

**FEMP First Thursday Seminar:
Energy Savings Performance Contracts; March 3, 2011**

[Music]

Timothy Unruh:

Hello. I'm Timothy Unruh, Program Manager for the Department of Energy's Federal Energy Management Program. Welcome to First Thursday Seminars. Now in its second year, this series provides you, the Federal energy and environmental professional, with current information on critical topics that you have identified and requested. We encourage you to continue to provide us with this important feedback through the evaluation at the end of this program.

This year, First Thursday Seminars will offer training on alternative financing investments through public-private partnerships and public benefit funds, the generation and deployment of renewable energy, alternative fuel vehicles and fleet infrastructure development, procurement of energy-efficient products and the design, operation and maintenance of sustainable high performance buildings. These practices demonstrate Federal leadership in sustainability, lessen dependence on foreign oil, reduce greenhouse gas emissions, and save taxpayer dollars. They are critical to meeting the important mandates of Executive Order 13514. We hope these programs help you reach your energy, water, and greenhouse gas reduction targets.

While we present several of the most important topics, no single one is a standalone solution. Only through an integrated, whole systems approach, can we meet our executive order mandates. Visit the FEMP website at any time to view an archive of previous First Thursday Seminars and to find additional resources, technical assistance, and guidance to help your agency meet its mission critical goals. Enjoy the seminar and thanks for joining us.

Kathy Hyland:

Hello. Welcome to the Department of Energy Federal Energy Management Program, First Thursday Seminars. I'm Kathy Hyland and I will be your moderator today.

This is the second course in our series this fiscal year, focusing on energy savings performance contracts, or ESPCs. If you have not already printed a copy of the learner guide and handouts, you may want to do so now. You can do that by accessing www.femp.energy.gov/firstthursday. If you'd prefer, you can print them out after the course. The materials and a copy of this presentation will be available 24/7.

Now let me cover the objectives for our training today. It is our hope that, after completing this seminar, you will be able to explain the purpose of ESPCs. You will be able to talk about some of the benefits of ESPCs to Federal agencies. You will be able to talk about some of the different energy conservation measures that can be met using an ESPC. You will be able to describe some of the support that you're going to get from FEMP if you enter into an ESPC. And, most importantly, you'll be able to consider how an ESPC might be useful for your site or facility.

Our format today is simple. There will be a presentation followed by a question and answer session. And, we really encourage your questions. There periodically on your screen, you will see an e-mail address, a fax number and a phone number so that you can pose your questions. If you'd like to speak with the instructor live or a FEMP expert live; if you will phone in your questions at the end of the presentation, someone can speak with you directly. So, we really encourage you to do that.

I'd like to now introduce our instructor today, John Shonder. John is a senior mechanical engineer at Oak Ridge National Laboratory. And, for the past 25 years, he's been involved in the design, implementation and evaluation of energy efficiency projects. He currently serves as the lead at Oak Ridge National Laboratory for FEMP support. And, he has been involved with ESPCs since their inception in 1998.

We also have with us live from Washington, D.C. at the Department of Energy, Sky Schell. And, I will introduce Sky further to you later in the broadcast.

So, without further ado, let me turn the presentation over to John Shonder.

John Shonder:

Okay; thank you Kathy. Good afternoon. I hope everyone's doing well today.

I want to begin this presentation with a short quiz. I'm going to talk about four different energy projects and I want you to think about what these projects have in common. These are all projects that have been done in recent years in the Federal Government.

The first project reduced energy use by 44 percent and met the EISA goals, the Energy Independence and Security Act goals, of 30 percent reductions six years early through a comprehensive project that involved the steam plant decommissioning, simple lighting upgrades, insulation of photovoltaics and other ECMs for energy conservation measures.

The second project was a water conservation project. Among the ECMs installed were reductions in potable water consumption and that reduced water consumption by 160 million gallons per year. Actually the host city's water consumption was reduced by two percent, so that's quite a large reduction.

The third project was a renewable energy project and installed four wind turbines that will generate 3,800-kW of electricity. It was about 25 percent of the base's peak power. The wind turbines reduced diesel consumption by 650,000 gallons of diesel fuel per year and that reduction in diesel fuel reduced air pollution emissions by 26 tons of SO₂, 15 tons of NO_x and probably a significant amount of CO₂ as well.

The fourth project was more of a garden variety ESPC project – or garden variety project that installed common ECMs. There was efficient lighting, HVAC controls, installed some new boilers, also advanced metering to meet the metering goals of the EPAct. It also included ground source heat pumps. The interesting thing about this project is that it included facilities across six states.

Let's go to the next slide. The interesting thing about all these projects is that they were ESPCs. They were installed with this ESPC vehicle, energy savings performance contract, that allows agencies to install equipment without upfront appropriations. The projects are paid for through guaranteed cost savings that occur during a performance period. And, the projects were designed and installed by expert energy service companies.

I want you to notice, too, the wide range of technologies that were used in these projects. There are very basic common technologies, like lighting retrofits, controls retrofits, boilers, chillers; things like that. But, there were also a lot of – a wide range of renewable technologies from ground source heat pumps, PV, wind power as well.

Now let's look at the range of goals that were met as well. The EISA goals were met on that one project: 30 percent reduction in energy use; actually 44 percent reduction in energy use. The renewables goals were met; there were goals for the government to increase the use of renewable energy. And, water reduction goals were met as well. And, I'm sure that, if we scratched the surface, we'd find that some of these sites met their greenhouse gas reduction targets as well.

All of these were ESPC projects and they all met a variety of goals.

So what is an ESPC? An energy savings performance contract is a way of implementing energy efficiency measures that are required by legislation without appropriations. If you look at what the Federal Government has, or what Congress has appropriated over the past few years for energy efficiency projects, there's been about 60 percent, 40 to 60 percent I believe of what is required to meet the energy reduction targets. The remainder of this has been met by ESPCs and other alternative financing. ESPCs have no upfront capital and they avoid many of the complications and delays that are associated with applying for funds from agency level energy programs.

