



United States Department of Agriculture

# FED GREEN CHALLENGE

## WEBINAR –

# Green Energy Can Save

USFS R5 Regional Office

Carport Mounted Solar Photovoltaic (PV)  
System

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Forest  
Service

Pacific Southwest  
Region

# Forest Service Goals

- In 2012, the Pacific Southwest Region (Region 5 or R5) desired a Photovoltaic System(s) with potential roof, carport, and/or ground solar arrays for its Main Regional Office Building on Mare Island, California.
- Region 5 *did* have a preference for a carport-mounted Solar Photovoltaic System, which is one of the fastest growing trends in the Photovoltaic market.
- And, with the carport-mounted PV System, the addition of about fourteen (14) electric vehicle charging stations was wanted, too. (We now have two, dual charging stations).
- Aiming for “energy net zero.”

# Background

- Our Solar PV System is a part of the *Federal Aggregated Solar Procurement Pilot (FASPP)* which was selected in 2013 as a segment of The White House GreenGov Spotlight Communities Program. This initiative was under the purview of the Federal Environmental Executive, Office of the Federal Environmental Executive, Council on Environmental Quality (CEQ), Executive Office of the President.
- CEQ now refers to this project as “the *California Solar Challenge*,” as opposed to the “Capital Solar Challenge” launched in 2014 by The White House.

**This was the first *ever* Federal Multi-Agency Partnership to purchase solar power.**

# Background (continues)

- In addition to the U.S. General Services Administration (GSA), this Solar Procurement not only includes the Forest Service, but is also comprised of other Federal organizations such as the U.S. Environmental Protection Agency (EPA), and the U.S. Department of Energy (DOE) Federal Energy Management Program (FEMP), as well as two DOE National Laboratories—Lawrence Berkeley National Laboratory and the National Renewable Energy Laboratory (similar to a consortium). The U.S. Coast Guard was formerly a part of this effort, too.



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# Background (cont'd) - EPA, FS, GSA, DOE, LBL



Forest Service

Pacific Southwest Region



# FASPP Site Summary

Location:	System Design Size	Annual Generation	Type of System	Designed for Net Zero?	EV Charger Ready?	Battery?
Reno, NV	<b>385.92 KW</b>	614,678 kWh	Carport	Yes	Yes	No
Carson City, NV	<b>249.48 KW</b>	394,312 kWh	Carport	Yes	Yes	No
Sacramento, CA	<b>1603.8 KW</b>	2,645,841 kWh	Carport	Yes	Yes	No
<b>Vallejo, CA</b>	<b>791.6 KW</b>	<b>1,189,623 kWh</b>	<b>Carport</b>	<b>Yes</b>	<b>Yes</b>	<b>No</b>
San Bruno, CA	<b>618.03 KW</b>	925,125 kWh	Rooftop	Yes	No	Yes
Menlo Park, CA	<b>725.16 KW</b>	1,129,602 kWh	Carport & Rooftop	Yes	Yes	Yes
San Jose, CA	<b>136.08 KW</b>	201,306 kWh	Rooftop	No	No	No

# Procurement – Site Considerations



Mare Island is a peninsula alongside the city of Vallejo, California, about thirty-five (35) miles Northeast of San Francisco. For over a century, Mare Island hosted the U.S. Navy's Mare Island Naval Shipyard. Then, in 1993, Congress approved the findings of the Base Realignment and Closure Report, leading to the closure of this Shipyard.

# Procurement – The Site (continued)



Mare Island Entrance - 2011

- Consequently, the successful contract/agreement awardee encountered antiquated buildings and roadways crisscrossed with train tracks, as well as newly developed housing, on Mare Island.
- Also, this meant that additional contractor coordination of shipping or trucking for deliveries to this Mare Island location was required. Older, narrow roads posed obstacles for loads with non-traditional widths, shapes, or sizes.
- There is a slightly steep hill leading up to the Regional Office, too.



