

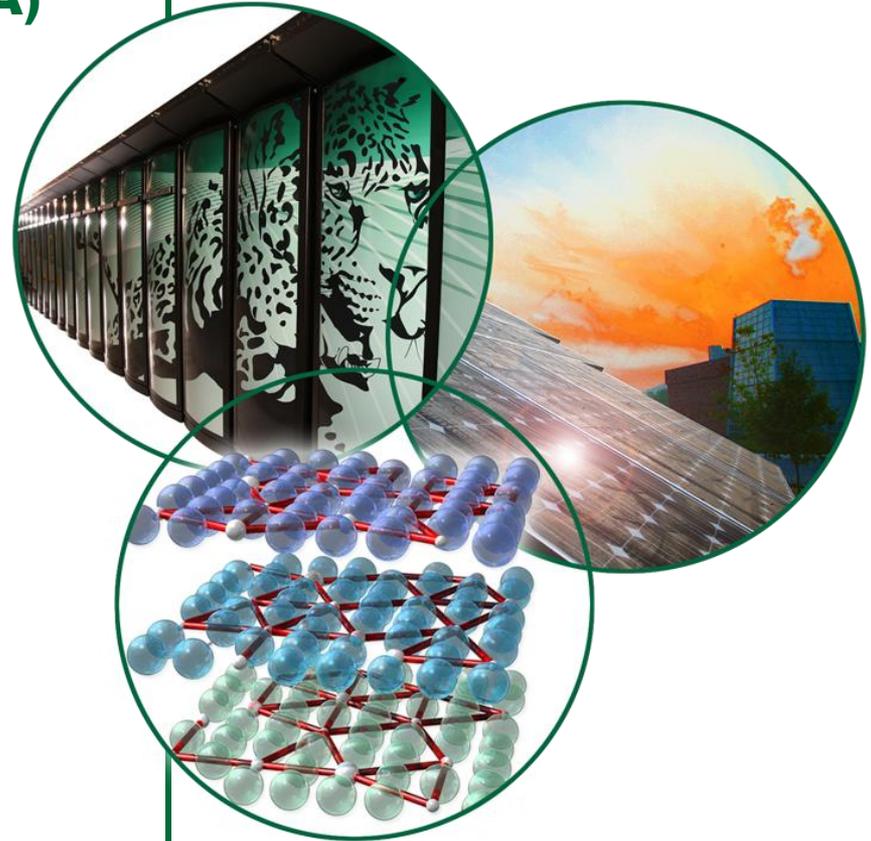
Other Alternative Funding Methods:

- **Enhanced Use Leases (EUL)**
- **Energy Service Agreements (ESA)**
- **Power Purchase Agreements (PPA)**

John Shonder
Oak Ridge National Laboratory

2011 NASA Facilities Engineering
and Real Property Conference

May 10, 2011



What is an Enhanced Use Lease?

- **A cooperative arrangement between a government entity and a private sector developer**
 - **Government negotiates a long-term lease of an underutilized property (land, buildings and other structures) to the private developer**
 - **Developer constructs facility and enters into lease with tenants, which may be government or non-governmental entities**
 - **Government receives cash or in-kind services from the selected developer while retaining ownership of the asset**



Advantages of EUL

Government

- Provides funding for capital improvements
- Enhances mission
- Strengthens community relations
- Create buffer zones
- May attract synergistic tenants

Private Sector

- Brings formerly unavailable land to market
- Provides business opportunities
- Stimulates the local economy
- Creates new sources of renewable energy

Legislative Authority for NASA EULs

- **Public Law 108-7 (2003) authorized demonstration EUL projects at two NASA Centers**
- **Congress amended the authority in 2007 to allow NASA to enter into enhanced use leases at all Centers**
- **Additional amendments in 2008 clarified how the funds should be expended and established percentages of the revenue that were to remain at the Centers versus being placed in an Agency capital asset account**

