

**Memorandum of Record
U.S. Department of Energy
Federal Energy Management Program
Energy Savings Performance Contracts**

**ESCO Forum
1000 Independence Avenue, SW, WDC, Room GJ-015,
January 13, 2010
9:00 a.m. – 3:00 p.m.**

Introductions and FEMP Updates

Richard Kidd, Program Manager, Federal Energy Management Program (FEMP), welcomed each attendee and explained that the purpose of the meeting was to continue a regular quarterly forum for dialogue between the Department of Energy (DOE) and the energy service companies (ESCOs). He stated that he would like ESCO input and comments on issues important to the Federal Government's mission to implement sound, cost-effective energy management and investment practices. He further explained the meeting's importance by referencing the great deal of public interest due to President Obama's aim to increase government transparency.

Mr. Kidd stated that DOE officials are committed to Energy Savings Performance Contracts (ESPC) program reform efforts and highlighted December 2009 as the busiest month ever for the program with 30 Delivery Orders awarded, representing more than \$400 million investment. Mr. Kidd then recognized the agencies and ESCOs who completed the Delivery Orders by the end-of-year deadline. Commenting on the growth of the ESPC program, Mr. Kidd noted that in the FY 2009 the program yielded \$450 million in investments, compared with \$300 million in FY 2008 and \$144 million in FY 2007.

Mr. Kidd acknowledged his pride in the past ESPC program growth, but encouraged focusing on the future and FY 2010 projects and issues. The Golden Field Office has expanded contracting staff and resources to increase their ESPC program capabilities. He explained that with the American Recovery and Reinvestment Act work bubble subsiding, there should be more Federal agency procurement staff resources available for ESPC projects. With 19 agencies already in discussions for new ESPC Task Orders, Mr. Kidd emphasized the importance of applying better practices to award the Task Orders in an appropriate amount of time. Mr. Kidd noted that FEMP is increasing efforts to address the findings from the recent DOE Inspector General's report, which identified that more needed to be done during the ESPC life of contract (LOC) to ensure high value and quality throughout the term of the contract. He commented that this can be accomplished by focusing efforts on Measurement and Verification (M&V) to ensure that ESPCs deliver value and promised energy and energy cost savings actually occur. In closing, Mr. Kidd recognized emerging technologies as an opportunity for improving size and number of ESPC projects.

Ab Ream, FEMP, welcomed everyone in attendance, reviewed the meeting schedule and requested each attendee present and on the phone to introduce themselves and their represented agency. The meeting attendees are shown in Attachment 1.

Mr. Ream echoed Mr. Kidd's earlier comments that the purpose of the meeting was not to obtain ESCO industry consensus, but to receive recommendations on ways to improve the state of M&V through the experiences of those present.

The PowerPoint presentations from this ESCO Forum are available at:
http://www1.eere.energy.gov/femp/financing/espcs_publicforums.html

ESPC Dashboard Report

Mr. Ream also discussed the ESPC Dashboard report, including the number of ESPC project awards and number of Federal personnel trained. He referenced the importance of examining how well ESPCs are performing after the first year of M&V, because the level of effort seems to drop off after the first year. Due to this drop-off, it is important to monitor all aspects of ESPC projects throughout the life of the contract. Focusing on this continual review, Mr. Ream noted the importance of communication and assistance from the ESCOs to ensure that M&V reports are sent to Golden Field Office on time. He then discussed that the high turnover rate of the personnel in charge of ESPC projects makes it even more important to stay in regular contact and ensure adherence to contractual agreements.

Mr. Ream highlighted a recent survey effort to evaluate customer satisfaction throughout the ESPC LOC. He stated that FEMP attempted a telephone interview survey during 2009 to determine how well Federal agencies were being served by ESPCs during their performance periods. There was limited success from surveys: 100 sites were identified, but only 17 gave responses. There is an ongoing effort to emphasize the importance of receiving more responses from the surveys, so that both FEMP and ESCOs can identify issues before a serious problem arises. Mr. Kidd stated that the ESPC Dashboard report is a very important management tool to collect data on all ESPC projects to enhance the projects and identify those projects that are not performing. It is also a way to provide ESCO performance data to Federal customers.

A participant asked whether the ESPC Dashboard reports are available for all program stakeholders, i.e. agencies and ESCOs, and what the plan was for the distribution of the information. Mr. Ream answered that the ESPC Dashboard report information would be made available in some form, but there are sensitivity issues that restrict the level of information distributed. The process needs to be evaluated to ensure that proprietary information is not distributed.

