National Aeronautics and
Space Administration
Headquarters
Washington, DC 20546-0001

August 11, 2003

Reply to Attn of: JX

TO: Directors, NASA Centers

FROM: J/Assistant Administrator for Management Systems

SUBJECT: Analysis of "Report on Real Property Opportunities"

The enclosed report on opportunities for NASA Centers has been developed by the Headquarters Facilities Engineering Division to assist NASA Centers to leverage the value of underutilized NASA real property. The report is a third-party study of real property management "opportunities" for NASA. The opportunities listed in the report are not recommendations for action, but are an inventory of the potential business opportunities that the Centers should consider.

The report provides an analysis of new opportunities at the Centers, as well as known Center opportunities. All of the opportunities have been scored by the contractor, The Staubach Company, based on their findings at the Centers, and their understanding of the real estate market forces in the communities that host the NASA Centers and sites. The contractor's team worked closely with the Centers and Headquarters' elements to develop a report that NASA could use in developing a business plan for the future.

The report addresses, from the contactor's perspective, various options and authorities that NASA could use in taking action on the listed opportunities. The opportunities in the report span a broad array of facilities, including undeveloped land. Both NASA Headquarters and the NASA Centers have reviewed the resultant report to ensure accuracy of the data, as well as to perform an initial analysis, and the report has been modified where appropriate to ensure data integrity.

The Centers should now review their full list of opportunities and determine: (1) which opportunities they would propose to implement; (2) which would require extensive further study; and (3) which should be "rejected" as currently not feasible. Centers may recommend that some opportunities are not feasible at this time, and that no further action on those opportunities be contemplated in the next few years. All such rejections, however, will require justification.

We request that each Center forward their recommendations to their Headquarters Institutional Program Office (IPO) by October 1, 2003. The Centers should indicate, for each opportunity, whether the opportunity will be recommended for implementation, require extensive further study, or should be rejected as not feasible at this time.

We request that the NASA Enterprise IPO's review their Centers' analyses, develop their own recommendations, and forward to the Facilities Engineering Division, Code JX, by November 1, 2003. Code JX will work with the IPO's to consolidate the responses and develop an Agencywide implementation plan, the NASA Real Property Business Plan. This plan will be presented to the Associate Deputy Administrator for Institutions and Asset Management for approval.

If you have any questions regarding the report, please contact Eugene F. Hubbard, Director, Facilities Engineering Division, at 202-358-1090.

Jeffrey E. Sutton

Enclosure

Directors, NASA Centers:
ARC/Mr. Hubbard
DFRC/Mr. Petersen
GRC/Mr. Campbell
GSFC/Mr. Diaz
JSC/Gen. Howell
KSC/Mr. Kennedy
LaRC/Mr. Freeman
MSFC/Mr. King
SSC/Mr. Rudolphi (Acting)

cc:
A/Ms. Whewell
ADI/Mr. Jennings
B/Mr. Isakowitz
C/Mr. Frelk
CIC/Ms. Grimes
G/Mr. Pastorek
JX/Mr. Hubbard
L/Mr. Horner
M/Mr. Readdy
P/Mr. Mahone
R/Dr. Lebacqz (Acting)
S/Dr. Weiler
Y/Dr. Asrar

REPORT ON
Real Property Opportunities
For Expanded Use of NASA's Facilities

MAIN REPORT (Electronic Version)

August 1, 2003

NASA Real Property Opportunities

Overview

August 1, 2003

Goal

- Develop an easy to use list of Real Property Opportunities that NASA can use to support its mission now and in the future

Activities/ Outcomes

- 750 interviews at HQ's and Centers
- 45 people working on the analysis/report
- Visited 13 major sites over 3 month period
- Gathered and reviewed 300 pounds of paper
- Identified potential savings/ income generation

Status

- Final draft review

WHY?

Change

Is happening everywhere at NASA:

- **NASA mission clarification**
- **Changing, aging infrastructure**
- **Shrinking Federal Government**
- **Impending retirement, recruitment**

NASA's physical infrastructure is at a critical juncture

"Opportunity comes to the prepared mind…."

How does NASA determine it's future before "change" determines it for NASA?

The Report Is…

- An independent third party review
- High-level review of opportunities
- Description of known and out-of-the-box ideas
- Multiple potential implementation strategies
- A resource for cross-center idea-generation
- Multi-perspective review of opportunities
- A model for approaching opportunities
- Big questions for NASA
- Real Estate focus – NOT program/mission focus

The Report Is Not…

- Specific or inferred recommendations
- A review of NASA's mission
- A complete listing of opportunities/ strategies
- A detailed analysis of any specific opportunity – it is a strategic approach to potential approaches

Report Structure

Section 1 - Overview, Executive Summary
Section 2 - NASA: Overview and History
Section 3 - NASA's Legislative Authorities
Section 4 - Center Summary Matrix
Section 5 - Opportunities – Descriptions, Measures
Section 6 - Real Property Opportunity Types
Section 7 - Center Executive Summaries
Section 8 - NASA-Wide Opportunity Types
Section 9 - Real Property Management Strategies
Section 10 - Near-Term and EUL Opportunities
Appendix - Center Reports, Interview Participants, Bibliography, Scope of Services

Center Reports

Section 1 - Executive Overview (In Briefing format)
Section 2 - General Market Statistics
Section 3 - Business, Mission, Vision of the Center
Section 4 - Infrastructure
Section 5 - Center Specific Opportunities

Opportunity Matrix

Title Here			
SORT	1	2	

Overall Opportunity title and information sort ofder

Identification #

ID #	Center	Type	Authority	Partner	Name	Opportuni	Potential Strategy	Impact Factors: NASA Financial (F)	NASA Synergistic (S)	Community Economic (E)	Community Outreach (O)	Mkt. Reality (R)	Results & Rank: Business (9=max) (F,E,R)	Intangible (6=Max) (S,O)	Justification: Financial	Synergisti	Economi	Outreach	Reality
23	All	Underutilized Facilities	Operational	NASA	Wind Tunnels	Management Strategy for Wind Tunnels	The Rand study is currently reviewing Wind Tunnels and will have specific recommendations. There appears to be an opportunity to reposition NASA's Wind Tunnel capability throu[illegible] reimbursable ag[illegible]ments, [illegible]tilization analysis [illegible]otential [illegible]nsolidation -- res[illegible]g in [illegible]uction in costs to [illegible]tain infrastructur	2	2	2		3	7	3	Ensures optimization of unique facility portfolio, including cost saving opportunitie s	Shared usage/colla boration with partners	Can bring more users/contr actors to mark[illegible]tplace	Can include local business incubation and educational missions	Study currently in process.

Center / Location

Type

Authority / Structure

Potential Partner

Name

Specific Oppor-tunity

Specific strategy; brief description

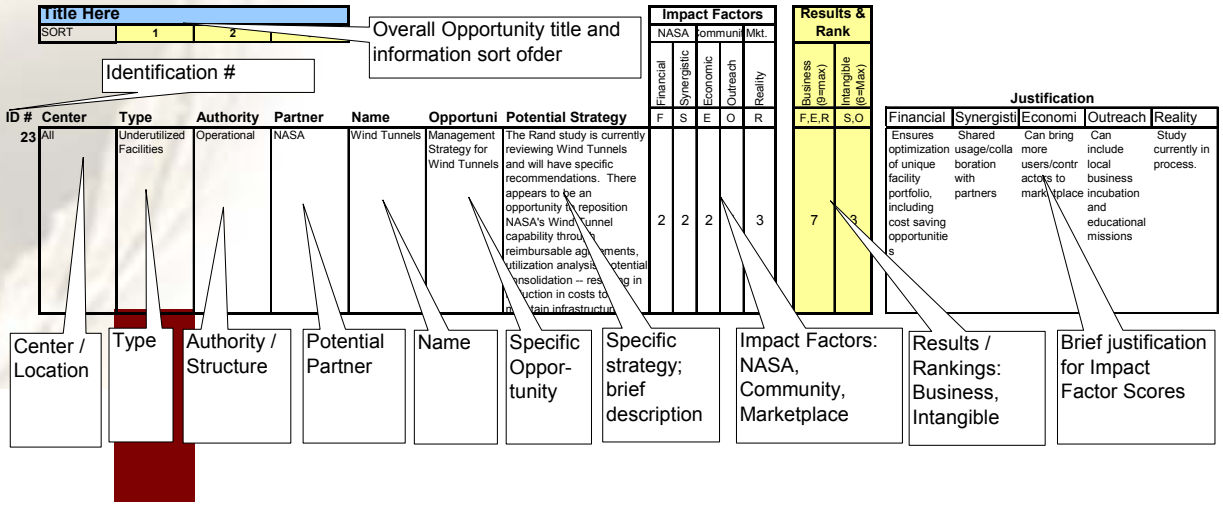
Impact Factors: NASA, Community, Marketplace

Results / Rankings: Business, Intangible

Brief justification for Impact Factor Scores

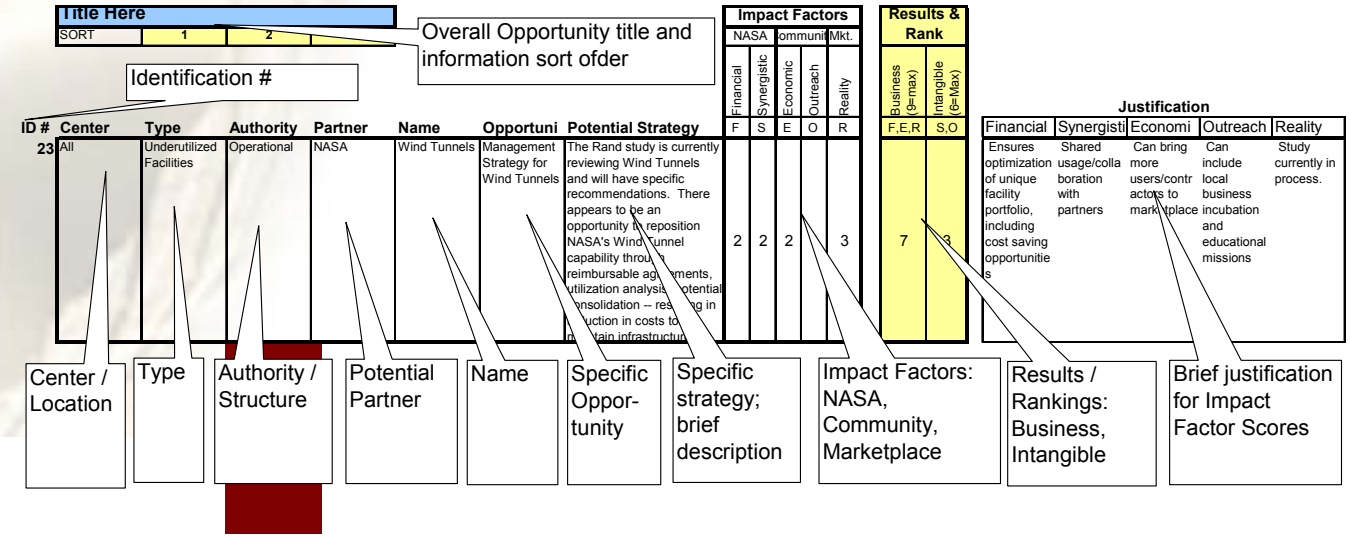
Opportunity Type

- Underutilized Land Opportunities
- Underutilized Facilities Opportunities
- Facilities and Asset Management Strategy Opportunities
- Mission or Program Clarification Opportunities
- Restructuring Opportunities
- Utilities Management Opportunities
- Example Opportunities



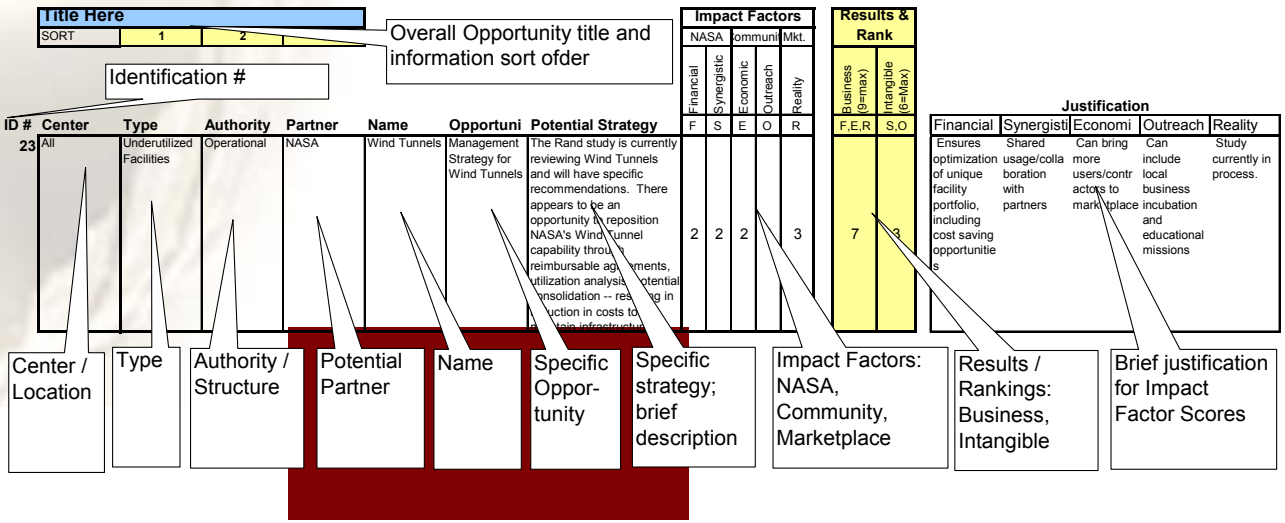
Authority / Structure

- **Space Act Agreement**
- **Enhanced-Use Lease (EUL)**
- **CoF**
- **Divest**
- **Historic Preservation Act**
- **Operational**
- **Outside Fence**



Opportunity/ Characteristics

- **Potential Partners**
- **Name**
- **Opportunity**
- **Potential Strategy**



Impact Factor Value Measurement

NASA Impact Factors

- Financial and Economic (Quantitative)
- Synergistic/Collaborative (Qualitative)

Community Impact Factors

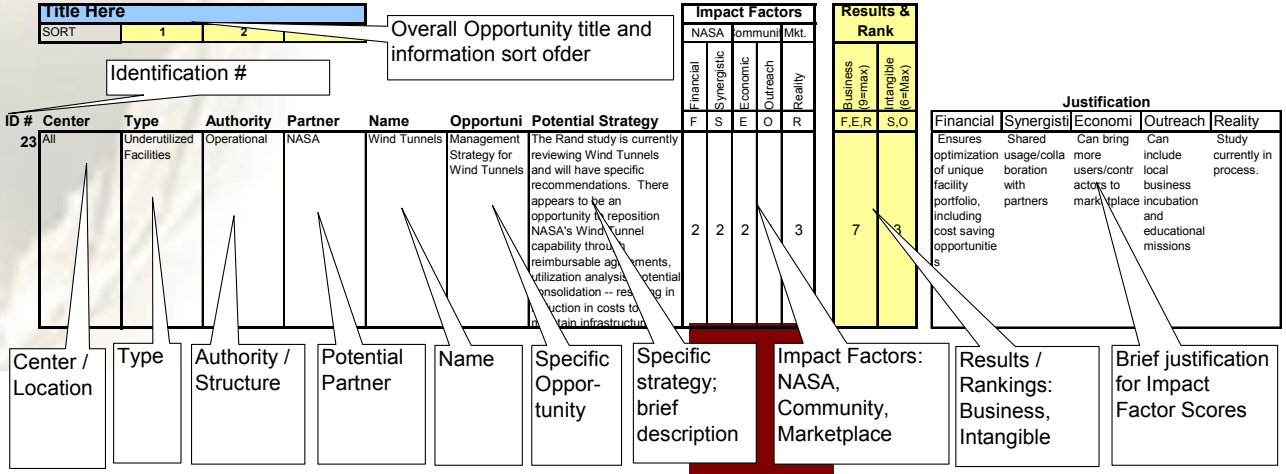
- Economic Impact (Quantitative)
- Outreach Impact (Qualitative)

Marketplace Factors

- Reality of Implementation

Measurement System

0 = No Impact
1 = Minimal Impact
2 = Average Impact
3 = High Impact



Results and Ranking

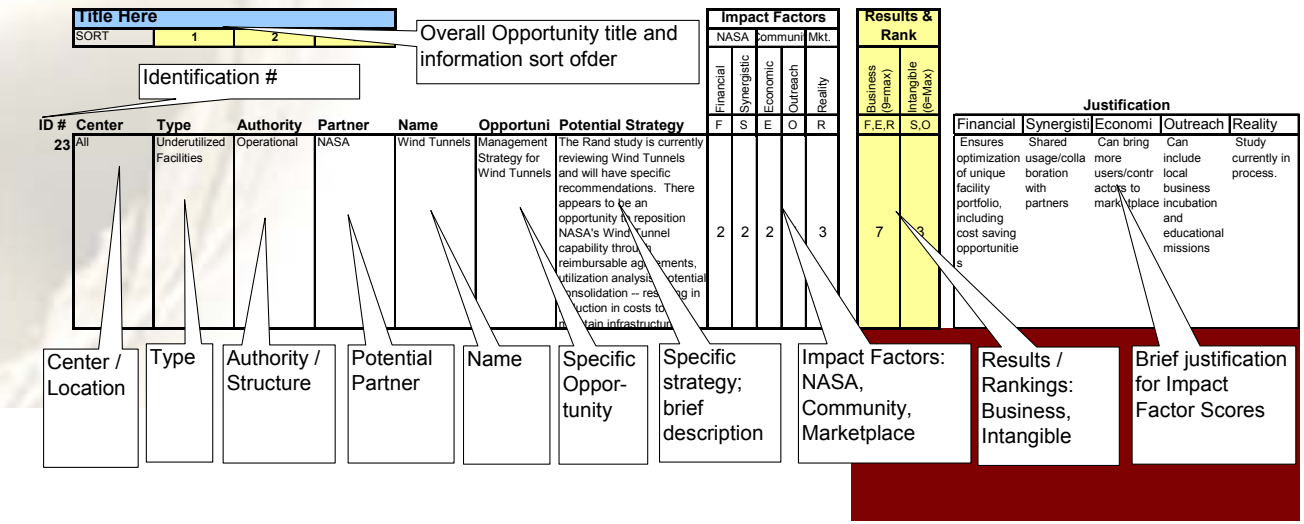
The Impact Factors are added together so opportunities can be reviewed on broader level:

Business Ranking (High score = "9") includes:

- NASA financial impact factors
- Community economic impact factors
- Marketplace reality factors

Intangible Ranking (High score = "6") includes:

- NASA synergistic impact factors
- Community outreach impact factors



Conclusion

- **NASA is at a crucial point in its history**
  - **Refined vision**
  - **Aging infrastructure**
  - **Renewed focus on infrastructure improvements**

- **The report is a <u>tool</u> to help NASA, not a series of recommendations**

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[*1] *Center Reports are in a separate binder in hardcopy versions; Center Reports are included in Section 7 in electronic copies of this report.*

SECTION 1 – OVERVIEW AND EXECUTIVE SUMMARY

OVERVIEW – PROJECT MISSION AND OBJECTIVES

NASA has, over its 44-year history, acquired land and property in support of its mission and operations. NASA owns or manages nearly 400,000 acres of land and 44 million square feet of facilities. In keeping with NASA's support of the President's Management Agenda to seek maximum efficiency and cost effectiveness, NASA, through the facilities engineering division (Code JX), sponsored an agency-wide review and analysis of its Real Property strategy and Real Property holdings. The review includes all ten Centers and three components in this report for use by the Centers and the Strategic Enterprises. New methods of conducting business in the federal government and current budget constraints necessitate that NASA look at alternatives to managing its Real Property holdings.

The goal of this task was to develop an easy to use analysis of center specific opportunities. This summary document contains the report on all Centers. The plan includes an analysis of what underutilized property is available, what the demand and market at each Center is for any potential underutilized property and a collection of the Real Property opportunities for the NASA Centers. This report also analyzes Real Property opportunities and contains Center-specific review report. Furthermore, the report identifies targets of opportunity to reduce infrastructure by looking at ownership alternatives and cost-saving initiatives such as Enhanced-Use Leasing, public-private partnerships, and other innovative Real Property management actions.

The Staubach Company ("Staubach") was hired in October 2002, to develop this report. In addition to relying on existing data to conduct the analysis, Staubach conducted site visits at each of the ten major Centers and the Wallops Flight Facility, White Sands Test Facility, and Michoud Assembly Facility. The visits were used to validate information as well as gain an understanding of each Center and its surrounding community. It should be noted that Staubach visited several additional remote installations (such as Plum Brook Station and Moffett Field). The report addresses these component/satellite facilities in conjunction with the analysis of the Centers responsible for them.

The overview briefing paper used at most interviews to describe the review activities is attached in the appendix of this report.

EXECUTIVE SUMMARY AND FINDINGS

NASA has a special position among federal agencies because of its unique and purposeful mission. NASA employees and contractors share a common focus and inspiration; the mission allows NASA to justify unique facilities and capabilities and taxpayers to understand NASA's activities. However, NASA is in the midst of a mid-life crisis on several fronts, not the least of which is an expensive and unique but aging infrastructure that is approaching the end of its normal economic / design life. NASA infrastructure will require a substantial amount of investment over the next several years to ensure its ability to support NASA's unique mission. This challenge will require changes in the way NASA approaches its Real Property. This study identifies specific

opportunities and provides the grounding for a strategy which will assist NASA in making the transition from an aging infrastructure to a highly supportive one. The Real Property opportunities generally fall into the categories listed below. These categories are further defined in Sections Five and Six

- Underutilized Land Opportunities
- Underutilized Facilities Opportunities
- Facilities and Asset Management Strategy Opportunities
- Mission or Program Strategy Clarification Opportunities
- Restructuring Opportunities
- Utilities Management Opportunities
- Example of Opportunities

To pursue these opportunities, NASA may utilize a series of traditional and non-traditional legislative authorities, including the following:

- National Aeronautics and Space Act of 1958, which established NASA as a civilian federal agency responsible for exercising control over aeronautical and space activities sponsored by the United States. The "Space Act" authorizes the Administrator to acquire various facilities by purchase, lease, or otherwise, and to out-lease to third parties such Real Property.

- Enhanced-Use Leasing Authority, Public Law 108-7, enacted in 2003, which authorizes the Administrator to enter into leases for non-NASA use of property at not more than two NASA Centers. In return for such leases, NASA may obtain a combination of monetary consideration, services, facilities, or other benefits from the operation of the non-NASA uses so long as the Administrator determines the consideration to be "fair market value." The NASA Center where any such revenues are generated may retain such revenues, unlike traditional federal agency leasing, which requires the return of such revenues to the Department of the Treasury.

- The National Historic Preservation Act, which requires federal agencies to manage historic properties under their jurisdiction or control. It requires these agencies to consider the effects of their actions on such properties and enables them to lease historic properties not needed for current agency purposes to outside entities.

- Federal Real Property and Administrative Services Act of 1949, which authorizes the General Services Administration (GSA) to procure, supply and dispose of real and personal property and provide government-wide policy oversight and guidance for federal Real Property management. GSA has created a "Relocation Program" which offers agencies incentives to and funding to relocate from antiquated, functionally obsolete, or underutilized properties to modern and efficient ones.

Finally, as an aid in its pursuit of Real Property business opportunities, NASA has a plethora of potential partners with whom NASA can develop mutually beneficial business structures. By utilizing partnerships, NASA is removed from taking 100% of the responsibility for implementing the opportunity. The most prominent partners include other federal agencies, particularly Department of Defense agencies, such as the United States Army, Air Force, and Navy. These partnerships can build on the relationships that NASA has developed with these agencies out of shared history and proximity. Moreover, many of NASA's contractors, such as Boeing and Lockheed Martin, also represent potential partners simply due to their business objectives and need for proximity to NASA sites.

THE BIG QUESTIONS FOR NASA

During the analysis, over 700 individuals were interviewed about the potential opportunities for NASA. Most of the interviews were with NASA Civil Servants, but approximately 10% were with contractors or influence points in the marketplace. The interviews were intended to uncover as many wide-ranging opportunities as possible for NASA's consideration. This report's objective is to examine the numerous opportunities in sufficient detail to describe them to NASA for consideration.

Several recurring topics emerged which are important factors for NASA to address as it wrestles with the difficulty of investigating which opportunities are better than others.

For this report the recurring topics are set as the "Big Questions" that NASA should ask itself as NASA begins to weigh and prioritize options. The answers to these questions are critical in determining whether an opportunity is appropriate for NASA.

There are five Big Questions that relate to NASA overall:

1. Mission clarification is tied to NASA's Strategic Plan, and the Enterprises' Plans. What will be NASA's operational structure and strategy in the future?

2. What Real Property will NASA need in the future, and what is NASA's Real Property strategy?

3. What is NASA's relationship to research institutions, and what is the most effective strategy for NASA to pursue in coordinating with these institutions?

4. What is NASA's relationship to other federal agencies, and is there a synergistic strategy that can be mutually beneficial?

5. What is NASA's overall role in Real Property management, and how does that role support NASA's future strategy?

STAUBACH'S PROJECT TEAM AND MAJOR SCOPE TASKS

Staubach assembled a team of experienced Real Property professionals to work with NASA, including team members with specialized expertise in Real Property strategy, federal Government procurement, Office of Management and Budget (OMB) guidelines, prospectus development, Enhanced-Use Leasing, public private partnerships, benchmarking, research, development, and facilities assessment. The Staubach team included members from Patton Boggs to ensure NASA's ability to execute privatization initiatives. The Staubach team also included members from Plexus Scientific, the organization that recently completed a deferred maintenance analysis for NASA. The six major tasks in the team's scope of work include:

TASK 1: Agency-wide review of goals, missions, objectives; data gathering; and communication plans

TASK 2: Center-specific data-gathering

TASK 3: Center visits

TASK 4: Market assessment

TASK 5: Center-specific report

TASK 6: Agency-wide alternative real property strategies and work session

REPORT CONTENT

The remaining portions of the report are organized as follows:

Section 2: Section 2 provides a brief overview of NASA's rich history and the vision, mission and goals as well as a description of the ways in which NASA's activities contribute to achievement. It provides an introduction to the uniqueness of NASA's mission among federal agencies and a context for understanding how NASA operates.

Section 3: Section 3 discusses NASA's legislative authorities. It includes a lengthy analysis of the newly acquired Enhanced-Use Leasing authority together with a discussion of the experiences of other agencies with similar authority as well as other issues to be considered.

Section 4: Section 4 gives a brief overview of each Center through a Center Summary Matrix. The matrix provides Center statistics like the major activities at each Center, land and building quantity and value, etc. The matrix also lists the major contractors at each Center as well as the value of those contracts. Moreover, the matrix provides market statistical information for the location where each Center is located. The section provides a context for

understanding differences among the Centers and the types of opportunities that may be appropriate for each.

Section 5: Section 5 provides an overview of the opportunities and examples that the team discovered during the review. It includes a description of the methodology used to identify and rank these opportunities in the matrix format. The section also includes an analysis of the opportunities and a copy of the opportunity matrix. The opportunities are "out-of-the-box" ideas, and although they are conceptually well-thought out, each must be considered in the context of a detailed business plan based upon economic conditions and other intangibles.

Section 6: Section 6 discusses the six major opportunity types (Underutilized Land Opportunities, Underutilized Facilities Opportunities, Facilities and Asset Management Strategy Opportunities, Mission or Program Clarification Opportunities, Restructuring Opportunities, Utilities Management Opportunities, and Example Opportunities). A series of key success factors and "big questions" is included to aid in the analysis and further investigation. In addition, the section incorporates a copy of the opportunity matrix, sorted by business results ranking.

Section 7: This section provides in briefing format an overview of each Center. It demonstrates the uniqueness of each Center in its opportunities, development, economics, mission and community. There are separate binders containing Center reports discussing these findings in further detail.

Section 8: Section 8 demonstrates that although each of NASA's Centers is unique, there are a number of opportunities that can be considered across all Centers or incorporated on an agency-wide basis. This section includes an analysis of those opportunities.

Section 9: Using case studies to provide benching parameters, Section 9 describes how Real Property management functions are organized in private sector corporations and other federal agencies. It is intended to provide guidance to NASA in correlating its Real Property management operations with corporations and federal agencies that maintain large portfolios for Real Property.

Section 10: Section 10 encapsulates the Real Property opportunities that the team feels are poised for near-term success (i.e., the "low hanging fruit"). These opportunities are those where the financial benefits to NASA are expected to be significant; synergistic uses with NASA's missions can be created; the economic impact to the local community is positive; good will is created through academic and/or programmatic outreach; and the reality of being able to execute the opportunity is strong. This discussion includes the Enhanced-Use Leasing opportunities that are the best candidates for implementation.

APPENDIX:

1. Interviewed Participants: This section contains a list of those individuals who participated in the team's visits to the Centers, including the Center personnel, the applicable members of the team, and interested parties from the marketplace.

2. Abbreviated Bibliography: This section contains an abbreviated list of documents that the team used in compiling this report.

3. Executive Overview Briefing Paper: This section contains a copy of the overview briefing paper used at most interviews with NASA personnel to describe the process and the outcome.

4. Real Estate Business Plan: Statement of Work: This section contains a copy of the statement of work originally issued by NASA for the development of this report.

5. Center Reports: The Center Reports are provided in separate binders.

SECTION 2 – NASA: OVERVIEW AND HISTORY

OVERVIEW

Real Property is a support to execute NASA's overall mission and goals. Therefore, a well-rounded review of Real Property opportunities should be undertaken within the context of NASA's history, mission, goals and current operations.

NASA is the federal agency that provides Americans with the science, technology, and operations needed to understand and explore the furthest reaches of space. NASA programs enable scientists to use the vantage point of space to understand and improve life on Earth. It provides data and information to scientists and engineers; advanced software and hardware concepts and systems to governmental, academic, and commercial endeavors; and educational expertise and materials for all levels of formal and informal learning communities worldwide. The agency's primary areas of endeavor are managed by NASA's strategic enterprises: Space Science, Earth Science, Biological and Physical Research, Space Flight, Aerospace Technology, and Education. Of these, four have responsibility for Center oversight and management.

NASA's vision, as originally told to the Real Property team and repeated throughout the myriad of interviews, is shown below.

NASA's Vision	**NASA's Mission**
▪ To improve life here	▪ To understand and protect our home planet
▪ To extend life to there	▪ To explore the universe and search for life
▪ To find life beyond	▪ To inspire the next generation of explorers…. *As only NASA can*

The core structure consists of a headquarters in Washington, DC; 10 Field Centers located in Maryland, Virginia, Florida, Ohio, Alabama, Mississippi, Texas, and California; and associated sites across the nation. The agency has a workforce of approximately 18,000 full time civil service employees, supplemented by academic and commercial contractors, and an annual budget of approximately $14 billion.

HISTORY

October 1, 1958, the official start of the National Aeronautics and Space Administration (NASA), was the beginning of a rich history of unique scientific and technological achievements in human space flight, aeronautics, space science, and space applications. NASA was formed from the earlier National Advisory Committee for Aeronautics (NACA), and other government organizations. NASA almost immediately began working on options for human space flight. NASA's first high profile program was Project Mercury, an effort to learn if humans could survive in space, followed by Project Gemini, which built upon Mercury's successes and used spacecraft built for two astronauts. NASA's human space flight efforts then extended to the Moon with Project Apollo, culminating on July 20, 1969 when the Apollo 11 mission first put humans on the lunar surface. After the Skylab and Apollo-Soyuz Test Projects of the early and mid-1970s, NASA's human space flight efforts again resumed in 1981, with the Space Shuttle program that continues today to help build the International Space Station.

Building on its NACA roots, NASA continued to conduct many types of cutting-edge aeronautics research on aerodynamics, wind shear, and other important topics using wind tunnels, flight testing, and computer simulations. NASA's highly successful X-15 program involved a rocket-powered airplane that flew above the atmosphere and then glided back to Earth unpowered, providing Shuttle designers with much useful data. The watershed F-8 digital-fly-by-wire program laid the groundwork for electronic controlled flight in many other aircraft including the Shuttle and high performance airplanes that would have been uncontrollable otherwise. NASA has also done important research on such topics as "lifting bodies" (wingless airplanes) and "supercritical wings" to dampen the effect of shock waves on transonic aircraft.

Additionally, NASA has launched a number of significant scientific probes such as the Pioneer and Voyager spacecraft that have explored the planets and other areas beyond our solar system. NASA has sent several spacecraft to investigate Mars including the Viking and Mars Pathfinder spacecraft. The Hubble Space Telescope and other space science spacecraft have enabled scientists to make a number of significant astronomical discoveries about our universe.

NASA leads pioneering work in space applications satellites. NASA has helped bring about new generations of communications satellites such as the Echo, Telstar, and Syncom satellites. NASA technology has also resulted in numerous "spin-offs" in wide-ranging scientific, technical, and commercial fields.

NASA's mission involves endeavors that seek to achieve the seemingly unachievable. The agency's goals are inherently ambitious. NASA's programs have enabled leaps in scientific understanding and revolutionary technologies.

The outcomes of NASA's activities contribute significantly to achievement in five key areas:

Economic growth and security.
NASA conducts aeronautics and space research and develops technology in partnership with other federal agencies, the academic world, and industry to keep America capable and competitive.

Increased understanding of science and technology.
NASA communicates widely the content, relevancy, and excitement of its mission and discoveries to inspire and increase the understanding and the broad application of science and technology.

Protection of Earth's environment.
NASA studies the Earth as a planetary system to understand and predict its behavior, enabling the world to address environmental issues.

Educational excellence.
NASA involves the educational community in its endeavors to inspire America's students, create learning opportunities, and enlighten inquisitive minds.

Exploration and discovery.
NASA explores the universe to enrich human life by stimulating intellectual curiosity, opening new worlds of opportunity, and uniting nations of the world in this quest.

Technology developed for space flight has produced thousands of spinoffs for applications that contribute to the national economy, productivity, and lifestyle. It is almost impossible to find an area of everyday life that has not been improved by space-based technology. These secondary applications represent a substantial return on the national investment in NASA. Recent examples include:

Medical Diagnostics and Treatment.
Mars Pathfinder technology -- developed to enhance pictures obtained in space -- is being modified to make three-dimensional models of breast tissue. Combining ultrasound with advanced computing, the imaging device discerns cancerous from healthy tissue by comparing changes in shape and analyzing the ultrasound signal. This enables doctors to differentiate tissue more accurately without using painful invasive procedures.

Environmental Monitoring.
Sensors used for satellite monitoring of greenhouse gases in the Earth's atmosphere are now being adapted to detect lethal chemical agents on Earth. This will not only improve the ability of the U.S. government to respond to the potential domestic threat posed by terrorist groups, but it will also aid military personnel in combat situations abroad. Also, the technology has the

potential to detect the by-products of drug manufacturing operations, which could make drug interdiction efforts more productive and cost effective.

Training System Technology.
A training system originally developed to facilitate astronaut adaptation to space through a combination of autogenic therapy and biofeedback can now be used by commercial and private pilots to reduce the risk of human error accidents by helping to control the physiological effects associated with emergency flying conditions. The system can also be used in the treatment of hypertension, dysautonomia, autonomic neuropathy, and nausea associated with chemotherapy.

Complex Project Management.
A schedule and cost risk analysis modeling system, originally developed in response to NASA's need to identify the importance of major delays in Shuttle ground processing, is now available to help analyze schedule and cost risks in a range of complex projects. This technology could save industries millions of dollars by helping them improve project management processes and identify the best process improvements to reduce bottlenecks and inefficiencies.

Highway Transportation.
Subsonic aerodynamic design principles have been applied to highway vehicles to reduce drag. These principles have also been applied to improve livestock transportation, where a combination of overheating, ingestion of dust and fumes, and uneven ventilation contributes to shipping fever, a fatal respiratory disease. NASA's energy-efficient livestock hauler provides a healthier, more humane environment through a positive, monitored, controlled ventilation system. It overcomes ventilating and heat problems while lowering fuel consumption.

SECTION 3 – NASA'S LEGISLATIVE AUTHORITIES

INTRODUCTION

On February 20, 2003, Congress enacted House Joint Resolution 2, "Making further continuing appropriations for the fiscal year 2003, and for other purposes," as Public Law 108-7. Included among its various appropriations for the federal agencies involved, Section 315 of Title IV General Provisions provided authority to the Administrator of NASA to enter into a demonstration project for Enhanced-Use Leases on property at two centers under the jurisdiction of the Administrator. With enactment of this authority, NASA joins several other federal agencies in having the ability to pursue an aggressive asset management program so as to encourage NASA activities to view their property holdings as resources, potential revenue centers as well as a means to attract outside investment into NASA programs.

PRIOR NASA AUTHORITIES

Prior to enactment of Public Law 108-7, NASA has had a long tradition of working with the private sector as well as with other federal and public agencies in the development of NASA controlled property or in securing non-NASA investment into its facilities. The primary legal authority used was found within the provisions in Section 203 of Public Law 85-568, as amended, otherwise known as the "Space Act." Subsection 203(c)(3) provides authority to the Administrator to acquire various facilities (including laboratories, employee quarters, and other accommodations by purchase, lease, or otherwise, and to out-lease to "others such real and personal property."[1] It provides NASA with the ability to enter into contracts, leases, cooperative agreements, or other transactions as may be necessary in the conduct of its work and on such terms as it may deem appropriate with any federal, state, local, or private entity[2] and to accept unconditional gifts or donations of services, money, or real or personal property.[3] In sum, it grants a wide range of legal authorities to NASA to enter into commercial transactions regarding the acquisition and management of its property and facilities.

In addition to NASA's acquisition authority in subsection 203(c)(3), NASA has made extensive use of the "other transactions" authority contained in subsection 203(c)(3). This subsection authorizes NASA "to enter into and perform such contracts, leases, cooperative agreements, or other transactions as may be necessary in the conduct of its work and on such terms as it may deem appropriate…with any State,…or with any political subdivision thereof, or with any person, firm association, corporation or educational institution." The subsection has been used by NASA in connection with various "Space Act Agreements" involving collaborative arrangements between NASA and outside parties for the use of unique NASA facilities by outside parties on a fully

[1] Public Law 85-568, Section 203(c)(3).
[2] Public Law 85-568, Section 203(c)(5).
[3] Public Law 85-568, Section 203(c)(4).

reimbursable basis. It is a broad and flexible authority that should not be overlooked in developing and implementing the Agency's Real Property initiatives.

Furthermore, NASA has used the traditional legal authorities available to federal agencies for managing and disposing of its capital facilities. These include obtaining energy upgrades through the energy savings performance contracting authority,[4] leasing available historic properties in exchange for maintenance and repair services and other consideration as provided by the provision of the National Historic Preservation Act, and conveying easements and similar property rights to other parties in exchange for cash or other type of consideration.[5] However, in many instances, the traditional authorities pertaining to management and conveyance of federal property did not adequately address problems encountered by NASA's Centers in trying to deal with their own facility and operational requirements. Unless there is specific legislative authority otherwise (*e.g.*, the National Historic Preservation Act and the Energy Savings Performance Contract (ESPC) authority), an agency can only obtain monetary consideration from leasing federal property with those funds (in excess of costs) being deposited into the U. S. General Treasury.[6] Even in instances wherein NASA had ability to secure private investment into NASA facilities through such programs as the energy savings performance contracting or historic preservation leases, such authorities did not provide a total answer to NASA's ability to fully use its capital assets as financial resources. For example, while NASA was able to use the National Historic Preservation Act leasing authority to lease historic NASA facilities in return for maintenance and repair of such structures, the statute provides that any surplus proceeds must be deposited into the U. S. General Treasury after two fiscal years to the extent proceeds are not used to maintain or repair other historic property.[7] Similar limitations exist on transactions involving the ESPC program.[8]

The limitations of traditional authorities to enable NASA to treat its facilities as resources combined with increasing budgetary constraints have caused privatization and income generation programs to become increasingly important to NASA programs and activities. In an effort to obtain significant cost reductions and alternative funding sources for its programs and activities, NASA actively pursued an independent Enhanced-Use Leasing authority that would provide clear direction

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4 42 U.S.C. Section 8287.

5 See, The federal Property and Administrative Services Act of 1949, 40 U.S. C. Sections 483, 484, June 30, 1949, 63 Stat. 377, as amended for disposal of excess and surplus property. The National Historic Preservation Act, 16 U.S.C. Section 470, has provisions that enable federal agencies to lease historic properties not needed for current agency purposes to outside entities. See, 16 U.S.C. Authority to convey easements and similar interests is found in 40 U.S.C. Section 319.

6 40 U.S. C. 303(b).

7 40 U.S.C. Section 470h-3(b).

8 ESPC contract authority is contained in Subchapter VII of the National Conservation Policy Act (42 U.S.C. Section 8287). Subchapter III outlines the parameters of the Act including terms of incentives to federal agencies for undertaking energy conservation and performance management efforts. Section 8256 of Title 42 (which is a part of Subchapter III), provides that agencies other than DoD) are entitled to 50% of energy and water savings derived from energy savings performance contracts and utility energy rebate programs. These funds would be subject to further appropriation. The Act is silent as to the remainder of such savings, which it can be argued means that unless NASA has specific authority to use such sums, such sums would presumably be treated as miscellaneous receipts and deposited into the Treasury.

regarding NASA's ability to lease its property, retain revenues, reimburse its costs from such revenues and obtain services, space, facilities and other in-kind consideration. This effort culminated in Congressional enactment of the Enhanced-Use Leasing demonstration authority mentioned in the introduction to this section.

NASA'S ENHANCED-USE LEASING AUTHORITY

With enactment of this authority, NASA now has an undisputed right to enter into leases for non-NASA use of property under NASA jurisdiction.[9] Enacted as a demonstration program, the legislation provides the Administrator with the ability to enter into such leases at two NASA Centers.[10] A close examination of this authority indicates that there is no limit on the term of such leases. This provides a great deal of flexibility in structuring the duration of the lease so as to be commensurate with the level of private investment into the NASA property. In return for the lease, NASA can obtain any combination of monetary consideration, services, facilities or other benefits from the operation of the non-NASA uses so long as the consideration is determined by the Administrator to be "fair market value."[11] It should be noted, however, that while the "consideration" provisions are very broad in scope as to the types of consideration received, Subsection 315(e) specifically limits NASA from leasing back property during the term of the out-lease or enter into other contracts with the lessee respecting the property.

Unlike traditional federal leasing, where revenues generated from such leasing are required to be deposited into the Department of Treasury, Section 315(b)(3) permits NASA to "keep" all of the cash proceeds for the maintenance, capital revitalization, and improvements at the selected NASA Centers wherein the Enhanced-Use Leases are located. Section 315(b)(3)(a) also allows cost reimbursement. The ability to keep lease proceeds has been very popular with other federal agencies granted similar authority. Its popularity stems from the establishment of an economic incentive for federal property managers to utilize fully their existing capital assets and to begin to view these assets as potential funding resources for needed programs or facility requirements. Finally, like other similar Enhanced-Use Leasing authorities, this legislation provides for Congressional notification of potential projects. NASA must submit a plan to Congress on its proposed implementation of the Enhanced-Use Leasing authority before entering into the first lease, and thereafter NASA must submit an annual report by January 31st of each year regarding the status of the demonstration.[12] To underscore Congress' intent to provide the Agency with the necessary authority to undertake and

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9 Section 315 (a), Title IV General Provisions, Public Law 108-2.

10 Ibid.

11 *Id.* at Section 315(b)(1). It is interesting to note, however, that the legislation provides specific authority to the Administrator to enter into leases with other federal agencies for consideration equal to NASA's full costs in connection with the lease. It can be argued that such language may allow NASA to charge "rent" to federal agencies for use of NASA property. The current practice in the federal government under the 31 U.S.C. Section 1535 (the Economy Act), is that while agencies may provide and charge for services to other agencies, such authority would not apply to the use of federal lands.

12 The provisions of 38 U.S.C. Section 8162 mandate that the Department of Veterans Affairs provide two separate congressional notifications to its oversight committees and publish a federal register notice for each proposed Enhanced-Use Leasing transaction.

practice asset management, Section 315 specifically provides that the Enhanced-Use Leasing authority may be exercised notwithstanding any other law[13] and that such authority is in addition to any other authority to lease property of NASA.[14]

This Section examines NASA's Enhanced-Use Leasing authority in the context of similar such authorities and laws pertaining to the private development of federal property so as to provide a legal context in the development of an Enhanced-Use Leasing program at NASA. The term "Enhanced-Use Leasing" first appeared 1991 with enactment of the Department of Veterans Affairs' Enhanced-Use Leasing authority. Since enactment of this authority, the program has been developed into a successful privatization tool that several federal agencies have attempted to replicate.

In the years after VA obtained its Enhanced-Use Leasing authority, several federal agencies attempted to secure similar authority including the General Services Administration, the Centers for Disease Control, and the Department of Defense (DoD). When Congress enacted the FY 2001 Authorization Act, it included a provision that amended DoD's existing long-term leasing authority, known as Section 2667.[15] While the FY2001 Authorization Act referenced the amendment as an "Enhancement of Authority of Military Department to Lease Non-Excess Property," the new authority is commonly referred to within DoD as Enhanced-Use Leasing. Other agencies such as the Department of Energy decided to pursue Enhanced-Use Leasing projects using existing enabling authority rather than seek additional legislation. All of these efforts generated projects and experience that should be examined in the light of developing NASA's program.

OTHER AGENCY EXPERIENCES IN ENHANCED-USE LEASING

VA'S EXPERIENCE WITH ENHANCED-USE LEASING

Prior to securing the Enhanced-Use Leasing authority, VA had limited powers to enter into leases of property under its control. Those authorities permitted leases of up to 3 years to affiliated organizations or state or local authorities and required that any cash consideration received by VA be deposited within the U.S. Treasury. In-kind consideration was available only on leases to state and local entities but was limited to repairs and improvements to the leased property. The Enhanced-Use Leasing authority substantially expanded the leasing benefits available to VA.

VA's Enhanced-Use Leasing authority is codified at title 38 U.S.C. Sections 8161 through 8167 and permits VA to enter into long term Enhanced-Use Leases with any third parties of underutilized real property under its jurisdiction or control. A closer examination of this authority's legal framework identifies how key issues are addressed.

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13 Section 315 (a), Title IV General Provisions, Public Law 108-2.

14 Section 315 (c), Ibid.

15 Section 2812 of the Defense Authorization Act for FY2001, Public Law 106-398, now codified in 10 U.S.C. Section 2667.

The basic statutory elements of this authority are:

- VA can "out-lease" its property for up to 75 years;
- The leased property must be under VA's control or jurisdiction;
- Non-VA uses must be consistent with, and must not adversely affect, the mission of the Department;
- The overall lease objective must enhance the mission of the Department;
- In return for the lease, VA can obtain any combination of monetary consideration, services, facilities or other benefits from the operation of the non-VA uses so long as the consideration is determined by the Secretary as "fair consideration."[16]
- Rather than using FAR competition, a lessee is selected pursuant to procedures determined by the VA Secretary that ensure the integrity of the selection process.

Programmatically, the VA authority requires that, prior to execution of an Enhanced-Use Lease a determination must be made by the Secretary of Veterans Affairs (Secretary) that the site is an appropriate site and that the proposed Enhanced-Use Lease will be advantageous to VA. Once such a determination is made, notices must be provided to both the authorizing and appropriations Congressional committees informing them of VA's intention to designate the site as one where an Enhanced-Use Lease will be executed. This notification is also accompanied by publication of a "notice of intent to designate" in the federal Register. Additionally, the Secretary must provide more detailed information to those same committees thirty (30) days prior to document execution. Once the second 30-day notice period has elapsed, the Secretary may execute the Enhanced-Use Lease. These are solely notice obligations and do <u>not</u> require any approval by Congress for the lease to be executed. The practical application of these notifications is that they cause VA to provide constant flow of information to the committees and their staff on all proposed and current projects through formal and informal briefings and updates.

By using this authority, VA has been able to develop and incorporate a capital asset management program into its strategic mission objectives. This capital asset management program relies upon a central principle that each VA-controlled property must be managed in a manner that promotes or "enhances" a VA program or mission. Such management may be either by direct VA-use or by its redevelopment by non-VA (public or private) users. Since its enactment in the fall of 1991, VA has used Enhanced-Use Leasing authority to obtain: energy centers; administrative space in commercial

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16 VA policies require that VA secure an appraisal of the fair market value of the underlying property concerned for each transaction. The value of the consideration offered by a lessee is measured against the secured appraisal. Consideration to VA is defined as distinct financial benefits that would accrue to VA as a direct result of the transaction. In instances of non-monetary or "in-kind" consideration, the value of such benefit would be measured in present value terms and could include the cost of services, facilities or space provided. The value could also include cost reduction or cost avoidance, provided that such items directly related to current VA obligations. Capital cost savings are not included in calculation of consideration. In addition, the value of any improvements made by the lessee, where the lessee either held title to those improvements or had beneficial use of them during the lease term, are not included.

office buildings; parking garages; housing for homeless veterans; senior housing; medical and clinical facilities; golf course privatization; and child care facilities. Projects that have been completed or that are currently in development include office buildings, research buildings, hotels, conference facilities, and retail malls. The financial benefits to VA from this program have been impressive.

- Over $250 Million of private sector investment secured into VA facilities
- Over $125 Million in present value have been saved in VA capital expenditures
- Over $210 Million in present value have been saved in VA operational expenditures
- Over $5 Million in revenue for VA programs

In the last year, VA has used this program to secure over $100 million alone for new facilities in the Chicago area. The form and approach developed for these projects are as varied as the subject projects themselves. In some instances, the transaction consisted entirely of a ground lease of VA and for a specific purpose with the payment of cash consideration. In other projects, the transaction included VA activities or uses on the property subject to the Enhanced-Use Lease. The type and form of the transaction is dictated by the objective being sought in the context of VA's legal as well as fiscal and budgetary authorities and constraints.

DEPARTMENT OF DEFENSE EXPERIENCES WITH PUBLIC-PRIVATE INITIATIVES

Since the mid 1980's, the Department of Defense has experimented quite extensively with the use of public-private ventures as mechanisms for the acquisition of various facilities and services, including troop housing, transient quarters, depot supply activities, office space, child care facilities, and utility and energy services. For purposes of this discussion, these authorities are referred to as Department of Defense (or DoD) authorities, though in most instances, the legislative authority is provided directly to the Secretary of military department involved. Public-private venture projects that involved activities other than energy were often structured around a particular military department's service contract and leasing authority. Such efforts included offices, warehouses, hotels/temporary quarters, vehicle test tracks, wind tunnels, marina developments, cinemas, restaurants, family housing etc. In many instances, however, the projects were undertaken by non-appropriated fund activities under special legislation for such activities.

DoD's past experiences in public-private ventures has been considerable and extremely varied. Such initiatives have involved the development of facilities on federal as well as on non-federal property with a wide range of participation by the private sector.[17] Until recently, the major thrust of such initiatives developed along two major product lines or programs – housing and utility privatization.[18] Both of these efforts have had initial mixed results though substantial progress is

[17] For example, the Military Housing Privatization Initiative in Public Law 104-106, as amended, enabled the Department to enter into a wide range of financial agreements including direct loans, loan guarantees, out-leases of land, rental guarantees, bartering, direct investments and transfer of property with private sector participants to obtain military family housing. See, 10 U.S.C. Sections 2872.

[18] Statement of Mr. Raymond F. Dubois, Jr., Deputy Under Secretary of Defense, (Installations and Environment) before the Subcommittee on Technology and Procurement Policy of the House Government Reform Committee, October 1, 2001.

now being in both of these areas. Full competition as mandated by the Competition in Contracting Act and the FAR is used by DoD in exercising these contracting authorities.[19]

In addition to these direct program initiatives, DoD was facing the same challenges as other federal agencies with respect to dealing with a large backlog of maintenance and repair and ever decreasing operational funds to sustain and modernize its facilities.[20] In response to this effort, Congress made a significant change to DoD's general out-leasing authority that enabled military services to enter into VA-type of Enhanced-Use Leasing transaction.

Section 2667, as revised by Public Law 106-398, is commonly referred to as the military's Enhanced-Use Leasing authority. The provisions of 10 U.S.C. Section 2667 permit the Secretary of a military department to "out-lease" property (that has been determined to be "not excess" under applicable laws), for purposes the service Secretary considers "will promote the national defense or be in the public interest." The duration of an out-lease can be indefinite and is dependant upon the military Secretary's determination. Section 2812 of Public Law 106-398 significantly revised section 2667 by enabling the service Secretary to accept "in-kind consideration" as well as cash, so long as such consideration was not less than the fair market value of the leasehold interest, as determined by the service Secretary. The in-kind consideration can include the construction of new facilities and may be applied to any property or facility under the control of that Service rather than just at the installation where the property was leased. Cash proceeds are still subject to further appropriation, but they would be now available for an expanded variety of base operating support functions including the construction or acquisition of new facilities. While leasing out property is not an acquisition covered by the procurement competition requirements, case law has mandated that competitive procedures be used, such as those contained in the federal Property Act, 40 U.S.C. Section 484.[21]

To date, while the Army and Air Force are using the Section 2667 (out-leasing) authority in connection with non-energy related projects, there are no initiatives currently underway in the energy area. However, review of the authorities and discussions with the program officials involved indicate that Section 2667 authority would be available for energy facilities. In concept and application, the amended Section 2667 authority does not differ from that in Section 8162. Both enable the "out-leasing" of government land to private parties for non-federal use and both allow the agency to receive "in-kind" consideration in the form of products or services. In as this legal authority specifically allows the property to be used for non-federal purposes, by definition Section 2667 avoids one of the primary issues facing the military services in the prior legislative authorities; namely, allowing the on-site, private entity to sell its services to non-federal entities.

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19 See 41 U.S.C. Section 253 and its parallel authority for military contracts, 10 U.S.C. Section 2304

20 See United States General Accounting Office Report to the Secretary of Defense, Defense Infrastructure: Greater Management Emphasis Needed to Increase the Services' Use of Expanded Leasing Authority," GAO Report GAO-02-475, June 2002.

21 San Francisco Drydock, Inc v Dalton; No. 96-15549; 1997 WL 700941 (9th Cir. (Cal.));

DISCUSSION OF DOD EXPERIENCES

DoD experiences with public-private ventures have generally followed the traditional legal structure developed for leasing or service contracts. The legal structure was based on a service contract format. These projects used FAR competitive procedures for selection of the contractor. The scope of the efforts were to obtain space, products and services for the military facility involved. Because the projects were limited to obtaining services to the Government, the procurement and contract not only included requirements on quality and quantity of the item (space, products, or services) to be delivered, they also contained detailed specifications on the type of equipment and staffing requirements. While not statutorily mandated, in most instances there was no practical outside market other than the military service involved. The contracts contained "take-or-pay" provisions for the space, products and services delivered with minimum and maximum performance requirements.

While such contracts required that the facilities be built to federal specifications and standards, some contracts also required the contractor to obtain local permits. All of the efforts provided for federal responsibility for all existing on-site hazardous waste. The contractor was responsible for all hazardous waste generated from its own operations. Contractor compliance with all environmental codes and permits was required for all contractor activities. These contracts contained all the required contract administration requirements that are found in FAR service procurement contracts. The contracts contained default provisions for contractor non-performance such as were subject to the "take-or-pay" provisions. These efforts also specifically included the right of the Government to terminate the contract for the convenience.

An example of termination for convenience involved a cogeneration plant built at the Charleston Naval Shipyard in Charleston, South Carolina. In that instance, the Navy was forced to terminate for convenience when the Shipyard closed as part of the base closure initiatives in the early 1990s. In exercising the termination right, the Navy paid damages equivalent to the outstanding debt as well as other associated costs. This contract termination and pay-out came soon after an earlier public-private project involving the Navy and a public-private venture housing program – a 1,000 unit family housing complex being financed and developed by a private entity on Staten Island, New York.

Similar to the Charleston effort, the Navy solicited and awarded a long-term contract with the private entity. In this instance, the contract was a 20-year lease for the use and occupancy of family housing units which were to be built on Navy lands. The Navy was seeking the housing in connection with the development of a homeport on Staten Island for the U.S.S. Iowa. Also like the energy initiatives, the project was designed to Navy housing specifications and was limited to sole Navy use. Both projects also contained "take-or-pay" requirements so the government assumed the project's operational risk. Unlike the energy projects, however, the Staten Island housing contract did not have a termination for convenience provision. Nevertheless, the Navy did invoke a termination for convenience right in 1993 when the homeport initiative was abandoned by the Navy as part of the DoD base closure initiatives. The Navy paid $126 Million to the contractor in

connection with this termination. The military's experience in these instances highlighted two important issues which in reality are two sides of the same issue – risk. Lacking an outside market to support project financing, the financing involved relied entirely upon the revenue generated from military sales. The use of "termination for convenience" clause establishes a contingent liability and is an obligation of the United States that if executed results in expenditures and charges to budget authority. While termination for convenience clauses may, using specific procedures as provided for in the FAR, be omitted from such contracting efforts, their use will be demanded by the private financing as "collateral" to secure the borrowing. It will be incumbent upon the agency involved to refuse to include such obligations and negotiate, if possible, alternative credit enhancement mechanism to satisfy financing concerns.

Due, in part, to its experiences at Staten Island and Charleston, coupled with the OMB scoring policies (as will be discussed below), the Navy ceased further efforts in using this approach as part of their public- private venture programs.

In the late 1990's, DoD did again initiate public-private efforts but these efforts were specifically directed toward housing and utilities privatization. As part of these efforts, DoD entered into specific agreements with OMB that essentially agreed to scoring.

DEPARTMENT OF ENERGY AUTHORITIES AND ENERGY PUBLIC-PRIVATE INITIATIVES

Aside from using the authority for undertaking improvements to federal facilities (including energy plants and delivery systems) provided in connection with the Energy Saving Performance Contract authorities (42 U.S.C. Section 8287 as thereafter modified), the Department of Energy (DOE) has used its existing leasing authority as contained in Section 161(g) of the Atomic Energy Act of 1954 (now codified in 42 U.S.C. Section 2201(g)) for entering into public-private initiatives involving the development of private facilities on DOE lands. Section 2201(g) is the general acquisition authority for the DOE; it provides authority for DOE to:

> "acquire, purchase, lease, and hold real and personal property, including patents, as agent of and on behalf of the United States, subject to the provisions of section 2224 this title[22], and to sell, lease, grant, and dispose of such real and personal property as provided in this chapter." [Emphasis supplied]

DOE has used this authority in connection with the private development of new laboratory facilities on the campus of the Oak Ridge National Laboratory and is now considering similar initiatives at Brookhaven National Laboratory, New York, Argonne National Laboratory in Illinois and at other National Laboratories. Similarly, the Tennessee Valley Authority used DOE's authority to enter into innovative lease/leaseback arrangements as a means to finance improvements to their facilities. Between 1999 and 2001, TVA used the lease/leaseback

[22] This reference is to a section that provides for Department of Justice review and approval of title for any land acquisitions. Such review is consistent with other federal land acquisition authorities.

arrangement for 16 power plants it built during that time frame. However, DOE's and TVA's use of these authorities has not been without controversy especially with the OMB regarding the concept of "scoring." Without going into Oak Ridge transaction structure specifics, the OMB's Budget Review Division recently opined that the Oak Ridge project was an example of a capital lease and that any future transaction would be subject to being scored as such.[23] In January 2002, OMB formally categorized TVA's lease/leaseback arrangement as capital leases and scored $300 million against TVA's budget authority. OMB found that the DOE structures did not comply with the requirements of OMB Circular A-11 on the basis that TVA has effective ownership of the facilities even though the special purpose entities are able to claim ownership for tax purposes. Thus the transaction did not square with the first criteria of an operating lease under OMB Circular A-11 – "Ownership of asset remains with the lessor during the term of the lease and is not transferred to the Government at or shortly after the end of the lease term." The long-term nature of TVA's contracts translated into an obligation that is tantamount to debt. The net result of OMB's scoring was that the present value of its lease payments was counted against the Agency's operations budget authority.

DOE's experiences in this area as well as those of the DoD, indicate that federal agencies must be keenly aware of OMB's criteria and requirements regarding their leasing of facilities or purchasing of services in order to avoid such transactions being categorized as a capital lease. Further, such adherence must be more than a mechanical application of the OMB Circular A-11 requirements. A successful project not only requires requisite legislative authority, it mandates an avoidance of agency long-term commitments and obligations as well as a business and legal structure that recognizes financial realties of the private sector.

OMB SCORING ISSUES

The term "scoring," as it pertains to federal contracts, pertains to how OMB will treat the transaction in the context of allocating the agency's budget authority for its operations budget. If a project is treated as a "capital lease," OMB will require the agency to have full budget authority for the lease payments in the first year of the lease.

As mentioned earlier, in the mid-1980's, DoD began to pursue vigorously numerous public-private ventures pursuant to then recently enacted authorities, which enabled the military services to pursue various initiatives ranging from obtaining family housing, temporary housing, energy plants, and administrative office space to obtaining TAKX supply ships as well as assuming responsibility for operating and redeveloping golf courses, marinas, and other recreational buildings.[24] Similar

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23 Discussion with Art Stigile, Budget Review Division, Office of Management and Budget on November 7, 2002 and follow-on discussions with Michael Simmons and Anatolij Kushnir of Patton Boggs, LLP. OMB's position was that if formally requested, it would categorize such and similar structures as capital leases.

24 These authorities included: the "Section 801" housing program also known as the "Military Housing Build to Lease Program" contained in 10 U.S.C. Section 2828(g); the "Section 802" housing program as also known as the Military Housing Rental Guarantee Program contained in 10 U.S.C. Section 2821; an authority known as Test of Long Term Facilities Contracts as contained in 10 U.S.C. Section 2809; Contracts for Energy or Fuel

initiatives were being undertaken by the General Services Administration in structuring lease-purchase agreements for federal office buildings in New York, Chicago, Oakland and other areas. The rapid growth of these efforts gave rise to serious concerns within the legislative and executive branches of the Government regarding how such contracting authority impacted the Government's fiscal and budgetary policies. Those efforts were perceived as circumventions of the capital budgeting process. In 1988, the Domestic Policy Council issued a memorandum to all federal agencies, including OMB, outlining its position that "lease/purchase is a serious threat to controlling federal spending."[25] The memorandum charged OMB with developing federal policy and guidance to govern such transactions. OMB Circular A-11 is the current directive that provides such guidance and policy. This Circular outlines the criteria for determining "operating leases," "capital leases," and "lease-purchases." It should be noted, however, that energy savings performance contracting has been specifically exempted from scoring by OMB.[26] While OMB's Budget Review Division has recently indicated that it is looking to re-visit this matter, for the present, ESPC contracts are not subject to the OMB Circular A-11 review.[27]

For purposes of budgetary policy, OMB A-11 mandates that federal agencies must have sufficient budget authority in the appropriate annual authorization to fund fully any leases or other contracts determined to be capital leases or lease-purchases under the criteria stated therein.[28] While application of these criteria suggest that the analysis is mechanical, OMB's position is much more conceptual. Basically, if the project is built on federal property, OMB will look to whether the transaction and its financing is based on an agency commitment regardless of whether such commitment is actual or contingent (e.g., long-term contract, long-term lease, ultimate federal ownership, any kind of guarantee of debt payments such as "take-or-pay" or termination liability). If so, OMB will determine the transaction risk is assumed by the federal agency and thus is capital lease or lease-purchase.

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for Military Installations as contained in 10 U.S.C. Section 2394; and Sale of Electricity from Alternate Energy and Cogeneration Production Facilities as contained in 10 U.S.C. Section 2483.

25 Memorandum for The Domestic Policy Council from Joseph R. Wright, Jr. regarding Lease/Purchase dated June 23, 1988.

26 Memorandum for Senior Procurement Executives and Deputy Under Secretary of Defense (Acquisition Reform) from Steven Kelman, Administrator, Office of Management and Budget, dated January 15, 1997.

27 Discussion with Art Stigile, Budget Review Division, Office of Management and Budget on November 7, 2002 OMB's position was that if formally requested, it would categorize such and similar structures as capital leases.

28 OMB Circular A-11 outlines six major attributes which define an operating lease. Failure to meet any one of the criteria will make the transaction a capital lease or lease-purchase, as appropriate. The criteria are:

- ownership of the asset remains with the lessor during the term of the lease and is not transferred to the Government at or shortly after the end of the lease period;
- the lease does not contain a bargain-price purchase option;
- the lease term does not exceed 75% of the estimated economic life of the asset;
- the present value of the minimum lease payments over the life of the lease does not exceed 90% of the fair market value of the asset at the inception of the lease;
- the asset is a general-purpose asset rather than for a special purpose of the Government and is not built to unique specifications of the Government as lessee; and
- there is a private sector market for the asset.

In addition, the OMB Circular outlines various definitions and concepts that for application of these criteria.

OMB's scoring issue is now the major consideration in using Enhanced-Use Leasing and similar types of authorities for public-private ventures. Projects involving the construction of major facilities on Government lands that rely upon long-term Government commitments to purchase space, services or products or involve contingent liabilities on part of the Government are now facing scoring issues and, as a result, are not generally being pursued.[29] It should also noted that while the OMB Circular may technically apply to any agency utility purchases or service contract, such transactions would normally fall within the attributes of an operating lease.[30]

However, it should be noted that private development has been successfully undertaken and completed on out-leased federal lands without being categorized as capital leases.[31] The legal structure, the obligations of the parties and the business terms involved then become the principal determinants of whether the transaction is a capital lease or an operating lease under the provisions of OMB Circular A-11. At the very center of this is the issue of risk and shifting the risk of the facilities operation from the agency responsibility to that of the private sector and private market.

VARIOUS ISSUES TO BE CONSIDERED IN USING ENHANCED-USE LEASING AND SIMILAR AUTHORITIES

FEDERAL JURISDICTION ISSUES

Given that Enhanced-Use Leasing type of authorities by their very nature involve the development of federal land, the federal agency involved must deal with the issue of federal jurisdiction and to what the extent local authorities can regulate or tax the use of federal land. Generally speaking, legislative jurisdiction refers to the authority to make and enforce laws. If the federal government has "legislative jurisdiction" over a particular area, it has the authority and power to enact, execute and enforce laws within that area. The Constitution declares that Congress shall have the power to exercise exclusive jurisdiction over any lands acquired by the United States "for the Erection of Forts, Magazines, Arsenals, dock-Yards, and other needful Buildings."[32] The history of federal land acquisition, however, is varied as to the practice of the federal government in acquiring federal jurisdiction when it obtained title to the property. In the early to mid 1800's, the practice was to acquire land for federal use without acquiring legislative jurisdiction. In the mid-1800's to 1940, the opposite practice was found and States enacted statutes that willingly ceded

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29 The Department of the Army did use its Enhanced-Use Leasing authority to out-lease the Brooks Army Medical Center Hospital Building and two other facilities (along with the underlying land) located on the Brooks Army Medical Center in San Antonio, Texas on June 21, 2001 to a private developer for use as general office space. However, in August 2002, the Department of the Army sought OMB approval to lease back the office space in the Hospital Building in connection with its relocation of the U.S. Army South Command. The leaseback was scored by OMB as a capital lease under its interpretation of OMB Circular A-11.

30 OMB Circular A-11, supra.

31 VA has successfully completed projects involving the private development of facilities on VA Medical Center campuses that provide space or services to VA activities at Johnson City; TN, Salt Lake City, UT; North Chicago, IL; and in Chicago, IL. All of these transactions have been determined to be operating leases by OMB.

32 U.S. Constitution, Art I, Section 8 clause 17.

legislative jurisdiction to the federal government in federal acquisitions. In some instances, the jurisdiction ceded by the State was exclusive or partial (the right to exercise certain limited aspects of the State's general legislative authority); or concurrent (the State grants to the federal government what would otherwise be exclusive jurisdiction but reserves the right to exercise the same powers concurrently with the federal government). Since February 1, 1940, however, Congress has required that federal agencies specifically accept the jurisdiction offered by the State pursuant to a process enumerated in the statute or it is conclusively presumed that there is no federal jurisdiction. Put simply, mere federal ownership or occupancy of land does not mean that the federal government has jurisdiction over such property. Unless the legislature of the State concerned has expressly surrendered all or part of its reserved jurisdiction and the federal agency involved followed the specific requirements of the federal law to accept such jurisdiction, the legislative authority of the State within such areas remains complete and undisturbed.[33] As a result, while the federal government may own a tract of land subject to a patchwork of legislative jurisdiction depending on the type of jurisdiction being offered by the State and the date it was acquired by the federal government.

In terms of federal management of such property or in its development through the use Enhanced-Use Leasing type of authorities, having exclusive federal jurisdiction would provide NASA the most flexibility in defining its use and occupancy by non-federal entities without fear of conflict with state and/or local land-use requirements. However, in instances where there is concurrent States or no federal jurisdiction involved, it does not necessarily follow that states may regulate or control NASA's management or development of its properties. Irrespective of the legislative jurisdiction, however, it is well settled law that State laws can not interfere with federal activities. The question, however, is the degree or extent that States may control or exercise jurisdiction over non-federal activities on federal lands especially where the State has reserved jurisdiction over the property involved. The question is not entirely free of doubt. The case that stands for some degree of State involvement is a 1976 case called Dupuis v Submarine Base Credit Union.[34] The issue involved in the case concerned the applicability of City zoning and building codes to improvements made on federal property but owned by a credit union pursuant to a lease. While the Court ultimately held against the City on the basis of equitable estoppel, the court did note that in instances where there was no federal jurisdiction, local laws may be enforced on federal property if such local laws are not "inconsistent with the federal purpose in acquiring the lands." This latter concept of "supremacy" of the federal activity over state and local laws was used in a subsequent case to override a County's attempt to apply its single-family zoning to an RV park that subleased land from the US Army Corps of Engineers as part of a flood control/recreational project.[35]

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33 United States v San Francisco Bridge Company, 88 Fed. 891, (1898); United States v Penn, 48 Fed 669 (1880); Fort Leavenworth Railroad Company v Lowes, 114 U.S. 525, 29 L. Ed. 264, 5 S. Ct. 995 (1885); James v Dravo Contracting Company, 302 U.S. 134, 82 L.Ed. 155, 58 S. Ct. 208 (1937).

34 365 A.2d 1093 (1976).

35 Crystal Bay Marina v Sweeden, 939 F. Supp. 839 (N.D. Okl 1999).

While these technical points provide an overall picture as to the general legal issues involved in the private development of federal lands, there is a practical application that may be of more importance to a federal land manager. The point, however, is that irrespective of the legal arguments as to the applicability or non-applicability of state laws and local ordinances, if the contemplated project is controversial at the local level, the local government will want to become involved either through political channels (the local Congressional delegation) or by legal process – litigation. In lieu of inviting challenges by reliance upon constitutional principles of law, agencies have worked toward a middle ground. That is, while asserting a federal interest and a federal pre-emption in such matters, agencies such as VA and DoD have worked closely with state and local authorities to get them involved both in the process and in the development.

ENCOURAGING LOCAL GOVERNMENT INVOLVEMENT AND COMMUNITY COORDINATION

Central to the concept of using an Enhanced-Use Leasing approach is its close coordination with and reliance upon the local government and the local community as full partners in the development process. There are two primary benefits to the project and the federal agency involved that arise from this participation. First, in order to maximize efficiencies and to minimize development costs to the developer/energy provider (which are ultimately passed through as a project cost to the agency), the federal agency must rely, to the greatest extent possible, upon local building codes, safety requirements, construction standards and local government inspection services. While agencies generally have their own construction standards and criteria for their own facilities, application of federal requirements to non-federal (private) development can lead to confusion in instances where there are conflicting local requirements. More importantly, the developer/energy provider is assuming the construction and operation risk and thus, is paying for the development and, as the legal entity, is assuming responsibility for the conduct and liability of business operations. The agency's interest in the development is that of a ground lessor and potential user rather than that of a joint venturer or partner.

In such instances, it is most advantageous to the project and the federal interest that, absent an overriding federal concern or government interest, where there is relatively little or no federal occupancy or use in a privately-funded Enhanced-Use Lease facility, the project should be considered in the context of local codes and standards. To address potential liability concerns as a landlord in such instances, the agency would require that the developer/energy provider obtain the necessary insurance and certification of compliance from local building/safety officials. If the project involves direct agency control over the management and operation of the facility or if the agency makes a full long-term commitment to occupy or use a significant portion of the Enhanced-Use Lease facility or its services, the project should be considered in the context of standards applicable to federal activities. In such instances, agency requirements in any particular project should be reviewed in the context of how such standards deviate from applicable local codes and standards.

The second and perhaps the more important reason why Enhanced-Use Leasing or similar type of leasing stresses local government and local community involvement is to assure that the

development is integrated into the local planning process. Depending upon the size of the project, an Enhanced-Use Leasing development can have a considerable impact upon the local community both in a positive and negative sense. Tax benefits and economic growth resulting from the development of a large private energy enterprise can be off-set by increased community, noise and air quality impacts. Close integration early in the planning process enables the agency to spot any potential community concerns (scope and intensity of the development, compatibility issues, noise, traffic impacts, business impacts, etc.) and to address those issues early on in the planning and development process. This approach has a beneficial effect on the agency's environmental review of the proposed development and can dramatically shorten the environmental review process and minimize project costs.[36]

Close coordination with the local government allows the agency to identify potential and future local government taxes, fees, assessments or other development costs that may affect the project. While the federal agency may not be directly impacted by these taxes,[37] they do significantly affect the bottom line of the project and are a major concern to the development and financing sectors. Accordingly, it is in the agency's interest to take a lead in initiating discussions with the local government to resolve any such questions or issues.

AGENCY ADOPTION OF A "BUSINESS PLAN" APPROACH

In order to take advantage of market opportunities through Enhanced-Use Leasing, federal agencies must devise a specialized planning and implementation process that can identify and assess the viability of potential projects. Traditional planning for federal facilities is premised on appropriation funding. Under this approach, the federal agency would attempt to quantify its requirements, plan for the necessary facilities and services, and devise an estimated cost based on such demand. Non-governmental funding also requires the agency to take into account the various uncertainties and temporary nature of market demand and availability of private capital sources. The process ultimately adopted in VA was the "business plan." In VA, the business plan is a decision paper which describes in clear terms the underlying concept of the proposed venture, how it will meet defined VA requirements, its economic aspects, potential market issues, what resources are necessary to obtain the objective, and how the proponent (VA activity involved) plans to undertake and complete the project. While this document is "internal," in that it is not being prepared for

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36 The National Environmental Policy Act ("NEPA"), 42 U.S.C. Section 4321 through 4370c and the Council on Environmental Quality (CEQ), 40 C.F.R. Parts 1500 - 1508 implementing regulations require that an analysis of potential environmental impacts be conducted prior to implementation of any major federal action. Additionally, compliance with Section 106 of the National Historic Preservation Act (40 USC Section 470 through 470w-6) is required. For many projects, a detailed environmental analysis and documentation are necessary.

37 For example, 38 U.S.C. Section 8167 exempts Enhanced-Use Lease property from state or local ad valorem taxes when such property is leased back to VA or VA obtains services or products from it. This section reflects the current state of the law generally with respect to the local taxation of federal activities. It should be noted, however, that even when there is specific statutory exemptions such as contained in the VA Enhanced-Use Leasing authority, such exemptions do have limitations. For example, Section 8167 does not apply to sales taxes charged in connection with any construction, alteration, repair, remodeling or improvement project carried out under a VA Enhanced-Use Lease.

review by parties outside VA, its importance can not be overstressed. The plan is the basis for the initial Secretarial approval necessary for the project to proceed, VA's public hearing on the proposal, subsequent formal designations of the project for Enhanced-Use Leasing, congressional notifications and ultimately for development of the solicitation and award of the project.

A business plan may be program-wide in its scope (e.g., energy plants on a region-wide basis), or a separate plan may be prepared for a specific federal facility, perhaps as means for implementing a larger development or strategic plan. In VA, when a business plan is prepared independently of another planning effort, an effort is made to integrate the Enhanced-Use Leasing planning efforts with established VA planning policies. We believe this approach has merit. It represents an attempt by an agency to assess systematically potential projects as part of its own strategic planning efforts.

FINANCING CONSIDERATIONS AND LEGAL ISSUES

Notwithstanding the enabling, procedural and development issues regarding public-private ventures for capital improvements such as those found in an Enhanced-Use Leasing program, such ventures still face an overwhelming issue -- financing. In great measure, the source and manner of financing is dictated by the type of project and the particular agency's development objectives. Non-federal government financing sources for these projects have included:

- Lessee/Developer self-financing. The most preferred source for obvious reasons, though it is rare. More often it is used either in relatively small projects or with other public entities.
- Debt financing through private sources (financial institutions, REITS, other parties). Used primarily where the project is viewed as a "real estate" project rather than as an "investment" project.
- Revenue bond financing. This source has been used in instances where the project has a high degree of state or local participation either directly or indirectly. It requires that the project be structured around a single "ratable" user with a guaranteed revenue stream to secure the bond issue.
- Tax incremental financing. This approach requires state and local involvement and, potentially, can represent a significant financing source. In this approach, the development's tax base for is frozen at the pre-development level, but the tax is actually paid into a special fund that can be used as part of a revenue stream for bonds or necessary public improvements.
- Tax credits. A potential source of financing for specialized projects involving low-income or historic preservation.

In most Enhanced-Use Leasing initiatives to date, the agency's contribution to the proposed venture consisted primarily of land and market access. While DoD's and VA's enhanced-use leasing authorities permit the agency to obtain services and/or space[38], there are budgetary constraints that effectively preclude or severely limit the use of the agency's participation as a basis for obtaining financing. As discussed in the section dealing with OMB scoring issues, in addition to budget

[38] 38 U.S.C. Section 8162 (b)(4); 10 U.S.C. Section 2667(b)(4).

impacts resulting from annual lease payments for the lease-back of space in the Enhanced-Use Lease development, Enhanced-Use Leases, like any other federal commitment or lease must comply with federal government fiscal directives. The main directive in this area is OMB Circular No. A-11) which requires that federal agencies "score" leases of capital assets in the same manner as an outright purchase.[39] As previously discussed, federal agencies may enter into "capital leases" only if they have sufficient appropriations to cover the full estimated government cost or obligation for the project over the life of the capital lease. One of the factors to be considered in what constitutes a "capital lease" is whether the project being constructed is on federally owned land. Since the enhanced-use leasing programs essentially mandate that the project be on federal property, each agency must examine its actions to buy back space or services derived from such Enhanced-Use Lease in light of this factor. To comply with the OMB Circular, each agency must set aside sufficient budget authority to cover its total obligations under any buy-back arrangement in the first year of the lease-back. Since Enhanced-Use Leasing authorities primarily rely upon the use of operational funds, application of this directive precludes the use of long-term lease-back obligations by a federal agency as a revenue source to secure private financing.

In reality, this OMB policy reflects the fact that if a federal project is solely or substantially based on the public funding to accomplish predominately public sector capital objectives, the venture should be treated as a "public venture" and that the most cost efficient financing of such projects is by obtaining appropriated funds or, in their absence, by other public financing methods. In instances, however, where the overall value of the project lies in real estate values or in the form of the consideration generated from non-federal users, the Enhanced-Use Leasing program has looked to and has worked with non-federal sources to obtain financing for the proposed private development. Notwithstanding the success of VA's enhanced-use projects, these types of developments are difficult to finance through private sources. Even with the adoption of a viable development plan and selection of a credit-worthy developer, agencies may still face the prospect that the development will be unable to obtain financing. In many instances, the problems were discovered to be the result of the financing source's uncertainty as to the agency's ability to structure a lease so as to afford to the financing source with the necessary legal protections to allow it to be in as good a position from a financial perspective as it would have been had the development been undertaken on non-federal land. The major issues addressed in the VA programs were the limitations on the Department to use the underlying property as collateral and assuring that its program, contract and fiscal practices fit private financing requirements.

NON-SUBORDINATION OF TITLE

Generally in the development of Real Property a major issue that requires immediate attention by the participants relates to the collateral that will be provided by the developer to the financing entity to secure any loan extended for development activities. Depending upon the realty's value after development most transactions involve security in the form of a mortgage or deed of trust that permits the lender to foreclose and sell the realty at a foreclosure sale in the event of default in the loan payments by the developer. To ensure that the lender obtain and maintain a superior lien

[39] See, OMB Circular A-11, Appendix A and B.

position where the developer/provider possesses solely a leasehold interest it is common to require that the owner of the realty agree to a subordination of the fee title interest to that possessed by the lender pursuant to the mortgage or deed of trust.

For example, under VA's Enhanced-Use Lease authority, the Department is provided solely the authority to lease property under the jurisdiction and control of the Department. The Secretary does not possess the authority to transfer the fee interest to a developer nor does the statute permit the Secretary to subordinate the Government's fee interest in the property to a lender. Consequently, although lenders may still secure a lien on the lessee's leasehold interest, lenders will require additional security in order to ensure that a termination of the lessee's interest in the property will not result in the lender's loss of its security interest. Certain remedies available to VA after default by the lessee, such as termination rights as well as notices of default (generally provided to the lessee) necessitate substantial amendments. These provisions are discussed in detail the following section. In addition to the modified termination proceedings to permit lenders protection of their security interest, VA has also been able to structure its transactions to enable lenders to secure first liens on the properties by effectuating the provisions in the statute that permit disposal of the property should VA determine that the property is no longer needed by the Department.[40]

Recently, the financing of projects, where either the value of the improved real estate would be insufficient to satisfy the indebtedness or where the developer obtains less than a fee simple interest, has been structured to take advantage of any project income stream in order satisfy the loan. In such situations the lender must ensure that the income stream will be sufficient to meet all operating expenses associated with the project and that the income stream will continue, during the amortization of the loan, at a level that will be sufficient to permit the developer to meet its loan obligation.

ADDRESSING TERMINATION AND DEFAULT REQUIREMENTS

One of the major problems encountered in securing private sector investment in public infrastructure is the way the federal agencies deal with "termination and default." In commercial practice, the party extending the financing will require certain limitations and assurances in addition to subordination of title from the lender and the ground lessor. This minimizes or eliminates financing risk. Such limitations would normally include:

- mandates for the developer's absolute financial commitment to the project;
- restrictions on the ground lessor's ability to terminate for the developer's non-performance;
- restrictions on both parties' ability to alienate the property involved;
- elimination of the ground lessor's ability for off-set against the developer's non-performance;
- mandates for attornment to subsequent tenancies.

[40] See 38 U.S.C. Section 8164.

While these mechanisms form the necessary legal structure for debt financing, most if not all of these mechanisms would run afoul with fundamental fiscal laws and principles governing the way most federal agencies and other public entities are able to treat contractual and financial obligations. State and local governments have had success in obtaining specialized enabling authority to address these fundamental contract and fiscal issues. Aside from certain limited circumstances, federal agencies, for the most part, have not.[41] This is the primary reason why federal agencies have had limited participation in public-private ventures and privatization efforts. VA's measured success in this area is due to specific statutory authority enabling the Department to enter into long-term contractual commitments and the ramifications of that authority upon its ability to deal with these substantive and fundamental fiscal law frameworks.

One of the most well known government fiscal law issues encountered by financing sources the is the issue of "appropriation risk;" that is, the requirement that federal agencies cannot make any financial commitment beyond the end of the fiscal year in the year such lease was executed.[42] To do so, in fact, would violate a cardinal rule of law, often referred to as the "Anti-Deficiency Act."[43] Similar to this issue is the legal requirement that federal agencies can not commit to a "take-or-pay" clause in a lease or contract without specific statutory authority and appropriation for the amount of termination liability.[44] Other, traditional federal fiscal and contract law authorities have raised similar problems for financing sources. For instance, federal agencies are traditionally provided the right to off-set against lease payments and make late payments under certain circumstances.[45] Finally, there is considerable case law which permits federal agencies to exercise "termination for convenience" clauses in procurement and leasing contracts <u>even when such clauses are not physically located in the document</u>.[46] Under the standard termination for convenience clause, a contractor is entitled to recover costs <u>expended to the date of termination</u>, a negotiated profit on these costs, attorney's fees and similar costs.[47] The limitation of damages to expended costs is at wide variance with remedies available under common law.[48]

From a federal budgetary perspective, termination costs are increasingly being viewed with disfavor by agency financial officers in that they raise the same budget "scoring" issues as long-term

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41 Military Housing Privatization Initiative, 10 U.S.C. Section 2871.

42 31 U.S.C. Section 1502(a)

43 The Anti-Deficiency Act at Title 31 U.S.C. Section 1341 states in part:
(a) (1)An officer or employee of the United States Government or of the District of Columbia government may not –
A. make or authorize an expenditure or obligation exceeding an amount available in an appropriation or fund for the expenditure or obligation; or
B. involves either government in a contract or obligation for the payment of money before an appropriation is made unless authorized by law.

44 See, 41 U.S.C. Section 11, which mandates that each contract is authorized by law or is under an appropriation adequate to its fulfillment.

45 <u>United States v Munsey Trust Co</u>., 332 U.S. 234, 239 (1947).

46 <u>G.L. Christianson and Associates v. U.S.</u>, 160 Ct.Cl. 1; 312 F2d. 418, *rehearing denied*, 160 Ct.Cl. 58; *cert. denied*, 375 U.S. 954.

47 FAR 49-202; FAR 29-207; <u>Nolan Brothers, Inc. v U.S.</u>, 186 Ct.Cl. 602; 405 F2D 1240 (1969).

48 <u>G.L. Christianson,</u> 312 F2d. at 423.

commitments or obligations. Under the requirements of OMB Circular A-11, except in instances involving the use of revolving funds, federal agencies must score the cancellation charge or termination cost in each year of a lease even if such lease is deemed an "operating lease" under the terms of the Circular.[49] The use of termination costs should be seriously re-considered in light of this directive.

When examined in total, these issues put a severe limitation on a federal agency's ability to make the necessary commitments to address commercial financing practices. As a result, agencies found that many of their efforts were deemed "not-financeable" by the private sector. In response, agencies undertook an approach to seek and work with identified financing sources to reach solutions which provide the necessary comfort to the financing source that its investment is secure and that it would remain so within the parameters of its legal authority. No one "silver bullet" was found to address all of these issues. However, through a series of negotiations, many of the concerns were addressed and financing sources were secured and obtained. These efforts were designed to provide protections to the financing source similar to those in the commercial sector. These efforts include the provisions identified below.

- Notification to financing source of developer potential default, right to cure and assignability.
- Direct disposal of the leased property, as specifically provided for in the VA authority[50].
- Forbearance on ground rent.
- Right to substitute alternative uses.
- Essentiality of use.
- Limitations on and non-applicability of termination for convenience or similar clauses.
- Credit enhancement through establishment of various reserve funds.

It should be emphasized that in negotiating these provisions, care should be taken to assure that the agency's commitments are within its legal and budgetary parameters and rest on solid business decisions. The scope and extent to which such rights are granted to the financing source depends entirely upon the relative bargaining position of the parties involved and the economic strength and commercial viability of the project involved. No federal agency should enter into these negotiations without a clear understanding of its economic objectives, its legal authority and, most importantly, the project's value.

49 OMB Circular No. A-11, Appendix B (2002).

50 38 U.S.C. Section 8164 allows VA to dispose of the property subject to the Enhanced-Use Lease to the lessee upon a determination that such property is no longer required by VA.

SECTION 4 - CENTER SUMMARY MATRIX – ANALYSIS AND OBSERVATIONS

OVERVIEW

The Center Summary Matrix provides a brief overview of each Center that the team has reviewed over the course of the project. It is divided into five major categories:

1) **Center Mission/ Business:** Identifies the Center's major activities, and the Strategic Enterprise responsible for each Center. This information includes all major satellite facilities located in close proximity to the Center or component. In particular, Ames included Moffett Field, Glenn includes Plumbrook, Johnson includes Ellington Field, and Kennedy includes the NASA portion of Cape Canaveral. This information was developed from site visits, interviews at the Centers and interviews with the Enterprises, and the NASA Real Property database.

2) **Infrastructure Assets:** Identifies a broad overview including quantity of land, quantity of buildings, quantity of other structures (such as temporary buildings, etc.), the book value of the Center's facility portfolio, the current replacement value of those facilities, and whether the Center has a current master plan in executable form. The information regarding infrastructure assets was extracted from the NASA Real Property Inventory Database.

3) **Major Relationships:** Includes the top three major business contractors and university contractors from each Center, based upon total value of the contract award. Also includes the total contract value of the top 10 contractors and universities and the rank among Centers (1= Highest). The information was extracted from the NASA Procurement Management Database. As an imperfect measure, these statistics demonstrate the level of formal business relationship that a Center has with the private sector; many of these relationships can be utilized in Real Property business relationships. Since JPL is a FFRDC, specific major contractor lists were not available in the database. Similarly, since Michoud, Wallops, and White Sands are components of Marshall, Goddard and Johnson, respectively, the major relationship data is included in the main Center data. The team gathered this information from the NASA Acquisition Internet Service/NASA Procurement Management System database.

4) **Census Information:** Includes market statistical information for the county and state where each Center is located. It is intended to show the size/population of the Center's marketplace as well as basic economic statistics. The team gathered this information from the U.S. Census Bureau. Although the census is not a perfect measure, census information can help define overall drivers in population, demographics, land values, and business drivers near each Center and component. While the census information is a good indicator, it is not at all a perfect measure. Many Centers are in unusually shaped counties that may or may not fully surround a Center. However, when the census information is combined with the Center visits and interviews, the information becomes a broad starting point for understanding locational dynamics.

5) **Census Observation**: The census analysis includes rankings of Center statistics and percentage comparison of county to stage data. The comparison information is not useful in highly detailed analysis for decision-making; however, broad-based assumptions that derive from this information are described below.

ECONOMIC ANALYSIS AND OBSERVATIONS

Not surprisingly, the economic information shows a stark contrast in land values and household incomes among Centers based upon geographical location. For example, the median value of a home in Santa Clara County, California, where Ames Research Center is located, was approximately $446,400, and the median household income was $74,335. In contrast, the median value of a home in Otero County, New Mexico (home to White Sands Test Facility) was only $78,800, and the median household income was $30,861.

The Jet Propulsion Laboratory is located in Los Angeles County, California, which has the largest population (9,637,494) of the counties housing NASA Centers. Accomack County, Virginia (Wallops Flight Facility) and Hancock County, Mississippi (Stennis Space Center), rank among the lowest at 38,414, and 44,031, respectively.

Population increases among the counties generally ranged between 8% to 21% from 1990 to 2000, with the exceptions of Hancock County, Mississippi (Stennis), Cuyahoga County, Ohio (Glenn Research Center), and Orleans Parish, Louisiana (Michoud Assembly Facility). In sum, Hancock County showed a significant population increase of a whopping 35.3%. Whereas the populations of Cuyahoga County and Orleans Parish dropped 1.3% and 2.5%, respectively.

The Census observations were used very broadly to help identify the types of Real Property opportunities described in the following sections. The data can be reviewed individually or in two broad categories:

1) **High Real Property value and demand**. Typically, high population areas with positive growth, good housing value (as a surrogate measure for land value) and household income infer that more creative Real Property activities can take place. (Of course, there are always exceptions; there are many successful public-private partnerships located in more rural areas.) Ames is by far in an area with the highest overall Real Property business dynamics, and long term, the team's research showed that Ames land is very valuable despite being located in an economically cyclical market (of course, all markets are cyclical). Goddard, JPL, Johnson and Kennedy are all markets with good overall rankings. Glenn is in an average ranking market overall, and Dryden in the middle of an Air Force base – is an average market that naturally has a very low population density.

2) **High impact potential for community involvement and economic development**. Counties that ranked lower in household income, persons per square mile (density) and housing value (land value) typically represent areas that may have great Real Property opportunities but any potential changes to NASA's activities at the Center may have a more dramatic effect on the community compared to those Centers where the census information

ranked higher. Centers or components in this category include Michoud, White Sands, Wallops and Stennis. Although Langley had an overall average rank, the value of the land and household income were below state average (Virginia) and the poverty level was higher than the state average. Conversely, Marshall had an average rank but its percentages compared to state statistics showed that Marshall (Huntsville) is located in a more prosperous portion of the State of Alabama.

Basic Center Information	Ames Research Center & Moffett	Dryden Flight Research Center	Glenn Research Center & Plumbrook	Goddard Space Flight Center	Jet Propulsion Laboratory	Johnson Space Center & Ellington Field	Kennedy Space Center & Cape	Langley Research Center	Marshall Space Flight Center	Michoud Facility	Stennis Space Center	Wallops Flight Facility	White Sands Test Facility
Mission / Business													
Reporting Enterprise	Code R	Code R	Code R	Code Y	Code S	Code M	Code M	Code R	Code M	Marshall/Code M	Code M	Goddard/Code Y	JSC/Code M
Major Activities	Information Technology	Atmospheric Flight Operations	Aeropropulsion	Earth Science	Deep space exploration	Mission Control for Human Space Flight	Launch & payload processing systems	Aeronautics	Space propulsion	External tank manufacturing	Rocket propulsion testing	Sounding rocket program	Rocket propulsion testing
	Nanotechnology	Aerospace Flight Research	Aerospace research	Earth Observing System				Structures and materials research	Microgravity research		Commercial remote sensing	Balloon program	Hazardous materials testing
	Biotechnology	Shuttle Mission Support	Turbo machinery	Space Telescope Operations Control									
	Aerospace Operations		Microgravity research										
Infrastructure Assets													
Quantity of Land Total (acres)	1,864	921	7120	1271	155	1,634	139,566	798	1,882	832	138,801	6,195	60,636
% of Total NASA Land	0.5%	0.3%	2.0%	0.4%	0.0%	0.5%	38.6%	0.2%	0.5%	0.2%	38.4%	1.7%	16.8%
Rank	7	10	4	9	13	8	1	12	6	11	2	5	3
Quantity of Buildings	287	115	268	110	176	197	519	259	171	40	189	183	88
% of Total NASA Buildings	11.0%	4.4%	10.3%	4.2%	6.8%	7.6%	19.9%	10.0%	6.6%	1.5%	7.3%	7.0%	3.4%
Rank	2	10	3	11	8	5	1	4	9	13	6	7	12
Quantity of "Other" Structures	162	116	187	42	49	198	352	133	118	141	99	467	74
% total of NASA "Other" Structures	7.6%	5.4%	8.7%	2.0%	2.3%	9.3%	16.5%	6.2%	5.5%	6.6%	4.6%	21.8%	3.5%
Book Value	$ 927,844,157	$ 118,719,815	$ 613,948,337	$ 403,208,822	$ 289,821,945	$ 516,980,787	$ 1,522,074,946	$ 846,640,843	$ 408,659,084	$ 279,272,097	$ 428,682,603	$ 165,688,151	$ 68,497,203
% of Total NASA Book Value	14.1%	1.8%	9.3%	6.1%	4.4%	7.8%	23.1%	12.8%	6.2%	4.2%	6.5%	2.5%	1.0%
Rank	2	12	4	8	9	5	1	3	7	10	6	11	13
2003 Current Replacement Value (CRV)	$ 2,482,602,419	$ 39,911,813	$ 2,462,653,945	$ 902,119,032	$ 649,597,955	$ 1,439,154,667	$ 4,072,421,286	$ 2,377,103,124	$ 1,155,321,426	$ 1,008,521,963	$ 1,455,375,322	$ 603,510,697	$ 202,918,847
% of Total NASA CRV	13.2%	0.2%	13.1%	4.8%	3.4%	7.6%	21.6%	12.6%	6.1%	5.3%	7.7%	3.2%	1.1%
Rank	2	13	3	9	10	6	1	4	7	8	5	11	12
Executable Master Plan	EIS Completed			Yes	Yes		Yes		Yes				
Population													
Civil Servants	1,484	659	1,905	3,017	68	2,938	1,635	2,544	2,745	1,264	657	256	61
Contractors	2,520	960	1,577	3,577	6,058	5,297	7,921	1,570	4,539	1,988	1,528	590	593
Other	1,971	0	95	559	385	211	539	257	0	172	288	31	1
Total	5,975	1,619	3,577	7,153	6,511	8,446	10,095	4,371	7,284	3,424	2,473	877	655
Density (people / acre)	3.2	1.8	0.5	5.6	42.0	5.2	0.1	5.5	3.9	4.1	0.02	0.1	0.01
Major Relationships													
Major Contractors/Total Award Value	Lockheed Martin Energy& Science/$255,205,573	Orbital Sciences Corp/$42,885,629	Northrop Grumman Info Tech Inc./$330,305,590	Northrop Grumman Computing Systems/$4,000,000,000	Indyne Inc/$1,511,351	United Space Alliance/$12,669,472,333	McDonnell Douglas Corp/$1,510,222,283	Swales & Associates Inc./$240,000,000	Boeing North American Inc./$2,902,531,568	Contractor relationships covered by Marshall statistics	Lockheed Martin Space Operations/$309,249,109	Contractors Relationships covered by Goddard statistics	Contractor relationships covered by Johnson statistics
	Sverdup Technology Inc./$186,445,382	Lockheed Martin Logistics Management Inc./$25,001,330	United Technologies Corp/$198,970,000	Lockheed Martin Corp/$2,680,531,724	Security Identification Systems/$41,022	Boeing Co/$11,058,996,293	Space Gateway Support/$1,223,855,397	TRW Inc./$122,086,899	Lockheed Martin Corp./$2,693,431,939		Mississippi Space Services/$220,490,062		
	Raytheon S T X Corp/$152,146,693	Dyncorp/$14,189,248	General Electric/$198,771,100	Swales & Associates/$1,852,858,100		Lockheed Martin Space Operations/$2,097,946,261	Delta Launch Services/$1,016,410,375	Lockheed Martin Corp/$116,238,450	Boeing Co./$2,520,645,986		Boeing North American Inc./$39,344,645		
Value of highest 20 contractors	$1,494,924,764	$354,296,004	$1,802,332,120	$15,863,409,610	$1,552,373	$36,089,042,723	$6,624,479,462	$1,502,043,499	$14,044,400,724		$706,117,623		
Rank	7	9	5	2	10	1	4	6	3	#N/A	8	#N/A	#N/A
Major University Contractors/Total Award Value	San Jose State University/$15,546,892	University of California Los Angeles/$6,460,668	University of Florida/$17,700,000	Johns Hopkins University/$1,605,320,274	California Institute of Technology/$5,735,000,000	Baylor College of Medicine/$487,282,038	Florida A&M University/$2,185,517	Hampton University/$17,526,921	Stanford University/$386,989,200	University relationships covered by Marshall statistics	Mississippi State University/$20,000,000	University Relationships covered by Goddard statistics	University relationships covered by Johnson statistics
	University of Hawaii Hilo/$11,862,000	North Carolina A&T University/$600,000	University of Maryland College Park/$15,000,000	University of Colorado Boulder $207,844,220	California State Polytech Univ/$509,407	University of Missouri Columbia/$27,767,000	University of Central Florida/$1,339,066	Princeton University/$15,000,000	University of Alabama Huntsville/$54,782,179		Cayuga County Community College/$17,015,400		
	Stanford University/$9,624,654	California State University Los Angeles/$479,997	Clark Atlanta University/$5,998,945	New Mexico State University Las Cruz/$80,935,791	University of Washington/$491,737	Loma Linda University/$19,739,000	Tuskegee University/$1,188,841	Texas A&M University/$15,000,000	University of Alabama Birmingham/$37,362,262		University of Mississippi/$9,499,986		
Value of highest 20 contractors	$113,649,762	$10,851,223	$79,969,709	$2,579,179,442	$5,736,001,144	$601,734,779	$19,923,781	$139,620,957	$596,558,903		$78,969,176		
Rank	6	10	7	2	1	3	9	5	4	#N/A	8	#N/A	#N/A

Basic Center Information	Ames Research Center & Moffett	Dryden Flight Research Center	Glenn Research Center & Plumbrook	Goddard Space Flight Center	Jet Propulsion Laboratory	Johnson Space Center & Ellington Field	Kennedy Space Center & Cape	Langley Research Center	Marshall Space Flight Center	Michoud Facility	Stennis Space Center	Wallops Flight Facility	White Sands Test Facility
Census Information													
Population, 2001 estimate (County)	1,668,309	676,367	1,380,421	816,791	9,637,494	3,460,589	489,522	145,665	281,931	476,492	44,031	38,414	60,747
Population, 2001 estimate (State)	34,501,130	34,501,130	11,373,541	5,375,156	34,501,130	21,325,018	16,396,515	7,187,734	4,464,356	4,465,430	2,858,029	7,187,734	1,829,146
Population % Change, 1990 to 2000 (County)	12.4%	21.4%	-1.3%	10.9%	7.4%	20.7%	19.4%	9.5%	15.8%	-2.5%	35.3%	20.8%	20.0%
Population % Change, 1990 to 2000 (State)	13.6%	13.6%	0.2%	10.8%	13.6%	22.8%	23.5%	14.4%	10.1%	5.9%	10.5%	14.4%	20.1%
Housing Units, 2000 (County)	579,329	231,564	616,903	302,378	3,270,909	1,298,130	222,072	57,311	120,288	215,091	21,072	19,550	29,272
Housing Units, 2000 (State)	12,214,549	12,214,549	4,783,051	2,145,283	12,214,549	8,157,575	7,302,947	2,904,192	1,963,711	1,847,181	1,161,953	2,904,192	780,579
Median Value of owner-occupied housing units, 2000 (County)	$ 446,400	$ 93,300	$ 113,800	$ 145,600	$ 209,300	$ 87,000	$ 94,400	$ 91,100	$ 103,300	$ 87,300	$ 92,500	$ 79,300	$ 78,800
Median Value of owner-occupied housing units, 2000 (State)	$ 211,500	$ 211,500	$ 103,700	$ 146,000	$ 211,500	$ 82,500	$ 105,500	$ 125,400	$ 85,100	$ 85,000	$ 71,400	$ 125,400	$ 108,100
Median household money income, 1999 (County)	$ 74,335	$ 35,446	$ 39,168	$ 55,256	$ 42,189	$ 42,598	$ 40,099	$ 39,532	$ 44,704	$ 27,133	$ 35,202	$ 30,250	$ 30,861
Median household money income, 1999 (State)	$ 47,493	$ 47,493	$ 40,956	$ 52,868	$ 47,493	$ 39,927	$ 38,819	$ 46,677	$ 34,135	$ 32,566	$ 31,330	$ 46,677	$ 34,133
Per capita money income, 1999 (County)	$ 32,795	$ 15,760	$ 22,272	$ 23,360	$ 20,683	$ 21,435	$ 21,484	$ 19,774	$ 23,091	$ 17,258	$ 17,748	$ 16,309	$ 14,345
Per capita money income, 1999 (State)	$ 22,711	$ 22,711	$ 21,003	$ 25,614	$ 22,711	$ 19,617	$ 21,557	$ 23,975	$ 18,189	$ 16,912	$ 15,853	$ 23,975	$ 17,261
Persons below poverty, percent, 1999 (County)	7.5%	20.8%	13.1%	7.7%	17.9%	15.0%	9.5%	11.3%	10.5%	27.9%	14.4%	18.0%	19.3%
Persons below poverty, percent, 1999 (State)	14.2%	14.2%	10.6%	8.5%	14.2%	15.4%	12.5%	9.6%	16.1%	19.6%	19.9%	9.6%	18.4%
Land Area, 2000 (County) (square miles)	1,291	8,141	458	485	4,061	1,729	1,018	52	805	181	477	455	6,626
Land Area, 2000 (State) (square miles)	155,959	155,959	40,948	9,774	155,959	261,797	53,927	39,594	50,744	43,562	46,907	39,594	121,356
Persons per square mile, 2000 (County)	1,304	81	3,040	1,651	2,344	1,967	468	2,828	344	2,684	90	84	9
Persons per square mile, 2000 (State)	217	217	277	542	217	80	296	179	88	103	61	179	15
Largest industry (County)	Manufacturing	Educational, health, and social services	Educational, health and social services	Educational, health, and social services	Educational, health, and social services	Educational, health, and social services	Educational, health, and social services	Educational, health, and social services	Manufacturing	Educational, health, and social services	Educational, health, and social services	Manufacturing	Educational, health, and social services
2nd Largest industry (County)	Professional, scientific, mgmt, admin, and waste mgmt services	Agriculture, fishing, forestry, hunting and mining	Manufacturing	Public administration	Manufacturing	Professional, scientific, mgmt, admin, and waste mgmt services	Manufacturing	Manufacturing	Educational, health, and social services	Arts, entertainment, recreation, accommodation and food service	Arts, entertainment, recreation, accommodation and food service	Educational, health, and social services	Agriculture, fishing, forestry, hunting and mining
3rd Largest industry (County)	Educational, health, and social services	Professional, scientific, mgmt, admin, and waste mgmt services	Retail trade	Professional, scientific, mgmt, admin, and waste mgmt services	Professional, scientific, mgmt, admin, and waste mgmt services	Manufacturing	Retail trade	Retail trade	Retail trade	Professional, scientific, mgmt, admin, and waste mgmt services	Retail trade	Retail trade	Arts, entertainment, recreation, accommodation and food service
Census Observations													
Rank County Population	3	6	4	5	1	2	7	10	9	8	12	13	11
Rank Population Change County	8	2	12	9	11	4	6	10	7	13	1	3	5
Rank Population Change State	6	6	13	9	6	2	1	4	11	12	10	4	3
Rank Housing Value County	1	7	4	3	2	11	6	9	5	10	8	12	13
Rank Household Income County	1	9	8	2	5	4	6	7	3	13	10	12	11
Rank Persons per Square Mile County	7	12	1	6	4	5	8	2	9	3	10	11	13
% Value housing units county / state	211.1%	44.1%	109.7%	99.7%	99.0%	105.5%	89.5%	72.6%	121.4%	102.7%	129.6%	63.2%	72.9%
% medium household income county / state	156.5%	74.6%	95.6%	104.5%	88.8%	106.7%	103.3%	84.7%	131.0%	83.3%	112.4%	64.8%	90.4%
Poverty level comparison County/State	52.8%	146.5%	123.6%	90.6%	126.1%	97.4%	76.0%	117.7%	65.2%	142.3%	72.4%	187.5%	104.9%

SECTION 5 – OPPORTUNITIES – DESCRIPTIONS, MEASURES

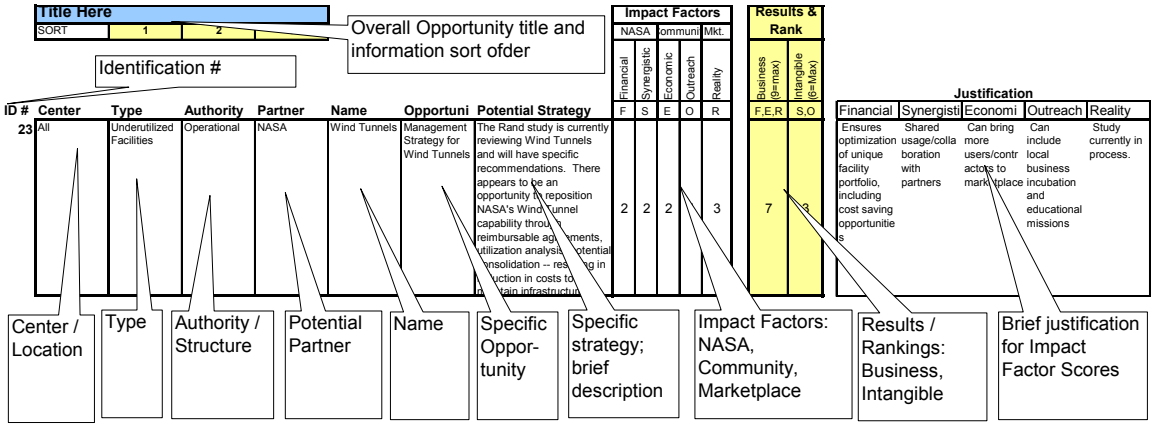
OVERVIEW

The information in this section provides an overview of the opportunities and examples discovered during the review. Not every opportunity is discussed – NASA has thousands of opportunities on various levels. The opportunities shown here are the ones that were discussed during visits, or are examples of opportunities that became evident during brainstorming sessions.

As a Real Property business planning tool, this report broadly lists and compares a wide variety of opportunities. Although the opportunities are well thought out conceptually, as an opportunity is considered for implementation, a much more detailed business plan should be conducted that looks at each opportunity based on current conditions and market elasticity. The need to develop a business plan for any opportunity cannot be overstated. The business plan needs to take into account the corporate requirement of the asset, the potential benefit to the agency in both economic and intangible terms, and the risks inherent to the agency, including failure after entering into an opportunity agreement. The business plan should mitigate those risks through a rigorous review and if necessary a due-diligence study of the project. The opportunities are arrayed in a matrix that contains the basic elements of a business plan:

- Center/Location
- Opportunity/Type
- Authority/Structure
- Partner
- Name
- Opportunity
- Potential Strategy
- Impact Factors and Results
- Justification

Each category describes an item NASA should consider in its business planning process. Each category is defined below and discussed in more detail through the rest of the report. An example of an opportunity in the matrix is shown below:



CENTER/ LOCATION

This category lists the opportunities by location.

In several cases an opportunity was discussed for a particular Center. Some opportunities relate to circumstances at multiple Centers even though the opportunities may not yet have been considered at the other Centers. Furthermore, some opportunities could apply to all Centers.

OPPORTUNITY TYPE

There are seven overall types of real property opportunities. Each is described in more detail in Section 6.

> ***Underutilized Land Opportunities*** (including Research Parks, Federal Campus Opportunities, Contractor Parks) - NASA has massive land holdings, either owned or leased from another federal agency. In many cases, the land is required for a buffer zone; in other cases the land is required to ensure that NASA has locations in the future to place new facilities or capabilities. The Real Property Opportunities discussed in this section relate specifically to addressing underutilized land.

Underutilized Facilities Opportunities - Much of NASA's facilities infrastructure is currently being utilized, but in some cases it is not being utilized consistently at the highest possible level. Ideally, facilities would be used at close to their maximum utilization rates while still allowing NASA to access a unique facility whenever it is needed. The opportunities for Underutilized Facilities describe strategies that can be employed to increase the utilization of those facilities.

Facilities and Asset Management Strategy Opportunities - Facilities strategies and Asset Management strategies are ways that NASA could potentially improve its management of real property by employing alternative strategies.

Mission or Program Clarification Opportunities - Real Property ideally supports an organizations business strategy. In some cases, a perfectly acceptable Real Property strategy is inappropriate for a particular organization because it may not fit with its overall business or program strategy. The term "Mission Clarification" refers to clarifying NASA's strategic intentions before making final decisions on real property.

Restructuring Opportunities - NASA has entered into several partnerships in order to execute its strategies. Many of the agreements that were perfectly appropriate at the time they were structured could potentially be re-structured based on new authorities and methods of doing business.

Utilities Management Opportunities - Although the team was specifically looking for Real Property alternatives, utilities management opportunities have been approached at a few Centers. As a large, expensive and critical component to a Center's operations, the Utilities Management opportunities could provide real business opportunities for NASA.

AUTHORITY/STRUCTURE

The authority category of information includes either the legislative authorities or the types of actions to be contemplated for each opportunity. The primary types of authorities and structures include:

Space Act Agreement – The overarching legislation that describes NASA's charter and interactions with potential partners, the Space Act is currently the most utilized authority within NASA. From a real property perspective, these agreements generally allow for a cost-reimbursement financial agreement. (refer to Section 3 for more details) Typically, Space Act Agreements are used for inter-agency agreements or agreements with institutions or partners where there is little likelihood of obtaining a

profit. Space Act agreements generally document either collaborative relationships (which may be on a non – reimbursable or partially reimbursable basis) or use of unique facilities by third parties on a fully reimbursable basis.

Enhanced-Use Leasing (EUL) – Authorization recently enacted that allows NASA to enter into market-rate agreements at two Centers, potentially at a profit which could be returned directly to NASA, (refer to Section 3 for more detail). EUL opportunities are described as opportunities where NASA would like to maintain control of the asset long-term, but the asset may not be needed for the foreseeable future. EUL structures may be beneficial to NASA's private sector partners; ground leases help investors/partners in financially tight "deals" because the payments can be spread over a longer period of time and the "land carry" cost is lower.

CoF - Construction of Facilities funds are traditionally appropriated funds used to finance Real Property projects. Typically CoF funding is established in five year rolling plans.

Divest - This term, used in the broadest sense, is for opportunities that include real property assets that NASA may never need in the future. The actual structure of the divesture can be managed in several ways including 1) give the asset to another federal agency, thereby reducing NASA's costs, 2) utilize GSA's relocation program to retain a significant percentage of the value of the asset, 3) special legislation that allows NASA to sell an asset to a non-federal entity while utilizing the proceeds to improve NASA's remaining real property, or 4) turn over to GSA for direct disposal with proceeds returning to the U.S. Treasury.

National Historic Preservation Act - Opportunities structured under this legislation allow NASA to enter into lease agreements with the private sector; proceeds can be retained for two fiscal years provided they are reinvested in the historic structures, thereby reducing NASA's obligations. This legislation is particularly appropriate for historic facilities (50 years or older) that have potential utilization or market value to private sector organizations.

Operational - Broad opportunities which relate to policy, procedures, and processes within NASA can also effect NASA's costs or operational efficiency.

Outside Fence - A few of the opportunities described in the matrix are agreements or collaborations NASA can form with organizations adjacent to outside of NASA's real property. The benefit to NASA is potentially to conduct activities with less long-term financial obligation and much more flexibility. The disadvantage to some of these opportunities is a loss of direct control.

Example Opportunities **-** Every Center has created unique solutions to very difficult problems. Often the problems are shared by other Centers. This type of opportunity describes various examples of how these property challenges and opportunities were addressed around NASA. Not all examples are translatable to other Centers; nor would some of the examples be perfectly appropriate given NASA's current strategic thrust, but each of the examples demonstrates a strategy that NASA has employed to solve the problems.

PARTNERS

Every business agreement has a partner, and this category of information describes some of the current or potential partners NASA could utilize in helping execute its real property business opportunities.

NAME

This category lists the 1-3 word project names. In several cases, the team has identified multiple scenarios for a particular building or area of the site; this category world list the same project "name" for all opportunities associated with that building or site. In other cases, similar strategies are being pursued including "marketing", "management", and federal campus ideas; all opportunities that are not building or site specific are given a strategy name.

OPPORTUNITY

The specific opportunities are relatively short descriptions that capture the essence of the opportunities. In several cases, the opportunity names refer to the same opportunity, but the strategy for implementing the opportunity could vary. For example, while there are three potential strategies for implementing the construction of a new parking garage at JPL the opportunities are described separately.

POTENTIAL STRATEGY

This section of the matrix captures in a few sentences some of the background and implementation strategies for each opportunity.

MEASUREMENT FILTERS AND FACTORS

There are many factors that need to be considered in order to determine if a particular opportunity is appropriate given all of the stakeholders and implementation structures. This

section of the opportunity matrix attempts to measure each opportunity against a standard list of factors. They are broken into three overall categories representing the key stakeholders - NASA, community, and marketplace - and five total factors. The balancing of these factors is important to understand where an opportunity excels or falls short.

NASA impact factors:

Financial – Financial impact factors measure NASA's potential for creating cost savings and/or positive cash flow. Included within financial impact factors is NASA's return on investment, particularly the length of time it will take to achieve the projected benefit and the potential investments that may be required to achieve the return on investment. Additionally, especially in scenarios where NASA enters into an agreement with a partner, there may be a risk that the partner may default in the agreement and cause NASA to take over full responsibility.

Synergistic - The Space Act specifically encourages NASA to collaborate; therefore over its history NASA has established partnerships that are synergistic with NASA's goals, regardless of financial gain or expense. Synergistic impact factors measure the perceived benefits of an opportunity to NASA's mission; the creation of a collaborative relationship that is mutually beneficial to NASA and its private sector or public partners. The Synergistic impact factors also include recognizing that some opportunities offer NASA operational efficiencies and/or enhanced capabilities. In addition, synergistic factors are considered in terms of an opportunity's effect on NASA's long-term mission and program interests – specifically whether or not an opportunity will limit NASA's expected capabilities in the future.

Community impact factors:

Economic - The communities where NASA is located benefit economically from NASA's presence, not only through direct investment, but also by providing jobs and other economic stimulus. This factor reflects the economic impact that each opportunity has on the community. Economic impact often most relates to how the community could benefit from the creation of jobs in the community – both non-federal and in some cases where NASA may attract another federal agency, other federal jobs. In some cases, the community could benefit through NASA's returning land to the local tax rolls, the incubation of new businesses, or the addition to or enhancement of the local tourism industry. Balanced against the positive impact factors for a community are potentially negative impacts, such as the loss of jobs in the market or the creation of a real estate activity that competes with the private sector – often through competition with real estate developers.

Outreach - In addition to economic impact, NASA has an impact on its community through direct outreach activities and indirect activities such as bringing a highly educated workforce into the community. Such outreach activities can provide substantial benefits to the community by fostering educational activities, enlightening students through science and technology, preserving open space and other natural resources, and by generally providing an amenity to the community.

Marketplace factors:

Reality of implementation – The marketplace is a multi-varied yet critical component of this analysis. The marketplace factor includes the market demand for an opportunity, and the speed at which an opportunity can be accomplished. For almost every opportunity, finding suitable partners that have the experience, financial strength, and capability to implement the opportunity becomes a critical component to consider. The reality factor also tries to estimate the he risk exposure to NASA including environmental risks and complexities and potential for sympathetic or antagonistic community stakeholders. Finally, the amount of time required to be able to execute the opportunity (including how much planning has been done to date), and the degree of complexity to complete the process are considerations. Many of these considerations will be at odds with one another.

The measurement system for the impact factors is relatively simple, reflecting the fact that the opportunities were discussed and analyzed on a conceptual level – not in high detail. Each factor is ranked on a "0-3" basis. Therefore the highest score for any one factor is a "3", and the lowest score is a "0". The measurements are translated as follows:

0 = No Impact
1 = Minimal impact
2 = Average impact
3 = High impact

RESULTS AND RANKING

The impact factors by themselves do not provide an understanding of an opportunity's full value. To obtain a more well rounded measurement of value at a conceptual level, the scores were added together in two categories:

Business Ranking - NASA financial, community economic impact and marketplace reality factors were added together to estimate the overall "Business" factors that take economics and marketplace into account. These factors are typically the first factors to be ranked. The highest score for Business Ranking is a "9".

Intangible Ranking - The NASA synergistic and community outreach factors are combined to form the "intangible" factors. Since these factors are important, but much more subjective than the business ranking factors, these factors are ranked after the business ranking factors. The highest score for an Intangible Ranking is a "6".

The justification of each opportunity's individual factor is described briefly in the columns on the right side of the matrix.

"Example" opportunity descriptions are not ranked or described in the justification portion of the matrix. Many of the decisions for Example opportunities were carefully made given information currently available; whether or not the example is currently in the best interest of NASA does not mean that the decision to pursue the opportunity was unwise. Therefore, it is not helpful to score on the example opportunities in hindsight.

SECTION 6 – REAL PROPERTY OPPORTUNITY TYPES

OVERVIEW

Each of NASA's Centers and components are unique, and therefore every opportunity at every Center must be viewed individually. Every opportunity, however, can be categorized into generic opportunity types. The purpose of this section of the report is to discuss and compare various approaches to broad opportunity-type categories.

There are six major opportunity-types discussed in this section. The opportunities come from every Center, and therefore encourage cross-center analysis. Wherever possible, the sections conclude with a series of broad "big questions" that can help structure further investigation into the opportunities. A copy of the opportunity matrix, sorted by business results ranking, follow each opportunity type description. The opportunities are:

6.1 - Underutilized Land Opportunities

6.2 - Underutilized Facilities Opportunities

6.3 - Facilities and Asset Management Strategy Opportunities

6.4 - Mission/ Program Clarification Opportunities

6.5 - Restructuring Opportunities

6.6 - Utilities Management Opportunities

6.7 - Example Opportunities

SECTION 6.1 – REAL PROPERTY OPPORTUNITY TYPES: UNDERUTILIZED LAND

OVERVIEW

One of NASA's unique Real Property requirements is the need for large tracts of land required to conduct NASA missions. Whether it's because of dangerous and noisy launch and rocket testing requirements or the need to hold land for potential NASA activities in the future that might require large pieces of land, NASA maintains massive land holdings. Not all of the land is currently being utilized, and in some cases the land may not ever be utilized for NASA's activities.

Many NASA Centers maintain available land that could be utilized in ways that would increase the land's benefit to NASA. For example, by identifying the "core" area of each Center (i.e., the area required to conduct the Center's operations) and either divesting of the remaining land or entering into enhanced-use leases for such portion, NASA may be able to reduce its infrastructure costs and/or generate income from its underutilized land.

Many strategies that NASA could deploy when addressing underutilized land are discussed below. In the end, these strategies could be deployed either through divestiture or by using Enhanced-Use Leasing (EUL) legislation. The proposed strategy would depend on numerous factors including NASA's long range plans for the land, whether synergistic partnership opportunities exist at the Center, the market demand for the land, market value of the land, etc. To reiterate, the foremost determinate of whether NASA could divest or lease land is whether NASA needs to keep the land for future use.

In situations where NASA does not need to maintain long-term ownership of land, the most viable strategy might be for NASA to divest the underutilized portion of land. If NASA prefers that the land be used in a manner that will be synergistic with the NASA Center, the land could potentially be sold with stipulations as to how the land is used, assuming the necessary legislation has been obtained that would allow NASA to sell land subject to restrictive covenants. For example, NASA could divest land that would subsequently be occupied as a research or contractor park. In some situations, universities might also make viable candidates for buying land as they could benefit from the close proximity to a NASA Center. Where NASA leases land from a federal agency and the land is not being fully utilized, NASA can potentially return the leased land to the federal agency.

DESCRIPTION AND ANALYSIS OF OPPORTUNITIES AT NASA

RESEARCH PARKS

Research parks have garnered much attention within NASA as a method for developing synergistic uses on underutilized NASA land. The development of research parks is currently being considered at three different NASA Centers. While details of the development of research parks may vary at each Center, there is common goal to each of the initiatives. That is, these NASA Centers are interested in leveraging with outside partners the unique activities experienced at each Center pertaining to space exploration, science and technology. Not unlike other government agencies such as the NIH and NSF, NASA creates an intrinsic market based on its roots in science and

technology. The universities and private sector companies that collaborate on NASA's missions serve as a natural catalyst to research park development. However, while synergistic relationships are certainly an important ingredient for research park development, many key questions must be answered in order to regard a potential research park as viable.

Through the Space Act, NASA Centers have the necessary authority to enter into leases and "other transactions" that are synergistic with NASA's mission. Under applicable law, however, NASA can not achieve a "profit" on such arrangements, at least without the proceeds reverting to the U.S. Treasury. By contrast, EUL legislation enables NASA to retain any "profit" from research park activities for use in other Center-specific activities.

One of the key questions confronting NASA regarding its willingness to undertake the development of research parks is how to measure success? Will NASA's primary barometer for success be the enhancement of its missions, including technological advancement, commercialization and/or educational outreach; or is the best barometer in gauging success of a research park measured in economic return to the Center? To begin to evaluate this question, it is worth evaluating how success is measured throughout the broader spectrum of research parks.

WHAT DETERMINES SUCCESS FOR RESEARCH PARKS?

Criteria for measuring success of research parks depend on specific program goals, the motivations of their sponsors, and available resources. For example, the goals of private developers are typically dissimilar to those of public sector entities. Private sector developers may in large part be driven by economic return to the land itself, while public sector stakeholders may measure success through broader economic impacts, such as job growth, additional tax revenue, and/or the incubation of a new business sector.

It is perhaps a bit sobering to realize that most research parks do not generate measurable benefits that exceed costs, and even those that are successful require long incubation periods. What's more, according to the Urban Land Institute, close to one half of all parks that were initiated over the last three decades have ceased to exist.

Research parks are unique in that their measure of success often goes beyond the financial return to the developer/operator of the park. Often, success will be measured in terms of macroeconomic benefit, including:

- Commercialization of developed technologies;
- Job growth, including the types of job added;
- Economic development;
- Incubation of start up companies;
- Increased Research & Development Activity;
- Increased tax revenue (for state and local government);
- Increased educational opportunities; and
- Positive collateral impact on local industry.

The pervading philosophy on measuring success is that costs as well as benefits must be examined. Most research parks are developed from an economic development perspective to stimulate and/or enhance a region, and create synergies between different entities, including companies and universities.

In the case of research parks that have a good degree of academic orientation, one key success factor that has developed in recent years is the "Green Door" concept. The "Green Door" concept affords scientists from universities, who are busy teaching and advising students, convenient access to industry-supported labs that focus on commercializing the results of research.

HOW WILL NASA DETERMINE SUCCESS OF RESEARCH PARKS?

The need for NASA to determine reasonable, accurate, and measurable metrics to assess success among research parks can not be understated. Indeed, there are several key factors that may oppose each other in determining the metrics for research park development. For example, Ames represents some of the most valuable land in the nation. But if the research park requires inexpensive or free land to provide viability for its tenant base, is NASA willing to forgo maximizing its potential income from the land in order to better its educational and programmatic missions? In turn, will construction of a park with the goal of maximizing economic return to the land negate the feasibility of the research park for its university tenant? Which measure of success is ascribed heavier weight by NASA in the decision process? And does this weighting in the decision process change by market area? For example, because Ames' land is so valuable, does NASA place more emphasis on financial metrics than they would at Wallops, where the land value is much lower?

Also, if one of the stated goals of developing research parks includes the commercialization of technology, does the economic benefit of successful commercialization or the potential to utilize new technology to expedite mission goals and reduce development costs surpass the economic benefits of maximizing returns on land? Is the balance of these two metrics dependent on market specific economics? In addition, NASA needs to evaluate the viability of any research park in relation to its ability to compete in the market place.

Removing economics out of the equation, some of the mission enhancement benefits NASA can achieve out of the development of research parks include:

- Better commercialization of technology;
- Enhancement of technological and scientific competencies;
- Fostering of interest in science and technology education; and
- Ability to collaborate with more scientists and researchers.

In summary, while research parks present a potentially synergistic use of underutilized land at a NASA Center, an important question relates to the goals for developing research parks. That is, is NASA interested in fostering its mission goals as stipulated in the Space Act, creating economic returns, or both? As discussed above, depending on NASA's long term needs for the land, the

opportunity for synergistic relationships, and the market demand of the land, the development of research parks could be structured through EUL or by divesting the land.

NASA AS DEVELOPER/LANDLORD

A linchpin to NASA's position on whether or not to develop research parks relates to the question of whether NASA is willing to act as a landlord. And if NASA is not willing to act as landlord, what system can NASA deploy whereby NASA can achieve both economic return and collaborative research and development?

In terms of acting as landlord, NASA could find itself having to collaborate with research park partners, while also collecting rent from partners and administrating the partner's space needs. These two functions could often be at odds with each other and serve to undermine programmatic good will.

