

Opportunities for Solar Installations at City Facilities

Overview

The City of Rockville's adopted FY 2014 budget for electricity is **\$2,431,950** – approximately **2%** of the City's total operating budget (\$112 million). Electricity plays a critical role in operations and services and is a significant annual cost; therefore, the City considers various strategies for cost control, reliability and sustainability. The City recently coordinated with the U.S. Environmental Protection Agency (EPA) to assess the feasibility of installing solar electric (photovoltaic) systems at City facilities and four sites were identified as good candidates. The City has an opportunity to collaborate with Montgomery County and other regional partners on a collaborative Request for Proposals (RFP) for solar installations. Solar collaborative procurement has the potential to:

- Stabilize and reduce the City's long-term electricity costs;
- Generate renewable energy for use at City facilities; and
- Support the goals outlined in the *Strategy for a Sustainable Rockville* and the Maryland Smart Energy Communities grant program.

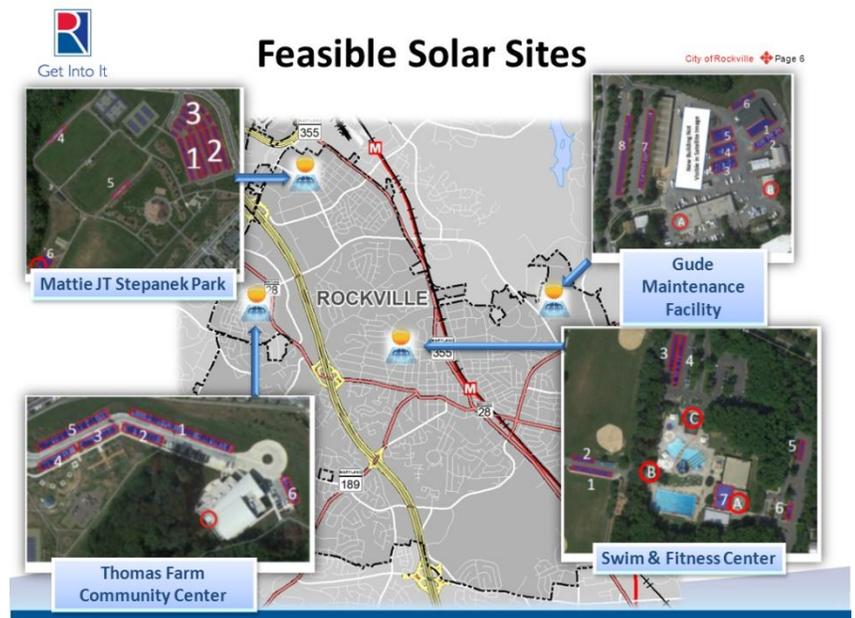
Solar Feasibility Study Recommendations

EPA has coordinated with over 20 agencies in the D.C. region to conduct solar feasibility assessments and provide a collaborative platform to procure clean energy installations. According to an EPA-funded study, solar installations are currently feasible at the following four City facilities:

1. Gude Maintenance Facility
2. Swim and Fitness Center
3. Thomas Farm Community Center
4. Mattie Stepanek Park

Under a solar power purchase agreement (SPPA), installations at these four sites are projected to yield:

- 1.16 megawatts (MW) of solar capacity;
- 1.25 million kWh of solar power generated per year;
- \$151,497 in electricity costs avoided in the first year; and
- A net present value of \$1,469,448 in operational cost savings over a 25 year period.



At each of these facilities, solar roof mount installations were limited due to roof age, size, orientation and structural conditions. Therefore, the solar consultant recommended installing solar canopies over existing parking spaces to generate electricity without sacrificing valuable real estate, parking and open space. As illustrated in the examples below, solar canopies provide shade and covered parking, are available in a variety of layout and size configurations, and can significantly increase overall energy production.