Another ESCO participant asked whether there were any findings that FEMP could share with this group. Mr. Ream answered that there are delinquencies in M&V reporting, and that there is an effort to gather and analyze more information before disseminating it to the ESCOs. Randy Jones, Golden Field Office (GFO), commented that the administrative side of the IDIQ process has historically been lightly staffed and that recently GFO has been focusing more on tracking deliverables. Mr. Jeff Poole, Navarro Research and Engineering, Inc., is the contact person working on this task for GFO. Mr. Jones noted that Golden did 43 contract modifications on the legacy IDIQ projects. He also noted the existence of a web-based document submission system that DOE uses to facilitate the process.

An ESCO representative commented on the delays in M&V reports, stating that he finds that a joint effort to create and submit deliverable reports takes about three months, and Agency review of the reports can take another six months. The representative stated this could be a significant reason for the tardiness of the reports, and that accuracy is more important than timeliness. Mr. Ream replied that both accuracy and timeliness are equally important, and diligence in determining how to create reports should be done before the contract is signed to help avoid any delays.

Another ESCO participant asked whether it was possible for an ESCO to review their data before it is published. Mr. Ream responded that FEMP has completed analysis and requested Agency review of the

information, and that the ESCO will be provided access to the information. Mr. Jones added that the system is not complete currently, but Mr. Jeff Poole can be contacted to find out what information and reports have already been submitted.

A participant asked for the reasons for the low satisfaction survey response rate, and any methods that could be employed to increase them. Mr. Ream replied that the survey efforts seem to come under suspicion because the initial survey work was done by FEMP contractors, but even with Mr. Ream's direct involvement there was opposition to responding. FEMP is also working to update and maintain current project contact information, and has requested help from agencies to assist with the survey efforts. These surveys will help ensure high quality in future projects.

Presentation: M&V Plans in Super ESPCs – Perceived Shortcomings

Mr. Phil Coleman, Lawrence Berkeley National Laboratory (LBNL), gave a presentation on perceived failings in Super ESPC M&V plans. He discussed a concerted effort for more rigor in M&V plans and requested input on DOE interpretation of M&V plans and options. He noted that when the DOE ESPC Technical Team evaluates M&V plans, they respond quickly and want to be as consistent as possible with their reviews. Mr. Coleman discussed the misattribution of International Performance Measurement and Verification Protocols (IPMVP) Options, in that there is concern that some ESCOs misinterpreted the options available.

Tom Hattery, FEMP Federal Financing Specialist (FFS), commented that there could be confusion over M&V Option A. He asked whether Option A could include one measurement at the beginning of the project performance period and one measurement annually, rather than just one at the beginning and one at the end, to increase accountability. Mr. Coleman agreed that that technique was a valid methodology. The group discussed definitions of the M&V Options and whether Option A is overused.

Mr. Hattery also discussed the perceptions of some project reviewers that may not be M&V experts and added that there should be some measurement over the post-acceptance period to add credibility to the ESPC program.

An ESCO participant noted the importance of measuring facilities' lighting inventory changes over time, as any changes in the number of lighting fixtures is far more significant than any minor fluctuations in the fixtures' power draws. Mr. Coleman and others agreed that this falls under Option A, and is a valid factor in assessing whether the contract is still performing well. Mr. Hattery emphasized the importance of using the best M&V Options for specific Energy Conservation Measures (ECMs) and making the project work.

A participant commented on Option B, asking who in the government confirms what is defined as a relevant parameter. Mr. Coleman and Mr. Jones answered that FEMP Project Facilitators (PFs), ESPC Technical Team members, GFO's key reviewers and agency project and contract staff all have role in validating the relevant parameters. The group discussed the importance of specifying responsible agency officials in the contract before award.

Mr. Coleman discussed problems with M&V methodology including the overuse of simulation in M&V, amorphous measurement commitments, and the insufficient use of Options B and C. Mr. Coleman intends to encourage the use of Option B, especially for renewable or combined heat and power projects, and Option C for projects such as steam decentralization. The group discussed best-practices for M&V

including ensuring that the most important parameters are measured, proper calibration, and M&V reports documenting performance and savings.

FEMP's M&V review strategy entails LBNL review of all M&V approaches (from winning Preliminary Assessments) and plans (from Final Proposals) received during CY 2010. FEMP will train PFs and Technical Team staff to improve and harmonize reviews among different reviewers. Some in-depth on-site reviews may be conducted of a sample of projects. Mr. Skye Schell, FEMP, commented that when the new harmonized approach to M&V is finalized, M&V training will be provided to the ESCOs.

