



• August 15-18, 2010 • Dallas, Texas •
• Dallas Convention Center •



Power Purchase Agreements

Chandra Shah, National Renewable Energy Laboratory

PPA Panel and Presentation Overview

- Chandra Shah, National Renewable Energy Laboratory
 - Renewable project financing options
 - Power Purchase Agreement (PPA) Overview
- Mike Warwick, Pacific Northwest National Laboratory
- Melanie Reed, Western Area Power Administration
- Scott Provinse, SunEdison
- Chandra Shah, National Renewable Energy Laboratory
 - PPA Hybrids
 - ESPC Energy Services Agreement (ESA)
 - Utility Renewable Electricity Service Contract (URESC)
 - FEMP Assistance & Resources
 - PPA Issue Paper

Federal Contracting Options

- Utility Energy Service Contracts (UESC)
- Energy Savings Performance Contracts (ESPC)
- Power Purchase Agreements (PPA)
- Utility Renewable Electricity Service Contract (URESC) - PPA with utility
- ESPC Energy Services Agreement (ESA)
- Enhanced Use Lease (EUL)
- Appropriations

Power Purchase Agreement

- Private entity installs, owns, operates and maintains customer-sited renewable equipment
- Site purchases electricity through power purchase agreement (PPA)
- Pros
 - Renewable developer/partner eligible for tax incentives, accelerated depreciation
 - No agency up-front capital required
 - Renewable developer provides O&M
 - Minimal risk to government
 - Known long term electricity price for portion of site load
 - On-site projects are encouraged for meeting federal renewable goal and are eligible for double bonus
 - Good alternative to purchasing renewable energy certificates (RECs)
 - Can help with energy security goals
- Cons
 - Transaction costs (staff time, learning curve)
 - Limited federal sector experience
 - Contract terms and conditions

