



SEE Action

STATE ENERGY EFFICIENCY ACTION NETWORK

Evaluation, Measurement, and Verification Working Group Blueprint

May 2011



SEE Action

STATE ENERGY EFFICIENCY ACTION NETWORK

The Evaluation, Measurement, and Verification Working Group of the State Energy Efficiency Action Network is committed to taking action to increase investment in cost-effective energy efficiency. This Blueprint was developed under the guidance of and with input from the Working Group. The document does not necessarily represent an endorsement by the organizations of Evaluation, Measurement, and Verification Working Group members.

The Evaluation, Measurement, and Verification Working Group Blueprint is a product of the State Energy Efficiency Action Network and does not reflect the views, policies, or otherwise of the federal government.

If this document is referenced, it should be cited as: State Energy Efficiency Action Network (2011). Evaluation, Measurement, and Verification Working Group Blueprint. www.seeaction.energy.gov

Outline

- SEE Action Introduction
- EM&V Working Group Introduction
- EM&V Background
- Priority Solutions
 - Develop foundation for credibility and cross-jurisdictional comparability
 - Explore new methods to address emerging issues and technologies
 - Build capacity and increase adoption of EM&V best practices
- Work Plan and Next Steps
- Appendix



SEE ACTION INTRODUCTION



SEE Action
STATE ENERGY EFFICIENCY ACTION NETWORK

www.seeaction.energy.gov

Today's Challenges

- **Challenges**
 - Energy: Rising price of electricity, dependence on imported oil, cost of compliance with environmental regulations
 - Environmental: Need to reduce emissions, protect sensitive water bodies
 - Economic: Need to create jobs, reduce price of energy
- **Energy Efficiency is a critical piece of the solution**
 - Energy: Diversifies energy mix, lowest-cost resource reduces demand
 - Environmental: Zero emissions
 - Economic: Creates jobs (implement efficiency programs)



Where We Are Today

- Increasing levels of investment in energy efficiency, but not sufficient to achieve all cost-effective efficiency
- Wide range of state policies
- Now is the time to capitalize on the investments in energy efficiency from ARRA and ensure the benefits from these efforts are sustained
- Many well-documented barriers preventing the capture of efficiency benefits – policy, regulatory, customer, market, program



State Energy Efficiency Action Network

- State Energy Efficiency Action Network (SEE Action) is a federal-state-local effort to assist state and local governments in:
 - Advancing efficiency policies and programs
 - Removing barriers and disincentives to realizing energy savings through efficiency
 - Growing state-level investments in cost-effective efficiency
- Goal: To help the nation achieve all cost-effective energy efficiency options by 2020 by assisting state and local governments in their implementation of energy efficiency policies and programs
- Executive Group
 - Provides visionary leadership, strategic direction, and prioritization
 - Approximately 30 members representing state policy makers, business leaders, utilities, non-governmental organizations, associations, etc.
 - Facilitated and co-chaired by DOE and EPA



Working Groups



- Eight issue-oriented Working Groups to drive investment in efficiency
- Represent all areas of the economy and infrastructure that can increase energy efficiency
- Chaired by state and local leaders
- Advance consistent approaches, best practices and considerations / recommendations
- Develop Blueprints to chart the course for achieving near- and long-term aggressive goals
- Use Blueprints to guide implementation efforts so stakeholders can work together, given their roles and responsibilities



Working Group Members

- Two co-chairs
- 25 Members
 - State, local, and regional organizations
 - Non-government operators
 - Program administrators/Utilities
 - Federal support staff

