Survey of Current Energy Efficiency Program Evaluation Practices and Emerging Issues

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Overview of Talk

- Study objectives and approach
  - Conducted in support of Action Plan EM&V Technical Work Group
- Review key findings
  - Approaches to EM&V planning (& budget levels)
  - EM&V methods and reporting conventions
  - Emerging evaluation Issues
- Recommendations: Improve consistency and coordination of practices

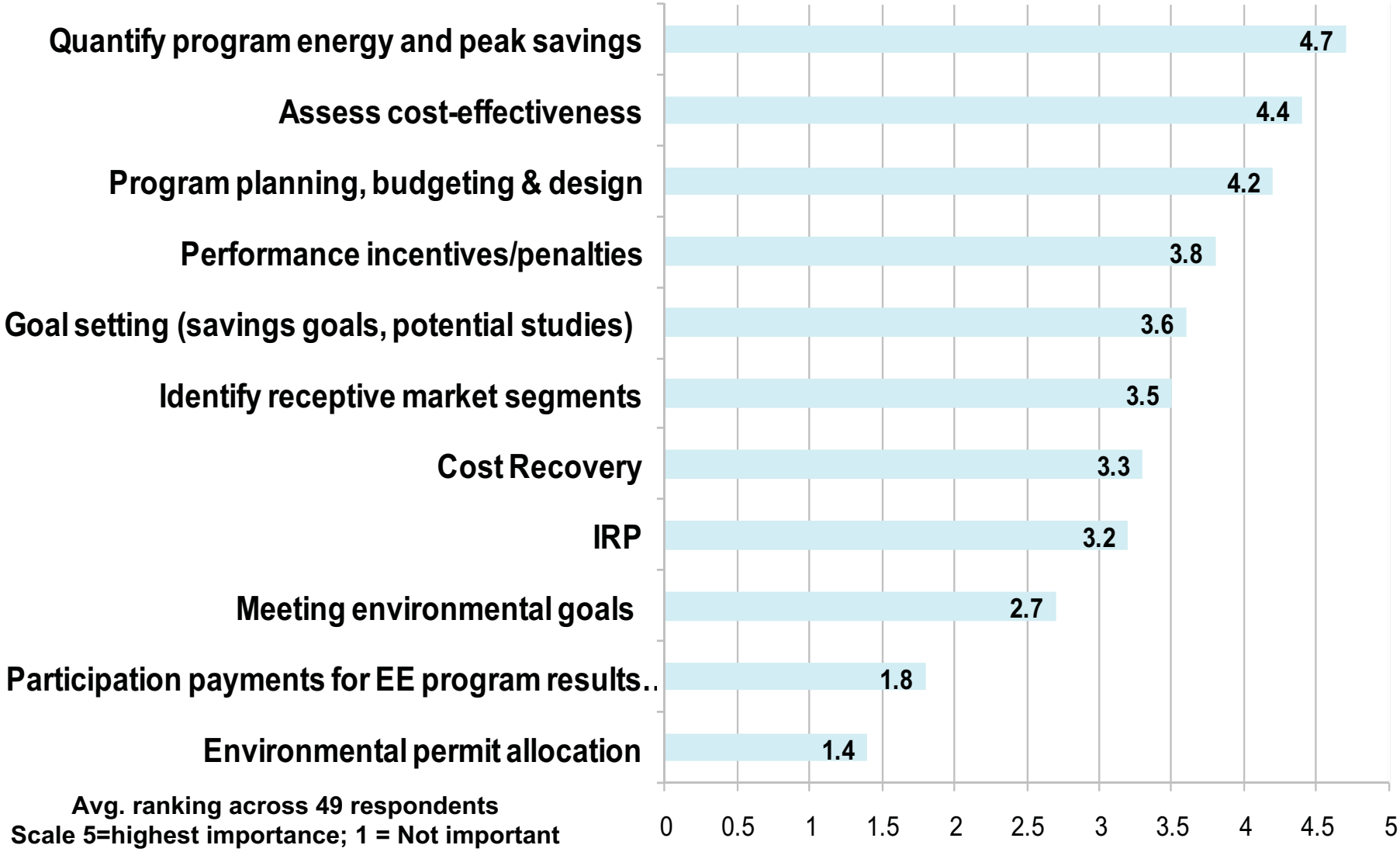
Action Plan Leadership Group: Project Objectives