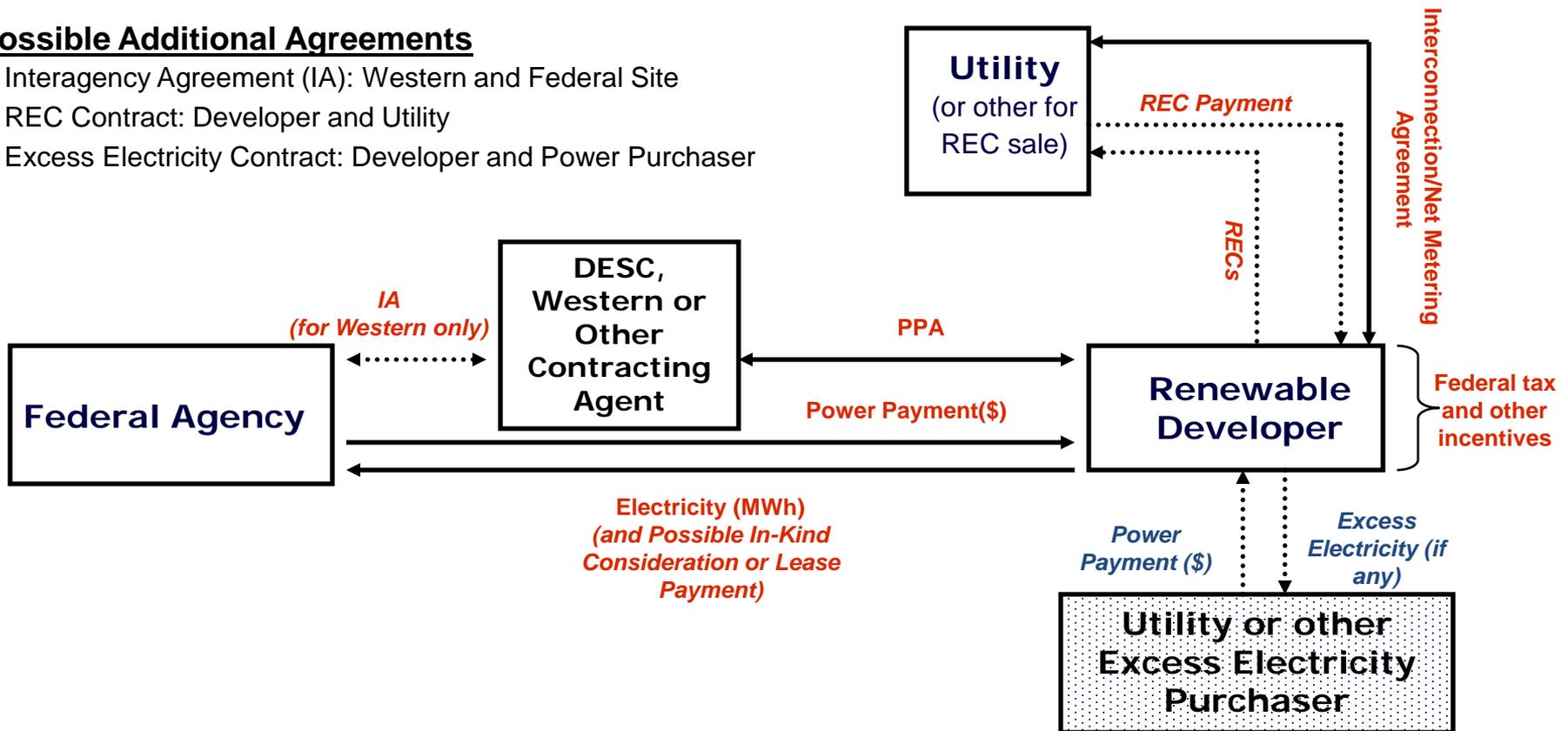
Renewable PPA Diagram

Agreements

- PPA: Federal Site, DESC/DLA Energy or Western, and Renewable Developer
- Land Use Agreement: Federal Site and Renewable Developer (not shown on diagram)
- Interconnection/Net Metering Agreement: Utility and Renewable Developer (and/or Federal Site)

