

# Federal Energy Management Program



**FEMP Renewable Energy Program**

Anne Crawley

April 15, 2011

- **This presentation presents an overview of FEMP's Renewable Energy Program**, which helps agencies use renewable energy to enhance the nation's energy security and environmental stewardship , meet agency goals, and comply with Federal renewable requirements.
- It also presents a brief introduction to initiatives of DOE's EERE Renewable Programs
  - Solar
  - Wind
  - Biomass
  - Fuel Cell
  - Storage

# Federal Renewable Energy Requirements



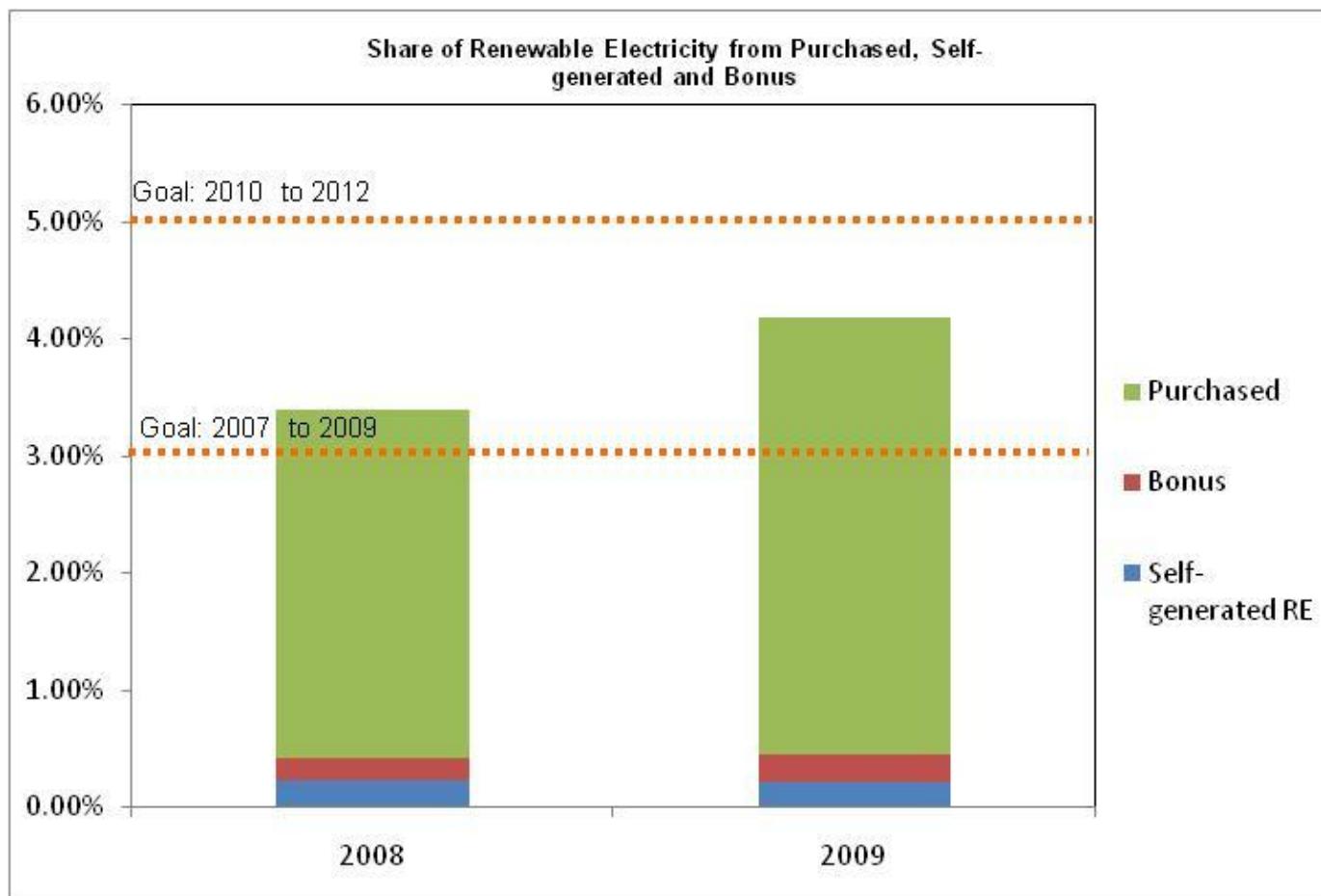
Energy Efficiency & Renewable Energy

Source of Requirement	Produce, Use, or Both	Level...	Applies to...
EPAct 2005 Federal Use Goal	Use, Electric	3% FY07-09 5% FY10-12 7.5% FY13...	All Agencies
Executive Order 13423	Use, All RE	½ of EPAct Federal Goal from “New” Sources	All Agencies
DoD National Defense Reauthorization Act of 2009	Produce or Use, All RE thermal or electric	25% of facility energy by 2025 (expanded from facility electricity in previous version)	DoD
EISA 2007 SWH Requirement	Use, Solar Water Heating	30% of hot water needs in new buildings/major renovations	All Agencies

# Federal Requirements Where RE Contributes

Source of Requirement	Produce, Use, or Both	Level...	Applies to...
EISA Sustainable Design Standards	Use, All RE	All new buildings, major renovations	All Agencies
EISA Fossil Fuel Reductions	Use, All RE	All new buildings major renovations	All Agencies
EO13514 Section 9	Use, All RE	Individual GHG agency goals	All Agencies

# Status of Federal Renewable Electricity Consumption



- **FEMP's Renewable Energy Program works to increase the proportion of renewable energy in the Federal government's energy mix so that agencies can enhance the nation's energy security and environmental stewardship and comply with Federal renewable requirements.**
- The Program does this by providing
  - Web-based Knowledge and Tools