More specifically however, there are several issues NASA would have to confront if deciding to act as landlord, including:

- Administer rent collection and expense reimbursements;
- Provide public services such as police and life safety services;
- Assume liability associated with hosting tenants on NASA land and the increased level of liability from providing services, such as fire, police, and life safety;
- Compete with outside market to maintain a high level of occupancy;
- Provide a high level of building maintenance and life cycle replacement; and
- Maintain the necessary level of staffing to service a research park, such as asset managers, property managers, and maintenance personnel.

The cost benefit analysis of NASA's willingness to act as landlord must be weighed against other possible models for achieving similar benefits. Brief examples of other possible development models include:

- The complete sale or ground leasing of land to developer/landlords, including universities, who could potentially be required by contract to create uses synergistic to NASA; and
- Ground lease land to synergistic tenants who could construct their own build-to-suit facilities. Management of the park could be performed by an independent agency who administers management expenses and ground lease collection on behalf of NASA. This model may not avoid the challenge of providing municipal services to the tenant base.

Examples:

Ames Research Center – The Ames Research Center (ARC) has embarked on a program to develop NASA Research Park (NRP), a science and technology park to be comprised of industry, other government, agencies and universities such as the University of California at Santa Cruz and Carnegie Mellon University.

The goal of the NRP is to enhance ARC's mission and the educational and research requirements pertaining to its missions, which include nanotechnology, biotechnology, and information technology. The park is to include shared research facilities and public-private cooperation in research, development, teaching and training with the goal of contributing to NASA's core missions of research, exploration, education and discovery. The co-location of university and private sector researchers encourages high-level fundamental research in areas of interest to ARC. Furthermore, ARC will be provided with a steady stream of university students and graduates for course project work, co-up programs and summer work. Not only will this achieve the goal of inspiring the next generation of scientist, but it will also increase ARC's access to the best and brightest because they will become invested in the work.

The fundamental goal of the NRP is to enable NASA to achieve its mission by providing economic access to technological capabilities external to NASA. There are two main methods by which ARC plans to gain economic access to technological access. The first is through the inward transfer of technology developed outside of NASA. The second is through the joint development of new technology by NASA in conjunction with external partners in private industry and universities.

Partners/tenants of NRP will create or renovate their own facilities on ARC property. In return for land and close proximity to NASA researchers, the partners would pay ground rent, reimburse NASA its costs and reinvest funds gained through partnership activities in collaborative activities at ARC. It should be noted that, for portions of the NRP located within the historic district, revenues can be retained for two fiscal years. Although, as planned, NASA will not initially receive a direct rent revenue stream from NRP, partnership activities will be funded by non-appropriated funds. ARC is also reviewing various development and management models to limit the Agency's landlord responsibilities in the future.

From a market standpoint, ARC enjoys several key benefits that favor the research park concept: 1) It has enough land to construct its own campus on-site; 2) it is located adjacent to Silicon Valley, the world epicenter of high-technology firms and entrepreneurs; and 3) it has a number of viable academic partners with considerable resources.

International Space Research Park – Kennedy Space Center (KSC) and the Florida Space Authority are partnering to develop an International Space Research Park (ISRP) on 400 +/- acres of KSC property. KSC and the Florida Space Authority envision the park to combine

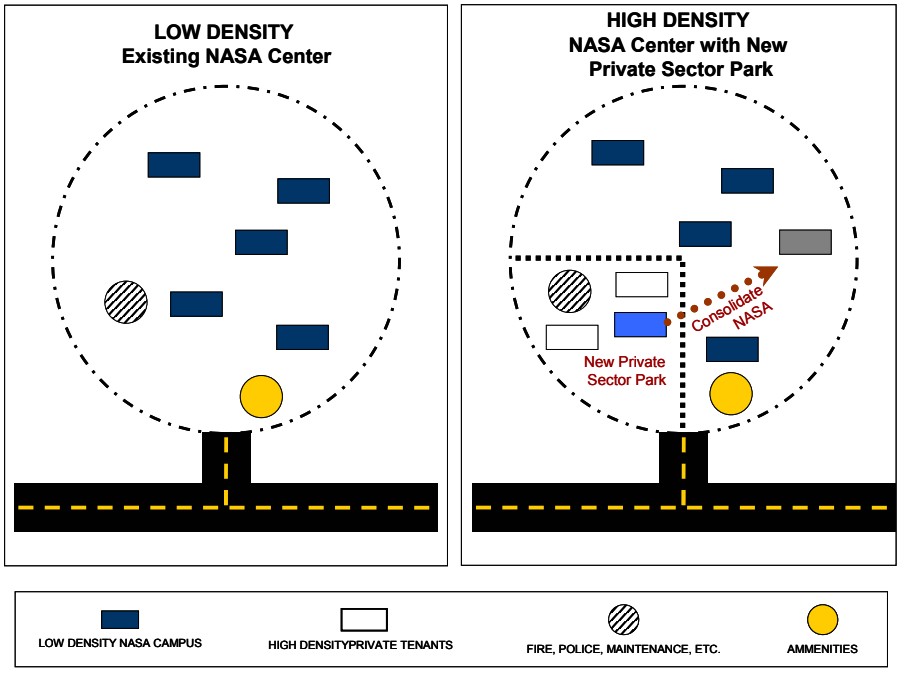
commercial, academic, and government tenants in a collaborative research and technology development environment. The park will bring together a mix of industry, academia, and government researchers to focus on the areas of research and development in support of the Cape Canaveral Spaceport and its partners. The total build-out of the park would equate to 2.0 million square feet.

Wallops Flight Facility – Wallops is in the preliminary idea development stages for a research park adjacent to the WFF site. The plans are for the park to be occupied by contractors that are in businesses synergistic with Wallop's activities. For example, private satellite or payload processing companies who may not need the high security afforded by Wallops, but could benefit from Wallops launch or airstrip capabilities. NASA would provide "back gate" access to these companies. Additionally, since Wallops is in a rural location, the business/ research park could provide a critical mass of businesses to the area. The net benefit to NASA is a potential for higher utilization of unique assets (i.e. launch facilities) at low cost and involvement.

CONTRACTOR PARKS

Given NASA's intense collaboration with contractors, contractors are prime candidates for locating within facilities constructed on NASA land. And since contractors typically must locate within close proximity to the Centers where they work anyway, it makes sense to consider having contractors locate "behind the fence". What's more, given today's heightened security needs, having contractors co-locate on NASA property could provide the most secure environment possible for NASA's intellectual property. Similar to research parks, the development of land to be used by contractors can be structured through either an EUL or by divesting the land.

Under this scenario, NASA could consolidate their facility needs into one section of the Center's land in order to "free up" an area that could be sold or leased to contractors. In this scenario, by freeing up a distinct section of the NASA Center campus, NASA could establish a new fence line to provide a secure environment for NASA Center operations.



EXAMPLES:

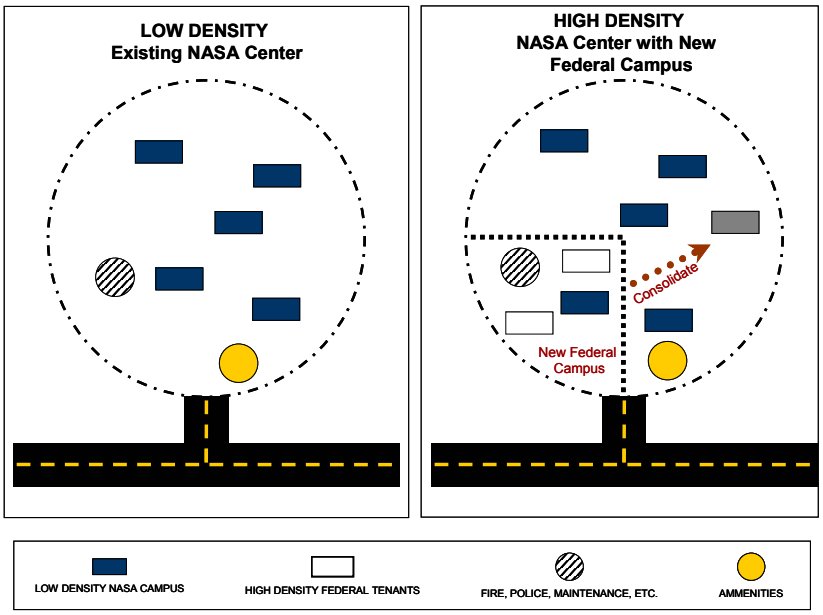
Johnson Space Center (JSC) – JSC has a large contractor population per Code M and most contractors lease space off site. In addition, NASA is often paying the contractor's rent as a direct pass through. NASA could potentially establish a contractor park within Section 400 of the JSC campus or at another location close to the fence line. This strategy could be deployed through an EUL or sale to a private developer, who in turn could lease the facilities to contractors.

Goddard (GSFC) – Goddard's master plan includes a designated partnering zone. Given the large number of contractors that work at GSFC, the partnering zone could be sold or leased (using EUL) to private developers, who in could in turn lease the facilities to contractors. In certain situations, it might be justified for Goddard to enter into an EUL or sale directly with a contractor.

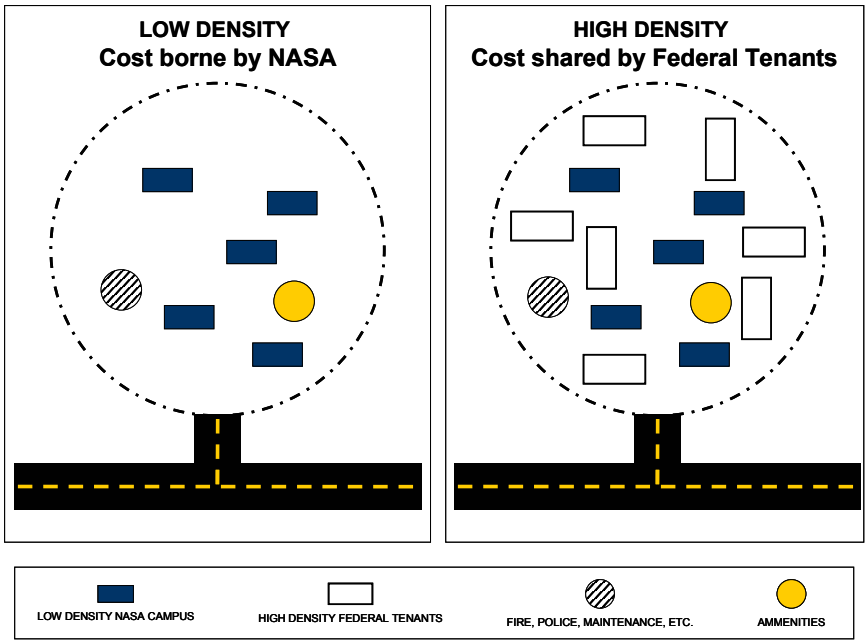
GOVERNMENT CAMPUS

Other federal agencies, particularly security conscious agencies, represent another type of user that would be a good candidate for occupying underutilized land. In such instances, using EUL legislation, land and/or facilities could be leased at cost to another federal agency. In lieu of using EUL legislation, land can be utilized by another federal agency through a shared cost arrangement. The strategy of marketing to other potential federal agency users might be particularly appropriate where NASA needs to maintain large buffer zones, the market demand for private sector uses is low, or security concerns prohibit private sector utilization.

In the first scenario, NASA could consolidate their facility needs into one section of the Center's land in order to "free up" an area that could be sold or leased to contractors. In this scenario, by freeing up a distinct section of the NASA Center campus, NASA could establish a new fence line to provide a secure environment for NASA Center operations.



In the second scenario, NASA could free up buildings interspersed throughout the Center's campus and redeploy those buildings for use by federal agencies. Given that within this scenario NASA can not carve out a distinct portion of the campus, NASA will probably not be able to ensure an appropriate level of security. Therefore, NASA would probably structure use of those facilities through an enhanced use lease (EUL) structure.



EXAMPLES:

Stennis – Stennis is an example of a Center that has attracted other federal agencies to occupy land and buildings at the Center. NASA needs to maintain the buffer zone to Stennis but doesn't need to occupy much of the land. Federal agencies occupy some of the land and reimburse NASA for management costs. This strategy could be enhanced at Stennis and deployed at other Centers as a method for reducing management costs.

Kennedy Space Center (KSC) – Because KSC requires a very large buffer zone and must maintain high security, NASA could potentially lease developable land to security conscious federal agencies to reduce facilities management costs.

GRANT OR RETURN LAND TO FEDERAL AGENCY

Where a NASA Center owns underutilized land, the simplest solution might be to grant the land to another federal agency. This strategy might work best where the market demand for land is low. While NASA might not be able to achieve a high economic return, it could at least reduce its costs associated with maintaining the underutilized land. In other scenarios, a NASA Center might occupy land that has been obtained through a ground lease from another federal agency. If it is determined that this land is not needed, or that the specific Center could consolidate facilities and operations to a part of the "campus" that the Center owns, the leased land could be returned to the appropriate federal agency. NASA could save the cost of the lease, if applicable, and the cost of maintaining the leased land.

KEY SUCCESS FACTORS, BIG QUESTIONS, APPROACHES

If NASA decides to pursue these opportunities, the questions that are critical for NASA to consider include:

1. Why has NASA maintained the land to date?

2. Does NASA need the land now or will it need the land in the future?

3. When and where do research parks on NASA land make the most sense?

   - Research Centers with available land;
   - Strong market/value potential

4. Where does NASA want to be on the "Risk/Reward" scale? That is, is NASA willing to take on more risk in the development and management process in order to potentially achieve higher economic value?

   - Does NASA want to take the role and responsibilities of an entrepreneurial developer/landlord in order to increase economic return?

   - Does NASA want to maximize economic return, achieve synergistic development, but not be in the business of developing Real Property?

   - Given NASA's mission, would it be best for NASA to limit its involvement to sale or ground lease?

5. What are the most vital metrics for NASA in determining the viability of a research park (i.e. how will NASA measure success)?

   - Successful collaboration and enhancement of programs and missions?
   - Financial returns to NASA?
   - Commercialization of developed technologies?
   - Some of each?

6. If the viability of a research park relies on inexpensive or free land, is NASA willing to forgo substantial economic value in order to enhance its programs and missions?

7. Could the commercialization of technology through collaboration with partners in a research park provide enough positive financial impact as to negate the need for financial returns on the real property development?

8. If NASA is willing to develop research parks, can it create a competitive market niche not already served in the marketplace?

9. Is NASA willing to be a landlord to research park tenants?

    - Is NASA willing to provide municipal services such as police protection, fire, life safety, etc.?
    - Is NASA willing to assume associated liability of failure to provide services, including safety?
    - Is NASA willing to assume the associated personal liability or the long-term liability (e.g. environmental, health)?

10. Who will determine the likeliness of success and grant approval for the commitment of NASA resources?

    - Center Director
    - NASA Headquarters
    - Representative NASA committee

6.1 Underutilized Land Opportunities.xls

SORT ORDER: Type | Business | Intangible

ID #	Center	Type	Authority	Partner	Name	Opportunity Name	Potential Strategy	Impact Factors: NASA Financial (F)	Synergistic (S)	Economic (E)	Outreach (O)	Reality (R)	Results & Rank: Business (9=max) (F,E,R)	Intangible (6=Max) (S,O)	Financial	Synergistic	Economic	Outreach	Reality
1	All	Underutilized Land	EUL	Private Sector	Consolidation	Define Center Real Property Requirements - Ground Lease remaining land	Identify the core area of every Center; move fence line in to core area; maintain land ownership for potential future need but look for opportunities to re-utilize land in the mean time. Consider EUL according to highest and best use - including everything from commercial development to agriculture.	3	3	3	2	3	9	5	Achieves revenue and/or cost savings that can be redeployed into improving facilities; maintains long term ownership of land to protect NASA's future interests	Can bring contractors, universities, etc in close proximity to NASA	Property returned to tax rolls, increased university presence, increased non-federal jobs, land returned to community	Community can benefit from new land planning (parks, etc	Political challenges for NASA but high reward and NASA retains land. Risk is that if EUL'ed property development fails, NASA may need to take over development.
45	Ames	Underutilized Land	EUL	Private Sector	NRP	NASA Research Park - EUL to developer	Ames has a well-thought out research park that has been included in their master plan. Consider EUL of the complete research park area through private investors; maintaining long-term federal ownership while removing development risks. In this scenario, NASA does not become highly involved with development activities	2	3	3	3	3	8	6	Great potential for revenue generation, but some "development value" is passed along to master developer	Provides collaboration with universities/contractors	Provides non-federal jobs	Collaborates with community through university presence	Strong local market, partner interest. NASA puts development risks on Investor with expertise in development who takes a take leadership role in NRP, avoiding known mistakes.
46	Ames	Underutilized Land	EUL	Private Sector	NRP	NASA Research Park - EUL, NASA maintain management	Ames has a well-thought out research park that has been included in their master plan. Consider NASA maintaining a high involvement in the development, structuring EUL opportunities to individual tenants / occupants, similar to the Carnegie Mellon lease. Maintaining long-term federal ownership while removing development risks.	3	3	3	3	2	8	6	Great potential for revenue generation, NASA controls obtaining highest returns on every EUL	Provides great collaboration with universities/contractors	Provides non-federal jobs	Collaborates with community through university presence	Strong local market, partner interest. NASA maintains "development" risks in good but highly volatile market.
83	Goddard	Underutilized Land	Space Act	Private Sector	Partnering Zone	Partnering Zone - University / Research - Space Act.	Goddard's Master plan includes a partnering zone. Consider a research-oriented partnering zone similar to Ames; high emphasis on research and university interactions - and related organizations. Share maintenance costs for net cost reduction.	3	3	3	3	2	8	6	Great potential for revenue generation	Provides great collaboration with universities and supports NASA mission	Provides non-federal jobs	Outreach to community through university presence	Near term market demand might be only question.

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84	Goddard	Underutilized Land	EUL	Private Sector	Partnering Zone	Partnering Zone - EUL to master developer	Goddard's Master plan includes a partnering zone. EUL the partnering zone to a master developer or local developers for a mix of collaborative uses including contractor office space and university space.	2	3	3	3	3	8	6	Great potential for revenue generation, NASA maintains long term land ownership, but some "development value" is passed along to master developer	Provides great collaboration with universities/contractors	Provides non-federal jobs	Outreach to community through university presence	Near term market demand might be only question. NASA puts development risks on Investor with expertise in development who takes a take leadership role in NRP, avoiding known mistakes.
85	Goddard	Underutilized Land	EUL	Private Sector	Partnering Zone	Partnering Zone - EUL, NASA maintain management	Goddard's Master plan includes a partnering zone. EUL the partnering zone to local developers for a mix of collaborative uses including contractor office space and university space.	3	3	3	3	2	8	6	Great potential for revenue generation, NASA maintains long term land ownership. NASA controls obtaining highest returns on every EUL	Provides great collaboration with universities/contractors	Provides non-federal jobs	Outreach to community through university presence	Near term market demand might be only question. NASA maintains "development" risks in soft sub-market.
2	All	Underutilized Land	Divest	Private Sector	Consolidation	Define Center Real Property Requirements - Divest remaining land	Keep only the areas of each Center that are required for NASA's core operations, and divest unused area through 1)special legislation that allows NASA to renovate its facilities through revenues received from divestment or 2)divest through GSA relocation plan, or 3)give to local municipalities (to reduce costs). Potential strategy: identify 1)core center area 2)EUL or "hold" Research/tech transfer/partnering park, 3)Divest remaining area.	3	3	3	2	2	8	5	Achieves significant revenue and/or cost savings	Can bring contractors, universities, etc in close proximity to NASA	Property returned to tax rolls, increased university presence, increased non-federal jobs, land returned to community	Community can benefit from new land planning (parks, etc	Political challenges for NASA but high reward; NASA give up long term use of land.
106	Johnson	Underutilized Land	EUL	Private Sector	Section 300, 400	Develop Commercial Buildings - EUL	JSC has a large contractor population for Code M, and many currently lease space off site. NASA is often paying the contractor's rent as a direct pass-through. Contractor's services could sometimes be enhanced by being on-site, or at least closer to the Center. There is no room for additional contractors on site; consider entering into an EUL to build new facilities near the fence line.	3	3	3	1	2	8	4	Creative potential for cost reduction (through contractor pass-through's)	Provides great collaboration with contractors who need to work closely with NASA	Provides non-federal jobs	Not a lot of outreach	Market demand in sub-market is soft; local developers may not support.

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203	Wallops	Underutilized Land	EUL	Private Sector	Runway	Aircraft Facilities	Consider EUL for Hangars, apron areas, support areas for uses that could co-exist with NASA's periodic mandatory use of runaway.	3	1	3	2	2	8	3	Currently NASA pays for most of the cost of runway activities; this scenario will turn it into a profit center	Could allow for more services to be offered benefiting NASA	The area economically challenged; could bring new non-federal jobs and business	Positive outreach	Would require time and investment to define concept and attract businesses, but possible.
44	Ames	Underutilized Land	EUL	Lockheed Martin	Lockheed Martin Building	Lockheed Park	Lockheed Martin had expressed an interest in developing a major presence on the Ames Research Park. Focus on these discussions in light of EUL authorities.	3	2	2	0	3	8	2	Can result in revenue generation	Involves a NASA contractor	Increases presence of a major employer	No outreach	NASA has EUL authority and potentially a willing partner.
180	Stennis	Underutilized Land	EUL	Private Sector	Private Secure Campus	Market to security-conscious private companies	Stennis has extensive buffer zone, land holdings, support services, and Federal-level security in place to support it's current activities. Lockheed Martin is already on site; could be additional government contractors or private companies who could build facilities that benefit from high security and lower costs.	3	2	3	0	2	8	2	Can result in revenue generation and cost reduction by having more tenants share fixed expenses	May involve NASA contractors	Increases presence of a major employers in economically depressed areas	No outreach	Stennis is in a unique location, with a unique security environment; may not be easy to convince private sector to relocate; workforce may not be extensive.
50	Ames	Underutilized Land	Divest	Private Sector	Runway	Runway / Moffett Field - Divest as raw land	Ames currently utilizes the runway, but not extensively. Consider relocating the "Sofia" program and Air National Guard, removing the runway and all facilities, divesting all land as mixed use housing/ commercial hub.	3	0	3	1	2	8	1	Potential significant revenue generation, although it will be a complex process; potentially requires investment to prepare land for sale	None, other than additional services and convenience; would remove flight-based capabilities	Major development returned to tax base, new housing, new retail, etc.	No outreach	Complex public process, similar to El Toro in Irvine, CA; potentially limit Ames future flight-based activities. The new owner needs to go through CEQA process.
67	Glenn	Underutilized Land	EUL	Private Sector	Runway	Global transportation hub	Glenn is located next to the runway in Cleveland. Consider offering the land along the runway to transportation or logistics organizations; use the revenues from the EUL to replace the facilities which are currently along the runway.	3	1	3	0	2	8	1	Achieve revenues by virtue of Glenn's proximity to the airport	Potential for modest synergies, additional capabilities	Increase non-federal jobs	No outreach	Potential but need to market capability, work through airport logistics, resolve security issues.

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99	Johnson	Underutilized Land	EUL	Private Sector	Section 300, 400	Section 400 - EUL contractor buildings	400 section of JSC is not completely used except for radio tower transmission areas. Consider marketing to university systems or developers for collaborative uses. Consider potential to use funds from EUL to move the transmission towers to increase area available for EUL.	3	3	3	2	1	7	5	Potential for revenue generation	Provides great collaboration with universities/ contractors	Provides non-federal jobs	Outreach to community through university presence	Market demand might be only question. Sub market is filled with low-cost office buildings, modest vacancy rate. NASA would risk taking over development if failure.
86	Goddard	Underutilized Land	Divest	Private Sector	Partnering Zone	Partnering Zone - Divest to master developer	Goddard's Master plan includes a partnering zone. Divest the partnering zone to a master developer or local developers for a mix of collaborative uses including contractor office space and university space.	3	2	3	2	1	7	4	Great potential for immediate revenue generation, NASA gives up expense, but loses long-term ownership control	Provides potential collaboration with universities/contractors but not in direct control	Provides non-federal jobs, returns land to tax roll	Outreach to community through university presence	Near term market demand might be question; also loss of control and potential security challenges.
35	Ames	Underutilized Land	EUL	Private Sector	East Side /Air Field	Center Consolidation - EUL Moffett and NRP; maintain core Center.	Ames core NASA activities are centered around a small portion of the total land-holdings, which are very valuable and would not be easy to acquire in the future if NASA gave them up now. Additionally, some of the land is part of a superfund site and clean-up activities will take time.. Complete partially-constructed fence line around center core, EUL remaining land to private entities or master developer. Maintain long-term ownership.	3	2	2	1	2	7	3	Long-term cost reduction and revenue generation for NASA	Potential synergies created if leased to university or contractors	Increases non-federal jobs, retail sales, tax base	Can involve universities, parks, etc	Some portions of the land are more valuable; need to potentially restructure agreements with other federal tenants; runway marketability is questionable.
191	Wallops	Underutilized Land	EUL	Private Sector	Runway	Runway - Global transportation hub	Consider utilizing the runway for air-based transportation hub; EUL land to warehouse uses; charge for use of air strip.	3	1	3	2	1	7	3	Currently NASA pays for most of the cost of runway activities; this scenario will turn it into a profit center	Could allow for more services to be offered benefiting NASA	The area economically challenged; could bring new non-federal jobs and business	Positive outreach	Would require time and investment to define concept and attract businesses. Could disrupt Wallops mission activities, limiting reality.

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51	Ames	Underutilized Land	EUL	Private Sector	Runway	Runway - Global transportation hub	Consider utilizing the runway for air-based transportation hub; EUL land to warehouse uses; charge for use of air strip.	3	1	3	1	1	7	2	Currently NASA pays for most of the cost of runway activities; this scenario will turn it into a profit center	Could allow for more services to be offered benefiting NASA	Could bring new non-federal jobs and business	Not much	Would require time and investment to define concept and attract businesses, but possible; Mountain View and Sunny Vale citizens oppose high use of air strip; would require modification to EIS.
97	Johnson	Underutilized Land	EUL	Private Sector	Runway	Runway - Global transportation hub	Consider utilizing the runway for air-based transportation hub; EUL land to warehouse uses; charge for use of air strip.	3	1	3	1	1	7	2	Currently NASA pays for most of the cost of runway activities; this scenario will turn it into a profit center	Could allow for more services to be offered benefiting NASA	Could bring new non-federal jobs and business	Not much	Would require time and investment to define concept and attract businesses, but possible; Mountain View and Sunny Vale citizens oppose high use of air strip; would require modification to EIS.
47	Ames	Underutilized Land	Divest	Private Sector	NRP	Center Consolidation - Divest Moffett and NRP ASAP; maintain core Center.	Ames core NASA activities are centered around a small portion of the total land-holdings, which are very valuable and would not be easy to acquire in the future if NASA gave them up now. Additionally, some of the land is part of a superfund site and clean-up activities will take time. Complete partially-constructed fence line around center core, Divest all land to third parties. Stipulate that runway remains for use by SOFIA and other NASA uses. Could be similar process to El Toro in Irvine, CA.	3	0	2	1	2	7	1	Long term cost reduction and revenue generation for NASA	Potential synergies created but outside of NASA's control	Returns land to tax rolls, more non-federal jobs, retail sales, etc	No outreach created	Superfund site makes divesting complex; EIS is complete and "value" has already been created; however, new owner would need CEQA process to get full value-takes time; NASA would give up rights to future use of land.

6.1 Underutilized Land Opportunities.xls

SORT ORDER: Type | Business | Intangible

ID #	Center	Type	Authority	Partner	Name	Opportunity Name	Potential Strategy	Impact Factors: NASA Financial (F)	Synergistic (S)	Community Economic (E)	Outreach (O)	Mkt. Reality (R)	Results & Rank: Business (9=max) (F,E,R)	Intangible (6=Max) (S,O)	Financial	Synergistic	Economic	Outreach	Reality
173	Stennis	Underutilized Land	EUL	Private Sector	Army Lease	Army lease - Cancel - market land to Private Sector	Army Land Lease - The army has a long term lease from NASA in the middle of Stennis that they don't need; the army is currently leasing to other companies; NASA could market the land to private sector organizations who require high security; structure agreements through EUL to gain maximum market value, reinvest proceeds to improve Stennis.	3	1	3	0	1	7	1	EUL offers additional revenue potential	Limited, but could bring in companies with synergies to NASA, or allow for additional resources available to the whole Center and tenants	Bring in new business to an economically challenged area	No net impact	Market is not easily identified; requires heavy marketing effort to attract.
176	Stennis	Underutilized Land	Space Act	Federal Agency	Federal Campus	Federal Campus	Currently NAVY on site; could add other security conscious agencies, reducing overall operations costs.	2	1	2	0	3	7	1	Cost of maintaining land too low to result in significant impact	Can be synergistic with fed. Agency	Might create non-federal jobs but land not returned to tax rolls	No net impact	Proven business model and systems set up; question is how many more agencies need facilities.
144	Langley	Underutilized Land	EUL	Private Sector	Wythe Creek Gate	Pull fence line back at back gate	Langley is located along fairly major road, near major highway. A portion of the area is currently designated a forested wet land. Work with the Corps to remove the designation. EUL to private groups. Maintain long-term ownership in case NASA requires land for use in the future.	2	0	3	0	2	7	0	Could generate modest income	No synergies created	Returns land to tax rolls, generates sales taxes	No outreach created	Depends on NASA security concerns; market viability of uses; sub market does not appear strong.
100	Johnson	Underutilized Land	EUL	MSFEFI	Section 300, 400	Golf Course - EUL	A proposed hotel development at Space Center Houston has expressed an interest in putting a golf course on section 400. The use is compatible with the need to maintain the radio tower transmission areas. Consider structuring as EUL.	2	2	2	1	2	6	3	Revenue potential good, but questionable golf course economics	Recreational amenity	Provides some non-federal jobs	Provides amenity to community	Market demand and financial viability need to be examined.
8	All	Underutilized Land	Space Act	Federal Agency	Federal Campus	Federal Campus	NASA has large tracts of land at almost every Center. DoD and other agencies similarly have large tracts of land, but NASA is potentially unique in that it is a civilian Agency. Consider marketing facilities and land to other federal agencies through Space Act Agreements; establish cost-sharing agreements to reduce costs to all tenants, including NASA.	2	2	2	0	2	6	2	Spreading costs among multiple tenants helps lower NASA's costs	Can be synergistic with some Agencies; may offer additional services, employee benefits that couldn't be afforded normally	Might bring new jobs to a community, but at expense of another community; land not returned to tax rolls	No outreach	Most likely if other agencies are forced to move for security reasons; or if other agencies go through consolidation.
36	Ames	Underutilized Land	Space Act	Federal Agency	East Side /Air Field	Federal Campus	Market Moffett Field to federal Agencies to increase number of Federal tenants who share similar security requirements; specifically try to find tenants who can increase the use of the runway and bring new potential tenants to the NRP. Also form sharing agreements to utilize other expensive/ unique NASA assets. Form cost-sharing agreements that lower everyone's occupancy costs. Federal Agency agreement could be accomplished through Space Act or EUL, with minor differences.	2	1	2	1	2	6	2	Reduces NASA cost	Limited with other federal agencies	Could increase non-federal jobs through commercial spin-offs of increasing Federal presence at Ames	Limited outreach	Dependent on finding Federal Agencies interested in expanding / relocating.

6.1 Underutilized Land Opportunities.xls

SORT ORDER: Type | Business | Intangible

ID #	Center	Type	Authority	Partner	Name	Opportunity Name	Potential Strategy	Impact Factors: NASA Financial (F)	NASA Synergistic (S)	Community Economic (E)	Community Outreach (O)	Mkt. Reality (R)	Results & Rank: Business (9=max) (F,E,R)	Intangible (6=Max) (S,O)	Financial	Synergistic	Economic	Outreach	Reality
37	Ames	Underutilized Land	Divest	Private Sector	East Side /Air Field	Moffett Field - Divest	Divest Moffett Field by working with Mountain view, Sunnyvale, other Federal tenants currently occupying space. Potentially provides income and cost reduction.	3	1	2	1	1	6	2	Reduce NASA costs	Limited opportunity with NASA partners, could maintain NRP synergies	Could increase non-federal jobs, commercial activity	Some opportunity for outreach	Dependent on finding user to take over and difficulty in environmental liability
101	Johnson	Underutilized Land	Divest	MSFEFI	Section 300, 400	Golf Course - Divest	A proposed hotel development at Space Center Houston has expressed an interest in putting a golf course on section 400. The use is compatible with the need to maintain the radio tower transmission areas. If NASA doesn't require the land long-term, consider divesting; retain transmission air-rights.	2	1	2	1	2	6	2	Revenue potential good, but questionable golf course economics	Recreational amenity, lose future rights to land	Provides some non-federal jobs	Provides amenity to community	Market demand and financial viability need to be examined.
122	Kennedy	Underutilized Land	Space Act	Federal Agency	ISRP	Federal Campus	Because KSC needs to maintain buffer zone and high security - similar to Stennis - lease developable land to security conscious federal agencies to reduce faculties management costs.	2	2	2	0	2	6	2	Increasing tenants reduces overall costs to NASA	Synergistic only with collaborative federal agency, may provide additional employee amenities	Brings more non-federal jobs/patrons to area, does not return property to tax rolls	No outreach	Dependent on federal agency partners.
166	Michoud	Underutilized Land	Space Act	Coast Guard	West of Mercury Drive	Federal Campus - Coast Guard. Homeland Security, Customs.	Coast Guard (now part of Homeland Security) have expressed an interest in the Dock area; engage them in a discussion focusing on consolidating more facilities on NASA land.	2	2	2	0	2	6	2	Increased tenants help reduce overall costs associated with real property maintenance	Synergistic only with collaborative federal agency, may provide additional employee amenities	Brings more non-federal jobs/patrons to area, does not return property to tax rolls	No outreach	Dependent on federal agency partners.
62	Glenn	Underutilized Land	Space Act	Federal Agency	Plum Brook	Federal Campus	NASA currently has federal agencies as tenants at Plum Brook. Market underutilized land to security conscious federal agencies to reduce management costs. Consider marketing as major secured federal campus for agencies in northern Ohio.	2	1	2	0	2	6	1	Sharing costs will help NASA, but may not result in significant impact; may help utilization of unique facilities	Can be synergistic with federal Agency; may provide employee amenities but not many NASA employees at Plum Brook	Might create non-federal jobs but land not returned to tax rolls	No impact	Significant federal agency user interest possible given increase security consciousness.
63	Glenn	Underutilized Land	Space Act	Federal Agency	Plum Brook	Federal Campus	Consider expanding Plum Brook's role as a federal campus.	2	0	2	0	2	6	0	Cost sharing	No synergies	Might create non-federal jobs but land not returned to tax rolls	No outreach	Market demand may be soft.
64	Glenn	Underutilized Land	EUL	Private Sector	Plum Brook	Plum Brook - EUL	Consider EUL of Plum Brook with exception of most unique specialty facilities that are critical to NASA's programs and nuclear testing area (Glenn is decommissioning the nuclear reactor facility but this process will take time). Maintain ownership in case NASA requires large portion of land in the future. Consider expanding agricultural leases.	2	0	2	0	2	6	0	Land value results in modest revenue through ground lease	No synergies	Might create non-federal jobs but land not returned to tax rolls	No outreach	Market demand may be soft.

6.1 Underutilized Land Opportunities.xls

SORT ORDER: Type | Business | Intangible

ID #	Center	Type	Authority	Partner	Name	Opportunity Name	Potential Strategy	Impact Factors: NASA Financial (F)	NASA Synergistic (S)	Community Economic (E)	Community Outreach (O)	Mkt. Reality (R)	Results & Rank: Business (9=max) (F,E,R)	Intangible (6=Max) (S,O)	Financial	Synergistic	Economic	Outreach	Reality
65	Glenn	Underutilized Land	Divest	Private Sector	Plum Brook	Plum Brook - Divest	Consider divesting of everything except for nuclear testing area and perhaps unique facilities that are critical to NASA's programs (Glenn is decommissioning the nuclear reactor facility but this process will take time.); move contents of storage magazines to Stennis. Divert nuclear testing area once it has been decommissioned.	2	0	2	0	2	6	0	Good land value	No synergies	Land returned to tax rolls, but area is economically challenged	No outreach	Market demand may be soft.
91	Goddard	Underutilized Land	EUL	Private Sector	Visitors Center	Visitors Center, Space Camp - EUL near Center	The future of Goddard's on-center Visitor Center is being discussed; one option is to move it away from the Center. Consider entering into an EUL agreement with investor/partners and expanding into a conference facility and educational space camp. Utilize the facility for NASA-related activities that involve foreign scientists who have difficulty getting on the Center.	2	2	2	3	1	5	5	Reduction in costs associated with running visitors center currently; potential to structure like KSC with revenues going back to public use activities	Close proximity could allow for more conferences, meetings, discussions	Modest increase in local visitors	Positive outreach to local students and community	Faces stiff competition for visitor center experiences in DC area; hotel conference centers are already near by, may not support.
139	Langley	Underutilized Land	EUL	NIA	NIA	National Institute for Aeronautics (NIA)	NIA is a contract recently won by a consortium that expressed a desire to lease space off-Center. Consider EUL on NASA owned land to help form critical mass and attract other R&D type users.	2	2	2	2	1	5	4	EUL has positive financial benefits	Brings NIA closer to Center civil servants	Helps generate spin off business	Employs good workers	NIA already desired to lease space away from Center
133	Kennedy	Underutilized Land	Divest	Fish and Wildlife / Florida	Wildlife Refuge	Divest buffer zone land while controlling use	NASA owns 82,822 acres of land at KSC, and has an easement for 56,547 acres which is needed to provide the buffer zone for launch activities. Review ownership and costs associated with maintaining the buffer zone and consider cost-reduction alternatives that would still protect NASA's interests (analogous to Stennis). Fish and Wildlife or the state of Florida may be potential partners.	3	2	0	0	2	5	2	Can result in significant cost savings	Bolsters coordination/partnership with F&W, State	No net economic impact with partners	No net impact on outreach vs. current structure	Will NASA sacrifice security control? Willingness of partners.
7	All	Underutilized Land	Space Act	Federal Agency	DoD collocation	Engage in active discussions prior to DoD BRAC process	The Department of Defense is preparing for a Base Relocation and Closure process to begin within the next couple of years. NASA's mission specifically encourages cooperation with the military. Engage in discussions with DoD to understand how NASA can take on additional tenants through the DoD BRAC process.	2	1	2	0	1	5	1	Spreading costs among multiple tenants helps lower NASA's costs	Can be synergistic with some DoD activates; may offer additional services, employee benefits that couldn't be afforded normally	Might bring new jobs to a community, but at expense of another community; land not returned to tax rolls	No outreach	Difficult to predict outcomes of highly political BRAC process.
174	Stennis	Underutilized Land	Space Act	Federal Agency	Army Lease	Army lease - Cancel - Incorporate land in Federal Campus Strategy	The army has a long term lease from NASA in the middle of Stennis that the Army may not need. Cancel the lease with the Army, take over the land, and market to other Federal Agencies, including DoD, to increase the federal tenant mix.	2	1	2	0	1	5	1	Increasing tenants reduce overall costs; but cost associated with Army land appears high	could bring in Agencies with synergies to NASA, or allow for additional resources available to the whole Center and tenants	Expand employment base in an economically challenged area but property not returned to tax rolls	No net impact	Proven business model and systems set up; question is how many more agencies need facilities.

6.1 Underutilized Land Opportunities.xls

SORT ORDER: Type | Business | Intangible

ID #	Center	Type	Authority	Partner	Name	Opportunity Name	Potential Strategy	Impact Factors: NASA Financial (F)	NASA Synergistic (S)	Community Economic (E)	Community Outreach (O)	Mkt. Reality (R)	Results & Rank: Business (9=max) (F,E,R)	Intangible (6=Max) (S,O)	Financial	Synergistic	Economic	Outreach	Reality
188	Wallops	Underutilized Land	Space Act	Federal Agency	Near highway	Federal Campus	Navy is already there. Using proximity to DC, state of VA support of DOD, training capability, add other federal tenants. Additional tenants could increase training.	2	1	2	0	1	5	1	Cost of maintaining land too low to result in significant impact	Can be synergistic with fed. Agency	Might create non-federal jobs but land not returned to tax rolls	No outreach	Significant fed agency user interest unlikely.
137	Langley	Underutilized Land	Divest	Air Force	East Campus - Langley	East campus - Return to Air Force	Return all underutilized land and facilities in river area to Air Force. Retain ownership of only those unique facilities that are critical to NASA in the future. Results in net reduction of costs.	3	0	0	0	2	5	0	Measurable cost savings for NASA			No net impact	Political question concerning NASA control.
167	Michoud	Underutilized Land	EUL	Private Sector	West of Mercury Drive	Ground Lease	EUL portion of land not needed for manufacturing; maintain drainage channel and dock access if necessary.	2	0	2	0	1	5	0	Potential for revenue generation, but most likely at industrial use rental rates	Provides limited collaboration opportunities with contractors	Provides non-federal jobs	Limited outreach	Near term market demand might be question; sub market is industrial.
168	Michoud	Underutilized Land	Divest	Private Sector	West of Mercury Drive	Divest to outside investors for industrial uses.	Divest portion of land not needed for manufacturing; maintain drainage channel and dock access if necessary.	3	0	0	0	2	5	0	Measurable cost savings for NASA	No net impact	No net impact	No net impact	Political question concerning NASA control.
169	Michoud	Underutilized Land	CoF	NASA	West of Mercury Drive	Invest in new manufacturing facilities	Michoud is organized to manufacture large scale, high quality facilities. As NASA considers next generation technology, centralize the manufacturing operations of all potential technologies at Michoud.	1	3	2	0	1	4	3	Minimal	Additional collaboration through manufacturing collocation	Provides non-federal jobs	Limited outreach	CoF funding is difficult.
146	Langley	Underutilized Land	Space Act	Air Force	Federal Campus	Federal Campus - Increase Air Force presence on NASA side	The Air Force is a growing presence at Langley and may need more space.	2	1	1	0	1	4	1	Cost of maintaining land too low to result in significant impact	Can be synergistic with federal Agency	Might create non-federal jobs but land not returned to tax rolls	Not relevant	Significant fed agency user interest unlikely; not high benefit to NASA.
150	Marshall	Underutilized Land	Divest	Army	Consolidation	Return underutilized area to Army	Marshall has a long term lease with the Army for use of land which may not be needed.	2	0	0	0	2	4	0	Potential cost savings for NASA			No net impact	Political question concerning NASA control.
135	Langley	Underutilized Land	EUL	Private Sector	East Campus - Langley	Air Force Parking	The Air Force needs additional parking on the East campus; EUL to parking company, and charge Air Force for parking to pay capital costs. Land is currently permitted to NASA, so this opportunity may be complex.	1	1	1	1	1	3	2	Creative method for financing needed parking structure; ultimate partner is other federal agency, so EUL payments might be lower than private sector	Might not involve synergistic partner	Modest	Can involve some community participation	Market has strong partner base; deal structure may be complicated; may encounter OMB scoring issues concerning Air Force payment of parking.

6.1 Underutilized Land Opportunities.xls

SORT ORDER: Type | Business | Intangible

ID #	Center	Type	Authority	Partner	Name	Opportunity Name	Potential Strategy	Impact Factors: NASA Financial (F)	NASA Synergistic (S)	Commun Economic (E)	Commun Outreach (O)	Mkt. Reality (R)	Results & Rank: Business (9=max) (F,E,R)	Intangible (6=Max) (S,O)	Financial	Synergistic	Economic	Outreach	Reality
48	Ames	Underutilized Land	Example	Private Sector	NRP	NASA Research Park - New Model for NASA	Ames has a well-thought out research park that has been included in their master plan. Consider increasing NASA's involvement in programmatic planning of NRP to serve NASA's mission needs; consider consolidation of NASA's research activities in the NRP, and attracting universities.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
52	Ames	Underutilized Land	Example	Private Sector	Shenandoah	Historic District	The Shenandoah district of Ames is a historic district. Take advantage of historic district and lease in historic district to tenants who can improve facilities and maintain in case of future use for NASA. Does not have to use EUL structure.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
123	Kennedy	Underutilized Land	Example	SpacePort Florida	ISRP	International Space Research Park (ISRP)	Example of NASA and the State of Florida working together to come up with a business plan for a research park.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
177	Stennis	Underutilized Land	Example	Federal Agency	Federal Campus	Federal Campus	Stennis is the best example of a Center that has attracted other Federal agencies to occupy land and buildings. NASA needs to maintain the buffer zone but doesn't need to occupy much of the land, so the federal campus allows NASA to control the land while decreasing overall management costs.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
179	Stennis	Underutilized Land	Example	Lockheed Martin	Lockheed Martin Building	Lockheed Martin Building/Land	Lockheed Martin, working with the State of Mississippi, has built a facility on NASA land. Good example of bringing outside tenants - in this case also a contractor - that need security onto NASA land; ultimately helps reduce costs to NASA.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
184	Stennis	Underutilized Land	Example	Boeing	Test Stand	Boeing Test Stand - MOU	Boeing currently has a 20 year MOU on one of the test stands; encourage Boeing to increase their presence - potentially adding new facilities through EUL - at Stennis.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				

The information shown here is conceptual and not intended for immediate action. A business plan including all business economics, structures, strategies and risks should be evaluated prior to the execution of any opportunity.

SECTION 6.2 – REAL PROPERTY OPPORTUNITY TYPES: UNDERUTILIZED FACILITIES

OVERVIEW

NASA owns over 5,000 buildings and "other structures and facilities" which total over $7 billion and $19.9 billion in book value and current replacement value (CRV), respectively. Many of these facilities are underutilized or used inefficiently. By pursuing strategies to maximize the use of some of these facilities through enhanced-use leases or reimbursable agreements, NASA can defray some of the cost of operating and maintaining its infrastructure or possibly create revenue that it can use to operate and maintain its facilities. Furthermore, NASA may choose to demolish certain facilities, thereby making additional land available for other uses.

The strategies for opportunities related to underutilized facilities fall into three broad categories: Enhanced-Use Leasing (EUL), Divestment, and Operational. Under each of these broad strategies, a number of different mechanisms may be used in order to accomplish the overall goal. EUL would involve identifying facilities that could be used to house contractors, federal agencies, or universities that would pay rent to occupy the facilities. Divestment would entail situations where NASA does not need to retain ownership of the facilities for future purposes. In these situations, NASA can either divest the facility to the private sector or transfer to another federal agency. Operational opportunities speak to scenarios where NASA could address underutilization of unique facilities such as vacuum chambers, test stands, and wind tunnels by establishing various practices and procedures.

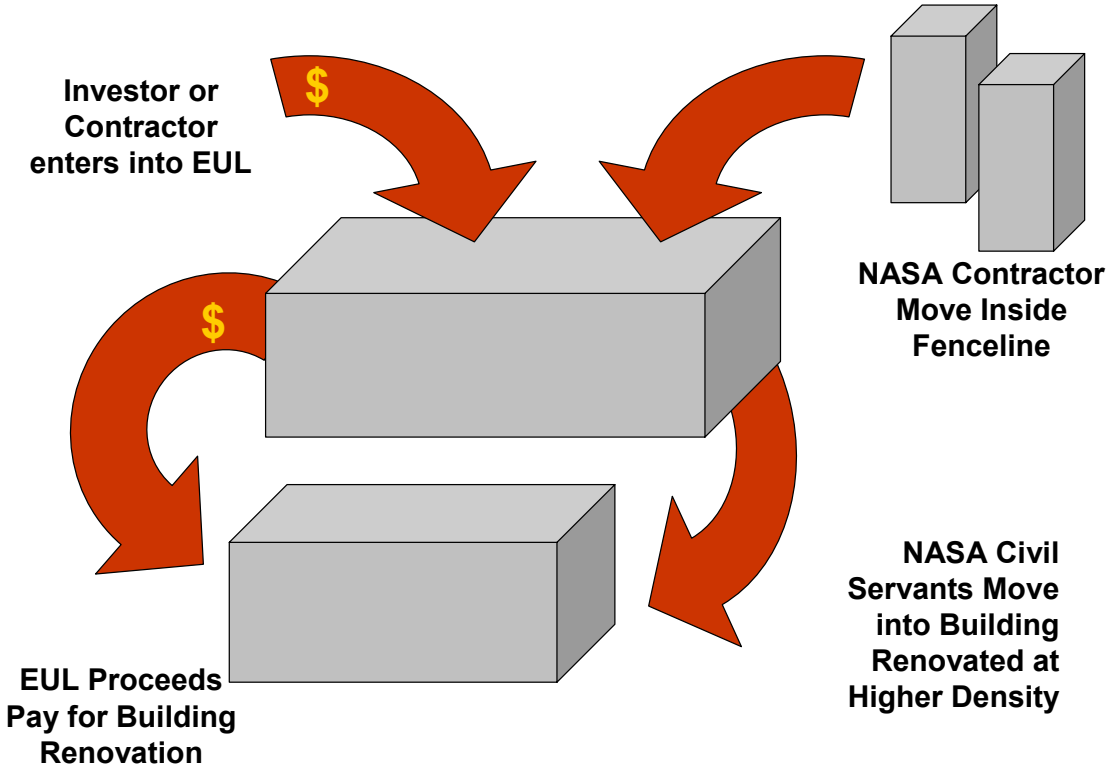
DESCRIPTION AND ANALYSIS OF OPPORTUNITIES AT NASA

EUL FACILITIES TO CONTRACTORS AND/OR UNIVERSITIES

EUL legislation will allow NASA to enter into agreements with third parties that will increase utilization of NASA facilities at two NASA Centers. Many of NASA's contractors are scrutinizing their own facility cost metrics and may be interested in scenarios where they can reduce costs and move closer to the NASA Center where they work. Consequently, NASA could consider marketing efforts to generate interest within the private sector.

At certain Centers, NASA might be able to designate facilities that could be leased by the private sector, including contractors and universities. Using an EUL structure, NASA could lease facilities to the private sector and use the proceeds to renovate or help maintain other facilities. The benefit for contractors is that they would have easier access to Center staff and would be located within a secure environment. Please refer to the graphic on the following page.

ON-CENTER CONTRACTOR ENHANCED USE LEASING



Examples:

Marshall: Boeing is currently occupying a building on the Center for activities that are not associated with NASA. NASA could discuss with Boeing the opportunity for Boeing to increase their space utilization at Marshall. What's more, NASA could discuss with Boeing the opportunity to occupy facilities under an EUL structure.

Michoud: Lockheed Martin is currently located on the Center and is conducting commercial work in a NASA facility. NASA could approach Lockheed Martin about increasing their space utilization at Michoud. This strategy could result in cost reduction or revenue generation (per EUL) at Marshall.

LEASE FACILITIES TO FEDERAL AGENCY

Similar to above, NASA might be able to designate facilities that could be leased by another federal agency. In this situation, however, NASA would only be able to lease facilities to another federal agency at cost to NASA. However, while NASA might not be able to recognize a profit, this strategy might present an opportunity for NASA to reduce costs through reimbursements on the facilities and shared services agreements.

Examples:

> ***Michoud:*** The Department of Agriculture already occupies a good portion of the headquarters building at the Center. NASA could potentially move out of the building and lease the entire headquarters building to the Department of Agriculture on a reimbursable basis.

DIVEST TO PRIVATE SECTOR

Another strategy that can be used to address underutilized facilities would include potentially divesting underutilized facilities to the private sector. In this situation, if NASA knows that it does not have a long term need for facilities, NASA could divest the facilities to the private sector and establish a new fence line for security purposes. If necessary, it is possible that NASA could stipulate the type of uses that could be employed in the new facility. If NASA needed to retain the land for future purposes, then a long-term lease could be structured.

Examples:

> ***Hangar One (Ames)*** – A private group has been formed to consider acquiring or taking over Hangar One at Ames Moffett Field for construction of a "Space World" museum. NASA could pursue the sale of Hangar One to the private group.

HISTORIC DISTRICT LEASING

The National Historic Preservation Act enables federal agencies, including NASA, to direct proceeds created from leasing within an historic district back into the facilities within the historic district. Since the majority of NASA's facilities were constructed in the 1960's, and some prior, NASA could evaluate having more of its facilities designated as historic districts. This strategy, where implemented, could result in historic zones in which NASA could lease facilities to the private sector and use the proceeds to help maintain facilities. This opportunity is more fully discussed in Section 6.3.

MARKET UNDERUTILIZED FACILITIES PER SPACE ACT (BUILDINGS AND STRUCTURES)

The Space Act enables NASA to enter into reimbursable agreements with the private sector or other federal agencies that desire to collaborate with NASA or to use unique NASA facilities such as wind tunnels, test stands, vacuum chambers, and runways. While NASA has some formalized methods for marketing underutilized facilities and structures for reimbursable agreements, more could possibly be done to bolster marketing efforts. Given the cost associated with these unique structures, additional reimbursable agreements would help offset these costs.

Examples:

Centrifuge agreement with NTSB (Goddard) - Goddard has a reimbursable agreement with the National Transportation and Safety Board (NTSB), which uses the centrifuge in testing cars. This arrangement helps reduce the costs to NASA of owning and operating the centrifuge.

Animal Care Facility (Ames) – The animal care facility at Ames is underutilized and only a small portion of the facility is currently used for NASA activities. NASA should consider marketing the facility to the private sector or another government agency.

KEY SUCCESS FACTORS, BIG QUESTIONS, APPROACHES

If NASA decides to pursue these opportunities, the questions that are critical for NASA to consider include:

1. Will NASA need the particular facility in the future?
2. What is the critical nature of the facility now and in the future?
3. Can NASA adequately address security concerns that will arise from bringing the private sector within close proximity of NASA buildings?
4. Is NASA concerned with the political challenges that might arise within the local communities if NASA competes for tenants with local landlords?
5. Does NASA have the resources to establish and monitor management terms that will address utilization and cost saving measures for unique structures?
6. Can NASA establish procedures for a coordinated process to ensure that Enhanced-Use Leases and reimbursable agreements are in NASA's best interests?

6.2 Underutilized Facilities Opportunities.xls

SORT ORDER: Type | Business | Intagible Results

ID #	Center	Type	Authority	Partner	Name	Opportunity Name	Potential Strategy	Impact Factors: NASA Financial (F)	NASA Synergistic (S)	Communi Economic (E)	Communi Outreach (O)	Mkt. Reality (R)	Results & Rank: Business (9=max) (F,E,R)	Intangible (6=Max) (S,O)	Financial	Synergistic	Economic	Outreach	Reality
16	All	Underutilized Facilities	EUL	Private Sector	Marketing - Contractor EUL	Market EUL program to Contractors, encourage creativity	Overall NASA has underutilized land and facilities; Enhanced- Use Leasing (EUL) allows NASA to enter specifically into agreements to increase utilization. Many of NASA's contractors are scrutinizing their own cost / facilities structures, and may be interested in entering into EUL agreement for mutually beneficial cost reductions. Consider actively marketing the EUL program to existing Contractors.	3	3	2	1	3	8	4	Results in increased generation of EUL opportunities	Strengthens collaboration with partners	Can solidify contractors/partners in market and bolster presence, can make it more difficult for new contractors to get work from NASA	No outreach	Marketing program should be easy to develop by NASA.
165	Michoud	Underutilized Facilities	Space Act	Contractors	Marketing	Market facilities	As a GOCO, Michoud has an opportunity to have it's contractor market NASA's facilities. Refine and expand incentives for Lockheed Martin to "market" NASA's underutilized facilities.	2	2	2	2	3	7	4	Can achieve modest cost savings	Brings more partners/contractors onto campus	More contractors /visitors	Can include outreach programs	NASA should easily be able to implement through contract.
186	Wallops	Underutilized Facilities	Space Act	State of Virginia/Virginia Space Port	Launch	Launch Facilities Marketing	Coordinate with VSPA to market use of launch facilities.	3	3	2	1	2	7	4	Ensures facilities are being marketed to full cost savings potential	Shared usage/collaboration with partners	Can bring more users/contractors to marketplace	Can include educational missions	Marketing infrastructure already in place; current collapse of launch market.
23	All	Underutilized Facilities	Operational	NASA	Test Stand	Test Stands	NASA has in place a management board focused on utilization of Test Stands (that also coordinates with other Federal Agencies). Fortify the board's efforts and devise additional ways to determine marketability of underutilized facilities; market for space act agreement; eliminate or consider consolidating or moving to fewer locations.	2	2	2	1	3	7	3	Ensures facilities are being marketed; other countries offer subsidized facilities, may not be able to charge at cost, but will keep facility active	Shared usage/collaboration with partners	Can bring more users/contractors to marketplace	Can include educational missions	Board already in place, expand scope
25	All	Underutilized Facilities	Operational	NASA	Vacuum Chambers	Vacuum Chambers	Vacuum chambers are a unique asset at NASA, but we were told that many were not at full utilization; consider a "Rand-type" study that reviews the chambers that are important to keep, market the chambers for Space Act Agreements, and consider eliminating un-necessary Chambers.	2	2	2	1	3	7	3	Ensures optimization of unique facility portfolio, including cost saving opportunities	Shared usage/collaboration with partners	Can bring more users/contractors to marketplace	Can include local business incubation and educational missions	Commissioning study easy and relatively low cost.
27	All	Underutilized Facilities	Operational	NASA	Wind Tunnels	Wind Tunnels	The Rand study is currently reviewing Wind Tunnels and will have specific recommendations. There appears to be an opportunity to reposition NASA's Wind Tunnel capability through reimbursable agreements, utilization analysis, potential consolidation -- resulting in reduction in costs to maintain infrastructure.	2	2	2	1	3	7	3	Ensures optimization of unique facility portfolio, including cost saving opportunities	Shared usage/collaboration with partners	Can bring more users/contractors to marketplace	Can include local business incubation and educational missions	Study currently in process.

6.2 Underutilized Facilities Opportunities.xls

SORT ORDER: Type | Business | Intagible Results

ID #	Center	Type	Authority	Partner	Name	Opportunity Name	Potential Strategy	Impact Factors: NASA Financial (F)	NASA Synergistic (S)	Communi Economic (E)	Communi Outreach (O)	Mkt. Reality (R)	Results & Rank: Business (9=max) (F,E,R)	Intangible (6=Max) (S,O)	Financial	Synergistic	Economic	Outreach	Reality
6	All	Underutilized Facilities	Operational	NASA	Demolition	Demolition	At many Centers, The Team was told that there are buildings that would be good candidates for demolition, but the Centers would prefer to spend scarce funds on construction or renovation rather than demolition. Commission a study to identify the structures to be demolished including development of an ROI for demolition (cost to maintain VS cost to demolish). Demolition can free land that can be addressed through the master plan.	2	2	2	1	2	6	3	Net cost to implement, qualitative improvement, long term cost savings	Creates better working facilities and atmosphere for partners	Demolition contracts for local construction	Enhances campus for outreach activities	Achievable, but still involves competition for annual funds
10	All	Underutilized Facilities	Operational	NASA	Launch	Launch Facilities	The Team was told that there is an international glut of launch facilities. Determine which launch assets are critical; market for reimbursable agreement, EUL or consider consolidation. Enter into Public Private Partnerships to help market capabilities wherever appropriate (i.e. KSC, Wallops)	2	2	2	1	2	6	3	Cost savings/revenue generation for expensive facilities	Partners/contractors share facilities	Brings more contractors/users to community	Creates minimal educational outreach	NASA can create or outsource for more aggressive marketing and coordination; the market is currently saturated
74	Glenn	Underutilized Facilities	EUL	Private Sector	Adjacent to Runway	Office building next to hangar	Market use of building along the fence near the airport to security-conscious contractors. Lease through EUL.	2	3	2	0	2	6	3	Moderate revenue to NASA	NASA contractors	Adds non-federal jobs	No Outreach	Depends on willingness of contractors.
75	Goddard	Underutilized Facilities	Space Act	Contractors	Centrifuge	Centrifuge - Market	Provide incentives to contractor to actively market centrifuge to outside groups similar to DOT agreement	2	2	1	1	3	6	3	Ensures facilities are being marketed to full cost savings potential	Shared usage/collaboration with partners	Can bring more users/contractors to marketplace	Can include educational missions	Infrastructure already in place, expand scope
197	Wallops	Underutilized Facilities	Space Act	Federal Agency	Training	Training - market as Resort style training	Market use of facilities/land to federal agencies; private sector; consider co-locating with visitor's center.	2	1	3	2	1	6	3	Reduces costs to NASA	Requires NASA share a facility currently dedicated to NASA	Could general new economic activities in a market that needs economic development	Could draw more tourists, offer local education	May not be a strong market to support immediately.
198	Wallops	Underutilized Facilities	EUL	Federal Agency	Training	Training - market as Resort style training	Market use of facilities/land to federal agencies; private sector; consider co-locating with visitor's center.	2	1	3	2	1	6	3	Reduces costs to NASA	Requires NASA share a facility currently dedicated to NASA	Could general new economic activities in a market that needs economic development	Could draw more tourists, offer local education	May not be a strong market to support immediately.
21	All	Underutilized Facilities	Operational	NASA	Runway	Runways	NASA has runways and support facilities at Ames, JSC, Kennedy, Wallops, and has access to runways at Dryden and Glenn. In several cases, the airport operations were not operating at capacity. Determine marketability of underutilized runways; market for space act agreement with public or private entities; eliminate facilities as required.	3	1	1	1	2	6	2	Runways and associated facilities are expensive; costs can be reduced and revenues can be generated through better utilization	Could result in stronger collaboration with partners	Could bring some partners to market, could be negative for markets if runway is eliminated	Limited	Political and community challenges for NASA, but achievable.
192	Wallops	Underutilized Facilities	Space Act	Federal Agency	Runway	Runway - Federal utilization strategies	Increase Navy use; investigate Homeland Security use of runway to increase utilization.	2	1	2	1	2	6	2	modest cost savings potential	Synergistic uses might be possible	Can increase non-federal jobs	Limited outreach capability	Dependent on users.

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22	All	Underutilized Facilities	Operational	NASA	Shared Services	Shared Services Organization - use underutilized space	NASA is considering a shared services organization; consider locating at a Center that has underutilized facilities and availability of staff. Could reduce overall NASA costs, help renovate underutilized facilities.	2	2	1	1	2	5	3	Net cost savings to NASA would be achieved	Bring more partners into NASA community	Net loss to one community, gain to another	Little impact	Difficult to implement and manage.
136	Langley	Underutilized Facilities	EUL	Private Sector	East Campus - Langley	East Campus - EUL Buildings	The East campus is one of the oldest at NASA, but separated from the current main campus. Maintain control of the East Campus (it is current a lease from the Air Force), but enter into EUL agreements with outside groups; utilize revenues to restore the facilities and improve facilities in the main part of the Center.	2	2	2	1	1	5	3	Potential to access private funds to renovate facilities	Potential synergies created by bringing partners/contractors "on-campus"	Can result in increased non-federal jobs within municipality	Limited.	Market for users/partners may be questionable; security issues associated with Air Force limits potential tenants.
147	Marshall	Underutilized Facilities	EUL	Boeing	Boeing Building	Boeing's commercial use of facilities - Expand	Boeing is occupying a building on Center for non-NASA activities. Encourage Boeing to increase the commercial work done on site. Enter into EUL Agreements for facilities to be used. Boeing may be able to consolidate commercial activities done elsewhere (reducing their overall costs) while better utilizing NASA underutilized facilities. Reinvest proceeds at Marshall.	2	2	2	1	1	5	3	Increased cost savings and revenue potential for NASA	Increases contractor/partner presence on campus	Increases non-federal jobs/contractor presence in community	Small positive impact on outreach	Boeing would need to make long term investment at Marshall which may require difficult decisions.
163	Michoud	Underutilized Facilities	EUL	Lockheed Martin	Lockheed Martin Building	Lockheed Martin's commercial use of facilities - Expand	Lockheed Martin is already on site doing commercial work in a NASA facility. Encourage Lockheed Martin to increase the commercial work done on site. Enter into EUL agreements for facility usage. Lockheed Martin may be able to consolidate commercial activities done elsewhere (reducing their overall costs) while better utilizing NASA underutilized facilities. Reinvest proceeds at Michoud.	2	2	2	1	1	5	3	Increased cost savings and revenue potential for NASA	Increases contractor/partner presence on campus	Increases non-federal jobs/contractor presence in community	Small positive impact on outreach	Lockheed Martin would need to make long term investment at Michoud, which may require difficult decisions.
151	Marshall	Underutilized Facilities	Space Act	NASA	IFMP	IFMP for Agency on Center	NASA rents space for the agency-wide activities; consider moving the operations on Center into existing facilities or master planned facilities. Advantages - lowers NASA Overall investment; increase Marshall cost-sharing.	3	2	0	0	2	5	2	NASA can reduce costs by putting long-term needs in owned space	Will bring more people/partners on campus	Net loss; communities lose revenues from leased space	Not relevant	Possibly require program shifts, strong cross-center collaboration.
158	Marshall	Underutilized Facilities	Divest	NASA	Test Stand	Test stands - Move to Stennis	Consider moving the large scale test stands to Stennis.	2	2	1	0	2	5	2	Cost savings through utilization/consolidation	can improve operations/ facilities for contractors	Communities can both gain or lose non-federal jobs/ contractors	No community outreach	Political challenges for NASA.
159	Michoud	Underutilized Facilities	Space Act	Agriculture	Building 350 - HQ	Federal Campus - Lease Headquarters to Department of Agriculture	Department of Agriculture already occupies a good portion of the headquarters; move NASA into other facility and lease the main building to Agriculture on reimbursable basis. Could also be accomplished through EUL, with negligible difference.	2	1	1	1	2	5	2	Helps reduce NASA costs	collaboration increased with Department of Agriculture, but main building would not hold NASA employees which could create confusion	Can expand non-federal jobs in community	Small positive impact on outreach	Depends on Department of Agriculture's desire to expand; could require improvement of facilities.

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ID #	Center	Type	Authority	Partner	Name	Opportunity Name	Potential Strategy	Impact Factors: NASA Financial (F)	NASA Synergistic (S)	Economic (E)	Outreach (O)	Mkt. Reality (R)	Results & Rank: Business (9=max) (F,E,R)	Intangible (6=Max) (S,O)	Financial	Synergistic	Economic	Outreach	Reality
29	Ames	Underutilized Facilities	Space Act	Private Sector	Animal Care	Animal Care Facility - Market	Animal Care Facilities are highly regulated and difficult to manage but a necessary part of some research activities. Therefore, this facility could be considered "unique" within NASA. Provide incentives to the contractor to market to companies who want access to approved, proven animal care facilities.	2	1	1	0	2	5	1	Cost savings for NASA by increased use	Limited synergies, unless similar programs being researched	Limited	No outreach	NASA will have to market facility publicly, and may face scrutiny of Animal Rights groups; potential security concerns (inside fence line
30	Ames	Underutilized Facilities	Divest	NASA	Animal Care	Animal Care Facility - Outsource	The animal care facility appeared to be very underutilized, with only a small portion of the facility conducting research. Consider not doing the research on center; outsource to contractors.	2	0	2	0	1	5	0	Cost savings for NASA increased expense in conducting research	No synergies	Benefit from increased non-federal jobs	No outreach	Potential, but will disrupt any research that needs to be done in close proximity to NASA researchers.
40	Ames	Underutilized Facilities	EUL	Private Sector	Hangars	California Space and Air Center - SpaceWorld	A private group has been formed to consider taking over Hangar One; they intent to renovate hangar and convert to major tourism attraction focused on space, aerospace, etc. EUL to investors.	0	1	2	3	2	4	4	Cost savings and potential income for NASA; payments would probably be spread over time	Little impact on synergies	Brings visitors to community	Positive Outreach	Very unique and expensive building with liability issues, may cost too much to prepare for divestiture.
31	Ames	Underutilized Facilities	EUL	Private Sector	Animal Care	Animal Care Facility - EUL	Animal Care Facilities are highly regulated and difficult to manage but a necessary part of some research activities. Therefore, this facility could be considered "unique" within NASA. Enter into an EUL arrangement with organization that requires an Animal Care facility; turn over facility and operations completely, outsource animal care research activities when NASA requires additional research.	2	1	1	0	1	4	1	Cost savings for NASA by increased use	Limited synergies, unless similar programs being researched	Modest	No outreach	NASA outsources animal testing which could help protect NASA's image; difficult to find EUL partner to take responsibility.
41	Ames	Underutilized Facilities	Divest	Private Sector	Hangars	California Space and Air Center - SpaceWorld	A private group has been formed to consider taking over Hangar One; they intent to renovate Hangar and convert to major tourism attraction focused on space, aerospace, etc. Divest the Hangar and remove NASA's obligation and involvement.	0	1	2	3	1	3	4	Cost savings and potential income for NASA	Little impact on synergies	Brings visitors to community	Positive Outreach	Very unique and expensive building with liability issues, may cost too much to prepare for divestiture.
154	Marshall	Underutilized Facilities	Space Act	Private Sector	NCAM	National Center for Advanced Manufacturing (NCAM)	NCAM operations are research-oriented activities focused on the manufacturing industry. Increase focus on this effort; coordinate with universities and manufacturing associations and corporations to increase reimbursable funding of these activities. Coordinate with Departments of Energy and Commerce to reduce costs.	1	2	1	1	1	3	3	sharing costs reduces NASA's obligation	NASA constantly needs to discover new manufacturing techniques	More emphasis creates opportunities for spin off businesses	Helps local region potential gain new manufacturing expertise	Limited funds available to support research, but potential

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160	Michoud	Underutilized Facilities	Space Act	Private Sector	CAM	National Center for Advanced Manufacturing (CAM)	NCAM operations are research-oriented activities focused on the manufacturing industry. Increase focus on this effort; coordinate with universities and manufacturing associations and corporations to increase reimbursable funding of these activities. Coordinate with Departments of Energy and Commerce to reduce costs.	1	2	1	1	1	3	3	sharing costs reduces NASA's obligation	NASA constantly needs to discover new manufacturing techniques	More emphasis creates opportunities for spin off businesses	helps local region potential gain new manufacturing expertise	limited funds available to support research, but potential
42	Ames	Underutilized Facilities	EUL	Private Sector	Hangars	Hangars 1, 2 & 3	Hangars 1, 2 & 3 are unique historic structures, currently being partially used. Full use of the Hangars, however, require substantial investment in fire suppression systems; Hangar One has environmental contamination challenges. Consider completely documenting the Hangars for historical purposes; solicit interest from the private sector, potentially in conjunction with the air field, and lease through EUL.	1	0	1	0	1	3	0	Reduce NASA costs, obligations	No synergy	Could increase non-federal jobs in demolition contract	No outreach	Political / community challenge in demolition; once demolished they would be irreplaceable in their historic context (could build new ones). NASA could still maintain Hangars - along with fire risk - until a more economical solution is found.
43	Ames	Underutilized Facilities	Divest	NASA	Hangars	Hangars 1, 2 & 3	Hangars 1, 2 & 3 are unique historic structures, currently being partially used. Full use of the Hangars, however, require substantial investment in fire suppression systems; Hangar One has environmental contamination challenges. Consider completely documenting the Hangars for historical purposes; demolish.	1	0	1	0	1	3	0	Reduce NASA costs, obligations; need to; need to incur remediation/ demolition costs.	No synergy	Could increase non-federal jobs in demolition contract	No outreach	Political / community challenge in demolition; once demolished they would be irreplaceable in their historic context (could build new ones). NASA could still maintain Hangars - along with fire risk - until a more economical solution is found.
76	Goddard	Underutilized Facilities	Example	NTSB	Centrifuge	Centrifuge	Goddard has a reimbursable agreement with NTSB to use it's Centrifuge in testing cars. Good example of utilizing federal assets to benefit other federal agencies	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				

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142	Langley	Underutilized Facilities	Example	ODU	ODU	ODU lease	Example of leasing unique facility to private sector in order to keep the facility operational, and reduce overall capital costs for the private sector.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
149	Marshall	Underutilized Facilities	Example	Boeing	Boeing Building	Boeing Building - reimbursable lease of facility	Boeing is leasing a facility, at full reimbursable cost from NASA.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
187	Wallops	Underutilized Facilities	Example	Virginia Space Port	Launch	Launch Facilities	Good example of coordinating with State of Virginia and private sector to help market launch facilities.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				

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SECTION 6.3 – REAL PROPERTY OPPORTUNITY TYPES: FACILITIES AND ASSET MANAGEMENT

OVERVIEW

NASA owns over 5,000 buildings and "other structures and facilities" which total over $7 billion and $19.9 billion in book value and current replacement value (CRV), respectively. While a number of these facilities are unique national and international assets, they are very expensive to maintain and many of them are aging and/or have reached the end of their useful lives. Facilities Management and Asset Management opportunities include strategies that can be employed across multiple centers. These opportunities include the elimination of NASA leased-spaced agency-wide, the creation of historic districts, divesting of underutilized assets, and the establishment of unique infrastructure management plans that will result in CoF cost savings and/or the ability to construct new facilities with minimal or no impact on CoF funding.

DESCRIPTION AND ANALYSIS OF OPPORTUNITIES AT NASA

ELIMINATION OF LEASED SPACE

NASA has the opportunity, using a strategic space planning utilization process, to eliminate leased space across its Centers. In order to eliminate leased space NASA may need to redistribute staff and/or departments across Centers. For example, NASA could potentially alleviate the need to lease space at JPL by distributing staff, and potentially operations, to another Center that could house the employees. The effective space planning that would be required to eliminate leased space across all Centers would require a centralized and coordinated space utilization management program.

CREATION OF HISTORIC DISTRICTS

The National Historic Preservation Act enables federal agencies, including NASA, to direct proceeds created by third parties leasing space within an historic district back into the facilities within the historic district. Since the majority of NASA's facilities were constructed in the 1960's, and some prior, NASA could evaluate having more of its facilities designated as historic districts. This strategy, where implemented, could result in historic zones in which NASA could lease facilities to the private sector and use the proceeds to help maintain other facilities within the historic zone.

Examples:

> ***Carnegie Mellon University (Ames)*** – Ames Research Center includes a district designated as historic per the National Historic Preservation Act. This designation enables Ames to retain any proceeds generated from leasing historic property for two fiscal years and use those proceeds on the maintenance and operations of other historic property. In one example, Ames entered into a lease with Carnegie Mellon University. Per the agreement,

Carnegie Mellon University will lease and renovate a building in the historic district. In this example, both Carnegie Mellon University and NASA benefit from a synergistic presence, while NASA also benefits by having a facility renovated.

ENHANCED USE LEASE – REVENUE CREATION FOR NEW FACILITIES

At certain Centers, NASA might be able to designate facilities that could be leased by the private sector, including contractors and universities. Using an Enhanced-Use Lease (EUL) structure, NASA could lease facilities to the private sector and use the proceeds to construct or renovate new facilities. The benefit for contractors is that they would have easier access to Center staff and would be located within a secure environment. Universities could benefit from close collaboration to NASA scientists and laboratories.

Examples:

Johnson Space Center (JSC) – JSC has many contractors who work on-site or in the office buildings that surround the Center. Although JSC's facilities are at full capacity, space planning and renovation could be employed to create more efficient space utilization. As a result, NASA could potentially vacate a building that could be renovated and leased to contractors. Proceeds from EUL of that building could than be used to renovate other facilities.

Parking Garage at JPL – JPL suffers from a dire lack of parking to accommodate employees and visitors. As a Federally Funded Research and Development Corporation (FFRDC), JPL may represent unique opportunities to enter into EUL arrangements. JPL could pursue opportunities to EUL facilities below Explorer Road or in another location along the fence line. Proceeds from the EUL could be used to construct a parking garage to alleviate the lack of parking

Goddard – The State of Maryland and Prince George's County are focused on increasing research activities, and NASA creates great opportunities for synergy. NASA could potentially consolidate all facilities to the west of Soil Conservation Road and lease the area to the east of Soil Conservation Road. Proceeds derived from the lease of the areas to the east of Soil Conservation Road can be used to pay for new facilities to the west of Soil Conservation Road.

DIVEST TO REDUCE COSTS

In situations where NASA owns and maintains underutilized land and/or facilities and an EUL structure does not appear to be viable, NASA should evaluate different mechanisms for divesting of the land or facilities. Several mechanisms could be deployed in order to divest, including sale to the

private sector, granting the land to another federal agency, or, in cases where NASA leases the land from another federal agency, break the agreement and return the land to that federal agency.

Examples:

Glenn – Glenn has two buildings located outside the main gate to the Center. NASA could potentially divest or lease buildings outside of the fence and use the proceeds to renovate or build additional office space behind the fence.

Dryden – Dryden's land is the subject of a use permit from the Air Force at Edwards Air Force Base. NASA could potentially return the land to the Air Force and rent facilities as needed while still contributing to airport operations. Leasing the necessary facilities could reduce maintenance costs to NASA by shifting the burden to the Air Force.

White Sands Test Stands – NASA owns, operates, and maintains test stands at White Sands that are not fully utilized. NASA could potentially consolidate testing operations at Stennis and reduce its presence at White Sands in order to reduce costs.

"OUTSIDE FENCE" (OUTSOURCING)

NASA currently has facilities maintenance contracts in place at many Centers. NASA could potentially outsource facilities and asset management for office space to private contractors. NASA could potentially create savings on maintenance and management contracts across all Centers by consolidating contracts with fewer vendors. In addition, it should be studied as to whether NASA could enter into more encompassing facilities maintenance contracts that might include capital improvement funding and repairs such as roof replacement.

Using another example, NASA could potentially outsource machine shop operations that it currently pays to operate and maintain. NASA should review strategies for outsourcing on an individual Center and Enterprise-wide basis. Outsourcing could result in strategies to eliminate machine shops inside the fence or using an EUL structure to outsource machine shops within the Center's boundaries. NASA might be able to foster additional cost savings by bundling machine shop outsourcing contracts across all Centers.

MARKETING MANAGEMENT TEAMS

NASA owns many unique facilities that can be regarded as national or international assets; many of the facilities are old and are typically expensive to operate and maintain. NASA should consider establishing cross-Center management boards to manage the costs, operations, and marketing of these unique facilities.

In addition, NASA could incentivize operating contractors to market the use of facilities to the private sector and universities. This could be supported by a fee structure within the contract.

Examples:

Rocket Propulsion Test Management Board – The Rocket Propulsion Test Management Board at Stennis is responsible for marketing the use of its test stands in order to try to help fund the maintenance and operation of these assets.

KEY SUCCESS FACTORS, BIG QUESTIONS, APPROACHES

If NASA decides to pursue these opportunities, the questions that are critical for NASA to consider include:

1. Can NASA deploy a centralized space planning and management process to achieve optimal space utilization and eliminate the need for leased space?
2. Should NASA conduct an Enterprise-wide study to evaluate the locations where it may be beneficial to establish historic districts?
3. Does the establishment of historic districts negate the ability to structure EULs or divest of land?
4. Can NASA logistically bring contractors in close proximity to NASA buildings in order to lease facilities? Can NASA move the security boundaries to exclude a facility that could be leased to contractors?
5. Is NASA willing to consider consolidated contract(s) for maintenance and management of Center facilities? If so, can contracts be established to include capital repair and life cycle replacement programs?
6. Does NASA have the resources to deploy cross-Center management boards to manage the costs, operations, and marketing of unique structures and facilities?

6.3 Facilities and Asset Management Opportunities.xls

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32	Ames	Facilities and Asset Management	EUL	Carnegie Mellon	Carnegie Mellon	Carnegie Mellon University Center - Grow presence, create University Center, structure as EUL	Carnegie Mellon University has an agreement with NASA; their intent is to develop a campus at Ames that can service the west coast. Ames is a high-research Center; Carnegie Mellon is a wealthy university that can make long term investments. Engage in active discussions with them to expand their presence substantially. Structure new leases as EUL - either whole campus or individual facilities. Encourage Carnegie Mellon to incorporate other universities as part of their campus. Could add local campus facilities for MIT, etc.	3	3	3	3	2	8	6	Strong revenue generation potential,	Partner brought on campus, becomes focal point for many different types of research	New user and non-federal jobs brought to community	Provides education opportunities	Universities are inherently risk-adverse and under financial scrutiny; may be over-supply of university centers in the United States.
77	Goddard	Facilities and Asset Management	EUL	State of Maryland, Prince Georges County	East Campus - Goddard	East Campus - EUL - Alternative master plan to finance development	Prince Georges County and the State of Maryland are focused on increasing research activities, and NASA offers great opportunity for synergy. Consider alternative master plan consolidating all facilities west of Soil Conservation Road; EUL east campus to pay for new facilities on west campus while maintaining long-term ownership of the land; potential to turn east into high tech partnering zone; "showcase for county". Don't move Soil Conservation Road. Maintain or move radar stations. EUL new Earth Sciences facilities to "kick start" project.	3	3	3	3	2	8	6	Revenue generation for NASA while preserving land for potential long term growth, phased payments allow for continued improvements to remaining Center	Partners located "on campus" or adjacent to campus	Increases non-federal jobs, brings firms to community, returns land to tax rolls	Can achieve outreach if university, incubator, or think tank involved	Good market, requires willing partners. Requires EUL authority for NASA. Risk is if business plan fails, NASA may take over development role.
182	Stennis	Facilities and Asset Management	Operational	NASA	Test Stand	Test Stand Marketing	Stennis currently markets the use of it's test stands; increase the profile of this effort to try to help fund the maintenance and operation of these national assets.	3	3	2	2	3	8	5	Ensures facilities are being marketed to full cost savings potential	Shared usage/collaboration with partners	Can bring more users/contractors to marketplace	Can include educational missions	Board already in place, expand scope
88	Goddard	Facilities and Asset Management	EUL	Private Sector	Space Science Building	Space Science Building - EUL	The Space Sciences groups are currently in old facilities that inhibit their work. The Goddard Master plan includes a new Space Science Building in the middle of the campus. Consider entering into EUL to support the financing and construction of the new facility. Because of OMB rules, consider designing the building where a portion can be occupied almost completely by Contractors.	3	3	3	0	2	8	3	Allows NASA to have building financed partially by outside financing source	Allows for better working conditions, could brings contractors/partners on campus	Adds non-federal jobs and increases presence of employers	No outreach involved	Market has strong contractor base, current EUL legislation does not allow NASA occupancy.
96	Johnson	Facilities and Asset Management	EUL	Contractors	Renovation by Partnership	Contractor Strategy - EUL Existing Facilities to Contractors	JSC has many contractors that would prefer to be on Center, and although JSC's facilities are at capacity, the facilities could be space-planned and renovated to fit additional capacity. Free up building(s) then EUL to contractors; use EUL proceeds to renovate NASA buildings/facilities to increase their capacity.	3	3	3	0	2	8	3	Allows NASA to have building financed partially by outside financing source	Brings contractors/partners on campus	Adds non-federal jobs and increases presence of employers	No outreach involved	Market has strong partner base; deal structure may be complicated; local developers may not support.

6.3 Facilities and Asset Management Opportunities.xls

SORT ORDER: Type | Business | Intagible Results

ID #	Center	Type	Authority	Partner	Name	Opportunity Name	Potential Strategy	Impact Factors: NASA Financial (F)	NASA Synergistic (S)	Communi Economic (E)	Communi Outreach (O)	Mkt. Reality (R)	Results & Rank: Business (9=max) (F,E,R)	Intangible (6=Max) (S,O)	Financial	Synergistic	Economic	Outreach	Reality
125	Kennedy	Facilities and Asset Management	EUL	Contractors	Renovation by Partnership	Contractor Strategy - EUL Existing Facilities to Contractors	Kennedy has many contractors that could be on Center in office facilities, and although Kennedy's facilities are at capacity, the facilities could be space-planned and renovated to fit additional capacity. Free up building(s) then EUL to contractors; use EUL proceeds to renovate NASA buildings/facilities to increase their capacity.	3	3	3	0	2	8	3	Allows NASA to have building financed partially by outside financing source	Brings contractors/ partners on campus	Adds non-federal jobs and increases presence of contractors	No outreach involved	Market has strong partner base; deal structure may be complicated; works best for office space, not clear of demand; local developers may not support, but less than in comparable urban Centers.
57	Glenn	Facilities and Asset Management	Divest	Private Sector	Bldg 500, 501	Office space outside of Main Gate	Divest buildings and land outside of fence and use proceeds to renovate/build office space inside fence.	3	1	3	0	2	8	1	Strong cash generation	increases security, brings NASA staff closer, could create more efficient facilities	Returns property to community tax rolls	None	Executable, reinvestment of proceeds dependent on divestment strategy; market not strong, but good location.
190	Wallops	Facilities and Asset Management	Outside Fence	Private Sector	Research Park	Research park outside Fence	Wallops has a conceptual plan for a research/contractor park outside of fence; develop a detailed marketing strategy to attract university satellites, or contractors; market to increase payload processing/launch activities.	2	3	3	3	2	7	6	Indirect cost savings if users take advantage of payload processing	Brings contractors/partners close to campus	New non-federal jobs/companies in market	Can result in outreach	Market demand difficult to gauge; market for launch facilities saturated.
78	Goddard	Facilities and Asset Management	Divest	State of Maryland, Prince Georges County	East Campus - Goddard	East Campus - Divest - Alternative master plan to finance development	Prince Georges County and the State of Maryland are focused on increasing research activities, and NASA offers great opportunity for synergy. Consider alternative master plan consolidating all facilities west of soil conservation road; sell east campus to pay for new facilities on west campus; potential to turn east into high tech partnering zone; "showcase for county". Don't move Soil Conservation Road. Maintain or move radar stations. Sell new Earth Sciences facilities to "kick start" project.	3	2	3	2	1	7	4	Significant revenue generation for NASA	Partners located "on campus" or adjacent to campus	Increases non-federal jobs, brings firms to community, returns land to tax rolls	Can achieve outreach if university, incubator, or think tank involved	Good market, requires willing buyers/developers. GSA relocation program, or special legislation would be required to return proceeds to Goddard to allow master plan be implemented.
113	JPL	Facilities and Asset Management	Space Act	Cal Tech	Marketing	Marketing - Stronger pursuit of reimbursable agreements	Create incentives or contract requirements whereby GOCO will more strongly pursue reimbursable agreements.	2	2	2	2	3	7	4	Can achieve modest cost savings	Brings more partners/contractors onto campus	More contractors/visitors	Can include outreach programs	NASA should easily be able to implement through contract.

6.3 Facilities and Asset Management Opportunities.xls

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15	All	Facilities and Asset Management	Space Act	Contractors	Marketing	Marketing - increase incentives and support for marketing unique assets	NASA's operational strategy is to have contractors heavily supporting NASA's activities, and often these contractors help operate major facilities. Provide a coordinated marketing plan and incentives to contractors to encourage them to heavily market NASA's unique assets to public and private organizations as a way of cost reduction.	3	2	2	1	2	7	3	Helps NASA reduce expenses by increasing utilization of unique facilities; reduces costs of mothballing then re-starting facilities	Some potential synergy with users; could increase collaborative efforts	If utilization rises, local economies will benefit through additional activity	Limited, but better awareness of capabilities in community	NASA's facilities are well-known to some organizations that need similar facilities, but the marketing of facilities could increase utilization.
107	JPL	Facilities and Asset Management	EUL	Private Sector	Explorer Road - Below	Explorer Road - EUL area below road	JPL's master plan generally calls for most unique facilities to be above Explorer road. As an FFRDC, JPL may have unique EUL opportunities. Consider a radical EUL concept which leases the land and facilities generally below Explorer Road to investors with JPL being primary tenant. Use proceeds to implement master plan. Investor provides capital for rehabilitation and maintenance of JPL buildings.	3	2	3	0	1	7	2	Potential revenue generation for NASA; investor can access long-term financing for infrastructure improvements, NASA can invest proceeds into unique facilities above Explorer Road	Brings additional contractors/partners on campus	Adds non-federal jobs and increases presence of employers	No outreach involved	Market has strong partner base, including Cal Tech; deal structure and logistics may be complicated.
108	JPL	Facilities and Asset Management	Divest	Private Sector	Explorer Road - Below	Explorer Road - Divest area below road	JPL's master plan generally calls for most unique facilities to be above Explorer road. As an FFRDC, JPL may have unique opportunities for managing real property. Consider a radical Divestment concept which leases the land and facilities generally below Explorer Road to investors with JPL being primary tenant. Use proceeds to implement master plan. Investor provides capital for rehabilitation and maintenance of JPL buildings.	3	2	3	0	1	7	2	Potential revenue generation for NASA; investor can access long-term financing for infrastructure improvements, NASA can invest proceeds into unique facilities above Explorer Road	Brings additional contractors/partners on campus, allows for substantial additional non-NASA work to keep workforce busy	Adds non-federal jobs and increases presence of employers	No outreach involved	Market has strong partner base, including Cal Tech; deal structure and logistics may be complicated. NASA would give up long term ownership.
114	JPL	Facilities and Asset Management	EUL	Private Sector	Parking Garage	Parking Garage - EUL	Ground lease land near fence line but close to the hub of the workforce in order to provide most efficient location for workers; developer/investor would construct Garage through EUL agreement. NASA could "donate" the land and encourage a longer amortization period in exchange for lower parking fees charged to JPL workers (which the developer would need to pay for construction costs and profit).	3	1	2	1	2	7	2	Creative method for financing needed parking structure	Might not involve synergistic partner, but would allow JPL closer access to parking	Adds non-federal jobs and increases presence of employers	Can involve some community participation	Market has strong partner base; deal structure may be complicated.

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6.3 Facilities and Asset Management Opportunities.xls

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ID #	Center	Type	Authority	Partner	Name	Opportunity Name	Potential Strategy	Impact Factors: NASA Financial (F)	NASA Synergistic (S)	Community Economic (E)	Community Outreach (O)	Mkt. Reality (R)	Results & Rank: Business (9=max) F,E,R	Intangible (6=Max) S,O	Financial	Synergistic	Economic	Outreach	Reality
58	Glenn	Facilities and Asset Management	EUL	Private Sector	Bldg 500, 501	Office space outside of Main Gate	The buildings and land outside of fence are next to a major road; keep the facilities in NASA control long term by entering into an EUL to a developer for private sector use. Use proceeds to renovate/build office space inside fence.	2	1	3	0	2	7	1	Strong cash generation	increases security, brings NASA staff closer, could create more efficient facilities	Returns property to community tax rolls	None	Executable, reinvestment of proceeds dependent on divestment strategy; market not strong, but good location.
196	Wallops	Facilities and Asset Management	EUL	Private Sector	Visitors Center	Visitor Center and Summer Space Camp collaboration	Wallops is part of a relatively new Summer Space Camp that has experienced growing success; NASA's Visitor Center is a modest success in the summer, but has access to tourist traffic. Consider negotiating an EUL with partner/investors to build multi-use facilities near the fence in conjunction with a the current or a new Visitors Center. Consider KSC model for re-investment of proceeds into visitor's experience and marketing.	1	1	3	3	2	6	4	Small but positive impact for NASA, could provide creative financing of Visitors Center and reduce required normal investments	Modest creation of synergies	Can boost visitors to area	Positive for community outreach/education	Uncertain about demand, but potential good market dynamics; may be difficult to find investor / partner.
19	All	Facilities and Asset Management	EUL	Contractors	Renovation by Partnership	On-Center office buildings - EUL	NASA's contractors often would prefer to be inside the fence line. Review occupancy of facilities; if facilities have mostly contractor occupants, and if the contractor population is expected to remain steady, consider EUL to contractor or private sector investor of the specific facility, regardless of proximity to fence line.	3	3	1	0	2	6	3	NASA can generate revenue through EUL and reduce required CoF spending	Contractors/Partners are brought "on-campus"	Maintains non-federal jobs in locality but may hurt local development, property taxes	No outreach to community	Achievable at some centers, may call for policy shift.
109	JPL	Facilities and Asset Management	EUL	Cal Tech	Flight Project Center	Flight Project Center - EUL	Since JPL is an FFRDC and few if any NASA Civil Servants will occupy the facility, consider entering into an EUL agreement with outside investor to build the facility and lease it back to Cal Tech.	2	3	2	0	2	6	3	Utilize private sector funding, potential revenue Generation for NASA	Allows better facility than current	Potentially adds non-federal jobs and increases presence of employers	No outreach involved	Market has strong partner base; deal structure may be complicated. Since JPL is an FFRDC, few NASA occupancy issues related to EUL.
161	Michoud	Facilities and Asset Management	EUL	Lockheed Martin	GOCO	Lease Michoud to Lockheed Martin	Lockheed Martin has a long history as NASA's primary contractor at Michoud. As a GOCO, NASA could potentially enter into a EUL for all of the facilities without being subject to NASA occupancy rules in the EUL legislation. Consider entering into an EUL agreement with Lockheed Martin to allow them to take over full responsibility for all real property. Lockheed Martin could access long-term financing to improve the facilities as part of the EUL agreement.	2	3	2	0	2	6	3	Can save money for NASA although contractor costs might increase	Increases collaboration with partner	Enhances private employer in market, no net loss of non-federal jobs	No outreach involved	Political challenges for NASA; question of cost benefit analysis.

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6.3 Facilities and Asset Management Opportunities.xls

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26	All	Facilities and Asset Management	Operational	Public Private Partnership	Visitors Center	Visitor Center - National Contract	In NASA role of inspiring the future explorers, Visitor's Centers are important but generally considered cost-centers. Consider establishing cross-Center Visitor Center contracts with contractors to gain more visibility and share economies of scale. Potentially locate in high-profile locations, not necessarily next to Centers.	2	0	2	2	2	6	2	Financial returns from visitors centers can be improved by single-sourcing management and operations and locating in strategic areas.	No benefit to synergistic relationships	Community can benefit from increased visitor traffic	Benefits community outreach/education	Achievable, but NASA would need to make sure most Centers benefit - difficult to find contractor who will take a loss in one location and profits in another.
73	Glenn	Facilities and Asset Management	Outside Fence	Private Sector	Visitors Center	Visitors Center re-located to outside fence - Outsource	Outsource Visitor's Center activities. Locate Visitor's Center to a more accessible location, or even to downtown Cleveland where it might get more visitor traffic, freeing up needed space.	2	0	2	2	2	6	2	Financial returns from visitors centers can be improved by sole-sourcing management and operations and locating in strategic areas.	No benefit to synergistic relationships	Community can benefit from increased visitor traffic	Benefits community outreach/education	Achievable, but dependent on willingness of contractor.
80	Goddard	Facilities and Asset Management	EUL	Private Sector	Mod C	Mod C Consolidation - EUL	Mod C is a logistics consolidation project that will help Goddard better conduct that operation. Consider outsourcing some of the logistics activities and having private sector build the facilities to house the activities on NASA land near the fence through EUL.	2	1	2	1	2	6	2	EUL offers NASA opportunity for increased revenues; outsourcing could potentially reduce some costs	Not as good as controlling logistics completely, but could be private sector efficiencies	Investment in non-federal jobs	Limited	Potential, but requires NASA operational change; could be security risk.
90	Goddard	Facilities and Asset Management	Outside Fence	Private Sector	Visitors Center	Visitors Center, Space Camp - Outsource	Goddard is reviewing proposals for Visitor Center and potential Space Camp activities. Currently Goddard maintains its own Visitor Center; consider completely outsourcing activities similar to Marshall; maintain only "exhibit" input and "Brand" control.	2	0	2	2	2	6	2	Net cost savings to NASA	No benefit to synergistic relationships	Community can benefit from increased visitor traffic	Benefits community outreach/education	Achievable, but dependent on willingness of contractor.
12	All	Facilities and Asset Management	Operational	NASA	Management	Real Property Management Group	NASA operates in a decentralized management structure; NASA's real estate in almost all locations is in the midst of change due to it's age and condition. Not all Center's have the real estate expertise required to implement complex real estate projects. Consider strengthening NASA's HQ real estate group's ability to manage real estate expertise to each Center's activities. This effort is particularly acute for regulatory issues including EUL and Space Act agreements.	3	0	0	0	3	6	0	NASA can create significant savings through more coordinated control over space utilization, prioritization of CoF funding, EUL opportunities, etc.	Limited	Limited	Limited	Increased centralization of facilities and real estate management should be achievable.

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6.3 Facilities and Asset Management Opportunities.xls

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ID #	Center	Type	Authority	Partner	Name	Opportunity Name	Potential Strategy	Impact Factors: NASA Financial (F)	NASA Synergistic (S)	Communi Economic (E)	Communi Outreach (O)	Mkt. Reality (R)	Results & Rank: Business (9=max) (F,E,R)	Intangible (6=Max) (S,O)	Financial	Synergistic	Economic	Outreach	Reality
20	All	Facilities and Asset Management	Operational	NASA	Renovation by Replacement	Renovation by Replacement	Since NASA is nearly 50 years old, many facilities have reached the end of their useful lives. Establish clear policy on replacing facilities that have reached their useful lives; determine "pay back" period and criteria to justify investment return; consider 10 year program to replace outdated facilities.	2	0	2	0	2	6	0	Can save money as repair and maintenance costs surpass annual cost amortization of new facilities	No relative	Construction contracts can benefit community	Not relative	Achievable, but dependent on funding and policy change for NASA.
115	JPL	Facilities and Asset Management	Outside Fence	Private Sector	Parking Garage	Parking Garage - Off Site	Identify neighboring site; have private developer construct garage.	2	0	2	0	2	6	0	NASA does not have to provide funding for construction, but might be required to subsidize additional costs for employee parking	No special synergies involved	Tax revenue for community	No outreach involved	Issue of NASA employees paying for parking, or have employees bear the burden of additional costs.
156	Marshall	Facilities and Asset Management	Operational	NASA	Renovation by Replacement	Renovation by Replacement	Since NASA is nearly 50 years old, many facilities have reached the end of their useful lives. Establish clear policy on replacing facilities that have reached their useful lives; determine "pay back" period and criteria to justify investment return; consider 10 year program to replace outdated facilities.	2	0	2	0	2	6	0	Can save money as repair and maintenance costs surpass annual cost amortization of new facilities	No relative	Construction contracts can benefit community	Not relative	Achievable, but dependent on funding and policy change for NASA.
195	Wallops	Facilities and Asset Management	EUL	Private Sector	Visitors Center	Visitors Center / Resort - EUL on NASA land near the Fence	Wallops has a major training facility for NASA. In conjunction with local government and other partners to combine Visitors Center, Space Camp and Resort as an EUL on NASA land near the fence; construct new high-end resort utilizing runway for major visitors. Wallops is near high tourist area in summer; training facility provides stability needed by seasonal business.	2	2	1	3	2	5	5	Measurable revenue generation opportunity	Collaboration with a variety of partners	Enhances tourism/visitors to area	Will foster educational/community outreach	Questionable economic feasibility for partners; resorts are historically difficult to manage; risk for NASA if the venture fails.
92	Johnson	Facilities and Asset Management	EUL	NSBRI	Bioastronautics	Bioastronautics - EUL	JSC needs new facilities to conduct research and provide better Astronaut services. Consider EUL structure to finance and build the facility on the Center, near the fence line for separate access to outside. May be difficult with OMB Scoring rules prohibiting NASA occupancy of EUL; may be structured in conjunction with outsourcing of Bioastronautics activities.	2	3	2	1	1	5	4	Helps construct a needed facility for NASA using private sector funds; potential Revenue Generation for NASA	Brings contractors/partners on campus	Adds non-federal jobs and increases presence of employers	Potential outreach involved	Market has strong partner base; current legislation does not allow NASA occupancy.

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9	All	Facilities and Asset Management	Historic Preservation Act	NASA	Historic Review	Historic review - Historic Districts and Building-by-Building	Conduct an agency-wide historic review to determine 1)potential for Ames-type historic districts with private sector, and 2)determine strategy for specific buildings and 3)review for consistency with the Executive Order governing historic structures.	2	3	1	0	2	5	3	NASA can reinvest proceeds of leases into facilities, thereby renovating the facilities at little net cost to NASA; helps reduce CoF requirements, but not substantial financial gain	Helps NASA maintain it's important heritage facilities for future generations; potential synergies created by bringing partners/contractors "on-campus"	Can result in increased non-federal jobs within municipality	Limited outreach	This opportunity calls for a study of the potential; the study is straightforward, the potential for multiple income-generating opportunities is less likely.
18	All	Facilities and Asset Management	Operational	NASA	Real Property Strategy	Master plans and Economic Phasing	NASA's Centers have completed Master Plans for their facilities for many years; many of the older plans focused on describing existing conditions while some of the newer plans focus on guiding development in the future. Some of the Centers have current Master Plans, and others are more dated. The Master Plans help inform long-term decisions about investment and cost reduction opportunities, ultimately allowing NASA to make strategic investment decisions. Consider establishing a consistent process and system for developing center-specific and cross-center master plans that encompass Center, Enterprise and Real Estate goals.	2	3	0	0	3	5	3	Correlating real estate strategy to a master plan can help achieve savings over the long term in that it optimizes space utilization. One detriment, however, might be that NASA may not be able to adhere to the plans, given budget constraints	Should increase Center efficiency	Limited, but may incorporate local needs	Limited, but may incorporate local needs	Establishment of a coordinated master planning strategy should be achievable.
3	All	Facilities and Asset Management	Operational	NASA	Consolidation	Divest NASA leased space agency-wide	Review NASA leased space agency-wide to determine if the leased operations can be moved to a Center that can accommodate the space and requirements. Space planning and utilization can help reduce leased space.	3	2	0	0	2	5	2	NASA can reduce costs by implementing enterprise wide space utilization	Will bring more people/partners on campus	Net loss; communities lose leased space	Not relevant	Possibly require program shifts, strong cross-center collaboration.
13	All	Facilities and Asset Management	Operational	NASA	Management	Unique Infrastructure Management Plans	NASA has several types of unique facilities which are national or international assets; many of the facilities are old, and often they are very expensive to maintain and operate. Consider establishing cross-Center management boards, like the Test Stand Board, for all major infrastructure assets. To help insure NASA costs are to a realistic level managed.	2	2	1	0	2	5	2	Helps NASA reduce expenses by increasing utilization of unique facilities.	Some potential synergy with users	Little economic benefit to community if users stay in hotels, etc.	No community outreach	Achievable, but not easy to implement in decentralized organization.
81	Goddard	Facilities and Asset Management	Outside Fence	Private Sector	Mod C	Mod C Consolidation - Outsourcing	Consider outsourcing as many logistics operations outside the fence, removing NASA's obligation to manage the process and provide the service.	2	1	2	1	1	5	2	Potentially reduce operations costs	Not as good as controlling logistics but could offer efficiencies	Non-federal jobs in the local economy	Modest	Requires change in operations

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145	Langley	Facilities and Asset Management	Space Act	Air Force	Shared Cost	Federal Campus - Joint facilities management contract	Negotiate a facilities management contract with the Air Force - similar to the JBOSC contract at KSC to share and reduce overall facilities costs.	2	2	0	0	3	5	2	modest cost savings on services	Calls for close collaboration	No net impact on community	Involves no outreach	Easy to implement for NASA, depends on willingness of Air Force.
157	Marshall	Facilities and Asset Management	Space Act	Army	Shared Cost	Federal Campus - NASA / Army shared services agreement	Develop JBOSC type agreement with Army to reduce expenses.	2	2	0	0	3	5	2	modest cost savings on services	Calls for close collaboration	No net impact on community	Involves no outreach	Easy to implement for NASA, depends on willingness of Army.
202	White Sands	Facilities and Asset Management	Divest	NASA	Test Stand	Test stands - Move to Stennis	Consider moving the large scale test stands to Stennis.	2	2	1	0	2	5	2	Cost savings through utilization/consolidation	Can improve operations/ facilities for contractors	Communities can both gain or lose non-federal jobs/ contractors	No community outreach	Political challenges for NASA.
14	All	Facilities and Asset Management	Operational	Private Sector	Management	Outsourcing - Office Space Creative strategy	Turn over complete facilities and asset management responsibilities for office space to private contractors. Facilities management contracts are in place at many centers (i.e. JSC, KSC), but currently focus on maintenance. Establish more encompassing contracts that include items normally covered in some discrete and minor CoF funding items.	3	1	1	0	1	5	1	If achievable, can reduce CoF funding and enhance condition of facilities. Single-sourcing contracts can also reduce overall management costs.	Potentially a better work environment	No economic impact on community	No community outreach	Achievable; but difficult gaining contracting authority and OMB scoring; potential to include capital repairs and replacement is questionable.
11	All	Facilities and Asset Management	Operational	Private Sector	Machine Shops	Outsource Machine Shops	NASA needs machine shops which NASA pays to operate and maintain; review strategies for outsourcing by Center and cross-center (few or multiple outsourcing contracts). Strategies could include eliminating machine shops inside the fence, or forming EUL of on-Center machine shops. There could be potential cost savings by bundling machine shop contracts cross-Center.	2	0	1	0	2	5	0	Can save money but might not be considered high impact	No relative	Provides some positive impact to local vendor firms	Not relative	Study is Achievable, but success of outsourcing is highly dependent on willing contractors.
152	Marshall	Facilities and Asset Management	EUL	Private Sector	Machine Shops	Outsource Machine Shops - ON Center	NASA needs machine shops which NASA pays to operate and maintain; consider eliminating offering the machine shops to outside vendors through EUL, allowing them to perform work for NASA and other clients.	2	0	2	0	1	5	0	Can save money, probably not substantial revenues; could provide creative financing to for expensive equipment	Limited additional benefit	Provides some positive impact to local vendor firms	Limited additional benefit	Achievable, but dependent on willing contractors who would need to follow security guidelines; may be difficult to attract workforce; NASA may have liability with non-NASA work done on NASA real property.

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153	Marshall	Facilities and Asset Management	Divest	Private Sector	Machine Shops	Outsource Machine Shops - OFF Center	NASA needs machine shops which NASA pays to operate and maintain; consider eliminating machine shops on Center; outsource to local machine shop contractors; purchase goods on a competitive basis from the local marketplace.	2	0	1	0	2	5	0	Can save money but might not be considered high impact	Not relative	Provides some positive impact to local vendor firms	Not relative	Achievable, but dependent on willing contractors.
185	Wallops	Facilities and Asset Management	Divest	Private Sector	Consolidation	Center Consolidation - Wallops move to Launch Facilities	NASA has two locations at Wallops - the launch area, and the main campus. Consider divesting the main campus and use the revenues to consolidate into new operations at the Launch location.	3	0	2	0	0	5	0	Cost saving opportunity through consolidation	Only involves synergy if land divested to partner	Brings more firms/employees to community, but community is economically challenged	No outreach	Low demand could render unfeasible; doesn't currently provide much benefit for the cost of the consolidation.
93	Johnson	Facilities and Asset Management	Outside Fence	Private Sector	Bioastronautics	Bioastronautics - Outsource	JSC needs new facilities to conduct research and provide better Astronaut services. Consider entering into long-term agreement with NSBRI or other entity to finance and build the facility. NASA would lease a portion of the facility as needed (similar to KSC's SERPL)	1	1	3	3	0	4	4	Net reduction in NASA's expense compared to CoF; NASA would pay to lease space and may run into OMB Scoring issues	Provided better facility, but not as good as being on Center - difficult for Astronaut-specific issues	Good for generating outside non-federal jobs	Good education	Difficult to accomplish.
66	Glenn	Facilities and Asset Management	Historic Preservation Act	Private Sector	Real Property Development Strategy	Historic District	Consider designating Glenn as a historic district, similar to the Shenandoah District at Ames. Wherever possible, lease facilities to the private sector to help renovation of the facilities. The net result is a reduction of CoF funds that need to be spent on the facilities and lower future occupancy costs.	2	3	1	0	1	4	3	NASA can reinvest proceeds of leases into facilities, thereby renovating the facilities at little net cost to NASA; helps reduce CoF requirements, but not substantial financial gain	Helps NASA maintain it's important heritage facilities for future generations; potential synergies created by bringing partners/contractors "on-campus"	Can result in increased non-federal jobs within municipality	Limited outreach	Viable, but dependent on market for tenants/users. Most likely location is near the Runway.
117	JPL	Facilities and Asset Management	Historic Preservation Act	Private Sector	Real Property Development Strategy	Historic District	Consider designating JPL, or portions of JPL as a historic district, similar to the Shenandoah District at Ames. Wherever possible, lease facilities to the private sector to help renovation of the facilities. The net result is a reduction of CoF funds that need to be spent on the facilities and lower future occupancy costs.	2	3	1	0	1	4	3	NASA can reinvest proceeds of leases into facilities, thereby renovating the facilities at little net cost to NASA; helps reduce CoF requirements, but not substantial financial gain	Helps NASA maintain it's important heritage facilities for future generations; potential synergies created by bringing partners/contractors "on-campus"	Can result in increased non-federal jobs within municipality	Limited outreach	Viable, but dependent on market for tenants/users.

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6.3 Facilities and Asset Management Opportunities.xls

SORT ORDER: Type | Business | Intagible Results

ID #	Center	Type	Authority	Partner	Name	Opportunity Name	Potential Strategy	Impact Factors: NASA Financial (F)	NASA Synergistic (S)	Communi Economic (E)	Communi Outreach (O)	Mkt. Reality (R)	Results & Rank: Business (9=max) (F,E,R)	Intangible (6=Max) (S,O)	Financial	Synergistic	Economic	Outreach	Reality
138	Langley	Facilities and Asset Management	Historic Preservation Act	Private Sector	East Campus - Langley	East Campus - Historic District	Consider designating Langley's East Campus as a historic district, similar to the Shenandoah District at Ames. Wherever possible, lease facilities to the private sector to help renovation of the facilities. The net result is a reduction of CoF funds that need to be spent on the facilities and lower future occupancy costs.	2	3	1	0	1	4	3	NASA can reinvest proceeds of leases into facilities, thereby renovating the facilities at little net cost to NASA; helps reduce CoF requirements, but not substantial financial gain	Helps NASA maintain it's important heritage facilities for future generations; potential synergies created by bringing partners/contractors "on-campus"	Can result in increased non-federal jobs within municipality	Limited outreach	Viable, but dependent on market for tenants/users; may be difficult to attract suitable tenants into high security area.
155	Marshall	Facilities and Asset Management	Divest	NSSTC	NSSTC	NSSTC, reduce support	NSSTC is a unique organization that is associated with NASA. NASA leases space occupied by NASA employees at cost since NASA paid for larger portion of the construction cost to eliminate real estate responsibility.	1	0	1	1	2	4	1	Can save money but might not be considered high impact	Reduces synergy with NASA	Provides some positive impact to local firms	Reach out to community for support	Achievable, but dependent on willing contractors.
175	Stennis	Facilities and Asset Management	Space Act	Army	Army Lease	Army lease - Keep lease - negotiate shared management expenses	Army Land Lease - The Army has a long term lease from NASA in the middle of Stennis; let Army keep the lease, set up management for all of Stennis run by NASA, charge Army for services.	2	1	0	0	2	4	1	Helps reduce overall shared costs; Allows NASA to no incur business risk associated with Canceling lease	Could allow for additional services to be offered to NASA	No net impact	No net impact	Potential to keep lease and increase expense sharing; additional risk is that Army may cancel lease in BRAC round.
194	Wallops	Facilities and Asset Management	Outside Fence	Private Sector	Training	Training Co-locate off-site - Outsource	There are many training / conference facilities available. Consider moving training activities off site (rent as needed) and reduce the facilities specifically associated with Training.	1	0	1	0	2	4	0	Reduction in costs to Wallops but may increase costs to NASA depending upon frequency of renting outside facilities	No synergies	Help other locations, hurt area around Wallops	No benefit	Could happen quickly if necessary.
24	All	Facilities and Asset Management	Operational	NASA	Trailers	Temporary Facilities and Trailers	Eliminate expansion-based trailers that ultimately become long-term housing solutions . Consider 1)consolidation-driven renovations of facilities, 2)inexpensive metal buildings or alternative longer-term temporary housing or 3)mission re-alignment that reduces need 4) Balancing space needs across center.	2	3	0	0	1	3	3	Can save money as repair and maintenance costs surpass annual cost amortization of new facilities	Provide better, more efficient work place	No impact	No impact	Achievable, but dependent on funding and policy change for NASA.

6.3 Facilities and Asset Management Opportunities.xls

SORT ORDER: Type | Business | Intagible Results

ID #	Center	Type	Authority	Partner	Name	Opportunity Name	Potential Strategy	Impact Factors: NASA Financial (F)	NASA Synergistic (S)	Communi Economic (E)	Communi Outreach (O)	Mkt. Reality (R)	Results & Rank: Business (9=max) F,E,R	Intangible (6=Max) S,O	Financial	Synergistic	Economic	Outreach	Reality
72	Glenn	Facilities and Asset Management	EUL	Private Sector	Swing Space	Swing Space	Glenn is located on a very dense campus and has minimal room for expansion although a majority of the occupants are contractors. Subsequently, as new facilities need renovation, there is a dearth of swing space. Enter into EUL to have simple "swing space" facility built near the fence line that can be occupied by contractors.	1	2	1	1	1	3	3	Costly but could help reduce current churn expenses	Helps NASA keep productive while renovating facilities	Investment in community, but small	Potential for outside companies when NASA not needed	Difficult agreement to structure; hard to finance unknown occupancy requirement.
89	Goddard	Facilities and Asset Management	CoF	Private Sector	Space Science Building	Space Science Building - CoF	The Space Sciences groups are currently in old facilities that inhibit their work. The Goddard Master plan includes a new Space Science Building. Pursue normal CoF funding.	1	3	1	0	1	3	3	Requires continued competition for limited funding	Creates efficiencies, currently in old inefficient buildings	Minimal economic impact to community	No outreach to community	Limited funding hurts expediency.
143	Langley	Facilities and Asset Management	EUL	Contractors	Swing Space	Swing Space	Langley has no room for expansion on their western campus, although a majority of the occupants are contractors. Subsequently, as new facilities need renovation, there is a dearth of swing space. Enter into EUL to have simple "swing space" facility built near the fence line at the back gate that can be occupied by contractors.	1	2	1	1	1	3	3	Costly but could help reduce current churn expenses	Helps NASA keep productive while renovating facilities	Investment in community, but small	Potential for outside companies when NASA not needed	Difficult agreement to structure; hard to finance unknown occupancy requirement.
82	Goddard	Facilities and Asset Management	CoF	NASA	Mod C	Mod C Consolidation - CoF	Mod C is a logistics consolidation project that will help Goddard better conduct that operation. Proceed through the normal CoF process.	1	2	1	0	1	3	2	Requires continued competition for limited funding	Creates efficiencies	Minimal economic impact to community	No outreach to community	Limited funding hurts expediency.
94	Johnson	Facilities and Asset Management	CoF	NASA	Bioastronautics	Bioastronautics - CoF process	JSC needs new facilities to conduct research and provide better Astronaut services. Proceed with normal CoF funding cycle.	1	2	1	0	1	3	2	Requires continued competition for limited funding	Would provide operational efficiencies	Minimal economic impact to community	No outreach to community	Limited funding hurts expediency.
110	JPL	Facilities and Asset Management	CoF	Cal Tech	Flight Project Center	Flight Project Center - CoF	The Flight Project Center is a facility that would improve JPL's operational efficiency. As currently planned, continue to build the facility as a CoF project.	1	2	1	0	1	3	2	Requires continued competition for limited funding	Would provide operational efficiencies	Minimal economic impact to community	No outreach to community	Limited funding hurts expediency.
116	JPL	Facilities and Asset Management	CoF	NASA	Parking Garage	Parking Garage - CoF	JPL has a shortage of parking. Use NASA CoF funding to construct structured parking on-site.	1	1	1	0	1	3	1	Requires continued competition for limited funding	Would provide operational efficiencies by putting parking closer to worker buildings	Minimal economic impact to community	No outreach to community	Limited funding hurts expediency.
200	White Sands	Facilities and Asset Management	Divest	Army	Consolidation	Return to Army, rent facilities as needed	NASA leases the land from the Army. Maintain critical operations, but substantially reduce presence at White Sands to reduce costs.	2	0	0	0	1	3	0	Measurable cost savings	Not relevant to synergies	Possible reduction of non-federal jobs	No impact on outreach	Political challenge for NASA.
53	Dryden	Facilities and Asset Management	Divest	Air Force	Consolidation Dryden	Return to Air Force, rent facilities as needed	NASA has a land-use permit for the land with the Air Force Flight Test Center. Maintain airport operations, but substantially reduce presence at Dryden to reduce costs.	1	1	0	0	1	2	1	Moderate cost savings potential	Synergies only with Air Force	No net benefit to community	No outreach	No substantial motive for NASA

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34	Ames	Facilities and Asset Management	Example	Carnegie Mellon	Carnegie Mellon	Carnegie Mellon - renovation of facility	Ames has entered into a long-term agreement with Carnegie Mellon (who is also a NASA contractor) to renovate and lease a facility in the historic district. This is an example of using a relationship to develop mutual synergies and ultimately provide NASA with a renovated facility.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
49	Ames	Facilities and Asset Management	Example	NASA	Real Property Strategy	Master Plan	The Center has a well thought out EIS which will be supported by a master plan - that will allows it to be prepared to address its future proactively.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
55	Dryden	Facilities and Asset Management	Example	Air Force	Shared Cost	Federal Campus - Cost sharing alliance	Good example of cooperating with resident federal agencies in cost reduction.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
56	Glenn	Facilities and Asset Management	Example	City of Cleveland	Airport	Airport Extension	Example of how NASA entered into a negotiation with the City of Cleveland to achieve mutual goals.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
61	Glenn	Facilities and Asset Management	Example	OAI	OAI	OAI building on NASA land	Example of how NASA could use PPP structure to develop shared state of the art facilities.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
87	Goddard	Facilities and Asset Management	Example	NASA	Real Property Strategy	Master Plan	The Center has a well thought out master plan that will allows it to be prepared to address its future proactively.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
98	Johnson	Facilities and Asset Management	Example	SpacePort Florida	Saturn 5 hangar	Saturn 5 hangar	Space Port Florida helped provide an enclosure for a Saturn 5 rocket as part of it's visitor center experience. Example of using PPP to share capital costs in order to construct unique facilities.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
105	Johnson	Facilities and Asset Management	Example	MSFEFI	Space Center Houston	Space Center Houston	Example of outsourcing visitor center activities in site adjacent to Center in collaboration with local community. Allows NASA to concentrate on core competencies, and allows Visitor Center activities to remain fresh to the public.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
111	JPL	Facilities and Asset Management	Example	Private Sector	Flight Project Center	Flight Project Center - enhancing mission operations	JPL has a master plan to include a flight project center which will substantially improve it's operations. This is an example of how strategic facility planning can help improve mission capabilities, and potentially reduce long term tangible and intangible costs.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
118	JPL	Facilities and Asset Management	Example	NASA	Real Property Strategy	Master Plan	Although not complete, the Center has a well thought out master plan that will allows it to be prepared to address its future proactively.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
124	Kennedy	Facilities and Asset Management	Example	NASA	Real Property Strategy	Master Plan	The Center has a well thought out master plan that will allows it to be prepared to address its future proactively.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				

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126	Kennedy	Facilities and Asset Management	Example	SpacePort Florida	Saturn 5 hangar	Saturn 5 hangar	Space Port Florida helped provide an enclosure for a Saturn 5 rocket as part of it's visitor center experience. Example of using PPP to share capital costs in order to construct unique facilities.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
129	Kennedy	Facilities and Asset Management	Example	SpacePort Florida	SERPL	SERPL	NASA and Space Port Florida entered into a development agreement; NASA leased the Land to SPF and provided the facility design; SPF provided the construction and landlord responsibilities. NASA's contractor will lease space in the facility. Example of using PPP structure to share capital costs of obtaining state of the art facilities/labs for contractor.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
130	Kennedy	Facilities and Asset Management	Example	Air Force	Shared Cost	Federal Campus - Cost sharing - JBOSC Contract	JBOSC contract is a good example of working with other major federal agencies to reduce overall facilities maintenance costs.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
132	Kennedy	Facilities and Asset Management	Example	Delaware North	Visitors Center	Visitor Center	Example of complete outsourcing of visitor center experience; structuring profit agreement to allow profits to be put back into NASA (for public-oriented uses).	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
189	Wallops	Facilities and Asset Management	Example	NASA	Real Property Strategy	Master Plan	Although not complete, the Center has a well thought out master plan that will allows it to be prepared to address its future proactively.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				

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SECTION 6.4 – REAL PROPERTY OPPORTUNITY TYPES: MISSION OR PROGRAM STRATEGY

OVERVIEW

Real property is primarily a support function to NASA's operations and strategies. In order for Real Property to be a strategic asset – and not a liability – it needs to be aligned with the overall organization's strategy. The term "mission clarification" refers to areas where a Real Property strategy is highly dependent on clarifying the overall mission of the Center or NASA.

NASA owns and operates numerous facilities that are exorbitantly expensive to maintain. Some of these facilities are duplicative across multiple Centers, performing the same or very similar functions. By reviewing from an Agency-wide perspective the opportunity to streamline overall operations and reduce potential duplications and/or inefficiencies across Centers, NASA may have the opportunity to reduce its infrastructure, thereby reducing its costs.

DESCRIPTION AND ANALYSIS OF OPPORTUNITIES AT NASA

MISSION CLARIFICATION –AGENCY ACTIVITIES

During the team's visits to NASA Centers, it became apparent that duplication exists across NASA Centers for both current and future planned activities. This duplication of Center activities appears to result in inefficient real property and space utilization across the Agency. Clarifying each Center's missions and correlating those missions with a strategic Real Property plan can result in significant cost savings.

As an example, several Centers consider biotechnology as a future program mission. As a result, multiple Centers could vie for expensive laboratory research and development space. If NASA could focus its future efforts in biotechnology in one or two Centers, it could significantly reduce space utilization costs in the future. Programmatically, this might also help NASA achieve its goals in a particular area by consolidating expertise into one or two Centers.

MISSION CLARIFICATION – LOGISTICS/MANUFACTURING

This opportunity mainly relates to NASA manufacturing operations at the Michoud Facility. Currently, NASA manufactures external tanks at Michoud and then ships the tanks to Kennedy Space Center. Since Kennedy has available land, NASA could consider moving the external tank manufacturing process to Kennedy. If so, NASA could potentially divest of Michoud, resulting in significant cost savings.

A second strategy would be to operate Michoud until the end of the shuttle program when the external tanks are no longer needed. At that time, NASA could divest of Michoud's manufacturing facility.

OUTSOURCING – "NSF MODEL"

NASA provides a large amount of capital for the construction, management, and operations of facilities to support research and development initiatives at its Centers. Using a model similar to that employed by the National Science Foundation (NSF), NASA could potentially outsource Center activities to reduce infrastructure costs. Outsourcing research and development activities through grants and co-operative agreements could enable NASA to create significant cost savings throughout its inventory of facilities and real property.

The NSF is an example of a model that NASA could deploy in order to continue to fulfill its programmatic goals and objectives, while not having to spend significant amounts of capital on the infrastructure that would support those goals. Using this model, the NSF awards grants and contracts to the private sector with well-stated goals for measuring achievement in research and development. Given that the NSF is not tied to a specific infrastructure base, the research and development programs can be implemented anywhere in the United States, or abroad. In terms of programmatic benefits, NSF funded research and development can be implemented at any of the top universities and "think tanks", many of which will already have the state of the art facilities necessary to support the program.

It is worth noting, however, that one reason this model is necessary for the NSF is that the NSF is responsible for a much wider array of research initiatives. Consequently, it would be impractical for the NSF to invest in infrastructure that could only accommodate a limited number of programs. In addition, the NSF stipulates strict time periods when awarding research programs. At the end of the program, the NSF turns over the research results to the private sector. Given the relatively short life cycle of an NSF-sponsored research program, it would be imprudent to make long-term investments in infrastructure. Nonetheless, outsourcing certain research and development efforts to the private sector could benefit NASA in terms of both program goals and infrastructure costs.

Example:

Ames Research Center – Ames Research Center is responsible for developing nanotechnology to support NASA's future missions. Given ARC's location in Silicon Valley, NASA could potentially outsource research programs related to nanotechnology to the private sector, including universities. NASA could achieve significant cost reductions among its facilities.

FFRDC/GOCO – Federally-funded research and development corporations (FFRDC) and government owned contractor operated (GOCO) organizations are proven solutions to outsourcing in the federal government. Given NASA's drive to remain on the cutting edge of research and technology, both of these organizations have potential roles in helping reduce NASA's real property requirements. At JPL, for example, the FFRDC is incentivized to conduct cutting-edge research cost-effectively. If JPL does not need a wind tunnel, for

example, JPL shuts it down quickly and redeploys its workforce. NASA's use of GOCO's is also demonstrated at Michoud where the external tank is manufactured. Lockheed Martin's involvement in that facility is essentially to completely run the facility and manufacturing operations. These activities, although unusual, in their scale and quality requirements, are not the types of leading-edge activities that tend to be the focus of most of NASA's activities.

Rocket Propulsion Testing Board (Stennis) – The rocket propulsion testing board (RPTB) is an example of NASA's cross-Center coordination in national real property asset management. Through these types of activities, the professionals who are responsible for NASA's research and testing activities are also heavily involved with deciding about real property. Ideally management groups would review the real property assets from a variety of NASA-wide perspectives, including cost reduction or revenue enhancement.

KEY SUCCESS FACTORS, BIG QUESTIONS, APPROACHES

If NASA decides to pursue these opportunities, the questions that are critical for NASA to consider include:

1. Regarding mission clarification, what will be NASA's operational structure and strategy in the future?

2. Can NASA pursue a centralized method for delineating each Center's mission and goals and create a strategic plan that matches facility requirements to those missions and goals?

3. What are NASA's long-term goals with regard to manufacturing the external tank at Michoud? What facilities strategy should be implemented to mirror those goals?

4. What is NASA's relationship to research institutions, and what is the most effective strategy for NASA to pursue regarding the potential outsourcing of research activities?

5. What would the qualitative and quantitative benefits be to outsourcing more research activities, similar to the NSF model?