Possible Additional Agreements

- Interagency Agreement (IA): Western and Federal Site
- REC Contract: Developer and Utility
- Excess Electricity Contract: Developer and Power Purchaser



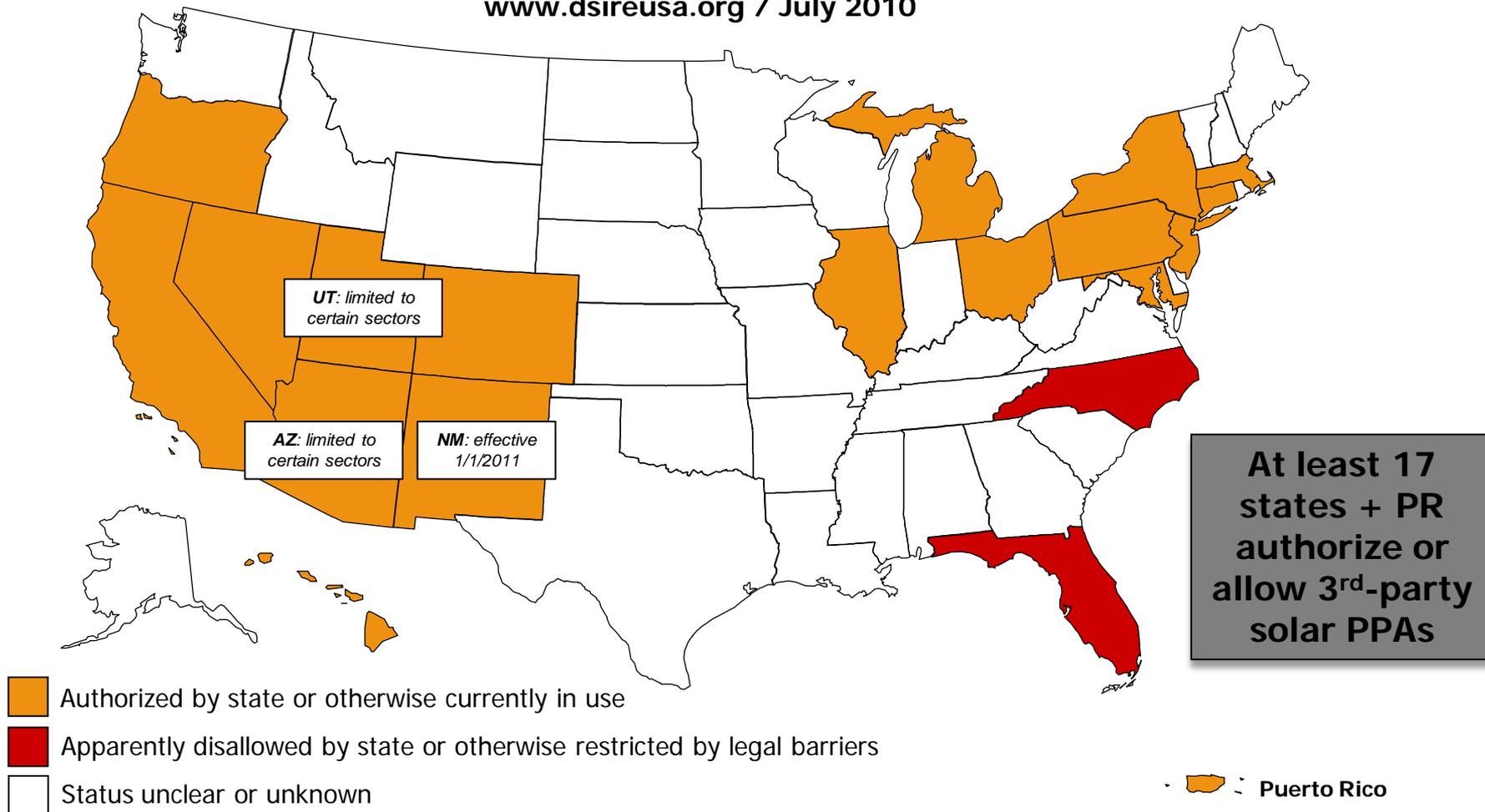
- DESC = Defense Energy Support Center/DLA Energy
- Western = Western Area Power Administration

