



EXECUTIVE SUMMARY

WORKSHOP REPORT; 360° PERSPECTIVE ON DEEP ENERGY RETROFITS



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EXECUTIVE SUMMARY

Deep energy retrofits, which can save upwards of 50 percent or more of a building's energy consumption, hold the key to enabling significant building energy use reductions and operational cost savings. They could also bring federal agencies into compliance with federal energy efficiency mandates. While this opportunity has long been recognized by energy service companies (ESCOs) and the General Services Administration (GSA), deep energy retrofits are still uncommon. There are several challenges, big and small, that have been explored over the past four years as part of the GSA's National Deep Energy Retrofit (NDER) program. And as proof of concept, the GSA has anted up with a group of buildings and has demonstrated the power deep energy retrofits hold. However, there is still more work to be done.

The GSA, the Federal Energy Management Program (FEMP), Oak Ridge National Laboratory (ORNL), and Rocky Mountain Institute (RMI) convened a workshop to review the NDER program at the National Renewable Energy Laboratory (NREL) in Golden, Colorado, on April 2, 2014. The goal of the workshop was to build upon previous collaborative efforts between the federal government and ESCOs and increase energy savings in federal buildings. Meeting attendees included the GSA, FEMP, NREL, equipment manufacturers, U.S. Army Corps of Engineers ESCOs, and 15 of the 16 ESCOs qualified under FEMP's ESPC Indefinite Delivery, Indefinite Quantity (IDIQ) contract. This was the third such meeting focused on increasing stakeholder collaboration.

GSA nearly doubles typical energy savings

THE 10 GSA ESPC PROJECTS REACHED AN AVERAGE 38% SAVINGS, COMPARED TO 21% SAVINGS IN 33 PROJECTS BY OTHER FEDERAL GOVERNMENT AGENCIES.

The meeting aimed to provide a 360-degree perspective on recent projects—reflecting on successes and lessons learned from current deep retrofit projects, and more importantly, looking forward to what all ESPC stakeholders can do better in the next round of NDER projects to achieve deeper energy savings.

Specific objectives were to:

1. provide an opportunity for open discussion among key stakeholders, continuing the collaborative process begun at the 2011 and 2013 meetings;
2. discuss barriers, solutions, and lessons learned to “raise the bar” on energy savings provided through ESPCs; and
3. provide an update on the GSA energy saving performance contract (ESPC) and the NDER program.

The meeting fostered a collaborative and transparent environment that enabled candid discussions between all stakeholders and further built relationships between the federal government and ESCOs to help streamline ESPC projects, motivated by a vision of eventual net-zero-energy buildings.



At the meeting, the GSA shared best practices to streamline the process and enable projects to achieve greater energy savings than those seen by other government agencies. Similarly, the GSA leadership shared several lessons learned that should continue to help achieve greater savings, such as the use of centralized contracting reviews resulting in more consistent approaches and faster review time frames.

BEST PRACTICES AND LESSONS LEARNED

Many of these best practices impact current GSA processes, including: limiting task orders to match available human resources, keeping a comprehensive comment form throughout all reviews, and setting an agenda prior to weekly meetings. Other best practices surrounded project specifics, including: providing more information (e.g., utility escalation rates) at the preliminary assessment (PA) kickoff, scheduling baseline and measurement and verification (M&V) meetings separately from regular meetings, using an independent cost estimator, and adding appropriated funds into the planning process if possible. Lastly, for larger retrofits, using FEMP M&V Option C for three years during the M&V stage, then dropping back down to FEMP M&V Option A or Option B would be beneficial to verify the energy savings to the myriad stakeholders.¹ Combining these methods provides more initial feedback and accuracy of savings without compromising the economics of the project, thus giving stakeholders tangible

data to become more comfortable with the ESPC results and stream of payments. Gaining credibility with the stakeholders was an objective to achieve long-term viability for the program.

BREAKOUT GROUP FINDINGS

Five breakout groups focused on barriers and solutions to specific aspects of the ESPC and project engagement process:

1. Project delivery
2. Transitions/Team dynamics
3. Integrative design and innovative technologies
4. Operations and maintenance
5. Project economics

The breakout groups provided an opportunity for participants to openly discuss barriers, creatively brainstorm ideas, and collaboratively develop solutions, the key outcomes of which are summarized below.

¹ FEMP M&V Options are described as follows: *Option A—Retrofit isolation with key parameter measurement; Option B—Retrofit isolation with all parameter measurement; Option C—Utility data analysis.* For a full description of the four general categories of M&V methodologies, see the latest U.S. Department of Energy Federal Energy Management Program measurement and verification guidelines. Those in use at the time of this report: U.S. Department of Energy Federal Energy Management Program, "M&V Guidelines: Measurement and Verification for Federal Energy Projects, Version 3.0", Section 4.1, http://www1.eere.energy.gov/femp/pdfs/mv_guidelines.pdf

01: Project Delivery

The project delivery group focused on the desired expectations of the preliminary assessment (PA) phase that had the potential to create problems downstream in the ESPC process. A major concern was trying to find the balance between a faster and yet more accurate PA submission. The group agreed that providing ranges of cost and savings estimates, receiving more transparent guidance from the GSA on how to present savings, and using a matrix based on building size and system complexity to direct PA timing could all lead to a more manageable PA delivery process.