6.4 Mission or Program Strategy Opportunities.xls

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39	Ames	Mission or Program Strategy	EUL	Private Sector	GOCO	FFRDC - Convert Ames, EUL real estate to investor	Ames is a high-research Center similar to JPL. Consider combining the NASA Research Park and Ames Campus as a new model of FFRDC. As an FFRDC, EUL to investors who could access long term financing and would be responsible for long-term facility needs. Consider EUL on part or all of NRP/Ames campus to remove NASA from direct facilities obligations.	3	3	2	2	1	6	5	Potential cost savings/revenue generation; proceeds from EUL could help support unique facilities that may not be included in EUL	Potential collaboration with partners on campus	Bring more users and non-federal jobs to community	Can include educational institutions and initiatives	FFRDC's have pros and cons, could be more expensive; politically challenging to set up FFRDC and transfer employees; difficult to find educated investors to enter into EUL.
79	Goddard	Mission or Program Strategy	EUL	Private Sector	GOCO	FFRDC - Convert Goddard, EUL real estate to investor	Goddard is a high-research Center similar to JPL. Consider combining with other research-oriented agencies in DC area to create new FFRDC's in DC area. As an FFRDC, EUL to investors who could access long term financing and would be responsible for long-term facility needs. Consider EUL on part or all of Goddard campus to remove NASA from direct facilities obligations. Use proceeds to implement master plan.	3	3	2	2	1	6	5	Potential cost savings/revenue generation; proceeds from EUL could help support unique facilities that may not be included in EUL	Potential collaboration with partners on campus	Bring more users and non-federal jobs to community	Can include educational institutions and initiatives	FFRDC's have pros and cons, could be more expensive; politically challenging to set up FFRDC and transfer employees; difficult to find educated investors to enter into EUL.
17	All	Mission or Program Strategy	Operational	Private Sector	Outsource	Outsourcing of Research Activities - NAS model	Mission clarification of Research - oriented centers with goal of pushing research activities into the academic community; may result in university-oriented FFRDC's. Essentially reduces NASA infrastructure needs; allows research program funds be directed to research institutions that successfully win NASA research contracts; enables NASA to benefit from private sector expertise.	2	3	3	3	0	5	6	Significant cost savings potential on infrastructure, although programmatic costs will increase	Increases collaboration with partners	Non-federal jobs/Revenue pushed to private sector	Educational outreach significantly enhanced	Would call for a significant policy shift for NASA; NASA currently requires a lot of land a facilities to accommodate current and potential future activities that can't be fully predicted.
170	Michoud	Mission or Program Strategy	Space Act	Federal Agency	Building 103	Invest in Michoud Manufacturing Expertise; make world-class	Michoud is the only major large-scale "unique" manufacturing operation at NASA. Consider long-term manufacturing role within NASA; increase utilization in planning for future programs, especially development of SLI-type research. Market world-class manufacturing and research capabilities to government contractors as Space Act agreement; Increase R&D capabilities.	1	3	3	3	1	5	6	Net expense for NASA, not cost savings, but potentially necessary	Helps NASA control quality through extensive investment	Helps economically challenged area	New non-federal jobs, new capabilities, potential for education and outreach	Very difficult to attract capital from NASA to support; risk is that NASA would make an investment in area 3.6 feet above sea level subject to Hurricanes

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6.4 Mission or Program Strategy Opportunities.xls

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4	All	Mission or Program Strategy	Operational	NASA	Consolidation	Mission Clarification - Enterprise activities	Review NASA from an Enterprise perspective - prior to impact of full cost accounting - to have enterprises help determine opportunities to streamline overall operations and reduce potential duplications or inefficiencies across centers, resulting in opportunity to reduce infrastructure.	3	2	1	1	1	5	3	Removing mission/goal duplications will result in cost savings on infrastructure	Coordinated pursuit of mission/goals will foster relationships with universities/contractors, but might hurt some	Net gain to some communities while others might have net loss	Enhanced mission/goal coordination should enhance outreach	Political challenges for NASA.
5	All	Mission or Program Strategy	Operational	NASA	Consolidation	Mission Clarification - Logistics/ Manufacturing	Review NASA operations with goal of streamlining manufacturing-type operations and reduce potential duplications or inefficiencies across centers, resulting in opportunity to reduce infrastructure.	3	1	1	1	1	5	2	Cost savings on infrastructure	Minimal effect on contractors	Small net positive - some communities gain, others lose	Minimal effect on community outreach	Political challenges for NASA.
199	White Sands	Mission or Program Strategy	Operational	NASA	Consolidation	Expand operations in low cost, high security location	Review mission - critical activities that may be redundant throughout NASA. Consider moving the activities to White Sands to reduce costs at other centers and to provide protection that White Sands affords through it's location.	2	2	1	0	2	5	2	Cost savings through space utilization/consolidation	Can improve operations/ facilities for contractors	Communities can both gain or lose jobs	No community outreach	Political challenges for NASA.
28	Ames	Mission or Program Strategy	Operational	NASA	Animal Care	Animal Care Facility - Consolidate NASA-Wide research activities	The animal care facility appeared to be very underutilized, with only a small portion of the facility conducting research. NASA's mission includes biotechnology research, and potential animal research can support NASA's Astronaut program. Consider conducting all related research done at various NASA facilities at the Ames facility to take advantage of the current capabilities, and to focus "live" research activities.	2	1	1	0	2	5	1	Cost savings for NASA to coordinate and focus research	Potential cross-Center synergies	Modest	No outreach	Potential, but not sure of quantity of current research and how transportable to research could be
171	Michoud	Mission or Program Strategy	Divest	Private Sector	Consolidation	Divest Michoud - Co-locate ET manufacturing with Launch operations	Move External Tank (ET) manufacturing near-term. Currently Michoud makes the ET which is transported to Kennedy. If this function is expected to continue for decades, consider moving operations to Kennedy, divest Michoud	2	0	0	0	2	4	0	Significant cost savings, but offset by move costs	No net impact	No net impact	No net impact vs. current situation (a gain for KSC community offset by loss at Michoud	Political and cost challenges for NASA.
172	Michoud	Mission or Program Strategy	Divest	Private Sector	Consolidation	Divest Michoud when Shuttle Program complete.	At end of Shuttle program, divest manufacturing facility at Michoud, consistent with NASA's intent to outsource capabilities to commercial contractors wherever possible. Invest only to maintain quality of External Tank production.	2	1	0	0	1	3	1	Net ultimate cost reduction regarding Michoud, but potential higher investment elsewhere	Could move operations to location better for NASA overall	Not good for economically challenged area	Not good for economically challenged area	Difficult decision, but not out of the question realistically.
54	Dryden	Mission or Program Strategy	Example	NASA	Reutilization Center	Reutilization Center system for hazardous materials	Dryden has a good system for managing hazardous materials, ultimately protecting NASA's future facilities clean up operations costs.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
95	Johnson	Mission or Program Strategy	Example	NSBRI	NSBRI	NSBRI	Example of collaborating with Universities to accomplish program goals. Saves NASA from having to invest solely in necessary labs and facilities.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				

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6.4 Mission or Program Strategy Opportunities.xls

SORT ORDER: Type | Business | Intagible Results

ID #	Center	Type	Authority	Partner	Name	Opportunity Name	Potential Strategy	Impact Factors: NASA Financial (F)	NASA Synergistic (S)	Communi Economic (E)	Communi Outreach (O)	Mkt. Reality (R)	Results & Rank: Business (9=max) (F,E,R)	Intangible (6=Max) (S,O)	Financial	Synergistic	Economic	Outreach	Reality
112	JPL	Mission or Program Strategy	Example	Cal Tech	GOCO	FFRDC	JPL's FFRDC with Cal Tech is a good example of how to partner with the academic community; offers benefits of gaining research without needing to directly employ staff; challenges are the uniqueness with being "like" a Center, but not really being totally a part of NASA.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
140	Langley	Mission or Program Strategy	Example	NIA	NIA	National Institute for Aeronautics (NIA)	Example of research activities done outside the Center for NASA's benefit	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
162	Michoud	Mission or Program Strategy	Example	Lockheed Martin	GOCO	Government Owned Contractor Operated (GOCO)	Michoud is a good example of turning a location almost completely over to the private sector, while maintaining NASA control.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
181	Stennis	Mission or Program Strategy	Example	NASA	RPTB	Rocket Propulsion Testing Board	The RPTB is a good example of a management group taking responsibility for asset allocation cross-center.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
201	White Sands	Mission or Program Strategy	Example	NASA	Consolidation	Low cost operations, high security	Example of locating NASA operations in an area of the country that is not easily accessible, allowing NASA to protect certain investments at lower cost than locating them in higher cost, higher visibility areas.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				

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SECTION 6.5 – REAL PROPERTY OPPORTUNITY TYPES: RESTRUCTURE OF AGREEMENTS

OVERVIEW

NASA currently is a party to or negotiating of agreements for the use of certain of its land and/or facilities. Traditionally, in entering into these agreements, the Agency has not been as focused on the economic benefits that NASA could obtain from the arrangements. Because of the current administration's emphasis on management and new Enhanced-Use Leasing authority, some of these agreements could be renegotiated and restructured to increase their benefits to NASA through the recently obtained Enhanced-Use Leasing authority, or by other means.

The process of deciding whether or not an agreement can be restructured as an Enhanced-Use Lease (EUL) is not merely a function of NASA's desire to obtain revenue. There may be many instances, for example, where a level of payment by a potential user above NASA's "at-cost" cost level might render an opportunity unfeasible for the partner. In these instances, NASA is faced with a cost benefit analysis decision in which the qualitative benefits of having a tenant "on-campus" must be compared to the quantitative benefits.

SPACE CENTER HOUSTON CONFERENCE CENTER

MSFEFI, the operating entity for Space Center Houston, has a memorandum of understanding (MOU) with Johnson Space Center for 88 acres of land that includes the footprint and parking area of the Space Center Houston building. MSFEFI and Space Center Houston are considering structuring an agreement with a developer to build a hotel conference center, office buildings, and an adjacent golf course. It is the team's understanding that, per the terms of agreement between MSFEFI and the developer, no additional revenue will be generated for NASA beyond the amount stipulated in the current MOU between NASA and MSFEFI. If the terms of the proposed agreement between MS FEFI and the private developer are finalized, NASA could be forgoing significant economic benefit.

CARNEGIE MELLON UNIVERSITY (AMES)

Carnegie Mellon University entered into an agreement with NASA to lease and renovate buildings in the historic district at Ames, with the intent of establishing a presence on the west coast and, more importantly, Silicon Valley. While the agreement results in a newly renovated buildings for NASA, and the opportunity for on-campus research collaboration, the team believes it is worth understanding whether the agreement could have resulted in a more significant economic benefit to NASA if structured as an EUL. What's more, if NASA is unable to restructure the current agreement as an EUL, NASA should consider structuring similar future opportunities using EUL legislation.

ISRP (KENNEDY)

Kennedy Space Center and the Florida Space Authority are partnering to develop an International Space Research Park (ISRP) on approximately 400 acres of KSC property. As partners in the ISRP, NASA and FSA envision the ISRP to combine commercial, academic, and government tenants in a collaborative research and technology environment. The ISRP, if fully developed, can accommodate up to 2.0 million square feet of office space. As currently planned, tenants will build their own facilities and NASA will be reimbursed at cost the amount necessary to improve the infrastructure.

SERPL (KENNEDY)

Kennedy Space Center and SpacePort Florida have entered into an agreement to develop the Space Experiment Research and Processing Laboratory (SERPL). Under this agreement, SpacePort Florida is financing and constructing a new laboratory building on land that has been leased from KSC. KSC's contractor will then lease a portion of the constructed building.

NASA should consider whether the agreement could have resulted in a more significant economic benefit to NASA if structured as an enhanced use lease. If NASA is unable to restructure the current agreement as an EUL, NASA should consider structuring similar future opportunities using EUL legislation.

KEY SUCCESS FACTORS, BIG QUESTIONS, APPROACHES

If NASA decides to pursue these opportunities, the questions that are critical for NASA to consider include:

1. Is NASA's long-term interest [still] consistent with the agreement as currently structured?
2. Does the agreement fail to capture excess market value that could be beneficial to NASA?
3. Would altering the agreement impair an important relationship that NASA should maintain?
4. If NASA pursues more economically attractive agreements using EUL legislation, will it potentially do so at the expense of Space Act goals, such as education, technology enhancement, and outreach?
5. Is a centralized process needed for determining the best agreement structure for opportunities that arise at each Center?

6.5 Restructuring Opportunities.xls

SORT ORDER: Type | Business | Intagible Results

ID #	Center	Type	Authority	Partner	Name	Opportunity Name	Potential Strategy	Impact Factors: NASA Financial (F)	NASA Synergistic (S)	Community Economic (E)	Community Outreach (O)	Mkt. Reality (R)	Results & Rank: Business (9=max) (F,E,R)	Intangible (6=Max) (S,O)	Financial	Synergistic	Economic	Outreach	Reality
119	Kennedy	Restructure	EUL	SpacePort Florida	ISRP	International Space Research Park (ISRP) - Increase NASA's role in development	NASA take larger role in planned ISRP development; re-evaluate ISRP's planned tenant mix correlated to NASA's current and future program and mission goals. EUL portions of the land as available; consider space act agreements for university research park-specific developments.	3	3	3	2	2	8	5	Potential for significant revenue	Increase Contractor and university partners	Provides non-federal jobs and industry to area	Enhances education/outreach element	Favorable, more cautious approach to viability; political challenge to restructuring agreement, but possible since ISRP is early in development
102	Johnson	Restructure	Divest	MSFEFI	Space Center Houston	Space Center Houston Conference Center - Divest	Space Center Houston is considering entering into an agreement with a developer to build a conference center and office buildings as an enhancement to their campus. Consider canceling Space Center Houston's MOU. Divest land and remove NASA from all Real Property obligations regarding the facility; re-invest proceeds into Johnson (or potentially into golf course in Section 400).	3	3	3	0	1	7	3	Reduce NASA's costs, and provide revenue to reinvest in NASA	Office space, if developed with NASA's increased involvement, can bring contractors/partners near by - by divesting, NASA may be able to occupy space without EUL occupancy conflicts	Return property to tax rolls, will bring visitors and tenants to market	Limited additional benefit	Agreement might be difficult to restructure
120	Kennedy	Restructure	EUL	SpacePort Florida	ISRP	International Space Research Park (ISRP) - EUL	Consider the development of the ISRP using EUL versus currently planned structure. Still maintain an arms-length distance.	3	2	2	1	1	6	3	Provide additional revenue to NASA	Will bring contractors/ partners onto campus	While property not returned to tax rolls, will bring visitors and tenants to market	Conference center can aid community outreach	Political challenges in restructuring agreement. Feasibility needs to be examined.
38	Ames	Restructure	Space Act	Navy	East Side /Air Field	Golf Course - Restructure	The air force constructed a golf course which they still maintain on the East Side/Air field. The Air Force currently leases the golf course from NASA, although all of the improvements were provided by the Navy. The AF makes a profit on the use of the course. Consider restructuring the agreement to allow NASA to take responsibility for the golf course, ultimately taking over the revenues also.	2	1	1	1	3	6	2	Potential for revenue production to NASA or employee welfare.	Positive employee morale	Little economic impact on community	Community benefit, if access can be changed to allow community use.	Achievable
121	Kennedy	Restructure	Divest	SpacePort Florida	ISRP	International Space Research Park (ISRP) - EUL	Consider the divesting the land under development for the ISRP.	2	1	3	1	1	6	2	Provide additional revenue to NASA, low land value	Will bring contractors/ partners onto campus	While property not returned to tax rolls, will bring visitors and tenants to market	Conference center can aid community outreach	Political challenges in restructuring agreement. Feasibility needs to be examined.
59	Glenn	Restructure	Divest	OAI	OAI	OAI building on NASA land - Divest	OAI occupies NASA land through Space Act Agreement. The operation appears to be relatively successful; consider divesting the land and reinvesting proceeds at the Center.	3	0	0	0	1	4	0	Small land parcel, low land value, but would provide immediate revenue.	No additional benefit	No additional benefit	No additional benefit	Agreement might be difficult to restructure

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6.5 Restructuring Opportunities.xls

SORT ORDER: Type | Business | Intagible Results

ID #	Center	Type	Authority	Partner	Name	Opportunity Name	Potential Strategy	Impact Factors: NASA Financial (F)	NASA Synergistic (S)	Community Economic (E)	Community Outreach (O)	Mkt. Reality (R)	Results & Rank: Business (9=max) (F,E,R)	Intangible (6=Max) (S,O)	Financial	Synergistic	Economic	Outreach	Reality
103	Johnson	Restructure	EUL	MSFEFI	Space Center Houston	Space Center Houston Conference Center - Convert to EUL	Space Center Houston is considering entering into an agreement with a developer to build a conference center and office buildings as an enhancement to their campus. Consider canceling Space Center Houston's MOU on that subject land and have NASA enter into EUL agreement directly.	3	0	0	0	1	4	0	Provide revenue to NASA while maintaining long term ownership	No additional benefit	No additional benefit	No additional benefit	Agreement might be difficult to restructure
127	Kennedy	Restructure	EUL	SpacePort Florida	SERPL	SERPL	Consider restructuring the SERPL agreement to demonstrate it's applicability to EUL.	3	0	0	0	1	4	0	Positive financial impact for NASA	No additional benefit	No additional benefit	No additional benefit	Agreement might be difficult to restructure
178	Stennis	Restructure	EUL	Lockheed Martin	Lockheed Martin Building	Lockheed Martin Building EUL	NASA currently has a Space Act Agreement with the State of Mississippi, who in turn has an agreement with Lockheed Martin. Restructure agreement with Mississippi and Lockheed Martin as EUL.	3	0	0	0	1	4	0	Positive financial impact for NASA compared to the current lease rate	No additional benefit	No additional benefit	No additional benefit	Agreement might be difficult to restructure.
33	Ames	Restructure	EUL	Carnegie Mellon	Carnegie Mellon	Carnegie Mellon - Convert lease to EUL	Carnegie Mellon University has an agreement with NASA to lease and renovate a building in the historic district. Their intent is to develop a campus at Ames that can service the west coast. Consider restructuring the current agreement through EUL, or structuring future agreements on new facilities through EUL.	2	0	0	0	1	3	0	Potential additional revenue generation potential	No additional benefit	No additional benefit	No additional benefit	Agreement might be difficult to restructure
60	Glenn	Restructure	EUL	OAI	OAI	OAI building on NASA land - EUL	OAI occupies NASA land through Space Act Agreement. Examine in context of structuring under EUL. Result in ground lease proceeds to NASA.	2	0	0	0	1	3	0	Not for profit on s mall land parcel, low land value, difficult to negotiate "better deal"	Limited additional benefit	Limited additional benefit	Limited additional benefit	Agreement might be difficult to restructure
104	Johnson	Restructure	EUL	MSFEFI	Space Center Houston	Space Center Houston	Consider restructuring Space Center Houston's Space Act Agreement under EUL.	2	0	0	0	1	3	0	Provide cash stream to Johnson	No additional benefit	No additional benefit	No additional benefit	Agreement might be difficult to restructure
128	Kennedy	Restructure	Divest	SpacePort Florida	SERPL	SERPL	NASA owns the land under the SERPL building; the land is not near the main center of campus. Consider restructuring the SERPL agreement to divest the land to SpacePort Florida or an investor.	2	0	0	0	1	3	0	Positive immediate financial impact for NASA but not high value land	No additional benefit	No additional benefit	No additional benefit	Agreement might be difficult to restructure; partner may be difficult to find.
141	Langley	Restructure	EUL	ODU	ODU	ODU lease - EUL	ODU currently leases a wind tunnel for non-NASA uses. Current agreement is reimbursable; consider converting to EUL.	2	0	0	0	1	3	0	Result in modest impact to NASA; market value of Wind Tunnel may not be high	No additional benefit	No additional benefit	No additional benefit	May be difficult to restructure; market value of leasing wind tunnels not high.

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6.5 Restructuring Opportunities.xls

SORT ORDER: Type | Business | Intagible Results

ID #	Center	Type	Authority	Partner	Name	Opportunity Name	Potential Strategy	Impact Factors: NASA Financial (F)	NASA Synergistic (S)	Communi Economic (E)	Communi Outreach (O)	Mkt. Reality (R)	Results & Rank: Business (9=max) (F,E,R)	Intangible (6=Max) (S,O)	Financial	Synergistic	Economic	Outreach	Reality
148	Marshall	Restructure	EUL	Boeing	Boeing Building	Boeing Building - convert to EUL	Boeing is occupying a building on Center for non-NASA activities. Convert the Space Act agreement to EUL.	2	0	0	0	1	3	0	Positive financial impact for NASA, but the current rate is close to current market rate	Limited additional benefit	Limited additional benefit	Limited additional benefit	Agreement might be difficult to restructure.
164	Michoud	Restructure	EUL	Lockheed Martin	Lockheed Martin Building	Lockheed Martin building - Convert to EUL	Lockheed Martin currently has a Space Act Agreement with NASA to perform Non-NASA commercial activities at Michoud. Consider restructuring agreement as EUL.	2	0	0	0	1	3	0	Positive financial impact for NASA, but market value is not high	Limited additional benefit	Limited additional benefit	Limited additional benefit	Agreement might be difficult to restructure.
183	Stennis	Restructure	EUL	Boeing	Test Stand	Boeing Test Stand - EUL	Boeing currently has a 20 year MOU on one of the test stands; encourage Boeing to increase their presence - potentially adding new facilities through EUL - at Stennis.	1	1	0	0	1	2	1	EUL allows potential revenues, but not high competitive demand for leasing the test stand	No additional benefit	No additional benefit	No additional benefit	Agreement might be difficult to restructure.

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SECTION 6.6 – REAL PROPERTY OPPORTUNITY TYPES: UTILITIES MANAGEMENT

OVERVIEW

Real Property assets include not only the land and facilities, but also the extensive infrastructure that provides critical utilities services. Although this study did not focus specifically on utilities, several opportunities were uncovered that were being considered. If NASA decides to pursue utility management opportunities, a more complete review of the issues is warranted.

Through the use of utilities management strategies, such as utilities privatization, NASA has the opportunity to reduce its costs and/or generate additional income.

DESCRIPTION AND ANALYSIS OF OPPORTUNITIES AT NASA

There may be opportunities to privatize some of the Centers' utility systems, particularly electric distribution. Various segments of the federal government have been privatizing certain functions and assets. For instance, the Department of Defense has privatized some of its utility distribution systems. Options that could be evaluated at the NASA Centers, especially for electric distribution systems, include divesting some of the existing systems or contracting with someone to run them for the Centers. There are a number of issues that would have to be evaluated to determine the feasibility and desirability of these approaches. A number of systems and assets that have been proposed to be sold from time to time unfortunately just do not have a financial risk/reward profile that should attract much interest – contracting with someone to operate such systems, however, may be desirable. Some of the analysis and decisions on privatization may be affected by the future plans for a specific Center's campus.

Cogeneration plants have been proposed at various Centers. The cost of electricity from many smaller plants is not competitive most of the time. The specifics on the plant and the steam use should be reviewed to make sure it is a reasonable way to meet whatever operational and financial goals have been established.

Power purchases at all the NASA Centers are from off-site suppliers, generally the local electric utility, Tennessee Valley Authority or Western Area Power Administration. As with many large users of electricity, there may be opportunities for structuring special contracts and arrangements. The NASA Centers may have entered into such arrangements. Large users of power in many states are in the position of being able to negotiate power purchase contracts on terms that provide lower costs and services that meet a Center's particular requirements. The ability to negotiate with more than the local utility is affected by particular state regulatory law. In the case of the NASA Centers, there may be special provisions of federal law that apply as well.

UTILITIES PRIVATIZATION (KENNEDY)

Kennedy is considering options for privatizing utilities based on best practices from public and private examples. Kennedy could be a lead Center for investigating and proving various levels of utilities privatizations on behalf of NASA since Kennedy is a major user with multi-faceted needs.

RYE BEACH PUMPING STATION - (GLENN)

NASA owns and operates a pumping station in Lake Erie that supplies water to Plum Brook. Erie County has approached NASA about acquiring the pumping station from NASA in order to supply water to Erie County. NASA should consider divesting or leasing the pumping station to Erie County in order to create revenue.

KEY SUCCESS FACTORS, BIG QUESTIONS, APPROACHES

If NASA decides to pursue these opportunities, the questions that are critical for NASA to consider include:

1. What are the options for utilities management?
2. How can NASA achieve maximum value by implementing utilities privatization?
3. What are the best options?

6.6 Utilities Management Opportunities.xls

SORT ORDER: Type | Business | Intangible Results

ID #	Center	Type	Authority	Partner	Name	Opportunity Name	Potential Strategy	Impact Factors: NASA Financial (F)	NASA Synergistic (S)	Community Economic (E)	Community Outreach (O)	Mkt. Reality (R)	Results & Rank: Business (9=max) (F,E,R)	Intangible (6=Max) (S,O)	Financial	Synergistic	Economic	Outreach	Reality
68	Glenn	Utilities Management	Space Act	Erie County	Rye Beach	Rye Beach Pumping Station - Cost reduction	NASA has water supply channel to Lake Erie. Negotiate market-rate profit through EUL for water supply; Hire utilities valuation consultants to ensure that NASA is receiving maximum value when selling water from the pumping station to the County.	2	0	3	0	3	8	0	Achieve higher value than currently expected	No synergies	Saves community from constructing pumping station	No outreach	Buyer already in place; requires NASA action.
193	Wallops	Utilities Management	Space Act	Private Sector	Utilities	Utilities	Market capability of water, sewage, steam, cogeneration of steam power, etc to nearby potential users to defray costs.	3	0	1	0	3	7	0	Potential cost reduction; income generation	No Impact	Minimal impact	No impact	Potential users; have been identified.
69	Glenn	Utilities Management	EUL	Erie County	Rye Beach	Rye Beach Pumping Station - EUL	NASA has water supply channel to Lake Erie. Consider entering into EUL with investor to take over operations and sell water at a profit.	2	0	2	0	2	6	0	Some revenue stream to NASA S	No synergies	Community does not have to build	Limited	Agreement structure might be complicated.
70	Glenn	Utilities Management	Divest	Erie County	Rye Beach	Rye Beach Pumping Station - Divest	NASA has water supply channel to Lake Erie. Consider entering into EUL with investor to take over operations and sell water at a profit.	2	0	2	0	2	6	0	Some revenue stream to NASA	No synergies	Community does not have to build	Limited	Agreement structure might be complicated.
71	Glenn	Utilities Management	Example	Private Sector	Rye Beach	Rye Beach Pumping Station	Glenn is planning a potential pumping station that will offer water to the local community	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
131	Kennedy	Utilities Management	Example	Private Sector	Utilities Privatization	Utilities Privatization - Private Authority	Kennedy is considering the options for privatization of Utilities, using best practices from public and private examples.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
134	Langley	Utilities Management	Example	Air Force	Cogen	Cogen (Trash for energy)	Through agreement between NASA and Air Force, trash is burned in a cogen plan and Electrical costs are reduced.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				

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SECTION 6.7 – REAL PROPERTY OPPORTUNITY TYPES: EXAMPLE OPPORTUNITIES

OVERVIEW

Every Center has created unique solutions to very difficult problems, and often the problems are shared by other Centers. This type of opportunity describes various examples of unusual solutions around NASA for other Centers' benefit. Not all examples are translatable to other Centers; nor would some of the examples be perfectly appropriate given NASA's current strategic thrust, but each of the examples demonstrates an innovative strategy that NASA has employed to solve problems.

Attached on the following pages are examples of solutions that Centers have created to address the myriad of challenges regarding NASA's land and facilities.

6.7 Example Opportunities.xls

SORT ORDER:	Example Authority	Center	Name

ID #	Center	Type	Authority	Partner	Name	Opportunity Name	Potential Strategy	Impact Factors: NASA Financial (F)	NASA Synergistic (S)	Community Economic (E)	Community Outreach (O)	Mkt. Reality (R)	Results & Rank: Business (9=max) (F,E,R)	Intangible (6=Max) (S,O)	Financial	Synergistic	Economic	Outreach	Reality
34	Ames	Facilities and Asset Management	Example	Carnegie Mellon	Carnegie Mellon	Carnegie Mellon - renovation of facility	Ames has entered into a long-term agreement with Carnegie Mellon (who is also a NASA contractor) to renovate and lease a facility in the historic district. This is an example of using a relationship to develop mutual synergies and ultimately provide NASA with a renovated facility.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
48	Ames	Underutilized Land	Example	Private Sector	NRP	NASA Research Park - New Model for NASA	Ames has a well-thought out research park that has been included in their master plan. Consider increasing NASA's involvement in programmatic planning of NRP to serve NASA's mission needs; consider consolidation of NASA's research activities in the NRP, and attracting universities.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
49	Ames	Facilities and Asset Management	Example	NASA	Real Property Strategy	Master Plan	The Center has a well thought out EIS which will be supported by a master plan - that will allows it to be prepared to address its future proactively.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
52	Ames	Underutilized Land	Example	Private Sector	Shenandoah	Historic District	The Shenandoah district of Ames is a historic district. Take advantage of historic district and lease in historic district to tenants who can improve facilities and maintain in case of future use for NASA. Does not have to use EUL structure.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
54	Dryden	Mission or Program Strategy	Example	NASA	Reutilization Center	Reutilization Center system for hazardous materials	Dryden has a good system for managing hazardous materials, ultimately protecting NASA's future facilities clean up operations costs.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
55	Dryden	Facilities and Asset Management	Example	Air Force	Shared Cost	Federal Campus - Cost sharing alliance	Good example of cooperating with resident federal agencies in cost reduction.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
56	Glenn	Facilities and Asset Management	Example	City of Cleveland	Airport	Airport Extension	Example of how NASA entered into a negotiation with the City of Cleveland to achieve mutual goals.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
61	Glenn	Facilities and Asset Management	Example	OAI	OAI	OAI building on NASA land	Example of how NASA could use PPP structure to develop shared state of the art facilities.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
71	Glenn	Utilities Management	Example	Private Sector	Rye Beach	Rye Beach Pumping Station	Glenn is planning a potential pumping station that will offer water to the local community	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
76	Goddard	Underutilized Facilities	Example	NTSB	Centrifuge	Centrifuge	Goddard has a reimbursable agreement with NTSB to use it's Centrifuge in testing cars. Good example of utilizing federal assets to benefit other federal agencies	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				

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6.7 Example Opportunities.xls

SORT ORDER:	Example Authority	Center	Name

ID #	Center	Type	Authority	Partner	Name	Opportunity Name	Potential Strategy	Impact Factors: NASA Financial (F)	NASA Synergistic (S)	Community Economic (E)	Community Outreach (O)	Mkt. Reality (R)	Results & Rank: Business (9=max) (F,E,R)	Intangible (6=Max) (S,O)	Financial	Synergistic	Economic	Outreach	Reality
87	Goddard	Facilities and Asset Management	Example	NASA	Real Property Strategy	Master Plan	The Center has a well thought out master plan that will allows it to be prepared to address its future proactively.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
95	Johnson	Mission or Program Strategy	Example	NSBRI	NSBRI	NSBRI	Example of collaborating with Universities to accomplish program goals. Saves NASA from having to invest solely in necessary labs and facilities.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
98	Johnson	Facilities and Asset Management	Example	SpacePort Florida	Saturn 5 hangar	Saturn 5 hangar	Space Port Florida helped provide an enclosure for a Saturn 5 rocket as part of it's visitor center experience. Example of using PPP to share capital costs in order to construct unique facilities.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
105	Johnson	Facilities and Asset Management	Example	MSFEFI	Space Center Houston	Space Center Houston	Example of outsourcing visitor center activities in site adjacent to Center in collaboration with local community. Allows NASA to concentrate on core competencies, and allows Visitor Center activities to remain fresh to the public.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
111	JPL	Facilities and Asset Management	Example	Private Sector	Flight Project Center	Flight Project Center - enhancing mission operations	JPL has a master plan to include a flight project center which will substantially improve it's operations. This is an example of how strategic facility planning can help improve mission capabilities, and potentially reduce long term tangible and intangible costs.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
112	JPL	Mission or Program Strategy	Example	Cal Tech	GOCO	FFRDC	JPL's FFRDC with Cal Tech is a good example of how to partner with the academic community; offers benefits of gaining research without needing to directly employ staff; challenges are the uniqueness with being "like" a Center, but not really being totally a part of NASA.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
118	JPL	Facilities and Asset Management	Example	NASA	Real Property Strategy	Master Plan	Although not complete, the Center has a well thought out master plan that will allows it to be prepared to address its future proactively.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
123	Kennedy	Underutilized Land	Example	SpacePort Florida	ISRP	International Space Research Park (ISRP)	Example of NASA and the State of Florida working together to come up with a business plan for a research park.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
124	Kennedy	Facilities and Asset Management	Example	NASA	Real Property Strategy	Master Plan	The Center has a well thought out master plan that will allows it to be prepared to address its future proactively.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
126	Kennedy	Facilities and Asset Management	Example	SpacePort Florida	Saturn 5 hangar	Saturn 5 hangar	Space Port Florida helped provide an enclosure for a Saturn 5 rocket as part of it's visitor center experience. Example of using PPP to share capital costs in order to construct unique facilities.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				

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6.7 Example Opportunities.xls

SORT ORDER:	Example Authority	Center	Name

ID #	Center	Type	Authority	Partner	Name	Opportunity Name	Potential Strategy	Impact Factors: NASA Financial (F)	NASA Synergistic (S)	Community Economic (E)	Community Outreach (O)	Mkt. Reality (R)	Results & Rank: Business (9=max) (F,E,R)	Intangible (6=Max) (S,O)	Financial	Synergistic	Economic	Outreach	Reality
129	Kennedy	Facilities and Asset Management	Example	SpacePort Florida	SERPL	SERPL	NASA and Space Port Florida entered into a development agreement; NASA leased the Land to SPF and provided the facility design; SPF provided the construction and landlord responsibilities. NASA's contractor will lease space in the facility. Example of using PPP structure to share capital costs of obtaining state of the art facilities/labs for contractor.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
130	Kennedy	Facilities and Asset Management	Example	Air Force	Shared Cost	Federal Campus - Cost sharing - JBOSC Contract	JBOSC contract is a good example of working with other major federal agencies to reduce overall facilities maintenance costs.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
131	Kennedy	Utilities Management	Example	Private Sector	Utilities Privatization	Utilities Privatization - Private Authority	Kennedy is considering the options for privatization of Utilities, using best practices from public and private examples.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
132	Kennedy	Facilities and Asset Management	Example	Delaware North	Visitors Center	Visitor Center	Example of complete outsourcing of visitor center experience; structuring profit agreement to allow profits to be put back into NASA (for public-oriented uses).	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
134	Langley	Utilities Management	Example	Air Force	Cogen	Cogen (Trash for energy)	Through agreement between NASA and Air Force, trash is burned in a cogen plan and Electrical costs are reduced.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
140	Langley	Mission or Program Strategy	Example	NIA	NIA	National Institute for Aeronautics (NIA)	Example of research activities done outside the Center for NASA's benefit	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
142	Langley	Underutilized Facilities	Example	ODU	ODU	ODU lease	Example of leasing unique facility to private sector in order to keep the facility operational, and reduce overall capital costs for the private sector.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
149	Marshall	Underutilized Facilities	Example	Boeing	Boeing Building	Boeing Building - reimbursable lease of facility	Boeing is leasing a facility, at full reimbursable cost from NASA.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
162	Michoud	Mission or Program Strategy	Example	Lockheed Martin	GOCO	Government Owned Contractor Operated (GOCO)	Michoud is a good example of turning a location almost completely over to the private sector, while maintaining NASA control.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
177	Stennis	Underutilized Land	Example	Federal Agency	Federal Campus	Federal Campus	Stennis is the best example of a Center that has attracted other Federal agencies to occupy land and buildings. NASA needs to maintain the buffer zone but doesn't need to occupy much of the land, so the federal campus allows NASA to control the land while decreasing overall management costs.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				

The information shown here is conceptual and not intended for immediate action. A business plan including all business economics, structures, strategies and risks should be evaluated prior to the execution of any opportunity.

6.7 Example Opportunities.xls

SORT ORDER:	Example Authority	Center	Name

ID #	Center	Type	Authority	Partner	Name	Opportunity Name	Potential Strategy	Impact Factors: NASA Financial (F)	NASA Synergistic (S)	Community Economic (E)	Community Outreach (O)	Mkt. Reality (R)	Results & Rank: Business (9=max) (F,E,R)	Intangible (6=Max) (S,O)	Financial	Synergistic	Economic	Outreach	Reality
179	Stennis	Underutilized Land	Example	Lockheed Martin	Lockheed Martin Building	Lockheed Martin Building/Land	Lockheed Martin, working with the State of Mississippi, has built a facility on NASA land. Good example of bringing outside tenants - in this case also a contractor - that need security onto NASA land; ultimately helps reduce costs to NASA.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
181	Stennis	Mission or Program Strategy	Example	NASA	RPTB	Rocket Propulsion Testing Board	The RPTB is a good example of a management group taking responsibility for asset allocation cross-center.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
184	Stennis	Underutilized Land	Example	Boeing	Test Stand	Boeing Test Stand - MOU	Boeing currently has a 20 year MOU on one of the test stands; encourage Boeing to increase their presence - potentially adding new facilities through EUL - at Stennis.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
187	Wallops	Underutilized Facilities	Example	Virginia Space Port	Launch	Launch Facilities	Good example of coordinating with State of Virginia and private sector to help market launch facilities.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
189	Wallops	Facilities and Asset Management	Example	NASA	Real Property Strategy	Master Plan	Although not complete, the Center has a well thought out master plan that will allows it to be prepared to address its future proactively.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
201	White Sands	Mission or Program Strategy	Example	NASA	Consolidation	Low cost operations, high security	Example of locating NASA operations in an area of the country that is not easily accessible, allowing NASA to protect certain investments at lower cost than locating them in higher cost, higher visibility areas.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				

The information shown here is conceptual and not intended for immediate action. A business plan including all business economics, structures, strategies and risks should be evaluated prior to the execution of any opportunity.

SECTION 7 – CENTER EXECUTIVE SUMMARIES

OVERVIEW

Every Center is unique in its opportunities, development, economics, mission, and community. In order to incorporate as much of the uniqueness into this report, the team visited each location, met with numerous people, and tried to understand the special circumstances. Although the visit process was very fluid, the team systematically documented consistent facts and observations. A summary of the Center Reports is reproduced in this section; the full Center Reports are provided in a separate binder.

This section provides, in briefing format, an overview including the following information:

- Introduction – outlines the goals of the team's visit to the Center as well as the team's research and visit schedule;
- Participants – lists the individuals who participated in the team's visit to the Center, including the Center personnel, the applicable members of the team, and interested parties from the marketplace;
- Marketplace and Location – briefly describes the location of the Center and the marketplace surrounding it;
- Business, Mission and Vision – identifies the Strategic Enterprise that has oversight responsibilities for the Center; the Center's major activities; and the Center's view of potential future activities as told to the team by Center representatives;
- Infrastructure Summary – outlines the land acreage under the Center's control and the book value and current replacement value of the Center's buildings and other structures;
- Best Business Opportunities – briefly describes those opportunities that the team has identified as the best business opportunities at the Center.

The individual Center Reports discuss each of the foregoing topics in greater detail.

REAL PROPERTY OPPORTUNITIES CENTER REPORT: Ames Research Center Moffett Field, California

CENTER REPORT – Table of Contents

Section 1: Executive Overview (In Briefing format)
- Introduction
- Participants
- Marketplace and Location
- Business, Missions, Vision
- Infrastructure and Population
- Best Business Opportunities

Section 2: General Market Statistics
- Location
- Economic/Demographic Indicators
- Interpretation of Market

Section 3: Business, Mission, Vision of the Center
- Center History and Overview
- Description of Major Current and Potential Future Programs
- Major Relationships (Contractors, Universities, Government)

Section 4: Infrastructure
- Land and Site Metrics
- Facility Metrics and Deferred Maintenance Results
- Utilities Synopsis
- Property Listing from the Real Property Database

Section 5: Opportunities – Descriptions, Measures, Matrix
- Overview and Methodology
- Opportunity Matrix
- Analysis and Observations

REAL PROPERTY OPPORTUNITIES

CENTER REPORT:

Ames Research Center

Moffett Field, California

Executive Overview

August 1, 2003

Ames Research Center Introduction

Goal of Visit

- Understand ARC-specific issues
- Identify potential real property business alternatives
  - increasing revenues
  - reducing expenses
  - creating organizational improvement / mission enhancement

Schedule

- Research: 1/13/03 – 1/30/03
- Visit: 1/20/03 – 1/24/03

Ames Research Center Participants

NASA

INTERVIEW

- G. Scott Hubbard
- Tom Moyles
- David Fluck
- Gus Gold
- Mike Makinen
- Sandy Olliges
- Trish Morrissey
- Mejghan Haider
- Lisa Lockyer
- Bob Dolci
- Geary Tiffany
- George Kidwell
- Sally Mauldin
- Mark Beskind
- Lewis Braxton
- Connie Cunningham
- Carnegie Mellon University Representative

COORDINATOR

- Tony Cuticchia, NASA HQ
- Al Johnson, NASA HQ
- Calvin Williams, NASA HQ
- David Fluck, NASA-ARC

MARKETPLACE

- Karen Davis, City of Sunnyvale
- Linda Forsberg, City of Mountainview
- Nancy Bussani, Metropolitan Technology Center
- David Shiver, Bay Area Economics

STAUBACH

STAUBACH VISIT

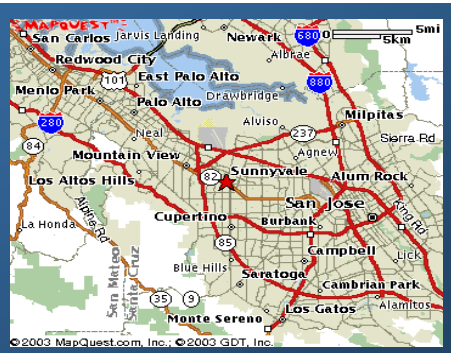
- Kurt Haglund
- Peter Larkin
- Peter Brohoski

STAUBACH RESEARCH

- Wayne Powell, Plexus
- Steve Ranck
- Tony Lautmann

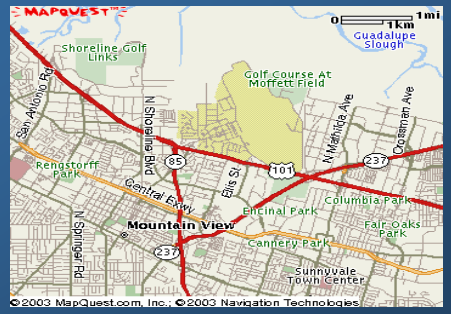
Ames Research Center
Market Place and Location

REGION



- Santa Clara County Population: 1,668,309
- Economy: Computer & Information Technology
- Educated Workforce
- High Land Values
- Housing Crunch

ARC SUBMARKET



- City of Sunnyvale / Mountain View
- Access to Transportation - Good
- Local Economy: High-Tech, NASA
- Current Real Property Activity
  - City of Mountain View – (West) Residential, Street Retail, Shopping Centers
  - City of Sunnyvale (South) – Residential, Highway Commercial Retail
  - Onizuka AFB (East)
  - In the heart of “Silicon Valley” , the area is abundant with high-tech Firms such as AOL, Silicon Graphics, Microsoft, CISCO Systems
  - Office market vacancy currently 20%

Ames Research Center Business, Mission, Vision

- **Aerospace Technology Enterprise (Code R)**
- **Major Center Activities**
  - Information Technology
  - Nanotechnology
  - Biotechnology
  - Aerospace Operations
- **Center's View of Potential Future Activities**
  - Astrobiology
  - Fundamental Space Biology
  - Computer Science

Ames Research Center

Infrastructure and Population Summary (includes Moffett Field)

Land	Acres	% Total	% Total of NASA Portfolio
Owned	1,864	100%	.5%
Easement	0	0%	0%
Leased	0	0%	0%
Permit	0	0%	0%
Public	0	0%	0%
TOTAL	1,864		

* Extracted from the Land Report as of 2003 from the NASA Real Property Inventory Database on 5/9/03.

Structures	Quantity	Book Value	2003 CRV
Buildings	287	$ 817,214,295	$ 1,877,413,031
Other Structures	162	110,629,862	608,189,388
TOTAL	449	$ 927,844,157	$ 2,485,602,419

* Extracted from the NASA Site Summary Report from the NASA Real Property Inventory Database on 5/9/03.

Civil Servants	+	Contractors	+	Other	=	Total Center Population	Density (People/Acre)
1,484		2,520		1,971		5,975	3.2

* Extracted from the Facilities Utilization Program Report, September 2002.

Ames Research Center
Best Business Opportunities

Opportunity Name	Description
— Space World	— Hangar One at Ames Moffett Field represents a major underutilized, historic asset — Continue negotiations with a private group that has been formed to consider acquiring or taking over Hangar One for construction of a “Space World” museum
— Historic District	— Ames has an area that has been designated as historic per the Historic Preservation Act — Lease income within an historic district can be reinvested into facilities within the district
— Moffett Field	— Located in one of the nation’s most expensive land markets — Costs NASA to operate and maintain — Consider EUL or Divesting through sale
— NASA Research Park	— Planned research park to include university tenants including the University of California at Santa Cruz and Carnegie Mellon University — Consider structuring as an EUL, possibly through a private developer — Analyze NASA’s potential role as landlord and manager

SECTION 2: GENERAL MARKET STATISTICS

LOCATION

Ames Research Center (ARC) is located in Santa Clara County, CA. The site is bordered by the City of Mountain View, the City of Sunnyvale, and the southern tip of the San Francisco Bay. The site is in very close proximity to three major highways: US 101, Highway 85, and Highway 237. The Ames site also includes its own light rail station where commuters can connect to downtown Mountain View and San Jose.

ECONOMIC/DEMOGRAPHIC INDICATORS

Economic/Demographic Component (County)	**Indicators**
2001 Population Estimate	1,668,309
Population % Change, 1990 to 2000	+12.4%
Housing Units, 2000	579,329
Median Value of owner-occupied housing units, 2000	$446,400
Median household money income, 1999	$74,335
Per capita money income, 1999	$32,795
Persons below poverty, percent, 1999	7.5%
Land Area, 2000 (square miles)	1,291
Persons per square mile, 2000	1,303
Largest Industries	Manufacturing, Scientific Management, Education, Health

**Extracted from U.S. Census Bureau Quickfacts at quickfacts.census.gov on 2/14/03.*

INTERPRETATION OF MARKET

Santa Clara County, considered the nucleus of United States' development of information, software, and computer technology, boasts some of the highest housing prices and most expensive Real Property in the country. Strong population growth and employment, coupled with stringent development controls and a dwindling supply of developable land, make this one of the most attractive Real Property investment markets in the country.

SECTION 3: BUSINESS, MISSION, VISION OF THE CENTER

CENTER HISTORY AND OVERVIEW

Ames Research Center (ARC) is located at Moffett Field, California in the heart of "Silicon Valley." ARC was founded December 20, 1939 as an aircraft research laboratory by the National Advisory Committee for Aeronautics (NACA) and in 1958 became part NASA. ARC specializes in research geared toward creating new knowledge and new technologies that span the spectrum of NASA interests.

DESCRIPTION OF MAJOR CURRENT AND POTENTIAL FUTURE PROGRAMS

ARC and its personnel work to develop technologies that enable the Information Age, expand the frontiers of knowledge for aeronautics and space, improve America's competitive position, and inspire future generations.

The following three specific goals address ARC's mission responsibilities:

- ARC provides Agency research leadership and world-class capability encompassing the fields of supercomputing and networking, high-assurance software development, verification and validation, automated reasoning, planning and scheduling, and human factors.

- ARC champions research efforts in air traffic control and human factors. ARC also leads the Agency's research efforts in rotorcraft technology, and has major responsibility for the creation of design and development process tools, wind tunnel testing, and simulation.

- ARC is responsible for science leadership, program coordination, the conduct of science research, and integration at the working level. ARC develops science and technology requirements for current and future flight missions that are relevant to astrobiology, including advanced concepts and technology development. This Center identifies and develops astrobiology mission opportunities, life sciences experiments for space flight, and space science research components of astrobiology. ARC also leads in information technology applications, and astrobiology education and outreach programs that inform and inspire the American public.

The centerpiece of ARC's implementation strategy is to focus on the use of information technology as an enabling and integrating vehicle for the entire Agency. In addition, renewed emphasis is being placed on the development and extension of strong collaborative relationships and partnerships with industry, universities, and institutes. The ARC implementation paradigm is being incorporated into all ARC research activities. This includes a renewed focus on such emerging and expanding research disciplines as origins/biogenesis, intelligent autonomous systems, human factors, and human-machine interface.

ARC – MAJOR RELATIONSHIPS

Relationships and partners are critical in business dealings. Real Property business opportunities are enabled by pairing an opportunity with a partner, and the most likely partners already have relationships with NASA. The following charts describe three major categories of relationships: (1) contractor relationships (can partner with NASA as tenants or Enhanced-Use Leasing partners); (2) university relationships (can partner with NASA as tenants, Enhanced-Use Leasing partners, or outsourcing research partners); and (3) federal agency relationships (can lead to multiple opportunities, including cost sharing and federal campus strategies).

Although in many cases contractor and university relationships exist because NASA is funding the relationships, there also exist opportunities for mutually beneficial Real Property partnerships. It is generally easier to do business based on existing relationships rather than attempting to forge completely new relationships.

CONTRACTORS

The following is a list of ARC's current most active contractors based upon total award value of the contract:

Contractor	Total Award Value
Lockheed Martin Engineering & Sciences Corp	$255,205,573
Sverdrup Technology Inc	$186,445,382
Raytheon S T X Corp	$152,146,693
Advanced Management Tech	$117,111,528
Lockheed Martin Space Operations	$109,329,511
Northrop Grumman Info Tech Inc	$91,378,369
QSS Group Inc	$77,224,700
Johnson Controls World Services	$63,625,869
Raytheon Technical Services Co	$59,256,029
Orbital Technologies Corp	$59,104,971
Payload Systems Inc	$44,456,417
PAI Corp	$38,060,426

Daniel Mann Johnson Mendenhal	$37,970562
Cube Corp	$37,172,876
Quantum Services Inc	$36,618,643
Computer Sciences Corp	$35,496,131
Orbital Sciences Corp	$32,284,084
Eloret Corp	$31,231,734
Star Enterprises Inc	$30,805,266

**Extracted from the NASA Procurement Management Database on 3/31/03.*

UNIVERSITIES

The following is a list of ARC's current most active university contractors based upon total award value of the contract:

University	**Total Award Value**
San Jose State University	$15,546,892
University of Hawaii Hilo	$11,862,000
Stanford University	$9,624,654
Carnegie Mellon University	$7,188,694
Montana State University	$7,096,000
Pennsylvania State University	$6,782,292
University of California at Los Angeles	$6,313,902
University of Hawaii	$6,167,971
Arizona State University	$6,156,038
Harvard University	$5,773,255
Purdue University	$5,000,000
University of Colorado at Boulder	$4,978,112
Scripps Research Institute	$4,866,110

University of Southern California	$3,750,000
Clark University	$3,125,600
Foothill De Anza College District	$2,550,080
California State University – Monterey Bay	$2,448,894
Colorado State University	$2,409,201
University of Michigan Ann Arbor	$2,010,067

**Extracted from the NASA Procurement Management Database on 3/31/03.*

The following is a list of ARC's federal agency relationships based upon the Real Property Inventory database:

Agency
Federal Emergency Management Agency
Department of the Interior
U.S. Navy
U.S. Army
U.S. Army Reserve
U.S. Air Force

**Extracted from the NASA Real Property Inventory Database list of In-Grants/Out-Grants.*

SECTION 4: INFRASTRUCTURE

LAND AND SITE METRICS

	Ames	Moffet Field	Total	*% of NASA Portfolio*
Land Area (Acres)	448	1,416	1,864	*0.5%*

Note: Land area does not include Crow's Landing and Camp Parks
**Extracted from the Land Report as of 2003 from the NASA Real Property Inventory Database on 5/9/03.*

FACILITY METRICS

	Number	Book Value (MMs)	2003 CRV (MMs)
Buildings	287	$817	$1,877
Other Structures	162	$111	$ 605
Total	449	$928	$2,482
% of NASA Portfolio	*9.3%*	*14.0%*	*13.0%*

**Extracted from the NASA Site Summary Report from the NASA Real Property Inventory Database on 5/9/03.*

DEFERRED MAINTENANCE ASSESSMENT RESULTS

An assessment of deferred maintenance was previously prepared for each NASA Center, the results of which are reflected on the chart below. The table indicates the summary of facilities condition of the Center by the Facilities Condition Index (FCI), developed during deferred maintenance analysis. The table also displays where the Center ranks in comparison to the other NASA Centers in terms of FCI and deferred maintenance as a percentage of CRV (13 is the highest ranking.) It should be noted that deferred maintenance amount set forth in the chart does not represent what the agency is currently spending. Instead, it demonstrates the amount that would need to be spent to solve the deferred maintenance problem.

2002	FCI	DM	BMAR	CRV	DM(%CRV)
Deferred Maintenance Assessment	4.0	$109 MM	$70 MM	$1.9 B	5.8%
Rank Among Centers	*T3*	-	-	-	*6*

*****Extracted from Report on the FY02 NASA – Wide Deferred Maintenance Assessment, March 2002.*

UTILITIES SYNOPSIS

The following chart reflects a brief synopsis of the Center's utilities.

Power	Electrical Power is purchased from Western Area Power Administration and Pacific Gas and Electric is the mediator. The power is divided at one-site substations, each 300 MW.
Heating	Almost every building has its own boiler that utilizes natural gas, however some buildings do share a boiler
Cooling	Cooling is provided by chillers and A/C units
Sewage	Sewage is handled off-site at 2 different facilities. 2/3 of sewage is treated by the City of Palo Alto in a gravity drain system and 1/3 of sewage is treated by the City of Sunnyvale in a sewage rejection system. One on-site lift station is used
Water	Water comes from the San Francisco water district and chilled water is made on-site using the chillers.

** Extracted from Report on the FY02 NASA – Wide Deferred Maintenance Assessment, March 2002.*

PROPERTY LISTING FROM THE REAL PROPERTY INVENTORY

NASA has an extraordinary database which lists its Real Property inventory. Although the team found a few anomalies, the database proves to be a reliable metric of the overall Real Property portfolio that is relatively accurate at the time of this report. A summary of the leased property, including in-grants and out-grants (if any), is shown on the following pages as a baseline for understanding the Real Property opportunities.

AMES Research Center

In/Out Grant Report

Grant	Reference Number	#	Property Name	Type	Size		Party	Effective Date	Expiration Date	Status
In-Grant	CONT # NAS2-01086 Mod. # 6	T28-D	MODULAR OFFICE TRAILER COMPLEX	Lease	2880	SF	MOBILE MODULAR MANAGEMENT CORP.	08/20/2001	08/20/2003	Active
In-Grant	CONT # NAS2-01086 Mod. # 6	T28-E	MODULAR OFFICE TRAILER COMPLEX	Lease	2880	SF	MOBILE MODULAR MANAGEMENT CORP.	08/20/2001	08/20/2003	Active
In-Grant	A65997D(ANG)	T38-A	MODULAR OFFICE TRAILER COMPLEX	Lease	5,650	SF	MOBILE MODULAR MANAGEMENT CORP.	07/01/2002	09/30/2003	Active
In-Grant	TEMP002	T923-B	TEMPORARY CHILD CARE TRAILER COMPLEX	Agreement	90,000	SF	U.S. Army Corp of Engineers	07/25/2001	07/25/2004	Active
In-Grant	CONT # NAS2-01085 Mod. # 3	T923-C	TEMPORARY CHILD CARE TRAILER COMPLEX	Lease	2,820	SF	MOBILE MODULAR MANAGEMENT CORP.	08/20/2001	08/20/2003	Active
Out-Grant	SAA2-401184	LAND	LAND	Agreement	0.820	AC	PAIX.net, Inc. (PAIX), and IP Networks, Inc.	07/01/2001	06/30/2006	Active
Out-Grant	SAA2-400820 Mod. # 0002	N127C	FEMA EQUIPMENT STORAGE SHED	Agreement	1,500	SF	Federal Emergency Management Agency	08/28/1996	12/20/2006	Active
Out-Grant	SAA2-400820 Mod. # 0002	N144	GENERAL WAREHOUSE	Agreement	109,600	SF	Federal Emergency Management Agency	08/28/1996	12/20/2006	Active
Out-Grant	SAA2-401338	N217	MAGNETIC STANDARDS LAB	Agreement	846	SF	GEOMETRICS, INC.	08/05/2002	08/05/2005	Active
Out-Grant	SAA2-401338	N217A	MAGNETIC TEST FACILITY	Agreement	2,158	SF	GEOMETRICS, INC.	08/05/2002	08/05/2005	Active
Out-Grant	SAA2-401272	N223	VISITORS CENTER/GIFT SHOP	Agreement	11,546	SF	NASA AMES EXCHANGE	10/23/2001	10/22/2004	Active
Out-Grant	SAA2-401272	N235	CAFETERIA BUILDING	Agreement	10,850	SF	NASA AMES EXCHANGE	10/23/2001	10/22/2004	Active

AMES Research Center

In/Out Grant Report

Out-Grant	SAA2-400820 Mod. # 0002	NA300	OPEN STORAGE COMPOUND	Agreement	9,840	SY	Federal Emergency Management Agency	08/28/1996	12/20/2006	Active
Out-Grant	SAA2-401559	T12-A	OFFICE TRAILER	Agreement	2,444	SF	MOFFETT FIELD HISTORICAL SOCIETY	03/31/2003	03/31/2007	Active

Moffett Federal Airfield

In/Out Grant Report

Grant	Reference Number	#	Property Name	Type	Size		Party	Effective Date	Expiration Date	Status
In-Grant	06-3800-3302	LAND	LAND	Permit	1	AC	California State Lands Commission	01/04/1953	04/04/1956	Expired
In-Grant	06-3800-6103	LAND	LAND	Permit	1	AC	CALTRANS/Dept.of PW, Div. of HWYS	11/04/1943	11/04/1945	Expired
In-Grant	06-3800-6101D	LAND	LAND	Permit	1	AC	City of Palo Alto	03/02/1938	12/01/1938	Expired
In-Grant	06-3800-610C	LAND	LAND	Permit	1	AC	Dept. of Public Works (Div. of Hwys)	02/08/1938	12/31/1938	Expired
In-Grant	06-3800-6002	LAND	LAND	Agreement	38.844	AC	Cargill Inc./Leslie Salt Co.	07/01/1994	06/01/2009	Active
In-Grant	06-3800-6001	LAND	LAND	Easement	1	AC	Pacific Telephone & Telegraph Co.	07/14/1949	11/30/1954	Expired
In-Grant	06-3800-6126	LAND	LAND	Permit	0.02	AC	Lockheed Martin	02/03/1978	02/03/1998	Expired
In-Grant	06-3800-3303	LAND	LAND	Permit	1266.17	AC	Leslie Salt Company	10/17/1955	12/31/1955	Expired
In-Grant	06-3800-2601	LAND	LAND	Easement	10.513	AC	Cargill Inc./Leslie Salt Company	07/01/1994	07/01/2094	Active
In-Grant	06-3800-3202	LAND	LAND	Agreement	0.51	AC	Cargill Inc./Leslie Salt Co. NF(R)-9643	01/22/1971	07/01/1994	Expired
In-Grant	06-3800-3201	LAND	LAND	Agreement	2.70	AC	Cargill Inc./Leslie Salt Co. NF(R)-9075	04/01/1970	07/01/1994	Expired
In-	06-3800-2901	LAND	LAND	Easement	0.3	A	State of California	07/14/	07/26/1983	Expired

Moffett Federal Airfield

In/Out Grant Report

Grant					84	C		1983		
In-Grant	06-3800-2602	LAND	LAND	Easement	0.06	AC	City of Sunnyvale, (NF(R)-27510)	11/24/1975	11/24/2075	Active
In-Grant	06-3800-2105	LAND	LAND	Easement	6.80	AC	Cargill Inc./Leslie Salt Company	10/18/1977	10/18/2027	Active
In-Grant	06-3800-1001	LAND	LAND	Easement	120	AC	Bayshore Freight Lines Inc.	07/07/1951	07/07/1956	Expired
In-Grant	06-3800-3304	LAND	LAND	Permit	0.0013 7	AC	City of Sunnyvale	09/01/1996	08/31/2006	Active
In-Grant	06-3800-1002	LAND	LAND	Easement	4.35	AC	Bayshore Freight Lines Inc.	01/25/1952	07/01/1956	Expired
Out-Grant	SAA2-401559	001	HANGAR ONE	Agreement	4,549	SF	MOFFETT FIELD HISTORICAL SOCIETY	03/31/2003	03/31/2007	Active
Out-Grant	SAA2-401272	003	TRAINING AND CONFERENCE CENTER	Agreement	1,607.5	SF	NASA AMES EXCHANGE	10/23/2001	10/22/2004	Active
Out-Grant	TEMP005	012	COMMISSARY/ADMINISTRATION	Agreement	64,152	SF	DEFENSE COMMISSARY AGENCY	07/01/1994	07/01/2019	Active
Out-Grant	TEMP005	013	COMMISSARY STORAGE	Agreement	16,080	SF	DEFENSE COMMISSARY AGENCY	07/01/1994	07/01/2019	Active
Out-Grant	SAA2-401582	014	ARMY HOUSING SELF-HELP FACILITY	Lease	1,936	SF	CARNEGIE MELLON UNIVERSITY	01/09/2003	12/31/2003	Active
Out-Grant	TEMP006	014	ARMY HOUSING SELF-HELP FACILITY	Agreement	10,140	SF	U.S. ARMY	04/01/2003	04/01/2004	Active

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Out-Grant	SAA2-401582	017	ADMINISTRATION AND TELEPHONE EXCHANGE	Lease	3,978	SF	CARNEGIE MELLON UNIVERSITY	01/31/2003	09/30/2003	Active
Out-Grant	SAA-401356	018	ADMINISTRATION BUILDING	Agreement	2,894	SF	THE GIRVAN INSTITUTE	06/04/2003	05/14/2007	Active
Out-Grant	SAA2-401272	019	NASA RESEARCH SUPPORT	Agreement	12,176	SF	NASA AMES EXCHANGE	10/23/2001	10/22/2004	Active
Out-Grant	SAA2-401356	019	NASA RESEARCH SUPPORT	Agreement	10,457	SF	THE GIRVAN INSTITUTE	05/15/2002	05/14/2007	Active
Out-Grant	TEMP005	031	COMMISSARY/STORAGE	Agreement	4,995	SF	DEFENSE COMMISSARY AGENCY	07/01/1994	07/01/2019	Active
Out-Grant	SAA2-400671	045	COMPUTER HISTORY MUSEUM STORAGE	Agreement	9,939	SF	Computer Museum History Center	02/08/2001	02/08/2003	Active
Out-Grant	TEMP004	047	AIRCRAFT MAINTENANCE HANGAR 3	Agreement	154,495	SF	CALIFORNIA AIR NATIONAL GUARD	07/01/1994	07/01/2004	Active
Out-Grant	SAA2-400083 Mod. # 0001	067	POST OFFICE	Agreement	2,777	SF	THE UNITED STATES POSTAL SERVICE	09/19/1995	09/19/2003	Active
Out-Grant	TEMP004	070	FUSE & DETONATOR MAGAZINE	Agreement	192	SF	CALIFORNIA AIR NATIONAL GUARD	07/01/1994	07/01/2004	Active
Out-Grant	TEMP004	071	HIGH EXPLOSIVE MAGAZINE	Agreement	546	SF	CALIFORNIA AIR NATIONAL GUARD	07/01/1994	07/01/2004	Active
Out-Grant	TEMP004	072	HIGH EXPLOSIVE MAGAZINE	Agreement	625	SF	CALIFORNIA AIR NATIONAL GUARD	07/01/1994	07/01/2004	Active
Out-Grant	TEMP004	073	HIGH EXPLOSIVE MAGAZINE	Agreement	546	SF	CALIFORNIA AIR NATIONAL GUARD	07/01/1994	07/01/2004	Active

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Out-Grant	TEMP004	074	HIGH EXPLOSIVE MAGAZINE	Agreement	546	SF	CALIFORNIA AIR NATIONAL GUARD	07/01/1994	07/01/2004	Active
Out-Grant	SAA2-401272	108	NASA EXCHANGE SWIMMING POOL	Agreement	260,000	GA	NASA AMES EXCHANGE	10/23/2001	10/22/2004	Active
Out-Grant	SAA2-401272	109	SWIMMING POOL DRESSING ROOMS AND EQUIP ROOM	Agreement	5,296	SF	NASA AMES EXCHANGE	10/23/2001	10/22/2004	Active
Out-Grant	TEMP004	111	TRANSPORTATION STORAGE	Agreement	4,100	SF	CALIFORNIA AIR NATIONAL GUARD	07/01/1994	07/01/2004	Active
Out-Grant	SAA2-401107 Mod.# 2	113	NAVY EXCHANGE STORAGE	Permit	978	SF	DEPARTMENT OF THE AIR FORCE	10/01/2001	07/01/2004	Active
Out-Grant	SAA2-400671	126	COMPUTER HISTORY MUSEUM CENTER	Agreement	13,300	SF	Computer Museum History Center	02/08/2001	02/08/2003	Active
Out-Grant	SAA2-400042	137	AIRCRAFT FUEL STORAGE TANK	Agreement	567,000	GA	Defense Fuel Supply Center	04/29/1996	04/28/2021	Active
Out-Grant	SAA2-400042	138	AIRCRAFT FUEL STORAGE TANK	Agreement	567,000	GA	Defense Fuel Supply Center	04/29/1996	04/28/2021	Active
Out-Grant	SAA2-400042	139	AIRCRAFT FUEL STORAGE TANK	Agreement	567,000	GA	Defense Fuel Supply Center	04/29/1996	04/28/2021	Active
Out-Grant	SAA2-400042	140	AIRCRAFT FUEL STORAGE TANK	Agreement	567,000	GA	Defense Fuel Supply Center	04/29/1996	04/28/2021	Active
Out-	SAA2-400042	141	TANK TRUCK	Agreement	240	G	Defense Fuel Supply	04/29/	04/28/2021	Active

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In/Out Grant Report

Grant			FILLING RACK			M	Center	1996		
Out-Grant	TEMP004	143	HIGH EXPLOSIVE MAGAZINE	Agreement	567	S F	CALIFORNIA AIR NATIONAL GUARD	07/01/1994	07/01/2004	Active
Out-Grant	TEMP004	146	TRANSPORTATION GARAGE	Agreement	38,545	S F	CALIFORNIA AIR NATIONAL GUARD	07/01/1994	07/01/2004	Active
Out-Grant	TEMP004	147	HIGH EXPLOSIVE MAGAZINE	Agreement	567	S F	CALIFORNIA AIR NATIONAL GUARD	07/01/1994	07/01/2004	Active
Out-Grant	TEMP007	152	ARMY RESERVE TRAINING CENTER	Agreement	37,102	S F	U.S. ARMY RESERVE	07/01/1994	07/01/2019	Active
Out-Grant	TEMP007	153	ARMY RESERVE ADMINISTRATION FACILITY	Agreement	15,785	S F	U.S. ARMY RESERVE	07/01/1994	07/01/2019	Active
Out-Grant	TEMP007	154	ARMY RESERVE ADMINISTRATION FACILITY	Agreement	15,785	S F	U.S. ARMY RESERVE	07/01/1994	07/01/2019	Active
Out-Grant	TEMP007	155	ARMY RESERVE ADMINISTRATION FACILITY	Agreement	16,013	S F	U. S. ARMY RESERVE	07/01/1994	07/01/2019	Active
Out-Grant	TEMP007	156	ARMY RESERVE ADMINISTRATION FACILITY	Agreement	15,785	S F	U. S. ARMY RESERVE	07/01/1994	07/01/2019	Active
Out-Grant	SAA2-400042	328	CONTAMINATED FUEL STORAGE TANK	Agreement	25,000	G A	Defense Fuel Supply Center	04/29/1996	04/28/2021	Active
Out-Grant	SAA2-400042	342	FUEL FARM STORAGE	Agreement	192	S F	Defense Fuel Supply Center	04/29/1996	04/28/2021	Active
Out-Grant	SAA2-400042	348	FUEL FARM SAMPLING/TEST	Agreement	780	S F	Defense Fuel Supply Center	04/29/1996	04/28/2021	Active

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In/Out Grant Report

			BUILDING							
Out-Grant	SAA2-401107	359	GOLF COURSE GROUNDS MAINTENANCE SHOP	Permit	1,000	SF	DEPARTMENT OF THE AIR FORCE	07/01/1994	07/01/2004	Active
Out-Grant	SAA2-400042	360	FUEL ADDITIVE STORAGE TANK	Agreement	595	GA	Defense Fuel Supply Center	04/29/1996	04/28/2021	Active
Out-Grant	SAA2-400042	361	CONTAMINATED FUEL STORAGE TANK	Agreement	20,000	GA	Defense Fuel Supply Center	04/29/1996	04/28/2021	Active
Out-Grant	SAA2-400042	362	CONTAMINATED FUEL STORAGE TANK	Agreement	97	GA	Defense Fuel Supply Center	04/29/1996	04/28/2021	Active
Out-Grant	SAA2-400042	372	FUEL LOADING RACK RESTROOM	Agreement	80	SF	Defense Fuel Supply Center	04/29/1996	04/28/2021	Active
Out-Grant	SAA2-400042	390	FUEL PARTS STORAGE	Agreement	192	SF	Defense Fuel Supply Center	04/29/1996	04/28/2021	Active
Out-Grant	SAA2-401107	399	COVERED STORAGE GOLF COURSE LANDSCAPING EQUIPMENT	Permit	2,400	SF	DEPARTMENT OF THE AIR FORCE	07/01/1994	07/01/2004	Active
Out-Grant	SAA2-401107	409	ABOVE GROUND FUEL DISPENSING TANK	Permit	500	GA	DEPARTMENT OF THE AIR FORCE	07/01/1994	07/01/2004	Active
Out-Grant	SAA2-401107	455	GOLF CART CHARGING AND MAINTENANCE FACILITY	Permit	4,365	SF	DEPARTMENT OF THE AIR FORCE	07/01/1994	07/01/2004	Active

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In/Out Grant Report

Out-Grant	SAA2-401107	471	HAZARDOUS MATERIAL STORAGE	Permit	100	SF	DEPARTMENT OF THE AIR FORCE	07/01/1994	07/01/2004	Active
Out-Grant	SAA2-401107	476	NAVY EXCHANGE RETAIL STORE	Permit	43,374	SF	DEPARTMENT OF THE AIR FORCE	07/01/1994	07/01/2004	Active
Out-Grant	TEMP004	484	AIR/UNDERWATER SHOP	Agreement	6,760	SF	CALIFORNIA AIR NATIONAL GUARD	07/01/1994	07/01/2004	Active
Out-Grant	TEMP004	485	GUARD & WATCH TOWERS	Agreement	81	SF	CALIFORNIA AIR NATIONAL GUARD	07/01/1994	07/01/2004	Active
Out-Grant	TEMP004	486	HIGH EXPLOSIVE MAGAZINE	Agreement	780	SF	CALIFORNIA AIR NATIONAL GUARD	07/01/1994	07/01/2004	Active
Out-Grant	TEMP004	487	HIGH EXPLOSIVE MAGAZINE	Agreement	780	SF	CALIFORNIA AIR NATIONAL GUARD	07/01/1994	07/01/2004	Active
Out-Grant	TEMP004	488	HIGH EXPLOSIVE MAGAZINE	Agreement	780	SF	CALIFORNIA AIR NATIONAL GUARD	07/01/1994	07/01/2004	Active
Out-Grant	TEMP004	489	HIGH EXPLOSIVE MAGAZINE	Agreement	780	SF	CALIFORNIA AIR NATIONAL GUARD	07/01/1994	07/01/2004	Active
Out-Grant	TEMP004	490	HIGH EXPLOSIVE MAGAZINE	Agreement	780	SF	CALIFORNIA AIR NATIONAL GUARD	07/01/1994	07/01/2004	Active
Out-Grant	TEMP004	491	HIGH EXPLOSIVE MAGAZINE	Agreement	780	SF	CALIFORNIA AIR NATIONAL GUARD	07/01/1994	07/01/2004	Active
Out-Grant	TEMP004	492	HIGH EXPLOSIVE MAGAZINE	Agreement	780	SF	CALIFORNIA AIR NATIONAL GUARD	07/01/1994	07/01/2004	Active
Out-Grant	SAA2-401107	502	GOLF COURSE RESTROOMS	Permit	192	SF	DEPARTMENT OF THE AIR FORCE	07/01/1994	07/01/2004	Active
Out-Grant	SAA2-401107	503	NAVY EXCHANGE SERVICE STATION	Permit	7,240	SF	DEPARTMENT OF THE AIR FORCE	07/01/1994	07/01/2004	Active

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In/Out Grant Report

Out-Grant	SAA2-401107	509	NAVY EXCHANGE BEAUTY AND BARBER SHOP	Permit	1,813	SF	DEPARTMENT OF THE AIR FORCE	07/01/1994	07/01/2004	Active
Out-Grant	TEMP004	528	HIGH EXPLOSIVE MAGAZINE	Agreement	400	SF	CALIFORNIA AIR NATIONAL GUARD	07/01/1994	07/01/2004	Active
Out-Grant	SAA2-401107	537	GOLF COURSE RESTROOMS	Permit	194	SF	DEPARTMENT OF THE AIR FORCE	07/01/1994	07/01/2004	Active
Out-Grant	SAA2-401356	543	ADMINISTRATION BUILDING	Agreement	7,352	SF	THE GIRVAN INSTITUTE	05/15/2002	05/14/2007	Active
Out-Grant	SAA2-400042	545	FUEL FARM OFFICES	Agreement	2,386	SF	Defense Fuel Supply Center	04/29/1996	04/28/2021	Active
Out-Grant	SAA2-401107	554	EXCHANGE GARDEN SHOP	Permit	27,493	SF	DEPARTMENT OF THE AIR FORCE	07/01/1994	07/01/2004	Active
Out-Grant	SAA2-401168	555	ADMINISTRATION BUILDING	Permit	5,270	SF	University of California, Santa Cruz	08/20/2001	08/20/2004	Active
Out-Grant	SAA2-401272	556	CREDIT UNION	Agreement	10,436	SF	NASA AMES EXCHANGE	10/23/2001	10/22/2004	Active
Out-Grant	TEMP004	561	MISSILE MAGAZINE	Agreement	2,160	SF	CALIFORNIA AIR NATIONAL GUARD	07/01/1994	07/01/2004	Active
Out-Grant	SAA2-401356	566	ADMINISTRATION (INCUBATOR)	Agreement	4,866	SF	THE GIRVAN INSTITUTE	05/15/2002	05/14/2007	Active
Out-Grant	SAA2-401107	569	AIR FORCE OFFICE OF SPECIAL INVESTIGATIONS	Permit	4,032	SF	DEPARTMENT OF THE AIR FORCE	07/01/1994	07/01/2004	Active
Out-Grant	TEMP004	574	STORAGE WAREHOUSE B	Agreement	960	SF	CALIFORNIA AIR NATIONAL GUARD	07/01/1994	07/01/2004	Active
Out-	SAA2-401272	583A	NASA EXCHANGE	Agreement	30,	S	Ames Exchange	10/23/	10/22/2004	Active

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In/Out Grant Report

Grant			HOTEL		900	F		2001		
Out-Grant	SAA2-401272	583B	NASA EXCHANGE HOTEL	Agreement	30,900	SF	Ames Exchange	10/23/2001	10/22/2004	Active
Out-Grant	SAA2-401585	583C	SAN JOSE STATE UNIVERSITY	Agreement	8,135	SF	SAN JOSE STATE (MTC)	04/18/2003	04/18/2006	Active
Out-Grant	TEMP004	585	VEHICLE WASH PLATFORM/FACILITY	Agreement	1,024	SF	CALIFORNIA AIR NATIONAL GUARD	07/01/1994	07/01/2004	Active
Out-Grant	SAA2-401107	596	MCDONALD'S RESTAURANT	Permit	4,784	SF	DEPARTMENT OF THE AIR FORCE	07/01/1994	07/01/2004	Active
Out-Grant	TEMP004	650	ADMINISTRATION BUILDING	Agreement	34,092	SF	CALIFORNIA AIR NATIONAL GUARD	07/01/1994	07/01/2004	Active
Out-Grant	TEMP004	651	BATTERY LOCKER/SHOP	Agreement	760	SF	CALIFORNIA AIR NATIONAL GUARD	07/01/1994	07/01/2004	Active
Out-Grant	TEMP004	653	ADMINISTRATION BUILDING	Agreement	16,388	SF	CALIFORNIA AIR NATIONAL GUARD	07/01/1994	07/01/2004	Active
Out-Grant	TEMP004	654	ADMINISTRATION BUILDING	Agreement	13,000	SF	CALIFORNIA AIR NATIONAL GUARD	07/01/1994	07/01/2004	Active
Out-Grant	TEMP004	655	MOBILITY WAREHOUSE A	Agreement	4,754	SF	CALIFORNIA AIR NATIONAL GUARD	07/01/1994	07/01/2004	Active
Out-Grant	TEMP004	656	129TH RESCUE OPERATIONS	Agreement	12,801	SF	CALIFORNIA AIR NATIONAL GUARD	07/01/1994	07/01/2004	Active
Out-Grant	TEMP004	657	WAREHOUSE F	Agreement	401	SF	CALIFORNIA AIR NATIONAL GUARD	07/01/1995	07/01/2004	Active
Out-Grant	TEMP004	658	WAREHOUSE F	Agreement	401	SF	CALIFORNIA AIR NATIONAL GUARD	07/01/1994	07/01/2004	Active
Out-	TEMP004	659	WAREHOUSE G	Agreement	364	S	CALIFORNIA AIR	07/01/	07/01/2004	Active

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In/Out Grant Report

Grant						F	NATIONAL GUARD	1994		
Out-Grant	TEMP004	660	WAREHOUSE H	Agreement	364	SF	CALIFORNIA AIR NATIONAL GUARD	07/01/1994	07/01/2004	Active
Out-Grant	TEMP004	661	WAREHOUSE I	Agreement	401	SF	CALIFORNIA AIR NATIONAL GUARD	07/01/1994	07/01/2004	Active
Out-Grant	TEMP004	669	PROPULSION/TRAINING FACILITY	Agreement	29,376	SF	CALIFORNIA AIR NATIONAL GUARD	07/01/1994	07/01/2004	Active
Out-Grant	TEMP004	679	CIVIL ENGINERRING WAREHOUSE	Agreement	1,080	SF	CALIFORNIA AIR NATIONAL GUARD	07/01/1994	07/01/2004	Active
Out-Grant	TEMP004	680	ANG HEADQUARTERS	Agreement	19,564	SF	CALIFORNIA AIR NATIONAL GUARD	07/01/1994	07/01/2004	Active
Out-Grant	TEMP004	681	BASE SUPPLY EQUIPMENT WAREHOUSE	Agreement	30,720	SF	CALIFORNIA AIR NATIONAL GUARD	07/01/1994	07/01/2004	Active
Out-Grant	TEMP004	682	HAZARDOUS/FLAMMABLE MATERIAL STORAGE FACILITY	Agreement	796	SF	CALIFORNIA AIR NATIONAL GUARD	07/01/1994	07/01/2004	Active
Out-Grant	TEMP004	683	ANG CIVIL ENGINEERING	Agreement	9,180	SF	CALIFORNIA AIR NATIONAL GUARD	07/01/1994	07/01/2004	Active
Out-Grant	TEMP004	684	GROUND SUPPORT MAINTENANCE	Agreement	4,340	SF	CALIFORNIA AIR NATIONAL GUARD	07/01/1994	07/01/2004	Active
Out-Grant	TEMP004	686	PARACHUTE/SURVIVAL GEAR REPAIR SHOP	Agreement	12,643	SF	CALIFORNIA AIR NATIONAL GUARD	07/01/1994	07/01/2004	Active
Out-	SAA2-401107	934	GOLF COURSE	Permit	6,1	S	DEPARTMENT OF THE	07/01/	07/01/2004	Active

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In/Out Grant Report

Grant			CLUB HOUSE (19TH HOLE)		04	F	AIR FORCE	1994		
Out-Grant	SAA2-401607	943	ADMINISTRATIVE FACILITY	Agreement	4,636	SF	CARNEGIE MELLON UNIVERSITY	06/23/2003	08/30/2003	Active
Out-Grant	SAA2-400042	953	AIRCRAFT READY FUEL DAY TANK AND PUMPING STATION	Agreement	105,000	GA	Defense Fuel Supply Center	04/29/1996	04/28/2021	Active
Out-Grant	TEMP004	958	COVERED STORAGE	Agreement	800	SF	CALIFORNIA AIR NATIONAL GUARD	07/01/1994	07/01/2004	Active
Out-Grant	TEMP004	992	TRANSPORTATION TRUCK REPAIR SHOP	Agreement	2,952	SF	CALIFORNIA AIR NATIONAL GUARD	07/01/1994	07/01/2004	Active
Out-Grant	06-3800-4503	LAND	LAND	Easement	8.565	AC	State of California, (No. NOy(R-65376)	02/11/1958	02/11/2058	Active
Out-Grant	SAA2-401289	LAND	LAND	Agreement	0.861	AC	Department of the Navy	12/18/2001	01/02/2003	Expired
Out-Grant	13593950	LAND	LAND	Easement	5.520	AC	Santa Clara County Transit District of CA	01/23/1997	01/23/2097	Active
Out-Grant	06-3803-4501	LAND	LAND	Easement	0.27	AC	S C County Flood Control & Water Conservation Dist.	03/08/1960	07/01/1994	Expired
Out-Grant	06-3800-9706	LAND	LAND	Easement	4.06	AC	P G & E Co.	01/11/1966	01/11/2016	Active
Out-Grant	06-3800-4701	LAND	LAND	Permit	1	AC	Pacific Telephone & Telegraph Co.	01/20/1945	01/20/2045	Active
Out-Grant	06-3800-4506	LAND	LAND	Easement	2.60	AC	State of California, (No. NOy(R)-57920)	02/03/1960	02/03/2060	Active

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Out-Grant	06-3800-4504	LAND	LAND	Easement	3.277	AC	State of California, (No. NOy(R)-65415)	05/19/1958	05/19/2058	Active
Out-Grant	06-3800-4502	LAND	LAND	Easement	.109	AC	Pacific Gas and Electric Company	09/26/1956	09/26/2056	Active
Out-Grant	06-3800-4501	LAND	LAND	Easement	4.73	AC	Leslie Salt Company	07/27/1956	10/08/1974	Expired
Out-Grant	SAA2-401308	LAND	LAND	Lease	35.4	AC	City of Sunnyvale, Ca	05/24/2002	05/24/2022	Active
Out-Grant	06-3800-4505	LAND	LAND	Easement	0.084	AC	Southern Pacific Co., (No. NOy(R)-57873)	03/16/1960	03/16/2010	Active
Out-Grant	SAA2-400042	MF1003	HI-SPEED AIRCRAFT FUELING PITS	Agreement	2,400	GM	Defense Fuel Supply Center	04/29/1996	04/28/2021	Active
Out-Grant	SAA2-400042	MF1004	FUEL/POL DISTRIBUTION SYSTEM	Agreement	66,792	LF	Defense Fuel Supply Center	04/29/1996	04/28/2021	Active
Out-Grant	SAA2-401107	MF1017	GOLF COURSE	Permit	128.2Acres/18	HO	DEPARTMENT OF THE AIR FORCE	07/01/1994	09/30/2004	Active

SECTION 5 – OPPORTUNITIES – DESCRIPTIONS, MEASURES, MATRIX

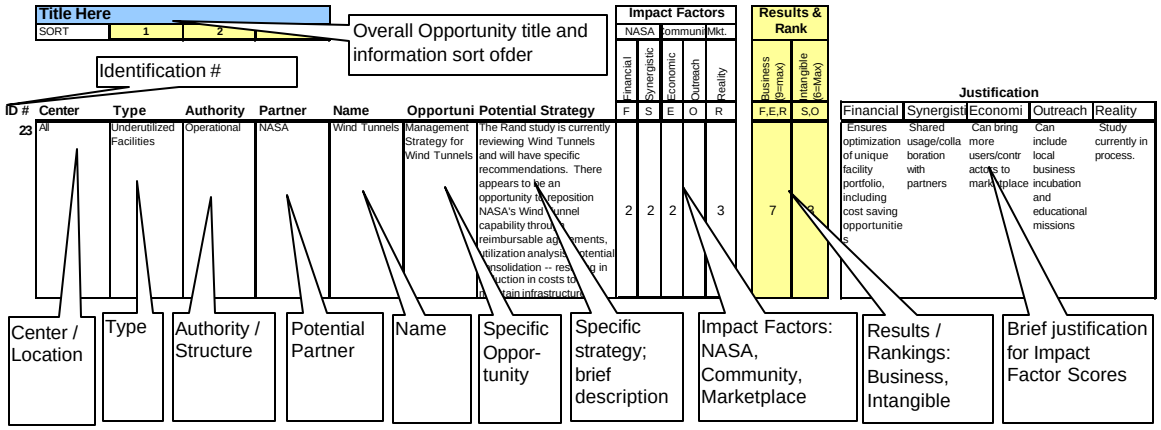
OVERVIEW

The information in this section provides an overview of the opportunities and examples discovered during the review. The opportunities shown here are the ones that were discussed during visits, or are examples of opportunities that became evident during brainstorming sessions.

Although the opportunities are well thought out conceptually, as an opportunity is considered for implementation, a much more detailed business plan should be conducted that looks at each opportunity based on current conditions and market elasticity. The need to develop a business plan for any opportunity cannot be overstated. The business plan needs to take into account the corporate requirement of the asset, the potential benefit to the Agency both economic and other intangibles, and the risks inherent to the Agency, including failure after entering into an opportunity agreement. The business plan should mitigate those risks through a rigorous review and if necessary a due-diligence study of the project. The opportunities are arrayed in a matrix that contains the basic elements of a business plan:

- Center/Location
- Opportunity Type
- Authority/Structure
- Partner
- Name
- Opportunity
- Potential Strategy
- Impact Factors and Results
- Justification

Each category describes an item NASA should consider in its business planning process. Each category is defined below and discussed in more detail through the rest of this report. An example of an opportunity in the matrix is shown below:



OPPORTUNITY TYPE

There are six overall types of Real Property opportunities. Each is summarized in Section 5 and described in more detail in Section 6.

- Underutilized Land Opportunities (including Research Parks, Federal Campus Opportunities, Contractor Parks)
- Underutilized Facilities Opportunities
- Facilities and Asset Management Strategy Opportunities
- Mission or Program Clarification Opportunities
- Restructuring Opportunities
- Utilities Management Opportunities

AUTHORITY / STRUCTURE

The authority category of information includes either the legislative authorities or the types of actions to be contemplated for each opportunity. The primary types of authorities and structures that are outlined in more detail in Section 5 include the following:

- Space Act Agreement
- Enhanced-Use Leasing (EUL)
- CoF

- Divest
- National Historic Preservation Act
- Outside Fence
- Example Opportunities

PARTNERS

Every business agreement has a partner, and this category of information describes some of the current or potential partners NASA could utilize in helping execute its Real Property business opportunities.

NAME

This category lists the 1-3 word project name. In several cases, the team has identified multiple scenarios for a particular building or area of the site; this category world list the same project "name" for all opportunities associated with that building or site. In other cases, similar strategies are being pursued including "marketing", "management", and federal campus ideas; all opportunities that are not building or site specific are given a strategy name.

OPPORTUNITY

The specific opportunities are relatively short descriptions that capture the essence of the opportunities. In several cases, the opportunity names refer to the same opportunity, but the strategy for implementing the opportunity could vary.

POTENTIAL STRATEGY

This section of the matrix captures in a few sentences some of the background and implementation strategies for each opportunity.

MEASUREMENT FILTERS AND FACTORS

There are many factors that need to be considered in order to determine if a particular opportunity is appropriate given all of the stakeholders and implementation structures. This section of the opportunity matrix attempts to measure each opportunity against a standard list of factors. They are broken into three overall categories representing the key stakeholders- NASA, community, and marketplace - and five total factors. The balancing of these factors is important to understand where an opportunity excels or falls short.

NASA impact factors:

Financial and Economic - Quantitative - NASA's financial incentives are to reduce costs or increase revenues, regardless of the impact on NASA's other activities.

Synergistic - Qualitative - The Space Act specifically encourages NASA to collaborate; therefore, over its history, NASA has established partnerships that are synergistic with NASA's goals, regardless of financial gain or expense.

Community impact factors:

Economic Impact - Quantitative - The communities where NASA is located benefit economically from NASA's presence, not only through direct investment, but also by providing jobs and other economic stimulus. This factor reflects the impact that each opportunity has economically on the community.

Outreach Impact - Qualitative - In addition to economic impact, NASA has impact on its community through direct outreach activities, and indirect activities such as bringing a highly educated workforce into the community.

Marketplace factors:

Reality of implementation – The marketplace is a multi-varied yet critical component of this analysis. The marketplace factor includes the speed at which an opportunity can be accomplished; the risk exposure to NASA; the likelihood of finding suitable partners; and the reality that the opportunity could be implemented. Many of these considerations will be at odds with one another.

The measurement system for the impact factors is relatively simple, reflecting the fact that the opportunities were discussed and analyzed on a conceptual level – not in high detail. Each factor is ranked on a "0-3" basis. Therefore the highest score for any one factor is a "3", and the lowest score is a "0". The measurements are translated as follows:

0 = No Impact
1 = Minimal impact
2 = Average impact
3 = High impact

RESULTS AND RANKING

The impact factors by themselves do not provide an understanding of an opportunity's full value. To obtain a better measurement of value at a conceptual level, the scores were added together in two categories:

Business Ranking - NASA financial, community economic impact and marketplace reality factors were added together to estimate the overall "Business" factors that

take economics and marketplace into account. The factors are typically the first factors to be ranked. The highest score for Business Ranking is a "9".

Intangible Ranking - The NASA synergistic and community outreach factors are combined to form the "intangible" factors. Since these factors are important, but much more subjective than the business ranking factors, these factors are ranked after the business ranking factors. The highest score for an Intangible Ranking is a "6".

The justification of each opportunity's individual factor is described briefly in the columns on the right side of the matrix.

"Example" opportunity descriptions are not ranked or described in the justification portion of the matrix. Many of the decisions for Example opportunities were carefully made given information currently available; whether or not the example is currently in the best interest of NASA does not mean that the decision to pursue the opportunity was unwise. Therefore, it is not helpful to score on the example opportunities in hindsight.

5 Ames Opportunity Matrix.xls

SORT ORDER: Center | Name | Opportunity

ID #	Center	Type	Authority	Partner	Name	Opportunity Name	Potential Strategy	Impact Factors: NASA Financial (F)	NASA Synergistic (S)	Economic (E)	Outreach (O)	Mkt. Reality (R)	Results & Rank: Business (9=max) (F,E,R)	Intangible (6=Max) (S,O)	Financial	Synergistic	Economic	Outreach	Reality
34	Ames	Facilities and Asset Management	Example	Carnegie Mellon	Carnegie Mellon	Carnegie Mellon - renovation of facility	Ames has entered into a long-term agreement with Carnegie Mellon (who is also a NASA contractor) to renovate and lease a facility in the historic district. This is an example of using a relationship to develop mutual synergies and ultimately provide NASA with a renovated facility.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
32	Ames	Facilities and Asset Management	EUL	Carnegie Mellon	Carnegie Mellon	Carnegie Mellon University Center - Grow presence, create University Center, structure as EUL	Carnegie Mellon University has an agreement with NASA; their intent is to develop a campus at Ames that can service the west coast. Ames is a high-research Center; Carnegie Mellon is a wealthy university that can make long term investments. Engage in active discussions with them to expand their presence substantially. Structure new leases as EUL - either whole campus or individual facilities. Encourage Carnegie Mellon to incorporate other universities as part of their campus. Could add local campus facilities for MIT, etc.	3	3	3	3	2	8	6	Strong revenue generation potential,	Partner brought on campus, becomes focal point for many different types of research	New user and non-federal jobs brought to community	Provides education opportunities	Universities are inherently risk-adverse and under financial scrutiny; may be over-supply of university centers in the United States.
49	Ames	Facilities and Asset Management	Example	NASA	Real Property Strategy	Master Plan	The Center has a well thought out EIS which will be supported by a master plan - that will allows it to be prepared to address its future proactively.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
28	Ames	Mission or Program Strategy	Operational	NASA	Animal Care	Animal Care Facility - Consolidate NASA-Wide research activities	The animal care facility appeared to be very underutilized, with only a small portion of the facility conducting research. NASA's mission includes biotechnology research, and potential animal research can support NASA's Astronaut program. Consider conducting all related research done at various NASA facilities at the Ames facility to take advantage of the current capabilities, and to focus "live" research activities.	2	1	1	0	2	5	1	Cost savings for NASA to coordinate and focus research	Potential cross-Center synergies	Modest	No outreach	Potential, but not sure of quantity of current research and how transportable to research could be
39	Ames	Mission or Program Strategy	EUL	Private Sector	GOCO	FFRDC - Convert Ames, EUL real estate to investor	Ames is a high-research Center similar to JPL. Consider combining the NASA Research Park and Ames Campus as a new model of FFRDC. As an FFRDC, EUL to investors who could access long term financing and would be responsible for long-term facility needs. Consider EUL on part or all of NRP/Ames campus to remove NASA from direct facilities obligations.	3	3	2	2	1	6	5	Potential cost savings/revenue generation; proceeds from EUL could help support unique facilities that may not be included in EUL	Potential collaboration with partners on campus	Bring more users and non-federal jobs to community	Can include educational institutions and initiatives	FFRDC's have pros and cons, could be more expensive; politically challenging to set up FFRDC and transfer employees; difficult to find educated investors to enter into EUL.
33	Ames	Restructure	EUL	Carnegie Mellon	Carnegie Mellon	Carnegie Mellon - Convert lease to EUL	Carnegie Mellon University has an agreement with NASA to lease and renovate a building in the historic district. Their intent is to develop a campus at Ames that can service the west coast. Consider restructuring the current agreement through EUL, or structuring future agreements on new facilities through EUL.	2	0	0	0	1	3	0	Potential additional revenue generation potential	No additional benefit	No additional benefit	No additional benefit	Agreement might be difficult to restructure

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5 Ames Opportunity Matrix.xls

SORT ORDER: Center | Name | Opportunity

ID #	Center	Type	Authority	Partner	Name	Opportunity Name	Potential Strategy	Impact Factors: NASA Financial (F)	NASA Synergistic (S)	Communi Economic (E)	Communi Outreach (O)	Mkt. Reality (R)	Results & Rank: Business (9=max) (F,E,R)	Intangible (6=Max) (S,O)	Financial	Synergistic	Economic	Outreach	Reality
38	Ames	Restructure	Space Act	Navy	East Side /Air Field	Golf Course - Restructure	The air force constructed a golf course which they still maintain on the East Side/Air field. The Air Force currently leases the golf course from NASA, although all of the improvements were provided by the Navy. The AF makes a profit on the use of the course. Consider restructuring the agreement to allow NASA to take responsibility for the golf course, ultimately taking over the revenues also.	2	1	1	1	3	6	2	Potential for revenue production to NASA or employee welfare.	Positive employee morale	Little economic impact on community	Community benefit, if access can be changed to allow community use.	Achievable
31	Ames	Underutilized Facilities	EUL	Private Sector	Animal Care	Animal Care Facility - EUL	Animal Care Facilities are highly regulated and difficult to manage but a necessary part of some research activities. Therefore, this facility could be considered "unique" within NASA. Enter into an EUL arrangement with organization that requires an Animal Care facility; turn over facility and operations completely, outsource animal care research activities when NASA requires additional research.	2	1	1	0	1	4	1	Cost savings for NASA by increased use	Limited synergies, unless similar programs being researched	Modest	No outreach	NASA outsources animal testing which could help protect NASA's image; difficult to find EUL partner to take responsibility.
29	Ames	Underutilized Facilities	Space Act	Private Sector	Animal Care	Animal Care Facility - Market	Animal Care Facilities are highly regulated and difficult to manage but a necessary part of some research activities. Therefore, this facility could be considered "unique" within NASA. Provide incentives to the contractor to market to companies who want access to approved, proven animal care facilities.	2	1	1	0	2	5	1	Cost savings for NASA by increased use	Limited synergies, unless similar programs being researched	Limited	No outreach	NASA will have to market facility publicly, and may face scrutiny of Animal Rights groups; potential security concerns (inside fence line
30	Ames	Underutilized Facilities	Divest	NASA	Animal Care	Animal Care Facility - Outsource	The animal care facility appeared to be very underutilized, with only a small portion of the facility conducting research. Consider not doing the research on center; outsource to contractors.	2	0	2	0	1	5	0	Cost savings for NASA increased expense in conducting research	No synergies	Benefit from increased non-federal jobs	No outreach	Potential, but will disrupt any research that needs to be done in close proximity to NASA researchers.
41	Ames	Underutilized Facilities	Divest	Private Sector	Hangars	California Space and Air Center - SpaceWorld	A private group has been formed to consider taking over Hangar One; they intent to renovate Hangar and convert to major tourism attraction focused on space, aerospace, etc. Divest the Hangar and remove NASA's obligation and involvement.	0	1	2	3	1	3	4	Cost savings and potential income for NASA	Little impact on synergies	Brings visitors to community	Positive Outreach	Very unique and expensive building with liability issues, may cost too much to prepare for divestiture.
40	Ames	Underutilized Facilities	EUL	Private Sector	Hangars	California Space and Air Center - SpaceWorld	A private group has been formed to consider taking over Hangar One; they intent to renovate hangar and convert to major tourism attraction focused on space, aerospace, etc. EUL to investors.	0	1	2	3	2	4	4	Cost savings and potential income for NASA; payments would probably be spread over time	Little impact on synergies	Brings visitors to community	Positive Outreach	Very unique and expensive building with liability issues, may cost too much to prepare for divestiture.

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5 Ames Opportunity Matrix.xls

SORT ORDER: Center | Name | Opportunity

ID #	Center	Type	Authority	Partner	Name	Opportunity Name	Potential Strategy	Impact Factors: NASA Financial (F)	NASA Synergistic (S)	Communi Economic (E)	Communi Outreach (O)	Mkt. Reality (R)	Results & Rank: Business (9=max) (F,E,R)	Intangible (6=Max) (S,O)	Financial	Synergistic	Economic	Outreach	Reality
42	Ames	Underutilized Facilities	EUL	Private Sector	Hangars	Hangars 1, 2 & 3	Hangars 1, 2 & 3 are unique historic structures, currently being partially used. Full use of the Hangars, however, require substantial investment in fire suppression systems; Hangar One has environmental contamination challenges. Consider completely documenting the Hangars for historical purposes; solicit interest from the private sector, potentially in conjunction with the air field, and lease through EUL.	1	0	1	0	1	3	0	Reduce NASA costs, obligations	No synergy	Could increase non-federal jobs in demolition contract	No outreach	Political / community challenge in demolition; once demolished they would be irreplaceable in their historic context (could build new ones). NASA could still maintain Hangars - along with fire risk - until a more economical solution is found.
43	Ames	Underutilized Facilities	Divest	NASA	Hangars	Hangars 1, 2 & 3	Hangars 1, 2 & 3 are unique historic structures, currently being partially used. Full use of the Hangars, however, require substantial investment in fire suppression systems; Hangar One has environmental contamination challenges. Consider completely documenting the Hangars for historical purposes; demolish.	1	0	1	0	1	3	0	Reduce NASA costs, obligations; need to; need to incur remediation/ demolition costs.	No synergy	Could increase non-federal jobs in demolition contract	No outreach	Political / community challenge in demolition; once demolished they would be irreplaceable in their historic context (could build new ones). NASA could still maintain Hangars - along with fire risk - until a more economical solution is found.

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5 Ames Opportunity Matrix.xls

SORT ORDER: Center | Name | Opportunity

ID #	Center	Type	Authority	Partner	Name	Opportunity Name	Potential Strategy	Impact Factors: NASA Financial (F)	NASA Synergistic (S)	Economic (E)	Community Outreach (O)	Mkt. Reality (R)	Results & Rank: Business (9=max) (F,E,R)	Intangible (6=Max) (S,O)	Financial	Synergistic	Economic	Outreach	Reality
47	Ames	Underutilized Land	Divest	Private Sector	NRP	Center Consolidation - Divest Moffett and NRP ASAP; maintain core Center.	Ames core NASA activities are centered around a small portion of the total land-holdings, which are very valuable and would not be easy to acquire in the future if NASA gave them up now. Additionally, some of the land is part of a superfund site and clean-up activities will take time. Complete partially-constructed fence line around center core, Divest all land to third parties. Stipulate that runway remains for use by SOFIA and other NASA uses. Could be similar process to El Toro in Irvine, CA.	3	0	2	1	2	7	1	Long term cost reduction and revenue generation for NASA	Potential synergies created but outside of NASA's control	Returns land to tax rolls, more non-federal jobs, retail sales, etc	No outreach created	Superfund site makes divesting complex; EIS is complete and "value" has already been created; however, new owner would need CEQA process to get full value-takes time; NASA would give up rights to future use of land.
35	Ames	Underutilized Land	EUL	Private Sector	East Side /Air Field	Center Consolidation - EUL Moffett and NRP; maintain core Center.	Ames core NASA activities are centered around a small portion of the total land-holdings, which are very valuable and would not be easy to acquire in the future if NASA gave them up now. Additionally, some of the land is part of a superfund site and clean-up activities will take time.. Complete partially-constructed fence line around center core, EUL remaining land to private entities or master developer. Maintain long-term ownership.	3	2	2	1	2	7	3	Long-term cost reduction and revenue generation for NASA	Potential synergies created if leased to university or contractors	Increases non-federal jobs, retail sales, tax base	Can involve universities, parks, etc	Some portions of the land are more valuable; need to potentially restructure agreements with other federal tenants; runway marketability is questionable.
36	Ames	Underutilized Land	Space Act	Federal Agency	East Side /Air Field	Federal Campus	Market Moffett Field to federal Agencies to increase number of Federal tenants who share similar security requirements; specifically try to find tenants who can increase the use of the runway and bring new potential tenants to the NRP. Also form sharing agreements to utilize other expensive/ unique NASA assets. Form cost-sharing agreements that lower everyone's occupancy costs. Federal Agency agreement could be accomplished through Space Act or EUL, with minor differences.	2	1	2	1	2	6	2	Reduces NASA cost	Limited with other federal agencies	Could increase non-federal jobs through commercial spin-offs of increasing Federal presence at Ames	Limited outreach	Dependent on finding Federal Agencies interested in expanding / relocating.
52	Ames	Underutilized Land	Example	Private Sector	Shenandoah	Historic District	The Shenandoah district of Ames is a historic district. Take advantage of historic district and lease in historic district to tenants who can improve facilities and maintain in case of future use for NASA. Does not have to use EUL structure.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
44	Ames	Underutilized Land	EUL	Lockheed Martin	Lockheed Martin Building	Lockheed Park	Lockheed Martin had expressed an interest in developing a major presence on the Ames Research Park. Focus on these discussions in light of EUL authorities.	3	2	2	0	3	8	2	Can result in revenue generation	Involves a NASA contractor	Increases presence of a major employer	No outreach	NASA has EUL authority and potentially a willing partner.

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5 Ames Opportunity Matrix.xls

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ID #	Center	Type	Authority	Partner	Name	Opportunity Name	Potential Strategy	Impact Factors: NASA Financial (F)	NASA Synergistic (S)	Economic (E)	Outreach (O)	Mkt. Reality (R)	Results & Rank: Business (9=max) (F,E,R)	Intangible (6=Max) (S,O)	Financial	Synergistic	Economic	Outreach	Reality
37	Ames	Underutilized Land	Divest	Private Sector	East Side /Air Field	Moffett Field - Divest	Divest Moffett Field by working with Mountain view, Sunnyvale, other Federal tenants currently occupying space. Potentially provides income and cost reduction.	3	1	2	1	1	6	2	Reduce NASA costs	Limited opportunity with NASA partners, could maintain NRP synergies	Could increase non-federal jobs, commercial activity	Some opportunity for outreach	Dependent on finding user to take over and difficulty in environmental liability
45	Ames	Underutilized Land	EUL	Private Sector	NRP	NASA Research Park - EUL to developer	Ames has a well-thought out research park that has been included in their master plan. Consider EUL of the complete research park area through private investors; maintaining long-term federal ownership while removing development risks. In this scenario, NASA does not become highly involved with development activities	2	3	3	3	3	8	6	Great potential for revenue generation, but some "development value" is passed along to master developer	Provides collaboration with universities/contractors	Provides non-federal jobs	Collaborates with community through university presence	Strong local market, partner interest. NASA puts development risks on Investor with expertise in development who takes a take leadership role in NRP, avoiding known mistakes.
46	Ames	Underutilized Land	EUL	Private Sector	NRP	NASA Research Park - EUL, NASA maintain management	Ames has a well-thought out research park that has been included in their master plan. Consider NASA maintaining a high involvement in the development, structuring EUL opportunities to individual tenants / occupants, similar to the Carnegie Mellon lease. Maintaining long-term federal ownership while removing development risks.	3	3	3	3	2	8	6	Great potential for revenue generation, NASA controls obtaining highest returns on every EUL	Provides great collaboration with universities/contractors	Provides non-federal jobs	Collaborates with community through university presence	Strong local market, partner interest. NASA maintains "development" risks in good but highly volatile market.
48	Ames	Underutilized Land	Example	Private Sector	NRP	NASA Research Park - New Model for NASA	Ames has a well-thought out research park that has been included in their master plan. Consider increasing NASA's involvement in programmatic planning of NRP to serve NASA's mission needs; consider consolidation of NASA's research activities in the NRP, and attracting universities.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
51	Ames	Underutilized Land	EUL	Private Sector	Runway	Runway - Global transportation hub	Consider utilizing the runway for air-based transportation hub; EUL land to warehouse uses; charge for use of air strip.	3	1	3	1	1	7	2	Currently NASA pays for most of the cost of runway activities; this scenario will turn it into a profit center	Could allow for more services to be offered benefiting NASA	Could bring new non-federal jobs and business	Not much	Would require time and investment to define concept and attract businesses, but possible; Mountain View and Sunny Vale citizens oppose high use of air strip; would require modification to EIS.

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5 Ames Opportunity Matrix.xls

SORT ORDER: Center | Name | Opportunity

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50	Ames	Underutilized Land	Divest	Private Sector	Runway	Runway / Moffett Field - Divest as raw land	Ames currently utilizes the runway, but not extensively. Consider relocating the "Sofia" program and Air National Guard, removing the runway and all facilities, divesting all land as mixed use housing/ commercial hub.	3	0	3	1	2	8	1	Potential significant revenue generation, although it will be a complex process; potentially requires investment to prepare land for sale	None, other than additional services and convenience; would remove flight-based capabilities	Major development returned to tax base, new housing, new retail, etc.	No outreach	Complex public process, similar to El Toro in Irvine, CA; potentially limit Ames future flight-based activities. The new owner needs to go through CEQA process.

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REAL PROPERTY OPPORTUNITIES CENTER REPORT: Dryden Flight Research Center Edwards, CA

CENTER REPORT – Table of Contents

Section 1: Executive Overview (In Briefing format)
- Introduction
- Participants
- Marketplace and Location
- Business, Missions, Vision
- Infrastructure and Population
- Best Business Opportunities

Section 2: General Market Statistics
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- Economic/Demographic Indicators
- Interpretation of Market

Section 3: Business, Mission, Vision of the Center
- Center History and Overview
- Description of Major Current and Potential Future Programs
- Major Relationships (Contractors, Universities, Government)

Section 4: Infrastructure
- Land and Site Metrics
- Facility Metrics and Deferred Maintenance Results
- Utilities Synopsis
- Property Listing from the Real Property Database

Section 5: Opportunities – Descriptions, Measures, Matrix
- Overview and Methodology
- Opportunity Matrix
- Analysis and Observations

REAL PROPERTY OPPORTUNITIES

CENTER REPORT:

Dryden Flight Research Center

Edwards, CA

Executive Overview

August 1, 2003

Dryden Flight Research Center Introduction

Goal of Visit

- Understand DFRC-specific issues
- Identify potential real property business alternatives
  - increasing revenues
  - reducing expenses
  - creating organizational improvement / mission enhancement

Schedule

- Research: 1/27/03 – 2/7/03
- Visit: 2/5/03

Dryden Flight Research Center Participants

NASA

INTERVIEW

- Bob Meyer
- Gwen Young
- Greg Spencer
- Russ Davis
- Steve Hodson
- Margaret Ashworth

COORDINATOR

- Howard Kass, NASA HQ
- Louis Steers, NASA DFRC

STAUBACH

STAUBACH VISIT

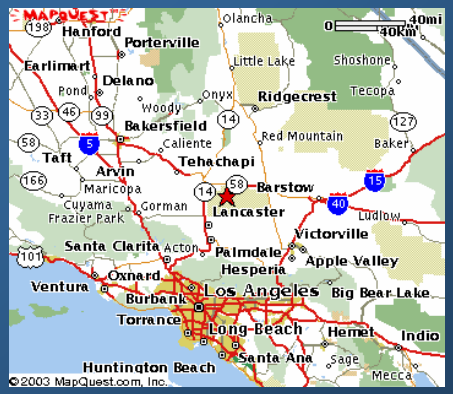
- Angela Foster
- Peter Brohoski
- Terry Laudick

STAUBACH RESEARCH

- Wayne Powell, Plexus
- Steve Ranck
- Angela Foster
- Cynthia Nunnally

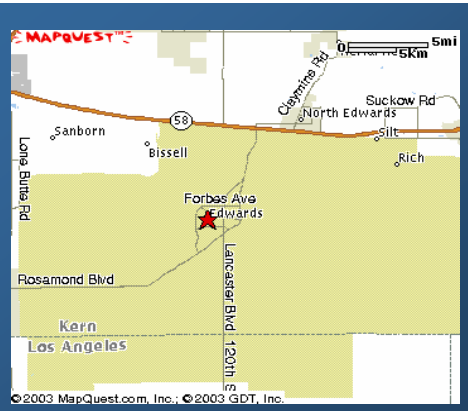
Dryden Flight Research Center Market Place and Location

REGION



- Kern County Population: 676,367
- Economy: NASA, Edwards AFB
- Large Buffer Area

DFRC SUBMARKET



- Access to Transportation – Fair
- Local Economy: NASA, Edwards AFB

Dryden Flight Research Center Business, Mission, Vision

- **Aerospace Technology Enterprise (Code R)**

- **Major Center Activities**
  - Atmospheric Flight Operations
  - Aerospace Flight Research
  - Shuttle Mission Support
  - Human Exploration and Development of Space
  - Earth Science

- **Center's View of Potential Future Activities**
  - Space Science
  - Biology and Physical Research

Dryden Flight Research Center
Infrastructure and Population Summary

Land	Acres	% Total	% Total of NASA Portfolio
Owned	0	0%	0%
Easement	0	0%	0%
Leased	0	0%	0%
Permit	921	100%	0.3%
Public	0	0%	0%
TOTAL	921		

* Extracted from the Land Report as of 2003 from the NASA Real Property Inventory Database on 5/9/03.

Structures	Quantity	Book Value	2003 CRV
Buildings	115	$ 118,719,815	$ 200,782,635
Other Structures	116	39,911,813	69,074,007
TOTAL	231	$ 158,631,628	$ 269,856,642

* Extracted from the NASA Site Summary Report from the NASA Real Property Inventory Database on 5/9/03.

Civil Servants	+	Contractors	+	Other	=	Total Center Population	Density (People/Acre)
659		960		0		1,619	1.8

* Extracted from the Facilities Utilization Program Report, September 2002.

Dryden Flight Research Center
Best Business Opportunities

Opportunity Name	Description
— Reutilization Center	— Successful hazardous materials management program — Good example of using a hazardous materials program to help avoid NASA's future cleanup costs
— Return to Air Force	— NASA leases its land from the Air Force — Analyze the option of returning land to the Air Force and leasing facilities as needed
— Cost Sharing Alliance	— Dryden is located at Edwards Air Force Base — Dryden and Ames have formed a successful cost sharing alliance that can serve as an example for other Centers where appropriate

SECTION 2: GENERAL MARKET STATISTICS

LOCATION

Dryden Flight Research Center (DFRC) is located in Kern County, CA. Dryden is the subject of a use permit from the United States Air Force and, therefore, is completely surrounded by Edwards Air Force base. The site is accessible via routes 58, 14 and Highway 395.

ECONOMIC/DEMOGRAPHIC INDICATORS

Economic/Demographic Component (County)	Indicators
2001 Population Estimate	676,367
Population % Change, 1990 to 2000	+21.4%
Housing Units, 2000	231,564
Median Value of owner-occupied housing units, 2000	$93,300
Median household money income, 1999	$35,446
Per capita money income, 1999	$15,760
Persons below poverty, percent, 1999	20.8%
Land Area, 2000 (square miles)	8,141
Persons per square mile, 2000	81.3
Largest Industries	Military, Agriculture

**Extracted from U.S. Census Bureau Quickfacts at quickfacts.census.gov on 3/3/03.*

INTERPRETATION OF MARKET

DFRC is in a remote location that is sparsely populated. The market place outside the fence is comprised of very low density, low value highway commercial and agricultural uses. The opportunities for value creation at DFRC are not supported by market parameters.

SECTION 3: BUSINESS, MISSION, VISION OF THE CENTER

CENTER HISTORY AND OVERVIEW

The Dryden Flight Research Center, located at Edwards, California, is NASA's primary installation for flight research. Projects at Dryden over the past 50 years have lead to major advancements in the design and capabilities of many civilian and military aircraft.

The history of the Dryden Flight Research Center is the story of modern flight research in this country. Since the pioneering days after World War II, when a small, intensely dedicated band of pilots, engineers, and technicians dared to challenge the "sound barrier" in the X-1, Dryden has been on the leading edge in aeronautics and, more recently, in space technology.

DESCRIPTION OF MAJOR CURRENT AND POTENTIAL FUTURE PROGRAMS

Dryden Flight Research Center is a premier installation for atmospheric flight operations and flight research. Dryden's charter is to research, develop, verify and transfer advanced aeronautics, space and related technologies.

Dryden uses research aircraft and demonstrators to investigate high-speed, high-altitude environments to reduce travel time over long distances, conduct atmospheric studies, and develop alternative aircraft configurations and structures to increase aircraft agility. Dryden's efforts in the development of a reusable launch vehicle leads efforts to reduce payload costs. The Center is partnering with the Federal Aviation Administration, the aviation industry, and the Department of Defense to develop technology and training to increase aviation safety and reduce the fatal aircraft accident rate.

Dryden's Mission Elements include:

- Conducting aeronautical flight research in support of global civil aviation, revolutionary technology leaps, and access to space;
- Supporting development and operations of the Space Shuttle and future access-to-space vehicles;
- Conducting airborne science mission and flight operations;
- Developing piloted and uninhabited aircraft testbeds for research and science mission.

DFRC – MAJOR RELATIONSHIPS

Relationships and partners are critical in business dealings. Real Property business opportunities are enabled by pairing an opportunity with a partner, and the most likely partners already have relationships with NASA. The following charts describe three major categories of relationships: (1) contractor relationships (can partner with NASA as tenants or Enhanced-Use Leasing partners); (2) university relationships (can partner with NASA as tenants, Enhanced-Use Leasing partners, or outsourcing research partners); and (3) federal agency relationships (can lead to multiple opportunities, including cost sharing and campus strategies).

Although in many cases contractor and university relationships exist because NASA is funding the relationships, there also exist opportunities for mutually beneficial Real Property partnerships. It is generally easier to do business based on existing relationships rather than attempting to forge completely new relationships.

CONTRACTORS

The following is a list of Dryden Flight Research Center's current most active contractors based upon total award value of the contract:

Contractor	Total Award Value
Micro Craft Inc	$77,105,757
Orbital Sciences Corp	$46,622,610
Analytical Services & Mat Inc	$43,115,703
Lockheed Martin Logistical Management Inc	$25,001,330
Arcata Associates Inc	$24,227,147
DTI Associates Inc	$21,746,730
Dyncorp	$19,078,701
Lockheed Martin Corp	$13,751,463
Kay & Associates Inc	$11,847,929
Boeing Co	$11,115,244
McDonnell Douglas Corp	$10,840,486
ACS Government Solutions Group	$9,954,886
Booz Allen & Hamilton Inc	$9,124,747
Infinity Technology Inc	$7,257,734

Scientific & Commercial Systems	$6,999,045
Systems Application Tech Inc	$4,771,084
GRD Inc	$3,535,408
BAE Systems	$3,000,000
Stronghold Engineering	$2,700,000
Aydin Corp	$2,500,000

** Extracted from the NASA Procurement Management Database on 3/31/03.*

UNIVERSITIES

The following is a list of Dryden Flight Research Center's current most active university contractors based upon total award value of the contract:.

University	Total Award Value
University of California Los Angeles	$6,460,668
North Carolina A&T State University	$600,000
Prairie View A&M University	$581,999
California State University Los Angeles	$479,997
Tuskegee University	$350,553
Case Western Reserve University	$312,194
California State University Fullerton	$300,000
Norfolk State University	$300,000
California State University San Bernardino	$296,810
California State University Fresno	$234,914
California State University Bakersfield	$177,679
Purdue University	$165,520
Brigham Young University	$102,034
Southern University A&M College Baton Rouge	$102,000
Estrella Mountain Community College	$100,000

University of California Santa Barbara	$92,000
Antelope Valley College	$53,266
New Mexico State University Las Cruz	$49,589
Oklahoma State University	$46,000
University of Michigan Ann Arbor	$46,000

**Extracted from the NASA Procurement Management Database on 3/31/03.*

The following is a list of Dryden Flight Research Center's federal agency relationships.

Agency
U.S. Air Force

**Extracted from the NASA Real Property Inventory Database list of In-Grants/Out-Grants.*

SECTION 4: INFRASTRUCTURE

LAND AND SITE METRICS

	Total	% of NASA Portfolio
Land Area (Acres)	921	0.3%

**Extracted from the Land Report as of 2003 from the NASA Real Property Inventory Database on 5/9/03.*

FACILITY METRICS

	Number	Book Value (MMs)	2003 CRV (MMs)
Buildings	115	$118	$200
Other Structures	116	$40	$ 69
Total	231	$158	$269
% of NASA Portfolio	*4.0%*	*2.4%*	*1.4%*

** Extracted from the NASA Site Summary Report from the NASA Real Property Inventory Database on 5/9/03.*

DEFERRED MAINTENANCE ASSESSMENT RESULTS

An assessment of deferred maintenance was previously prepared for each NASA Center, the results of which are reflected on the chart below. The table indicates the summary of facilities' condition of the Center by the Facilities Condition Index (FCI), developed during deferred maintenance analysis. The table also displays where the Center ranks in comparison to the other NASA Centers in terms of FCI and deferred maintenance as a percentage of CRV. (13 is the highest ranking.) It should be noted that deferred maintenance amount set forth in the chart does not represent what the agency is currently spending. Instead, it demonstrates the amount that would need to be spent to solve the deferred maintenance problem.

2002	FCI	DM	BMAR	CRV	DM(%CRV)
Deferred Maintenance Assessment	4.1	$8.1 MM	$10 MM	$264 MM	3.3%
Rank Among Centers	*T1*	-	-	-	*T1*

** Extracted from Report on the FY02 NASA – Wide Deferred Maintenance Assessment, March 2002.*

UTILITIES SYNOPSIS

The following chart reflects a brief synopsis of the Center's utilities.

Power	Electrical Power comes from Southern California Edison, via Edwards AFB. The substations are rated @ 12.47 kva.
Heating	Employs a steam boiler heating system. The boiler uses natural gas and it is 231 horsepower.
Cooling	The main portion of cooling comes from on-site chillers and air handlers, with additional support provided by AC package units.
Sewage	All sewage is handled by Edwards AFB.
Water	There are 2 types of water systems, potable/fresh and fire. DFRC makes its own chilled water.

**Extracted from Report on the FY02 NASA- Wide Deferred Maintenance Assessment, March 2002.*

PROPERTY LISTING FROM THE REAL PROPERTY INVENTORY

NASA has an extraordinary database which lists its Real Property inventory. Although the team found a few anomalies, the database proves to be a reliable metric of the overall Real Property portfolio that is relatively accurate at the time of this report. A summary of the leased property, including in-grants and out-grants (if any), is shown on the following pages as a baseline for understanding the Real Property opportunities.

Dryden Flight Research Center

In/Out Grant Report

Grant	Reference Number	#	Property Name	Type	Size		Party	Effective Date	Expiration Date	Status
In-Grant	96-02-01-MA-A	1623	AIRCRAFT SUPPORT FACILITY	Agreement	146,129	SF	AFFTC	03/25/1996	12/31/2001	Active

SECTION 5 – OPPORTUNITIES – DESCRIPTIONS, MEASURES, MATRIX

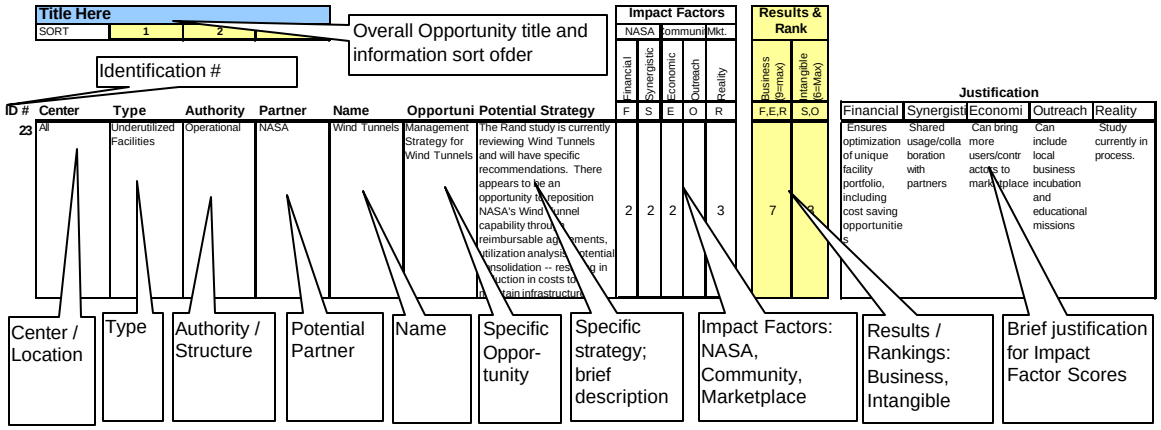
OVERVIEW

The information in this section provides an overview of the opportunities and examples discovered during the review. The opportunities shown here are the ones that were discussed during visits, or are examples of opportunities that became evident during brainstorming sessions.

Although the opportunities are well thought out conceptually, as an opportunity is considered for implementation, a much more detailed business plan should be conducted that looks at each opportunity based on current conditions and market elasticity. The need to develop a business plan for any opportunity cannot be overstated. The business plan needs to take into account the corporate requirement of the asset, the potential benefit to the Agency both economic and other intangibles, and the risks inherent to the Agency, including failure after entering into an opportunity agreement. The business plan should mitigate those risks through a rigorous review and if necessary a due-diligence study of the project. The opportunities are arrayed in a matrix that contains the basic elements of a business plan:

- Center/Location
- Opportunity Type
- Authority/Structure
- Partner
- Name
- Opportunity
- Potential Strategy
- Impact Factors and Results
- Justification

Each category describes an item NASA should consider in its business planning process. Each category is defined below and discussed in more detail through the rest of this report. An example of an opportunity in the matrix is shown below:



OPPORTUNITY TYPE

There are six overall types of Real Property opportunities. Each is summarized in Section 5 and described in more detail in Section 6.

- Underutilized Land Opportunities (including Research Parks, Federal Campus Opportunities, Contractor Parks)
- Underutilized Facilities Opportunities
- Facilities and Asset Management Strategy Opportunities
- Mission or Program Clarification Opportunities
- Restructuring Opportunities
- Utilities Management Opportunities

AUTHORITY / STRUCTURE

The authority category of information includes either the legislative authorities or the types of actions to be contemplated for each opportunity. The primary types of authorities and structures that are outlined in more detail in Section 5 include the following:

- Space Act Agreement
- Enhanced-Use Leasing (EUL)
- CoF

- Divest
- National Historic Preservation Act
- Outside Fence
- Example Opportunities

PARTNERS

Every business agreement has a partner, and this category of information describes some of the current or potential partners NASA could utilize in helping execute its Real Property business opportunities.

NAME

This category lists the 1-3 word project name. In several cases, the team has identified multiple scenarios for a particular building or area of the site; this category world list the same project "name" for all opportunities associated with that building or site. In other cases, similar strategies are being pursued including "marketing", "management", and federal campus ideas; all opportunities that are not building or site specific are given a strategy name.

OPPORTUNITY

The specific opportunities are relatively short descriptions that capture the essence of the opportunities. In several cases, the opportunity names refer to the same opportunity, but the strategy for implementing the opportunity could vary.

POTENTIAL STRATEGY

This section of the matrix captures in a few sentences some of the background and implementation strategies for each opportunity.

MEASUREMENT FILTERS AND FACTORS

There are many factors that need to be considered in order to determine if a particular opportunity is appropriate given all of the stakeholders and implementation structures. This section of the opportunity matrix attempts to measure each opportunity against a standard list of factors. They are broken into three overall categories representing the key stakeholders- NASA, community, and marketplace - and five total factors. The balancing of these factors is important to understand where an opportunity excels or falls short.

NASA impact factors:

Financial and Economic - Quantitative - NASA's financial incentives are to reduce costs or increase revenues, regardless of the impact on NASA's other activities.

Synergistic - Qualitative - The Space Act specifically encourages NASA to collaborate; therefore, over its history, NASA has established partnerships that are synergistic with NASA's goals, regardless of financial gain or expense.

Community impact factors:

Economic Impact - Quantitative - The communities where NASA is located benefit economically from NASA's presence, not only through direct investment, but also by providing jobs and other economic stimulus. This factor reflects the impact that each opportunity has economically on the community.

Outreach Impact - Qualitative - In addition to economic impact, NASA has impact on its community through direct outreach activities, and indirect activities such as bringing a highly educated workforce into the community.

Marketplace factors:

Reality of implementation – The marketplace is a multi-varied yet critical component of this analysis. The marketplace factor includes the speed at which an opportunity can be accomplished; the risk exposure to NASA; the likelihood of finding suitable partners; and the reality that the opportunity could be implemented. Many of these considerations will be at odds with one another.

The measurement system for the impact factors is relatively simple, reflecting the fact that the opportunities were discussed and analyzed on a conceptual level – not in high detail. Each factor is ranked on a "0-3" basis. Therefore the highest score for any one factor is a "3", and the lowest score is a "0". The measurements are translated as follows:

0 = No Impact
1 = Minimal impact
2 = Average impact
3 = High impact

RESULTS AND RANKING

The impact factors by themselves do not provide an understanding of an opportunity's full value. To obtain a better measurement of value at a conceptual level, the scores were added together in two categories:

Business Ranking - NASA financial, community economic impact and marketplace reality factors were added together to estimate the overall "Business" factors that

take economics and marketplace into account. The factors are typically the first factors to be ranked. The highest score for Business Ranking is a "9".

Intangible Ranking - The NASA synergistic and community outreach factors are combined to form the "intangible" factors. Since these factors are important, but much more subjective than the business ranking factors, these factors are ranked after the business ranking factors. The highest score for an Intangible Ranking is a "6".

The justification of each opportunity's individual factor is described briefly in the columns on the right side of the matrix.

"Example" opportunity descriptions are not ranked or described in the justification portion of the matrix. Many of the decisions for Example opportunities were carefully made given information currently available; whether or not the example is currently in the best interest of NASA does not mean that the decision to pursue the opportunity was unwise. Therefore, it is not helpful to score on the example opportunities in hindsight.