Key PPA Considerations

- PPA legality - <http://www.dsireusa.org/summarymaps/index.cfm?ee=1&RE=1>
- Incentives
 - Renewable energy certificate (REC) ownership/sale
- Contract term limitations
- Coordination with local utility
 - Interconnection requirements/costs, standby/tariff considerations, etc.
- Land use agreement (lease, easement, license, other)
- National Environmental Policy Act and other environmental requirements
- Land/building ownership, management & operation contractors
- Water availability (for most concentrated solar power & biomass)

3rd-Party Solar Power Purchase Agreements (PPAs)

www.dsireusa.org / July 2010



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 authority references.

Authority / References for 3rd-Party Solar PPAs

Note: Authorization for 3rd-party solar PPAs usually lies in the definition of a “utility” in state statutes, regulations or case law; in state regulatory commission decisions or orders; and/or in rules and guidelines for state incentive programs. This information is provided as a public service and does not constitute legal advice. Seek qualified legal expertise before making binding financial decisions related to a 3rd-party PPA.

These slides will be updated quarterly. Please send comments to Amanda Vanega at amanda_vanega@ncsu.edu.

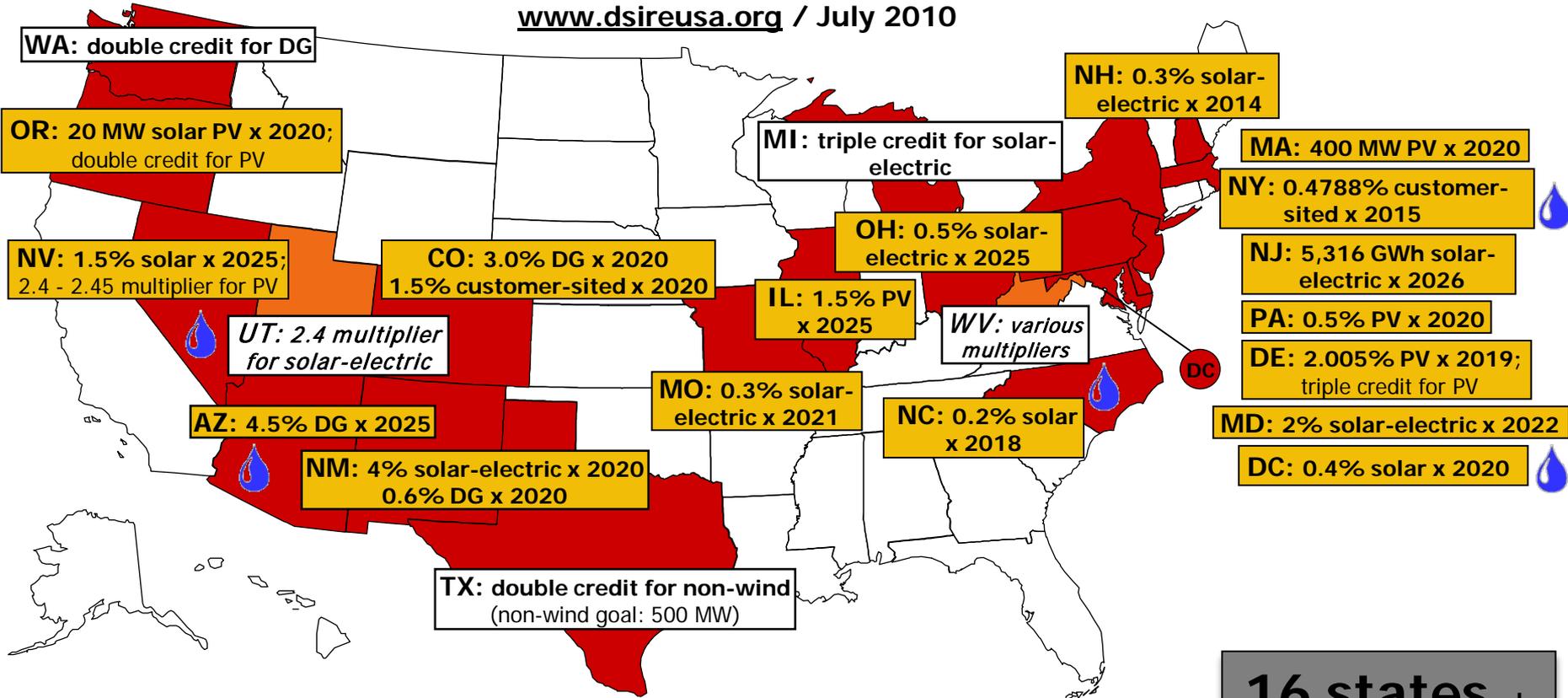
- California: Cal. Pub. Util. Code § 218, § 2868
- Colorado: S.B. 09-051; PUC Decision C09-0990
- Connecticut: Connecticut Clean Energy Fund
- Hawaii: PUC Order 20633
- Illinois: 220 ILCS 5/16-102; 83 Ill. Adm. Code, Part 465
- Massachusetts: 220 CMR 18.00
- Maryland: H.B. 1057 (2009)
- Michigan: 2008 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: NYCLS 2.13
- Ohio: PUC Order 06-653-EL-ORD
- Oregon: PUC Order, Docket 08-388
- Puerto Rico: No reference available
- Utah: H.B. 0145 (2010) *(effective 3/31/2010, and limited to installations at public buildings, schools or 501(c)(3) non-profits)*

DSIRE acknowledges IREC and Keyes & Fox, LLP, for their support in creating and maintaining this resource.



