



The Premier Energy Training Workshop
and Trade Show for Federal Agencies

A River of Energy Solutions

Renewable Energy Funding Vehicles

Presentation Overview

- Federal renewable project funding vehicles and example projects
 - On-Site Renewable Power Purchase Agreements (PPA)
 - Utility Energy Service Contracts (UESC)
 - Utility Renewable Energy Service Contracts (URESC)
 - Energy Savings Performance Contracts (ESPC)
 - Enhanced Use Lease (EUL)
- How to choose
- FEMP resources

On-Site Renewable Power Purchase Agreement (PPA)

On-Site Renewable Power Purchase Agreement

- Renewable developer installs, owns, operates and maintains customer-sited renewable equipment
- Site purchases electricity (or possibly thermal energy) through power purchase agreement

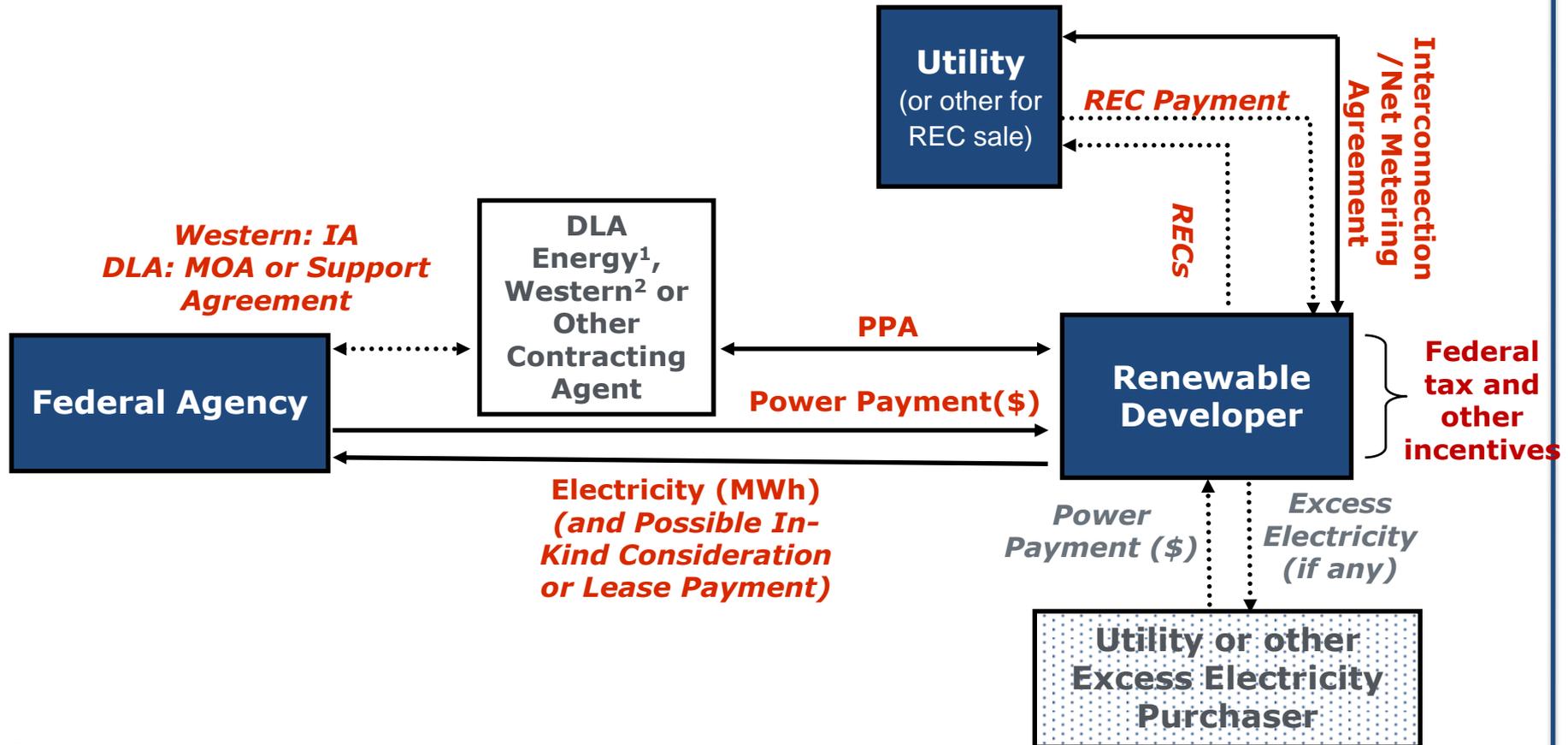
Pros

- Renewable developer eligible for tax incentives, accelerated depreciation
- No agency up-front capital required
- Renewable developer provides O&M
- Minimal risk to government
- Usually known long term electricity price for portion of site load

Cons

- Transaction costs
- Limited federal sector experience
- Contract length limitations (for civilian agencies)