Summary of Current NASA Authority

- **All NASA Centers may enter EUL agreements**
- **Agreements may only be for cash consideration, at fair market value determined**
- **No in-kind consideration is allowed for leases under the expanded authority; leases executed before December 31, 2008, may continue to include in-kind consideration**
- **Revenues used to cover the full costs to the Center in connection with the lease, and for for maintenance, capital revitalization, and improvements of the real property assets and related personal property**

Ames Research Center

- **Google leases 42.2 acres of unimproved land in NASA Research Park at Ames**
- **Google will construct up to 1.2 million square feet of offices and research and development (R&D) facilities**
- **Google will pay NASA an initial base rent of \$3.66 million per year**
- **NASA will use proceeds to cover full cost of the lease and the balance may be used for capital revitalization and improvements of the real property assets at Ames**
- **40 year agreement**



Kennedy Space Center

- **Florida Power and Light (FPL) leases 60 acres earmarked for photovoltaic electricity production**
- **FPL constructs 10 MW PV power plant**
 - Expected to generate 16,000 MWh/yr
 - Enough to power 1,100 homes
- **30-year lease**
- **In-kind consideration: FPL constructs and maintains a 900 kW NASA-owned PV plant**



EUL has been used by other agencies for a wide variety of purposes

- **Historic preservation**
- **Parking structures**
- **Recreational facilities**
- **Housing**
- **Research facilities**
- **Industrial facilities**
- **Technology parks**
- **Energy plants – renewable and conventional**



Examples of other Agencies' use of EUL

- **General Motors Hot Weather Test Track in Yuma, Arizona (Yuma Proving Ground)**
- **University of Missouri Technology Park at Fort Leonard Wood**
- **Aberdeen Proving Ground: A private developer building an office/research park of up to 2 million square feet on a 200-acre footprint**
- **Naval Station Pearl Harbor: 55,000 square foot Support Center and commercial space**



Energy projects at other Agencies implemented through EUL

- **Edwards AFB: Commercial scale solar**
- **Kirtland AFB: Commercial scale solar**
- **Fort Detrick: Central utility plant**
- **North Chicago VAMC: Cogeneration plant**
- **Other facilities developing biomass, wind, geothermal and waste-to-energy projects**



First steps in developing an EUL at a NASA site

- **Project requires a Champion: An individual who espouses the project, secures the necessary support, and ensures its forward progress**
- **Team building: engage representatives from**
 - **Business/account managers**
 - **OCFO office**
 - **Legal office**
 - **Safety and environmental**
 - **Master planning/land use**
 - **Center Operations (including security)**
 - **Facilities management and construction**

FEMP Offers Assistance as well

- **Federal Finance Specialists can provide assistance, direct team to available resources**
- **National Laboratory resources**

Primary reference for NASA EULs

- **NASA Desk Guide for Enhanced Use Leasing of Real Property**
 - http://www.hq.nasa.gov/office/codej/codejx/Assets/Docs/EUL_Desk_Guide_Feb_2010.pdf

Power Purchase Agreements (PPA) Energy Service Agreements (ESA)

What is a Power Purchase Agreement?

- In a PPA, a developer installs a renewable energy system on agency property under an agreement that the agency will purchase the power generated by the system
- Agency pays for the system through these power payments over the life of the contract. After installation, the developer owns, operates, and maintains the system for the life of the contract



Motivation for use of PPA

- **EPAAct 2005 requires at least five percent of total federal electricity consumption to come from renewable energy for FY 2010 through FY 2012, at least 7.5 percent thereafter**
- **Renewable electricity generated on Federal agency land or buildings and used by that agency receives double credit toward this goal**
- **Power purchase agreements allow Federal agencies to implement on-site renewable energy projects with no upfront capital costs**

How a PPA works

- **Developer installs a renewable energy system on Federal land or buildings at no cost to the agency, using private capital**
- **Agency agrees to purchase the power generated by the system for a period of time**
- **Power purchase payments allow developer to repay the financing, pay operating costs and make a profit**
- **Developer owns, operates, and maintains the system for the life of the contract.**

