



U.S. Department of Energy
Energy Efficiency and Renewable Energy

federal energy management program

Power Purchase Agreements 2008 Federal Environmental Symposium - West 6/17/08

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- Customer-Sited power purchase agreement (PPA) definition
- Key PPA issues
- Project process
- Project examples



Customer-Sited Power Purchase Agreement

- Private entity installs, owns, operates and maintains customer-sited (behind the meter) renewable equipment
- Site purchases electricity through power purchase agreement (PPA)
 - May be possible to do a PPA within an ESPC or UESC – called an “Energy Services Agreement (ESA)”
- Pros
 - Private entity eligible for tax incentives (note that federal investment tax credit reverts from 30% to 10% at end of year – extensions being considered in Congress)
 - No agency up-front capital required
 - RE developer provides O&M
 - Contract directly with RE developer - minimizes overhead/profit costs
 - Minimal risk to government
- Cons
 - New process
 - Limited federal sector experience

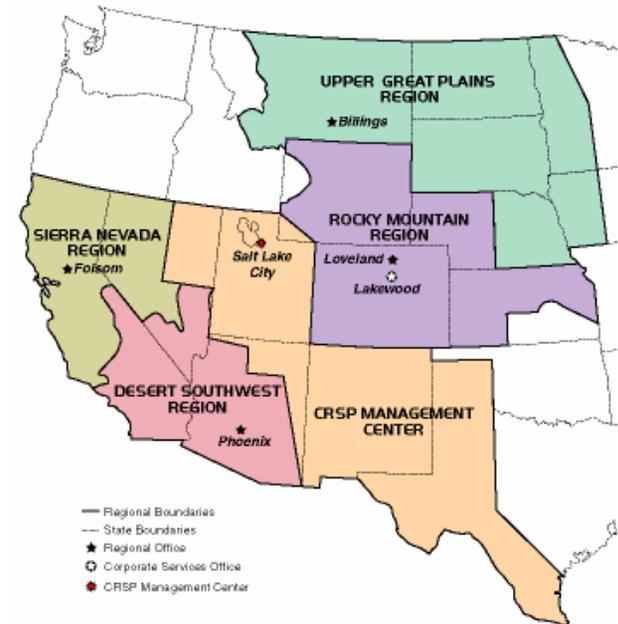


- PPA contract length
 - Long term best– at least 10 years, preferably 20
 - Evaluating authorities and options
 - ✓ FAR Part 41 – Utility Services
 - ✓ FAR Part 12 – Acquisition of Commercial Items
 - ✓ FAR Part 15 – Contracting by Negotiation
 - ✓ DOD 30-year authority (2922A) – requires Secretary of Defense approval
 - ✓ Other



Key PPA Issues

- PPA contract length
 - Western Area Power Administration (Western) Option
 - ✓ Long term contract authority - at least 20 years
 - ✓ Federal agencies in Western's service territory can use Western as the contracting agent
 - ❖ Bring renewable developer to Western (they will not do RFP).
 - ✓ Examples: NREL, Fort Carson
 - ✓ Nominal fee for Western's services





Key PPA Issues

- Land use agreement – lease, easement, license, other
 - Separate contract
 - Contract length limitations likely (agency authorities vary)
 - May include site access, environment, safety, security provisions
 - Investigate options early

- National Environmental Policy Act (NEPA) requirements
 - Crucial to investigate requirements early in process
 - Check state/local environmental requirements also



Key PPA Issues

- Renewable energy certificate (REC) ownership
 - Ensure that PPA contract explicitly spells out REC ownership
 - Solar RECs may be very valuable (see states with RPS solar set-asides)
 - ✓ “REC swap” option for credit towards EPACT RE goal and get double bonus (sell valuable RECs, purchase cheaper national RECs)
 - ✓ Federal Renewable Guidance
http://www1.eere.energy.gov/femp/pdfs/epact05_fedrenewenergyguid.pdf
 - ✓ REC monthly price report
<http://www.evomarkets.com/resources/index.php?xp1=1&type=mmu>
- PPA Electricity Price
 - Escalation factor typically included (usually 1-3%)
 - May be fixed price or tied to utility rate
 - Evaluate price and escalation factors carefully



