

Evaluation, Measurement, and Verification (EM&V) Plan for 2010

**Presentations by EEAC EM&V Consultant
and Program Administrators**

MA EE Advisory Council Meeting
February 9, 2010

2010 EM&V Plans

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**EEAC Consultant Team Lead for
EM&V**

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Council EM&V Resolution of Sept. 8, 2009

Policy Provisions

- Ensure independence and objectivity of EM&V activities, as well as consistency, timeliness, and credibility of results
- EEAC to assume oversight role over EM&V activities by PAs
- EEAC consultants to work with PAs to reach consensus on evaluation issues, but if consensus cannot be reached, authority for decision-making to reside with EEAC or its designee.
- Subject to system of appeals
- Creation of EEAC EM&V standing committee
- EM&V Resolution approved by DPU on January 28, 2010 in its Orders on the PAs' three-year plan filings

Council EM&V Resolution of Sept. 8, 2009

Administrative Provisions

- Most EM&V studies to be performed at a statewide level
- Evaluation activities to be divided into 5 to 7 semi-permanent statewide research areas, each with:
 - A long-term research area manager (RAM) from the PAs
 - An independent evaluation contractor working under a long-term contract
 - An assigned EEAC EM&V consultant
- EEAC will have authority to remove RAMs if they do not perform effectively
- Electric and gas evaluation efforts should be fully integrated to the maximum extent possible
- RAMs and EEAC EM&V consultants to jointly prepare annual evaluation plans

New EM&V System: What PAs and Consultants Have Done Since Resolution

- Agreed on a system of six statewide research areas
- Assigned RAMs and EEAC consultants to each research area
- Developed high-level 2010 EM&V plan, structured by research area (in October 30 filings, which have now been approved by DPU)
- Developed a proposed EM&V metric specifying due dates for a number of key 2010 deliverables (DPU rejected the metric in their Orders on the plans)
- For each research area, developed and released RFP to recruit contractor for PY2010-2012
 - All six RFPs were released roughly simultaneously in late January
 - Proposals generally due in late February; contractor selection a few weeks later
 - Goal is to have signed contracts in all six areas by April 15

Currently Two Other Sets of EM&V Studies Being Implemented in Parallel With the New System

- Studies Initiated Under Old System
 - Some statewide studies, some PA-specific studies
 - *All but one or two of these wrapping up by June 2010*
 - Mostly affect savings to be reported in 2009 annual reports
- Northeast EM&V Forum
 - Performs collaborative EM&V studies involving entire Northeast
 - MA is active participant (both PAs and EEAC Consultants)
 - *This is not changing; studies will be ongoing*
 - Produces some results that will directly affect savings claims for 2010 and beyond

New EM&V System: Six Statewide Research Areas

- 1. Residential Retrofit and Low Income.** Includes residential cooling and heating equipment, residential heating and water heating, residential and low-income retrofit, weatherization, and most aspects of multi-family programs.
- 2. Residential Retail Products.** Includes residential lighting and appliance programs.
- 3. Residential New Construction.** Includes residential and low-income new construction and major renovations programs, as well as codes and standards and compliance efforts. Also includes baseline studies of construction practices for both single- and multi-family homes.
- 4. Non-Residential Large Retrofit and New Construction.** Includes C&I new construction (small and large) and major renovation, as well as large C&I retrofit programs.
- 5. Non-Residential Small Retrofit.** Includes the current C&I small retrofit, direct install programs, along with any future programs targeting small non-residential customers.
- 6. Special and Cross-Sector Studies.** Studies that don't fit into any of the above areas, as well as those that cross multiple customer sectors. Includes: cross-sector free ridership and spillover studies; non-energy benefits; behavioral programs; community-based pilots; and marketing, public education, and outreach activities.