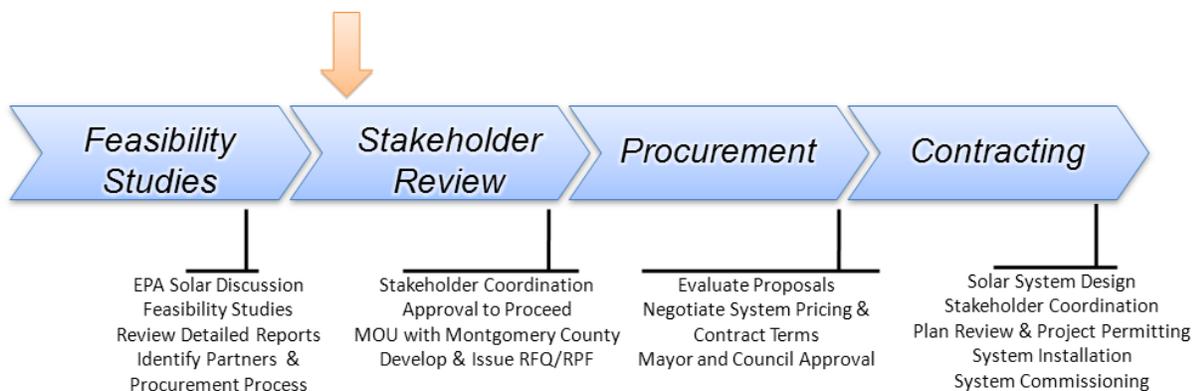


Examples of solar canopies over existing parking to maximize on-site power production.

Solar Power Purchase Agreement (SPPA)