5 Dryden Opportunity Matrix.xls

SORT ORDER: Center | Name | Opportunity

ID #	Center	Type	Authority	Partner	Name	Opportunity Name	Potential Strategy	Impact Factors: NASA Financial (F)	NASA Synergistic (S)	Communi Economic (E)	Communi Outreach (O)	Mkt. Reality (R)	Results & Rank: Business (9=max) F,E,R	Intangible (6=Max) S,O	Financial	Synergistic	Economic	Outreach	Reality
55	Dryden	Facilities and Asset Management	Example	Air Force	Shared Cost	Federal Campus - Cost sharing alliance	Good example of cooperating with resident federal agencies in cost reduction.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
53	Dryden	Facilities and Asset Management	Divest	Air Force	Consolidation Dryden	Return to Air Force, rent facilities as needed	NASA has a land-use permit for the land with the Air Force Flight Test Center. Maintain airport operations, but substantially reduce presence at Dryden to reduce costs.	1	1	0	0	1	2	1	Moderate cost savings potential	Synergies only with Air Force	No net benefit to community	No outreach	No substantial motive for NASA
54	Dryden	Mission or Program Strategy	Example	NASA	Reutilization Center	Reutilization Center system for hazardous materials	Dryden has a good system for managing hazardous materials, ultimately protecting NASA's future facilities clean up operations costs.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				

The information shown here is conceptual and not intended for immediate action. A business plan including all business economics, structures, strategies and risks should be evaluated prior to the execution of any opportunity.

REAL PROPERTY OPPORTUNITIES CENTER REPORT: Glenn Research Center Cleveland, Ohio

CENTER REPORT – Table of Contents

Section 1: Executive Overview (In Briefing format)
- Introduction
- Participants
- Marketplace and Location
- Business, Missions, Vision
- Infrastructure and Population
- Best Business Opportunities

Section 2: General Market Statistics
- Location
- Economic/Demographic Indicators
- Interpretation of Market

Section 3: Business, Mission, Vision of the Center
- Center History and Overview
- Description of Major Current and Potential Future Programs
- Major Relationships (Contractors, Universities, Government)

Section 4: Infrastructure
- Land and Site Metrics
- Facility Metrics and Deferred Maintenance Results
- Utilities Synopsis
- Property Listing from the Real Property Database

Section 5: Opportunities – Descriptions, Measures, Matrix
- Overview and Methodology
- Opportunity Matrix
- Analysis and Observations

REAL PROPERTY OPPORTUNITIES

CENTER REPORT:

Glenn Research Center

Cleveland, Ohio

Executive Overview

August 1, 2003

Glenn Research Center Introduction

Goal of Visit

- Understand GRC-specific issues
- Identify potential real property business alternatives
  - increasing revenues
  - reducing expenses
  - creating organizational improvement / mission enhancement

Schedule

- Research: 1/7/03 – 1/17/03
- Visit: 1/13/03 – 1/15/03

Glenn Research Center Participants

NASA

INTERVIEW

- Donald Campbell
- Julian Earls
- Randy Furnas
- Randy Furnas
- John Hairston
- Peter McCallum
- Gary Seng
- Rick Danks
- Joe Torri
- Dallas Lauderdale
- Jeff Swan
- John Hamley
- Bob Pozak
- Eli Naffah
- Arvn Sehra
- Rudolph Sadana
- Dave Furih (SAIC)
- Carol Cash (CAPRA)
- Ann Heyward (OAI)

COORDINATOR

- Tony Cuticchia, NASA HQ
- Joe Morris, NASA GRC

MARKETPLACE

- Tom Jordan, City of Cleveland
- Vince Adamus, City of Brook Park

STAUBACH

STAUBACH VISIT

- Kurt Haglund
- Angela Foster
- Peter Brohoski

STAUBACH RESEARCH

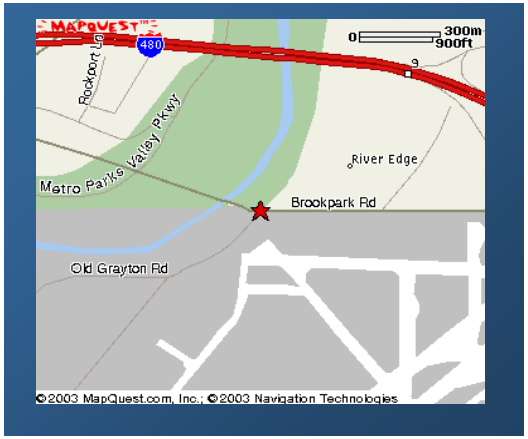
- Wayne Powell, Plexus
- Steve Ranck

Glenn Research Center
Market Place and Location

REGION

- Cuyahoga County Population: 1,380,421
- Economy: Health, Education, Manufacturing
- Several Universities
- Automotive Industry
- Low Cost of Living

GRC SUBMARKET



- Access to Transportation - Good
- Local Economy: NASA + Manufacturing, Air Cargo
- Low Housing Costs

Glenn Research Center Business, Mission, Vision

- **Aerospace Technology Enterprise (Code R)**
- **Major Center Activities**
  - Turbo Machinery
  - Aeropulsion and Aerospace
  - Microgravity Research
- **Center's View of Potential Future Activities**
  - Microgravity Research
  - Biomedical Experiments

Glenn Research Center
Infrastructure and Population Summary (Includes Plum Brook Station)

Land	Acres	% Total	% Total of NASA Portfolio
Owned	7107	99.8%	1.9%
Easement	0	0%	0%
Leased	13	0.2%	.003%
Permit	0	0%	0%
Public	0	0%	0%
TOTAL	7,120		

* Extracted from the Land Report as of 2003 from the NASA Real Property Inventory Database on 5/9/03.

Structures	Quantity	Book Value	2003 CRV
Buildings	268	$ 461,705,435	$ 1,789,350,946
Other Structures	187	152,242,902	673,302,999
TOTAL	455	$ 613,948,337	$ 2,462,653,945

* Extracted from the NASA Site Summary Report from the NASA Real Property Inventory Database on 5/9/03.

Civil Servants	+	Contractors	+	Other	=	Total Center Population	Density (People/Acre)
1,905		1,577		95		3,577	0.5

* Extracted from the Facilities Utilization Program Report, September 2002.

Glenn Research Center
Best Business Opportunities

Opportunity Name	Description
— Rye Beach Pumping Station (Plum Brook)	— NASA owns a water pumping station at Lake Erie that Erie County would like to acquire — NASA should use a utilities valuation consultant to ensure maximum value is obtained — Consider EUL or sale of facility
— Historic District	— Consider designating Glenn as an historic district similar to the Shenandoah District at Ames — Where possible, lease facilities to private sector and invest proceeds back into facilities
— Divest Buildings Outside Fence	— NASA has two buildings that are located outside the main gate and, therefore, are not within a secured area — Consider divesting these buildings and use proceeds to build or renovate inside the fence
— Divest Plum Brook	— NASA owns and maintains over 6,000 acres at Plum Brook — Consider divesting of land except for the nuclear testing area (the nuclear reactor facility is being decommissioned but this process will take time)

SECTION 2: GENERAL MARKET STATISTICS

LOCATION

Glenn Research Center is located in Cuyahoga County, Ohio. Cuyahoga County is located in the northeast portion of the state, and is the largest in population of Ohio's 88 counties. Interstate Highways 80 and 90, U.S. Routes 6, 20, and 322, and State Routes 2, 10, and 82 cross the county east and west, and Interstate Highways 71 and 77, U.S. Route 42, and State Routes 3, 8, 14, 91, and 94 run north and south. The Cuyahoga and Rocky Rivers flow through the county.

ECONOMIC/DEMOGRAPHIC INDICATORS

Economic/Demographic Component (County)	Indicators
2001 Population Estimate	1,380,421
Population % Change, 1990 to 2000	-1.3%
Housing Units, 2000	616,903
Median Value of owner-occupied housing units, 2000	$113,800
Median household money income, 1999	$39,168
Per capita money income, 1999	$22,272
Persons below poverty, percent, 1999	13.1%
Land Area, 2000 (square miles)	458
Persons per square mile, 2000	3,040
Largest Industries	Education, Health, Manufacturing, Retail Trade

** Extracted from the U.S. Census Bureau Quickfacts at quickfacts.census.gov on 2/14/03.*

INTERPRETATION OF MARKET

Cuyahoga County enjoys a low cost of living and a stable employment base centered on Manufacturing, Medicine and Trade. However, the population has decreased over the last ten years and industry has not been able to draw employment and population back to the county at the pace it has desired. In addition, the county does not boast particularly healthy levels of household and per capital income. Despite some relative stability, Cuyahoga County does not represent a favorable Real Property investment market. However, the Plum Brook Station property arguably can be viewed differently. Plum Brook's water system and buffer land are excellent attributes and the area may be considered more investment favorable and marketable.

SECTION 3: BUSINESS, MISSION, VISION OF THE CENTER

CENTER HISTORY AND OVERVIEW

NASA Glenn was established in 1941 by the National Advisory Committee for Aeronautics (NACA). It was one of three such Centers nationwide. Groundbreaking ceremonies for the new lab were held at the site in Cleveland on January 23, 1941, and the new NACA Aircraft Engine Research Laboratory was born. In April 1947 the Cleveland laboratory was renamed the Flight Propulsion Research Laboratory to mark its transition from an engine laboratory, charged with assisting industry with its wartime development problems, to a laboratory with the freedom to explore areas in propulsion research that seemed to hold promise for the future. The following year, after the death of George W. Lewis, the Director of Aeronautical Research for the NASA was born and the lab became part of the foundation of the new agency and was renamed the NASA Lewis Research Center.

On March 1, 1999, the Lewis Research Center was officially renamed the NASA John H. Glenn Research Center at Lewis Field. The name recognizes the contributions of two outstanding men, John H. Glenn and George W. Lewis. The designation of the historic site upon which the Center is built as Lewis Field celebrates the legacy of George W. Lewis.

DESCRIPTION OF MAJOR CURRENT AND POTENTIAL FUTURE PROGRAMS

The Glenn Research Center's mission is to work as a diverse team in partnership with government, industry, and academia to increase national wealth, safety, and security, protect the environment, and explore the universe. Glenn develops and transfers critical technologies that address national priorities through research, technology development, and systems development for safe and reliable aeronautics, aerospace, and space applications.

Glenn leads research and development in Aeropropulsion, powering flight through the atmosphere and beyond. The Center's Aeropropulsion program plays a significant role in the Agency's goals to promote economic growth and national security through safe, superior, and environmentally compatible U.S. civil and military aircraft propulsion systems. The Agency's major efforts are in subsonic, supersonic, hypersonic, general aviation, and high-performance aircraft propulsion systems as well as in materials, structures, internal fluid mechanics, instrumentation and controls, interdisciplinary technologies, and aircraft icing research.

Moreover, NASA Glenn specializes in Turbomachinery. The Center is committed to developing new and innovative technology and leveraging its computational, analytical, and experimental expertise in turbomachinery to future aerospace programs. The results will be improvements in reliability, performance, and efficiency; increases in affordability, capacity, safety, and environmental capability; and reductions in design cycle time and development costs.

Glenn also leads research in the microgravity science disciplines of fluid physics, combustion science and the field of microgravity acceleration measurement. Many shuttle and space station science missions have an experiment managed by Glenn. The Center also designs power and propulsion systems for space flight systems in support of NASA programs such as the International

Space Station, Mars Pathfinder, and Deep Space 1. In addition, Glenn also leads NASA's Space Communications Program, including the operation of the ACTS satellite.

GRC – MAJOR RELATIONSHIPS

Relationships and partners are critical in business dealings. Real property business opportunities are enabled by pairing an opportunity with a partner, and the most likely partners already have relationships with NASA. The following charts describe three major categories of relationships: (1) contractor relationships (can partner with NASA as tenants or Enhanced-Use Leasing partners); (2) university relationships (can partner with NASA as tenants, Enhanced-Use Leasing partners, or outsourcing research partners); and (3) federal agency relationships (can lead to multiple opportunities, including cost sharing and federal campus strategies).

Although in many cases contractor and university relationships exist because NASA is funding the relationships, there also exist opportunities for mutually beneficial real property partnerships. It is generally easier to do business based on an existing relationship rather than attempting to forge completely new relationships.

CONTRACTORS

The following is a list of Glenn Research Center's current most active contractors based upon total award value of the contract:

Contractor	Total Award Value
Northrop Grumman Info Tech Inc	$330,305,590
United Technologies Corp	$198,970,000
General Electric Co	$198,771,100
Williams International Corp	$154,000,000
Allison Advanced Development Co	$148,500,000
Honeywell International Inc	$119,000,000
Indyne Inc	$103,884,484
Zin Technologies Inc	$102,000,000
QSS Group Inc	$71,972,729
Boeing Co	$58,500,000
McDonnell Douglas Corp	$55,588,326
Call Henry Inc	$49,515,059
Akima Corp	$46,844,661
ACS Government Solutions Group	$43,421,274
Gilchrist Electric & Supply Co	$37,034,909

RS Information Systems Inc	$30,000,000
First Energy Corp	$28,013,988
GASL Inc	$26,000,000

**Extracted from the NASA Procurement Management Database on 3/31/03.*

UNIVERSITIES

The following is a list of Glenn Research Center's current most active university contractors based upon total award value of the contract:

University	**Total Award Value**
University of Florida	$17,700,000
University of Maryland College Park	$15,000,000
Clark Atlanta University	$5,998,945
University of Central Florida	$5,425,000
Auburn University	$4,620,500
Case Western Reserve University	$4,198,800
University of Texas Austin	$3,884,324
Texas A&M University	$3,727,500
Tennessee State University	$2,503,355
University of Illinois Urbana	$1,805,000
Pennsylvania State University	$1,800,000
Harvard University	$1,748,000
Princeton University	$1,737,680
North Carolina Central University	$1,600,000
North Carolina A&T University	$1,594,351
Mississippi State University	$1,540,000
Ohio Wesleyan University	$1,497,000
Rice University	$1,246,223
Northwestern University Evanston	$1,179,478

Massachusetts Institute of Technology	$1,163,553

**Extracted from the NASA Procurement Management Database on 3/31/03.*

The following is a list of Glenn Research Center's Federal agency relationships based upon the Real Property Inventory database:

Agency
U.S. Army
U.S. Air Force
Department of the Interior
U.S. Coast Guard
Federal Bureau of Investigation

**Extracted from the Real Property Inventory Database Listing of In-Grants/Out-Grants.*

OTHER RELATIONSHIPS

Ohio Aerospace Council (OAC): Consortium of aerospace industry interests. Advocacy network for GRC.

Ohio Aerospace Institute (OAI): 501(c)(3) research organization. Facility is located on GRC land.

CAPRA: Organization of on-site contractors. Civil servants may participate but are not members.

SECTION 4: INFRASTRUCTURE

LAND AND SITE METRICS

	Glenn	Plum Brook	Total	*% of NASA Portfolio*
Land Area (Acres)	351	6,755	7,106	*2.0%*

**Extracted from the Land Report as of 2003 from the NASA Real Property Inventory Database on 5/9/03.*

FACILITY METRICS

	Number	Book Value (MMs)	2003 CRV
Buildings	268	$462	$1,789
Other Structures	187	$152	$ 673
Total	455	$614	$2,462
% of NASA Portfolio	*8.5%*	*9.3%*	*12.9%*

**Extracted from the NASA Site Summary Report as of 2003 from the NASA Real Property Inventory Database on 5/9/03.*

DEFERRED MAINTENANCE ASSESSMENT RESULTS

An assessment of deferred maintenance was previously prepared for each NASA Center, the results of which are reflected on the chart below. The table indicates the summary of facilities' condition of the Center by the Facilities Condition Index (FCI), developed during deferred maintenance analysis. The table also displays where the Center ranks in comparison to the other NASA Centers in terms of FCI and deferred maintenance as a percentage of CRV. (13 is the highest ranking.) It should be noted that deferred maintenance amount set forth in the chart does not represent what the agency is currently spending. Instead, it demonstrates the amount that would need to be spent to solve the deferred maintenance problem.

2002	FCI	DM	BMAR	CRV	DM(%CRV)
Deferred Maintenance Assessment	3.7	$122 MM	$60 MM	$1.7 B	7.1%
Rank Among Centers	*T6*	-	-	-	*7*

**Extracted from Report on the FY02 NASA- Wide Deferred Maintenance Assessment, March 2002.*

UTILITIES SYNOPSIS

The following chart reflects a synopsis of the Center's utilities.

Power	At both Lewis Field (LF) and Plum Brook Station (PB) power comes from an off-site commercial power company to the GRC substation.
Heating	At LF the heating system is based on natural gas. The central part of LF is generally served by large boilers in the steam plant with steam piped underground to buildings where it is converted to hot water for distribution throughout the building. And various buildings that are not served by the central steam system have small natural gas fired boilers or hot air furnaces. Additionally, there are a few small buildings that have electric heating. At Plum Brook Station, each building has a separate boiler heating system that uses natural gas.
Cooling	At Lewis Field the energy source for the cooling system is electric power. The water source is the Non-potable water system. There are two large chillers that supply the central chilled water system. These central chillers use refrigerants R123 or R134A. The central chilled water system is piped underground to cool buildings on the central campus. Numerous buildings are not served by the central system, and they have a smaller individual chillers, using R123, R134A, and in some cases R22. There are a few small buildings that have small direct expansion air conditioners utilizing R22 refrigerant. At Plum Brook Station, the energy source is electric power. Each building has a stand alone air conditioner or chiller system. Some of the chillers are air cooled, some are water cooled. The water supply is raw water.
Sewage	At Lewis Field all sewage flows to an on-site lift station, which pumps the sewage to the local Northeast Ohio Regional Sewer District. At Plum Brook Station all sewage is handled by Erie County Department of Environmental Services with the exception of the Space Power Facility. This facility has its own waste water treatment facility.
Water	At Lewis Field the source of water is Lake Erie. It is delivered to GRC via the City of Cleveland Water Department system. On site, City water is piped underground to all buildings, in which have reduced pressure type back flow preventers. The City water service in each building is split into Potable and Non-potable water systems. The Non-potable water system feeds the Chilled Water system, which is used for cooling. At Plum Brook Station the source of water is Lake Erie. Treated water is supplied by Erie County Dept. of Environmental Services. Raw water comes from Lake Erie via NASA owned pumping stations and pipes located on Lake Erie. This water is used for cooling and for fire hydrants.

**Extracted from the FY02 NASA- Wide Deferred Maintenance Assessment, March 2002.*

PROPERTY LISTING FROM THE REAL PROPERTY INVENTORY

NASA has an extraordinary database which lists its Real Property inventory. Although the team found a few anomalies, the database proves to be a reliable metric of the overall Real Property portfolio that is relatively accurate at the time of this report. A summary of the leased property, including in-grants and out-grants (if any), is shown on the following pages as a baseline for understanding the Real Property opportunities.

Glenn Research Center

In/Out Grant Report

Grant	Reference Number	#	Property Name	Type	Size		Party	Effective Date	Expiration Date	Status
In-Grant	13	3914	LAND PARCELS	Permit	0	AC	Cleveland Metropolitan Park Board	03/03/1952		Active
In-Grant	1	3914	LAND PARCELS	Agreement	13.17	AC	City of Cleveland	07/01/1962	06/30/1987	Active
In-Grant	2	3914	LAND PARCELS	Easement	.796	AC	Cleveland Metropolitan Park Board	07/18/1962		Active
In-Grant	3	3914	LAND PARCELS	Easement	.28	AC	City of Cleveland	11/18/1964		Active
In-Grant	6	3914	LAND PARCELS	Easement	0	AC	City of Cleveland	01/06/1941		Active
In-Grant	7	3914	LAND PARCELS	Permit	0	AC	Cleveland Metropolitan Park Board	01/31/1950		Active
In-Grant	8	3914	LAND PARCELS	Permit		AC	Cleveland Metropolitan Park Board	04/18/1957		Active
In-Grant	9	3914	LAND PARCELS	Agreement		AC	U.S. Coast Guard	11/02/1972		Active
In-Grant	10	3914	LAND PARCELS	Permit	0	AC	Cleveland Metropolitan Park Board	05/16/1961		Active
In-Grant	12	3914	LAND PARCELS	Permit	0	AC	City of Brook Park	04/01/1946		Active
In-Grant	14	3914	LAND PARCELS	Agreement	0	AC	City of Cleveland	06/09/1958		Active
In-Grant	15	3914	LAND PARCELS	Permit	.014	AC	Cuyahoga County	10/18/1962		Active

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In-Grant	16	3914	LAND PARCELS	Agreement	2.112	AC	City of Cleveland	08/04/1970		Active
In-Grant	20	3914	LAND PARCELS	Agreement	0	AC	Greater Cleveland Regional Transit Authority	09/04/1990		Active
In-Grant	17	3914	LAND PARCELS	Easement	2.48	AC	City of Cleveland	11/24/1984	11/28/1999	Active
In-Grant	11	3914	LAND PARCELS	Permit	0	AC	City of Cleveland	06/18/1973		Active
In-Grant	1	3926	DEB PARKING AND ACCESS ROADS	Agreement	13.170	AC	City of Cleveland	07/01/1962	06/30/1987	Active
Out-Grant	42	0004	FLIGHT RESEARCH BUILDING	Agreement	270	SF	Selective Service System	09/16/1999	09/30/2000	Expired
Out-Grant	15	0004	FLIGHT RESEARCH BUILDING	Agreement	0	SF	Department of Army	08/14/1972		Active
Out-Grant	5	0015	EDWARD R. SHARP EMPLOYEE CENTER	Agreement	1554	SF	Century Federal Credit Union	02/26/1973		Active
Out-Grant	7	0077	INSTRUMENT RESEARCH LAB.	Agreement	1011	SF	U.S. Army Material Development and Readiness Command	01/02/1970		Active
Out-Grant	43	0146	Natural Gas Fueling Station	Agreement	348	GA	East Ohio Gas	06/01/1997	06/01/2007	Active
Out-Grant	35	0322	PROGRAM SUPPORT COMM. NETWORK BLDG.	Agreement	7166	SF	GE American Communications	12/31/1990	12/31/1995	Active
Out-Grant	44	0501	DEVELOPMENT ENGINEERING BLDG. ANNEX	Agreement	2500	SF	LIFT (Lewis Incubator for Technology)	02/12/1999	11/30/1999	Active
Out-Grant	45	0501	DEVELOPMENT ENGINEERING BLDG.	Agreement	0	SF	OIG	02/03/1997		Active

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			ANNEX							
Out-Grant	37	39 14	LAND PARCELS	Easement	2.0	AC	Cleveland Electric Illuminating (CEI) Company			Active
Out-Grant	3	39 14	LAND PARCELS	Easement		AC	City of Cleveland	12/08/1940		Active
Out-Grant	40	39 14	LAND PARCELS	Easement	0	AC	Ohio Bell Telephone Company	10/23/1993		Active
Out-Grant	27	39 14	LAND PARCELS	Permit	0	AC	Federal Aviation Agency	01/01/1955		Active
Out-Grant	22	39 14	LAND PARCELS	Permit	0	AC	BSA Troop No. 89	03/19/1990		Active
Out-Grant	16	39 14	LAND PARCELS	Easement	.80	AC	East Ohio Gas Company	11/12/1962		Active
Out-Grant	16	39 14	LAND PARCELS	Agreement	.80	AC	East Ohio Gas Company	11/12/1962		Active
Out-Grant	12	39 14	LAND PARCELS	Permit	0	AC	Internal Revenue Service	04/18/1974		Active
Out-Grant	2	39 14	LAND PARCELS	Agreement	.27	AC	Federal Aviation Agency	07/22/1957		Active
Out-Grant	41	39 14	LAND PARCELS	Lease	8.722	AC	Ohio Aerospace Institute	05/01/1991	04/30/2006	Active

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Grant	Reference Number	#	Property Name	Type	Size		Party	Effective Date	Expiration Date	Status
In-Grant	1	9490	LAND PARCELS	Easement	.557	AC	G.A. Boeckling Company 24 inch line to Big island	09/30/1941		Active
In-Grant	10c	9490	LAND PARCELS	Easement	5.80	AC	G.A. Boeckling Company	09/24/1942		Active
In-Grant	10b	9490	LAND PARCELS	Easement	2.38	AC	Alvin Koch			Active
In-Grant	10a	9490	LAND PARCELS	Easement	1.10	AC	W.J. Kautz & H.G. Schenk			Active
In-Grant	9a	9490	LAND PARCELS	Easement	0	AC	Anton P. Kob			Active
In-Grant	13	9490	LAND PARCELS	Easement	0	AC	N.Y. Central R.R.	09/29/1942		Active
In-Grant	10d	9490	LAND PARCELS	Easement	25.02	AC	Individual Property Owners	09/24/1942		Active
In-Grant	2	9490	LAND PARCELS	Easement	0	AC	Anton P. Kob	09/29/1941		Active
In-Grant	6	9490	LAND PARCELS	Easement	0	AC	William O. Heminger	09/29/1941		Active
In-Grant	12	9490	LAND PARCELS	Agreement	0	AC	Ohio Department of Natural Resources	05/01/1986		Active
In-Grant	10	9490	LAND PARCELS	Agreement	.06	AC	Mrs. Dean Sheldon	05/16/1954		Active
In-Grant	9	9490	LAND PARCELS	Easement	0	AC	Anton P. Kob	09/29/1941		Active
In-Grant	8	9490	LAND PARCELS	Easement	0	AC	Anton and Mary Kob	09/29/1941		Active

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In-Grant	7	9490	LAND PARCELS	Easement	0	AC	Toledo Edison	10/01/1941		Active
In-Grant	5	9490	LAND PARCELS	Easement	0	AC	George and Mary Mulaney	09/29/1941		Active
In-Grant	3	9490	LAND PARCELS	Easement	0	AC	Jane H. Kelley	09/29/1941		Active
In-Grant	10f	9490	LAND PARCELS	Easement	0	AC	Individual Property Owners			Active
In-Grant	10g	9490	LAND PARCELS	Easement	0	AC	Individual Property Owners			Active
In-Grant	10e	9490	LAND PARCELS	Easement	11.83	AC	Individual Property Owners			Active
In-Grant	4	9490	LAND PARCELS	Easement	0	AC	John O. Hinde	09/29/1941		Active
Out-Grant	86a	2311	D SITE TEST BUILDING	Agreement	4471	SF	DOI, Fish and Wildlife Service	08/11/1999	09/30/2003	Active
Out-Grant	22	2321	D SITE SHOP BUILDING	Agreement	4928	SF	Department of Agriculture	04/05/1999	09/30/2003	Active
Out-Grant	18a	3311	B3 TEST STAND	Agreement	569	SF	Federal Bureau of Investigation	06/20/1999	09/30/2003	Active
Out-Grant	98a	5334	GAS HANDLING STORAGE BUILDING	Agreement	2582	SF	Department of Interior, Law Enforcement Division	07/01/1990	10/16/2001	Active
Out-Grant	22	7141	ENGINEERING BUILDING	Agreement	4928	SF	APHIS	04/05/1999	09/30/2003	Active
Out-Grant	86	7141	ENGINEERING BUILDING	Agreement	4471	SF	DOI, Fish and Wildlife Service	08/11/1999	09/30/2003	Active
Out-	83	7141	ENGINEERING	Agreement	2311	SF	Department of Agriculture	09/23/1999	09/30/2003	Active

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Grant			BUILDING				- Animal and Plant Health Inspection Service			
Out-Grant	52	7141	ENGINEERING BUILDING	Agreement	512	SF	U.S. Coast Guard	11/28/1997	09/30/2002	Active
Out-Grant	18b	7141	ENGINEERING BUILDING	Agreement	569	SF	Federal Bureau of Investigation	06/20/1999	09/30/2003	Active
Out-Grant	98	7141	ENGINEERING BUILDING	Agreement	2582	SF	Department of Interior, Law Enforcement Division	10/16/2001	09/30/2006	Active
Out-Grant	130	9107	IGLOO	Agreement	1789	SF	Department of the Army	12/31/2000		Active
Out-Grant	130a	9109	IGLOO	Agreement	1789	SF	Department of the Army	10/16/1996	10/15/2001	Active
Out-Grant	13	9146	IGLOO	Agreement	1789	SF	Department of Air Force - Ohio Air National Guard	04/11/1999	09/30/2004	Active
Out-Grant	13a	9147	IGLOO	Agreement	1789	SF	Department of Air Force - Ohio Air National Guard	04/11/1999	09/30/2004	Active
Out-Grant	13b	9148	IGLOO	Agreement	1789	SF	Department of Air Force - Ohio Air National Guard	04/11/1999	09/30/2004	Active
Out-Grant	83a	9194	IGLOO	Agreement	2311	SF	Department of Agriculture - Animal and Plant Health Inspection Service	09/23/1999	09/30/2003	Active
Out-Grant	18	9215	WAREHOUSE	Agreement	569	SF	Federal Bureau of Investigation	06/20/1999	09/30/2003	Active
Out-Grant	115	9490	LAND PARCELS	Lease	53.079	AC	Erie County Conservation League	08/18/2000	08/18/2005	Active
Out-Grant	11	9490	LAND PARCELS	Easement	0	AC	Ohio Edison Power Company	05/27/1965	05/27/2015	Active

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Out-Grant	19	9490	LAND PARCELS	Agreement	38.0	AC	Department of Interior	11/21/1968		Active
Out-Grant	34	9490	LAND PARCELS	Easement	.0803	AC	Erie County	04/12/1977		Active
Out-Grant	85	9490	LAND PARCELS	Easement	0	AC	J.J. Ostheimer	11/21/1983		Active
Out-Grant	127	9490	LAND PARCELS	Lease	119.850	AC	John Rockwell Jr.	01/01/1999	12/31/2003	Active
Out-Grant	88	9490	LAND PARCELS	Lease	65.623	AC	David C. Schlessman	01/01/1999	12/31/2003	Active
Out-Grant	91	9490	LAND PARCELS	Lease	33.78	AC	Rockwell Jr., John	01/01/1999	12/31/2003	Active
Out-Grant	104	9490	LAND PARCELS	Lease	59.069	AC	Hermes Brothers	01/01/1999	12/31/2003	Active
Out-Grant	111	9490	LAND PARCELS	Easement	0	AC	Ohio Bell Telephone Company	08/16/1988		Active
Out-Grant	113	9490	LAND PARCELS	Lease	20.11	AC	Robert Schenk	01/01/1999	12/31/2003	Active
Out-Grant	114	9490	LAND PARCELS	Lease	47.31	AC	Hermes Brothers	02/24/2000	02/24/2005	Active
Out-Grant	126	9490	LAND PARCELS	Lease	62.24	AC	Schlessman Seed Co.	01/01/1999	12/31/2003	Active
Out-Grant	2	9490	LAND PARCELS	Agreement	0	AC	Ohio Turnpike Commission	08/25/1967		Active
Out-Grant	10	9490	LAND PARCELS	Easement	0	AC	Ohio Edison Power Company	04/23/1965	04/23/2015	Active
Out-Grant	52	9490	LAND PARCELS	Agreement	.25	AC	U.S. Coast Guard	09/30/2002	09/30/2007	Active

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Out-Grant	132	9490	LAND PARCELS	Agreement	.08260	AC	Sprintcom, Inc	12/03/1998	12/03/2003	Active
Out-Grant	131	9490	LAND PARCELS	Agreement	.7490	AC	Jennings & Sotz	08/22/1997		Active
Out-Grant	124	9490	LAND PARCELS	Lease	43.11	AC	David Schlessman	01/01/2000	12/31/2005	Active
Out-Grant	128	9490	LAND PARCELS	Lease	55.2	AC	John Rockwell Jr.	01/01/1999	12/31/2003	Active
Out-Grant	116	9490	LAND PARCELS	Lease	117.80	AC	Schlessman Seed Company	01/01/1999	12/31/2003	Active
Out-Grant	122	9490	LAND PARCELS	Easement	.01193	AC	Mr. & Mrs. K. J. DeChant	04/09/1992		Active
Out-Grant	121	9490	LAND PARCELS	Easement	2.18	AC	Erie County	07/29/1991		Active
Out-Grant	120	9490	LAND PARCELS	Lease	58.470	AC	Schlessman Seed Co.	01/01/1999	12/31/2003	Active
Out-Grant	119	9490	LAND PARCELS	Lease	6	AC	Schlessman Seed Co.	01/01/2002	12/31/2004	Active
Out-Grant	118	9490	LAND PARCELS	Lease	71.5	AC	Rockwel Jr., John	01/01/1999	12/31/2003	Active
Out-Grant	117	9490	LAND PARCELS	Lease	120.990	AC	Rockwell Jr., John	01/01/1999	12/31/2003	Active
Out-Grant	129	9490	LAND PARCELS	Lease	35.520	AC	David Schlessman	01/01/1999	12/31/2003	Active

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SECTION 5 – OPPORTUNITIES – DESCRIPTIONS, MEASURES, MATRIX

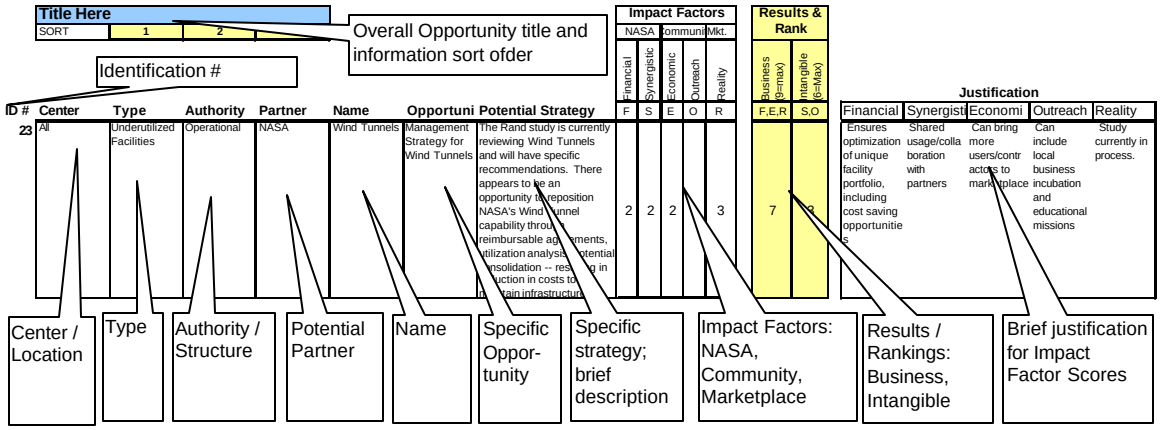
OVERVIEW

The information in this section provides an overview of the opportunities and examples discovered during the review. The opportunities shown here are the ones that were discussed during visits, or are examples of opportunities that became evident during brainstorming sessions.

Although the opportunities are well thought out conceptually, as an opportunity is considered for implementation, a much more detailed business plan should be conducted that looks at each opportunity based on current conditions and market elasticity. The need to develop a business plan for any opportunity cannot be overstated. The business plan needs to take into account the corporate requirement of the asset, the potential benefit to the Agency both economic and other intangibles, and the risks inherent to the Agency, including failure after entering into an opportunity agreement. The business plan should mitigate those risks through a rigorous review and if necessary a due-diligence study of the project. The opportunities are arrayed in a matrix that contains the basic elements of a business plan:

- Center/Location
- Opportunity Type
- Authority/Structure
- Partner
- Name
- Opportunity
- Potential Strategy
- Impact Factors and Results
- Justification

Each category describes an item NASA should consider in its business planning process. Each category is defined below and discussed in more detail through the rest of this report. An example of an opportunity in the matrix is shown below:



OPPORTUNITY TYPE

There are six overall types of Real Property opportunities. Each is summarized in Section 5 and described in more detail in Section 6.

- Underutilized Land Opportunities (including Research Parks, Federal Campus Opportunities, Contractor Parks)
- Underutilized Facilities Opportunities
- Facilities and Asset Management Strategy Opportunities
- Mission or Program Clarification Opportunities
- Restructuring Opportunities
- Utilities Management Opportunities

AUTHORITY / STRUCTURE

The authority category of information includes either the legislative authorities or the types of actions to be contemplated for each opportunity. The primary types of authorities and structures that are outlined in more detail in Section 5 include the following:

- Space Act Agreement
- Enhanced-Use Leasing (EUL)
- CoF

- Divest
- National Historic Preservation Act
- Outside Fence
- Example Opportunities

PARTNERS

Every business agreement has a partner, and this category of information describes some of the current or potential partners NASA could utilize in helping execute its Real Property business opportunities.

NAME

This category lists the 1-3 word project name. In several cases, the team has identified multiple scenarios for a particular building or area of the site; this category world list the same project "name" for all opportunities associated with that building or site. In other cases, similar strategies are being pursued including "marketing", "management", and federal campus ideas; all opportunities that are not building or site specific are given a strategy name.

OPPORTUNITY

The specific opportunities are relatively short descriptions that capture the essence of the opportunities. In several cases, the opportunity names refer to the same opportunity, but the strategy for implementing the opportunity could vary.

POTENTIAL STRATEGY

This section of the matrix captures in a few sentences some of the background and implementation strategies for each opportunity.

MEASUREMENT FILTERS AND FACTORS

There are many factors that need to be considered in order to determine if a particular opportunity is appropriate given all of the stakeholders and implementation structures. This section of the opportunity matrix attempts to measure each opportunity against a standard list of factors. They are broken into three overall categories representing the key stakeholders- NASA, community, and marketplace - and five total factors. The balancing of these factors is important to understand where an opportunity excels or falls short.

NASA impact factors:

Financial and Economic - Quantitative - NASA's financial incentives are to reduce costs or increase revenues, regardless of the impact on NASA's other activities.

Synergistic - Qualitative - The Space Act specifically encourages NASA to collaborate; therefore, over its history, NASA has established partnerships that are synergistic with NASA's goals, regardless of financial gain or expense.

Community impact factors:

Economic Impact - Quantitative - The communities where NASA is located benefit economically from NASA's presence, not only through direct investment, but also by providing jobs and other economic stimulus. This factor reflects the impact that each opportunity has economically on the community.

Outreach Impact - Qualitative - In addition to economic impact, NASA has impact on its community through direct outreach activities, and indirect activities such as bringing a highly educated workforce into the community.

Marketplace factors:

Reality of implementation – The marketplace is a multi-varied yet critical component of this analysis. The marketplace factor includes the speed at which an opportunity can be accomplished; the risk exposure to NASA; the likelihood of finding suitable partners; and the reality that the opportunity could be implemented. Many of these considerations will be at odds with one another.

The measurement system for the impact factors is relatively simple, reflecting the fact that the opportunities were discussed and analyzed on a conceptual level – not in high detail. Each factor is ranked on a "0-3" basis. Therefore the highest score for any one factor is a "3", and the lowest score is a "0". The measurements are translated as follows:

0 = No Impact
1 = Minimal impact
2 = Average impact
3 = High impact

RESULTS AND RANKING

The impact factors by themselves do not provide an understanding of an opportunity's full value. To obtain a better measurement of value at a conceptual level, the scores were added together in two categories:

Business Ranking - NASA financial, community economic impact and marketplace reality factors were added together to estimate the overall "Business" factors that

take economics and marketplace into account. The factors are typically the first factors to be ranked. The highest score for Business Ranking is a "9".

Intangible Ranking - The NASA synergistic and community outreach factors are combined to form the "intangible" factors. Since these factors are important, but much more subjective than the business ranking factors, these factors are ranked after the business ranking factors. The highest score for an Intangible Ranking is a "6".

The justification of each opportunity's individual factor is described briefly in the columns on the right side of the matrix.

"Example" opportunity descriptions are not ranked or described in the justification portion of the matrix. Many of the decisions for Example opportunities were carefully made given information currently available; whether or not the example is currently in the best interest of NASA does not mean that the decision to pursue the opportunity was unwise. Therefore, it is not helpful to score on the example opportunities in hindsight.

5 Glenn Opportunity Matrix.xls

SORT ORDER: Center | Name | Opportunity

ID #	Center	Type	Authority	Partner	Name	Opportunity Name	Potential Strategy	Impact Factors: NASA Financial (F)	NASA Synergistic (S)	Economic (E)	Community Outreach (O)	Mkt. Reality (R)	Results & Rank: Business (9=max) (F,E,R)	Intangible (6=Max) (S,O)	Financial	Synergistic	Economic	Outreach	Reality
56	Glenn	Facilities and Asset Management	Example	City of Cleveland	Airport	Airport Extension	Example of how NASA entered into a negotiation with the City of Cleveland to achieve mutual goals.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
66	Glenn	Facilities and Asset Management	Historic Preservation Act	Private Sector	Real Property Development Strategy	Historic District	Consider designating Glenn as a historic district, similar to the Shenandoah District at Ames. Wherever possible, lease facilities to the private sector to help renovation of the facilities. The net result is a reduction of CoF funds that need to be spent on the facilities and lower future occupancy costs.	2	3	1	0	1	4	3	NASA can reinvest proceeds of leases into facilities, thereby renovating the facilities at little net cost to NASA; helps reduce CoF requirements, but not substantial financial gain	Helps NASA maintain it's important heritage facilities for future generations; potential synergies created by bringing partners/contractors "on-campus"	Can result in increased non-federal jobs within municipality	Limited outreach	Viable, but dependent on market for tenants/users. Most likely location is near the Runway.
61	Glenn	Facilities and Asset Management	Example	OAI	OAI	OAI building on NASA land	Example of how NASA could use PPP structure to develop shared state of the art facilities.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
58	Glenn	Facilities and Asset Management	EUL	Private Sector	Bldg 500, 501	Office space outside of Main Gate	The buildings and land outside of fence are next to a major road; keep the facilities in NASA control long term by entering into an EUL to a developer for private sector use. Use proceeds to renovate/build office space inside fence.	2	1	3	0	2	7	1	Strong cash generation	increases security, brings NASA staff closer, could create more efficient facilities	Returns property to community tax rolls	None	Executable, reinvestment of proceeds dependent on divestment strategy; market not strong, but good location.
57	Glenn	Facilities and Asset Management	Divest	Private Sector	Bldg 500, 501	Office space outside of Main Gate	Divest buildings and land outside of fence and use proceeds to renovate/build office space inside fence.	3	1	3	0	2	8	1	Strong cash generation	increases security, brings NASA staff closer, could create more efficient facilities	Returns property to community tax rolls	None	Executable, reinvestment of proceeds dependent on divestment strategy; market not strong, but good location.
72	Glenn	Facilities and Asset Management	EUL	Private Sector	Swing Space	Swing Space	Glenn is located on a very dense campus and has minimal room for expansion although a majority of the occupants are contractors. Subsequently, as new facilities need renovation, there is a dearth of swing space. Enter into EUL to have simple "swing space" facility built near the fence line that can be occupied by contractors.	1	2	1	1	1	3	3	Costly but could help reduce current churn expenses	Helps NASA keep productive while renovating facilities	Investment in community, but small	Potential for outside companies when NASA not needed	Difficult agreement to structure; hard to finance unknown occupancy requirement.

The information shown here is conceptual and not intended for immediate action. A business plan including all business economics, structures, strategies and risks should be evaluated prior to the execution of any opportunity.

5 Glenn Opportunity Matrix.xls

SORT ORDER: Center | Name | Opportunity

ID #	Center	Type	Authority	Partner	Name	Opportunity Name	Potential Strategy	Impact Factors: NASA Financial (F)	NASA Synergistic (S)	Economic (E)	Community Outreach (O)	Mkt. Reality (R)	Results & Rank: Business (9=max) (F,E,R)	Intangible (6=Max) (S,O)	Financial	Synergistic	Economic	Outreach	Reality
73	Glenn	Facilities and Asset Management	Outside Fence	Private Sector	Visitors Center	Visitors Center re-located to outside fence - Outsource	Outsource Visitor's Center activities. Locate Visitor's Center to a more accessible location, or even to downtown Cleveland where it might get more visitor traffic, freeing up needed space.	2	0	2	2	2	6	2	Financial returns from visitors centers can be improved by sole-sourcing management and operations and locating in strategic areas.	No benefit to synergistic relationships	Community can benefit from increased visitor traffic	Benefits community outreach/education	Achievable, but dependent on willingness of contractor.
59	Glenn	Restructure	Divest	OAI	OAI	OAI building on NASA land - Divest	OAI occupies NASA land through Space Act Agreement. The operation appears to be relatively successful; consider divesting the land and reinvesting proceeds at the Center.	3	0	0	0	1	4	0	Small land parcel, low land value, but would provide immediate revenue.	No additional benefit	No additional benefit	No additional benefit	Agreement might be difficult to restructure
60	Glenn	Restructure	EUL	OAI	OAI	OAI building on NASA land - EUL	OAI occupies NASA land through Space Act Agreement. Examine in context of structuring under EUL. Result in ground lease proceeds to NASA.	2	0	0	0	1	3	0	Not for profit on s mall land parcel, low land value, difficult to negotiate "better deal"	Limited additional benefit	Limited additional benefit	Limited additional benefit	Agreement might be difficult to restructure
63	Glenn	Underutilized Land	Space Act	Federal Agency	Plum Brook	Federal Campus	Consider expanding Plum Brook's role as a federal campus.	2	0	2	0	2	6	0	Cost sharing	No synergies	Might create non-federal jobs but land not returned to tax rolls	No outreach	Market demand may be soft.
62	Glenn	Underutilized Land	Space Act	Federal Agency	Plum Brook	Federal Campus	NASA currently has federal agencies as tenants at Plum Brook. Market underutilized land to security conscious federal agencies to reduce management costs. Consider marketing as major secured federal campus for agencies in northern Ohio.	2	1	2	0	2	6	1	Sharing costs will help NASA, but may not result in significant impact; may help utilization of unique facilities	Can be synergistic with federal Agency; may provide employee amenities but not many NASA employees at Plum Brook	Might create non-federal jobs but land not returned to tax rolls	No impact	Significant federal agency user interest possible given increase security consciousness.
67	Glenn	Underutilized Land	EUL	Private Sector	Runway	Global transportation hub	Glenn is located next to the runway in Cleveland. Consider offering the land along the runway to transportation or logistics organizations; use the revenues from the EUL to replace the facilities which are currently along the runway.	3	1	3	0	2	8	1	Achieve revenues by virtue of Glenn's proximity to the airport	Potential for modest synergies, additional capabilities	Increase non-federal jobs	No outreach	Potential but need to market capability, work through airport logistics, resolve security issues.
65	Glenn	Underutilized Land	Divest	Private Sector	Plum Brook	Plum Brook - Divest	Consider divesting of everything except for nuclear testing area and perhaps unique facilities that are critical to NASA's programs (Glenn is decommissioning the nuclear reactor facility but this process will take time.); move contents of storage magazines to Stennis. Divert nuclear testing area once it has been decommissioned.	2	0	2	0	2	6	0	Good land value	No synergies	Land returned to tax rolls, but area is economically challenged	No outreach	Market demand may be soft.

The information shown here is conceptual and not intended for immediate action. A business plan including all business economics, structures, strategies and risks should be evaluated prior to the execution of any opportunity.

5 Glenn Opportunity Matrix.xls

SORT ORDER: Center | Name | Opportunity

ID #	Center	Type	Authority	Partner	Name	Opportunity Name	Potential Strategy	Impact Factors: NASA Financial (F)	NASA Synergistic (S)	Economic (E)	Community Outreach (O)	Mkt. Reality (R)	Results & Rank: Business (9=max) (F,E,R)	Intangible (6=Max) (S,O)	Financial	Synergistic	Economic	Outreach	Reality
64	Glenn	Underutilized Land	EUL	Private Sector	Plum Brook	Plum Brook - EUL	Consider EUL of Plum Brook with exception of most unique specialty facilities that are critical to NASA's programs and nuclear testing area (Glenn is decommissioning the nuclear reactor facility but this process will take time). Maintain ownership in case NASA requires large portion of land in the future. Consider expanding agricultural leases.	2	0	2	0	2	6	0	Land value results in modest revenue through ground lease	No synergies	Might create non-federal jobs but land not returned to tax rolls	No outreach	Market demand may be soft.
71	Glenn	Utilities Management	Example	Private Sector	Rye Beach	Rye Beach Pumping Station	Glenn is planning a potential pumping station that will offer water to the local community	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
68	Glenn	Utilities Management	Space Act	Erie County	Rye Beach	Rye Beach Pumping Station - Cost reduction	NASA has water supply channel to Lake Erie. Negotiate market-rate profit through EUL for water supply; Hire utilities valuation consultants to ensure that NASA is receiving maximum value when selling water from the pumping station to the County.	2	0	3	0	3	8	0	Achieve higher value than currently expected	No synergies	Saves community from constructing pumping station	No outreach	Buyer already in place; requires NASA action.
70	Glenn	Utilities Management	Divest	Erie County	Rye Beach	Rye Beach Pumping Station - Divest	NASA has water supply channel to Lake Erie. Consider entering into EUL with investor to take over operations and sell water at a profit.	2	0	2	0	2	6	0	Some revenue stream to NASA	No synergies	Community does not have to build	Limited	Agreement structure might be complicated.
69	Glenn	Utilities Management	EUL	Erie County	Rye Beach	Rye Beach Pumping Station - EUL	NASA has water supply channel to Lake Erie. Consider entering into EUL with investor to take over operations and sell water at a profit.	2	0	2	0	2	6	0	Some revenue stream to NASA S	No synergies	Community does not have to build	Limited	Agreement structure might be complicated.
74	Glenn	Underutilized Facilities	EUL	Private Sector	Adjacent to Runway	Office building next to hangar	Market use of building along the fence near the airport to security-conscious contractors. Lease through EUL.	2	3	2	0	2	6	3	Moderate revenue to NASA	NASA contractors	Adds non-federal jobs	No Outreach	Depends on willingness of contractors.

The information shown here is conceptual and not intended for immediate action. A business plan including all business economics, structures, strategies and risks should be evaluated prior to the execution of any opportunity.

REAL PROPERTY OPPORTUNITIES CENTER REPORT: Goddard Space Flight Center Greenbelt, MD

CENTER REPORT – Table of Contents

Section 1: Executive Overview (In Briefing format)
- Introduction
- Participants
- Marketplace and Location
- Business, Missions, Vision
- Infrastructure and Population
- Best Business Opportunities

Section 2: General Market Statistics
- Location
- Economic/Demographic Indicators
- Interpretation of Market

Section 3: Business, Mission, Vision of the Center
- Center History and Overview
- Description of Major Current and Potential Future Programs
- Major Relationships (Contractors, Universities, Government)

Section 4: Infrastructure
- Land and Site Metrics
- Facility Metrics and Deferred Maintenance Results
- Utilities Synopsis
- Property Listing from the Real Property Database

Section 5: Opportunities – Descriptions, Measures, Matrix
- Overview and Methodology
- Opportunity Matrix
- Analysis and Observations

REAL PROPERTY OPPORTUNITIES

CENTER REPORT:

Goddard Space Flight Center

Greenbelt, MD

Executive Overview

August 1, 2003

Goddard Space Flight Center Introduction

Goal of Visit

- Understand GSFC-specific issues
- Identify potential real property business alternatives
  - increasing revenues
  - reducing expenses
  - creating organizational improvement / mission enhancement

Schedule

- Research: 11/23/02 – 12/06/02
- Visit: 12/02/02 – 12/06/02

Goddard Space Flight Center Participants

NASA

INTERVIEW

- Alphonso V. Diaz
- Tom Paprocki
- Kim Toufectis
- Terry Spaguolo
- Krista Paquin
- Dennis Vantertag
- Dot Zukor
- Phil Holloway
- Rick Obenschain

COORDINATOR

- Tony Cuticchia, NASA HQ
- Debbie Baggett, NASA GSFC

MARKETPLACE

- Joe James, Prince George's County Economic Development

STAUBACH

STAUBACH VISIT

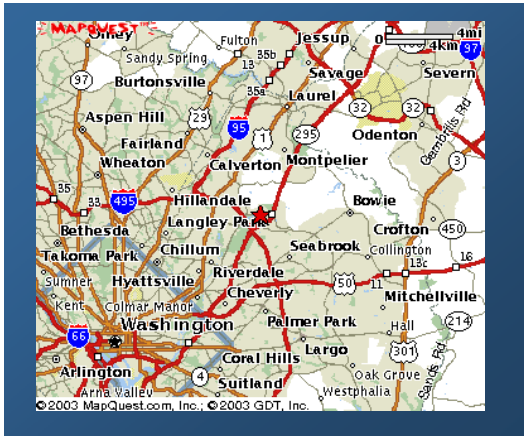
- Kurt Haglund
- Angela Foster
- Barry Johnson

STAUBACH RESEARCH

- Don Sapp, Plexus
- Angela Foster
- Peter Brohoski

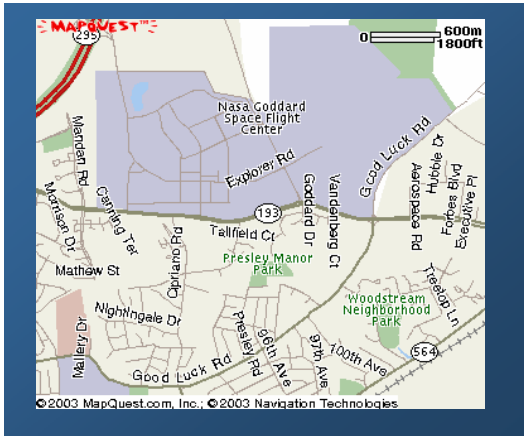
Goddard Space Flight Center Market Place and Location

REGION



- Prince George's County Population: 816,791
- Economy: Federal Government, Technology
- Washington, DC SMSA
- East Coast
- Excellent Employment Base
- Excellent University System

GSFC SUBMARKET



- Access to Transportation - Good
- Local Economy: NASA, Education, Health, and Social Services

Goddard Space Flight Center Business, Mission, Vision

- **Earth Science Enterprise (Code Y)**

- **Major Center Activities**
  - Earth Science
  - Space Science
  - Science – Enabling Technologies

- **Center's View of Potential Future Activities**
  - Large Space Observations
  - Space and Earth Sciences

Goddard Space Flight Center
Infrastructure and Population Summary

Land	Acres	% Total	% Total of NASA Portfolio
Owned	1,121	88.3%	0.4%
Easement	0	0%	0%
Leased	0	0%	0%
Permit	150	11.7%	0%
Public	0	0%	0%
TOTAL	1,271		

* Extracted from the Land Report as of 2003 from the NASA Real Property Inventory Database on 5/9/03.

Structures	Quantity	Book Value	2003 CRV
Buildings	110	$ 316,286,408	$ 740,100,931
Other Structures	42	86,922,414	162,018,101
TOTAL	152	$ 403,208,822	$ 902,119,032

* Extracted from the NASA Site Summary Report as of 2003 from the NASA Real Property Inventory Database on 5/9/03.

Civil Servants	+	Contractors	+	Other	=	Total Center Population	Density (People/Acre)
3,017		3,577		559		7,153	5.6

* Extracted from the Facilities Utilization Program Report, September 2002.

Goddard Space Flight Center
Best Business Opportunities

Opportunity Name	Description
— East Campus Development	— "Free up" east side of Soil Conservation road by consolidating NASA to the West of Soil Conservation Road — EUL or divest areas East of Soil Conservation Road; reinvest proceeds into new/ renovated facilities
—Partnering Zone	— Goddard's master plan includes a partnering zone earmarked for private sector collaboration — Consider EUL to developers for development of a research park and/or contractor campus
—Space Science Building	— The Goddard master plan includes a new space science building to replace the old facilities currently being used — Consider entering into an EUL to support the financing and construction of the new facility

SECTION 2: GENERAL MARKET STATISTICS

LOCATION

Goddard Space Flight Center is located in Prince George's County, Maryland. Comprising nearly 500 square miles and more than 801,500 residents (2000 Census), Prince George's County wraps around the northeastern, eastern, and southeastern borders of Washington, D.C. It is a community of diverse neighborhoods with 27 unique municipalities, ranging in population from fewer than 100 to as many as 50,000 people. Just beyond its borders are the political and cultural activities of Washington, D.C.; the historic waterfront of Annapolis, Maryland; and the pleasures of the Eastern Shore and neighboring mountain areas.

Proximity to the Nation's Capital has been a considerable benefit in attracting important federal facilities. There are nearly a dozen federal agencies, many with research-focused activities, in the northern part of the county known as the High-Technology Triangle. The NASA Goddard Space Flight Center, the USDA Beltsville Agricultural Research Center, the Army Research Laboratory, the Institute for Defense Analysis, and the US Census Bureau Supercomputer Center, as well as other agencies, support the expansion and growth of the local technology business base.

ECONOMIC/DEMOGRAPHIC INDICATORS

Economic/Demographic Component (County)	**Indicators**
2001 Population Estimate	816,791
Population % Change, 1990 to 2000	+10.9%
Housing Units, 2000	302,378
Median Value of owner-occupied housing units, 2000	$145,600
Median household money income, 1999	$55,256
Per capita money income, 1999	$23,360
Persons below poverty, percent, 1999	7.7%
Land Area, 2000 (square miles)	485
Persons per square mile, 2000	1,651
Largest Industries	Manufacturing, Scientific Management, Education, Health

* *Extracted from U.S. Census Bureau Quickfacts at quickfacts.census.gov on 2/13/03.*

INTERPRETATION OF MARKET

GSFC is located within one of the best macro Real Property markets in the country. The prolification of the federal government and its associated industries, particularly the defense industry, have greatly enhanced Prince Georges County as a commercial Real Property community. And while the county has not been completely impervious to the nation's economic slowdown, the county's dependence on the federal government has rendered it relatively immune to drastic swings in the broader economy. While Prince George's County offers some of the more affordable commercial Real Property prices in the Washington MSA, these pricing levels remain attractive by national standards.

SECTION 3: BUSINESS, MISSION, VISION OF THE CENTER

CENTER HISTORY AND OVERVIEW

Goddard Space Flight Center was formed on May 1, 1959. With about 160 researchers from the Naval Research Lab (project Vanguard), the Goddard Space Flight Center began. A tract of land was identified near the Beltsville Agricultural Research Center and its ownership was negotiated between the Federal Government and the State of Maryland.

Those 160 researchers grew into today's nearly 12,000-combined civil servant and contractor workforce. From that modest beginning, scientists, engineers, technicians and administrative staff members now occupy more than dozens of buildings across 1,270 acres at the Greenbelt campus alone. Goddard's Wallops Flight Facility occupies over 6,100 acres and another 84 major buildings including aircraft hangars.

The '60's were, for Goddard, a time to test new schemes, to see how, and if, spacecraft could with-stand the environment of space. Goddard built satellites, and the rockets to launch them. Goddard created ways to control and track the spacecraft, and to collect and send data back and forth, and analyze the data.

GSFC Vision Statement

"We revolutionize knowledge of the Earth and the universe through scientific discovery from space to enhance life on Earth"

DESCRIPTION OF MAJOR CURRENT AND POTENTIAL FUTURE PROGRAMS

The fundamental mission of the Goddard Space Flight Center is to expand knowledge of the Earth and its environment, the solar system and the universe through observations from space. This NASA Center is a major U.S. laboratory for developing and operating unmanned scientific spacecraft. Goddard is home to the Space Telescope Operations Control Center, the nerve Center for the Hubble Space Telescope, where all commands from the telescope originate. The Center manages many of NASA's Earth Observation, Astronomy, and Space Physics missions.

Goddard is committed to excellence in scientific research and investigation, the development of space systems, and the advancement of essential technologies. In pursuit of this challenge, the Center pledges to:

- Conduct a preeminent program of research in the space and Earth science disciplines using measurements from space complemented by suborbital, ground-based and laboratory measurements and by theoretical investigations;
- Develop and operate a broad spectrum of flight missions that are responsive to the needs of the science community;
- Provide and operate spaceflight tracking and data acquisition networks;

- Develop innovative technology and instruments critical to the success of their mission;
- Develop and maintain advanced information systems for the display, analysis, archiving and distribution of space and Earth science data; and
- Develop National Oceanic and Atmospheric Administration (NOAA) satellite systems that provide environmental data for forecasting and research.

GSFC (INCLUDING WFF) – MAJOR RELATIONSHIPS

Relationships and partners are critical in business dealings. Real Property business opportunities are enabled by pairing an opportunity with a partner, and the most likely partners already have relationships with NASA. The following charts describe three major categories of relationships: (1) contractor relationships (can partner with NASA as tenants or Enhanced-Use Leasing partners); (2) university relationships (can partner with NASA as tenants, Enhanced-Use Leasing partners, or outsourcing research partners); and (3) federal agency relationships (can lead to multiple opportunities, including cost sharing and federal campus strategies).

Although in many cases contractor and university relationships exist because NASA is funding the relationships, there also exist opportunities for mutually beneficial Real Property partnerships. It is generally easier to do business based on an existing relationship rather than attempting to forge completely new relationships.

CONTRACTORS

The following is a list of Goddard Space Flight Center's (including Wallops Flight Facility's) current most active contractors based upon total award value of the contract:

Contractor	Total Award Value
Northrop Grumman Computing Systems	$4,000,000,000
Lockheed Martin Corp	$2,680,531,724
Swales & Associates Inc	$1,852,858,100
TRW Inc	$1,485,592,291
ITT Corp	$1,168,941,041
Loral Inc	$1,058,145,293
Boeing Satellite Systems Inc	$1,003,274,016
Santa Barbara Research Center	$400,170,224
PRC Inc	$385,500,976
QSS Group Inc	$335,366,752
Science Systems Applications	$324,208,160
Ball Aerospace & Tech Corp	$297,528,162
Northrop Grumman Systems Corp	$264,418,321
Averstar Inc	$142,288,845
Science Application International Corp	$105,219,443

Orbital Sciences Corp	$89,919,517
Parsons Infrastructure & Tech	$75,608,211
Cortez III Service Corp	$73,696,161
Cube Corp	$60,078,060
Spectrum Astro Inc	$60,064,313

**Extracted from the NASA Procurement Management Database on 3/31/03.*

UNIVERSITIES

The following is a list of Goddard Space Flight Center's (including Wallops Flight Facility's) university contractors based upon total award value of the contract:

University	**Total Award Value**
Johns Hopkins University	$1,605,320,274
University of Colorado Boulder	$207,844,220
New Mexico State University Las Cruz	$80,935,791
University of Maryland Baltimore County	$75,000,000
California Institute of Technology	$73,903,242
Boston University	$63,561,272
University of California San Diego	$63,059,756
Massachusetts Institute of Technology	$56,558,829
University of Miami	$54,396,241
University of California Berkeley	$50,281,375
University of Alaska Fairbanks	$49,542,782
Stanford University	$44,148,515
University of Maryland College Park	$35,439,650
University of New Hampshire	$32,362,500
Columbia University	$31,471,807
University of Arizona	$27,859,191
Pennsylvania State University	$27,493,997

**Extracted from the NASA Procurement Management Database on 3/31/03.*

The following is a list of Goddard Space Flight Center's federal agency relationships based upon the Real Property Inventory database:

Agency
General Services Administration
Department of Agriculture

**Extracted from the Real Property Inventory Database Listing of In-Grants/Out-Grants.*

SECTION 4: INFRASTRUCTURE

LAND AND SITE METRICS

	Total	***% of NASA Portfolio***
Land Area (Acres)	1,271	*0.4%*

**Extracted from the Land Report as of 2003 from the NASA Real Property Inventory Database on 5/9/03.*

FACILITY METRICS

	Number	**Book Value (MMs)**	**2003 CRV (MMs)**
Buildings	110	$316	$740
Other Structures	42	$ 87	$162
Total	152	$403	$902
% of NASA Portfolio	*4.3%*	*6.1%*	*4.7%*

**Extracted from the NASA Site Summary Report from the NASA Real Property Inventory Database on 5/9/03.*

DEFERRED MAINTENANCE ASSESSMENT RESULTS

An assessment of deferred maintenance was previously prepared for each NASA Center, the results of which are reflected on the chart below. The table indicates the summary of facilities' condition of the Center by the Facilities Condition Index (FCI), developed during deferred maintenance analysis. The table also displays where the Center ranks in comparison to the other NASA Centers in terms of FCI and deferred maintenance as a percentage of CRV. (13 is the highest ranking.) It should be noted that deferred maintenance amount set forth in the chart does not represent what the agency is currently spending. Instead, it demonstrates the amount that would need to be spent to solve the deferred maintenance problem.

2002	**FCI**	**DM**	**BMAR**	**CRV**	**DM(%CRV)**
Deferred Maintenance Assessment	4.0	$37.5 MM	$70 MM	$884 MM	4.4%
Rank Among Centers	*T3*	-	-	-	*3*

**Extracted from Report on the FY02 NASA- Wide Deferred Maintenance Assessment, March 2002.*

UTILITIES SYNOPSIS

The following chart reflects a brief synopsis of the Center's utilities.

Power	Electrical Power comes from PEPCO and there are 2 substations on-site @ 34.5 kV. There are 9 transformers 6 @ 15 nva and 3 @ 9.75 Volts.
Heating	5 natural gas boilers are used
Cooling	Chilled Water
Sewage	Sewage is handled off-site at the Washington Suburban Sanitation Commission (WSSC).
Water	Chilled Water comes from on-site wells and potable water comes from WSSC.

**Extracted from Report on the FY02 NASA – Wide Deferred Maintenance Assessment, March 2002.*

PROPERTY LISTING FROM THE REAL PROPERTY INVENTORY

NASA has an extraordinary database which lists its Real Property inventory. Although the team found a few anomalies, the database proves to be a reliable metric of the overall Real Property portfolio that is relatively accurate at the time of this report. A summary of the leased property, including in-grants and out-grants (if any), is shown on the following pages as a baseline for understanding the Real Property opportunities.

SECTION 5 – OPPORTUNITIES – DESCRIPTIONS, MEASURES, MATRIX

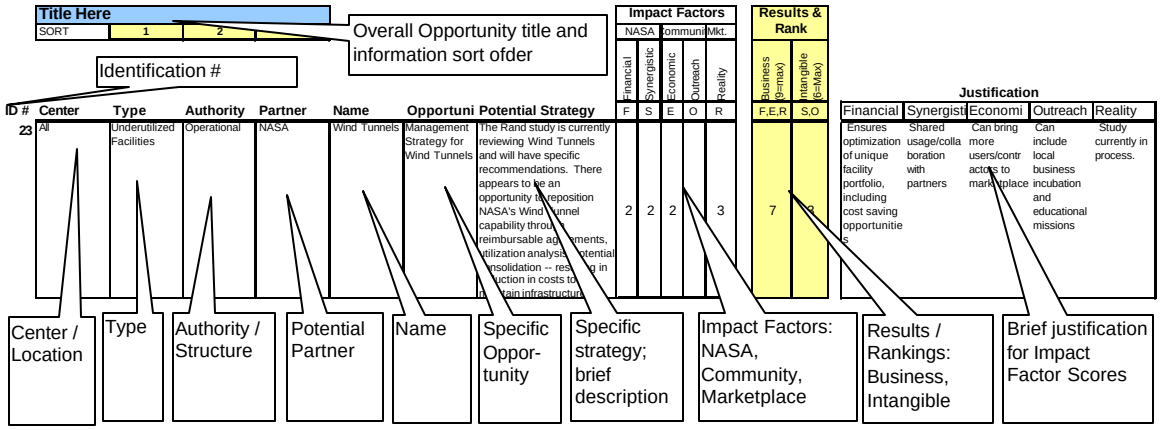
OVERVIEW

The information in this section provides an overview of the opportunities and examples discovered during the review. The opportunities shown here are the ones that were discussed during visits, or are examples of opportunities that became evident during brainstorming sessions.

Although the opportunities are well thought out conceptually, as an opportunity is considered for implementation, a much more detailed business plan should be conducted that looks at each opportunity based on current conditions and market elasticity. The need to develop a business plan for any opportunity cannot be overstated. The business plan needs to take into account the corporate requirement of the asset, the potential benefit to the Agency both economic and other intangibles, and the risks inherent to the Agency, including failure after entering into an opportunity agreement. The business plan should mitigate those risks through a rigorous review and if necessary a due-diligence study of the project. The opportunities are arrayed in a matrix that contains the basic elements of a business plan:

- Center/Location
- Opportunity Type
- Authority/Structure
- Partner
- Name
- Opportunity
- Potential Strategy
- Impact Factors and Results
- Justification

Each category describes an item NASA should consider in its business planning process. Each category is defined below and discussed in more detail through the rest of this report. An example of an opportunity in the matrix is shown below:



OPPORTUNITY TYPE

There are six overall types of Real Property opportunities. Each is summarized in Section 5 and described in more detail in Section 6.

- Underutilized Land Opportunities (including Research Parks, Federal Campus Opportunities, Contractor Parks)
- Underutilized Facilities Opportunities
- Facilities and Asset Management Strategy Opportunities
- Mission or Program Clarification Opportunities
- Restructuring Opportunities
- Utilities Management Opportunities

AUTHORITY / STRUCTURE

The authority category of information includes either the legislative authorities or the types of actions to be contemplated for each opportunity. The primary types of authorities and structures that are outlined in more detail in Section 5 include the following:

- Space Act Agreement
- Enhanced-Use Leasing (EUL)
- CoF

- Divest
- National Historic Preservation Act
- Outside Fence
- Example Opportunities

PARTNERS

Every business agreement has a partner, and this category of information describes some of the current or potential partners NASA could utilize in helping execute its Real Property business opportunities.

NAME

This category lists the 1-3 word project name. In several cases, the team has identified multiple scenarios for a particular building or area of the site; this category world list the same project "name" for all opportunities associated with that building or site. In other cases, similar strategies are being pursued including "marketing", "management", and federal campus ideas; all opportunities that are not building or site specific are given a strategy name.

OPPORTUNITY

The specific opportunities are relatively short descriptions that capture the essence of the opportunities. In several cases, the opportunity names refer to the same opportunity, but the strategy for implementing the opportunity could vary.

POTENTIAL STRATEGY

This section of the matrix captures in a few sentences some of the background and implementation strategies for each opportunity.

MEASUREMENT FILTERS AND FACTORS

There are many factors that need to be considered in order to determine if a particular opportunity is appropriate given all of the stakeholders and implementation structures. This section of the opportunity matrix attempts to measure each opportunity against a standard list of factors. They are broken into three overall categories representing the key stakeholders- NASA, community, and marketplace - and five total factors. The balancing of these factors is important to understand where an opportunity excels or falls short.

NASA impact factors:

Financial and Economic - Quantitative - NASA's financial incentives are to reduce costs or increase revenues, regardless of the impact on NASA's other activities.

Synergistic - Qualitative - The Space Act specifically encourages NASA to collaborate; therefore, over its history, NASA has established partnerships that are synergistic with NASA's goals, regardless of financial gain or expense.

Community impact factors:

Economic Impact - Quantitative - The communities where NASA is located benefit economically from NASA's presence, not only through direct investment, but also by providing jobs and other economic stimulus. This factor reflects the impact that each opportunity has economically on the community.

Outreach Impact - Qualitative - In addition to economic impact, NASA has impact on its community through direct outreach activities, and indirect activities such as bringing a highly educated workforce into the community.

Marketplace factors:

Reality of implementation – The marketplace is a multi-varied yet critical component of this analysis. The marketplace factor includes the speed at which an opportunity can be accomplished; the risk exposure to NASA; the likelihood of finding suitable partners; and the reality that the opportunity could be implemented. Many of these considerations will be at odds with one another.

The measurement system for the impact factors is relatively simple, reflecting the fact that the opportunities were discussed and analyzed on a conceptual level – not in high detail. Each factor is ranked on a "0-3" basis. Therefore the highest score for any one factor is a "3", and the lowest score is a "0". The measurements are translated as follows:

0 = No Impact
1 = Minimal impact
2 = Average impact
3 = High impact

RESULTS AND RANKING

The impact factors by themselves do not provide an understanding of an opportunity's full value. To obtain a better measurement of value at a conceptual level, the scores were added together in two categories:

Business Ranking - NASA financial, community economic impact and marketplace reality factors were added together to estimate the overall "Business" factors that

take economics and marketplace into account. The factors are typically the first factors to be ranked. The highest score for Business Ranking is a "9".

Intangible Ranking - The NASA synergistic and community outreach factors are combined to form the "intangible" factors. Since these factors are important, but much more subjective than the business ranking factors, these factors are ranked after the business ranking factors. The highest score for an Intangible Ranking is a "6".

The justification of each opportunity's individual factor is described briefly in the columns on the right side of the matrix.

"Example" opportunity descriptions are not ranked or described in the justification portion of the matrix. Many of the decisions for Example opportunities were carefully made given information currently available; whether or not the example is currently in the best interest of NASA does not mean that the decision to pursue the opportunity was unwise. Therefore, it is not helpful to score on the example opportunities in hindsight.

5 Goddard Opportunity Matrix.xls

SORT ORDER: Center | Name | Opportunity

ID #	Center	Type	Authority	Partner	Name	Opportunity Name	Potential Strategy	Impact Factors: NASA Financial (F)	NASA Synergistic (S)	Communi Economic (E)	Communi Outreach (O)	Mkt. Reality (R)	Results & Rank: Business (9=max) F,E,R	Intangible (6=Max) S,O	Financial	Synergistic	Economic	Outreach	Reality
78	Goddard	Facilities and Asset Management	Divest	State of Maryland, Prince Georges County	East Campus - Goddard	East Campus - Divest - Alternative master plan to finance development	Prince Georges County and the State of Maryland are focused on increasing research activities, and NASA offers great opportunity for synergy. Consider alternative master plan consolidating all facilities west of soil conservation road; sell east campus to pay for new facilities on west campus; potential to turn east into high tech partnering zone; "showcase for county". Don't move Soil Conservation Road. Maintain or move radar stations. Sell new Earth Sciences facilities to "kick start" project.	3	2	3	2	1	7	4	Significant revenue generation for NASA	Partners located "on campus" or adjacent to campus	Increases non-federal jobs, brings firms to community, returns land to tax rolls	Can achieve outreach if university, incubator, or think tank involved	Good market, requires willing buyers/developers. GSA relocation program, or special legislation would be required to return proceeds to Goddard to allow master plan be implemented.
77	Goddard	Facilities and Asset Management	EUL	State of Maryland, Prince Georges County	East Campus - Goddard	East Campus - EUL - Alternative master plan to finance development	Prince Georges County and the State of Maryland are focused on increasing research activities, and NASA offers great opportunity for synergy. Consider alternative master plan consolidating all facilities west of Soil Conservation Road; EUL east campus to pay for new facilities on west campus while maintaining long-term ownership of the land; potential to turn east into high tech partnering zone; "showcase for county". Don't move Soil Conservation Road. Maintain or move radar stations. EUL new Earth Sciences facilities to "kick start" project.	3	3	3	3	2	8	6	Revenue generation for NASA while preserving land for potential long term growth, phased payments allow for continued improvements to remaining Center	Partners located "on campus" or adjacent to campus	Increases non-federal jobs, brings firms to community, returns land to tax rolls	Can achieve outreach if university, incubator, or think tank involved	Good market, requires willing partners. Requires EUL authority for NASA. Risk is if business plan fails, NASA may take over development role.
87	Goddard	Facilities and Asset Management	Example	NASA	Real Property Strategy	Master Plan	The Center has a well thought out master plan that will allows it to be prepared to address its future proactively.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
82	Goddard	Facilities and Asset Management	CoF	NASA	Mod C	Mod C Consolidation - CoF	Mod C is a logistics consolidation project that will help Goddard better conduct that operation. Proceed through the normal CoF process.	1	2	1	0	1	3	2	Requires continued competition for limited funding	Creates efficiencies	Minimal economic impact to community	No outreach to community	Limited funding hurts expediency.
80	Goddard	Facilities and Asset Management	EUL	Private Sector	Mod C	Mod C Consolidation - EUL	Mod C is a logistics consolidation project that will help Goddard better conduct that operation. Consider outsourcing some of the logistics activities and having private sector build the facilities to house the activities on NASA land near the fence through EUL.	2	1	2	1	2	6	2	EUL offers NASA opportunity for increased revenues; outsourcing could potentially reduce some costs	Not as good as controlling logistics completely, but could be private sector efficiencies	Investment in non-federal jobs	Limited	Potential, but requires NASA operational change; could be security risk.
81	Goddard	Facilities and Asset Management	Outside Fence	Private Sector	Mod C	Mod C Consolidation - Outsourcing	Consider outsourcing as many logistics operations outside the fence, removing NASA's obligation to manage the process and provide the service.	2	1	2	1	1	5	2	Potentially reduce operations costs	Not as good as controlling logistics but could offer efficiencies	Non-federal jobs in the local economy	Modest	Requires change in operations
89	Goddard	Facilities and Asset Management	CoF	Private Sector	Space Science Building	Space Science Building - CoF	The Space Sciences groups are currently in old facilities that inhibit their work. The Goddard Master plan includes a new Space Science Building. Pursue normal CoF funding.	1	3	1	0	1	3	3	Requires continued competition for limited funding	Creates efficiencies, currently in old inefficient buildings	Minimal economic impact to community	No outreach to community	Limited funding hurts expediency.

The information shown here is conceptual and not intended for immediate action. A business plan including all business economics, structures, strategies and risks should be evaluated prior to the execution of any opportunity.

5 Goddard Opportunity Matrix.xls

SORT ORDER: Center | Name | Opportunity

ID #	Center	Type	Authority	Partner	Name	Opportunity Name	Potential Strategy	Impact Factors: NASA Financial (F)	NASA Synergistic (S)	Communi Economic (E)	Communi Outreach (O)	Mkt. Reality (R)	Results & Rank: Business (9=max) (F,E,R)	Intangible (6=Max) (S,O)	Financial	Synergistic	Economic	Outreach	Reality
88	Goddard	Facilities and Asset Management	EUL	Private Sector	Space Science Building	Space Science Building - EUL	The Space Sciences groups are currently in old facilities that inhibit their work. The Goddard Master plan includes a new Space Science Building in the middle of the campus. Consider entering into EUL to support the financing and construction of the new facility. Because of OMB rules, consider designing the building where a portion can be occupied almost completely by Contractors.	3	3	3	0	2	8	3	Allows NASA to have building financed partially by outside financing source	Allows for better working conditions, could brings contractors/partners on campus	Adds non-federal jobs and increases presence of employers	No outreach involved	Market has strong contractor base, current EUL legislation does not allow NASA occupancy.
90	Goddard	Facilities and Asset Management	Outside Fence	Private Sector	Visitors Center	Visitors Center, Space Camp - Outsource	Goddard is reviewing proposals for Visitor Center and potential Space Camp activities. Currently Goddard maintains its own Visitor Center; consider completely outsourcing activities similar to Marshall; maintain only "exhibit" input and "Brand" control.	2	0	2	2	2	6	2	Net cost savings to NASA	No benefit to synergistic relationships	Community can benefit from increased visitor traffic	Benefits community outreach/education	Achievable, but dependent on willingness of contractor.
79	Goddard	Mission or Program Strategy	EUL	Private Sector	GOCO	FFRDC - Convert Goddard, EUL real estate to investor	Goddard is a high-research Center similar to JPL. Consider combining with other research-oriented agencies in DC area to create new FFRDC's in DC area. As an FFRDC, EUL to investors who could access long term financing and would be responsible for long-term facility needs. Consider EUL on part or all of Goddard campus to remove NASA from direct facilities obligations. Use proceeds to implement master plan.	3	3	2	2	1	6	5	Potential cost savings/revenue generation; proceeds from EUL could help support unique facilities that may not be included in EUL	Potential collaboration with partners on campus	Bring more users and non-federal jobs to community	Can include educational institutions and initiatives	FFRDC's have pros and cons, could be more expensive; politically challenging to set up FFRDC and transfer employees; difficult to find educated investors to enter into EUL.
76	Goddard	Underutilized Facilities	Example	NTSB	Centrifuge	Centrifuge	Goddard has a reimbursable agreement with NTSB to use it's Centrifuge in testing cars. Good example of utilizing federal assets to benefit other federal agencies	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
75	Goddard	Underutilized Facilities	Space Act	Contractors	Centrifuge	Centrifuge - Market	Provide incentives to contractor to actively market centrifuge to outside groups similar to DOT agreement	2	2	1	1	3	6	3	Ensures facilities are being marketed to full cost savings potential	Shared usage/collaboration with partners	Can bring more users/contractors to marketplace	Can include educational missions	Infrastructure already in place, expand scope
86	Goddard	Underutilized Land	Divest	Private Sector	Partnering Zone	Partnering Zone - Divest to master developer	Goddard's Master plan includes a partnering zone. Divest the partnering zone to a master developer or local developers for a mix of collaborative uses including contractor office space and university space.	3	2	3	2	1	7	4	Great potential for immediate revenue generation, NASA gives up expense, but loses long-term ownership control	Provides potential collaboration with universities/contractors but not in direct control	Provides non-federal jobs, returns land to tax roll	Outreach to community through university presence	Near term market demand might be question; also loss of control and potential security challenges.

The information shown here is conceptual and not intended for immediate action. A business plan including all business economics, structures, strategies and risks should be evaluated prior to the execution of any opportunity.

5 Goddard Opportunity Matrix.xls

SORT ORDER: Center | Name | Opportunity

ID #	Center	Type	Authority	Partner	Name	Opportunity Name	Potential Strategy	Impact Factors: NASA Financial (F)	NASA Synergistic (S)	Communi Economic (E)	Communi Outreach (O)	Mkt. Reality (R)	Results & Rank: Business (9=max) (F,E,R)	Intangible (6=Max) (S,O)	Financial	Synergistic	Economic	Outreach	Reality
84	Goddard	Underutilized Land	EUL	Private Sector	Partnering Zone	Partnering Zone - EUL to master developer	Goddard's Master plan includes a partnering zone. EUL the partnering zone to a master developer or local developers for a mix of collaborative uses including contractor office space and university space.	2	3	3	3	3	8	6	Great potential for revenue generation, NASA maintains long term land ownership, but some "development value" is passed along to master developer	Provides great collaboration with universities/contractors	Provides non-federal jobs	Outreach to community through university presence	Near term market demand might be only question. NASA puts development risks on Investor with expertise in development who takes a take leadership role in NRP, avoiding known mistakes.
85	Goddard	Underutilized Land	EUL	Private Sector	Partnering Zone	Partnering Zone - EUL, NASA maintain management	Goddard's Master plan includes a partnering zone. EUL the partnering zone to local developers for a mix of collaborative uses including contractor office space and university space.	3	3	3	3	2	8	6	Great potential for revenue generation, NASA maintains long term land ownership. NASA controls obtaining highest returns on every EUL	Provides great collaboration with universities/contractors	Provides non-federal jobs	Outreach to community through university presence	Near term market demand might be only question. NASA maintains "development" risks in soft sub-market.
83	Goddard	Underutilized Land	Space Act	Private Sector	Partnering Zone	Partnering Zone - University / Research - Space Act.	Goddard's Master plan includes a partnering zone. Consider a research-oriented partnering zone similar to Ames; high emphasis on research and university interactions - and related organizations. Share maintenance costs for net cost reduction.	3	3	3	3	2	8	6	Great potential for revenue generation	Provides great collaboration with universities and supports NASA mission	Provides non-federal jobs	Outreach to community through university presence	Near term market demand might be only question.
91	Goddard	Underutilized Land	EUL	Private Sector	Visitors Center	Visitors Center, Space Camp - EUL near Center	The future of Goddard's on-center Visitor Center is being discussed; one option is to move it away from the Center. Consider entering into an EUL agreement with investor/partners and expanding into a conference facility and educational space camp. Utilize the facility for NASA-related activities that involve foreign scientists who have difficulty getting on the Center.	2	2	2	3	1	5	5	Reduction in costs associated with running visitors center currently; potential to structure like KSC with revenues going back to public use activities	Close proximity could allow for more conferences, meetings, discussions	Modest increase in local visitors	Positive outreach to local students and community	Faces stiff competition for visitor center experiences in DC area; hotel conference centers are already near by, may not support.

The information shown here is conceptual and not intended for immediate action. A business plan including all business economics, structures, strategies and risks should be evaluated prior to the execution of any opportunity.

REAL PROPERTY OPPORTUNITIES CENTER REPORT:
Jet Propulsion Laboratory
Pasadena, CA

CENTER REPORT – Table of Contents

Section 1: Executive Overview (In Briefing format)
- Introduction
- Participants
- Marketplace and Location
- Business, Missions, Vision
- Infrastructure and Population
- Best Business Opportunities

Section 2: General Market Statistics
- Location
- Economic/Demographic Indicators
- Interpretation of Market

Section 3: Business, Mission, Vision of the Center
- Center History and Overview
- Description of Major Current and Potential Future Programs
- Major Relationships (Contractors, Universities, Government)

Section 4: Infrastructure
- Land and Site Metrics
- Facility Metrics and Deferred Maintenance Results
- Utilities Synopsis
- Property Listing from the Real Property Database

Section 5: Opportunities – Descriptions, Measures, Matrix
- Overview and Methodology
- Opportunity Matrix
- Analysis and Observations

REAL PROPERTY OPPORTUNITIES

CENTER REPORT:

Jet Propulsion Laboratory

Pasadena, CA

Executive Overview

August 1, 2003

Jet Propulsion Laboratory Introduction

Goal of Visit

- Understand JPL-specific issues
- Identify potential real property business alternatives
  - increasing revenues
  - reducing expenses
  - creating organizational improvement / mission enhancement

Schedule

- Research: 1/28/03 – 2/07/03
- Visit: 2/03/03 – 2/05/03

Jet Propulsion Laboratory Participants

NASA

INTERVIEW

- Gene Tattini
- Dean Ines
- Tom Gavin
- Fred Mcnutt
- Bruce Fischer
- Frank Nolinowski
- Susan Henry
- Carl Weber
- Thomas Prince
- Jim Rooney
- Tim Howell
- Jay Schmuecker
- Randy Wager

COORDINATOR

- Howard Kass, NASA HQ
- Gary Gray, NASA JPL

STAUBACH

STAUBACH VISIT

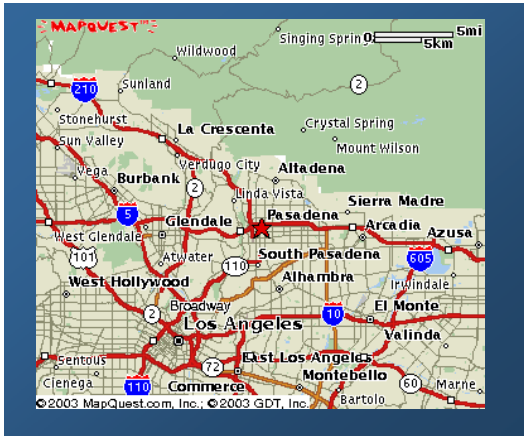
- Kurt Haglund
- Angela Foster
- Peter Brohoski
- Terry Laudick

STAUBACH RESEARCH

- Wayne Powell, Plexus
- Angela Foster
- Cynthia Nunnaly

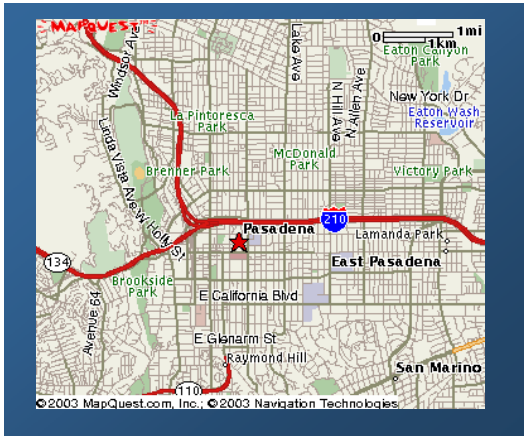
Jet Propulsion Laboratory Marketplace and Location

REGION



- Los Angeles County Population: 9,637,494
- Economy: Finance, Entertainment, Technology
- Several Universities
- Large Population and Employment Base
- Extensive Transportation Network

JPL SUBMARKET



- Access to Transportation - Good
- Local Economy: Educational, Health & Social Services, Professional, Scientific

Jet Propulsion Laboratory Business, Mission, Vision

- **Space Science Enterprise (Code S)**

- **Major Center Activities**
  - Planetary Science
  - Deep Space Systems
  - Robotics and Instrumentation
  - Earth Sciences
  - Astrophysics

- **Center's View of Potential Future Activities**
  - Continued work in the Major Center Activities outlined above

Jet Propulsion Laboratory
Infrastructure and Population Summary

Land	Acres	% Total	% Total of NASA Portfolio
Owned	155	100%	0.04%
Easement	0	0%	0%
Leased	0	0%	0%
Permit	0	0%	0%
Public	0	0%	0%
TOTAL	155		

*Extracted from the Land Report as of 2003 from the NASA Real Property Inventory Database on 5/9/03.

Structures	Quantity	Book Value	2003 CRV
Buildings	176	$ 254,927,734	$ 579,484,556
Other Structures	49	34,894,211	70,113,399
TOTAL	225	$ 289,821,945	$ 649,597,955

*Extracted from the NASA Site Summary Report from the NASA Real Property Inventory Database on 5/9/03.

Civil Servants	+	Contractors	+	Other	=	Total Center Population	Density (People/Acre)
68		6,058		385		6,511	42.0

* Extracted from the Facilities Utilization Program Report, September 2002.

Jet Propulsion Laboratory
Best Business Opportunities

Opportunity Name	Description
— Flight Project Center	— JPL is constructing a new flight project center building using CoF funding — Since JPL is an FFRDC, few NASA civil servants will occupy the building — Consider an EUL with outside developers/ investors who can lease the constructed facility to CalTech
— Parking Garage	— JPL suffers from a lack of parking — NASA could potentially EUL available land and use proceeds to construct garage — If EUL is not an option, consider having the garage constructed on a private site
— Historic District	— Consider designing JPL as an historic district, similar to the Shenandoah District at Ames — Where possible, lease facilities to the private sector, possibly including CalTech, and invest proceeds back into facilities
— Reimbursable Agreements	— CalTech is not incentivized, per its contract with NASA, to strongly pursue reimbursable agreements — NASA could create incentives or requirements for CalTech to pursue reimbursable agreements in order to reduce costs

SECTION 2: GENERAL MARKET STATISTICS

LOCATION

The Jet Propulsion Laboratory is located in Los Angeles County, California and is situated at the base of the foothills of the San Gabriel Mountains and at the northern edge of the Los Angeles metropolitan area. The greater Los Angeles area is crossed by many interstate freeways which provide easy access to the major airports. Los Angeles benefits from a diverse and growing population and employment base and offers a multifaceted economic base led by education, technology, oil & gas, financial services, and entertainment.

ECONOMIC/DEMOGRAPHIC INDICATORS

Economic/Demographic Component (County)	Indicators
2001 Population Estimate	9,637,494
Population % Change, 1990 to 2000	+7.4%
Housing Units, 2000	3,270,909
Median Value of owner-occupied housing units, 2000	$209,300
Median household money income, 1999	$42,189
Per capita money income, 1999	$20,683
Persons below poverty, percent, 1999	17.9%
Land Area, 2000 (square miles)	4,061
Persons per square mile, 2000	2,344
Largest Industries	Education, Health, Manufacturing, Retail Trade

**Extracted from U.S. Census Bureau Quickfacts at quickfacts.census.gov on 2/14/03.*

INTERPRETATION OF MARKET

Los Angeles County has a diverse economic base and boasts a well-educated work force. Pasadena, and the area immediately surrounding JPL, has some of the highest housing prices and most expensive Real Property in California. Strong population growth and employment, coupled with stringent development controls and a dwindling supply of developable land, make this an attractive Real Property investment market.

SECTION 3: BUSINESS, MISSION, VISION OF THE CENTER

CENTER HISTORY AND OVERVIEW

On November 20, 1943, a group from the California Institute of Technology, headed by Professor Theodore vón Kárman, drafted a proposal to the military to fund work in developing missiles in response to Germany's V-2 rocket on leased land in Pasadena, California (land that became the Jet Propulsion Laboratory). In 1947, JPL conducted the first test of the six-ton Corporal E missile. In 1949, the Pentagon chose the Corporal for carrying nuclear warheads.

The United States and the Soviet Union began exploring space in the 1950s. Both nations strived to be the first to get spacecraft into Earth orbit and to the Moon. During this period, JPL built an Earth satellite to go atop an Army-supplied booster rocket. As successes mounted, momentum built for attempting the next great leap: going to another planet. A robot named Mariner 2 about twice as tall and three times as heavy as a human adult, coasted past cloud-wrapped Venus on Dec. 14, 1962, and became Earth's first emissary to successfully examine another planet up close. NASA's Jet Propulsion Laboratory designed, built and operated Mariner 2, which found that Venus has cool clouds and a very hot surface.

A series of other JPL-managed Mariner missions in the 1960s and early 1970s paid initial visits to Mars and Mercury plus follow-ups to Venus and Mars. The first spacecraft to orbit another planet, Mariner 9, discovered dry riverbeds, massive volcanoes and vast canyons during its orbital tour of Mars beginning Nov. 14, 1971. Besides its scientific discoveries, the Mariner series built up expertise for planning and managing future planetary exploration. Mariner 10, launched in 1973, visited two planets, pioneering the use of "gravity-assist" maneuvers by using Venus' gravity for a boost toward Mercury.

Other early JPL spacecraft inspected the Earth's Moon. The Ranger series of crash landers and Surveyor series of soft landers in the 1960s supplied detailed photographs and surface analysis that scouted the way for the bootprints of Apollo astronauts.

After the successes gained from the grand missions started in the 1970s, scientists are again pushing the limits of exploration by laying the groundwork for a possible permanent presence on Mars and by going to as yet unexplored bodies in Earth's solar system. To fit these goals, a new generation of smaller interplanetary spacecraft is being created.

DESCRIPTION OF MAJOR CURRENT AND POTENTIAL FUTURE PROGRAMS

The Jet Propulsion Laboratory, managed by the California Institute of Technology, conducts robotic exploration of the solar system. Its spacecraft have visited all the planets in our solar system except Pluto. JPL telescopes are observing distant galaxies in the universe to study how the solar system was formed. JPL also manages the worldwide Deep Space Network, which communicates with spacecraft and conducts scientific investigations from its complexes in California's Mojave Desert near Goldstone, near Madrid, Spain, and near Canberra, Australia. JPL cameras and sensors are aboard satellites circling Earth to study the ozone, oceans and other Earth sciences. To support

its continued exploration, JPL is making advances in technology with new instruments and computer programs to help spaceships travel further and telescopes see farther than ever before.

JPL – MAJOR RELATIONSHIPS

Relationships and partners are critical in business dealings. Real Property business opportunities are enabled by pairing an opportunity with a partner, and the most likely partners already have relationships with NASA. The following charts describe three major categories of relationships: (1) contractor relationships (can partner with NASA as tenants or Enhanced-Use Leasing partners); (2) university relationships (can partner with NASA as tenants, Enhanced-Use Leasing partners, or outsourcing research partners); and (3) federal agency relationships (can lead to multiple opportunities, including cost sharing and federal campus strategies).

Although in many cases contractor and university relationships exist because NASA is funding the relationships, there also exist opportunities for mutually beneficial Real Property partnerships. It is generally easier to do business based on an existing relationship rather than attempting to forge completely new relationships.

CONTRACTORS

The following is a list of Jet Propulsion Laboratory NASA Management Office's current most active contractors based upon total award value of the contract:

Contractor	Total Award Value
Indyne Inc	$1,511,351
Security Identification Systems	$41,022

**Extracted from the NASA Procurement Management Database on 3/31/03.*

UNIVERSITIES

The following is a list of Jet Propulsion Laboratory NASA Management Office's current most active university contractors based upon total award value of the contract:

University	Total Award Value
California Institute of Technology	$5,735,000,000
California State Polytechnical University	$509,407
University of Washington	$491,737

**Extracted from the NASA Procurement Management Database on 3/31/03.*

SECTION 4: INFRASTRUCTURE

LAND AND SITE METRICS

	Total	***% of NASA Portfolio***
Land Area (Acres)	155	*0.04%*

**Extracted from the Land Report as of 2003 from the NASA Real Property Inventory Database on 5/9/03.*

FACILITY METRICS

	Number	**Book Value (MMs)**	**2003 CRV (MMs)**
Buildings	172	$255	$579
Other Structures	49	$ 35	$ 71
Total	221	$290	$650
% of NASA Portfolio	*4.1%*	*4.4%*	*3.4%*

**Extracted from the NASA Site Summary Report from the NASA Real Property Inventory Database on 5/9/03.*

DEFERRED MAINTENANCE ASSESSMENT RESULTS

An assessment of deferred maintenance was previously prepared for each NASA Center, the results of which are reflected on the chart below. The table indicates the summary of facilities' condition of the Center by the Facilities Condition Index (FCI), developed during deferred maintenance analysis. The table also displays where the Center ranks in comparison to the other NASA Centers in terms of FCI and deferred maintenance as a percentage of CRV. (13 is the highest ranking.) It should be noted that deferred maintenance amount set forth in the chart does not represent what the agency is currently spending. Instead, it demonstrates the amount that would need to be spent to solve the deferred maintenance problem.

2002	**FCI**	**DM**	**BMAR**	**CRV**	**DM(%CRV)**
Deferred Maintenance Assessment	3.9	$22.6 MM	$0 MM	$613 MM	3.3%
Rank Among Centers	*5*	-	-	-	*T1*

**Extracted from the Report on the FY02 NASA- Wide Deferred Maintenance Assessment, March 2002.*

UTILITIES SYNOPSIS

The following chart reflects a brief synopsis of the Center's utilities.

Power	Electrical Power comes from Southern California Edison Company which transmits it @ 66kV to a substation owned and operated by JPL and located on JPL property. A 6.6 mW cogeneration plant may be constructed on-site in the next 2 years
Heating	JPL uses primarily hot water boilers to heat its buildings. Use of steam boilers is limited.
Cooling	Buildings are cooled using a mix of centrifugal, screw, and reciprocating liquid chillers. Systems vary in different buildings.
Sewage	Sewage is disposed into the LA County Sanitation District Collection System. The sewage lift station meters all sewage effluent and permits are maintained for the total volume discharged.
Water	Chilled Water comes from the chillers. Potable water is procured from the City of Pasadena.

**Extracted from Report on the FY02 NASA- Wide Deferred Maintenance Assessment, March 2002.*

PROPERTY LISTING FROM THE REAL PROPERTY INVENTORY

NASA has an extraordinary database which lists its Real Property inventory. Although the team found a few anomalies, the database proves to be a reliable metric of the overall Real Property portfolio that is relatively accurate at the time of this report. A summary of the leased property, including in-grants and out-grants (if any), is shown on the following pages as a baseline for understanding the Real Property opportunities.

Jet Propulsion Laboratory

In/Out Grant Report

Grant	Reference Number	#	Property Name	Type	Size		Party	Effective Date	Expiration Date	Status
In-Grant		525	PASADENA TECH CENTER	Lease	121917	SF	Limar Realty/JPL	06/30/1996	06/30/1998	Expired
In-Grant		CHELI	CHELI WAREHOUSE	Agreement	119104	SF	GSA/JPL	09/30/1997	09/30/1998	Active

SECTION 5 – OPPORTUNITIES – DESCRIPTIONS, MEASURES, MATRIX

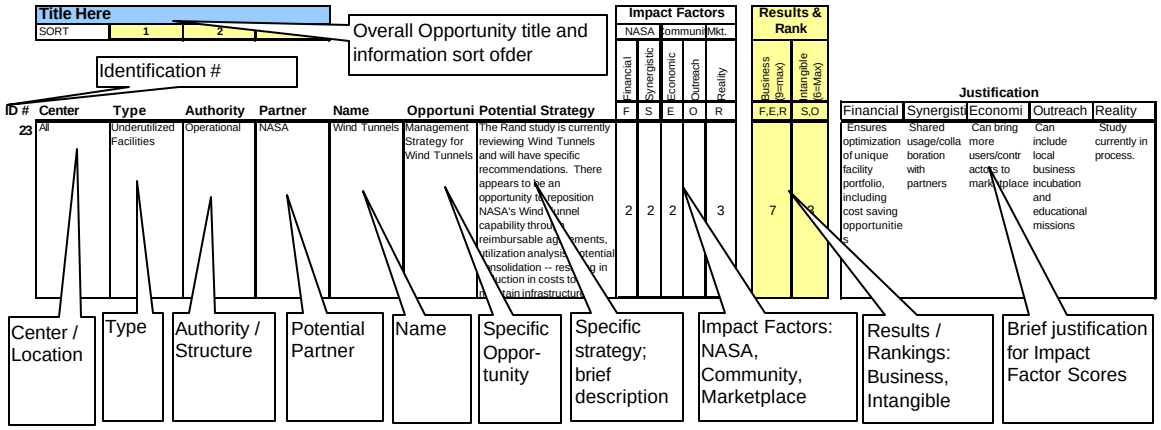
OVERVIEW

The information in this section provides an overview of the opportunities and examples discovered during the review. The opportunities shown here are the ones that were discussed during visits, or are examples of opportunities that became evident during brainstorming sessions.

Although the opportunities are well thought out conceptually, as an opportunity is considered for implementation, a much more detailed business plan should be conducted that looks at each opportunity based on current conditions and market elasticity. The need to develop a business plan for any opportunity cannot be overstated. The business plan needs to take into account the corporate requirement of the asset, the potential benefit to the Agency both economic and other intangibles, and the risks inherent to the Agency, including failure after entering into an opportunity agreement. The business plan should mitigate those risks through a rigorous review and if necessary a due-diligence study of the project. The opportunities are arrayed in a matrix that contains the basic elements of a business plan:

- Center/Location
- Opportunity Type
- Authority/Structure
- Partner
- Name
- Opportunity
- Potential Strategy
- Impact Factors and Results
- Justification

Each category describes an item NASA should consider in its business planning process. Each category is defined below and discussed in more detail through the rest of this report. An example of an opportunity in the matrix is shown below:



OPPORTUNITY TYPE

There are six overall types of Real Property opportunities. Each is summarized in Section 5 and described in more detail in Section 6.

- Underutilized Land Opportunities (including Research Parks, Federal Campus Opportunities, Contractor Parks)
- Underutilized Facilities Opportunities
- Facilities and Asset Management Strategy Opportunities
- Mission or Program Clarification Opportunities
- Restructuring Opportunities
- Utilities Management Opportunities

AUTHORITY / STRUCTURE

The authority category of information includes either the legislative authorities or the types of actions to be contemplated for each opportunity. The primary types of authorities and structures that are outlined in more detail in Section 5 include the following:

- Space Act Agreement
- Enhanced-Use Leasing (EUL)
- CoF

- Divest
- National Historic Preservation Act
- Outside Fence
- Example Opportunities

PARTNERS

Every business agreement has a partner, and this category of information describes some of the current or potential partners NASA could utilize in helping execute its Real Property business opportunities.

NAME

This category lists the 1-3 word project name. In several cases, the team has identified multiple scenarios for a particular building or area of the site; this category world list the same project "name" for all opportunities associated with that building or site. In other cases, similar strategies are being pursued including "marketing", "management", and federal campus ideas; all opportunities that are not building or site specific are given a strategy name.

OPPORTUNITY

The specific opportunities are relatively short descriptions that capture the essence of the opportunities. In several cases, the opportunity names refer to the same opportunity, but the strategy for implementing the opportunity could vary.

POTENTIAL STRATEGY

This section of the matrix captures in a few sentences some of the background and implementation strategies for each opportunity.

MEASUREMENT FILTERS AND FACTORS

There are many factors that need to be considered in order to determine if a particular opportunity is appropriate given all of the stakeholders and implementation structures. This section of the opportunity matrix attempts to measure each opportunity against a standard list of factors. They are broken into three overall categories representing the key stakeholders- NASA, community, and marketplace - and five total factors. The balancing of these factors is important to understand where an opportunity excels or falls short.

NASA impact factors:

Financial and Economic - Quantitative - NASA's financial incentives are to reduce costs or increase revenues, regardless of the impact on NASA's other activities.

Synergistic - Qualitative - The Space Act specifically encourages NASA to collaborate; therefore, over its history, NASA has established partnerships that are synergistic with NASA's goals, regardless of financial gain or expense.

Community impact factors:

Economic Impact - Quantitative - The communities where NASA is located benefit economically from NASA's presence, not only through direct investment, but also by providing jobs and other economic stimulus. This factor reflects the impact that each opportunity has economically on the community.

Outreach Impact - Qualitative - In addition to economic impact, NASA has impact on its community through direct outreach activities, and indirect activities such as bringing a highly educated workforce into the community.

Marketplace factors:

Reality of implementation – The marketplace is a multi-varied yet critical component of this analysis. The marketplace factor includes the speed at which an opportunity can be accomplished; the risk exposure to NASA; the likelihood of finding suitable partners; and the reality that the opportunity could be implemented. Many of these considerations will be at odds with one another.

The measurement system for the impact factors is relatively simple, reflecting the fact that the opportunities were discussed and analyzed on a conceptual level – not in high detail. Each factor is ranked on a "0-3" basis. Therefore the highest score for any one factor is a "3", and the lowest score is a "0". The measurements are translated as follows:

0 = No Impact
1 = Minimal impact
2 = Average impact
3 = High impact

RESULTS AND RANKING

The impact factors by themselves do not provide an understanding of an opportunity's full value. To obtain a better measurement of value at a conceptual level, the scores were added together in two categories:

Business Ranking - NASA financial, community economic impact and marketplace reality factors were added together to estimate the overall "Business" factors that

take economics and marketplace into account. The factors are typically the first factors to be ranked. The highest score for Business Ranking is a "9".

Intangible Ranking - The NASA synergistic and community outreach factors are combined to form the "intangible" factors. Since these factors are important, but much more subjective than the business ranking factors, these factors are ranked after the business ranking factors. The highest score for an Intangible Ranking is a "6".

The justification of each opportunity's individual factor is described briefly in the columns on the right side of the matrix.

"Example" opportunity descriptions are not ranked or described in the justification portion of the matrix. Many of the decisions for Example opportunities were carefully made given information currently available; whether or not the example is currently in the best interest of NASA does not mean that the decision to pursue the opportunity was unwise. Therefore, it is not helpful to score on the example opportunities in hindsight.

5 JPL Opportunity Matrix.xls

SORT ORDER: Center | Name | Opportunity

ID #	Center	Type	Authority	Partner	Name	Opportunity Name	Potential Strategy	Impact Factors: NASA Financial (F)	NASA Synergistic (S)	Communi Economic (E)	Communi Outreach (O)	Mkt. Reality (R)	Results & Rank: Business (9=max) (F,E,R)	Intangible (6=Max) (S,O)	Financial	Synergistic	Economic	Outreach	Reality
108	JPL	Facilities and Asset Management	Divest	Private Sector	Explorer Road - Below	Explorer Road - Divest area below road	JPL's master plan generally calls for most unique facilities to be above Explorer road. As an FFRDC, JPL may have unique opportunities for managing real property. Consider a radical Divestment concept which leases the land and facilities generally below Explorer Road to investors with JPL being primary tenant. Use proceeds to implement master plan. Investor provides capital for rehabilitation and maintenance of JPL buildings.	3	2	3	0	1	7	2	Potential revenue generation for NASA; investor can access long-term financing for infrastructure improvements, NASA can invest proceeds into unique facilities above Explorer Road	Brings additional contractors/partners on campus, allows for substantial additional non-NASA work to keep workforce busy	Adds non-federal jobs and increases presence of employers	No outreach involved	Market has strong partner base, including Cal Tech; deal structure and logistics may be complicated. NASA would give up long term ownership.
107	JPL	Facilities and Asset Management	EUL	Private Sector	Explorer Road - Below	Explorer Road - EUL area below road	JPL's master plan generally calls for most unique facilities to be above Explorer road. As an FFRDC, JPL may have unique EUL opportunities. Consider a radical EUL concept which leases the land and facilities generally below Explorer Road to investors with JPL being primary tenant. Use proceeds to implement master plan. Investor provides capital for rehabilitation and maintenance of JPL buildings.	3	2	3	0	1	7	2	Potential revenue generation for NASA; investor can access long-term financing for infrastructure improvements, NASA can invest proceeds into unique facilities above Explorer Road	Brings additional contractors/partners on campus	Adds non-federal jobs and increases presence of employers	No outreach involved	Market has strong partner base, including Cal Tech; deal structure and logistics may be complicated.
110	JPL	Facilities and Asset Management	CoF	Cal Tech	Flight Project Center	Flight Project Center - CoF	The Flight Project Center is a facility that would improve JPL's operational efficiency. As currently planned, continue to build the facility as a CoF project.	1	2	1	0	1	3	2	Requires continued competition for limited funding	Would provide operational efficiencies	Minimal economic impact to community	No outreach to community	Limited funding hurts expediency.
111	JPL	Facilities and Asset Management	Example	Private Sector	Flight Project Center	Flight Project Center - enhancing mission operations	JPL has a master plan to include a flight project center which will substantially improve it's operations. This is an example of how strategic facility planning can help improve mission capabilities, and potentially reduce long term tangible and intangible costs.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
109	JPL	Facilities and Asset Management	EUL	Cal Tech	Flight Project Center	Flight Project Center - EUL	Since JPL is an FFRDC and few if any NASA Civil Servants will occupy the facility, consider entering into an EUL agreement with outside investor to build the facility and lease it back to Cal Tech.	2	3	2	0	2	6	3	Utilize private sector funding, potential revenue Generation for NASA	Allows better facility than current	Potentially adds non-federal jobs and increases presence of employers	No outreach involved	Market has strong partner base; deal structure may be complicated. Since JPL is an FFRDC, few NASA occupancy issues related to EUL.

The information shown here is conceptual and not intended for immediate action. A business plan including all business economics, structures, strategies and risks should be evaluated prior to the execution of any opportunity.

5 JPL Opportunity Matrix.xls

SORT ORDER: Center | Name | Opportunity

ID #	Center	Type	Authority	Partner	Name	Opportunity Name	Potential Strategy	Impact Factors: NASA Financial (F)	NASA Synergistic (S)	Communi Economic (E)	Communi Outreach (O)	Mkt. Reality (R)	Results & Rank: Business (9=max) (F,E,R)	Intangible (6=Max) (S,O)	Financial	Synergistic	Economic	Outreach	Reality
117	JPL	Facilities and Asset Management	Historic Preservation Act	Private Sector	Real Property Development Strategy	Historic District	Consider designating JPL, or portions of JPL as a historic district, similar to the Shenandoah District at Ames. Wherever possible, lease facilities to the private sector to help renovation of the facilities. The net result is a reduction of CoF funds that need to be spent on the facilities and lower future occupancy costs.	2	3	1	0	1	4	3	NASA can reinvest proceeds of leases into facilities, thereby renovating the facilities at little net cost to NASA; helps reduce CoF requirements, but not substantial financial gain	Helps NASA maintain it's important heritage facilities for future generations; potential synergies created by bringing partners/contractors "on-campus"	Can result in increased non-federal jobs within municipality	Limited outreach	Viable, but dependent on market for tenants/users.
113	JPL	Facilities and Asset Management	Space Act	Cal Tech	Marketing	Marketing - Stronger pursuit of reimbursable agreements	Create incentives or contract requirements whereby GOCO will more strongly pursue reimbursable agreements.	2	2	2	2	3	7	4	Can achieve modest cost savings	Brings more partners/contractors onto campus	More contractors/visitors	Can include outreach programs	NASA should easily be able to implement through contract.
118	JPL	Facilities and Asset Management	Example	NASA	Real Property Strategy	Master Plan	Although not complete, the Center has a well thought out master plan that will allows it to be prepared to address its future proactively.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
116	JPL	Facilities and Asset Management	CoF	NASA	Parking Garage	Parking Garage - CoF	JPL has a shortage of parking. Use NASA CoF funding to construct structured parking on-site.	1	1	1	0	1	3	1	Requires continued competition for limited funding	Would provide operational efficiencies by putting parking closer to worker buildings	Minimal economic impact to community	No outreach to community	Limited funding hurts expediency.
114	JPL	Facilities and Asset Management	EUL	Private Sector	Parking Garage	Parking Garage - EUL	Ground lease land near fence line but close to the hub of the workforce in order to provide most efficient location for workers; developer/investor would construct Garage through EUL agreement. NASA could "donate" the land and encourage a longer amortization period in exchange for lower parking fees charged to JPL workers (which the developer would need to pay for construction costs and profit).	3	1	2	1	2	7	2	Creative method for financing needed parking structure	Might not involve synergistic partner, but would allow JPL closer access to parking	Adds non-federal jobs and increases presence of employers	Can involve some community participation	Market has strong partner base; deal structure may be complicated.
115	JPL	Facilities and Asset Management	Outside Fence	Private Sector	Parking Garage	Parking Garage - Off Site	Identify neighboring site; have private developer construct garage.	2	0	2	0	2	6	0	NASA does not have to provide funding for construction, but might be required to subsidize additional costs for employee parking	No special synergies involved	Tax revenue for community	No outreach involved	Issue of NASA employees paying for parking, or have employees bear the burden of additional costs.

The information shown here is conceptual and not intended for immediate action. A business plan including all business economics, structures, strategies and risks should be evaluated prior to the execution of any opportunity.

5 JPL Opportunity Matrix.xls

SORT ORDER:	Center	Name	Opportunity

ID #	Center	Type	Authority	Partner	Name	Opportunity Name	Potential Strategy	Impact Factors: NASA Financial (F)	NASA Synergistic (S)	Communi Economic (E)	Communi Outreach (O)	Mkt. Reality (R)	Results & Rank: Business (9=max) (F,E,R)	Intangible (6=Max) (S,O)	Financial	Synergistic	Economic	Outreach	Reality
112	JPL	Mission or Program Strategy	Example	Cal Tech	GOCO	FFRDC	JPL's FFRDC with Cal Tech is a good example of how to partner with the academic community; offers benefits of gaining research without needing to directly employ staff; challenges are the uniqueness with being "like" a Center, but not really being totally a part of NASA.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				

The information shown here is conceptual and not intended for immediate action. A business plan including all business economics, structures, strategies and risks should be evaluated prior to the execution of any opportunity.

REAL PROPERTY OPPORTUNITIES CENTER REPORT: Johnson Space Center Houston, Texas

CENTER REPORT – Table of Contents

Section 1: Executive Overview (In Briefing format)
- Introduction
- Participants
- Marketplace and Location
- Business, Missions, Vision
- Infrastructure and Population
- Best Business Opportunities

Section 2: General Market Statistics
- Location
- Economic/Demographic Indicators
- Interpretation of Market

Section 3: Business, Mission, Vision of the Center
- Center History and Overview
- Description of Major Current and Potential Future Programs
- Major Relationships (Contractors, Universities, Government)

Section 4: Infrastructure
- Land and Site Metrics
- Facility Metrics and Deferred Maintenance Results
- Utilities Synopsis
- Property Listing from the Real Property Database

Section 5: Opportunities – Descriptions, Measures, Matrix
- Overview and Methodology
- Opportunity Matrix
- Analysis and Observations

REAL PROPERTY OPPORTUNITIES

CENTER REPORT:

Johnson Space Center

Houston, Texas

Executive Overview

August 1, 2003

Johnson Space Center Introduction

Goal of Visit

- Understand JSC-specific issues
- Identify potential real property business alternatives
  - increasing revenues
  - reducing expenses
  - creating organizational improvement / mission enhancement

Schedule

- Research: 11/11/02 – 11/24/02
- Visit: 11/18/02 – 11/21/02

Johnson Space Center Participants

NASA

INTERVIEW

- General Howell
- Joel Walker
- Abdul Hanif
- David Hickens
- Don Holick
- Sandy Parker
- Beth Humphries
- Cindy Garren
- Jill Goldstein
- Judy Robinson
- Amy Voigt
- Michelle Sermann

COORDINATOR

- Tony Cuticchia, NASA HQ
- Perri Fox, NASA JSC

MARKETPLACE

- Jim Reinhartsen, Clearlake Economic Development
- Janet Burns, Space Center Houston

STAUBACH

STAUBACH VISIT

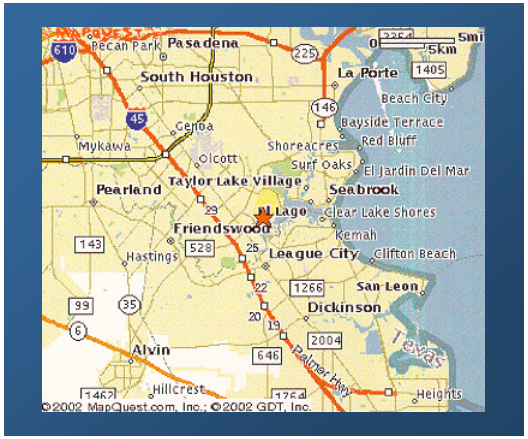
- Kurt Haglund
- Angela Foster
- Peter Brohoski

STAUBACH RESEARCH

- Wayne Powell, Plexus
- Colin Haynes
- Carma Gaggero
- Steve Ranck
- Dan Bellow

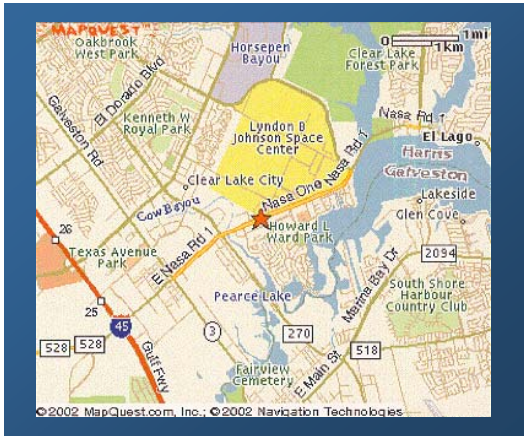
Johnson Space Center
Market Place and Location

REGION



- Harris County Population: 3,460,583
- Economy: Diversified/Energy, Research
- Several Universities
- Central to USA
- Periodic Hurricanes

JSC SUBMARKET



- City of Clear Lake - Suburban
- Access to Transportation - Good
- Local Economy: NASA + Petroleum
- Current Real Property Activity
  - Bay Area road / is active residential, commercial
  - NASA 1 is marginal
  - South / Galveston County is residential
  - Univ. of Houston Clear Lake is nearby
  - Space Center Houston is modest tourist draw

Johnson Space Center Business, Mission, Vision

- **Space Flight Enterprise (Code M)**
- **Major Center Activities**
  - Crew Training
  - Mission Control
  - Space Shuttle Program
  - International Space Station Program
- **Center's View of Potential Future Activities**
  - Bio Technology / Science Research
  - Research and Develop Shuttle Alternatives

Johnson Space Center

Infrastructure and Population Summary (includes Ellington Field)

Land	Acres	% Total	% Total of NASA Portfolio
Owned	1,632	99.9%	0.5%
Easement	0	0%	0%
Leased	2	0.1%	0%
Permit	0	0%	0%
Public	0	0%	0%
TOTAL	1,634		

* Extracted from the Land Report as of 2003 from the NASA Real Property Inventory Database on 5/9/03.

Structures	Quantity	Book Value	2003 CRV
Buildings	197	$ 383,407,873	$ 1,125,094,617
Other Structures	198	133,572,914	314,060,050
TOTAL	395	$ 516,980,787	$ 1,439,154,667

* Extracted from the NASA Site Summary Report from the NASA Real Property Inventory Database on 5/9/03.

Civil Servants	+	Contractors	+	Other	=	Total Center Population	Density (People/Acre)
2,938		5,297		211		8,446	5.2

* Extracted from the Facilities Utilization Program Report, September 2002.

Johnson Space Center
Best Business Opportunities

Opportunity Name	Description
— Bioastronautics Facility	— JSC is planning to build a new bioastronautics facility — Consider EUL to finance and build the facility, possibly through partnership with NSBRI — Dependent on OMB scoring rules
— Section 400	— Section 400 at JSC is largely underutilized — Consider EUL to private sector for the development of collaborative uses in Section 400
— Conference Center/ Hotel	— MSFEFI, the operating entity for Space Center Houston, is planning on constructing a hotel and conference center on land under MOU from JSC — As planned, no proceeds will be paid to JSC beyond what is already paid by MSFEFI, per the terms of the MOU — Consider restructuring terms of the agreement with MSFEFI into an EUL
— Golf Course	— As part of plans to construct a hotel/ conference center on land under MOU to MSFEFI, a golf course has been proposed for Section 400 — Consider structuring an EUL for use of Section 400 as a golf course

SECTION 2: GENERAL MARKET STATISTICS

LOCATION

Johnson Space Center is located approximately 25 miles south of downtown Houston in the NASA/Clear Lake area. The Center is in close proximity to Interstate 45, which provides easy access to Galveston to the southwest and downtown Houston to the Northeast. The site is generally surrounded by the residential and commercial areas of NASA/Clear Lake and Galveston. The University of Houston also has a campus approximately two miles to the northeast of the JSC site.

ECONOMIC/DEMOGRAPHIC INDICATORS

Economic/Demographic Component (County)	Indicators
2001 Population Estimate	3,460,589
Population % Change, 1990 to 2000	+20.7%
Housing Units, 2000	1,298,130
Median Value of owner-occupied housing units, 2000	$87,000
Median household money income, 1999	$42,598
Per capita money income, 1999	$21,435
Persons below poverty, percent, 1999	15.0%
Land Area, 2000 (square miles)	1,729
Persons per square mile, 2000	1,967.0
Largest Industries	Oil & Gas, Electronics Manufacturing, Medicine

** Extracted from U.S Census Bureau Quickfacts at quickfacts.census.gov on 2/14/03.*

INTERPRETATION OF MARKET

Houston is predicted to be the third fastest growing Metropolitan Statistical area through 2025. The area has robust industry based on oil & gas and electronics manufacturing. In addition, Houston is world renowned for medicine, boasting such institutions as the Texas Medical Center and Baylor University Hospital. Houston also boasts one of the most affordable cost of living indexes for major metropolitan areas throughout the nation. With a strong industry base, rapid population growth, and healthy employment market, Houston represents an attractive real property investment market.

SECTION 3: BUSINESS, MISSION, VISION OF THE CENTER

CENTER HISTORY AND OVERVIEW

In May 1961, President John F. Kennedy approved the formation of a new installation for NASA and its manned space flight efforts. On September 9, 1961, NASA Administrator James E. Webb announced that the new Manned Spacecraft Center (MSC) would be established on a 1,020-acre tract near Houston, Texas. Webb stated that the selection of the Houston site had been influenced by recent decisions to expand the launch complex at the Atlantic Missile Range and to establish a fabrication facility for large booster and vehicle stages at the Michoud Plant, near New Orleans, Louisiana. MSC, the Michoud Operations, and the Atlantic Missile Range would become a vast integrated enterprise coordinating the development, manufacture, and operation of the manned space flight program.

The first personnel moved to the new site in October 1963, when Building 12 was occupied. The major occupancy move to the balance of facilities began in February 1964. In December 1964, the Center was declared officially occupied.

On February 17, 1971, President Richard M. Nixon signed Public Law 93-8 renaming the Center for the nation's recently deceased 37th President and native Texan, Lyndon B. Johnson. President Johnson's interest in and support of the space program began when he was Chairman of the Senate Committee on Aeronautical and Space Sciences. As Vice President, Johnson played a vital role leading to the decision that committed this nation to the space goals of the 1960s. Throughout his presidency, Lyndon Johnson maintained a strong interest in the space program and visited the Center often.

On August 27, 1973, formal dedication ceremonies were held at the Center to change its official designation to "Lyndon B. Johnson Space Center," with "JSC" as the abbreviation.

From the early Gemini, Apollo and Skylab projects to today's Space Shuttle and International Space Station Programs, the Center continues to lead NASA's efforts in human space exploration.

DESCRIPTION OF MAJOR CURRENT AND POTENTIAL FUTURE PROGRAMS

The Lyndon B. Johnson Space Center (JSC) is responsible for crewed spacecraft development, management, crew training, space flight operations, and related bioastronautics/human life sciences responsibilities including biomedical research, space medicine and habitability/environmental factors. The Center is also responsible for conducting investigations of lunar science, space science, and Earth resources technology and applications, as well as for the duration of astromaterials. JSC has been given major management responsibilities in the past for the Apollo Spacecraft Program, the Skylab Program, the Apollo/Soyuz Test Project, and currently for the Space Shuttle Program, the International Space Station Program, and the Lunar and Mars Exploration Program Office. The Center's major test facilities are used to develop and qualification test crewed spacecraft, as well as to accomplish advanced research and technology.

JSC conducts operations for the International Space Station -- a U.S.-led collaborative effort of 16 nations, and the largest, most powerful, complex human facility to ever operate in space. The Center's famed Mission Control Center , or MCC, has been the operational hub of every American human space mission since Gemini IV. The MCC manages all activity onboard the space station and directs all space shuttle missions, including station assembly flights and Hubble Space Telescope servicing.

JSC is also home to the NASA astronaut corps, and is responsible for training space explorers from the United States and the space station partner nations. As such, it is the principal training site for both space shuttle crews and International Space Station Expedition crews.

JSC (INCL. WSTF) – MAJOR RELATIONSHIPS

Relationships and partners are critical in business dealings. Real Property business opportunities are enabled by pairing an opportunity with a partner, and the most likely partners already have relationships with NASA. The following charts describe three major categories of relationships: (1) contractor relationships (can partner with NASA as tenants or Enhanced-Use Leasing partners); (2) university relationships (can partner with NASA as tenants, Enhanced-Use Leasing partners, or outsourcing research partners); and (3) federal agency relationships (can lead to multiple opportunities, including cost sharing and federal campus strategies).

Although in many cases contractor and university relationships exist because NASA is funding the relationships, there also exist opportunities for mutually beneficial Real Property partnerships. It is generally easier to do business based on an existing relationship rather than attempting to forge completely new relationships.

CONTRACTORS

The following is a list of Johnson Space Center's (including White Sands Test Facility's) current most active contractors based upon total award value of the contract:

Contractor	Total Award Value
United Space Alliance	$12,669,472,333
Boeing Co	$11,058,996,293
Boeing North American Inc	$5,340,321,405
Lockheed Martin Space Ops	$2,096,078,028
Lockheed Martin Engineering & Sciences Co	$1,777,302,420
Raytheon Technical Services Co	$718,457,547
Johnson Engineering Group	$396,616,850
Science Application International Corp	$344,681,095
Hamilton Sundstrand Space Systems	$285,933,128
Wyle Laboratories	$269,454,437
Spacehab Inc	$241,037,742
Honeywell Technology Sols Inc	$206,018,303
Dyncorp	$153,209,307
Indyne Inc	$147,828,393
Rothe JV	$97,037,470

OAO Corp	$68,914,342
Techtrans International Inc	$68,457,464
Dyncorp Technical Services	$56,521,130
Barrios Technology Inc	$49,910,286
Honeywell Inc	$42,794,750

**Extracted from the NASA Procurement Management Database on 3/31/03.*

UNIVERSITIES

The following is a list of Johnson Space Center's (including White Sands Test Facility's) current most active university contractors based upon total award value of the contract:

University	Total Award Value
Baylor College of Medicine	$487,282,038
University of Missouri Columbia	$27,767,000
Loma Linda University	$19,739,000
Morehouse School of Medicine	$8,308,596
Prairie View A&M University	$7,900,131
Massachusetts Institute of Technology	$6,813,681
Virginia Commonwealth University	$6,774,079
Tuskegee University	$6,225,000
Montana State University	$5,847,000
University of California Los Angeles	$4,004,398
Texas A&M University	$3,740,139
Brandeis University	$3,385,431
Marquette University	$3,081,568
Indiana University Bloomington	$3,063,977
Iowa State University	$2,800,000
Rice University	$2,706,000
University of Florida	$2,296,741

**Extracted from the NASA Procurement Management Database on 3/31/03.*

The following is a list of Johnson Space Center's federal agency relationships based upon the Real Property Inventory database:

Agency
NONE

**Extracted from the NASA Real Property Database listing of In-Grants/Out-Grants.*

OTHER RELATIONSHIPS

National Space Biomedical Research Institute (NSBRI). NSBRI is a consortium of 12 universities.

