

Federal Utility Partnership Working Group Seminar

April 22-23, 2015 - Nashville, Tennessee

Meeting Notes

The Federal Utility Partnership Working Group (FUPWG) is a joint effort between the Federal Energy Management Program (FEMP) and the utility industry to stimulate the exchange of information among participants and foster energy efficiency projects in Federal facilities nationwide.

The Spring 2015 FUPWG meeting was held in Nashville, Tennessee on April 22-23 and was attended by 230 professionals.

An additional 27 professionals participated via webinar.

The complete meeting participant list can be found in Appendix A and the agenda is provided in Appendix B. The meeting presentations can be found at <http://energy.gov/eere/femp/downloads/fupwg-spring-2015-agenda-and-presentations>.

Welcome Remarks from the Host Utility

Gary Harris, Vice President, Industrial Marketing & Services, Tennessee Valley Authority

Gary Harris, Vice President of Industrial Marketing & Services at the Tennessee Valley Authority (TVA) welcomed attendees to the 2015 Spring Federal Utility Partnership Working Group (FUPWG) Meeting. The TVA, a corporation owned by the U.S. government, provides electricity for 9 million people in parts of seven southeastern states. TVA generates \$10.9 billion in annual revenue and works to manage the Tennessee Valley's river systems and environmental resources.

Mr. Harris discussed TVA's mission and priorities for the year 2015. Particular emphasis was placed upon the following priorities:

- Align spending and revenue for financial health
- Improve operational performance
- Stimulate economic development and investment
- Improve customer communication and collaboration
- Manage the Valley's river system

Mr. Harris provided attendees with an overview of TVA's community involvement, its updated energy portfolio, and future plans to integrate resources and diversify energy sources. TVA has reached 6,688 megawatt (MW) in renewable energy capacity, with hydroelectric providing 4,655 MW.

Additionally, Mr. Harris spoke about TVA's transmission system, featuring over 16,000 circuit miles of transmission line, over 400 substations and switchyards, and over 1,200 customer connection points.

Mr. Harris concluded his presentation by highlighting the need to prepare to adapt to the continually evolving power grid, particularly with increased emphasis on renewable energy, energy efficiency, distributed generation, and demand response.

To view Mr. Harris's presentation, visit:

http://energy.gov/sites/prod/files/2015/05/f22/fupwg_spring15_harris.pdf

DOE/FEMP Welcome and Announcements

David McAndrew, Chair of the Federal Utility Partnership Working Group, Federal Energy Management Program (FEMP), U.S. Department of Energy (DOE)

David McAndrew, FEMP's Project Lead for Utility Energy Service Contracts (UESCs) and state energy efficiency incentive programs, welcomed the attendees to the meeting, thanked the TVA and the meeting steering committee, and noted that portions of the meeting would be available via webinar.

Mr. McAndrew provided an update on some of FEMP's recent projects. The next FUPWG Seminar will be held in Houston, TX in early November and will be hosted by CenterPoint Energy.

To view Mr. McAndrew's presentation, visit:
http://energy.gov/sites/prod/files/2015/05/f22/fupwg_spring15_mcandrew.pdf

Washington Update

Dr. Tim Unruh, Program Director, FEMP, U.S. Department of Energy

Tim Unruh, Program Director for FEMP, discussed the role of the FEMP. FEMP works with Federal agencies to deploy technologies, tools, and knowledge within the federal government.

Dr.. Unruh provided an overview of federal fuel consumption. He summarized Executive Order 13693 – Planning for Sustainability in the Next Decade:

- Building Energy Use: Reduce agency building energy intensity (in BTUs per square foot) by 2.5% annually through the end of FY 2025, amounting to at least a 25% reduction from a FY 2015 baseline
- Building Electric Energy and Thermal Energy: Use clean energy (renewable or alternative) equivalent to at least 25% of total electricity use FY2025
- Renewable Electric Energy Use: Use renewable electric energy equivalent to at least 30% of total electricity use FY2025
- Water Use: Reduce water consumption (gals/sq. feet) by 36% by FY 2025, through 2% annual reduction (2007 baseline)
- GHG Emissions: Agencies must propose agency-wide percentage reduction targets of Scope 1 and 2 and Scope 3 by the end of FY2025, amounting to at least a 40% reduction relative to FY2008 baseline
- Sustainability: At least 15% of new, existing, and leased buildings >5,000 square feet meet the Guiding Principles by 2025. Must make annual progress towards 100% conformance with the Guiding Principles
- Efficient Investment: \$4 billion of investment through performance-based contracts to upgrade the energy efficiency of Federal buildings and/or invest in renewable energy by 2016
- Vehicle GHG Reduction: Reduce per mile GHGs relative to 2014 baseline, greater than 30% reduction by 2025

Dr. Unruh went on to discuss the expansion of the Presidential Performance Contracting Challenge (PPCC). According to Mr. Unruh, the PPCC will continue to expand the use of performance-based contracts through 2016 to upgrade the energy efficiency of Federal buildings at no cost to taxpayers.

Dr. Unruh announced that the Department of Energy (DOE) would be seeking multiple Energy Service Companies (ESCOs) to arrange for financing for and to develop and install energy, water conservation, and renewable energy projects at federally owned facilities. As part of these projects, the ESCO conducts a comprehensive energy audit and identifies improvements that will save energy and/or reduce utility bills at the facility. Competing companies must be on the DOE Qualified List, which consists of private industry

firms that have submitted an application and have been qualified by a Qualification Review Board comprised of Federal Interagency Energy Management Task Force representatives and DOE staff.

Attendees were updated about FEMP's updated measurement and verification (M&V) guidelines. At the time of the presentation, FEMP M&V Guideline 4.0 was being revised before being released for public comment.

