



To: Energy Efficiency Board
From: Kim Oswald, on Behalf of the EEB Evaluation Committee
Date: February 8, 2011
RE: Evaluation Committee Status Report – for February Meeting

DPUC Compliance Issues

In Docket 10-10-03, the Departments made several evaluation-related orders. All will require immediate attention.

- Develop data collection needs with ISE by 3/15.

We will need also to provide an independent study whenever the next self-evaluation is scheduled. Some . I am working with Bill Leahy and Les Tumidaj to determine what the needs are and how best to capture needed information.

- Develop written protocols for evaluation.

The evaluation Committee has a draft Evaluation Roadmap before them for their approval.

- Provide a study using billing analysis and reconcile to engineering-based study.

As noted in last month's report, there are limitations in what kinds of evaluation studies can employ an Engineering-Adjusted Billing Analysis – as is true also for engineering-based studies. I recommend significantly broadening the existing Small Business project. We would have to add the billing analysis component and also provide for metering additional measure types beyond the air-conditioning and refrigeration measures planned.

Contractor Pool - Infrastructure Development

As has recently been implemented in MA, the evaluation group will establish a set of qualified and cost competitive Contractors to perform all evaluation studies in each of 4 or 5 research areas, (for example, residential retrofit programs may be one research area). This project is likely to provide long term benefits by reducing lead time for starting new studies, providing an incentive for more bidders, reducing the cost of educating Contractors and providing better cost-certainty. The winning bidder would be the sole evaluation contractor for their particular research area. The winning bidder will be expected to handle all evaluation issues and either team with or sub-contract out work where specific skill sets are required that the evaluation contractor may not possess in-house.

I do not propose that we guarantee the selected contract any particular volume of work, nor that they be guaranteed that they will retain the contract if their work is unsatisfactory or the research area is no longer needed.

To reduce the amount of up-front work, the MA RFPs are being used as a starting point. Each RFP will contain one Scope of Work for a study that is scheduled for this year. So having 4 research areas in the initial set, I am producing 8 scopes of work; 4 for the overall research area and 4 for a

study contained within each research area. I have begun drafting the RFPs. See page 9 for more information on the current plan.

Residential Studies

2010 Home Energy Solutions Impact Evaluation - CT - continued for 2010

This study examines the impacts of gas and electric measures installed in the HES program. Because the broad range of services for which different customer groups are eligible greatly complicates the analysis, the study focuses on a billing analysis, where the results parsed into measure types using engineering models. Nexant is the contractor for this evaluation.

The Contractor has provided several draft reports to date – the most recent of which came recently. The Final Draft report (as defined by the order in Docket 10-10-03) was released to the Companies on Jan 28 and to the Board February 1. Comments have been returned and the Final report is being produced at this time.

Residential Behavioral Pilot Program/ C&I Behavior Program (small C&I) CL&P project continued from 2010

CL&P The original expectation was for a single evaluation of both UI and CL&P's programs to be developed through a single solicitation. However, UI decided to pursue a different model for their Pilot and different focus for the evaluation. To meet important time constraints that would impact the CL&P Pilot, the RFP for evaluation of CL&P's behavior pilot program was released for bid on September 16th. Responses from bidders came in on October 11th. Seven bids were received. The bid by the NMR Group has been selected. For this study, the goals are to determine:

- Savings that accrue to customers over the course of the pilot
- What actions customers take to achieve those savings
- Types of messages and ways of communicating those messages that are most likely to result in significant savings
- Whether customers continue interactions with other customers after they are no longer reminded to do so
- Whether customers continue to make the behavioral actions the program induced over time and without reminders

The project is now underway with the [substantial] data collection as the first task.

