




Office of Audits Office of Inspector General U.S. General Services Administration

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TO: Dorothy Robyn
Commissioner
Public Buildings Service (P)

FROM: Catherine M. Chunn 
Audit Manager
Real Property Audit Office (JA-R)

SUBJECT: Assumptions Used in Payback Calculation for Photovoltaic Systems
at the Bean Federal Center May Distort Cost-Effectiveness Results
Audit Number A130115

The General Services Administration's (GSA) Office of Inspector General (OIG) performs an annual assessment of the agency's management challenges. As part of the OIG's assessment of the agency's sustainable environmental stewardship challenge, we reviewed the Green Proving Ground (GPG¹) program's December 2012 study of photovoltaic (PV²) panels at the Major General Emmett J. Bean Federal Center (Bean Federal Center). While evaluating the study's conclusion, we found that the assumptions used in the payback calculation could result in misleading cost-effectiveness decisions for PV systems.

As part of an American Recovery and Reinvestment Act modernization project at the Bean Federal Center, GSA installed five PV roof systems. In fiscal year 2011, GPG had a study performed to evaluate the practicality of large scale renewable energy generation through the use of PV systems. As part of the study, GPG assessed the technology's lifespan using a simple payback calculation.³ As part of this payback calculation, GSA took into account a Renewable Energy Production (REP) contract with Indianapolis Power & Light Company (IPL) that provides GSA with a 10-year monetary incentive to produce on-site solar energy. However, the payback calculation included the assumption that the REP contract would be renewed beyond its 10-year term,

¹The Green Proving Ground program evaluates innovative, sustainable building technologies and practices for GSA's real estate portfolio. The agency uses these findings to support the development of GSA performance specifications and inform decision-making within GSA, other federal agencies, and the real estate industry.

² Photovoltaic panels are used to collect solar energy and transform it into electrical energy.

³ The simple payback calculation determines the amount of time it takes to recover the cost of an initial investment.

calculating a 19-year payback period.⁴ At the time, GPG considered this to be the most reasonable and likely scenario.

During our evaluation, we found that IPL discontinued its REP program, effective March 30, 2013. Although IPL agreed to honor its existing contract with GSA through the remaining term, there is a high risk that the initial investment may not be recovered without the REP's monetary incentive continuing beyond the initial 10-year term.

The study's assumption that the incentive would continue beyond the contract term resulted in a misleading conclusion regarding the cost-effectiveness of PV systems installed at the Bean Federal Center. Further, since GSA prioritizes and selects construction projects based on return on investment, estimated energy savings per dollar invested, and anticipated reductions to greenhouse gas emissions, the study's results may impact the selection of future projects. It is important to note that the GPG issued guidance on the implementation of PV systems, stating that IPL's incentive was essential to making the PV system cost-effective, in the example of the Bean Federal Center PV study.

Management Comments

PBS agrees with the specifics of the memorandum and is aware of the risk that the initial investment may not be recovered without the REP's monetary incentive continuing beyond the initial 10-year term.

PBS is fully cognizant of the study's assumption and will ensure the study's assumptions and results do not impact the selection of future projects. PBS further explained that, under the existing RATE REP, GSA is selling its Solar Renewable Energy Credits (SRECs) to IPL for a 10-year term. While GSA cannot predict IPL's interest in purchasing SRECs after the expired 10-year period, GSA is not limited to selling its SRECs to that specific company or to just the Indiana market. In Illinois for example, SREC transactions can cross state lines to include adjoining states such as Indiana plus the entire service territories of the two Regional Transmission Organizations (RTO). One of the RTOs extends to the Mid-Atlantic states on the east coast, the other extends from Manitoba, Canada to Louisiana and parts of Texas. GSA has already taken advantage of the ability to sell out-of-state SRECs by selling SRECs produced in Maryland and Pennsylvania for RTO markets.

Lastly, PBS stated that SREC prices are determined by market forces, many of which are state-specific, and change over time. PBS noted that it is difficult to estimate the value of the SRECs 10 years in the future, but the value GSA is currently receiving under RATE REP is a point in time, location specific value. Per PBS, even if the accuracy of long term projections of the value of the SRECs has a wide margin of error,

⁴ The study stated that the payback period would be 19 years. During our review, the study's team found an error in the calculation leading to a revised payback period of 17.4 years. This revised payback period still includes the assumption that the REP incentive extends beyond the 10-year term.

SRECs will have a significant impact on the economic viability of large photovoltaic projects.

If you have any questions regarding this audit memorandum, please contact any member of the audit team at the following:

Catherine Chunn	Audit Manager	catherine.chunn@gsaig.gov	202-273-7292
Gregory Kepner	Auditor-In-Charge	gregory.kepner@gsaig.gov	202-273-4999

I would like to thank you and your staff for your assistance.

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