Dr. Unruh provided updates on the following initiatives/projects:

- eProject Builder (ePB)
- Capital Solar Challenge
- Better Buildings Data Center Challenge/Accelerator

It was noted that the DOE's Technical Assistance Request Portal is now open, allowing federal agencies to request assistance with fleet management, project funding, and renewable energy projects.

Dr. Unruh discussed how FEMP aims to take steps to understand and appropriately manage risks associated with building control systems, building communications and computing networks, and the growing number of commercial and consumer devices that are Internet-enabled. He also stated that DOI and FEMP have partnered for an agency deep dive and the REopt studies for National Park Service and Fish and Wildlife Service.

Dr. Unruh concluded the presentation by summarizing the ten tracks of the Energy Exchange 2015 Technical Program.

To view Dr. Unruh's presentation, visit:

http://energy.gov/sites/prod/files/2015/05/f22/fupwg_spring15_unruh.pdf

DOD Update and Air Force Utility Partnerships Overview

Matt McCann, Office of the Secretary of Defense

Les Martin, Air Force

Dan Gerdes, AFCEC

Mr. McCann discussed the current Utility Energy Service Contracts (UESC) term limit. According to Mr. McCann, DoD has specific authority under 10 U.S.C § 2913 for Shared Energy Savings Contracts (SESCs). The DAR Council is considering whether guidance is needed regarding the term limit.

Mr. Martin spoke about the Energy Savings Performance Contract (ESPC) and UESC programs. The Air Force Civil Engineer Center (AFCEC) aims to balance risk between Air Force and Industry. Mr. Martin identified the following AFCEC lessons learned and changes made:

- Embedded centralized acquisition and legal support
- Standardized selection criteria
- Selectively reduced Sample Preliminary Assessment (PA) package
- Improved site visit coordination
- Improved Notice of Opportunity & Request for PA templates
- Increased throughput through selective use of other Federal Agencies

Mr. Martin summarized the three acquisition methods for third party opportunities:

- ENABLE (\$1-10M)
 - Smaller projects, limited Energy Conservation Measures (ECMs) including lighting, water fixtures, basic HVAC controls, HVAC replacement, and solar PV
- UESC (\$10-30M)

- Serving Utility interested and equipment performance guarantees acceptable versus energy saving guarantees
- ESPC (\$30+M)
 - Needle moving projects
 - Fence line to fence line efforts

Mr. Martin concluded the presentation with a discussion about the multiple contracting organizations involved with ESPC/UESC programs.

Mr. Gerdes gave an update from the Department of Defense (DoD) and provided an overview of Air Force Utility Partnerships. After discussing the wide variety of Air Force energy demand, Mr. Gerdes provided a summary of planned and completed Air Force renewable energy projects.

Mr. Gerdes discussed priorities regarding strategic partnerships with utility companies as well as partnerships with federal power marketing administrations. Mr. Gerdes identified several potential issues and solutions, including determining how the Air Force can gain energy resilience in locations geographically separated from renewable energy.

Mr. Gerdes emphasized the importance of adapting to a continually evolving market. The presentation concluded with discussion about how to continue solving future issues. Mr. Gerdes stated the importance of collaborating with a range of skilled decision makers, including contracting, legal, project developers, utilities, and regulatory professionals.

To view the presentations for this session, visit the following:

http://energy.gov/sites/prod/files/2015/05/f22/fupwg_spring15_mccann.pdf

http://energy.gov/sites/prod/files/2015/05/f22/fupwg_spring15_martin.pdf

http://energy.gov/sites/prod/files/2015/05/f22/fupwg_spring15_gerdes.pdf

Energy Resilience Panel

Dr. Ariel Castillo, Office of the Secretary of Defense

Scott Van Broekhoven, MIT Lincoln Lab

Chris Gillis, Pacific Gas & Electric

Randy Smidt, Army

Dr. Ariel Castillo provided an overview of the DoD Power Resilience Review. Taking place between December 2013 and June 2014, the DoD-wide power resilience review helped understand vulnerabilities and risks that impact mission assurance. The review examined adherence to key resilience policies and policy gaps and identified more integrated critical energy requirements. The focus was on remediating issues associated with existing critical energy requirements and policies.

Dr. Castillo discussed the next steps for DoD energy resilience. Future priorities were identified as: 1) Developing universal energy resilience guidance and 2) Developing business case analyses approaches to support budgetary resources or alternative financing.

Mr. Van Broekhoven discussed Energy Resilience for DoD Domestic Installations. Under the current state of DoD power infrastructure, backup generators supply critical loads at the building/ low voltage level. Large bases can have 50-100 individual backup generators, and between one and three days' worth of fuel is stored on-site. According to Mr. Van Broekhoven, existing energy security solutions are poorly integrated, both across the installation and within the larger grid.

Mr. Van Broekhoven noted that a DoD installation microgrid is a more effective solution to large-scale power grid disruptions. It was stated that onsite cogeneration and PV are both currently below market prices with third party financing. Energy storage costs can also be offset by participating in the ancillary services market.

Methods for scaling up were discussed. Mr. Van Broekhoven contended that this effort would require a champion both at the installation and service levels. It was stated that appropriated funding is limited to significantly fund new energy security solutions at domestic installations.

In terms of solutions, Mr. Van Broekhoven suggested that the existing financing vehicles be used to combine high return efficiency improvements with more advanced energy security solutions.

Mr. Gillis and Mr. Smidt together discussed U.S. Army and PG&E Presidio of Monterey Energy Resiliency. The objective was to define Energy Resiliency & Strategy for the U.S. Army while providing a clear understanding of the Utility role. The presenters summarized the U.S. Army Presidio of Monterey (POM) facilities assessment. The assessment included analyzing existing electrical system topology, determining high-level design for energy security, defining the critical load, building specific islanding capability, identifying utility grid vulnerabilities, and developing a plan to change distribution voltage.