United Illuminating The original expectation was for a single evaluation of both UI and CL&P's programs. However, UI decided to pursue a different model for their Pilot. As UI clarified its programs' dimensions and what kinds of information they will require to make decisions later, I amassed enough information developed a scope of work that was released to NMR for them to develop a work plan and budget on January 6. This task was first offered to NMR to reduce lead-time and provide for consistency in approaches and cost-beneficial overlap; however the Evaluation Committee retained the right to continue to a separate bid should that be necessary. UI's main concerns were:

- What messages and message delivery vehicles, alone and in combination, are most effective in producing energy efficiency actions among participants? Ease of access and use of the web interface;
- Changes in knowledge, attitudes, and reported actions among program participants. Barriers to taking additional (more substantial) energy efficiency behaviors? The extent to which participation in the Pilot induces participation in other CEEF programs

- Participant satisfaction with the overall program and specific aspects of the program?
- Frequency and reasons for program drop-outs, including passive dropouts

NMR provided the work plan on January 12 and UI approved going forward with it on the 13th. The quick turn-around by both NMR and UI would allow the 2 projects to run a bit more in sync. However, contract finalization continues as pending. A kick-off meeting will be scheduled as soon as the contracts are executed.

Ground Source Heat Pump Study

CL&P estimates that they've helped install, or have in the pipeline, upwards of a 1,000 units; UI has a lesser number. This study will entail working with CCEF to do an impact analysis and a market and technology assessment, including more detailed lifecycle cost and carbon impact analyses.

Residential New Construction Baseline - continued from 2010

The Residential New Construction Baseline project is being completed in cooperation with an effort begun in Massachusetts. While there are many common tasks across the various groups, each entity is able to select those activities important to their states. CT is focusing on an assessment of the extent to which: new residential construction meets current building codes; customers seek out opportunities to select efficient systems; and whether builders are making those opportunities available. MA selected a team made up of KEMA and NMR to conduct this study. The CT Scope of Work was developed over the last couple of weeks, since CT was able to establish out study parameters more quickly than other states involved. The Companies are now putting together purchase orders to support the project.

Residential Measure Life and Persistence -

This study is intended to examine measure life (time until failure) and persistence (time still in service) for measures installed in HES and HES Income-Eligible. The most recent study on this topic was undertaken in 2007. Beyond the age of the existing information, the need for this study was made evident with the completion of the 2010 Low Income study. That study found evidence that existing estimates developed for HES poorly matched what was found in limited income homes.

Early Replacement of Gas Water Heater/ Feasibility of On-demand Units -

This study will be a market assessment study to examine the feasibility and likely cost efficiency of encouraging early replacement of inefficient gas water heaters and especially the benefits and costs of replacing these units with on-demand water heaters.

Residential Lighting Saturation

Completion of this study is required and will be initiated as soon as possible. This study will examine the numbers and locations of common and specialty efficient lighting products with an aim to determine the extent to which substantial direct intervention in the market continues to be needed.

Efficiency Opportunities in Multifamily

This market assessment and feasibility study will assess ways to reach and expand depth of multifamily efficiency options. The study will include site visits to assess common apartment configurations and efficient equipment saturation. The study will also examine barriers to implementation including landlord/tenant conflicts and payback requirements.

Commercial/Industrial Studies

Energy Conscious Blueprint Impact and Process Study- Continued from 2010

Global Energy Partners, LLC (with their subcontractor, Lime Energy) was chosen to complete the study the ECB study. In order to quantify the benefits of efficient measures installed in C&I facilities through the ECB program. The program benefits include avoided capacity costs resulting from reduced electric demand during peak hours and avoided energy costs resulting from energy savings during seasonal and on/off-peak periods. In addition to the impact study, changes in the program and in the market made plain the need for a process evaluation that will examine customer benefits realized, comprehensiveness and depth of installations made with and beyond program incentives and effects of individual measures on program performance.

An initial draft was supplied as scheduled. GEP is working on revision. Metered data from winter temperature sensitive measures and process measures has been collected and analysis is beginning.

Event/Deliverable	Due Date	New Due Date	Date Complete	Reasons for Delay/Notes
Final Workplan	5/15	-	8/19/	Fuller participant data needed in order to finalize tasks and costs
Procure Company data	Within 4 weeks of contract signature		11/30/	Billing data provision complete as of 11/30
Sample Design and Customer Selection	Within 10 weeks of contract		09/9/	
Impact and Process Data Collection Protocols	6/10		07/26/	Tasks above took precedence
Data Collection (summer)	10/10		10/10/	
Process and remaining impact	11/01		11/01/	
Phase 1 Data Analysis and Report	11/01	12/01	02/04/ (draft)	December version needed major revision and reanalysis.
Data Collection (winter)	01/01/11		01/31/	Difficulty accessing some sites
Billing Data from Companies	Within 2 weeks of request			
Phase 2 Data Analysis	03/01/11			