Assignments

Research Area	PA	RAM	EEAC Consultant
Residential Retrofit and Low-Income	NSTAR	Lisa Shea / Gail Azulay	Bob Wirtshafter
Residential Retail Products	NSTAR	Lisa Shea / Birud Jhaveri	Ralph Prah
Residential New Construction	NGRID	Bill Blake	Bob Wirtshafter
Non-Residential Large Retrofit and New Construction	NGRID	David Jacobson / Andrew Wood	Ralph Prah
Non-Residential Small Retrofit	NSTAR	Lisa Shea / Dave Weber	Ralph Prah
Special and Cross-Sector Studies	WMECO	Gene Fry	Ralph Prah

Approach to RFPs

- PY2010 activities:
 - RFPs generally scope out in moderate detail, request specific technical and cost proposals.
 - More detailed workplans to be developed collaboratively with contractors after selection
 - This approach enlists support of contractors in project scoping and uses market forces to apply downward budget pressure.
 - However, because of it we do not have budget information yet.
 - Overall EM&V budget cap proposed for PY2010 was around \$9 million, but Consultants anticipate actual spending in 2010 to be substantially lower.
- PY2011-2012 activities:
 - RFPs typically discuss in general terms, request billing rates and general approach.
 - More detailed plans to be developed on an annual basis, in last quarter of each calendar year.
 - Rationale is that it is difficult to plan EM&V activities in detail years in advance.

Global Process and Marketing Evaluation

- First significant EM&V results from new system are likely to start to become available in late 2010
- However, it is important to support 2010 mid-course adjustment process to maximum extent feasible
- Thus planning on a Global Process and Marketing Evaluation to provide early feedback, draft report due July 15
- A key focus is on getting insights into how well new and changed program approaches are working.
- In order to mobilize extensive resources quickly, work is to be split among four research area contractors.
- Key uncertainty is which program changes will have advanced quickly enough to productively study in the April-July period

High-Level Timeline for 2010

- New Statewide EM&V System
 - February: RFPs on the street
 - Late February – early March: proposals due
 - March: Contractor selection
 - March-April: Contract negotiations and signing
 - April-July: Global Process/Marketing Evaluation performed and reported
 - April-December: Numerous 2010 statewide studies initiated
 - Late 2010: Results of new studies start coming in
- Old EM&V System
 - March-June: Several PA-level and statewide studies initiated under old system wrapping up
- EM&V Forum
 - February-December: several studies underway and/or due to be completed, with MA's active participation

Overall Situation Assessment

- Thus far, new EM&V system is generally on track and working the way it is supposed to.
- NGRID, NSTAR and WMECo have done a good job of mobilizing staff and adapting to new system
- No unresolvable disagreements have arisen
- Limited participation thus far by gas-only utilities.

Research Areas

Research Area Managers – NSTAR

Residential Retail Products

- Lisa Shea/Birud Jhaveri

Residential Retrofit and Low Income

- Lisa Shea/Gail Azulay

Non-Residential Small Retrofit

- Lisa Shea/Dave Weber

Residential Retail Products

2010 Focus

- Lighting Net-to-Gross (NTG) Impact Study
 - Spiral CFL
 - Specialty Bulbs
 - Hard to Reach
 - Optional Study Components
 - CFL Saturation study
 - Hard-to-Reach segmentation study
 - Other CFL Impact Factors (e.g. operating hours, installation rate, delta watts)

Residential Retail Products 2010 Focus

- Process Evaluation – Lighting
 - Evaluation of new program design and implementation
- Market Characteristics Study
 - Example of research areas include pricing, retailer stocking and promotional activities
- Market Research & Evaluation
 - Appliance Turn-in Program

Residential Retrofit and Low Income 2010 Focus

- Process evaluation - MassSAVE program
 - Statewide marketing effort
 - Vendor delivery structure and standardized report
 - Vendor consistency and standardize impact factors statewide
- Deep Energy Retrofit Pilot - Process Evaluation
 - Recommend baseline energy use
 - Identify strategies to seek potential participants and how to reach them
 - Determine barriers to participation
- Brushless Fan Motor Pilot Process Evaluation
 - Assess installation process
 - Review program implementation
 - Barriers to participation

Residential Retrofit and Low Income 2010 Focus

- Multi-family - Potential Study
 - Determine program's impact on multi-family market rate sector
 - Answer questions such as:
 - How much energy can apartment common/tenant areas save?
 - What kind of buildings and measures are out there?
 - What are the barriers to participation?
 - What are the costs and best approach to getting at (deeper) savings
- Low Income - Process Evaluation
 - Assess administrative and delivery processes
 - Review data collection for consistency
 - Recommend ways to streamline reporting
 - How can we improve internal/external process?
 - Can we leverage weatherization funds?