Mr. Smidt gave an overview of the Army's energy resilience. Resilience was defined as the ability to anticipate, prepare for, and adapt to changing conditions and withstand, respond to, and recover rapidly from disruptions. Security was defined as assured access to reliable supplies of energy and the ability to protect and deliver sufficient energy to meet mission essential requirements.

The presenters concluded by summarizing the Energy Resiliency Plan. The plan identified:

- Options - Critical Redundant Circuits
- Islanding Concept
- Disconnect Requirements for DG on Distribution Sys.
- Feasibility of "Islanded Microgrid" for critical load
- Vulnerabilities of for Current Electric system (both sides of meter)
- Plan to phase-out existing distribution system

To view the presentations for this session, visit the following:

http://energy.gov/sites/prod/files/2015/05/f22/fupwg_spring15_castillo.pdf

http://energy.gov/sites/prod/files/2015/05/f22/fupwg_spring15_vanbroekhoven.pdf

http://energy.gov/sites/prod/files/2015/05/f22/fupwg_spring15_gillis_smidt.pdf

TVA's Integrated River System

John J. McCormick, Jr. VP, Safety, River Management and Environment at TVA

Mr. McCormick gave an overview of TVA's integrated river system and resource management. The TVA power service area includes the following:

- 80,000 square mile power-service area
- 41,000 square mile watershed
- 16,000 miles of transmission line
- Diverse power supply
 - 29 conventional hydroelectric plants
 - 1 pumped storage hydroelectric plant
 - 10 coal-fired plants
 - 3 nuclear plants
 - 5 combined cycle plants
 - 9 CT sites
- 155 local power companies
- 59 direct-serve customers

It was noted that TVA operations are driven by rainfall and runoff as guided by the Reservoir Operations Policy. Mr. McCormick spoke about benefits including flood damage reduction, convenient navigation, affordable and reliable electricity, dam safety, and water quality.

To view Mr. McCormick's presentation, visit:

http://energy.gov/sites/prod/files/2015/05/f22/fupwg_spring15_mccormick.pdf

Lessons Learned in Renewable Projects

Andrea Kincaid, Defense Logistics Agency

Chandra Shah, National Renewable Energy Laboratory

Andrea Kincaid, Division Chief and Contracting Officer of the Defense Logistics Agency (DLA), presented on the lessons learned from DLA renewable energy projects. Energy was described as the primary field activity of the DLA. The DLA's mission is to provide the DoD and other government agencies with comprehensive energy solutions in the most effective and efficient manner possible and serve as a single procurement agent for DoD's energy needs.

The DLA Energy Renewable Energy Program serves as a procurement agent for 3rd party financed on-site renewable project development.

Ms. Kincaid identified the following lessons learned in terms of environmental concerns:

- Some type of assessment needs to be completed prior to issuance of RFP
- By not doing any assessment a procurement was cancelled

Ms. Kincaid identified the following lessons learned in terms of interconnection:

- Utility communication must be a high priority
- It should be determined ahead of time which parties need to sign the agreement

Ms. Kincaid identified the following lessons learned in terms of renewable energy certificates:

- Market area values is important
- It is not possible to predict long-term value
- Sharing risk should be considered

Ms. Kincaid identified the following lessons learned in terms of evaluations as well as past performance evaluations:

- A streamlined approach has reduced evaluation time from first procurement to current efforts
- Contractors need to read specifically what is being asked of them and respond to those points
- Evaluation has led to many Unknown Confidence ratings that have to be resolved during discussions

The first presentation concluded on a positive note, stating that progress is being made in renewable energy purchasing, particularly as lessons learned are identified and applied to the process.

Chandra Shah of the National Renewable Energy Laboratory spoke further about lessons learned in renewable projects. It was noted that the majority of advice applies regardless of implementation method.

Ms. Shah discussed the following lessons regarding policies and regulations:

- Ensure that the state and utility allow PPAs

- Compare renewable generation to load
- Utilize very conservative (if any) demand charge savings estimates, unless the contractor is willing to guarantee savings
- Talk to utility about the interconnection process (requirements, cost, timeline)
- Review interconnection agreement

Ms. Shah noted several sales considerations for solar renewable energy certificates (SRECs), including project ownership, volatile markets, and the ability to renegotiate contracts.

The presentation also included discussion about general utility coordination. It was recommended to contact the utility early in the project process to discuss all pertinent issues. It was further recommended to tailor the project and implementation approach to the regulatory environment as well as discuss how the renewable project will be interconnected with the site load.

Specific considerations for biomass projects were identified as:

- Fuel (availability, quality, price)
- Biomass plant reliability and unplanned outages
- Planned maintenance

Other miscellaneous issues included land ownership, agency approval requirements, coordination with other tenants, security, and funding.

To view the presentations for this session, visit the following:

http://energy.gov/sites/prod/files/2015/05/f22/fupwg_spring15_kincaid.pdf
http://energy.gov/sites/prod/files/2015/05/f22/fupwg_spring15_shah.pdf

FAA Utility Partnerships Update

Dave Powers, Federal Aviation Administration

Dave Powers, Program Implementation Manager of the Federal Aviation Administration (FAA), presented on the following UESC projects:

- Oakland District UESC Project
- Southern California TRACON (SCT) UESC Project
- Los Angeles Center (ZLA) UESC Project

The Oakland District UESC project includes upgraded interior and exterior lighting, boiler replacements, and a cooling tower water treatment upgrade. The project encompasses 25 sites.

The Southern California TRACON (SCT) UESC project will include LED lighting retrofits, chillers, and a photovoltaic solar array. Mr. Powers noted that the LA Center UESC project will include LED retrofits, an HVAC system, and a 989-kilowatt photovoltaic solar array over carports.