Key PPA Issues

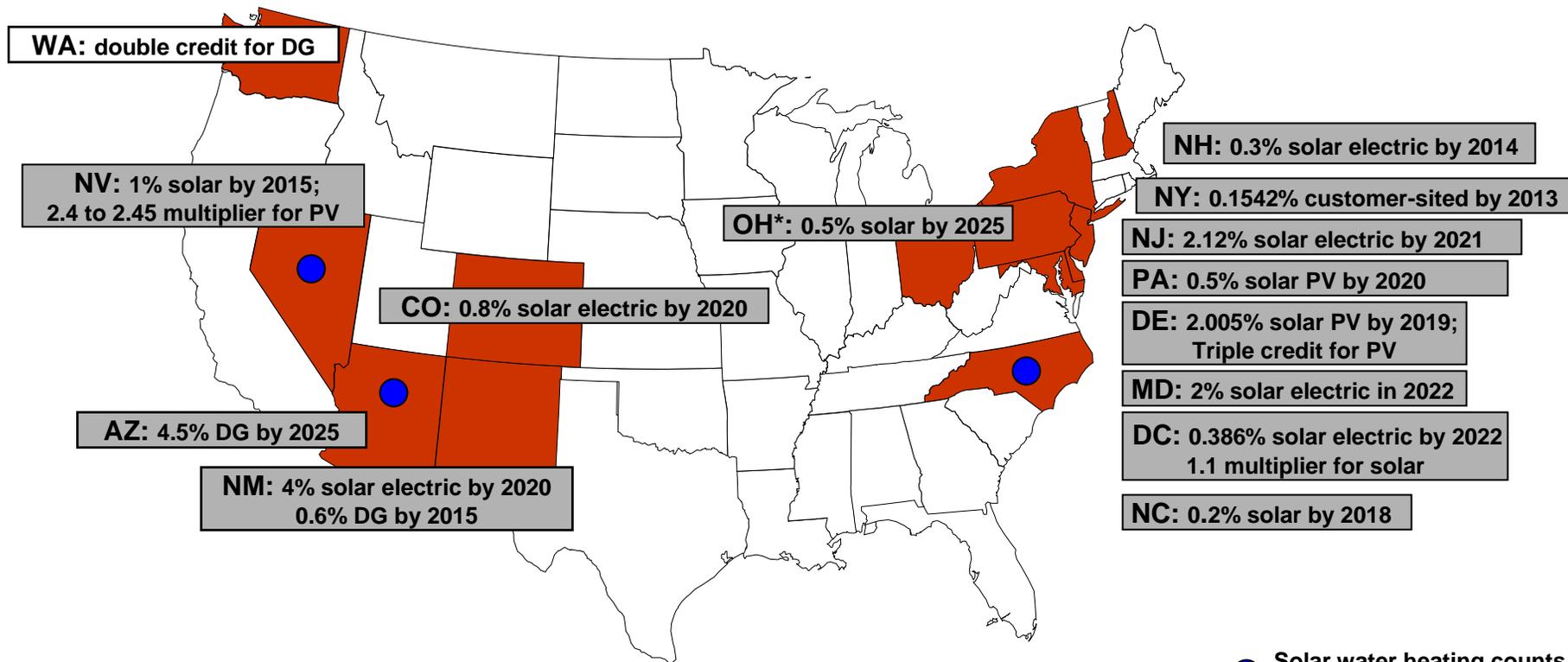
- Infrastructure requirements - road/fence, etc
- Interconnection, metering
- Incentives (see <http://www.dsireusa.org/>)



Solar/DG Provisions in RPS Policies

DSIRE: www.dsireusa.org

June 2008



DG: Distributed Generation

* It is unclear at this point if solar water heating is eligible for OH's solar carve-out.

Solar water heating counts towards solar set-aside



- Form project team – decision-maker, energy manager, facilities, real estate, environmental/sustainability manager, contracting officer, attorney, other
- Assess renewable options
 - Solar options include ground mounted, roof-top, carport; concentrated solar power
 - Large projects best (private sector unlikely to be interested in small projects)
 - Select project option(s) - renewable type, project location(s), estimated size
- Investigate NEPA and other environmental requirements
- Explore land use agreement options

Note: FEMP assistance available throughout process



- Choose contracting agency
 - Site or other agency contracting staff?
 - Defense Energy Support Center (DESC)?
 - Note: Western Area Power Administration only signs contract, they do not issue RFPs (site chooses solar/renewable developer, then goes to Western)
- Request for Information (RFI)?
- Develop Request for Proposal (RFP)
- Issue RFP and distribute widely
- Site visit and/or pre-proposal meeting
- Evaluate bids, award contract
- Project construction
- Publicity