Co-Chairs	
Pat Oshie	Washington Utilities and Transportation Commission
Malcolm Woolf	Maryland Energy Administration
State, Local, and Regional Organizations	
Claire Fulenwider	Northwest Energy Efficiency Alliance
Frank Gorke	Massachusetts Department of Energy Resources
Jennifer Messiner	New York State Energy Research and Development Authority
Julie Michals	Northeast Energy Efficiency Partnerships
Terry Morlan	Northwest Power & Conservation Council
Matthew Tisdale	California Public Utilities Commission
Jay Wrobel	Midwest Energy Efficiency Alliance
NGOs	
Don Gilligan	National Association of Energy Service Companies
Marc Hoffman/Monica Nevius	Consortium for Energy Efficiency
Marty Kushler	American Council for an Energy Efficient Economy
Yerine Mugica/Noah Long	Natural Resource Defense Council
Alan Shedd	NRCA/Touchstone Energy
Al Skodowski	Building Owners and Managers Association/Transwestern
Rod Sobin	Alliance to Save Energy
Program Administrators / Utilities	
Jean-Claude Van Duysen	EDF
Fred Gordon	Energy Trust of Oregon
Val Jensen	ComEd
Diane Munns	Mid American
Jeremy Newberger	National Grid
Gene Rodriguez	Southern California Edison
Cal Shirley	Puget Sound Energy
Federal Support Staff	
Niko Dietsch	Environmental Protection Agency
Carla Frisch	U.S. Department of Energy Office of Renewable Energy and Energy Efficiency
Michael Li	U.S. Department of Energy Office of Electricity Delivery and Energy Reliability
Denise Mulholland	Environmental Protection Agency



Acknowledgements

- Thank you to the additional experts who have provided input to the development of this Blueprint:
 - Chuck Goldman, Lawrence Berkeley National Laboratory (LBNL)
 - Mike Messenger, Itron
 - Bill Miller, SRA
 - Steve Schiller, Schiller Consulting



EM&V WORKING GROUP INTRODUCTION



SEE Action
STATE ENERGY EFFICIENCY ACTION NETWORK

www.seeaction.energy.gov

Overview

- EM&V Working Group Goal:
 - Transform EM&V to yield more accurate, credible, and timely results that accelerate deployment and improve management of energy efficiency
- The Working Group builds on work started under the National Action Plan for Energy Efficiency
- This blueprint lays out pathways and actions to meet the EM&V goal



Goals

- SEE Action Goal: Capture all cost-effective energy efficiency by 2020
- EM&V Working Group Goal: Transform EM&V to yield more accurate, credible, and timely results that accelerate deployment and improve management of energy efficiency
 - Credibility: Increase the accuracy and transparency of reported savings by improving the accuracy of measuring and verifying savings, and standardizing the reporting of energy savings
 - Timing: Accelerate availability of preliminary results to within (at least) 3 months of implementation
 - Cost: Proactively balance the cost of EM&V with the potential value it has to particular audiences/stakeholders while working on ways to reduce the overall cost and intrusiveness of certain methods. SEE Action prioritizes improving credibility and timing in the short term and lowering costs in the long term



Strategic Pathways to Achieving Goals

- Develop a foundation for improving the credibility of efficiency and cross-jurisdiction comparability of results
- Explore new methods to address emerging issues and technologies
- Build capacity and increase adoption of EM&V best practices



Vision for the Future

- Meeting our goals will yield a world where:
 - The credibility of energy efficiency has increased significantly
 - EM&V planning and reporting processes are streamlined, transparent, reliable, and result in comparable information across jurisdictions and portfolios
 - EM&V is integrated into the portfolio planning and implementation processes with frequent and useful feedback loops
 - Energy efficiency is fully and reliably incorporated into load forecasts, and accurately informs infrastructure investments
 - EM&V human, data, and tool resources are sufficient to meet growing demand for effective efficiency investments



Scope

- While EM&V is most frequently associated with ratepayer-funded programs, SEE Action includes energy efficiency EM&V regardless of funding source
- This blueprint addresses both market needs and specific actions the SEE Action network can take to address those needs
- While SEE Action addresses all markets, the current focus of the EM&V work group is residential, commercial, and industrial programs administered by:
 - Utilities
 - Third-party program administrators
 - Local and state government entities
 - Private and public entities (for their own facilities)
- Focus on:
 - High-level capacity building and tools, best practices dissemination, both resource development and leveraging existing resources and infrastructure
 - Largely resource acquisition rather than market transformation
 - Uniformity of EM&V definitions and comparability of reported EM&V results (e.g., energy and demand savings)



EM&V BACKGROUND



SEE Action
STATE ENERGY EFFICIENCY ACTION NETWORK

www.seeaction.energy.gov

Definitions

Terms used as defined in the National Action Plan's Impact Evaluation Guide glossary:
http://www.epa.gov/cleanenergy/documents/suca/evaluation_guide.pdf

Evaluation, Measurement, and Verification:

Evaluation: The performance of studies and activities aimed at determining the effects of a program; any of a wide range of assessment activities associated with understanding or documenting program performance, assessing program or program-related markets and market operations; any of a wide range of evaluative efforts including assessing program-induced changes in energy efficiency markets, levels of demand or energy savings, and program cost-effectiveness.