Mr. Powers summarized basic issues to consider when beginning a project, and discussed opportunities for energy rebates.

To view Mr. Powers' presentation, visit:

http://energy.gov/sites/prod/files/2015/05/f22/fupwg_spring15_powers.pdf

UESC Best Practices – Performance Assurance, Fair and Reasonable Pricing Guidance, ESPC/UESC Similarities and Differences, How to Include Avoided Costs in a UESC, and How to Determine Baselines for Specific ECMs

*Karen Thomas, National Renewable Energy Laboratory
Alice Oberhausen, Alice Oberhausen Consulting
Leila Comer, AGL Resources, Energy Services
Patricia Nardone, Energy Services Manager, Southern Company
Kevin Johnson, Vectren – Energy Systems Group*

Ms. Thomas provided attendees with an overview of the Performance Assurance Plan template. A good plan helps both parties agree on the methodology to validate savings for ECMs identified in the proposal.

According to Ms. Thomas, Performance Assurance actions need to:

- prove the actual performance meets design expectations
- be reasonable and within the power of the utility to honor
- provide sufficient performance assurance at costs within the project savings budget

Ms. Thomas summarized FEMP's minimal Performance Assurance levels recommendations:

1. Start-up performance verification (based on measured data)
2. Performance verification at the end of warranty period (based on measured data)
3. Operations and maintenance training (required in the more common instance where the agency continues to operate and maintain the installed equipment)
4. Provision of continuing training throughout the contract period as specified in the contract as determined by the needs of the facility
5. Periodic inspections and verification of appropriate O&M performance
6. Performance discrepancy resolution

Alice Oberhausen a contractor in support of the FEMP Utility Team provided guidance on fair and reasonable pricing. Ms. Oberhausen summarized the services provided by public utilities. Public Utility companies provide services to both their Federal customers and their non-Federal commercial and residential customers. The types of services offered to both Federal and non-Federal customers include programs and incentives to help its customers manage and reduce their energy consumption. When determining price reasonableness, the contracting officer need not require the submission of certified cost and pricing data.

It was noted that proposals will be evaluated using price analysis methods and not cost analysis. Ms. Oberhausen stated that it is important to have discussions with the Utility to understand the drivers of costs perceived as high in case it is possible to adjust project scope or correct misconceptions. It was stated that it is beneficial to request additional detailed pricing data as necessary to determine fair and reasonable pricing.

Patricia Nardone and Kevin Johnson discussed ESPC/UESC similarities and differences. Ms. Nardone and Mr. Johnson provided true or false statements to attendees regarding both UESC and ESPC. The presenters differentiated between UESC and ESPC in terms of:

- Authorization and contract term
- Competition
- Contract mechanism
- Cost structure
- Overhead and markup
- Guarantee level
- Interest rate
- Project team
- Time to project award
- Measurement and verification
- Motivation

- Resources

Leila Comer, Engineering Manager at AGL Resources, presented on how to include avoided costs in a UESC, and how to determine baselines for specific ECMs. Ms. Comer began the presentation by defining energy baseline as the energy consumption prior to efficiency upgrades. It was noted that the base for savings calculations represents the energy consumption a building or system would have in the future if the program had not been implemented. Ms. Comer noted that an energy baseline is important in terms of energy management, accurate savings calculations, and Performance Assurance.

The following energy baseline steps were identified:

1. Determine system boundary
2. Gather energy use data
3. Choose baseline year
4. Adjust baseline as needed
5. Validate reasonableness
6. Track future energy consumption against baseline (Performance Assurance)

Ms. Comer specified cases in which energy baseline adjustments would be needed. Energy baseline challenges were identified, such as a lack of building utility meters, control systems that do not track operating conditions, and lack of time or funding. The following factors were identified as energy baseline best practices: 1) accurate baseline data, 2) well-documented baseline conditions, 3) documentation that demonstrates levels and sources of risk, and 4) an established method for tracking and reporting changes in conditions.

Ms. Comer provided the following definitions in terms of cost:

- Cost savings: actual dollar difference between current year costs and baseline year costs (simple arithmetic).
- Cost avoidance: amount of money you avoid spending when comparing "apples to apples." It includes adjustments for dissimilar weather conditions, more/less square footage, utility rate changes, and changes in operating hours. (Energy savings is an avoided cost.)
- Capital Cost avoidance: capital cost reduction that results from spending that is lower than that would have otherwise been required if the project had not been undertaken.

Attendees discussed whether there was value for agencies to include comprehensive upgrades and deep retrofits in UESC projects and how can the non-energy benefits can be monetized for loan repayment, among other topics.

To view the presentations for this session, visit the following:

http://energy.gov/sites/prod/files/2015/05/f22/fupwg_spring15_thomas.pdf
http://energy.gov/sites/prod/files/2015/05/f22/fupwg_spring15_oberhausen.pdf
http://energy.gov/sites/prod/files/2015/05/f22/fupwg_spring15_nardone_johnson.pdf
http://energy.gov/sites/prod/files/2015/05/f22/fupwg_spring15_comer.pdf

Leveraging UESCs for Innovative Water Projects

Kate McMordie Stoughton, Pacific Northwest National Laboratory

Ms. Kate McMordie Stoughton of the Pacific Northwest National Laboratory discussed methods for leveraging UESCs for innovative water projects. Ms. McMordie Stoughton noted that numerous counties in the US will face high risk of water shortages by the middle of the century.