An ESPC can be thought of as a partnership between an energy services company and a Federal agency. Each partner in this process has its role. The agency expresses its goals to the ESCO and tells the ESCO what types of ECMs it wants to do. The energy services company then comes on the site and designs and constructs the energy project. The energy services company arranges private financing to cover the construction costs of the project and then that ESCO guarantees the cost savings and the performance of the equipment over the contract term.

Now I think that most Federal agencies are familiar with appropriations funded projects in which congress provides funding. An ESPC project has some similarities of that process, but there are a lot of differences. One of the key differences is that it includes private financing that may last up to 25 years. The cost savings that are generated by the project are used to fund that financing over the term of the project. Those cost savings are also used to fund performance period services. So sometimes, at your choice, the ESCO may perform the operations and maintenance of the equipment.

Measurement and verification of savings is required. This is another difference between the appropriations process. So, once per year, the ESCO is going to come out and do some measurements, prove to the agency that those savings are there. We're going to talk about that a little bit more.

Now I always like to include this slide just to look at the basics of what this is. If we look at what happens here, before the ESPC is in place, your site is paying this much in energy and operations and maintenance. The project is installed and that generates a savings. That's this gray portion. So, during the performance period of the contract, your utility bills are reduced by the amount of the savings. The site essentially pays that savings to the ESCO; that goes to the performance period services and the debt service. And then, at the end of the contract or after the ESPC is concluded, that savings accrues to the Federal Government.

Now there's an extensive list of laws and executive orders that apply to ESPCs and encourage their use. I'm not going to go through all these. All these are available on the FEMP website. There are links to PDFs and links to all the information you'll need. But, for example, if we look at NECPA, the National Energy Conservation Policy Act, that goes all the way back to 1986 and gave the Federal Government authority to enter into shared energy savings contracts, which were like the forerunner of ESPCs.

Then EPart 1992 introduced the energy savings performance contracting term. There's the DOE rule on ESPCs, 10 CFR 436. Just so you know too that the Federal Acquisition Regulations encourage the use of ESPCs and require agencies to make maximum use of their ESPC authority. And, as I said, all this is available on the FEMP website and we'll have links to that later in the program.

Even though ESPCs were authorized as far back as the 1980's, if you look at a graph of the activity of ESPC since that time, there really wasn't much activity back in the 80's and the early 90's until the advent of these umbrella or indefinite delivery/indefinite quantity contracts.

What happened was that, prior to this, each ESPC had to be negotiated separately. There were site specific ESPCs and that took a lot of time, a lot of energy and it was very complicated to implement those projects and negotiate them. To alleviate that problem, DOE, the Federal Energy Management Program, awarded these umbrella IDIQ contracts. Currently, the IDIQ contracts are awarded to 16 ESCOs. DOE has examined the qualifications of all these ESCOs, their experience and their ability to design and install a wide range of energy efficiency measures at Federal sites. DOE also pre-negotiated many of the terms and conditions, so you don't have to do all that. What happens then is that a Federal agency issues a task order against one of DOE's master contracts.

There are other advantages to having umbrella contracts. It allows FEMP to centralize support. FEMP has a wide range of free training, resources, and support available to Federal agencies. Federal agencies can use these contracts to do energy conservation projects or energy efficiency projects at Federally-owned sites anywhere in the world.

One of the key differences is that the agency has to engage a qualified project facilitator. Project facilitators are people who have been through the process. They're experienced in implementing ESPCs. They are experienced in helping Federal agencies get the project moving, working with the ESCOs. I think Skye's going to talk a little bit more about this later. Essentially, these project facilitators have seen it all and they know how to resolve any procedural and technical issues that often crop up.

The advantage of using an ESCO, as I said, is that they bring their expertise in energy efficiency to you. You're a Federal agency; your job, your primary mission, is to support your role in the Federal Government and to carry out your mission. An ESCO's mission is to be an expert in finding energy efficiency measures at your site and to implement those measures.

We've got a list of these measures here. What we've got here are some of the basic ones. We're talking about boiler and chiller plants, energy management, and control systems. These are the things that are available at every site. Building envelope; we're talking about windows, insulation on the roof and the walls. HVAC equipment, for example, ground source heat pumps or rooftop units. Chilled water distribution systems; just this range of energy consuming equipment that you see at most Federal sites.

But, ESCOs can do a lot more. They can implement renewable energy solutions for you as we saw in those projects at the beginning. They can implement wind power. They can implement solar. They can do a lot of other things. They can also help you meet your water conservation goals. They can work with your utility to get you a better rate. For example, if they reduce your peak power consumption or if they can shift loads to a different part of the day, they can work with the utility to get a rate adjustment, and that's a savings to you and a savings to the project. They are experts in commissioning; also advanced metering, the meter requirements that are contained in EAct 2005; so just a wide range of ECMs.

FEMP's ESPC contract also encourages the use of renewables in advance energy technologies. There's a renewable energy screening tool. Once you begin a project with FEMP, your project will be screened for the availability of renewables at the site. Experts at the National Laboratories will look at that project and look at the site and see what wind resources are in the area, what solar resources are available, are there ground source heat pump projects nearby, what is going to work.

ESCOs are also encouraged to use the most advanced technologies available. Although there's certainly a lot of common variety controls for ECMs and lighting ECMs, we do encourage the use of advanced conservation measures as well. Your project is going to be screened for suitability for these advanced or emerging technologies. There's something called the Emerging Technology Matrix that you'll hear about.

Of course, as I said, most ECMs continue to be the garden variety as we'll see in the next slide. This slide is about a year old, but it shows how the conservation measures have broken down throughout the history of the program. You can see that controls, energy management and control systems, about 14 percent; HVAC, another 14; lighting, another 14; steam and water distribution systems make up about 14 as well. But, the interesting thing to notice here is that renewables are about 12 percent of the project or of the process. And, that percentage has been growing over the years and we really encourage the use of renewables.

Agencies have a lot of reasons for using ESPCs. First of all, as we say, they are able to improve infrastructure and facilities without appropriations. But, another key advantage of ESPCs is that the project can bundle longer and shorter payback ECMs together. For example, renewable conservation measures or renewable measures are known to have long payback periods. And, it is very difficult to justify those in a single project because of that. In ESPCs, you can bundle those longer payback ECMs with shorter payback ECMs, such as lighting or controls, and, as long as the whole project is feasible, it can be done.

