End-Use Energy Efficiency Evaluation, Measurement and Verification (EM&V) Resources

January 2013

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Prepared for US EPA and US DOE and State Energy Efficiency Action Network

These resource lists are intended as an indication of some, but not all, of public EM&V resources that are available via the Internet. Resources are not listed in a particular order and should not be presumed to include all available documents and websites.

General Evaluation Resources Websites

- US EPA Evaluating Clean Energy Programs Website:
  http://epa.gov/statelocalclimate/state/activities/measuring-savings.html

- US EPA EM&V Webinar Website:
  http://www.emvwebinar.org/

- Consortium for Energy Efficiency EM&V Resources Website:
  http://www.cee1.org/eval/eval-res.php3

- International Energy Program Evaluation Conference Website:
  http://www.iepec.org/IEPECHome.htm?programsabstracts.htm

- International Performance Measurement and Verification Protocol (IPMVP) – Efficiency Valuation Organization (EVO) website:
  www.evo-world.org

- Federal Energy Management Program M&V website:
  http://ateam.lbl.gov/mv/

- California Measurement Advisory Council (CALMAC):
  http://www.calmac.org

- Northwest Energy Efficiency Alliance:
  http://www.nwalliance.org/research/evaluationreports.aspx

- National Action Plan database of documents:
  http://cfpub.epa.gov/ceird/index.cfm?fuseaction=napee.search_js

- California Institute of Energy and Environment, Planning and Evaluation Library:
  http://uc-ciee.org/planning-evaluation/7/lbrsearch

- ACEEE Summer Studies Proceedings: http://www.aceee.org

Select Reference Documents

- 2012 SEE Action Energy Efficiency Program Impact Evaluation Guide:
  http://www1.eere.energy.gov/seeaction/pdfs/emv_ee_program_impact_guide.pdf

- 2012 Evaluation, Measurement, and Verification (EM&V) of Residential Behavior-Based Energy Efficiency Programs: Issues and Recommendations:
  http://www1.eere.energy.gov/seeaction/pdfs/emv_behaviorbased_eeprograms.pdf

- 2006 California Energy Efficiency Evaluation Protocols:
  http://www.calmac.org/publications/EvaluatorsProtocols_Final_AdoptedviaRuling_06-19-2006ES.pdf

- 2004 The California Evaluation Framework.
  http://www.calmac.org/publications/California_Evaluation_Framework_June_2004.pdf

- 2007 US DOE Impact Evaluation Framework for Technology Deployment Programs.
  http://www.eere.energy.gov/ba/pba/km_portal/docs/pdf/2007/impact_framework_tech_deploy_2007_main.pdf

- 2006 US DOE Guide for Managing General Program Evaluation Studies.
  http://www1.eere.energy.gov/ba/pba/pdfs/evl_mg_app.pdf

- 2010 LBNL Study: Review of Evaluation, Measurement and Verification Approaches Used to Estimate the Load Impacts and Effectiveness of Energy Efficiency Programs:
  http://eetd.lbl.gov/ea/emp/reports/lbnl-3277e.pdf

- 2011 LBNL Study: National Energy Efficiency Evaluation, Measurement and Verification (EM&V) Standard: Scoping Study of Issues and Implementation Requirements:
  http://eetd.lbl.gov/ea/ems/reports/lbnl-4265e.pdf

- 2011 SEE Action Report: Scoping Study to Evaluate Feasibility of National Databases for EM&V Documents and Measure Savings:

- California Institute for Energy and Environment – report on EM&V training opportunities:
  http://uc-ciee.org/planning-evaluation/7/342/105/nested

U.S. Environmental Protection Agency Non-Energy Benefits and Avoided Emissions Calculation References

Assessing the Multiple Benefits of Clean Energy: This document helps state energy, environmental, and economic policymakers identify and quantify the benefits of clean energy, including the energy, environmental—specifically greenhouse gas, air, and health—and economic benefits of clean energy. It provides an analytical framework that states can use to estimate those benefits during the development, implementation, and evaluation of clean energy policies and programs. http://epa.gov/statelocalclimate/ resources/benefits.html.

Co-Benefits Risk Assessment (COBRA) Screening Model: EPA's Co-Benefits Risk Assessment (COBRA) screening model is a free tool that helps state and local governments estimate and map the air quality, human health, and related economic benefits (excluding energy cost savings) of clean energy policies or programs.

Roadmap for Incorporating Energy Efficiency/Renewable Energy Policies and Programs into State and Tribal Implementation Plans: The EPA Roadmap reduces the barriers for state, tribal, and local agencies to incorporate energy efficiency and renewable energy (EE/ RE) policies and programs in state and tribal implementation plans by clarifying existing EPA guidance and providing new and detailed information. The goal of this document is to facilitate the use of energy efficiency and renewable energy emissions reduction strate- gies in air quality plans. www.epa.gov/airquality/eere/manual.html.

Projected Impacts of Existing State Energy Efficiency and Renewable Energy Policies: These EPA methods and projected energy impacts may be useful to states preparing State Implementation Plan (SIP) submittals to meet the National Ambient Air Quality Standards (NAAQS) for ozone and particulate matter. www.epa.gov/statelocalclimate/state/ statepolicies.html.

