

Uniform Methods Project: Steering Committee Meeting

Meeting Minutes

January 19, 2016 – 3:00 to 4:00 pm EST

Attendees

Name	Company
UMP Management Team	
Michael Li	U.S. Department of Energy
Chuck Kurnik	National Renewable Energy Lab (NREL)
Hossein Haeri	Cadmus
Arlis Reynolds	Cadmus
K. Erina Keefe	Cadmus
UMP Phase 3 Protocol Authors	
George Simons	Itron
Jim Stewart	Cadmus
Steering Committee	
Adam Zoet	Commonwealth of Minnesota
Carmen Best	California Public Utilities Commission
David Lis	NEEP
Deborah Miller	Efficiency Valuation Organization
Mark Garofano	Commonwealth of Minnesota
Jay Wrobel	U.S. Department of Energy
Jeffery Orcutt	Illinois Commerce Commission
Jenah Zweig	U.S. Department of Energy
Jess Burgess	Consortium for Energy Efficiency
Jessica Burdette	Commonwealth of Minnesota
Kerry Worthington	National Association of Regulatory Utility Commissioners
Lauren S M Gage	BPA
Linda Ecker	AEP Ohio
Paul Scheihing	U.S. Department of Energy
Rodney Sobin	National Association of State Energy Officials
Sandy Glatt	U.S. Department of Energy
Steve Kromer	Efficiency Valuation Organization
Steven Schiller	on behalf of Lawrence Berkeley National Laboratory
Ted Jones	Consortium for Energy Efficiency

Chuck Kurnik (NREL Project Manager) welcomed the Steering Committee members to the meeting to discuss progress during the third phase of the Uniform Methods Project.

Introduction and Agenda

Mr. Kurnik provided a general update on how UMP is used as a reference in industry and presented the meeting agenda. During this meeting, the authors of the Phase 3 protocols would provide the Steering Committee with an overview of the protocols currently under development. Both protocols follow the standard UMP structure: measure definition; application conditions of the protocol; savings estimation; M&V methods; other evaluation issues; and resources/references.

Combined Heat and Power (CHP) Protocol

Mr. George Simons (Itron) gave an overview of combined heat and power (CHP) systems and the UMP approach for the protocol. The protocol is available for review at:

http://www.nrel.gov/extranet/ump/draft_protocols.html:

Measure description

CHP systems, sometimes known as cogeneration systems, provide both electricity and heat to a facility. This UMP protocol focuses on small CHP facilities (<5 MW).

CHP systems include internal combustion engines, gas turbines, microturbines, fuel cells, and boiler/steam turbines.

The fuel source is predominantly natural gas, but may also include biogas, oil, and woody biomass.

Protocol approach

CHP systems are unique in that they may consume fuel, and this protocol describes methods to estimate electricity and fuel impacts of CHP systems. Default values are offered where data are not available, including defaults to calculate parasitic loads and to determine useful heat from recovered energy. The protocol identifies types of metered data that should be used, including frequency of data collection. Because peak demand is an important component for CHP facilities, data collected at 15-minute intervals is recommended. Multiple fuel sources can be incorporated into the algorithms provided in the protocol. The type, accuracy, and frequency of performance data collection from meters are outlined, and variables from interactive effects (e.g., generators) are identified.

Challenges

- *Degradation and retirement* – Unlike energy efficiency (EE) measures which are put in place for a set number of years, CHP systems may be retired early and unexpectedly based on fluctuating fuel and electricity prices. For example, a facility owner may decide that the CHP system is not cost-effective, or the program “champion” may leave the facility. Aging, both naturally occurring and due to lack of an ongoing maintenance performance, may also reduce CHP performance.
- *Performance* – It is difficult to weather-normalize CHP operations. CHP facilities do not always track weather, especially since some facility operations (e.g., laundromats) are not impacted by weather. Performance can vary for a number of reasons, so long-term metering is a recommended investment.
- *Net-to-gross estimation* – Free ridership has been low historically since CHP systems are complex and require significant effort and upfront costs, but free ridership is on the rise. The UMP recommendation is to revert back to best practices for net-to-gross impact estimation.

Questions

Steve Schiller:

- 1) Q: What is the boundary of the analysis? Are default values used for useful thermal output and displaced thermal system efficiency?

A: The envelope/boundary is based on the CHP system. The protocol defines the boundary and includes a figure that depicts the load that is being displaced by the CHP facility. Defaults are

allowed but the protocol identifies and recommends key data fields from metered data (often at 15-minute intervals).

- 2) Q: Are there different recommendations for differently sized facilities? Assumptions vary significantly depending on the defaults used for key variables. The key assumption is that the electricity generated is useful in the base case scenario.

A: The approach is size-independent, though this protocol targets smaller facilities (<5 MW). Use of defaults can be made more explicit in the protocol. One assumption that can be clarified in the protocol is that larger facilities must rely on metered data. Useful data refers to what is being supplied to the facility.

Strategic Energy Management (SEM) Protocol

Jim Stewart (Cadmus) described the objectives of the strategic energy management (SEM) protocol systems and the UMP approach for the protocol.

