Regional EM&V Forum
2011 Project Agenda & Budget
December 6, 2010

Introduction

Launched in 2008, the Regional Evaluation, Measurement and Verification Forum's (EM&V Forum) purpose is to support the development and use of consistent protocols to evaluate, measure, verify, and report the savings, costs, and associated avoided emissions of energy efficiency across a region that covers ten jurisdictions in the northeast and mid-Atlantic region.

The Forum conducts **Protocol Development** projects to develop common EM&V protocols or guidelines that support the calculation of energy efficiency and other demand-side resource impacts, including energy and demand savings, costs, and emissions, and the tracking and reporting of such impacts to support state and regional energy and environmental policy goals. The Forum conducts coordinated **Research and Evaluation** projects to inform the development and use of common EM&V protocols and savings assumptions, provide cost efficiencies for states' EM&V activities, and help ensure consistent, robust results in assessing the accuracy of demand-side resource impacts. Finally, the Forum undertakes a range **Education & Information Access** activities to ensure that Forum products are publicly available, easily accessible and understood through various venues to disseminate Forum results, recommendations and products; provides technical support for the use of Forum products; protects confidential information; and holds an Annual Forum Public Meeting.

Forum Project Selection Criteria

The Forum's projects are selected based on the following criteria:

1. The project makes sense to do regionally
    - Project addresses a topical issue for many/most states
    - Project leverages dollars across multiple states for large expensive projects, thereby saving states money (compared to the alternative of conducting study on its own)
2. If adopted and implemented by Forum states, the results of the project will:
    - Improve the credibility of EE savings
    - Reduce barriers to participation of EE resources in wholesale capacity markets
    - Improve state and regional demand-side resource and energy planning, and air quality planning by having readily available and consistent inputs, protocols and reporting format and tools
3. The project results can inform/guide national EM&V protocol development efforts, where the region brings a single voice to the national dialog

Forum Project Development Process

The proposed 2011 Forum agenda is developed/informed by the following process:

1) NEEP develops an initial list of possible projects informed by: a) Forum Three-Year Plan; b) areas of interest identified informally throughout the year by Forum participants; c) input from Project Committee co-chairs (May/June);

2) NEEP conducts a survey of list of projects with Forum participants to prioritize projects of greatest interest by each state (July);
3) Based on survey results, NEEP develops a proposed project agenda and developed estimated budgets (based on feedback from Project Committee co-chairs and outreach to evaluation experts) and circulates to the Project Committees for further discussion, changes and refinement (August/September quarterly meeting);
4) NEEP conducts additional outreach to each Forum state to solicit further feedback and interest in the project areas, which also helps to further shape project scope/needs based on that feedback (September/October);
5) Through the above process, a recommended agenda goes to the Forum Steering Committee for adoption, where a consensus resolution reflects a statement of interest to participate in specific Forum project, where subsequent consideration by the states is given for their support and financial commitment in a manner appropriate to each state (November/December). At this juncture, the statement of interest does not bind any state to fund any particular project;
6) Following Steering Committee adoption of the proposed project agenda and budget, NEEP convenes project subcommittees, which play the critical role of informing the full development of project scopes (January/February); and
7) Funding commitments are provided to NEEP upon further project scope and RFP development (1s quarter 2011)

The Forum is a participant driven process, and therefore relies on Forum stakeholders' input into the project priorities and scope development. At this juncture (October 2010) the attached project scopes are high level with budget estimates based on best information available to NEEP at this time, and will be further developed based on additional feedback from Forum participants, and ultimately from the project subcommittees that will be formed to fully scope each project in early 2011.

PROTOCOL DEVELOPMENT PROJECTS:

[PD10-1: Develop Net Savings Project: This project was approved to be funded as a 2010 project, but will be launched in early 2011. Its scope is to be informed by the Net Savings Scoping Paper and the Forum Policy Committee. Its budget is not reflected in the 2011 budget, but is being considered a carry-over project.]

PD11-1: Develop EM&V Methods and Savings Assumptions Guidelines for Emerging Technologies and Program Designs (2010 project moved to 2011)

Purpose: The project's purpose is to provide consistent methods and savings assumptions (where appropriate) to support Forum states program planning and evaluation activities. The guidelines would add a second set of priority measures/program types to the Forum *EM&V Methods & Savings Assumptions Guidelines* adopted in May 2010, by recommending EM&V methods and savings algorithms and assumptions to estimate initial gross savings for a set of emerging technologies/program designs.