Measurement and verification (M&V): Data collection, monitoring, and analysis associated with the calculation of gross energy and demand savings from individual sites or projects. M&V can be a subset of program impact evaluation.

Evaluation Type	Description	Uses
Impact Evaluation	Quantifies direct and indirect benefits of the program.	Determines the amount of energy and demand saved, the quantity of emissions reductions, and possibly the co-benefits.
Process Evaluations	Indicates how the program implementation procedures are performing from both administration and participant perspectives.	Identifies how program processes can be improved.
Market Effects Evaluation	Indicates how the overall supply chain and market have been affected by the program.	Determines changes that have occurred in markets and whether they are sustainable with or without the program.
Cost-Effectiveness Evaluation	Quantifies the cost of program implementation and compares with program benefits.	Determines whether the energy efficiency program is a cost-effective investment as compared to other programs and energy supply resources.

EM&V exists to:

- Confirm energy savings and verify cost-effectiveness
- Facilitate integrated resource planning
- Guide future energy efficiency investments



Size of the Efficiency Market

- Energy efficiency budgets for programs funded by U.S. utility customers have increased significantly in recent years (e.g., \$5.3 billion in 2010 compared to \$1.6 billion in 2005) (Consortium for Energy Efficiency (CEE), 2010)
- A recent LBNL study projected that ratepayer-funded energy efficiency programs could increase to \$7.5 - \$12 billion in 2020 based on an analysis of existing state policies and legislation (e.g., Energy Efficiency Resource Standards) and utility resource plans (Barbose et al., 2009)
- Federal spending on energy efficiency is ~\$1 billion per year and was augmented by a \$11.6 billion ARRA investment



The Need for EM&V

- Most EM&V activities have originated from the need for state regulators to assess the success of programs funded by utility customers.
- Regulators support evaluation activities because of their interest in documenting total savings, assessing the cost-effectiveness of efficiency compared to generation alternatives, assessing the relative contribution of program administrators in achieving savings, determining market baselines and market program effects, and using the feedback to improve current and future portfolio offerings.
- Increasingly, other stakeholders have interest in the outcomes of EM&V including load forecasters, RTOs/ISOs, state and federal governments, utility customers, etc.
- Entities with multiple facilities (e.g., school districts, universities, chain store companies, industrial companies) can be interested in evaluations of their efficiency programs in terms of benchmarking and assessing lessons learned. This would be in addition to the more typical private sector transaction need for project specific M&V.



EM&V Challenges

- EM&V is sometimes seen as expensive, not credible, not timely, not transparent, and as a burden, not a benefit.
- Jurisdictions calculate and define savings differently, utilize different deemed savings values and baseline assumptions, tend to not report uncertainty in results, and apply different levels of independent review. This can both make meaningful comparisons difficult and hurt the credibility of energy efficiency when savings values for the same measures, even when justifiable, vary from one state to another.
- Jurisdictions have difficulty reliably determining savings directly attributable to their programs and also use different methods and apply different net savings factors (e.g., free riders, spillover, snap back) when estimating net savings. This makes it difficult to determine program attribution, define and set standards for rigor and accuracy for net savings given different policy objectives, and assess broader “net” market effects of energy efficiency programs.
- While most EM&V focuses on first-year savings, there is a lack of support for analyses of savings persistence. Similarly, comparative analysis of alternative program designs, estimates of market changes, and mechanisms for prompt and regular program feedback are not emphasized.
- EM&V practices have yet to evolve to take advantage of the Smart Grid infrastructure that allows for increased data collection.