- Identify key purposes and uses (and users) of evaluation studies
- Assess differences across states in EM&V planning, methods, and reporting of program success metrics
- Identify emerging EM&V issues
- Suggest approaches to address emerging EM&V issues under future scenarios for energy efficiency

Approach

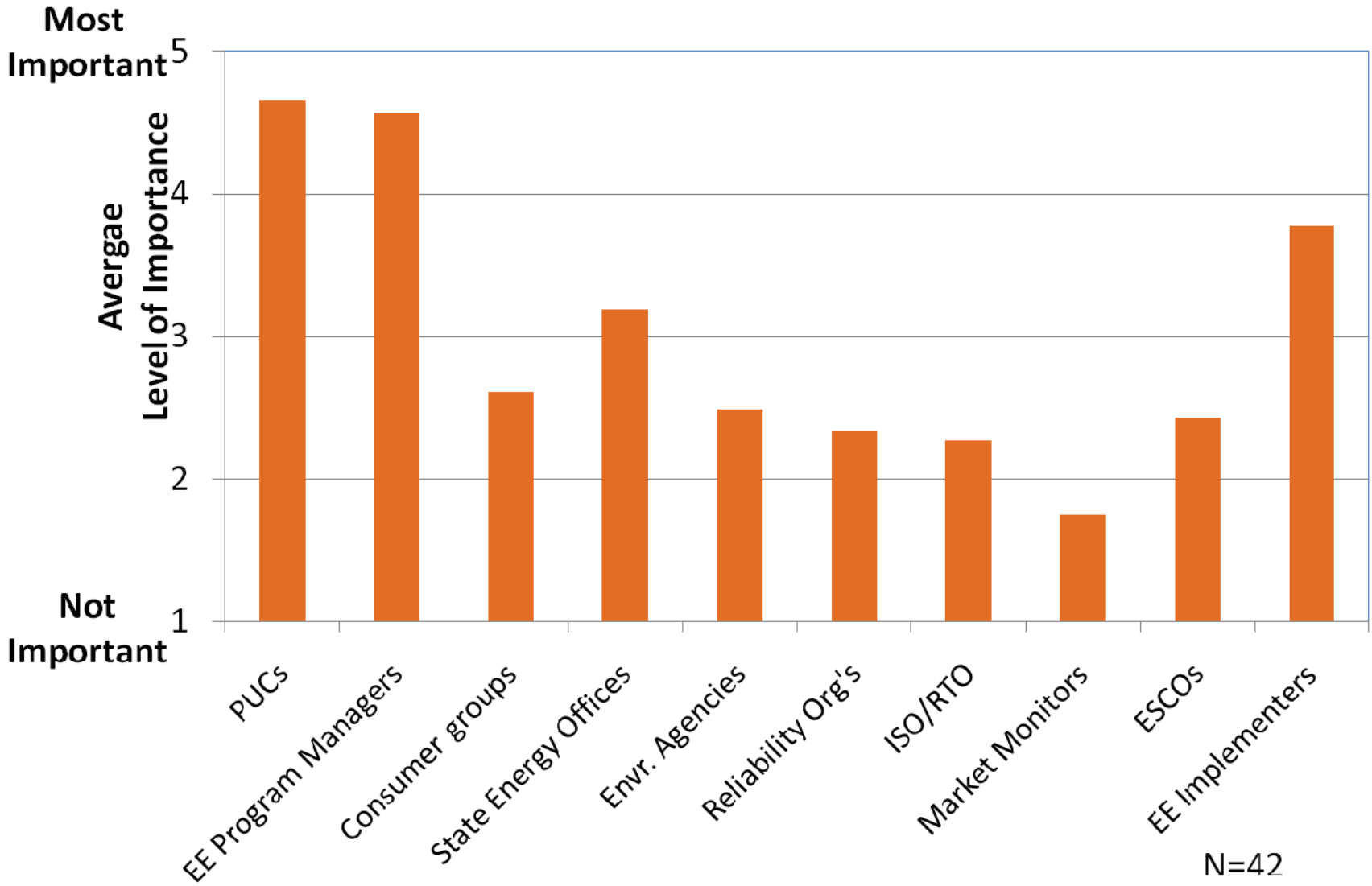
- Inventory evaluation practices in 14 states with active EE programs
- Interview users and experts
  - Program managers, evaluators, PUC staff
  - 53 interviews in 14 states and NEEA
  - 11 national experts
- Interview protocol on current approaches to managing and overseeing EM&V and views on emerging issues and potential solutions