PPA Diagram

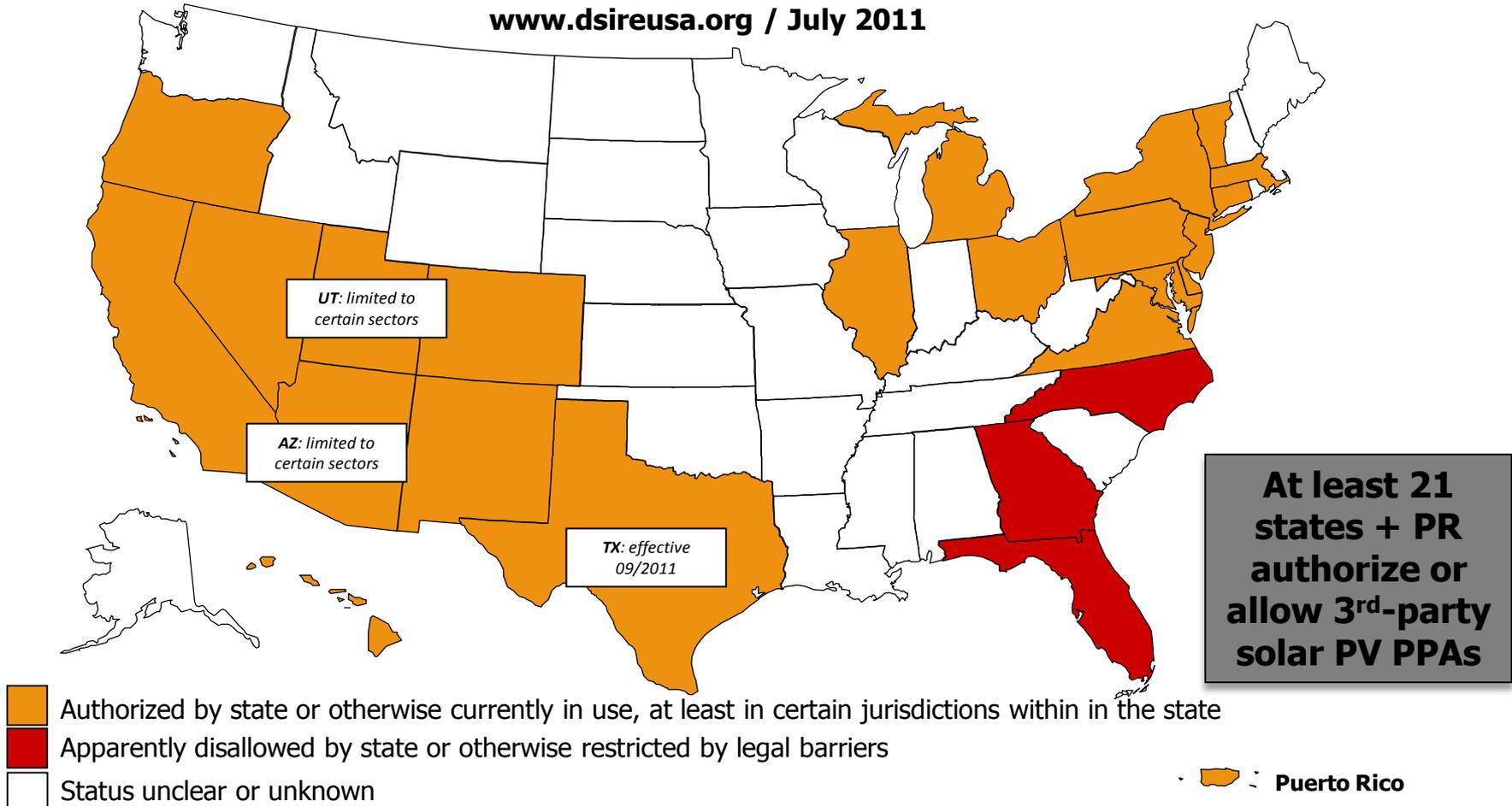


¹Formerly Defense Energy Support Center (DESC)

²Western = Western Area Power Administration

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

www.dsireusa.org / July 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 slides for additional important information and authority references.

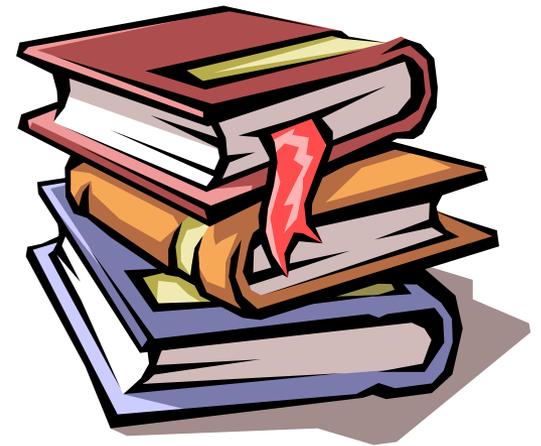
PPA Project Comparison

	Nellis AFB, NV	Fort Carson, CO	NREL, CO	GSA Sacramento, CA	USCG Petaluma, CA
Size	14.2 MW, 140 acres including closed landfill	2 MW on 12 acre closed landfill	2.3 MW total	.5 MW	855 kW on ~4 acres
Type	Ground Mounted, Single Axis Tracking PV	Ground Mounted, Fixed PV	Two Ground Mounted, Single Axis Tracking systems & two roof-top PV systems	Roof-top PV	Ground Mounted, Fixed PV
PPA Contract Length	Indefinite with 1 year termination	17 with 3 yr option	20 years	10 years	1 yr with 24, 1 yr options
Land Use Agreement	Lease (20 yrs)	Lease (20 yrs)	Easement for ground systems, license for roof systems (20 yrs)	License (10 yrs, included in PPA)	Irrevocable License (25 years)
Procurement and Contracting Agent	Site	Site, in partnership with Western	Site, in partnership with Western	Site	Site
RECs	Sold to utility	Sold to utility	Sold to utility	Retained by renewable developer	Transferred to site