  - Direct Project Technical Assistance
  - Interagency Coordination
  - Renewable Energy Guidance and Reporting Requirements

- Case Studies, Technology Descriptions, and Guides

- Training

- Provide energy managers with information, best practices, and lessons learned on a wide-range of renewable energy topics

- Resource and Screening Maps

- Allow energy managers to conduct their own prescreening by seeing what types of local renewable resources are available and how costs are impacted by resource and incentives

- Screening Software and Analysis Products

U.S. DEPARTMENT OF ENERGY Energy Efficiency & Renewable Energy

Federal Energy Management Program

HOME ABOUT THE PROGRAM PROGRAM AREAS LAWS & REGULATIONS INFORMATION RESOURCES FINANCING MECHANISMS TECHNOLOGIES SERVICES NEWS & EVENTS

EEIE • Federal Energy Management Program • Technologies

Energy-Efficient Products  
New & Emerging Technologies  
Renewable Energy  
Federal Requirements  
Renewable Resources & Technologies  
Project Planning & Implementation  
Resource Maps & Screening Tools  
Purchasing Renewable Power  
Case Studies  
Training  
Working Group  
Contacts  
Distributed Energy Resources/Combined Heat & Power

**Renewable Energy Resource Maps and Screening Tools**

Renewable energy resources are available across the U.S., but vary greatly depending on exact location and micro-climate. This page outlines renewable energy resource maps and screening tools to help Federal agencies assess the viability of on-site renewable energy projects. Before initiating a project, resources in your area must be measured and verified. Resource maps and screening tools are a good start, but it is important to consult an expert for a professional evaluation before implementing renewable energy projects.

**Resource Maps**

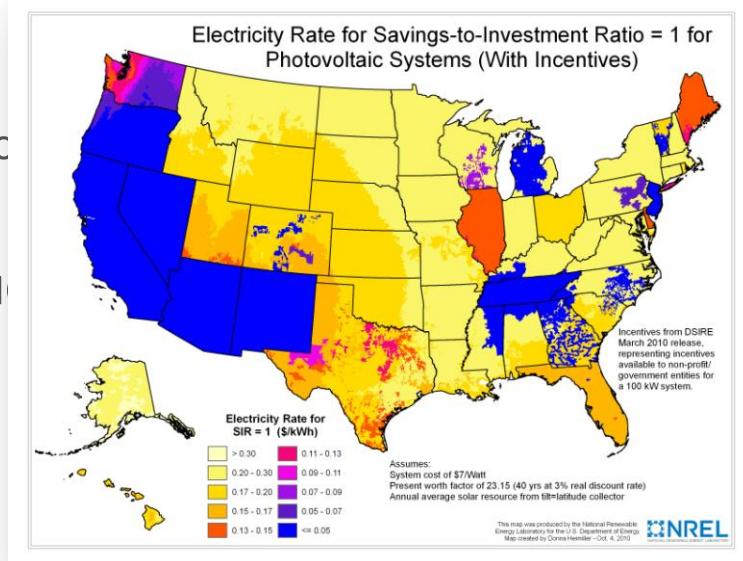
The Department of Energy (DOE) and its National Renewable Energy Laboratory (NREL) compiled the following renewable energy resource maps:

- **FEMP Renewable Energy Resource Maps** Various maps of availability and other data, such as savings to investment ratio (SIR) analysis, for renewable resources across the U.S.
- **Biomass Energy Hotspots and Resources** NREL-produced maps of typical biomass energy hotspots and available resources across the U.S.
- **Geothermal Energy Hotspots and Resources** NREL-produced maps of typical geothermal energy hotspots and available resources across the U.S.
- **Solar Energy Hotspots and Resources** NREL-produced maps of typical solar energy hotspots and available resources across the U.S.
- **Wind Energy Hotspots and Resources** NREL-produced maps of typical wind energy hotspots and available resources across the U.S.
- **Hydrogen Energy Hotspots and Resources** NREL-produced maps of typical hydrogen energy hotspots and available resources across the U.S.

**Screening Tools**

DOE and its national laboratories compiled the following renewable energy screening tools for Federal facility use:

- **Federal Renewable Energy Screening Assistant (FRESA)** A new, improved version of the Federal Renewable Energy Screening Assistant (FRESA) is currently under development. The new, Web-based version will better help users examine which renewable technologies are cost-effective at their site. Please check back for more information on its release, or contact [Alicen Kandt](mailto:alicen_kandt@nrel.gov) at [alicen\\_kandt@nrel.gov](mailto:alicen_kandt@nrel.gov).
- **HOMER**: A model for evaluating design options for both off-grid and grid-connected power systems for remote, standalone, and distributed



# Renewables Website

- Purpose: Primary way for energy managers to access and acquire knowledge on Federal renewable energy
- All Knowledge and Tools products including on-demand training are on the website
- [www.femp.energy.gov/technologies/renewable\\_energy.html](http://www.femp.energy.gov/technologies/renewable_energy.html)

U.S. DEPARTMENT OF ENERGY Energy Efficiency & Renewable Energy

EERE Home | Programs & Offices | Consumer Information

# Federal Energy Management Program

Federal Energy Management Program

SEARCH

HOME ABOUT THE PROGRAM PROGRAM AREAS LAWS & REGULATIONS INFORMATION RESOURCES FINANCING MECHANISMS TECHNOLOGIES SERVICES NEWS & EVENTS

EERE + Federal Energy Management Program + Technologies

36 Site Map | Accessible Version | SHARE

**Renewable Energy**

Renewable energy leveraged from natural, renewable resources delivers electricity, heating, cooling, and other applications to Federal facilities and fleets. By using renewable energy, Federal agencies increase national security, conserve natural resources, and meet regulatory requirements and goals.

The Energy Policy Act of 2005 requires the following amounts of total electricity consumed by the Federal Government to come from renewable energy:

- No less than 3% in fiscal years 2007-2009
- No less than 5% in fiscal years 2010-2012
- No less than 7.5% in fiscal year 2013 and thereafter

FEMP provides technical assistance and resources to help Federal agencies evaluate and implement renewable energy technologies. These activities span:

- **Federal Requirements** Current Federal renewable energy regulations, goals, and guidance documents to help Federal agencies understand and meet requirements.
- **Renewable Resources and Technologies** Introduction to renewable energy resources and technologies with a strong emphasis on Federal application opportunities.
- **Project Application** Overview of how Federal agencies can assess and implement renewable energy technologies to meet energy and regulatory requirements.
- **Resource Maps and Screening Tools** Collection of resource maps and assessment tools to help Federal agencies screen for potential renewable energy projects
- **Purchasing Renewable Power** Available options to purchase renewable power and renewable energy certificates (RECs) to meet energy regulatory requirements and goals.
- **Case Studies** Examples of renewable energy projects conducted by Federal agencies across wind, solar, geothermal, biomass, and other renewable sources
- **Training** On-demand training sessions covering Federal renewable energy requirements, technologies, and best practices.
- **Working Group** Forum for Federal agencies and the renewable energy industry to exchange information on existing and planned projects, lessons learned, project funding sources, and technologies available

**Renewable Energy Training**  
The FEMP Project Implementation: From RFP to Project Closeout webinar is now available on demand. Multiple on-demand renewable energy training opportunities are available.