Current Uses of EM&V Studies: Relative Importance



Avg. ranking across 49 respondents
Scale 5=highest importance; 1 = Not important

Most Important EM&V Audiences



Evaluation Planning Practices

Evaluation Planning Approaches

- **EE Pgm Administrators (PA) conducts Internal Process – 30%**
  - **PA develops program and portfolio level evaluation objectives; PA hires 3rd party Evaluator and approves budget**
- **EE Pgm Administrator leads Public Process – 38%**
  - **PA initiates evaluation planning for a proposed portfolio of research projects within regulatory approved budget**
  - **Project specific planning is performed by consultants after final projects selected.**
- **PUC leads public process for evaluation planning – 21%**
  - **PUC staff proposes overall EM&V budgets and approves set of EM&V studies proposed by evaluation consultant**
  - **Project-specific evaluation planning is internal process between PUC staff and evaluation consultants**

Evaluation Methods and Execution

Net or Gross or Both or Maybe

State	Report Gross or Net Savings?	Standardized Definition of Net Program Savings?	Technical Resource Manual used to develop program saving estimates?	Does Net Savings include Spillover and or Market Effects?
California	Both	Yes	Yes	Yes
Connecticut	Gross	Yes	Yes	?
Idaho	No	No	No	No
Illinois	Both	No	Not yet	Yes
Iowa	Sometimes	No	No	No
Maine	Gross only	Gross=Net	Yes	Gross=Net
Massachusetts	Net savings	Yes	Yes (soon)	Yes
Minnesota	Gross	No	Yes	NA
New York	Net only	Yes	Yes	No
Oregon	Sometimes	No	Yes	Yes
Pennsylvania	Under review	Under Review	Planned	No
Texas	Gross only	No	Yes	Under Review
Wisconsin	Yes	No	No	NA

- **States are making somewhat uneven progress toward standardized definitions of savings**

Schedule RAV-2 pp 128-155

How is Certainty Defined and Addressed

State	Range of uncertainty defined in reported program savings estimates?	Audits required to verify sample of installations?	EM&V protocols require (or provide guidance) on specific methods to use in evaluating and reporting savings uncertainty?
California	Yes	Yes	Yes
Connecticut	Yes; 80/20 for surveys	Part of program	No
Idaho	No	No	No
Illinois	No, but likely	Yes	Not yet, in process
Iowa	No	No	No
Maine	No	No	No
Massachusetts	Yes	Yes for most programs	No
Minnesota	No	Yes	Yes for custom projects
New York	Not yet	Yes	Yes
Oregon	No	No	No
Pennsylvania	No	Under review	Not yet
Texas	No	In Practice yes	No
Wisconsin	No	Yes	Yes

Emerging Evaluation Issues

- Consistency in Reported Savings or Load Impacts
  - Difficult to compare reported savings across states
- Lack of agreement on what types of effects should be included in estimating net savings
  - How important is it to estimate net savings?
  - How to assess broader "net" market effects/impacts of EE programs?
- Wide Range of Requirements and Processes Used to Ensure Quality Control and Accuracy
  - Differences in level of independent review
  - Few states require level of uncertainty associated with pgm savings to be reported
  - Net savings: How to define and set standards for rigor and accuracy given policy objectives?

