



Northeast Energy Efficiency Partnerships

COMMON STATEWIDE ENERGY EFFICIENCY REPORTING GUIDELINES

Version 1.0

A project of the Regional Evaluation, Measurement and Verification Forum

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PREFACE

1. Background: These *Common Statewide Energy Efficiency Reporting Guidelines* ('the Guidelines') were prepared by the Regional Evaluation, Measurement and Verification Forum ('the Forum'). The Forum, established in 2008, is a regional project facilitated and managed by Northeast Energy Efficiency Partnerships (NEEP) that represents states in New England¹, New York, New Jersey, Maryland, Delaware, and the District of Columbia.

At a time when states in the Forum region are making unprecedented investments in energy efficiency to meet a range of policy objectives, the need for consistency and transparency for energy efficiency is more important than ever in order to build understanding and credibility of efficiency as a resource. The intent of these Guidelines, which include recommended state-level reporting templates and several process recommendations, is to provide for consistent definitions and the reporting of electric and natural gas energy-efficiency program energy and demand savings and associated costs, and their emission and job impacts across the region. If the Forum states can collectively successfully implement these Guidelines, the region would benefit from a common "currency" of reported energy efficiency data to support multiple state and regional energy and environmental policies/objectives.

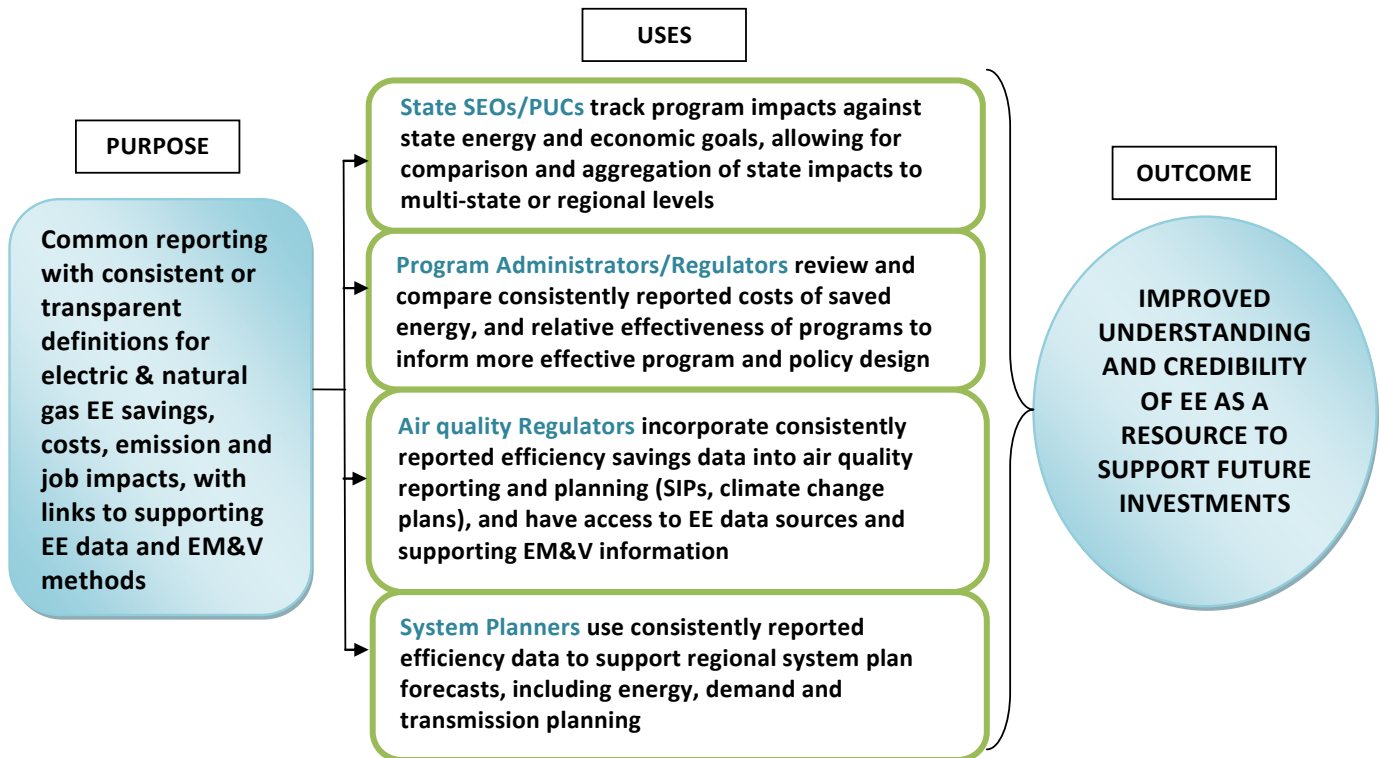
The Guidelines recommend common reporting templates that provide basic information in a format that makes it straightforward to support energy and environmental planning or analyses. The specific uses and users of these Guidelines and reporting templates include:

- State-level tracking of efficiency program impacts against state energy and economic goals, and allowing for the comparison and aggregation of state impacts to multi-state or regional levels;
- Program administrator and regulatory review and comparison of consistently² reported costs of saved energy, and the relative effectiveness of energy efficiency programs to help inform more effective program and policy design;
- Air quality regulators, including climate change stakeholders, use of consistently reported efficiency savings data, and access to data sources and supporting EM&V information to inform calculations of avoided emission at state/regional levels; and
- System planner use of consistently reported efficiency data to support regional system plan forecasts, including energy, demand and transmission planning.