Current State of EM&V

Current Market Activity

- In 2009, rate-payer funded programs budgeted ~\$100 million on EM&V activities; ESCOs spent ~\$60 - \$80 million; DOE spent ~\$1 million (and ~\$37 million on ARRA EM&V).
- Level of funding for EM&V is related to the regulatory expectations or requirements.
- Rate-payer funded programs with at-risk incentives for administrators (utilities) have the most thorough EM&V procedures. Range of rate-payer funded program EM&V spending is from 0.5% to 5% of program funding with mean of 2.8% (CEE, 2010)
- ESCOs conduct M&V to assure hosts' savings (but still often rely on stipulated savings values).

Key Programs and Policies in Place

- National Action Plan guidelines on EM&V methods being used by large portion of EM&V practitioner audience .
- Many states establishing their own EM&V policies and requirements. On a regional basis, the mid-Atlantic/Northeast EM&V Forum is developing standard reporting forms and EM&V protocols. The Pacific Northwest Regional Technical Forum has developed EM&V tools and databases.

Two-Year Forecast Without SEE Action

- Incremental progress in adopting best practices and common use of terms will be achieved; more 'up and coming' states will establish EM&V infrastructures, and more state/regional databases will be established of stipulated savings values and deemed calculated values.
- Limited advances will be made in having comparable results between states/regions, number of experienced/trained EM&V practitioners, use of the large quantities of data being collected from EM&V efforts and smart meters, developing results which are directly usable by resource and transmission planners, increasing the ability to cost-effectively report results with more certainty, and in the development of top down evaluation methods.



EM&V Audiences, Needs, and Concerns

Audience	Needs and Concerns: What decisions must be made?
Planners and System Operators	<ul style="list-style-type: none">• Prove energy efficiency is a viable resource.• Need data accurate and complete enough to analyze energy efficiency for resource planning and system operation (could include hourly impacts and load shape).
Program Administrators	<ul style="list-style-type: none">• Run programs effectively/improve programs; compare programs.• Demonstrate that programs achieved expected savings.• Pass program cost-benefit tests.
Commissions	<ul style="list-style-type: none">• Need credibility so that planning authorities will incorporate energy efficiency into load forecasts and resource planning.• Prove energy efficiency programs and portfolios are cost effective. Determine attribution and/or appropriate incentive payments. Compare programs.
State and Federal Government	<ul style="list-style-type: none">• Measure and verify savings. Know that targets are met and energy efficiency benefits ratepayers. Compare savings across various programs and potential program activities.• Improve grant management by improving best practices.• Use energy efficiency data to determine green house gas (GHG) and other environmental impacts.
Finance Community	<ul style="list-style-type: none">• Need data sufficient to show that efficiency is a viable investment.
Host Customers	<ul style="list-style-type: none">• Need feedback justifying their participation (current EM&V uses hosts solely as data sources). Could benefit from individualized results from M&V activities.
(EM&V Practitioners)	<ul style="list-style-type: none">• Need better access to tools and data, support for capacity building, more people.



EM&V Audience Data Needs

AUDIENCE	DATA NEEDS							
Key: ● Almost Always ○ Sometimes NA Rarely	First Year Gross Energy Saved (annual, monthly, hourly)	Net Energy Saved	Cost-Effectiveness (perspectives vary)	Savings Persistence	Lessons Learned (process evaluation)	Market Impacts	Participation Levels (e.g. customers served)	Environmental Benefits
Planners and System Operators	●	○	○	●	○	○	●	○
Program Administrators	●	○	●	●	●	○	○	○
Commissions	●	○	●	●	●	○	○	○
State and Federal Government	●	○	○	○	●	○	○	○
Finance Community	●	NA	●	○	○	NA	NA	○
Host Customers	●	NA	●	○	○	NA	NA	○
EM&V Practitioners	●	○	○	○	○	○	○	○



PRIORITY SOLUTIONS



SEE Action
STATE ENERGY EFFICIENCY ACTION NETWORK

www.seeaction.energy.gov

Key Solutions & Actions to Achieve the Goal

GOAL: Transform EM&V to yield more accurate, credible, and timely results that accelerate successful energy efficiency deployment and management

Three Major Work Areas

Develop a foundation for improving credibility and cross-jurisdiction comparability

Explore new methods to address emerging issues and technologies

Build capacity and increase adoption of best practices

Priority Solution Areas

- 1. Consistent savings estimates and consistent and comparable reporting**
Resource for calculations, uniform definitions and common forms
- 2. Review and update EM&V resource guides**
Impact evaluation techniques explained
- 3. Uniform methods and/or standards**
Set of voluntary methods/protocols