Advantages of a PPA

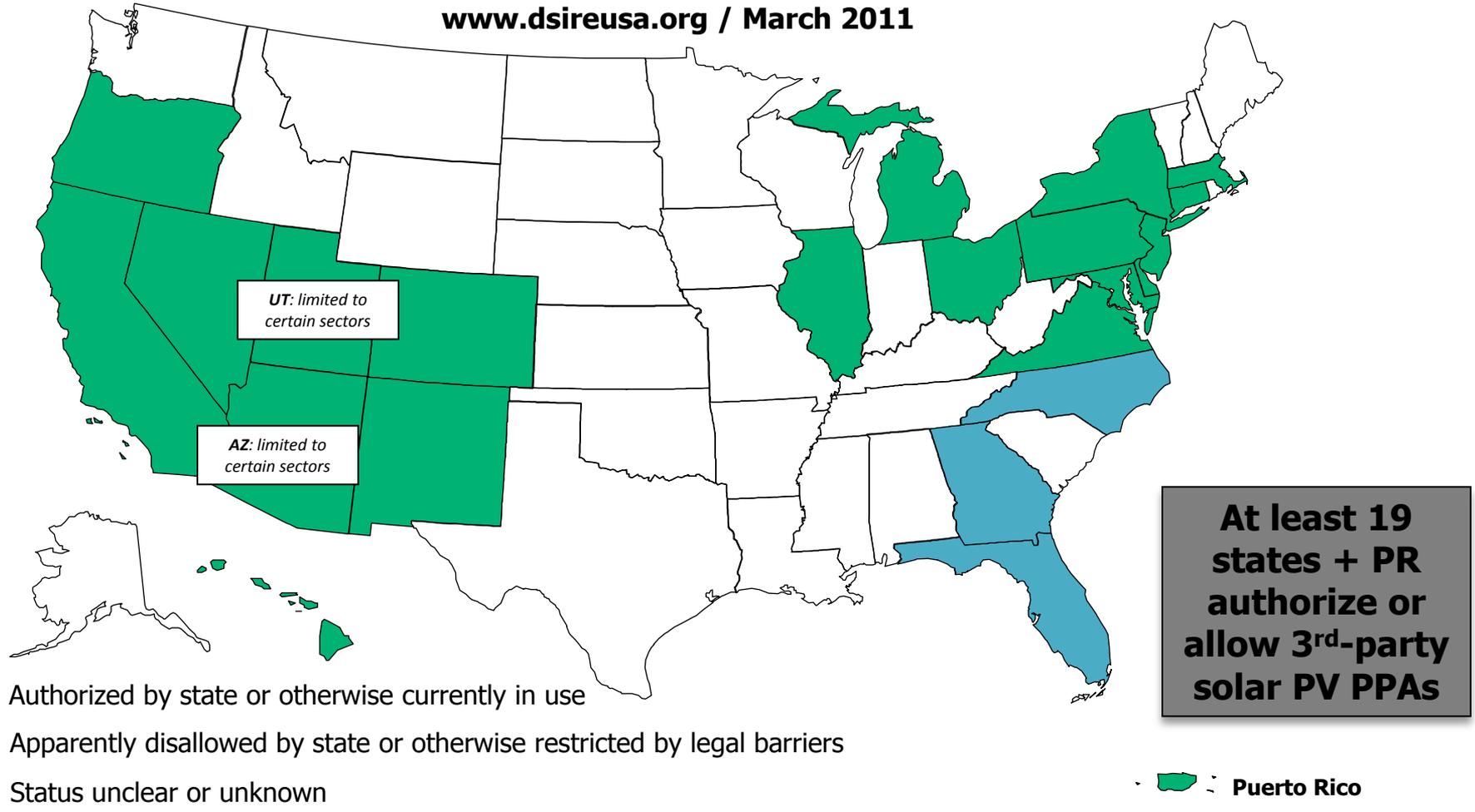
- **Allows agencies to meet renewable electricity goals at no up-front cost**
- **Minimal risk to the government**
- **Stabilize a portion of electricity costs**
- **Renewable developer's eligibility for tax incentives and accelerated depreciation improve the project economics**

