

## Quick Guide: Power Purchase Agreements

The U.S. Department of Energy (DOE) Federal Energy Management Program (FEMP) provides support and technical assistance to Federal agencies interested in power purchase agreements (PPAs) for on-site renewable energy projects.

The Energy Policy Act (EPAc) of 2005 requires no less than five percent of total agency electricity consumption to come from renewable energy in fiscal years (FY) 2010 through 2012, and no less than 7.5 percent thereafter. Renewable electricity generated on Federal agency land or buildings and used by that agency receives double credit toward this goal (see Section 3.4 of the FEMP Renewable Energy Requirements Guidance for EPAc 2005 and Executive Order 13423). In addition, Executive Order 13514 requires Federal agencies to inventory and reduce greenhouse gas (GHG) emissions.

On-site renewable energy generation projects can help Federal agencies meet Federal goals and requirements. PPAs are one method for implementing these projects.



View of the 500 kW PV system on the rooftop of the GSA Sacramento Federal Building.

*Photo by Dennis Schroeder, NREL/PIX 17396*



A PPA funded the photovoltaic system installed on the Research Support Facility at the National Renewable Energy Laboratory. *Photo by Dennis Schroeder, NREL/PIX 18824*

### Overview

Power purchase agreements allow Federal agencies to implement on-site renewable energy projects with no upfront capital costs. A developer installs a renewable energy system on Federal land or buildings. In exchange, the agency agrees to purchase the power generated by the system. These power purchase payments repay the developer over the contract term. The developer owns, operates, and maintains the system for the life of the contract.

PPAs were used to fund the following Federal on-site renewable energy projects:

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

The renewable energy certificates (RECs) from all of the projects (except U.S. Coast Guard Petaluma) were sold by the solar project owner to improve project cost effectiveness. If high-value RECs are sold from a PPA project, low cost national replacement RECs must be purchased for credit toward the Federal renewable energy goal and on-site project bonus. This is also known as a REC swap. However, when making claims about a project involving REC swapping or REC sales, an agency cannot claim to be using power generated by on-site solar, for example, if the RECs are sold or swapped for some other type of RECs, such as wind.

While these examples are all PV projects, PPAs can be implemented for projects using other renewable energy resources.

### FEMP Services

FEMP assists Federal agencies throughout the PPA evaluation and implementation process. Technical assistance and training opportunities is offered. Additional information is available at [www.femp.energy.gov/financing/power\\_purchase\\_agreements.html](http://www.femp.energy.gov/financing/power_purchase_agreements.html).

## Getting Started

The following questions can help Federal agencies determine if a PPA is right for their proposed project and to gather the necessary background information. This basic information should be collected prior to moving forward with a project. FEMP is available to assist with this initial evaluation and project implementation.

### Resources

Additional information is available at:

FEMP Website

[www.femp.energy.gov/financing/power\\_purchase\\_agreements.html](http://www.femp.energy.gov/financing/power_purchase_agreements.html)

Guide to Purchasing Green Power

[www.femp.energy.gov/pdfs/purchase\\_green\\_power.pdf](http://www.femp.energy.gov/pdfs/purchase_green_power.pdf)

FEMP Renewable Energy

Requirements Guidance for EPAct 2005 and Executive Order 13423

[www.femp.energy.gov/pdfs/epact05\\_fedrenewenergyguid.pdf](http://www.femp.energy.gov/pdfs/epact05_fedrenewenergyguid.pdf)

### Contacts

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### PPA Legality

- Are PPAs legal in your state or utility service territory? The Database of State Incentives for Renewables and Efficiency (DSIRE) provides PPA legality information by state at [www.dsireusa.org/documents/summary\\_maps/3rd\\_party\\_ppa\\_map.pptx](http://www.dsireusa.org/documents/summary_maps/3rd_party_ppa_map.pptx).

### Basic Project Information

- What is the proposed renewable energy project (type, location, size, estimated generation)?
- Do you have management approval for use of the land/roof?
- Where will the electricity be used? Will generation exceed load?

### Basic Site Information

- What goals do you want to accomplish with this on-site renewable energy project (Federal renewable energy and/or GHG emissions goals, electric rate cost stability, energy security, other)?
- What is your site's electricity use (annual usage, peak demand, and average demand)?
- What are your electricity costs (energy rate and demand charge)? Are rates differentiated (peak/non-peak or time-of-use)?

### Project Cost Effectiveness

- Has a renewable screening/assessment been performed recently at your site? Does the project have an acceptable levelized cost of energy range based on the assessment assumptions?
- What incentives are available (rebates, tax treatment, etc.)? DSIRE outlines incentive information at [www.dsireusa.org](http://www.dsireusa.org).
- Do you want to purchase the RECs along with the energy, or do you plan to purchase replacement RECs for credit toward the Federal renewable goal?

### Considerations

- Have you talked to your serving utility about this project? For example, what are the interconnection costs, time-lines, queues, and other related issues?
- Who owns the land and pays the utility bill? Have you discussed the project with them?
- Other important considerations include contract length, National Environmental Policy Act (NEPA) requirements, and land use agreements (leases, easements, etc.).



The U.S. Coast Guard Petaluma Site financed an 850 kW PV system through a PPA.

Photo by Dennis Schroeder, NREL/PIX 17395

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Renewable Energy

For additional information  
please contact:

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1-877-EERE-INFO (1-877-337-3463)  
[www.eere.energy.gov/informationcenter](http://www.eere.energy.gov/informationcenter)

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