SECTION 4: INFRASTRUCTURE

LAND AND SITE METRICS

	Total	*% of NASA Portfolio*
Land Area (Acres)	1,634	*0.5%*

Note: Includes Ellington Field and but excludes Palmdale.
**Extracted from the Land Report as of 2003 from the NASA Real Property Inventory Database on 5/09/03.*

FACILITY METRICS

	Number	Book Value (MMs)	2003 CRV (MMs)
Buildings	197	383	$1,047
Other Structures	198	133	$ 303
Total	395	516	1,439
% of NASA Portfolio	*6.2%*	*7.8%*	*7.5%*

Note: Includes Ellington Field but excludes Palmdale.
**Extracted from the NASA Site Summary Report from the NASA Real Property Inventory Database on 5/9/03.*

DEFERRED MAINTENANCE ASSESSMENT RESULTS

An assessment of deferred maintenance was previously prepared for each NASA Center, the results of which are reflected on the chart below. The table indicates the summary of facilities' condition of the Center by the Facilities Condition Index (FCI), developed during deferred maintenance analysis. The table also displays where the Center ranks in comparison to the other NASA Centers in terms of FCI and deferred maintenance as a percentage of CRV. (13 is the highest ranking.) It should be noted that deferred maintenance amount set forth in the chart does not represent what the agency is currently spending. Instead, it demonstrates the amount that would need to be spent to solve the deferred maintenance problem.

2002	FCI	DM	BMAR	CRV	DM(%CRV)
Deferred Maintenance Assessment	3.5	$103 MM	$180 MM	$1.3 B	7.7%
Rank Among Centers	*8*	-	-	-	*9*

**Extracted from Report on the FY02 NASA- Wide Deferred Maintenance Assessment, March 2002.*

UTILITIES SYNOPSIS

The following chart reflects a brief synopsis of the Center's utilities.

Power	JSC is a commercial customer and power is generated off-site. There is an on-site substation that distributes the commercial power around. There are both fixed and portable generators for back up power needs.
Heating	JSC uses natural gas and fuel oil boilers.
Cooling	The mall area buildings are generally cooled by chilled water from the site utility plant. The outlying buildings are generally cooled with direct expansion units.
Sewage	JSC is a commercial customer for the Clear Lake Water Authority. Sewage is sent to their sewage plant for treatment. It is an aerobic plant with clarifying tanks.
Water	The chilled water system is closed loop but it has make up from the potable water system. JSC is a commercial customer of the Clear Lake Water Authority for its potable water supply.

** Extracted from Report on the FY02 NASA- Wide Deferred Maintenance Assessment, March 2002.*

PROPERTY LISTING FROM THE REAL PROPERTY INVENTORY

NASA has an extraordinary database which lists its Real Property inventory. Although the team found a few anomalies, the database proves to be a reliable metric of the overall Real Property portfolio that is relatively accurate at the time of this report. A summary of the leased property, including in-grants and out-grants (if any), is shown on the following pages as a baseline for understanding the Real Property opportunities.

SECTION 5 – OPPORTUNITIES – DESCRIPTIONS, MEASURES, MATRIX

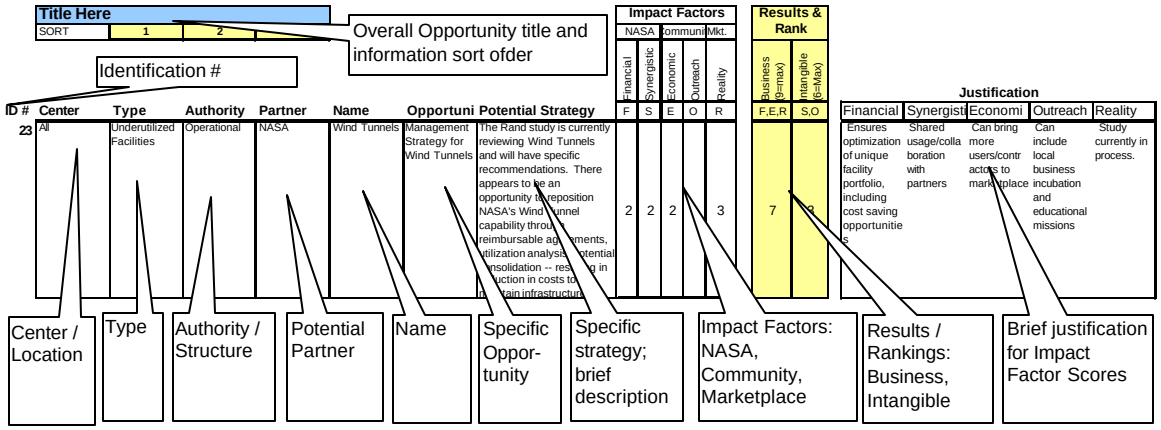
OVERVIEW

The information in this section provides an overview of the opportunities and examples discovered during the review. The opportunities shown here are the ones that were discussed during visits, or are examples of opportunities that became evident during brainstorming sessions.

Although the opportunities are well thought out conceptually, as an opportunity is considered for implementation, a much more detailed business plan should be conducted that looks at each opportunity based on current conditions and market elasticity. The need to develop a business plan for any opportunity cannot be overstated. The business plan needs to take into account the corporate requirement of the asset, the potential benefit to the Agency both economic and other intangibles, and the risks inherent to the Agency, including failure after entering into an opportunity agreement. The business plan should mitigate those risks through a rigorous review and if necessary a due-diligence study of the project. The opportunities are arrayed in a matrix that contains the basic elements of a business plan:

- Center/Location
- Opportunity Type
- Authority/Structure
- Partner
- Name
- Opportunity
- Potential Strategy
- Impact Factors and Results
- Justification

Each category describes an item NASA should consider in its business planning process. Each category is defined below and discussed in more detail through the rest of this report. An example of an opportunity in the matrix is shown below:



OPPORTUNITY TYPE

There are six overall types of Real Property opportunities. Each is summarized in Section 5 and described in more detail in Section 6.

- Underutilized Land Opportunities (including Research Parks, Federal Campus Opportunities, Contractor Parks)
- Underutilized Facilities Opportunities
- Facilities and Asset Management Strategy Opportunities
- Mission or Program Clarification Opportunities
- Restructuring Opportunities
- Utilities Management Opportunities

AUTHORITY / STRUCTURE

The authority category of information includes either the legislative authorities or the types of actions to be contemplated for each opportunity. The primary types of authorities and structures that are outlined in more detail in Section 5 include the following:

- Space Act Agreement
- Enhanced-Use Leasing (EUL)
- CoF

- Divest
- National Historic Preservation Act
- Outside Fence
- Example Opportunities

PARTNERS

Every business agreement has a partner, and this category of information describes some of the current or potential partners NASA could utilize in helping execute its Real Property business opportunities.

NAME

This category lists the 1-3 word project name. In several cases, the team has identified multiple scenarios for a particular building or area of the site; this category world list the same project "name" for all opportunities associated with that building or site. In other cases, similar strategies are being pursued including "marketing", "management", and federal campus ideas; all opportunities that are not building or site specific are given a strategy name.

OPPORTUNITY

The specific opportunities are relatively short descriptions that capture the essence of the opportunities. In several cases, the opportunity names refer to the same opportunity, but the strategy for implementing the opportunity could vary.

POTENTIAL STRATEGY

This section of the matrix captures in a few sentences some of the background and implementation strategies for each opportunity.

MEASUREMENT FILTERS AND FACTORS

There are many factors that need to be considered in order to determine if a particular opportunity is appropriate given all of the stakeholders and implementation structures. This section of the opportunity matrix attempts to measure each opportunity against a standard list of factors. They are broken into three overall categories representing the key stakeholders- NASA, community, and marketplace - and five total factors. The balancing of these factors is important to understand where an opportunity excels or falls short.

NASA impact factors:

Financial and Economic - Quantitative - NASA's financial incentives are to reduce costs or increase revenues, regardless of the impact on NASA's other activities.

Synergistic - Qualitative - The Space Act specifically encourages NASA to collaborate; therefore, over its history, NASA has established partnerships that are synergistic with NASA's goals, regardless of financial gain or expense.

Community impact factors:

Economic Impact - Quantitative - The communities where NASA is located benefit economically from NASA's presence, not only through direct investment, but also by providing jobs and other economic stimulus. This factor reflects the impact that each opportunity has economically on the community.

Outreach Impact - Qualitative - In addition to economic impact, NASA has impact on its community through direct outreach activities, and indirect activities such as bringing a highly educated workforce into the community.

Marketplace factors:

Reality of implementation – The marketplace is a multi-varied yet critical component of this analysis. The marketplace factor includes the speed at which an opportunity can be accomplished; the risk exposure to NASA; the likelihood of finding suitable partners; and the reality that the opportunity could be implemented. Many of these considerations will be at odds with one another.

The measurement system for the impact factors is relatively simple, reflecting the fact that the opportunities were discussed and analyzed on a conceptual level – not in high detail. Each factor is ranked on a "0-3" basis. Therefore the highest score for any one factor is a "3", and the lowest score is a "0". The measurements are translated as follows:

0 = No Impact
1 = Minimal impact
2 = Average impact
3 = High impact

RESULTS AND RANKING

The impact factors by themselves do not provide an understanding of an opportunity's full value. To obtain a better measurement of value at a conceptual level, the scores were added together in two categories:

Business Ranking - NASA financial, community economic impact and marketplace reality factors were added together to estimate the overall "Business" factors that

take economics and marketplace into account. The factors are typically the first factors to be ranked. The highest score for Business Ranking is a "9".

Intangible Ranking - The NASA synergistic and community outreach factors are combined to form the "intangible" factors. Since these factors are important, but much more subjective than the business ranking factors, these factors are ranked after the business ranking factors. The highest score for an Intangible Ranking is a "6".

The justification of each opportunity's individual factor is described briefly in the columns on the right side of the matrix.

"Example" opportunity descriptions are not ranked or described in the justification portion of the matrix. Many of the decisions for Example opportunities were carefully made given information currently available; whether or not the example is currently in the best interest of NASA does not mean that the decision to pursue the opportunity was unwise. Therefore, it is not helpful to score on the example opportunities in hindsight.

Johnson Space Center

In/Out Grant Report

Grant	Reference Number	#	Property Name	Type	Size		Party	Effective Date	Expiration Date	Status
In-Grant	N/A	LNDCO	LEASE NASSAU DEVELOPMENT COMPANY	Lease	8,949	SF	Nassau Development Company	04/01/2003	09/30/2003	Active
Out-Grant		901	TRACT 1	Easement	0.012	AC	Houston Lighting & Power	03/26/1992		Active
Out-Grant		901	TRACT 1	Easement	1.3058	AC	Metro Media Network Services	12/18/2000		Active
Out-Grant		901	TRACT 1	Easement	34.0	AC	Clear Creek Independent School District	11/12/1997	11/12/2047	Active
Out-Grant		901	TRACT 1	Agreement	53.98	AC	Clear Creek Independent School District	02/25/1997	02/25/2005	Active
Out-Grant		901	TRACT 1	Easement	1.708	AC	State of Texas	01/30/1996		Active
Out-Grant		901	TRACT 1	Easement	0.1907	AC	Houston Lighting and Power Company	07/21/1994		Active
Out-Grant		901	TRACT 1	Easement	28.036	AC	Houston Lighting & Power Company	01/04/1952		Active
Out-Grant		901	TRACT 1	Easement	4.0	AC	Manned Space Flight Education Foundation, Inc.	11/23/1992	11/23/2002	Active
Out-Grant		901	TRACT 1	Easement	27.5344	AC	City of Houston	05/27/1992		Active
Out-Grant		901	TRACT 1	Easement	16.040	AC	State of Texas	10/17/1963		Active
Out-Grant		901	TRACT 1	Easement	55.601	AC	Houston Lighting & Power Company	03/21/1962		Active
Out-Grant		901	TRACT 1	Easement	1.4348	AC	City of Houston	09/07/1994	09/07/2044	Active
Out-Grant		901	TRACT 1	Easement	13.822	AC	State of Texas	03/14/1961		Active
Out-Grant		901	TRACT 1	Easement	-0-	AC	Houston Lighting & Power Company System	01/29/1991		Active

Johnson Space Center

In/Out Grant Report

Out-Grant		901	TRACT 1	Easement	.042	AC	Coastal State Gas Producing Company	12/15/1965		Active
Out-Grant		901	TRACT 1	Easement	1.023	AC	City of Nassau Bay, Texas	08/04/1975		Active
Out-Grant		901	TRACT 1	Easement	6.185	AC	Houston Lighting & Power Company	08/18/1975		Active
Out-Grant		901	TRACT 1	Easement	.219	AC	State of Texas	03/17/1978		Active
Out-Grant		901	TRACT 1	Agreement	88.09	AC	Manned Space Flight Education Foundation, Inc.	04/18/1991	01/31/2041	Active
Out-Grant		901	TRACT 1	Easement	13.446	AC	Exxon Company, USA	03/21/1962		Active
Out-Grant		902	TRACT 2	Easement	.565	AC	Southwestern Bell Telephone Company	03/28/1963	03/27/2013	Active
Out-Grant		902	TRACT 2	Easement	.209	AC	Friendswood Development Company	10/08/1964		Active
Out-Grant		902	TRACT 2	Easement	22.080	AC	Houston Lighting & Power Company	04/06/1964		Active
Out-Grant		902	TRACT 2	Easement	28.036	AC	Houston Lighting & Power Company	01/04/1952		Active
Out-Grant		902	TRACT 2	Easement	.124	AC	Houston Natural Gas Corporation	05/14/1962		Active
Out-Grant		902	TRACT 2	Easement	1.355	AC	PCHG Investments/Village on the Lake, Ltd./Village on the Lake II, Ltd.	02/06/1992		Active
Out-Grant		902	TRACT 2	Lease	0	AC	ATC Teleports, Inc.	08/01/2000	07/31/2005	Active
Out-Grant		902	TRACT 2	Easement	0	AC	Reliant Energy HL&P	01/07/2000		Active
Out-Grant		902	TRACT 2	Easement	5.3934	AC	Clear Lake City Water Authority	02/02/1999		Active
Out-Grant		902	TRACT 2	Easement	N/A	AC	Entex	05/12/1997		Active
Out-Grant		902	TRACT 2	Easement	0.1125	AC	Exxon Company, USA	08/04/1995		Active
Out-Grant		902	TRACT 2	Easement	0.2276	AC	Exxon Company USA	08/04/1995		Active

Johnson Space Center

In/Out Grant Report

Out-Grant		902	TRACT 2	Easement	0.270	AC	Houston Lighting & Power	03/26/1992		Active
Out-Grant		902	TRACT 2	Easement	-0-	AC	Houston Lighting & Power Company System	01/29/1991		Active
Out-Grant		902	TRACT 2	Agreement	2.92	AC	Space Family Education, Inc.	02/23/2001	02/23/2006	Active
Out-Grant		902	TRACT 2	Agreement	.0100	AC	Jack Roberts,	10/30/1990	07/09/2006	Active
Out-Grant		902	TRACT 2	Easement	13.446	AC	Exxon Company, USA	03/21/1962		Active
Out-Grant		902	TRACT 2	Permit	3.725	AC	PHCG Investments	02/06/1992	10/23/2003	Active
Out-Grant		902	TRACT 2	Easement	20.000	AC	Exxon Company, USA	03/05/1962		Active
Out-Grant		902	TRACT 2	Easement	3.725	AC	PCHG Investments/Village on the Lake, Ltd./Village on the Lake II, Ltd.	02/06/1992		Active
Out-Grant		902	TRACT 2	Easement	0	AC	Clear Lake City Water Authority	09/08/1970		Active
Out-Grant		902	TRACT 2	Agreement	.397	AC	GE American Communication, Inc.	01/13/1993	01/12/2003	Active
Out-Grant		902	TRACT 2	Easement	0	AC	Houston Pipeline Company	12/10/1963		Active
Out-Grant		902	TRACT 2	Permit	.018	AC	Entex, Inc.	05/24/1993	05/23/2003	Active
Out-Grant		902	TRACT 2	Easement	36.131	AC	County of Harris	01/11/1982		Active
Out-Grant		902	TRACT 2	Easement	6.185	AC	Houston Lighting & Power Company	08/18/1975		Active
Out-Grant		902	TRACT 2	Permit	.094	AC	Clear Lake City Water Authority	11/30/1990	11/30/2000	Active
Out-Grant		902	TRACT 2	Easement	16.040	AC	State of Texas	10/17/1963		Active
Out-Grant		902	TRACT 2	Easement	13.822	AC	State of Texas	03/14/1961		Active
Out-Grant		902	TRACT 2	Easement	.1140	AC	Southwestern Bell Telephone Company	07/20/1990		Active

Ellington Field (JSC)

In/Out Grant Report

Grant	Reference Number	#	Property Name	Type	Size		Party	Effective Date	Expiration Date	Status
In-Grant		906	EASEMENT, PIPELINE	Agreement	.1399	AC	City of Houston	07/01/1984		Active
In-Grant		911	LAND LEASE, SCTF	Lease	2.34	AC	Houston Airport System	08/15/1999	08/14/2004	Active
In-Grant		LB129	LEASE BUILDING 129 EF	Lease	3,108	SF	City of Houston	08/21/2002	10/20/2003	Active
Out-Grant		903	TRACT 1	Easement	0	AC	City of Houston	07/01/1984		Active
Out-Grant		904	TRACT 2	Easement	0	AC	City of Houston	07/01/1984		Active
Out-Grant		905	TRACT 3	Easement	0	AC	City of Houston	07/01/1984		Active
Out-Grant		906	EASEMENT, PIPELINE	Easement	0	AC	City of Houston	07/01/1984		Active
Out-Grant		907	TRACT 4	Easement	0	AC	City of Houston	07/01/1984		Active
Out-Grant		908	TRACT 5	Easement	0	AC	City of Houston	07/01/1984		Active
Out-Grant		909	TRACT 6	Easement	0	AC	City of Houston	07/01/1984		Active
Out-Grant		910	LAND - SCTF	Easement	N/A	AC	Clear Lake City Water Authority	12/28/1990		Active
Out-Grant		910	LAND - SCTF	Easement	N/A	AC	Friendswood Development Company	12/27/1989		Active
Out-Grant		910	LAND - SCTF	Easement	N/A	AC	Houston Lighting & Power Company	05/22/1990		Active
Out-Grant		910	LAND - SCTF	Easement	N/A	AC	Houston Lighting & Power Company	01/23/1990		Active
Out-Grant		910	LAND - SCTF	Easement	0.01	AC	Reliant Energy HL&P	01/07/2000		Active

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REAL PROPERTY OPPORTUNITIES CENTER REPORT: Kennedy Space Center Cape Canaveral, FL

CENTER REPORT – Table of Contents

Section 1: Executive Overview (In Briefing format)
- Introduction
- Participants
- Marketplace and Location
- Business, Missions, Vision
- Infrastructure and Population
- Best Business Opportunities

Section 2: General Market Statistics
- Location
- Economic/Demographic Indicators
- Interpretation of Market

Section 3: Business, Mission, Vision of the Center
- Center History and Overview
- Description of Major Current and Potential Future Programs
- Major Relationships (Contractors, Universities, Government)

Section 4: Infrastructure
- Land and Site Metrics
- Facility Metrics and Deferred Maintenance Results
- Utilities Synopsis
- Property Listing from the Real Property Database

Section 5: Opportunities – Descriptions, Measures, Matrix
- Overview and Methodology
- Opportunity Matrix
- Analysis and Observations

REAL PROPERTY OPPORTUNITIES

CENTER REPORT:

Kennedy Space Center

Cape Canaveral, FL

Executive Overview

August 1, 2003

Kennedy Space Center Introduction

Goal of Visit

- Understand KSC-specific issues
- Identify potential real property business alternatives
  - increasing revenues
  - reducing expenses
  - creating organizational improvement / mission enhancement

Schedule

- Research: 1/2/03 – 1/10/03
- Visit: 1/06/03-1/10/03

Kennedy Space Center Participants

NASA

INTERVIEW

- Roy Bridges
- John Van Hooser Jr.
- John Hudi Burg
- Scott Kerr
- Frank Davies
- Geoffrey Swanson
- Jack Gibson
- Miguel Morales
- Pam Bregort
- Jim Butts
- Matt Taylor, ZHA
- Leila Taylor
- Mark Woods
- Mike Sumner
- Jim Ball, ISRP
- Lisa Malone, Delaware North
- Pam Steele, Delaware North
- Gregg Buckingham
- Nap Carroll
- Jim Heald
- Mario Bussala
- Ray Grimm
- Wayne Thasalonias
- Sue Gaines

COORDINATOR

- Gene Hubbard, NASA HQ
- Rene Ponik, NASA KSC

MARKETPLACE

- Keith Witt, Florida Space Port Authority
- Tim Franta, Florida Space Port Authority
- Malcolm McLouth, Canaveral Port Authority

STAUBACH

STAUBACH VISIT

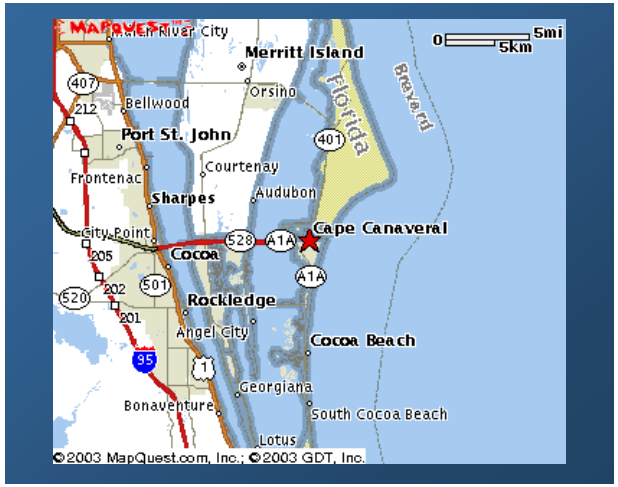
- Kurt Haglund
- Angela Foster
- Peter Brohoski
- Barry Johnson

STAUBACH RESEARCH

- Don Sapp, Plexus
- Angela Foster
- Peter Brohoski
- Steve Ranck
- Cynthia Nunnaly

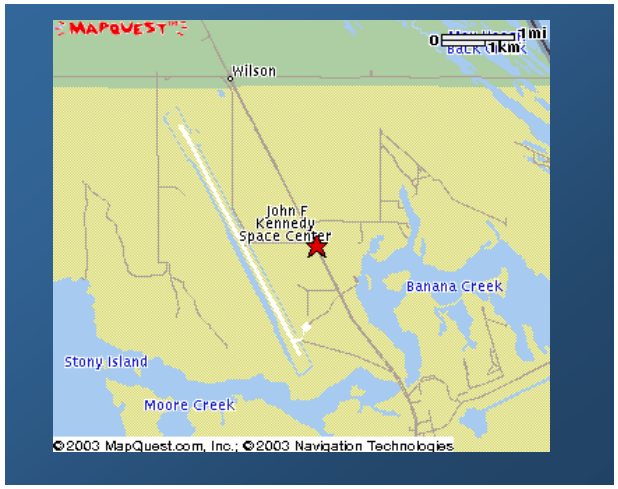
Kennedy Space Center Market Place and Location

REGION



- Brevard County Population: 489,522
- Economy: NASA, Air Force, Tourism
- Access to I-95
- Estuary

KSC SUBMARKET



- Access to Transportation – Good
- Local Economy: NASA, Air Force, Tourism
- Current Real Property Activity
  - Surrounding area is comprised of very low to medium density development.
  - Port Canaveral
  - Cocoa Beach is good tourism destination

Kennedy Space Center Business, Mission, Vision

- **Space Flight Enterprise (Code M)**
- **Major Center Activities**
  - Space Launch Operations and Space Port and Range Technologies
  - Human Exploration and Development of Space (HEDS)
  - Launch and Payload Processing Systems
  - International Space Station
- **Center's View of Potential Future Activities**
  - Biological and Physical Research
  - Space Science
  - Aerospace Technologies
  - Advanced Space Transportation Program (ASTP)

Kennedy Space Center

Infrastructure and Population Summary (includes the Cape)

Land	Acres	% Total	% Total of NASA Portfolio
Owned	82,882	59.38%	22.81%
Easement	56,547	40.52%	15.56%
Leased	0	0%	0%
Permit	16	.01%	.004%
Public	121	.09%	.03%
TOTAL	139,566		

* Extracted from the Land Report as of 2003 from the NASA Real Property Inventory Database on 5/9/03.

Structures	Quantity	Book Value	2003 CRV
Buildings	519	$ 789,673,795	$ 1,877,629,520
Other Structures	352	732,401,151	2,194,791,766
TOTAL	871	$ 1,522,074,946	$ 4,072,421,286

* Extracted from the NASA Site Summary Report from the NASA Real Property Inventory Database on 5/9/03.

Civil Servants	+	Contractors	+	Other	=	Total Center Population	Density (People/Acre)
1,635		7,921		539		10,095	0.1

* Extracted from the Facilities Utilization Program Report, September 2002.

Kennedy Space Center
Best Business Opportunities

Opportunity Name	Description
— International Space Research Park	— Space Port Florida, in partnership with KSC, is planning the International Space Research Park (ISRP) — NASA should expand its role in development and consider synergistic collaboration regarding NASA's mission — Consider development of the park per EUL structure — Investigate feasibly in more detail
— Federal Campus	— KSC needs to maintain a large buffer zone — Consider leasing developable portions of buffer zone land to security conscious federal agency in order to reduce costs
— Transfer Buffer Zone Land	— NASA maintains over 82,000 acres of land at KSC, including more than 56,000 acres it needs for a buffer zone — Consider transferring the buffer zone land to U.S. Fish and Wildlife, or another appropriate agency, to reduce costs
— Space Experiments Research Processing Laboratory (SERPL)	— NASA/ Space Port Authority Development Agreement — Consider restructuring to demonstrate applicability to Enhanced-Use Leasing

SECTION 2: GENERAL MARKET STATISTICS

LOCATION

Kennedy Space Center (KSC) is located on the east coast of Florida approximately midway between Jacksonville and Miami, 35 miles east of Orlando. KSC is located directly off Interstate 95 and in very close proximity to the Bee Line Expressway (528) to SR A1A. The Center is bordered by the Atlantic Ocean to the east and is bordered by the Merritt Island National Wildlife Refuge to the north and west. To the south, KSC is bordered by Canaveral Air Force base and the Port of Cape Canaveral.

ECONOMIC / DEMOGRAPHIC INDICATORS

Economic / Demographic Component (County)	Indicators
2001 Population Estimate	489,522
Population % Change, 1990 to 2000	+ 19.4%
Housing Units, 2000	222,072
Median Value of owner-occupied housing units, 2000	$94,400
Median household money income, 1999	$40,099
Per capita money income, 1999	$21,484
Persons below poverty, percent, 1999	9.5%
Land Area, 2000 (square miles)	1,018
Persons per square mile, 2000	467.7
Largest Industries	Education, Health, Manufacturing, Retail Trade

** Extracted from U.S Census Bureau Quickfacts at quickfacts.census.gov on 02/14/03.*

INTERPRETATION OF MARKET

KSC is in a remote location that is sparsely populated. The market place outside the fence is comprised of low to medium density and low value highway commercial and agricultural uses. While the population level and development density is modest, the growth pattern over the past ten years has been high. The housing stock in the area is affordable, demonstrating that the cost of land is modest. Because the land value surrounding KSC is not particularly high, KSC must create its own market place through creative real property strategies and partnerships.

SECTION 3: BUSINESS, MISSION, VISION OF THE CENTER

CENTER HISTORY AND OVERVIEW

In October 1949, President Harry S. Truman established the Joint Long Range Proving Grounds at Cape Canaveral, Fla. The Cape was ideal for testing missiles. Virtually undeveloped, it enabled personnel to inspect fuel and launch missiles without danger to nearby communities. The area's climate also permitted year-round operations, and rockets could be launched over water instead of populated areas. A chain of islands extending southeastward from Grand Bahama to Ascension provided sites for tracking stations to follow the progress of missiles in flight. Some years later, many of these same factors led to selection of the area adjacent to Cape Canaveral – Merritt Island – as the location of the Kennedy Space Center.

In May 1961, President John F. Kennedy fired the public imagination by announcing that the United States would fly men to the Moon and back within the decade. His challenge elicited congressional support for a program which required rockets far more powerful than any then available, and spacecraft designed to protect men from the hostile environment of space during the 500,000-mile (800,000-kilometer) journey to and from the Moon.

The program was Apollo, and the vehicle that would launch the Apollo spacecraft and its three-man crew to the Moon was the Saturn V. Dr. Debus, representing NASA, and Lt. Gen. Leighton I. Davis, representing the Department of Defense, organized a joint study to find a new launch site. They considered Hawaii, Texas, the California coast, an island off the coast of Georgia, islands in the Caribbean, and Merritt Island (adjacent to the Cape) as possible sites.

The study concluded that Merritt Island offered compelling advantages. Several small communities were within easy driving range, and larger cities like Daytona Beach, Vero Beach, and Orlando were only slightly further. Locating on Merritt Island also would allow NASA to share facilities of the Atlantic Missile Range, avoiding costly duplication. Dr. Debus and General Davis recommended the acquisition of the northern part of Merritt Island. The choice was endorsed by NASA and the Defense Department. Congress authorized NASA to acquire the property.

The space agency began acquisition in 1962, taking title to 83,894 acres (33,952 hectares) by outright purchase. It negotiated with the State of Florida for use of an additional 55,805 acres (22,600 hectares) of state-owned submerged land, most of which lies within the Mosquito Lagoon. The investment in property reached approximately $71,872,000.

In July 1962, the Launch Operations Directorate at the Cape was separated from the Marshall Space Flight Center by executive order. It became the Launch Operations Center, an independent NASA installation, with Dr. Debus as its first director. It was renamed the John F. Kennedy Space Center in December 1963, in honor of America's slain president. In December 1964, launch elements of Houston's Manned Spacecraft Center (now the Johnson Space Center) were transferred to the Kennedy Space Center. The following October, Goddard Space Center's Field Projects Branch on the Cape was incorporated into the Kennedy Space Center.

DESCRIPTION OF MAJOR CURRENT AND POTENTIAL FUTURE PROGRAMS

Kennedy Space Center focuses on launch and payload processing systems as well as the acquisition and management of expendable launch vehicle services and payload carriers. KSC is responsible for the checkout, launch, and landing of the Space Shuttle and its payloads. Elements of the International Space Station undergo final flight preparations at KSC before being launched aboard the Shuttle for on-orbit assembly. The Center's personnel also provide management and technical expertise for the launch of NASA missions from adjacent Cape Canaveral Air Station and Vanderberg Air Force Base in California.

As NASA continues to consider commercialization of the Space Shuttle and related technologies, KSC continues to focus on cutting edge engineering that helps meet the goal of faster, better, and cheaper development and operations of space systems. As a partner in the world's premier launch site, KSC is helping to set the standard for future spaceports everywhere. Part of KSC's mission is spaceport and range technology development. For example, KSC's expertise contributed to the development of the launch site at Kodiak Island, Alaska.

Although today's commercial launch industry is focused on launching rockets carrying multi-million dollar communications satellites, the future will bring a greater need for commercial space transportation with multiple launches per day from many spaceports across the country and around the globe.

KSC MAJOR RELATIONSHIPS

Relationships and partners are critical in business dealings. Real Property business opportunities are enabled by pairing an opportunity with a partner, and the most likely partners already have relationships with NASA. The following charts describe three major categories of relationships: (1) contractor relationships (can partner with NASA as tenants or Enhanced-Use Leasing partners); (2) university relationships (can partner with NASA as tenants, Enhanced-Use Leasing partners, or outsourcing research partners); and (3) federal agency relationships (can lead to multiple opportunities, including cost sharing and federal campus strategies).

Although in many cases contractor and university relationships exist because NASA is funding the relationships, there also exist opportunities for mutually beneficial Real Property partnerships. It is generally easier to do business based on existing relationships rather than attempting to forge completely new relationships.

The following is a list of Kennedy Space Center's current most active contractors based upon total award value of the contract:

Contractor	**Total Award Value**
McDonnell Douglas Corp	$1,510,222,383
Space Gateway Support	$1,223,855,397
Delta Launch Services Inc	$1,016,410,375
Lockheed Martin Corp	$847,436,768
Orbital Sciences Corp	$400,500,000
Coleman Research Corp	$400,000,000
Boeing Space Operations Co	$332,116,998
OAO Corp	$218,441,786
Air Products & Chemicals Inc	$164,584,778
Praxair Inc	$150,720,473
Dynacs Engineering Co Inc	$144,454,964
Analex Corp	$54,960,916
Dynamac Corp	$54,361,419
Air Liquide America Corp	$37,098,700
Boland David A Inc	$23,969,000
Rush Construction Inc	$17,454,820
Canaveral Construction Co Inc	$14,151,644
Geosyntec Consultants Inc	$13,739,041

** Extracted from the NASA Procurement Management Database on 03/31/03.*

The following is a list of Kennedy Space Center's current most active university contractors based upon total award value of the contract:

University	**Total Award Value**
University of Florida	$5,960,814
Georgia Institute Technology	$2,769,629
Florida A&M University	$2,185,517
University of Central Florida	$1,339,066
Tuskegee University	$1,188,841
Bethune Cookman College	$939,154
Miami Dade Community College	$915,000
University of North Dakota	$821,054
University of Louisiana Lafayette	$803,358
Ohio State University	$715,352
University of Texas Austin	$503,437
Florida International University	$446,738
University of Arizona	$423,420
Alabama A&M University	$419,134
North Carolina A&T State University	$297,764
Southern University A&M College Baton Rouge	$100,000
Kansas State University	$95,503

** Extracted from the NASA Procurement Management Database on 03/31/03.*

The following is a list of Kennedy Space Center's federal agency relationships based upon the Real Property Inventory database:

Agency
Department of the Air Force
Department of the Interior
Army Corps of Engineers

** Extracted from the NASA Real Property Inventory Database list of In-Grants/Out-Grants.*

SECTION 4: INFRASTRUCTURE

LAND AND SITE METRICS

The following chart represents a brief synopsis of the Kennedy Space Center (including the Cape) land and site metrics.

	Total	***% of NASA Portfolio***
Land Area (Acres)	139,566	*38.6%*

Note: KSC has an easement for an additional 56,547 acres, resulting in a usable total of 139,566 acres.
**Extracted from the Land Report as of 2003 from the NASA Real Property Inventory Database on 05/09/03.*

FACILITY METRICS AND DEFERRED MAINTENANCE ASSESSMENT RESULTS

The following chart represents a brief synopsis of the facility metrics.

	Number	**Book Value (MMs)**	**2003 CRV (MMs)**
Buildings	519	$789	$1,877
Other Structures	352	$732	$2,195
Total	871	$1,522	$4,072
% of NASA Portfolio	16.4%	23%	21.3%

**Extracted from the NASA Site Summary Report from the NASA Real Property Inventory Database on 05/09/03.*

An assessment of deferred maintenance was previously prepared for each NASA Center, the results of which are reflected on the chart below. The table indicates the summary of facilities' condition of the Center by the Facilities Condition Index (FCI), developed during deferred maintenance analysis. The table also displays where the Center ranks in comparison to the other NASA Centers in terms of FCI and deferred maintenance as a percentage of CRV. (13 is the highest ranking.) It should be noted that deferred maintenance amount set forth in the chart does not represent what the agency is currently spending. Instead, it demonstrates the amount that would need to be spent to solve the deferred maintenance problem.

2002	**FCI**	**DM**	**BMAR**	**CRV**	**DM(%CRV)**
Deferred Maintenance Assessment	3.1	$486 MM	$210 MM	$3.8 B	12.9%
Rank Among Centers	*12*	-	-	-	*12*

** Extracted from Report on the FY02 NASA – Wide Deferred Maintenance Assessment, March 2002.*

UTILITIES SYNOPSIS

The following chart reflects a brief synopsis of the Center's utilities.

Power	Purchase power from FP&L (Florida Power & Light). KSC has diesel generators for critical operations.
Heating	For US Alliance's systems, most of the systems are either fed from the Space Gateway Support's central chiller/boiler plant in the LC-39 and Horizontal Mating Facility areas, or there is electric heat and a minimal number of stand alone boilers in outlying systems.
Cooling	Large buildings are fed chilled water. Pads, and other areas have centrifugal or reciprocating chiller systems, both chilled water and direct expansion systems. Most large buildings are supported by chilled water systems
Sewage	KSC has its own sewage treatment plants
Water	KSC buys their potable water from the town of Cocoa Beach and then re-treats it in our own re-chlorination plants.

**Extracted from Report on the FY02 NASA- Wide Deferred Maintenance Assessment, March 2002.*

PROPERTY LISTING FROM THE REAL PROPERTY INVENTORY

NASA has an extraordinary database which lists its Real Property inventory. Although the team found a few anomalies, the database proves to be a reliable metric of the overall Real Property portfolio that is relatively accurate at the time of this report. A summary of the leased property, including in-grants and out-grants (if any), is shown on the following pages as a baseline for understanding the Real Property opportunities.

Kennedy Space Center

In/Out Grant Report

Grant	Reference Number	#	Property Name	Type	Size		Party	Effective Date	Expiration Date	Status
Out-Grant		LA-001	LAND	Agreement	0	AC	Dept. of Air Force	03/09/1965		Active
Out-Grant		LA-001	LAND	Easement	271	AC	State of Florida	04/18/1962		Active
Out-Grant		LA-001	LAND	Easement	184	AC	Florida Power & Light	09/12/1994	09/11/2019	Active
Out-Grant		LA-001	LAND	Easement	45	AC	Air Liquide	07/01/2002	06/30/2007	Active
Out-Grant		LA-001	LAND	Easement	50.33	AC	City Gas Co. of Florida	09/23/1993	09/22/2018	Active
Out-Grant		LA-001	LAND	Lease	.006	AC	General Electric	01/01/1996	12/31/2000	Expired
Out-Grant		LA-001	LAND	Easement	15.633	AC	Florida Space Authority	12/15/2000	12/14/2005	Active
Out-Grant		LA-001	LAND	Easement	.15	AC	American Towers, Inc.	01/01/2002	12/31/2006	Active
Out-Grant		LA-001	LAND	Lease	1.019	AC	BellSouth	03/12/1999	03/11/2004	Active
Out-Grant		LA-001	LAND	Agreement	39912	AC	Dept. of Interior	04/02/1975		Active
Out-Grant		LA-001	LAND	Lease	.027	AC	Florida Today	08/01/2001	07/31/2006	Active
Out-Grant		LA-001	LAND	Lease	0	AC	Corps of Engineers	09/02/1985		Active
Out-Grant		LA-001	LAND	Lease	34.4	AC	Corps of Engineers	02/05/1964		Active
Out-Grant		LA-001	LAND	Easement	3.88	AC	Southern Bell	08/02/1979	07/26/2004	Active
Out-Grant		LA-001	LAND	Easement	55,795	AC	State of Florida	01/30/1970		Active
Out-Grant		LA-001	LAND	Agreement	140,760	AC	State of Florida	07/31/1962		Active
Out-Grant		LA-001	LAND	Easement	185	AC	State of Florida	06/01/1985		Active
Out-Grant		LA-001	LAND	Easement	296	AC	State of Florida	03/21/1963		Active
Out-Grant		LA-001	LAND	Agreement	7514.66	AC	U.S. Bureau of Sport Fish	08/03/1972		Active

Out-Grant		LA-001	LAND	Lease	.164	AC	NBC News, Inc.	01/01/1996	12/31/2000	Expired
Out-Grant		LA-001	LAND	Easement	.284	AC	Florida Power & Light	02/19/2003	02/18/2028	Active
Out-Grant		LA-001	LAND	Permit	23	AC	Florida Space Authority	06/05/1998		Active
Out-Grant		LA-001	LAND	Permit	0	AC	Florida Space Authority	04/30/1993	04/29/2008	Active
Out-Grant		LA-001	LAND	Permit	1	AC	Astro. Memorial Foundation	09/01/1989		Active
Out-Grant		LA-001	LAND	Permit	7.099	AC	Astronaut Memorial	09/01/1989		Active
Out-Grant		LA-001	LAND	Permit	57.27	AC	Department of the Air Force	02/01/1999	12/31/2021	Active
Out-Grant		LA-001	LAND	Lease	.06	AC	Reuters	09/01/2001	08/31/2006	Active
Out-Grant		LA-001	LAND	Easement	0.01	AC	Melbourne Cellular	09/27/1994	09/26/2004	Active
Out-Grant		LA-001	LAND	Lease	.014	AC	Agence France-Presse	08/01/2001	07/31/2006	Active
Out-Grant		LA-001	LAND	Easement	.682	AC	Florida Power & Light	02/19/2003	02/18/2028	Active
Out-Grant		LA-001	LAND	Lease	.06	AC	Cable News Network	05/01/2001	04/30/2006	Active
Out-Grant		LA-001	LAND	Lease	.032	AC	Associated Press	09/01/2001	08/31/2006	Active
Out-Grant		LA-001	LAND	Lease	.015	AC	BellSouth	04/01/2001	03/31/2006	Active
Out-Grant		LA-001	LAND	Lease	.164	AC	CBS, Inc.	05/01/2001	04/30/2006	Active
Out-Grant		LA-001	LAND	Lease	.16	AC	ABC News, Inc.	05/01/2001	04/30/2006	Active
Out-Grant		LA-001	LAND	Lease	.005	AC	Nikon, Inc.	05/01/2001	04/30/2006	Active
Out-Grant		LA-001	LAND	Lease	.06	AC	Orlando Sentinel	05/01/2001	04/30/2006	Active
Out-Grant		LA-001	LAND	Lease	.021	AC	UPI	05/01/2001	04/30/2006	Active

CAPE

In/Out Grant Report

Grant	Reference Number	#	Property Name	Type	Size		Party	Effective Date	Expiration Date	Status
In-Grant		LA-004	LAND	Permit	15.633	AC	Department of the Air Force	04/01/1999	03/31/2049	Active

SECTION 5 – OPPORTUNITIES – DESCRIPTIONS, MEASURES, MATRIX

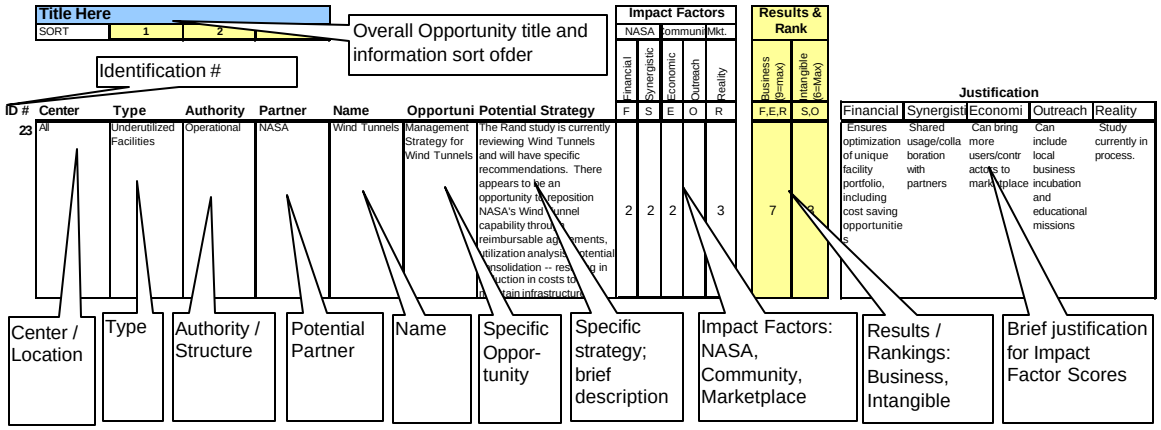
OVERVIEW

The information in this section provides an overview of the opportunities and examples discovered during the review. The opportunities shown here are the ones that were discussed during visits, or are examples of opportunities that became evident during brainstorming sessions.

Although the opportunities are well thought out conceptually, as an opportunity is considered for implementation, a much more detailed business plan should be conducted that looks at each opportunity based on current conditions and market elasticity. The need to develop a business plan for any opportunity cannot be overstated. The business plan needs to take into account the corporate requirement of the asset, the potential benefit to the Agency both economic and other intangibles, and the risks inherent to the Agency, including failure after entering into an opportunity agreement. The business plan should mitigate those risks through a rigorous review and if necessary a due-diligence study of the project. The opportunities are arrayed in a matrix that contains the basic elements of a business plan:

- Center/Location
- Opportunity Type
- Authority/Structure
- Partner
- Name
- Opportunity
- Potential Strategy
- Impact Factors and Results
- Justification

Each category describes an item NASA should consider in its business planning process. Each category is defined below and discussed in more detail through the rest of this report. An example of an opportunity in the matrix is shown below:



OPPORTUNITY TYPE

There are six overall types of Real Property opportunities. Each is summarized in Section 5 and described in more detail in Section 6.

- Underutilized Land Opportunities (including Research Parks, Federal Campus Opportunities, Contractor Parks)
- Underutilized Facilities Opportunities
- Facilities and Asset Management Strategy Opportunities
- Mission or Program Clarification Opportunities
- Restructuring Opportunities
- Utilities Management Opportunities

AUTHORITY / STRUCTURE

The authority category of information includes either the legislative authorities or the types of actions to be contemplated for each opportunity. The primary types of authorities and structures that are outlined in more detail in Section 5 include the following:

- Space Act Agreement
- Enhanced-Use Leasing (EUL)
- CoF

- Divest
- National Historic Preservation Act
- Outside Fence
- Example Opportunities

PARTNERS

Every business agreement has a partner, and this category of information describes some of the current or potential partners NASA could utilize in helping execute its Real Property business opportunities.

NAME

This category lists the 1-3 word project name. In several cases, the team has identified multiple scenarios for a particular building or area of the site; this category world list the same project "name" for all opportunities associated with that building or site. In other cases, similar strategies are being pursued including "marketing", "management", and federal campus ideas; all opportunities that are not building or site specific are given a strategy name.

OPPORTUNITY

The specific opportunities are relatively short descriptions that capture the essence of the opportunities. In several cases, the opportunity names refer to the same opportunity, but the strategy for implementing the opportunity could vary.

POTENTIAL STRATEGY

This section of the matrix captures in a few sentences some of the background and implementation strategies for each opportunity.

MEASUREMENT FILTERS AND FACTORS

There are many factors that need to be considered in order to determine if a particular opportunity is appropriate given all of the stakeholders and implementation structures. This section of the opportunity matrix attempts to measure each opportunity against a standard list of factors. They are broken into three overall categories representing the key stakeholders- NASA, community, and marketplace - and five total factors. The balancing of these factors is important to understand where an opportunity excels or falls short.

NASA impact factors:

Financial and Economic - Quantitative - NASA's financial incentives are to reduce costs or increase revenues, regardless of the impact on NASA's other activities.

Synergistic - Qualitative - The Space Act specifically encourages NASA to collaborate; therefore, over its history, NASA has established partnerships that are synergistic with NASA's goals, regardless of financial gain or expense.

Community impact factors:

Economic Impact - Quantitative - The communities where NASA is located benefit economically from NASA's presence, not only through direct investment, but also by providing jobs and other economic stimulus. This factor reflects the impact that each opportunity has economically on the community.

Outreach Impact - Qualitative - In addition to economic impact, NASA has impact on its community through direct outreach activities, and indirect activities such as bringing a highly educated workforce into the community.

Marketplace factors:

Reality of implementation – The marketplace is a multi-varied yet critical component of this analysis. The marketplace factor includes the speed at which an opportunity can be accomplished; the risk exposure to NASA; the likelihood of finding suitable partners; and the reality that the opportunity could be implemented. Many of these considerations will be at odds with one another.

The measurement system for the impact factors is relatively simple, reflecting the fact that the opportunities were discussed and analyzed on a conceptual level – not in high detail. Each factor is ranked on a "0-3" basis. Therefore the highest score for any one factor is a "3", and the lowest score is a "0". The measurements are translated as follows:

0 = No Impact
1 = Minimal impact
2 = Average impact
3 = High impact

RESULTS AND RANKING

The impact factors by themselves do not provide an understanding of an opportunity's full value. To obtain a better measurement of value at a conceptual level, the scores were added together in two categories:

Business Ranking - NASA financial, community economic impact and marketplace reality factors were added together to estimate the overall "Business" factors that

take economics and marketplace into account. The factors are typically the first factors to be ranked. The highest score for Business Ranking is a "9".

Intangible Ranking - The NASA synergistic and community outreach factors are combined to form the "intangible" factors. Since these factors are important, but much more subjective than the business ranking factors, these factors are ranked after the business ranking factors. The highest score for an Intangible Ranking is a "6".

The justification of each opportunity's individual factor is described briefly in the columns on the right side of the matrix.

"Example" opportunity descriptions are not ranked or described in the justification portion of the matrix. Many of the decisions for Example opportunities were carefully made given information currently available; whether or not the example is currently in the best interest of NASA does not mean that the decision to pursue the opportunity was unwise. Therefore, it is not helpful to score on the example opportunities in hindsight.

5 Kennedy Opportunity Matrix.xls

SORT ORDER: Center | Name | Opportunity

ID #	Center	Type	Authority	Partner	Name	Opportunity Name	Potential Strategy	Impact Factors: NASA Financial (F)	NASA Synergistic (S)	Communi Economic (E)	Communi Outreach (O)	Mkt. Reality (R)	Results & Rank: Business (9=max) (F,E,R)	Intangible (6=Max) (S,O)	Financial	Synergistic	Economic	Outreach	Reality
125	Kennedy	Facilities and Asset Management	EUL	Contractors	Renovation by Partnership	Contractor Strategy - EUL Existing Facilities to Contractors	Kennedy has many contractors that could be on Center in office facilities, and although Kennedy's facilities are at capacity, the facilities could be space-planned and renovated to fit additional capacity. Free up building(s) then EUL to contractors; use EUL proceeds to renovate NASA buildings/facilities to increase their capacity.	3	3	3	0	2	8	3	Allows NASA to have building financed partially by outside financing source	Brings contractors/ partners on campus	Adds non-federal jobs and increases presence of contractors	No outreach involved	Market has strong partner base; deal structure may be complicated; works best for office space, not clear of demand; local developers may not support, but less than in comparable urban Centers.
130	Kennedy	Facilities and Asset Management	Example	Air Force	Shared Cost	Federal Campus - Cost sharing - JBOSC Contract	JBOSC contract is a good example of working with other major federal agencies to reduce overall facilities maintenance costs.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
124	Kennedy	Facilities and Asset Management	Example	NASA	Real Property Strategy	Master Plan	The Center has a well thought out master plan that will allows it to be prepared to address its future proactively.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
126	Kennedy	Facilities and Asset Management	Example	SpacePort Florida	Saturn 5 hangar	Saturn 5 hangar	Space Port Florida helped provide an enclosure for a Saturn 5 rocket as part of it's visitor center experience. Example of using PPP to share capital costs in order to construct unique facilities.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
129	Kennedy	Facilities and Asset Management	Example	SpacePort Florida	SERPL	SERPL	NASA and Space Port Florida entered into a development agreement; NASA leased the Land to SPF and provided the facility design; SPF provided the construction and landlord responsibilities. NASA's contractor will lease space in the facility. Example of using PPP structure to share capital costs of obtaining state of the art facilities/labs for contractor.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
132	Kennedy	Facilities and Asset Management	Example	Delaware North	Visitors Center	Visitor Center	Example of complete outsourcing of visitor center experience; structuring profit agreement to allow profits to be put back into NASA (for public-oriented uses).	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
121	Kennedy	Restructure	Divest	SpacePort Florida	ISRP	International Space Research Park (ISRP) - EUL	Consider the divesting the land under development for the ISRP.	2	1	3	1	1	6	2	Provide additional revenue to NASA, low land value	Will bring contractors/ partners onto campus	While property not returned to tax rolls, will bring visitors and tenants to market	Conference center can aid community outreach	Political challenges in restructuring agreement. Feasibility needs to be examined.
120	Kennedy	Restructure	EUL	SpacePort Florida	ISRP	International Space Research Park (ISRP) - EUL	Consider the development of the ISRP using EUL versus currently planned structure. Still maintain an arms-length distance.	3	2	2	1	1	6	3	Provide additional revenue to NASA	Will bring contractors/ partners onto campus	While property not returned to tax rolls, will bring visitors and tenants to market	Conference center can aid community outreach	Political challenges in restructuring agreement. Feasibility needs to be examined.

The information shown here is conceptual and not intended for immediate action. A business plan including all business economics, structures, strategies and risks should be evaluated prior to the execution of any opportunity.

5 Kennedy Opportunity Matrix.xls

SORT ORDER: Center | Name | Opportunity

ID #	Center	Type	Authority	Partner	Name	Opportunity Name	Potential Strategy	Impact Factors: NASA Financial (F)	NASA Synergistic (S)	Communi Economic (E)	Communi Outreach (O)	Mkt. Reality (R)	Results & Rank: Business (9=max) (F,E,R)	Intangible (6=Max) (S,O)	Financial	Synergistic	Economic	Outreach	Reality
119	Kennedy	Restructure	EUL	SpacePort Florida	ISRP	International Space Research Park (ISRP) - Increase NASA's role in development	NASA take larger role in planned ISRP development; re-evaluate ISRP's planned tenant mix correlated to NASA's current and future program and mission goals. EUL portions of the land as available; consider space act agreements for university research park-specific developments.	3	3	3	2	2	8	5	Potential for significant revenue	Increase Contractor and university partners	Provides non-federal jobs and industry to area	Enhances education/outreach element	Favorable, more cautious approach to viability; political challenge to restructuring agreement, but possible since ISRP is early in development
128	Kennedy	Restructure	Divest	SpacePort Florida	SERPL	SERPL	NASA owns the land under the SERPL building; the land is not near the main center of campus. Consider restructuring the SERPL agreement to divest the land to SpacePort Florida or an investor.	2	0	0	0	1	3	0	Positive immediate financial impact for NASA but not high value land	No additional benefit	No additional benefit	No additional benefit	Agreement might be difficult to restructure; partner may be difficult to find.
127	Kennedy	Restructure	EUL	SpacePort Florida	SERPL	SERPL	Consider restructuring the SERPL agreement to demonstrate it's applicability to EUL.	3	0	0	0	1	4	0	Positive financial impact for NASA	No additional benefit	No additional benefit	No additional benefit	Agreement might be difficult to restructure
133	Kennedy	Underutilized Land	Divest	Fish and Wildlife / Florida	Wildlife Refuge	Divest buffer zone land while controlling use	NASA owns 82,822 acres of land at KSC, and has an easement for 56,547 acres which is needed to provide the buffer zone for launch activities. Review ownership and costs associated with maintaining the buffer zone and consider cost-reduction alternatives that would still protect NASA's interests (analogous to Stennis). Fish and Wildlife or the state of Florida may be potential partners.	3	2	0	0	2	5	2	Can result in significant cost savings	Bolsters coordination/partnership with F&W, State	No net economic impact with partners	No net impact on outreach vs. current structure	Will NASA sacrifice security control? Willingness of partners.
122	Kennedy	Underutilized Land	Space Act	Federal Agency	ISRP	Federal Campus	Because KSC needs to maintain buffer zone and high security - similar to Stennis - lease developable land to security conscious federal agencies to reduce faculties management costs.	2	2	2	0	2	6	2	Increasing tenants reduces overall costs to NASA	Synergistic only with collaborative federal agency, may provide additional employee amenities	Brings more non-federal jobs/patrons to area, does not return property to tax rolls	No outreach	Dependent on federal agency partners.
123	Kennedy	Underutilized Land	Example	SpacePort Florida	ISRP	International Space Research Park (ISRP)	Example of NASA and the State of Florida working together to come up with a business plan for a research park.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
131	Kennedy	Utilities Management	Example	Private Sector	Utilities Privatization	Utilities Privatization - Private Authority	Kennedy is considering the options for privatization of Utilities, using best practices from public and private examples.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				

The information shown here is conceptual and not intended for immediate action. A business plan including all business economics, structures, strategies and risks should be evaluated prior to the execution of any opportunity.

REAL PROPERTY OPPORTUNITIES CENTER REPORT: Langley Research Center Hampton, VA

CENTER REPORT – Table of Contents

Section 1: Executive Overview (In Briefing format)
- Introduction
- Participants
- Marketplace and Location
- Business, Missions, Vision
- Infrastructure and Population
- Best Business Opportunities

Section 2: General Market Statistics
- Location
- Economic/Demographic Indicators
- Interpretation of Market

Section 3: Business, Mission, Vision of the Center
- Center History and Overview
- Description of Major Current and Potential Future Programs
- Major Relationships (Contractors, Universities, Government)

Section 4: Infrastructure
- Land and Site Metrics
- Facility Metrics and Deferred Maintenance Results
- Utilities Synopsis
- Property Listing from the Real Property Database

Section 5: Opportunities – Descriptions, Measures, Matrix
- Overview and Methodology
- Opportunity Matrix
- Analysis and Observations

REAL PROPERTY OPPORTUNITIES

CENTER REPORT:

Langley Research Center

Hampton, VA

Executive Overview

August 1, 2003

Langley Research Center Introduction

Goal of Visit

- Understand LaRC-specific issues
- Identify potential real property business alternatives
  - increasing revenues
  - reducing expenses
  - creating organizational improvement / mission enhancement

Schedule

- Research: 1/22/03 – 1/31/03
- Visit: 1/27/03 – 1/28/03

Langley Research Center Participants

NASA

INTERVIEW

- Bob Brown
- Lee Rich
- Marny Skora
- Doug Dwoyer
- Lana Couch
- Jerome Kegelman
- Ken Winter
- Karen Reilly
- Randy Rooker
- John Le Neave
- Tony Zavich
- Mac Jackson
- Diana Kusmira
- Jim Mayhew
- Bert Sawyer
- Alan Henderson
- George Firth
- Mike Mastaler
- Fred Thompson
- Angela Brown
- Rodney Harris
- Mary Morgan Hunter

COORDINATOR

- Al Johnson, NASA HQ
- Alan Farrow, NASA LaRC

STAUBACH

STAUBACH VISIT

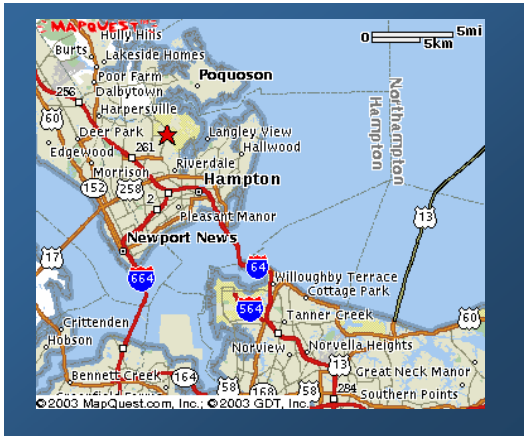
- Kurt Haglund
- Angela Foster
- Skip Orr

STAUBACH RESEARCH

- Angela Foster
- Peter Brohoski
- Steve Ranck
- Cynthia Nunnaly

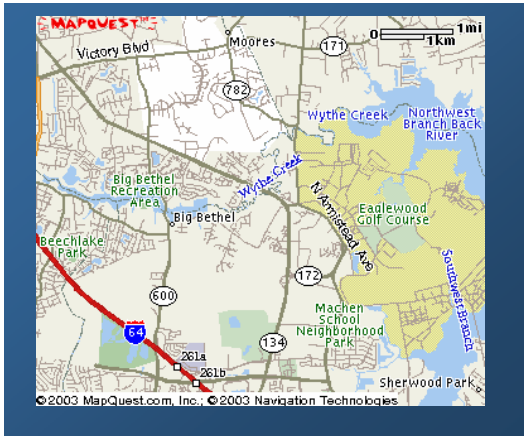
Langley Research Center
Market Place and Location

REGION



- Hampton City Population: 145,665
- Economy: NASA, Langley Air Force Base
- Low Cost of Living

LaRC SUBMARKET



- Access to Transportation - Fair
- Local Economy: NASA + Manufacturing, Air Cargo
- Immediately adjacent to Air Force Base

Langley Research Center Business, Mission, Vision

- **Aerospace Technology Enterprise (Code R)**

- **Major Center Activities**
  - Aerospace Systems, Concepts, & Analysis
  - Atmospheric Science
  - Systems Engineering
  - AeroDynamics, Aerothermodynamics, & Acoustics
  - Structure and Materials
  - Airborne Systems

- **Center's View of Potential Future Activities**
  - Aerospace Technology
  - Planetary Flight Exploration
  - NASA Engineering and Safety Center

Langley Research Center
Infrastructure and Population Summary

Land	Acres	% Total	% Total of NASA Portfolio
Owned	788	98.7%	0.2%
Easement	0	0%	0%
Leased	0	0%	0%
Permit	20	1.3%	0.005%
Public	0	0%	0%
TOTAL	798		

* Extracted from the Land Report as of 2003 from the NASA Real Property Inventory Database on 5/9/03.

Structures	Quantity	Book Value	2003 CRV
Buildings	259	$ 307,544,402	$ 979,645,379
Other Structures	133	539,096,441	1,397,457,746
TOTAL	392	$ 846,640,843	$ 2,377,103,124

* Extracted from the NASA Site Summary Report from the NASA Real Property Inventory Database on 5/9/03.

Civil Servants	+	Contractors	+	Other	=	Total Center Population	Density (People/Acre)
2,544		1,570		257		4,371	5.5

* Extracted from the Facilities Utilization Program Report, September 2002.

Langley Research Center
Best Business Opportunities

Opportunity Name	Description
— Air Force Parking	— The Air Force needs additional parking — Consider EUL of NASA land to private parking company
— Land Along Highway	— Langley has land which is located along a well-traveled highway and might have private sector demand — NASA could consider pulling the security fence line away from the road and EUL the land to private investors
— Historic District	— Consider designating Langley as an historic district similar to the Shenandoah District at Ames — Where possible, lease facilities to private sector and invest proceeds back into facilities
— Shared Services	— NASA is co-located with the Air Force at Langley — NASA could potentially structure a shared services management contract at Langley, similar to the JBOSC contract at Kennedy

SECTION 2: GENERAL MARKET STATISTICS

LOCATION

NASA Langley Research Center is located in Hampton next to Langley Air Force Base (LAFB). The site is accessible from Interstate 64 and Route 17. The site is bordered by the Chesapeake Bay to the east, and the residential and commercial areas of Hampton Roads to the north, west and south.

ECONOMIC/DEMOGRAPHIC INDICATORS

Economic/Demographic Component (City)	Indicators
2001 Population Estimate	145,665
Population % Change, 1990 to 2000	+9.5%
Housing Units, 2000	57,311
Median Value of owner-occupied housing units, 2000	$91,100
Median household money income, 1999	$39,532
Per capita money income, 1999	$19,774
Persons below poverty, percent, 1999	11.3%
Land Area, 2000 (square miles)	52
Persons per square mile, 2000	2,828
Largest Industries	Military

**Extracted from U.S Census Bureau Quickfacts at quickfacts.census.gov on 2/14/03.*

INTERPRETATION OF MARKET

The marketplace outside the LRC fence is comprised of low density and low value highway commercial and agriculture uses. In spite of the modest population, the growth pattern over the past ten years has been stable. The housing stock is affordable, demonstrating that the cost of the land is modest as well.

SECTION 3: BUSINESS, MISSION, VISION OF THE CENTER

CENTER HISTORY AND OVERVIEW

NASA's Langley Research Center in Hampton, Virginia was the United States' first civilian aeronautics laboratory. Several major episodes in the epic story of American aerospace have their roots in the research contributions made by Langley since its establishment in 1917. LRC has forged new frontiers in aviation and space research since its inception.

DESCRIPTION OF MAJOR CURRENT AND POTENTIAL FUTURE PROGRAMS

More than half of NASA Langley's research is in aeronautics. Many of the Center's 3,800 civil service and contract employees focus on improving today's military and civilian aircraft, while designing tomorrow's jets. Not only does Langley develop Airframe Systems, scientists also examine the layers of air planes and spacecraft fly through in Atmospheric Sciences.

Researchers have expanded their studies into other atmospheres, the kind spacecraft will find on distant planets. Next generation spaceships will be able to survive unforgiving extraterrestrial environments, because of work done at Langley. Langley leads NASA initiatives in aviation safety, quiet aircraft technology, small aircraft transportation and aerospace vehicles system technology. It supports NASA space programs with atmospheric research and technology testing and development. Its research has a significant impact on the global economy, making the skies safer, quieter and more efficient.

LRC – MAJOR RELATIONSHIPS

Relationships and partners are critical in business dealings. Real Property business opportunities are enabled by pairing an opportunity with a partner, and the most likely partners already have relationships with NASA. The following charts describe three major categories of relationships: (1) contractor relationships (can partner with NASA as tenants or Enhanced-Use Leasing partners); (2) university relationships (can partner with NASA as tenants, Enhanced-Use Leasing partners, or outsourcing research partners); and (3) federal agency relationships (can lead to multiple opportunities, including cost sharing and federal campus strategies).

Although in many cases contractor and university relationships exist because NASA is funding the relationships, there also exist opportunities for mutually beneficial Real Property partnerships. It is generally easier to do business based on existing relationships rather than attempting to forge completely new relationships.

CONTRACTORS

The following is a list of Langley Research Center's current most active contractors based upon total award value of the contract:

Contractor	**Total Award Value**
Swales & Associates Inc	$240,000,000
Ball Aerospace & Tech Corp	$139,489,505
TRW Inc	$122,086,899
Lockheed Martin Corp	$116,228,450
Johnson Controls World Services	$110,270,344
Wyle Laboratories	$92,655,293
Raytheon Technical Services Co	$87,206,610
Science Application International Corp	$57,291,308
Tessada & Associates Inc	$54,997,701
Virginia Electric & Power Co	$53,720,053
McDonnell Douglas Corp	$49,848,750
Advanced Technologies Inc	$49,000,000
Dynamic Engineering Inc	$49,000,000
TRI Models Inc	$49,000,000
Boeing Co	$48,000,000

Northrop Grumman Corp	$48,000,000
ACS Government Solutions Group	$45,248,586
Analysis & Technology	$30,000,000
BBN Technologies	$30,000,000
Boeing Commercial Airplane Group	$30,000,000

**Extracted from the NASA Procurement Management Database on 3/31/03.*

UNIVERSITIES

The following is a list of Langley Research Center's current most active university contractors based upon total award value of the contract:

University	**Total Award Value**
Utah State University	$49,695,823
Hampton University	$17,526,921
Princeton University	$15,000,000
Texas A&M University	$15,000,000
North Carolina A&T State University	$6,991,248
Florida A&M University	$6,200,000
Harvard University	$5,998,416
University of Wisconsin	$4,142,729
University of Alabama Huntsville	$3,230,057
Christopher Newport University	$2,808,942
Syracuse University	$2,448,000
Iowa State University	$2,000,000
State University of New York Albany	$1,886,233
Norfolk State University	$1,830,000
Ohio University	$1,744,588
University of Virginia	$1,599,000
University of Arizona	$1,519,000

**Extracted from the NASA Procurement Management Database on 3/31/03.*

The following is a list of Langley Research Center's federal agency relationships based upon the Real Property Inventory database:

Agency
U.S. Air Force

** Extracted from the NASA Procurement Management Database on 3/31/03.*

OTHER RELATIONSHIPS

National Institute of Aerospace (NIA): NIA is a 501(c)(3) research education institute. LRC will provide $5m/year for 5 years to help establish the entity. Six universities are participating currently: University of Virginia, Virginia Technology Institute, North Carolina State, North Carolina A&T, University of Maryland, and Georgia Tech.

SECTION 4: INFRASTRUCTURE

LAND AND SITE METRICS

	Total	***% of NASA Portfolio***
Land Area (Acres)	798	*0.2%*

** Extracted from the Land Report as of 2003 from the NASA Real Property Inventory Database on 5/09/03.*

FACILITY METRICS

	Number	**Book Value (MMs)**	**2003 CRV (MMs)**
Buildings	259	$308	$980
Other Structures	133	$539	$1,397
Total	392	$847	$2,377
% of NASA Portfolio	7.4%	12.8%	12.5%

**Extracted from the NASA Site Summary Report from the NASA Real Property Inventory Database on 5/09/03.*

DEFERRED MAINTENANCE ASSESSMENT RESULTS

An assessment of deferred maintenance was previously prepared for each NASA Center, the results of which are reflected on the chart below. The table indicates the summary of facilities' condition of the Center by the Facilities Condition Index (FCI), developed during deferred maintenance analysis. The table also displays where the Center ranks in comparison to the other NASA Centers in terms of FCI and deferred maintenance as a percentage of CRV. (13 is the highest ranking.) It should be noted that deferred maintenance amount set forth in the chart does not represent what the agency is currently spending. Instead, it demonstrates the amount that would need to be spent to solve the deferred maintenance problem.

2002	**FCI**	**DM**	**BMAR**	**CRV**	**DM(%CRV)**
Deferred Maintenance Assessment	3.7	$288 MM	$30 MM	$2.3 B	12.6%
Rank Among Centers	*T6*	-	-	-	*11*

** Extracted from Report on the FY02 NASA- Wide Deferred Maintenance Assessment, March 2002.*

UTILITIES SYNOPSIS

The following chart reflects a brief synopsis of the Center's utilities.

Power	Electrical Power comes from Dominion Virginia Power. There are two substations involved, Dominion Virginia Power has its own substation for LaRC and LaRC has its own substation that is 115 kV.
Heating	Boilers are used and there are 2 main plants, 1 on-site and 1 off-site. The on-site plant has 4 natural gas boilers that are fueled by Virginia Natural Gas. The off-site plant is managed by Hampton Refuse and is a fired steam production facility. Additionally, on LaRC there are a few satellite boilers.
Cooling	Cooling is not centralized, chilled water systems are used in all of the buildings. Most buildings have their own units but some buildings, share a chilled water system, there is never more than 2 buildings on one system.
Sewage	Hampton Roads Sanitation is used, all sewage is handled off-site and a forced-feed system is utilized. There is a sewage meter on-site which is monitored by LaRC daily.
Water	Water is currently undergoing change. Affective, next month (Feb 2003), LaRC will be purchasing their water from Newport News Waterworks for the West Facilities. For the East Facilities, water will continue to come from Langley AFB.

**Extracted from Report on the FY02-NASA- Wide Deferred Maintenance Assessment, March 2002.*

PROPERTY LISTING FROM THE REAL PROPERTY INVENTORY

NASA has an extraordinary database which lists its Real Property inventory. Although the team found a few anomalies, the database proves to be a reliable metric of the overall Real Property portfolio that is relatively accurate at the time of this report. A summary of the leased property, including in-grants and out-grants (if any), is shown on the following pages as a baseline for understanding the Real Property opportunities.

Langley Research Center

In/Out Grant Report

Grant	Reference Number	#	Property Name	Type	Size		Party	Effective Date	Expiration Date	Status
In-Grant		0004Y	LAND TRANSFER WEST AREA-USAF	Permit	0.21	AC	USAF - Air Combat Command	04/09/2002	04/08/2007	Active
In-Grant		0004Y	LAND TRANSFER WEST AREA-USAF	Permit	0	AC	USAF Air Combat Command - 1st Support Group	07/18/2002	07/18/2007	Active
In-Grant		0007Y	LAND PERMIT-EAST AREA-US AIR FORCE	Permit	19.97	AC	USAF - Air Combat Command (Plot 16)	03/02/1939		Active
In-Grant		1000	SATS Program	Lease	19,500	SF	National Consortium for Aviation Mobility	06/01/2001	05/31/2006	Active
In-Grant		1001	IFMP SUPPORT BUILDING	Lease	15,706	SF	MID-EASTERN BUILDINGS	10/01/2002	10/01/2005	Active
In-Grant		1312	EARTH & SCIENCE PROG OFF	Agreement	128	SF	1ST SUPPORT GROUP, LAFB	04/23/2002	04/23/2007	Active
In-Grant		720	HYDRODYNAMICS RESEARCH FAC. (CLOSED)	Agreement	0	SF	LAFB - Air Combat Command (transfer ownership)	07/11/1996		Active
In-Grant		851-11	FENCE MODS	Agreement	21	SY	LAFB	08/15/2001	08/15/2006	Active
Out-Grant		0002Y	FEE OWNED LAND-WEST AREA	Easement	1.129	AC	City of Hampton	02/09/1993		Active
Out-Grant		0004Y	LAND TRANSFER WEST AREA-USAF	Easement	0.34	AC	USAF - Air Combat Command	04/09/2002	04/08/2007	Active
Out-Grant		0007Y	LAND PERMIT-EAST AREA-US AIR FORCE	Agreement	0	AC	USAF - Air Combat Command (Communication cables)	08/09/1988		Active
Out-Grant		1288	REFUSE-FIRED STEAM GENERATING FAC	Agreement	100%	MB	LAFB	04/10/2000	04/10/2005	Active

Langley Research Center

In/Out Grant Report

Out-Grant		1288	REFUSE-FIRED STEAM GENERATING FAC	Agreement	100%	MB	City of Hampton	07/01/2000	06/30/2020	Active
Out-Grant		583A	LANGLEY AIR FORCE OFFICES(CLOSED)	Agreement	2,530	SF	USAF - Air Combat Command	04/12/2001	04/12/2005	Active
Out-Grant		584	AIR FORCE OFFICE BLDG (NASA OWNED)	Agreement	29,140	SF	USAF-Air Combat Command	03/08/2003	03/08/2004	Active
Out-Grant		641	AIR FORCE OFF BLDG - MOU (RePermit)	Agreement	20,000	SF	USAF - Air Combat Command	09/01/2000	09/01/2003	Active
Out-Grant		642	BACK RIVER SUBSTATION	Agreement	0	KV	USAF Air Combat Command	01/01/1999	01/01/2004	Active
Out-Grant		643	ODU FULL SCALE TUN (30X60-FT)	Agreement		EA	Old Dominion University	08/18/1997	08/18/2007	Active
Out-Grant		647	GEN ROTOR AEROELAS LB, USAF OFF,GWU	Agreement	10,150	SF	USAF-Air Combat Command	04/12/2001	01/01/2004	Active
Out-Grant		720	HYDRODYNAMICS RESEARCH FAC. (CLOSED)	Agreement	98,297	SF	LAFB - Demolishing Tow Tank (Acting as Agent)	04/12/2001	06/30/2004	Active
Out-Grant		720	HYDRODYNAMICS RESEARCH FAC. (CLOSED)	Agreement	3,507	SF	LAFB - Air Combat Command (Brick Portion)	03/08/2003	03/08/2004	Active

SECTION 5 – OPPORTUNITIES – DESCRIPTIONS, MEASURES, MATRIX

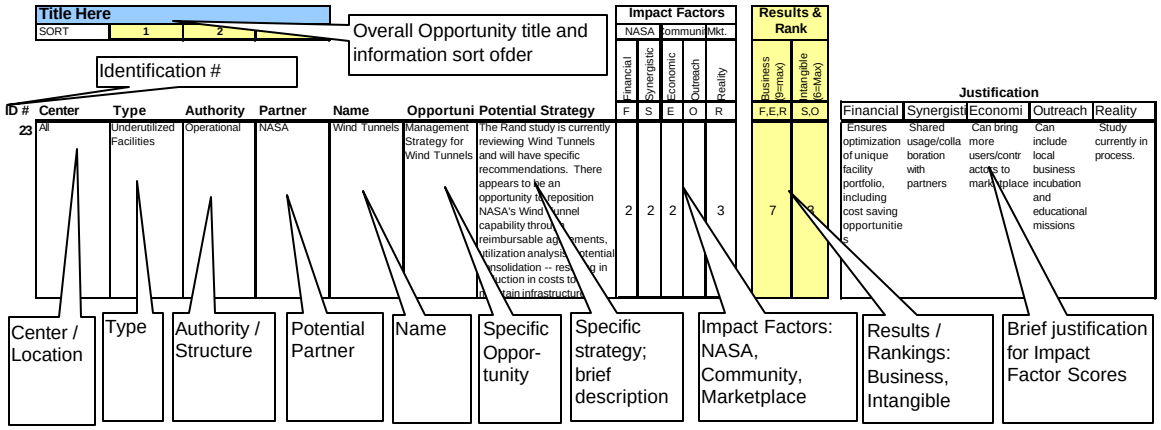
OVERVIEW

The information in this section provides an overview of the opportunities and examples discovered during the review. The opportunities shown here are the ones that were discussed during visits, or are examples of opportunities that became evident during brainstorming sessions.

Although the opportunities are well thought out conceptually, as an opportunity is considered for implementation, a much more detailed business plan should be conducted that looks at each opportunity based on current conditions and market elasticity. The need to develop a business plan for any opportunity cannot be overstated. The business plan needs to take into account the corporate requirement of the asset, the potential benefit to the Agency both economic and other intangibles, and the risks inherent to the Agency, including failure after entering into an opportunity agreement. The business plan should mitigate those risks through a rigorous review and if necessary a due-diligence study of the project. The opportunities are arrayed in a matrix that contains the basic elements of a business plan:

- Center/Location
- Opportunity Type
- Authority/Structure
- Partner
- Name
- Opportunity
- Potential Strategy
- Impact Factors and Results
- Justification

Each category describes an item NASA should consider in its business planning process. Each category is defined below and discussed in more detail through the rest of this report. An example of an opportunity in the matrix is shown below:



OPPORTUNITY TYPE

There are six overall types of Real Property opportunities. Each is summarized in Section 5 and described in more detail in Section 6.

- Underutilized Land Opportunities (including Research Parks, Federal Campus Opportunities, Contractor Parks)
- Underutilized Facilities Opportunities
- Facilities and Asset Management Strategy Opportunities
- Mission or Program Clarification Opportunities
- Restructuring Opportunities
- Utilities Management Opportunities

AUTHORITY / STRUCTURE

The authority category of information includes either the legislative authorities or the types of actions to be contemplated for each opportunity. The primary types of authorities and structures that are outlined in more detail in Section 5 include the following:

- Space Act Agreement
- Enhanced-Use Leasing (EUL)
- CoF

- Divest
- National Historic Preservation Act
- Outside Fence
- Example Opportunities

PARTNERS

Every business agreement has a partner, and this category of information describes some of the current or potential partners NASA could utilize in helping execute its Real Property business opportunities.

NAME

This category lists the 1-3 word project name. In several cases, the team has identified multiple scenarios for a particular building or area of the site; this category world list the same project "name" for all opportunities associated with that building or site. In other cases, similar strategies are being pursued including "marketing", "management", and federal campus ideas; all opportunities that are not building or site specific are given a strategy name.

OPPORTUNITY

The specific opportunities are relatively short descriptions that capture the essence of the opportunities. In several cases, the opportunity names refer to the same opportunity, but the strategy for implementing the opportunity could vary.

POTENTIAL STRATEGY

This section of the matrix captures in a few sentences some of the background and implementation strategies for each opportunity.

MEASUREMENT FILTERS AND FACTORS

There are many factors that need to be considered in order to determine if a particular opportunity is appropriate given all of the stakeholders and implementation structures. This section of the opportunity matrix attempts to measure each opportunity against a standard list of factors. They are broken into three overall categories representing the key stakeholders- NASA, community, and marketplace - and five total factors. The balancing of these factors is important to understand where an opportunity excels or falls short.

NASA impact factors:

Financial and Economic - Quantitative - NASA's financial incentives are to reduce costs or increase revenues, regardless of the impact on NASA's other activities.

Synergistic - Qualitative - The Space Act specifically encourages NASA to collaborate; therefore, over its history, NASA has established partnerships that are synergistic with NASA's goals, regardless of financial gain or expense.

Community impact factors:

Economic Impact - Quantitative - The communities where NASA is located benefit economically from NASA's presence, not only through direct investment, but also by providing jobs and other economic stimulus. This factor reflects the impact that each opportunity has economically on the community.

Outreach Impact - Qualitative - In addition to economic impact, NASA has impact on its community through direct outreach activities, and indirect activities such as bringing a highly educated workforce into the community.

Marketplace factors:

Reality of implementation – The marketplace is a multi-varied yet critical component of this analysis. The marketplace factor includes the speed at which an opportunity can be accomplished; the risk exposure to NASA; the likelihood of finding suitable partners; and the reality that the opportunity could be implemented. Many of these considerations will be at odds with one another.

The measurement system for the impact factors is relatively simple, reflecting the fact that the opportunities were discussed and analyzed on a conceptual level – not in high detail. Each factor is ranked on a "0-3" basis. Therefore the highest score for any one factor is a "3", and the lowest score is a "0". The measurements are translated as follows:

0 = No Impact
1 = Minimal impact
2 = Average impact
3 = High impact

RESULTS AND RANKING

The impact factors by themselves do not provide an understanding of an opportunity's full value. To obtain a better measurement of value at a conceptual level, the scores were added together in two categories:

Business Ranking - NASA financial, community economic impact and marketplace reality factors were added together to estimate the overall "Business" factors that

take economics and marketplace into account. The factors are typically the first factors to be ranked. The highest score for Business Ranking is a "9".

Intangible Ranking - The NASA synergistic and community outreach factors are combined to form the "intangible" factors. Since these factors are important, but much more subjective than the business ranking factors, these factors are ranked after the business ranking factors. The highest score for an Intangible Ranking is a "6".

The justification of each opportunity's individual factor is described briefly in the columns on the right side of the matrix.

"Example" opportunity descriptions are not ranked or described in the justification portion of the matrix. Many of the decisions for Example opportunities were carefully made given information currently available; whether or not the example is currently in the best interest of NASA does not mean that the decision to pursue the opportunity was unwise. Therefore, it is not helpful to score on the example opportunities in hindsight.

5 Langley Opportunity Matrix

SORT ORDER: Center | Name | Opportunity

ID #	Center	Type	Authority	Partner	Name	Opportunity Name	Potential Strategy	Impact Factors: NASA Financial (F)	NASA Synergistic (S)	Community Economic (E)	Community Outreach (O)	Mkt. Reality (R)	Results & Rank: Business (9=max) (F,E,R)	Intangible (6=Max) (S,O)	Financial	Synergistic	Economic	Outreach	Reality
138	Langley	Facilities and Asset Management	Historic Preservation Act	Private Sector	East Campus - Langley	East Campus - Historic District	Consider designating Langley's East Campus as a historic district, similar to the Shenandoah District at Ames. Wherever possible, lease facilities to the private sector to help renovation of the facilities. The net result is a reduction of CoF funds that need to be spent on the facilities and lower future occupancy costs.	2	3	1	0	1	4	3	NASA can reinvest proceeds of leases into facilities, thereby renovating the facilities at little net cost to NASA; helps reduce CoF requirements, but not substantial financial gain	Helps NASA maintain it's important heritage facilities for future generations; potential synergies created by bringing partners/contractors "on-campus"	Can result in increased non-federal jobs within municipality	Limited outreach	Viable, but dependent on market for tenants/users; may be difficult to attract suitable tenants into high security area.
145	Langley	Facilities and Asset Management	Space Act	Air Force	Shared Cost	Federal Campus - Joint facilities management contract	Negotiate a facilities management contract with the Air Force - similar to the JBOSC contract at KSC to share and reduce overall facilities costs.	2	2	0	0	3	5	2	modest cost savings on services	Calls for close collaboration	No net impact on community	Involves no outreach	Easy to implement for NASA, depends on willingness of Air Force.
143	Langley	Facilities and Asset Management	EUL	Contractors	Swing Space	Swing Space	Langley has no room for expansion on their western campus, although a majority of the occupants are contractors. Subsequently, as new facilities need renovation, there is a dearth of swing space. Enter into EUL to have simple "swing space" facility built near the fence line at the back gate that can be occupied by contractors.	1	2	1	1	1	3	3	Costly but could help reduce current churn expenses	Helps NASA keep productive while renovating facilities	Investment in community, but small	Potential for outside companies when NASA not needed	Difficult agreement to structure; hard to finance unknown occupancy requirement.
140	Langley	Mission or Program Strategy	Example	NIA	NIA	National Institute for Aeronautics (NIA)	Example of research activities done outside the Center for NASA's benefit	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
141	Langley	Restructure	EUL	ODU	ODU	ODU lease - EUL	ODU currently leases a wind tunnel for non-NASA uses. Current agreement is reimbursable; consider converting to EUL.	2	0	0	0	1	3	0	Result in modest impact to NASA; market value of Wind Tunnel may not be high	No additional benefit	No additional benefit	No additional benefit	May be difficult to restructure; market value of leasing wind tunnels not high.
136	Langley	Underutilized Facilities	EUL	Private Sector	East Campus - Langley	East Campus - EUL Buildings	The East campus is one of the oldest at NASA, but separated from the current main campus. Maintain control of the East Campus (it is current a lease from the Air Force), but enter into EUL agreements with outside groups; utilize revenues to restore the facilities and improve facilities in the main part of the Center.	2	2	2	1	1	5	3	Potential to access private funds to renovate facilities	Potential synergies created by bringing partners/contractors "on-campus"	Can result in increased non-federal jobs within municipality	Limited.	Market for users/partners may be questionable; security issues associated with Air Force limits potential tenants.
142	Langley	Underutilized Facilities	Example	ODU	ODU	ODU lease	Example of leasing unique facility to private sector in order to keep the facility operational, and reduce overall capital costs for the private sector.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				

The information shown here is conceptual and not intended for immediate action. A business plan including all business economics, structures, strategies and risks should be evaluated prior to the execution of any opportunity.

5 Langley Opportunity Matrix

SORT ORDER: Center | Name | Opportunity

ID #	Center	Type	Authority	Partner	Name	Opportunity Name	Potential Strategy	Impact Factors: NASA Financial (F)	NASA Synergistic (S)	Community Economic (E)	Community Outreach (O)	Mkt. Reality (R)	Results & Rank: Business (9=max) (F,E,R)	Intangible (6=Max) (S,O)	Financial	Synergistic	Economic	Outreach	Reality
135	Langley	Underutilized Land	EUL	Private Sector	East Campus - Langley	Air Force Parking	The Air Force needs additional parking on the East campus; EUL to parking company, and charge Air Force for parking to pay capital costs. Land is currently permitted to NASA, so this opportunity may be complex.	1	1	1	1	1	3	2	Creative method for financing needed parking structure; ultimate partner is other federal agency, so EUL payments might be lower than private sector	Might not involve synergistic partner	Modest	Can involve some community participation	Market has strong partner base; deal structure may be complicated; may encounter OMB scoring issues concerning Air Force payment of parking.
137	Langley	Underutilized Land	Divest	Air Force	East Campus - Langley	East campus - Return to Air Force	Return all underutilized land and facilities in river area to Air Force. Retain ownership of only those unique facilities that are critical to NASA in the future. Results in net reduction of costs.	3	0	0	0	2	5	0	Measurable cost savings for NASA			No net impact	Political question concerning NASA control.
146	Langley	Underutilized Land	Space Act	Air Force	Federal Campus	Federal Campus - Increase Air Force presence on NASA side	The Air Force is a growing presence at Langley and may need more space.	2	1	1	0	1	4	1	Cost of maintaining land too low to result in significant impact	Can be synergistic with federal Agency	Might create non-federal jobs but land not returned to tax rolls	Not relevant	Significant fed agency user interest unlikely; not high benefit to NASA.
139	Langley	Underutilized Land	EUL	NIA	NIA	National Institute for Aeronautics (NIA)	NIA is a contract recently won by a consortium that expressed a desire to lease space off-Center. Consider EUL on NASA owned land to help form critical mass and attract other R&D type users.	2	2	2	2	1	5	4	EUL has positive financial benefits	Brings NIA closer to Center civil servants	Helps generate spin off business	Employs good workers	NIA already desired to lease space away from Center
144	Langley	Underutilized Land	EUL	Private Sector	Wythe Creek Gate	Pull fence line back at back gate	Langley is located along fairly major road, near major highway. A portion of the area is currently designated a forested wet land. Work with the Corps to remove the designation. EUL to private groups. Maintain long-term ownership in case NASA requires land for use in the future.	2	0	3	0	2	7	0	Could generate modest income	No synergies created	Returns land to tax rolls, generates sales taxes	No outreach created	Depends on NASA security concerns; market viability of uses; sub market does not appear strong.
134	Langley	Utilities Management	Example	Air Force	Cogen	Cogen (Trash for energy)	Through agreement between NASA and Air Force, trash is burned in a cogen plan and Electrical costs are reduced.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				

The information shown here is conceptual and not intended for immediate action. A business plan including all business economics, structures, strategies and risks should be evaluated prior to the execution of any opportunity.

REAL PROPERTY OPPORTUNITES CENTER REPORT: Marshall Space Flight Center Hunstville, AL

CENTER REPORT – Table of Contents

Section 1: Executive Overview (In Briefing format)
- Introduction
- Participants
- Marketplace and Location
- Business, Missions, Vision
- Infrastructure and Population
- Best Business Opportunities

Section 2: General Market Statistics
- Location
- Economic/Demographic Indicators
- Interpretation of Market

Section 3: Business, Mission, Vision of the Center
- Center History and Overview
- Description of Major Current and Potential Future Programs
- Major Relationships (Contractors, Universities, Government)

Section 4: Infrastructure
- Land and Site Metrics
- Facility Metrics and Deferred Maintenance Results
- Utilities Synopsis
- Property Listing from the Real Property Database

Section 5: Opportunities – Descriptions, Measures, Matrix
- Overview and Methodology
- Opportunity Matrix
- Analysis and Observations

REAL PROPERTY OPPORTUNITES

CENTER REPORT:

Marshall Space Flight Center

Hunstville, AL

Executive Overview

August 1, 2003

Marshall Space Flight Center Introduction

Goal of Visit

- Understand MSFC-specific issues
- Identify potential real property business alternatives
  - increasing revenues
  - reducing expenses
  - creating organizational improvement / mission enhancement

Schedule

- Research: 1/8/03 – 1/17/03
- Visit: 1/15/03-1/17/03

Marshall Space Flight Center Participants

NASA

INTERVIEW

- David King
- Sheila Cloud
- Allen Elliot
- Stephen Beale
- James R. Frees
- Louis R. Durnya
- Mike Ward
- Ann Whitaker
- Scott Croomes, U.S. Space & Rocket Center
- Edwin James
- James Wyckoff
- Debbie Hendon
- T. Jerry Williams
- Jody Terch
- David Throckmorton
- Ed Kiessling
- Freida Lowery
- Alan Patterson
- John Vickers
- Wendell Colberg
- Pete Rodriquez
- Rhonda Pepper
- Frank Mayhall
- David Bates
- Jim Baker
- Judy Simons, NSSTC
- Robin Henderson, NSSTC

COORDINATOR

- Scott Robinson, NASA HQ
- Keith Kirksey, NASA MSFC

MARKETPLACE

- Alex Hardy, Chamber of Commerce
- W. Brian Hilson, Chamber of Commerce
- Mike Ward, Chamber of Commerce

STAUBACH

STAUBACH VISIT

- Kurt Haglund
- Angela Foster

STAUBACH RESEARCH

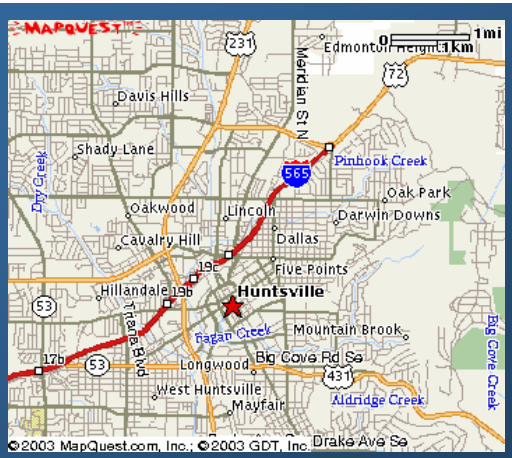
- Don Sapp, Plexus
- Angela Foster
- Cynthia Nunnaly

Marshall Space Flight Center
Market Place and Location

REGION

- Madison County Population: 281,931
- Economy: Manufacturing, Education, Health, & Social Services
- Low Cost of Living

MSFC SUBMARKET



- Access to Transportation – Good
- Local Economy: NASA, Army

Marshall Space Flight Center Business, Mission, Vision

- **Space Flight Enterprise (Code M)**

- **Major Center Activities**
  - Propulsion Research
  - Advanced Vehicle Concept, Definition and Assessment
  - Vehicle Design and Integration
  - Program / Project Management
  - Microgravity Science & Applications

- **Center's View of Potential Future Activities**
  - Space Optics Manufacturing Technology
  - Molecular Biotechnology

Marshall Space Flight Center
Infrastructure and Population Summary

Land	Acres	% Total	% Total of NASA Portfolio
Owned	41	2.18%	0.01%
Easement	0	0%	0%
Leased	0	0%	0%
Permit	1,841	97.82%	0.5%
Public	0	0%	0%
TOTAL	1,882		

* Extracted from the Land Report as of 2003 from the NASA Real Property Inventory Database on 5/9/03.

Structures	Quantity	Book Value	2003 CRV
Buildings	171	$ 284,609,846	$ 917,351,069
Not Capitalized	5	222,500	299,093
Other Structured	118	124,049,238	237,674,274
TOTAL	294	$ 408,881,585	$ 1,155,321,436

* Extracted from the NASA Site Summary Report from the NASA Real Property Inventory Database on 5/9/03.

Civil Servants	+	Contractors	+	Other	=	Total Center Population	Density (People/Acre)
2,745		4,539		0		7,284	3.9

* Extracted from the Facilities Utilization Program Report, September 2002.

Marshall Space Flight Center
Best Business Opportunities

Opportunity Name	Description
— Land Leased from Army	— NASA leases land under long-term lease from the Army — Consider breaking lease and returning land to the Army in order to save costs
— Boeing	— Boeing occupies a building at Marshall that it uses for commercial activities unrelated to NASA — Discuss with Boeing the possibility of taking more space, potentially using an EUL structure
— Shared Services	— NASA is co-located with the Army at Marshall — NASA could potentially structure a shared services management contract at Marshall similar to the JBOSC contract at Kennedy
— Test Stands	— Marshall operates and maintains test stands that are not fully utilized — Consider moving test stands to Stennis and possibly divesting of test stands that are no longer necessary

SECTION 2: GENERAL MARKET STATISTICS

LOCATION

Marshall Space Flight Center (MSFC) is located in Huntsville, Alabama on Army Redstone Arsenal. The site is surrounded by commercial, residential and light industrial uses. Access to the site is provided by Interstate 565 and Routes 72, 231 and 431. Route 231 provides direct access to downtown Huntsville.

ECONOMIC/DEMOGRAPHIC INDICATORS

Economic/Demographic Component (County)	Indicators
2001 Population Estimate	281,931
Population % Change, 1990 to 2000	+15.8%
Housing Units, 2000	120,288
Median Value of owner-occupied housing units, 2000	$103,300
Median household money income, 1999	$44,704
Per capita money income, 1999	$23,091
Persons below poverty, percent, 1999	10.5%
Land Area, 2000 (square miles)	805
Persons per square mile, 2000	343.8
Largest Industries	Manufacturing, Education, Health, Retail Trade

**Extracted from U.S Census Bureau Quickfacts at quickfacts.census.gov on 2/14/03.*

INTERPRETATION OF MARKET

Huntsville offers diverse industry and an affordable cost of living. While housing and land values are low relative to most urban Centers, the area has demonstrated marked population growth over the past ten years. Housing costs are modest, showing that land costs are still affordable in this growing area. NASA and the Army are two of the largest employers in the area.

SECTION 3: BUSINESS, MISSION, VISION OF THE CENTER

CENTER HISTORY AND OVERVIEW

The Marshall Space Flight Center, a field installation of the National Aeronautics and Space Administration, was established in 1960 and named in honor of General George C. Marshall, the Army Chief of Staff during World War II, Secretary of State, and Nobel Prize Winner for his world-renowned "Marshall Plan."

The Center was activated on July 1, 1960, with the transfer of buildings, land, space projects, property, and personnel from the U.S. Army. Dr. Wernher von Braun became the Center's first director.

In 1961, Marshall's Mercury-Redstone vehicle boosted America's first astronaut, Alan B. Shepard, on a suborbital flight. The Marshall Center's first major program was development of the Saturn rockets, the largest of which boosted man to the Moon in 1969. Saturns also lifted Skylab and the Apollo spacecraft into Earth orbit for the historic linkup with the Russian-Soyuz spacecraft in 1975. The Marshall Center has managed many other space projects successfully since its creation in 1960, including Pegasus (1965), three unmanned satellites to detect micrometeoroids; the Lunar Roving Vehicle (1971) for transporting astronauts on the lunar surface; Skylab (1973); the United States' first crewed orbiting space station; the three High Energy Astronomy Observatories (1977, 1978, and 1979) to study stars and star-like objects; and the Hubble Space Telescope (1990), an optical observatory that is returning unprecedented views of the universe. A new era in space flight began on April 12, 1981, when Marshall-developed propulsion systems unleashed almost six-million pounds of thrust to launch America's first Space Shuttle.

DESCRIPTION OF MAJOR CURRENT AND POTENTIAL FUTURE PROGRAMS

Marshall Space Flight Center is at the forefront of the development of advanced Earth-to-orbit and in-space propulsion systems and technologies. Marshall is leading the way to unlocking the potential of space by improving the safety, reliability, and reducing the cost of getting to space.

In addition, Marshall is responsible for the critical components of the Space Shuttle, including the shuttle main engines, solid rocket boosters and external fuel tank (through Michoud Assembly Facility).

The mission of Marshall's Flight Projects Directorate is to manage MSFC-assigned payload/mission integration and operations, as well as all Spacelab activities, including system design/development, interfaces, integration, engineering, and operations planning efforts.

The Flight Projects Directorate also manages the Space Station payload utilization vehicle carrier integration, vehicle supporting development, node project engineering activities, support of the Multi-Purpose Logistics Module (MPLM), and Station Life Support Systems development and integration.

MSFC (INCLUDING MAF) – MAJOR RELATIONSHIPS

Relationships and partners are critical in business dealings. Real Property business opportunities are enabled by pairing an opportunity with a partner, and the most likely partners already have relationships with NASA. The following charts describe three major categories of relationships: (1) contractor relationships (can partner with NASA as tenants or Enhanced-Use Leasing partners); (2) university relationships (can partner with NASA as tenants, Enhanced-Use Leasing partners, or outsourcing research partners); and (3) federal agency relationships (can lead to multiple opportunities, including cost sharing and federal campus strategies).

Although in many cases contractor and university relationships exist because NASA is funding the relationships, there also exist opportunities for mutually beneficial Real Property partnerships. It is generally easier to do business based on an existing relationship rather than attempting to forge completely new relationships.

CONTRACTORS

The following is a list of Marshall Space Flight Center's (including Michoud Assembly Facility's) current most active contractors based upon total award value of the contract:

Contractor	Total Award Value
Boeing North American Inc	$2,902,531,568
Lockheed Martin Corp	$2,693,431,939
Boeing Co	$2,520,645,986
Thiokol Corp	$2,406,424,130
United Technologies Corp	$1,213,787,298
Computer Sciences Corp	$1,148,404,021
McDonnell Douglas Corp	$322,050,567
Lockheed Martin Engineering & Sciences Co	$204,530,437
EG&G Alabama Inc	$186,506,707
Sverdrup Technology Inc	$125,880,569
Cortez III Service Corp	$98,146,289
Northrop Grumman Corp	$63,517,800
United Technologies Aerojet JV	$57,892,605
Teledyne Industries Inc	$39,588,394
LB&B Associates Inc	$31,094,337

SAP Public Services Inc	$29,968,077

**Extracted from the NASA Procurement Management Database on 3/31/03.*

UNIVERSITIES

The following is a list of Marshall Space Flight Center's (including Michoud Assembly Facility's) current most active university contractors based upon total award value of the contract:

University	**Total Award Value**
Stanford University	$386,989,200
University of Alabama Huntsville	$54,782,179
University of Alabama Birmingham	$37,362,262
University of California at Irvine	$30,327,364
University of New Orleans	$14,067,587
University of Colorado Boulder	$10,492,339
Colorado School Mines	$8,500,000
Spelman College	$7,878,700
University of Arizona	$7,494,420
Morehouse College	$6,871,195
Fisk University	$6,200,000
Auburn University	$5,500,000
Pennsylvania State University	$5,322,353
Texas A&M University	$4,993,000
Northeastern University	$3,945,000
Massachusetts Institute of Technology	$3,792,214
Case Western Reserve University	$2,041,090

* *Extracted from the NASA Procurement Management Database on 3/31/03.*

The following is a list of Marshall Space Flight Center's federal agency relationships.

Agency
U.S. Army

OTHER RELATIONSHIPS

NSSTC: Affiliated research organization run by NASA civil servants. Partnership between NASA, University of Alabama, industry, and State of Alabama. Not a legal entity.

SECTION 4: INFRASTRUCTURE

LAND AND SITE METRICS

	Total	% of NASA Portfolio
Land Area (Acres)	1,882	0.5%

**Extracted from the Land Report as of 2003 from the NASA Real Property Inventory Database on 5/9/03.*

FACILITY METRICS

	Number	Book Value (MMs)	2003 CRV (MMs)
Buildings	172	$284	$917
Not Capitalized	5	$.02	$.03
Other Structures	118	$129	$236
Total	295	$408	$1,156
% of NASA Portfolio	8.0%	6.2%	6.1%

**Extracted from the NASA Site Summary Report from the NASA Real Property Inventory Database on 5/9/03.*

DEFERRED MAINTENANCE ASSESSMENT RESULTS

An assessment of deferred maintenance was previously prepared for each NASA Center, the results of which are reflected on the chart below. The table indicates the summary of facilities' condition of the Center by the Facilities Condition Index (FCI), developed during deferred maintenance analysis. The table also displays where the Center ranks in comparison to the other NASA Centers in terms of FCI and deferred maintenance as a percentage of CRV. (13 is the highest ranking.) It should be noted that deferred maintenance amount set forth in the chart does not represent what the agency is currently spending. Instead, it demonstrates the amount that would need to be spent to solve the deferred maintenance problem.

2002	FCI	DM	BMAR	CRV	DM(%CRV)
Deferred Maintenance Assessment	4.1	$89 MM	$170 MM	$1.2 B	7.5%
Rank Among Centers	*T1*	-	-	-	*8*

** Extracted from Report on the FY02 NASA- Wide Deferred Maintenance Assessment, March 2002.*

UTILITIES SYNOPSIS

The following chart reflects a brief synopsis of the Center's utilities.

Power	Power is generated by the Tennessee Valley Authority (TVA) and supplied through Redstone Arsenal. The substation is 480 volts.
Heating	Heating is provided from 3 sources: steam from Redstone Arsenal, steam from an MSFC boiler (fuel and electric), and electric space heater.
Cooling	Provided from a central chiller system using electrical driven chillers, local chillers, and direct expansion air conditioning units. These systems are all on-site and operated by MSFC.
Sewage	Sewage from MSFC is discharged to Redstone sewer lines and is treated at their facilities.
Water	Potable water is provided by Redstone Arsenal for multiple uses at MSFC. Chilled water comes from Redstone Arsenal as well and water and is filtered and treated for use in MSFC's central chiller system.

** Extracted from Report on the FY02 NASA- Wide Deferred Maintenance Assessment, March 2002.*

PROPERTY LISTING FROM THE REAL PROPERTY INVENTORY

NASA has an extraordinary database which lists its Real Property inventory. Although the team found a few anomalies, the database proves to be a reliable metric of the overall Real Property portfolio that is relatively accurate at the time of this report. A summary of the leased property, including in-grants and out-grants (if any), is shown on the following pages as a baseline for understanding the Real Property opportunities.

Marshall Space Flight Center

In/Out Grant Report

Grant	Reference Number	#	Property Name	Type	Size		Party	Effective Date	Expiration Date	Status
Out-Grant		4202	Office Building	Agreement	2100	SF	Redstone Federal Credit Union	09/30/1986	09/14/2006	Active
Out-Grant		4203	Office Building	Agreement	513	SF	S&H Barber Shop	08/08/1977	05/26/2004	Active
Out-Grant		4207	Communications Facility	Agreement	1200	SF	GE American Communications	01/01/1995	06/30/2004	Active
Out-Grant		4494	Child Development Center	Agreement	8658	SF	MSFC Child Development Center	03/30/1995	12/18/2003	Active
Out-Grant		4678	Shop Building	Agreement	3192	SF	Auto Shop (Terry Thompson)	01/28/1982	06/08/2004	Active

SECTION 5 – OPPORTUNITIES – DESCRIPTIONS, MEASURES, MATRIX

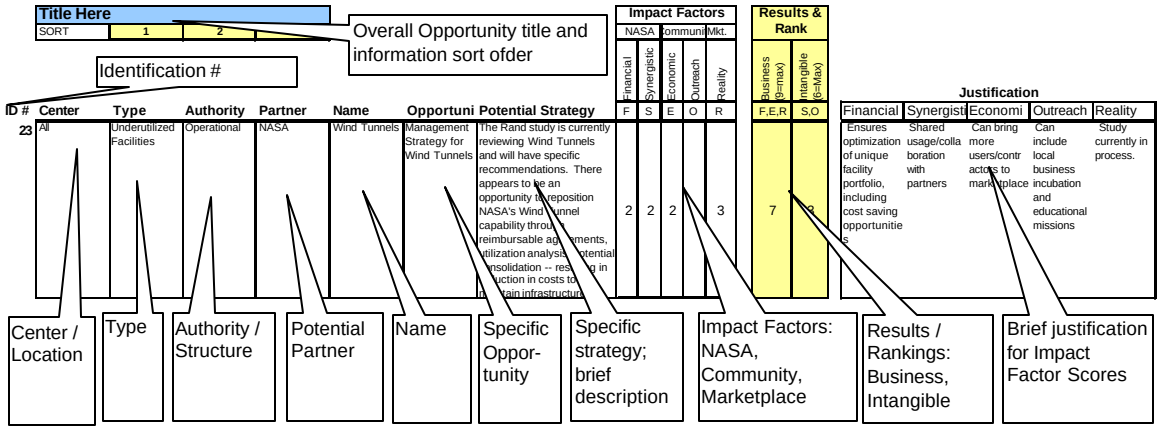
OVERVIEW

The information in this section provides an overview of the opportunities and examples discovered during the review. The opportunities shown here are the ones that were discussed during visits, or are examples of opportunities that became evident during brainstorming sessions.

Although the opportunities are well thought out conceptually, as an opportunity is considered for implementation, a much more detailed business plan should be conducted that looks at each opportunity based on current conditions and market elasticity. The need to develop a business plan for any opportunity cannot be overstated. The business plan needs to take into account the corporate requirement of the asset, the potential benefit to the Agency both economic and other intangibles, and the risks inherent to the Agency, including failure after entering into an opportunity agreement. The business plan should mitigate those risks through a rigorous review and if necessary a due-diligence study of the project. The opportunities are arrayed in a matrix that contains the basic elements of a business plan:

- Center/Location
- Opportunity Type
- Authority/Structure
- Partner
- Name
- Opportunity
- Potential Strategy
- Impact Factors and Results
- Justification

Each category describes an item NASA should consider in its business planning process. Each category is defined below and discussed in more detail through the rest of this report. An example of an opportunity in the matrix is shown below:



OPPORTUNITY TYPE

There are six overall types of Real Property opportunities. Each is summarized in Section 5 and described in more detail in Section 6.

- Underutilized Land Opportunities (including Research Parks, Federal Campus Opportunities, Contractor Parks)
- Underutilized Facilities Opportunities
- Facilities and Asset Management Strategy Opportunities
- Mission or Program Clarification Opportunities
- Restructuring Opportunities
- Utilities Management Opportunities

AUTHORITY / STRUCTURE

The authority category of information includes either the legislative authorities or the types of actions to be contemplated for each opportunity. The primary types of authorities and structures that are outlined in more detail in Section 5 include the following:

- Space Act Agreement
- Enhanced-Use Leasing (EUL)
- CoF

- Divest
- National Historic Preservation Act
- Outside Fence
- Example Opportunities

PARTNERS

Every business agreement has a partner, and this category of information describes some of the current or potential partners NASA could utilize in helping execute its Real Property business opportunities.

NAME

This category lists the 1-3 word project name. In several cases, the team has identified multiple scenarios for a particular building or area of the site; this category world list the same project "name" for all opportunities associated with that building or site. In other cases, similar strategies are being pursued including "marketing", "management", and federal campus ideas; all opportunities that are not building or site specific are given a strategy name.

OPPORTUNITY

The specific opportunities are relatively short descriptions that capture the essence of the opportunities. In several cases, the opportunity names refer to the same opportunity, but the strategy for implementing the opportunity could vary.

POTENTIAL STRATEGY

This section of the matrix captures in a few sentences some of the background and implementation strategies for each opportunity.

MEASUREMENT FILTERS AND FACTORS

There are many factors that need to be considered in order to determine if a particular opportunity is appropriate given all of the stakeholders and implementation structures. This section of the opportunity matrix attempts to measure each opportunity against a standard list of factors. They are broken into three overall categories representing the key stakeholders- NASA, community, and marketplace - and five total factors. The balancing of these factors is important to understand where an opportunity excels or falls short.

NASA impact factors:

Financial and Economic - Quantitative - NASA's financial incentives are to reduce costs or increase revenues, regardless of the impact on NASA's other activities.

Synergistic - Qualitative - The Space Act specifically encourages NASA to collaborate; therefore, over its history, NASA has established partnerships that are synergistic with NASA's goals, regardless of financial gain or expense.

Community impact factors:

Economic Impact - Quantitative - The communities where NASA is located benefit economically from NASA's presence, not only through direct investment, but also by providing jobs and other economic stimulus. This factor reflects the impact that each opportunity has economically on the community.

Outreach Impact - Qualitative - In addition to economic impact, NASA has impact on its community through direct outreach activities, and indirect activities such as bringing a highly educated workforce into the community.

Marketplace factors:

Reality of implementation – The marketplace is a multi-varied yet critical component of this analysis. The marketplace factor includes the speed at which an opportunity can be accomplished; the risk exposure to NASA; the likelihood of finding suitable partners; and the reality that the opportunity could be implemented. Many of these considerations will be at odds with one another.

The measurement system for the impact factors is relatively simple, reflecting the fact that the opportunities were discussed and analyzed on a conceptual level – not in high detail. Each factor is ranked on a "0-3" basis. Therefore the highest score for any one factor is a "3", and the lowest score is a "0". The measurements are translated as follows:

0 = No Impact
1 = Minimal impact
2 = Average impact
3 = High impact

RESULTS AND RANKING

The impact factors by themselves do not provide an understanding of an opportunity's full value. To obtain a better measurement of value at a conceptual level, the scores were added together in two categories:

Business Ranking - NASA financial, community economic impact and marketplace reality factors were added together to estimate the overall "Business" factors that

take economics and marketplace into account. The factors are typically the first factors to be ranked. The highest score for Business Ranking is a "9".

Intangible Ranking - The NASA synergistic and community outreach factors are combined to form the "intangible" factors. Since these factors are important, but much more subjective than the business ranking factors, these factors are ranked after the business ranking factors. The highest score for an Intangible Ranking is a "6".

The justification of each opportunity's individual factor is described briefly in the columns on the right side of the matrix.

"Example" opportunity descriptions are not ranked or described in the justification portion of the matrix. Many of the decisions for Example opportunities were carefully made given information currently available; whether or not the example is currently in the best interest of NASA does not mean that the decision to pursue the opportunity was unwise. Therefore, it is not helpful to score on the example opportunities in hindsight.

5 Marshall Opportunity Matrix

SORT ORDER: Center | Name | Opportunity

ID #	Center	Type	Authority	Partner	Name	Opportunity Name	Potential Strategy	Impact Factors: NASA Financial (F)	NASA Synergistic (S)	Community Economic (E)	Community Outreach (O)	Mkt. Reality (R)	Results & Rank: Business (9=max) (F,E,R)	Intangible (6=Max) (S,O)	Financial	Synergistic	Economic	Outreach	Reality
157	Marshall	Facilities and Asset Management	Space Act	Army	Shared Cost	Federal Campus - NASA / Army shared services agreement	Develop JBOSC type agreement with Army to reduce expenses.	2	2	0	0	3	5	2	modest cost savings on services	Calls for close collaboration	No net impact on community	Involves no outreach	Easy to implement for NASA, depends on willingness of Army.
155	Marshall	Facilities and Asset Management	Divest	NSSTC	NSSTC	NSSTC, reduce support	NSSTC is a unique organization that is associated with NASA. NASA leases space occupied by NASA employees at cost since NASA paid for larger portion of the construction cost to eliminate real estate responsibility.	1	0	1	1	2	4	1	Can save money but might not be considered high impact	Reduces synergy with NASA	Provides some positive impact to local firms	Reach out to community for support	Achievable, but dependent on willing contractors.
153	Marshall	Facilities and Asset Management	Divest	Private Sector	Machine Shops	Outsource Machine Shops - OFF Center	NASA needs machine shops which NASA pays to operate and maintain; consider eliminating machine shops on Center; outsource to local machine shop contractors; purchase goods on a competitive basis from the local marketplace.	2	0	1	0	2	5	0	Can save money but might not be considered high impact	Not relative	Provides some positive impact to local vendor firms	Not relative	Achievable, but dependent on willing contractors.
152	Marshall	Facilities and Asset Management	EUL	Private Sector	Machine Shops	Outsource Machine Shops - ON Center	NASA needs machine shops which NASA pays to operate and maintain; consider eliminating offering the machine shops to outside vendors through EUL, allowing them to perform work for NASA and other clients.	2	0	2	0	1	5	0	Can save money, probably not substantial revenues; could provide creative financing to for expensive equipment	Limited additional benefit	Provides some positive impact to local vendor firms	Limited additional benefit	Achievable, but dependent on willing contractors who would need to follow security guidelines; may be difficult to attract workforce; NASA may have liability with non-NASA work done on NASA real property.
156	Marshall	Facilities and Asset Management	Operational	NASA	Renovation by Replacement	Renovation by Replacement	Since NASA is nearly 50 years old, many facilities have reached the end of their useful lives. Establish clear policy on replacing facilities that have reached their useful lives; determine "pay back" period and criteria to justify investment return; consider 10 year program to replace outdated facilities.	2	0	2	0	2	6	0	Can save money as repair and maintenance costs surpass annual cost amortization of new facilities	No relative	Construction contracts can benefit community	Not relative	Achievable, but dependent on funding and policy change for NASA.
148	Marshall	Restructure	EUL	Boeing	Boeing Building	Boeing Building - convert to EUL	Boeing is occupying a building on Center for non-NASA activities. Convert the Space Act agreement to EUL.	2	0	0	0	1	3	0	Positive financial impact for NASA, but the current rate is close to current market rate	Limited additional benefit	Limited additional benefit	Limited additional benefit	Agreement might be difficult to restructure.
149	Marshall	Underutilized Facilities	Example	Boeing	Boeing Building	Boeing Building - reimbursable lease of facility	Boeing is leasing a facility, at full reimbursable cost from NASA.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				

The information shown here is conceptual and not intended for immediate action. A business plan including all business economics, structures, strategies and risks should be evaluated prior to the execution of any opportunity.

5 Marshall Opportunity Matrix

SORT ORDER:	Center	Name	Opportunity

ID #	Center	Type	Authority	Partner	Name	Opportunity Name	Potential Strategy	Impact Factors: NASA Financial (F)	NASA Synergistic (S)	Community Economic (E)	Community Outreach (O)	Mkt. Reality (R)	Results & Rank: Business (9=max) (F,E,R)	Intangible (6=Max) (S,O)	Financial	Synergistic	Economic	Outreach	Reality
147	Marshall	Underutilized Facilities	EUL	Boeing	Boeing Building	Boeing's commercial use of facilities - Expand	Boeing is occupying a building on Center for non-NASA activities. Encourage Boeing to increase the commercial work done on site. Enter into EUL Agreements for facilities to be used. Boeing may be able to consolidate commercial activities done elsewhere (reducing their overall costs) while better utilizing NASA underutilized facilities. Reinvest proceeds at Marshall.	2	2	2	1	1	5	3	Increased cost savings and revenue potential for NASA	Increases contractor/partner presence on campus	Increases non-federal jobs/contractor presence in community	Small positive impact on outreach	Boeing would need to make long term investment at Marshall which may require difficult decisions.
151	Marshall	Underutilized Facilities	Space Act	NASA	IFMP	IFMP for Agency on Center	NASA rents space for the agency-wide activities; consider moving the operations on Center into existing facilities or master planned facilities. Advantages - lowers NASA Overall investment; increase Marshall cost-sharing.	3	2	0	0	2	5	2	NASA can reduce costs by putting long-term needs in owned space	Will bring more people/partners on campus	Net loss; communities lose revenues from leased space	Not relevant	Possibly require program shifts, strong cross-center collaboration.
154	Marshall	Underutilized Facilities	Space Act	Private Sector	NCAM	National Center for Advanced Manufacturing (NCAM)	NCAM operations are research-oriented activities focused on the manufacturing industry. Increase focus on this effort; coordinate with universities and manufacturing associations and corporations to increase reimbursable funding of these activities. Coordinate with Departments of Energy and Commerce to reduce costs.	1	2	1	1	1	3	3	sharing costs reduces NASA's obligation	NASA constantly needs to discover new manufacturing techniques	More emphasis creates opportunities for spin off businesses	Helps local region potential gain new manufacturing expertise	Limited funds available to support research, but potential
158	Marshall	Underutilized Facilities	Divest	NASA	Test Stand	Test stands - Move to Stennis	Consider moving the large scale test stands to Stennis.	2	2	1	0	2	5	2	Cost savings through utilization/consolidation	can improve operations/ facilities for contractors	Communities can both gain or lose non-federal jobs/ contractors	No community outreach	Political challenges for NASA.
150	Marshall	Underutilized Land	Divest	Army	Consolidation	Return underutilized area to Army	Marshall has a long term lease with the Army for use of land which may not be needed.	2	0	0	0	2	4	0	Potential cost savings for NASA			No net impact	Political question concerning NASA control.

The information shown here is conceptual and not intended for immediate action. A business plan including all business economics, structures, strategies and risks should be evaluated prior to the execution of any opportunity.

REAL PROPERTY OPPORTUNITIES CENTER REPORT: Michoud Assembly Facility New Orleans, LA

CENTER REPORT – Table of Contents

Section 1: Executive Overview (In Briefing format)
- Introduction
- Participants
- Marketplace and Location
- Business, Missions, Vision
- Infrastructure and Population
- Best Business Opportunities

Section 2: General Market Statistics
- Location
- Economic/Demographic Indicators
- Interpretation of Market

Section 3: Business, Mission, Vision of the Center
- Center History and Overview
- Description of Major Current and Potential Future Programs
- Major Relationships (Contractors, Universities, Government)

Section 4: Infrastructure
- Land and Site Metrics
- Facility Metrics and Deferred Maintenance Results
- Utilities Synopsis
- Property Listing from the Real Property Database

Section 5: Opportunities – Descriptions, Measures, Matrix
- Overview and Methodology
- Opportunity Matrix
- Analysis and Observations

REAL PROPERTY OPPORTUNITIES

CENTER REPORT:

Michoud Assembly Facility

New Orleans, LA

Executive Overview

August 1, 2003

Michoud Assembly Facility Introduction

Goal of Visit

- Understand MAF-specific issues
- Identify potential real property business alternatives
  - increasing revenues
  - reducing expenses
  - creating organizational improvement / mission enhancement

Schedule

- Research: 12/03/02 – 12/13/02
- Visit: 12/10/02

Michoud Assembly Facility Participants

NASA

INTERVIEW

- Steve Ehrlicher
- Ron Wetmore
- Stephen Brettel
- Francis Celino
- Mike Newbold
- Rey Abadie
- Bill Olson
- Elliot Perret
- Mike Lalla
- Debbie Burns, USDA

COORDINATOR

- Jeff Irby, NASA MAF

STAUBACH

STAUBACH VISIT

- Kurt Haglund
- Angela Foster

STAUBACH RESEARCH

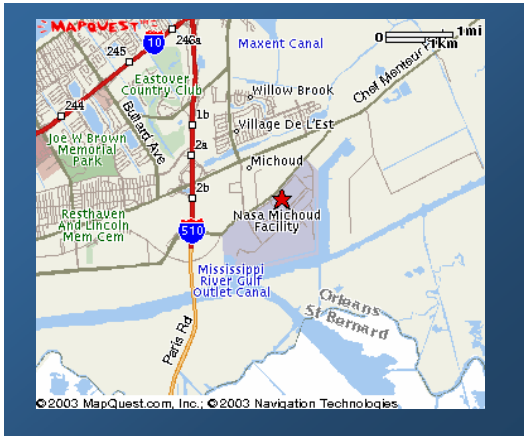
- Don Sapp, Plexus
- Angela Foster
- Cynthia Nunnaly

Michoud Assembly Facility Market Place and Location

REGION

- Orleans Parish Population: 476,492
- Economy: Shipping, Manufacturing, Tourism

MAF SUBMARKET



- Rural / Low Density Development
- Access to Transportation - Fair
- Current Real Property Activity
  - Surrounding area is comprised of very low density development.

Michoud Assembly Facility Business, Mission, Vision

- **Space Flight Enterprise (Code M/ Stennis)**
  - Government–Owned, Contractor Operated (GOCO)
- **Major Center Activities**
  - External Fuel Tank Assembly
- **Center's View of Potential Future Activities**
  - Space Shuttle Program Orbiter Storage

Michoud Assembly Facility
Infrastructure and Population Summary

Land	Acres	% Total	% Total of NASA Portfolio
Owned	832	100%	0.2%
Easement	0	0%	0%
Leased	0	0%	0%
Permit	0	0%	0%
Public	0	0%	0%
TOTAL	832		

* Extracted from the Land Report as of 2003 from the NASA Real Property Inventory Database on 5/9/03.

Structures	Quantity	Book Value	2003 CRV
Buildings	40	$ 177,230,759	$ 707,290,865
Other Structures	141	102,041,338	301,231,097
TOTAL	181	$ 279,272,097	$ 1,008,521,963

* Extracted from the NASA Site Summary Report from the NASA Real Property Inventory Database on 5/9/03.

Civil Servants	+	Contractors	+	Other	=	Total Center Population	Density (People/Acre)
1,264		1,988		172		3,424	4.1

* Extracted from the Facilities Utilization Program Report, September 2002.

Michoud Assembly Facility
Best Business Opportunities

Opportunity Name	Description
— East Campus Land	— Michoud has land that might not be necessary to support its manufacturing operations — NASA could potentially enter into an EUL for a portion of the underutilized land and maintain drainage channel and dock access, as necessary
— Lockheed Martin (GOCO)	— Lockheed Martin has been NASA's primary contractor at Michoud for many years — Consider completely outsourcing all real property management at Michoud, possibly using an EUL structure
— Reimbursable Agreements	— Lockheed Martin, as a GOCO, is not incentivized to strongly pursue reimbursable agreements — NASA shall create incentives or requirements for Lockheed Martin to pursue reimbursable agreements in order to reduce costs
— Department of Agriculture	— The Department of Agriculture already occupies a good portion of the headquarters building at Michoud — Consider consolidating NASA out of the headquarters building and leasing completely to DOA

SECTION 2: GENERAL MARKET STATISTICS

LOCATION

The 832-acre NASA Michoud Assembly Facility (MAF) is located in New Orleans, Louisiana, approximately 24 miles from New Orleans International Airport and 15 miles from downtown New Orleans. The site is served by Interstate 10 and Routes 90 and 61. The facility includes a port with deep-water access for the transportation of large space structures.

ECONOMIC/DEMOGRAPHIC INDICATORS

Economic/Demographic Component (County)	**Indicators**
2001 Population Estimate	476,492
Population % Change, 1990 to 2000	-2.5%
Housing Units, 2000	215,091
Median Value of owner-occupied housing units, 2000	$81,300
Median household money income, 1999	$30,250
Per capita money income, 1999	$17,258
Persons below poverty, percent, 1999	27.9%
Land Area, 2000 (square miles)	181
Persons per square mile, 2000	2,684
Largest Industries	Manufacturing, Retail Trade

** Extracted from U.S. Census Bureau Quickfacts at quickfacts.census.gov on 2/14/03.*

INTERPRETATION OF MARKET

Orleans Parish does not boast strong economic indicators, specifically with regard to capita income, home values, and the percentage of the population living below the national poverty level. The area surrounding Michoud is comprised of low density and highway commercial and agricultural uses. The population has decreased in the past ten years and industry has not been able to draw employment and population back to the area as desired.

SECTION 3: BUSINESS, MISSION, VISION OF THE CENTER

MAF HISTORY AND OVERVIEW

In 1940, with the outbreak of World War II, the U.S. government purchased a 1,000 acre tract as the site of war-related construction. Within three years, the world's largest building at that time -- 43 acres under one roof -- was completed, and plywood cargo planes and landing craft rolled off the production line to aid the war effort.

In 1961, with the space race with the Russians heating up, the NASA took over the facility for design and assembly of large space vehicles. The first space project at the Michoud facility was the design and development of the first stage of the powerful Saturn booster, destined to place man on the moon. Construction of the Saturn S1B and S1C boosters continued at the Michoud facility until the early 1970s, when the Apollo program wound down and work began on the Space Shuttle, the next generation launch vehicle

MAF MISSION AND GOALS

NASA's Michoud Assembly Facility, through Michoud Operations, Lockheed Martin Space Systems Company, produces the Space Shuttle External Tank (ET) at in New Orleans, LA. The ET is 154 feet long (longer than Orville Wright's first flight in 1903 of 120 feet), 28 feet in diameter and the largest single component of the Space Shuttle system. Michoud also works on experimental space vehicles and related projects.

With 2,000 employees, the organization is one of the largest employers in New Orleans. The facility features one of the world's biggest manufacturing plants (43 acres under one roof) and a port with deep-water access for the transportation of large space structures. When completed, the ET is towed on a barge across the Gulf of Mexico, around Florida and up to Kennedy Space Center.

MAF – MAJOR RELATIONSHIPS

Relationships and partners are critical in business dealings. Real Property business opportunities are enabled by pairing an opportunity with a partner, and the most likely partners already have relationships with NASA. The following charts describe three major categories of relationships: (1) contractor relationships (can partner with NASA as tenants or Enhanced-Use Leasing partners); (2) university relationships (can partner with NASA as tenants, Enhanced-Use Leasing partners, or outsourcing research partners); and (3) federal agency relationships (can lead to multiple opportunities, including cost sharing and federal campus strategies).

Although in many cases contractor and university relationships exist because NASA is funding the relationships, there also exist opportunities for mutually beneficial Real Property partnerships. It is generally easier to do business based on existing relationships rather than attempting to forge completely new relationships.