¹ Connecticut, Massachusetts, Maine, New Hampshire, Rhode Island, and Vermont.

² Consistent reporting does not necessarily mean use of consistent underlying EM&V methods/approaches. Development and use of consistent EM&V methods is addressed in a separate set of guidelines developed by the Regional EM&V Forum: [Common EM&V Methods and Savings Assumptions Guidelines \(May 2010\)](#)

Figure 1. Common Statewide Energy Efficiency Reporting Guidelines Purpose, Uses and Outcome



2. Basis for Guidelines: The Guidelines are informed by a gap analysis which identified discrepancies in available energy efficiency data relative to information needed to support multiple policy objectives.³ The research catalogued current and planned reporting practices from available energy-efficiency documents and compared these to reporting parameters and data needs identified as important to support multiple energy, economic and environmental policies or market drivers. The reporting templates build largely from data that are already reported and/or collected by energy efficiency program administrators in the region, and were informed by the Forum stakeholder process, including extensive review and input by the project subcommittee, Forum participants, and peer review. As such, the recommendations herein represent the collective input, ideas, and considerations of the Forum participants.

3. Scope of the Guidelines: The scope of the Guidelines focuses on electric and gas energy efficiency savings, impacts and program expenditures, where such investments are funded by gas and electric service ratepayers. The Guidelines may evolve in the future to include the broader range of public policy driven energy efficiency investments as well as demand resources, as discussed further below.

³ These Guidelines are based on the EM&V Forum project *Develop Common Energy Efficiency Reporting Guidelines*, conducted by the NMR Group, Dorothy Conant, and Cadmus Group. To view full report, see <http://neep.org/emv-forum/forum-products-and-guidelines>.



a) Balancing Consistency with Transparency: The Guidelines reflect what most Forum jurisdictions will find feasible to report without having to make significant changes in current practices. In many cases the data fields in the reporting template can be populated with data extracted from current annual energy efficiency reports, or data currently collected by program administrators but not currently reported. For each reporting table, supporting definitions are provided. Where definitions for certain reporting parameters vary significantly across jurisdictions (e.g. adjusted gross savings, net savings), the Guidelines offer some flexibility by providing check boxes that allow reporters to identify underlying definitions. While we hope that in the future the Forum will move towards greater consistency in definitions of key reporting parameters, at this juncture, the Guidelines strive to balance reporting consistency and transparency of underlying definitions.

To help support access to and the understanding of efficiency data and information, the Guidelines also include placeholders for direct links to supporting efficiency data (e.g. technical reference manuals, program administrator efficiency plans and reports) and descriptions of EM&V processes and regulatory approval of reported data.

b) Reporting Energy and Demand Savings: The reporting categories are relatively high level, where savings are reported at the customer sector level for electric, gas and other fuel savings. While consideration was given to reporting savings by specific program types (e.g., retrofit, lost opportunity), defining such categories proved to be a challenge given variations in definitions and because some efficiency programs can fall into both categories, in particular C&I custom projects. As such, in the interest of achieving transparency, we recommend that states submit program level savings at the customer sector, with an option to list program administrator specific program types/levels within each customer sector.

c) Reporting Program Expenditures and Cost of Saved Energy: As with savings data, the Guidelines provide high level reporting categories for program expenditures, recognizing that current definitions vary considerably across the region. While the Guidelines encourage states to adopt consistent definitions to report program expenditures (e.g., for marketing costs versus administrative costs), they allow states to use their current definitions for expenditure categories accompanied by an explanation of what is included. Nonetheless, the Guidelines provide a useful starting point that enables basic comparison and aggregation of expenditure data across the region.

In terms of reporting cost of saved energy, while there are reasons for reporting lifetime (or lifecycle) cost of saved energy, the Guidelines recommend that states move towards using a levelized cost of saved energy over time as the most appropriate methodology. To support comparison analyses and averaging, this would require that the states ideally use a consistent discount rate definition, but a second option is for states to disclose the discount rate used. We recommend this issue be addressed by the Steering Committee.

d) Reporting Avoided Emissions: With the increasingly important role of energy efficiency as a primary strategy to meet state and regional air quality and climate change goals, the Guidelines provide basic information on avoided emissions associated with efficiency programs. Per the process recommendations below, increased effort is needed in most Forum states to coordinate air agency, program administrator and utility regulator



coordination to develop estimated avoided emissions, and ensure access to additional efficiency data needs for air regulators to incorporate into their emissions forecasts.

e) Reporting Job Impacts: Given many state agencies are recipients of American Recovery and Reinvestment Act (ARRA) funding and are familiar with ARRA reporting requirements, these Guidelines recommend that in the interest of consistency, states report the annual direct full-time equivalent (FTE) number of jobs funded through energy efficiency programs in accordance with ARRA guidelines. The Guidelines also recommend that states report indirect and net job impacts, and provide information and links to resources to support such calculations (e.g., calculators, models) but do not make specific recommendations regarding specific tools/approaches to be used.