Non-Residential Small Retrofit 2010 Focus

- Evaluate Multi-Tier Program Delivery Model
 - Investigate Direct Install approach for customers using 200-750 kW
 - Review “Main Street” Pilot Results
 - Survey Participants and Non-Participants
 - Assess additional electric/gas measures
 - Test awareness and interest
 - Determine reasons for non-participation

Non-Residential Small Retrofit 2010 Focus

- Lighting - Impact Evaluation
 - Includes both energy and demand
 - Site Assessments (including recession effects)
 - Updated Coincidence Factors
 - Complementary to NEEP Loadshape/Measure Persistence Studies
 - Statewide and Company Specific Results for Energy and Demand

Non-Residential Small Retrofit 2010 Focus

Planned Evaluation Activities by Quarter

	2010				2011				2012			
2010 – 2012 Studies	1	2	3	4	1	2	3	4	1	2	3	4
Global Process & Marketing Eval		■										
Multi-Tier Market Assessment			■	■								
Lighting Impact			■	■	■							
Statewide Delivery Model Process						■	■	■	■			
Integrated Program Impact										■	■	■

Research Areas

Research Area Managers – NGrid

Non-Residential Large Retrofit & New Construction

➤ David Jacobson /Andrew Wood

Residential New Construction

➤ Bill Blake

nationalgrid

The power of action.™

Non-Residential Large Retrofit & New Construction

3 Market Characterization Studies

- ◆ Comprehensive Customer Visits & Market Actor Interviews
 1. 150 Commercial New Construction site visits to assess baseline practices
 2. 25 interviews/site visits studying the Chain & Franchise Segment
 3. 30 interviews studying the Combined Heat & Power market
- ◆ Detailed Case Studies (part of Study 1)
 - ◆ Case studies of the 50 largest new construction projects in the state to quantify how they interacted with current programs and assess barriers to participation.

Non-Residential Large Retrofit & New Construction

2 Process Evaluation Studies

1. 2010 Mid-Course Program Delivery Assessment
 - ◆ 30 Interviews PA staff, contractor staff, and customers to assess effectiveness of delivery and to date performance.
 - ◆ 4 Case Studies to define program barriers
 - ◆ 2 Case studies of Comprehensive Design Assistance participants.
 - ◆ 2 Case studies of prescriptive measure participants that were good candidates of Comprehensive Design Assistance.
2. Full Comprehensive Design Assistance (CDA) Evaluation.
 - ◆ 100 interviews with program stakeholders focused on defining process improvements that when implemented should increase program participation.