# Procurement – The Site (continued)

- Additionally, the Regional Office has a Receiving /Shipping Area with a small loading bay and limited forklift equipment.
- Moreover, some contractor work was impacted by wildlife (e.g., large, wild turkeys and rabbits) crossing the roads, the fields, or the Regional Office Main Parking Lot. (Later, a bird even built a nest on the underside of the PV System).
- Further, the Regional Office is situated near a private University, Touro University, so the contractor needed to watch for University student and personnel traffic during commute hours.

# Procurement – The Site (continued)

- **The Main Building.** The Pacific Southwest Regional Office is a four story, Government-owned building of approximately 122,300 gross square feet. Originally built and previously owned and operated by the U.S. Navy, the building is divided into a North Wing and a South Wing. The South Wing was constructed in 1976 and the North Wing was constructed in 1984.
- However, it had undergone many renovations to reach its current state, most notably a major renovation in 1999. Some of the building systems had largely been untouched since that date and were not performing, optimally.
- The Building hosts approximately 285 employees, although building capacity would allow for approximately 450 occupants. This facility is primarily devoted to the administrative management functions for the Pacific Southwest Region.

# Procurement – The Site (continued)

- **Storage Building.** Also, there is a smaller building often referred to as the “Annex” building, located adjacent to the Main Parking Lot.
- **Main Parking Lot.** With a potential car-port solar array coming to the Regional Office, the status of the Main Parking Lot became of most importance. The Forest Service inherited the Parking Lot and adjacent asphalted areas from the U.S. Navy. For the past fifteen (15) years, no work had been done to upgrade the Parking Lot areas around the Regional Office. Consequently, the asphalted areas had fallen into disrepair, and the overall design of the Lot did not meet the most recent Building Code for space and safety.
- So, it was hoped by the Forest Service that the design-build of a Solar PV System, if carport-mounted, would not only provide cheaper electricity, but solve other issues, as well, since the Parking Lot would be re-paved.

# Procurement – The Site (continued)

## Main Parking Lot, before PV System



# Procurement – The Plan

- **Contract Vehicle.** Originally, the contracting vehicle for this endeavor was an Energy Savings Performance Contract (ESPC). However, GSA, Public Buildings Service, Pacific Rim (Region Nine or 9), believed that a Power Purchase Agreement (PPA) would be less expensive to the Federal Agencies involved.
- Therefore, GSA anticipated awarding a Firm Fixed-Price (FFP), Power Purchase Agreement to a single contractor, in the 2013-2014 timeframe. (Although, the contract was actually awarded in December 2015)
- GSA would enter the PPA on behalf of the U.S. Forest Service Region 5 Regional Office, and for eight (8) other Federal Buildings owned by GSA in Northern California, as well as in Reno and Carson City, Nevada.

# Procurement – Source Selection

- This was a Best Value/Tradeoff Source Selection.
- It was a Full and Open Competition Solicitation.
- Advertised on the Federal Business Opportunities (FedBizOpps or FBO) website.
- Held Industry & Small Business Conferences and Site Visits for Interested Vendors.
- There were 13 Amendments to the Solicitation (not recommended).
- Had Source Selection Evaluation Board (SSEB).

# Procurement – Contract Vehicle - PPA

- What is a Power Purchase Agreement?* In this instance, a **Power Purchase Agreement (PPA)** is a contractual arrangement between two parties, one who furnishes electricity (the seller) and one who is looking to purchase electricity (the buyer). The seller or solar service provider designs, constructs, finances, operates, and maintains the photovoltaic (PV) system and a customer or buyer (such as the Forest Service) agrees to host the system on its roof or elsewhere on its property.



## Procurement – Contract Vehicle – PPA (cont'd)

- The host customer purchases the system's electric output from the solar provider for a predetermined price and time period. This arrangement allows the host customer to receive stable, lower-cost electricity, while the solar services provider acquires valuable benefits.
- These benefits can include financial incentives (e.g., renewable energy and energy efficiency tax credits) and/or revenue generated from the sale of electricity to the host customer.