Utility Energy Service Contracts (UESC)

Utility Energy Service Contracts (UESC)

- **Definition:** Contracts that allow utilities to provide agencies with comprehensive energy and water efficiency improvements and demand reduction services.
- **Utilities front the capital costs**, assess the opportunities, design and implement the ECMs, and are paid out of savings.

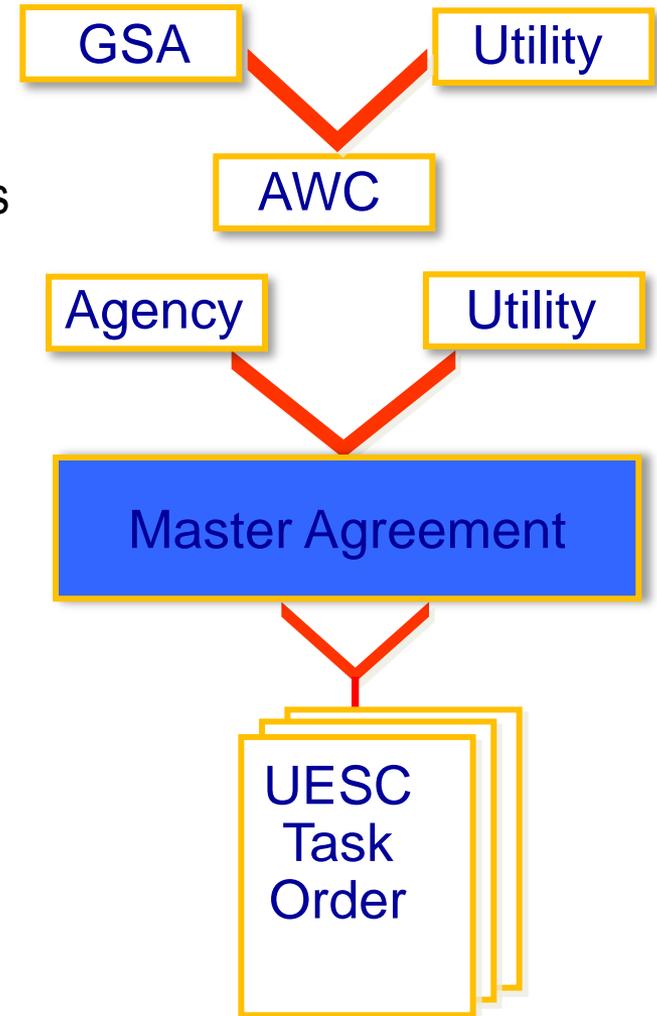


UESC

- Typically renewable projects bundled with energy efficiency
- Contract term up to 25 years, varies by agency
 - GSA legal opinion states that extended utility agreements are allowed. (See UESC Enabling Documents, p. 76-77 available at http://www1.eere.energy.gov/femp/pdfs/uesc_enabling_documents09.pdf)
 - EISA Section 513 prohibits agency policies that limit maximum contract term for a period shorter than 25 years
- Contract options – areawide contract (AWC), basic ordering agreement (BOA), site specific contract

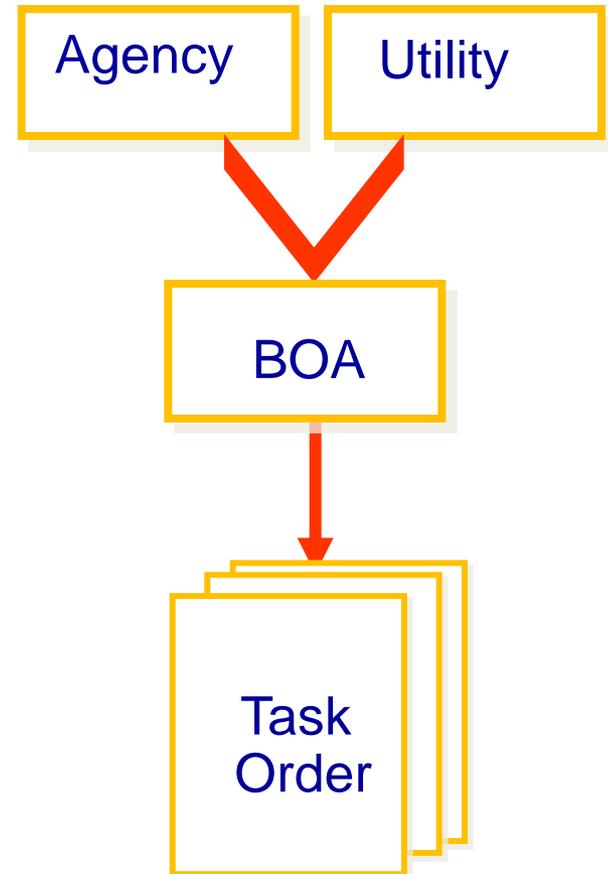
UESC

- AWC
 - GSA places a blanket contract for utility services under FAR Part 41
 - Agency can place a UESC Task Order directly under the AWC or Utility and Agency can negotiate detailed site-specific terms and conditions
 - Model Agreement (in UESC Enabling Documents) can be used as the Master Agreement template



