



Charting a Course to Energy Independence

Providence, RI
August 9-12, 2009

Renewable (RE) Headlines – Federal Civilian Agencies

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Overview

- Financing Mechanisms
- Financial Incentives
- Addressing NEPA Challenges
- Case Studies for RE at Civilian Agencies
- RE Federal PPA/USC Template Development
- RE Project Support - FEMP Contacts
- Conclusion & Contact



Making RE Projects Happen

Financing Mechanisms

- Appropriations
 - For PV consider using GSA Federal Supply Schedules
 - <http://www.gsaelibrary.gsa.gov/ElibMain/SinDetails;jsessionid=www.gsaelibrary.gsa.gov-52cc0%3A446117b3%3Ae18334633d31dfd?scheduleNumber=56&executeQuery=YES&specialItemNumber=206+3>
 - Effective for < 1MW systems
 - ~\$6.5/W installed



Making RE Projects Happen

Financing Mechanisms

- ESPCs
 - Bundling EE & RE (with M&V)
 - Private Ownership option for RE projects
 - Allow sale or transfer of excess RE power
 - Include ESA in ESPC
- UESCs
 - Bundling EE & RE
 - Private Ownership option for RE projects
 - GSA Legal Opinion on terms >10 years



Making RE Projects Happen

Financing Mechanisms

- Power Purchase Agreements (PPAs)
 - Current Limit 10 years
 - Indefinite Term Option under FAR
 - FAR Part 41 Program Guidance Instructions (PGI)
 - Private Ownership & O&M Common
 - Partner with WAPA for longer term PPA
 - Without longer term Federal PPA authority



Making RE Projects Happen

Financing Mechanisms

- Enhanced Use Lease
 - DOE/VA/NASA Authority
 - ~ 50 year lease agreements
 - Focus on underutilized land
 - Projects initiated by real estate transactions
 - Developer provides In-Kind Services (IKS)
 - IKS may be RE Power delivery to host site



Making RE Projects Happen

Financial Incentives

- Federal & State Tax Incentives
 - Fed Solar ITC, Wind/Bio PTCs, MACRS
 - State PTC, tax exemptions
 - Private Ownership
- State/Utility Financial Incentives
 - ¢/kWh (production) or \$/W (capacity)
 - Resource for RE incentives at:
<http://www.dsireusa.org/Index.cfm?EE=0&re=1>



Making RE Projects Happen

Financial Incentives

- State RPSs motivating RE industry
 - RECs effective revenue source
- Congressional Action
 - Federal RPS proposed
 - Extension of RE PPA authority
 - House Approved Bill – 20 Yr Federal Authority
 - Senate Proposal – 30 Yr Federal Authority
 - GHG monetization potential (\$/ton)



Addressing NEPA Challenges

- NEPA – On site federal projects or funding trigger environmental study actions
- Programmatic EIS (PEIS) for Wind & Solar
 - Good reference for site specific EISs or EAs
- BLM Wind PEIS (11 Western states) – 12/05
 - <http://windeis.anl.gov>
 - BLM/DOE can tier off PEIS for EAs
- BLM/DOE Solar PEIS (6 SW states) ~ 12/10
 - <http://solareis.anl.gov>



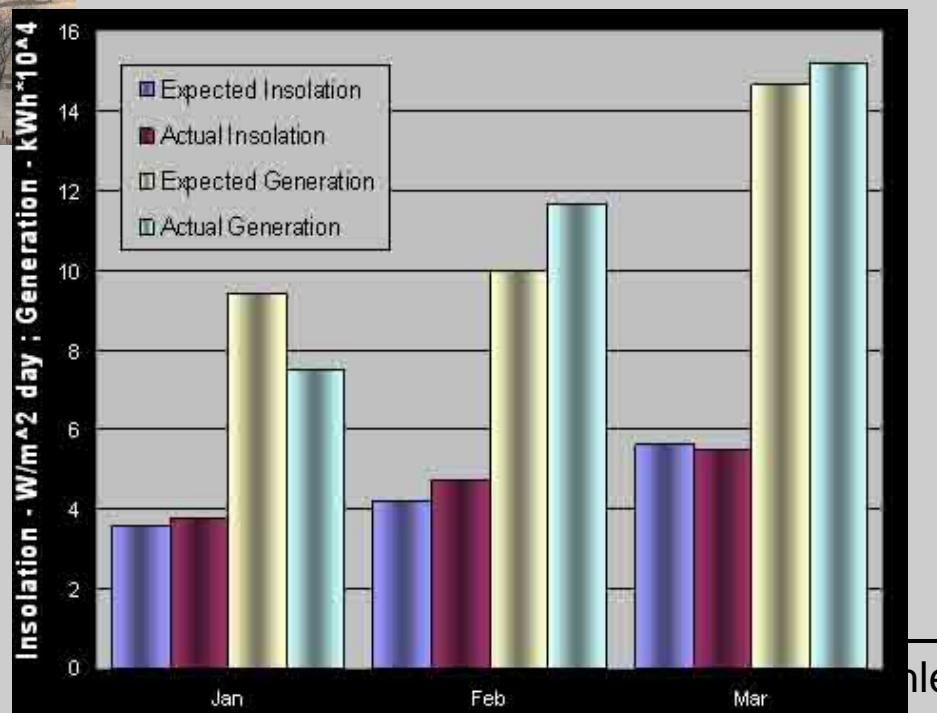
Case Studies - Appropriations

PV Case Study – GSA Federal Center (Denver, CO)