# Procurement – Agreement Term

- Performance Period.** GSA can contract for utility services for periods not exceeding ten (10) years, as cited in Federal Acquisition Regulation (FAR) Subpart 41.103, “Statutory and Delegated Authority.” The term of this particular PPA is ten (10) years, with one Option Period of ten (10) years for a total term of twenty (20) years.
- (Like some Agencies, the Forest Service does not have the authority to enter into long-term utility agreements or contracts, so it must rely on GSA contracts).

# Procurement – Agreement Term (cont'd)

- **Performance Period** (continued). However, the Forest Service did reserve the right to reduce the length of this contractual arrangement by “buying down” the contract products/services for its facility, only, if viable. This may shortened the performance period for the Forest Service.
- Additionally, during the term of the PPA, the Forest Service may purchase the Solar Photovoltaic System outright for a negotiated fair market value, and obtain title.

# Procurement – Contract/Agreement Award

- On 11 December 2015, GSA competitively awarded a Firm Fixed-Price (FFP) Power Purchase Agreement (PPA) to a single contractor, SolarCity (now Tesla) of San Mateo, California. GSA entered into this PPA on behalf of the U.S. Forest Service Region 5 Regional Office, as well as for eight (8) other Federal Buildings owned by GSA in Northern California, as well as in Reno and Carson City, Nevada. This brought the total to nine (9). *(But, currently, there are only seven (7) locations because San Francisco & Santa Rosa sites were eliminated for various administrative or technical reasons).*

**This was the *first ever* Third-party financed Civilian Multi-Agency PPA.**

# Expected Benefits

The Carport-Mounted Solar PV System size is 791.6 kilowatts (kW). Commercial Operation Date (COD)—first day of production or when billing started—was 2 April 2018:

- ❑ Annual kilowatt-hour (kWh), first year—1,189,623 kWh.
- ❑ Total Lifetime Production—33,161,988 kWh.
- ❑ Total pounds  $CO_2$  avoided over PPA lifetime—30,934,170 lbs.
- ❑ Number of homes powered for one year based on first year of production—98.40 homes.
- ❑ Number of homes powered based on PPA lifetime production—2,952 homes.
- ❑ **Total Trees Equivalent over PPA lifetime—359,778 trees.**

# Expected Benefits (continued)

- Power Purchase Agreement (PPA) required No Upfront Capital, so Forest Service can save Facility funds for other projects.
- Under this PPA, each kWh produced by the System will be billed to the Forest Service at \$0.114 kWh. The current Regional Office utility service provider's utility billing rate is approximately \$0.2307 kWh. So, there will be *savings*.
- The utility's Interconnection Exported Renewable Energy Agreement provides for credit when Forest Service delivers available energy to utility service provider/grid, at \$0.062 kWh (wholesale).

# Other Benefits

- Moves Regional Office Towards Net-Zero Consumption and Achieving the Goals set forth in Executive Order 13834, “Efficient Federal Operations.”
- Established Standardized Parking Layout—and More Spaces.
- Added Covered Parking for both Government Fleet and Employee Personal Vehicles.
- Design Provides for fourteen (14) Electric Vehicle Charging Stations for Government Fleet—and Employee Vehicles. (We have two dual Charging Stations, now).
- New Fencing built.
- Regional Office can guide other Federal sites with Solar PVs.

# What Worked Well...

- DOE/FEMP (e.g., Chandra Shah, Dr. Andy Walker, Otto VanGeet, Gerald Robinson, etc.) and EPA (Ray Saracino, Ben Machol) provided Excellent Assistance!
- Forest Service stored Solicitation information (utility data, building drawings, roof warranty specification, etc.) for secured access by Offerors on CloudVault (similar to Google Drive);
- Partnerships with other Agencies were created (e.g., U.S. Army allowed us to park our vehicles on its Mare Island Site during construction of Solar PV System and re-surface of Main Parking Lot).