UESC

- BOA
 - FAR Part 16 Service Contract, establishes terms & conditions for future contracts to provide services
 - Any agency can place with a utility
 - Task orders with project-specifics are placed underneath it
 - Model Agreement can be used as the template for the BOA



UESC Renewable Project Pros/Cons

Pros

- Utilities are interested in a wide range of project sizes (large and small)
- Existing relationship
- Utilities are now eligible for investment tax credit, per “Emergency Economic Stabilization Act of 2008, PL 110-343; Title I, Energy Production Incentives”
- Interconnection and tariff/standby issues may be mitigated or even eliminated due to utility involvement

Cons

- Not all utilities offer UESCs
- Utility may have limited renewable experience, may be uncomfortable with renewable projects
 - Renewable developer subcontractor will add to project cost
 - Renewable project may not cash flow without sufficient low payback energy efficiency measures

UESC Example

Camp Pendleton Photovoltaic Project

- 75 kW PV project with 116,000 KWh/year estimated production (actual production has been higher)
- Bundled with various EE measures
- Total project cost was \$11.2 Million,
- Simple payback 7.8 years, SIR 1.94
- Contract term is 10 years
- Projected annual savings is 62,377 MMBTUs.
- Total projected California solar incentive covers approximately 33% of project costs
- On-line since July 2008



Utility Renewable Energy Services Contract (URESC)

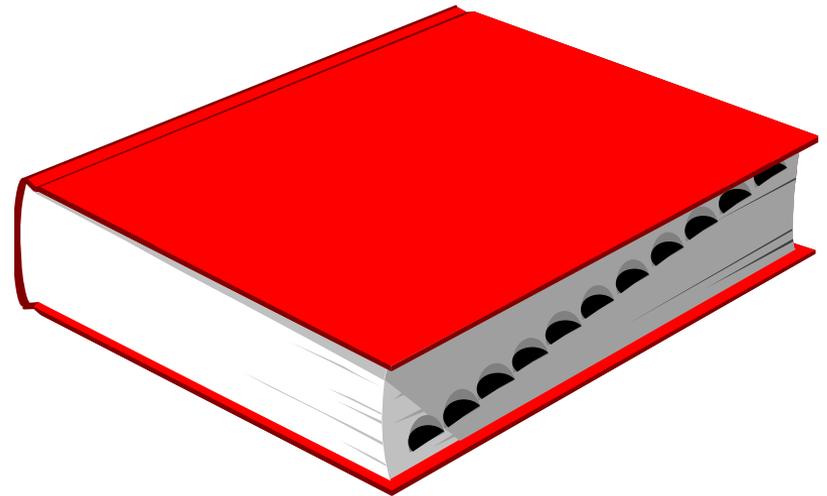
Utility Renewable Energy Services Contract (URESC)

- Contract with local serving utility for the purchase of energy (electric or thermal) from on-site renewable project
- Utility or a partner could own renewable project and take advantage of tax benefits
 - Prime contract with utility, possible separate contract between utility and project owner that spells out performance and other responsibilities.
- Could use AWC, BOA or other agreement such as a Blanket Purchase Agreement
- Commission approval requirement is likely
- Other issues: subcontractor competition, land use agreement, payment, etc.
- Several projects in progress

Energy Savings Performance Contract (ESPC)

Definition of Energy Savings Performance Contracting (ESPC)

ESPC is a no-upfront-cost contracting method. The contractor incurs the cost of implementing energy conservation measures (ECMs) and is paid from the energy, water, and operations savings resulting from these ECMs.



ESPC

- Partnership between federal agency & energy service company (ESCO)
- ESCO incurs the cost of developing and implementing the energy project and guarantees a specified level of cost savings
- Federal site pays the ESCO over the term of the contract out of the energy and energy-related savings resulting from the project
- DOE IDIQ contract (international, 16 companies), other federal agency contracts such as Army Corps of Engineers IDIQ (International, 14 companies – 2 are small business)

ESPC

- Established project implementation process
- 25 year contract
- Typically renewable projects bundled with energy efficiency

ESPC Renewable Project Pros/Cons

Pros

- 25 year contract length - fits well with higher renewable energy paybacks
- Performance guaranteed
- O&M can be included as part of contract
- Site can require renewables
- Project Facilitator assigned - FEMP funded through Initial Proposal/Preliminary Assessment
- Excess electricity/thermal energy sale allowed (EISA provision)