- 4. Explore new technology solutions**
Use Smart Grid and AMI to measure and verify savings
- 5. Innovative analysis techniques**
New methods provide more efficient EM&V and maintain rigor

- 6. Resource accessibility and tool development**
National or regional databases of reports, plans, and stipulated savings values
- 7. Training**
Increase the number of EM&V practitioners and their level of expertise and experience

*EM&V is different from the other SEE Action working groups; it does not focus on a sector or one issue. Hence, each of the solution pathways are highly interconnected.



Develop a foundation for improving credibility and cross-jurisdiction comparability

Solution 1: Consistent Savings Estimates and Comparable Reporting

Action—Facilitate transparent, consistent savings estimates. Results are reported with consistent methods, baselines, certainty, and definitions or there is indication of the methods, baselines, certainty, and definitions used that enables meaningful comparisons and aggregation of results

- A. Analyze differences in Technical Reference Manuals and deemed savings calculations and provide national access to analysis results and deemed savings values
- Compare deemed savings values and calculation protocols in existing Technical Reference Manuals (deliverable underway)
 - Develop national and/or regional databases of deemed savings values and calculation protocols, including effective useful lives and baseline definitions. Encourage their use where appropriate
- B. Improve access to measure and program data (e.g. pre and post measure energy use and demand data) in order to inform investments in efficiency, update and validate deemed values, and improve program management. Work through National Energy Performance Data Warehouse and explore portfolio/actuarial approaches, with particular focus on approaches for the financial community



Solution 1: Consistent Savings Estimates and Comparable Reporting

Action—Facilitate regular, transparent reporting of comparable savings estimates

- C. Test a standardized form for reporting savings at the portfolio and sector level on a voluntary basis (deliverable underway).
 - Use feedback and uniform definitions to help the Energy Information Administration (EIA) improve data quality and response rate on Form 861
- D. Support use of common definitions and reporting efforts underway (e.g., definitions in Model Energy Efficiency Program Impact Evaluation Guide, Northeast Energy Efficiency Partnership [NEEP] common reporting form)
 - Work with decision makers to encourage use of discrete, defined terms
 - Share information about common reporting at the macro level with program administrators

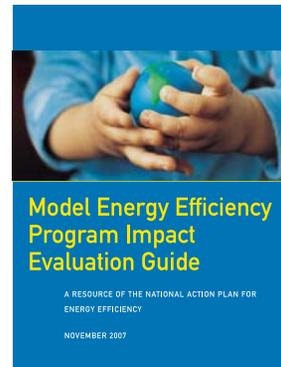


Develop a foundation for improving credibility and cross-jurisdiction comparability

Solution 2: Review and Update EM&V Resource Guides

Action—Prepare new SEE Action Guide for Impact Evaluation and additional resources

- E. Use lessons learned and feedback from states to update the 2007 National Action Plan for Energy Efficiency *Model Energy Efficiency Program Impact Evaluation Guide* as a step toward voluntary guidance for those new to documenting energy efficiency benefits
- Provide guidance on roles and responsibilities including independence of evaluators
 - Include tools and resources for analyzing persistence of savings in evaluation guides, including updated NAPEE Impact Evaluation Guide
 - Include resources to develop evaluation budgets to fit local conditions
 - Create a framework that describes how a jurisdiction would address the key issues as an attachment to updated impact evaluation guide
- F. Document best practices for integrating energy efficiency savings into forecasts (e.g. regional interconnection planning work underway)



SEE Action
STATE ENERGY EFFICIENCY ACTION NETWORK

www.seeaction.energy.gov

Develop a foundation for improving credibility and cross-jurisdiction comparability

Solution 3: Uniform Methods and/or Protocols

Action—Prepare voluntary set of generally accepted EM&V methods and/or protocols

Examples: Generally Accepted Accounting Principles; U.S. Green Building Council's LEED Standard; Forest Stewardship Council

- G. Facilitate creation of set of detailed methods/protocols for EM&V, with input from relevant stakeholders and experts
- Voluntary guidance can be used by state regulatory bodies and energy offices new to documenting energy efficiency benefits
 - Take regional and local needs into account, including appropriate levels of rigor and varying needs of ratepayers
 - Use work to inform a voluntary national EM&V protocol



Explore new methods to address emerging issues and technologies

Solution 4: Explore New Technology Solutions

Action—Explore use of smart grid, advanced meter infrastructure, and non-intrusive metering to measure and verify energy savings.