The presentation included a summary of the new Executive Order 13693 water requirements:

- Reduce potable water use intensity 36% by FY25 from FY07 baseline

- Reduce industrial, landscaping, and agricultural (ILA) water use 30% by FY25 from FY10 baseline
- Install water meters
- Develop water balance to improve water conservation
- Build and renovate net zero water buildings
- Install WaterSense products

Ms. McMordie Stoughton identified the following steps for leveraging UESCs:

1. Screen: What is the potential for water efficiency?
2. Require expertise: Is the contractor qualified?
3. Conduct a water balance: What are the primary water uses?
4. Specify technologies: Are the right technologies being chosen?

The presentation concluded with a discussion about the next 'big idea' in water efficiency. Discussion topics included wastewater reclaim, irrigation, process discharge, and condensate capture.

To view Ms. McMordie Stoughton's presentation, visit:

http://energy.gov/sites/prod/files/2015/05/f22/fupwg_spring15_mcmordie.pdf

Oak Ridge National Laboratory Overview

Dr. Johney Green – Director, Energy and Transportation Science Division at Oak Ridge National Laboratory

Dr. Green stated that transformation of the global energy system is required, and contended that major advances in science and supporting technology are needed to ensure success.

Dr. Green discussed the need to improve energy efficiency in the global transportation, residential, industrial, and commercial sectors. Dr. Green summarized the mission of Oak Ridge National Laboratory (ORNL): Deliver scientific discoveries and technical breakthroughs that will accelerate the development and deployment of solutions in clean energy and global security, and in doing so create economic opportunity for the nation.

ORNL's vision for a sustainable community encompasses the following work areas:

- Green Intelligent Buildings
- Smart Grid
- Renewables
- Climate and Sustainability
- Industrial
- Intelligent Transportation Systems

The subsequent discussion included methods for leveraging ORNL assets within the community in order to move toward more sustainable communities.

To view Dr. Green's presentation, visit:

http://energy.gov/sites/prod/files/2015/05/f22/fupwg_spring15_green.pdf

Large Scale Battery Projects/Energy Storage

Michael Starke, Oak Ridge National Laboratory

Dr. Starke provided a perspective on secondary use energy storage. The ORNL project aimed to support the industry investigation into vehicle battery secondary-use through testing, demonstration, and modeling.

Dr. Starke discussed potential secondary use of electric vehicle (EV) batteries, taking into consideration the continued growth of the EV market. There are several demonstration sites featuring the repurposing of batteries for energy storage.

As a third party in a partnership with General Motors and ABB Ltd., ORNL is testing and demonstrating whether EV battery technology could have useful automotive and grid applications.

Dr. Starke identified the following local benefits of the technology:

- Real and Reactive Power Support: demonstrate that load factor and power factor can be maintained.
- Service reliability: during outage, CES unit can still supply load for a period of time.
- Phase balancing: if three units are installed (each on separate phases) additional energy can be used to balance phases.

Dr. Starke additionally noted the technology benefits to the grid:

- Firming and shifting Renewables and Load leveling / T&D Deferral: battery can charge/discharge depending on control and load behavior.
- Ancillary Services: regulation/spinning

The initial economic results included a year-long simulated load for three homes. Dr. Starke identified development of refurbished secondary use energy storage as a future task.

To view Dr. Starke's presentation, visit:

http://energy.gov/sites/prod/files/2015/05/f22/fupwg_spring15_starke.pdf

Data Centers – New Market for Performance Contracting

Jake Wooley, Department of Energy

Mr. Wooley provided attendees with an overview of the annual federal information technology (IT) budget. Mr. Wooley emphasized that buildings with more technology drain more energy.

It was noted that data centers have two different lines-of-business with two different incentives: 1) IT infrastructure, which is concerned with IT systems performance and availability as well as operational control of floor space and 2) Facilities infrastructure, which focuses on one utility service provider and paying the electric bill. Mr. Wooley emphasized that efficiency requires unified management.

Mr. Wooley discussed energy efficiency opportunities for power conversion and distribution, server load and computing operations, cooling equipment, and alternative power generation. Cloud service opportunities as well as other options such as managed print services and video teleconferencing were also discussed.

The pending Energy Efficient Government Technology Act was summarized. Mr. Wooley noted that the recommended best practices will include energy savings performance contracting and utility energy services contracting.

Mr. Wooley answered questions from participants about current and future opportunities for federal IT sustainable and efficient practices.

To view Mr. Wooley's presentation, visit:

UESC Basics

Alice Oberhausen, Contractor in support of the FEMP Utility Team

Kay Sommerkamp, Army Corps of Engineers

Scott Foster, Bostonia Partners LLC

Ms. Oberhausen discussed methods for determining price reasonableness in UESC price proposals. It was noted that the Contracting Officer will determine if the UESC services provided by the Utility company meets the definition of commercial services. Utility companies assert these services are commercial in nature and are offered to both the federal sector and their commercial and residential customers when requested.

The following methods of determining price reasonableness for commercial items and services were identified:

- Proposals will be evaluated using price analysis methods and not cost analysis.
- Pricing from sources such as independent government cost estimates (IGCEs) or market data should be reviewed first.
- If data from the offeror is needed, offeror formats should be used and the request tailored to be the least intrusive to the offerors as possible.
- The contracting officer may require the offeror to submit data other than cost and pricing data as determined necessary to determine fair and reasonable pricing.

Ms. Oberhausen discussed two techniques for determining price reasonableness:

1. The Utility company is required to use competitive procedures in soliciting offers from ESCOs, lenders, and subcontractors (both for installation services and for materials/equipment). Provide full transparency to the Contracting Officer.
2. When only one response is provided, even if several solicited, there is no competition. Additional detail must be provided to substantiate fair and reasonable pricing (i.e., labor and material costs, overhead rates, and profit).

Ms. Oberhausen emphasized the importance of negotiations that remained fair and reasonable to both parties involved.