Cons

- Not easy to incorporate tax incentives (ITC, PTC, accelerated depreciation)
 - ESCO/financier must own equipment for tax incentive eligibility
- ESCO may subcontract to renewable developer - adding to project cost (project may not cash flow without sufficient low payback energy efficiency measures)
- Site O&M increases the performance risk
- Fixed price contract can be challenging due to renewable fuel pricing & variance in fuel quality/quantity (for biomass)

ESPC Example

29 Palms Photovoltaic Project



- 1.3 MW
- Completed September 2003
- Implementation cost = \$6.5M
- Incentives = \$4.5M
- Estimated annual savings over \$500k
- Additional 1 MW project in progress

Enhanced Use Lease (EUL)

Enhanced Use Lease (EUL)

- EUL is a real estate agreement
- The lease is competed (rather than the energy purchase, as in a PPA)
- Payment or in-kind consideration
- Usually for large projects where project size > site load
- Department of Defense authority: 10 USC 2667
- Past GovEnergy presentations:
 - 2010 <http://www.govenergy.com/2010/Workshop/Presentations.aspx> (Session 3 and 5)
 - 2009 <http://www.govenergy.com/presentations.php#finance> (Session 5)
 - 2008 <http://www.govenergy.com/2008/presentations2008.html#finance> (Session 5)

EUL Example

Fort Irwin

- Notice of Opportunity to Lease
- Up to 1000 MW at 5 Fort Irwin sites (initial 500 MW project)
- In-kind services equal to or greater than fair market value of land
- Developer conducts NEPA EIS
 - Fort Irwin will conduct an environmental baseline study as a part of the lease documents.
- Developer selection announced July 30, 2009 – Clark and Acciona Solar Power
 - First phase: 10-20 MW PV – 2014, up to 500 MW CSP/PV by 2022
- <http://eul.army.mil/ftirwin/>

EUL Example

NASA Kennedy Space Center/FP&L

- Partnership between NASA Kennedy Space Center and Florida Power & Light
- EUL signed June 2008
- Phase 1 involves 60 acres, potential phase 2 for additional 40 acres
- 10 MW FPL-owned PV project
 - Output feeds into FPL transmission system
 - Substation expansion required
- In-Kind Consideration - 990 kW NASA-owned PV
 - FPL construction
 - Output feeds into NASA-owned distribution system
- 130 mph wind standard
- Both systems operational
- See <http://www.fpl.com/environment/solar/spacecoast.shtml>



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Space Coast Next Generation
Solar Energy Center