# Lessons Learned

- Take Care with the choice of Contract or Agreement type. For example an Energy Savings Performance Contract (ESPC) may be better than a Power Purchase Agreement (PPA) at your site.
- Look for ways to aggregate nearby Agency (or other Government Agency) sites under one ESPC, PPA and/or Utility Agreement.
- Include Site Logistic Considerations in Solicitation.
- ALWAYS Include Solar PV Performance in Solicitation/Contract.
- Review—ahead of time—the Utility Service Provider's Interconnection and Net Metering Agreement for specific PV System requirements, such as a 10-year Warranty on Solar Panels. Design, Materials, and Construction specifications may be cited in this Agreement, too. Delete any Liability and/or Indemnification clauses from Utility Agreement, prior to signing.



# Lessons Learned (continued)

- Read the Utility Service Provider’s Tariff (Rate Schedules) to ensure that the Agency will receive utility bill credit for any energy it puts back into the Electrical Grid.
- Make Sure that if an Offeror identifies Proprietary Data in its Proposal (usually via a “legend” at the bottom of the Proposal pages), that all Proposal Copies are controlled (locked-up and accounted).
- Watch the Market for such actions as when one of the largest Solar manufacturers (Suniva) filed for Chapter 11 Bankruptcy protection and also filed other petitions with the U.S. International Trade Commission. This impacted the solar panel industry.

# Lessons Learned (continued)

- Take Note of Any Recalls—Eaton just had one for PV Safety Switches\*

http://dcl-msha-peir-mshagov-prod.s3.amazonaws.com/CDPA%2030.60A%20Safety%20Issue.pdf

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prefixes. Potentially affected switches can be identified using the information identified in Figures 1 and 2.

You are receiving this notification because Eaton's records indicate you received an Eaton 30A or 60A Heavy Duty Safety Switch manufactured within the above stated date range. If you are not the end customer for this product and you have subsequently shipped this product to a third-party, please forward this notice to the end customer/third-party. Electronic copies of this notice that may be downloaded and forwarded are available at [www.eaton.com/hdss-advisorybulletin](http://www.eaton.com/hdss-advisorybulletin).

**Figure 1. Location of catalog number and date code.**

Catalog Number and Manufacturing Date can be identified on the shipping label as shown above

Catalog Number and Manufacturing Date can be identified on the unit publication inside the switch

**Figure 2. Identification of Conforming Switches.** If any of the yellow markings as indicated below are present on your product, no return or repair is required. Switches containing this yellow marking have been verified to be conforming and re...

\*26 models of safety switches that may transport power when the handle is in the “off” position.

# Lessons Learned (continued)

- If a Carport-Mounted Solar System, include Electric Vehicle Charging Stations or Charger-Ready ports, if possible.
- Have Great, Dedicated Contracting Officer's Representatives (CORS)/Engineers, because the Contractor may have less-than-ideal Construction/Project Management.
- Make Sure that Contractor's Drawings Meet Industry Standards.
- Have Comprehensive Underground Surveys, performed—to avoid "hidden" utilities.
- Require installers to be factory-certified.
- Ensure that the Solar Panels, as well as ancillary equipment, to be installed by the Contractor, are Trade Agreement Act-compliant, if that is what is required in the Solicitation/Contract.

## Lessons Learned (continued)

- May Have to Fund and Install more Equipment, Fencing, etc., to mitigate wildlife (pigeon, wild turkey, etc.) interference with solar panels.
- Make Sure that the Contractor looks for opportunities to recycle old fencing, equipment, etc., as appropriate.

### Communication is The Key:

- Have an Employee and Stakeholder Communication Plan. Update Often.
- Be prepared for Biweekly Meetings with your Contracting Officer's Representatives (CORs), Engineers, Contractor, Lower-Tier Subcontractors, etc.



# Questions & Contact Information

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