Scope/Approach: The project will focus on developing common EM&V methods for emerging technologies/program designs, such as solid state lighting/LEDs, heat pump water heaters, ductless mini-split heat pumps, consumer electronics, data centers, set top boxes, advanced power/smart strips and applications (e.g., for entertainment centers and offices). The project would also review existing and emerging program designs (e.g., whole building, comprehensive lighting design, including load

control on customer side of the meter), the methods and tools being used (or developed) to evaluate savings, and recommend approaches to encourage consistency in EM&V practices and build awareness of available tools. The priority measures and program designs are to be proposed by the project subcommittee and agreed to by project funders. The project is not intended to address R&D type projects/issues nor related economic development aspects. The project will likely consist of 2 parts:

Part 1: Conduct secondary research of current practice/methods used (where programs/pilots exist), and conduct primary research where needed to develop new EM&V methods for priority emerging technologies. Scope will include developing recommended common procedures and methods for estimating preliminary savings; calculating gross evaluated savings; determining baseline conditions and addressing levels of certainty in savings estimates.

Part 2: Collecting secondary data for existing savings assumptions (e.g., deemed values and input assumptions from pilot projects) and algorithms for the selected priority emerging technologies/programs, identifying data gaps and were further evaluation needs exist, and develop (where appropriate) recommended deemed savings values.

Both Parts 1-2 will involve research within the Northeast and mid-Atlantic, as well as in other parts of the country where there is experience/data for the priority emerging technologies/programs. The project will also coordinate with any national projects and efforts to address national EM&V methods protocols, including the North American Energy Standards Board M&V standards efforts, and US EPA and US DOE's State Energy Efficiency Action (SEE Action) Network EM&V project.

Estimated Budget: $225,000

PD11-2: Develop Guidelines for Integrating Energy Efficiency into System Planning

Purpose: The project purpose is to develop guidelines for incorporating energy efficiency impacts into system planning in order to build greater consistency in how electric utilities/distribution companies and system planners forecast efficiency as part of their load forecasting efforts. The guidelines, if adopted and implemented, will assist regional ISO/RTO comparisons and will support power pool interchange planning. The project will build from an initial dialog with the region's three system planners - ISO New England, New York ISO, and PJM Interconnection – at the Forum's October 2010 Annual Public Meeting, where the system planners will share general information regarding current practice for how they reflect energy efficiency in their forecasts, and identify challenges and opportunities for improving the integration of efficiency in system planning, including addressing issues raised in FERC's NOPR regarding incorporation of demand resources in transmission planning processes.

Scope/Approach: The project will involve researching and documenting current forecasting practice/methods/models at ISO New England, New York ISO, and PJM Interconnection, and the extent to which and how efficiency is reflected in such forecasting. The research will review how building codes and product standards, "naturally occurring" efficiency (e.g., price induced effects), and efficiency programs are defined and currently incorporated into forecasting practices, and identifying data needs, challenges and opportunities for more fully incorporating efficiency into system plans in the Northeast and Mid-Atlantic regions. In developing recommended guidelines, the project will include reviewing forecasting practice in other parts of the country, such as the Northwest, and consider FERC and Eastern Interconnection developments addressing efficiency in transmission planning.

Estimated Budget: $110,000 (including NEEP seeking US DOE co-funding).

PD11-3: Common Statewide Energy Efficiency Reports Implementation Support

Purpose: This project would support the implementation of the Forum's Common Statewide Energy Efficiency Reporting Guidelines (a 2009-2010 project), which are slated to be adopted by the Steering Committee in December 2010. This effort would help to ensure effective implementation and use within Forum states and coordination across key state agencies.

Scope/Approach: The project would include developing a user-friendly on-line tool (e.g. spreadsheet tool) that would incorporate the Guidelines' reporting tables/templates, and provide associated technical support services to assist designated state entities in collecting and populating the *Common Statewide Energy Efficiency Reports* and use of the on-line resources. Such services would be supplemented by NEEP facilitating coordination between energy regulators, program administrators and air regulators to help ensure the reports, in particular reporting of avoided emissions, are informed by all key agencies through a collaborative process.

Estimated Budget: $80,000 (including NEEP seeking US DOE/EPA co-funding).

PD11-4: Calculating Effective Useful Measure Life in Early Replacement Programs

Purpose: Replacement at failure programs are not currently designed to incent the early replacement of equipment. The project would address program design that would engage customers at an earlier stage and encourage and accelerate early replacement, including program elements, necessary to reduce the instances of gaming the system (i.e., where a contractor or homeowner seeks a higher early retirement incentives when the unit was going to be replaced anyway). Further, the project will make recommendations regarding how to screen for early replacement change-outs, given that measure and program screening tools in use in a number of states are not well equipped to account for early replacement of equipment.