Ms. Sommerkamp and Mr. Foster discussed the assignment of contract claims between financier, agency, and utility. According to the Assignment of Claims Act, an assignment may be made only after a claim is allowed, the amount of the claim is decided, and a warrant or payment of the claim has been issued.

According to Ms. Sommerkamp and Mr. Foster, the purpose of anti-assignment statutes are to prevent buying up of claims, which might improperly be submitted for payment; to prevent possible multiple payments of the same claim and to enable the government to deal only with the original claimant; and to save government defenses, e.g. setoff and counterclaims.

The presentation provided an overview of the U.S. Vs. Sinton Dairy Foods Co. case and discussed the principles developed through the litigation:

- Prohibition does not apply to assignments by operation of law
- Statute is for protection of the government, so the government can waive it
- Noncomplying assignment is voidable at the government's option

The presenters discussed attorney fees, prohibition on transfer of contacts, and the assignment of contract payments.

Contract financing institutions include:

- Factoring companies (firms which purchase accounts receivable)
- Small business investment companies under SB Investment Act of 1958
- State government small business financing agencies
- Insurance companies

The presenters summarized the effect of assignments as follows:

- Government has duty to pay the assignee. If government mistakenly pays the assignor, it remains liable to the assignee.
- No entitlement for the assignee to receive prompt payment interest.
- Liability of government to the assignee is contingent upon compliance with the statutory notice requirement.
- FAR 32.804(a) prevents government from getting money back to satisfy a debt of the contractor.

Mr. Foster discussed how to keep UESC financing costs down through careful contracting. It was noted that Financiers evaluate a Federal Energy Efficiency Project across three broad risk categories:

1. Contract Risk
2. Project Risk
3. Participant Risk

Pricing and terms are set by comparing the overall risk and return of a project to similar projects in the private sector.

The main concern regarding contract risk involves how well-documented the project is. The main concern of project risk is whether the project can perform as projected over the term specific, emphasizing equipment risk, maintenance and operation risk, measurement and verification risk, useful life versus term risk, and market and inflation risk. The main concern of participant risk involves Utility/ESCO risk and customer risk.

Mr. Foster concluded the presentation with the following key points to remember:

- Financier prices to “weakest non-mitigatable risk” assumed.
- Financier’s concern is repayment of their investment on-time. All actions/requests reflect increasing certainty of repayment.
- Most financiers make their return over time, not at funding.

To view the presentations for this session, visit the following:

http://energy.gov/sites/prod/files/2015/05/f22/fupwg_spring15_oberhausen2.pdf

http://energy.gov/sites/prod/files/2015/05/f22/fupwg_spring15_sommerkamp_foster.pdf

http://energy.gov/sites/prod/files/2015/05/f22/fupwg_spring15_foster.pdf

Appendix A

2015 Spring FUPWG Seminar – Final Attendee List

Christopher	Abbuehl	Constellation
Steve	Allenby	Allenby Associates, LLC
Bryan	Ancell	Eaton's Cooper Lighting
Ed	Anderson	Florida Power & Light
Chris	Azar	Tennessee Valley Authority
Julie	Baird	General Services Administration
Josh	Baker	Booz Allen Hamilton
Gene	Beck	Florida, Power & Light
Dawn	Best	Tennessee Valley Authority
Matthew	Blaz	NAVFAC MARIANAS
Stephen	Bolotin	Wilson Sonsini Goodrich & Rosati
Adam	Borden	Tennessee Valley Authority
George	Bourassa	Jacobs
Jeanne	Boyce	Southern California Edison
Steven	Boyle	Pepco Energy Services
Ronnie	Brannen	PowerSecure
Charlie	Brewer	Teichos Energy
Payten	Butler	Tennessee Valley Authority
Richard	Butterworth	General Services Administration
Norm	Campbell	Schneider Electric
Maryanne	Campbell	Philadelphia Gas Works
Steve	Carr	Colorado Springs Utilities
John	Carroll	IPERC
Jason	Cartozian	Siemens
Stephen	Casey	US Dept of Energy / Portsmouth Paducah Project
Ariel	Castillo	Defense Department
Steven	Chaffin	Erica Lane Enterprises
Toby	Chandler	AGL Resources
Robert	Chapman	U.S. Air Force Civil Engineer Center
Bud	Clark	American Electric Power
John	Clayton	Southwest Gas Corporation
Jarryd	Coates	Dominion Virginia Power
Nancy	Coleal	U.S. Air Force
Leila	Comer	AGL Resources
Phillip	Consiglio	Southern California Edison
Michael	Cooper	ASA Engineering & Surveying, Inc.
Jeromy	Cotten	Tennessee Valley Authority
Thomas	Counts	Johnson Contractors, Inc.
Susan	Courtney	Energetics Incorporated
Rhonda	Courtney	Energy Focus Inc.