Many sites have also seen the advantages of having the ESCO do the operations and maintenance on the installed equipment. Another advantage is that there are 16 ESCOs to choose from and it allows you to take advantage of a wide range of expertise; and also, of course, you get the benefit of having a world class energy expert design your project for you. But, the bottom line is that agencies use ESPCs because they deliver guaranteed improvements, guaranteed savings, and guaranteed performance.

But, a primary driver, as we've seen for these projects, has been the need to meet Federal energy goals, primarily Executive Order 13423 and the Energy Independence and Security Act of 2007. We've all been living with these goals and we're wondering how we're going to meet them. We

have to reduce energy use by three percent per year relative to 2003, or a 30 percent reduction by 2015. We're also required to increase our use of renewable energy to not less than 7.5 percent by 2013, and that's only two years away; and also to reduce water use by two percent per year, and actually 16 percent within four years from now. Those are going to be very challenging goals to meet. And, there are also some other goals in EISA that are going to be even more difficult to meet. But, these are the primary things that are driving the use of ESPC and agencies have been very successful in meeting these goals using the process.

Now, ESPCs have been used by a very wide variety of Federal agencies. As you can see, DOD has been the largest user. The Army, Navy, Air Force, and Marines have done about 82 projects. But, notice the wide range of agencies that have used the process. Actually, the interesting thing to note about this is that that other bar down there contains fully as many agencies as are contained in the other part of the graph. There are 12 to 15 agencies contained in this bar here. This program is being used by the largest agencies and the smallest agencies and every agency in between. And, the projects have been from large to small as well.

ESPC activity has been increasing from year to year. There was a problem in 2004 when the ESPC legislation was originally put into place. There was a sunset provision and, through really no fault of anybody, just because of other things that had to be done in Congress, the authority to do ESPCs expired in 2004. Only modifications to existing contracts were done during that time. So, there was a little bit of a problem there, a little bit of a glitch. But, once authority was restored back in 2005, the activity started increasing again and we're back up almost to the level of where we were before the hiatus in 2003. It's important to note that ESPCs have been given permanent authority so we're not going to have that problem again. The authority is never going to expire again.

The size of projects has been increasing as well. If you look at back in 1998, the average size of a project was only about \$2 million; 2009, that was all the way up to about \$19 million. Even during the hiatus in 2004, there was a slight dip there in 2004 and that's because, as I said, only modifications were allowed to be done at that time. But, right through that, the size of those projects has increased.

Altogether, the results of the process – under the FEMP program, there have been about 250 ESPC projects awarded by 25 agencies. Now, if you look at the FEMP website, you may see another number there. There have been I'd say between 250 and 260 projects done. The reason why that number is a little variable is because some of those projects have been modifications and sometimes a modification is large enough for it to be considered a new project.

The total investment in the FEMP program so far has been \$2.5 billion. The total savings generated have been \$6.5 billion. That's been about an energy savings, a slight energy savings, of about 300 million MMBtu's.

Our rule of thumb that we use – and this is a rule of thumb that you might be able to use if you're looking at how much energy you have to save on your project or how much investment you need – long term, on average, our projects have been saving about 8,000 Btu's per year per dollar invested. So, every dollar that you invest at your site through the ESPC process will wind up saving, on average, about 8,000 Btu's per year. Not every project is going to get that, of course, but that's the average.

Another thing is that ESCOs, when they come in and design your project and determine what the energy savings for those ECMs are going to be, they'll tend not to guarantee all of those savings. They'll guarantee about 95 percent of those. So, actually, there's more savings to your site accruing than what is guaranteed by the ESCO.

Last year, we went through every M&V report for the active projects at that time, and we looked at what the guaranteed savings were versus what the ESCOs were reporting. We found that about 108 percent of savings was being reported at that time.

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Kathy Hyland:

Now let's take a break from John's presentation and talk with Skye Schell. And, let me introduce Skye. Skye is a team lead for FEMP's Project Transaction Services. And, in that role, he assists Federal agencies in funding technical assistance and other projects support. He's currently involved in the streamlining of the ESCO selection process based on the National Defense Authorization Act of 2011. He's also involved in GovEnergy and in training Federal energy, facility and sustainability personnel. So now to Skye.

[Music]

Schuyler Schell:

In the face of expanding agency missions and utility bills and steady or reduced operating budgets, Federal energy and facility managers must continue to meet high agency customer expectations and also comply with new executive order requirements to save energy, reduce greenhouse gases, and generate secure, domestic energy.

Hello, I'm Skye Schell, Supervisor for Project Transaction Services at the Department of Energy's Federal Energy Management Program. Today's First Thursday Seminar will focus on an important tool for Federal employees who must meet the challenge of creating high performance Federal buildings in the face of very real budget constraints.

Since 1995, Federal energy professionals have used ESPCs to fund both large and small projects with the latest technology for energy efficiency and renewable energy generation. At little to no upfront cost to the taxpayers, more than 500 ESPC projects at 25 different Federal agencies in 49 states have collectively saved the government more than \$11 billion in energy costs. It's clear that ESPCs have a proven track record and the Federal Government is committed to expanding and accelerating their use.

FEMP has developed tools and resources to help you identify, develop, and administer ESPCs at your site. FEMP provides free services to help you get started quickly and effectively on the path to contract award.

I'd like to give you a quick overview of the experienced team that is available to assist all Federal agencies in developing and managing these contracts. This team includes Federal personnel at FEMP's Washington office, Federal contract and project management staff at our Golden Field Office, and various contractor resources at locations around the country.

After exploring financing options through training or the FEMP website, contact one of FEMP's expert Federal financing specialists to explain various private sector financing options to your associates and senior management, determine with you the best type of financing for your project, identify and bring together the key members of your acquisition team and connect you with contracting expertise at our Golden Field Office and with an experienced project facilitator to support your efforts. No matter where your site is located, FEMP's Federal financing specialists, Scott Wolf, Tom Hattery, Doug Culbreth, and Gordon Drawer, are available to help you get started.