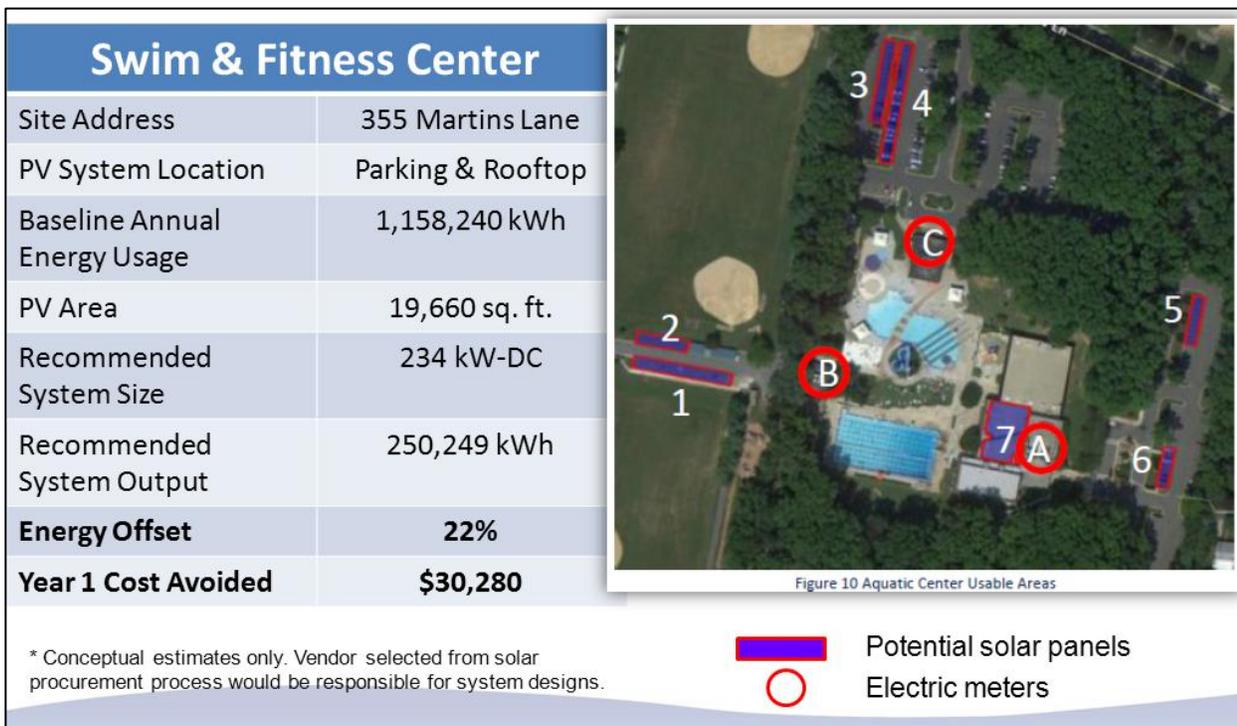
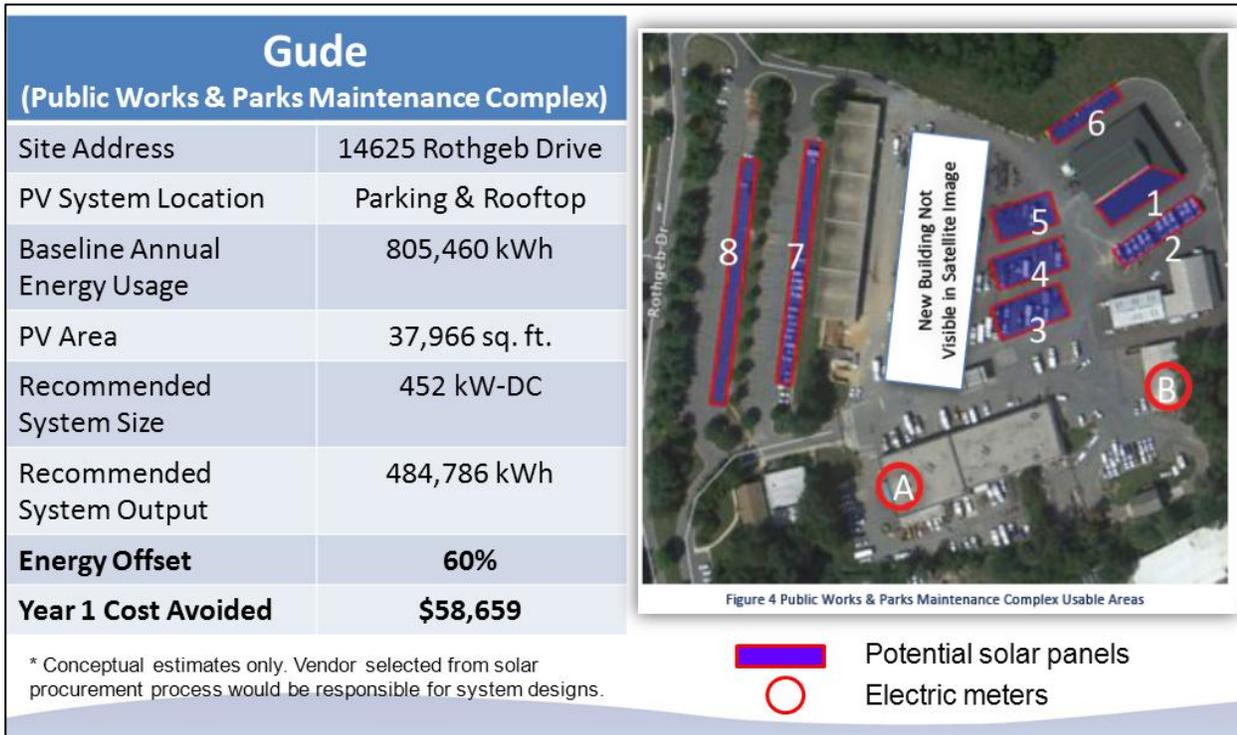
The City can avoid the high up-front capital costs of installing solar by using a solar power purchase agreement (SPPA). Through a negotiated contract, a third party developer pays to purchase, finance, install, operate and maintain the solar electric system on the City’s building or land. The third party owns the system and is able to take advantage of tax incentives, rebates and renewable energy certificates (RECs) to reduce the price of electricity. In exchange, the City agrees to purchase the electricity generated by the solar system for the duration of the contract term (6-25 years). The objective is to purchase the solar generated electricity at a price that is less than the local electric utility’s rate. SPPAs are currently utilized by several local entities; including the State of Maryland, Montgomery County Public Schools and Division of Solid Waste Services, Washington Suburban Sanitary Commission, Takoma Park and the Town of Poolesville.

Potential Process



City of Rockville Potential Solar Locations

Site aerials with the locations of potential solar canopies over parking lots and roof installations highlighted in red and blue. Circles represent the location(s) of existing electric meters.



City of Rockville Potential Solar Locations (continued)

Site aerials with the locations of potential solar canopies over parking lots and roof installations highlighted in red and blue. Circles represent existing electric meters.