An ESCO participant asked for the best method of dealing with anticipated changes during the project performance period. FEMP's M&V experts responded that as ESPC projects can have terms not to exceed 25 years, changes during the LOC are expected and recommended the use of multiple M&V Options, including simulations, and clearly identifying "static factors" – i.e., those that are assumed not to change over the contract term.

Another ESCO representative added that conventional wisdom is to follow Option A (before and after measurements) for simple lighting retrofit projects. However, there is not much value seen in the post-project measurements, since there is not much variation from the manufacturer measurements, but still requires a substantial effort to review. The panel answered that pre- and post-measurements are necessary to comply with IPMVP guidelines.

The group reiterated that the quantitative inventory of installed equipment by type (i.e. lighting fixtures) and measuring hours of operation trumped the actual power draw measurements. During the ESPC term, any number of fixtures can be replaced, and therefore increase or decrease the amount of energy saved.

Measurement and Verification Templates

Shankar Earni, LBNL, gave a presentation on M&V templates. The objective of this presentation is to create awareness among the M&V community about the existence of M&V templates, discuss the contents and main advantages, and set a course of action. The goal for M&V templates is to streamline M&V plan preparation and address weaknesses in typical ESPC M&V plans by developing prescriptive M&V templates for most common ECMs. M&V templates provide detailed instructions, fill-in sections for the project details, and step-by-step M&V instructions for typical ECMs. M&V templates have been developed for lighting retrofits (Option A), and chiller replacements (Option B). DOE plans to develop additional templates for boilers, energy management control systems (EMCS), and other common ECMs employed in the Federal sector. DOE encourages the ESCOs to use the templates.

An ESCO participant asked if the templates are mandatory. Mr. Schell answered that the DOE IDIQ ESPC contracts do not currently require them, but that DOE expects to see the templates actively used. Agencies may request or require use of the templates. He further commented that standardization of the forms would streamline the process in the future.

The group discussed the accountability for maintaining equipment vital to the ESPC project. All acknowledged that equipment will degrade over time, but steps need to be taken in order to safeguard the performance and savings guaranteed in the contract. Several ESCOs also noted their difficulties in contacting agency points of contact and in gaining access to the equipment in question. Charlie Williams, LBL, explained that this was one of the reasons for creating the Agency Witnessing guidelines for the ESPC program – to specify that agencies appoint a principal POC responsible to

facilitating annual M&V. He noted that the Risk and Responsibility matrix should specify the party accountable for each piece of equipment, and that logs should be kept to ensure that they are maintained. He also noted that the contract should account for anticipated degradation of equipment that may result in a decrease in performance and savings. Tom Hattery added that the ESCO is responsible for basing the guaranteed savings on the efficiency of the equipment used, and accounting for losses in efficiency. As a follow-up, Mr. Coleman stated that the M&V templates outline methods to account for any change in efficiency.

A meeting participant asked about the time frame to present additional templates. FEMP responded that there is a plan to reconvene the M&V Task Force and related Working Groups during Spring 2010. The process to develop the templates takes about 4-6 months and FEMP plans to complete two M&V templates this year. In response, an ESCO attendee asked if the Working Groups were already chosen. Dr. Williams responded that due to the amount of turnover, the Working Groups are currently under review. There were steps taken to obtain a lead M&V contact from each ESCO attending the Forum, and there will be additional follow-up to identify M&V leads from each ESCO. He added that DOD and many other agencies are represented on Steering Committee.

Mr. Ream asked about methods to prioritize which templates should be completed first. Dr. Williams answered that the Task Force would consider the most common Federal ESPC ECMs and use that order, with feedback from the M&V Task Force.

Performance Period M&V and Quality Assurance

Mr. John Shonder, Oak Ridge National Laboratory (ORNL), gave a presentation and outlined key performance period activities that can help ensure a quality ESPC relationship and performance. He noted that access to, and continued maintenance of, equipment are integral to ensuring that the guaranteed energy savings are achieved.

Mr. Shonder also deemed it very important for the agency to witness the ESCO's M&V activities and ensure compliance with contractual requirements. He outlined the following points:

- Need proactive agency participation in ESCO conduct;
- Must clarify responsibilities in the existing review process, ensuring agency buy-in and verification of activities; and
- FEMP has extensive guidelines on the witnessing process.