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RPS Policies

RPS Policies

DSIRETM

Database of State Incentives for Renewables & Efficiency

U.S. DEPARTMENT OF
ENERGY

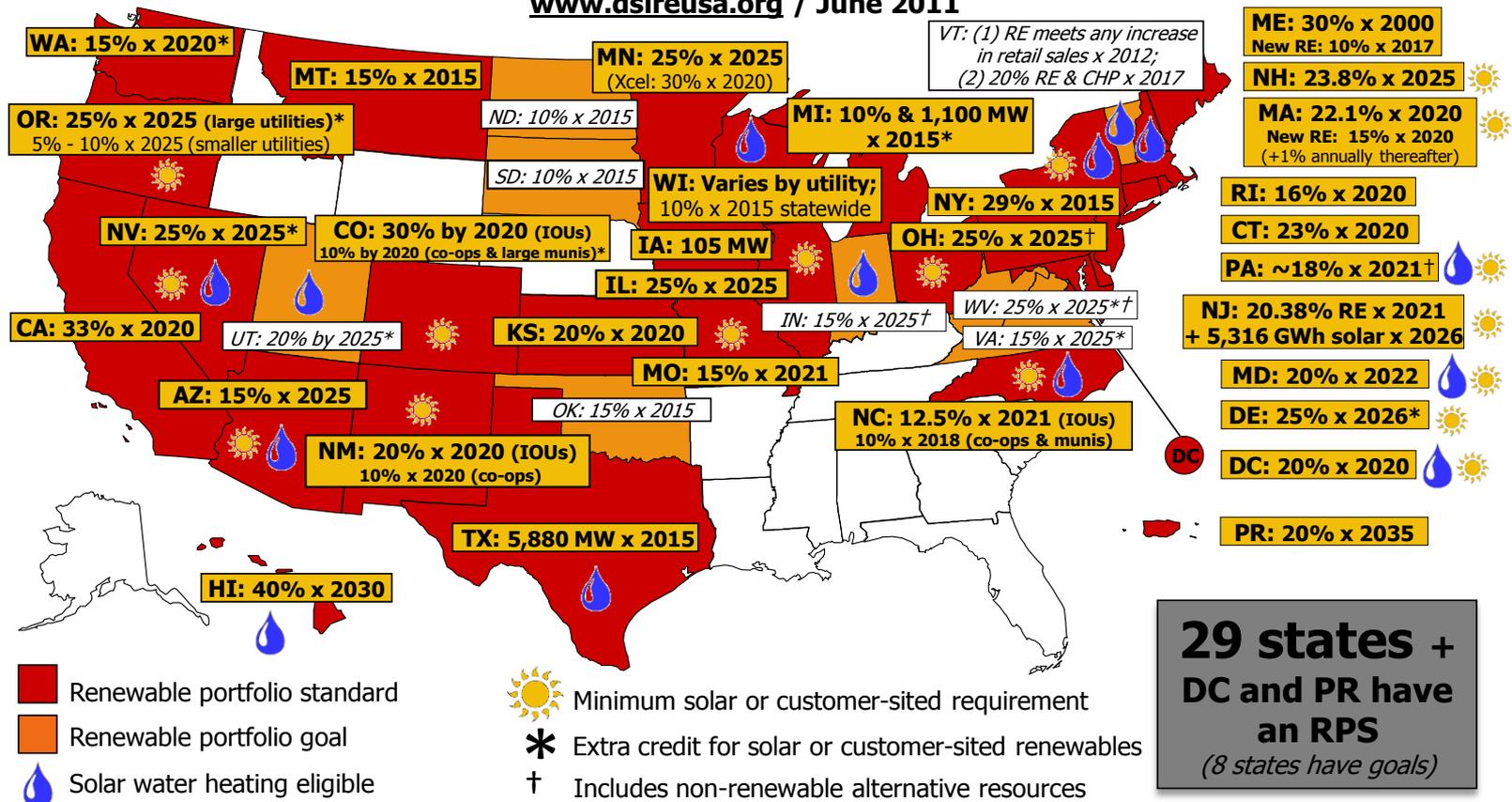
Energy Efficiency &
Renewable Energy

IREC
INTERSTATE RENEWABLE ENERGY COUNCIL

**NORTH CAROLINA
SOLAR CENTER**

RPS Policies

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RPS Policies with Solar/DG Provisions

DSIRESOLARTM

Database of State Incentives for Renewables & Efficiency

U.S. DEPARTMENT OF
ENERGY

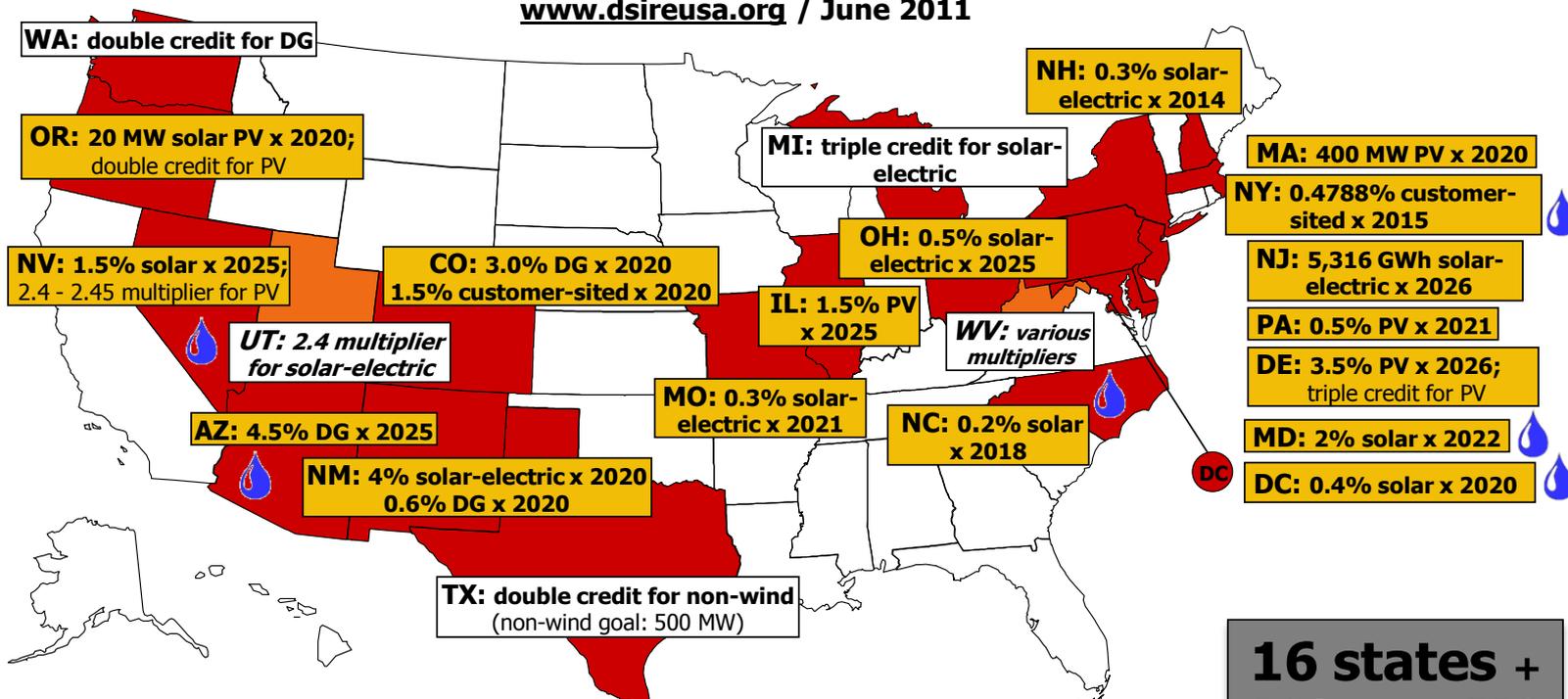
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**NORTH CAROLINA
SOLAR CENTER**

