

Times are tight.

Just another round of budget cutting.

*If we could just cut the waste,
our problems would be solved.*

Its not just the budget; its growth.

And what it means for NASA.

It's the 90s all over again; once the economy turns up, we'll be hunky-dory.

Agenda

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- U.S. budget and debt outlook
- U.S. current economic standing
- Proposals for change
- What does this mean for NASA?

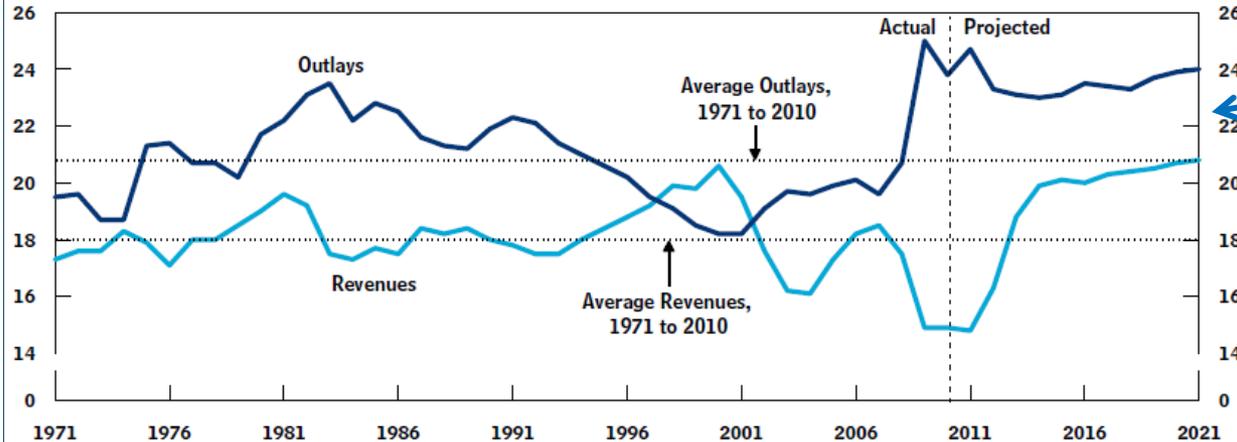
Current Law Budget Projections (Baseline)

Deep, Lasting Deficits Lead to...

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Total Revenues and Outlays

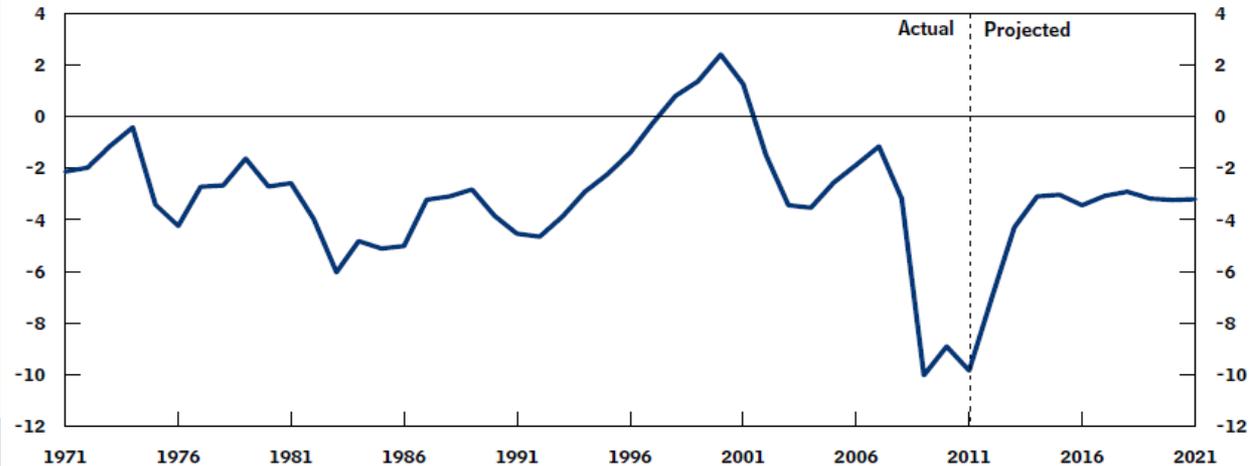
(Percentage of gross domestic product)



\$800 B

Total Deficits and Surpluses

(Percentage of gross domestic product)

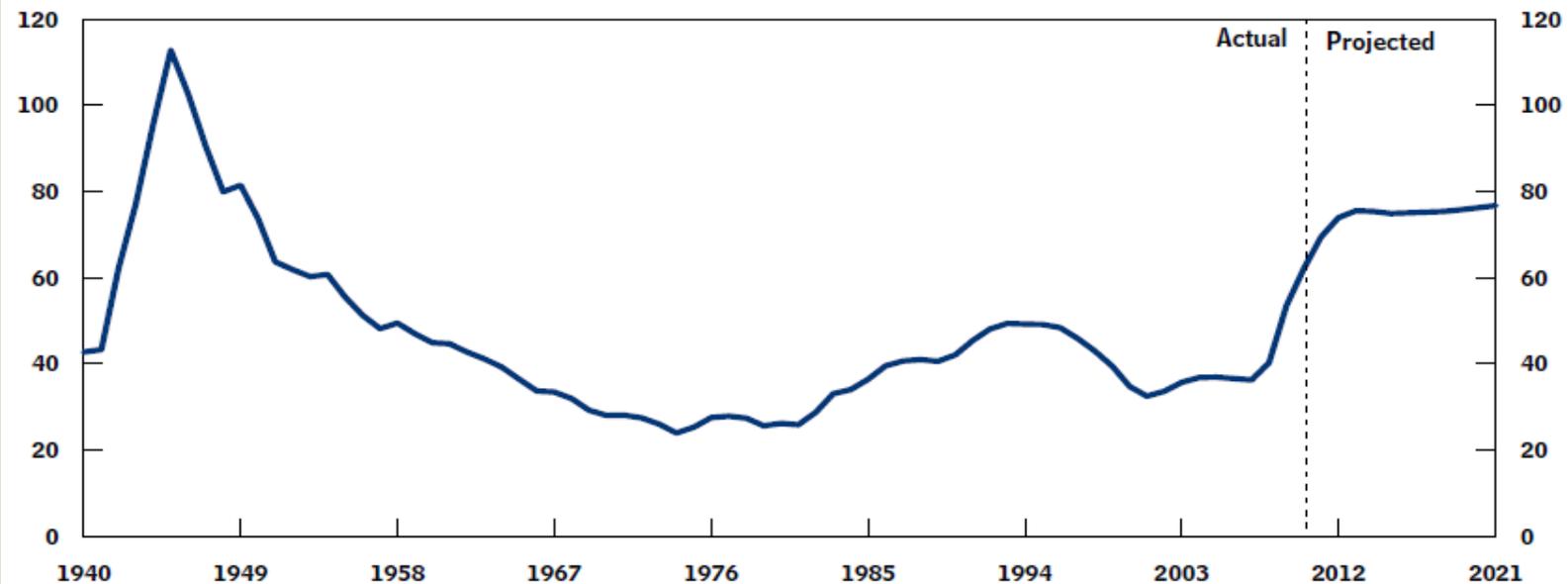


Unprecedented, Lasting Debt Levels

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Federal Debt Held by the Public

(Percentage of gross domestic product)



If we could stabilize the debt at such levels, we might be on-par for a time with the rest of the world, but ...