After deciding to pursue an ESPC, your financing specialists will arrange the assignment of a FEMP project facilitator through our Golden Field Office who will help you complete your ESPC. Project facilitators serve as experienced, unbiased advisors who can walk you through an ESPC from start to finish. Your project facilitator can help you develop and manage your project plan from kickoff through contractor selection, award, project acceptance, and first year measurement and verification. Project facilitators can also consult with your team on contracted and financial issues, technology and engineering questions, and measure and verification planning and reporting. Whether you're experienced with ESPC contracting or just getting started, FEMP's project facilitators are here to help you.

Other FEMP resources can also be called in to assist with your project. For example, through FEMP, you will have access to top experts from DOE's National Laboratories to review your project and ensure that the best technologies are being used and the most appropriate M&V plan is being recommended for these technologies. Get in touch with our ESPC team to learn more about how FEMP can help your agency reach its energy savings goals.

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For further information, please visit the FEMP website to learn more about how you can benefit from FEMP's technical, legal, and financial services. The website offers comprehensive guidance documents, listings of pre-qualified energy service companies, summaries of ESPC laws and regulations, case studies of successful energy savings projects, and archived, on demand training session.

So if today's training piques your interest in ESPCs, take the next step and contact a FEMP Federal financing specialist to get started on this powerful tool, to meet your sustainability goals. Thank you for joining us and enjoy the rest of the seminar.

Kathy Hyland:

Thanks Skye. As I said earlier, Skye will be available to answer questions at the end of this broadcast or at the end of the presentation. So now back to John Shonder.

John Shonder:

Okay, thank you Kathy. Over its 12 year history, FEMP has established a pretty well established process for implementing these ESPCs. We like to think about this in terms of five different phases. I'm going to talk about each one of these phases in turn.

Phase one, the acquisition and planning phase. Now this, of course the first step, as Skye mentioned, is to talk to your Federal finance specialist. They're the key; they're there like the *entré* into the program. But, you can think of this acquisition planning phase as a team building phase as well. If you think about it, most sites, most agencies in the Federal Government, and most people will probably do one ESPC in their career. So, chances are that the people that you are going to be working with at your site, this is the first ESPC they're going to do. There's a training mission that needs to happen.

You begin by considering who's on the acquisition team, who is going to have to approve this project, who is in the signature chain. You want to get these people training. FEMP offers a wide variety of training. There is live training. There is training via the web and there are also recorded training programs on the FEMP website.

Also at this stage, you want to consider your project motivations and the site needs. Why are you doing this ESPC? What are your goals? What do you want to achieve with the project? For example, what specific systems do you want to focus on? Do you have an aging steam system at the site that you want to replace? When you look out your window, can you see steam billowing out of faulty traps and valves? You want to think about how much money that is costing you. You may want to think about repairing or replacing that. Do you have a water problem at your site? Are your water bills increasing? Maybe another goal?

The second stage is ESCO selection. What happens when you select an ESCO is that they will come out and they will talk to you, review what your goals are for the project, those goals that I just talked about. Then they'll do a preliminary assessment of your site. They'll consider your goals, but they'll also go out to look for additional ECMs. They'll bring their expertise to the process and they will develop a project for you. If you like that project, then a notice of intent to award will be issued.

Now, in the past, some people have had the impression that that ESCO selection process was somewhat complicated. There is a new process in the works. It's going to be a lot simpler. We expect to have that modified very soon and that's going to be covered in the next ESPC workshop. Stay tuned on that because the process is much simplified.

In phase three of the process, the agency looks at the preliminary proposal and issues the notice of intent to award and then issues a task order RFP. The project now begins in earnest. The ESCO will do something called an investment grade audit and that investment grade audit is when the ESCO goes out and, okay, so they have their ideas now for the ECMs that they want to install. They've toured your site. Now they're going to go out and do detailed measurements to determine what the savings are going to be. They're going to, for example for a lighting project, determine how many fixtures are on the site and how many lights they have to replace; they'll want to do accounts like that. They'll measure baseline conditions. If you have existing equipment that needs

to be replaced, they'll take some measurements of that to determine how much energy is being consumed by those systems and how much energy could be saved.

An important thing here too is that they'll determine the cost of the project. They'll size all the equipment and, through their experience, they'll determine how much they think that that project is going to cost. Also at this time they'll go out and start to look for financing for the project.

They'll put all this information together from the investment grade audit into something called the final proposal. You'll get a copy of that final proposal. It will go to various people in the project; the project facilitator will get a copy of it. FEMP's laboratory experts will get a copy of that. They'll look at the things like the measurement and verification plan, the commissioning, whether these ECMs look reasonable, whether the savings that the ESCO has projected looks reasonable based on previous projects that have been done under the program.

Then there will be a process of negotiations. Everybody will have a chance to comment on that final proposal. You'll have a chance to see whether it meets your needs, whether it's the project that you thought you were going to get, whether it's going to go at your site. There are some negotiations and finally, when everybody agrees, then you will award the ESCO a task order for the project.

Now the construction phase; we like to say that this is very similar to any construction project that you do at your site similar to any project done under the appropriations process. The ESCO will complete the design of the ECMs. They'll develop a design and construction package. You'll have a chance to review that every step of the way. Then they'll begin construction and, during this period, you'll have the responsibility to gain them access to the site, to doing escorts that are needed.

Finally, you'll do some inspection of that. The ESCO will commission that equipment for you and, at the end of the construction process, then the agency will have to either accept that completed project once the ESCO is done with that. Then, at the end of that, the performance period begins.

During the performance period, operations and maintenance will take place. As I said at the beginning, some sites or some agencies prefer the ESCO to take over operations and maintenance of the equipment that they installed. Not every site is like that. Some sites have O&M contractors that do that or M&O contractors.