Doug	Culbreth	DOE FEMP
McKinley	Cunningham	Duke Energy
Karen	Curran	General Services Administration
Cynthia	Dates	Federal Aviation Administration Aeronautical Center
Ivy	Davenporti	4 County Electric Power Association
Scott	Dever	Philadelphia Gas Works
John	Dierkes	Schneider Electric
Doug	Dixon	Pacific Northwest National Laboratory
Duane	Dobson	Mississippi Power Company
Leslie	Ebert	NRUCFC
Toni	Egan	TD Equipment Finance
Calan	Eldridge	Powersmiths International Corp
Cyril	Eldridge	Powersmiths International Corp
Bill	Elliott	US Army - NVESD
Patrick	Ellison	Trane
David	Erickson	Gulf Power Co.
Steven	Estomin	Exeter Associates, Inc.
Mark	Ewing	General Services Administration
Marilyn	Fine	Schneider Electric
Matt	Foley	The VVA Group
Bruce	Forsberg	USACE-HNC
Scott	Foster	Bostonia Partners
Kevin	Fox	Jacobs
Rodney	Frazier	Constellation
Steve	Ganzer	SEE Solutions, LLC
Patricia	Gardner Young	Constellation
Lara	Gast	Department of Veterans Affairs
Dan	Gerdes	US Air Force
Peter	Giannotti	So Cal Edison
Chris	Gillis	Pacific Gas and Electric
Johney	Green, Jr.	Oak Ridge National Laboratory
Bruce	Gross	Dominion Federal Corporation
Mark	Handley	AECOM
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Gary	Harris	Tennessee Valley Authority
Lisa	Harris	US Army Corps of Engineers-Huntsville
Thomas	Hattery	DOE-FEMP-ORNL
Ramon	Hayes	Eco-Energy Solutions
John	Hickey	Jacobs
Mark	Hillman	Florida Power & Light
Joe	Hoagland	Tennessee Valley Authority
James	Holton	Georgia Power Company
Joe	Holton	Canoochee EMC

Allen	Honey	Sain
Chris	Hood	Gulf Power
Dan	Hooks	Canoochee EMC
Dave	Howe	Powersmiths International Corporation
Joey	Janning	Duke Energy
Michael	Jensen	U.S. Department of Energy
Cynthia	Jester	US Army Corps of Engineers
Bob	Johnson	Hannon Armstrong
Kevin	Johnson	Vectren - Energy Systems Group
Catherine	Johnson	Department of Veterans Affairs
Martin	Johnson	Pacific Gas and Electric
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Brent	Kent	Tennessee Valley Authority - TVA
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Rob	Kittel	Independent Consultant
Reinhard	Knerr	US Dept. of Energy / Portsmouth Paducah Project
Vernon	Knight, Jr.	Tennessee Valley Authority
Linda	Koman	General Services Administration
Christina	Kopitopoulou	DOE Southeast CHP TAP
Jason	Krupp	Tennessee Valley Authority
Art	Kwerneland	Xcel Energy
Christopher	Landro	Johnson Controls, Inc.
Jonathan	Landy	Duke Energy
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Scott	Layne	Veolia North America
Gary	Leatherman	Booz Allen Hamilton
Greg	Lee	Nolin RECC
Will	Lent	Booz Allen Hamilton - OASD Facilities Energy
Jon	Lewis	Honeywell
J.T.	Long	Tennessee Valley Authority
Andy	Lowery	Booz Allen Hamilton
Andy	Lynch	Academy Energy Group
Jesse	Maestas	Verus Resource Management
Kazi	Mamun	Eaton
Leslie	Martin	U. S. Air Force
Michaei	Matour	Lutron Electronics
Lee	Matthews	Tennessee Valley Authority
Gordon	Maynard	SoCalGas
David	McAndrew	U.S. Department of Energy
Russell	McCallister	U.S. Department of Energy
Matthew	McCann	Office of Secretary of Defense

Kate	McMordie - Stoughton	Pacific Northwest National Laboratory
Josh	Mersfelder	Hannon Armstrong
Chris	Mills	Energy Systems Group
Jared	Mitchem	Tennessee Valley Authority
King	Moon	NORESCO, LLC
Sandy	Morgan	US Department of Agriculture
Christina	Mudd	Exeter Associates
Kimberley	Mueller	Dominion Virginia Power
Kaye	Murphy	Tennessee Valley Authority
Patricia	Nardone	Georgia Power Company
William	Naughton	Veolia
Karma	Nilsson	CPS Energy
Stephen	Noe	Tennessee Valley Authority
Patrick	Nolan	Teichos Energy
Alice	Oberhausen	Alice Oberhausen Consulting, LLC
Cynthia	Obermeyer	DLA Energy
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William	Pott	Booz Allen Hamilton
Brent	Powell	Tennessee Valley Authority
david	powers	Federal Aviation Administration (FAA)
Joseph	Price	Ameresco
Ray	Prosis	Spirax Sarco
Anthony	Raimondo	Southwest Gas Corporation
Laura	Ray	Schneider Electric
Kaila	Raybuck	Energetics
David	Roberts	Cypress Envirosystems
Sean	Robertson	Bostonia Partners LLC
Kurmit	Rockwell	U.S. Department of Energy
Robert	Rouse	AECOM
Jenny	Russell	General Services Administration

Patrick	Saxton	Oklahoma Gas & Electric
Schuyler	Schell	U.S. Department of Energy
Carl	Seigenthaler	Tennessee Valley Authority
Chandra	Shah	National Renewable Energy Laboratory
Natasha	Shah	Southland Energy
Jeff	Sherman	Schneider Electric
John	Shonder	Oak Ridge National Laboratory
Matt	Short	Southland Energy
Timothy	Simmons	NORESCO
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Johnathan	Sitzlar	General Services Administration
Bob	Slattery	Oak Ridge National Laboratory
Randall	Smidt	US Army - OACSIM
Jim	Smith	PowerSecure International
Robert	Somers II	2rw Consultants, Inc.
Kathryn	Sommerkamp	U.S. Army Corps of Engineers
Anthony	Spera	Con Edison Solutions
Michael	Starke	Oak Ridge National Laboratory
Bob	Starling	B. Starling & Associates, Inc.
Bart	Stewart	Griffith Engineering, Inc.
Emily	Stoddart	U.S. Department of Energy
Lester	Stokes	Tennessee Valley Authority
Jeff	Stott	Avid Energy
Chuck	Strand	Siemens Building Technologies
Erika	Sudderth	The Volpe Center
Ralph	Terrell	TECO Energy
Wayne	Thalasinios	National Aeronautics and Space Administration
Karen	Thomas	National Renewable Energy Laboratory
Schwartz	Timothy	SAF/IEN
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Oanh	Tran	Vectren - Energy Systems Group
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Francis	Wheeler	Water Savers, LLC
Chris	Wheeler	Powersmiths Corporation
David	Williams	HQ USACE
Daryl	Williams	Tennessee Valley Authority
Brigitte	Wilson	Energy Systems Group
Everett	Wilson	U.S. Air Force Reserve
Terry	Wilson	Westar Energy
Walter	Winans	Siemens
Scott	Wolf	Oak Ridge National Laboratory /FEMP
Richard	Woo	Powersmiths International Corp
Jake	Wooley	Department of Energy
Jason	Wood	US Navy
Randy	Wynn	Alabama Power Company
Dean	Yobs	Schneider Electric
Steve	Zip	Energy Systems Group