Important considerations

- PPA's are not legal in all states (see <http://www.dsireusa.org/summarymaps/index.cfm?ee=1&RE=1>)
- Not all utilities allow PPAs (especially important for public utilities that have their own governing structure)
- Renewable developer may be subject to oversight by the Public Utility Commission
- Civilian agencies can only enter into 10-year contracts

3rd-Party Solar PV Power Purchase Agreements (PPAs)

www.dsireusa.org / March 2011



Note: This map is intended to serve as an unofficial guide; it does not constitute legal advice. Seek qualified legal expertise before making binding financial decisions related to a 3rd-party PPA. See following slide for additional important information and authority references.

Authorities/References

- **Arizona:** ACC Decision 71795, Docket E-20690A-09-0346
- **California:** Cal. Pub. Util. Code § 218, § 2868
- **Colorado:** S.B. 09-051; PUC Decision C09-0990
- **Connecticut:** Connecticut Clean Energy Fund
- **Delaware:** S.B. 266 and S.B. 267 (2010)
- **Hawaii:** PUC Order 20633
- **Illinois:** 220 ILCS 5/16-102; 83 Ill. Adm. Code, Part 465
- **Massachusetts:** 220 CMR 18.00
- **Maryland:** H.B. 1057 (2009)
- **Michigan:** 2008 Public Act 286; PSC Order Docket U-15787
- **New Jersey:** N.J. Stat. 48:3-51; N.J.A.C. §14:8-4.1 et seq.
- **New Mexico:** H.B. 181 and S.B. 190 (2010) (effective 1/1/2011)
- **Nevada:** S.B. 395 (2009); PUC Orders 07-06024 and 07-06027
- **New York:** NY CLS Public Service § 2.13
- **Ohio:** PUC Order 06-653-EL-ORD
- **Oregon:** PUC Order, Docket 08-388
- **Pennsylvania:** PUC Order, Docket M-00051865
- **Puerto Rico:** No policy reference available; based on news reports and articles
- **Utah:** H.B. 0145 (2010) (effective 3/31/2010, and limited to installations at public buildings, schools or 501(c)(3) non-profits)
- **Virginia:** VA Code § 56-232 and 20VAC5-315-20

First steps

- **Decide on goals the project is intended to meet (renewable energy and/or GHG emissions goals, electric rate cost stability, etc.)**
- **Determine site electricity use (annual usage, peak demand, and average demand)**
- **Site electricity costs (energy rate and demand charge)**
- **Electricity rate structure**
- **Available incentives (rebates, tax treatment, etc.)**
- **Contract length, National Environmental Policy Act (NEPA) requirements, and land use agreements, etc.**
- **Form Acquisition Team**

Completed Federal PPA Projects

- **14.2 megawatt (MW) photovoltaic (PV) array at Nellis Air Force Base. The project is the largest Federal PV system in the United States**
- **2 MW PV system at U.S. Army Fort Carson**
- **2 MW from three PV systems at the National Renewable Energy Laboratory (NREL)**
- **500 kilowatt (kW) PV rooftop system on the U.S. General Services Administration's (GSA) Sacramento Federal Building**
- **850 kW PV system at the U.S. Coast Guard Petaluma site**

PPAs can also be implemented within an ESPC -- USCG Puerto Rico



Air Station Borinquen- Location of PV Arrays

**Air Station
Borinquen**

Sector San Juan



**Rio Bayamon
Housing**

USCG Puerto Rico ESPC ESA - Phase 1

Scope of Work

- **Solar Photovoltaic System installation (via ESA)**
 - 2.89MW of PV installed on over 240 cool roofs
- **Asbestos abatement in existing roof system**
- **Replacement of existing roofs with Cool Roofs**
 - includes additional insulation
- **Removal/relocation of existing roof mounted equipment (i.e. A/C condensers, solar domestic hot water units)**
- **40% reduction in utility purchased electricity**
- **Anticipated annual energy reduction of over 3.9 BBTU**