- This PV system generated 1,726,000 kWh in 2008, 14% more than contract required (10% of the DFC campus peak electrical load, 2.5% of total DFC kWh)
- Collectors at 20 degree fixed tilt
- Requires 6 acres of land
- First cost was \$6.9 Million (\$5.8/Watt), GSA owned
- Incentives - \$200K
- REC = 1,525 MWh, \$240/MWh for 20 years.

1.19 MWdc Fixed-Tilt PV System





Case Studies - Appropriations

Veterans Administration Jerry L. Pettis Memorial Medical Center in Loma Linda, CA



- *309 kWdc
- *1,584 Sanyo 195-watt PV modules
- *SunLink racks minimum roof penetration.
- *Advanced Energy Solaron 333kW inverter
- *Feasibility Study by NREL estimates:
 - 475 MWh/year delivery
 - \$60k/year savings
 - \$2.9million cost without any incentives
- Procured off GSA
- Schedule for complete PV systems.

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Case Studies - Appropriations

High Temperature Example: Social Security Admin. Philadelphia.

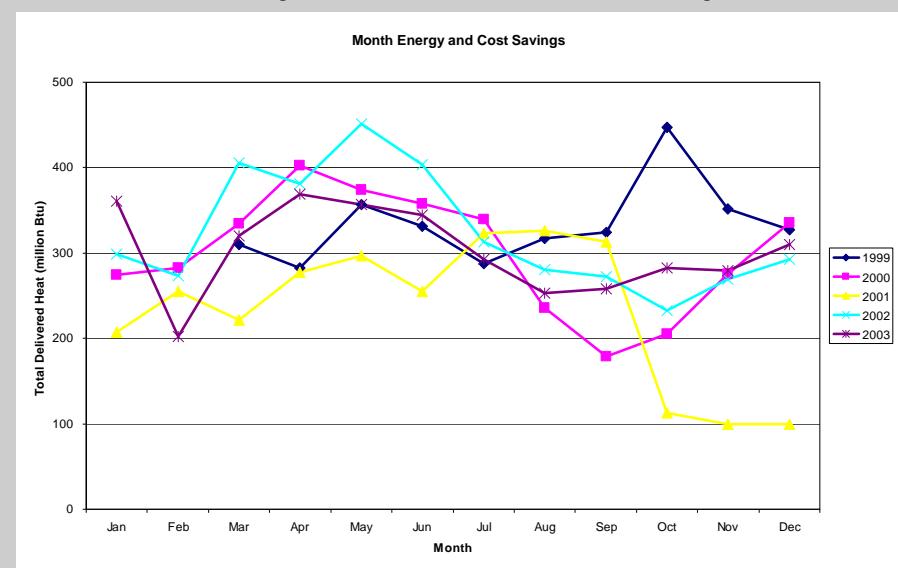


Reheats Recirculation Loop
360 Evacuated Heat-Pipe
Collector tubes, 54 m² gross
area, 36 m² net absorber
area
Cost \$58,000
Delivery of 143 million
Btu/year estimated
Installed 2004.



Case Studies - ESPC

Concentrating Solar Thermal (Industrial Process Heat) Federal Correctional Institution (Phoenix, AZ)



- 17,040 square feet of parabolic trough collectors
- 23,000 gallon storage tank
- Installed cost of \$650,000
- Delivered 1,161,803 kWh in 1999 (87.1% of the water heating load).
- Saved \$77,805 in 1999 Utility Costs



BOP Federal Correctional Institution Victorville, CA - ESPC

- Awarded 09/03
- Initial capital investment \$5.4M, 19 year term with NORESCO
 - Scope includes HVAC controls upgrade, 750KW wind turbine, and 74.5KW PV Carport
- First ESPC financed wind turbine
- SCE provided RE generation financial incentive \$4/W
- Escrow account for wind turbine maintenance





NREL Wood Fuel Heat Plant - ESPC

- 9 MMBtu/hr
- 62-75% of campus heat
- Heats major lab buildings
- Fuel from Front Range forest thinnings (USFS) and urban wood
- Biomass cost is \$29/ton (\$2.42/MMBtu vs. \$10.00 gas)
- 2,200 tonnes CO₂ reduction/year
- \$3 million cost
- 8 year simple payback
- Financed with ESPC





DOE Savannah River - ESPC

Project Data:

- New 20 MW woodwaste cogeneration plant & 2 heating plants using biomass from local area instead of coal and fuel oil, results in significant energy consumption and cost savings

Project Specifics:

- Signed 5/15/09
- Construction mobilization this September, completion in Dec 2011.
- 19 year contract, performance guaranteed by Ameresco (ESCO)
- O&M of plants by Ameresco (ESCO)
- Project fully satisfies DOE HQ initiatives for increased use of renewable energy sources and ESPC type contracts
- Green house Gas reduction of 100,000 tons annually
- Annual Savings of \$34 M project cost of \$183 M



Case Studies - UESC

PV/Propane Hybrid - Joshua Tree National Park



- 20.5 kW PV Array
- 613 kWh battery bank
- 35 kW propane generator
- \$273,000 cost financed by Southern California Edison under 15 year tariff



Case Studies - PPA

NREL – PV Plant

- 720 kW (1200 MWh) single-axis tracking, ~ 5 acres
- 20 year PPA contract (utilizing Western)
- 20 year easement
- RECs sold to Xcel Energy for RPS solar set-aside (20 year contract)
- PPA price equal to or less than utility electricity prices (based on EIA projections)
- Operational December 2008
- Additional PV projects in progress





Case Studies - PPA

GSA Sacramento PV Project

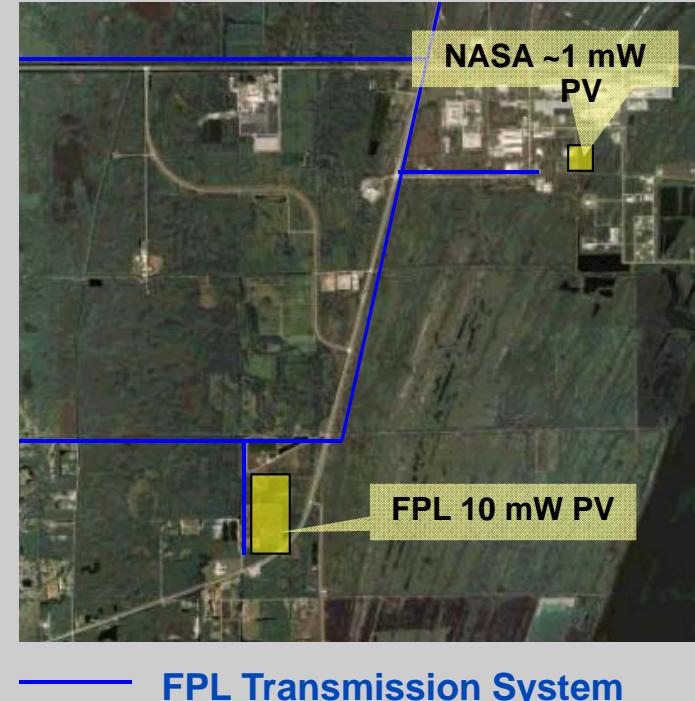
- .5 MW roof-top PV (thin film)
- 10-year contract
- Price matched to utility energy rate, with price floor
- Utility rebate and federal incentives (30% tax credit & accelerated depreciation) - pay for approximately 1/2 cost
- License for use of roof
- Renewable developer retains RECs
- Came on-line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





NASA KSC/FP&L – Solar EUL

- EUL signed June 2008
- Phase 1 involves 60 acres, potential phase 2 for additional 40 acres
- 10 MW FPL-owned PV project
 - Construction started, estimated completion date 3/10
 - Output feeds into FPL transmission system
 - Substation expansion required
- In-Kind Consideration - 990 kW NASA-owned PV
 - FPL construction, O&M
 - Construction started, estimated completion date 10/09
 - Output feeds into NASA-owned distribution system
- 130 mph wind standard
- Attend Project Financing Session 5 Tues 10:30-12:00
Kathy Salvador presentation for more information



— FPL Transmission System



RE PPA/USC Template Development

- American Clean Energy & Security Act
 - 20 - 30 Yr Federal Energy Purchase Authority
 - House approved 20, Senate proposes 30
- FEMP/FUPWG action to form Contracting & Legal Working Group to develop:
 - RE PPA template
 - Utility Renewable Electric Service Contract (URESC) template
 - Templates w/ common federal terms & conditions
 - Attend Energy Lawyers & Contracting Officers Working Group Session 7 – Tues 4-5pm



FEMP Contacts (ESPC/UESC/PPA)

Federal Financing Specialists (FFSs)

- **Scott Wolf** (MT, WY, UT, CO, NM, TX, LA, AL WA, OR, ID, CA, NV, AZ, HI, Pacific Islands)
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- **Doug Culbreth** (KY, AR, TN, NC, SC, MS, AL, GA, FL, PR, VI)
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- **Tom Hattery** (PA, NJ, WV, VA, MD, DE, DC, NY, NH, VT, ME, MA, CT, RI)
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- **Gordon Drawer** (ND, SD, NE, KS, MN, WI, IA, MO, IL, MI, IN, OH)
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FEMP Contacts

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UESC

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PPA

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- Chandra Shah, NREL
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Conclusions & Contact

- Growing RE Projects in Civilian Sector
- Legislation for 20-30 Year PPAs catalyst
- Use GSA PV Purchase if funds (ARRA?)

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