RPS Policies with Solar/DG Provisions

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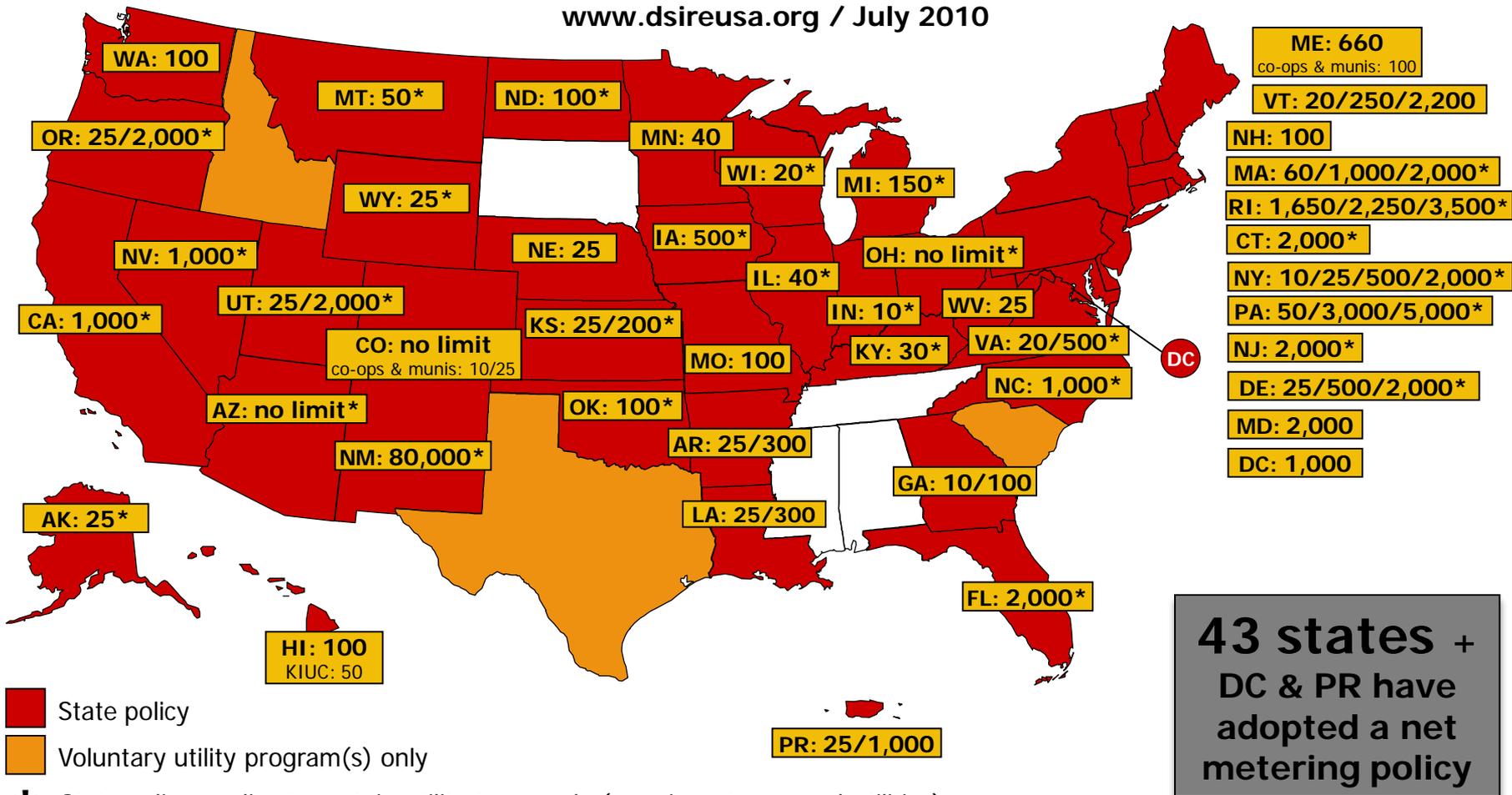


- State renewable portfolio standard with solar / distributed generation (DG) provision
- State renewable portfolio goal with solar / distributed generation provision
- Solar water heating counts toward solar provision

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

Net Metering

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Note: Numbers indicate individual system capacity limit in kW. Some limits vary by customer type, technology and/or application. Other limits might also apply.

Completed 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	1954 kW total (720 kW on 5.4 acres; 1116 kW ground mount, 94 kW roof-top; additional 420 kW roof-top under construction)	.5 MW	855 kW on ~4 acres
Type	Ground Mounted, Single Axis Tracking PV	Ground Mounted, Fixed PV	Ground Mounted, Single Axis Tracking PV	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 (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

Mike Warwick

Melanie Reed

Scott Provinse

PPA Hybrid Options - URESC

- Utility Renewable Electricity Services Contract (URESC) – PPA with utility
 - Contract with local serving utility for the purchase of electricity from utility owned, utility operated on-site renewable generation
 - Utility/partner retain ownership and take advantage of tax benefits
 - Possible authority - FAR Part 41.501c4 (FAR 52.241-5 Contractor's Facilities)
 - Draft template agreement developed through Energy Lawyers and Contracting Officer Working Group
 - Currently pursuing a pilot project

PPA Hybrid Options – ESPC ESA

- ESPC Energy Services Agreement (ESA)
 - Pro: ESPC has a 25 year contract authority
 - ESCO/partner retain ownership and take advantage of tax benefits
 - There must be savings relative to current/forecasted rates
 - Fixed payment to match guaranteed production
 - Lower payment if guaranteed production is not met
 - Several projects in progress - no signed contracts yet
 - NREL can assist Agency & ESCO with ESA implementation
- Options include DOE IDIQ, other government IDIQ, full and open competition
 - DOE pre-qualified ESCO list

http://www1.eere.energy.gov/femp/financing/espcs_qualifiedescos.html

FEMP PPA Support

- Renewable screening/assessments to determine potential cost effective renewable projects
 - FEMP conducts renewable screening for every new ESPC project. This screening also available for UESC and other potential renewable projects
 - Information available at http://www.eere.energy.gov/femp/financing/espcs_techplanning.html
- Project assistance
 - Market research assistance
 - Applicable incentives and/or solar REC market
 - Possible utility bill impacts (tariff/competitive electric supply changes, standby charges, etc.)
 - Interconnection, net metering and other applicable policies/requirements
 - Assistance with other requirements such as land use agreement (lease, easement, license, other)
 - Solicitation
 - Proposal evaluation