Nellis AFB PV Project

- 15 MW on ~140 acres including closed landfill
- Estimated \$1 million electricity savings/year
- FAR Part 41 utility service contract, indefinite term
- One year termination notice
- 20-year ground lease
- Ribbon cutting event December 2007
- RECs sold to Nevada Power (for state RPS)



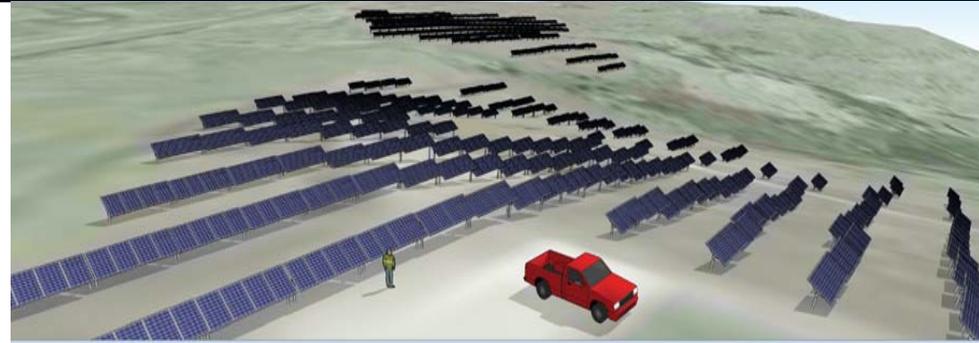
Nellis Air Force Base, Nevada

Courtesy of SunPower Corporation



NREL PV Project

- 750 kW (1200 MWh) single-axis tracking, ~ 5 acres
- Western Area Power Administration is contracting agent
- 20 year contract
- DOE/NREL provides 20 year easement/access agreement
- Developer sells RECs to Xcel Energy for RPS solar set-aside (20 year contract)
- Electricity price to DOE/NREL is equal to or less than utility electricity prices (based on EIA projections)
- Expected construction completion date – August 2008
- Phase 2 – Two projects, 1.5 MW total





Fort Carson PV Project

- 2 MW, 3200 MWh in first year (~2% of Ft. Carson's load)
- Fixed, non-escalating energy rate
- Western Area Power Administration is contracting agent
- 17 year contract, with 3 year option
- No cost lease (using 10 USC 2667 lease authority)
- Developer sells RECs to Xcel Energy for RPS solar set-aside (20 year contract)
- Ground-mounted, fixed system covering 12 acre former landfill
- First Solar thin film, 25 year warranty
- Came on-line December 2007





GSA Sacramento PV Project

- .5 MW roof-top PV (thin film)
- 10-year contract
- Price matched to energy rate, with price floor
- Utility rebate and federal incentives (30% tax credit & accelerated depreciation) - pay for approximately 1/2 cost
- License for use of roof
- Renewable developer retains RECs
- Came on-line March 2008