Mr. Schell added that it is in the ESCO's interest to ensure that they have access to the agency and make sure there is complete collaboration between all parties in a project. One reason is that DOE needs accurate data to validate the ESPC process, especially when audits are conducted. Keeping equipment in good working order and all parties in regular communication are great ways to ensure the project will succeed.

An ESCO participant asked if there was language in the new contract pertaining to situations where equipment maintenance is necessary. The panel stated that the risk and responsibility matrix governs maintenance and operation responsibility and that the ESCO has the ultimate responsibility to meet the energy and energy cost savings stipulated in the contract. Dr. Williams added that the agency may decide to do the maintenance on their own, as documented in the risk and responsibility matrix, and in such cases there should be standards mutually agreed upon between the ESCO and agency as to frequency and procedures for maintenance. Mr. Schell remarked that there can not be any decrease in equipment performance, since the process is paid for by savings that could be reduced by

malfunctioning equipment. So, however it is done, there must be contract provisions that ensure that either the agency or the ESCO will repair outdated or degraded equipment.

Several ESCO participants had issues regarding the annual M&V audit. Some ESCOs feel that they are hampered from doing their jobs by difficulty entering the facilities and buildings, difficulty getting to the right contact, and other issues working with the agencies. Another ESCO participant remarked that sometimes an agency just doesn't have the funding to appropriately handle operations and maintenance, hindering efforts further.

Also, ESCOs expressed apprehension at whether or not the agencies are fully accepting their responsibility to keep an open dialogue. Even if there are issues that require increased cooperation and communication, the parties involved may have difficulties with changing the dynamics of the relationship. The group agreed that in order to preserve the integrity of equipment, partnerships and the contract as a whole, points of contact and accessibility rules must be outlined in the contract. In some cases, the contract will have to be modified in order to properly adjust to changes occurring during the ESPC LOC.

The preferred ESPC model is one where the ESCO is performing the M&V according to schedule, delivers the guaranteed cost savings, and the site is cooperating in completing the reporting and inspection services. This process would be further strengthened by the proposed FEMP Life of Contract (LOC) service of regular site visits every three years that include training and a thorough review of the contract. The ESCOs can also help ensure that that GFO receives the M&V reports, so that DOE can form a cogent analysis of the Department's efforts.

FEMP ESPC Life of Contract Services

Mr. Ream discussed the ESPC services and training that FEMP provides including: commissioning; operations and maintenance; performance measurement and verification; certification; communications; project coordination and oversight; and, training. He added that agencies can decide which services are necessary for their particular ESPC project.

An agency participant asked whether these services from FEMP (above) were fee-for-service or free for agencies. Mr. Ream answered that FEMP wants to ensure that all agencies receive access to services, so there is a mix of fee-for-service and free services. He added that there may interest in ongoing site support from FEMP, similar to what DOE sites receive, but it should be a cooperative effort between all parties, rather than FEMP forcing the measures.

Deploying Emerging Technologies in U. S. Federal Buildings through ESPC

Dr. Williams gave a presentation about new technologies and processes in the energy industry. FEMP seeks to deploy emerging technologies (ET) to acquire energy savings otherwise not attainable, build larger ESPC projects, and ESPC projects that would not be otherwise feasible. Dr. Williams provided definitions and examples of emerging technologies in ESPC projects. ESPCs are reputed to be conservative in energy technologies as they have to guarantee the energy savings, so emerging technologies need a project champion to promote them. The DOE ESPC, however, has some advantages in deploying new technologies, as the Risk and Responsibility matrix provides a tool through which perceived risks can be identified, managed, and mitigated. Dr. Williams provided examples of projects in which risk was mitigated through expert technical assistance and innovative M&V strategies.

In implementing FEMP's ET Deployment Action Plan, LBNL and others identified, cataloged, and prioritized technologies into FEMP Emerging Technology Matrix. The Emerging Technology (ET) Matrix is an Excel spreadsheet tool to assist agencies and ESCOs. Concise Technology Fact Sheets, more in-depth technical information and test data, and contact information for technology experts have also been developed and are linked to the Matrix. In the early stages of project development, agency customers will be provided the ET Matrix and they will be requested to review the ET Matrix for potential saving opportunities. FEMP Federal Financing Specialists and PFs will meet with the agency and ESCO to review the ET Matrix in more detail and identify potential ET ECMs. Agency customers are also requested to provide site data needed for a Renewable Energy screening. This site data may also be used for screening for other power generation and emerging energy saving technologies.

Among other next steps in the ET Deployment Action Plan, FEMP plans to assess technologies for GHG abatement potential.