Baselines are not
Reality

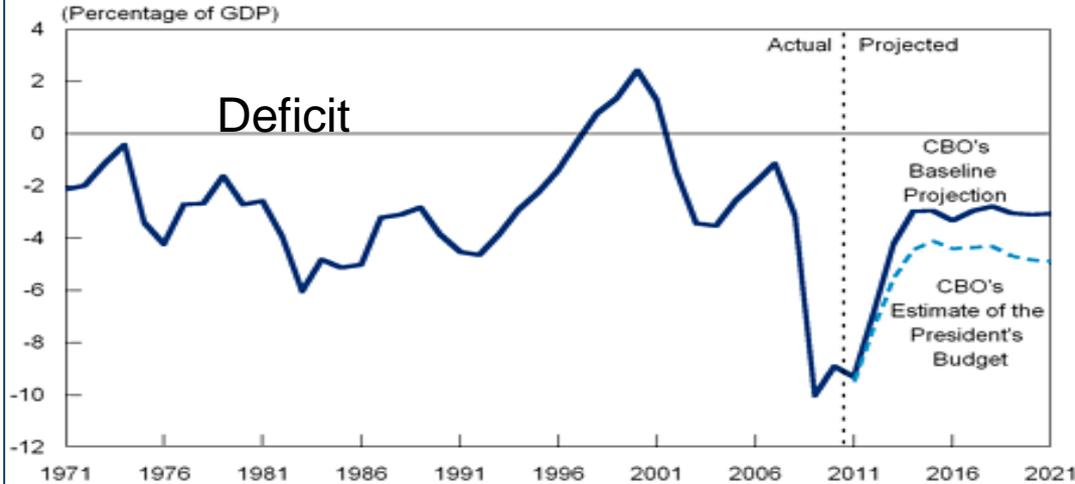
Baseline v Reality

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- Baseline forecasts project current law, so...
 - The Bush tax cuts (and others) expire
 - The AMT comes back in full
 - Medicare doctors' salaries are slashed
 - Discretionary spending rises (only) with inflation
- *On the other hand, the Afghan war continues forever.*

So Most Policies Make It Worse

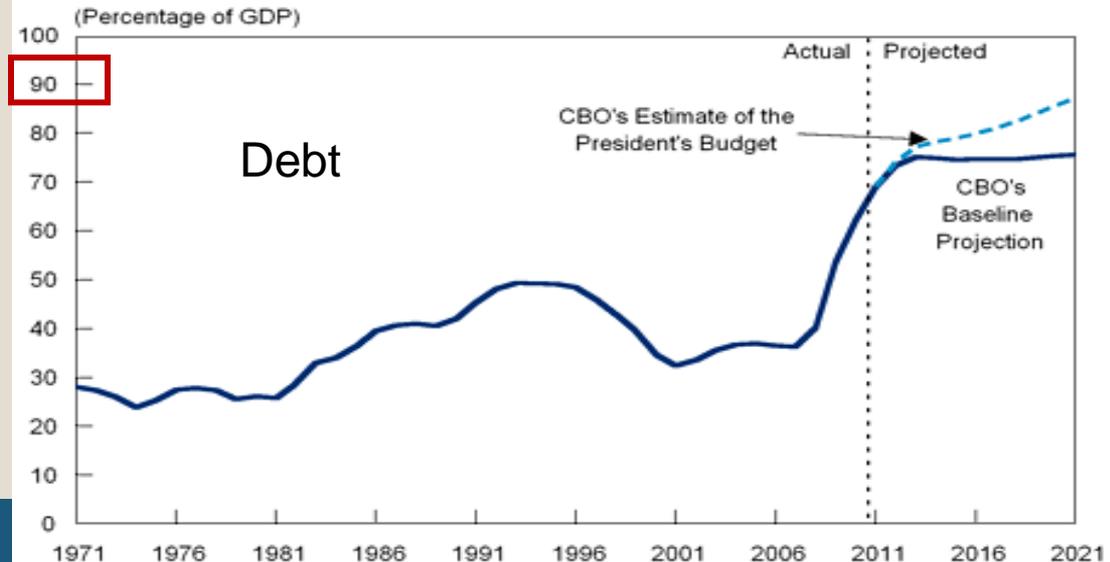
Total Deficits or Surpluses Under CBO's March 2011 Baseline and CBO's Estimate of the President's Budget



Deficit remains at Reagan peak ... for the foreseeable future.

Debt approaches WWII level (when defense was 42% of GDP) but will last much longer.

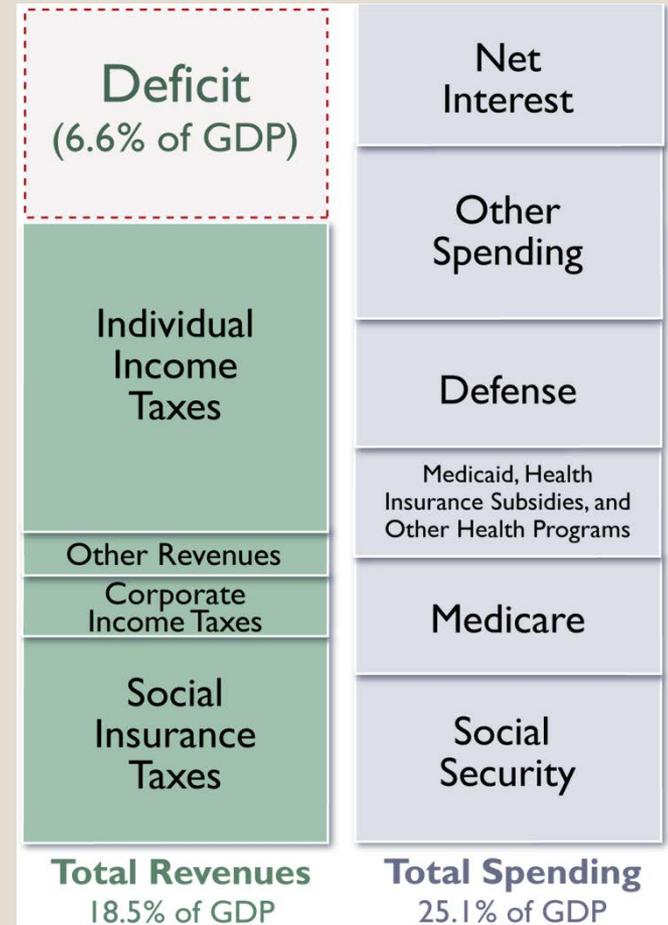
Debt Held by the Public Under CBO's March 2011 Baseline and CBO's Estimate of the President's Budget



Moreover ...

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- By 2021, we approach borrowing primarily to pay interest, which could instigate a debt spiral.
- “Tough” policies (e.g., let Bush tax cuts expire) would lead at best to stagnation; Borrowing remains high, crowding out private investment.
- Global investment could turn away from the United States.