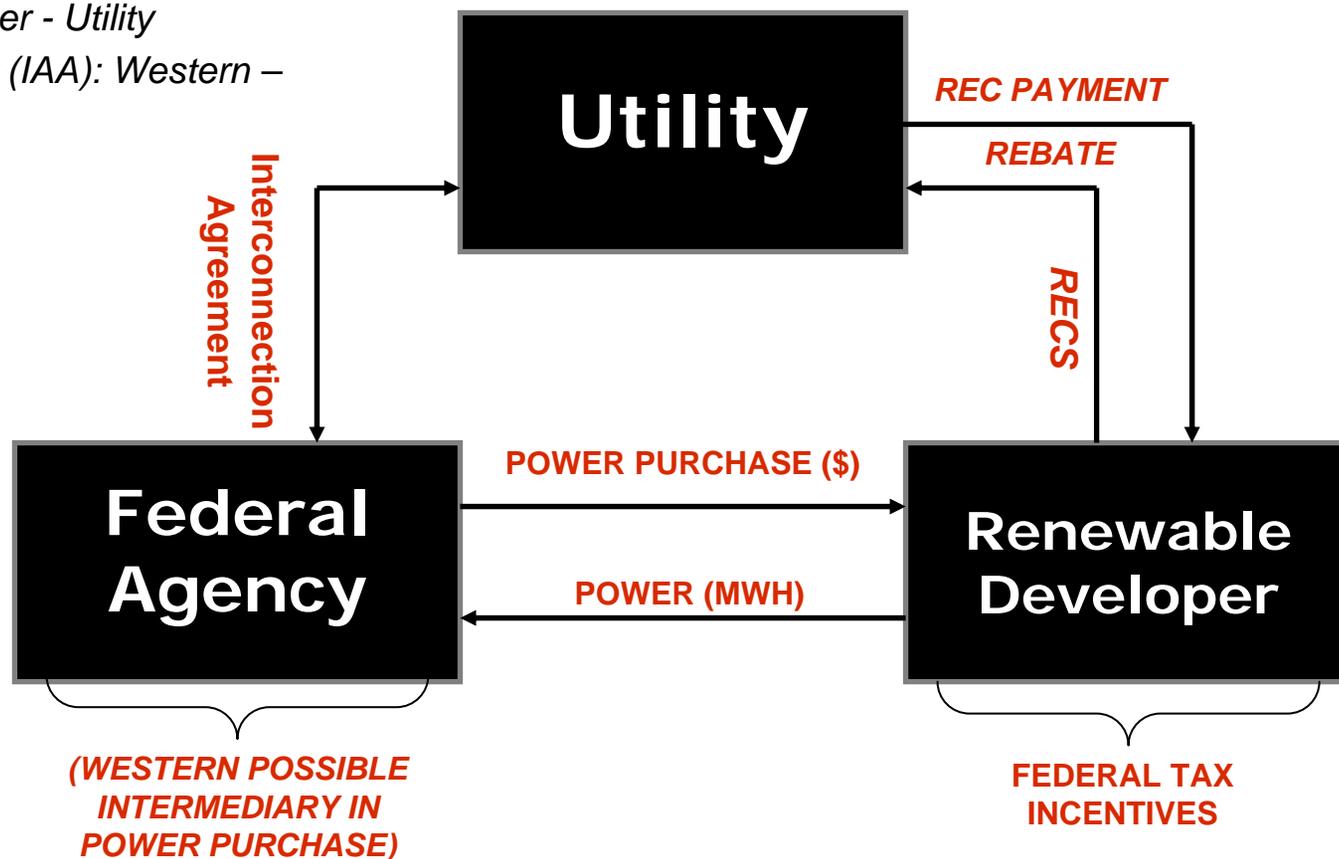




PPA “Wiring Diagram”

Agreements

- PPA: Federal Site (*or Western*) - Developer
- Land Use Agreement: Federal Site – Developer
- Interconnection Agreement: Federal Site (or Developer) and Utility
- REC Contract: Developer - Utility
- Interagency Agreement (IAA): Western – Federal Site





Project Comparison

	Nellis	Fort Carson	NREL	GSA
Size	15 MW	2 MW	.75 MW	.5 MW
Contract Length	Indefinite with 1 year termination	17	20	10
Land Use Agreement	Lease	Lease	Easement	License
Contracting Agent	Site	Western	Western	Site
RECs	Sold to utility	Sold to utility	Sold to utility	Retained by renewable developer



In Progress Projects

- NASA Jet Propulsion Laboratory
- Goodfellow AFB
- Davis-Monthan AFB
- USCG Petaluma



RFI and Forum Examples

- Davis Monthan AFB, AZ - Solar PPA RFI

https://www.fbo.gov/index?s=opportunity&mode=form&tab=core&id=a157781a2698c7a46af5fbfb9779caf1&_cview=1

- China Lake - Solar RFI

<http://www.govcb.com/S-PV-GENERATED-POWER-AT-NAWS-ADP11801275060000591.htm>

12/5/07 Solar Forum

https://portal.navfac.navy.mil/portal/page?_pageid=181,6076166,181_6076174&_dad=portal&_schema=PORTAL

- DOE - Renewable RFI

http://www1.eere.energy.gov/femp/pdfs/re_forum_rfi.pdf

2/12/08 Renewable Forum

http://www1.eere.energy.gov/femp/renewable_energy/renewable_forum.html



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- FEMP Focus article (Fall 2007)
http://www1.eere.energy.gov/femp/newsevents/fempfocus_article.cfm/news_id=11218