The contractors and university contractors that are active at Michoud are covered under the Marshall Space Flight Center report.

The following is a list of Michoud's federal agency relationships based upon the Real Property Inventory database:

Agency
NONE

**Extracted from the NASA Real Property Database listing of In-Grants/Out-Grants.*

SECTION 4: INFRASTRUCTURE

LAND AND SITE METRICS

	Total	***% of NASA Portfolio***
Land Area (Acres)	832	*0.2%*

**Extracted from the Land Report as of 2003 from the NASA Real Property Inventory Database on 5/9/03.*

FACILITY METRICS

	Number	**Book Value (MMs)**	**2003 CRV (MMs)**
Buildings	40	$177	$707
Other Structures	141	$102	$301
Total	181	$279	$1,008
% of NASA Portfolio	3.4%	4.2%	5.3%

**Extracted from the NASA Site Summary Report from the NASA Real Property Inventory Database on 5/9/03.*

DEFERRED MAINTENANCE ASSESSMENT RESULTS

An assessment of deferred maintenance was previously prepared for each NASA Center, the results of which are reflected on the chart below. The table indicates the summary of facilities' condition of the Center by the Facilities Condition Index (FCI), developed during deferred maintenance analysis. The table also displays where the Center ranks in comparison to the other NASA Centers in terms of FCI and deferred maintenance as a percentage of CRV. (13 is the highest ranking.) It should be noted that deferred maintenance amount set forth in the chart does not represent what the agency is currently spending. Instead, it demonstrates the amount that would need to be spent to solve the deferred maintenance problem.

2002	**FCI**	**DM**	**BMAR**	**CRV**	**DM(%CRV)**
Deferred Maintenance Assessment	3.4	$75.4 MM	$50 MM	$1.0 B	8.0%
Rank Among Centers	T9	-	-	-	10

** Extracted from Report on the FY02 NASA- Wide Deferred Maintenance Assessment, March 2002.*

UTILITIES SYNOPSIS

The following chart reflects a brief synopsis of the Center's utilities.

Power	Electrical Power comes from the Entergy Corporation and is brought directly in at a high voltage rate, 115,000 Volts to the on-site substation.
Heating	6 Boilers are used that run on natural gas from the New Orleans Power Service (NOPS). Not all 6 boilers run at one time.
Cooling	Electric Chillers are used, there are 12+ on-site.
Sewage	All sewage is handled off-site by the New Orleans City Services (NOCS).
Water	Water comes from the City of New Orleans and MAF users their own chillers for chilled water.

** Extracted from Report on the FY02 NASA- Wide Deferred Maintenance Assessment, March 2002.*

PROPERTY LISTING FROM THE REAL PROPERTY INVENTORY

NASA has an extraordinary database which lists its real property inventory. Although the team found a few anomalies, the database proves to be a reliable metric of the overall real property portfolio that is relatively accurate at the time of this report. A summary of the leased property, including in-grants and out-grants (if any), is shown on the following pages as a baseline for understanding the real property opportunities.

SECTION 5 – OPPORTUNITIES – DESCRIPTIONS, MEASURES, MATRIX

OVERVIEW

The information in this section provides an overview of the opportunities and examples discovered during the review. The opportunities shown here are the ones that were discussed during visits, or are examples of opportunities that became evident during brainstorming sessions.

Although the opportunities are well thought out conceptually, as an opportunity is considered for implementation, a much more detailed business plan should be conducted that looks at each opportunity based on current conditions and market elasticity. The need to develop a business plan for any opportunity cannot be overstated. The business plan needs to take into account the corporate requirement of the asset, the potential benefit to the Agency both economic and other intangibles, and the risks inherent to the Agency, including failure after entering into an opportunity agreement. The business plan should mitigate those risks through a rigorous review and if necessary a due-diligence study of the project. The opportunities are arrayed in a matrix that contains the basic elements of a business plan:

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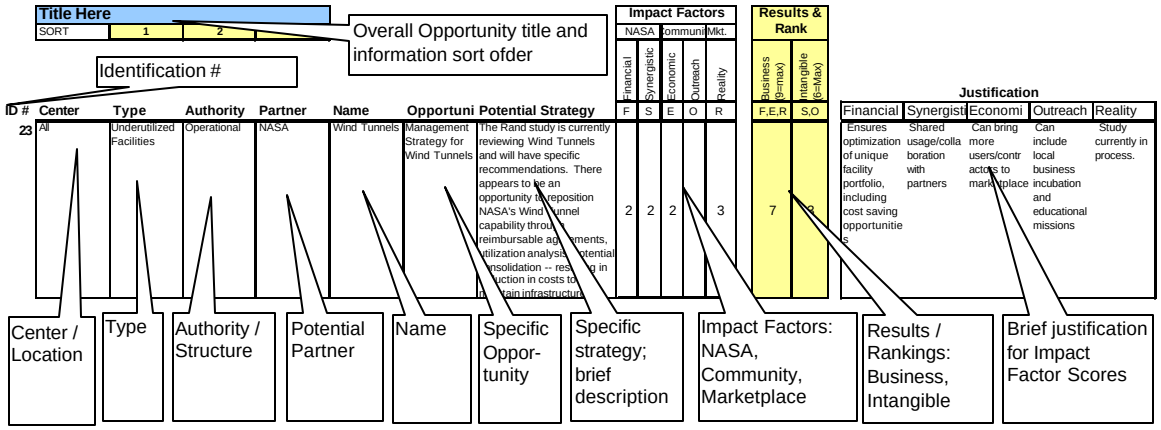


OPPORTUNITY TYPE

There are six overall types of Real Property opportunities. Each is summarized in Section 5 and described in more detail in Section 6.

- Underutilized Land Opportunities (including Research Parks, Federal Campus Opportunities, Contractor Parks)
- Underutilized Facilities Opportunities
- Facilities and Asset Management Strategy Opportunities
- Mission or Program Clarification Opportunities
- Restructuring Opportunities
- Utilities Management Opportunities

AUTHORITY / STRUCTURE

The authority category of information includes either the legislative authorities or the types of actions to be contemplated for each opportunity. The primary types of authorities and structures that are outlined in more detail in Section 5 include the following:

- Space Act Agreement
- Enhanced-Use Leasing (EUL)
- CoF

- Divest
- National Historic Preservation Act
- Outside Fence
- Example Opportunities

PARTNERS

Every business agreement has a partner, and this category of information describes some of the current or potential partners NASA could utilize in helping execute its Real Property business opportunities.

NAME

This category lists the 1-3 word project name. In several cases, the team has identified multiple scenarios for a particular building or area of the site; this category world list the same project "name" for all opportunities associated with that building or site. In other cases, similar strategies are being pursued including "marketing", "management", and federal campus ideas; all opportunities that are not building or site specific are given a strategy name.

OPPORTUNITY

The specific opportunities are relatively short descriptions that capture the essence of the opportunities. In several cases, the opportunity names refer to the same opportunity, but the strategy for implementing the opportunity could vary.

POTENTIAL STRATEGY

This section of the matrix captures in a few sentences some of the background and implementation strategies for each opportunity.

MEASUREMENT FILTERS AND FACTORS

There are many factors that need to be considered in order to determine if a particular opportunity is appropriate given all of the stakeholders and implementation structures. This section of the opportunity matrix attempts to measure each opportunity against a standard list of factors. They are broken into three overall categories representing the key stakeholders- NASA, community, and marketplace - and five total factors. The balancing of these factors is important to understand where an opportunity excels or falls short.

NASA impact factors:

Financial and Economic - Quantitative - NASA's financial incentives are to reduce costs or increase revenues, regardless of the impact on NASA's other activities.

Synergistic - Qualitative - The Space Act specifically encourages NASA to collaborate; therefore, over its history, NASA has established partnerships that are synergistic with NASA's goals, regardless of financial gain or expense.

Community impact factors:

Economic Impact - Quantitative - The communities where NASA is located benefit economically from NASA's presence, not only through direct investment, but also by providing jobs and other economic stimulus. This factor reflects the impact that each opportunity has economically on the community.

Outreach Impact - Qualitative - In addition to economic impact, NASA has impact on its community through direct outreach activities, and indirect activities such as bringing a highly educated workforce into the community.

Marketplace factors:

Reality of implementation – The marketplace is a multi-varied yet critical component of this analysis. The marketplace factor includes the speed at which an opportunity can be accomplished; the risk exposure to NASA; the likelihood of finding suitable partners; and the reality that the opportunity could be implemented. Many of these considerations will be at odds with one another.

The measurement system for the impact factors is relatively simple, reflecting the fact that the opportunities were discussed and analyzed on a conceptual level – not in high detail. Each factor is ranked on a "0-3" basis. Therefore the highest score for any one factor is a "3", and the lowest score is a "0". The measurements are translated as follows:

0 = No Impact
1 = Minimal impact
2 = Average impact
3 = High impact

RESULTS AND RANKING

The impact factors by themselves do not provide an understanding of an opportunity's full value. To obtain a better measurement of value at a conceptual level, the scores were added together in two categories:

Business Ranking - NASA financial, community economic impact and marketplace reality factors were added together to estimate the overall "Business" factors that

take economics and marketplace into account. The factors are typically the first factors to be ranked. The highest score for Business Ranking is a "9".

Intangible Ranking - The NASA synergistic and community outreach factors are combined to form the "intangible" factors. Since these factors are important, but much more subjective than the business ranking factors, these factors are ranked after the business ranking factors. The highest score for an Intangible Ranking is a "6".

The justification of each opportunity's individual factor is described briefly in the columns on the right side of the matrix.

"Example" opportunity descriptions are not ranked or described in the justification portion of the matrix. Many of the decisions for Example opportunities were carefully made given information currently available; whether or not the example is currently in the best interest of NASA does not mean that the decision to pursue the opportunity was unwise. Therefore, it is not helpful to score on the example opportunities in hindsight.

5 Michoud Opportunity Matrix

SORT ORDER: Center | Name | Opportunity

ID #	Center	Type	Authority	Partner	Name	Opportunity Name	Potential Strategy	Impact Factors: NASA Financial (F)	NASA Synergistic (S)	Communi Economic (E)	Communi Outreach (O)	Mkt. Reality (R)	Results & Rank: Business (9=max) (F,E,R)	Intangible (6=Max) (S,O)	Financial	Synergistic	Economic	Outreach	Reality
161	Michoud	Facilities and Asset Management	EUL	Lockheed Martin	GOCO	Lease Michoud to Lockheed Martin	Lockheed Martin has a long history as NASA's primary contractor at Michoud. As a GOCO, NASA could potentially enter into a EUL for all of the facilities without being subject to NASA occupancy rules in the EUL legislation. Consider entering into an EUL agreement with Lockheed Martin to allow them to take over full responsibility for all real property. Lockheed Martin could access long-term financing to improve the facilities as part of the EUL agreement.	2	3	2	0	2	6	3	Can save money for NASA although contractor costs might increase	Increases collaboration with partner	Enhances private employer in market, no net loss of non-federal jobs	No outreach involved	Political challenges for NASA; question of cost benefit analysis.
162	Michoud	Mission or Program Strategy	Example	Lockheed Martin	GOCO	Government Owned Contractor Operated (GOCO)	Michoud is a good example of turning a location almost completely over to the private sector, while maintaining NASA control.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
164	Michoud	Restructure	EUL	Lockheed Martin	Lockheed Martin Building	Lockheed Martin building - Convert to EUL	Lockheed Martin currently has a Space Act Agreement with NASA to perform Non-NASA commercial activities at Michoud. Consider restructuring agreement as EUL.	2	0	0	0	1	3	0	Positive financial impact for NASA, but market value is not high	Limited additional benefit	Limited additional benefit	Limited additional benefit	Agreement might be difficult to restructure.
159	Michoud	Underutilized Facilities	Space Act	Agriculture	Building 350 - HQ	Federal Campus - Lease Headquarters to Department of Agriculture	Department of Agriculture already occupies a good portion of the headquarters; move NASA into other facility and lease the main building to Agriculture on reimbursable basis. Could also be accomplished through EUL, with negligible difference.	2	1	1	1	2	5	2	Helps reduce NASA costs	collaboration increased with Department of Agriculture, but main building would not hold NASA employees which could create confusion	Can expand non-federal jobs in community	Small positive impact on outreach	Depends on Department of Agriculture's desire to expand; could require improvement of facilities.
163	Michoud	Underutilized Facilities	EUL	Lockheed Martin	Lockheed Martin Building	Lockheed Martin's commercial use of facilities - Expand	Lockheed Martin is already on site doing commercial work in a NASA facility. Encourage Lockheed Martin to increase the commercial work done on site. Enter into EUL agreements for facility usage. Lockheed Martin may be able to consolidate commercial activities done elsewhere (reducing their overall costs) while better utilizing NASA underutilized facilities. Reinvest proceeds at Michoud.	2	2	2	1	1	5	3	Increased cost savings and revenue potential for NASA	Increases contractor/partner presence on campus	Increases non-federal jobs/contractor presence in community	Small positive impact on outreach	Lockheed Martin would need to make long term investment at Michoud, which may require difficult decisions.
165	Michoud	Underutilized Facilities	Space Act	Contractors	Marketing	Market facilities	As a GOCO, Michoud has an opportunity to have it's contractor market NASA's facilities. Refine and expand incentives for Lockheed Martin to "market" NASA's underutilized facilities.	2	2	2	2	3	7	4	Can achieve modest cost savings	Brings more partners/contractors onto campus	More contractors /visitors	Can include outreach programs	NASA should easily be able to implement through contract.
160	Michoud	Underutilized Facilities	Space Act	Private Sector	CAM	National Center for Advanced Manufacturing (CAM)	NCAM operations are research-oriented activities focused on the manufacturing industry. Increase focus on this effort; coordinate with universities and manufacturing associations and corporations to increase reimbursable funding of these activities. Coordinate with Departments of Energy and Commerce to reduce costs.	1	2	1	1	1	3	3	sharing costs reduces NASA's obligation	NASA constantly needs to discover new manufacturing techniques	More emphasis creates opportunities for spin off businesses	helps local region potential gain new manufacturing expertise	limited funds available to support research, but potential
168	Michoud	Underutilized Land	Divest	Private Sector	West of Mercury Drive	Divest to outside investors for industrial uses.	Divest portion of land not needed for manufacturing; maintain drainage channel and dock access if necessary.	3	0	0	0	2	5	0	Measurable cost savings for NASA	No net impact	No net impact	No net impact	Political question concerning NASA control.

The information shown here is conceptual and not intended for immediate action. A business plan including all business economics, structures, strategies and risks should be evaluated prior to the execution of any opportunity.

5 Michoud Opportunity Matrix

SORT ORDER: Center | Name | Opportunity

ID #	Center	Type	Authority	Partner	Name	Opportunity Name	Potential Strategy	Impact Factors: NASA Financial (F)	NASA Synergistic (S)	Community Economic (E)	Community Outreach (O)	Mkt. Reality (R)	Results & Rank: Business (9=max) F,E,R	Intangible (6=Max) S,O	Financial	Synergistic	Economic	Outreach	Reality
166	Michoud	Underutilized Land	Space Act	Coast Guard	West of Mercury Drive	Federal Campus - Coast Guard. Homeland Security, Customs.	Coast Guard (now part of Homeland Security) have expressed an interest in the Dock area; engage them in a discussion focusing on consolidating more facilities on NASA land.	2	2	2	0	2	6	2	Increased tenants help reduce overall costs associated with real property maintenance	Synergistic only with collaborative federal agency, may provide additional employee amenities	Brings more non-federal jobs/patrons to area, does not return property to tax rolls	No outreach	Dependent on federal agency partners.
167	Michoud	Underutilized Land	EUL	Private Sector	West of Mercury Drive	Ground Lease	EUL portion of land not needed for manufacturing; maintain drainage channel and dock access if necessary.	2	0	2	0	1	5	0	Potential for revenue generation, but most likely at industrial use rental rates	Provides limited collaboration opportunities with contractors	Provides non-federal jobs	Limited outreach	Near term market demand might be question; sub market is industrial.
169	Michoud	Underutilized Land	CoF	NASA	West of Mercury Drive	Invest in new manufacturing facilities	Michoud is organized to manufacture large scale, high quality facilities. As NASA considers next generation technology, centralize the manufacturing operations of all potential technologies at Michoud.	1	3	2	0	1	4	3	Minimal	Additional collaboration through manufacturing collocation	Provides non-federal jobs	Limited outreach	CoF funding is difficult.
171	Michoud	Mission or Program Strategy	Divest	Private Sector	Consolidation	Divest Michoud - Co-locate ET manufacturing with Launch operations	Move External Tank (ET) manufacturing near term. Currently Michoud makes the ET which is transported to Kennedy. If this function is expected to continue for decades, consider moving operations to Kennedy, divest Michoud	2	0	0	0	2	4	0	Significant cost savings, but offset by move costs	No net impact	No net impact	No net impact vs. current situation (a gain for KSC community offset by loss at Michoud	Political and cost challenges for NASA.
172	Michoud	Mission or Program Strategy	Divest	Private Sector	Consolidation	Divest Michoud when Shuttle Program complete.	At end of Shuttle program, divest manufacturing facility at Michoud, consistent with NASA's intent to outsource capabilities to commercial contractors wherever possible. Invest only to maintain quality of External Tank production.	2	1	0	0	1	3	1	Net ultimate cost reduction regarding Michoud, but potential higher investment elsewhere	Could move operations to location better for NASA overall	Not good for economically challenged area	Not good for economically challenged area	Difficult decision, but not out of the question realistically.
170	Michoud	Mission or Program Strategy	Space Act	Federal Agency	Building 103	Invest in Michoud Manufacturing Expertise; make world-class	Michoud is the only major large-scale "unique" manufacturing operation at NASA. Consider long-term manufacturing role within NASA; increase utilization in planning for future programs, especially development of SLI-type research. Market world-class manufacturing and research capabilities to government contractors as Space Act agreement; Increase R&D capabilities.	1	3	3	3	1	5	6	Net expense for NASA, not cost savings, but potentially necessary	Helps NASA control quality through extensive investment	Helps economically challenged area	New non-federal jobs, new capabilities, potential for education and outreach	Very difficult to attract capital from NASA to support; risk is that NASA would make an investment in area 3.6 feet above sea level subject to Hurricanes

The information shown here is conceptual and not intended for immediate action. A business plan including all business economics, structures, strategies and risks should be evaluated prior to the execution of any opportunity.

REAL PROPERTY OPPORTUNITIES CENTER REPORT:
Stennis Space Center
Stennis Space Center, MS

CENTER REPORT – Table of Contents

Section 1: Executive Overview (In Briefing format)
- Introduction
- Participants
- Marketplace and Location
- Business, Missions, Vision
- Infrastructure and Population
- Best Business Opportunities

Section 2: General Market Statistics
- Location
- Economic/Demographic Indicators
- Interpretation of Market

Section 3: Business, Mission, Vision of the Center
- Center History and Overview
- Description of Major Current and Potential Future Programs
- Major Relationships (Contractors, Universities, Government)

Section 4: Infrastructure
- Land and Site Metrics
- Facility Metrics and Deferred Maintenance Results
- Utilities Synopsis
- Property Listing from the Real Property Database

Section 5: Opportunities – Descriptions, Measures, Matrix
- Overview and Methodology
- Opportunity Matrix
- Analysis and Observations

REAL PROPERTY OPPORTUNITIES

CENTER REPORT:

Stennis Space Center

Stennis Space Center, MS

Executive Overview

August 1, 2003

Stennis Space Center Introduction

Goal of Visit

- Understand SSC-specific issues
- Identify potential real property business alternatives
  - increasing revenues
  - reducing expenses
  - creating organizational improvement / mission enhancement

Schedule

- Research: 12/03/02 – 12/13/02
- Visit: 12/11/02 – 12/12/02

Stennis Space Center Participants

NASA

INTERVIEW

- Michael Rudolphi
- Miguel Rodriguez
- Patrick Scheuermann
- Bob Heitzmann
- Larrie Kelly
- Kirk Miller
- Anne Peek
- Pat Faerley
- Kevin Power
- Jason Edge
- Jim Huk
- Robert Lightfoot
- Mark Mick
- Trish Penton
- Ken Human

COORDINATOR

- Steve Rider, NASA HQ
- Kirk Miller, NASA SSC

STAUBACH

STAUBACH VISIT

- Kurt Haglund
- Angela Foster

STAUBACH RESEARCH

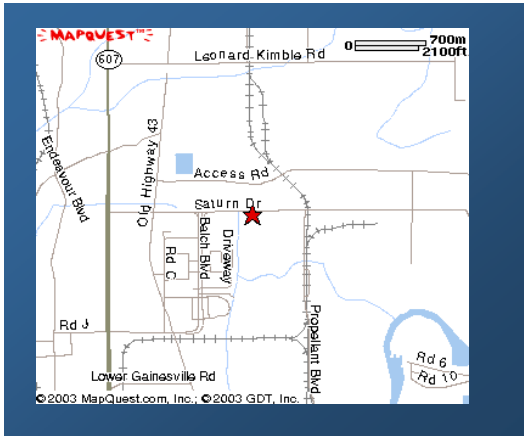
- Don Sapp, Plexus
- Angela Foster
- Cynthia Nunnaly

Stennis Space Center
Market Place and Location

REGION

- County Population: 44,031
- Economy: Education, Health and Social Services
- Rural
- Low Cost of Living

SSC SUBMARKET



- Hancock County - Rural
- Access to Transportation - Fair
- Local Economy: NASA
- Current Real Property Activity
  - Surrounding area is comprised of very low density development (Buffer Zone)

Stennis Space Center Business, Mission, Vision

- **Space Flight Enterprise (Code M)**

- **Major Center Activities**
  - Rocket Propulsion Testing
  - Commercial Earth Remote Sensing
  - Landlord/ Host Agency

- **Center's View of Potential Future Activities**
  - Continued Work in the Major Activities outlined above

Stennis Space Center
Infrastructure and Population Summary

Land	Acres	% Total	% Total of NASA Portfolio
Owned	20,807	15%	5.7%
Easement	0	0%	0%
Leased	0	0%	0%
Permit	117,994	85%	32.5%
Public	0	0%	0%
TOTAL	138,801		

* Extracted from the Land Report as of 2003 from the NASA Real Property Inventory Database on 5/9/03.

Structures	Quantity	Book Value	2003 CRV
Buildings	189	$ 129,012,746	$ 400,175,680
Leased Buildings, Facilities or Other Structures	5		2,034
Other Structures	99	299,669,857	1,055,197,618
TOTAL	293	$ 428,682,603	$ 1,455,375,332

* Extracted from the NASA Site Summary Report from the NASA Real Property Inventory Database on 5/9/03.

Civil Servants	+	Contractors	+	Other	=	Total Center Population	Density (People/Acre)
657		1,528		288		2,473	0.02

* Extracted from the Facilities Utilization Program Report, September 2002.

Stennis Space Center
Best Business Opportunities

Opportunity Name	Description
— Test Stand Marketing	— Stennis markets the use of its test stands to the private sector, or other federal agencies, as stipulated in the Space Act. — Consider increasing this effort to help defray the maintenance and operating costs of these assets
— Army Land Lease	— The Army leases land at Stennis from NASA which it no longer needs. The Army also leases their land to other users — After the Army land reverts to Stennis, NASA could pursue leases with the companies currently leasing from the Army, as well as other private sector users
— Lockheed Martin	— Lockheed Martin currently occupies a building at Stennis — Consider reconstructing Lockheed Martin's lease as an Enhanced-Use Lease (EUL)

SECTION 2: GENERAL MARKET STATISTICS

LOCATION

Stennis Space Center (SSC) located in the southwest corner of the state of Mississippi near the mouth of the East Pearl River, about 68 kilometers (37 miles) northeast of New Orleans, Louisiana. Situated along the lower edge of the Gulf Coastal Plain bordering the Gulf of Mexico, the land surface throughout most of the area is low-lying, nearly flat, heavily wooded, and often a swamp, marsh or wetland. New Orleans is the largest metropolitan area in the region. With a metropolitan-area population of over one million, it serves as an international port for air and sea transportation. Another major metropolitan area is the combined communities of Biloxi and Gulfport, Mississippi, located approximately 36 miles east of SSC. Other major metropolitan areas within 125 miles of SSC include Mobile, Alabama and Baton Rouge, Louisiana.

ECONOMIC / DEMOGRAPHIC INDICATORS

Economic / Demographic Component (County)	Indicators
2001 Population Estimate	44,031
Population % Change, 1990 to 2000	+35.3%
Housing Units, 2000	21,072
Median Value of owner-occupied housing units, 2000	$92,500
Median household money income, 1999	$35,202
Per capita money income, 1999	$17,748
Persons below poverty, percent, 1999	14.4%
Land Area, 2000 (square miles)	477
Persons per square mile, 2000	90.1
Largest Industries	Forest Products

**Extracted from U.S. Census Bureau Quickfacts at quickfacts.census.gov on 2/14/03.*

INTERPRETATION OF MARKET

SSC is in a remote location that is sparsely populated. The market place outside the fence is comprised of very low density, low value highway commercial and agricultural uses. Despite marked population growth over the past ten years, opportunities for value creation at SSC are not supported by market indicators.

SECTION 3: BUSINESS, MISSION, VISION OF THE CENTER

CENTER HISTORY AND OVERVIEW

In October 1961, an historic announcement was made: the federal government had selected an area in Hancock County, Mississippi to be the site of a static test facility for launch vehicles to be used in the Apollo manned lunar landing program.

It was the largest construction project in the state of Mississippi and the second largest in the United States at that time. The Center's primary mission at the onset was to flight certify all first and second stages of the Saturn V rocket for the Apollo program. This program began with a static test firing on April 23, 1966, and continued into the early 1970s.

DESCRIPTION OF MAJOR CURRENT AND POTENTIAL FUTURE PROGRAMS

The John C. Stennis Space Center (SSC) conducts testing and flight certifying rocket propulsion systems for the Space Shuttle and future generations of space vehicles. Because of its important role in engine testing for four decades, Stennis Space Center is NASA's program manager for rocket propulsion testing with responsibility for conducting and/or managing all NASA propulsion test programs.

Stennis Space Center tests all Space Shuttle Main Engines. These high-performance, liquid-fueled engines provide most of the total impulse needed during the shuttle's eight and one-half-minute-flight to orbit. All shuttle main engines must pass a series of test firings at Stennis Space Center prior to being installed in the back of the orbiter.

The Earth Science Applications Directorate is NASA's Program Manager for Earth Science Applications. The Directorate matches NASA's scientific and technical knowledge with issues of national concern and the needs of its partners. Partners include local, state, and tribal governments, commercial industry, with educational institutions and other non-profit institutions. Through the Directorate's co-funded partnerships, public and private sector decision-makers learn how to apply new technologies to critical environmental, resource management, community growth, and disaster management issues. The Directorate also provides the remote sensing community with a comprehensive array of manmade and natural ground targets, measurement systems, and benchmark processes to help test airborne and space remote sensing systems against performance specifications and customer needs.

Stennis Space Center began "re-inventing government" before the concept became popular. Over the years, SSC has evolved into a multiagency, multidisciplinary Center for federal, state, academic and private organizations engaged in space, oceans, environmental programs and the national defense. In addition to NASA, there are 30 other agencies located at Stennis. Of approximately 4,500 employees, about l,600 work in the fields of science and engineering.

These agencies work side by side and share common costs related to infrastructure, facility and technical services, thus making it cheaper for each to accomplish its independent mission at SSC.

SSC – MAJOR RELATIONSHIPS

Relationships and partners are critical in business dealings. Real Property business opportunities are enabled by pairing an opportunity with a partner, and the most likely partners already have relationships with NASA. The following charts describe three major categories of relationships: (1) contractor relationships (can partner with NASA as tenants or Enhanced-Use Leasing partners); (2) university relationships (can partner with NASA as tenants, Enhanced-Use Leasing partners, or outsourcing research partners); and (3) federal agency relationships (can lead to multiple opportunities, including cost sharing and federal campus strategies).

Although in many cases contractor and university relationships exist because NASA is funding the relationships, there also exist opportunities for mutually beneficial Real Property partnerships. It is generally easier to do business based on an existing relationship rather than attempting to forge completely new relationships.

CONTRACTORS

The following is a list of Stennis Space Center's current most active contractors based upon total award value of the contract:

Contractor	**Total Award Value**
Lockheed Martin Space Ops	$309,249,109
Mississippi Space Services	$220,490,062
Boeing North American Inc.	$39,380,825
Earth Satellite Corp	$21,477,500
Industrial Construction Inc	$20,000,000
Praxair Inc	$16,444,548
Air Products & Chemicals Inc	$12,793,361
Omni Cube LLC	$12,292,016
BOC Group Inc	$10,360,304
Digital Globe Inc	$5,000,000
Global Initiatives	$5,000,000
GM&R Construction Co Inc	$4,518,146
Sverdrup Technology Inc	$4,500,000
Taylor Forge Engineered Systems	$4,327,278
Laughlin Environmental Inc	$3,942,552

Paragon Systems Inc	$3,916,463
Tiger Natural Gas Inc	$2,850,992
Fore W C Trucking Corp	$2,827,683
Dresser Equipment Group Inc	$2,533,897
Precision Components Corp	$2,205,957
Starks Contracting Co Inc	$2,006,930

**Extracted from the NASA Procurement Management Database on 3/31/03.*

UNIVERSITIES

The following is a list of Stennis Space Center's current most active university contractors based upon total award value of the contract:

University	**Total Award Value**
Mississippi State University	$20,000,000
Cayuga County Community College	$17,015,400
University of Mississippi	$9,499,986
University of North Dakota	$5,216,700
University of Texas Austin	$3,026,240
University of Southern Mississippi	$2,993,400
University of Maryland College Park	$2,733,023
University of Massachusetts Dartmouth	$2,000,000
Southern University A& M Baton Rouge	$1,915,800
Heritage College	$1,598,007
California State University Dominguez	$1,587,523
University of Kansas	$1,550,000
University of Minnesota Minneapolis-St. Paul	$1,500,000
University of Wisconsin Madison	$1,500,000
Dartmouth College	$1,498,547
Drexel University	$1,464,549

Rochester Institute of Technology	$1,370,001
George Mason University	$1,300,000
University of Miami	$1,200,000

** Extracted from the NASA Procurement Management Database on 3/31/03.*

The following is a list of Stennis Space Center's federal agency relationships based upon the Real Property Inventory database:

Agency
U.S. Geological Survey
Naval Oceanographic Office
Naval Research Laboratory
Environmental Protection Agency
National Data Buoy Center
U.S. Customs
National Marine Fisheries Service

** Extracted from the NASA Real Property Inventory Database list of In-Grants/Out-Grants.*

SECTION 4: INFRASTRUCTURE

LAND AND SITE METRICS

	Total	***% of NASA Portfolio***
Land Area (Acres)	138,801	*38.4%*

** Extracted from the Land Report as of 2003 from the NASA Real Property Inventory Database on 5/9/03.*

FACILITY METRICS

	Number	**Book Value (MMs)**	**2003 CRV (MMs)**
Buildings	189	$129	$400
Other Structures	99	$300	$1,055
Leased Buildings, etc.	5	N/A	$.0002
Total	293	$429	$1,455
% of NASA Portfolio	*4.2%*	*6.5%*	*7.6%*

**Extracted from the NASA Site Summary Report from the NASA Real Property Inventory Database on 5/09/03.*

DEFERRED MAINTENANCE ASSESSMENT RESULTS

An assessment of deferred maintenance was previously prepared for each NASA Center, the results of which are reflected on the chart below. The table indicates the summary of facilities' condition of the Center by the Facilities Condition Index (FCI), developed during deferred maintenance analysis. The table also displays where the Center ranks in comparison to the other NASA Centers in terms of FCI and deferred maintenance as a percentage of CRV. (13 is the highest ranking.) It should be noted that deferred maintenance amount set forth in the chart does not represent what the agency is currently spending. Instead, it demonstrates the amount that would need to be spent to solve the deferred maintenance problem.

2002	**FCI**	**DM**	**BMAR**	**CRV**	**DM(%CRV)**
Deferred Maintenance Assessment	2.9	$264 MM	$80 MM	$1.5 B	17.3%
Rank Among Centers	13	-	-	-	13

** Extracted from Report on the FY02 NASA- Wide Deferred Maintenance Assessment, March 2002.*

UTILITIES SYNOPSIS

The following chart reflects a brief synopsis of the Center's utilities.

Power	Electrical power is generated by Mississippi Power at a plant off-site. Several critical areas have back-up generators of various sizes. SSC has two 35MVA transformers for a total of 70MVA. They transform the voltage from 115KV to 13.8KV
Heating	SSC uses various heating systems, primarily NG boilers, but they are distributed. There is not a central boiler plant.
Cooling	SSC utilizes various cooling systems including: chilled water, split, packaged, etc; water cooled & air cooled. There is not a central chiller plant.
Sewage	SSC processes all sewage on-site using a unique Stennis developed system of water hyacinth lagoons, duck weed finishing ponds, and ultra-violet lights.
Water	Potable water comes from on-site deep wells and is chlorinated at the wells. The make-up water for chilled water systems comes from potable water.

** Extracted from Report on the FY02- NASA- Wide Deferred Maintenance Assessment, March 2002.*

PROPERTY LISTING FROM THE REAL PROPERTY INVENTORY

NASA has an extraordinary database which lists its real property inventory. Although the team found a few anomalies, the database proves to be a reliable metric of the overall real property portfolio that is relatively accurate at the time of this report. A summary of the leased property, including in-grants and out-grants (if any), is shown on the following pages as a baseline for understanding the real property opportunities.

Stennis Facility

In/Out Grant Report

Grant	Reference Number	#	Property Name	Type	Size		Party	Effective Date	Expiration Date	Status
In-Grant		0019	LAND	Permit	4.59	AC	Department of the Army	02/01/2002	01/31/2005	Active
In-Grant		Hanger	Hanger	Lease	3600	SF	Hancock County Port and Harbor Commission	10/01/2000	09/30/2001	Active
In-Grant		TRL-266	E Complex Operations Trailer 266	Lease	2,214	SF	GE Capital Modular Space	12/06/1999	06/01/2002	Active
In-Grant		TRL-267	E Complex Operations Trailer 267	Lease	1440	SF	GE Capital Modular Space	11/10/1999	06/01/2002	Active
In-Grant		TRL-268	E Complex Operations Trailer 268	Lease	1960	SF	GE Capital Modular Space	11/10/1999	06/01/2002	Active
In-Grant		TRL-270	Trailer 270	Lease	1440	SF	Ge Capital Modular Space	07/01/2001	06/01/2002	Active
In-Grant		TRL-271	Trailer 271	Lease	1824	SF	GE Capital Modular Space	07/01/2001	06/01/2002	Active
Out-Grant		0019	LAND	Easement	13.040	AC	State of Mississippi	05/23/1966		Active
Out-Grant		0019	LAND	Easement	3.170	AC	Mississippi Power Company	05/04/1964	05/04/2014	Active
Out-Grant		0019	LAND	Easement	2.200	AC	Mississippi Power Company	10/21/1966	10/21/2018	Active
Out-Grant		0019	LAND	Easement	.820	AC	MS State Highway Dept.	01/17/1969		Active
Out-Grant		0019	LAND	Permit	0	AC	Venture Oil & Gas, Inc.	08/01/2002	10/31/2002	Active
Out-Grant		0019	LAND	Easement	26.44	AC	State of Mississippi	03/06/1967		Active
Out-Grant		0019	LAND	Easement	6.48	AC	United Gas Corporation	12/11/1964		Active
Out-Grant		0019	LAND	Easement	11.52	AC	Tennessee Gas Pipeline	05/19/1965	05/18/2015	Active
Out-Grant		0019	LAND	Easement	3.02	AC	American Telephone & Telegraph	06/17/1981		Active

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Out-Grant		0019	LAND	Easement	.200	AC	Coast Electric Power	06/07/1972	06/06/2022	Active
Out-Grant		0019	LAND	Easement	2.53	AC	Tennessee Gas Pipeline	05/12/1972	05/22/2022	Active
Out-Grant		0019	LAND	Easement	0	AC	AT&T Corp & PF Net Network Services Corp	06/29/2001	06/28/2051	Active
Out-Grant		0019	LAND	Easement	0	AC	Coast Electric Power Association	10/23/1985	10/22/2035	Active
Out-Grant		0019	LAND	Easement	3.03	AC	South MS Electric Power Asso.	09/17/1985	09/16/2035	Active
Out-Grant		0019	LAND	Easement	.14	AC	United Gas Pipeline	11/10/1986		Active
Out-Grant		0019	LAND	Easement	1.00	AC	AT&T	03/30/1987	03/29/2037	Active
Out-Grant		0019	LAND	Easement	0	AC	Bell South Telephone	03/29/1968		Active
Out-Grant		0019	LAND	Permit	3	AC	DOT, Federal Aviation Administration	10/01/1993	09/30/2007	Active
Out-Grant		0019	LAND	Easement	.170	AC	Coast Electric	07/03/1975	07/02/2025	Active
Out-Grant	DACA01-3-03-9225	0019	LAND	Lease	78.40	AC	Hancock County Board of Supervisors	01/15/2003	01/14/2008	Active
Out-Grant		0019	LAND	Permit	6145	AC	Department of the Army	07/07/1978	12/31/2027	Active
Out-Grant		0019	LAND	Lease	60	AC	Mississippi Development Authority	10/31/2000	10/31/2030	Active
Out-Grant		0019	LAND	Permit	4.59	AC	Lockheed Martin Prop, Thermal & Metrology	02/01/2002	01/31/2005	Active
Out-Grant		0019	LAND	Permit	0	AC	Duncan Oil, Inc.	06/01/2002	08/31/2002	Active
Out-Grant		0019	LAND	Easement	.17	AC	Joseph Phillips	06/15/2002	06/14/2007	Active
Out-Grant		0019	LAND	Easement	.17	AC	Brian Grissom	06/15/2002	06/14/2007	Active
Out-Grant		0019	LAND	Easement	0	AC	Mississippi Power Company	03/31/1964		Active

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Out-Grant		0019	LAND	Easement	9.145	AC	Mississippi Power Company	08/04/1999	08/03/2049	Active
Out-Grant		0019	LAND	Easement	5.68	AC	American Telephone & Telegraph	03/30/1964		Active
Out-Grant		0019	LAND	Permit	0	AC	Lewis Oil Corporation	03/15/2002	12/14/2002	Active
Out-Grant		0019	LAND	Easement	3.63	AC	Mississippi State Highway Department	12/21/1965		Active
Out-Grant	DACA01-3-95-9081	0019A	Land (Easement)	Easement	0	AC	Celutel (now Alltel)	12/01/1994	11/30/1999	Active
Out-Grant	DACA01-3-01-9185	0019A	Land (Easement)	Easement	0	AC	Communisite Tower Rentals of America, L.L.C.	07/15/2001	07/14/2006	Active
Out-Grant	DACA01-3-01-9184	0019A	Land (Easement)	Easement	0	AC	Verizon Wireless, Inc.	07/15/2001	07/14/2006	Active
Out-Grant	DA01-076-ENG(NASA)-2957	0019A	Land (Easement)	Easement	0	AC	State Highway Comission of MS	09/22/1965		Active
Out-Grant	DACA01-3-99-9193	0019A	Land (Easement)	Easement	0	AC	Board of Supervisors, Hancock County MS	04/28/1998	04/27/2008	Active
Out-Grant	DACA01-3-02-9207	0019A	Land (Easement)	Easement	0	AC	Verizon Wireless	08/01/2002	07/31/2007	Active
Out-Grant	DA01-076-ENG(NASA)-2884	0019A	Land (Easement)	Easement	0	AC	Southern Bell Telephone & Telegraph Co.	02/17/1965		Active
Out-Grant	DACA01-3-03-9224	0019A	Land (Easement)	Easement	0	AC	Venture Oil & Gas, Inc.	03/01/2003	05/31/2003	Active
Out-Grant	DACA01-9-68-9001	0019A	Land (Easement)	Easement	0	AC	Southern Bell Telephone and Telegraph Company	03/29/1968		Active
Out-Grant	DACA01-3-	0019A	Land (Easement)	Easement	0	AC	Hancock County, MS , Board of	10/15/2002	10/14/2007	Active

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	02-9204						Supervisors			
Out-Grant	DACA01-3-98-9133, Sup. 1	0019A	Land (Easement)	Easement	0	AC	TXI Operations, LP d/b/a Louisiana Aggregates	10/02/1996	10/01/2006	Active
Out-Grant	DACA01-3-99-9142	0019A	Land (Easement)	Easement	0	AC	Mississippi Power Company	08/01/1999	07/31/2024	Active
Out-Grant	DACA01-3-98-9132	0019A	Land (Easement)	Easement		AC	Bellsouth Mobility, Inc.	04/01/1998	03/31/2003	Active
Out-Grant	DACA01-3-97-9124, Sup. 1	0019A	Land (Easement)	Easement	.64	AC	Cellular South Real Estate, Inc.	05/01/1997	04/30/2007	Active
Out-Grant	DACA01-3-96-9122	0019A	Land (Easement)	Easement	0	AC	Cellutel of Biloxi	11/01/1996	10/31/2006	Active
Out-Grant	DACA01-2-94-9065	0019A	Land (Easement)	Easement	0	AC	Mississippi Power Company	04/04/1995	04/03/2045	Active
Out-Grant	DACA01-3-71-9012	0019A	Land (Easement)	Easement	0	AC	State Highway Commission of Mississippi	02/18/1971		Active
Out-Grant	DACA01-3-76-9000	0019A	Land (Easement)	Easement	69.21	AC	State Highway Commission of Mississippi	10/14/1975		Active
Out-Grant	DACA01-3-80-9012, Sup. 4	0019A	Land (Easement)	Easement	0	AC	Kock Gateway Pipeline Company	10/15/1980	10/14/2005	Active
Out-Grant	DACA01-3-94-9062, Sup. 2	0019A	Land (Easement)	Easement	0	AC	Pearl River Basin Development District	11/01/1994	10/31/2004	Active
Out-Grant	DACA01-2-94-9064	0019A	Land (Easement)	Easement	.95	AC	Mississippi Power Company	09/01/1994	08/31/2044	Active
Out-Grant		1100	ADMINISTRATION	Agreement	17219	SF	Naval Oceanographic Office	08/12/1995	06/30/2011	Active

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In/Out Grant Report

			BUILDING							
Out-Grant		1100	ADMINISTRATION BUILDING	Agreement	144	SF	Defense Security Service	12/01/2000	12/01/2005	Active
Out-Grant		1100	ADMINISTRATION BUILDING	Agreement	6030	SF	NOAA/Coastal Data Development Center	06/05/2000	06/05/2005	Active
Out-Grant		1100	ADMINISTRATION BUILDING	Agreement	24927	SF	Department of the Navy (CNMOC)	11/21/1975	06/30/2011	Active
Out-Grant		1100	ADMINISTRATION BUILDING	Agreement	9705	SF	National Data Buoy Center	04/27/1998	04/27/2003	Active
Out-Grant		1103	MISS. TECH. TRANSFER CENTER	Agreement	9802	SF	Center for Higher Learning	10/19/1995		Active
Out-Grant		1103	MISS. TECH. TRANSFER CENTER	Agreement	2,513	SF	National Marine Fisheries	09/03/1998	04/27/2003	Active
Out-Grant		1103	MISS. TECH. TRANSFER CENTER	Agreement	5185	SF	Naval Oceanographic Office	11/21/1975	06/30/2011	Active
Out-Grant		1103	MISS. TECH. TRANSFER CENTER	Agreement	5,461	SF	EPA Gulf of Mexico Program Office	02/08/1999	01/25/2004	Active
Out-Grant		1103	MISS. TECH. TRANSFER CENTER	Agreement	4695	SF	Institute for Technology Development	02/10/1998	02/10/2003	Active
Out-Grant		1103	MISS. TECH. TRANSFER CENTER	Agreement	9,695	SF	Mississippi Enterprise for Technology	12/01/1998	12/01/2003	Active
Out-Grant		1105	ENVIRONMENTAL LABORATORY	Agreement	1247	SF	EPA Gulf of Mexico Program Office	02/08/1999	01/25/2004	Active
Out-Grant		1105	ENVIRONMENTAL LABORATORY	Agreement	2,339	SF	Center for Higher Learning	10/19/1995		Active
Out-Grant		1105	ENVIRONMENTAL LABORATORY	Agreement	11324	SF	Environmental Protection Agency	01/25/1999	01/25/2004	Active

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Out-Grant		1201	COMMUNICATION BUILDING	Permit	4200	SF	OAO Corporation	02/18/1999	02/19/2002	Active
Out-Grant		2203	WAREHOUSE FLAMMABLE MAT. STO. BLDG.	Agreement	944	SF	Environmental Protection Agency	03/17/1999	01/25/2004	Active
Out-Grant		2204	WAREHOUSE BUILDING	Agreement	568	SF	OAO Corporation	02/18/1999	02/19/2002	Active
Out-Grant		2204	WAREHOUSE BUILDING	Agreement	17907	SF	Naval Research Laboratory	08/12/1995	06/30/2011	Active
Out-Grant		2204	WAREHOUSE BUILDING	Agreement	35187	SF	U.S. Geological Survey	03/09/1999	03/09/2004	Active
Out-Grant		2204	WAREHOUSE BUILDING	Agreement	2586	SF	Environmental Protection Agency	01/25/1999	01/25/2004	Active
Out-Grant		2415	ACOUSTICAL VELOCITY TRAINING FAC.	Agreement	83	EA	U.S. Geological Survey	03/09/1999	03/09/2004	Active
Out-Grant		2436	BUTLER COMPLEX OFFICE BUILDING	Agreement	858	SF	Mississippi State University			Active
Out-Grant		2436	BUTLER COMPLEX OFFICE BUILDING	Agreement	1385	SF	Center of Higher Learning			Active
Out-Grant		2437	MAGNETIC OBSERVATORY BLDG	Agreement	1428	SF	Naval Research Laboratory	08/12/1995	06/30/2011	Active
Out-Grant		2438	AIRBORNE ELECTRO-MAG. LAB.	Agreement	2,436	SF	Naval Research Laboratory	08/12/1995	06/30/2011	Active
Out-Grant		3101	SECURITY CONTROL CENTER SOUTH	Agreement	451	SF	MS Technology Transfer Center	12/01/1998	12/01/2003	Active

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Out-Grant		3210	EDUCATION RESEARCH LAB	Agreement	561	SF	Mississippi State University	05/04/1978		Active
Out-Grant		4220	TEST STAND B-1	Agreement	81066	EA	Boeing North American, Inc.	07/20/2000	05/18/2003	Active
Out-Grant		4221	TEST STAND B-2	Agreement	0	EA	Boeing North American, Inc.	07/20/2000	05/18/2003	Active
Out-Grant		4301	TEST COMPLEX OFFICE BLDG	Agreement	510	SF	Boeing North American, Inc.	07/20/2000	05/18/2003	Active
Out-Grant		4995	DATA STORAGE FACILITY	Agreement	3610	SF	Boeing North American, Inc.	07/20/2000	05/18/2003	Active
Out-Grant		8100	INSTRUMENTATION LABORATORY	Agreement	57465	SF	Naval Oceanographic Office	08/12/1995	06/30/2011	Active
Out-Grant		TRL-117	TRAILER 117	Agreement	161	SF	National Marine Fisheries	09/03/1998	04/27/2003	Active
Out-Grant		TRL-134	TRAILER 134	Agreement	722	SF	National Data Buoy Center	04/27/1998	04/27/2003	Active
Out-Grant		TRL-137	TRAILER 137	Agreement	748	SF	National Data Buoy Center	04/27/1998	04/27/2003	Active
Out-Grant		TRL-261	TRAILER 261	Agreement	1420	SF	National Data Buoy Center	04/27/1998	04/27/2003	Active

Stennis Space Center (Tenants)

In/Out Grant Report

Grant	Reference Number	#	Property Name	Type	Size		Party	Effective Date	Expiration Date	Status
Out-Grant		0044	FLOW BASIN/FLOOD PLAIN	Agreement	0	LF	U.S. Geological Survey	03/09/1999	03/09/2004	Active
Out-Grant		1000	DATA HANDLING CENTER	Agreement	32097	SF	Naval Oceanographic Office	08/12/1995	06/30/2011	Active
Out-Grant		1000-B	BOILER ROOM BUILDING	Agreement		MB	Naval Oceanographic Office	08/12/1995	06/30/2011	Active
Out-Grant		1002	OCEANOGRAPHY BLDG.	Agreement	92416	SF	Naval Oceanographic Office	08/12/1995	06/30/2011	Active
Out-Grant		1003	NAVY COMPUTER PROGRAM OPS	Agreement	63968	SF	Naval Oceanographic Office	08/12/1995	06/30/2011	Active
Out-Grant		1005	OCEAN SCIENCE LAB BLDG.	Agreement	62822	SF	Naval Research Laboratory	08/12/1995	06/30/2011	Active
Out-Grant		1006	OCEAN TECH. STAGING FACILITY	Agreement	5001	SF	Naval Research Laboratory	08/12/1995	06/30/2011	Active
Out-Grant		1007	NAVAL OCEANOGRAPHIC PROGRAM BLDG.	Agreement	6927	SF	Naval Research Laboratory	08/12/1995	06/30/2011	Active
Out-Grant		1008	AIR DEFENSE INITIATIVE	Agreement	6409	SF	Naval Research Laboratory	08/12/1995	06/30/2011	Active
Out-Grant		1009	Ocean Research Laboratory	Agreement	46043	SF	Naval Research Laboratory	11/21/1975	06/30/2011	Active
Out-Grant		1020	CHL RESEARCH LABORATORY	Agreement	13830	SF	Center for Higher Learning	08/12/1995	06/30/2011	Active
Out-Grant		1106	EPA GMPO STORAGE FACILITY	Agreement	2,697	SF	EPA Gulf of Mexico Program Office	05/18/1994	01/25/2004	Active

Stennis Space Center (Tenants)

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Out-Grant		1107	CHEMICAL STORAGE BUILDING	Agreement	630	SF	Environmental Protection Agency	06/02/1994	01/25/2004	Active
Out-Grant		1206	CHL CLASSROOM FACILITY	Agreement	4384	SF	Center for Higher Learning	08/12/1995	06/30/2011	Active
Out-Grant		2040	U.S. CUSTOMS BUILDING	Agreement	7032	SF	U.S. Customs	06/12/1998	06/12/2003	Active
Out-Grant		2101	SSC HYDROSCIENCE CENTER	Agreement	36874	SF	U.S. Geological Survey	03/09/1999	03/09/2004	Active
Out-Grant		2406	NAVOCEANO FACILITIES ANNEX A	Agreement	2,240	SF	Naval Oceanographic Office	08/12/1995	06/30/2011	Active
Out-Grant		2408	NAVOCEANO FACILITIES ANNEX B	Agreement	6775	SF	Naval Oceanographic Office	08/12/1995	06/30/2011	Active
Out-Grant		2420	EPA/GMPO CONFERENCE BUILDING	Agreement	1184	SF	U.S. Geological Survey	03/09/1999	03/09/2004	Active
Out-Grant		3150	NDBC Dock Facility	Agreement	392	FB	National Data Buoy Center	09/03/1998	04/27/2003	Active
Out-Grant		3200	MARINE LOGISTICS FACILITY	Agreement	10478	SF	Naval Research Laboratory	08/12/1995	06/30/2011	Active
Out-Grant		3203	OCEANOGRAPHIC BUILDING	Agreement	2657	SF	National Marine Fisheries Service	09/03/1998	04/27/2003	Active
Out-Grant		3203	OCEANOGRAPHIC BUILDING	Agreement	50590	SF	National Data Buoy Center	04/27/1998	04/27/2003	Active
Out-Grant		3203A	NDBC METAL STORAGE BUILDING	Agreement	2,886	SF	National Data Buoy Center	04/27/1998	04/27/2003	Active
Out-Grant		3204	National Data Buoy Storage Facility	Agreement	12053	SF	National Data Buoy Center	04/27/1998	04/27/2003	Active
Out-		320	SYSTEM TEST & DEVELOP	Agree	13,5	S	National Data Buoy Center	04/27/1	04/27/2	Activ

Stennis Space Center (Tenants)

In/Out Grant Report

Grant		5	BLDG.	ment	21	F		998	003	e
Out-Grant		3206	NDBC METAL OFFICE BUILDING	Agreement	1005	SF	National Data Buoy Center	04/27/1998	04/27/2003	Active
Out-Grant		3209	PAINT & SAND BLAST FACILITY	Agreement	1551	SF	National Data Buoy Center	04/27/1998	04/27/2003	Active
Out-Grant		3212	BOILER ROOM @3203	Agreement		MB	National Data Buoy Center	04/27/1998	04/27/2003	Active
Out-Grant		8130	OCEAN SCIENCE STORAGE	Agreement	895	SF	Naval Oceanographic Office	08/12/1995	06/30/2011	Active
Out-Grant		S-1001	NAVY OCEANOGRAPHY BLDG.	Agreement	13452	SF	Naval Oceanographic Office	08/12/1995	06/30/2011	Active
Out-Grant		S-1205	NAVOCEANO GEOPHYSICS DIVISION	Agreement	6461	SF	Commander, Naval Meteorology & Oceanography Command	08/12/1995	06/30/2011	Active

SECTION 5 – OPPORTUNITIES – DESCRIPTIONS, MEASURES, MATRIX

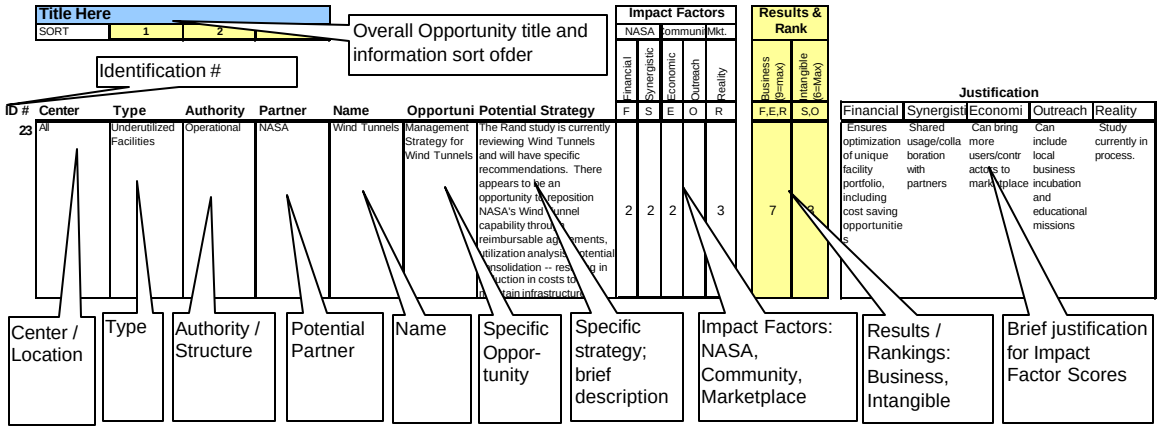
OVERVIEW

The information in this section provides an overview of the opportunities and examples discovered during the review. The opportunities shown here are the ones that were discussed during visits, or are examples of opportunities that became evident during brainstorming sessions.

Although the opportunities are well thought out conceptually, as an opportunity is considered for implementation, a much more detailed business plan should be conducted that looks at each opportunity based on current conditions and market elasticity. The need to develop a business plan for any opportunity cannot be overstated. The business plan needs to take into account the corporate requirement of the asset, the potential benefit to the Agency both economic and other intangibles, and the risks inherent to the Agency, including failure after entering into an opportunity agreement. The business plan should mitigate those risks through a rigorous review and if necessary a due-diligence study of the project. The opportunities are arrayed in a matrix that contains the basic elements of a business plan:

- Center/Location
- Opportunity Type
- Authority/Structure
- Partner
- Name
- Opportunity
- Potential Strategy
- Impact Factors and Results
- Justification

Each category describes an item NASA should consider in its business planning process. Each category is defined below and discussed in more detail through the rest of this report. An example of an opportunity in the matrix is shown below:



OPPORTUNITY TYPE

There are six overall types of Real Property opportunities. Each is summarized in Section 5 and described in more detail in Section 6.

- Underutilized Land Opportunities (including Research Parks, Federal Campus Opportunities, Contractor Parks)
- Underutilized Facilities Opportunities
- Facilities and Asset Management Strategy Opportunities
- Mission or Program Clarification Opportunities
- Restructuring Opportunities
- Utilities Management Opportunities

AUTHORITY / STRUCTURE

The authority category of information includes either the legislative authorities or the types of actions to be contemplated for each opportunity. The primary types of authorities and structures that are outlined in more detail in Section 5 include the following:

- Space Act Agreement
- Enhanced-Use Leasing (EUL)
- CoF

- Divest
- National Historic Preservation Act
- Outside Fence
- Example Opportunities

PARTNERS

Every business agreement has a partner, and this category of information describes some of the current or potential partners NASA could utilize in helping execute its Real Property business opportunities.

NAME

This category lists the 1-3 word project name. In several cases, the team has identified multiple scenarios for a particular building or area of the site; this category world list the same project "name" for all opportunities associated with that building or site. In other cases, similar strategies are being pursued including "marketing", "management", and federal campus ideas; all opportunities that are not building or site specific are given a strategy name.

OPPORTUNITY

The specific opportunities are relatively short descriptions that capture the essence of the opportunities. In several cases, the opportunity names refer to the same opportunity, but the strategy for implementing the opportunity could vary.

POTENTIAL STRATEGY

This section of the matrix captures in a few sentences some of the background and implementation strategies for each opportunity.

MEASUREMENT FILTERS AND FACTORS

There are many factors that need to be considered in order to determine if a particular opportunity is appropriate given all of the stakeholders and implementation structures. This section of the opportunity matrix attempts to measure each opportunity against a standard list of factors. They are broken into three overall categories representing the key stakeholders- NASA, community, and marketplace - and five total factors. The balancing of these factors is important to understand where an opportunity excels or falls short.

NASA impact factors:

Financial and Economic - Quantitative - NASA's financial incentives are to reduce costs or increase revenues, regardless of the impact on NASA's other activities.

Synergistic - Qualitative - The Space Act specifically encourages NASA to collaborate; therefore, over its history, NASA has established partnerships that are synergistic with NASA's goals, regardless of financial gain or expense.

Community impact factors:

Economic Impact - Quantitative - The communities where NASA is located benefit economically from NASA's presence, not only through direct investment, but also by providing jobs and other economic stimulus. This factor reflects the impact that each opportunity has economically on the community.

Outreach Impact - Qualitative - In addition to economic impact, NASA has impact on its community through direct outreach activities, and indirect activities such as bringing a highly educated workforce into the community.

Marketplace factors:

Reality of implementation – The marketplace is a multi-varied yet critical component of this analysis. The marketplace factor includes the speed at which an opportunity can be accomplished; the risk exposure to NASA; the likelihood of finding suitable partners; and the reality that the opportunity could be implemented. Many of these considerations will be at odds with one another.

The measurement system for the impact factors is relatively simple, reflecting the fact that the opportunities were discussed and analyzed on a conceptual level – not in high detail. Each factor is ranked on a "0-3" basis. Therefore the highest score for any one factor is a "3", and the lowest score is a "0". The measurements are translated as follows:

0 = No Impact
1 = Minimal impact
2 = Average impact
3 = High impact

RESULTS AND RANKING

The impact factors by themselves do not provide an understanding of an opportunity's full value. To obtain a better measurement of value at a conceptual level, the scores were added together in two categories:

Business Ranking - NASA financial, community economic impact and marketplace reality factors were added together to estimate the overall "Business" factors that

take economics and marketplace into account. The factors are typically the first factors to be ranked. The highest score for Business Ranking is a "9".

Intangible Ranking - The NASA synergistic and community outreach factors are combined to form the "intangible" factors. Since these factors are important, but much more subjective than the business ranking factors, these factors are ranked after the business ranking factors. The highest score for an Intangible Ranking is a "6".

The justification of each opportunity's individual factor is described briefly in the columns on the right side of the matrix.

"Example" opportunity descriptions are not ranked or described in the justification portion of the matrix. Many of the decisions for Example opportunities were carefully made given information currently available; whether or not the example is currently in the best interest of NASA does not mean that the decision to pursue the opportunity was unwise. Therefore, it is not helpful to score on the example opportunities in hindsight.

5 Stennis Opportunity Matrix

SORT ORDER: Center | Name | Opportunity

ID #	Center	Type	Authority	Partner	Name	Opportunity Name	Potential Strategy	Impact Factors: NASA Financial (F)	NASA Synergistic (S)	Community Economic (E)	Community Outreach (O)	Mkt. Reality (R)	Results & Rank: Business (9=max) (F,E,R)	Intangible (6=Max) (S,O)	Financial	Synergistic	Economic	Outreach	Reality
174	Stennis	Underutilized Land	Space Act	Federal Agency	Army Lease	Army lease - Cancel - Incorporate land in Federal Campus Strategy	The army has a long term lease from NASA in the middle of Stennis that the Army may not need. Cancel the lease with the Army, take over the land, and market to other Federal Agencies, including DoD, to increase the federal tenant mix.	2	1	2	0	1	5	1	Increasing tenants reduce overall costs; but cost associated with Army land appears high	could bring in Agencies with synergies to NASA, or allow for additional resources available to the whole Center and tenants	Expand employment base in an economically challenged area but property not returned to tax rolls	No net impact	Proven business model and systems set up; question is how many more agencies need facilities.
173	Stennis	Underutilized Land	EUL	Private Sector	Army Lease	Army lease - Cancel - market land to Private Sector	Army Land Lease - The army has a long term lease from NASA in the middle of Stennis that they don't need; the army is currently leasing to other companies; NASA could market the land to private sector organizations who require high security; structure agreements through EUL to gain maximum market value, reinvest proceeds to improve Stennis.	3	1	3	0	1	7	1	EUL offers additional revenue potential	Limited, but could bring in companies with synergies to NASA, or allow for additional resources available to the whole Center and tenants	Bring in new business to an economically challenged area	No net impact	Market is not easily identified; requires heavy marketing effort to attract.
175	Stennis	Facilities and Asset Management	Space Act	Army	Army Lease	Army lease - Keep lease - negotiate shared management expenses	Army Land Lease - The Army has a long term lease from NASA in the middle of Stennis; let Army keep the lease, set up management for all of Stennis run by NASA, charge Army for services.	2	1	0	0	2	4	1	Helps reduce overall shared costs; Allows NASA to no incur business risk associated with Canceling lease	Could allow for additional services to be offered to NASA	No net impact	No net impact	Potential to keep lease and increase expense sharing; additional risk is that Army may cancel lease in BRAC round.
177	Stennis	Underutilized Land	Example	Federal Agency	Federal Campus	Federal Campus	Stennis is the best example of a Center that has attracted other Federal agencies to occupy land and buildings. NASA needs to maintain the buffer zone but doesn't need to occupy much of the land, so the federal campus allows NASA to control the land while decreasing overall management costs.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
176	Stennis	Underutilized Land	Space Act	Federal Agency	Federal Campus	Federal Campus	Currently NAVY on site; could add other security conscious agencies, reducing overall operations costs.	2	1	2	0	3	7	1	Cost of maintaining land too low to result in significant impact	Can be synergistic with fed. Agency	Might create non-federal jobs but land not returned to tax rolls	No net impact	Proven business model and systems set up; question is how many more agencies need facilities.
178	Stennis	Restructure	EUL	Lockheed Martin	Lockheed Martin Building	Lockheed Martin Building EUL	NASA currently has a Space Act Agreement with the State of Mississippi, who in turn has an agreement with Lockheed Martin. Restructure agreement with Mississippi and Lockheed Martin as EUL.	3	0	0	0	1	4	0	Positive financial impact for NASA compared to the current lease rate	No additional benefit	No additional benefit	No additional benefit	Agreement might be difficult to restructure.
179	Stennis	Underutilized Land	Example	Lockheed Martin	Lockheed Martin Building	Lockheed Martin Building/Land	Lockheed Martin, working with the State of Mississippi, has built a facility on NASA land. Good example of bringing outside tenants - in this case also a contractor - that need security onto NASA land; ultimately helps reduce costs to NASA.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				

The information shown here is conceptual and not intended for immediate action. A business plan including all business economics, structures, strategies and risks should be evaluated prior to the execution of any opportunity.

5 Stennis Opportunity Matrix

SORT ORDER: Center | Name | Opportunity

ID #	Center	Type	Authority	Partner	Name	Opportunity Name	Potential Strategy	Impact Factors: NASA Financial (F)	NASA Synergistic (S)	Community Economic (E)	Community Outreach (O)	Mkt. Reality (R)	Results & Rank: Business (9=max) (F,E,R)	Intangible (6=Max) (S,O)	Financial	Synergistic	Economic	Outreach	Reality
180	Stennis	Underutilized Land	EUL	Private Sector	Private Secure Campus	Market to security-conscious private companies	Stennis has extensive buffer zone, land holdings, support services, and Federal-level security in place to support it's current activities. Lockheed Martin is already on site; could be additional government contractors or private companies who could build facilities that benefit from high security and lower costs.	3	2	3	0	2	8	2	Can result in revenue generation and cost reduction by having more tenants share fixed expenses	May involve NASA contractors	Increases presence of a major employers in economically depressed areas	No outreach	Stennis is in a unique location, with a unique security environment; may not be easy to convince private sector to relocate; workforce may not be extensive.
181	Stennis	Mission or Program Strategy	Example	NASA	RPTB	Rocket Propulsion Testing Board	The RPTB is a good example of a management group taking responsibility for asset allocation cross-center.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
183	Stennis	Restructure	EUL	Boeing	Test Stand	Boeing Test Stand - EUL	Boeing currently has a 20 year MOU on one of the test stands; encourage Boeing to increase their presence - potentially adding new facilities through EUL - at Stennis.	1	1	0	0	1	2	1	EUL allows potential revenues, but not high competitive demand for leasing the test stand	No additional benefit	No additional benefit	No additional benefit	Agreement might be difficult to restructure.
184	Stennis	Underutilized Land	Example	Boeing	Test Stand	Boeing Test Stand - MOU	Boeing currently has a 20 year MOU on one of the test stands; encourage Boeing to increase their presence - potentially adding new facilities through EUL - at Stennis.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
182	Stennis	Facilities and Asset Management	Operational	NASA	Test Stand	Test Stand Marketing	Stennis currently markets the use of it's test stands; increase the profile of this effort to try to help fund the maintenance and operation of these national assets.	3	3	2	2	3	8	5	Ensures facilities are being marketed to full cost savings potential	Shared usage/collaboration with partners	Can bring more users/contractors to marketplace	Can include educational missions	Board already in place, expand scope

The information shown here is conceptual and not intended for immediate action. A business plan including all business economics, structures, strategies and risks should be evaluated prior to the execution of any opportunity.

REAL PROPERTY OPPORTUNITIES CENTER REPORT: Wallops Flight Facility Wallops Island, VA

CENTER REPORT – Table of Contents

Section 1: Executive Overview (In Briefing format)
- Introduction
- Participants
- Marketplace and Location
- Business, Missions, Vision
- Infrastructure and Population
- Best Business Opportunities

Section 2: General Market Statistics
- Location
- Economic/Demographic Indicators
- Interpretation of Market

Section 3: Business, Mission, Vision of the Center
- Center History and Overview
- Description of Major Current and Potential Future Programs
- Major Relationships (Contractors, Universities, Government)

Section 4: Infrastructure
- Land and Site Metrics
- Facility Metrics and Deferred Maintenance Results
- Utilities Synopsis
- Property Listing from the Real Property Database

Section 5: Opportunities – Descriptions, Measures, Matrix
- Overview and Methodology
- Opportunity Matrix
- Analysis and Observations

REAL PROPERTY OPPORTUNITIES

CENTER REPORT:

Wallops Flight Facility

Wallops Island, VA

Executive Overview

August 1, 2003

Wallops Flight Facility Introduction

Goal of Visit

- Understand WFF-specific issues
- Identify potential real property business alternatives
  - increasing revenues
  - reducing expenses
  - creating organizational improvement / mission enhancement

Schedule

- Research: 1/24/03 – 1/30/03
- Visit: 1/29/03-1/30/03

Wallops Flight Facility Participants

NASA

INTERVIEW

- Dr. John Campbell
- Craig Purdy
- Bruce Underwood
- Bill Phillips
- Peter Turlington
- Todd Winfield, Navy
- Bernie Pagliaro
- Bill Bott
- Steve Wells, Virginia Space Port
- Tom Arceneaux
- Barbara Lusby
- Keith Koehler

COORDINATOR

- William Phillips, NASA WFF

MARKETPLACE

- Sandy Manter

STAUBACH

STAUBACH VISIT

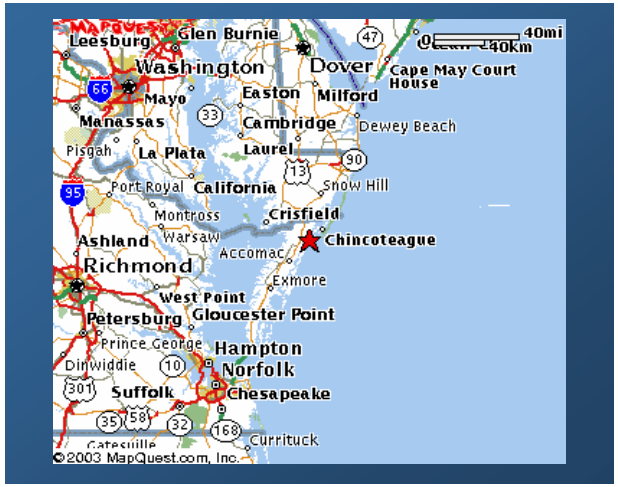
- Kurt Haglund
- Angela Foster
- Skip Orr

STAUBACH RESEARCH

- Don Sapp, Plexus
- Angela Foster
- Steve Ranck
- Cynthia Nunnaly

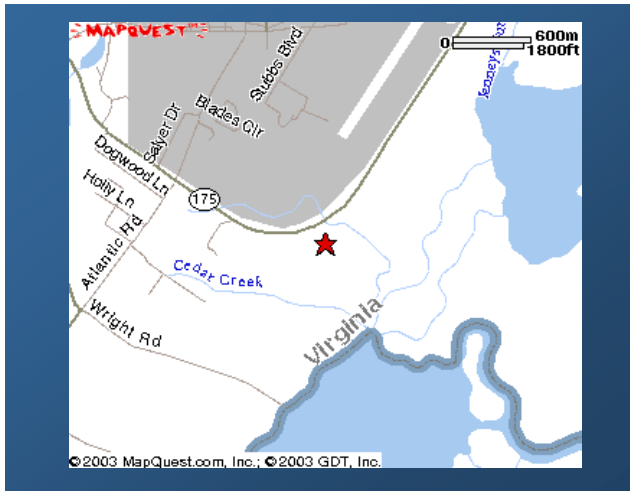
Wallops Flight Facility
Market Place and Location

REGION



- Accomack County Population: 38,414
- Economy: Tourism, Manufacturing
- Low Cost of Living

WFF SUBMARKET



- Sparsely Populated
- Access to Transportation – Fair
- Local Economy: NASA, Navy
- Current Real Property Activity
  - Surrounding area is comprised of very low density development.

Wallops Flight Facility Business, Mission, Vision

- **Earth Science Enterprise (Code Y/ Goddard)**

- **Major Center Activities**
  - Development / Deployment of Suborbital and Small Orbiter Carriers
  - Earth Science Research
  - Mission Services
  - Advanced Technology Development
  - Testing and Operational Support
  - Facilitation of the Commercial Launch Industry

- **Center's Views of Potential Future Activities**
  - Become a National Resource for Enabling Low-Cost Aerospace-based Science and Technology Research

Wallops Flight Facility
Infrastructure and Population Summary

Land	Acres	% Total	% Total of NASA Portfolio
Owned	6,195	100%	1.7%
Easement	0	0%	0%
Leased	0	0%	0%
Permit	0	0%	0%
Public	0	0%	0%
TOTAL	6,195		

* Extracted from the Land Report as of 2003 from the NASA Real Property Inventory Database on 5/9/03.

Structures	Quantity	Book Value	2003 CRV
Buildings	183	$ 66,796,108	$ 200,576,905
Other Structures	467	98,892,043	402,933,793
TOTAL	650	$ 165,688,151	$ 603,510,697

* Extracted from the NASA Site Summary Report from the NASA Real Property Inventory Database on 5/9/03.

Civil Servants	+	Contractors	+	Other	=	Total Center Population	Density (People/Acre)
256		590		31		877	0.1

* Extracted from the Facilities Utilization Program Report, September 2002.

Wallops Flight Facility
Best Business Opportunities

Opportunity Name	Description
— Launch Facilities	— Competition for the use of launch facilities internationally is soft — Coordinate with the Virginia Space Port Authority (VSPA) to market the use of the launch facilities
— Underutilized Land/ Runways	— The air-strip at Wallops is underutilized and costs money to maintain — Consider marketing the air-strip to air freight/ transportation companies — Surrounding land could also be used for distribution warehouses and structured as Enhanced-Use Leases
— Visitors Center	— Develop business plan to combine Visitor's Center, Space Camp, and resort — Take advantage of summer tourism industry to market Space Camp and Visitor's Center — Market training facilities year-round to private sector
— Consolidation of Launch Facilities	— NASA maintains two launch areas at Wallops- the launch area and the main campus — Consider divesting the main campus through sale or EUL and consolidate launch operations at the launch area

SECTION 2: GENERAL MARKET STATISTICS

LOCATION

Wallops Flight Facility (WFF) is located on Virginia's Eastern Shore, approximately 150 miles from Washington, DC and 110 miles from Norfolk, Virginia. Wallops Island is in close proximity to Assateague Island National Seashore. The site is accessible via route 13, which connects with Route 50 to the north and Interstate 64 to the south. Route 50 connects with Washington, DC while Interstate 64 connects with Richmond, Virginia. WFF is comprised of the following land area Wallops Main Base (approx. 1900 acres), Wallops Island (approx. 3000 acres), Wallops Mainland (approx. 100 acres), and Marshland (approx. 1000 acres).

ECONOMIC / DEMOGRAPHIC INDICATORS

Economic / Demographic Component (County)	Indicators
2001 Population Estimate	38,414
Population % Change, 1990 to 2000	+20.8%
Housing Units, 2000	19,550
Median Value of owner-occupied housing units, 2000	$79,300
Median household money income, 1999	$30,250
Per capita money income, 1999	$16,309
Persons below poverty, percent, 1999	18.0%
Land Area, 2000 (square miles)	455
Persons per square mile, 2000	84.1
Largest Industries	Manufacturing, Education, Health, Retail Trade

**Extracted from U.S Census Bureau Quickfacts at quickfacts.census.gov on 2/14/03.*

INTERPRETATION OF MARKET

WFF is in a remote location that is sparsely populated. The market place outside the fence is comprised of very low density, and low value highway commercial and agricultural uses. Despite the significant population growth over the past ten years, opportunities for value creation at WFF are not supported by market indicators.

SECTION 3: BUSINESS, MISSION, VISION OF THE CENTER

CENTER HISTORY AND OVERVIEW

Established in 1945 under NASA`s predecessor, the National Advisory Committee for Aeronautics (NACA), Wallops is one of the oldest launch sites in the world. Built to conduct aeronautical research using rocket-propelled vehicles, Wallops launched its first rocket on July 4, 1945. Since then, it has launched more than 14,000 rockets.

DESCRIPTION OF MAJOR CURRENT AND POTENTIAL FUTURE PROGRAMS

For the Wallops Flight Facility, as a part of Goddard, the overall vision is that:

Wallops Flight Facility will be a national resource for enabling low-cost aerospace-based science and technology research.

Wallops is a national resource for providing low-cost integration, launch and operation of suborbital and small orbital payloads that support space-based research focused on Earth and its environments.

The Wallops Flight Facility mission is to:

Enable scientific research through the development and deployment of low-cost, highly capable suborbital and orbital research/payload carriers and science platform mission services.

Enable aerospace technology and facilitate commercial use of space through advanced technology development, testing, operational support, and facilitation of the commercial launch activity at WFF.

Enable education, outreach and innovative partnerships by providing science and technology educational opportunities, and pursuing innovative partnerships with academia, other government agencies, and industry.

As an operational test site for the next generation of low-cost launch technologies, Wallops supports the commercial development of space technologies and the dissemination of information through educational and outreach programs. It is recognized as a role model for pioneering productive and innovative government, industry and academic partnerships.

WFF – MAJOR RELATIONSHIPS

Relationships and partners are critical in business dealings. Real Property business opportunities are enabled by pairing an opportunity with a partner, and the most likely partners already have relationships with NASA. The following charts describe three major categories of relationships: (1) contractor relationships (can partner with NASA as tenants or Enhanced-Use Leasing partners); (2) university relationships (can partner with NASA as tenants, Enhanced-Use Leasing partners, or outsourcing research partners); and (3) federal agency relationships (can lead to multiple opportunities, including cost sharing and federal campus strategies).

Although in many cases contractor and university relationships exist because NASA is funding the relationships, there also exist opportunities for mutually beneficial Real Property partnerships. It is generally easier to do business based on an existing relationship rather than attempting to forge completely new relationships.

The contractors and universities that are active at Wallops are covered under the Goddard Space Flight Center report.

The following is a list of Wallops Flight Facility federal agency relationships based upon the Real Property Inventory database:

Agency
Naval Sea Systems Command
United States Coast Guard
Naval Surface Warfare Center

**Extracted from the NASA Real Property Inventory Database List of In-Grants/Out-Grants.*

SECTION 4: INFRASTRUCTURE

LAND AND SITE METRICS

	Total	% of NASA Portfolio
Land Area (Acres)	6,195	1.7%

**Extracted from the Land Report as of 2003 from the NASA Real Property Inventory Database on 5/9/03.*

FACILITY METRICS

	Number	Book Value (MMs)	2003 CRV (MMs)
Buildings	183	$67	$201
Other Structures	467	$99	$403
Total	650	$166	$604
% of NASA Portfolio	*12.5%*	*2.5%*	*3.2%*

** Extracted from the NASA Site Summary Report from the NASA Real Property Inventory Database on 5/9/03.*

DEFERRED MAINTENANCE ASSESSMENT RESULTS

An assessment of deferred maintenance was previously prepared for each NASA Center, the results of which are reflected on the chart below. The table indicates the summary of facilities' condition of the Center by the Facilities Condition Index (FCI), developed during deferred maintenance analysis. The table also displays where the Center ranks in comparison to the other NASA Centers in terms of FCI and deferred maintenance as a percentage of CRV. (13 is the highest ranking.) It should be noted that deferred maintenance amount set forth in the chart does not represent what the agency is currently spending. Instead, it demonstrates the amount that would need to be spent to solve the deferred maintenance problem.

2002	FCI	DM	BMAR	CRV	DM(%CRV)
Deferred Maintenance Assessment	3.3	$27.4 MM	$30 MM	$607 MM	5.0%
Rank Among Centers	*11*	-	-	-	*T4*

** Extracted from Report on the FY02 NASA – Wide Deferred Maintenance Assessment, March 2002.*

UTILITIES SYNOPSIS

The following chart reflects a brief synopsis of the Center's utilities.

Power	Electrical Power comes from Connective Power. The on-site substation is 12,470 Volts. There is a 1200 amp switch gear divided by a tie breaker which switches WFF between 2 feeders. WFF also has a 1.1 Megawatt diesel generator on-site.
Heating	There is a central steam plant with 20 boilers on-site. The boilers are fueled by #2 and #6 fuel oil.
Cooling	There is one "loop" with 7 buildings on it. A chiller with cold water. The remaining buildings have their own separate units. The separate units vary widely, direct expansion, chilled water, split system, and package units. Because some buildings have grown over time, they have more than one type of unit in them.
Sewage	"State of the Art" sewage system that is 5 years old. All sewage is pumped from the Island at WFF onto the main land facility at WFF and treated. It is an activated sludge plant.
Water	At the main base there is a ground level tank with 500,000 gal, and 1 120,000 gal high-rise, and 4 deep wells on-site. On the Island at WFF there is 84,000 gal ground level tank and 3 120,000 gal high rise tanks.

**Extracted from Report on the FY02 NASA- Wide Deferred Maintenance Assessment, March 2002.*

PROPERTY LISTING FROM THE REAL PROPERTY INVENTORY

NASA has an extraordinary database which lists its Real Property inventory. Although the team found a few anomalies, the database proves to be a reliable metric of the overall Real Property portfolio that is relatively accurate at the time of this report. A summary of the leased property, including in-grants and out-grants (if any), is shown on the following pages as a baseline for understanding the Real Property opportunities.

Wallops Flight Facility

In/Out Grant Report

Grant	Reference Number	#	Property Name	Type	Size		Party	Effective Date	Expiration Date	Status
In-Grant		8-001	LAND OWNED - WALLOPS STATION	Permit	0	AC	Post Office Department , Chincoteague, VA	08/01/2000	08/01/2005	Active
In-Grant		8-001	LAND OWNED - WALLOPS STATION	Easement	0	AC	C & P Telephone Co. of Virginia	12/20/1960	12/20/2010	Active
In-Grant		8-001	LAND OWNED - WALLOPS STATION	Easement	0	AC	Delmarva Power & L ight Co.	02/22/1985	02/22/2035	Active
In-Grant		8-001	LAND OWNED - WALLOPS STATION	Agreement	0	AC	Department of Interior, U.S. Geological Survey	08/20/1979	08/20/2029	Active
In-Grant		8-001	LAND OWNED - WALLOPS STATION	Easement	0	AC	Delmarva Power & Light Co.	06/23/1981	06/23/2031	Active
In-Grant		8-001	LAND OWNED - WALLOPS STATION	Agreement	0	AC	Aegis Combat Systems (ACSC)	09/24/1987	09/24/2037	Active
In-Grant		8-001	LAND OWNED - WALLOPS STATION	Permit	0	AC	Delmarva Power & Light Co.	02/21/1978	02/21/2022	Active
In-Grant		8-001	LAND OWNED - WALLOPS STATION	Easement	0	AC	Delmarva Power & Light Co.	02/03/1944	02/03/2014	Active
In-Grant		8-001	LAND OWNED - WALLOPS STATION	Agreement	0	AC	Dept of Interior, Bureau of Sport Fisheries and Wildlife	03/11/1981	05/14/2006	Active
In-Grant		8-001	LAND OWNED - WALLOPS STATION	Agreement	0	AC	Delmarva Power & Light Co.	08/06/1954	08/06/2014	Active
In-Grant		8-001	LAND OWNED - WALLOPS STATION	Easement	4.71	AC	Town of Chincoteague	07/17/1982	07/17/2032	Active

Wallops Flight Facility

In/Out Grant Report

In-Grant		8-001	LAND OWNED - WALLOPS STATION	Permit	10.989	AC	Dept of Commerce (NOAA)	06/29/1972	06/29/2022	Active
In-Grant		8-001	LAND OWNED - WALLOPS STATION	Easement	0	AC	Delmarva Power & Light	09/07/1965	09/07/2015	Active
In-Grant		8-001	LAND OWNED - WALLOPS STATION	Easement	0	AC	C & P Telephone Co. of Virginia	10/15/1965	10/15/2015	Active
In-Grant		8-001	LAND OWNED - WALLOPS STATION	Easement	3.27	AC	C & P Telephone Co. of Virginia	02/20/1982	02/20/2032	Active
In-Grant		8-001	LAND OWNED - WALLOPS STATION	Easement	0	AC	C & P Telephone Co. of Virginia	08/05/1964	08/05/2014	Active
In-Grant		8-001	LAND OWNED - WALLOPS STATION	Easement	0	AC	Delmarva Power & Light Co.	02/21/1978	02/21/2028	Active
In-Grant		8-001	LAND OWNED - WALLOPS STATION	Easement	.321	AC	Commonwealth of VA (Department of Transportation)	08/19/1996	08/19/2046	Active
In-Grant		8-001	LAND OWNED - WALLOPS STATION	Permit	0	AC	Naval Sea Systems Command/ACSC	08/06/1999	08/06/2004	Active
In-Grant		8-001	LAND OWNED - WALLOPS STATION	Easement	0	AC	Delmarva Power & Light	07/26/1983	07/26/2033	Active
In-Grant		8-001	LAND OWNED - WALLOPS STATION	Agreement	2.62	AC	Village of Fort Sumner, NM	07/17/1997	07/17/2047	Active
In-Grant		8-001	LAND OWNED - WALLOPS STATION	Agreement	0	AC	National Science Foundation	10/01/1982	10/01/2032	Active
In-Grant		8-001	LAND OWNED - WALLOPS STATION	Permit	0	AC	Marine Science Consortium	04/22/1999	04/22/2009	Active
In-Grant		8-001	LAND OWNED - WALLOPS STATION	Permit	75	AC	United States Coast Guard	01/31/1985	01/31/2015	Active
In-		8-001	LAND OWNED -	Permit	60	A	Aegis Combat Systems Center	03/14/1984	03/14/2014	Active

Wallops Flight Facility

In/Out Grant Report

Grant			WALLOPS STATION			C	(ACSC)			
In-Grant		8-001	LAND OWNED - WALLOPS STATION	Agreement	0	A C	Delmarva Power & Light Co.	10/21/1982	10/21/2032	Active
In-Grant		8-001	LAND OWNED - WALLOPS STATION	Agreement	0	A C	Delmarva Power & Light Co.	06/15/1955	06/15/2015	Active
In-Grant		8-001	LAND OWNED - WALLOPS STATION	Easement	0	A C	Delmarva Power & Light	10/13/1998	10/13/2048	Active
In-Grant		8-002	LAND OWNED - WALLOPS ISLAND	Agreement	0	A C	Naval Surface Warfare Center (NAVSWC)	06/01/1980	06/01/2030	Active
In-Grant		8-002	LAND OWNED - WALLOPS ISLAND	Permit	8.0	A C	Aegis Combat Systems (ACSC)	06/13/1983	03/24/2018	Active
In-Grant		8-002	LAND OWNED - WALLOPS ISLAND	Permit	3.2	A C	Naval Surface Warfare Center (NAVSWC)	11/16/1993	11/16/2023	Active
In-Grant		8-002	LAND OWNED - WALLOPS ISLAND	Agreement	0	A C	VA Commercial Space Flight Authority (VCSFA)	03/04/1997	03/04/2002	Active
In-Grant		8-003	LAND OWNED - WALLOPS ML	Permit	0.6	A C	Naval Surface Warfare Center (NAVSWC)	05/23/1986	05/23/2016	Active
In-Grant		8-003	LAND OWNED - WALLOPS ML	Permit	6.0	A C	Dahlgren Division Naval Surface Warfare Center (NSWCDD)	01/12/2000	01/12/2005	Active

SECTION 5 – OPPORTUNITIES – DESCRIPTIONS, MEASURES, MATRIX

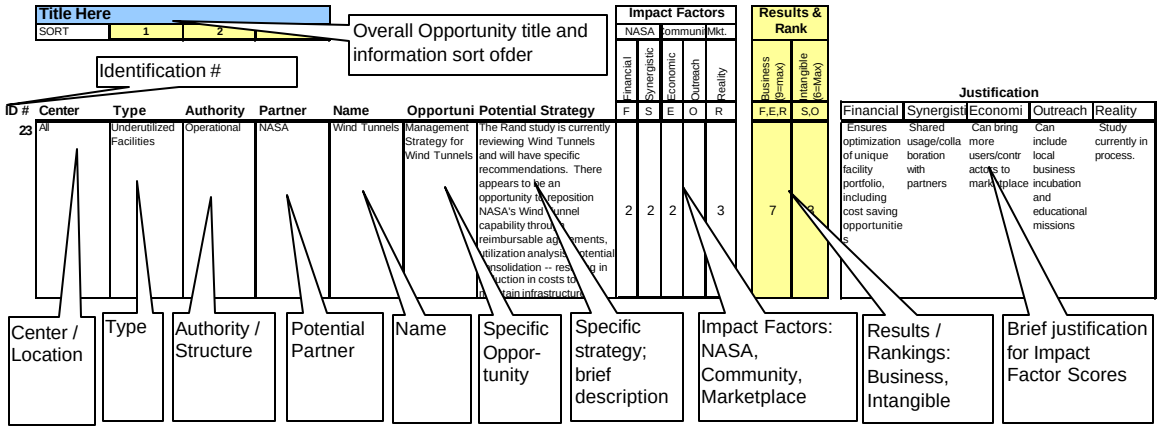
OVERVIEW

The information in this section provides an overview of the opportunities and examples discovered during the review. The opportunities shown here are the ones that were discussed during visits, or are examples of opportunities that became evident during brainstorming sessions.

Although the opportunities are well thought out conceptually, as an opportunity is considered for implementation, a much more detailed business plan should be conducted that looks at each opportunity based on current conditions and market elasticity. The need to develop a business plan for any opportunity cannot be overstated. The business plan needs to take into account the corporate requirement of the asset, the potential benefit to the Agency both economic and other intangibles, and the risks inherent to the Agency, including failure after entering into an opportunity agreement. The business plan should mitigate those risks through a rigorous review and if necessary a due-diligence study of the project. The opportunities are arrayed in a matrix that contains the basic elements of a business plan:

- Center/Location
- Opportunity Type
- Authority/Structure
- Partner
- Name
- Opportunity
- Potential Strategy
- Impact Factors and Results
- Justification

Each category describes an item NASA should consider in its business planning process. Each category is defined below and discussed in more detail through the rest of this report. An example of an opportunity in the matrix is shown below:



OPPORTUNITY TYPE

There are six overall types of Real Property opportunities. Each is summarized in Section 5 and described in more detail in Section 6.

- Underutilized Land Opportunities (including Research Parks, Federal Campus Opportunities, Contractor Parks)
- Underutilized Facilities Opportunities
- Facilities and Asset Management Strategy Opportunities
- Mission or Program Clarification Opportunities
- Restructuring Opportunities
- Utilities Management Opportunities

AUTHORITY / STRUCTURE

The authority category of information includes either the legislative authorities or the types of actions to be contemplated for each opportunity. The primary types of authorities and structures that are outlined in more detail in Section 5 include the following:

- Space Act Agreement
- Enhanced-Use Leasing (EUL)
- CoF

- Divest
- National Historic Preservation Act
- Outside Fence
- Example Opportunities

PARTNERS

Every business agreement has a partner, and this category of information describes some of the current or potential partners NASA could utilize in helping execute its Real Property business opportunities.

NAME

This category lists the 1-3 word project name. In several cases, the team has identified multiple scenarios for a particular building or area of the site; this category world list the same project "name" for all opportunities associated with that building or site. In other cases, similar strategies are being pursued including "marketing", "management", and federal campus ideas; all opportunities that are not building or site specific are given a strategy name.

OPPORTUNITY

The specific opportunities are relatively short descriptions that capture the essence of the opportunities. In several cases, the opportunity names refer to the same opportunity, but the strategy for implementing the opportunity could vary.

POTENTIAL STRATEGY

This section of the matrix captures in a few sentences some of the background and implementation strategies for each opportunity.

MEASUREMENT FILTERS AND FACTORS

There are many factors that need to be considered in order to determine if a particular opportunity is appropriate given all of the stakeholders and implementation structures. This section of the opportunity matrix attempts to measure each opportunity against a standard list of factors. They are broken into three overall categories representing the key stakeholders- NASA, community, and marketplace - and five total factors. The balancing of these factors is important to understand where an opportunity excels or falls short.

NASA impact factors:

Financial and Economic - Quantitative - NASA's financial incentives are to reduce costs or increase revenues, regardless of the impact on NASA's other activities.

Synergistic - Qualitative - The Space Act specifically encourages NASA to collaborate; therefore, over its history, NASA has established partnerships that are synergistic with NASA's goals, regardless of financial gain or expense.

Community impact factors:

Economic Impact - Quantitative - The communities where NASA is located benefit economically from NASA's presence, not only through direct investment, but also by providing jobs and other economic stimulus. This factor reflects the impact that each opportunity has economically on the community.

Outreach Impact - Qualitative - In addition to economic impact, NASA has impact on its community through direct outreach activities, and indirect activities such as bringing a highly educated workforce into the community.

Marketplace factors:

Reality of implementation – The marketplace is a multi-varied yet critical component of this analysis. The marketplace factor includes the speed at which an opportunity can be accomplished; the risk exposure to NASA; the likelihood of finding suitable partners; and the reality that the opportunity could be implemented. Many of these considerations will be at odds with one another.

The measurement system for the impact factors is relatively simple, reflecting the fact that the opportunities were discussed and analyzed on a conceptual level – not in high detail. Each factor is ranked on a "0-3" basis. Therefore the highest score for any one factor is a "3", and the lowest score is a "0". The measurements are translated as follows:

0 = No Impact
1 = Minimal impact
2 = Average impact
3 = High impact

RESULTS AND RANKING

The impact factors by themselves do not provide an understanding of an opportunity's full value. To obtain a better measurement of value at a conceptual level, the scores were added together in two categories:

Business Ranking - NASA financial, community economic impact and marketplace reality factors were added together to estimate the overall "Business" factors that

take economics and marketplace into account. The factors are typically the first factors to be ranked. The highest score for Business Ranking is a "9".

Intangible Ranking - The NASA synergistic and community outreach factors are combined to form the "intangible" factors. Since these factors are important, but much more subjective than the business ranking factors, these factors are ranked after the business ranking factors. The highest score for an Intangible Ranking is a "6".

The justification of each opportunity's individual factor is described briefly in the columns on the right side of the matrix.

"Example" opportunity descriptions are not ranked or described in the justification portion of the matrix. Many of the decisions for Example opportunities were carefully made given information currently available; whether or not the example is currently in the best interest of NASA does not mean that the decision to pursue the opportunity was unwise. Therefore, it is not helpful to score on the example opportunities in hindsight.

5 Wallops Opportunity Matrix

SORT ORDER: Center | Name | Opportunity

ID #	Center	Type	Authority	Partner	Name	Opportunity Name	Potential Strategy	Impact Factors: NASA Financial (F)	NASA Synergistic (S)	Community Economic (E)	Community Outreach (O)	Mkt. Reality (R)	Results & Rank: Business (9=max) (F,E,R)	Intangible (6=Max) (S,O)	Financial	Synergistic	Economic	Outreach	Reality
185	Wallops	Facilities and Asset Management	Divest	Private Sector	Consolidation	Center Consolidation - Wallops move to Launch Facilities	NASA has two locations at Wallops - the launch area, and the main campus. Consider divesting the main campus and use the revenues to consolidate into new operations at the Launch location.	3	0	2	0	0	5	0	Cost saving opportunity through consolidation	Only involves synergy if land divested to partner	Brings more firms/employees to community, but community is economically challenged	No outreach	Low demand could render unfeasible; doesn't currently provide much benefit for the cost of the consolidation.
187	Wallops	Underutilized Facilities	Example	Virginia Space Port	Launch	Launch Facilities	Good example of coordinating with State of Virginia and private sector to help market launch facilities.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
186	Wallops	Underutilized Facilities	Space Act	State of Virginia/Virginia Space Port	Launch	Launch Facilities Marketing	Coordinate with VSPA to market use of launch facilities.	3	3	2	1	2	7	4	Ensures facilities are being marketed to full cost savings potential	Shared usage/collaboration with partners	Can bring more users/contractors to marketplace	Can include educational missions	Marketing infrastructure already in place; current collapse of launch market.
188	Wallops	Underutilized Land	Space Act	Federal Agency	Near highway	Federal Campus	Navy is already there. Using proximity to DC, state of VA support of DOD, training capability, add other federal tenants. Additional tenants could increase training.	2	1	2	0	1	5	1	Cost of maintaining land too low to result in significant impact	Can be synergistic with fed. Agency	Might create non-federal jobs but land not returned to tax rolls	No outreach	Significant fed agency user interest unlikely.
189	Wallops	Facilities and Asset Management	Example	NASA	Real Property Strategy	Master Plan	Although not complete, the Center has a well thought out master plan that will allows it to be prepared to address its future proactively.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
190	Wallops	Facilities and Asset Management	Outside Fence	Private Sector	Research Park	Research park outside Fence	Wallops has a conceptual plan for a research/contractor park outside of fence; develop a detailed marketing strategy to attract university satellites, or contractors; market to increase payload processing/launch activities.	2	3	3	3	2	7	6	Indirect cost savings if users take advantage of payload processing	Brings contractors/partners close to campus	New non-federal jobs/companies in market	Can result in outreach	Market demand difficult to gauge; market for launch facilities saturated.
203	Wallops	Underutilized Land	EUL	Private Sector	Runway	Aircraft Facilities	Consider EUL for Hangars, apron areas, support areas for uses that could co-exist with NASA's periodic mandatory use of runaway.	3	1	3	2	2	8	3	Currently NASA pays for most of the cost of runway activities; this scenario will turn it into a profit center	Could allow for more services to be offered benefiting NASA	The area economically challenged; could bring new non-federal jobs and business	Positive outreach	Would require time and investment to define concept and attract businesses, but possible.
192	Wallops	Underutilized Facilities	Space Act	Federal Agency	Runway	Runway - Federal utilization strategies	Increase Navy use; investigate Homeland Security use of runway to increase utilization.	2	1	2	1	2	6	2	modest cost savings potential	Synergistic uses might be possible	Can increase non-federal jobs	Limited outreach capability	Dependent on users.

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5 Wallops Opportunity Matrix

SORT ORDER: Center | Name | Opportunity

ID #	Center	Type	Authority	Partner	Name	Opportunity Name	Potential Strategy	Impact Factors: NASA Financial (F)	NASA Synergistic (S)	Community Economic (E)	Community Outreach (O)	Mkt. Reality (R)	Results & Rank: Business (9=max) (F,E,R)	Intangible (6=Max) (S,O)	Financial	Synergistic	Economic	Outreach	Reality
191	Wallops	Underutilized Land	EUL	Private Sector	Runway	Runway - Global transportation hub	Consider utilizing the runway for air-based transportation hub; EUL land to warehouse uses; charge for use of air strip.	3	1	3	2	1	7	3	Currently NASA pays for most of the cost of runway activities; this scenario will turn it into a profit center	Could allow for more services to be offered benefiting NASA	The area economically challenged; could bring new non-federal jobs and business	Positive outreach	Would require time and investment to define concept and attract businesses. Could disrupt Wallops mission activities, limiting reality.
194	Wallops	Facilities and Asset Management	Outside Fence	Private Sector	Training	Training Co-locate off-site - Outsource	There are many training / conference facilities available. Consider moving training activities off site (rent as needed) and reduce the facilities specifically associated with Training.	1	0	1	0	2	4	0	Reduction in costs to Wallops but may increase costs to NASA depending upon frequency of renting outside facilities	No synergies	Help other locations, hurt area around Wallops	No benefit	Could happen quickly if necessary.
193	Wallops	Utilities Management	Space Act	Private Sector	Utilities	Utilities	Market capability of water, sewage, steam, cogeneration of steam power, etc to nearby potential users to defray costs.	3	0	1	0	3	7	0	Potential cost reduction; income generation	No Impact	Minimal impact	No impact	Potential users; have been identified.
196	Wallops	Facilities and Asset Management	EUL	Private Sector	Visitors Center	Visitor Center and Summer Space Camp collaboration	Wallops is part of a relatively new Summer Space Camp that has experienced growing success; NASA's Visitor Center is a modest success in the summer, but has access to tourist traffic. Consider negotiating an EUL with partner/investors to build multi-use facilities near the fence in conjunction with a the current or a new Visitors Center. Consider KSC model for re-investment of proceeds into visitor's experience and marketing.	1	1	3	3	2	6	4	Small but positive impact for NASA, could provide creative financing of Visitors Center and reduce required normal investments	Modest creation of synergies	Can boost visitors to area	Positive for community outreach/education	Uncertain about demand, but potential good market dynamics; may be difficult to find investor / partner.
195	Wallops	Facilities and Asset Management	EUL	Private Sector	Visitors Center	Visitors Center / Resort - EUL on NASA land near the Fence	Wallops has a major training facility for NASA. In conjunction with local government and other partners to combine Visitors Center, Space Camp and Resort as an EUL on NASA land near the fence; construct new high-end resort utilizing runway for major visitors. Wallops is near high tourist area in summer; training facility provides stability needed by seasonal business.	2	2	1	3	2	5	5	Measurable revenue generation opportunity	Collaboration with a variety of partners	Enhances tourism/visitors to area	Will foster educational/community outreach	Questionable economic feasibility for partners; resorts are historically difficult to manage; risk for NASA if the venture fails.
197	Wallops	Underutilized Facilities	Space Act	Federal Agency	Training	Training - market as Resort style training	Market use of facilities/land to federal agencies; private sector; consider co-locating with visitor's center.	2	1	3	2	1	6	3	Reduces costs to NASA	Requires NASA share a facility currently dedicated to NASA	Could general new economic activities in a market that needs economic development	Could draw more tourists, offer local education	May not be a strong market to support immediately.

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5 Wallops Opportunity Matrix

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ID #	Center	Type	Authority	Partner	Name	Opportunity Name	Potential Strategy	Impact Factors: NASA Financial (F)	NASA Synergistic (S)	Communi Economic (E)	Communi Outreach (O)	Mkt. Reality (R)	Results & Rank: Business (9=max) (F,E,R)	Intangible (6=Max) (S,O)	Financial	Synergistic	Economic	Outreach	Reality
198	Wallops	Underutilized Facilities	EUL	Federal Agency	Training	Training - market as Resort style training	Market use of facilities/land to federal agencies; private sector; consider co-locating with visitor's center.	2	1	3	2	1	6	3	Reduces costs to NASA	Requires NASA share a facility currently dedicated to NASA	Could general new economic activities in a market that needs economic development	Could draw more tourists, offer local education	May not be a strong market to support immediately.

The information shown here is conceptual and not intended for immediate action. A business plan including all business economics, structures, strategies and risks should be evaluated prior to the execution of any opportunity.

REAL PROPERTY OPPORTUNITIES CENTER REPORT: White Sands Test Facility White Sands, NM

CENTER REPORT – Table of Contents

Section 1: Executive Overview (In Briefing format)
- Introduction
- Participants
- Marketplace and Location
- Business, Missions, Vision
- Infrastructure and Population
- Best Business Opportunities

Section 2: General Market Statistics
- Location
- Economic/Demographic Indicators
- Interpretation of Market

Section 3: Business, Mission, Vision of the Center
- Center History and Overview
- Description of Major Current and Potential Future Programs
- Major Relationships (Contractors, Universities, Government)

Section 4: Infrastructure
- Land and Site Metrics
- Facility Metrics and Deferred Maintenance Results
- Utilities Synopsis
- Property Listing from the Real Property Database

Section 5: Opportunities – Descriptions, Measures, Matrix
- Overview and Methodology
- Opportunity Matrix
- Analysis and Observations

REAL PROPERTY OPPORTUNITIES

CENTER REPORT:

White Sands Test Facility

White Sands, NM

Executive Overview

August 1, 2003

White Sands Test Facility Introduction

Goal of Visit

- Understand WSTF-specific issues
- Identify potential real property business alternatives
  - increasing revenues
  - reducing expenses
  - creating organizational improvement / mission enhancement

Schedule

- Research: 11/23/02 – 11/25/02
- Visit: 12/02/02 – 12/05/02

White Sands Test Facility Participants

NASA

INTERVIEW

- John Bernal
- Richard Von Wolff
- Barry Plante
- Jason Noble
- Robert Mitchell
- Tom Condon
- Mike Kirsch
- Mike Lalla

COORDINATOR

- Tony Cuticchia, NASA HQ
- Perri Fox, NASA JSC

MARKETPLACE

- Las Cruces Chamber of Commerce

STAUBACH

STAUBACH VISIT

- Peter Brohoski

STAUBACH RESEARCH

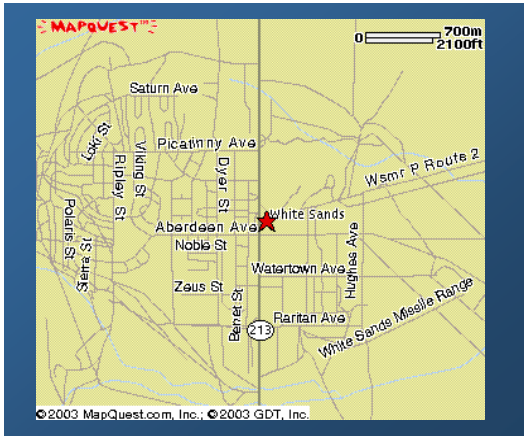
- Don Sapp, Plexus
- Angela Foster
- Peter Brohoski

White Sands Test Facility Market Place and Location

REGION

- Otero County Population: 184,341
  Economy: Agriculture/Dairy, Education
- State University
- Central to USA
- Only 10 Inches of Rainfall Per Year

WSTF SUBMARKET



- Rural
- Access to Transportation - Fair
- Local Economy: NASA, Air Force, DOD
- Current Real Property Activity
  - Surrounding area is comprised of very low density development.

White Sands Test Facility Business, Mission, Vision

- **Space Flight Enterprise (Code M/ Johnson)**
  - All WSTF land under lease from White Sands Missile Range (WSMR)
- **Major Center Activities**
  - Propulsion Test Support for Space Shuttle and Space Station
  - Test Chemical and Physical Properties of Materials
  - Hazards Assessment
  - Launch and Landing Support
  - Tracking and Data Relay Satellite System (TDRSS)
- **Center's View of Potential Future Activities**
  - Test Support for Future NASA Programs

White Sand Test Facility
Infrastructure and Population Summary

Land	Acres	% Total	% Total of NASA Portfolio
Owned	377	0.62%	0.10%
Easement	63	0.10%	0.02%
Leased	0	0%	0%
Permit	54,080	89.19%	14.9%
Public	6,116	10.09%	1.7%
TOTAL	60,636		

* Extracted from the Land Report as of 2003 from the NASA Real Property Inventory Database on 5/9/03.

Structures	Quantity	Book Value	2003 CRV
Buildings	88	$ 21,898,743	$ 66,466,387
Other Structures	74	46,598,460	136,452,460
TOTAL	162	$ 68,497,203	$ 202,918,847

* Extracted from the NASA Site Summary Report from the NASA Real Property Inventory Database on 5/9/03.

Civil Servants	+	Contractors	+	Other	=	Total Center Population	Density (People/Acre)
61		593		1		655	0.01

* Extracted from the Facilities Utilization Program Report, September 2002.

White Sands Test Facility
Best Business Opportunities

Opportunity Name	Description
— Test Stands	— NASA operates and maintains test stands at White Sands — NASA could potentially consolidate its test operations at Stennis and reduce its presence at White Sands
— Land Lease	— NASA leases its land at White Sands from the Army — NASA could substantially reduce its presence at White Sands to reduce costs, while still maintaining critical operations
— Expand Operations	— White Sands consists of a highly secure, remote site with a large buffer area — Redundant mission-critical activities could be consolidated at White Sands to reduce costs at other Centers and take advantage of the secure environment

SECTION 2: GENERAL MARKET STATISTICS

LOCATION

The White Sands Test Facility (WSTF) is located in Dona Ana County, New Mexico within 15 miles of Las Cruces. The land comprising WSTF measures 60,636 acres situated at the southwest portion of the White Sands Missile Range. NASA has use of the land under a Memorandum of Understanding (MOU) agreement with the White Sands Missile Range. The site is accessible via Interstates 25 and 10.

ECONOMIC/DEMOGRAPHIC INDICATORS

Economic/Demographic Component (County)	Indicators
2001 Population Estimate	60,747
Population % Change, 1990 to 2000	+20.0%
Housing Units, 2000	29,272
Median Value of owner-occupied housing units, 2000	$78,800
Median household money income, 1999	$30,861
Per capita money income, 1999	$14,345
Persons below poverty, percent, 1999	19.3%
Land Area, 2000 (square miles)	6,626
Persons per square mile, 2000	9.4
Largest Industries	Military, Agriculture

**Extracted from U.S. Census Bureau Quickfacts at quickfacts.census.gov on 2/14/03.*

INTERPRETATION OF MARKET

WSTF is in a remote location that is sparsely populated. The market place outside the fence is comprised of very low density, low value highway commercial uses. The opportunities for value creation at WSTF are not supported by market parameters.

SECTION 3: BUSINESS, MISSION, VISION OF THE CENTER

CENTER HISTORY AND OVERVIEW

White Sands Test Facility (WSTF), located in southwestern New Mexico, has been a part of the NASA Johnson Space Center since its construction in 1963. Its primary mission is to provide the expertise and infrastructure to test and evaluate spacecraft materials, components, and rocket propulsion systems to enable the safe human exploration and utilization of space.

DESCRIPTION OF MAJOR CURRENT AND POTENTIAL FUTURE PROGRAMS

White Sands Test Facility (WSTF) is a preeminent resource for testing and evaluating potentially hazardous materials, space flight components, and rocket propulsion systems. The primary mission of WSTF is to support NASA's Space Shuttle and Space Station Programs. As the official Johnson Space Center (JSC) Propulsion Systems Development Facility, WSTF's rocket propulsion program is a leader in propulsion systems testing, with unique test expertise in hypergolic propellant handling and training, and is the Shuttle Fleet Leader for testing orbital maneuvering and reaction control subsystems.

WSTF – MAJOR RELATIONSHIPS

Relationships and partners are critical in business dealings. Real property business opportunities are enabled by pairing an opportunity with a partner, and the most likely partners already have relationships with NASA. The following charts describe three major categories of relationships: (1) contractor relationships (can partner with NASA as tenants or Enhanced-Use Leasing partners); (2) university relationships (can partner with NASA as tenants, Enhanced-Use Leasing partners, or outsourcing research partners); and (3) federal agency relationships (can lead to multiple opportunities, including cost sharing and federal campus strategies).

Although in many cases contractor and university relationships exist because NASA is funding the relationships, there also exist opportunities for mutually beneficial real property partnerships. It is generally easier to do business based on existing relationships rather than attempting to forge completely new relationships.

The contractors and university contractors that are active at WSTF are covered under the Johnson Space Center report.

The following is a list of White Sand's federal agency relationships based upon the Real Property Inventory database:

Agency
NONE

**Extracted from the NASA Real Property Database listing of In-Grants/Out-Grants.*

SECTION 4: INFRASTRUCTURE

LAND AND SITE METRICS

	Total	% of NASA Portfolio
Land Area (Acres)	60,636	16.8%

**Extracted from the Land Report as of 2003 from the NASA Real Property Inventory Database on 5/9/03.*

FACILITY METRICS

	Number	Book Value (MMs)	2003 CRV (MMs)
Buildings	88	$22	$66
Other Structures	74	$47	$136
Total	162	$69	$202
% of NASA Portfolio	*3.6%*	*1.0%*	*1.1%*

**Extracted from the NASA Site Summary Report from the NASA Real Inventory Database on 5/9/03.*

DEFERRED MAINTENANCE ASSESSMENT RESULTS

An assessment of deferred maintenance was previously prepared for each NASA Center, the results of which are reflected on the chart below. The table indicates the summary of facilities' condition of the Center by the Facilities Condition Index (FCI), developed during deferred maintenance analysis. The table also displays where the Center ranks in comparison to the other NASA Centers in terms of FCI and deferred maintenance as a percentage of CRV. (13 is the highest ranking.) It should be noted that deferred maintenance amount set forth in the chart does not represent what the agency is currently spending. Instead, it demonstrates the amount that would need to be spent to solve the deferred maintenance problem.

2002	FCI	DM	BMAR	CRV	DM(%CRV)
Deferred Maintenance Assessment	3.4	$ 7.4 MM	$30 MM	$205 MM	5.0%
Rank Among Centers	*T9*	-	-	-	*T4*

** Extracted from Report on the FY02 NASA – Wide Deferred Maintenance Assessment, March 2002.*

UTILITIES SYNOPSIS

The following chart reflects a brief synopsis of the Center's utilities.

Power	All commercial power is from El Paso Electric company, we also have several emergency power generators.
Heating	The majority of the buildings use gas fired boilers for hot water and some of the smaller buildings use gas fired units, gas radiant heat, electric force air and heat pumps.
Cooling	The major buildings use water chillers and smaller buildings use small package refrigeration units. Remote and support buildings are primarily evaporative coolers.
Sewage	The primary sewage is contained in four sewage ponds with two overflow liquid lagoons. Buildings not assessable to the sewage systems use septic tanks with leach lines.
Water	The potable water comes from our own water wells pumped to an million gallon storage tank and then gravity fed back to buildings. The chilled water comes from potable water with additives for cooling towers to reduce scaling.

** Extracted from Report on the FY02 NASA- Wide Deferred Maintenance Assessment, March 2002.*

PROPERTY LISTING FROM THE REAL PROPERTY INVENTORY

NASA has an extraordinary database which lists its Real Property inventory. Although the team found a few anomalies, the database proves to be a reliable metric of the overall Real Property portfolio that is relatively accurate at the time of this report. A summary of the leased property, including in-grants and out-grants (if any), is shown on the following pages as a baseline for understanding the Real Property opportunities.

NASA / JSC / White Sands Test Facility

In/Out Grant Report

Grant	Reference Number	#	Property Name	Type	Size		Party	Effective Date	Expiration Date	Status
In-Grant		900	PUBLIC LAND #3462	Easement	320	AC	BUREAU OF LAND MANAGEMENT	02/25/1987	02/25/2012	Active
In-Grant		900	PUBLIC LAND #3462	Easement	70.8	AC	BUREAU OF LAND MANAGEMENT	07/15/1987	07/14/2012	Active
In-Grant		901	EASEMENT COURT ORDER #5386	Easement	19.70	AC	S. A. & EFFIE WALTER	09/06/1963		Active
In-Grant		902	AGREEMENT DOD NMI 1052-54A	Agreement	0	AC	U.S. ARMY WHITE SANDS MISSILE RANGE	03/18/1981		Active
In-Grant		903	EASEMENT DA-29-005-ENG-3771	Easement	9.09	AC	S. A. & EFFIE WALTER	03/13/1963		Active
In-Grant		904	EASEMENT GRANT #185	Easement	.54	AC	LESLIE J. & ZELDA S. BYRON	05/28/1963		Active
In-Grant		905	EASEMENT PERMIT #RW-15641	Easement	18.18	AC	STATE OF NEW MEXICO	02/25/1963		Active
In-Grant		906	EASEMENT AMENDED #RW-15641	Easement	2.68	AC	STATE OF NEW MEXICO	05/28/1963		Active
In-Grant		907	EASEMENT PERMIT #RW-15710	Easement	12.13	AC	STATE OF NEW MEXICO	06/27/1963		Active
In-Grant		908	AGRMNT BUFFER ZONE DACA47-9-78-141	Agreement	4707.13	AC	BUREAU OF LAND MANAGEMENT	01/26/1978		Active
In-Grant		909	NORTHRUP STRIP SUPPORT SERVICES (HAFB)	Agreement	0	AC	U.S. AIR FORCE	03/19/1992	06/01/1998	Active
Out-Grant		902	AGREEMENT DOD NMI 1052-54A	Easement	0	AC	ORGAN WATER AND SEWAGE ASSN.	07/19/1995		Active

NASA / JSC / White Sands Test Facility

In/Out Grant Report

Out-Grant		902	AGREEMENT DOD NMI 1052-54A	Agreement	49	AC	WHITE SANDS MISSILE RANGE / GODDARD SPACE FLIGHT CENTER	08/29/1986	02/10/2003	Active
Out-Grant		902	AGREEMENT DOD NMI 1052-54A	Agreement	0	AC	U.S. AIR FORCE	05/30/1989		Active
Out-Grant		902	AGREEMENT DOD NMI 1052-54A	Agreement	18.75	AC	U.S. AIR FORCE	08/19/1994	08/19/2004	Active
Out-Grant		902	AGREEMENT DOD NMI 1052-54A	Easement	0	AC	U.S. WEST COMMUNICATIONS	07/18/1989		Active
Out-Grant		902	AGREEMENT DOD NMI 1052-54A	Agreement	0	AC	GODDARD SPACE FLIGHT CENTER	01/10/1986	11/30/1998	Active

SECTION 5 – OPPORTUNITIES – DESCRIPTIONS, MEASURES, MATRIX

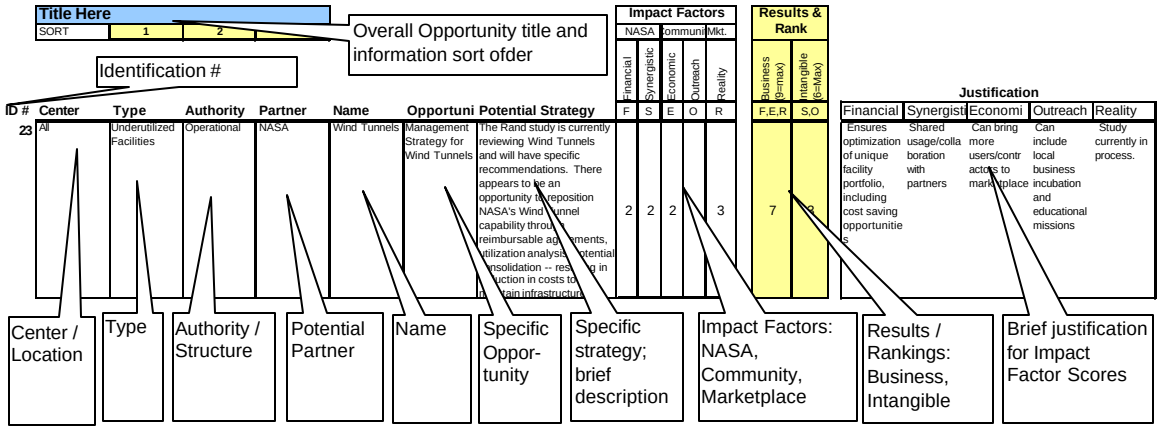
OVERVIEW

The information in this section provides an overview of the opportunities and examples discovered during the review. The opportunities shown here are the ones that were discussed during visits, or are examples of opportunities that became evident during brainstorming sessions.

Although the opportunities are well thought out conceptually, as an opportunity is considered for implementation, a much more detailed business plan should be conducted that looks at each opportunity based on current conditions and market elasticity. The need to develop a business plan for any opportunity cannot be overstated. The business plan needs to take into account the corporate requirement of the asset, the potential benefit to the Agency both economic and other intangibles, and the risks inherent to the Agency, including failure after entering into an opportunity agreement. The business plan should mitigate those risks through a rigorous review and if necessary a due-diligence study of the project. The opportunities are arrayed in a matrix that contains the basic elements of a business plan:

- Center/Location
- Opportunity Type
- Authority/Structure
- Partner
- Name
- Opportunity
- Potential Strategy
- Impact Factors and Results
- Justification

Each category describes an item NASA should consider in its business planning process. Each category is defined below and discussed in more detail through the rest of this report. An example of an opportunity in the matrix is shown below:



OPPORTUNITY TYPE

There are six overall types of Real Property opportunities. Each is summarized in Section 5 and described in more detail in Section 6.

- Underutilized Land Opportunities (including Research Parks, Federal Campus Opportunities, Contractor Parks)
- Underutilized Facilities Opportunities
- Facilities and Asset Management Strategy Opportunities
- Mission or Program Clarification Opportunities
- Restructuring Opportunities
- Utilities Management Opportunities

AUTHORITY / STRUCTURE

The authority category of information includes either the legislative authorities or the types of actions to be contemplated for each opportunity. The primary types of authorities and structures that are outlined in more detail in Section 5 include the following:

- Space Act Agreement
- Enhanced-Use Leasing (EUL)
- CoF

- Divest
- National Historic Preservation Act
- Outside Fence
- Example Opportunities

PARTNERS

Every business agreement has a partner, and this category of information describes some of the current or potential partners NASA could utilize in helping execute its Real Property business opportunities.

NAME

This category lists the 1-3 word project name. In several cases, the team has identified multiple scenarios for a particular building or area of the site; this category world list the same project "name" for all opportunities associated with that building or site. In other cases, similar strategies are being pursued including "marketing", "management", and federal campus ideas; all opportunities that are not building or site specific are given a strategy name.

OPPORTUNITY

The specific opportunities are relatively short descriptions that capture the essence of the opportunities. In several cases, the opportunity names refer to the same opportunity, but the strategy for implementing the opportunity could vary.

POTENTIAL STRATEGY

This section of the matrix captures in a few sentences some of the background and implementation strategies for each opportunity.

MEASUREMENT FILTERS AND FACTORS

There are many factors that need to be considered in order to determine if a particular opportunity is appropriate given all of the stakeholders and implementation structures. This section of the opportunity matrix attempts to measure each opportunity against a standard list of factors. They are broken into three overall categories representing the key stakeholders- NASA, community, and marketplace - and five total factors. The balancing of these factors is important to understand where an opportunity excels or falls short.

NASA impact factors:

Financial and Economic - Quantitative - NASA's financial incentives are to reduce costs or increase revenues, regardless of the impact on NASA's other activities.

Synergistic - Qualitative - The Space Act specifically encourages NASA to collaborate; therefore, over its history, NASA has established partnerships that are synergistic with NASA's goals, regardless of financial gain or expense.

Community impact factors:

Economic Impact - Quantitative - The communities where NASA is located benefit economically from NASA's presence, not only through direct investment, but also by providing jobs and other economic stimulus. This factor reflects the impact that each opportunity has economically on the community.

Outreach Impact - Qualitative - In addition to economic impact, NASA has impact on its community through direct outreach activities, and indirect activities such as bringing a highly educated workforce into the community.

Marketplace factors:

Reality of implementation – The marketplace is a multi-varied yet critical component of this analysis. The marketplace factor includes the speed at which an opportunity can be accomplished; the risk exposure to NASA; the likelihood of finding suitable partners; and the reality that the opportunity could be implemented. Many of these considerations will be at odds with one another.

The measurement system for the impact factors is relatively simple, reflecting the fact that the opportunities were discussed and analyzed on a conceptual level – not in high detail. Each factor is ranked on a "0-3" basis. Therefore the highest score for any one factor is a "3", and the lowest score is a "0". The measurements are translated as follows:

0 = No Impact
1 = Minimal impact
2 = Average impact
3 = High impact

RESULTS AND RANKING

The impact factors by themselves do not provide an understanding of an opportunity's full value. To obtain a better measurement of value at a conceptual level, the scores were added together in two categories:

Business Ranking - NASA financial, community economic impact and marketplace reality factors were added together to estimate the overall "Business" factors that

take economics and marketplace into account. The factors are typically the first factors to be ranked. The highest score for Business Ranking is a "9".

Intangible Ranking - The NASA synergistic and community outreach factors are combined to form the "intangible" factors. Since these factors are important, but much more subjective than the business ranking factors, these factors are ranked after the business ranking factors. The highest score for an Intangible Ranking is a "6".

The justification of each opportunity's individual factor is described briefly in the columns on the right side of the matrix.

"Example" opportunity descriptions are not ranked or described in the justification portion of the matrix. Many of the decisions for Example opportunities were carefully made given information currently available; whether or not the example is currently in the best interest of NASA does not mean that the decision to pursue the opportunity was unwise. Therefore, it is not helpful to score on the example opportunities in hindsight.

5 White Sands Opportunity Matrix

SORT ORDER: Center | Name | Opportunity

ID #	Center	Type	Authority	Partner	Name	Opportunity Name	Potential Strategy	Impact Factors: NASA Financial (F)	NASA Synergistic (S)	Communi Economic (E)	Communi Outreach (O)	Mkt. Reality (R)	Results & Rank: Business (9=max) F,E,R	Intangible (6=Max) S,O	Financial	Synergistic	Economic	Outreach	Reality
199	White Sands	Mission or Program Strategy	Operational	NASA	Consolidation	Expand operations in low cost, high security location	Review mission - critical activities that may be redundant throughout NASA. Consider moving the activities to White Sands to reduce costs at other centers and to provide protection that White Sands affords through it's location.	2	2	1	0	2	5	2	Cost savings through space utilization/consolidation	Can improve operations/ facilities for contractors	Communities can both gain or lose jobs	No community outreach	Political challenges for NASA.
201	White Sands	Mission or Program Strategy	Example	NASA	Consolidation	Low cost operations, high security	Example of locating NASA operations in an area of the country that is not easily accessible, allowing NASA to protect certain investments at lower cost than locating them in higher cost, higher visibility areas.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
200	White Sands	Facilities and Asset Management	Divest	Army	Consolidation	Return to Army, rent facilities as needed	NASA leases the land from the Army. Maintain critical operations, but substantially reduce presence at White Sands to reduce costs.	2	0	0	0	1	3	0	Measurable cost savings	Not relevant to synergies	Possible reduction of non-federal jobs	No impact on outreach	Political challenge for NASA.
202	White Sands	Facilities and Asset Management	Divest	NASA	Test Stand	Test stands - Move to Stennis	Consider moving the large scale test stands to Stennis.	2	2	1	0	2	5	2	Cost savings through utilization/consolidation	Can improve operations/ facilities for contractors	Communities can both gain or lose non-federal jobs/ contractors	No community outreach	Political challenges for NASA.

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SECTION 8 – NASA-WIDE OPPORTUNITIES

OVERVIEW

Although each of NASA's Centers is unique in its development, mission and location, there are a number of opportunities that can be incorporated at every Center or on an agency-wide basis. Therefore, a copy of the opportunity matrix (sorted by the "all" category) is set forth in this section to provide an overview of these opportunities.