Carefully consider role of new technologies

H. Explore use:

- Provide training and resources for EM&V community on smart grid potential capabilities, and vice-versa
- Test different EM&V methods in conjunction with smart grid. Promote innovation and research and development through government grants focused on the linkage between smart grid and EM&V
- Compile findings on smart grid and EM&V from pilot projects (e.g., ARRA Better Buildings and Smart Grid projects, utility pilot programs)
- Incorporate technology innovation in evaluation plans and guidebooks, including updated National Action Plan for Energy Efficiency *Model Energy Efficiency Program Impact Evaluation Guide*



Explore new methods to address emerging issues and technologies

Solution 5: Innovative Analysis Techniques

Action—Facilitate innovative and rigorous applications of statistical techniques and experimental design methods to develop more efficient EM&V methods while maintaining necessary rigor

- I. To investigate impact of behavior/feedback programs, create a guide on methods. Include information about and updates to market transformation metrics
- J. Expand and distribute guidance on practical evaluation design that meets academic standards, including the “Gold Standard,” random control trials
- K. Explore top down methods to estimate savings at state, sector, utility level; monitor progress in California and Europe



Build capacity and increase adoption of best practices

Solution 6: Resource Accessibility and Tool Development

Action—Make resources needed for cost-effective EM&V easily accessible and usable

Examples: CEE database, EERE Program Evaluation guidebook

- L. To provide greater access to completed evaluation reports and evaluation plans, create a database (scoping underway)
- M. Ensure relevant EM&V resources are available to all by housing on a common website



SEE Action
STATE ENERGY EFFICIENCY ACTION NETWORK

www.seeaction.energy.gov

Build capacity and increase adoption of best practices

Solution 7: Training

Action—Increase the number of EM&V practitioners and their level of expertise and experience; every state energy office, public utility commission, program administrator, and federal energy efficiency program has in-house understanding of EM&V and access to EM&V expertise

N. Provide a guide to existing trainings and support an EM&V curriculum

- Support M&V and EM&V training programs (e.g., EVO’s CMVP program and International Energy Program Evaluation Conference workshops). Support a guild of professionals
- Continue EPA seminar series, DOE EERE Weatherization and Intergovernmental Program Technical Assistance seminar series
- Tailor training for specific EM&V audiences

O. In support of ongoing efforts and new national efforts, continue building EM&V capacity in regional organizations (e.g. NW RTF, NEEP EM&V Forum)

- Share resources among regions
- Hold regional seminars to teach best practices in integrating energy efficiency in potential studies, demand forecasts, and integrated resource planning



SEE Action
STATE ENERGY EFFICIENCY ACTION NETWORK

www.seeaction.energy.gov

WORK PLAN and NEXT STEPS



SEE Action
STATE ENERGY EFFICIENCY ACTION NETWORK

www.seeaction.energy.gov

DOE and EPA Roles

- While SEE Action is focused on guidance and resources for non-federal entities, success will require all parties working to complement each-other. Generally, the federal role will include:
 - Convening stakeholders to identify needs
 - Collaborating with stakeholders on program design/ development
 - Providing technical assistance
 - Ensuring that programs document and share results and performance data
 - Developing tools and projects
 - Developing/updating guidance documents



Working Group Member Role

- Publically support achieving the Blueprint and goals
- Actively engage with input and feedback on Working Group projects
- Disseminate and publically support SEE Action products



Leveraging Existing Resources

- There are many existing EM&V resources, including frameworks and methods. SEE Action intends to build on and leverage those resources. Examples of organizations currently working in this area include:
 - AESP
 - California Evaluation Protocols
 - CEE
 - EVO's IPMVP and CMVP
 - IEPEC
 - ISO TC 257
 - NAESB
 - NAESCO community
 - NEEP EM&V Forum
 - NW Regional Technical Forum



Implementation of Solutions (1)