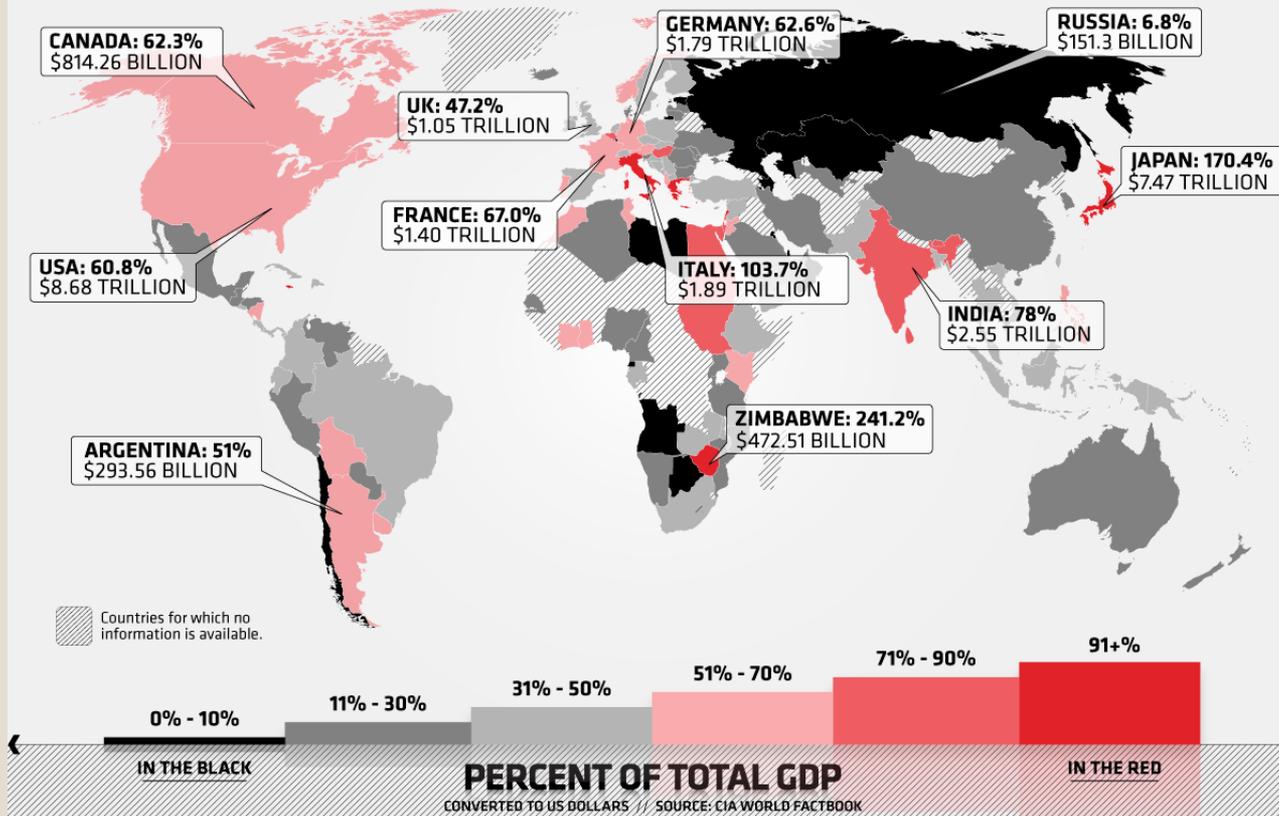


Note: Interest will have grown from 1.4% to 3.3% of GDP from 2011 to 2021.

So ... Why isn't
everyone freaking out?

U.S. Debt Levels Similar to Others

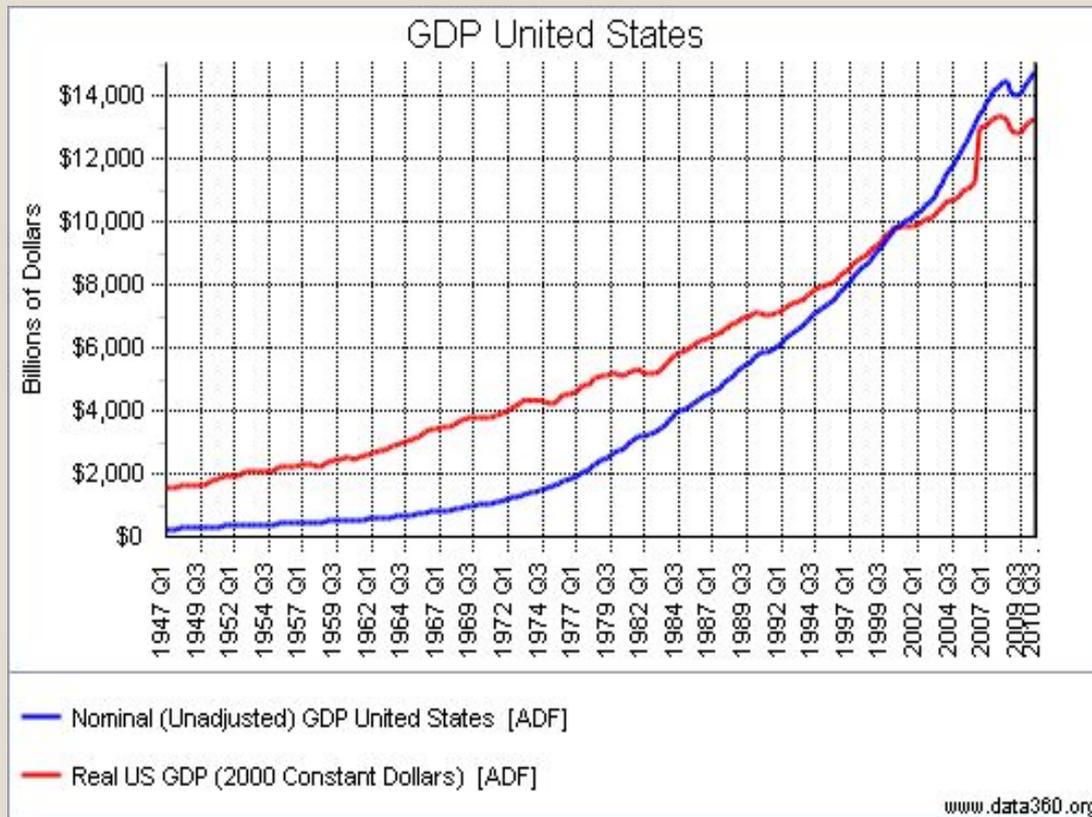
National Debt by Country



... at least for now

We Remain a Good Investment

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- The U.S. economy is the largest per country in the world at $\frac{1}{4}$ th of the world's GDP. (But the EU economy is 20% larger.)
- The U.S. economy has produced steady growth rates, with its overall low tax rates and strong technological base.

And China & Others Invest in Us

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- As of Dec 2010, foreign holdings of the \$14 T U.S. Debt equaled \$4.4T. Top holdings:



- China \$1.2 trillion
- Japan \$0.9 trillion
- United Kingdom \$0.3 trillion
- Oil Exporters \$0.2 trillion

- Why? Due to the U.S. recovery and the lack of a better alternative. **But that may change ...**

Potential Omens...

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Feb 16, 2011. Describing the eurozone and China as one another's most important trading partners and close strategic partners, Chairman Gang stated that the euro's survival was in China's interest.

Mar 11, 2011. Bill Gross has dumped all Treasuries from the world's biggest mutual fund. ... Gross, who runs the \$237 billion Pimco Total Return Fund, eliminated government-related debt from his flagship fund last month as the U.S. projected record budget deficits.

Apr 18, 2011. For the first time since it began rating the creditworthiness of railroad bonds in 1860, Standard and Poor's has issued a "negative" outlook on the U.S. government, citing increased concerns about the Washington's ability to manage the federal budget. The move stopped short of an outright cut in the country's top AAA credit rating, but means that there's a one in three chance that such a cut will happen in the next two years.

What can be done?