PPA Resources

- Chandra Shah, National Renewable Energy Laboratory (NREL)
chandra.shah@nrel.gov, 303-384-7557
- Gerald Robinson, Lawrence Berkeley National Laboratory (LBNL)
gtrobinson@lbl.gov, 510-486-5769
- Mike Warwick, Pacific Northwest National Laboratory (PNNL)
mike.warwick@pnl.gov, 503-417-7555 (for DOD sites)
- FEMP PPA web site (includes a Sample Document page)
http://www.eere.energy.gov/femp/financing/power_purchase_agreements.html
- FEMP PPA Quick Guide – http://www1.eere.energy.gov/femp/pdfs/ppa_guide.pdf
- Alternative Financing Options webinar presentation and recording
- FEMP Focus article (Fall 2007, p. 16-17)
<http://www1.eere.energy.gov/femp/news/fempfocus.html>
- EPA Solar PPA web site and 7/28/09 webinar (for all sectors, not just federal)
<http://www.epa.gov/greenpower/buygp/solarpower.htm>
http://www.epa.gov/greenpower/events/july28_webinar.htm

PPA Issue Paper & Input Opportunities

- Seeking input from industry/federal experts on high priority PPA issues
 - Contract length limitations
 - End of contract and disposition of renewable project
 - Termination for Convenience
 - Land use agreement options
 - Creation of special purpose entities for project development
- Energy Lawyers and Contracting Officers Working Group
 - GovEnergy track - Wednesday ELCO Panels
 - 8:30 -10 Legal Issues in Energy Projects
 - 10:30 – 12 Energy Lawyers Town Hall (PPA issues last 30 minutes)
 - FUPWG meetings
 - Template documents in development

Closing Thoughts

- Ensure that the PPA option is legal
- Contact your serving utility early and often
- Research applicable incentives and policies (<http://www.dsireusa.org/>)
- Review contract length options
- Address key issues early (NEPA, land use agreement options, etc.)
- Take advantage of FEMP assistance and federal contacts with PPA experience

Back Up Slides

ESPC 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
- Fixed price contract can be challenging due to renewable fuel pricing & variance in fuel quality/quantity
- Site O&M increases the performance risk

(Note: Ask for FEMP assistance to overcome barriers.)

UESC Pros/Cons

Pros

- UESC contract term 10 to 25 years, varies by agency
 - GSA legal opinion states that extended utility agreements are allowed. (p. 75-77 of new UESC Enabling Documents)
 - EISA Section 513 prohibits agency policies that limit maximum contract term for a period shorter than 25 years.
- Utilities are now eligible for renewable investment tax credit (utility must own renewable plant)
- Interconnection and tariff/standby issues should be minimal with utility ownership
- Utilities are interested in a wide range of project sizes (large and small)
- Existing relationship

Cons

- Not all utilities offer UESCs
- Utility may have limited renewable experience, may be uncomfortable with renewable projects

(Note: Ask for FEMP assistance to overcome barriers.)

UESC, ESPC & PPA Comparison

	PPAs	DOE ESPCs	UESC
AUTHORIZATION	FAR Part 41	EPAAct 42 USC 8287; 10 CFR 436	EPAAct, 42 USC 8256; 10 USC 2913; 10 USC 2866; 48 CFR 41; 48 CFR 16
COMPETITION	Competitive	Competitive (FedBizz Opps not required for delivery orders)	Exempt from CICA, sole source to utility; utility competitively selects 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 2922A)	25-years maximum	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 audit required	M&V and annual energy audit negotiable
OPERATION & MAINTENANCE	Required	O&M typically included	O&M negotiable
CONTRACT COORDINATION	DESC, WAPA 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	New process. Will get simpler with time.	Streamlined selection process	Reduced time and resources needed for selection process (close scrutiny of specifications and proposal evaluation required)