Solution Pathway	Action	First Year	Second Year	Stakeholders	Existing Resources
Develop a foundation for improving credibility and cross-jurisdiction comparability Solution 1: Consistent Savings Estimates and Consistent and Comparable Reporting	A. Analyze differences in deemed savings calculations and provide national access to deemed savings values	Finish comparing deemed savings values and calculation protocols in existing Technical Reference Manuals (deliverable underway)	Create an app to manipulate data in Building Energy Data Performance Warehouse (BEPDW)	Utilities, program administrators, state and local policymakers	California Database for Energy Efficient Resources (DEER) database, other state efforts
	B. Improve access to measure and program data; e.g. pre and post measure energy use and demand data	Work with EERE Buildings Technology Program on the National Energy Performance Data Warehouse. Raise transparency needs with stakeholders	TBD depending on database progress	Utilities, program administrators, state and local policymakers	NEPDW
	C. Test a standardized form for reporting savings and work with EIA on Form 861	Finish beta form, share results with EIA (deliverable underway) Compile additional comments from efficiency community	Pending results, work with EIA to update their form	State and local policymakers, academia, NGOs	EIA 861, NEEP common reporting form, CEE surveys
	D. Support use of common definitions and reporting efforts underway	Promote effort in outreach materials; speak about this at conferences	Continue to monitor efforts and support as appropriate	State and local policymakers, academia, NGOs	NEEP efforts, NW RTF, IEPEC meetings



Implementation of Solutions (2)

Solution Pathway	Action	First Year	Second Year	Stakeholders	Existing Resources
Develop a foundation for improving credibility and cross-jurisdiction comparability Solution 2: Review and Update EM&V Resource Guides	E. Update 2007 “Model Energy Efficiency Program Impact Evaluation Guide”	Scope updates and begin revisions	Finish updated guide and share with stakeholders	All – focus on utilities, program administrators	2007 Action Plan guide
	F. Document best practices for integrating energy efficiency savings into forecasts	Document DOE OE interconnection planning process	Share document with stakeholders	Utilities	Supported by OE interconnection planning activities
Develop a foundation for improving credibility and cross-jurisdiction comparability Solution 3: Uniform Methods and/or Protocols	G. Facilitate creation of set of detailed methods/protocols for EM&V, with input from relevant stakeholders and experts	Publish scoping document (deliverable underway). Set up stakeholder process.	Release interim drafts for review	All – focus on utilities, program administrators, state and local policymakers	California protocols, Alberta protocols for inclusion of EE as GHG, IPMVP, NAESB work



Implementation of Solutions (4)

Solution Pathway	Action	First Year	Second Year	Stakeholders	Existing Resources
<p>Explore new methods to address emerging issues and technologies</p> <p>Solution 4: New Technology Solutions</p>	H. Provide training and resources for EM&V community on smart grid potential capabilities, and vice-versa	Already held one webinar. Include testing in Better Buildings evaluation. Lessons learned write-up. Reference possibility of technology improvements in new guides	Continue to sponsor trainings. Consider RFP for a new grant in this area. Outreach on best practices	All, especially industry	DOE and EPA Technical Assistance, Better Buildings evaluation. ARRA smart grid data collection
<p>Explore new methods to address emerging issues and technologies</p> <p>Solution 5: Innovative Analysis Techniques</p>	I. Guide on methods to investigate impact of behavior/feedback programs	Write SOW in conjunction with CIB working group	Release guide	State and local policymakers, program administrators, utilities, industry, academia	EPRI protocols for feedback experimental design
	J. Expand and distribute guidance on practical evaluation design that meets academic standards, including the "Gold Standard," random control trials	Refine and distribute guidance	Hold workshop to share best practices	State and local policymakers, utilities, program administrators, academia	UCB guidance for ARRA SG projects, ARRA WAP RCT
	K. Explore top down methods to estimate savings at state, sector, utility level	Release RFPs for top-down work, monitor progress in California and Europe	Hold workshop to discuss findings. Come to agreement on formula	State and local policy makers, federal policy, utilities, NGOs, academia	Marvin Horowitz's work; NRDC/ Humboldt State University work



Implementation of Solutions (5)