U.S. DEPARTMENT OF ENERGY Energy Efficiency & Renewable Energy

Slide Title Duration Status

- FEDERAL ENERGY 00:34 ✓
- Course Overview 00:50 ✓
- FEMP Mission 00:17 ✓
- Acronyms 00:20 ✓
- The Nine Steps: 00:05 ✓
- The 9 Steps 01:12 ✓
- Planning Phase 00:12 ✓
- Implementation... 00:29
- Step 3: 00:19
- Step 3: Request... 00:59
- Assemble a Te... 01:24
- Consider and ... 00:26
- Consider and ... 03:00
- Consider and ... 00:34
- Develop a Soc... 01:26
- Performance S... 01:29
- Address Issue... 01:10

SEARCH Find 00:02 / 34:29 Minutes

## FEDERAL ENERGY MANAGEMENT PROGRAM



**Project Planning:**  
**From RFP to Project Closeout**  
February 2011

FEMP Federal Energy Management Program

- Identify Federal renewable energy project opportunities, develop projects to the point that they are taken over by the private sector or agencies, and ensure that on-site projects are performing as intended over their operational period.
  - FEMP can offer assistance with:
    - Identifying opportunities and assessing viability through prescreenings, screenings, and feasibility studies
    - Reviewing RFPs, proposals, contracts, and design
    - Helping perform acceptance testing and commissioning, O&M, and M&V procedures
- Starting to implement a renewables project stage-gate process to improve
  - the selection of requests for FEMP renewable energy project assistance
  - the project technical assistance work funded by FEMP

- Technical assistance (TA) provides the ground level feedback for technical information and training. Agencies want TA for renewable energy.
- Ft Bliss effort – supporting 2 consecutive Commanding General champions (MG Bromberg and MG Pittard) working to develop renewable energy to help power huge expansion of base under BRAC.
  - Developing models for large federal projects – resource assessment, master planning (land available is key), technical and economic feasibility studies, environmental assessment and planning (EA or EIS has large impact on project planning)

# Renewable Energy Certificates (RECs)

- Renewable Energy Certificates (RECs) , also referred to as Green Tags, Tradable Renewable Certificates, Green Energy Certificates/Credits, etc. A REC is a piece of paper that certifies that 1 MegaWatt hour of Renewable Energy has been produced in a particular year.
- US Renewable Energy operates in several markets: utility, compliance REC, voluntary RECs, on site distributed projects with no REC market interaction.
- The Federal Government currently is a medium player in a fast growing market for RECs, which have emerged as a clear market mechanism to support Renewable Energy Projects.
- Nation's top Renewable Energy purchaser (Intel) purchases more than 8 times the largest Federal purchaser (EPA).