Appendix B
2015 Spring FUPWG Agenda

Federal Utility Partnership Working Group Seminar
April 22-23, 2015
Nashville, TN



Hosted by:
Tennessee Valley Authority



Monday, April 20

9:00 am – 4:30 pm	Advanced UESC Workshop
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Tuesday, April 21

9:00 am – 4:00 pm	Advanced UESC Workshop
5:00 pm – 6:00 pm	FUPWG Steering Committee Meeting

Wednesday, April 22

7:45 am	Registration and Continental Breakfast
8:30 am	Welcome – Gary H. Harris, VP, Industrial Marketing and Services at TVA
8:50 am	DOE/FEMP Welcome and Announcements – David McAndrew, DOE FEMP
9:00 am	Washington Update – Dr. Tim Unruh, DOE FEMP Program Manager
9:30 am	DOD Update and Air Force Utility Partnerships Overview <ul style="list-style-type: none"> • Matt McCann, Office of the Secretary of Defense • Les Martin, AFCEC • Dan Gerdes, AFCEC
10:30 am	Networking Break
11:00 am	Energy Resilience <ul style="list-style-type: none"> • Dr. Ariel Castillo, Office of the Secretary of Defense • Scott Van Broekhoven, MIT Lincoln Lab • Chris Gillis, Pacific Gas & Electric • Randy Smidt, Army
Noon	Lunch – John J. McCormick, Jr., VP, Safety, River Management and Environment at TVA
1:15pm	Lessons Learned in Renewable Projects <ul style="list-style-type: none"> • Andrea Kincaid, Defense Logistics Agency • Chandra Shah, National Renewable Energy Laboratory
2:00pm	FAA Utility Partnerships Update <ul style="list-style-type: none"> • Dave Powers, Federal Aviation Administration
2:45 pm	Networking Break
3:15 pm	UESC Best Practices <ul style="list-style-type: none"> • Performance Assurance – Karen Thomas, NREL • Fair and Reasonable Pricing Guidance – Alice Oberhausen, FEMP Team • Determining Baseline and Avoided Costs for UESC Projects - Leila Comer, AGL Resources • UESC/ESPC Similarities and Differences – Patricia Nardone, Southern Company and Kevin Johnson, Vectren

4:30 pm	Wrap-up – David McAndrew, DOE FEMP
6:00 – 7:30pm	Networking Event at the Marriott

Thursday, April 23

8:00 am	Continental Breakfast
8:30 am	Leveraging UESCs for Innovative Water Projects <ul style="list-style-type: none"> Kate McMordie Stoughton, Pacific Northwest National Laboratory
9:10 am	Oak Ridge National Laboratory Overview <ul style="list-style-type: none"> Dr. Johnney Green – Director, Energy and Transportation Science Division at ORNL
9:50 am	Networking Break
10:10 am	Executive Order 13693: Planning for Federal Sustainability in the Next Decade <ul style="list-style-type: none"> Kate Brandt, Federal Environmental Executive, White House Council on Environmental Quality (Session was cancelled onsite as Ms. Brandt was unable to attend)
10:40 am	Large Scale Battery Projects / Energy Storage <ul style="list-style-type: none"> Dr. Michael Starke, Oak Ridge National Laboratory
11:20 am	Data Centers – New Market for Performance Contracting <ul style="list-style-type: none"> Jake Wooley, Department of Energy
Noon	Evaluations and Wrap-up – David McAndrew, DOE FEMP Lunch on Own

Special Session: Energy Lawyers and Contracting Officers Working Group

Facilitator: Julia Kelley, ORNL

12:30 pm	Announcements and Introductions - Julia Kelley (ORNL), FEMP Utility Team
12:30 – 2:00pm	UESC Basics <ul style="list-style-type: none"> How to Determine Fair and Reasonable Pricing – CO Perspective - Alice Oberhausen, FEMP Utility Team Assignment of Contract Claims Between Financier, Agency and Utility Kay Sommerkamp - Army Corps of Engineers, Scott Foster – Bostonia Partners, Karen Thomas - NREL How to Keep UESC Financing Costs Down through Careful Contracting Scott Foster – Bostonia Partners
2:15pm	Optional Tour to Old Hickory Dam

2015 Fall FUPWG Seminar
November 4-5, 2015 – Houston, TX
Hosted by: CenterPoint Energy

2016 Spring FUPWG Seminar
Hosted by: Duke Energy

2016 Fall FUPWG Seminar
Hosted by: Southern Company

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Federal Utility Partnership Working Group Code of Conduct

All delegates are required to honor the Federal Utility Partnership Working Group guidelines developed by the Working Group Steering Committee. Hospitality/social functions (on and off site) are strictly prohibited from conflicting with the timing of official Working Group activities listed in the "Schedule of Events". Aggressive sales techniques are to be avoided while attending Working Group meetings. Signs and flyers may not be displayed or distributed in the meeting or guestroom areas of the hotel reserved for Working Group participants.