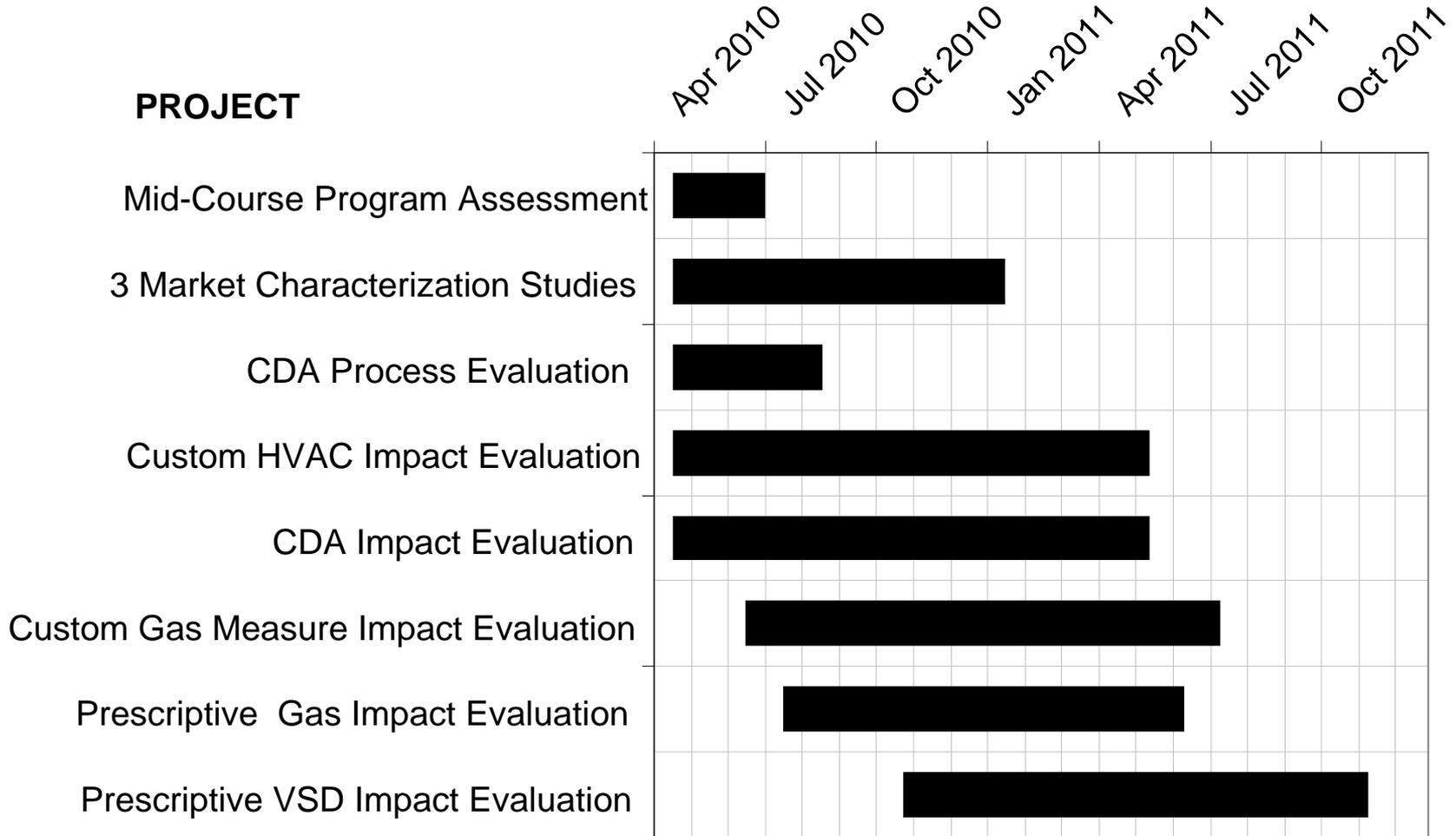
Non-Residential Large Retrofit & New Construction

5 Impact Evaluation Studies

1. Custom HVAC Measures (30 Measures)
2. Comprehensive Design Assistance (CDA) (5 Projects)
3. Prescriptive Variable Speed Drives (40 Measures)
4. Custom Gas Measures (TBD Sample sizes)
 - ◆ Insulation, Boiler Controls, Energy Management Systems, Unique Measures
5. Prescriptive Gas Measures (TBD Sample sizes)
 - ◆ Boilers, Furnaces, Programmable Thermostats

Non-Residential Large Retrofit & New Construction

2010 Project Schedule (10 Projects)



Residential New Construction Research Area

4 Areas of Evaluation Focus for 2010

1. Baseline study for Residential New Construction Program
 - ◆ Approximately 100 or more site visits
 - ◆ Data collection of energy efficiency and physical characteristics of home
 - ◆ Blower Door, Duct Blaster, & HVAC tests
 - ◆ Customer Surveys
2. Codes and Standards
 - ◆ Quantify impacts of PA efforts to enhance and upgrade
 - ◆ Research Code compliance
3. Pilot Areas – Process & Impact Evaluations
 - ◆ Major Renovation
 - ◆ Lighting Design
4. Other Evaluation Activities and Planning