The group asked whether there were any M&V protocol plans in the works available for the emerging technologies discussed. Dr. Williams responded that there are examples in the published case studies, but as yet specific M&V protocols have not been developed for ET ECMs. Another attendee asked whether there were any testimonials for these new technologies from agency customers or other ESPC program stakeholders. Dr. Williams said that although there were no agency testimonials yet, there are case-studies that can accomplish the same "wow" factor.

A meeting participant asked if DOE had considered offering rebates for certain technologies. FEMP representatives answered that this question is outside the realm of FEMP's responsibility, but that other DOE offices, such as Building Technologies could address the issue.

An ESCO attendee remarked that it may be helpful to lay out an O&M plan for some of the new technologies in order to make maintenance less rigorous and confusing for agency staff. Another commenter stated that for ECM payback periods, there is a term-risk possibility. ESCOs need to ensure that ESPC project payback periods (in aggregate, including other ECMs) do not exceed the statutory 25 year limit.

Another group participant asked whether a list of manufacturers for these new technologies had been disseminated. Dr. Williams responded that there are few companies actually offering the newest technologies, so they are easily identified. As more suppliers develop, FEMP will consider a manufacturers list.

Closing Remarks

Mr. Richard Kidd remarked that there were four points that he wanted the group to take with them regarding FEMP's ongoing role and vision. He expressed the FEMP's interest in Technology, M&V, Project Management, and Communications as vital for ensuring ESPC projects.

Mr. Kidd also stated that with the current Administration and political appointees, there is considerable interest in deploying new technologies into the public market. He noted that ESCOs may be criticized for "playing it safe," rather than making more aggressive moves to integrate new technologies into their ESPC projects. He added that FEMP is looking toward whole systems integrated design and building envelope improvements.

Mr. Kidd then agreed that M&V efforts needed to see growth, and that performance period management is a great way to ensure it. He stated that FEMP is committed to a rigorous management process, including a commitment to life of contract support. He expressed his goal of keeping Federal agencies well-versed and highly responsive to the ESCOs. Mr. Kidd offered FEMP's assistance and open, responsive communications as an important part of the ESPC program.

Mr. Ream thanked the participants and requested that they contact him with any comments or questions at ab.ream@ee.doe.gov.

ATTACHMENT 1
List of Attendees

NAME	Company/Agency Represented	NAME	Company/Agency Represented
Aitcheson, Pete	DHHS	McCarthy, Patrick	Lockheed Martin Corporation
Barakat, Monjed	Pepco Energy Services	McDonnell, Amy	Constellation Energy
Berry-Lewis, Sylvia	Honeywell	Parker, Brandon	Constellation Energy
Borroni, Eduardo	AMERESCO	Perron, Brett	AMERESCO
Boyle, Steven	Pepco Energy Services	Piest, Bonnie	Johnson Controls
Coleman, Phil	Lawrence Berkeley National Lab	Raup, William	FEMP
Collier, Alicia	Honeywell	Ream, Ab	FEMP
Culbreth, Carson	FEMP	Rinaldi, Anthony S.	NORESKO
Earni, Bhavani Shankar	Lawrence Berkeley National Lab	Schafer, Jennifer	Federal Performance Contracting Coalition
Eisemann, Douglas	Sentech Inc.	Schell, Skye	FEMP
Fischer, Holger	NASA	Scinta, Robert	DOC
Gariepy, James	SAIC/Benham	Simms, Terry	Pepco Energy Services
Griffin, Corey	Main Stream GS	Shonder, John	ORNL
Hattery, Tom	FEMP	Stevens, Eric	AMERESCO
Hill, Terry	T J Hill & Associates	Stiff, Phil	Energetics Incorporated
Hurlbut, Darrel	Trane	Thalasinios, Wayne	NASA
Johnson, Charles	USDA	Vaughn, Kevin	TAC/Schneider Electric
Johnson, Jay	Chevron Energy Solutions	Vitek, Rod	AMERESCO
Jones, Randy	FEMP	Walker, John	Sentech Inc.
Judson, Scott	NORESKO	Williams, Charles	Lawrence Berkeley National Lab
Kelly, James	SAIC/Benham	Williams, David	DOJ
Kidd, Richard	FEMP	Wolf, Kent	Chevron Energy Solutions
Kiriazes, James	Honeywell	Woods, Patrick	Clark Energy Group
Krug, Bryon	Clark Energy Group	Yan, Justin	Lockheed Martin Corporation
Maniwang, Jose V.	DOJ	Zampardo, Ryan	Clark Energy Group