But, one of the key things that will happen during the performance period that's different from an appropriations funded project is this measurement and verification process. Once a year, the ESCO is going to come out and they're going to measure the performance of the equipment. They'll go and make sure that all the equipment is still operating. Depending on the type of plan that you selected or that you agreed to with them, they may do some further measurements to make sure that the efficiency of the equipment is as it's supposed to be.

Once that measurement and verification process is over, they'll issue you a measurement and verification report. That happens annually. Once annually you will receive a report that tells you how much energy is being saved by all the ECMs that were installed. You'll get that report. You will review it. There will also be an invoice associated with that report. You will review the report and, based on that, I've seen that you may have some comments on that report as well. But, once you receive the invoice, you'll make the payment and that payment will be used by the ESCO to fund the O&M activities and the debt service on the financing that was used to install the project.

The performance period is key. We tend to spend a lot of time up front negotiating the project, but the performance period is a very important part of the process. You're going to have to live with this project at your site for the next whatever the term is. I think on average the term is 17 years. So, everybody at your site needs to be aware of what has to be done during the performance period and what your responsibilities are and what the ESCOs responsibilities are.

I'd like to talk about some of the success stories. Some of these are case studies that are right from the FEMP website. The Bureau of Prison's project in Victorville: back in about 2003, the Bureau of Prisons had not done ESPCs before, so they got involved in our program with this project. Victorville is somewhat of a remote site, so they wanted to install some renewable energy there; so they installed a 750 kW wind turbine. There's also a smaller PV array. There were upgrades of their existing HVAC and control systems to reduce energy consumption at the site.

Essentially this is a total equipment price of about \$5.4 million. Now there was an initial payment from savings in this project of \$2.2 million. Those are possible too and there are some advantages to those payments from savings if your agency has those available. Of course, it reduces the interest costs on the project. You can see here that the ESCO arrangement – they only had to arrange financing then for \$3.8 million.

This project was awarded in September of 2003. It resulted in annual savings of 2.6 million kWh of electrical energy. The peak demand was reduced by 3,800 kW; reduced fuel oil consumption by 13,000 MMBtu's. And, if you think about all the associated pollution reduction associated with the reduction of the fuel oil, electrical energy was considerable.

Year one savings in this case was \$430,000. The way the project worked out, it was a 19-year performance period. It was a very positive experience for the Bureau of Prisons; so positive that it lead them to award another ESPC at the same facility in 2009. They have several other energy savings performance contracts in the works at other prison sites around the country.

The Harold Washington Center in Chicago is another success story. This project was awarded in 2006. It included rooftop solar electric systems. During that video where Skye spoke, I think there was a picture of that as well. It also included some simpler ECMs, such as energy-efficient lighting fixtures and controls, retro commissioning of existing equipment, energy management and control systems, improvements to their HVAC equipment, their chillers and boilers; it also included significant water conservation measures as well.

The annual savings on this project turned out to be four million kW a year; and that was 20 percent of their electrical use at the site. It also saved two million gallons per year of water; a very significant water savings as well. And, at this site, the agency chose to have the ESCO do the O&M on the installed equipment during the 10-year project life.

GSA's White Oak facility has installed a series of ESPC projects. Beginning in 2002, they began with a \$25 million project that included a cogeneration system, 5.8 megawatts, or 5,800 kW. They included some PV as well, 26 KW of PV. There were lighting upgrades; various HVAC upgrades as well at the site. There's also some new construction involved in this. ESPCs can also be used in new construction, and this is a good example of how that happened.

The year one savings on this project was \$2.6 million. That increases to about \$6.5 million by year 20 and this project was a success and, again, GSA was happy enough with the process that they awarded a series of additional ESPCs and, altogether, those ESPCs have been worth about \$200 million. Some of the things that they've done there include an expanded the cogeneration plant, lighting and controls, and other HVAC improvements in other buildings at the site.

As Sky alluded to during his presentation, FEMP has many, many resources available. That's one of the advantages of this IDIQ umbrella contract. One of the resources, one of the key resources are these FEMP Federal financing specialists. Those are going to be your first contact with the FEMP program if you do an ESPC project at your site.

Basically, their job is to explain the performance contracting process to your agency. They'll help you to determine if an ESPC is a good option or a good vehicle for the particular project or set of projects that you have in mind. They will also help you form the agency acquisition team. They've been through this process many, many times before. They know who the key players are in just about every agency in the Federal Government, so they'll know who's in the signature chain and who has to approve the project, and they'll make those suggestions to you and tell you how to form that team.

The National Laboratories, one of which I represent, is another resource. FEMP calls these the lab core teams and the lab core teams; what they do is screen your site for renewable energy. They review initial proposals. They review final proposals. We have experts in pricing, financing. We have experts in measurement and verification, so they'll take a look at your measurement and verification plan for your project and ensure that that's sufficient to guarantee the savings as well.

So here are the Federal finance specialists. I know Sky mentioned their names before, but I want to keep this slide up for a little while so that those of you who are out there who would like to call these folks can get their numbers down.

Gordon Drawer works in the Midwest region and, since our contract now is worldwide, Gordon also takes care of Africa and new independent states.

Tom Hattery is in the Northeast region plus state department sites worldwide.

Doug Culbreth, my friend Doug, is in the Southeast region, so most of the southern states plus Europe and the western hemisphere.

And then Scott Wolfe out in the West; Scott takes care of the Western region, including all of the islands and Asia and the Pacific.

Everybody's phone number is up here and, if you're interested in a project, please give them a call.

Another thing that Skye mentioned was project facilitators. Project facilitators have been involved with all of these projects, all 250, 260 FEMP projects from the beginning. So, they have a wealth of experience in contracting and financing. They're engineers, so they have a lot of experience in all the technologies that are installed in ESPCs and all the engineering issues that arise. They, too, are experts in measurement and verification, and so they'll review your measurement and verification proposal with you and help you ensure that that meets your needs and the needs to guarantee the savings.

The project facilitator will also help you review cost and technical proposals; so reviewing the costs of the ECMs, reviewing the amount of savings that the ESCO is projecting for those ECMs, reviewing the financing with you and the financial schedules; they'll help you do that. They'll also review your agency task order request for the proposal and help you draft that.