Scope/approach: The scope of this project would include a) a review of methods for calculating effective useful life in early replacement program types; b) the application of a recommended method to examples drawn from 2-3 types of measures and programs; and c) consideration of implications of various calculation strategies and baseline adjustments in cost-effectiveness analysis. The applications would review types of data typically available for the analysis. Suggested measures and programs to use as examples include early replacement of residential furnaces/boilers with high efficiency equipment (including scenarios with and without fuel switching), and early replacement of residential appliances such as refrigerators and residential and/or small commercial central a/c/unitary A/C. Specific questions/issues that this project would also address include:

1) What is the effective useful life to support initial savings estimates for the selected measures;
2) How to address the potential for continued savings after the effective useful life is over; and
3) Treatment of measure costs in cost-effectiveness screening of early replacement programs: accounting for full cost now for early replacement versus accounting for the costs involved at the normal (end of useful life) time of equipment replacement.

Estimated Budget: $100,000, which assumes some primary research for the selected measures.

PD11-5: Mid-Atlantic TRM (Phase 3)

Purpose: The purpose of this project is to continue the 2009 and 2010 projects on development of a technical reference manual (TRM) for the mid Atlantic jurisdictions (Maryland, Delaware and DC) with common savings assumptions, input parameters, and algorithms for priority end-use measures to support program planning and evaluation activities.

Scope/Approach: This project provides the mid-Atlantic EM&V Forum members with the opportunity to designate funds for a third phase of development of the mid-Atlantic TRM. At this time, with Phase 2

underway, it is premature to define the contents of a Phase 3, but one or more of the following options are suggested as candidates for a Phase 3 scope: addition of additional measures and/or additional Forum participating states (e.g. Pennsylvania) to the TRM, as appropriate; conversion of the TRM to a shared on-line resource (models for this are the Ohio TRM which is under development and the Northwest Regional Technical Forum database); facilitation leading to establishment of a formal multi-state TRM review and update process and infrastructure (follow up from recommendations included in the Appendix to the TRM).

Estimated Budget: $75,000

RESEARCH & EVALUATION PROJECTS

RE11-1: Loadshape Research (Phase 3) With Protocols to Support Transferability of Metering and Related Data

Purpose: EMV Forum loadshape studies are conceived as a multi-phase, multi-year effort. This project is intended to expand Forum loadshape research being conducted as part of the 2009-2010 projects, which are addressing two priority measures: commercial lighting and unitary HVAC. The ultimate goal of the Forum's loadshape studies is to make loadshape data – impact of electric energy efficiency programs during identified periods of time (e.g. hourly, seasonal and annual consumption data used to analyze coincidence factors and other usage patterns) available to Forum participants for use in implementing energy efficiency programs, participation in capacity markets, and meeting air/environmental regulatory needs.

Scope/Approach: This 2011 project will involve primary research including metering throughout the region on a measure or set of measures. The final list will be informed by EMV Forum members as well as what is feasible within the budget allocation. Data will be analyzed and 8760 loadshapes and coincidence factors will be provided as a result. The following measures have been identified as candidates for inclusion in this study, per recommendations culled from the Phase 1 study, the 2009 survey of measure priorities from Forum members, and recommendations by technical advisor and the EMV Forum co-chairs:

a) *Commercial/Industrial Sector*:* Refrigeration, HVAC heating, HVAC fans
b) *Residential Sector*:* HVAC cooling, HVAC heating
c) *Research on Tier 2/Emerging Measure Loadshapes* (primary research but on very limited set of measures and sites, possibly explore cofounding with other organization such as NW Council): plug load/consumer electronics (residential, C&I; data centers (measures and cooling)

*The initial assumption is that the research on these measure categories would address some or all of the measures listed, and that it would be based on a combination of primary research (metering) and compilation of existing data (to the extent it is available). Further, it is assumed that these studies would be conducted for the entire region, with recognition that final scoping the project may lead to some studies being conducted at sub-regional levels, depending on need and interest.

This project will also develop a report that recommends a format and checklist of critical pieces of information that are needed and should accompany metering data files, in order to facilitate the sharing and aggregation of metering results from future multiple projects and sources. As an example, information on the facility type, the dates of collection, the measures metered, the nearest weather station, and various other pieces of information are needed in order to incorporate metering data from multiple sources into models and weighting schemes. The report will provide both an explanation and a protocol that can be included in RFP's that include metering activities. In addition, the report will

develop a protocol for how data from existing metering studies should be prepared and presented to enable it to be shared with others. This will include addressing protection of confidentiality, as well as formatting, labeling, and storage protocols. These protocols will facilitate development of a data resource repository; it will also assist the Forum sponsors and others outside of the region with leveraging data going forward.