RPS Policies with Solar/DG Provisions

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- Renewable portfolio standard with solar / distributed generation (DG) provision
- Renewable portfolio goal with solar / distributed generation provision
- Solar water heating counts toward solar provision

**16 states +
DC have an RPS
with solar/DG
provisions**

How to Choose & Comparison

How To Choose

- What is the size of the proposed renewable project? Small projects are best implemented through UESC or ESPC, bundled with EE.
 - Do you have energy efficiency opportunities?
 - What is your agency policy related to ESPC and UESC?

UESC questions:

- Does your utility have a federal program?
- Have you done any energy projects through your utility?
- Does your site have a good relationship with your utility?

ESPC questions:

- What is the estimated size of the proposed RE and EE project (ESPC projects are typically at least \$1 million)?
- Have you done any ESPC projects?

How To Choose

- If proposed renewable project is large, then consider PPA or EUL
- What is expected energy generation relative to load? EUL is a good option If energy generation is significantly greater than load.
 - Does your agency have an EUL authority?
- If estimated generation is less than load most of year, but may be greater than load during certain time periods: Research net metering, feed-in tariff and other applicable policies.

UESC, ESPC & PPA Comparison

	PPAs	DOE ESPCs	UESC
AUTHORIZATION	40 USC 501 (FAR Part 41)	EPAc 1992 42 USC 8287 10 CFR 436	EPAc 1992 42 USC 8256 10 USC 2913 10 USC 2866
COMPETITION	Competitive	Competitive (FedBizOpps not required for delivery orders)	Exempt from CICA, sole source to utility; AWC includes requirements for small business subcontracting plan and competitive selection of subcontractors
CONTRACTING PARTY	Contract with a renewable developer	Contract with energy services company (ESCO)	Contract with utility
PERFORMANCE	Contractor only gets paid if project generates electricity (or therms)	Guaranteed performance required	Guaranteed performance negotiable
TERM	Varies (10 years with FAR Part 41, up to 30 years with DOD 10 USC 2922A)	25 years	Up to 25 years allowed; varies by agency

UESC, ESPC & PPA Comparison

	PPAs	DOE ESPCs	UESC
PAYMENTS	Invoice	Invoice	Utility bill or invoice
QUALIFIED	None	Multiple contractors selected list required	Use of qualified contractors list not required
MEASUREMENT & VERIFICATION	Not required (see Performance).	M&V and annual energy M&V Report required	M&V and annual energy audit negotiable
OPERATION & MAINTENANCE	Required	O&M negotiable	O&M negotiable
CONTRACT COORDINATION	DLA Energy, Western Area Power Administration and/or agency	Agency coordinates contract through DOE or lead agency	Agency coordinates contract
CONTRACTOR RELATIONSHIP	Typically no existing relationship is in place with the renewable developer	Typically no existing relationship is in place with ESCO	Relationship with utility usually well established
TIME & RESOURCE REQUIREMENTS	Relatively new process. Will get simpler with time.	Streamlined selection process	Simplified selection process

FEMP Assistance and Resources

FEMP Assistance

- Renewable screening to evaluate renewable project cost effectiveness
 - Part of the official DOE ESPC process – see http://www1.eere.energy.gov/femp/financing/espcs_techplanning.html
 - UESC renewable screening is available on request, based on available FEMP funding
- Project assistance
- ESPC: Established process, comprehensive support
 - Federal Financing Specialist (FFS)
 - Qualified Project Facilitators, required for FEMP ESPCs
 - National Laboratory Core Team