*The answers are nearly always identical: The government must address all spending and tax categories, **NOW**. The Debt Commission has the latest.*

Commission Proposals

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1. Discretionary Spending Cuts: -\$50B in 2012 growing to -\$300B in 2020.
2. Comprehensive Tax Reform: Sharply reduce rates, broaden the base, simplify the tax code, and reduce “tax expenditures.” Reform corporate taxes for American competitiveness; cap revenue to avoid excessive taxation.
3. Health Care Cost Containment: Reforms to physician payments, cost-sharing, malpractice law, prescription drug costs, government-subsidized medical education, and other sources. And much more ...

Commission Proposals, continued

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4. Other Mandatory Savings: Cut agriculture subsidies and modernize military and civil service retirement, while reforming student loan programs and putting the Pension Benefit Guarantee Corporation and Fannie/Freddie/etc on a sustainable path.
5. Social Security Reforms: Ensure sustainable solvency for the next 75 years while reducing poverty among seniors (progressive indexing, increase retirement age, etc). Reform Soc Sec for its own sake, not for deficit reduction.
6. Process Changes: Reform the budget process in a way similar to the Budget Enforcement Act and more.

What does this all
mean for NASA?

Multi-Year Trends

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- Non-security discretionary will likely trend down.
- NASA funding may become more unpredictable as broader concerns and competition with other agencies become more the norm.
- The Administration has proposed a Civilian BRAC to dispose of under-utilized property.
- Programs that focus on economic growth – essential to maintaining the U.S. economic position – will be favored.

FY 2011

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- NASA's budget was reduced by -\$552M from the FY 2011 Request/Authorization Act levels and -\$276M from FY 2010 levels.

- NASA is able to fund all elements of the NASA Authorization Act, including Space Technology.

| | Auth Act | FY 2010 Level | FY 2011 Level |
|-------------------------------|---------------|---------------|---------------|
| Space Operations | 5,509 | 6,147 | 5,497 |
| Science | 5,006 | 4,469 | 4,935 |
| Exploration | 3,868 | 3,746 | 3,801 |
| Cross-Agency Support | 3,111 | 3,194 | 3,105 |
| Aeronautics | 580 | 501 | 534 |
| Construction and Env Com/Rest | 394 | 448 | 394 |
| Space Technology | 350 | NA | NA |
| Education | 146 | 183 | 146 |
| Inspector General | 37 | 36 | 36 |
| NASA FY 2011 | 19,000 | 18,724 | 18,448 |

- However, NASA has had to aggressively streamline administrative and infrastructure costs.

FY 2012

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Three principles explain NASA's budget request:

- **Meet the challenge of tough budget times.**
 - The top-line reduction and pension payment reduced NASA's program funding by -\$1.3B from the authorized level of \$19.5B.
- **Follow the Authorization Act.**
 - All elements of the Act are addressed in the Request.
- **Prioritize the safety of the astronauts on the ISS.**
 - To provide safe and effective transportation services to the ISS, the Request seeks to ensure that Commercial Crew/Cargo programs are successful.
 - It also holds almost everything else to FY 2011 Auth Act levels (Science, Aero, Education, SLS/MPCV) and reduces CAS.

Civilian BRAC Proposal

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- The President has proposed to significantly reduce and realign the Federal government's real property inventory, including roughly 15,000 buildings and structures currently designated as excess and about 55,000 identified as underutilized.
 - The Administration's initiative would create an independent Board of private and public sector leaders to recommend Federal civilian real estate holdings for sale, consolidation, co-location, or reconfiguration.
 - Using the best practices of the military's BRAC process, the Board will develop and forward to Congress, for an up-or-down vote, recommendations of properties or actions to better align the Federal government's real property inventory.
 - The Administration estimates that the Board's actions would return \$15 billion over the first three years the Board is fully operational.
- In advance of the enactment of this proposal, the Administration has created an Advisory Board consisting of three Senior Real Property Officers and four Chief Financial Officers from major agencies (including NASA).
 - The Advisory Board will be collecting data from all agencies and making recommendations so that the Civilian BRAC Board can hit the ground running.

Questions?