FEMP has a staff of project facilitators that are available and one will be assigned to your project. But, just on a side note here, there are some agencies that have their own project facilitators and those are qualified by FEMP. FEMP does have some leadership role in the entire process. But, those are the larger agencies and the smaller agencies and most other agencies use our project facilitators.

One of the new services being provided by FEMP during 2010 and 2011 is support during the performance period. As I mentioned on this previous slide, the performance period is the longest period of the project; that's going to last 20 to 23 years. The fact is that changes happen in those contracts over long periods of time, and, actually, changes happen at the site during those long contract terms.

If you think about it, people do not last in their jobs for more than say three to five years before they move on. It's a rare thing that somebody lasts 10 or 20 years in the same job. So what's going to happen is that the people who negotiated the ESPC and the people who are aware of what needed to be done once a year for the ESPC, the people that were aware of what the measurement and verification plan was and what needs to be done for that every year, chances are, within a couple of years, they're going to move on. Does the person at your site who has been assigned the responsibility, the new responsibility of doing the ESPC, are they aware of all the responsibilities that they have for the project? Are they aware of what needs to be done on an annual basis in terms of witnessing the M&V process, in terms of reviewing the M&V plans?

FEMP – essentially what we do is we make calls to the sites, biannual calls to keep the projects on track and to keep up with personnel changes; and also to make sure that you have access to the latest FEMP guidance. FEMP is continually renewing its guidance. There's a continual improvement process going on up there as we learn new things. We want to make sure that all the new training and all the new guidance that is available to the people at your site doing the ESPC.

One more thing on that slide, every couple of years, from three to five years, a FEMP representative is going to visit your site and they will walk through the process with you. They'll look at the ECMs. We find that most agencies and most sites see this as a positive process. We're not doing this, you know, as a quiz or anything. This is to help you and to make sure that you're aware of all the training that's available and all the guidance.

FEMP has a website with an extensive library of tools and documents. This will be up there for awhile. I assume though that most of you out there in the audience have been to this website if you signed up for the training. But we have a list of all the assistance available and all the contacts, people's phone numbers and e-mails. We have a list of all the resources that are available to you.

We have a list, as I said, of those laws and regulations that apply to ESPCs that you may need to justify the ESPC during presentations to management and things like that.

We have a list of all the ESCOs and the ESCO contacts. We have a list of every awarded contract out there and a listing of what the ECMs were and where those projects were. So, if you'd like to call other sites in your agency that have done those ESPCs, those contacts are there as well.

There are case studies of projects, of a wide variety of projects, as I said, from simple garden variety ECMs to renewables and more complicated projects as well.

There's also training. There's a schedule of FEMP training. There are links to recorded training that has been done in the past and other webinar based training. As a matter of fact, the next comprehensive ESPC training course is going to take place in Chicago from June 7th to the 9th. You can go to the website there to sign up for it. There are three on demand web training courses on the site right now. There's the "Intro to ESPC," which is an expanded version of this seminar.

There's a course that I designed called "Financing & Pricing Evaluation for ESPCs." We found, over the years, that two of the things that are most different about negotiating an ESPC, as compared with an appropriations project, are the financing portion and the pricing portion. It's slightly different than what you're used to in the appropriations projects; so Joyce Ziesler and I developed a complete course around that. And, there's a course specifically in ESPC contracting and negotiations; so all those are available at that website as well.

to summarize, ESPCs are a valuable, proven tool for government facilities used to meet Federal energy goals. ESPC is a flexible contract process that allows each project to address site and agency specific priorities. It can be used to address a wide variety of goals. As I said, there have been about 250 projects done by 25 Federal agencies over 12 years, so it's a well established process. A range of projects from large projects to small projects have been done by a range of small to large Federal agencies. So it's a very well established process. There's a wealth of support and resources available from FEMP.

When I have a meeting, I always end it by asking, "Okay, what are our next steps?" I think the next step in your process, if you want to do an ESPC, I would reverse the order of these bullets and say the first thing you need to do is contact a Federal financing specialist to discuss your project needs and perhaps then also, after that, you need to look at what your project needs are and what types of things you want to do with an ESPC. Talk that over with a Federal financing specialist and allow them to help you with the process of implementing a project.

I want to put up this slide once again because these are the key players here. If you haven't copied down those numbers already, please do: Gordon Drawer, Tom Hattery, Doug Culbreth and Scott Wolf.

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Tthat's the end of my presentation today. So there, once again, are the resources and I guess now we'll turn it over to some questions.

Kathy Hyland: Yes, now we're open to your questions. So call us and we will be glad to answer your questions. I have some that have been turned in during the presentation. So let me start with that one.

My first question to you is: I can see dumping a whole lot of projects and a whole lot of ECMs in an ESPC. Based on your experience, how broad is too broad for an ESPC project?

John Shonder: How broad is too broad? That's a pretty interesting question. I don't think I've ever seen a project that has more than 25 ECMs. But, you know, there is a broad range of numbers in a project. I don't think there's ever been a project with a single ECM, and I'd say that's gone all the way up to 25 ESPCs.

There are probably some advantages and disadvantages. A lot of sites; they want to start small because – or they at least want to start with a more manageable set of ECMs because it takes a lot of – if there are a lot of ECMs in the project, then there has to – there's a lot of coordination that has to be done all across the facility. Some sites, at their choice, may start out with say one specific part of an installation and then they'll do a modification or a delivery order number two or a task order number two. I'd say that depends on the agency. But certainly you can do a large number of ECMs as long as all those can be managed by the site at one time.

Kathy Hyland: Skye, would you like to weigh in on that?

Schuyler Schell: Yeah, thank you. I think John's description was right on target. We have also seen that, from a – in terms of focusing on how best to achieve the optimal financing cost, if projects can be in the neighborhood of 10 to 15 million dollars, then the ESCO is better able to achieve the best financing for the projects.

Kathy Hyland: Okay, next question. With the current climate on government spending and budget, it seems like alternative financing is a natural. Why don't more people get involved with ESPCs?