Emerging Evaluation Issues (cont)

- Allocation of Evaluation Resources (Budget and Staff)
  - Example: relative priority of process, impact, or market effects studies or whether to estimate measure and/or program level savings
  - Bias toward short-term program savings reporting with less attention to market changes stimulated by programs
- Methods to Ensure Evaluator Independence/Objectivity
  - Challenge to achieve primary objectives of EM&V (assess savings and provide feedback to improve programs) in regulatory and policy environment
- Integration of EE evaluation load impact results in utility (and regional transmission) planning and forecasting

Recommendations: Improve Consistency in Program Energy Savings Terms and Reporting

- Develop voluntary standardized program savings formats
  - One-page reporting format that would include definitions, instructions, examples
  - Seek voluntary adoption via regional workshops or other strategies
- Develop glossary of standardized EM&V and measure, program, or portfolio terms that can be used by states on voluntary basis

Recommendations: Improving EM&V Methods

- **Objective:**
  - **Improve accessibility and reduce transaction costs of obtaining information and training on evaluation methods and planning**
- **Develop and share "best practices" guides and case studies on EM&V Methods and Planning**
- **Support efforts to improve evaluation methods used for estimating long-term energy savings by integrating physical and human behavior impacts of programs**
  - **Link to efficiency and behavior research**

Recommendations: Improving Quality Control and accuracy of program savings estimates

- **Objective:**
  - **Support efforts to disseminate best practices in quality control and accuracy in reporting program savings estimates**
- **Develop "best practices" guide on practices and techniques to improve quality control in savings reports**
  - **Estimate level of uncertainty in program load impact estimates under different EM&V methods**
  - **FAQ for PUC staff reviewing program savings estimates**

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Background slides

Annual EM&V Funding

State	EM&V Funding (million $)	EM&V Funding as % of Total EE Funding	Allocation of EM&V Budget (% Impact / % Process / % Market Research)
CA	25 to 45*	> 5%*	75 / 15 / 10
CT	2	3%	NA
FL	NA	NA	NA
IA	8	> 5%	50 / 30 / 20
ID	NA	NA	NA
IL	2.6	2-3%	75 / 15 / 10
MA	6.3	3-5%*	75 / 15 / 10
ME	0.5	2-3%	30 / 50 /20
MN	0.7	3-5%	NA
NEEA	NA	3-5%	60 / 30 / 10
NY	8	3-5%	80 / 10 / 10
OR	2*	2-3%*	50 / 30 / 20
PA	NA	<1%	50 / 30 / 20
TX	0.8	<1%	75 / 15 / 10
WI	3 to 4	3-5%	100 / 0 / 0

Sources: Survey respondents

Energy Efficiency Program and EM&V Budgets

	2007 EE Budget	2008 EE Budget	2007 EM&V Budget
CA	1,210	1,256	48.7
CT	108	114	1.4
FL	256	303	4.2
IA	95	97	3.0
ID	23	27	0.8
IL	9	42	0.2
MA	148	149	4.2
ME	16	17	0.2
MN	90	146	0.8
NEEA	78	98	1.6
NY	271	314	5.1
OR	56	77	1.6
PA	?	?	?
TX	83	114	0.3
WI	114	141	2.1

Sources: CEE (2008); survey respondents

Who currently evaluates energy savings and/or the effectiveness of Energy Efficiency programs?