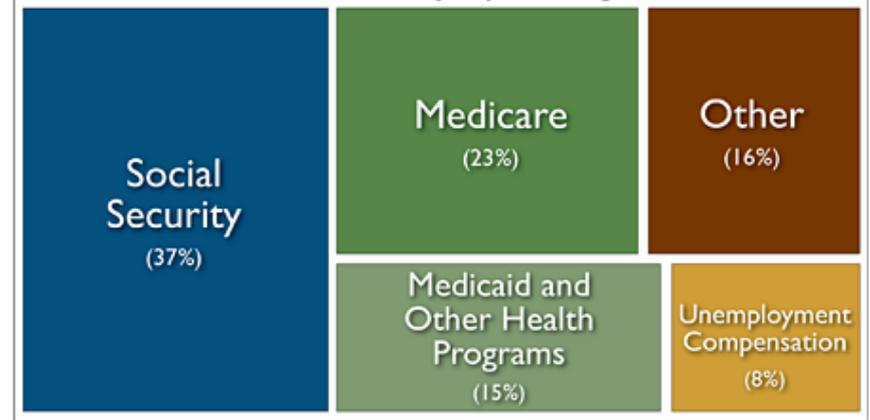
Spending and Revenue Composition

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2010 Total Spending



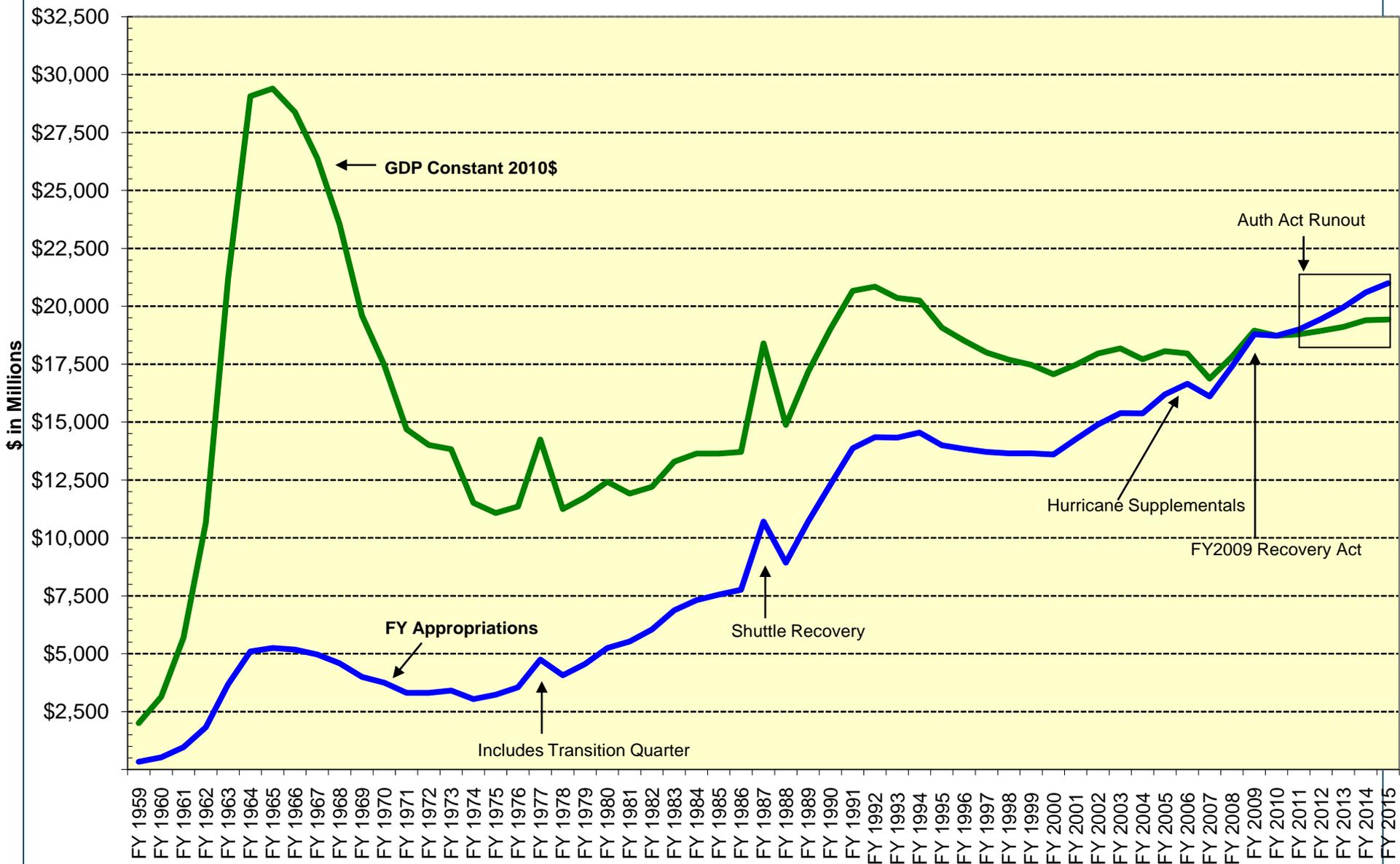
Mandatory Spending



Revenues



NASA Appropriation History, In Fiscal Year and Constant 2010\$ *



* Constant dollar estimate is based on FY10 Budget GDP deflator. NASA's actual purchasing power is likely less, since labor and materials in the aerospace sector have generally experienced greater cost escalation than reflected in the GDP indices.

The funding in FY05-07 are overstated by the inclusion of emergency hurricane supplementals., and FY09 by \$1B from the Recovery Act
 FY2011-15 is the current budget request and runout year estimates.

FY 2012 Budget Request

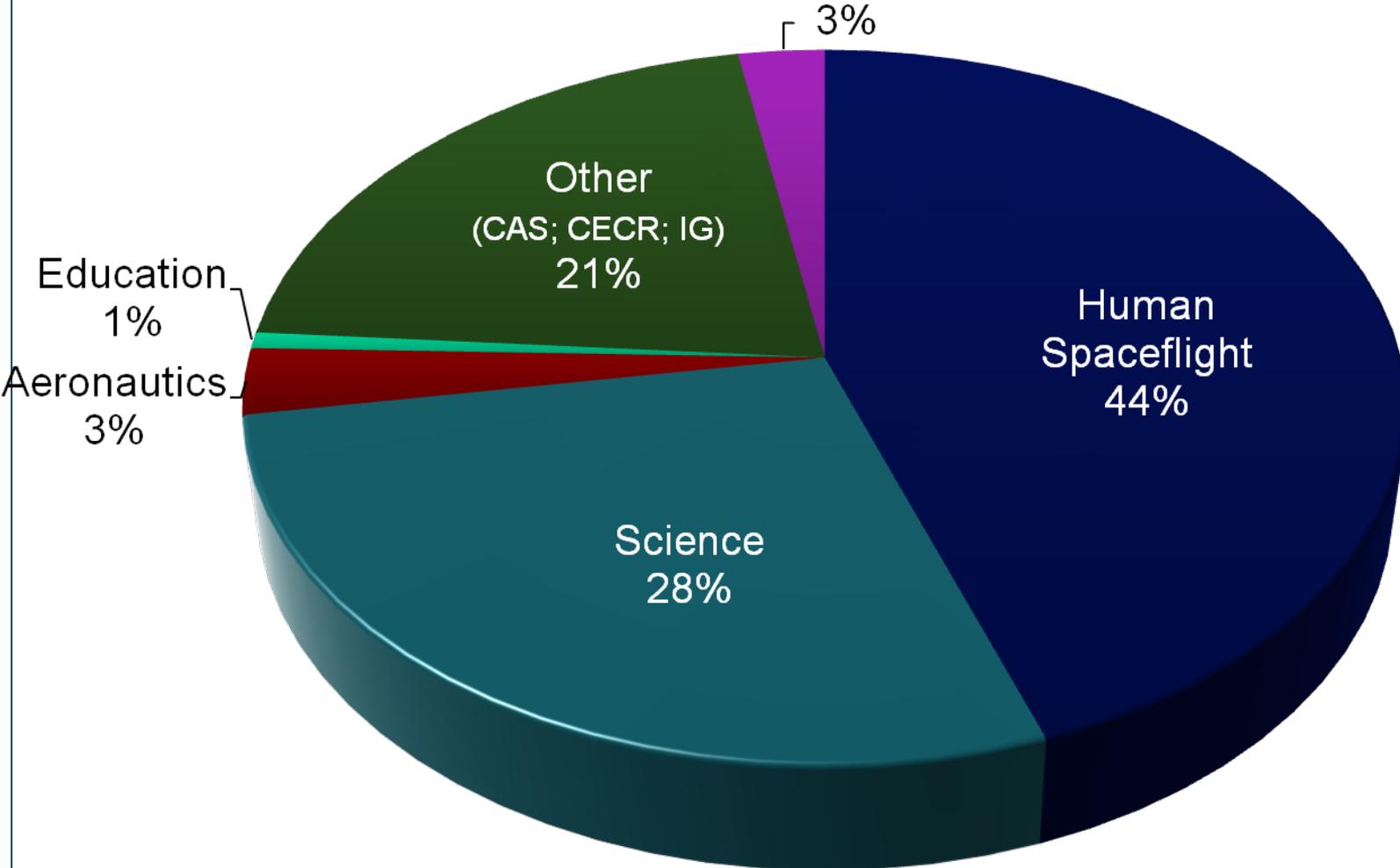
Out-years are notional

| Budget Authority (\$M) | FY 2010 | FY 2011 Annualized CR | FY 2011 Authorization Act | FY 2012 | FY 2013 | FY 2014 | FY 2015 | FY 2016 |
|--------------------------------------|---------------|-----------------------------|---------------------------------|---------------|---------------|---------------|---------------|---------------|
| Science | 4,498 | 4,469 | 5,006 | 5,017 | 5,017 | 5,017 | 5,017 | 5,017 |
| Earth Science | 1,439 | | 1,802 | 1,797 | 1,822 | 1,819 | 1,858 | 1,915 |
| Planetary Science | 1,364 | | 1,486 | 1,540 | 1,429 | 1,395 | 1,344 | 1,257 |
| Astrophysics | 647 | | 1,076 | 683 | 758 | 775 | 780 | 811 |
| James Webb Space Telescope | 439 | | | 375 | 375 | 375 | 375 | 375 |
| Heliophysics | 608 | | 642 | 622 | 634 | 653 | 660 | 659 |
| Aeronautics | 497 | 501 | 580 | 569 | 569 | 569 | 569 | 569 |
| Space Technology | 275 | 327 | 512 | 1,024 | 1,024 | 1,024 | 1,024 | 1,024 |
| Exploration Systems | 3,626 | 3,594 | 3,706 | 3,949 | 3,949 | 3,949 | 3,949 | 3,949 |
| Human Exploration Capabilities | 3,288 | | 2,751 | 2,810 | 2,810 | 2,810 | 2,810 | 2,810 |
| Commercial Spaceflight | 39 | | 612 | 850 | 850 | 850 | 850 | 850 |
| Exploration Research and Development | 299 | | 343 | 289 | 289 | 289 | 289 | 289 |
| Space Operations | 6,142 | 6,147 | 5,508 | 4,347 | 4,347 | 4,347 | 4,347 | 4,347 |
| Space Shuttle | 3,101 | | 1,610 | 665 | 80 | 1 | 1 | 1 |
| International Space Station | 2,313 | | 2,780 | 2,841 | 2,960 | 3,005 | 3,098 | 3,175 |
| Space and Flight Support | 728 | | 1,119 | 841 | 1,307 | 1,341 | 1,248 | 1,172 |
| Education | 180 | 183 | 146 | 138 | 138 | 138 | 138 | 138 |
| Cross-Agency Support | 3,018 | 3,019 | 3,111 | 3,192 | 3,192 | 3,192 | 3,192 | 3,192 |
| CoF and ECR | 453 | 448 | 394 | 450 | 450 | 450 | 450 | 450 |
| Inspector General | 36 | 36 | 37 | 38 | 38 | 38 | 38 | 38 |
| NASA FY 2012 | 18,724 | 18,724 | 19,000 | 18,724 | 18,724 | 18,724 | 18,724 | 18,724 |