Thomas Farm Community Center	
Site Address	700 Fallsgrove Drive
PV System Location	Parking
Baseline Annual Energy Usage	396,900 kWh
PV Area	17,557 sq. ft.
Recommended System Size	237 kW-DC
Recommended System Output	257,012 kWh
Energy Offset	65%
Year 1 Cost Avoided	\$31,098




Figure 1 Thomas Farm Community Center Usable Areas

■ Potential solar panels
○ Electric meter

* Conceptual estimates only. Vendor selected from solar procurement process would be responsible for system designs.

Mattie JT Stepanek Park	
Site Address	1800 Piccard Dr.
PV System Location	Parking
Baseline Annual Energy Usage	148,960 kWh
Recommended PV Area	20,603 sq. ft. *
Recommended System Size	245 kW-DC
Recommended System Output	259,996 kWh
Energy Offset	175%
Year 1 Cost Avoided	\$31,460

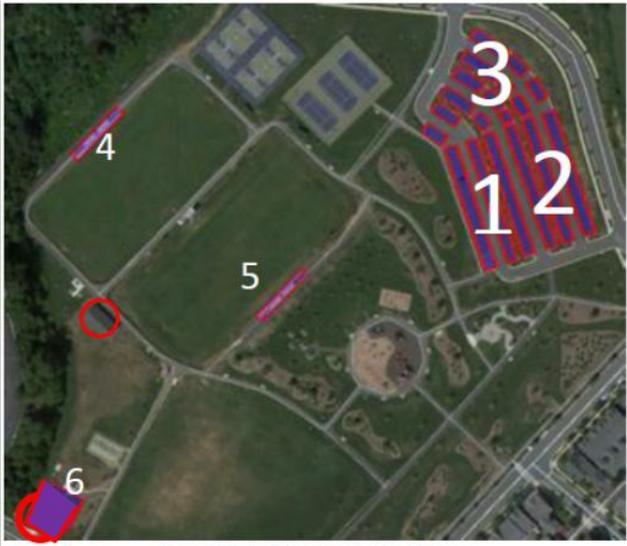


Figure 7 Mattie JT Stepanek Park Usable Areas

■ Potential solar panels
○ Electric meter

* Site is limited by MD net metering system capacity limit. Not all highlighted areas can be used.
 ** Conceptual estimates only. Vendor selected from solar procurement process would be responsible for system designs.

City of Rockville Potential Solar Photovoltaic (PV) Projects

	Gude Maintenance Facility	Swim and Fitness Center	Thomas Farm Community Center	Mattie Stepanek Park	Total for All Solar PV Sites
Site Address	14625 Rothgeb Drive	355 Martins Lane	700 Falls Grove Drive	1800 Piccard Drive	
Location of PV Systems	Parking lot & Rooftop	Parking lot & Rooftop	Parking lot	Parking lot	
Recommended System Size (kW-DC)	452	234	237	245	1,168
Recommended Annual PV Output (kWh)	484,786	250,249	257,012	259,996	1,252,043*
Recommended PV Area (sq. ft.)	37,966	19,660	17,557	20,603	95,786
Baseline Annual Energy Usage (kWh)	805,460	1,158,240	396,900	148,960	2,509,506
Energy Offset	60%	22%	65%	175%	50%
Direct Purchase Cost Range (before incentives, funded by a developer under a SPPA)	\$1,738,993 - \$1,922,045	\$889,352 - \$982,986	\$900,182 - \$994,938	\$932,064 - \$1,030,176	\$4,460,591 - \$4,930,127
Year 1 Cost Avoided	\$58,659	\$30,280	\$31,098	\$31,460	\$151,497
Net Present Value SPPA (25 year period)	\$553,307	\$298,809	\$306,884	\$310,448	\$1,469,448

* The City of Rockville uses approximately 15 million kWh of electricity annually for all facilities, parks, street lights and traffic lights. The proposed solar installations could generate approximately 8% of the City's total electricity use.

Source: *Solar Feasibility Study for the City of Rockville*. February 21, 2013. Prepared by Optony Inc., contractor to the EPA Green Power Partnership.