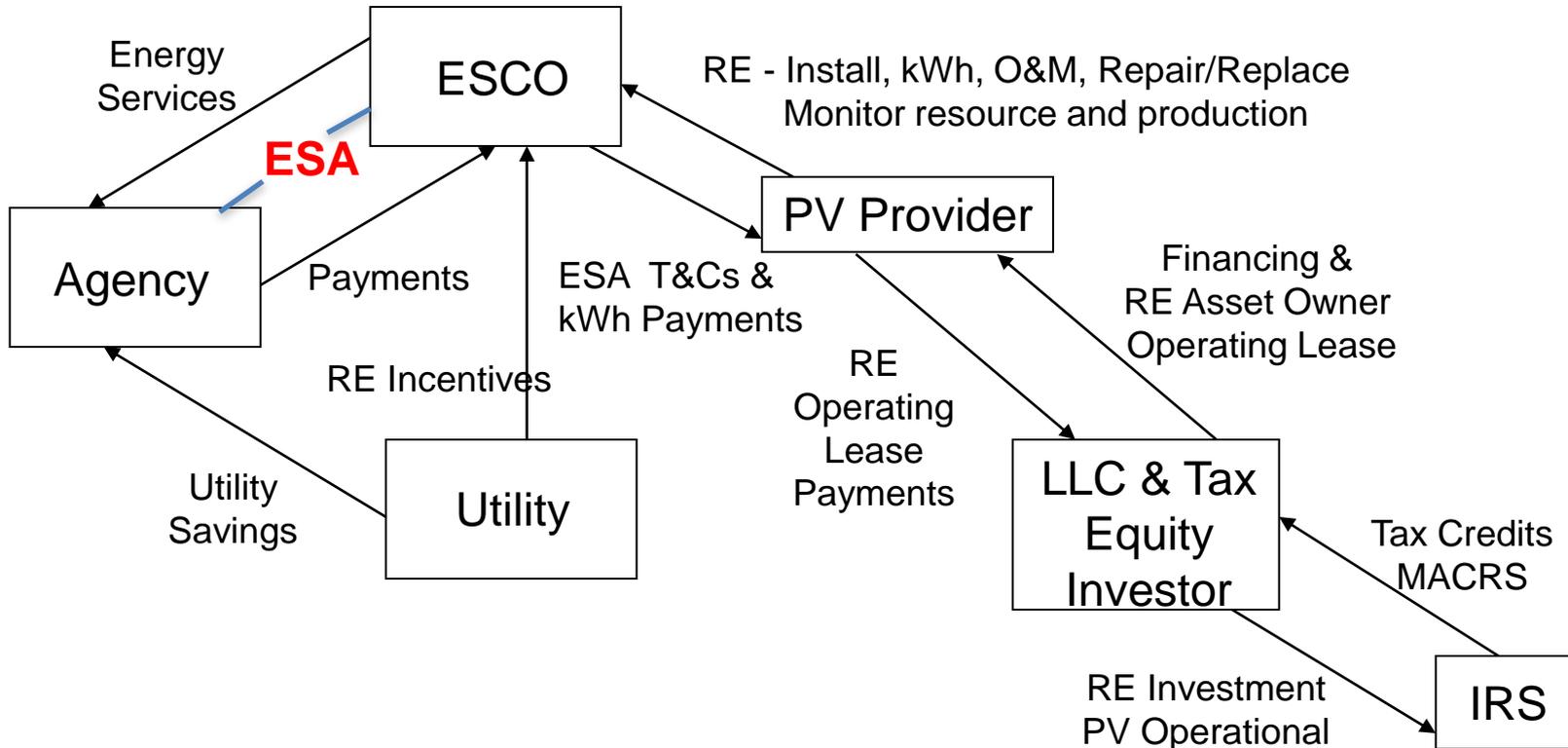
USCG Puerto Rico ESPC ESA Phase 1

- **Awarded 12/17/2010. 13 month construction schedule**
- **Initial investment \$13,736,701**
- **Guaranteed annual savings \$1.2M+**
- **Contract term 23 years**
- **\$10.5M Implementation Period Payment by USCG**
- **Captured \$6.5M US Treasury Grant tax incentive**