John Shonder: That's another good question. There are a variety of reasons. First of all, it may be unfamiliarity with the process. As I said, although Skye mentioned 500 ESPC projects that were done throughout the Federal Government and about half of those have been done through ESPCs, when you compare that to the number of total Federal installations across the world, it's probably a small percentage of agencies and sites that have done that. So it's probably unfamiliarity with the process. And that's part of the objective of this seminar as well is to get people more aware of what the process is.

I think that there was, in recent years, the ARRA process; that funded a lot of energy conservation projects as well. Some of the things that would have been done by ESPC in recent years was done using that type of funding.

But, in general, I'd say it's probably just lack of familiarity with the process.

Kathy Hyland: Oh good; next question. Many already overworked Federal executives consider an ESPC project just more work than they can handle. How can we get the attention we need from our finance, contracting, and procurement professionals?

John Shonder: I wonder if Joyce is on the line, if Joyce Ziesler is on the line and we could throw that. Joyce is a former contracting officer for the ESPC program and I wonder if Joyce could address those questions about contracting officers.

Kathy Hyland: Do we have Joyce available?

Joyce Ziesler: Yes, I'm on the line. FEMP has signed up to and is engaging more in the stressing contracting officers, contract specialist training and becoming more involved early on in the process. In the early days of ESPCs, we really didn't have much participation in our workshops. Mostly we had

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engineers and technical types of folks coming onboard for the workshops. But I think we just need to continue and to start at a management level when we are marketing, if you will, the training opportunities and so forth to agency managers. And I think FEMP headquarters has the lead on that and is diligently working to engage more management and contracting and procurement type folks in the training.

John Shonder: I guess, to sum up, you would say training is the key, right? We need to get more people, more Federal contracting officers trained in ESPC and more of them aware of what's available under the ESPC program.

Joyce Ziesler: Yes, and I think management is a good place to start with that because, typically, they are the ones to control travel dollars that go into training. So management is important, is the key element in getting more procurement folks involved.

Kathy Hyland: Thank you very much, Joyce. Let me direct the next question towards Skye. It says: Some may shy away from ESPCs because regulations seem to be continually changing. And John mentioned some new legislation. Can you elaborate a little bit on that and the ESPC contracting process?

Schuyler Schell: Certainly. Well, as John's presentation described, a variety of regulations and executive orders that relate to ESPCs, in all cases there's regulations and the regulatory environment has been very supportive of ESPCs. This is a program that appeals to both sides of the aisle and it's been one that has been of great interest and focus and support from a legislative and regulatory basis.

An example of the improving regulatory environment is the new National Defense Authorization Act of 2011, which does provide a very streamlined approach for the selection of the ESCO, while maintaining a sound transparent and competitive process.

John Shonder: I just want to add one; even though these regulations are changing over time, I've never known them to get easier over time. The regulations that govern energy use at Federal facilities are only getting more stringent over time. You need ESPCs in order to meet those goals. There just isn't the funding available from Congress to do that. So get started now because there are going to be more difficult regulations coming out in the future, I believe.

Kathy Hyland: Okay, next question. How could the project facilitator help with determining how we can use renewable energy technologies? Is that something that we're particular interested in in starting an ESPC project?

John Shonder: Okay, I think the answer to that question, Kathy, is that – the project – first of all, project facilitators have a lot of experience in the use of renewable energies. But they also – the National Lab teams are key here as well.

There is something called the renewable screening process; so people at the National Renewable Energy Lab are in charge of this and they go out to laboratory experts and ask –I am the subject matter expert in ground source heat pumps, so every time there's a new project, I get a notice from NREL that says, "Okay, there's a project going on here or there's a Federal agency interested in doing a project at this site so what can you tell me about geothermal resources at this site?" I'm sure that they're doing the same with their solar experts there at NREL; the wind experts at other laboratories.

We take a look at the sites. We take a look at the location. For geothermal actually, in terms of geothermal heat pumps, those are applicable most everywhere around the country. So what we really do is look at whether there are other projects around the site where there is infrastructure available in the local community to do those projects. But, with the solar, for example, they will look at maps, determine what the solar resources are that are available, look at what wind resources are available there. So there are a lot of resources to help you, including the project facilitator. But he's backed up by the National Labs as well.

Kathy Hyland: Skye, anything to add to that?

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- Schuyler Schell:* No, I think John really summed it up perfectly. The only addition might be that the ESCOs really do bring a lot of excellent expertise to the table with regard to the renewable and other technologies. Thank you.
- Kathy Hyland:* Thank you. Okay, next question. It says: John, you mentioned about the project facilitator's support from FEMP during the performance period. Could you elaborate a little bit on how they can help with measurement and verification?
- John Shonder:* First of all, the project facilitator's role is from the time that the project development process begins with the ESCO and the site all the way through the first measurement and verification report that's delivered. The first year of the project performance process. After that, it's FEMP that takes over and these are not project facilitators. I guess we don't have a name for these people yet. But what they do is they will call the site twice a year. So we know the schedule of when you're supposed to receive your measurement and verification report.
- We call 30 days in advance of the ESCO visit. We make sure that somebody at your site – that the contracting officer and the energy manager and technical people are aware that the ESCO visit is going to take place. We make sure that they're aware of their witnessing responsibilities during M&V because it's very important that a Federal representative witnesses what the ESCO does during that M&V process. We also make sure that somebody is assigned to escort the ESCO around.
- Harold Merschman on my staff does that for many of the Federal agencies and Harold has a big long list of questions that he asks. He has a very good discussion with the contracting officer prior to the M&V process. Then, once the M&V report is delivered, Harold makes another call to the site to make sure that they're aware of what training is available for review of those M&V reports. He wants to make sure that, if there are any technical problems that were highlighted during the M&V visit, the site is aware that there are FEMP resources available to assist them in resolving those issues, technical and contracting issues, that they can turn over to FEMP technical experts.
- Kathy Hyland:* Okay, thank you. We have a caller live from GSA in Chicago.
- Question:* I know that these contracts are quite, quite lengthy. They're, from what I understood, up to 25 years in length. And I was wondering if you can elaborate on the verification process, the measurement and verification process I think is what you mentioned, and how exactly that's kept to over such a long period of time?
- From what I understand, I'm vaguely familiar with these but, they're kind of difficult to measure in such a long time. You have the project that takes care of certain scope items but, over that 25 years in time, so many different things happen to different systems in the building that it's kind of difficult to measure specifically what this contract did from 10 years ago and to actually continue to attribute that phasing and for it not to get lost in other projects that are ongoing in the buildings.
- John Shonder:* Okay, well I think the answer to that is that you have to try to anticipate all those changes or anticipate change. You can't anticipate what changes are going to happen, but you do have to anticipate change at the time you develop your measurement and verification process. You want to involve the master planning process as well at your facility. If you know that certain buildings are going to be decommissioned or demolished within the timeframe of the ESPC, you don't want to involve those buildings in the ESPC.
- Now certain changes do happen that are unanticipated. We can't prevent those. But, one of the reasons why we call during the performance period is to make sure that you're aware that the contract can be changed once it's signed. Okay, so even though the project is 25 years long if, for example, something happens at your site, if it's decided that a building is beyond repair or the roof is beyond repair or something, it needs to be demolished or the function of that building needs to be changed, well then the contract has to be changed. There has to be a modification of the contract. Those do happen. They happen quite often and there's no problem with that. The ESPC can accommodate changes like that.