	Utility Internal Staff	3rd Party Contractors	State Agency	Other
CA	X	X	X	
CT		X		X (Collab.)
FL	X	X	X	
IA	X	X	X	
ID	X	X		
IL		X		
MA		X		
ME			X	
MN	X	X	X	
NEEA		X		X
NY		X		
OR		X		
PA			X	
TX	X	X		
WI		X		

Current Uses of EM&V Studies: Relative Importance

Current Uses of EE Program Evaluations	Average Rating (N = 43)			
	All	Policymakers/ Regulators	Program Administrators	Practitioners/ Evaluators
Quantify program energy and peak savings	4.7	4.9	3.8	4.5
Assess cost-effectiveness	4.4	4.5	4.6	4
Program planning, budgeting & design	4.2	4.2	4.4	4.3
Performance incentives/penalties	3.8	4.1	2.9	4
Goal setting (savings goals, potential studies)	3.6	3.6	3.4	3.4
Identify receptive market segments	3.5	3.5	3.7	3.3
Cost Recovery	3.3	3.8	3.5	2.8
IRP	3.2	2.9	3.1	3.6
Meeting environmental goals	2.7	2.9	1.9	3
Participation payments for EE program results from ISOs	1.8	2.1	1.5	1.4
Environmental permit allocation	1.4	1.3	3.6	1.2

Emerging EM&V Issues: Relative importance under energy efficiency futures

Decision Criteria	Evaluation, Measurement and Verification Issues					
	Consistency in Reporting Issues	Measurement Methods	Quality Control & Accuracy	Evaluation Resource Allocation	Independent Vs Cooperative Relationship with Program Managers	Integration of program impacts into load forecasts
EE under "Business as Usual" Future	Low	High	Low	High	High	Medium
National Policy as Driver	High	Medium	High	High	Medium	Low
Regional Initiatives as Driver	Medium	High	Medium	Low	High	Medium

What is Reported: Program Gross or Net Savings or Both?

States	Standardized Definition of Gross Program Savings?	Standardized Definition of Net Program Savings?	Support Need to Standardize Definitions of Gross and Net savings at National level?
California	Yes	Yes	Yes
Connecticut	Yes	Yes	Maybe
Idaho	No	No	No
Illinois	Not yet	No	??
Iowa	No	No	3 of 4 say yes
Maine	Gross=Net	Gross=Net	Yes
Massachusetts	Yes	Yes	Maybe
Minnesota	Yes	No	Maybe
New York	Yes	Yes	Yes
Oregon	No	No	Yes if not forced
Pennsylvania	Under Review	Under Review	Yes
Texas	Yes	No	??
Wisconsin	No	No	Yes

- **States are making somewhat uneven progress toward standardized definitions of savings**

What is Reported: Program Gross or Net Savings or Both?

Requirement to report Gross or Net Program Savings or both ?	Does Net savings include spillover and or Market Effects caused by program?
Both	Yes
Net	?
Gross	No
Both	Yes
Sometimes	No
Gross=Net	Gross=Net
Both	Yes
Gross only	NA
Gross and Net	No
Net	Yes
NA	No
Under Review	Under Review
Gross	NA
Both	Yes

- ~60% of respondents indicate that EE pgm evaluations consider free riders
- Net savings are not reported in consistent fashion

Guidance on Evaluation Methods

State	Technical Resource Manual (or Deemed Savings database) used to develop program saving estimates?	Report Gross or Net Savings or both?
California	Yes	Both
Connecticut	Yes	Gross
Idaho	No	No
Illinois	Not yet	Both
Iowa	No	Sometimes
Maine	Yes	Gross only
Massachusetts	Yes (soon)	Net savings
Minnesota	Yes	Gross
New York	Yes	Net only
Oregon	Yes	Sometimes
Pennsylvania	Planned	Under review
Texas	Yes	Gross only
Wisconsin	No	Yes

Guidance on Evaluation Methods (cont)

State	Identify range of uncertainty in program savings estimates?	Audit requirement to verify sample of installations?	EM&V protocols require (or provide guidance) on specific methods to use in evaluating savings?
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