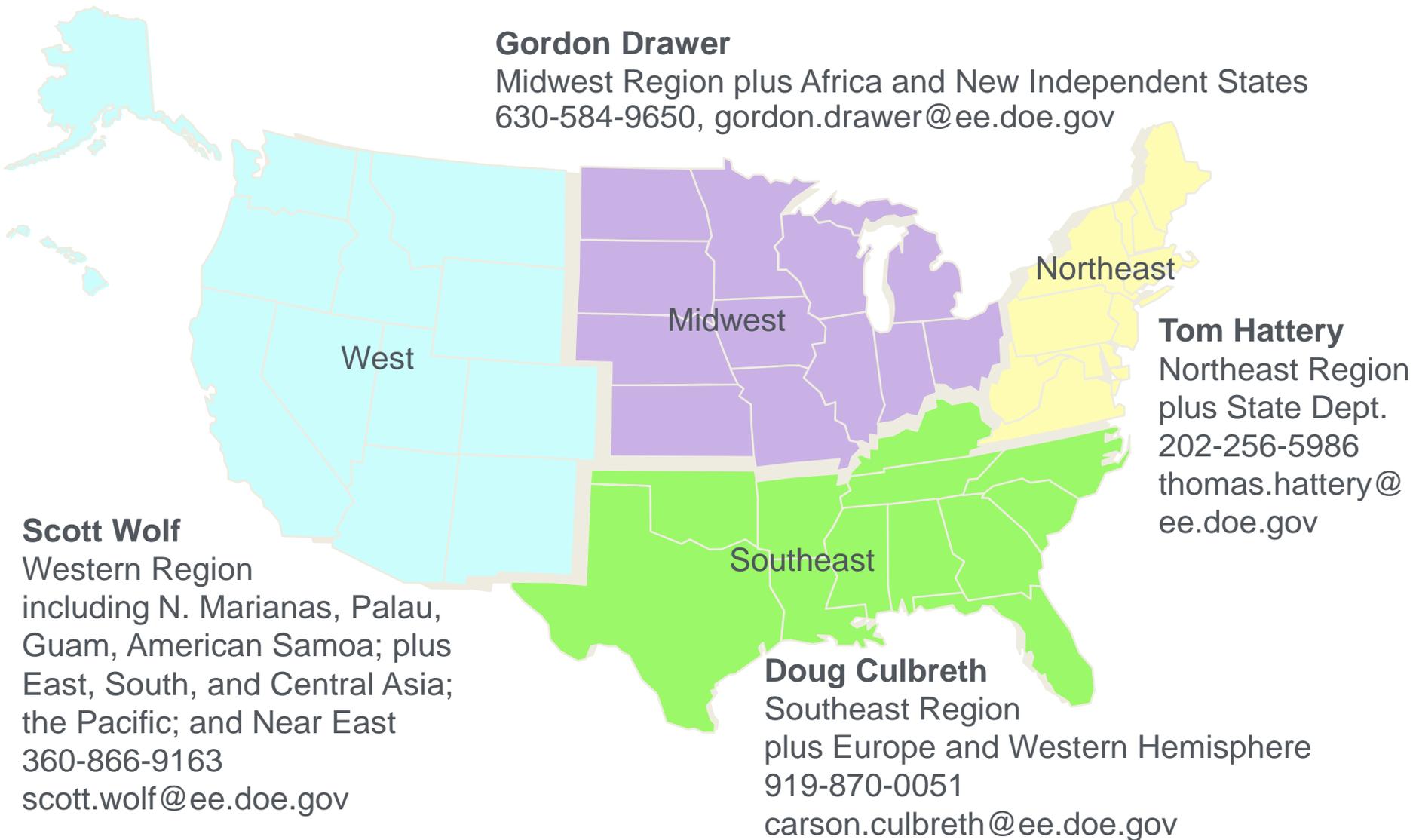
FEMP Assistance

- UESC: Support tailored to customers needs
 - Advise and consultation (helping you get “unstuck”)
 - Review of technical proposal
 - Full project facilitation and Lab Core Team support
- PPA: Support tailored to customer’s needs
 - Market research
 - Solicitation development
 - Proposal evaluation
 - Assistance with other issues such as coordination with local utility, NEPA and land use agreement

FEMP and Other Resources

- FEMP Project Funding web site
<http://www1.eere.energy.gov/femp/financing/mechanisms.html>
 - FEMP Project Funding Quick Guide
- Procuring Solar Energy: A Guide for Federal Facility Decision Makers
<http://www1.eere.energy.gov/solar/pdfs/47854.pdf>
- Guide to Purchasing Green Power (with Federal appendix)
http://www1.eere.energy.gov/femp/pdfs/purchase_green_power.pdf
- Workshops and webinars <http://www1.eere.energy.gov/femp/news/events.html>
 - Alternative Financing Options June 2010 webinar recording (covering PPA, UESC, ESPC)
http://apps1.eere.energy.gov/femp/training/course_detail_ondemand.cfm/CourseId=44
- Federal Utility Partnership Working Group (FUPWG)
http://www1.eere.energy.gov/femp/financing/uescs_fupwg.html
- DSIRE web site for incentive information <http://www.dsireusa.org/>

FEMP Federal Financing Specialists (FFS's)



FEMP Contacts

UESC

- David McAndrew, DOE HQ/FEMP
David.McAndrew@ee.doe.gov, 202-586-7722
- Karen Thomas, National Renewable Energy Laboratory (NREL)
Karen.Thomas@nrel.gov, 202-488-2223
- Additional FEMP, national laboratory, utility, agency contacts: See p.255-9 of UESC Enabling Documents

ESPC

- Bill Raup, DOE HQ/FEMP
william.raup@ee.doe.gov, 202-586-2214
- Doug Dahle, NREL
douglas.dahle@nrel.gov, 303-384-7513

PPA

- Tracy Logan, DOE HQ/FEMP
tracy.logan@ee.doe.gov, 202-586-9973
- Chandra Shah, NREL
chandra.shah@nrel.gov, 303-384-7557
- Gerald Robinson, LBNL
gtrobinson@lbl.gov, 510-486-5769

Summary and Additional Tips

- Various methods for acquiring, contracting and funding renewables
- ESPC and UESC allow for bundling renewable projects with energy efficiency
- Regardless of how project is funded, make sure to talk to your utility about the proposed renewable project (interconnection, standby charges, etc.)
- Investigate renewable and energy efficiency incentives
- Get assistance from the experts