The group also discussed how FirstFuel or other similar analysis tools might impact the PA phase and requested clarity on the GSA's preferred method of using analysis tools to inform the PA phase through the notice of intent to award (NOITA).

02: Transitions/Team Dynamics

Maintaining team consistency and continuity is a critical element for any successful ESPC project and even more important on deep energy retrofit projects where new processes (e.g., integrative design) and technical innovation require full buy-in and understanding from start to finish. Best practices to help ensure continuity include:

1. ensuring clear communication of staff and information during transitions,
2. maintaining ESCO and GSA staff continuity from project development through construction (and ideally into the performance period), and
3. providing a one-page summary quarterly during construction and through the first year of the performance period that informs all levels of the GSA on the project status.

“WE NEED TO UNLEARN THE TRADITIONAL WAY OF ECM THINKING AND CHANGE TO A WHOLE-BUILDING INTEGRATIVE APPROACH.”

—KEVIN KAMPSHROER,
Director, Office of Federal High-Performance Green Buildings, U.S. GSA



03: Integrative Design and Innovative Technologies

This group discussed successful integrative design strategies and innovative approaches to energy savings and identified underutilized technologies. The participants highlighted technologies they sought to use in non-GSA projects, and explored barriers to employing these technologies. ESCOs are hesitant to submit new technology solutions out of concerns of delaying the project, despite the GSA's requests for these innovative approaches. Lastly, the ESCOs discussed ways to identify "triggers" that might get customers to identify parts of their buildings needing retrofit that are ripe for new technology approaches.

The participants identified potential solutions to these issues that involved change both to ESCO operations and the GSA ESPC process. Solutions varied from holding collaborative workshops, to modifying traditional operational rules of thumb, to creating mock-ups to test new technologies.

04: Operations and Maintenance

Today, GSA buildings typically contract operations and maintenance (O&M) services on a per-equipment or per-system basis through a performance-based contract to small businesses. While the GSA and ESCOs both see the value of transitioning operations and maintenance into whole-building performance contracts, O&M provisions were only included on certain new systems in NDER projects. Reasons for this center largely around competing internal goals and the small business contracting requirement. While this remains unaddressed, the GSA is potentially missing out on a key opportunity to achieve deeper savings in its NDER

projects, since O&M savings can sometimes be as large (or larger than) energy cost savings and in many cases enable project teams to afford a greater number of building efficiency measures.

Breakout group participants identified immediate trends that make the next couple of years an opportune time to address O&M contracting issues. The GSA is undergoing a Building Maintenance and Operations Federal Strategic Sourcing process to centralize decision making and standardize processes around O&M. Emerging efficient building technologies are increasingly requiring O&M expertise that many local contractors do not have, which ESCOs are well positioned to fill.

Breakout group participants brainstormed a range of strategies that allow GSA to begin quickly assimilating O&M into performance contracts. Given pressure to demonstrate upwards of 50 percent energy savings and a limited window to impact the federal strategic sourcing process, participants recommended opening existing NDER task orders to incorporate O&M in one or two current projects this year, so lessons and benefits can be extracted and documented in time to establish clear O&M protocol in the next wave of NDER projects.



05: Project Economics

This breakout session brainstormed how ESCOs could be combined with appropriated renovation funds. The group discussed the difficulties associated with combining these two types of contracts, including:

- coordinating and communicating between both contractors,
- developing an appropriate building application for this combined process,
- determining ownership of risk, and
- reconciling the existing contract procurement process with the GSA.

The group then brainstormed possible solutions to address these barriers, many of which stemmed from past or existing projects with which the GSA and ESCOs were involved. Two of the most discussed solutions were the creation of a project manager role that would coordinate between the ESCO and renovation contractors, and the possibility of combining the energy efficiency and renovation contracts through a partnership agreement.

This dual contract process could incentivize both contractors to help each other reach the guaranteed energy savings embedded in their combined contract. The group also discussed the ability of the GSA to contribute in this joint contract process. The GSA could preselect projects within its portfolio that would be conducive to this dual-contract process. The GSA could also create guidelines for combined renovation and ESCO contracts to help spark this process. While these ideas can start the conversation, there are regulatory and contractual issues that need to be further explored.

NEXT STEPS

In May 2014, GSA released a notice of opportunity for GSA/PBS Nationwide Deep Retrofits Round 2 Program (NDER 2 Program). This included 49 buildings spanning 5 different regions with a total of over 19.6 M square feet. Preliminary Assessments are currently underway and contracts are expected in the next year.



WORKSHOP PHOTOS BY CRAIG SCHILLER