Measure description

SEM is defined in the protocol as a set of energy use principles and practices emphasizing continuous improvements in energy management and energy efficiency in both industrial facilities and large commercial buildings. Unlike other EE measures, there is an emphasis on the implementation of *sustained* changes in operations, maintenance, and behaviors. SEM programs may include training and financial incentives, and are typically set up through four steps:

- 1) Achievement of buy-in from facility management, goal-setting, and employee engagement
- 2) Identification of opportunities for EE savings and implementation of measures
- 3) Procedures for tracking progress toward an EE goal
- 4) Goal updates to achieve continued improvement

Protocol approach

The protocol includes the conditions that should be satisfied in order to apply the protocol: 1) the objective is to estimate savings (not peak demand), 2) availability of whole-facility energy use data (e.g., output, weather, and occupancy), and 3) detectability of savings using recommended statistical methods. A statistical power analysis is recommended to estimate the probability of detecting the expected savings.

A series of savings estimation steps as well as regression analyses are recommended in the protocol. Methods outlined in the protocol expand on principles described in Option C of IPMVP.

The protocol provides two approaches for conducting the statistical analysis for M&V. Since SEM is relatively new, the protocol does not recommend one method of analysis over another.

Considerations for the development of a sampling plan for impact evaluations is discussed for larger programs.

Challenges

- Evaluators may not be able to detect expected savings, if they are less than 5 percent of the facility's energy use. Statistical power analysis is recommended to ensure that savings can be detected when statistical methods are used.
- Baseline and engagement period data must be available for key variables for impact evaluations.
- Testing the robustness of regression savings estimates for the omission or inclusion of variables is recommended.
- Changes in production or input characteristics unrelated to SEM could be addressed through non-routine adjustments, but these adjustments should only be made sparingly and based on an engineering analysis.
- Recommended procedures for SEM program evaluation should align with Superior Energy Performance (SEP) certification. DOE is working to harmonize SEM and SEP.

Past Protocol Updates

Mr. Kurnik described UMP's effort to collect feedback from authors of past UMP protocols (available at: <http://energy.gov/eere/about-us/ump-protocols>). For protocols with no updates deemed necessary by the author, there will be an opportunity for the author's review and the protocol will be re-published in 2016. For protocols requiring minor updates, the author will make modifications, Cadmus will perform a technical review, NREL will copyedit, and the protocol will be re-published in 2016. To date, no protocols requiring substantive updates have been identified. If they should arise, the proposed approach is to include review by authors, the Technical Advisory Group (TAG), Cadmus, and NREL. A summary of the proposed approach is below.

Protocol Status	Author review	TAG Review	Cadmus Technical Review	NREL copyedit	Publish 2016 version
No updates	X				X
Minor updates	X		X	X	X
Substantive updates	X	X	X	X	X

The Steering Committee would be invited to join the call with the TAG and authors to discuss the updates. Carmen Best (California Public Utilities Commission) suggested inclusion of external users of the UMP protocols in the revision process. Implementers, evaluators, and other users are welcome to submit their feedback to ump.protocols@nrel.gov.

Steve Schiller asked about DOE's plans to expand UMP based on feedback from the intended audience (e.g., into deemed savings, technical reference manuals). Mike Li (DOE) has received lots of feedback from industry users, but there is no formal plan to expand UMP. A conversation regarding strategic long-term planning may begin once the current protocols are published and completed protocols updated.

Paul Scheihing (DOE) expressed concern about the SEM protocol's application in industry and will work with Mr. Li and SEP staff separately. Mr. Stewart clarified that the draft SEM protocol is still in progress based on feedback from the TAG and technical experts.

Schedule and Next Steps

Jess Burgess (Consortium for Energy Efficiency) asked about the Steering Committee's role in the process. Mr. Kurnik presented the four-step protocol development process:

1. Internal review, during which the Technical Advisory Group (TAG) and Steering Committee reviews the protocol author's initial draft;
2. Stakeholder review, during which public stakeholders can submit comments on the draft protocol and the author and internal stakeholders must review and respond;
3. Editor and author review, during which the author updates the draft based on feedback and NREL has an editor review the final draft, followed by TAG and Steering Committee reviews and approvals; and
4. DOE approval and publishing, during which DOE provides final approval on the protocols and NREL publishes the protocol on the UMP website.

The Steering Committee is invited to conduct any level of review they wish, from forwarding the protocol to relevant staff to providing detailed technical feedback.

The draft CHP protocol is currently available for review at:

http://www.nrel.gov/extranet/ump/draft_protocols.html. Feedback should be sent to Erina.Keefe@cadmusgroup.com and Chuck.Kurnik@nrel.gov by February 2, 2016.

The draft SEM protocol will be posted on the same website in February. The Steering Committee will be notified when the draft SEM protocol is available for review.

Timeline

- Mid-February and March 2016 – Stakeholder review
- May and June 2016 – Final reviews and formatting
- July and August 2016 – Publication

Discussion

- Mr. Schiller inquired about EPA's involvement with the CHP protocol regarding consistency with EPA's Clean Power Plan. Neeharika Naik-Dhungel (EPA) has been actively involved in the review process, and Niko Dietsch (EPA) is a member of the Steering Committee.
- SEM – Steve Kromer (EVO) mentioned that EVO's Statistics and Uncertainty Committee, led by Sami Khawaja, may consider referencing the protocol in their general statistics guide. The guide is intended to reference sufficiently rigorous guidance (e.g., Option C of IPMVP) when available. Mr. Kurnik responded that, in general, UMP protocols reference an IPMVP process (A, B, C, or D). Hossein Haeri (Cadmus) explained that statistical power analysis is not likely under the current scope of Mr. Khawaja's work, but that it can be included and cross-referenced.

Contact

Please contact the UMP management team if you have any questions or feedback on the project.

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