I don't know if I answered your question, but –

Question: What I was thinking about is, if you have a building – let's say you have a building that has a million square feet in it and a portion of that building has a new lighting system that's being upgraded as part of this contract at point 2001 and then, 10 years later, out of different funding, we go and upgrade other systems, maybe also including lighting. And then it gets really hard to track where actually savings come from.

John Shonder: I see what you're saying. That is one of the reasons why we make that contact with the sites. We have access to all the contracting documents. I realize that, at sites over time, some of those contracting documents may be misplaced or people forget about those. But, we have access to all of that documentation. We can help you.

Now certainly, if an ESPC installed equipment and then some brand new type of equipment comes out 10 years later and you want to replace that originally installed equipment with brand new equipment that perhaps uses a lot less energy, that can be accommodated as well. But, you have to buy out that ECM; so that ECM has to be bought out from the ESCO. And then, that ECM is no longer part of the project; so that can happen too.

Kathy Hyland: Thank you. We have another caller on the line from the U.S. Coast Guard in Cleveland, Ohio.

Question: My question is: do your project facilitators from FEMP, do they cost the agency at all?

Kathy Hyland: Skye, do you want to take that one?

Schuyler Schell: Yeah. The way that we have it currently set up is that the initial engagement of the project facilitator is provided by FEMP without a charge to the agency. However, after awhile, when the agency has determined that it will be going forward with the project, they would normally enter into an interagency agreement and provide funds to support the project facilitator's role throughout the entire engagement.

Question: Okay. Thank you.

Kathy Hyland: You're welcome. Okay, last question. What are the advantages of shorter or longer ESCO contract performance periods and how do the range of ESCO services and financing terms impact decision that relate to establishing the contract term?

John Shonder: I think that question has it the wrong way around. Usually what happens is it's the ECMs and things like the energy rates at the site that determine that contract period. Some agencies may want a certain package of ECMs and those ECMs and the financing terms available and the energy savings that are available, that really determines the term of the project.

I don't think there's really an advantage to having a shorter term over a longer term. There may be some advantages and disadvantage to either one. Of course, a longer term allows you to include more energy conservation measures. All things considered, I think that's probably the case. If you wanted to do just some simple ECMs with very short paybacks, that would result in a shorter project. But, those short payback ECMs are not going to allow you to meet the 30 percent reduction targets that Congress has set. Skye, I don't know if you have anything else to add to that.

Schuyler Schell: Well John, I would agree with you that we encourage agencies to take full advantage of the contract and the flexibility in term to try to do as deep and comprehensive a retrofit as possible so that you can achieve fully your efficiency and your renewable and your sustainable goals.

Kathy Hyland: Thank you John and thank you Skye. I want to point out at this time that this is a series of seminars and next month, on Thursday, April 7th, there will be another session on financing that will cover UESC's and also energy project incentive funds. We look forward to seeing you next month.

We're going to now show you the upcoming seminars that are available.

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[Music]

- April 7: Utility Energy Service Contracts and Public Benefit Funds, Julia S. Kelley, Oak Ridge National Laboratory; Phil Coleman, Lawrence Berkeley National Laboratory. Finance capital costs of energy improvement projects with savings funded by utilities and public benefit funds.*
- May 5: Renewable Energy: Andy Walker, National Renewable Energy Laboratory; utilize best practices to generate and optimize renewable energy at Federal facilities.*
- June 2: Federal Fleet Infrastructure and Electric Vehicles: Amanda Sahl, Federal Energy Management Program; Accelerate infrastructure upgrades and advance the use of electric and alternate fuel vehicles in Federal fleets.*
- July 7: Labs, Data Centers, and High-Tech Facilities: Dale Sartor and Paul A. Mathew, Lawrence Berkeley National Lab; improve the energy and environmental performance of laboratories, data centers and high-tech facilities.*
- August 4: Energy Efficient Product Procurement: Linda Mesaros, Mesaros Associates, Inc.; Christopher Payne, Lawrence Berkeley National Laboratory; Meet Executive Order and FAR requirements on purchasing FEMP-designated and ENERGY STAR products.*
- Kathy Hyland: Again, thank you for participating today. You can sign up for additional seminars by accessing www.femp.energy.gov/firstthursday.*

I want to point out that there is an evaluation and a quiz. You can access the evaluation and quiz in one of three ways. You can go to the website under www.femp.energy.gov/firstthursday and find the evaluation and quiz there. You can also, if you registered for this course, you'll get an e-mail follow up with the link. And, if you're watching this today by live webcast, you can click on the paper clip icon and it will take you to the evaluation and quiz.

Of course, we'll use the evaluation to continue to improve these seminars and to find out what training objectives will meet your needs. And, if you complete the quiz to kind of reinforce your learning, you will be able to print a certificate for your training records. So thank you and we'll see you next month.

[Music to end]

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