Draft Final Report	05/15/11				
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Impact Evaluation of the Retro-commissioning/O&M Services Program - Kick-off shortly

The study will provide savings data in order to quantify the benefits of efficient measures and processes developed in commercial and industrial (C&I) facilities through the RCx/O&M Services (O&M) program. The benefits include avoided capacity and energy costs resulting from energy savings during seasonal and on/off-peak periods. In addition, because operations adjustments may not be maintained, persistence is a particular concern for this study. Beyond the impacts of the current program, it is hoped that this study can inform the evolution of the program through the Business Sustainability Challenge.

Michaels Energy was selected to complete the project. Contracts are nearly complete. The kick-off meeting will be held on February 17th.

Business Sustainability Challenge

This project will examine the impacts made and the needs that corporations have to develop a culture of efficiency improvements. The study will use interview approaches to determine the extent to which participants have established attributes and practices that provide for culture change. We may be able to collect this information as part of the RCx/O&M Services study – just beginning. Additionally, the study will assess the existing program offerings to determine what approaches are most and least often beneficial and to examine alternate ways to expand the program cost effectively.

C&I Lighting Market

This study is a market study to examine where remaining opportunities exist for efficient lighting. In addition to examining particular technologies, the study will examine the extent to which program barriers affect capture of these opportunities.

Small Business Air Conditioning and Refrigeration Impact

The Small Business program impact evaluation (completed in 2009) provided good overall impact values and collected large amounts of information on lighting and lighting controls. However, additional information on summer impacts from air-conditioning and refrigeration measures needs to be collected. This study is the candidate for a full-program impact evaluation with both billing and metering activities; however, that scope is not in the current plan.

PSD Assessment

This project will provide a full and independent assessment of the 2011 PSD. Engineering analyses will examine both best practices from other jurisdictions and results from recent CT studies to recommend enhancements prior to the 2012 filing.

Regional EM&V Forum - 2010-2011

Load Shape Estimation: C&I Lighting - continued from 2010

This project involves the creation of a spreadsheet tool that can be used by members of the Regional EM&V Forum to calculate and quantify the hourly savings of efficient lighting measures

installed at Commercial and Industrial facilities. The tool will generate 8760 commercial/industrial lighting load shapes (largely from secondary sources). KEMA was selected to complete the study. Assembling the available data is nearly complete, and the spreadsheet tool design is being coordinated with the Unitary HVAC study. This project is proceeding at a slower pace than originally anticipated, but it is now at a point where the majority of the data has been collected, and KEMA can estimate the schedule for the next steps with more certainty. KEMA has completed almost 75% of the on-sites needed for the study. KEMA intends to complete up to 66 more projects, of which 10 are already in the pipeline. Preliminary results are expected by mid-April and a draft report by mid-May.

Load Shape Estimation: C&I Unitary HVAC - continued from 2010

The objective of the study is the development of Unitary HVAC load factor data for every hour of the calendar year. The annual load shape data must also be adaptable to different program participant populations located within the service territories of Forum members; load shape data will be weather-normalized in order to provide for the calculation of aggregate load shapes that reflect the weather conditions of different Program Administrator customer populations.

The Unitary HVAC Load Shape RFP was issued on January 14. The contractor selected was KEMA and the project initiated immediately.

KEMA has collected and analyzed the data from its metering effort, and it has completed its modeling tasks. It also developed the spreadsheet tool which was tested by a small subset of the subcommittee (beta testers) late last year. Since then, KEMA has refined the spreadsheet tool and populated it with the data. In the past 2 weeks, the spreadsheet tool and data have been scrutinized by the project's technical advisor, and the beta testers are again meeting to review these updated deliverables.

C&I Lighting: Measure Persistence of Savings - continued from 2010

The purpose of the project is to develop up-to-date impact parameters that describe lighting measure persistence, i.e. in place and operating over multiple (5+) years based on field and survey samples. The project will also develop equipment life estimates from secondary sources (manufacturer reports). The value of this project to sponsors is that commercial lighting is the largest source of savings for most EE providers in the region. Multi-year persistence lends itself to regional study because the research is difficult, expensive, and measures are consistent across locations. KEMA is working this study.