Research Area

Research Area Manager – WMECO

Special & Cross-Sector Studies

➤ Gene Fry

Special & Cross-Sector Studies

Free Riders & Spillover

- Re-examine C&I methodology

- Update C&I

Non-Energy Benefits

- Low-Income

- Other Residential

- C&I

Behavioral

- Process

- Impact

Community Mobilization Pilots

- Process Study for 2008-10 Pilots

- Process Study for 2010-11 Pilots

Early Global Process

- Umbrella marketing, community mobilization, program integration

- Coordinate 4 research areas

Free Riders & Spillover

- C&I 2010 FR/SO study, with old method, runs parallel to this.
- Re-examine C&I methodology (2010) and consider
 - Spillover into similar but not identical equipment
 - How to calculate partial free-ridership
 - Acceleration issues
 - Spillover into other states
- Update C&I FR/SO Rates – 2011
 - Use updated methodology
 - Survey 1,500+ participants from 2010
 - Perhaps 2/3 from NSTAR and National Grid
 - Rest from gas companies and smaller electric ones
 - About 1/3 small businesses, the rest large C&I
 - Survey 100+ suppliers, design professionals, trade allies

Non-Energy Benefits

- Residential (2010)
 - Low-Income
 - Tangible benefits – reduced water use, arrearages, shut-offs, etc.
 - Other benefits – property values, safety, noise, bill volatility, etc.
 - Bill savings effects are appreciable.
 - See if benefits differ for multi-family vs not, own vs rent, etc.
 - Other Residential (Benefits overlap a lot with low-income.)
 - Tangible benefits – CFL lives are longer, etc.
 - Other benefits – comfort, indoor air pollution, system reliability, etc.
 - See if benefits differ for retrofit vs new construction.
- C&I (2011-12)
 - Prescriptive in 2011, Custom in 2012?
 - Generally measure-specific
 - More sales
 - Less spoilage
 - Reduced O&M costs
 - Less water and material use, etc.

Behavioral Programs

- Background
 - Targeted customers get data on “neighbors” energy use & tips on how to reduce their own use.
- Process & Behavioral Response Evaluations (2010+)
 - How exactly do people save? Which tips are used most often?
 - How persistent are behavior changes?
 - How much does participation draw people into other programs?
- Impact Evaluations (2010, 2011, 2012, etc.)
 - Gas & electric savings
 - Prepare data system interfaces.
 - Bill comparisons – participants vs matched non-participants
 - Subtract out double counting (from equipment via other programs).
 - Savings by season, esp. summer & winter, are important.
 - Evaluations at least once a year, probably twice

Community-Based

- Process studies
 - What worked well? What didn't? Why?
 - How did community effort affect participation rates?
 - Who did participants contact to follow up applications? Success rates?
 - Can non-resource savings, like job creation, be quantified?
 - Was it cost effective? More or less than traditional program outreach?
- Process study for pilots well under way (2010)
 - Marshfield Energy Challenge
 - Cambridge Energy Alliance
 - Energy Smackdown
 - Western Mass Saves
 - MAPS
- Process study for pilots starting up (2010-12)
 - Chinatown
 - New Bedford
 - Renew Boston
 - Next?

Special & Cross-Sector Studies Timelines

PLANNED EVALUATION ACTIVITIES BY QUARTER	2010				2011				2012			
	1	2	3	4	1	2	3	4	1	2	3	4
Coordinate Mini-Global Process & Marketing Evaluation		Dark	Dark									
C&I Free Riders & Spillover					Dark	Dark	Dark		Dark	Dark		
Free Rider / Spillover Methods			Dark	Dark								
Non-Energy Benefits, Low-Income		Dark	Dark									
Non-Energy Benefits, Residential		Dark	Dark									
Non-Energy Benefits, C&I					Dark	Dark			Light	Light		
Community-Based, Process+ 2010-		Dark	Dark	Dark	Dark							
Community-Based, Process+ 2010+		Dark	Dark	Dark	Dark	Dark	Dark		Light	Dark	Dark	
Behavioral Programs, Process			Dark	Dark		Dark	Dark		Light	Light	Light	
Behavioral Programs, Impact			Dark	Dark	Dark	Dark		Dark	Dark	Dark		Dark
Umbrella Marketing & Integration		Dark	Dark	Light	Dark	Dark			Light	Light		
Other Evaluation Issues				Light								

Darkly shaded areas are definite.

Lightly shaded ones are tentative, mostly with respect to timing.