Emissions & Generation Resource Integrated Database (eGRID): eGRID is a comprehensive source of data on the environmental characteristics of almost all electric power generated in the United States. These include air emissions of nitrogen oxides, sulfur dioxide, carbon dioxide, and many other attributes. www.epa.gov/ cleanenergy/energy-resources/egrid/index.html.

Power Plant Emissions Calculator (P-PEC): P-PEC is a simplified tool that uses eGRID "non-baseload" emissions factors to help states quickly estimate the magnitude of emission reductions from EE/RE for each power plant within a region, and to understand potential emission reductions within a county or air quality nonattainment area. Contact Robyn DeYoung at EPA: deyoung.robyn@epa.gov

Hourly Marginal Emissions Tool: This tool is a statistical dispatch simulator that predicts the hourly changes in generation and air emissions at electric generating units (EGUs) resulting from EE/RE policies and programs. Contact Robyn DeYoung at EPA: deyoung.robyn@epa.gov

Technical Reference Manual Resources[1]

Scope	Resource Name	Web Site	Format	Information Included	Administrator
National	ENERGY STAR®	http://www.energystar.gov/index.cfm?c=products.pr_find_es_products	Online Calculators	*Ex ante* savings based on algorithms	Agency
Regional – Northwest	Regional Technical Forum (RTF) Deemed Measures	http://www.nwcouncil.org/energy/rtf/measures/Default.asp	Online Database	*Ex ante* savings based on algorithms	Advisory Committee
Regional– Midatlantic	Mid-Atlantic TRM	http://neep.org/uploads/EMV%20Forum/EMV%20Products/Mid%20Atlantic%20TRM_V1%202_FINAL.pdf	PDF	Algorithms and *ex ante* savings	Non-Profit Organization
Arkansas	Arkansas Deemed Savings Quick Start Programs	http://www.aepefficiency.com/oklahoma/ci/downloads/Deemed_Savings_Report.pdf	PDF	Algorithms	Public Utility
California	DEER Database for Energy-Efficient Resources	http://www.deeresources.com/	Software Program	*Ex ante* savings	State Commission
Connecticut	Connecticut Light & Power and United Illuminating Company Program Savings Documentation	http://www.ctenergyinfo.com/2012%20CT%20Program%20Savings%20Documentation%20FINAL.pdf	PDF	Algorithms and *ex ante* savings	Public Utility
Hawaii	Hawaii Energy Efficiency Program TRM	http://www.hawaiienergy.com/media/assets/AnnualReportAttachments-ALL.pdf	PDF	Algorithms and *ex ante* savings	State Commission

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[1] This table is an updated version from the SEE Action and LBNL Report: Scoping Study to Evaluate Feasibility of National Databases for EM&V Documents and Measure Savings, by the Cadmus Group (tables are current as of Spring 2011)

Maine	[Efficiency Maine TRM – Commercial](#) [Efficiency Maine TRM – Residential](#)	http://www.efficiencymaine.com/docs/board_meeting_documents/Maine-Commercial-TRM-8-31-2010-Final.pdf http://www.efficiencymaine.com/docs/board_meeting_documents/Maine-Residential-TRM-02-04-09.pdf	PDF	Algorithms and *ex ante* savings	Trust
Massachusetts	[Massachusetts Statewide TRM for Estimating Savings from Energy Efficiency Measures](#)	http://www.ma-eeac.org/docs/2012%20MTM%20Files/Oct%2028,%202011%20DPU%20Filings/WMECo/13%20-%20WMECO%20Exhibit%20H%20MA%20TRM_2012%20PLAN_FINAL.pdf	PDF	Algorithms and *ex ante* savings	Agency
Michigan	[Michigan Energy Measures Database](#)	http://www.michigan.gov/mpsc/0,1607,7-159-52495_55129---,00.html	Excel Database	*Ex ante* savings	State Commission
New Jersey	[New Jersey Clean Energy Program Protocols to Measure Resource Savings](#)	http://www.njcleanenergy.com/files/file/Library/NJ%20Protocols%20Revisions%207-21-11_Clean.pdf	PDF	Algorithms and *ex ante* savings	Agency
New York	[New York Standard Approach for Estimating Energy Savings from Energy Efficiency Programs](#)	http://efile.mpsc.state.mi.us/efile/docs/16671/0026.pdf	PDF	Algorithms and *ex ante* savings	Agency

Ohio	Ohio TRM	http://www.ohiotrm.org/	Online Database	Algorithms and *ex ante* savings	State Commission
Pennsy lvania	Pennsylvania TRM	http://www.puc.state.pa.us/electric/Act129/TRM.aspx	DOC	Algorithms and *ex ante* savings	State Commission
Texas	Deemed Savings, Installation, and Efficiency Standards	http://www.entergy-texas.com/content/Energy_Efficiency/documents/Deemed_Savings_Measures_List.pdf	PDF	Algorithms and *ex ante* savings	State Commission
Vermo nt	Efficiency Vermont Technical Reference User Manual	http://www.veic.org/Libraries/Resumes/TechManualEVT.sflb.ashx	PDF	Algorithms and *ex ante* savings	Non-Profit Organization
Wisco nsin	Focus on Energy Evaluation Business Programs: Deemed Savings Manual V1.0	http://www.focusonenergy.com/files/Document_Management_System/Evaluation/bpdeemedsavingsmanuav10_evaluationreport.pdf	PDF	Algorithms and *ex ante* savings	State Commission