Section 8- Opportunity Matrix - Agency Wide (All)

SORT ORDER: Center | Name | Opportunity

ID #	Center	Type	Authority	Partner	Name	Opportunity Name	Potential Strategy	Impact Factors: NASA Financial (F)	NASA Synergistic (S)	Community Economic (E)	Community Outreach (O)	Mkt. Reality (R)	Results & Rank: Business (9=max) (F,E,R)	Intangible (6=Max) (S,O)	Financial	Synergistic	Economic	Outreach	Reality
2	All	Underutilized Land	Divest	Private Sector	Consolidation	Define Center Real Property Requirements - Divest remaining land	Keep only the areas of each Center that are required for NASA's core operations, and divest unused area through 1)special legislation that allows NASA to renovate its facilities through revenues received from divestment or 2)divest through GSA relocation plan, or 3)give to local municipalities (to reduce costs). Potential strategy: identify 1)core center area 2)EUL or "hold" Research/tech transfer/partnering park, 3)Divest remaining area.	3	3	3	2	2	8	5	Achieves significant revenue and/or cost savings	Can bring contractors, universities, etc in close proximity to NASA	Property returned to tax rolls, increased university presence, increased non-federal jobs, land returned to community	Community can benefit from new land planning (parks, etc	Political challenges for NASA but high reward; NASA give up long term use of land.
1	All	Underutilized Land	EUL	Private Sector	Consolidation	Define Center Real Property Requirements - Ground Lease remaining land	Identify the core area of every Center; move fence line in to core area; maintain land ownership for potential future need but look for opportunities to re-utilize land in the mean time. Consider EUL according to highest and best use - including everything from commercial development to agriculture.	3	3	3	2	3	9	5	Achieves revenue and/or cost savings that can be redeployed into improving facilities; maintains long term ownership of land to protect NASA's future interests	Can bring contractors, universities, etc in close proximity to NASA	Property returned to tax rolls, increased university presence, increased non-federal jobs, land returned to community	Community can benefit from new land planning (parks, etc	Political challenges for NASA but high reward and NASA retains land. Risk is that if EUL'ed property development fails, NASA may need to take over development.
3	All	Facilities and Asset Management	Operational	NASA	Consolidation	Divest NASA leased space agency-wide	Review NASA leased space agency-wide to determine if the leased operations can be moved to a Center that can accommodate the space and requirements. Space planning and utilization can help reduce leased space.	3	2	0	0	2	5	2	NASA can reduce costs by implementing enterprise wide space utilization	Will bring more people/partners on campus	Net loss; communities lose leased space	Not relevant	Possibly require program shifts, strong cross-center collaboration.
4	All	Mission or Program Strategy	Operational	NASA	Consolidation	Mission Clarification - Enterprise activities	Review NASA from an Enterprise perspective - prior to impact of full cost accounting - to have enterprises help determine opportunities to streamline overall operations and reduce potential duplications or inefficiencies across centers, resulting in opportunity to reduce infrastructure.	3	2	1	1	1	5	3	Removing mission/goal duplications will result in cost savings on infrastructure	Coordinated pursuit of mission/goals will foster relationships with universities/contractors, but might hurt some	Net gain to some communities while others might have net loss	Enhanced mission/goal coordination should enhance outreach	Political challenges for NASA.
5	All	Mission or Program Strategy	Operational	NASA	Consolidation	Mission Clarification - Logistics/ Manufacturing	Review NASA operations with goal of streamlining manufacturing-type operations and reduce potential duplications or inefficiencies across centers, resulting in opportunity to reduce infrastructure.	3	1	1	1	1	5	2	Cost savings on infrastructure	Minimal effect on contractors	Small net positive - some communities gain, others lose	Minimal effect on community outreach	Political challenges for NASA.
6	All	Underutilized Facilities	Operational	NASA	Demolition	Demolition	At many Centers, The Team was told that there are buildings that would be good candidates for demolition, but the Centers would prefer to spend scarce funds on construction or renovation rather than demolition. Commission a study to identify the structures to be demolished including development of an ROI for demolition (cost to maintain VS cost to demolish). Demolition can free land that can be addressed through the master plan.	2	2	2	1	2	6	3	Net cost to implement, qualitative improvement, long term cost savings	Creates better working facilities and atmosphere for partners	Demolition contracts for local construction	Enhances campus for outreach activities	Achievable, but still involves competition for annual funds

Section 8- Opportunity Matrix - Agency Wide (All)

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7	All	Underutilized Land	Space Act	Federal Agency	DoD collocation	Engage in active discussions prior to DoD BRAC process	The Department of Defense is preparing for a Base Relocation and Closure process to begin within the next couple of years. NASA's mission specifically encourages cooperation with the military. Engage in discussions with DoD to understand how NASA can take on additional tenants through the DoD BRAC process.	2	1	2	0	1	5	1	Spreading costs among multiple tenants helps lower NASA's costs	Can be synergistic with some DoD activates; may offer additional services, employee benefits that couldn't be afforded normally	Might bring new jobs to a community, but at expense of another community; land not returned to tax rolls	No outreach	Difficult to predict outcomes of highly political BRAC process.
8	All	Underutilized Land	Space Act	Federal Agency	Federal Campus	Federal Campus	NASA has large tracts of land at almost every Center. DoD and other agencies similarly have large tracts of land, but NASA is potentially unique in that it is a civilian Agency. Consider marketing facilities and land to other federal agencies through Space Act Agreements; establish cost-sharing agreements to reduce costs to all tenants, including NASA.	2	2	2	0	2	6	2	Spreading costs among multiple tenants helps lower NASA's costs	Can be synergistic with some Agencies; may offer additional services, employee benefits that couldn't be afforded normally	Might bring new jobs to a community, but at expense of another community; land not returned to tax rolls	No outreach	Most likely if other agencies are forced to move for security reasons; or if other agencies go through consolidation.
9	All	Facilities and Asset Management	Historic Preservation Act	NASA	Historic Review	Historic review - Historic Districts and Building-by-Building	Conduct an agency-wide historic review to determine 1)potential for Ames-type historic districts with private sector, and 2)determine strategy for specific buildings and 3)review for consistency with the Executive Order governing historic structures.	2	3	1	0	2	5	3	NASA can reinvest proceeds of leases into facilities, thereby renovating the facilities at little net cost to NASA; helps reduce CoF requirements, but not substantial financial gain	Helps NASA maintain it's important heritage facilities for future generations; potential synergies created by bringing partners/contractors "on-campus"	Can result in increased non-federal jobs within municipality	Limited outreach	This opportunity calls for a study of the potential; the study is straightforward, the potential for multiple income-generating opportunities is less likely.
10	All	Underutilized Facilities	Operational	NASA	Launch	Launch Facilities	The Team was told that there is an international glut of launch facilities. Determine which launch assets are critical; market for reimbursable agreement, EUL or consider consolidation. Enter into Public Private Partnerships to help market capabilities wherever appropriate (i.e. KSC, Wallops)	2	2	2	1	2	6	3	Cost savings/revenue generation for expensive facilities	Partners/contractors share facilities	Brings more contractors/users to community	Creates minimal educational outreach	NASA can create or outsource for more aggressive marketing and coordination; the market is currently saturated
11	All	Facilities and Asset Management	Operational	Private Sector	Machine Shops	Outsource Machine Shops	NASA needs machine shops which NASA pays to operate and maintain; review strategies for outsourcing by Center and cross-center (few or multiple outsourcing contracts). Strategies could include eliminating machine shops inside the fence, or forming EUL of on-Center machine shops. There could be potential cost savings by bundling machine shop contracts cross-Center.	2	0	1	0	2	5	0	Can save money but might not be considered high impact R3	No relative	Provides some positive impact to local vendor firms	Not relative	Study is Achievable, but success of outsourcing is highly dependent on willing contractors.

Section 8- Opportunity Matrix - Agency Wide (All)

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14	All	Facilities and Asset Management	Operational	Private Sector	Management	Outsourcing - Office Space Creative strategy	Turn over complete facilities and asset management responsibilities for office space to private contractors. Facilities management contracts are in place at many centers (i.e. JSC, KSC), but currently focus on maintenance. Establish more encompassing contracts that include items normally covered in some discrete and minor CoF funding items.	3	1	1	0	1	5	1	If achievable, can reduce CoF funding and enhance condition of facilities. Single-sourcing contracts can also reduce overall management costs.	Potentially a better work environment	No economic impact on community	No community outreach	Achievable; but difficult gaining contracting authority and OMB scoring; potential to include capital repairs and replacement is questionable.
12	All	Facilities and Asset Management	Operational	NASA	Management	Real Property Management Group	NASA operates in a decentralized management structure; NASA's real estate in almost all locations is in the midst of change due to it's age and condition. Not all Center's have the real estate expertise required to implement complex real estate projects. Consider strengthening NASA's HQ real estate group's ability to manage real estate expertise to each Center's activities. This effort is particularly acute for regulatory issues including EUL and Space Act agreements.	3	0	0	0	3	6	0	NASA can create significant savings through more coordinated control over space utilization, prioritization of CoF funding, EUL opportunities, etc.	Limited	Limited	Limited	Increased centralization of facilities and real estate management should be achievable.
13	All	Facilities and Asset Management	Operational	NASA	Management	Unique Infrastructure Management Plans	NASA has several types of unique facilities which are national or international assets; many of the facilities are old, and often they are very expensive to maintain and operate. Consider establishing cross-Center management boards, like the Test Stand Board, for all major infrastructure assets. To help insure NASA costs are to a realistic level managed.	2	2	1	0	2	5	2	Helps NASA reduce expenses by increasing utilization of unique facilities.	Some potential synergy with users	Little economic benefit to community if users stay in hotels, etc.	No community outreach	Achievable, but not easy to implement in decentralized organization.
15	All	Facilities and Asset Management	Space Act	Contractors	Marketing	Marketing - increase incentives and support for marketing unique assets	NASA's operational strategy is to have contractors heavily supporting NASA's activities, and often these contractors help operate major facilities. Provide a coordinated marketing plan and incentives to contractors to encourage them to heavily market NASA's unique assets to public and private organizations as a way of cost reduction.	3	2	2	1	2	7	3	Helps NASA reduce expenses by increasing utilization of unique facilities; reduces costs of mothballing then re-starting facilities	Some potential synergy with users; could increase collaborative efforts	If utilization rises, local economies will benefit through additional activity	Limited, but better awareness of capabilities in community	NASA's facilities are well-known to some organizations that need similar facilities, but the marketing of facilities could increase utilization.
16	All	Underutilized Facilities	EUL	Private Sector	Marketing - Contractor EUL	Market EUL program to Contractors, encourage creativity	Overall NASA has underutilized land and facilities; Enhanced- Use Leasing (EUL) allows NASA to enter specifically into agreements to increase utilization. Many of NASA's contractors are scrutinizing their own cost / facilities structures, and may be interested in entering into EUL agreement for mutually beneficial cost reductions. Consider actively marketing the EUL program to existing Contractors.	3	3	2	1	3	8	4	Results in increased generation of EUL opportunities	Strengthens collaboration with partners	Can solidify contractors/partners in market and bolster presence, can make it more difficult for new contractors to get work from NASA	No outreach	Marketing program should be easy to develop by NASA.

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17	All	Mission or Program Strategy	Operational	Private Sector	Outsource	Outsourcing of Research Activities - NAS model	Mission clarification of Research - oriented centers with goal of pushing research activities into the academic community; may result in university-oriented FFRDC's. Essentially reduces NASA infrastructure needs; allows research program funds be directed to research institutions that successfully win NASA research contracts; enables NASA to benefit from private sector expertise.	2	3	3	3	0	5	6	Significant cost savings potential on infrastructure, although programmatic costs will increase	Increases collaboration with partners	Non-federal jobs/Revenue pushed to private sector	Educational outreach significantly enhanced	Would call for a significant policy shift for NASA; NASA currently requires a lot of land a facilities to accommodate current and potential future activities that can't be fully predicted.
18	All	Facilities and Asset Management	Operational	NASA	Real Property Strategy	Master plans and Economic Phasing	NASA's Centers have completed Master Plans for their facilities for many years; many of the older plans focused on describing existing conditions while some of the newer plans focus on guiding development in the future. Some of the Centers have current Master Plans, and others are more dated. The Master Plans help inform long-term decisions about investment and cost reduction opportunities, ultimately allowing NASA to make strategic investment decisions. Consider establishing a consistent process and system for developing center-specific and cross-center master plans that encompass Center, Enterprise and Real Estate goals.	2	3	0	0	3	5	3	Correlating real estate strategy to a master plan can help achieve savings over the long term in that it optimizes space utilization. One detriment, however, might be that NASA may not be R1able to adhere to the plans, given budget constraints	Should increase Center efficiency	Limited, but may incorporate local needs	Limited, but may incorporate local needs	Establishment of a coordinated master planning strategy should be achievable.
19	All	Facilities and Asset Management	EUL	Contractors	Renovation by Partnership	On-Center office buildings - EUL	NASA's contractors often would prefer to be inside the fence line. Review occupancy of facilities; if facilities have mostly contractor occupants, and if the contractor population is expected to remain steady, consider EUL to contractor or private sector investor of the specific facility, regardless of proximity to fence line.	3	3	1	0	2	6	3	NASA can generate revenue through EUL and reduce required CoF spending	Contractors/Partners are brought "on-campus"	Maintains non-federal jobs in locality but may hurt local development, property taxes	No outreach to community	Achievable at some centers, may call for policy shift.
20	All	Facilities and Asset Management	Operational	NASA	Renovation by Replacement	Renovation by Replacement	Since NASA is nearly 50 years old, many facilities have reached the end of their useful lives. Establish clear policy on replacing facilities that have reached their useful lives; determine "pay back" period and criteria to justify investment return; consider 10 year program to replace outdated facilities.	2	0	2	0	2	6	0	Can save money as repair and maintenance costs surpass annual cost amortization of new facilities	No relative	Construction contracts can benefit community	Not relative	Achievable, but dependent on funding and policy change for NASA.

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21	All	Underutilized Facilities	Operational	NASA	Runway	Runways	NASA has runways and support facilities at Ames, JSC, Kennedy, Wallops, and has access to runways at Dryden and Glenn. In several cases, the airport operations were not operating at capacity. Determine marketability of underutilized runways; market for space act agreement with public or private entities; eliminate facilities as required.	3	1	1	1	2	6	2	Runways and associated facilities are expensive; costs can be reduced and revenues can be generated through better utilization	Could result in stronger collaboration with partners	Could bring some partners to market, could be negative for markets if runway is eliminated	Limited	Political and community challenges for NASA, but achievable.
22	All	Underutilized Facilities	Operational	NASA	Shared Services	Shared Services Organization - use underutilized space	NASA is considering a shared services organization; consider locating at a Center that has underutilized facilities and availability of staff. Could reduce overall NASA costs, help renovate underutilized facilities.	2	2	1	1	2	5	3	Net cost savings to NASA would be achieved	Bring more partners into NASA community	Net loss to one community, gain to another	Little impact	Difficult to implement and manage.
23	All	Underutilized Facilities	Operational	NASA	Test Stand	Test Stands	NASA has in place a management board focused on utilization of Test Stands (that also coordinates with other Federal Agencies). Fortify the board's efforts and devise additional ways to determine marketability of underutilized facilities; market for space act agreement; eliminate or consider consolidating or moving to fewer locations.	2	2	2	1	3	7	3	Ensures facilities are being marketed; other countries offer subsidized facilities, may not be able to charge at cost, but will keep facility active	Shared usage/collaboration with partners	Can bring more users/contractors to marketplace	Can include educational missions	Board already in place, expand scope
24	All	Facilities and Asset Management	Operational	NASA	Trailers	Temporary Facilities and Trailers	Eliminate expansion-based trailers that ultimately become long-term housing solutions . Consider 1)consolidation-driven renovations of facilities, 2)inexpensive metal buildings or alternative longer-term temporary housing or 3)mission re-alignment that reduces need 4) Balancing space needs across center.	2	3	0	0	1	3	3	Can save money as repair and maintenance costs surpass annual cost amortization of new facilities	Provide better, more efficient work place	No impact	No impact	Achievable, but dependent on funding and policy change for NASA.
25	All	Underutilized Facilities	Operational	NASA	Vacuum Chambers	Vacuum Chambers	Vacuum chambers are a unique asset at NASA, but we were told that many were not at full utilization; consider a "Rand-type" study that reviews the chambers that are important to keep, market the chambers for Space Act Agreements, and consider eliminating un-necessary Chambers.	2	2	2	1	3	7	3	Ensures optimization of unique facility portfolio, including cost saving opportunities	Shared usage/collaboration with partners	Can bring more users/contractors to marketplace	Can include local business incubation and educational missions	Commissioning study easy and relatively low cost.
26	All	Facilities and Asset Management	Operational	Public Private Partnership	Visitors Center	Visitor Center - National Contract	In NASA role of inspiring the future explorers, Visitor's Centers are important but generally considered cost-centers. Consider establishing cross-Center Visitor Center contracts with contractors to gain more visibility and share economies of scale. Potentially locate in high-profile locations, not necessarily next to Centers.	2	0	2	2	2	6	2	Financial returns from visitors centers can be improved by single-sourcing management and operations and locating in strategic areas.	No benefit to synergistic relationships	Community can benefit from increased visitor traffic	Benefits community outreach/education	Achievable, but NASA would need to make sure most Centers benefit - difficult to find contractor who will take a loss in one location and profits in another.

Section 8- Opportunity Matrix - Agency Wide (All)

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27	All	Underutilized Facilities	Operational	NASA	Wind Tunnels	Wind Tunnels	The Rand study is currently reviewing Wind Tunnels and will have specific recommendations. There appears to be an opportunity to reposition NASA's Wind Tunnel capability through reimbursable agreements, utilization analysis, potential consolidation -- resulting in reduction in costs to maintain infrastructure.	2	2	2	1	3	7	3	Ensures optimization of unique facility portfolio, including cost saving opportunities	Shared usage/collaboration with partners	Can bring more users/contractors to marketplace	Can include local business incubation and educational missions	Study currently in process.

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SECTION 9 – REAL PROPERTY MANAGEMENT STRATEGIES

OVERVIEW

NASA owns over 5,000 buildings and "other structures and facilities" which total over $7 billion and $19.9 billion in book value and current replacement value, respectively. Mirroring NASA's decentralized Center operations, repairs and maintenance of facilities and structures are handled primarily at the individual Centers with some guidance provided by members of the Facilities Engineering Division (FED), Code JX – NASA headquarters. The FED staff provides broad policy guidance and act as liaison in helping Centers address their Real Property needs.

The purpose of the discussion below is to describe how Real Property management functions are organized in private sector corporations and other federal agencies. Because NASA's Real Property operations are currently decentralized, that particular approach to Real Property management is well understood. The team discovered very talented professionals at every location, but various locations were more fully staffed than others, and certain required areas of expertise may not have been fully covered. These challenges can be overcome by ensuring that the local staff is fortified depending upon the specific Real Property need.

NASA has enormous challenges to face in the future, including an enormous deferred maintenance requirement, increased federal scrutiny, and a push for cross-Center coordination and consistency. Since Real Property issues historically require much localized knowledge, the question becomes how could NASA provide more centralized management without losing the benefits of an on-the-ground Real Property team?

The following discussion includes six case studies to serve as a benchmarking parameters and guidance for NASA in correlating its Real Property management operations with other corporations and federal agencies that maintain large portfolios of Real Property.

In the private sector, chief executive officers recognize that the major part of their balance sheets is in Real Property and that, in an often harshly competitive business environment, management of those fixed assets is critical to a firm's success. According to the Urban Land Institute, Real Property at market value is estimated to account for 25 to 40 percent of a corporation's assets. Not only is Real Property important from a cost/value perspective, but access to the right space in the right location with the appropriate features, functions and benefits is also critical to the firm's operating performance and its employees' quality of life.

A detailed understanding of the value of a corporation's Real Property is extremely important as the corporation attempts to minimize its cost of space while meeting all of its space needs. Indeed, this cost for many businesses is second only to the cost of its payroll. In the early 1990s, businesses devoted considerable effort to reducing operating costs, and corporate Real Property management was a big part of the process.

In the private sector, in order to save costs through optimization of a Real Property portfolio, the Real Property management team is involved in the decisions regarding building requirements, capacity and layout, lease versus buy, prioritization and appropriation of capital funds, and management information systems. Also, Real Property managers work to identify surplus or underused Real Property and seek ways to reuse those assets. By coordinating the utilization and/or divestment of the corporate Real Property portfolio, the Real Property manager can ensure the most cost-efficient method of providing space and facilities to the work force.

Government agencies, much like the private sector, contain a vast portfolio of Real Property holdings that represents a major cost to taxpayers. An effective Real Property management strategy, including a centralized, empowered, and well-coordinated management team, is an integral means to optimizing Real Property holdings, thereby lessening the burden on constrained resources.

CASE STUDIES

The trend towards centralized Real Property functional organizations continues to be seen within domestic corporations. While centralized Real Property responsibilities have been well entrenched within certain companies, the current business climate is driving others to create such structures. These efforts are intended to identify and capture capital from surplus assets and achieve savings within the existing portfolio.

Characteristics of corporate Real Property management:

- Centralized core organization
- Empowered by corporate management
- Dedicated Real Property transaction and facilities management personnel
- Outsourced service providers leveraged
- Regional offices within larger organizations
- Personnel aligned with either business units or geographically
- Recurring staff training
- Centralized lease administration and critical date management
- Standardized acquisition/disposition process

The following are examples of corporate Real Property departments and processes:

NEXTEL COMMUNICATIONS

- Corporate Real Property transaction and lease administration staff include three professionals at headquarters
- Corporate facilities staff include seven personnel at headquarters plus personnel in four regional offices

- Leasing transactions are outsourced to commercial Real Property brokers
- Space planning and design is outsourced to A&E firms – including collocated at headquarters
- Lease administration function is in-house
- Needs identified by business unit communicated to Regional Facility Manager, then to Corporate Real Property
- Written "Real Property Request Form" required
- Business Unit Manager has final authority for sign-off based upon profit and loss responsibility
- Corporate guidelines utilized for space allocations
- Portfolio mix of office, retail, and light industrial
- Portfolio virtually all leased facilities

SCIENCE APPLICATIONS INTERNATIONAL CORPORATION (SAIC)

- Corporate Real Property transaction and facility management functions at both headquarters and limited regional offices
- Corporate Real Property staff: six professionals plus administrative support
- National Capital Region: three professionals plus support; 3.5 million SF
- Lease administration function is in-house
- Leased space consists of office, warehouse, labs (bio and electronic) and SCIF space
- Most leasing contingent upon contract awards
- Space needs generated by business units, benchmarked against corporate guidelines
- Written "Corporate Real Property Request Form" required
- Regional Real Property Managers may approve lease transactions below threshold
- Regions all have facility managers
- Business units have profit and loss responsibility
- Portfolio mix of office and light industrial
- Portfolio mix of owned and leased facilities

EXXON MOBIL CORPORATION

- Corporate Real Property staff handle transaction management and facility management functions
- Corporate Real Property department based in Houston with regional offices in London and Singapore
- Leasing transactions are outsourced to commercial Real Property brokers
- Lease administration function is fully outsourced
- America's transaction team: eight professionals plus support staff

- America's facility management team: six professionals plus support staff
- Published management guidelines define role of corporate Real Property staff
- Business units generate space needs – submitted as written "Work Order"
- Space needs confirmed through internal space programming
- Business units seek endorsement of corporate Real Property, but has ultimate decision-making authority – profit and loss responsibility
- Portfolio mix of office, research and development, and industrial space
- Portfolio mix of owned and leased facilities

BOOZ ALLEN & HAMILTON, INC.

- Centralized Real Property at Headquarters
- Real Property group is part of Administrative Services: ten professionals plus support staff
- Corporate standards published for space acquisitions
- Business units submit written requests for space need to Administrative Services – usually contract contingent
- Administrative Services communicates with business units to understand requirement, reach agreement on head count, etc.
- Existing facilities surveyed to determine if they can satisfy the requirement
- Business case is submitted by Business Unit, approved by Administrative Services – final approval comes from Finance Committee
- Company views Real Property as an employee benefit
- Templates have been created for all relevant documentation
- Portfolio only Class A office space

US SECURITIES AND EXCHANGE COMMISSION

- Centralized Real Property: small staff at headquarters
- Written requests for space prepared by Regional Administrators
- Space programming performed by outsourced A&E firm confirms space need
- GSA process used for space acquisition
- Final decision made by headquarters Real Property staff
- Funding for transaction and tenant improvements provided by headquarters

AMTRAK

- Formerly had large, regionalized Real Property staff but now Real Property is centralized
- Unique facilities needs, therefore, most space acquisition is considered as a "special project" with no specified procedures
- Most office space is in owned facilities generally in the larger train stations

- CFO has decision-making responsibility for most projects
- CEO involved in larger project decision-making
- Amtrak is not a relevant benchmark for Governance

MANAGING NASA'S REAL PROPERTY

Centralized management of NASA's assets can potentially provide 1) objective prioritization and coordination of repairs, maintenance, and capital expenditures, and 2) required expertise in evaluating and structuring out-leases and public private partnerships (PPP).

Centralized coordination of repair, maintenance, and capital expenditures is a vital component of creating an effective Real Property strategy. However, an effective means for facility management, including macro level utilization, cannot be ignored. Whether a private corporation or governmental entity, the maintenance, repair, and replacement of Real Property infrastructure requires significant effort to balance with other objectives, most notably, limited funds and the preservation of capital.

Since repair and replacement projects compete for expense and/or capital dollars, it is important that potential projects be identified and weighed by relatively impartial subject matter experts. Such projects should be nominated and documented with enough specificity to undergo technical scrutiny by an oversight team or panel. This type of approach is seen in other federal programs as well as within the private sector.

Such technical review should be undertaken only with full consideration of the strategic perspective of the organization. Proposed spending plans should be consistent with the mission, obligations, goals and objectives of the organization. Such a process should be employed to identify, quantify, evaluate, score, and prioritize proposals toward a recommended spending plan. These processes and their objectives lend themselves best to a centralized group of subject matter experts and strategic planners.

In order to address capital constraints currently faced by NASA Centers, innovative concepts are being proposed as Centers seek to identify additional financial and physical resources necessary to perform its research and development missions. These new initiatives, such as enhanced use leasing, may call for NASA to enter into long-term use of its land and other assets with the private sector or other federal agencies.

New initiatives among the NASA Centers involving Real Property are becoming more complex as Centers strive to find answers in the resource-constrained environment. Major new initiatives such as out-leasing and/or PPP, although potentially compatible with existing NASA policy and regulations, may potentially put NASA land and assets at risk if partnership arrangements are not structured properly.

Given NASA's increasing interests in out-leasing and PPP arrangements, NASA should consider taking steps to develop a coordinated and centralized process for evaluating and structuring such agreements. A centralized management process with expertise in structuring such arrangements is necessary to ensure that NASA land and assets are deployed to their highest and best uses and to protect NASA's legal interests.

With regard to managing NASA's interests when structuring out-leases and/or PPPs, a coordinated team can take responsibility for the following functions and responsibilities:

- Assist and advise the Centers with regard to assets that can be made available for out-leasing and ensure whether or not they will be needed for future NASA activities;
- Assist and advise Centers as to the market viability of a proposed agreement, including financial terms, market conditions, and potential partners;
- Assist and advise the Centers in proactively marketing opportunities to potential users by issuing requests for proposals, and advertising in the appropriate periodicals;
- Working with the Office of General Counsel, create standardized out-leasing and PPP agreements that meet NASA's requirements and protect NASA's interests; and
- Standardize a NASA review and approval process for approving out-leasing and PPP agreements.

SECTION 10 – NEAR-TERM AND ENHANCED-USE LEASING OPPORTUNITIES

OVERVIEW

This report includes numerous potential opportunities that were found over an intensive six-month study period. Many of the opportunities were identified by the Centers; other opportunities were identified through brainstorming ideas. Rather than limiting the opportunity list to those opportunities that appear to be easily and quickly implemented, all opportunities are listed for near term or long-term considerations.

In this section, the team has identified the opportunities that appear to have the best chance for successful near-term implementation either through Enhanced-Use Leasing (EUL) or through other structures or authorities. All of the opportunities described below may not reach implementation. Conversely, some of the opportunities described elsewhere in this report, but not specifically listed below, may prove to be easily and successfully implemented.

INTERPRETATION OF EUL FILTERS AND OPPORTUNITIES

With enactment of the EUL authority, NASA joins several other federal agencies in having the ability to pursue an aggressive asset management program so as to encourage NASA Centers to view their real property holdings as resources, potential revenue centers, and as a means for attracting outside investment into NASA programs.

With specific regard to EUL opportunities, the best candidates for successful implementation of an EUL structure will be those opportunities where the market dynamics are strong, partners are perceived to be plentiful, the end product or user will be synergistic with NASA's goals and missions, and the Center's land holdings and master plan encompass a land parcel or facility that can support the leasing opportunity.

POTENTIAL NEAR-TERM SUCCESSES

The goal of this section is to encapsulate the real property opportunities that the team feels are poised for near-term success. These opportunities represent the highest scores in both the "business" and "intangible" categories in the opportunities matrix. More specifically:

- Opportunities where the financial benefits to NASA are expected to be high;
- Synergistic uses with NASA's missions can be created;
- Economic impact to the local community is positive;
- Good will is created in the community through academic and/or programmatic outreach; and
- Likelihood, or reality, of being able to execute the opportunity is strong.

Each of the following opportunities described below, in no particular order, represent situations where the impact, probability of execution, and immediacy are perceived to be high relative to other opportunities. Additionally, several of these opportunities describe opportunities that could potentially lay groundwork for similar projects at other Centers.

The matrix on the following pages represent the opportunities which overall scored either an 8 of 9 in business rankings, meaning that the NASA financial impact, economical impact, and marketplace reality rankings were all at least a "2" or greater.

Partner Enterprise Zone (Goddard)

Goddard's master plan includes a designated partnering zone. Given the large number of contractors that work at GSFC, the partnering zone could be sold or leased (using EUL) to private developers, who could in turn lease the facilities to contractors. It may also be justified for Goddard to enter into an EUL or sale directly with a contractor. This opportunity involves strong financial impact potential to NASA, the ability to create synergistic uses, and quantitative and qualitative benefits to the local community. Also, the likelihood of being able to execute this opportunity appears high, given the prevalence of partners and an area that has already been designated for partnership through the master plan. The local community planning authority (NCPC) has approved Goddard's plans and the marketplace, although not robust, appears stable.

Research Park (Kennedy)

The International Space Research Park (ISRP), is a project which has NASA, state, and community support. Market reports have been completed that underscore the validity of the ISRP's potential, although the demand for the project may have changed over the past couple of years. This opportunity has multiple scenarios that would allow it to begin implementation very soon.

Contractor Park (Johnson)

JSC has a large contractor population and most contractors lease space off site. In addition, NASA is often paying the contractor's rent as a direct pass through. NASA could potentially establish a contractor park within Section 300 or 400 of the JSC campus or at another location close to the fence line. This strategy could be deployed through an EUL or sale to a private developer, who in turn could lease the facilities to contractors. This opportunity involves strong financial impact potential to NASA; the ability to create synergistic uses; and the ability to generate quantitative and qualitative benefits to the local community. Also, the likelihood of being able to execute this opportunity appears high, given the prevalence of partners and a land area that appears suitable for such development. The concept of executing an EUL for an existing building on JSC's campus (then renovating another JSC building to accommodate the NASA civil servants) also

appears promising – although complex – because of the potential contractor demand for on-campus facilities.

Space Center Houston (Johnson)

MSFEFI, the operating entity for Space Center Houston, has a memorandum of understanding (MOU) with Johnson Space Center for 88 acres of land that includes the footprint and parking area of the Space Center Houston building. MSFEFI and Space Center Houston are considering structuring an agreement with a developer to build a hotel conference center, office buildings, and an adjacent golf course. It is the team's understanding that, per the terms of agreement between MSFEFI and the developer, no additional revenue will be generated for NASA beyond the amount stipulated in the current MOU between NASA and MSFEFI. If the terms of the proposed agreement between MSFEFI and the private developer are finalized, NASA could be forgoing significant economic benefit. The range of opportunities surrounding this project are as far reaching a renegotiating the complete space center Houston MOU to renegotiating the hotel conference center site, to entering into an EUL agreement for the golf course on Section 400.

NASA Research Park at Ames

The Ames Research Center (ARC) has embarked on a program to develop NASA Research Park (NRP), a science and technology park to be comprised of industry, other government agencies and universities, such as the University of California at Santa Cruz and Carnegie Mellon University. The strategy that could potentially provide the best overall impact to NASA would be to structure the research park through an EUL or sale to a private developer.

The goal of the NRP is to enhance ARC's mission and the educational and research requirements pertaining to its missions, which include nanotechnology, biotechnology, and information technology. The NRP is to include shared research facilities and public-private cooperation in teaching and training with the goal of contributing to NASA's core missions of research, exploration, and discovery.

The NRP opportunity at ARC scores high in both the "Business" and "Intangible" scoring categories. From a market standpoint, ARC enjoys several key benefits that favor the research park concept: 1) has enough land to construct its own campus on-site; 2) it is located adjacent to Silicon Valley, the world epicenter of high-technology firms and entrepreneurs; and 3) it has a number of viable partners with considerable resources. Furthermore, ARC has completed the onerous Environmental Impact Statement process and obtained a Record of Decision, suggesting community support for the project.

Stennis Federal Campus/ Private Tenancy

Stennis has been increasing the number of federal facilities on its campus for numerous years. Stennis has well thought out systems to manage efficiently the intricate business systems that are required to manage a federal campus. Recently, Lockheed Martin and The State of Mississippi constructed a facility on campus to conduct non-NASA work. With a low cost of labor, access to the gulf coast and major airports, and a new road under construction, Stennis has the ability to attract federal and/ or private sector organizations to the campus.

Glenn Buildings 500 and 501

Glenn has two facilities located outside the main gate, along a fairly major road. Although the market is not highly active, the facilities could be leased or divested, with the proceeds paying for the relocation of the NASA civil servants and contractors on the main center campus.

Section 10- NASA Opportunity Matrix - Highest Factors.xls

SORT ORDER: Business | Intangible

ID #	Center	Type	Authority	Partner	Name	Opportunity Name	Potential Strategy	Impact Factors: NASA Financial (F)	NASA Synergistic (S)	Community Economic (E)	Community Outreach (O)	Mkt. Reality (R)	Results & Rank: Business (9=max) F,E,R	Intangible (6=Max) S,O	Financial	Synergistic	Economic	Outreach	Reality
1	All	Underutilized Land	EUL	Private Sector	Consolidation	Define Center Real Property Requirements - Ground Lease remaining land	Identify the core area of every Center; move fence line in to core area; maintain land ownership for potential future need but look for opportunities to re-utilize land in the mean time. Consider EUL according to highest and best use - including everything from commercial development to agriculture.	3	3	3	2	3	9	5	Achieves revenue and/or cost savings that can be redeployed into improving facilities; maintains long term ownership of land to protect NASA's future interests	Can bring contractors, universities, etc in close proximity to NASA	Property returned to tax rolls, increased university presence, increased non-federal jobs, land returned to community	Community can benefit from new land planning (parks, etc	Political challenges for NASA but high reward and NASA retains land. Risk is that if EUL'ed property development fails, NASA may need to take over development.
77	Goddard	Facilities and Asset Management	EUL	State of Maryland, Prince Georges County	East Campus - Goddard	East Campus - EUL - Alternative master plan to finance development	Prince Georges County and the State of Maryland are focused on increasing research activities, and NASA offers great opportunity for synergy. Consider alternative master plan consolidating all facilities west of Soil Conservation Road; EUL east campus to pay for new facilities on west campus while maintaining long-term ownership of the land; potential to turn east into high tech partnering zone; "showcase for county". Don't move Soil Conservation Road. Maintain or move radar stations. EUL new Earth Sciences facilities to "kick start" project.	3	3	3	3	2	8	6	Revenue generation for NASA while preserving land for potential long term growth, phased payments allow for continued improvements to remaining Center	Partners located "on campus" or adjacent to campus	Increases non-federal jobs, brings firms to community, returns land to tax rolls	Can achieve outreach if university, incubator, or think tank involved	Good market, requires willing partners. Requires EUL authority for NASA. Risk is if business plan fails, NASA may take over development role.
83	Goddard	Underutilized Land	Space Act	Private Sector	Partnering Zone	Partnering Zone - University / Research - Space Act.	Goddard's Master plan includes a partnering zone. Consider a research-oriented partnering zone similar to Ames; high emphasis on research and university interactions - and related organizations. Share maintenance costs for net cost reduction.	3	3	3	3	2	8	6	Great potential for revenue generation	Provides great collaboration with universities and supports NASA mission	Provides non-federal jobs	Outreach to community through university presence	Near term market demand might be only question.
84	Goddard	Underutilized Land	EUL	Private Sector	Partnering Zone	Partnering Zone - EUL to master developer	Goddard's Master plan includes a partnering zone. EUL the partnering zone to a master developer or local developers for a mix of collaborative uses including contractor office space and university space.	2	3	3	3	3	8	6	Great potential for revenue generation, NASA maintains long term land ownership, but some "development value" is passed along to master developer	Provides great collaboration with universities/contractors	Provides non-federal jobs	Outreach to community through university presence	Near term market demand might be only question. NASA puts development risks on Investor with expertise in development who takes a take leadership role in NRP, avoiding known mistakes.

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SORT ORDER: Business | Intangible

ID #	Center	Type	Authority	Partner	Name	Opportunity Name	Potential Strategy	Impact Factors: NASA Financial (F)	NASA Synergistic (S)	Community Economic (E)	Community Outreach (O)	Mkt. Reality (R)	Results & Rank: Business (9=max) F,E,R	Intangible (6=Max) S,O	Financial	Synergistic	Economic	Outreach	Reality
85	Goddard	Underutilized Land	EUL	Private Sector	Partnering Zone	Partnering Zone - EUL, NASA maintain management	Goddard's Master plan includes a partnering zone. EUL the partnering zone to local developers for a mix of collaborative uses including contractor office space and university space.	3	3	3	3	2	8	6	Great potential for revenue generation, NASA maintains long term land ownership. NASA controls obtaining highest returns on every EUL	Provides great collaboration with universities/contractors	Provides non-federal jobs	Outreach to community through university presence	Near term market demand might be only question. NASA maintains "development" risks in soft sub-market.
32	Ames	Facilities and Asset Management	EUL	Carnegie Mellon	Carnegie Mellon	Carnegie Mellon University Center Grow presence, create University Center, structure as EUL	Carnegie Mellon University has an agreement with NASA; their intent is to develop a campus at Ames that can service the west coast. Ames is a high-research Center; Carnegie Mellon is a wealthy university that can make long term investments. Engage in active discussions with them to expand their presence substantially. Structure new leases as EUL - either whole campus or individual facilities. Encourage Carnegie Mellon to incorporate other universities as part of their campus. Could add local campus facilities for MIT, etc.	3	3	3	3	2	8	6	Strong revenue generation potential,	Partner brought on campus, becomes focal point for many different types of research	New user and non-federal jobs brought to community	Provides education opportunities	Universities are inherently risk-adverse and under financial scrutiny; may be over-supply of university centers in the United States.
45	Ames	Underutilized Land	EUL	Private Sector	NRP	NASA Research Park - EUL to developer	Ames has a well-thought out research park that has been included in their master plan. Consider EUL of the complete research park area through private investors; maintaining long-term federal ownership while removing development risks. In this scenario, NASA does not become highly involved with development activities	2	3	3	3	3	8	6	Great potential for revenue generation, but some "development value" is passed along to master developer	Provides collaboration with universities/contractors	Provides non-federal jobs	Collaborates with community through university presence	Strong local market, partner interest. NASA puts development risks on Investor with expertise in development who takes a take leadership role in NRP, avoiding known mistakes.
46	Ames	Underutilized Land	EUL	Private Sector	NRP	NASA Research Park - EUL, NASA maintain management	Ames has a well-thought out research park that has been included in their master plan. Consider NASA maintaining a high involvement in the development, structuring EUL opportunities to individual tenants / occupants, similar to the Carnegie Mellon lease. Maintaining long-term federal ownership while removing development risks.	3	3	3	3	2	8	6	Great potential for revenue generation, NASA controls obtaining highest returns on every EUL	Provides great collaboration with universities/contractors	Provides non-federal jobs	Collaborates with community through university presence	Strong local market, partner interest. NASA maintains "development" risks in good but highly volatile market.

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SORT ORDER: Business | Intangible

ID #	Center	Type	Authority	Partner	Name	Opportunity Name	Potential Strategy	Impact Factors: Financial (F)	Synergistic (S)	Economic (E)	Outreach (O)	Reality (R)	Results & Rank: Business (9=max) (F,E,R)	Intangible (6=Max) (S,O)	Financial	Synergistic	Economic	Outreach	Reality
182	Stennis	Facilities and Asset Management	Operational	NASA	Test Stand	Test Stand Marketing	Stennis currently markets the use of it's test stands; increase the profile of this effort to try to help fund the maintenance and operation of these national assets.	3	3	2	2	3	8	5	Ensures facilities are being marketed to full cost savings potential	Shared usage/collaboration with partners	Can bring more users/contractors to marketplace	Can include educational missions	Board already in place, expand scope
119	Kennedy	Restructure	EUL	SpacePort Florida	ISRP	International Space Research Park (ISRP) - Increase NASA's role in development	NASA take larger role in planned ISRP development; re-evaluate ISRP's planned tenant mix correlated to NASA's current and future program and mission goals. EUL portions of the land as available; consider space act agreements for university research park-specific developments.	3	3	3	2	2	8	5	Potential for significant revenue	Increase Contractor and university partners	Provides non-federal jobs and industry to area	Enhances education/outreach element	Favorable, more cautious approach to viability; political challenge to restructuring agreement, but possible since ISRP is early in development
2	All	Underutilized Land	Divest	Private Sector	Consolidation	Define Center Real Property Requirements - Divest remaining land	Keep only the areas of each Center that are required for NASA's core operations, and divest unused area through 1)special legislation that allows NASA to renovate its facilities through revenues received from divestment or 2)divest through GSA relocation plan, or 3)give to local municipalities (to reduce costs). Potential strategy: identify 1)core center area 2)EUL or "hold" Research/tech transfer/partnering park, 3)Divest remaining area.	3	3	3	2	2	8	5	Achieves significant revenue and/or cost savings	Can bring contractors, universities, etc in close proximity to NASA	Property returned to tax rolls, increased university presence, increased non-federal jobs, land returned to community	Community can benefit from new land planning (parks, etc	Political challenges for NASA but high reward; NASA give up long term use of land.
106	Johnson	Underutilized Land	EUL	Private Sector	Section 300, 400	Develop Commercial Buildings - EUL	JSC has a large contractor population for Code M, and many currently lease space off site. NASA is often paying the contractor's rent as a direct pass-through. Contractor's services could sometimes be enhanced by being on-site, or at least closer to the Center. There is no room for additional contractors on site; consider entering into an EUL to build new facilities near the fence line.	3	3	3	1	2	8	4	Creative potential for cost reduction (through contractor pass-through's)	Provides great collaboration with contractors who need to work closely with NASA	Provides non-federal jobs	Not a lot of outreach	Market demand in sub-market is soft; local developers may not support.
16	All	Underutilized Facilities	EUL	Private Sector	Marketing - Contractor EUL	Market EUL program to Contractors, encourage creativity	Overall NASA has underutilized land and facilities; Enhanced- Use Leasing (EUL) allows NASA to enter specifically into agreements to increase utilization. Many of NASA's contractors are scrutinizing their own cost / facilities structures, and may be interested in entering into EUL agreement for mutually beneficial cost reductions. Consider actively marketing the EUL program to existing Contractors.	3	3	2	1	3	8	4	Results in increased generation of EUL opportunities	Strengthens collaboration with partners	Can solidify contractors/partners in market and bolster presence, can make it more difficult for new contractors to get work from NASA	No outreach	Marketing program should be easy to develop by NASA.
203	Wallops	Underutilized Land	EUL	Private Sector	Runway	Aircraft Facilities	Consider EUL for Hangars, apron areas, support areas for uses that could co-exist with NASA's periodic mandatory use of runaway.	3	1	3	2	2	8	3	Currently NASA pays for most of the cost of runway activities; this scenario will turn it into a profit center	Could allow for more services to be offered benefiting NASA	The area economically challenged; could bring new non-federal jobs and business	Positive outreach	Would require time and investment to define concept and attract businesses, but possible.

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125	Kennedy	Facilities and Asset Management	EUL	Contractors	Renovation by Partnership	Contractor Strategy - EUL Existing Facilities to Contractors	Kennedy has many contractors that could be on Center in office facilities, and although Kennedy's facilities are at capacity, the facilities could be space-planned and renovated to fit additional capacity. Free up building(s) then EUL to contractors; use EUL proceeds to renovate NASA buildings/facilities to increase their capacity.	3	3	3	0	2	8	3	Allows NASA to have building financed partially by outside financing source	Brings contractors/ partners on campus	Adds non-federal jobs and increases presence of contractors	No outreach involved	Market has strong partner base; deal structure may be complicated; works best for office space, not clear of demand; local developers may not support, but less than in comparable urban Centers.
96	Johnson	Facilities and Asset Management	EUL	Contractors	Renovation by Partnership	Contractor Strategy - EUL Existing Facilities to Contractors	JSC has many contractors that would prefer to be on Center, and although JSC's facilities are at capacity, the facilities could be space-planned and renovated to fit additional capacity. Free up building(s) then EUL to contractors; use EUL proceeds to renovate NASA buildings/facilities to increase their capacity.	3	3	3	0	2	8	3	Allows NASA to have building financed partially by outside financing source	Brings contractors/partners on campus	Adds non-federal jobs and increases presence of employers	No outreach involved	Market has strong partner base; deal structure may be complicated; local developers may not support.
88	Goddard	Facilities and Asset Management	EUL	Private Sector	Space Science Building	Space Science Building - EUL	The Space Sciences groups are currently in old facilities that inhibit their work. The Goddard Master plan includes a new Space Science Building in the middle of the campus. Consider entering into EUL to support the financing and construction of the new facility. Because of OMB rules, consider designing the building where a portion can be occupied almost completely by Contractors.	3	3	3	0	2	8	3	Allows NASA to have building financed partially by outside financing source	Allows for better working conditions, could brings contractors/partners on campus	Adds non-federal jobs and increases presence of employers	No outreach involved	Market has strong contractor base, current EUL legislation does not allow NASA occupancy.
180	Stennis	Underutilized Land	EUL	Private Sector	Private Secure Campus	Market to security-conscious private companies	Stennis has extensive buffer zone, land holdings, support services, and Federal-level security in place to support it's current activities. Lockheed Martin is already on site; could be additional government contractors or private companies who could build facilities that benefit from high security and lower costs.	3	2	3	0	2	8	2	Can result in revenue generation and cost reduction by having more tenants share fixed expenses	May involve NASA contractors	Increases presence of a major employers in economically depressed areas	No outreach	Stennis is in a unique location, with a unique security environment; may not be easy to convince private sector to relocate; workforce may not be extensive.
44	Ames	Underutilized Land	EUL	Lockheed Martin	Lockheed Martin Building	Lockheed Park	Lockheed Martin had expressed an interest in developing a major presence on the Ames Research Park. Focus on these discussions in light of EUL authorities.	3	2	2	0	3	8	2	Can result in revenue generation	Involves a NASA contractor	Increases presence of a major employer	No outreach	NASA has EUL authority and potentially a willing partner.

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57	Glenn	Facilities and Asset Management	Divest	Private Sector	Bldg 500, 501	Office space outside of Main Gate	Divest buildings and land outside of fence and use proceeds to renovate/build office space inside fence.	3	1	3	0	2	8	1	Strong cash generation	increases security, brings NASA staff closer, could create more efficient facilities	Returns property to community tax rolls	None	Executable, reinvestment of proceeds dependent on divestment strategy; market not strong, but good location.
67	Glenn	Underutilized Land	EUL	Private Sector	Runway	Global transportation hub	Glenn is located next to the runway in Cleveland. Consider offering the land along the runway to transportation or logistics organizations; use the revenues from the EUL to replace the facilities which are currently along the runway.	3	1	3	0	2	8	1	Achieve revenues by virtue of Glenn's proximity to the airport	Potential for modest synergies, additional capabilities	Increase non-federal jobs	No outreach	Potential but need to market capability, work through airport logistics, resolve security issues.
50	Ames	Underutilized Land	Divest	Private Sector	Runway	Runway / Moffett Field - Divest as raw land	Ames currently utilizes the runway, but not extensively. Consider relocating the "Sofia" program and Air National Guard, removing the runway and all facilities, divesting all land as mixed use housing/ commercial hub.	3	0	3	1	2	8	1	Potential significant revenue generation, although it will be a complex process; potentially requires investment to prepare land for sale	None, other than additional services and convenience; would remove flight-based capabilities	Major development returned to tax base, new housing, new retail, etc.	No outreach	Complex public process, similar to El Toro in Irvine, CA; potentially limit Ames future flight-based activities. The new owner needs to go through CEQA process.
68	Glenn	Utilities Management	Space Act	Erie County	Rye Beach	Rye Beach Pumping Station - Cost reduction	NASA has water supply channel to Lake Erie. Negotiate market-rate profit through EUL for water supply; Hire utilities valuation consultants to ensure that NASA is receiving maximum value when selling water from the pumping station to the County.	2	0	3	0	3	8	0	Achieve higher value than currently expected	No synergies	Saves community from constructing pumping station	No outreach	Buyer already in place; requires NASA action.
190	Wallops	Facilities and Asset Management	Outside Fence	Private Sector	Research Park	Research park outside Fence	Wallops has a conceptual plan for a research/contractor park outside of fence; develop a detailed marketing strategy to attract university satellites, or contractors; market to increase payload processing/launch activities.	2	3	3	3	2	7	6	Indirect cost savings if users take advantage of payload processing	Brings contractors/partners close to campus	New non-federal jobs/companies in market	Can result in outreach	Market demand difficult to gauge; market for launch facilities saturated.

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99	Johnson	Underutilized Land	EUL	Private Sector	Section 300, 400	Section 400 - EUL contractor buildings	400 section of JSC is not completely used except for radio tower transmission areas. Consider marketing to university systems or developers for collaborative uses. Consider potential to use funds from EUL to move the transmission towers to increase area available for EUL.	3	3	3	2	1	7	5	Potential for revenue generation	Provides great collaboration with universities/ contractors	Provides non-federal jobs	Outreach to community through university presence	Market demand might be only question. Sub market is filled with low-cost office buildings, modest vacancy rate. NASA would risk taking over development if failure.
186	Wallops	Underutilized Facilities	Space Act	State of Virginia/Virginia Space Port	Launch	Launch Facilities Marketing	Coordinate with VSPA to market use of launch facilities.	3	3	2	1	2	7	4	Ensures facilities are being marketed to full cost savings potential	Shared usage/collaboration with partners	Can bring more users/contractors to marketplace	Can include educational missions	Marketing infrastructure already in place; current collapse of launch market.
165	Michoud	Underutilized Facilities	Space Act	Contractors	Marketing	Market facilities	As a GOCO, Michoud has an opportunity to have it's contractor market NASA's facilities. Refine and expand incentives for Lockheed Martin to "market" NASA's underutilized facilities.	2	2	2	2	3	7	4	Can achieve modest cost savings	Brings more partners/contractors onto campus	More contractors /visitors	Can include outreach programs	NASA should easily be able to implement through contract.
113	JPL	Facilities and Asset Management	Space Act	Cal Tech	Marketing	Marketing - Stronger pursuit of reimbursable agreements	Create incentives or contract requirements whereby GOCO will more strongly pursue reimbursable agreements.	2	2	2	2	3	7	4	Can achieve modest cost savings	Brings more partners/contractors onto campus	More contractors/visitors	Can include outreach programs	NASA should easily be able to implement through contract.
78	Goddard	Facilities and Asset Management	Divest	State of Maryland, Prince Georges County	East Campus - Goddard	East Campus - Divest - Alternative master plan to finance development	Prince Georges County and the State of Maryland are focused on increasing research activities, and NASA offers great opportunity for synergy. Consider alternative master plan consolidating all facilities west of soil conservation road; sell east campus to pay for new facilities on west campus; potential to turn east into high tech partnering zone; "showcase for county". Don't move Soil Conservation Road. Maintain or move radar stations. Sell new Earth Sciences facilities to "kick start" project.	3	2	3	2	1	7	4	Significant revenue generation for NASA	Partners located "on campus" or adjacent to campus	Increases non-federal jobs, brings firms to community, returns land to tax rolls	Can achieve outreach if university, incubator, or think tank involved	Good market, requires willing buyers/developers. GSA relocation program, or special legislation would be required to return proceeds to Goddard to allow master plan be implemented.
86	Goddard	Underutilized Land	Divest	Private Sector	Partnering Zone	Partnering Zone - Divest to master developer	Goddard's Master plan includes a partnering zone. Divest the partnering zone to a master developer or local developers for a mix of collaborative uses including contractor office space and university space.	3	2	3	2	1	7	4	Great potential for immediate revenue generation, NASA gives up expense, but loses long-term ownership control	Provides potential collaboration with universities/contractors but not in direct control	Provides non-federal jobs, returns land to tax roll	Outreach to community through university presence	Near term market demand might be question; also loss of control and potential security challenges.

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Section 10- NASA Opportunity Matrix - Highest Factors.xls

SORT ORDER: Business | Intangible

ID #	Center	Type	Authority	Partner	Name	Opportunity Name	Potential Strategy	Impact Factors: NASA Financial (F)	NASA Synergistic (S)	Community Economic (E)	Community Outreach (O)	Mkt. Reality (R)	Results & Rank: Business (9=max) (F,E,R)	Intangible (6=Max) (S,O)	Financial	Synergistic	Economic	Outreach	Reality
191	Wallops	Underutilized Land	EUL	Private Sector	Runway	Runway - Global transportation hub	Consider utilizing the runway for air-based transportation hub; EUL land to warehouse uses; charge for use of air strip.	3	1	3	2	1	7	3	Currently NASA pays for most of the cost of runway activities; this scenario will turn it into a profit center	Could allow for more services to be offered benefiting NASA	The area economically challenged; could bring new non-federal jobs and business	Positive outreach	Would require time and investment to define concept and attract businesses. Could disrupt Wallops mission activities, limiting reality.
102	Johnson	Restructure	Divest	MSFEFI	Space Center Houston	Space Center Houston Conference Center - Divest	Space Center Houston is considering entering into an agreement with a developer to build a conference center and office buildings as an enhancement to their campus. Consider canceling Space Center Houston's MOU. Divest land and remove NASA from all Real Property obligations regarding the facility; re-invest proceeds into Johnson (or potentially into golf course in Section 400).	3	3	3	0	1	7	3	Reduce NASA's costs, and provide revenue to reinvest in NASA	Office space, if developed with NASA's increased involvement, can bring contractors/partners near by - by divesting, NASA may be able to occupy space without EUL occupancy conflicts	Return property to tax rolls, will bring visitors and tenants to market	Limited additional benefit	Agreement might be difficult to restructure
35	Ames	Underutilized Land	EUL	Private Sector	East Side /Air Field	Center Consolidation - EUL Moffett and NRP; maintain core Center.	Ames core NASA activities are centered around a small portion of the total land-holdings, which are very valuable and would not be easy to acquire in the future if NASA gave them up now. Additionally, some of the land is part of a superfund site and clean-up activities will take time.. Complete partially-constructed fence line around center core, EUL remaining land to private entities or master developer. Maintain long-term ownership.	3	2	2	1	2	7	3	Long-term cost reduction and revenue generation for NASA	Potential synergies created if leased to university or contractors	Increases non-federal jobs, retail sales, tax base	Can involve universities, parks, etc	Some portions of the land are more valuable; need to potentially restructure agreements with other federal tenants; runway marketability is questionable.
15	All	Facilities and Asset Management	Space Act	Contractors	Marketing	Marketing - increase incentives and support for marketing unique assets	NASA's operational strategy is to have contractors heavily supporting NASA's activities, and often these contractors help operate major facilities. Provide a coordinated marketing plan and incentives to contractors to encourage them to heavily market NASA's unique assets to public and private organizations as a way of cost reduction.	3	2	2	1	2	7	3	Helps NASA reduce expenses by increasing utilization of unique facilities; reduces costs of mothballing then re-starting facilities	Some potential synergy with users; could increase collaborative efforts	If utilization rises, local economies will benefit through additional activity	Limited, but better awareness of capabilities in community	NASA's facilities are well-known to some organizations that need similar facilities, but the marketing of facilities could increase utilization.

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23	All	Underutilized Facilities	Operational	NASA	Test Stand	Test Stands	NASA has in place a management board focused on utilization of Test Stands (that also coordinates with other Federal Agencies). Fortify the board's efforts and devise additional ways to determine marketability of underutilized facilities; market for space act agreement; eliminate or consider consolidating or moving to fewer locations.	2	2	2	1	3	7	3	Ensures facilities are being marketed; other countries offer subsidized facilities, may not be able to charge at cost, but will keep facility active	Shared usage/collaboration with partners	Can bring more users/contractors to marketplace	Can include educational missions	Board already in place, expand scope
25	All	Underutilized Facilities	Operational	NASA	Vacuum Chambers	Vacuum Chambers	Vacuum chambers are a unique asset at NASA, but we were told that many were not at full utilization; consider a "Rand-type" study that reviews the chambers that are important to keep, market the chambers for Space Act Agreements, and consider eliminating un-necessary Chambers.	2	2	2	1	3	7	3	Ensures optimization of unique facility portfolio, including cost saving opportunities	Shared usage/collaboration with partners	Can bring more users/contractors to marketplace	Can include local business incubation and educational missions	Commissioning study easy and relatively low cost.
27	All	Underutilized Facilities	Operational	NASA	Wind Tunnels	Wind Tunnels	The Rand study is currently reviewing Wind Tunnels and will have specific recommendations. There appears to be an opportunity to reposition NASA's Wind Tunnel capability through reimbursable agreements, utilization analysis, potential consolidation -- resulting in reduction in costs to maintain infrastructure.	2	2	2	1	3	7	3	Ensures optimization of unique facility portfolio, including cost saving opportunities	Shared usage/collaboration with partners	Can bring more users/contractors to marketplace	Can include local business incubation and educational missions	Study currently in process.
107	JPL	Facilities and Asset Management	EUL	Private Sector	Explorer Road - Below	Explorer Road - EUL area below road	JPL's master plan generally calls for most unique facilities to be above Explorer road. As an FFRDC, JPL may have unique EUL opportunities. Consider a radical EUL concept which leases the land and facilities generally below Explorer Road to investors with JPL being primary tenant. Use proceeds to implement master plan. Investor provides capital for rehabilitation and maintenance of JPL buildings.	3	2	3	0	1	7	2	Potential revenue generation for NASA; investor can access long-term financing for infrastructure improvements, NASA can invest proceeds into unique facilities above Explorer Road	Brings additional contractors/partners on campus	Adds non-federal jobs and increases presence of employers	No outreach involved	Market has strong partner base, including Cal Tech; deal structure and logistics may be complicated.
108	JPL	Facilities and Asset Management	Divest	Private Sector	Explorer Road - Below	Explorer Road - Divest area below road	JPL's master plan generally calls for most unique facilities to be above Explorer road. As an FFRDC, JPL may have unique opportunities for managing real property. Consider a radical Divestment concept which leases the land and facilities generally below Explorer Road to investors with JPL being primary tenant. Use proceeds to implement master plan. Investor provides capital for rehabilitation and maintenance of JPL buildings.	3	2	3	0	1	7	2	Potential revenue generation for NASA; investor can access long-term financing for infrastructure improvements, NASA can invest proceeds into unique facilities above Explorer Road	Brings additional contractors/partners on campus, allows for substantial additional non-NASA work to keep workforce busy	Adds non-federal jobs and increases presence of employers	No outreach involved	Market has strong partner base, including Cal Tech; deal structure and logistics may be complicated. NASA would give up long term ownership.

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114	JPL	Facilities and Asset Management	EUL	Private Sector	Parking Garage	Parking Garage - EUL	Ground lease land near fence line but close to the hub of the workforce in order to provide most efficient location for workers; developer/investor would construct Garage through EUL agreement. NASA could "donate" the land and encourage a longer amortization period in exchange for lower parking fees charged to JPL workers (which the developer would need to pay for construction costs and profit).	3	1	2	1	2	7	2	Creative method for financing needed parking structure	Might not involve synergistic partner, but would allow JPL closer access to parking	Adds non-federal jobs and increases presence of employers	Can involve some community participation	Market has strong partner base; deal structure may be complicated.
97	Johnson	Underutilized Land	EUL	Private Sector	Runway	Runway - Global transportation hub	Consider utilizing the runway for air-based transportation hub; EUL land to warehouse uses; charge for use of air strip.	3	1	3	1	1	7	2	Currently NASA pays for most of the cost of runway activities; this scenario will turn it into a profit center	Could allow for more services to be offered benefiting NASA	Could bring new non-federal jobs and business	Not much	Would require time and investment to define concept and attract businesses, but possible; Mountain View and Sunny Vale citizens oppose high use of air strip; would require modification to EIS.
51	Ames	Underutilized Land	EUL	Private Sector	Runway	Runway - Global transportation hub	Consider utilizing the runway for air-based transportation hub; EUL land to warehouse uses; charge for use of air strip.	3	1	3	1	1	7	2	Currently NASA pays for most of the cost of runway activities; this scenario will turn it into a profit center	Could allow for more services to be offered benefiting NASA	Could bring new non-federal jobs and business	Not much	Would require time and investment to define concept and attract businesses, but possible; Mountain View and Sunny Vale citizens oppose high use of air strip; would require modification to EIS.
173	Stennis	Underutilized Land	EUL	Private Sector	Army Lease	Army lease - Cancel - market land to Private Sector	Army Land Lease - The army has a long term lease from NASA in the middle of Stennis that they don't need; the army is currently leasing to other companies; NASA could market the land to private sector organizations who require high security; structure agreements through EUL to gain maximum market value, reinvest proceeds to improve Stennis.	3	1	3	0	1	7	1	EUL offers additional revenue potential	Limited, but could bring in companies with synergies to NASA, or allow for additional resources available to the whole Center and tenants	Bring in new business to an economically challenged area	No net impact	Market is not easily identified; requires heavy marketing effort to attract.

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176	Stennis	Underutilized Land	Space Act	Federal Agency	Federal Campus	Federal Campus	Currently NAVY on site; could add other security conscious agencies, reducing overall operations costs.	2	1	2	0	3	7	1	Cost of maintaining land too low to result in significant impact	Can be synergistic with fed. Agency	Might create non-federal jobs but land not returned to tax rolls	No net impact	Proven business model and systems set up; question is how many more agencies need facilities.
58	Glenn	Facilities and Asset Management	EUL	Private Sector	Bldg 500, 501	Office space outside of Main Gate	The buildings and land outside of fence are next to a major road; keep the facilities in NASA control long term by entering into an EUL to a developer for private sector use. Use proceeds to renovate/build office space inside fence.	2	1	3	0	2	7	1	Strong cash generation	increases security, brings NASA staff closer, could create more efficient facilities	Returns property to community tax rolls	None	Executable, reinvestment of proceeds dependent on divestment strategy; market not strong, but good location.
47	Ames	Underutilized Land	Divest	Private Sector	NRP	Center Consolidation - Divest Moffett and NRP ASAP; maintain core Center.	Ames core NASA activities are centered around a small portion of the total land-holdings, which are very valuable and would not be easy to acquire in the future if NASA gave them up now. Additionally, some of the land is part of a superfund site and clean-up activities will take time. Complete partially-constructed fence line around center core, Divest all land to third parties. Stipulate that runway remains for use by SOFIA and other NASA uses. Could be similar process to El Toro in Irvine, CA.	3	0	2	1	2	7	1	Long term cost reduction and revenue generation for NASA	Potential synergies created but outside of NASA's control	Returns land to tax rolls, more non-federal jobs, retail sales, etc	No outreach created	Superfund site makes divesting complex; EIS is complete and "value" has already been created; however, new owner would need CEQA process to get full value-takes time; NASA would give up rights to future use of land.
193	Wallops	Utilities Management	Space Act	Private Sector	Utilities	Utilities	Market capability of water, sewage, steam, cogeneration of steam power, etc to nearby potential users to defray costs.	3	0	1	0	3	7	0	Potential cost reduction; income generation	No Impact	Minimal impact	No impact	Potential users; have been identified.
144	Langley	Underutilized Land	EUL	Private Sector	Wythe Creek Gate	Pull fence line back at back gate	Langley is located along fairly major road, near major highway. A portion of the area is currently designated a forested wet land. Work with the Corps to remove the designation. EUL to private groups. Maintain long-term ownership in case NASA requires land for use in the future.	2	0	3	0	2	7	0	Could generate modest income	No synergies created	Returns land to tax rolls, generates sales taxes	No outreach created	Depends on NASA security concerns; market viability of uses; sub market does not appear strong.

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79	Goddard	Mission or Program Strategy	EUL	Private Sector	GOCO	FFRDC - Convert Goddard, EUL real estate to investor	Goddard is a high-research Center similar to JPL. Consider combining with other research-oriented agencies in DC area to create new FFRDC's in DC area. As an FFRDC, EUL to investors who could access long term financing and would be responsible for long-term facility needs. Consider EUL on part or all of Goddard campus to remove NASA from direct facilities obligations. Use proceeds to implement master plan.	3	3	2	2	1	6	5	Potential cost savings/revenue generation; proceeds from EUL could help support unique facilities that may not be included in EUL	Potential collaboration with partners on campus	Bring more users and non-federal jobs to community	Can include educational institutions and initiatives	FFRDC's have pros and cons, could be more expensive; politically challenging to set up FFRDC and transfer employees; difficult to find educated investors to enter into EUL.
39	Ames	Mission or Program Strategy	EUL	Private Sector	GOCO	FFRDC - Convert Ames, EUL real estate to investor	Ames is a high-research Center similar to JPL. Consider combining the NASA Research Park and Ames Campus as a new model of FFRDC. As an FFRDC, EUL to investors who could access long term financing and would be responsible for long-term facility needs. Consider EUL on part or all of NRP/Ames campus to remove NASA from direct facilities obligations.	3	3	2	2	1	6	5	Potential cost savings/revenue generation; proceeds from EUL could help support unique facilities that may not be included in EUL	Potential collaboration with partners on campus	Bring more users and non-federal jobs to community	Can include educational institutions and initiatives	FFRDC's have pros and cons, could be more expensive; politically challenging to set up FFRDC and transfer employees; difficult to find educated investors to enter into EUL.
196	Wallops	Facilities and Asset Management	EUL	Private Sector	Visitors Center	Visitor Center and Summer Space Camp collaboration	Wallops is part of a relatively new Summer Space Camp that has experienced growing success; NASA's Visitor Center is a modest success in the summer, but has access to tourist traffic. Consider negotiating an EUL with partner/investors to build multi-use facilities near the fence in conjunction with a the current or a new Visitors Center. Consider KSC model for re-investment of proceeds into visitor's experience and marketing.	1	1	3	3	2	6	4	Small but positive impact for NASA, could provide creative financing of Visitors Center and reduce required normal investments	Modest creation of synergies	Can boost visitors to area	Positive for community outreach/education	Uncertain about demand, but potential good market dynamics; may be difficult to find investor / partner.
197	Wallops	Underutilized Facilities	Space Act	Federal Agency	Training	Training - market as Resort style training	Market use of facilities/land to federal agencies; private sector; consider co-locating with visitor's center.	2	1	3	2	1	6	3	Reduces costs to NASA	Requires NASA share a facility currently dedicated to NASA	Could general new economic activities in a market that needs economic development	Could draw more tourists, offer local education	May not be a strong market to support immediately.
198	Wallops	Underutilized Facilities	EUL	Federal Agency	Training	Training - market as Resort style training	Market use of facilities/land to federal agencies; private sector; consider co-locating with visitor's center.	2	1	3	2	1	6	3	Reduces costs to NASA	Requires NASA share a facility currently dedicated to NASA	Could general new economic activities in a market that needs economic development	Could draw more tourists, offer local education	May not be a strong market to support immediately.

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161	Michoud	Facilities and Asset Management	EUL	Lockheed Martin	GOCO	Lease Michoud to Lockheed Martin	Lockheed Martin has a long history as NASA's primary contractor at Michoud. As a GOCO, NASA could potentially enter into a EUL for all of the facilities without being subject to NASA occupancy rules in the EUL legislation. Consider entering into an EUL agreement with Lockheed Martin to allow them to take over full responsibility for all real property. Lockheed Martin could access long-term financing to improve the facilities as part of the EUL agreement.	2	3	2	0	2	6	3	Can save money for NASA although contractor costs might increase	Increases collaboration with partner	Enhances private employer in market, no net loss of non-federal jobs	No outreach involved	Political challenges for NASA; question of cost benefit analysis.
120	Kennedy	Restructure	EUL	SpacePort Florida	ISRP	International Space Research Park (ISRP) - EUL	Consider the development of the ISRP using EUL versus currently planned structure. Still maintain an arms-length distance.	3	2	2	1	1	6	3	Provide additional revenue to NASA	Will bring contractors/ partners onto campus	While property not returned to tax rolls, will bring visitors and tenants to market	Conference center can aid community outreach	Political challenges in restructuring agreement. Feasibility needs to be examined.
109	JPL	Facilities and Asset Management	EUL	Cal Tech	Flight Project Center	Flight Project Center - EUL	Since JPL is an FFRDC and few if any NASA Civil Servants will occupy the facility, consider entering into an EUL agreement with outside investor to build the facility and lease it back to Cal Tech.	2	3	2	0	2	6	3	Utilize private sector funding, potential revenue Generation for NASA	Allows better facility than current	Potentially adds non-federal jobs and increases presence of employers	No outreach involved	Market has strong partner base; deal structure may be complicated. Since JPL is an FFRDC, few NASA occupancy issues related to EUL.
100	Johnson	Underutilized Land	EUL	MSFEFI	Section 300, 400	Golf Course - EUL	A proposed hotel development at Space Center Houston has expressed an interest in putting a golf course on section 400. The use is compatible with the need to maintain the radio tower transmission areas. Consider structuring as EUL.	2	2	2	1	2	6	3	Revenue potential good, but questionable golf course economics	Recreational amenity	Provides some non-federal jobs	Provides amenity to community	Market demand and financial viability need to be examined.
75	Goddard	Underutilized Facilities	Space Act	Contractors	Centrifuge	Centrifuge - Market	Provide incentives to contractor to actively market centrifuge to outside groups similar to DOT agreement	2	2	1	1	3	6	3	Ensures facilities are being marketed to full cost savings potential	Shared usage/collaboration with partners	Can bring more users/contractors to marketplace	Can include educational missions	Infrastructure already in place, expand scope
74	Glenn	Underutilized Facilities	EUL	Private Sector	Adjacent to Runway	Office building next to hangar	Market use of building along the fence near the airport to security-conscious contractors. Lease through EUL.	2	3	2	0	2	6	3	Moderate revenue to NASA	NASA contractors	Adds non-federal jobs	No Outreach	Depends on willingness of contractors.
19	All	Facilities and Asset Management	EUL	Contractors	Renovation by Partnership	On-Center office buildings - EUL	NASA's contractors often would prefer to be inside the fence line. Review occupancy of facilities; if facilities have mostly contractor occupants, and if the contractor population is expected to remain steady, consider EUL to contractor or private sector investor of the specific facility, regardless of proximity to fence line.	3	3	1	0	2	6	3	NASA can generate revenue through EUL and reduce required CoF spending	Contractors/Partners are brought "on-campus"	Maintains non-federal jobs in locality but may hurt local development, property taxes	No outreach to community	Achievable at some centers, may call for policy shift.

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6	All	Underutilized Facilities	Operational	NASA	Demolition	Demolition	At many Centers, The Team was told that there are buildings that would be good candidates for demolition, but the Centers would prefer to spend scarce funds on construction or renovation rather than demolition. Commission a study to identify the structures to be demolished including development of an ROI for demolition (cost to maintain VS cost to demolish). Demolition can free land that can be addressed through the master plan.	2	2	2	1	2	6	3	Net cost to implement, qualitative improvement, long term cost savings	Creates better working facilities and atmosphere for partners	Demolition contracts for local construction	Enhances campus for outreach activities	Achievable, but still involves competition for annual funds
10	All	Underutilized Facilities	Operational	NASA	Launch	Launch Facilities	The Team was told that there is an international glut of launch facilities. Determine which launch assets are critical; market for reimbursable agreement, EUL or consider consolidation. Enter into Public Private Partnerships to help market capabilities wherever appropriate (i.e. KSC, Wallops)	2	2	2	1	2	6	3	Cost savings/revenue generation for expensive facilities	Partners/contractors share facilities	Brings more contractors/users to community	Creates minimal educational outreach	NASA can create or outsource for more aggressive marketing and coordination; the market is currently saturated
192	Wallops	Underutilized Facilities	Space Act	Federal Agency	Runway	Runway - Federal utilization strategies	Increase Navy use; investigate Homeland Security use of runway to increase utilization.	2	1	2	1	2	6	2	modest cost savings potential	Synergistic uses might be possible	Can increase non-federal jobs	Limited outreach capability	Dependent on users.
166	Michoud	Underutilized Land	Space Act	Coast Guard	West of Mercury Drive	Federal Campus - Coast Guard. Homeland Security, Customs.	Coast Guard (now part of Homeland Security) have expressed an interest in the Dock area; engage them in a discussion focusing on consolidating more facilities on NASA land.	2	2	2	0	2	6	2	Increased tenants help reduce overall costs associated with real property maintenance	Synergistic only with collaborative federal agency, may provide additional employee amenities	Brings more non-federal jobs/patrons to area, does not return property to tax rolls	No outreach	Dependent on federal agency partners.
121	Kennedy	Restructure	Divest	SpacePort Florida	ISRP	International Space Research Park (ISRP) - EUL	Consider the divesting the land under development for the ISRP.	2	1	3	1	1	6	2	Provide additional revenue to NASA, low land value	Will bring contractors/ partners onto campus	While property not returned to tax rolls, will bring visitors and tenants to market	Conference center can aid community outreach	Political challenges in restructuring agreement. Feasibility needs to be examined.
122	Kennedy	Underutilized Land	Space Act	Federal Agency	ISRP	Federal Campus	Because KSC needs to maintain buffer zone and high security - similar to Stennis - lease developable land to security conscious federal agencies to reduce faculties management costs.	2	2	2	0	2	6	2	Increasing tenants reduces overall costs to NASA	Synergistic only with collaborative federal agency, may provide additional employee amenities	Brings more non-federal jobs/patrons to area, does not return property to tax rolls	No outreach	Dependent on federal agency partners.
101	Johnson	Underutilized Land	Divest	MSFEFI	Section 300, 400	Golf Course - Divest	A proposed hotel development at Space Center Houston has expressed an interest in putting a golf course on section 400. The use is compatible with the need to maintain the radio tower transmission areas. If NASA doesn't require the land long-term, consider divesting; retain transmission air-rights.	2	1	2	1	2	6	2	Revenue potential good, but questionable golf course economics	Recreational amenity, lose future rights to land	Provides some non-federal jobs	Provides amenity to community	Market demand and financial viability need to be examined.

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80	Goddard	Facilities and Asset Management	EUL	Private Sector	Mod C	Mod C Consolidation - EUL	Mod C is a logistics consolidation project that will help Goddard better conduct that operation. Consider outsourcing some of the logistics activities and having private sector build the facilities to house the activities on NASA land near the fence through EUL.	2	1	2	1	2	6	2	EUL offers NASA opportunity for increased revenues; outsourcing could potentially reduce some costs	Not as good as controlling logistics completely, but could be private sector efficiencies	Investment in non-federal jobs	Limited	Potential, but requires NASA operational change; could be security risk.
90	Goddard	Facilities and Asset Management	Outside Fence	Private Sector	Visitors Center	Visitors Center, Space Camp - Outsource	Goddard is reviewing proposals for Visitor Center and potential Space Camp activities. Currently Goddard maintains its own Visitor Center; consider completely outsourcing activities similar to Marshall; maintain only "exhibit" input and "Brand" control.	2	0	2	2	2	6	2	Net cost savings to NASA	No benefit to synergistic relationships	Community can benefit from increased visitor traffic	Benefits community outreach/education	Achievable, but dependent on willingness of contractor.
73	Glenn	Facilities and Asset Management	Outside Fence	Private Sector	Visitors Center	Visitors Center re-located to outside fence - Outsource	Outsource Visitor's Center activities. Locate Visitor's Center to a more accessible location, or even to downtown Cleveland where it might get more visitor traffic, freeing up needed space.	2	0	2	2	2	6	2	Financial returns from visitors centers can be improved by sole-sourcing management and operations and locating in strategic areas.	No benefit to synergistic relationships	Community can benefit from increased visitor traffic	Benefits community outreach/education	Achievable, but dependent on willingness of contractor.
38	Ames	Restructure	Space Act	Navy	East Side /Air Field	Golf Course - Restructure	The air force constructed a golf course which they still maintain on the East Side/Air field. The Air Force currently leases the golf course from NASA, although all of the improvements were provided by the Navy. The AF makes a profit on the use of the course. Consider restructuring the agreement to allow NASA to take responsibility for the golf course, ultimately taking over the revenues also.	2	1	1	1	3	6	2	Potential for revenue production to NASA or employee welfare.	Positive employee morale	Little economic impact on community	Community benefit, if access can be changed to allow community use.	Achievable
36	Ames	Underutilized Land	Space Act	Federal Agency	East Side /Air Field	Federal Campus	Market Moffett Field to federal Agencies to increase number of Federal tenants who share similar security requirements; specifically try to find tenants who can increase the use of the runway and bring new potential tenants to the NRP. Also form sharing agreements to utilize other expensive/ unique NASA assets. Form cost-sharing agreements that lower everyone's occupancy costs. Federal Agency agreement could be accomplished through Space Act or EUL, with minor differences.	2	1	2	1	2	6	2	Reduces NASA cost	Limited with other federal agencies	Could increase non-federal jobs through commercial spin-offs of increasing Federal presence at Ames	Limited outreach	Dependent on finding Federal Agencies interested in expanding / relocating.
37	Ames	Underutilized Land	Divest	Private Sector	East Side /Air Field	Moffett Field - Divest	Divest Moffett Field by working with Mountain view, Sunnyvale, other Federal tenants currently occupying space. Potentially provides income and cost reduction.	3	1	2	1	1	6	2	Reduce NASA costs	Limited opportunity with NASA partners, could maintain NRP synergies	Could increase non-federal jobs, commercial activity	Some opportunity for outreach	Dependent on finding user to take over and difficulty in environmental liability

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26	All	Facilities and Asset Management	Operational	Public Private Partnership	Visitors Center	Visitor Center - National Contract	In NASA role of inspiring the future explorers, Visitor's Centers are important but generally considered cost-centers. Consider establishing cross-Center Visitor Center contracts with contractors to gain more visibility and share economies of scale. Potentially locate in high-profile locations, not necessarily next to Centers.	2	0	2	2	2	6	2	Financial returns from visitors centers can be improved by single-sourcing management and operations and locating in strategic areas.	No benefit to synergistic relationships	Community can benefit from increased visitor traffic	Benefits community outreach/education	Achievable, but NASA would need to make sure most Centers benefit - difficult to find contractor who will take a loss in one location and profits in another.
21	All	Underutilized Facilities	Operational	NASA	Runway	Runways	NASA has runways and support facilities at Ames, JSC, Kennedy, Wallops, and has access to runways at Dryden and Glenn. In several cases, the airport operations were not operating at capacity. Determine marketability of underutilized runways; market for space act agreement with public or private entities; eliminate facilities as required.	3	1	1	1	2	6	2	Runways and associated facilities are expensive; costs can be reduced and revenues can be generated through better utilization	Could result in stronger collaboration with partners	Could bring some partners to market, could be negative for markets if runway is eliminated	Limited	Political and community challenges for NASA, but achievable.
8	All	Underutilized Land	Space Act	Federal Agency	Federal Campus	Federal Campus	NASA has large tracts of land at almost every Center. DoD and other agencies similarly have large tracts of land, but NASA is potentially unique in that it is a civilian Agency. Consider marketing facilities and land to other federal agencies through Space Act Agreements; establish cost-sharing agreements to reduce costs to all tenants, including NASA.	2	2	2	0	2	6	2	Spreading costs among multiple tenants helps lower NASA's costs	Can be synergistic with some Agencies; may offer additional services, employee benefits that couldn't be afforded normally	Might bring new jobs to a community, but at expense of another community; land not returned to tax rolls	No outreach	Most likely if other agencies are forced to move for security reasons; or if other agencies go through consolidation.
62	Glenn	Underutilized Land	Space Act	Federal Agency	Plum Brook	Federal Campus	NASA currently has federal agencies as tenants at Plum Brook. Market underutilized land to security conscious federal agencies to reduce management costs. Consider marketing as major secured federal campus for agencies in northern Ohio.	2	1	2	0	2	6	1	Sharing costs will help NASA, but may not result in significant impact; may help utilization of unique facilities	Can be synergistic with federal Agency; may provide employee amenities but not many NASA employees at Plum Brook	Might create non-federal jobs but land not returned to tax rolls	No impact	Significant federal agency user interest possible given increase security consciousness.
156	Marshall	Facilities and Asset Management	Operational	NASA	Renovation by Replacement	Renovation by Replacement	Since NASA is nearly 50 years old, many facilities have reached the end of their useful lives. Establish clear policy on replacing facilities that have reached their useful lives; determine "pay back" period and criteria to justify investment return; consider 10 year program to replace outdated facilities.	2	0	2	0	2	6	0	Can save money as repair and maintenance costs surpass annual cost amortization of new facilities	No relative	Construction contracts can benefit community	Not relative	Achievable, but dependent on funding and policy change for NASA.

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115	JPL	Facilities and Asset Management	Outside Fence	Private Sector	Parking Garage	Parking Garage - Off Site	Identify neighboring site; have private developer construct garage.	2	0	2	0	2	6	0	NASA does not have to provide funding for construction, but might be required to subsidize additional costs for employee parking	No special synergies involved	Tax revenue for community	No outreach involved	Issue of NASA employees paying for parking, or have employees bear the burden of additional costs.
63	Glenn	Underutilized Land	Space Act	Federal Agency	Plum Brook	Federal Campus	Consider expanding Plum Brook's role as a federal campus.	2	0	2	0	2	6	0	Cost sharing	No synergies	Might create non-federal jobs but land not returned to tax rolls	No outreach	Market demand may be soft.
64	Glenn	Underutilized Land	EUL	Private Sector	Plum Brook	Plum Brook - EUL	Consider EUL of Plum Brook with exception of most unique specialty facilities that are critical to NASA's programs and nuclear testing area (Glenn is decommissioning the nuclear reactor facility but this process will take time). Maintain ownership in case NASA requires large portion of land in the future. Consider expanding agricultural leases.	2	0	2	0	2	6	0	Land value results in modest revenue through ground lease	No synergies	Might create non-federal jobs but land not returned to tax rolls	No outreach	Market demand may be soft.
65	Glenn	Underutilized Land	Divest	Private Sector	Plum Brook	Plum Brook - Divest	Consider divesting of everything except for nuclear testing area and perhaps unique facilities that are critical to NASA's programs (Glenn is decommissioning the nuclear reactor facility but this process will take time.); move contents of storage magazines to Stennis. Divert nuclear testing area once it has been decommissioned.	2	0	2	0	2	6	0	Good land value	No synergies	Land returned to tax rolls, but area is economically challenged	No outreach	Market demand may be soft.
69	Glenn	Utilities Management	EUL	Erie County	Rye Beach	Rye Beach Pumping Station - EUL	NASA has water supply channel to Lake Erie. Consider entering into EUL with investor to take over operations and sell water at a profit.	2	0	2	0	2	6	0	Some revenue stream to NASA S	No synergies	Community does not have to build	Limited	Agreement structure might be complicated.
70	Glenn	Utilities Management	Divest	Erie County	Rye Beach	Rye Beach Pumping Station - Divest	NASA has water supply channel to Lake Erie. Consider entering into EUL with investor to take over operations and sell water at a profit.	2	0	2	0	2	6	0	Some revenue stream to NASA	No synergies	Community does not have to build	Limited	Agreement structure might be complicated.
12	All	Facilities and Asset Management	Operational	NASA	Management	Real Property Management Group	NASA operates in a decentralized management structure; NASA's real estate in almost all locations is in the midst of change due to it's age and condition. Not all Center's have the real estate expertise required to implement complex real estate projects. Consider strengthening NASA's HQ real estate group's ability to manage real estate expertise to each Center's activities. This effort is particularly acute for regulatory issues including EUL and Space Act agreements.	3	0	0	0	3	6	0	NASA can create significant savings through more coordinated control over space utilization, prioritization of CoF funding, EUL opportunities, etc.	Limited	Limited	Limited	Increased centralization of facilities and real estate management should be achievable.

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20	All	Facilities and Asset Management	Operational	NASA	Renovation by Replacement	Renovation by Replacement	Since NASA is nearly 50 years old, many facilities have reached the end of their useful lives. Establish clear policy on replacing facilities that have reached their useful lives; determine "pay back" period and criteria to justify investment return; consider 10 year program to replace outdated facilities.	2	0	2	0	2	6	0	Can save money as repair and maintenance costs surpass annual cost amortization of new facilities	No relative	Construction contracts can benefit community	Not relative	Achievable, but dependent on funding and policy change for NASA.
170	Michoud	Mission or Program Strategy	Space Act	Federal Agency	Building 103	Invest in Michoud Manufacturing Expertise; make world-class	Michoud is the only major large-scale "unique" manufacturing operation at NASA. Consider long-term manufacturing role within NASA; increase utilization in planning for future programs, especially development of SLI-type research. Market world-class manufacturing and research capabilities to government contractors as Space Act agreement; Increase R&D capabilities.	1	3	3	3	1	5	6	Net expense for NASA, not cost savings, but potentially necessary	Helps NASA control quality through extensive investment	Helps economically challenged area	New non-federal jobs, new capabilities, potential for education and outreach	Very difficult to attract capital from NASA to support; risk is that NASA would make an investment in area 3.6 feet above sea level subject to Hurricanes
17	All	Mission or Program Strategy	Operational	Private Sector	Outsource	Outsourcing of Research Activities - NAS model	Mission clarification of Research - oriented centers with goal of pushing research activities into the academic community; may result in university-oriented FFRDC's. Essentially reduces NASA infrastructure needs; allows research program funds be directed to research institutions that successfully win NASA research contracts; enables NASA to benefit from private sector expertise.	2	3	3	3	0	5	6	Significant cost savings potential on infrastructure, although programmatic costs will increase	Increases collaboration with partners	Non-federal jobs/Revenue pushed to private sector	Educational outreach significantly enhanced	Would call for a significant policy shift for NASA; NASA currently requires a lot of land a facilities to accommodate current and potential future activities that can't be fully predicted.
195	Wallops	Facilities and Asset Management	EUL	Private Sector	Visitors Center	Visitors Center / Resort - EUL on NASA land near the Fence	Wallops has a major training facility for NASA. In conjunction with local government and other partners to combine Visitors Center, Space Camp and Resort as an EUL on NASA land near the fence; construct new high-end resort utilizing runway for major visitors. Wallops is near high tourist area in summer; training facility provides stability needed by seasonal business.	2	2	1	3	2	5	5	Measurable revenue generation opportunity	Collaboration with a variety of partners	Enhances tourism/visitors to area	Will foster educational/community outreach	Questionable economic feasibility for partners; resorts are historically difficult to manage; risk for NASA if the venture fails.
91	Goddard	Underutilized Land	EUL	Private Sector	Visitors Center	Visitors Center, Space Camp - EUL near Center	The future of Goddard's on-center Visitor Center is being discussed; one option is to move it away from the Center. Consider entering into an EUL agreement with investor/partners and expanding into a conference facility and educational space camp. Utilize the facility for NASA-related activities that involve foreign scientists who have difficulty getting on the Center.	2	2	2	3	1	5	5	Reduction in costs associated with running visitors center currently; potential to structure like KSC with revenues going back to public use activities	Close proximity could allow for more conferences, meetings, discussions	Modest increase in local visitors	Positive outreach to local students and community	Faces stiff competition for visitor center experiences in DC area; hotel conference centers are already near by, may not support.

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139	Langley	Underutilized Land	EUL	NIA	NIA	National Institute for Aeronautics (NIA)	NIA is a contract recently won by a consortium that expressed a desire to lease space off-Center. Consider EUL on NASA owned land to help form critical mass and attract other R&D type users.	2	2	2	2	1	5	4	EUL has positive financial benefits	Brings NIA closer to Center civil servants	Helps generate spin off business	Employs good workers	NIA already desired to lease space away from Center
92	Johnson	Facilities and Asset Management	EUL	NSBRI	Bioastronautics	Bioastronautics - EUL	JSC needs new facilities to conduct research and provide better Astronaut services. Consider EUL structure to finance and build the facility on the Center, near the fence line for separate access to outside. May be difficult with OMB Scoring rules prohibiting NASA occupancy of EUL; may be structured in conjunction with outsourcing of Bioastronautics activities.	2	3	2	1	1	5	4	Helps construct a needed facility for NASA using private sector funds; potential Revenue Generation for NASA	Brings contractors/partners on campus	Adds non-federal jobs and increases presence of employers	Potential outreach involved	Market has strong partner base; current legislation does not allow NASA occupancy.
163	Michoud	Underutilized Facilities	EUL	Lockheed Martin	Lockheed Martin Building	Lockheed Martin's commercial use of facilities - Expand	Lockheed Martin is already on site doing commercial work in a NASA facility. Encourage Lockheed Martin to increase the commercial work done on site. Enter into EUL agreements for facility usage. Lockheed Martin may be able to consolidate commercial activities done elsewhere (reducing their overall costs) while better utilizing NASA underutilized facilities. Reinvest proceeds at Michoud.	2	2	2	1	1	5	3	Increased cost savings and revenue potential for NASA	Increases contractor/partner presence on campus	Increases non-federal jobs/contractor presence in community	Small positive impact on outreach	Lockheed Martin would need to make long term investment at Michoud, which may require difficult decisions.
147	Marshall	Underutilized Facilities	EUL	Boeing	Boeing Building	Boeing's commercial use of facilities - Expand	Boeing is occupying a building on Center for non-NASA activities. Encourage Boeing to increase the commercial work done on site. Enter into EUL Agreements for facilities to be used. Boeing may be able to consolidate commercial activities done elsewhere (reducing their overall costs) while better utilizing NASA underutilized facilities. Reinvest proceeds at Marshall.	2	2	2	1	1	5	3	Increased cost savings and revenue potential for NASA	Increases contractor/partner presence on campus	Increases non-federal jobs/contractor presence in community	Small positive impact on outreach	Boeing would need to make long term investment at Marshall which may require difficult decisions.
136	Langley	Underutilized Facilities	EUL	Private Sector	East Campus - Langley	East Campus - EUL Buildings	The East campus is one of the oldest at NASA, but separated from the current main campus. Maintain control of the East Campus (it is current a lease from the Air Force), but enter into EUL agreements with outside groups; utilize revenues to restore the facilities and improve facilities in the main part of the Center.	2	2	2	1	1	5	3	Potential to access private funds to renovate facilities	Potential synergies created by bringing partners/contractors "on-campus"	Can result in increased non-federal jobs within municipality	Limited.	Market for users/partners may be questionable; security issues associated with Air Force limits potential tenants.
9	All	Facilities and Asset Management	Historic Preservation Act	NASA	Historic Review	Historic review - Historic Districts and Building-by-Building	Conduct an agency-wide historic review to determine 1)potential for Ames-type historic districts with private sector, and 2)determine strategy for specific buildings and 3)review for consistency with the Executive Order governing historic structures.	2	3	1	0	2	5	3	NASA can reinvest proceeds of leases into facilities, thereby renovating the facilities at little net cost to NASA; helps reduce CoF requirements, but not substantial financial gain	Helps NASA maintain it's important heritage facilities for future generations; potential synergies created by bringing partners/contractors "on-campus"	Can result in increased non-federal jobs within municipality	Limited outreach	This opportunity calls for a study of the potential; the study is straightforward, the potential for multiple income-generating opportunities is less likely.

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18	All	Facilities and Asset Management	Operational	NASA	Real Property Strategy	Master plans and Economic Phasing	NASA's Centers have completed Master Plans for their facilities for many years; many of the older plans focused on describing existing conditions while some of the newer plans focus on guiding development in the future. Some of the Centers have current Master Plans, and others are more dated. The Master Plans help inform long-term decisions about investment and cost reduction opportunities, ultimately allowing NASA to make strategic investment decisions. Consider establishing a consistent process and system for developing center-specific and cross-center master plans that encompass Center, Enterprise and Real Estate goals.	2	3	0	0	3	5	3	Correlating real estate strategy to a master plan can help achieve savings over the long term in that it optimizes space utilization. One detriment, however, might be that NASA may not be able to adhere to the plans, given budget constraints	Should increase Center efficiency	Limited, but may incorporate local needs	Limited, but may incorporate local needs	Establishment of a coordinated master planning strategy should be achievable.
4	All	Mission or Program Strategy	Operational	NASA	Consolidation	Mission Clarification - Enterprise activities	Review NASA from an Enterprise perspective - prior to impact of full cost accounting - to have enterprises help determine opportunities to streamline overall operations and reduce potential duplications or inefficiencies across centers, resulting in opportunity to reduce infrastructure.	3	2	1	1	1	5	3	Removing mission/goal duplications will result in cost savings on infrastructure	Coordinated pursuit of mission/goals will foster relationships with universities/contractors, but might hurt some	Net gain to some communities while others might have net loss	Enhanced mission/goal coordination should enhance outreach	Political challenges for NASA.
22	All	Underutilized Facilities	Operational	NASA	Shared Services	Shared Services Organization - use underutilized space	NASA is considering a shared services organization; consider locating at a Center that has underutilized facilities and availability of staff. Could reduce overall NASA costs, help renovate underutilized facilities.	2	2	1	1	2	5	3	Net cost savings to NASA would be achieved	Bring more partners into NASA community	Net loss to one community, gain to another	Little impact	Difficult to implement and manage.
202	White Sands	Facilities and Asset Management	Divest	NASA	Test Stand	Test stands - Move to Stennis	Consider moving the large scale test stands to Stennis.	2	2	1	0	2	5	2	Cost savings through utilization/consolidation	Can improve operations/ facilities for contractors	Communities can both gain or lose non-federal jobs/ contractors	No community outreach	Political challenges for NASA.
199	White Sands	Mission or Program Strategy	Operational	NASA	Consolidation	Expand operations in low cost, high security location	Review mission - critical activities that may be redundant throughout NASA. Consider moving the activities to White Sands to reduce costs at other centers and to provide protection that White Sands affords through it's location.	2	2	1	0	2	5	2	Cost savings through space utilization/consolidation	Can improve operations/ facilities for contractors	Communities can both gain or lose jobs	No community outreach	Political challenges for NASA.
159	Michoud	Underutilized Facilities	Space Act	Agriculture	Building 350 - HQ	Federal Campus - Lease Headquarters to Department of Agriculture	Department of Agriculture already occupies a good portion of the headquarters; move NASA into other facility and lease the main building to Agriculture on reimbursable basis. Could also be accomplished through EUL, with negligible difference.	2	1	1	1	2	5	2	Helps reduce NASA costs	collaboration increased with Department of Agriculture, but main building would not hold NASA employees which could create confusion	Can expand non-federal jobs in community	Small positive impact on outreach	Depends on Department of Agriculture's desire to expand; could require improvement of facilities.

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157	Marshall	Facilities and Asset Management	Space Act	Army	Shared Cost	Federal Campus - NASA / Army shared services agreement	Develop JBOSC type agreement with Army to reduce expenses.	2	2	0	0	3	5	2	modest cost savings on services	Calls for close collaboration	No net impact on community	Involves no outreach	Easy to implement for NASA, depends on willingness of Army.
151	Marshall	Underutilized Facilities	Space Act	NASA	IFMP	IFMP for Agency on Center	NASA rents space for the agency-wide activities; consider moving the operations on Center into existing facilities or master planned facilities. Advantages - lowers NASA Overall investment; increase Marshall cost-sharing.	3	2	0	0	2	5	2	NASA can reduce costs by putting long-term needs in owned space	Will bring more people/partners on campus	Net loss; communities lose revenues from leased space	Not relevant	Possibly require program shifts, strong cross-center collaboration.
158	Marshall	Underutilized Facilities	Divest	NASA	Test Stand	Test stands - Move to Stennis	Consider moving the large scale test stands to Stennis.	2	2	1	0	2	5	2	Cost savings through utilization/consolidation	can improve operations/ facilities for contractors	Communities can both gain or lose non-federal jobs/ contractors	No community outreach	Political challenges for NASA.
145	Langley	Facilities and Asset Management	Space Act	Air Force	Shared Cost	Federal Campus - Joint facilities management contract	Negotiate a facilities management contract with the Air Force - similar to the JBOSC contract at KSC to share and reduce overall facilities costs.	2	2	0	0	3	5	2	modest cost savings on services	Calls for close collaboration	No net impact on community	Involves no outreach	Easy to implement for NASA, depends on willingness of Air Force.
133	Kennedy	Underutilized Land	Divest	Fish and Wildlife / Florida	Wildlife Refuge	Divest buffer zone land while controlling use	NASA owns 82,822 acres of land at KSC, and has an easement for 56,547 acres which is needed to provide the buffer zone for launch activities. Review ownership and costs associated with maintaining the buffer zone and consider cost-reduction alternatives that would still protect NASA's interests (analogous to Stennis). Fish and Wildlife or the state of Florida may be potential partners.	3	2	0	0	2	5	2	Can result in significant cost savings	Bolsters coordination/partnership with F&W, State	No net economic impact with partners	No net impact on outreach vs. current structure	Will NASA sacrifice security control? Willingness of partners.
81	Goddard	Facilities and Asset Management	Outside Fence	Private Sector	Mod C	Mod C Consolidation - Outsourcing	Consider outsourcing as many logistics operations outside the fence, removing NASA's obligation to manage the process and provide the service.	2	1	2	1	1	5	2	Potentially reduce operations costs	Not as good as controlling logistics but could offer efficiencies	Non-federal jobs in the local economy	Modest	Requires change in operations
3	All	Facilities and Asset Management	Operational	NASA	Consolidation	Divest NASA leased space agency-wide	Review NASA leased space agency-wide to determine if the leased operations can be moved to a Center that can accommodate the space and requirements. Space planning and utilization can help reduce leased space.	3	2	0	0	2	5	2	NASA can reduce costs by implementing enterprise wide space utilization	Will bring more people/partners on campus	Net loss; communities lose leased space	Not relevant	Possibly require program shifts, strong cross-center collaboration.
13	All	Facilities and Asset Management	Operational	NASA	Management	Unique Infrastructure Management Plans	NASA has several types of unique facilities which are national or international assets; many of the facilities are old, and often they are very expensive to maintain and operate. Consider establishing cross-Center management boards, like the Test Stand Board, for all major infrastructure assets. To help insure NASA costs are to a realistic level managed.	2	2	1	0	2	5	2	Helps NASA reduce expenses by increasing utilization of unique facilities.	Some potential synergy with users	Little economic benefit to community if users stay in hotels, etc.	No community outreach	Achievable, but not easy to implement in decentralized organization.
5	All	Mission or Program Strategy	Operational	NASA	Consolidation	Mission Clarification - Logistics/ Manufacturing	Review NASA operations with goal of streamlining manufacturing-type operations and reduce potential duplications or inefficiencies across centers, resulting in opportunity to reduce infrastructure.	3	1	1	1	1	5	2	Cost savings on infrastructure	Minimal effect on contractors	Small net positive - some communities gain, others lose	Minimal effect on community outreach	Political challenges for NASA.

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188	Wallops	Underutilized Land	Space Act	Federal Agency	Near highway	Federal Campus	Navy is already there. Using proximity to DC, state of VA support of DOD, training capability, add other federal tenants. Additional tenants could increase training.	2	1	2	0	1	5	1	Cost of maintaining land too low to result in significant impact	Can be synergistic with fed. Agency	Might create non-federal jobs but land not returned to tax rolls	No outreach	Significant fed agency user interest unlikely.
174	Stennis	Underutilized Land	Space Act	Federal Agency	Army Lease	Army lease - Cancel - Incorporate land in Federal Campus Strategy	The army has a long term lease from NASA in the middle of Stennis that the Army may not need. Cancel the lease with the Army, take over the land, and market to other Federal Agencies, including DoD, to increase the federal tenant mix.	2	1	2	0	1	5	1	Increasing tenants reduce overall costs; but cost associated with Army land appears high	could bring in Agencies with synergies to NASA, or allow for additional resources available to the whole Center and tenants	Expand employment base in an economically challenged area but property not returned to tax rolls	No net impact	Proven business model and systems set up; question is how many more agencies need facilities.
28	Ames	Mission or Program Strategy	Operational	NASA	Animal Care	Animal Care Facility - Consolidate NASA-Wide research activities	The animal care facility appeared to be very underutilized, with only a small portion of the facility conducting research. NASA's mission includes biotechnology research, and potential animal research can support NASA's Astronaut program. Consider conducting all related research done at various NASA facilities at the Ames facility to take advantage of the current capabilities, and to focus "live" research activities.	2	1	1	0	2	5	1	Cost savings for NASA to coordinate and focus research	Potential cross-Center synergies	Modest	No outreach	Potential, but not sure of quantity of current research and how transportable to research could be
29	Ames	Underutilized Facilities	Space Act	Private Sector	Animal Care	Animal Care Facility - Market	Animal Care Facilities are highly regulated and difficult to manage but a necessary part of some research activities. Therefore, this facility could be considered "unique" within NASA. Provide incentives to the contractor to market to companies who want access to approved, proven animal care facilities.	2	1	1	0	2	5	1	Cost savings for NASA by increased use	Limited synergies, unless similar programs being researched	Limited	No outreach	NASA will have to market facility publicly, and may face scrutiny of Animal Rights groups; potential security concerns (inside fence line
14	All	Facilities and Asset Management	Operational	Private Sector	Management	Outsourcing - Office Space Creative strategy	Turn over complete facilities and asset management responsibilities for office space to private contractors. Facilities management contracts are in place at many centers (i.e. JSC, KSC), but currently focus on maintenance. Establish more encompassing contracts that include items normally covered in some discrete and minor CoF funding items.	3	1	1	0	1	5	1	If achievable, can reduce CoF funding and enhance condition of facilities. Single-sourcing contracts can also reduce overall management costs.	Potentially a better work environment	No economic impact on community	No community outreach	Achievable; but difficult gaining contracting authority and OMB scoring; potential to include capital repairs and replacement is questionable.

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7	All	Underutilized Land	Space Act	Federal Agency	DoD collocation	Engage in active discussions prior to DoD BRAC process	The Department of Defense is preparing for a Base Relocation and Closure process to begin within the next couple of years. NASA's mission specifically encourages cooperation with the military. Engage in discussions with DoD to understand how NASA can take on additional tenants through the DoD BRAC process.	2	1	2	0	1	5	1	Spreading costs among multiple tenants helps lower NASA's costs	Can be synergistic with some DoD activates; may offer additional services, employee benefits that couldn't be afforded normally	Might bring new jobs to a community, but at expense of another community; land not returned to tax rolls	No outreach	Difficult to predict outcomes of highly political BRAC process.
185	Wallops	Facilities and Asset Management	Divest	Private Sector	Consolidation	Center Consolidation - Wallops move to Launch Facilities	NASA has two locations at Wallops - the launch area, and the main campus. Consider divesting the main campus and use the revenues to consolidate into new operations at the Launch location.	3	0	2	0	0	5	0	Cost saving opportunity through consolidation	Only involves synergy if land divested to partner	Brings more firms/employees to community, but community is economically challenged	No outreach	Low demand could render unfeasible; doesn't currently provide much benefit for the cost of the consolidation.
167	Michoud	Underutilized Land	EUL	Private Sector	West of Mercury Drive	Ground Lease	EUL portion of land not needed for manufacturing; maintain drainage channel and dock access if necessary.	2	0	2	0	1	5	0	Potential for revenue generation, but most likely at industrial use rental rates	Provides limited collaboration opportunities with contractors	Provides non-federal jobs	Limited outreach	Near term market demand might be question; sub market is industrial.
168	Michoud	Underutilized Land	Divest	Private Sector	West of Mercury Drive	Divest to outside investors for industrial uses.	Divest portion of land not needed for manufacturing; maintain drainage channel and dock access if necessary.	3	0	0	0	2	5	0	Measurable cost savings for NASA	No net impact	No net impact	No net impact	Political question concerning NASA control.
152	Marshall	Facilities and Asset Management	EUL	Private Sector	Machine Shops	Outsource Machine Shops - ON Center	NASA needs machine shops which NASA pays to operate and maintain; consider eliminating offering the machine shops to outside vendors through EUL, allowing them to perform work for NASA and other clients.	2	0	2	0	1	5	0	Can save money, probably not substantial revenues; could provide creative financing to for expensive equipment	Limited additional benefit	Provides some positive impact to local vendor firms	Limited additional benefit	Achievable, but dependent on willing contractors who would need to follow security guidelines; may be difficult to attract workforce; NASA may have liability with non-NASA work done on NASA real property.
153	Marshall	Facilities and Asset Management	Divest	Private Sector	Machine Shops	Outsource Machine Shops - OFF Center	NASA needs machine shops which NASA pays to operate and maintain; consider eliminating machine shops on Center; outsource to local machine shop contractors; purchase goods on a competitive basis from the local marketplace.	2	0	1	0	2	5	0	Can save money but might not be considered high impact	Not relative	Provides some positive impact to local vendor firms	Not relative	Achievable, but dependent on willing contractors.

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137	Langley	Underutilized Land	Divest	Air Force	East Campus - Langley	East campus - Return to Air Force	Return all underutilized land and facilities in river area to Air Force. Retain ownership of only those unique facilities that are critical to NASA in the future. Results in net reduction of costs.	3	0	0	0	2	5	0	Measurable cost savings for NASA			No net impact	Political question concerning NASA control.
30	Ames	Underutilized Facilities	Divest	NASA	Animal Care	Animal Care Facility - Outsource	The animal care facility appeared to be very underutilized, with only a small portion of the facility conducting research. Consider not doing the research on center; outsource to contractors.	2	0	2	0	1	5	0	Cost savings for NASA increased expense in conducting research	No synergies	Benefit from increased non-federal jobs	No outreach	Potential, but will disrupt any research that needs to be done in close proximity to NASA researchers.
11	All	Facilities and Asset Management	Operational	Private Sector	Machine Shops	Outsource Machine Shops	NASA needs machine shops which NASA pays to operate and maintain; review strategies for outsourcing by Center and cross-center (few or multiple outsourcing contracts). Strategies could include eliminating machine shops inside the fence, or forming EUL of on-Center machine shops. There could be potential cost savings by bundling machine shop contracts cross-Center.	2	0	1	0	2	5	0	Can save money but might not be considered high impact	No relative	Provides some positive impact to local vendor firms	Not relative	Study is Achievable, but success of outsourcing is highly dependent on willing contractors.
93	Johnson	Facilities and Asset Management	Outside Fence	Private Sector	Bioastronautics	Bioastronautics - Outsource	JSC needs new facilities to conduct research and provide better Astronaut services. Consider entering into long-term agreement with NSBRI or other entity to finance and build the facility. NASA would lease a portion of the facility as needed (similar to KSC's SERPL)	1	1	3	3	0	4	4	Net reduction in NASA's expense compared to CoF; NASA would pay to lease space and may run into OMB Scoring issues	Provided better facility, but not as good as being on Center - difficult for Astronaut-specific issues	Good for generating outside non-federal jobs	Good education	Difficult to accomplish.
40	Ames	Underutilized Facilities	EUL	Private Sector	Hangars	California Space and Air Center - SpaceWorld	A private group has been formed to consider taking over Hangar One; they intent to renovate hangar and convert to major tourism attraction focused on space, aerospace, etc. EUL to investors.	0	1	2	3	2	4	4	Cost savings and potential income for NASA; payments would probably be spread over time	Little impact on synergies	Brings visitors to community	Positive Outreach	Very unique and expensive building with liability issues, may cost too much to prepare for divestiture.
169	Michoud	Underutilized Land	CoF	NASA	West of Mercury Drive	Invest in new manufacturing facilities	Michoud is organized to manufacture large scale, high quality facilities. As NASA considers next generation technology, centralize the manufacturing operations of all potential technologies at Michoud.	1	3	2	0	1	4	3	Minimal	Additional collaboration through manufacturing collocation	Provides non-federal jobs	Limited outreach	CoF funding is difficult.

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138	Langley	Facilities and Asset Management	Historic Preservation Act	Private Sector	East Campus - Langley	East Campus - Historic District	Consider designating Langley's East Campus as a historic district, similar to the Shenandoah District at Ames. Wherever possible, lease facilities to the private sector to help renovation of the facilities. The net result is a reduction of CoF funds that need to be spent on the facilities and lower future occupancy costs.	2	3	1	0	1	4	3	NASA can reinvest proceeds of leases into facilities, thereby renovating the facilities at little net cost to NASA; helps reduce CoF requirements, but not substantial financial gain	Helps NASA maintain it's important heritage facilities for future generations; potential synergies created by bringing partners/contractors "on-campus"	Can result in increased non-federal jobs within municipality	Limited outreach	Viable, but dependent on market for tenants/users; may be difficult to attract suitable tenants into high security area.
117	JPL	Facilities and Asset Management	Historic Preservation Act	Private Sector	Real Property Development Strategy	Historic District	Consider designating JPL, or portions of JPL as a historic district, similar to the Shenandoah District at Ames. Wherever possible, lease facilities to the private sector to help renovation of the facilities. The net result is a reduction of CoF funds that need to be spent on the facilities and lower future occupancy costs.	2	3	1	0	1	4	3	NASA can reinvest proceeds of leases into facilities, thereby renovating the facilities at little net cost to NASA; helps reduce CoF requirements, but not substantial financial gain	Helps NASA maintain it's important heritage facilities for future generations; potential synergies created by bringing partners/contractors "on-campus"	Can result in increased non-federal jobs within municipality	Limited outreach	Viable, but dependent on market for tenants/users.
66	Glenn	Facilities and Asset Management	Historic Preservation Act	Private Sector	Real Property Development Strategy	Historic District	Consider designating Glenn as a historic district, similar to the Shenandoah District at Ames. Wherever possible, lease facilities to the private sector to help renovation of the facilities. The net result is a reduction of CoF funds that need to be spent on the facilities and lower future occupancy costs.	2	3	1	0	1	4	3	NASA can reinvest proceeds of leases into facilities, thereby renovating the facilities at little net cost to NASA; helps reduce CoF requirements, but not substantial financial gain	Helps NASA maintain it's important heritage facilities for future generations; potential synergies created by bringing partners/contractors "on-campus"	Can result in increased non-federal jobs within municipality	Limited outreach	Viable, but dependent on market for tenants/users. Most likely location is near the Runway.
175	Stennis	Facilities and Asset Management	Space Act	Army	Army Lease	Army lease - Keep lease - negotiate shared management expenses	Army Land Lease - The Army has a long term lease from NASA in the middle of Stennis; let Army keep the lease, set up management for all of Stennis run by NASA, charge Army for services.	2	1	0	0	2	4	1	Helps reduce overall shared costs; Allows NASA to no incur business risk associated with Canceling lease	Could allow for additional services to be offered to NASA	No net impact	No net impact	Potential to keep lease and increase expense sharing; additional risk is that Army may cancel lease in BRAC round.

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155	Marshall	Facilities and Asset Management	Divest	NSSTC	NSSTC	NSSTC, reduce support	NSSTC is a unique organization that is associated with NASA. NASA leases space occupied by NASA employees at cost since NASA paid for larger portion of the construction cost to eliminate real estate responsibility.	1	0	1	1	2	4	1	Can save money but might not be considered high impact	Reduces synergy with NASA	Provides some positive impact to local firms	Reach out to community for support	Achievable, but dependent on willing contractors.
146	Langley	Underutilized Land	Space Act	Air Force	Federal Campus	Federal Campus - Increase Air Force presence on NASA side	The Air Force is a growing presence at Langley and may need more space.	2	1	1	0	1	4	1	Cost of maintaining land too low to result in significant impact	Can be synergistic with federal Agency	Might create non-federal jobs but land not returned to tax rolls	Not relevant	Significant fed agency user interest unlikely; not high benefit to NASA.
31	Ames	Underutilized Facilities	EUL	Private Sector	Animal Care	Animal Care Facility - EUL	Animal Care Facilities are highly regulated and difficult to manage but a necessary part of some research activities. Therefore, this facility could be considered "unique" within NASA. Enter into an EUL arrangement with organization that requires an Animal Care facility; turn over facility and operations completely, outsource animal care research activities when NASA requires additional research.	2	1	1	0	1	4	1	Cost savings for NASA by increased use	Limited synergies, unless similar programs being researched	Modest	No outreach	NASA outsources animal testing which could help protect NASA's image; difficult to find EUL partner to take responsibility.
194	Wallops	Facilities and Asset Management	Outside Fence	Private Sector	Training	Training Co-locate off-site - Outsource	There are many training / conference facilities available. Consider moving training activities off site (rent as needed) and reduce the facilities specifically associated with Training.	1	0	1	0	2	4	0	Reduction in costs to Wallops but may increase costs to NASA depending upon frequency of renting outside facilities	No synergies	Help other locations, hurt area around Wallops	No benefit	Could happen quickly if necessary.
178	Stennis	Restructure	EUL	Lockheed Martin	Lockheed Martin Building	Lockheed Martin Building EUL	NASA currently has a Space Act Agreement with the State of Mississippi, who in turn has an agreement with Lockheed Martin. Restructure agreement with Mississippi and Lockheed Martin as EUL.	3	0	0	0	1	4	0	Positive financial impact for NASA compared to the current lease rate	No additional benefit	No additional benefit	No additional benefit	Agreement might be difficult to restructure.
171	Michoud	Mission or Program Strategy	Divest	Private Sector	Consolidation	Divest Michoud - Co-locate ET manufacturing with Launch operations	Move External Tank (ET) manufacturing near-term. Currently Michoud makes the ET which is transported to Kennedy. If this function is expected to continue for decades, consider moving operations to Kennedy, divest Michoud	2	0	0	0	2	4	0	Significant cost savings, but offset by move costs	No net impact	No net impact	No net impact vs. current situation (a gain for KSC community offset by loss at Michoud	Political and cost challenges for NASA.
150	Marshall	Underutilized Land	Divest	Army	Consolidation	Return underutilized area to Army	Marshall has a long term lease with the Army for use of land which may not be needed.	2	0	0	0	2	4	0	Potential cost savings for NASA			No net impact	Political question concerning NASA control.
127	Kennedy	Restructure	EUL	SpacePort Florida	SERPL	SERPL	Consider restructuring the SERPL agreement to demonstrate it's applicability to EUL.	3	0	0	0	1	4	0	Positive financial impact for NASA	No additional benefit	No additional benefit	No additional benefit	Agreement might be difficult to restructure

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103	Johnson	Restructure	EUL	MSFEFI	Space Center Houston	Space Center Houston Conference Center - Convert to EUL	Space Center Houston is considering entering into an agreement with a developer to build a conference center and office buildings as an enhancement to their campus. Consider canceling Space Center Houston's MOU on that subject land and have NASA enter into EUL agreement directly.	3	0	0	0	1	4	0	Provide revenue to NASA while maintaining long term ownership	No additional benefit	No additional benefit	No additional benefit	Agreement might be difficult to restructure
59	Glenn	Restructure	Divest	OAI	OAI	OAI building on NASA land - Divest	OAI occupies NASA land through Space Act Agreement. The operation appears to be relatively successful; consider divesting the land and reinvesting proceeds at the Center.	3	0	0	0	1	4	0	Small land parcel, low land value, but would provide immediate revenue.	No additional benefit	No additional benefit	No additional benefit	Agreement might be difficult to restructure
41	Ames	Underutilized Facilities	Divest	Private Sector	Hangars	California Space and Air Center - SpaceWorld	A private group has been formed to consider taking over Hangar One; they intent to renovate Hangar and convert to major tourism attraction focused on space, aerospace, etc. Divest the Hangar and remove NASA's obligation and involvement.	0	1	2	3	1	3	4	Cost savings and potential income for NASA	Little impact on synergies	Brings visitors to community	Positive Outreach	Very unique and expensive building with liability issues, may cost too much to prepare for divestiture.
160	Michoud	Underutilized Facilities	Space Act	Private Sector	CAM	National Center for Advanced Manufacturing (CAM)	NCAM operations are research-oriented activities focused on the manufacturing industry. Increase focus on this effort; coordinate with universities and manufacturing associations and corporations to increase reimbursable funding of these activities. Coordinate with Departments of Energy and Commerce to reduce costs.	1	2	1	1	1	3	3	sharing costs reduces NASA's obligation	NASA constantly needs to discover new manufacturing techniques	More emphasis creates opportunities for spin off businesses	helps local region potential gain new manufacturing expertise	limited funds available to support research, but potential
154	Marshall	Underutilized Facilities	Space Act	Private Sector	NCAM	National Center for Advanced Manufacturing (NCAM)	NCAM operations are research-oriented activities focused on the manufacturing industry. Increase focus on this effort; coordinate with universities and manufacturing associations and corporations to increase reimbursable funding of these activities. Coordinate with Departments of Energy and Commerce to reduce costs.	1	2	1	1	1	3	3	sharing costs reduces NASA's obligation	NASA constantly needs to discover new manufacturing techniques	More emphasis creates opportunities for spin off businesses	Helps local region potential gain new manufacturing expertise	Limited funds available to support research, but potential
143	Langley	Facilities and Asset Management	EUL	Contractors	Swing Space	Swing Space	Langley has no room for expansion on their western campus, although a majority of the occupants are contractors. Subsequently, as new facilities need renovation, there is a dearth of swing space. Enter into EUL to have simple "swing space" facility built near the fence line at the back gate that can be occupied by contractors.	1	2	1	1	1	3	3	Costly but could help reduce current churn expenses	Helps NASA keep productive while renovating facilities	Investment in community, but small	Potential for outside companies when NASA not needed	Difficult agreement to structure; hard to finance unknown occupancy requirement.
89	Goddard	Facilities and Asset Management	CoF	Private Sector	Space Science Building	Space Science Building - CoF	The Space Sciences groups are currently in old facilities that inhibit their work. The Goddard Master plan includes a new Space Science Building. Pursue normal CoF funding.	1	3	1	0	1	3	3	Requires continued competition for limited funding	Creates efficiencies, currently in old inefficient buildings	Minimal economic impact to community	No outreach to community	Limited funding hurts expediency.

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72	Glenn	Facilities and Asset Management	EUL	Private Sector	Swing Space	Swing Space	Glenn is located on a very dense campus and has minimal room for expansion although a majority of the occupants are contractors. Subsequently, as new facilities need renovation, there is a dearth of swing space. Enter into EUL to have simple "swing space" facility built near the fence line that can be occupied by contractors.	1	2	1	1	1	3	3	Costly but could help reduce current churn expenses	Helps NASA keep productive while renovating facilities	Investment in community, but small	Potential for outside companies when NASA not needed	Difficult agreement to structure; hard to finance unknown occupancy requirement.
24	All	Facilities and Asset Management	Operational	NASA	Trailers	Temporary Facilities and Trailers	Eliminate expansion-based trailers that ultimately become long-term housing solutions . Consider 1)consolidation-driven renovations of facilities, 2)inexpensive metal buildings or alternative longer-term temporary housing or 3)mission re-alignment that reduces need 4) Balancing space needs across center.	2	3	0	0	1	3	3	Can save money as repair and maintenance costs surpass annual cost amortization of new facilities	Provide better, more efficient work place	No impact	No impact	Achievable, but dependent on funding and policy change for NASA.
135	Langley	Underutilized Land	EUL	Private Sector	East Campus - Langley	Air Force Parking	The Air Force needs additional parking on the East campus; EUL to parking company, and charge Air Force for parking to pay capital costs. Land is currently permitted to NASA, so this opportunity may be complex.	1	1	1	1	1	3	2	Creative method for financing needed parking structure; ultimate partner is other federal agency, so EUL payments might be lower than private sector	Might not involve synergistic partner	Modest	Can involve some community participation	Market has strong partner base; deal structure may be complicated; may encounter OMB scoring issues concerning Air Force payment of parking.
110	JPL	Facilities and Asset Management	CoF	Cal Tech	Flight Project Center	Flight Project Center - CoF	The Flight Project Center is a facility that would improve JPL's operational efficiency. As currently planned, continue to build the facility as a CoF project.	1	2	1	0	1	3	2	Requires continued competition for limited funding	Would provide operational efficiencies	Minimal economic impact to community	No outreach to community	Limited funding hurts expediency.
94	Johnson	Facilities and Asset Management	CoF	NASA	Bioastronautics	Bioastronautics - CoF process	JSC needs new facilities to conduct research and provide better Astronaut services. Proceed with normal CoF funding cycle.	1	2	1	0	1	3	2	Requires continued competition for limited funding	Would provide operational efficiencies	Minimal economic impact to community	No outreach to community	Limited funding hurts expediency.
82	Goddard	Facilities and Asset Management	CoF	NASA	Mod C	Mod C Consolidation - CoF	Mod C is a logistics consolidation project that will help Goddard better conduct that operation. Proceed through the normal CoF process.	1	2	1	0	1	3	2	Requires continued competition for limited funding	Creates efficiencies	Minimal economic impact to community	No outreach to community	Limited funding hurts expediency.
172	Michoud	Mission or Program Strategy	Divest	Private Sector	Consolidation	Divest Michoud when Shuttle Program complete.	At end of Shuttle program, divest manufacturing facility at Michoud, consistent with NASA's intent to outsource capabilities to commercial contractors wherever possible. Invest only to maintain quality of External Tank production.	2	1	0	0	1	3	1	Net ultimate cost reduction regarding Michoud, but potential higher investment elsewhere	Could move operations to location better for NASA overall	Not good for economically challenged area	Not good for economically challenged area	Difficult decision, but not out of the question realistically.