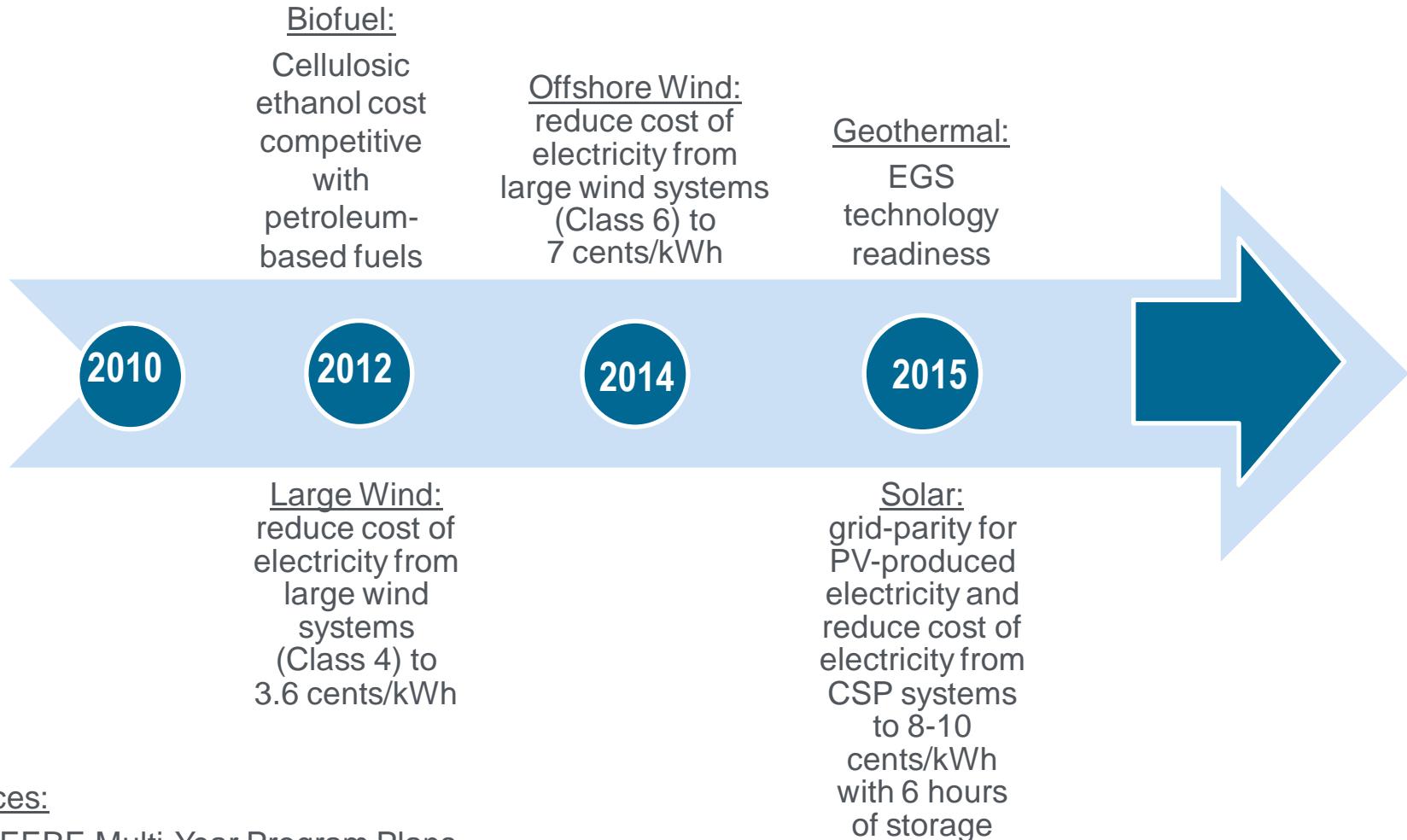
# Renewable Energy Certificates (RECs) (2)

- A renewable energy project produces two distinct products that can be unbundled and sold separately:
  - Generic electricity (sold into the local grid)
  - RECs (the environmental attributes of energy generated from renewable electric plants)
- Renewable Energy Markets in the US include 2 types of RECs
  - Compliance RECs, for compliance with State Renewable Portfolio Standards
  - Voluntary RECs which are sold by RE projects and bought by companies, agencies and others who want to support Renewable Energy and make a claim for goals or marketing.
- When unbundled from energy, no renewable energy is physically delivered to the REC purchaser; only the claim to the environmental attribute is acquired.
  - In this situation, RECs are purchased *in addition to* electricity.
- An agency must have RECs for RE claimed toward goals.

# EERE Renewable MYP Summary

U.S. DEPARTMENT OF  
**ENERGY**

Energy Efficiency &  
Renewable Energy



## Sources:

DOE EERE Multi-Year Program Plans

- General – address cost issues through R&D
  - Focus on utility scale projects to get economies of scale
  - Many Federal projects (even large by Federal standards) are not large enough to be compatible with research agendas
- Solar
- Wind

- Biomass
- Fuel Cells
- Storage

**Anne Sprunt Crawley**  
Renewable Technology Manager  
202-586-1505  
[Anne.Crawley@ee.doe.gov](mailto:Anne.Crawley@ee.doe.gov)