ESA/PPA Principles for ESPC

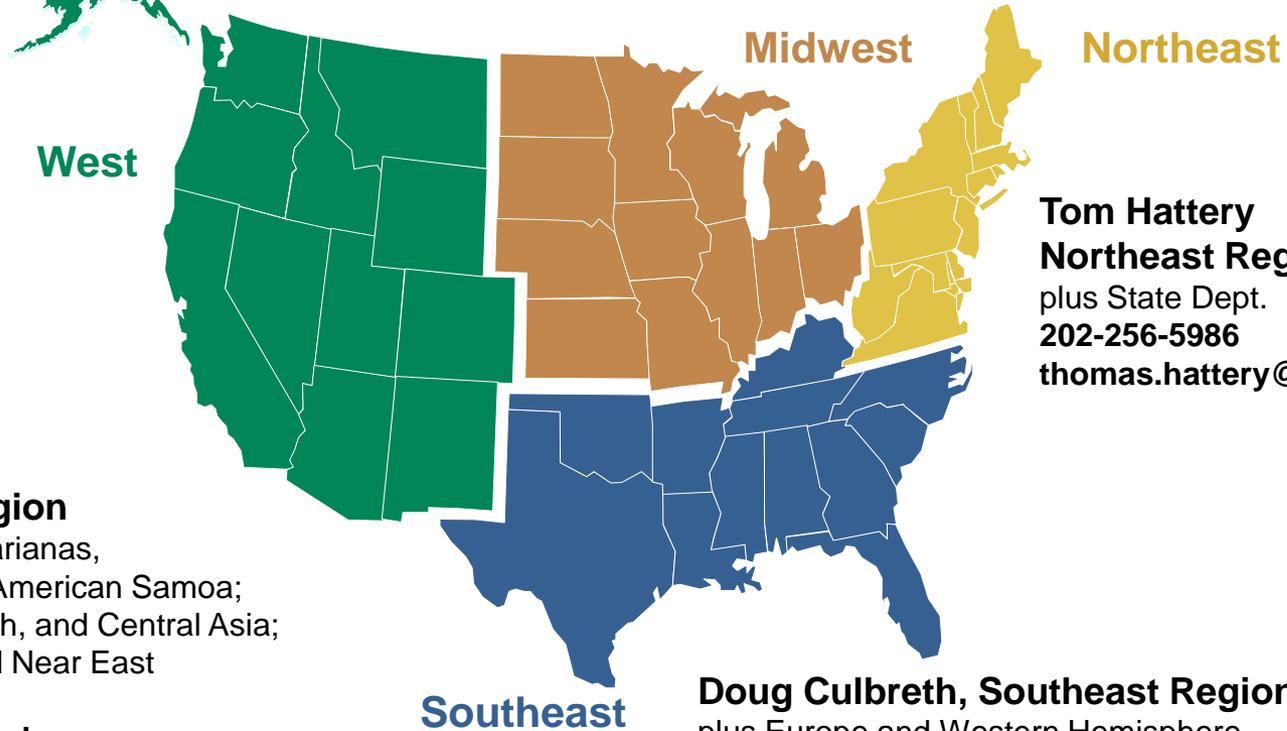
- **ESCO-Prime Contractor responsible for ensuring performance**
 - RE System Provider like subcontractor (relative to Agency)
- **RE Provider provides:**
 - Collaboration with Agency/ESCO on siting
 - Design
 - Financing (Tax Equity Participant)
 - Collaborates to pursue all RE & Tax Incentives
 - Permits
 - Installation
 - Interconnection
 - Operations & Maintenance
 - Repair & Replacement
 - Monitoring (delivery info & solar resource)

Parties & Transactions



FEMP Federal Financing Specialists (FFS's)

Gordon Drawer, Midwest Region plus Africa and New Independent States
630-584-9650, gordon.drawer@ee.doe.gov



Scott Wolf
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plus East, South, and Central Asia;
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• Questions?