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116	JPL	Facilities and Asset Management	CoF	NASA	Parking Garage	Parking Garage - CoF	JPL has a shortage of parking. Use NASA CoF funding to construct structured parking on-site.	1	1	1	0	1	3	1	Requires continued competition for limited funding	Would provide operational efficiencies by putting parking closer to worker buildings	Minimal economic impact to community	No outreach to community	Limited funding hurts expediency.
200	White Sands	Facilities and Asset Management	Divest	Army	Consolidation	Return to Army, rent facilities as needed	NASA leases the land from the Army. Maintain critical operations, but substantially reduce presence at White Sands to reduce costs.	2	0	0	0	1	3	0	Measurable cost savings	Not relevant to synergies	Possible reduction of non-federal jobs	No impact on outreach	Political challenge for NASA.
164	Michoud	Restructure	EUL	Lockheed Martin	Lockheed Martin Building	Lockheed Martin building - Convert to EUL	Lockheed Martin currently has a Space Act Agreement with NASA to perform Non-NASA commercial activities at Michoud. Consider restructuring agreement as EUL.	2	0	0	0	1	3	0	Positive financial impact for NASA, but market value is not high	Limited additional benefit	Limited additional benefit	Limited additional benefit	Agreement might be difficult to restructure.
148	Marshall	Restructure	EUL	Boeing	Boeing Building	Boeing Building - convert to EUL	Boeing is occupying a building on Center for non-NASA activities. Convert the Space Act agreement to EUL.	2	0	0	0	1	3	0	Positive financial impact for NASA, but the current rate is close to current market rate	Limited additional benefit	Limited additional benefit	Limited additional benefit	Agreement might be difficult to restructure.
141	Langley	Restructure	EUL	ODU	ODU	ODU lease - EUL	ODU currently leases a wind tunnel for non-NASA uses. Current agreement is reimbursable; consider converting to EUL.	2	0	0	0	1	3	0	Result in modest impact to NASA; market value of Wind Tunnel may not be high	No additional benefit	No additional benefit	No additional benefit	May be difficult to restructure; market value of leasing wind tunnels not high.
128	Kennedy	Restructure	Divest	SpacePort Florida	SERPL	SERPL	NASA owns the land under the SERPL building; the land is not near the main center of campus. Consider restructuring the SERPL agreement to divest the land to SpacePort Florida or an investor.	2	0	0	0	1	3	0	Positive immediate financial impact for NASA but not high value land	No additional benefit	No additional benefit	No additional benefit	Agreement might be difficult to restructure; partner may be difficult to find.
104	Johnson	Restructure	EUL	MSFEFI	Space Center Houston	Space Center Houston	Consider restructuring Space Center Houston's Space Act Agreement under EUL.	2	0	0	0	1	3	0	Provide cash stream to Johnson	No additional benefit	No additional benefit	No additional benefit	Agreement might be difficult to restructure
60	Glenn	Restructure	EUL	OAI	OAI	OAI building on NASA land - EUL	OAI occupies NASA land through Space Act Agreement. Examine in context of structuring under EUL. Result in ground lease proceeds to NASA.	2	0	0	0	1	3	0	Not for profit on s mall land parcel, low land value, difficult to negotiate "better deal"	Limited additional benefit	Limited additional benefit	Limited additional benefit	Agreement might be difficult to restructure
33	Ames	Restructure	EUL	Carnegie Mellon	Carnegie Mellon	Carnegie Mellon - Convert lease to EUL	Carnegie Mellon University has an agreement with NASA to lease and renovate a building in the historic district. Their intent is to develop a campus at Ames that can service the west coast. Consider restructuring the current agreement through EUL, or structuring future agreements on new facilities through EUL.	2	0	0	0	1	3	0	Potential additional revenue generation potential	No additional benefit	No additional benefit	No additional benefit	Agreement might be difficult to restructure

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42	Ames	Underutilized Facilities	EUL	Private Sector	Hangars	Hangars 1, 2 & 3	Hangars 1, 2 & 3 are unique historic structures, currently being partially used. Full use of the Hangars, however, require substantial investment in fire suppression systems; Hangar One has environmental contamination challenges. Consider completely documenting the Hangars for historical purposes; solicit interest from the private sector, potentially in conjunction with the air field, and lease through EUL.	1	0	1	0	1	3	0	Reduce NASA costs, obligations	No synergy	Could increase non-federal jobs in demolition contract	No outreach	Political / community challenge in demolition; once demolished they would be irreplaceable in their historic context (could build new ones). NASA could still maintain Hangars - along with fire risk - until a more economical solution is found.
43	Ames	Underutilized Facilities	Divest	NASA	Hangars	Hangars 1, 2 & 3	Hangars 1, 2 & 3 are unique historic structures, currently being partially used. Full use of the Hangars, however, require substantial investment in fire suppression systems; Hangar One has environmental contamination challenges. Consider completely documenting the Hangars for historical purposes; demolish.	1	0	1	0	1	3	0	Reduce NASA costs, obligations; need to; need to incur remediation/ demolition costs.	No synergy	Could increase non-federal jobs in demolition contract	No outreach	Political / community challenge in demolition; once demolished they would be irreplaceable in their historic context (could build new ones). NASA could still maintain Hangars - along with fire risk - until a more economical solution is found.
183	Stennis	Restructure	EUL	Boeing	Test Stand	Boeing Test Stand - EUL	Boeing currently has a 20 year MOU on one of the test stands; encourage Boeing to increase their presence - potentially adding new facilities through EUL - at Stennis.	1	1	0	0	1	2	1	EUL allows potential revenues, but not high competitive demand for leasing the test stand	No additional benefit	No additional benefit	No additional benefit	Agreement might be difficult to restructure.
53	Dryden	Facilities and Asset Management	Divest	Air Force	Consolidation Dryden	Return to Air Force, rent facilities as needed	NASA has a land-use permit for the land with the Air Force Flight Test Center. Maintain airport operations, but substantially reduce presence at Dryden to reduce costs.	1	1	0	0	1	2	1	Moderate cost savings potential	Synergies only with Air Force	No net benefit to community	No outreach	No substantial motive for NASA

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Section 10- NASA Opportunity Matrix - Highest Factors.xls

SORT ORDER: Business | Intangible

ID #	Center	Type	Authority	Partner	Name	Opportunity Name	Potential Strategy	Impact Factors: Financial (F)	Synergistic (S)	Economic (E)	Outreach (O)	Reality (R)	Results & Rank: Business (9=max) (F,E,R)	Intangible (6=Max) (S,O)	Financial	Synergistic	Economic	Outreach	Reality
201	White Sands	Mission or Program Strategy	Example	NASA	Consolidation	Low cost operations, high security	Example of locating NASA operations in an area of the country that is not easily accessible, allowing NASA to protect certain investments at lower cost than locating them in higher cost, higher visibility areas.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
189	Wallops	Facilities and Asset Management	Example	NASA	Real Property Strategy	Master Plan	Although not complete, the Center has a well thought out master plan that will allows it to be prepared to address its future proactively.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
187	Wallops	Underutilized Facilities	Example	Virginia Space Port	Launch	Launch Facilities	Good example of coordinating with State of Virginia and private sector to help market launch facilities.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
181	Stennis	Mission or Program Strategy	Example	NASA	RPTB	Rocket Propulsion Testing Board	The RPTB is a good example of a management group taking responsibility for asset allocation cross-center.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
177	Stennis	Underutilized Land	Example	Federal Agency	Federal Campus	Federal Campus	Stennis is the best example of a Center that has attracted other Federal agencies to occupy land and buildings. NASA needs to maintain the buffer zone but doesn't need to occupy much of the land, so the federal campus allows NASA to control the land while decreasing overall management costs.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
179	Stennis	Underutilized Land	Example	Lockheed Martin	Lockheed Martin Building	Lockheed Martin Building/Land	Lockheed Martin, working with the State of Mississippi, has built a facility on NASA land. Good example of bringing outside tenants - in this case also a contractor - that need security onto NASA land; ultimately helps reduce costs to NASA.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
184	Stennis	Underutilized Land	Example	Boeing	Test Stand	Boeing Test Stand - MOU	Boeing currently has a 20 year MOU on one of the test stands; encourage Boeing to increase their presence - potentially adding new facilities through EUL - at Stennis.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
162	Michoud	Mission or Program Strategy	Example	Lockheed Martin	GOCO	Government Owned Contractor Operated (GOCO)	Michoud is a good example of turning a location almost completely over to the private sector, while maintaining NASA control.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
149	Marshall	Underutilized Facilities	Example	Boeing	Boeing Building	Boeing Building - reimbursable lease of facility	Boeing is leasing a facility, at full reimbursable cost from NASA.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
140	Langley	Mission or Program Strategy	Example	NIA	NIA	National Institute for Aeronautics (NIA)	Example of research activities done outside the Center for NASA's benefit	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				

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142	Langley	Underutilized Facilities	Example	ODU	ODU	ODU lease	Example of leasing unique facility to private sector in order to keep the facility operational, and reduce overall capital costs for the private sector.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
134	Langley	Utilities Management	Example	Air Force	Cogen	Cogen (Trash for energy)	Through agreement between NASA and Air Force, trash is burned in a cogen plan and Electrical costs are reduced.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
124	Kennedy	Facilities and Asset Management	Example	NASA	Real Property Strategy	Master Plan	The Center has a well thought out master plan that will allows it to be prepared to address its future proactively.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
126	Kennedy	Facilities and Asset Management	Example	SpacePort Florida	Saturn 5 hangar	Saturn 5 hangar	Space Port Florida helped provide an enclosure for a Saturn 5 rocket as part of it's visitor center experience. Example of using PPP to share capital costs in order to construct unique facilities.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
129	Kennedy	Facilities and Asset Management	Example	SpacePort Florida	SERPL	SERPL	NASA and Space Port Florida entered into a development agreement; NASA leased the Land to SPF and provided the facility design; SPF provided the construction and landlord responsibilities. NASA's contractor will lease space in the facility. Example of using PPP structure to share capital costs of obtaining state of the art facilities/labs for contractor.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
130	Kennedy	Facilities and Asset Management	Example	Air Force	Shared Cost	Federal Campus - Cost sharing - JBOSC Contract	JBOSC contract is a good example of working with other major federal agencies to reduce overall facilities maintenance costs.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
132	Kennedy	Facilities and Asset Management	Example	Delaware North	Visitors Center	Visitor Center	Example of complete outsourcing of visitor center experience; structuring profit agreement to allow profits to be put back into NASA (for public-oriented uses).	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
123	Kennedy	Underutilized Land	Example	SpacePort Florida	ISRP	International Space Research Park (ISRP)	Example of NASA and the State of Florida working together to come up with a business plan for a research park.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
131	Kennedy	Utilities Management	Example	Private Sector	Utilities Privatization	Utilities Privatization - Private Authority	Kennedy is considering the options for privatization of Utilities, using best practices from public and private examples.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
111	JPL	Facilities and Asset Management	Example	Private Sector	Flight Project Center	Flight Project Center - enhancing mission operations	JPL has a master plan to include a flight project center which will substantially improve it's operations. This is an example of how strategic facility planning can help improve mission capabilities, and potentially reduce long term tangible and intangible costs.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				

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118	JPL	Facilities and Asset Management	Example	NASA	Real Property Strategy	Master Plan	Although not complete, the Center has a well thought out master plan that will allows it to be prepared to address its future proactively.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
112	JPL	Mission or Program Strategy	Example	Cal Tech	GOCO	FFRDC	JPL's FFRDC with Cal Tech is a good example of how to partner with the academic community; offers benefits of gaining research without needing to directly employ staff; challenges are the uniqueness with being "like" a Center, but not really being totally a part of NASA.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
98	Johnson	Facilities and Asset Management	Example	SpacePort Florida	Saturn 5 hangar	Saturn 5 hangar	Space Port Florida helped provide an enclosure for a Saturn 5 rocket as part of it's visitor center experience. Example of using PPP to share capital costs in order to construct unique facilities.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
105	Johnson	Facilities and Asset Management	Example	MSFEFI	Space Center Houston	Space Center Houston	Example of outsourcing visitor center activities in site adjacent to Center in collaboration with local community. Allows NASA to concentrate on core competencies, and allows Visitor Center activities to remain fresh to the public.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
95	Johnson	Mission or Program Strategy	Example	NSBRI	NSBRI	NSBRI	Example of collaborating with Universities to accomplish program goals. Saves NASA from having to invest solely in necessary labs and facilities.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
87	Goddard	Facilities and Asset Management	Example	NASA	Real Property Strategy	Master Plan	The Center has a well thought out master plan that will allows it to be prepared to address its future proactively.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
76	Goddard	Underutilized Facilities	Example	NTSB	Centrifuge	Centrifuge	Goddard has a reimbursable agreement with NTSB to use it's Centrifuge in testing cars. Good example of utilizing federal assets to benefit other federal agencies	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
56	Glenn	Facilities and Asset Management	Example	City of Cleveland	Airport	Airport Extension	Example of how NASA entered into a negotiation with the City of Cleveland to achieve mutual goals.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
61	Glenn	Facilities and Asset Management	Example	OAI	OAI	OAI building on NASA land	Example of how NASA could use PPP structure to develop shared state of the art facilities.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
71	Glenn	Utilities Management	Example	Private Sector	Rye Beach	Rye Beach Pumping Station	Glenn is planning a potential pumping station that will offer water to the local community	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
55	Dryden	Facilities and Asset Management	Example	Air Force	Shared Cost	Federal Campus - Cost sharing alliance	Good example of cooperating with resident federal agencies in cost reduction.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				

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54	Dryden	Mission or Program Strategy	Example	NASA	Reutilization Center	Reutilization Center system for hazardous materials	Dryden has a good system for managing hazardous materials, ultimately protecting NASA's future facilities clean up operations costs.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
34	Ames	Facilities and Asset Management	Example	Carnegie Mellon	Carnegie Mellon	Carnegie Mellon - renovation of facility	Ames has entered into a long-term agreement with Carnegie Mellon (who is also a NASA contractor) to renovate and lease a facility in the historic district. This is an example of using a relationship to develop mutual synergies and ultimately provide NASA with a renovated facility.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
49	Ames	Facilities and Asset Management	Example	NASA	Real Property Strategy	Master Plan	The Center has a well thought out EIS which will be supported by a master plan - that will allows it to be prepared to address its future proactively.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
48	Ames	Underutilized Land	Example	Private Sector	NRP	NASA Research Park - New Model for NASA	Ames has a well-thought out research park that has been included in their master plan. Consider increasing NASA's involvement in programmatic planning of NRP to serve NASA's mission needs; consider consolidation of NASA's research activities in the NRP, and attracting universities.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
52	Ames	Underutilized Land	Example	Private Sector	Shenandoah	Historic District	The Shenandoah district of Ames is a historic district. Take advantage of historic district and lease in historic district to tenants who can improve facilities and maintain in case of future use for NASA. Does not have to use EUL structure.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				

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ABBREVIATED BIBLIOGRAPHY

1) Materials provided by Centers (including Master Plans, Space Act Agreements, and other contracts, brochures, briefing reports, etc.)
2) Metropolitan Statistical Analysis Index
3) NASA Procurement Management System Database
4) Real Property Inventory Database
5) U.S. Census Bureau Quick facts
6) www.arc.nasa.gov
7) www.dfrc.nasa.gov
8) www.grc.nasa.gov
9) www.gsfc.nasa.gov
10) www.history.nasa.gov
11) www.jpl.nasa.gov
12) www.jsc.nasa.gov
13) www.ksc.nasa.gov
14) www.larc.nasa.gov
15) www.lockheedmartin.com/michoud
16) www.msfc.nasa.gov
17) www.nasa.gov
18) www.ssc.nasa.gov
19) www.wff.nasa.gov
20) www.wstf.nasa.gov

STAUBACH

REAL PROPERTY BUSINESS PLAN

(now called *Report on Real Property Opportunities*)

Executive Overview

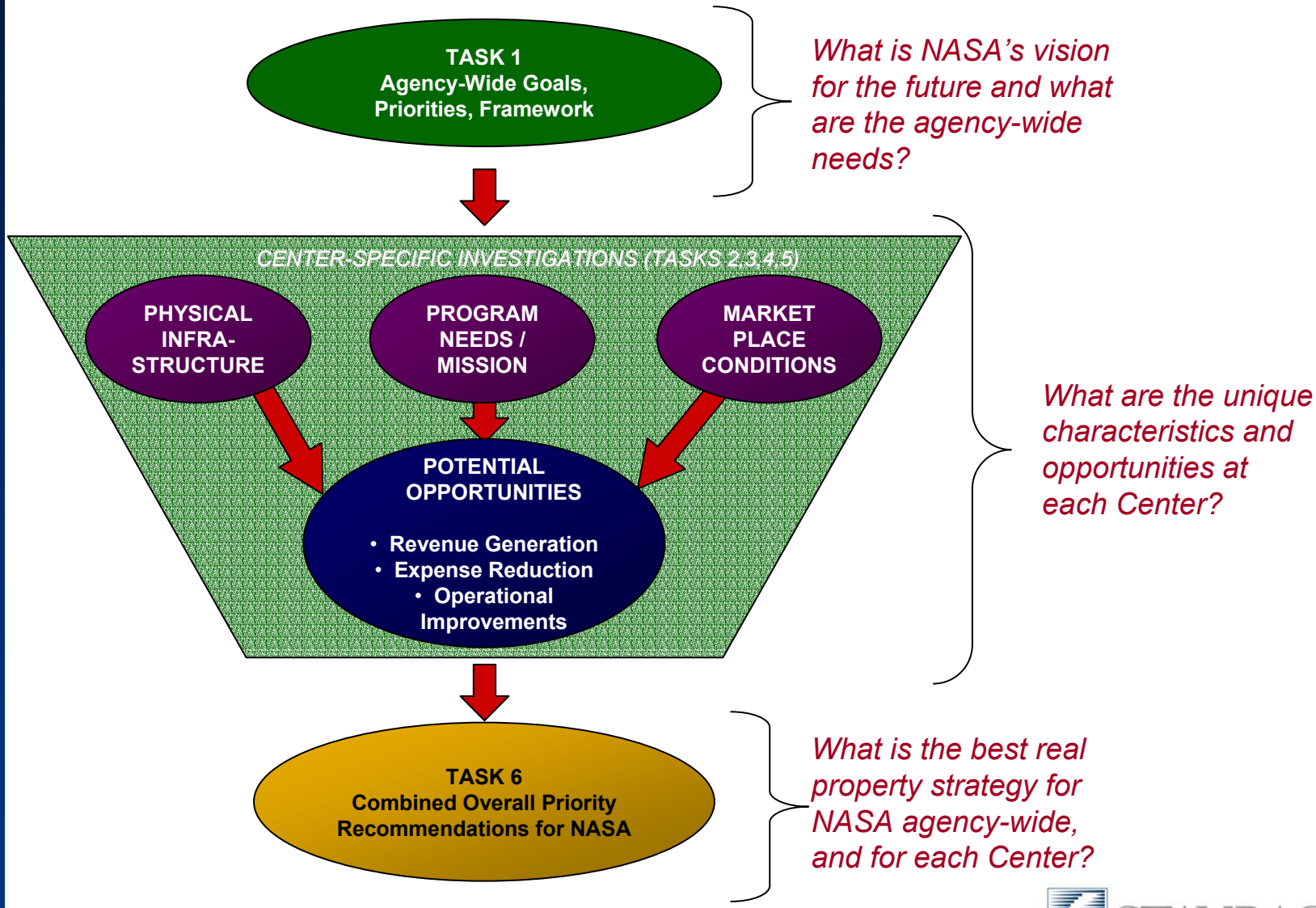
October 16, 2002

Real Property Business Plan

Purpose

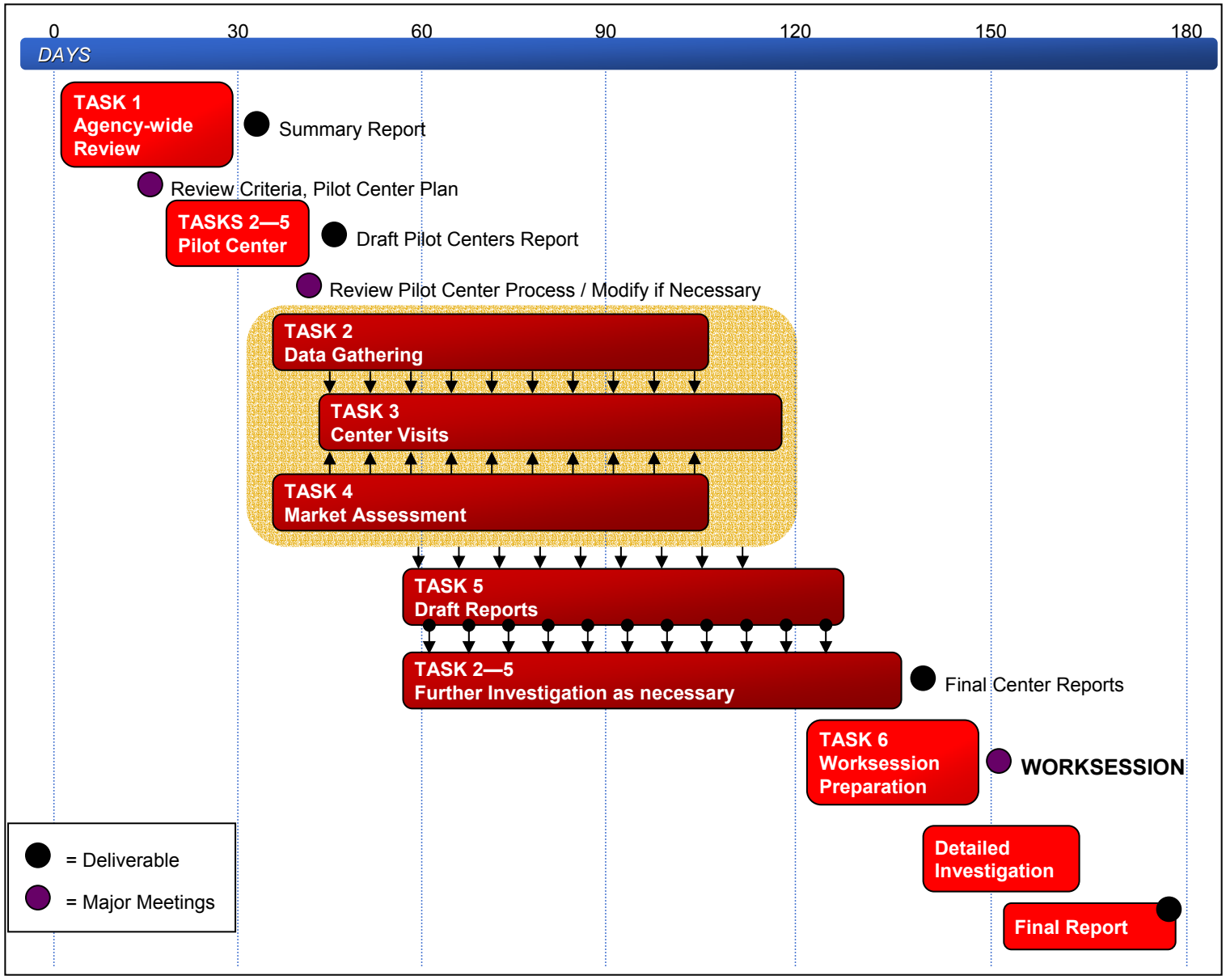
Goal	• Develop an easy to use real property business plan that NASA can use to support its mission now in the future
Outcomes	• Validate real property owned by NASA • Identify excess and underutilized infrastructure • Identify potential targets for consolidation and infrastructure reduction • Identify innovative structures (i.e. E.U.L., etc.) for reducing infrastructure cost
Opportunity Identification	• Revenue generation • Expense reduction • Operational improvement

Information Management



STAUBACH
A World of Real Estate Knowledge

Preliminary Schedule



6/20/02

Real Estate Strategic Plan: Statement of Work

Background:
The National Aeronautics and Space Administration (NASA) is the global leader in human space flight, space exploration, aeronautics research, space applications, and research in earth science and biological sciences. The NASA vision is "to improve life here, to extend life to there, and to find life beyond" and its mission is "to understand and protect our home planet, to explore the Universe and search for life, and to inspire the next generation of explorers."

In support of that mission, NASA has over its 44-year history acquired land and property to form ten major Centers throughout the United States, as well as several component installations. NASA owns over 3,000 major buildings, over 3,200 other major structures, over 403,000 acres of land and 44 million facility square feet, with a current replacement value of over $20 billion. NASA's real property includes traditional office space and logistical support facilities, as well as some unique facilities such as rocket launching facilities, wind tunnels, and a variety of laboratories.

NASA is seeking to comply with the President's Management Agenda and seek maximum efficiency and cost effectiveness. Real estate is a key component and expensive part of NASA's operations. Current budget constraints and new methods of conducting business are driving NASA to look at alternatives to maintaining massive real property holdings while still supporting its mission.

Objectives:
NASA desires a complete review of its real estate strategy and real estate holdings to produce a Real Estate Strategic Plan ("the Plan"). The Plan shall validate the real property owned by NASA, identify excess infrastructure and under-utilized infrastructure, identify potential targets for consolidation and infrastructure reduction, and will identify opportunities to reduce the NASA infrastructure through disposal, outleasing (including use of potential new authorities regarding enhanced use leasing), public-private partnerships, and other innovative real property management actions.

The goal is to develop an easy to use Real Estate Strategic Plan that NASA can use to position its real property to support its mission now, and in the future. The Plan shall identify targets of opportunity to help NASA position itself to reduce infrastructure costs in the near term and in the future.

Scope:
The contractor will develop an understanding of NASA's vision and mission, and how NASA real property currently supports them, and will support them in the future. The contractor will visit NASA's ten major Centers, prioritized based on initial data analysis for the potential for infrastructure reduction opportunities. The visits will be used to validate NASA real property data, as well as gain an understanding of each Center and its

surrounding community. The Real Estate Strategic Plan will include an analysis of what excess or under-utilized property is available, what the demand at each Center is for the under-utilized property, and include Center-specific review reports.

The Real Estate Strategic Plan will also include an analysis of alternatives to infrastructure ownership and opportunities for cost-saving initiatives such as outleasing. The Plan should provide Agency-wide alternative real estate strategies and recommendations, including technical input on statement of work(s) and other documentation required for NASA.

Follow-on work may include assistance in implementing the recommendations.

Tasks:

1. Agency-wide review of goals, missions, objectives; data gathering; and communications plans: The contractor shall review NASA mission, vision, and goals; NASA Headquarters real property inventory and other databases; and meet with the NASA counterparts including the functional offices and Enterprises. The contractor shall document and summarize the NASA mission and goals and how real estate relates to and supports them; broadly outline NASA's future facility and real property requirements to support the Agency vision, mission, and goals; and prepare the necessary procedures for the Center visits (task 4). Data gathered shall include legislative opportunities and constraints, real estate decision-making process, current proposals for public-private ventures, and current real estate needs.

2. Center-specific data gathering: Before visiting the Centers, the contractor shall gather all available data for the Centers including, but not limited to, organization charts, mission statements, master plans, identification of facilities classified as under-utilized or excess, the Center facility capital programs, staffing estimate, identification of leased buildings and the lease provisions, and identification of other nearby government facilities. The result will be a prepared process for Center visits and reviews, and identification based on the data review of which Centers have the greatest potential for infrastructure reduction or real estate innovations. The process and Center selections will be approved by the NASA COTR before proceeding to task 3 for each Center.

3. Center-visits: The contractor shall visit NASA Centers and component installations as listed below. The below list shall be modified as determined necessary between the contractor and NASA based on task 2 above. The goal of the visits is to validate the data gathered in tasks 1 and 2, and conduct a more detailed analysis of the supply of under-utilized and excess infrastructure. Center visits shall include speaking with key Center staff, tours of Center facilities including the current and proposed uses of all the Center real property assets, and visual inspections of the facilities to assess appropriateness, condition, utilization, capacity, and potential for commercial uses in a public-private partnership or

outleasing venture. Each Center point of contact will be released after the order is in effect.

NASA Centers:
*Ames Research Center, Mountain View, CA
Dryden Flight Research Center, Edwards, CA
*Glenn Research Center, Cleveland, OH
*Goddard Space Flight Center, Greenbelt, MD
*Jet Propulsion Laboratory, Pasadena, CA
*Johnson Space Center, Houston, TX
*Kennedy Space Center, Florida Space Coast, FL
Langley Research Center, Hampton, VA
Marshall Space Flight Center, Huntsville, AL
*Stennis Space Center, Biloxi, MS

NASA Component Installations:
Wallops Flight Facility, Wallops Island, MD (Goddard Space Flight Center)
White Sands Test Facility, White Sands, NM (Johnson Space Center)
Michoud Facility, New Orleans, LA (Marshall Space Flight Center)

*Target Centers to be visited first. Priority will be determined during task 2.

4. Market Assessment: The contractor shall conduct a market assessment for NASA real property at each Center visited. The contractor shall identify potential other uses for NASA real estate and potential for enhancing the value of NASA real estate. The assessment shall include addressing business opportunities with contractors, public-private partnerships and privatization opportunities, relation to other federal government agencies, local market conditions, and political issues.

5. Center-Specific Report: The contractor shall consolidate Center visits and marketing assessments and prepare a draft report per Center. The contractor shall identify elements or locations that show potential and require further analysis. The reports shall include at a minimum: outleasing (including enhanced-use leasing) opportunities, real property owned and leased, functionality and space utilization, occupancy and capacity, estimated occupancy costs, relocation/co-location/consolidation potential, growth and contraction potential, flexibility issues, property data (location, quality, age, surrounding opportunities).

6. Agency-wide Alternative Real Estate Strategies: Based on the Center reports and data gathering, the contractor shall develop alternative strategies and prepare the final Real Estate Strategic Plan. The contractor shall hold a work session with NASA Headquarters personnel to review the alternative strategies; identify and prioritize the top 10 opportunities for real property initiatives as developed by the contractor; identify legislative status, opportunities, and road blocks; discuss recommendations for consolidation and infrastructure reduction; and identify associated risk identification for alternative strategies.

Deliverables/Schedule:
Within 30 days after receipt of order, task 1 shall be complete with delivery of an analysis of how NASA real estate management supports NASA vision, mission and goals, proposed Center visits, and a Center data gathering process approved by the Contracting Officer's Technical Representative (COTR). Meetings with designated NASA Headquarters personnel and the contractor will take place weekly initially, then as necessary to support the remaining tasks.

Within 120 days after receipt of order, tasks 2, 3, and 4 shall be complete with all Centers visits complete as approved by the COTR. Tasks 1 through 4 (and 5) may be performed concurrently as approved by the COTR.

Within 150 days after receipt of order, task 5 shall be complete with delivery of draft Center-specific reports and meetings with NASA Headquarters, held to discuss results and next steps.

Within 180 days after receipt of order, task 6 shall be complete with delivery of final agency-wide recommendations and report in the form of the Real Estate Strategic Plan. The contractor shall deliver 10 bound copies and an electronic version in CD ROM format of the Real Estate Strategic Plan to the delivery address indicated on the Order.

Government-furnished equipment and information:
There is no government-furnished equipment. NASA maintains an Agency-wide real property inventory and space utilization database, and has data from Agency-wide "data calls" that will be made available to the contractor.

Security:
There are no unusual security requirements necessary to complete the tasks. Visits to the Centers will need advance planning and approval to satisfy each Center's requirements for outside visitors. The contractor shall check with each Center for requirements necessary to gain entrance to the Center.

The following Center Reports are provided in one (1) separate binder in the hardcopy version of this report. *

- Ames Research Center
- Dryden Flight Research Center
- Glenn Research Center
- Goddard Space Flight Center
- Jet Propulsion Laboratory
- Johnson Space Center
- Kennedy Space Center
- Langley Research Center
- Marshall Space Flight Center
- Michoud Facility
- Stennis Space Center
- Wallops Flight Facility
- White Sands Test Facility

* *In the electronic (CD) version of this report the Center Reports are included in section 7 of the Main Report.*

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1	All	Underutilized Land	EUL	Private Sector	Consolidation	Define Center Real Property Requirements - Ground Lease remaining land	Identify the core area of every Center; move fence line in to core area; maintain land ownership for potential future need but look for opportunities to re-utilize land in the mean time. Consider EUL according to highest and best use - including everything from commercial development to agriculture.	3	3	3	2	3	9	5	Achieves revenue and/or cost savings that can be redeployed into improving facilities; maintains long term ownership of land to protect NASA's future interests	Can bring contractors, universities, etc in close proximity to NASA	Property returned to tax rolls, increased university presence, increased non-federal jobs, land returned to community	Community can benefit from new land planning (parks, etc	Political challenges for NASA but high reward and NASA retains land. Risk is that if EUL'ed property development fails, NASA may need to take over development.
2	All	Underutilized Land	Divest	Private Sector	Consolidation	Define Center Real Property Requirements - Divest remaining land	Keep only the areas of each Center that are required for NASA's core operations, and divest unused area through 1)special legislation that allows NASA to renovate its facilities through revenues received from divestment or 2)divest through GSA relocation plan, or 3)give to local municipalities (to reduce costs). Potential strategy: identify 1)core center area 2)EUL or "hold" Research/tech transfer/partnering park, 3)Divest remaining area.	3	3	3	2	2	8	5	Achieves significant revenue and/or cost savings	Can bring contractors, universities, etc in close proximity to NASA	Property returned to tax rolls, increased university presence, increased non-federal jobs, land returned to community	Community can benefit from new land planning (parks, etc	Political challenges for NASA but high reward; NASA give up long term use of land.
3	All	Facilities and Asset Management	Operational	NASA	Consolidation	Divest NASA leased space agency-wide	Review NASA leased space agency-wide to determine if the leased operations can be moved to a Center that can accommodate the space and requirements. Space planning and utilization can help reduce leased space.	3	2	0	0	2	5	2	NASA can reduce costs by implementing enterprise wide space utilization	Will bring more people/partners on campus	Net loss; communities lose leased space	Not relevant	Possibly require program shifts, strong cross-center collaboration.
4	All	Mission or Program Strategy	Operational	NASA	Consolidation	Mission Clarification - Enterprise activities	Review NASA from an Enterprise perspective - prior to impact of full cost accounting - to have enterprises help determine opportunities to streamline overall operations and reduce potential duplications or inefficiencies across centers, resulting in opportunity to reduce infrastructure.	3	2	1	1	1	5	3	Removing mission/goal duplications will result in cost savings on infrastructure	Coordinated pursuit of mission/goals will foster relationships with universities/contractors, but might hurt some	Net gain to some communities while others might have net loss	Enhanced mission/goal coordination should enhance outreach	Political challenges for NASA.
5	All	Mission or Program Strategy	Operational	NASA	Consolidation	Mission Clarification - Logistics/ Manufacturing	Review NASA operations with goal of streamlining manufacturing-type operations and reduce potential duplications or inefficiencies across centers, resulting in opportunity to reduce infrastructure.	3	1	1	1	1	5	2	Cost savings on infrastructure	Minimal effect on contractors	Small net positive - some communities gain, others lose	Minimal effect on community outreach	Political challenges for NASA.
6	All	Underutilized Facilities	Operational	NASA	Demolition	Demolition	At many Centers, The Team was told that there are buildings that would be good candidates for demolition, but the Centers would prefer to spend scarce funds on construction or renovation rather than demolition. Commission a study to identify the structures to be demolished including development of an ROI for demolition (cost to maintain VS cost to demolish). Demolition can free land that can be addressed through the master plan.	2	2	2	1	2	6	3	Net cost to implement, qualitative improvement, long term cost savings	Creates better working facilities and atmosphere for partners	Demolition contracts for local construction	Enhances campus for outreach activities	Achievable, but still involves competition for annual funds

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7	All	Underutilized Land	Space Act	Federal Agency	DoD collocation	Engage in active discussions prior to DoD BRAC process	The Department of Defense is preparing for a Base Relocation and Closure process to begin within the next couple of years. NASA's mission specifically encourages cooperation with the military. Engage in discussions with DoD to understand how NASA can take on additional tenants through the DoD BRAC process.	2	1	2	0	1	5	1	Spreading costs among multiple tenants helps lower NASA's costs	Can be synergistic with some DoD activates; may offer additional services, employee benefits that couldn't be afforded normally	Might bring new jobs to a community, but at expense of another community; land not returned to tax rolls	No outreach	Difficult to predict outcomes of highly political BRAC process.
8	All	Underutilized Land	Space Act	Federal Agency	Federal Campus	Federal Campus	NASA has large tracts of land at almost every Center. DoD and other agencies similarly have large tracts of land, but NASA is potentially unique in that it is a civilian Agency. Consider marketing facilities and land to other federal agencies through Space Act Agreements; establish cost-sharing agreements to reduce costs to all tenants, including NASA.	2	2	2	0	2	6	2	Spreading costs among multiple tenants helps lower NASA's costs	Can be synergistic with some Agencies; may offer additional services, employee benefits that couldn't be afforded normally	Might bring new jobs to a community, but at expense of another community; land not returned to tax rolls	No outreach	Most likely if other agencies are forced to move for security reasons; or if other agencies go through consolidation.
9	All	Facilities and Asset Management	Historic Preservation Act	NASA	Historic Review	Historic review - Historic Districts and Building-by-Building	Conduct an agency-wide historic review to determine 1)potential for Ames-type historic districts with private sector, and 2)determine strategy for specific buildings and 3)review for consistency with the Executive Order governing historic structures.	2	3	1	0	2	5	3	NASA can reinvest proceeds of leases into facilities, thereby renovating the facilities at little net cost to NASA; helps reduce CoF requirements, but not substantial financial gain	Helps NASA maintain it's important heritage facilities for future generations; potential synergies created by bringing partners/contractors "on-campus"	Can result in increased non-federal jobs within municipality	Limited outreach	This opportunity calls for a study of the potential; the study is straightforward, the potential for multiple income-generating opportunities is less likely.
10	All	Underutilized Facilities	Operational	NASA	Launch	Launch Facilities	The Team was told that there is an international glut of launch facilities. Determine which launch assets are critical; market for reimbursable agreement, EUL or consider consolidation. Enter into Public Private Partnerships to help market capabilities wherever appropriate (i.e. KSC, Wallops)	2	2	2	1	2	6	3	Cost savings/revenue generation for expensive facilities	Partners/contractors share facilities	Brings more contractors/users to community	Creates minimal educational outreach	NASA can create or outsource for more aggressive marketing and coordination; the market is currently saturated
11	All	Facilities and Asset Management	Operational	Private Sector	Machine Shops	Outsource Machine Shops	NASA needs machine shops which NASA pays to operate and maintain; review strategies for outsourcing by Center and cross-center (few or multiple outsourcing contracts). Strategies could include eliminating machine shops inside the fence, or forming EUL of on-Center machine shops. There could be potential cost savings by bundling machine shop contracts cross-Center.	2	0	1	0	2	5	0	Can save money but might not be considered high impact	No relative	Provides some positive impact to local vendor firms	Not relative	Study is Achievable, but success of outsourcing is highly dependent on willing contractors.

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12	All	Facilities and Asset Management	Operational	NASA	Management	Real Property Management Group	NASA operates in a decentralized management structure; NASA's real estate in almost all locations is in the midst of change due to it's age and condition. Not all Center's have the real estate expertise required to implement complex real estate projects. Consider strengthening NASA's HQ real estate group's ability to manage real estate expertise to each Center's activities. This effort is particularly acute for regulatory issues including EUL and Space Act agreements.	3	0	0	0	3	6	0	NASA can create significant savings through more coordinated control over space utilization, prioritization of CoF funding, EUL opportunities, etc.	Limited	Limited	Limited	Increased centralization of facilities and real estate management should be achievable.
13	All	Facilities and Asset Management	Operational	NASA	Management	Unique Infrastructure Management Plans	NASA has several types of unique facilities which are national or international assets; many of the facilities are old, and often they are very expensive to maintain and operate. Consider establishing cross-Center management boards, like the Test Stand Board, for all major infrastructure assets. To help insure NASA costs are to a realistic level managed.	2	2	1	0	2	5	2	Helps NASA reduce expenses by increasing utilization of unique facilities.	Some potential synergy with users	Little economic benefit to community if users stay in hotels, etc.	No community outreach	Achievable, but not easy to implement in decentralized organization.
14	All	Facilities and Asset Management	Operational	Private Sector	Management	Outsourcing - Office Space Creative strategy	Turn over complete facilities and asset management responsibilities for office space to private contractors. Facilities management contracts are in place at many centers (i.e. JSC, KSC), but currently focus on maintenance. Establish more encompassing contracts that include items normally covered in some discrete and minor CoF funding items.	3	1	1	0	1	5	1	If achievable, can reduce CoF funding and enhance condition of facilities. Single-sourcing contracts can also reduce overall management costs.	Potentially a better work environment	No economic impact on community	No community outreach	Achievable; but difficult gaining contracting authority and OMB scoring; potential to include capital repairs and replacement is questionable.
15	All	Facilities and Asset Management	Space Act	Contractors	Marketing	Marketing - increase incentives and support for marketing unique assets	NASA's operational strategy is to have contractors heavily supporting NASA's activities, and often these contractors help operate major facilities. Provide a coordinated marketing plan and incentives to contractors to encourage them to heavily market NASA's unique assets to public and private organizations as a way of cost reduction.	3	2	2	1	2	7	3	Helps NASA reduce expenses by increasing utilization of unique facilities; reduces costs of mothballing then re-starting facilities	Some potential synergy with users; could increase collaborative efforts	If utilization rises, local economies will benefit through additional activity	Limited, but better awareness of capabilities in community	NASA's facilities are well-known to some organizations that need similar facilities, but the marketing of facilities could increase utilization.
16	All	Underutilized Facilities	EUL	Private Sector	Marketing - Contractor EUL	Market EUL program to Contractors, encourage creativity	Overall NASA has underutilized land and facilities; Enhanced- Use Leasing (EUL) allows NASA to enter specifically into agreements to increase utilization. Many of NASA's contractors are scrutinizing their own cost / facilities structures, and may be interested in entering into EUL agreement for mutually beneficial cost reductions. Consider actively marketing the EUL program to existing Contractors.	3	3	2	1	3	8	4	Results in increased generation of EUL opportunities	Strengthens collaboration with partners	Can solidify contractors/partners in market and bolster presence, can make it more difficult for new contractors to get work from NASA	No outreach	Marketing program should be easy to develop by NASA.

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17	All	Mission or Program Strategy	Operational	Private Sector	Outsource	Outsourcing of Research Activities - NAS model	Mission clarification of Research - oriented centers with goal of pushing research activities into the academic community; may result in university-oriented FFRDC's. Essentially reduces NASA infrastructure needs; allows research program funds be directed to research institutions that successfully win NASA research contracts; enables NASA to benefit from private sector expertise.	2	3	3	3	0	5	6	Significant cost savings potential on infrastructure, although programmatic costs will increase	Increases collaboration with partners	Non-federal jobs/Revenue pushed to private sector	Educational outreach significantly enhanced	Would call for a significant policy shift for NASA; NASA currently requires a lot of land a facilities to accommodate current and potential future activities that can't be fully predicted.
18	All	Facilities and Asset Management	Operational	NASA	Real Property Strategy	Master plans and Economic Phasing	NASA's Centers have completed Master Plans for their facilities for many years; many of the older plans focused on describing existing conditions while some of the newer plans focus on guiding development in the future. Some of the Centers have current Master Plans, and others are more dated. The Master Plans help inform long-term decisions about investment and cost reduction opportunities, ultimately allowing NASA to make strategic investment decisions. Consider establishing a consistent process and system for developing center-specific and cross-center master plans that encompass Center, Enterprise and Real Estate goals.	2	3	0	0	3	5	3	Correlating real estate strategy to a master plan can help achieve savings over the long term in that it optimizes space utilization. One detriment, however, might be that NASA may not be able to adhere to the plans, given budget constraints	Should increase Center efficiency	Limited, but may incorporate local needs	Limited, but may incorporate local needs	Establishment of a coordinated master planning strategy should be achievable.
19	All	Facilities and Asset Management	EUL	Contractors	Renovation by Partnership	On-Center office buildings - EUL	NASA's contractors often would prefer to be inside the fence line. Review occupancy of facilities; if facilities have mostly contractor occupants, and if the contractor population is expected to remain steady, consider EUL to contractor or private sector investor of the specific facility, regardless of proximity to fence line.	3	3	1	0	2	6	3	NASA can generate revenue through EUL and reduce required CoF spending	Contractors/Partners are brought "on-campus"	Maintains non-federal jobs in locality but may hurt local development, property taxes	No outreach to community	Achievable at some centers, may call for policy shift.
20	All	Facilities and Asset Management	Operational	NASA	Renovation by Replacement	Renovation by Replacement	Since NASA is nearly 50 years old, many facilities have reached the end of their useful lives. Establish clear policy on replacing facilities that have reached their useful lives; determine "pay back" period and criteria to justify investment return; consider 10 year program to replace outdated facilities.	2	0	2	0	2	6	0	Can save money as repair and maintenance costs surpass annual cost amortization of new facilities	No relative	Construction contracts can benefit community	Not relative	Achievable, but dependent on funding and policy change for NASA.

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21	All	Underutilized Facilities	Operational	NASA	Runway	Runways	NASA has runways and support facilities at Ames, JSC, Kennedy, Wallops, and has access to runways at Dryden and Glenn. In several cases, the airport operations were not operating at capacity. Determine marketability of underutilized runways; market for space act agreement with public or private entities; eliminate facilities as required.	3	1	1	1	2	6	2	Runways and associated facilities are expensive; costs can be reduced and revenues can be generated through better utilization	Could result in stronger collaboration with partners	Could bring some partners to market, could be negative for markets if runway is eliminated	Limited	Political and community challenges for NASA, but achievable.
22	All	Underutilized Facilities	Operational	NASA	Shared Services	Shared Services Organization - use underutilized space	NASA is considering a shared services organization; consider locating at a Center that has underutilized facilities and availability of staff. Could reduce overall NASA costs, help renovate underutilized facilities.	2	2	1	1	2	5	3	Net cost savings to NASA would be achieved	Bring more partners into NASA community	Net loss to one community, gain to another	Little impact	Difficult to implement and manage.
23	All	Underutilized Facilities	Operational	NASA	Test Stand	Test Stands	NASA has in place a management board focused on utilization of Test Stands (that also coordinates with other Federal Agencies). Fortify the board's efforts and devise additional ways to determine marketability of underutilized facilities; market for space act agreement; eliminate or consider consolidating or moving to fewer locations.	2	2	2	1	3	7	3	Ensures facilities are being marketed; other countries offer subsidized facilities, may not be able to charge at cost, but will keep facility active	Shared usage/collaboration with partners	Can bring more users/contractors to marketplace	Can include educational missions	Board already in place, expand scope
24	All	Facilities and Asset Management	Operational	NASA	Trailers	Temporary Facilities and Trailers	Eliminate expansion-based trailers that ultimately become long-term housing solutions . Consider 1)consolidation-driven renovations of facilities, 2)inexpensive metal buildings or alternative longer-term temporary housing or 3)mission re-alignment that reduces need 4) Balancing space needs across center.	2	3	0	0	1	3	3	Can save money as repair and maintenance costs surpass annual cost amortization of new facilities	Provide better, more efficient work place	No impact	No impact	Achievable, but dependent on funding and policy change for NASA.
25	All	Underutilized Facilities	Operational	NASA	Vacuum Chambers	Vacuum Chambers	Vacuum chambers are a unique asset at NASA, but we were told that many were not at full utilization; consider a "Rand-type" study that reviews the chambers that are important to keep, market the chambers for Space Act Agreements, and consider eliminating un-necessary Chambers.	2	2	2	1	3	7	3	Ensures optimization of unique facility portfolio, including cost saving opportunities	Shared usage/collaboration with partners	Can bring more users/contractors to marketplace	Can include local business incubation and educational missions	Commissioning study easy and relatively low cost.
26	All	Facilities and Asset Management	Operational	Public Private Partnership	Visitors Center	Visitor Center - National Contract	In NASA role of inspiring the future explorers, Visitor's Centers are important but generally considered cost-centers. Consider establishing cross-Center Visitor Center contracts with contractors to gain more visibility and share economies of scale. Potentially locate in high-profile locations, not necessarily next to Centers.	2	0	2	2	2	6	2	Financial returns from visitors centers can be improved by single-sourcing management and operations and locating in strategic areas.	No benefit to synergistic relationships	Community can benefit from increased visitor traffic	Benefits community outreach/education	Achievable, but NASA would need to make sure most Centers benefit - difficult to find contractor who will take a loss in one location and profits in another.

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27	All	Underutilized Facilities	Operational	NASA	Wind Tunnels	Wind Tunnels	The Rand study is currently reviewing Wind Tunnels and will have specific recommendations. There appears to be an opportunity to reposition NASA's Wind Tunnel capability through reimbursable agreements, utilization analysis, potential consolidation -- resulting in reduction in costs to maintain infrastructure.	2	2	2	1	3	7	3	Ensures optimization of unique facility portfolio, including cost saving opportunities	Shared usage/collaboration with partners	Can bring more users/contractors to marketplace	Can include local business incubation and educational missions	Study currently in process.
28	Ames	Mission or Program Strategy	Operational	NASA	Animal Care	Animal Care Facility - Consolidate NASA-Wide research activities	The animal care facility appeared to be very underutilized, with only a small portion of the facility conducting research. NASA's mission includes biotechnology research, and potential animal research can support NASA's Astronaut program. Consider conducting all related research done at various NASA facilities at the Ames facility to take advantage of the current capabilities, and to focus "live" research activities.	2	1	1	0	2	5	1	Cost savings for NASA to coordinate and focus research	Potential cross-Center synergies	Modest	No outreach	Potential, but not sure of quantity of current research and how transportable to research could be
29	Ames	Underutilized Facilities	Space Act	Private Sector	Animal Care	Animal Care Facility - Market	Animal Care Facilities are highly regulated and difficult to manage but a necessary part of some research activities. Therefore, this facility could be considered "unique" within NASA. Provide incentives to the contractor to market to companies who want access to approved, proven animal care facilities.	2	1	1	0	2	5	1	Cost savings for NASA by increased use	Limited synergies, unless similar programs being researched	Limited	No outreach	NASA will have to market facility publicly, and may face scrutiny of Animal Rights groups; potential security concerns (inside fence line
30	Ames	Underutilized Facilities	Divest	NASA	Animal Care	Animal Care Facility - Outsource	The animal care facility appeared to be very underutilized, with only a small portion of the facility conducting research. Consider not doing the research on center; outsource to contractors.	2	0	2	0	1	5	0	Cost savings for NASA increased expense in conducting research	No synergies	Benefit from increased non-federal jobs	No outreach	Potential, but will disrupt any research that needs to be done in close proximity to NASA researchers.
31	Ames	Underutilized Facilities	EUL	Private Sector	Animal Care	Animal Care Facility - EUL	Animal Care Facilities are highly regulated and difficult to manage but a necessary part of some research activities. Therefore, this facility could be considered "unique" within NASA. Enter into an EUL arrangement with organization that requires an Animal Care facility; turn over facility and operations completely, outsource animal care research activities when NASA requires additional research.	2	1	1	0	1	4	1	Cost savings for NASA by increased use	Limited synergies, unless similar programs being researched	Modest	No outreach	NASA outsources animal testing which could help protect NASA's image; difficult to find EUL partner to take responsibility.

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32	Ames	Facilities and Asset Management	EUL	Carnegie Mellon	Carnegie Mellon	Carnegie Mellon University Center - Grow presence, create University Center, structure as EUL	Carnegie Mellon University has an agreement with NASA; their intent is to develop a campus at Ames that can service the west coast. Ames is a high-research Center; Carnegie Mellon is a wealthy university that can make long term investments. Engage in active discussions with them to expand their presence substantially. Structure new leases as EUL - either whole campus or individual facilities. Encourage Carnegie Mellon to incorporate other universities as part of their campus. Could add local campus facilities for MIT, etc.	3	3	3	3	2	8	6	Strong revenue generation potential,	Partner brought on campus, becomes focal point for many different types of research	New user and non-federal jobs brought to community	Provides education opportunities	Universities are inherently risk-adverse and under financial scrutiny; may be over-supply of university centers in the United States.
33	Ames	Restructure	EUL	Carnegie Mellon	Carnegie Mellon	Carnegie Mellon - Convert lease to EUL	Carnegie Mellon University has an agreement with NASA to lease and renovate a building in the historic district. Their intent is to develop a campus at Ames that can service the west coast. Consider restructuring the current agreement through EUL, or structuring future agreements on new facilities through EUL.	2	0	0	0	1	3	0	Potential additional revenue generation potential	No additional benefit	No additional benefit	No additional benefit	Agreement might be difficult to restructure
34	Ames	Facilities and Asset Management	Example	Carnegie Mellon	Carnegie Mellon	Carnegie Mellon - renovation of facility	Ames has entered into a long-term agreement with Carnegie Mellon (who is also a NASA contractor) to renovate and lease a facility in the historic district. This is an example of using a relationship to develop mutual synergies and ultimately provide NASA with a renovated facility.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
35	Ames	Underutilized Land	EUL	Private Sector	East Side /Air Field	Center Consolidation - EUL Moffett and NRP; maintain core Center.	Ames core NASA activities are centered around a small portion of the total land-holdings, which are very valuable and would not be easy to acquire in the future if NASA gave them up now. Additionally, some of the land is part of a superfund site and clean-up activities will take time.. Complete partially-constructed fence line around center core, EUL remaining land to private entities or master developer. Maintain long-term ownership.	3	2	2	1	2	7	3	Long-term cost reduction and revenue generation for NASA	Potential synergies created if leased to university or contractors	Increases non-federal jobs, retail sales, tax base	Can involve universities, parks, etc	Some portions of the land are more valuable; need to potentially restructure agreements with other federal tenants; runway marketability is questionable.
36	Ames	Underutilized Land	Space Act	Federal Agency	East Side /Air Field	Federal Campus	Market Moffett Field to federal Agencies to increase number of Federal tenants who share similar security requirements; specifically try to find tenants who can increase the use of the runway and bring new potential tenants to the NRP. Also form sharing agreements to utilize other expensive/ unique NASA assets. Form cost-sharing agreements that lower everyone's occupancy costs. Federal Agency agreement could be accomplished through Space Act or EUL, with minor differences.	2	1	2	1	2	6	2	Reduces NASA cost	Limited with other federal agencies	Could increase non-federal jobs through commercial spin-offs of increasing Federal presence at Ames	Limited outreach	Dependent on finding Federal Agencies interested in expanding / relocating.

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37	Ames	Underutilized Land	Divest	Private Sector	East Side /Air Field	Moffett Field - Divest	Divest Moffett Field by working with Mountain view, Sunnyvale, other Federal tenants currently occupying space. Potentially provides income and cost reduction.	3	1	2	1	1	6	2	Reduce NASA costs	Limited opportunity with NASA partners, could maintain NRP synergies	Could increase non-federal jobs, commercial activity	Some opportunity for outreach	Dependent on finding user to take over and difficulty in environmental liability
38	Ames	Restructure	Space Act	Navy	East Side /Air Field	Golf Course - Restructure	The air force constructed a golf course which they still maintain on the East Side/Air field. The Air Force currently leases the golf course from NASA, although all of the improvements were provided by the Navy. The AF makes a profit on the use of the course. Consider restructuring the agreement to allow NASA to take responsibility for the golf course, ultimately taking over the revenues also.	2	1	1	1	3	6	2	Potential for revenue production to NASA or employee welfare.	Positive employee morale	Little economic impact on community	Community benefit, if access can be changed to allow community use.	Achievable
39	Ames	Mission or Program Strategy	EUL	Private Sector	GOCO	FFRDC - Convert Ames, EUL real estate to investor	Ames is a high-research Center similar to JPL. Consider combining the NASA Research Park and Ames Campus as a new model of FFRDC. As an FFRDC, EUL to investors who could access long term financing and would be responsible for long-term facility needs. Consider EUL on part or all of NRP/Ames campus to remove NASA from direct facilities obligations.	3	3	2	2	1	6	5	Potential cost savings/revenue generation; proceeds from EUL could help support unique facilities that may not be included in EUL	Potential collaboration with partners on campus	Bring more users and non-federal jobs to community	Can include educational institutions and initiatives	FFRDC's have pros and cons, could be more expensive; politically challenging to set up FFRDC and transfer employees; difficult to find educated investors to enter into EUL.
40	Ames	Underutilized Facilities	EUL	Private Sector	Hangars	California Space and Air Center - SpaceWorld	A private group has been formed to consider taking over Hangar One; they intent to renovate hangar and convert to major tourism attraction focused on space, aerospace, etc. EUL to investors.	0	1	2	3	2	4	4	Cost savings and potential income for NASA; payments would probably be spread over time	Little impact on synergies	Brings visitors to community	Positive Outreach	Very unique and expensive building with liability issues, may cost too much to prepare for divestiture.
41	Ames	Underutilized Facilities	Divest	Private Sector	Hangars	California Space and Air Center - SpaceWorld	A private group has been formed to consider taking over Hangar One; they intent to renovate Hangar and convert to major tourism attraction focused on space, aerospace, etc. Divest the Hangar and remove NASA's obligation and involvement.	0	1	2	3	1	3	4	Cost savings and potential income for NASA	Little impact on synergies	Brings visitors to community	Positive Outreach	Very unique and expensive building with liability issues, may cost too much to prepare for divestiture.

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42	Ames	Underutilized Facilities	EUL	Private Sector	Hangars	Hangars 1, 2 & 3	Hangars 1, 2 & 3 are unique historic structures, currently being partially used. Full use of the Hangars, however, require substantial investment in fire suppression systems; Hangar One has environmental contamination challenges. Consider completely documenting the Hangars for historical purposes; solicit interest from the private sector, potentially in conjunction with the air field, and lease through EUL.	1	0	1	0	1	3	0	Reduce NASA costs, obligations	No synergy	Could increase non-federal jobs in demolition contract	No outreach	Political / community challenge in demolition; once demolished they would be irreplaceable in their historic context (could build new ones). NASA could still maintain Hangars - along with fire risk - until a more economical solution is found.
43	Ames	Underutilized Facilities	Divest	NASA	Hangars	Hangars 1, 2 & 3	Hangars 1, 2 & 3 are unique historic structures, currently being partially used. Full use of the Hangars, however, require substantial investment in fire suppression systems; Hangar One has environmental contamination challenges. Consider completely documenting the Hangars for historical purposes; demolish.	1	0	1	0	1	3	0	Reduce NASA costs, obligations; need to; need to incur remediation/ demolition costs.	No synergy	Could increase non-federal jobs in demolition contract	No outreach	Political / community challenge in demolition; once demolished they would be irreplaceable in their historic context (could build new ones). NASA could still maintain Hangars - along with fire risk - until a more economical solution is found.
44	Ames	Underutilized Land	EUL	Lockheed Martin	Lockheed Martin Building	Lockheed Park	Lockheed Martin had expressed an interest in developing a major presence on the Ames Research Park. Focus on these discussions in light of EUL authorities.	3	2	2	0	3	8	2	Can result in revenue generation	Involves a NASA contractor	Increases presence of a major employer	No outreach	NASA has EUL authority and potentially a willing partner.

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45	Ames	Underutilized Land	EUL	Private Sector	NRP	NASA Research Park - EUL to developer	Ames has a well-thought out research park that has been included in their master plan. Consider EUL of the complete research park area through private investors; maintaining long-term federal ownership while removing development risks. In this scenario, NASA does not become highly involved with development activities	2	3	3	3	3	8	6	Great potential for revenue generation, but some "development value" is passed along to master developer	Provides collaboration with universities/contractors	Provides non-federal jobs	Collaborates with community through university presence	Strong local market, partner interest. NASA puts development risks on Investor with expertise in development who takes a take leadership role in NRP, avoiding known mistakes.
46	Ames	Underutilized Land	EUL	Private Sector	NRP	NASA Research Park - EUL, NASA maintain management	Ames has a well-thought out research park that has been included in their master plan. Consider NASA maintaining a high involvement in the development, structuring EUL opportunities to individual tenants / occupants, similar to the Carnegie Mellon lease. Maintaining long-term federal ownership while removing development risks.	3	3	3	3	2	8	6	Great potential for revenue generation, NASA controls obtaining highest returns on every EUL	Provides great collaboration with universities/contractors	Provides non-federal jobs	Collaborates with community through university presence	Strong local market, partner interest. NASA maintains "development" risks in good but highly volatile market.
47	Ames	Underutilized Land	Divest	Private Sector	NRP	Center Consolidation - Divest Moffett and NRP ASAP; maintain core Center.	Ames core NASA activities are centered around a small portion of the total land-holdings, which are very valuable and would not be easy to acquire in the future if NASA gave them up now. Additionally, some of the land is part of a superfund site and clean-up activities will take time. Complete partially-constructed fence line around center core, Divest all land to third parties. Stipulate that runway remains for use by SOFIA and other NASA uses. Could be similar process to El Toro in Irvine, CA.	3	0	2	1	2	7	1	Long term cost reduction and revenue generation for NASA	Potential synergies created but outside of NASA's control	Returns land to tax rolls, more non-federal jobs, retail sales, etc	No outreach created	Superfund site makes divesting complex; EIS is complete and "value" has already been created; however, new owner would need CEQA process to get full value-takes time; NASA would give up rights to future use of land.
48	Ames	Underutilized Land	Example	Private Sector	NRP	NASA Research Park - New Model for NASA	Ames has a well-thought out research park that has been included in their master plan. Consider increasing NASA's involvement in programmatic planning of NRP to serve NASA's mission needs; consider consolidation of NASA's research activities in the NRP, and attracting universities.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
49	Ames	Facilities and Asset Management	Example	NASA	Real Property Strategy	Master Plan	The Center has a well thought out EIS which will be supported by a master plan - that will allows it to be prepared to address its future proactively.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				

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50	Ames	Underutilized Land	Divest	Private Sector	Runway	Runway / Moffett Field - Divest as raw land	Ames currently utilizes the runway, but not extensively. Consider relocating the "Sofia" program and Air National Guard, removing the runway and all facilities, divesting all land as mixed use housing/ commercial hub.	3	0	3	1	2	8	1	Potential significant revenue generation, although it will be a complex process; potentially requires investment to prepare land for sale	None, other than additional services and convenience; would remove flight-based capabilities	Major development returned to tax base, new housing, new retail, etc.	No outreach	Complex public process, similar to El Toro in Irvine, CA; potentially limit Ames future flight-based activities. The new owner needs to go through CEQA process.
51	Ames	Underutilized Land	EUL	Private Sector	Runway	Runway - Global transportation hub	Consider utilizing the runway for air-based transportation hub; EUL land to warehouse uses; charge for use of air strip.	3	1	3	1	1	7	2	Currently NASA pays for most of the cost of runway activities; this scenario will turn it into a profit center	Could allow for more services to be offered benefiting NASA	Could bring new non-federal jobs and business	Not much	Would require time and investment to define concept and attract businesses, but possible; Mountain View and Sunny Vale citizens oppose high use of air strip; would require modification to EIS.
52	Ames	Underutilized Land	Example	Private Sector	Shenandoah	Historic District	The Shenandoah district of Ames is a historic district. Take advantage of historic district and lease in historic district to tenants who can improve facilities and maintain in case of future use for NASA. Does not have to use EUL structure.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
53	Dryden	Facilities and Asset Management	Divest	Air Force	Consolidation Dryden	Return to Air Force, rent facilities as needed	NASA has a land-use permit for the land with the Air Force Flight Test Center. Maintain airport operations, but substantially reduce presence at Dryden to reduce costs.	1	1	0	0	1	2	1	Moderate cost savings potential	Synergies only with Air Force	No net benefit to community	No outreach	No substantial motive for NASA
54	Dryden	Mission or Program Strategy	Example	NASA	Reutilization Center	Reutilization Center system for hazardous materials	Dryden has a good system for managing hazardous materials, ultimately protecting NASA's future facilities clean up operations costs.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
55	Dryden	Facilities and Asset Management	Example	Air Force	Shared Cost	Federal Campus - Cost sharing alliance	Good example of cooperating with resident federal agencies in cost reduction.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
56	Glenn	Facilities and Asset Management	Example	City of Cleveland	Airport	Airport Extension	Example of how NASA entered into a negotiation with the City of Cleveland to achieve mutual goals.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				

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57	Glenn	Facilities and Asset Management	Divest	Private Sector	Bldg 500, 501	Office space outside of Main Gate	Divest buildings and land outside of fence and use proceeds to renovate/build office space inside fence.	3	1	3	0	2	8	1	Strong cash generation	increases security, brings NASA staff closer, could create more efficient facilities	Returns property to community tax rolls	None	Executable, reinvestment of proceeds dependent on divestment strategy; market not strong, but good location.
58	Glenn	Facilities and Asset Management	EUL	Private Sector	Bldg 500, 501	Office space outside of Main Gate	The buildings and land outside of fence are next to a major road; keep the facilities in NASA control long term by entering into an EUL to a developer for private sector use. Use proceeds to renovate/build office space inside fence.	2	1	3	0	2	7	1	Strong cash generation	increases security, brings NASA staff closer, could create more efficient facilities	Returns property to community tax rolls	None	Executable, reinvestment of proceeds dependent on divestment strategy; market not strong, but good location.
59	Glenn	Restructure	Divest	OAI	OAI	OAI building on NASA land - Divest	OAI occupies NASA land through Space Act Agreement. The operation appears to be relatively successful; consider divesting the land and reinvesting proceeds at the Center.	3	0	0	0	1	4	0	Small land parcel, low land value, but would provide immediate revenue.	No additional benefit	No additional benefit	No additional benefit	Agreement might be difficult to restructure
60	Glenn	Restructure	EUL	OAI	OAI	OAI building on NASA land - EUL	OAI occupies NASA land through Space Act Agreement. Examine in context of structuring under EUL. Result in ground lease proceeds to NASA.	2	0	0	0	1	3	0	Not for profit on s mall land parcel, low land value, difficult to negotiate "better deal"	Limited additional benefit	Limited additional benefit	Limited additional benefit	Agreement might be difficult to restructure
61	Glenn	Facilities and Asset Management	Example	OAI	OAI	OAI building on NASA land	Example of how NASA could use PPP structure to develop shared state of the art facilities.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
62	Glenn	Underutilized Land	Space Act	Federal Agency	Plum Brook	Federal Campus	NASA currently has federal agencies as tenants at Plum Brook. Market underutilized land to security conscious federal agencies to reduce management costs. Consider marketing as major secured federal campus for agencies in northern Ohio.	2	1	2	0	2	6	1	Sharing costs will help NASA, but may not result in significant impact; may help utilization of unique facilities	Can be synergistic with federal Agency; may provide employee amenities but not many NASA employees at Plum Brook	Might create non-federal jobs but land not returned to tax rolls	No impact	Significant federal agency user interest possible given increase security consciousness.
63	Glenn	Underutilized Land	Space Act	Federal Agency	Plum Brook	Federal Campus	Consider expanding Plum Brook's role as a federal campus.	2	0	2	0	2	6	0	Cost sharing	No synergies	Might create non-federal jobs but land not returned to tax rolls	No outreach	Market demand may be soft.
64	Glenn	Underutilized Land	EUL	Private Sector	Plum Brook	Plum Brook - EUL	Consider EUL of Plum Brook with exception of most unique specialty facilities that are critical to NASA's programs and nuclear testing area (Glenn is decommissioning the nuclear reactor facility but this process will take time). Maintain ownership in case NASA requires large portion of land in the future. Consider expanding agricultural leases.	2	0	2	0	2	6	0	Land value results in modest revenue through ground lease	No synergies	Might create non-federal jobs but land not returned to tax rolls	No outreach	Market demand may be soft.

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65	Glenn	Underutilized Land	Divest	Private Sector	Plum Brook	Plum Brook - Divest	Consider divesting of everything except for nuclear testing area and perhaps unique facilities that are critical to NASA's programs (Glenn is decommissioning the nuclear reactor facility but this process will take time.); move contents of storage magazines to Stennis. Divert nuclear testing area once it has been decommissioned.	2	0	2	0	2	6	0	Good land value	No synergies	Land returned to tax rolls, but area is economically challenged	No outreach	Market demand may be soft.
66	Glenn	Facilities and Asset Management	Historic Preservation Act	Private Sector	Real Property Development Strategy	Historic District	Consider designating Glenn as a historic district, similar to the Shenandoah District at Ames. Wherever possible, lease facilities to the private sector to help renovation of the facilities. The net result is a reduction of CoF funds that need to be spent on the facilities and lower future occupancy costs.	2	3	1	0	1	4	3	NASA can reinvest proceeds of leases into facilities, thereby renovating the facilities at little net cost to NASA; helps reduce CoF requirements, but not substantial financial gain	Helps NASA maintain it's important heritage facilities for future generations; potential synergies created by bringing partners/contractors "on-campus"	Can result in increased non-federal jobs within municipality	Limited outreach	Viable, but dependent on market for tenants/users. Most likely location is near the Runway.
67	Glenn	Underutilized Land	EUL	Private Sector	Runway	Global transportation hub	Glenn is located next to the runway in Cleveland. Consider offering the land along the runway to transportation or logistics organizations; use the revenues from the EUL to replace the facilities which are currently along the runway.	3	1	3	0	2	8	1	Achieve revenues by virtue of Glenn's proximity to the airport	Potential for modest synergies, additional capabilities	Increase non-federal jobs	No outreach	Potential but need to market capability, work through airport logistics, resolve security issues.
68	Glenn	Utilities Management	Space Act	Erie County	Rye Beach	Rye Beach Pumping Station - Cost reduction	NASA has water supply channel to Lake Erie. Negotiate market-rate profit through EUL for water supply; Hire utilities valuation consultants to ensure that NASA is receiving maximum value when selling water from the pumping station to the County.	2	0	3	0	3	8	0	Achieve higher value than currently expected	No synergies	Saves community from constructing pumping station	No outreach	Buyer already in place; requires NASA action.
69	Glenn	Utilities Management	EUL	Erie County	Rye Beach	Rye Beach Pumping Station - EUL	NASA has water supply channel to Lake Erie. Consider entering into EUL with investor to take over operations and sell water at a profit.	2	0	2	0	2	6	0	Some revenue stream to NASA S	No synergies	Community does not have to build	Limited	Agreement structure might be complicated.
70	Glenn	Utilities Management	Divest	Erie County	Rye Beach	Rye Beach Pumping Station - Divest	NASA has water supply channel to Lake Erie. Consider entering into EUL with investor to take over operations and sell water at a profit.	2	0	2	0	2	6	0	Some revenue stream to NASA	No synergies	Community does not have to build	Limited	Agreement structure might be complicated.
71	Glenn	Utilities Management	Example	Private Sector	Rye Beach	Rye Beach Pumping Station	Glenn is planning a potential pumping station that will offer water to the local community	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				

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72	Glenn	Facilities and Asset Management	EUL	Private Sector	Swing Space	Swing Space	Glenn is located on a very dense campus and has minimal room for expansion although a majority of the occupants are contractors. Subsequently, as new facilities need renovation, there is a dearth of swing space. Enter into EUL to have simple "swing space" facility built near the fence line that can be occupied by contractors.	1	2	1	1	1	3	3	Costly but could help reduce current churn expenses	Helps NASA keep productive while renovating facilities	Investment in community, but small	Potential for outside companies when NASA not needed	Difficult agreement to structure; hard to finance unknown occupancy requirement.
73	Glenn	Facilities and Asset Management	Outside Fence	Private Sector	Visitors Center	Visitors Center re-located to outside fence - Outsource	Outsource Visitor's Center activities. Locate Visitor's Center to a more accessible location, or even to downtown Cleveland where it might get more visitor traffic, freeing up needed space.	2	0	2	2	2	6	2	Financial returns from visitors centers can be improved by sole-sourcing management and operations and locating in strategic areas.	No benefit to synergistic relationships	Community can benefit from increased visitor traffic	Benefits community outreach/education	Achievable, but dependent on willingness of contractor.
74	Glenn	Underutilized Facilities	EUL	Private Sector	Adjacent to Runway	Office building next to hangar	Market use of building along the fence near the airport to security-conscious contractors. Lease through EUL.	2	3	2	0	2	6	3	Moderate revenue to NASA	NASA contractors	Adds non-federal jobs	No Outreach	Depends on willingness of contractors.
75	Goddard	Underutilized Facilities	Space Act	Contractors	Centrifuge	Centrifuge - Market	Provide incentives to contractor to actively market centrifuge to outside groups similar to DOT agreement	2	2	1	1	3	6	3	Ensures facilities are being marketed to full cost savings potential	Shared usage/collaboration with partners	Can bring more users/contractors to marketplace	Can include educational missions	Infrastructure already in place, expand scope
76	Goddard	Underutilized Facilities	Example	NTSB	Centrifuge	Centrifuge	Goddard has a reimbursable agreement with NTSB to use it's Centrifuge in testing cars. Good example of utilizing federal assets to benefit other federal agencies	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
77	Goddard	Facilities and Asset Management	EUL	State of Maryland, Prince Georges County	East Campus - Goddard	East Campus - EUL - Alternative master plan to finance development	Prince Georges County and the State of Maryland are focused on increasing research activities, and NASA offers great opportunity for synergy. Consider alternative master plan consolidating all facilities west of Soil Conservation Road; EUL east campus to pay for new facilities on west campus while maintaining long-term ownership of the land; potential to turn east into high tech partnering zone; "showcase for county". Don't move Soil Conservation Road. Maintain or move radar stations. EUL new Earth Sciences facilities to "kick start" project.	3	3	3	3	2	8	6	Revenue generation for NASA while preserving land for potential long term growth, phased payments allow for continued improvements to remaining Center	Partners located "on campus" or adjacent to campus	Increases non-federal jobs, brings firms to community, returns land to tax rolls	Can achieve outreach if university, incubator, or think tank involved	Good market, requires willing partners. Requires EUL authority for NASA. Risk is if business plan fails, NASA may take over development role.

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78	Goddard	Facilities and Asset Management	Divest	State of Maryland, Prince Georges County	East Campus - Goddard	East Campus - Divest - Alternative master plan to finance development	Prince Georges County and the State of Maryland are focused on increasing research activities, and NASA offers great opportunity for synergy. Consider alternative master plan consolidating all facilities west of soil conservation road; sell east campus to pay for new facilities on west campus; potential to turn east into high tech partnering zone; "showcase for county". Don't move Soil Conservation Road. Maintain or move radar stations. Sell new Earth Sciences facilities to "kick start" project.	3	2	3	2	1	7	4	Significant revenue generation for NASA	Partners located "on campus" or adjacent to campus	Increases non-federal jobs, brings firms to community, returns land to tax rolls	Can achieve outreach if university, incubator, or think tank involved	Good market, requires willing buyers/developers. GSA relocation program, or special legislation would be required to return proceeds to Goddard to allow master plan be implemented.
79	Goddard	Mission or Program Strategy	EUL	Private Sector	GOCO	FFRDC - Convert Goddard, EUL real estate to investor	Goddard is a high-research Center similar to JPL. Consider combining with other research-oriented agencies in DC area to create new FFRDC's in DC area. As an FFRDC, EUL to investors who could access long term financing and would be responsible for long-term facility needs. Consider EUL on part or all of Goddard campus to remove NASA from direct facilities obligations. Use proceeds to implement master plan.	3	3	2	2	1	6	5	Potential cost savings/revenue generation; proceeds from EUL could help support unique facilities that may not be included in EUL	Potential collaboration with partners on campus	Bring more users and non-federal jobs to community	Can include educational institutions and initiatives	FFRDC's have pros and cons, could be more expensive; politically challenging to set up FFRDC and transfer employees; difficult to find educated investors to enter into EUL.
80	Goddard	Facilities and Asset Management	EUL	Private Sector	Mod C	Mod C Consolidation - EUL	Mod C is a logistics consolidation project that will help Goddard better conduct that operation. Consider outsourcing some of the logistics activities and having private sector build the facilities to house the activities on NASA land near the fence through EUL.	2	1	2	1	2	6	2	EUL offers NASA opportunity for increased revenues; outsourcing could potentially reduce some costs	Not as good as controlling logistics completely, but could be private sector efficiencies	Investment in non-federal jobs	Limited	Potential, but requires NASA operational change; could be security risk.
81	Goddard	Facilities and Asset Management	Outside Fence	Private Sector	Mod C	Mod C Consolidation - Outsourcing	Consider outsourcing as many logistics operations outside the fence, removing NASA's obligation to manage the process and provide the service.	2	1	2	1	1	5	2	Potentially reduce operations costs	Not as good as controlling logistics but could offer efficiencies	Non-federal jobs in the local economy	Modest	Requires change in operations
82	Goddard	Facilities and Asset Management	CoF	NASA	Mod C	Mod C Consolidation - CoF	Mod C is a logistics consolidation project that will help Goddard better conduct that operation. Proceed through the normal CoF process.	1	2	1	0	1	3	2	Requires continued competition for limited funding	Creates efficiencies	Minimal economic impact to community	No outreach to community	Limited funding hurts expediency.
83	Goddard	Underutilized Land	Space Act	Private Sector	Partnering Zone	Partnering Zone - University / Research - Space Act.	Goddard's Master plan includes a partnering zone. Consider a research-oriented partnering zone similar to Ames; high emphasis on research and university interactions - and related organizations. Share maintenance costs for net cost reduction.	3	3	3	3	2	8	6	Great potential for revenue generation	Provides great collaboration with universities and supports NASA mission	Provides non-federal jobs	Outreach to community through university presence	Near term market demand might be only question.

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84	Goddard	Underutilized Land	EUL	Private Sector	Partnering Zone	Partnering Zone - EUL to master developer	Goddard's Master plan includes a partnering zone. EUL the partnering zone to a master developer or local developers for a mix of collaborative uses including contractor office space and university space.	2	3	3	3	3	8	6	Great potential for revenue generation, NASA maintains long term land ownership, but some "development value" is passed along to master developer	Provides great collaboration with universities/contractors	Provides non-federal jobs	Outreach to community through university presence	Near term market demand might be only question. NASA puts development risks on Investor with expertise in development who takes a take leadership role in NRP, avoiding known mistakes.
85	Goddard	Underutilized Land	EUL	Private Sector	Partnering Zone	Partnering Zone - EUL, NASA maintain management	Goddard's Master plan includes a partnering zone. EUL the partnering zone to local developers for a mix of collaborative uses including contractor office space and university space.	3	3	3	3	2	8	6	Great potential for revenue generation, NASA maintains long term land ownership. NASA controls obtaining highest returns on every EUL	Provides great collaboration with universities/contractors	Provides non-federal jobs	Outreach to community through university presence	Near term market demand might be only question. NASA maintains "development" risks in soft sub-market.
86	Goddard	Underutilized Land	Divest	Private Sector	Partnering Zone	Partnering Zone - Divest to master developer	Goddard's Master plan includes a partnering zone. Divest the partnering zone to a master developer or local developers for a mix of collaborative uses including contractor office space and university space.	3	2	3	2	1	7	4	Great potential for immediate revenue generation, NASA gives up expense, but loses long-term ownership control	Provides potential collaboration with universities/contractors but not in direct control	Provides non-federal jobs, returns land to tax roll	Outreach to community through university presence	Near term market demand might be question; also loss of control and potential security challenges.
87	Goddard	Facilities and Asset Management	Example	NASA	Real Property Strategy	Master Plan	The Center has a well thought out master plan that will allows it to be prepared to address its future proactively.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
88	Goddard	Facilities and Asset Management	EUL	Private Sector	Space Science Building	Space Science Building - EUL	The Space Sciences groups are currently in old facilities that inhibit their work. The Goddard Master plan includes a new Space Science Building in the middle of the campus. Consider entering into EUL to support the financing and construction of the new facility. Because of OMB rules, consider designing the building where a portion can be occupied almost completely by Contractors.	3	3	3	0	2	8	3	Allows NASA to have building financed partially by outside financing source	Allows for better working conditions, could brings contractors/partners on campus	Adds non-federal jobs and increases presence of employers	No outreach involved	Market has strong contractor base, current EUL legislation does not allow NASA occupancy.

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89	Goddard	Facilities and Asset Management	CoF	Private Sector	Space Science Building	Space Science Building - CoF	The Space Sciences groups are currently in old facilities that inhibit their work. The Goddard Master plan includes a new Space Science Building. Pursue normal CoF funding.	1	3	1	0	1	3	3	Requires continued competition for limited funding	Creates efficiencies, currently in old inefficient buildings	Minimal economic impact to community	No outreach to community	Limited funding hurts expediency.
90	Goddard	Facilities and Asset Management	Outside Fence	Private Sector	Visitors Center	Visitors Center, Space Camp - Outsource	Goddard is reviewing proposals for Visitor Center and potential Space Camp activities. Currently Goddard maintains its own Visitor Center; consider completely outsourcing activities similar to Marshall; maintain only "exhibit" input and "Brand" control.	2	0	2	2	2	6	2	Net cost savings to NASA	No benefit to synergistic relationships	Community can benefit from increased visitor traffic	Benefits community outreach/education	Achievable, but dependent on willingness of contractor.
91	Goddard	Underutilized Land	EUL	Private Sector	Visitors Center	Visitors Center, Space Camp - EUL near Center	The future of Goddard's on-center Visitor Center is being discussed; one option is to move it away from the Center. Consider entering into an EUL agreement with investor/partners and expanding into a conference facility and educational space camp. Utilize the facility for NASA-related activities that involve foreign scientists who have difficulty getting on the Center.	2	2	2	3	1	5	5	Reduction in costs associated with running visitors center currently; potential to structure like KSC with revenues going back to public use activities	Close proximity could allow for more conferences, meetings, discussions	Modest increase in local visitors	Positive outreach to local students and community	Faces stiff competition for visitor center experiences in DC area; hotel conference centers are already near by, may not support.
92	Johnson	Facilities and Asset Management	EUL	NSBRI	Bioastronautics	Bioastronautics - EUL	JSC needs new facilities to conduct research and provide better Astronaut services. Consider EUL structure to finance and build the facility on the Center, near the fence line for separate access to outside. May be difficult with OMB Scoring rules prohibiting NASA occupancy of EUL; may be structured in conjunction with outsourcing of Bioastronautics activities.	2	3	2	1	1	5	4	Helps construct a needed facility for NASA using private sector funds; potential Revenue Generation for NASA	Brings contractors/partners on campus	Adds non-federal jobs and increases presence of employers	Potential outreach involved	Market has strong partner base; current legislation does not allow NASA occupancy.
93	Johnson	Facilities and Asset Management	Outside Fence	Private Sector	Bioastronautics	Bioastronautics - Outsource	JSC needs new facilities to conduct research and provide better Astronaut services. Consider entering into long-term agreement with NSBRI or other entity to finance and build the facility. NASA would lease a portion of the facility as needed (similar to KSC's SERPL)	1	1	3	3	0	4	4	Net reduction in NASA's expense compared to CoF; NASA would pay to lease space and may run into OMB Scoring issues	Provided better facility, but not as good as being on Center - difficult for Astronaut-specific issues	Good for generating outside non-federal jobs	Good education	Difficult to accomplish.
94	Johnson	Facilities and Asset Management	CoF	NASA	Bioastronautics	Bioastronautics - CoF process	JSC needs new facilities to conduct research and provide better Astronaut services. Proceed with normal CoF funding cycle.	1	2	1	0	1	3	2	Requires continued competition for limited funding	Would provide operational efficiencies	Minimal economic impact to community	No outreach to community	Limited funding hurts expediency.
95	Johnson	Mission or Program Strategy	Example	NSBRI	NSBRI	NSBRI	Example of collaborating with Universities to accomplish program goals. Saves NASA from having to invest solely in necessary labs and facilities.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				

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96	Johnson	Facilities and Asset Management	EUL	Contractors	Renovation by Partnership	Contractor Strategy - EUL Existing Facilities to Contractors	JSC has many contractors that would prefer to be on Center, and although JSC's facilities are at capacity, the facilities could be space-planned and renovated to fit additional capacity. Free up building(s) then EUL to contractors; use EUL proceeds to renovate NASA buildings/facilities to increase their capacity.	3	3	3	0	2	8	3	Allows NASA to have building financed partially by outside financing source	Brings contractors/partners on campus	Adds non-federal jobs and increases presence of employers	No outreach involved	Market has strong partner base; deal structure may be complicated; local developers may not support.
97	Johnson	Underutilized Land	EUL	Private Sector	Runway	Runway - Global transportation hub	Consider utilizing the runway for air-based transportation hub; EUL land to warehouse uses; charge for use of air strip.	3	1	3	1	1	7	2	Currently NASA pays for most of the cost of runway activities; this scenario will turn it into a profit center	Could allow for more services to be offered benefiting NASA	Could bring new non-federal jobs and business	Not much	Would require time and investment to define concept and attract businesses, but possible; Mountain View and Sunny Vale citizens oppose high use of air strip; would require modification to EIS.
98	Johnson	Facilities and Asset Management	Example	SpacePort Florida	Saturn 5 hangar	Saturn 5 hangar	Space Port Florida helped provide an enclosure for a Saturn 5 rocket as part of it's visitor center experience. Example of using PPP to share capital costs in order to construct unique facilities.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
99	Johnson	Underutilized Land	EUL	Private Sector	Section 300, 400	Section 400 - EUL contractor buildings	400 section of JSC is not completely used except for radio tower transmission areas. Consider marketing to university systems or developers for collaborative uses. Consider potential to use funds from EUL to move the transmission towers to increase area available for EUL.	3	3	3	2	1	7	5	Potential for revenue generation	Provides great collaboration with universities/ contractors	Provides non-federal jobs	Outreach to community through university presence	Market demand might be only question. Sub market is filled with low-cost office buildings, modest vacancy rate. NASA would risk taking over development if failure.
100	Johnson	Underutilized Land	EUL	MSFEFI	Section 300, 400	Golf Course - EUL	A proposed hotel development at Space Center Houston has expressed an interest in putting a golf course on section 400. The use is compatible with the need to maintain the radio tower transmission areas. Consider structuring as EUL.	2	2	2	1	2	6	3	Revenue potential good, but questionable golf course economics	Recreational amenity	Provides some non-federal jobs	Provides amenity to community	Market demand and financial viability need to be examined.
101	Johnson	Underutilized Land	Divest	MSFEFI	Section 300, 400	Golf Course - Divest	A proposed hotel development at Space Center Houston has expressed an interest in putting a golf course on section 400. The use is compatible with the need to maintain the radio tower transmission areas. If NASA doesn't require the land long-term, consider divesting; retain transmission air-rights.	2	1	2	1	2	6	2	Revenue potential good, but questionable golf course economics	Recreational amenity, lose future rights to land	Provides some non-federal jobs	Provides amenity to community	Market demand and financial viability need to be examined.

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102	Johnson	Restructure	Divest	MSFEFI	Space Center Houston	Space Center Houston Conference Center - Divest	Space Center Houston is considering entering into an agreement with a developer to build a conference center and office buildings as an enhancement to their campus. Consider canceling Space Center Houston's MOU. Divest land and remove NASA from all Real Property obligations regarding the facility; re-invest proceeds into Johnson (or potentially into golf course in Section 400).	3	3	3	0	1	7	3	Reduce NASA's costs, and provide revenue to reinvest in NASA	Office space, if developed with NASA's increased involvement, can bring contractors/partners near by - by divesting, NASA may be able to occupy space without EUL occupancy conflicts	Return property to tax rolls, will bring visitors and tenants to market	Limited additional benefit	Agreement might be difficult to restructure
103	Johnson	Restructure	EUL	MSFEFI	Space Center Houston	Space Center Houston Conference Center - Convert to EUL	Space Center Houston is considering entering into an agreement with a developer to build a conference center and office buildings as an enhancement to their campus. Consider canceling Space Center Houston's MOU on that subject land and have NASA enter into EUL agreement directly.	3	0	0	0	1	4	0	Provide revenue to NASA while maintaining long term ownership	No additional benefit	No additional benefit	No additional benefit	Agreement might be difficult to restructure
104	Johnson	Restructure	EUL	MSFEFI	Space Center Houston	Space Center Houston	Consider restructuring Space Center Houston's Space Act Agreement under EUL.	2	0	0	0	1	3	0	Provide cash stream to Johnson	No additional benefit	No additional benefit	No additional benefit	Agreement might be difficult to restructure
105	Johnson	Facilities and Asset Management	Example	MSFEFI	Space Center Houston	Space Center Houston	Example of outsourcing visitor center activities in site adjacent to Center in collaboration with local community. Allows NASA to concentrate on core competencies, and allows Visitor Center activities to remain fresh to the public.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
106	Johnson	Underutilized Land	EUL	Private Sector	Section 300, 400	Develop Commercial Buildings - EUL	JSC has a large contractor population for Code M, and many currently lease space off site. NASA is often paying the contractor's rent as a direct pass-through. Contractor's services could sometimes be enhanced by being on-site, or at least closer to the Center. There is no room for additional contractors on site; consider entering into an EUL to build new facilities near the fence line.	3	3	3	1	2	8	4	Creative potential for cost reduction (through contractor pass-through's)	Provides great collaboration with contractors who need to work closely with NASA	Provides non-federal jobs	Not a lot of outreach	Market demand in sub-market is soft; local developers may not support.
107	JPL	Facilities and Asset Management	EUL	Private Sector	Explorer Road - Below	Explorer Road - EUL area below road	JPL's master plan generally calls for most unique facilities to be above Explorer road. As an FFRDC, JPL may have unique EUL opportunities. Consider a radical EUL concept which leases the land and facilities generally below Explorer Road to investors with JPL being primary tenant. Use proceeds to implement master plan. Investor provides capital for rehabilitation and maintenance of JPL buildings.	3	2	3	0	1	7	2	Potential revenue generation for NASA; investor can access long-term financing for infrastructure improvements, NASA can invest proceeds into unique facilities above Explorer Road	Brings additional contractors/partners on campus	Adds non-federal jobs and increases presence of employers	No outreach involved	Market has strong partner base, including Cal Tech; deal structure and logistics may be complicated.

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108	JPL	Facilities and Asset Management	Divest	Private Sector	Explorer Road - Below	Explorer Road - Divest area below road	JPL's master plan generally calls for most unique facilities to be above Explorer road. As an FFRDC, JPL may have unique opportunities for managing real property. Consider a radical Divestment concept which leases the land and facilities generally below Explorer Road to investors with JPL being primary tenant. Use proceeds to implement master plan. Investor provides capital for rehabilitation and maintenance of JPL buildings.	3	2	3	0	1	7	2	Potential revenue generation for NASA; investor can access long-term financing for infrastructure improvements, NASA can invest proceeds into unique facilities above Explorer Road	Brings additional contractors/partners on campus, allows for substantial additional non-NASA work to keep workforce busy	Adds non-federal jobs and increases presence of employers	No outreach involved	Market has strong partner base, including Cal Tech; deal structure and logistics may be complicated. NASA would give up long term ownership.
109	JPL	Facilities and Asset Management	EUL	Cal Tech	Flight Project Center	Flight Project Center - EUL	Since JPL is an FFRDC and few if any NASA Civil Servants will occupy the facility, consider entering into an EUL agreement with outside investor to build the facility and lease it back to Cal Tech.	2	3	2	0	2	6	3	Utilize private sector funding, potential revenue Generation for NASA	Allows better facility than current	Potentially adds non-federal jobs and increases presence of employers	No outreach involved	Market has strong partner base; deal structure may be complicated. Since JPL is an FFRDC, few NASA occupancy issues related to EUL.
110	JPL	Facilities and Asset Management	CoF	Cal Tech	Flight Project Center	Flight Project Center - CoF	The Flight Project Center is a facility that would improve JPL's operational efficiency. As currently planned, continue to build the facility as a CoF project.	1	2	1	0	1	3	2	Requires continued competition for limited funding	Would provide operational efficiencies	Minimal economic impact to community	No outreach to community	Limited funding hurts expediency.
111	JPL	Facilities and Asset Management	Example	Private Sector	Flight Project Center	Flight Project Center - enhancing mission operations	JPL has a master plan to include a flight project center which will substantially improve it's operations. This is an example of how strategic facility planning can help improve mission capabilities, and potentially reduce long term tangible and intangible costs.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
112	JPL	Mission or Program Strategy	Example	Cal Tech	GOCO	FFRDC	JPL's FFRDC with Cal Tech is a good example of how to partner with the academic community; offers benefits of gaining research without needing to directly employ staff; challenges are the uniqueness with being "like" a Center, but not really being totally a part of NASA.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
113	JPL	Facilities and Asset Management	Space Act	Cal Tech	Marketing	Marketing - Stronger pursuit of reimbursable agreements	Create incentives or contract requirements whereby GOCO will more strongly pursue reimbursable agreements.	2	2	2	2	3	7	4	Can achieve modest cost savings	Brings more partners/contractors onto campus	More contractors/visitors	Can include outreach programs	NASA should easily be able to implement through contract.

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114	JPL	Facilities and Asset Management	EUL	Private Sector	Parking Garage	Parking Garage - EUL	Ground lease land near fence line but close to the hub of the workforce in order to provide most efficient location for workers; developer/investor would construct Garage through EUL agreement. NASA could "donate" the land and encourage a longer amortization period in exchange for lower parking fees charged to JPL workers (which the developer would need to pay for construction costs and profit).	3	1	2	1	2	7	2	Creative method for financing needed parking structure	Might not involve synergistic partner, but would allow JPL closer access to parking	Adds non-federal jobs and increases presence of employers	Can involve some community participation	Market has strong partner base; deal structure may be complicated.
115	JPL	Facilities and Asset Management	Outside Fence	Private Sector	Parking Garage	Parking Garage - Off Site	Identify neighboring site; have private developer construct garage.	2	0	2	0	2	6	0	NASA does not have to provide funding for construction, but might be required to subsidize additional costs for employee parking	No special synergies involved	Tax revenue for community	No outreach involved	Issue of NASA employees paying for parking, or have employees bear the burden of additional costs.
116	JPL	Facilities and Asset Management	CoF	NASA	Parking Garage	Parking Garage - CoF	JPL has a shortage of parking. Use NASA CoF funding to construct structured parking on-site.	1	1	1	0	1	3	1	Requires continued competition for limited funding	Would provide operational efficiencies by putting parking closer to worker buildings	Minimal economic impact to community	No outreach to community	Limited funding hurts expediency.
117	JPL	Facilities and Asset Management	Historic Preservation Act	Private Sector	Real Property Development Strategy	Historic District	Consider designating JPL, or portions of JPL as a historic district, similar to the Shenandoah District at Ames. Wherever possible, lease facilities to the private sector to help renovation of the facilities. The net result is a reduction of CoF funds that need to be spent on the facilities and lower future occupancy costs.	2	3	1	0	1	4	3	NASA can reinvest proceeds of leases into facilities, thereby renovating the facilities at little net cost to NASA; helps reduce CoF requirements, but not substantial financial gain	Helps NASA maintain it's important heritage facilities for future generations; potential synergies created by bringing partners/contractors "on-campus"	Can result in increased non-federal jobs within municipality	Limited outreach	Viable, but dependent on market for tenants/users.
118	JPL	Facilities and Asset Management	Example	NASA	Real Property Strategy	Master Plan	Although not complete, the Center has a well thought out master plan that will allows it to be prepared to address its future proactively.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				

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119	Kennedy	Restructure	EUL	SpacePort Florida	ISRP	International Space Research Park (ISRP) - Increase NASA's role in development	NASA take larger role in planned ISRP development; re-evaluate ISRP's planned tenant mix correlated to NASA's current and future program and mission goals. EUL portions of the land as available; consider space act agreements for university research park-specific developments.	3	3	3	2	2	8	5	Potential for significant revenue	Increase Contractor and university partners	Provides non-federal jobs and industry to area	Enhances education/outreach element	Favorable, more cautious approach to viability; political challenge to restructuring agreement, but possible since ISRP is early in development
120	Kennedy	Restructure	EUL	SpacePort Florida	ISRP	International Space Research Park (ISRP) - EUL	Consider the development of the ISRP using EUL versus currently planned structure. Still maintain an arms-length distance.	3	2	2	1	1	6	3	Provide additional revenue to NASA	Will bring contractors/ partners onto campus	While property not returned to tax rolls, will bring visitors and tenants to market	Conference center can aid community outreach	Political challenges in restructuring agreement. Feasibility needs to be examined.
121	Kennedy	Restructure	Divest	SpacePort Florida	ISRP	International Space Research Park (ISRP) - EUL	Consider the divesting the land under development for the ISRP.	2	1	3	1	1	6	2	Provide additional revenue to NASA, low land value	Will bring contractors/ partners onto campus	While property not returned to tax rolls, will bring visitors and tenants to market	Conference center can aid community outreach	Political challenges in restructuring agreement. Feasibility needs to be examined.
122	Kennedy	Underutilized Land	Space Act	Federal Agency	ISRP	Federal Campus	Because KSC needs to maintain buffer zone and high security - similar to Stennis - lease developable land to security conscious federal agencies to reduce faculties management costs.	2	2	2	0	2	6	2	Increasing tenants reduces overall costs to NASA	Synergistic only with collaborative federal agency, may provide additional employee amenities	Brings more non-federal jobs/patrons to area, does not return property to tax rolls	No outreach	Dependent on federal agency partners.
123	Kennedy	Underutilized Land	Example	SpacePort Florida	ISRP	International Space Research Park (ISRP)	Example of NASA and the State of Florida working together to come up with a business plan for a research park.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
124	Kennedy	Facilities and Asset Management	Example	NASA	Real Property Strategy	Master Plan	The Center has a well thought out master plan that will allows it to be prepared to address its future proactively.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				

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125	Kennedy	Facilities and Asset Management	EUL	Contractors	Renovation by Partnership	Contractor Strategy - EUL Existing Facilities to Contractors	Kennedy has many contractors that could be on Center in office facilities, and although Kennedy's facilities are at capacity, the facilities could be space-planned and renovated to fit additional capacity. Free up building(s) then EUL to contractors; use EUL proceeds to renovate NASA buildings/facilities to increase their capacity.	3	3	3	0	2	8	3	Allows NASA to have building financed partially by outside financing source	Brings contractors/ partners on campus	Adds non-federal jobs and increases presence of contractors	No outreach involved	Market has strong partner base; deal structure may be complicated; works best for office space, not clear of demand; local developers may not support, but less than in comparable urban Centers.
126	Kennedy	Facilities and Asset Management	Example	SpacePort Florida	Saturn 5 hangar	Saturn 5 hangar	Space Port Florida helped provide an enclosure for a Saturn 5 rocket as part of it's visitor center experience. Example of using PPP to share capital costs in order to construct unique facilities.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
127	Kennedy	Restructure	EUL	SpacePort Florida	SERPL	SERPL	Consider restructuring the SERPL agreement to demonstrate it's applicability to EUL.	3	0	0	0	1	4	0	Positive financial impact for NASA	No additional benefit	No additional benefit	No additional benefit	Agreement might be difficult to restructure
128	Kennedy	Restructure	Divest	SpacePort Florida	SERPL	SERPL	NASA owns the land under the SERPL building; the land is not near the main center of campus. Consider restructuring the SERPL agreement to divest the land to SpacePort Florida or an investor.	2	0	0	0	1	3	0	Positive immediate financial impact for NASA but not high value land	No additional benefit	No additional benefit	No additional benefit	Agreement might be difficult to restructure; partner may be difficult to find.
129	Kennedy	Facilities and Asset Management	Example	SpacePort Florida	SERPL	SERPL	NASA and Space Port Florida entered into a development agreement; NASA leased the Land to SPF and provided the facility design; SPF provided the construction and landlord responsibilities. NASA's contractor will lease space in the facility. Example of using PPP structure to share capital costs of obtaining state of the art facilities/labs for contractor.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
130	Kennedy	Facilities and Asset Management	Example	Air Force	Shared Cost	Federal Campus - Cost sharing - JBOSC Contract	JBOSC contract is a good example of working with other major federal agencies to reduce overall facilities maintenance costs.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
131	Kennedy	Utilities Management	Example	Private Sector	Utilities Privatization	Utilities Privatization - Private Authority	Kennedy is considering the options for privatization of Utilities, using best practices from public and private examples.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
132	Kennedy	Facilities and Asset Management	Example	Delaware North	Visitors Center	Visitor Center	Example of complete outsourcing of visitor center experience; structuring profit agreement to allow profits to be put back into NASA (for public-oriented uses).	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				

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133	Kennedy	Underutilized Land	Divest	Fish and Wildlife / Florida	Wildlife Refuge	Divest buffer zone land while controlling use	NASA owns 82,822 acres of land at KSC, and has an easement for 56,547 acres which is needed to provide the buffer zone for launch activities. Review ownership and costs associated with maintaining the buffer zone and consider cost-reduction alternatives that would still protect NASA's interests (analogous to Stennis). Fish and Wildlife or the state of Florida may be potential partners.	3	2	0	0	2	5	2	Can result in significant cost savings	Bolsters coordination/partnership with F&W, State	No net economic impact with partners	No net impact on outreach vs. current structure	Will NASA sacrifice security control? Willingness of partners.
134	Langley	Utilities Management	Example	Air Force	Cogen	Cogen (Trash for energy)	Through agreement between NASA and Air Force, trash is burned in a cogen plan and Electrical costs are reduced.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
135	Langley	Underutilized Land	EUL	Private Sector	East Campus - Langley	Air Force Parking	The Air Force needs additional parking on the East campus; EUL to parking company, and charge Air Force for parking to pay capital costs. Land is currently permitted to NASA, so this opportunity may be complex.	1	1	1	1	1	3	2	Creative method for financing needed parking structure; ultimate partner is other federal agency, so EUL payments might be lower than private sector	Might not involve synergistic partner	Modest	Can involve some community participation	Market has strong partner base; deal structure may be complicated; may encounter OMB scoring issues concerning Air Force payment of parking.
136	Langley	Underutilized Facilities	EUL	Private Sector	East Campus - Langley	East Campus - EUL Buildings	The East campus is one of the oldest at NASA, but separated from the current main campus. Maintain control of the East Campus (it is current a lease from the Air Force), but enter into EUL agreements with outside groups; utilize revenues to restore the facilities and improve facilities in the main part of the Center.	2	2	2	1	1	5	3	Potential to access private funds to renovate facilities	Potential synergies created by bringing partners/contractors "on-campus"	Can result in increased non-federal jobs within municipality	Limited.	Market for users/partners may be questionable; security issues associated with Air Force limits potential tenants.
137	Langley	Underutilized Land	Divest	Air Force	East Campus - Langley	East campus - Return to Air Force	Return all underutilized land and facilities in river area to Air Force. Retain ownership of only those unique facilities that are critical to NASA in the future. Results in net reduction of costs.	3	0	0	0	2	5	0	Measurable cost savings for NASA			No net impact	Political question concerning NASA control.
138	Langley	Facilities and Asset Management	Historic Preservation Act	Private Sector	East Campus - Langley	East Campus - Historic District	Consider designating Langley's East Campus as a historic district, similar to the Shenandoah District at Ames. Wherever possible, lease facilities to the private sector to help renovation of the facilities. The net result is a reduction of CoF funds that need to be spent on the facilities and lower future occupancy costs.	2	3	1	0	1	4	3	NASA can reinvest proceeds of leases into facilities, thereby renovating the facilities at little net cost to NASA; helps reduce CoF requirements, but not substantial financial gain	Helps NASA maintain it's important heritage facilities for future generations; potential synergies created by bringing partners/contractors "on-campus"	Can result in increased non-federal jobs within municipality	Limited outreach	Viable, but dependent on market for tenants/users; may be difficult to attract suitable tenants into high security area.

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139	Langley	Underutilized Land	EUL	NIA	NIA	National Institute for Aeronautics (NIA)	NIA is a contract recently won by a consortium that expressed a desire to lease space off-Center. Consider EUL on NASA owned land to help form critical mass and attract other R&D type users.	2	2	2	2	1	5	4	EUL has positive financial benefits	Brings NIA closer to Center civil servants	Helps generate spin off business	Employs good workers	NIA already desired to lease space away from Center
140	Langley	Mission or Program Strategy	Example	NIA	NIA	National Institute for Aeronautics (NIA)	Example of research activities done outside the Center for NASA's benefit	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
141	Langley	Restructure	EUL	ODU	ODU	ODU lease - EUL	ODU currently leases a wind tunnel for non-NASA uses. Current agreement is reimbursable; consider converting to EUL.	2	0	0	0	1	3	0	Result in modest impact to NASA; market value of Wind Tunnel may not be high	No additional benefit	No additional benefit	No additional benefit	May be difficult to restructure; market value of leasing wind tunnels not high.
142	Langley	Underutilized Facilities	Example	ODU	ODU	ODU lease	Example of leasing unique facility to private sector in order to keep the facility operational, and reduce overall capital costs for the private sector.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
143	Langley	Facilities and Asset Management	EUL	Contractors	Swing Space	Swing Space	Langley has no room for expansion on their western campus, although a majority of the occupants are contractors. Subsequently, as new facilities need renovation, there is a dearth of swing space. Enter into EUL to have simple "swing space" facility built near the fence line at the back gate that can be occupied by contractors.	1	2	1	1	1	3	3	Costly but could help reduce current churn expenses	Helps NASA keep productive while renovating facilities	Investment in community, but small	Potential for outside companies when NASA not needed	Difficult agreement to structure; hard to finance unknown occupancy requirement.
144	Langley	Underutilized Land	EUL	Private Sector	Wythe Creek Gate	Pull fence line back at back gate	Langley is located along fairly major road, near major highway. A portion of the area is currently designated a forested wet land. Work with the Corps to remove the designation. EUL to private groups. Maintain long-term ownership in case NASA requires land for use in the future.	2	0	3	0	2	7	0	Could generate modest income	No synergies created	Returns land to tax rolls, generates sales taxes	No outreach created	Depends on NASA security concerns; market viability of uses; sub market does not appear strong.
145	Langley	Facilities and Asset Management	Space Act	Air Force	Shared Cost	Federal Campus - Joint facilities management contract	Negotiate a facilities management contract with the Air Force - similar to the JBOSC contract at KSC to share and reduce overall facilities costs.	2	2	0	0	3	5	2	modest cost savings on services	Calls for close collaboration	No net impact on community	Involves no outreach	Easy to implement for NASA, depends on willingness of Air Force.
146	Langley	Underutilized Land	Space Act	Air Force	Federal Campus	Federal Campus - Increase Air Force presence on NASA side	The Air Force is a growing presence at Langley and may need more space.	2	1	1	0	1	4	1	Cost of maintaining land too low to result in significant impact	Can be synergistic with federal Agency	Might create non-federal jobs but land not returned to tax rolls	Not relevant	Significant fed agency user interest unlikely; not high benefit to NASA.

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147	Marshall	Underutilized Facilities	EUL	Boeing	Boeing Building	Boeing's commercial use of facilities - Expand	Boeing is occupying a building on Center for non-NASA activities. Encourage Boeing to increase the commercial work done on site. Enter into EUL Agreements for facilities to be used. Boeing may be able to consolidate commercial activities done elsewhere (reducing their overall costs) while better utilizing NASA underutilized facilities. Reinvest proceeds at Marshall.	2	2	2	1	1	5	3	Increased cost savings and revenue potential for NASA	Increases contractor/partner presence on campus	Increases non-federal jobs/contractor presence in community	Small positive impact on outreach	Boeing would need to make long term investment at Marshall which may require difficult decisions.
148	Marshall	Restructure	EUL	Boeing	Boeing Building	Boeing Building - convert to EUL	Boeing is occupying a building on Center for non-NASA activities. Convert the Space Act agreement to EUL.	2	0	0	0	1	3	0	Positive financial impact for NASA, but the current rate is close to current market rate	Limited additional benefit	Limited additional benefit	Limited additional benefit	Agreement might be difficult to restructure.
149	Marshall	Underutilized Facilities	Example	Boeing	Boeing Building	Boeing Building - reimbursable lease of facility	Boeing is leasing a facility, at full reimbursable cost from NASA.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
150	Marshall	Underutilized Land	Divest	Army	Consolidation	Return underutilized area to Army	Marshall has a long term lease with the Army for use of land which may not be needed.	2	0	0	0	2	4	0	Potential cost savings for NASA			No net impact	Political question concerning NASA control.
151	Marshall	Underutilized Facilities	Space Act	NASA	IFMP	IFMP for Agency on Center	NASA rents space for the agency-wide activities; consider moving the operations on Center into existing facilities or master planned facilities. Advantages - lowers NASA Overall investment; increase Marshall cost-sharing.	3	2	0	0	2	5	2	NASA can reduce costs by putting long-term needs in owned space	Will bring more people/partners on campus	Net loss; communities lose revenues from leased space	Not relevant	Possibly require program shifts, strong cross-center collaboration.
152	Marshall	Facilities and Asset Management	EUL	Private Sector	Machine Shops	Outsource Machine Shops - ON Center	NASA needs machine shops which NASA pays to operate and maintain; consider eliminating offering the machine shops to outside vendors through EUL, allowing them to perform work for NASA and other clients.	2	0	2	0	1	5	0	Can save money, probably not substantial revenues; could provide creative financing to for expensive equipment	Limited additional benefit	Provides some positive impact to local vendor firms	Limited additional benefit	Achievable, but dependent on willing contractors who would need to follow security guidelines; may be difficult to attract workforce; NASA may have liability with non-NASA work done on NASA real property.
153	Marshall	Facilities and Asset Management	Divest	Private Sector	Machine Shops	Outsource Machine Shops - OFF Center	NASA needs machine shops which NASA pays to operate and maintain; consider eliminating machine shops on Center; outsource to local machine shop contractors; purchase goods on a competitive basis from the local marketplace.	2	0	1	0	2	5	0	Can save money but might not be considered high impact	Not relative	Provides some positive impact to local vendor firms	Not relative	Achievable, but dependent on willing contractors.

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154	Marshall	Underutilized Facilities	Space Act	Private Sector	NCAM	National Center for Advanced Manufacturing (NCAM)	NCAM operations are research-oriented activities focused on the manufacturing industry. Increase focus on this effort; coordinate with universities and manufacturing associations and corporations to increase reimbursable funding of these activities. Coordinate with Departments of Energy and Commerce to reduce costs.	1	2	1	1	1	3	3	sharing costs reduces NASA's obligation	NASA constantly needs to discover new manufacturing techniques	More emphasis creates opportunities for spin off businesses	Helps local region potential gain new manufacturing expertise	Limited funds available to support research, but potential
155	Marshall	Facilities and Asset Management	Divest	NSSTC	NSSTC	NSSTC, reduce support	NSSTC is a unique organization that is associated with NASA. NASA leases space occupied by NASA employees at cost since NASA paid for larger portion of the construction cost to eliminate real estate responsibility.	1	0	1	1	2	4	1	Can save money but might not be considered high impact	Reduces synergy with NASA	Provides some positive impact to local firms	Reach out to community for support	Achievable, but dependent on willing contractors.
156	Marshall	Facilities and Asset Management	Operational	NASA	Renovation by Replacement	Renovation by Replacement	Since NASA is nearly 50 years old, many facilities have reached the end of their useful lives. Establish clear policy on replacing facilities that have reached their useful lives; determine "pay back" period and criteria to justify investment return; consider 10 year program to replace outdated facilities.	2	0	2	0	2	6	0	Can save money as repair and maintenance costs surpass annual cost amortization of new facilities	No relative	Construction contracts can benefit community	Not relative	Achievable, but dependent on funding and policy change for NASA.
157	Marshall	Facilities and Asset Management	Space Act	Army	Shared Cost	Federal Campus - NASA / Army shared services agreement	Develop JBOSC type agreement with Army to reduce expenses.	2	2	0	0	3	5	2	modest cost savings on services	Calls for close collaboration	No net impact on community	Involves no outreach	Easy to implement for NASA, depends on willingness of Army.
158	Marshall	Underutilized Facilities	Divest	NASA	Test Stand	Test stands - Move to Stennis	Consider moving the large scale test stands to Stennis.	2	2	1	0	2	5	2	Cost savings through utilization/consolidation	can improve operations/ facilities for contractors	Communities can both gain or lose non-federal jobs/ contractors	No community outreach	Political challenges for NASA.
159	Michoud	Underutilized Facilities	Space Act	Agriculture	Building 350 - HQ	Federal Campus - Lease Headquarters to Department of Agriculture	Department of Agriculture already occupies a good portion of the headquarters; move NASA into other facility and lease the main building to Agriculture on reimbursable basis. Could also be accomplished through EUL, with negligible difference.	2	1	1	1	2	5	2	Helps reduce NASA costs	collaboration increased with Department of Agriculture, but main building would not hold NASA employees which could create confusion	Can expand non-federal jobs in community	Small positive impact on outreach	Depends on Department of Agriculture's desire to expand; could require improvement of facilities.
160	Michoud	Underutilized Facilities	Space Act	Private Sector	CAM	National Center for Advanced Manufacturing (CAM)	NCAM operations are research-oriented activities focused on the manufacturing industry. Increase focus on this effort; coordinate with universities and manufacturing associations and corporations to increase reimbursable funding of these activities. Coordinate with Departments of Energy and Commerce to reduce costs.	1	2	1	1	1	3	3	sharing costs reduces NASA's obligation	NASA constantly needs to discover new manufacturing techniques	More emphasis creates opportunities for spin off businesses	helps local region potential gain new manufacturing expertise	limited funds available to support research, but potential

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161	Michoud	Facilities and Asset Management	EUL	Lockheed Martin	GOCO	Lease Michoud to Lockheed Martin	Lockheed Martin has a long history as NASA's primary contractor at Michoud. As a GOCO, NASA could potentially enter into a EUL for all of the facilities without being subject to NASA occupancy rules in the EUL legislation. Consider entering into an EUL agreement with Lockheed Martin to allow them to take over full responsibility for all real property. Lockheed Martin could access long-term financing to improve the facilities as part of the EUL agreement.	2	3	2	0	2	6	3	Can save money for NASA although contractor costs might increase	Increases collaboration with partner	Enhances private employer in market, no net loss of non-federal jobs	No outreach involved	Political challenges for NASA; question of cost benefit analysis.
162	Michoud	Mission or Program Strategy	Example	Lockheed Martin	GOCO	Government Owned Contractor Operated (GOCO)	Michoud is a good example of turning a location almost completely over to the private sector, while maintaining NASA control.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
163	Michoud	Underutilized Facilities	EUL	Lockheed Martin	Lockheed Martin Building	Lockheed Martin's commercial use of facilities - Expand	Lockheed Martin is already on site doing commercial work in a NASA facility. Encourage Lockheed Martin to increase the commercial work done on site. Enter into EUL agreements for facility usage. Lockheed Martin may be able to consolidate commercial activities done elsewhere (reducing their overall costs) while better utilizing NASA underutilized facilities. Reinvest proceeds at Michoud.	2	2	2	1	1	5	3	Increased cost savings and revenue potential for NASA	Increases contractor/partner presence on campus	Increases non-federal jobs/contractor presence in community	Small positive impact on outreach	Lockheed Martin would need to make long term investment at Michoud, which may require difficult decisions.
164	Michoud	Restructure	EUL	Lockheed Martin	Lockheed Martin Building	Lockheed Martin building - Convert to EUL	Lockheed Martin currently has a Space Act Agreement with NASA to perform Non-NASA commercial activities at Michoud. Consider restructuring agreement as EUL.	2	0	0	0	1	3	0	Positive financial impact for NASA, but market value is not high	Limited additional benefit	Limited additional benefit	Limited additional benefit	Agreement might be difficult to restructure.
165	Michoud	Underutilized Facilities	Space Act	Contractors	Marketing	Market facilities	As a GOCO, Michoud has an opportunity to have it's contractor market NASA's facilities. Refine and expand incentives for Lockheed Martin to "market" NASA's underutilized facilities.	2	2	2	2	3	7	4	Can achieve modest cost savings	Brings more partners/contractors onto campus	More contractors /visitors	Can include outreach programs	NASA should easily be able to implement through contract.
166	Michoud	Underutilized Land	Space Act	Coast Guard	West of Mercury Drive	Federal Campus - Coast Guard. Homeland Security, Customs.	Coast Guard (now part of Homeland Security) have expressed an interest in the Dock area; engage them in a discussion focusing on consolidating more facilities on NASA land.	2	2	2	0	2	6	2	Increased tenants help reduce overall costs associated with real property maintenance	Synergistic only with collaborative federal agency, may provide additional employee amenities	Brings more non-federal jobs/patrons to area, does not return property to tax rolls	No outreach	Dependent on federal agency partners.
167	Michoud	Underutilized Land	EUL	Private Sector	West of Mercury Drive	Ground Lease	EUL portion of land not needed for manufacturing; maintain drainage channel and dock access if necessary.	2	0	2	0	1	5	0	Potential for revenue generation, but most likely at industrial use rental rates	Provides limited collaboration opportunities with contractors	Provides non-federal jobs	Limited outreach	Near term market demand might be question; sub market is industrial.
168	Michoud	Underutilized Land	Divest	Private Sector	West of Mercury Drive	Divest to outside investors for industrial uses.	Divest portion of land not needed for manufacturing; maintain drainage channel and dock access if necessary.	3	0	0	0	2	5	0	Measurable cost savings for NASA	No net impact	No net impact	No net impact	Political question concerning NASA control.

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169	Michoud	Underutilized Land	CoF	NASA	West of Mercury Drive	Invest in new manufacturing facilities	Michoud is organized to manufacture large scale, high quality facilities. As NASA considers next generation technology, centralize the manufacturing operations of all potential technologies at Michoud.	1	3	2	0	1	4	3	Minimal	Additional collaboration through manufacturing collocation	Provides non-federal jobs	Limited outreach	CoF funding is difficult.
170	Michoud	Mission or Program Strategy	Space Act	Federal Agency	Building 103	Invest in Michoud Manufacturing Expertise; make world-class	Michoud is the only major large-scale "unique" manufacturing operation at NASA. Consider long-term manufacturing role within NASA; increase utilization in planning for future programs, especially development of SLI-type research. Market world-class manufacturing and research capabilities to government contractors as Space Act agreement; Increase R&D capabilities.	1	3	3	3	1	5	6	Net expense for NASA, not cost savings, but potentially necessary	Helps NASA control quality through extensive investment	Helps economically challenged area	New non-federal jobs, new capabilities, potential for education and outreach	Very difficult to attract capital from NASA to support; risk is that NASA would make an investment in area 3.6 feet above sea level subject to Hurricanes
171	Michoud	Mission or Program Strategy	Divest	Private Sector	Consolidation	Divest Michoud - Co-locate ET manufacturing with Launch operations	Move External Tank (ET) manufacturing near-term. Currently Michoud makes the ET which is transported to Kennedy. If this function is expected to continue for decades, consider moving operations to Kennedy, divest Michoud	2	0	0	0	2	4	0	Significant cost savings, but offset by move costs	No net impact	No net impact	No net impact vs. current situation (a gain for KSC community offset by loss at Michoud	Political and cost challenges for NASA.
172	Michoud	Mission or Program Strategy	Divest	Private Sector	Consolidation	Divest Michoud when Shuttle Program complete.	At end of Shuttle program, divest manufacturing facility at Michoud, consistent with NASA's intent to outsource capabilities to commercial contractors wherever possible. Invest only to maintain quality of External Tank production.	2	1	0	0	1	3	1	Net ultimate cost reduction regarding Michoud, but potential higher investment elsewhere	Could move operations to location better for NASA overall	Not good for economically challenged area	Not good for economically challenged area	Difficult decision, but not out of the question realistically.
173	Stennis	Underutilized Land	EUL	Private Sector	Army Lease	Army lease - Cancel - market land to Private Sector	Army Land Lease - The army has a long term lease from NASA in the middle of Stennis that they don't need; the army is currently leasing to other companies; NASA could market the land to private sector organizations who require high security; structure agreements through EUL to gain maximum market value, reinvest proceeds to improve Stennis.	3	1	3	0	1	7	1	EUL offers additional revenue potential	Limited, but could bring in companies with synergies to NASA, or allow for additional resources available to the whole Center and tenants	Bring in new business to an economically challenged area	No net impact	Market is not easily identified; requires heavy marketing effort to attract.
174	Stennis	Underutilized Land	Space Act	Federal Agency	Army Lease	Army lease - Cancel - Incorporate land in Federal Campus Strategy	The army has a long term lease from NASA in the middle of Stennis that the Army may not need. Cancel the lease with the Army, take over the land, and market to other Federal Agencies, including DoD, to increase the federal tenant mix.	2	1	2	0	1	5	1	Increasing tenants reduce overall costs; but cost associated with Army land appears high	could bring in Agencies with synergies to NASA, or allow for additional resources available to the whole Center and tenants	Expand employment base in an economically challenged area but property not returned to tax rolls	No net impact	Proven business model and systems set up; question is how many more agencies need facilities.

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175	Stennis	Facilities and Asset Management	Space Act	Army	Army Lease	Army lease - Keep lease - negotiate shared management expenses	Army Land Lease - The Army has a long term lease from NASA in the middle of Stennis; let Army keep the lease, set up management for all of Stennis run by NASA, charge Army for services.	2	1	0	0	2	4	1	Helps reduce overall shared costs; Allows NASA to no incur business risk associated with Canceling lease	Could allow for additional services to be offered to NASA	No net impact	No net impact	Potential to keep lease and increase expense sharing; additional risk is that Army may cancel lease in BRAC round.
176	Stennis	Underutilized Land	Space Act	Federal Agency	Federal Campus	Federal Campus	Currently NAVY on site; could add other security conscious agencies, reducing overall operations costs.	2	1	2	0	3	7	1	Cost of maintaining land too low to result in significant impact	Can be synergistic with fed. Agency	Might create non-federal jobs but land not returned to tax rolls	No net impact	Proven business model and systems set up; question is how many more agencies need facilities.
177	Stennis	Underutilized Land	Example	Federal Agency	Federal Campus	Federal Campus	Stennis is the best example of a Center that has attracted other Federal agencies to occupy land and buildings. NASA needs to maintain the buffer zone but doesn't need to occupy much of the land, so the federal campus allows NASA to control the land while decreasing overall management costs.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
178	Stennis	Restructure	EUL	Lockheed Martin	Lockheed Martin Building	Lockheed Martin Building EUL	NASA currently has a Space Act Agreement with the State of Mississippi, who in turn has an agreement with Lockheed Martin. Restructure agreement with Mississippi and Lockheed Martin as EUL.	3	0	0	0	1	4	0	Positive financial impact for NASA compared to the current lease rate	No additional benefit	No additional benefit	No additional benefit	Agreement might be difficult to restructure.
179	Stennis	Underutilized Land	Example	Lockheed Martin	Lockheed Martin Building	Lockheed Martin Building/Land	Lockheed Martin, working with the State of Mississippi, has built a facility on NASA land. Good example of bringing outside tenants - in this case also a contractor - that need security onto NASA land; ultimately helps reduce costs to NASA.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
180	Stennis	Underutilized Land	EUL	Private Sector	Private Secure Campus	Market to security-conscious private companies	Stennis has extensive buffer zone, land holdings, support services, and Federal-level security in place to support it's current activities. Lockheed Martin is already on site; could be additional government contractors or private companies who could build facilities that benefit from high security and lower costs.	3	2	3	0	2	8	2	Can result in revenue generation and cost reduction by having more tenants share fixed expenses	May involve NASA contractors	Increases presence of a major employers in economically depressed areas	No outreach	Stennis is in a unique location, with a unique security environment; may not be easy to convince private sector to relocate; workforce may not be extensive.
181	Stennis	Mission or Program Strategy	Example	NASA	RPTB	Rocket Propulsion Testing Board	The RPTB is a good example of a management group taking responsibility for asset allocation cross-center.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				

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182	Stennis	Facilities and Asset Management	Operational	NASA	Test Stand	Test Stand Marketing	Stennis currently markets the use of it's test stands; increase the profile of this effort to try to help fund the maintenance and operation of these national assets.	3	3	2	2	3	8	5	Ensures facilities are being marketed to full cost savings potential	Shared usage/collaboration with partners	Can bring more users/contractors to marketplace	Can include educational missions	Board already in place, expand scope
183	Stennis	Restructure	EUL	Boeing	Test Stand	Boeing Test Stand - EUL	Boeing currently has a 20 year MOU on one of the test stands; encourage Boeing to increase their presence - potentially adding new facilities through EUL - at Stennis.	1	1	0	0	1	2	1	EUL allows potential revenues, but not high competitive demand for leasing the test stand	No additional benefit	No additional benefit	No additional benefit	Agreement might be difficult to restructure.
184	Stennis	Underutilized Land	Example	Boeing	Test Stand	Boeing Test Stand - MOU	Boeing currently has a 20 year MOU on one of the test stands; encourage Boeing to increase their presence - potentially adding new facilities through EUL - at Stennis.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
185	Wallops	Facilities and Asset Management	Divest	Private Sector	Consolidation	Center Consolidation - Wallops move to Launch Facilities	NASA has two locations at Wallops - the launch area, and the main campus. Consider divesting the main campus and use the revenues to consolidate into new operations at the Launch location.	3	0	2	0	0	5	0	Cost saving opportunity through consolidation	Only involves synergy if land divested to partner	Brings more firms/employees to community, but community is economically challenged	No outreach	Low demand could render unfeasible; doesn't currently provide much benefit for the cost of the consolidation.
186	Wallops	Underutilized Facilities	Space Act	State of Virginia/Virginia Space Port	Launch	Launch Facilities Marketing	Coordinate with VSPA to market use of launch facilities.	3	3	2	1	2	7	4	Ensures facilities are being marketed to full cost savings potential	Shared usage/collaboration with partners	Can bring more users/contractors to marketplace	Can include educational missions	Marketing infrastructure already in place; current collapse of launch market.
187	Wallops	Underutilized Facilities	Example	Virginia Space Port	Launch	Launch Facilities	Good example of coordinating with State of Virginia and private sector to help market launch facilities.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
188	Wallops	Underutilized Land	Space Act	Federal Agency	Near highway	Federal Campus	Navy is already there. Using proximity to DC, state of VA support of DOD, training capability, add other federal tenants. Additional tenants could increase training.	2	1	2	0	1	5	1	Cost of maintaining land too low to result in significant impact	Can be synergistic with fed. Agency	Might create non-federal jobs but land not returned to tax rolls	No outreach	Significant fed agency user interest unlikely.
189	Wallops	Facilities and Asset Management	Example	NASA	Real Property Strategy	Master Plan	Although not complete, the Center has a well thought out master plan that will allows it to be prepared to address its future proactively.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
190	Wallops	Facilities and Asset Management	Outside Fence	Private Sector	Research Park	Research park outside Fence	Wallops has a conceptual plan for a research/contractor park outside of fence; develop a detailed marketing strategy to attract university satellites, or contractors; market to increase payload processing/launch activities.	2	3	3	3	2	7	6	Indirect cost savings if users take advantage of payload processing	Brings contractors/partners close to campus	New non-federal jobs/companies in market	Can result in outreach	Market demand difficult to gauge; market for launch facilities saturated.

Section Z - NASA Opportunity Matrix Raw Data.xls

SORT ORDER: ID #

ID #	Center	Type	Authority	Partner	Name	Opportunity Name	Potential Strategy	Impact Factors: NASA Financial (F)	NASA Synergistic (S)	Community Economic (E)	Community Outreach (O)	Mkt. Reality (R)	Results & Rank: Business (9=max) F,E,R	Intangible (6=Max) S,O	Financial	Synergistic	Economic	Outreach	Reality
191	Wallops	Underutilized Land	EUL	Private Sector	Runway	Runway - Global transportation hub	Consider utilizing the runway for air-based transportation hub; EUL land to warehouse uses; charge for use of air strip.	3	1	3	2	1	7	3	Currently NASA pays for most of the cost of runway activities; this scenario will turn it into a profit center	Could allow for more services to be offered benefiting NASA	The area economically challenged; could bring new non-federal jobs and business	Positive outreach	Would require time and investment to define concept and attract businesses. Could disrupt Wallops mission activities, limiting reality.
192	Wallops	Underutilized Facilities	Space Act	Federal Agency	Runway	Runway - Federal utilization strategies	Increase Navy use; investigate Homeland Security use of runway to increase utilization.	2	1	2	1	2	6	2	modest cost savings potential	Synergistic uses might be possible	Can increase non-federal jobs	Limited outreach capability	Dependent on users.
193	Wallops	Utilities Management	Space Act	Private Sector	Utilities	Utilities	Market capability of water, sewage, steam, cogeneration of steam power, etc to nearby potential users to defray costs.	3	0	1	0	3	7	0	Potential cost reduction; income generation	No Impact	Minimal impact	No impact	Potential users; have been identified.
194	Wallops	Facilities and Asset Management	Outside Fence	Private Sector	Training	Training Co-locate off-site - Outsource	There are many training / conference facilities available. Consider moving training activities off site (rent as needed) and reduce the facilities specifically associated with Training.	1	0	1	0	2	4	0	Reduction in costs to Wallops but may increase costs to NASA depending upon frequency of renting outside facilities	No synergies	Help other locations, hurt area around Wallops	No benefit	Could happen quickly if necessary.
195	Wallops	Facilities and Asset Management	EUL	Private Sector	Visitors Center	Visitors Center / Resort - EUL on NASA land near the Fence	Wallops has a major training facility for NASA. In conjunction with local government and other partners to combine Visitors Center, Space Camp and Resort as an EUL on NASA land near the fence; construct new high-end resort utilizing runway for major visitors. Wallops is near high tourist area in summer; training facility provides stability needed by seasonal business.	2	2	1	3	2	5	5	Measurable revenue generation opportunity	Collaboration with a variety of partners	Enhances tourism/visitors to area	Will foster educational/community outreach	Questionable economic feasibility for partners; resorts are historically difficult to manage; risk for NASA if the venture fails.
196	Wallops	Facilities and Asset Management	EUL	Private Sector	Visitors Center	Visitor Center and Summer Space Camp collaboration	Wallops is part of a relatively new Summer Space Camp that has experienced growing success; NASA's Visitor Center is a modest success in the summer, but has access to tourist traffic. Consider negotiating an EUL with partner/investors to build multi-use facilities near the fence in conjunction with a the current or a new Visitors Center. Consider KSC model for re-investment of proceeds into visitor's experience and marketing.	1	1	3	3	2	6	4	Small but positive impact for NASA, could provide creative financing of Visitors Center and reduce required normal investments	Modest creation of synergies	Can boost visitors to area	Positive for community outreach/education	Uncertain about demand, but potential good market dynamics; may be difficult to find investor / partner.

Section Z - NASA Opportunity Matrix Raw Data.xls

SORT ORDER: ID #

ID #	Center	Type	Authority	Partner	Name	Opportunity Name	Potential Strategy	Impact Factors: NASA Financial (F)	NASA Synergistic (S)	Communi Economic (E)	Communi Outreach (O)	Mkt. Reality (R)	Results & Rank: Business (9=max) F,E,R	Intangible (6=Max) S,O	Financial	Synergistic	Economic	Outreach	Reality
197	Wallops	Underutilized Facilities	Space Act	Federal Agency	Training	Training - market as Resort style training	Market use of facilities/land to federal agencies; private sector; consider co-locating with visitor's center.	2	1	3	2	1	6	3	Reduces costs to NASA	Requires NASA share a facility currently dedicated to NASA	Could general new economic activities in a market that needs economic development	Could draw more tourists, offer local education	May not be a strong market to support immediately.
198	Wallops	Underutilized Facilities	EUL	Federal Agency	Training	Training - market as Resort style training	Market use of facilities/land to federal agencies; private sector; consider co-locating with visitor's center.	2	1	3	2	1	6	3	Reduces costs to NASA	Requires NASA share a facility currently dedicated to NASA	Could general new economic activities in a market that needs economic development	Could draw more tourists, offer local education	May not be a strong market to support immediately.
199	White Sands	Mission or Program Strategy	Operational	NASA	Consolidation	Expand operations in low cost, high security location	Review mission - critical activities that may be redundant throughout NASA. Consider moving the activities to White Sands to reduce costs at other centers and to provide protection that White Sands affords through it's location.	2	2	1	0	2	5	2	Cost savings through space utilization/consolidation	Can improve operations/ facilities for contractors	Communities can both gain or lose jobs	No community outreach	Political challenges for NASA.
200	White Sands	Facilities and Asset Management	Divest	Army	Consolidation	Return to Army, rent facilities as needed	NASA leases the land from the Army. Maintain critical operations, but substantially reduce presence at White Sands to reduce costs.	2	0	0	0	1	3	0	Measurable cost savings	Not relevant to synergies	Possible reduction of non-federal jobs	No impact on outreach	Political challenge for NASA.
201	White Sands	Mission or Program Strategy	Example	NASA	Consolidation	Low cost operations, high security	Example of locating NASA operations in an area of the country that is not easily accessible, allowing NASA to protect certain investments at lower cost than locating them in higher cost, higher visibility areas.	0	0	0	0	0	0	0	Example - No Impact Factor Scores, Results or Ranking				
202	White Sands	Facilities and Asset Management	Divest	NASA	Test Stand	Test stands - Move to Stennis	Consider moving the large scale test stands to Stennis.	2	2	1	0	2	5	2	Cost savings through utilization/consolidation	Can improve operations/ facilities for contractors	Communities can both gain or lose non-federal jobs/ contractors	No community outreach	Political challenges for NASA.
203	Wallops	Underutilized Land	EUL	Private Sector	Runway	Aircraft Facilities	Consider EUL for Hangars, apron areas, support areas for uses that could co-exist with NASA's periodic mandatory use of runaway.	3	1	3	2	2	8	3	Currently NASA pays for most of the cost of runway activities; this scenario will turn it into a profit center	Could allow for more services to be offered benefiting NASA	The area economically challenged; could bring new non-federal jobs and business	Positive outreach	Would require time and investment to define concept and attract businesses, but possible.

The information shown here is conceptual and not intended for immediate action. A business plan including all business economics, structures, strategies and risks should be evaluated prior to the execution of any opportunity.