**Boyan Kovacic**  
202-586-4272  
[boyan.kovacic@ee.doe.gov](mailto:boyan.kovacic@ee.doe.gov)

[http://www1.eere.energy.gov/femp/technologies/renewable\\_energy.html](http://www1.eere.energy.gov/femp/technologies/renewable_energy.html)

# Procuring Solar Energy: A Guide for Federal Facility Decision Makers

- **Objective:**

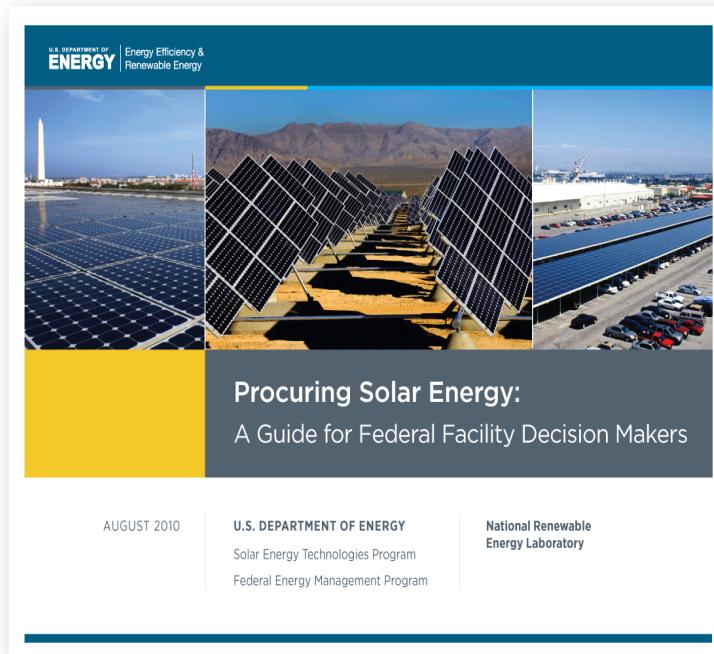
- To directly assist federal agencies in order to meet their sustainability goals through the successful installation of solar.
- Supply detailed information and examples that demonstrate the methods utilized by federal agencies to successfully procure solar energy and share lessons learned from those experiences.

- **Audience:**

- Hands-on use by federal facility managers, procurement officers, and project managers.

- **Available Oct 2010:**

- [http://www1.eere.energy.gov/solar/federal\\_guide/](http://www1.eere.energy.gov/solar/federal_guide/)
- Webinar held December 1, 2010



# Overall Solar Project Process

## PART I: PLANNING

DIRECTION »

STAFFING »

SITE EVALUATION »

CONSIDERATIONS »

FINANCING »

## PART II: EXECUTION

IMPLEMENTATION »