Solution Pathway	Action	First Year	Second Year	Stakeholders	Existing Resources
Build capacity and increase adoption of best practices Solution 6: Resource Accessibility and Tool Development	L. Create database of evaluation plans and reports	Finish scoping (deliverable underway); start outreach to collect plans and report	Release new database and continue outreach	All	CALMAC, CEE databases
	M. House EM&V resources on a common website	Post resources on seeaction.energy.gov	Consider adding materials to site housing evaluation plans and reports database	All	Seeaction.energy.gov
Build capacity and increase adoption of best practices Solution 7: Training	N. Provide a guide to existing trainings and support a core EM&V curriculum	Compile list of all current EM&V trainings and resources	Map out path to becoming an EM&V professional. Continue to enhance trainings	All	EVO's CMVP, IEPEC workshops, EPA seminar series, EERE WIP TA, OE TA
	O. Build EM&V capacity in regional organizations	Support NEEP and MW efforts. Start conversations with other regions	Support EM&V needs of all regions, moving toward national	Regional NGOs, state and local policymakers, utilities, program administrators	NEEP, emerging MW work



SEE Action EM&V Priority Deliverables

- 2010 (National Action Plan for Energy Efficiency)
 - To identify current issues and needs, completed survey of working group members and published LBNL report *Review of Evaluation, Measurement and Verification Approaches Used to Estimate the Load Impacts and Effectiveness of Energy Efficiency Programs*
 - To provide guidance on the evaluation process and a variety of key issues, published *Model Energy Efficiency Program Impact Evaluation Guide*
- 2011
 - Priorities identified in 2010 survey and already underway
 - To plan for potential implementation of national efficiency policies and support up and coming states, complete report [*National Energy Efficiency Evaluation, Measurement and Verification Standard: Scoping Study of Issues and Implementation Requirements*](#) by LBNL
 - To improve consistency and access to information, complete scoping study on national TRM and deemed savings and national evaluation plan and report databases: underway (Actions A and L)
 - To improve accuracy, consistency, and comparability of savings estimates, draft short savings reporting form and work with EIA on Form 861: underway (Action C)
 - Upcoming SEE Action priorities
 - To meet needs identified by states and localities new to energy efficiency, update *Model Energy Efficiency Program Impact Evaluation Guide* (Actions E)
 - To make the best use of already existing resources, communicate concepts through outreach and improved resource accessibility (Actions M, N, O)



Working Group Next Steps

- Review and comment on three projects currently underway:
 1. Scoping study on developing national EM&V protocol
 2. Scoping study on national deemed savings and evaluation plan and report databases
 3. Short savings reporting form
- Prioritize remaining proposed projects/deliverables
- Suggest any missing deliverables
- Members volunteer to manage, provide input, and/or communicate results on/of a project



APPENDIX



SEE Action
STATE ENERGY EFFICIENCY ACTION NETWORK

www.seeaction.energy.gov

	Residential Retrofit	Commercial Building Retrofit	Industrial Energy Efficiency	Financing	Utility Motivation	Customer Information & Behavior	EM&V	Building Codes
Building Codes								
EM&V	EM&V WG not addressing issues for deep retrofits	EM&V WG not addressing issues for deep retrofits		The finance community is a key EM&V stakeholder		CIB and EM&V will work on joint project to guide evaluation of savings from behavior change.		
Customer Information & Behavior								
Utility Motivation								
Financing								
Industrial EE								
Commercial Retrofit								
Residential Retrofit								

Working Groups – Interactions / Gaps

 Gap



www.seeaction.energy.gov

Working Group Member Sub-Teams

Current Deliverables

- National EM&V Protocol Scoping
 - Don Gilligan, NAESCO
 - Fred Gordon, ETO
 - Val Jensen, ComEd
 - Gene Rodrigues, SCE
 - Rod Sobin, ASE
- Savings Reporting Form
 - Don Gilligan, NAESCO
 - Dennis Hartline, MEA
 - Noah Long, NRDC
 - Julie Michals, NEEP
 - Terry Morlan, NPCC
 - Tory Webber, SCE
- Database Scoping
 - Dennis Hartline, MEA
 - Noah Long, NRDC
 - Julie Michals, NEEP
 - Monica Nevius, CEE
 - Tory Webber, SCE