KEMA developed the sample design for this project, based on data collected from EM&V Forum members in New England and New York. The results of this project are expected to deliver measure life estimates developed from models informed by primary data collected from programs that have been in existence and measures that have been installed for many years.

The project schedule has been extended to accommodate a change in available program data. Onsite data collection is one-third complete, and data analysis will take place this fall/winter, with a final report expected in early 2011.

Common EM&V Methods and Savings Assumptions

For 2011, development of common methods and savings assumptions will focus on emerging technologies and the programs offering them. 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. 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.

Common EE Reporting

The overall purpose of this study is to address growing interest in consistent reporting of electric and natural gas energy-efficiency program savings, costs and emission impacts across states in the region to help inform multiple energy and environmental policies, including:

- Climate change goals and air quality emission reductions, and associated planning;
- State procurement policies, energy-efficiency savings and associated economic goals; and
- Regional energy planning and forecasting purposes.

In 2010, NMR produced a set of guidelines (available at <http://neep.org/uploads/EMV%20Forum/EMV%20Products/EMV%20Forum%20Statewide%20EE%20Reporting%20Guidelines%2012-30-10.pdf>). NEEP is incorporating revisions and definitions to the draft Guidelines with guidance from lead subcommittee members. Implementation of these guidelines will be the focus in 2011.

Incremental Cost Study - continued from 2010

The objective of this Project is to develop incremental cost assumptions for a variety of efficiency measures. Navigant is the contractor selected for this project. A kick-off meeting was held on October 8th.

Priority measures: NEEP and the Subcommittee have developed a list of priority natural gas measures on which to focus:

- Residential Gas Furnaces
- Residential Gas Boilers
- Commercial Gas Boilers
- Combination Heat/Hot Water
- Tankless/On-demand Water Heater
- Indirect Water Heaters

Electric measures have not yet been determined. Program-specific data has been requested from the Companies and supplied as was possible to Navigant.

Impact of Codes and Standards on Advancing Energy Efficiency

This project is intended to accommodate several recent developments:

- The DPUC Order in to begin examining development of a mechanism for attribution of savings from codes and standards;
- The precedent of regulatory approval that now exists in California to claim savings from codes and standards activities;

- Ability to leverage their significant progress in developing a mechanism to claim and attribute savings for residential building energy code compliance and/or improvements related to newly adopted stretch codes;
- Make regulatory staff and program administrators throughout the region aware (at a high level) of the codes and standards activities and attribution strategies.

The 2010 project with this title developed a Workshop to assist Forum members whose organizations are a) planning or considering programs and/or other activities that encourage improved codes, standards, and code compliance, and b) expecting to claim savings attributable to their activities.

For 2011, a more complex or comprehensive regional research project is being scoped by the Forum; Project continuation subject to DOE co-funding.

Planned Research Areas for Contractor Pool

RA1. Residential Retrofit and Retail Products

This category includes HES/HES-IE, residential cooling and heating equipment, residential water heating, lighting saturation and some aspects of multi-family programs.

RA2. Residential New Construction/Emerging Measures

This includes residential new construction and major renovations programs, as well as codes and standards and compliance efforts. This area also includes appliance programs including assessment of ground source heat pumps and on-demand water heaters.

Savings characteristics, market conditions, and program recommendations will be included.

RA3. Large C&I

This area includes EO, ECB and O&M Services. The Business Sustainability Challenge would also be included in this research area. Large Multi-family projects may come into this research area.

RA4. Small C&I

This includes the process and impact evaluation of current C&I small retrofit, direct install programs as well as measuring the impacts of particular end-uses included. This category would also include commercial behavior programs and any future programs that may target small non-residential customers including O&M based programs and new construction.

RA5. Special and Cross-Sector Studies

This includes those studies that do not fit readily into any of the five market-oriented Research Areas above, as well as those studies that are cross-sector in nature, including: assessment of the Program Savings Document, cross-sector free ridership and spillover studies; non-energy benefits; community-based pilots; and marketing, public education, and outreach activities.