Identify Needs and Goals

Assemble an On-site Team

Evaluate Candidate Solar Energy Sites

Consider these Requirements and Recommendations

Make a Financing and Contracting Decision

Implement Financing/Contracting Process

### 1 Identify Needs & Goals

### 2 Assemble Your On-site Team

### 3 Evaluate Solar Screening

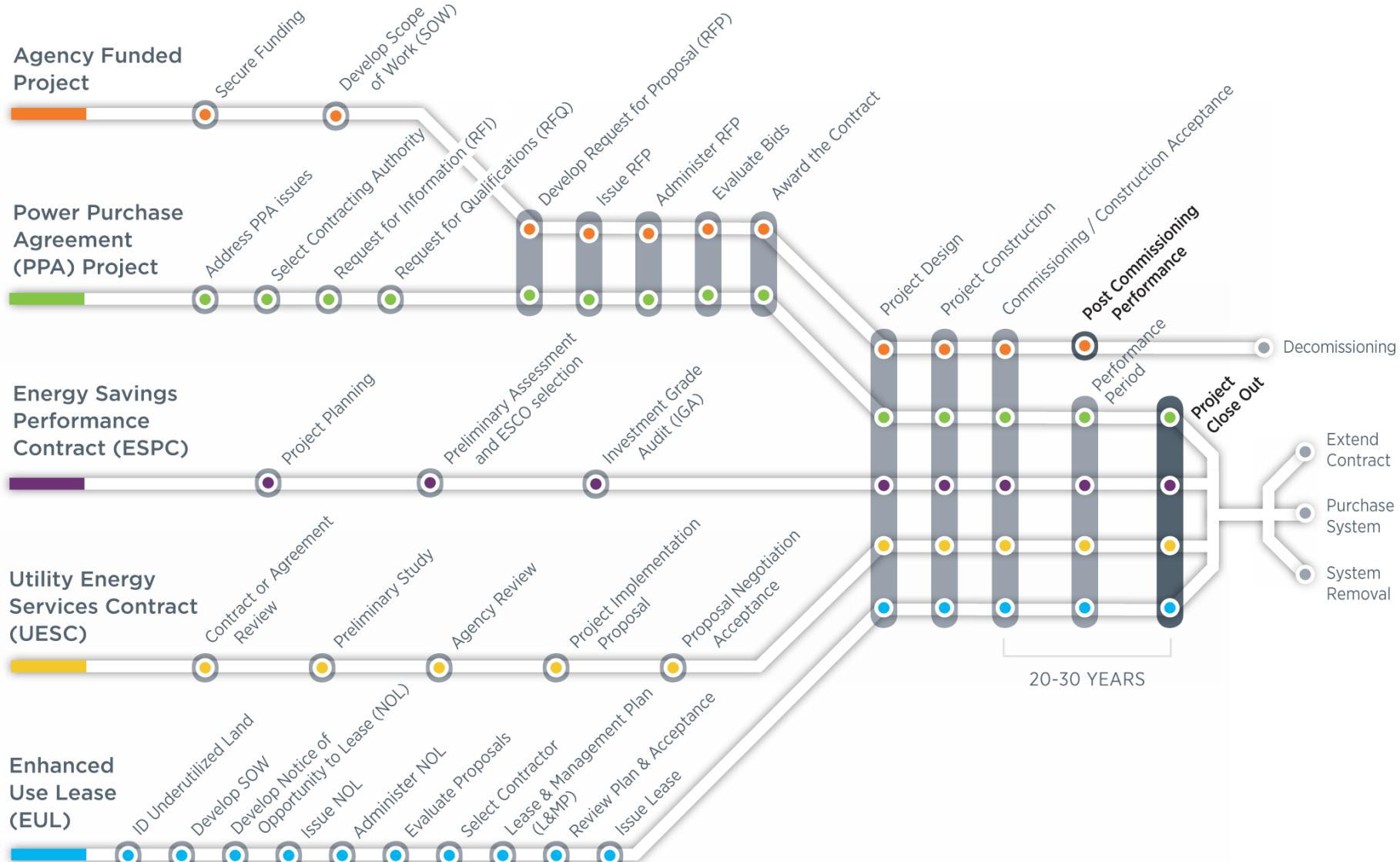
### 4 General Project Considerations

### 5 Select Financing/Contracting Option

### 6 Execute Selected Financing/Contracting Process

- Agency Funded Project
- Power Purchase Agreement (PPA) Project
- Energy Savings Performance Contract (ESPC)
- Utility Energy Services Contract (UESC)
- Enhanced Use Lease (EUL)

# Part II. Execute a Solar Project



- Statutory renewable energy goals under EPACT 2005 Section 203 are:
  - 3% of electric energy by 2007
  - 5% of electric energy by 2010
  - 7.5% of electric energy by 2013
- Bonus Provision
  - Doubled if produced on Federal or Indian land and used by Federal agency
- Under EO 13423:
  - At least half of the statutorily required renewable energy consumed comes from new renewable sources
  - New means renewable sources placed into service after January 1, 1999
  - Thermal can count toward new requirement under EO 13423
  - Information at: <http://www.ofee.gov/whats/e013423.pdf>

- Fossil fuel energy consumption reductions for new construction (EISA 2007, Section 433)
  - 55% (2010),
  - 65% (2015),
  - 80% (2020),
  - 90% (2025),
  - 100% (2030)
- Requirement of 30% of the hot water demand in new Federal buildings (and major renovations) be met with solar hot water equipment provided it is life-cycle cost-effective (EISA 2007, Section 523)
- Net Zero Energy Buildings (EO 13514 Section 2 (g))
  - Implement high performance sustainable building design
  - (i) beginning in 2020 and thereafter, ensuring that all new buildings that enter the planning process are designed to achieve zero-net-energy by 2030.