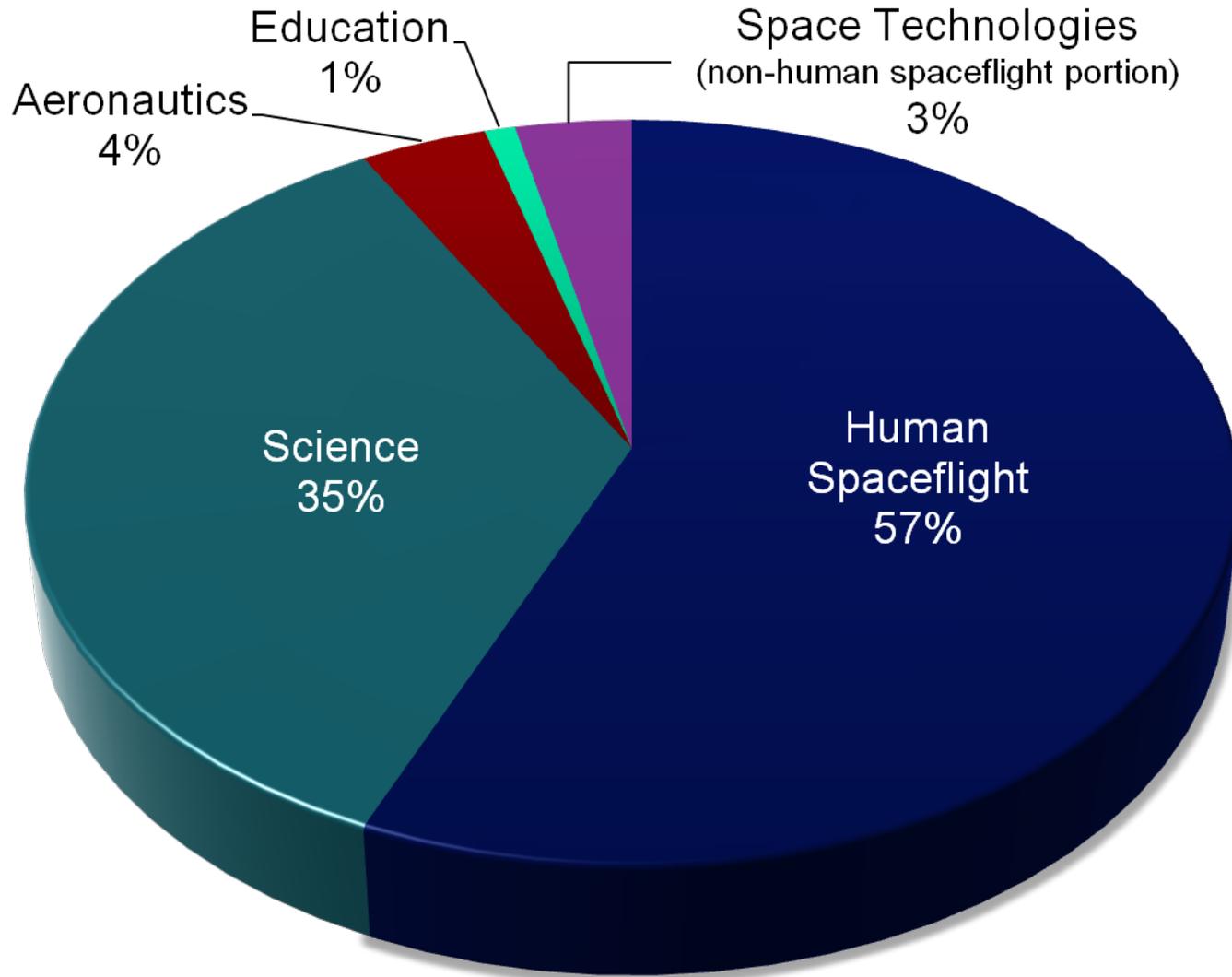
Note: FY10 and FY11 figures have been adjusted to show comparable Exploration technology content within the Space Technology account consistent with the FY12 Budget. FY11 CR column does not include 51M SBIR payback transfer from Science/ESMD to Space Technology

NASA Budget

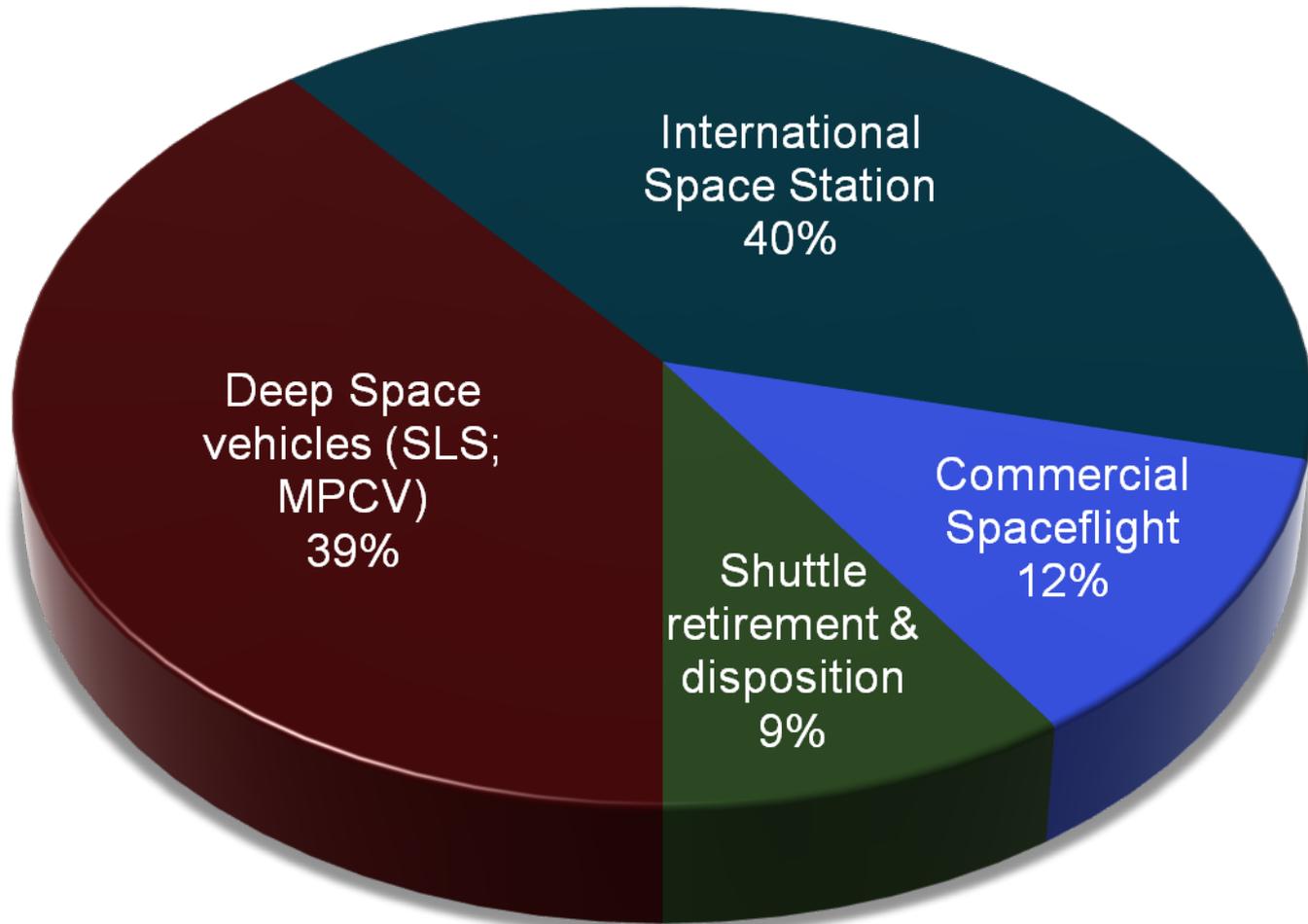
Space Technologies
(non-human spaceflight portion)



