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Strategies for Implementing Renewable Projects with Utilities
US Fish & Wildlife Service (Patuxent Refuge) UESC Photovoltaic Project

Hosted by:

FEMP
Federal Energy Management Program

PSE
Puget Sound Energy
Constellation Background

- Constellation is an Energy Service Company (ESCO) and Exelon Company (a utility holding group).
- Pepco Energy Services became part of Constellation ESCO.
- The US Fish & Wildlife Service (USFWS) Utility Energy Service Contract (UESC) project was done through PEPCO and Pepco Energy Services, mostly prior to the merger.
USFWS Background

• USFWS mission is to “. . . to conserve, protect, and enhance fish, wildlife, plants and their habitats for the continuing benefit of the American people.”

• USFWS is part of the US Department of the Interior.

• **Very strong environmental protection and natural resource conservation focus.**
USFWS Patuxent Research Refuge

• Located near Laurel, MD, only National Wildlife Refuge in the United States established to support wildlife research.

• Over 12,800 acres divided into three tracts.

• Research, wildlife viewing, environmental and hunting activities.

• Total of 75 buildings most of which are well below 5,000 sq ft. with diverse uses such as laboratories, offices, warming huts, and residential facilities (for visiting researchers).
Patuxent Visitors Center Overview

- 38,000 square feet, features an interpretive museum, classroom, and offices.
- Located at 10901 Scarlet Tanager Loop, Laurel, MD, and open six days a week 9:00am to 4:30pm
- Often accommodates school and other large visitor groups of 50+ people at a time.
- USFWS aiming for Visitors Center to be Net Zero.
- Prior (HVAC, mechanical) UESC project completed by Pepco Energy.
USFWS Solicitation

- USFWS utilized UESC Areawide contracting vehicle to facilitate fast, efficient, and productive photovoltaic installation.
- ESCO performed a Preliminary Assessment, results helped USFWS develop project solicitation -- determined rooftop and carport installations would maximize solar capacity.
- PV array needed to have adequate payback, but environmental benefits of solar installation very important to agency.
- New ENERGY STAR qualified roof an additional energy conservation measures (ECM).
Pepco Energy (now Constellation) Response

- PEPCO was the utility prime contractor on the project, Pepco Energy Services was PEPCO’s facilitator for the UESC.
- ESCO was required and did submit two separate proposals: Technical Qualifications and Pricing.
- Development of response required multiple site visits by ESCO’s engineering, construction, and M&V personnel as well as a solar developer and roofing subcontractors.
- ESCO response included 179.3 kW (DC) on rooftop, 71.3 kW (DC) on parking canopy, and ENERGY STAR qualified roof (note: installing new roof at time of solar installation is a great idea), and EV charging station.
- ESCO submitted response in February 2015 to USFWS Contracting Office located in Hadley, MA.
- USFWS awarded project to PEPCO in March 2015.
Equipment

Suniva 330W DC (330-72-4-100-B) Modules, 16.53% efficiency

Solectria 15.5kW, 19 kW, and 27 kW AC inverters (PVI 23TL, PVI 28TL, and PVI 36TL)

EcoFoot2 ballasted racking

Charge Point (CT4000) Standard EV charging station
Project Economics

• This was a small project (243 kW, as built), under $1.5M.
• ESCO offered to facilitate project financing, but USFWS wanted to use only appropriated funds.
• Maryland Solar Renewable Energy Credits (SRECs) could have been sold (ESCO recommended sale of 10-year, pre-paid strip), but USFWS wanted to keep SRECs to further the agency’s environmental mission.
• Tax advantages of a solar project not available to government agency.
  – NO Investment Tax Credit (ITC, 30% of total cost of project) and
  – NO bonus depreciation (about 10% of project cost)
• With no monetization of tax benefits or sale of SRECs, payback for project is 19 years.
Solar Carport with EV Chargers
Total Project

Parking Lot Solar Canopy
71 kW (DC)

Rooftop
172 kW (DC)

Projected Annual Energy Generation: 170,708 kWh

Verified Annual Potential: 211,645 kWh (excess of 40,937 kWh)
Important Considerations

• USFWS Patuxent photovoltaic project a tremendous success, allowed agency to fulfill renewable goals.
• UESCs can facilitate fast results
• Solar (and all renewable) installations relatively easy from a payback and cash flow perspective with appropriated funds.
• This kind of project **CANNOT** be a model for larger photovoltaic installations on federal facilities -- tax benefits cannot be monetized when government owns the system, paybacks too long!
• Power Purchase Agreements (PPAs) a **MUST** in federal marketplace to monetize tax benefits (ITC and bonus/MACRS depreciation) and pass on affordable renewable energy to agencies.
• Government agencies and ESCOs alike need embedded PPA in Energy Savings Performance Contracts (ESPCs) and Utility Energy Service Contracts (UESCs).
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