Estimated Budget: $625,000 estimated, cost will depend on number of measures or end uses selected, sample sizes, leveraging opportunities such as including existing data or teaming on some aspects.

RE11-2: Estimate EE Impact on Advancing Energy Building Codes & Standards

Purpose: The purpose of this project is to support sponsors/states interested in attributing and claiming savings associated with energy efficiency program activities directed at improving codes and standards and compliance. This project will serve as a next step after the September 28, 2010 workshop on this subject. The workshop shared information about what program administrator activities contribute to advancing energy codes and standards, what existing practices are used to estimate savings from these activities, and their applicability to the region and programs. This project will serve to implement recommendations that arise during or as a result of the workshop.

Scope/Approach: At this time, the project scope is still to be developed in consultation with the project subcommittee and informed by workshop participants' feedback. It will likely include the development of a framework, identifying or developing methods and materials (possibly including survey instruments, and roadmap of data that need to be collected) that can be used to estimate savings within the states in the region. Because codes and standards is still a very new and emerging program area in the region, it may include a continuing role for the EMV Forum facilitation to share knowledge between states and to share knowledge between the EMV Forum and related NEEP Policy products and activities.

Estimated Budget: $100,000 (including NEEP seeking US DOE co-funding for $75,000).

RE11-3: Add-On Research *Proposed at Nov 12, 2010 Project Committees Meeting*

This project provides additional funding to support possible project expansions for existing Forum research studies e.g., adding additional priority measures for incremental cost, measure persistence, or other research, as identified and approved by Forum participants during the year. This budget is intended to support on-going research needs without requiring the time and use of resources to issue new project RFPs for research approaches and resources already in place.

Estimated Budget: $200,000

Move to 2012? Natural Gas Efficiency Research – Market Characterization/Baseline Study

Purpose: The purpose of this research would be to establish the baseline conditions for high-efficiency gas heating equipment in the Northeast and Mid-Atlantic regions starting with the residential sector. The market characterization would describe where the market is now and what percent of the equipment being sold is high-efficiency. Several levels of high efficiency would be parsed out if appropriate for the technology/market being assessed. This research would help inform Forum states with natural gas efficiency programs of the market penetration for high efficient residential gas furnaces, boilers and domestic hot water heaters. Market channels and specification practices for these technologies would also be characterized. This investigation would look at the market differences throughout the region and would build on previous work conducted in the area and

complement work being done in the region such as in Massachusetts and Maryland where impact evaluations and baseline studies are underway.

Scope/Approach: Phase 1 (2011 project) - Conduct secondary research to synthesize recent and relevant work conducted in the region to serve as input to the study and to inform what primary research should be conducted. Phase 2 (2012) Primary research, including conducting interviews with trade associations, manufacturers, distributors and contractors to determine the percentage of equipment that meets certain efficiency criteria and determine if the market has been transformed for certain levels of efficiency. Also factor in current and future DOE's standards/ code changes for relevant equipment. Scope a distributor based tracking system similar to that undertaken in Wisconsin and done in the past for NEEP (will get further information on both).

Estimated Budget (Phase 1). $200,000

FORUM OPERATIONS & MANAGEMENT

Forum Base Costs include a range of Forum operational, management and education, information and communications activities, and are funded through Forum Base costs. For 2011, activities will include:

1. Facilitating Forum Steering Committee, Project Committees, and subcommittees;
2. Managing third-party contracts and projects for 10+ projects;
3. Updating and maintaining EM&V library of studies/research and other EM&V resources;
4. Maintaining and improving EM&V Forum website;
5. Holding Forum Annual Public Meeting;
6. Conducting Forum communications and outreach to Forum participants through monthly updates and quarterly newsletters;
7. Monitoring and participating in state, regional (ISO-NE, PJM), and national M&V meetings/efforts (NAPEE, NAESB M&V projects);
8. Conducting outreach to states to support state adoption of Forum products approved by Steering Committee (e.g., presentations, attend state evaluation meetings, submit public comments);
9. Assisting with coordinating/facilitating state PUC, PA and air regulatory efforts regarding access to energy efficiency data to support air quality and climate change planning;
10. Maintaining Forum operational policies, including ensuring access to Forum materials and protecting confidential information; and
11. Planning and developing 2012 Forum agenda and budget with outreach to Forum participants, subscribers, grant funders, and other stakeholders (subject to/informed by results of Forum Evaluation – see below)

Base Cost Budget: $650,000

FORUM EVALUATION: In 2011, an independent evaluation of the Forum will be conducted, per the Forum 3-Year Plan, to assess its performance and continued role and scope going forward being 2011.

Estimate Budget: $45,000