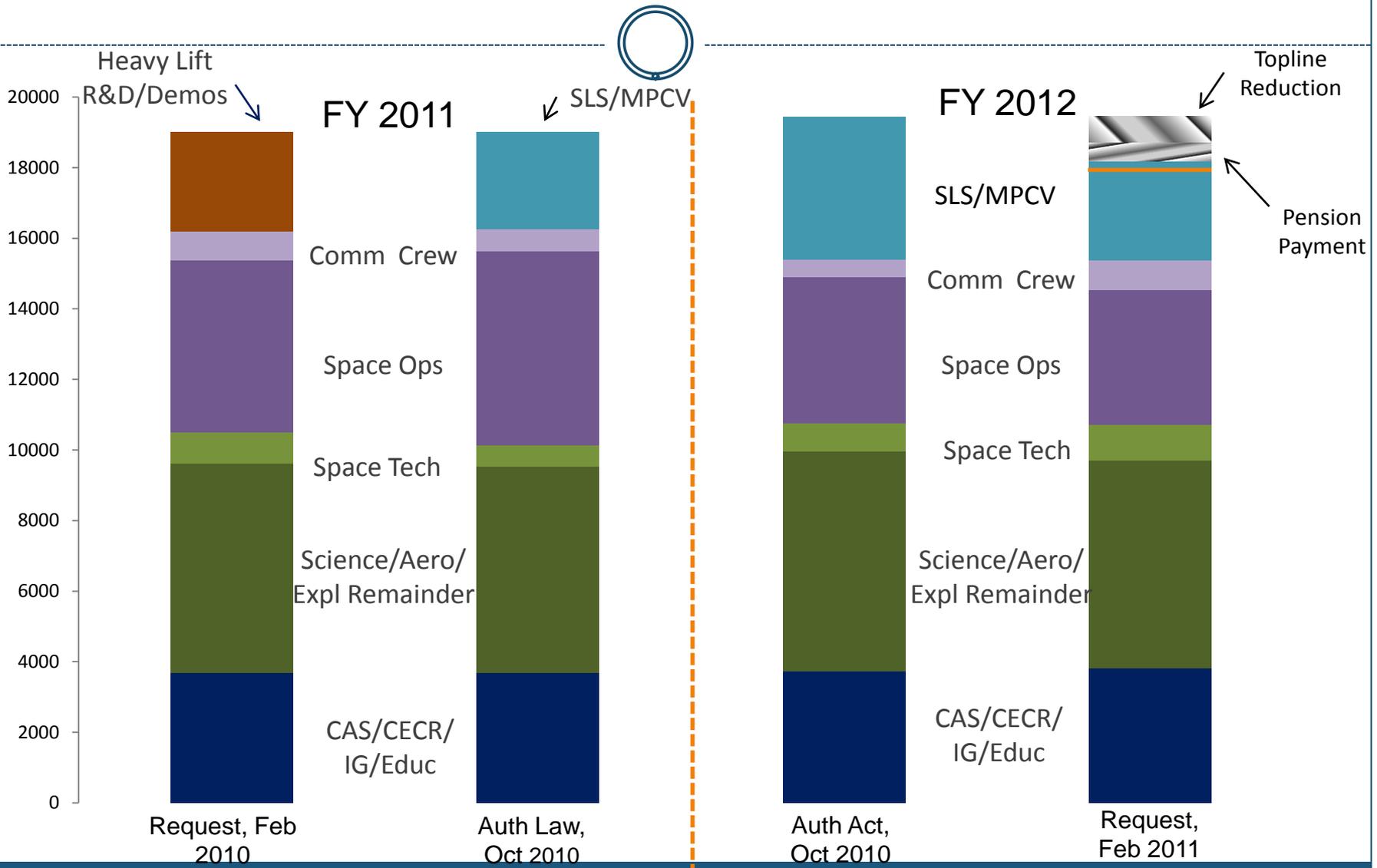
NASA Programmatic Budget



NASA Human Spaceflight Budget



Comparison of Auth Law to Requests: FY 2011 & FY 2012



Amounts (\$M) & Percentages

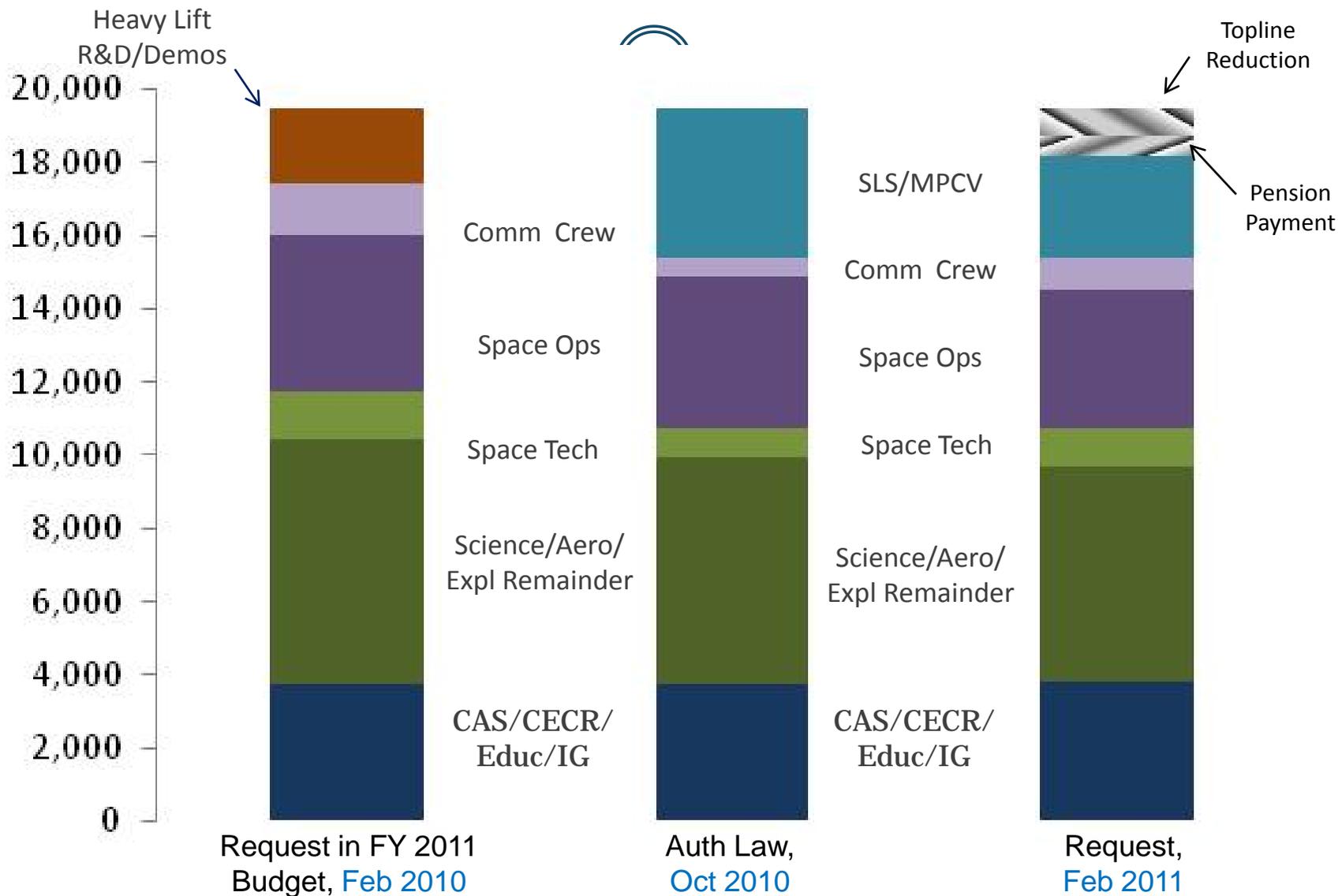


FY 2011 - \$19.0B

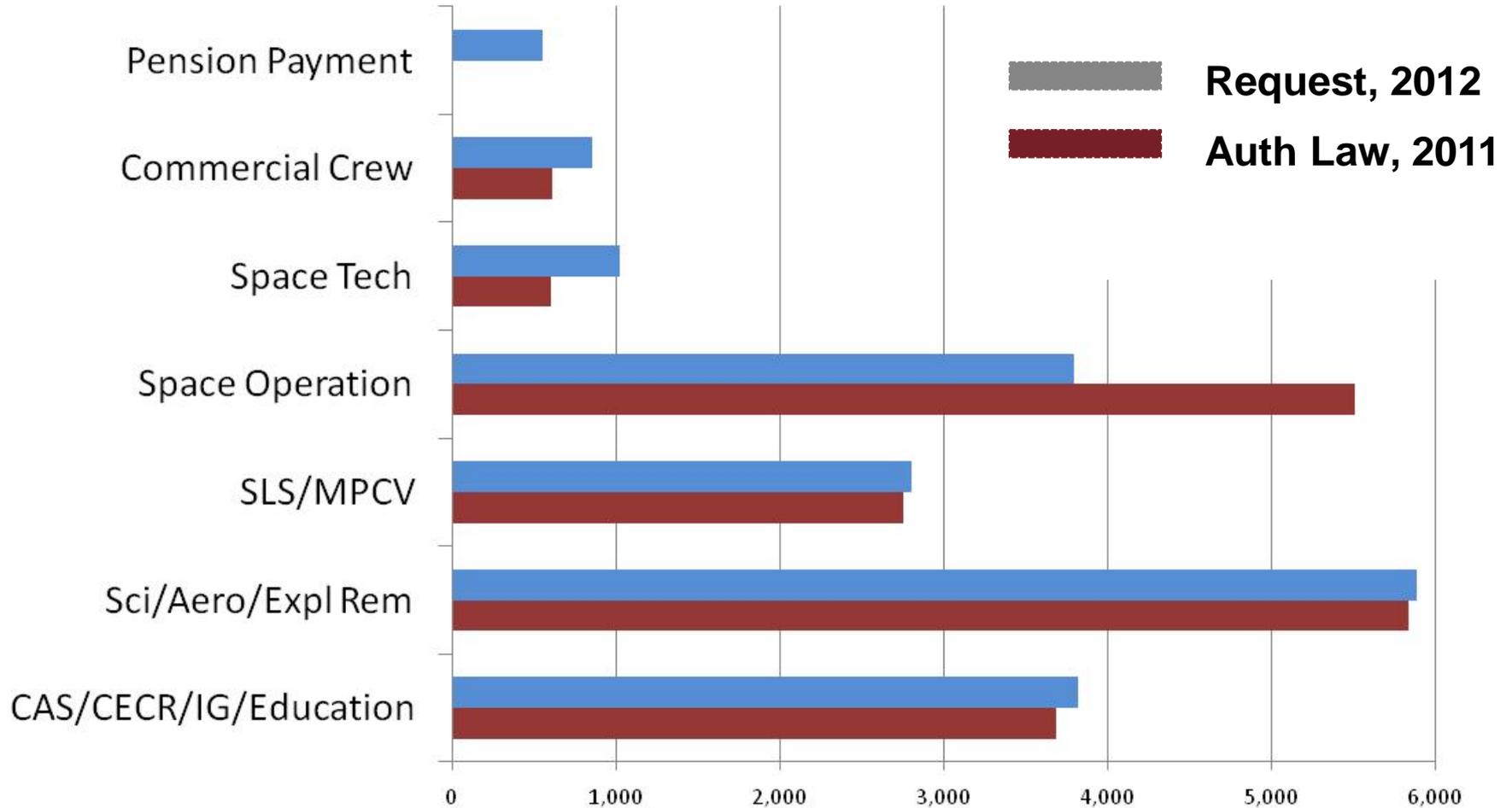
FY 2012 - \$19.45B

| | Request | | Auth | | Auth | | Request | |
|-----------------------------|---------------|----------------|---------------|----------------|---------------|----------------|---------------|----------------|
| | <u>Amount</u> | <u>Percent</u> | <u>Amount</u> | <u>Percent</u> | <u>Amount</u> | <u>Percent</u> | <u>Amount</u> | <u>Percent</u> |
| CAS/CECR/IG/Education | 3,691 | 19% | 3,688 | 19% | 3,738 | 19% | 3,818 | 20% |
| Science/Aero/Expl Remainder | 5,926 | 31% | 5,841 | 31% | 6,224 | 32% | 5,875 | 30% |
| Space Tech | 872 | 5% | 600 | 3% | 798 | 4% | 1,024 | 5% |
| Space Operation | 4,888 | 26% | 5,509 | 29% | 4,141 | 21% | 3,799 | 20% |
| Commercial Crew | 812 | 4% | 612 | 3% | 500 | 3% | 850 | 4% |
| SLS/MPCV | | | 2,751 | 14% | 4,050 | 21% | 2,810 | 14% |
| Heavy Lift R&D/Demos/Trans | 2,811 | 15% | | | | | | |
| Pension Payment | | | | | | | 548 | 3% |
| Topline Reduction | | | | | | | 727 | 4% |
| TOTAL | 19,000 | 100% | 19,001 | 100% | 19,451 | 100% | 19,451 | 100% |

Auth Law and Requests for FY 2012



Comparison of Current FY 2011 levels from Auth Law to Request for FY 2012



Comparison of FY 2012 levels for Auth Law and Request