f) Future Modifications to Guidelines: Particular areas where the Guidelines could evolve in the future, based on suggestions made by Forum participants during the course of developing these Guidelines, include:

1) *Include All State Efficiency Impacts:* The Guidelines focus on reporting efficiency program impacts funded by utility ratepayers. Recognizing, however, that some efficiency programs are supported or co-funded in part by other sources of funding, states can use check boxes to indicate other sources of funding such as: State Energy Program (SEP) funds, Regional Greenhouse Gas Initiative (RGGI) Allowance Proceeds, American Recovery and Reinvestment Act (ARRA) funds, Weatherization Assistance Programs (WAP), Wholesale Capacity Market Revenues, or Other. Going forward, the Forum should consider expanding the Guidelines' scope to include discrete reporting of all efficiency activities in a state (e.g. all Weatherization Assistance Program impacts, all state public building efficiency projects, etc.). From a state and regional energy planning perspective, reporting total efficiency savings would be ideal.

2) *Report Forecasted Energy Efficiency Data:* The Guidelines address program impacts retrospectively (what were savings in previous year) and over the lifetime of the efficiency measures installed in the previous year. The Guidelines do not include the reporting of forecasted energy efficiency impacts due to estimated future investments in energy efficiency (e.g., in next 10-15 years). This is particularly important for state and regional system planning and air quality/climate change planning. The Forum should consider broadening the Guidelines to include consistent reporting of forecasted data, focusing on data from state efficiency potential studies and other sources, and transparency of assumed policy drivers.

3) *Report More Detail on Energy Savings and Costs Categories:* The Guidelines provide for consistent reporting of savings and expenditures at a high level. Going forward, improved reporting consistency of more detailed information may be desirable, such as reporting savings by more specific: fuel type (e.g., propane, fuel oil); end-use data (e.g. Lighting, Appliances, HVAC, Motors/Drives, Refrigeration, etc.), and program sector and/or program type (e.g., prescriptive/custom programs, multi-family retrofit, Large C&I, Small C&I, etc.). The Guidelines also recommend that the states move towards consistently reporting a levelized cost of saved energy, as opposed to a lifetime cost of saved energy.



4) Address Issues of Timing: Some Forum jurisdictions currently report energy efficiency programs savings data in the first quarter following the program year, where such reported savings are based on tracking data (i.e., data used to estimate savings for planning purposes, and informed by impact factors from prior program year evaluations – often referred to as *ex-ante* savings). Other jurisdictions issue reports in the third or fourth quarter following the program year, which incorporate results of program year evaluations and/or independent third party reviews, to the extent evaluation studies are conducted (i.e., *ex-post* savings). Some jurisdictions report both planned and actual savings data. In the interest of providing consistency in reported data across the region, and ensuring availability of reported data in consistent timeframes, we recommend that policymakers address these reporting timing issues. A related timing issue is that while most states report energy-efficiency results on a calendar year basis, some report on a fiscal year basis. We recommend consideration by the Steering Committee of whether/how to better align reporting periods.

With the above considerations, the Guidelines should be viewed as a starting point and a living document. As jurisdictions adopt and become comfortable with these Guidelines, additional reporting elements can be added or modified as they become more commonly reported or deemed valuable for state, regional and/or national reporting needs. We recommend that the Guidelines' scope be reviewed periodically by the Forum Steering Committee to review, discuss and consider possible modifications to the Guidelines' scope.

4. Process Recommendations. The Guidelines also include several *process* recommendations needed to: a) Support the effective integration of energy efficiency into state and regional air quality and climate change analyses and planning; b) Coordinate these Guidelines with national efforts to develop common energy efficiency reporting templates; and c) Coordinate with regional system planners to build common approaches, and associated data needs, to effectively incorporate energy efficiency into system planning processes.

5. Implementation of Guidelines. The Guidelines are not intended to lead to the filing or reporting of duplicative statewide reports, by either program administrators or state agencies. Rather, we recommend that these reporting templates serve as the statewide annual report for Forum participating states, recognizing that states may opt to collect and report data in addition to the Guidelines' reporting parameters. As such, the Guidelines serve as a basic level of reporting.

Entity Responsible for Completing Statewide Annual Report: A key step to state implementation of the Guidelines is to identify the responsible agency/entity that will complete the Statewide Annual Report, consistent with these reporting Guidelines. Such an agency/entity could be the state energy office, the public utility commission, efficiency program administrator(s) or other entity. These Guidelines do not provide specific recommendations in this regard, however, we encourage state energy offices or agencies responsible for energy planning and forecasting for the state to engage and play a key role in guiding and completing the Statewide Annual Report, and to coordinate this effort with other agencies needing such information (e.g., air regulators, etc.).



6. *Recommended Next Steps*

a) Forum States to Adopt and Implement the Guidelines. A key first step to the success of common statewide energy efficiency reporting is for the Forum jurisdictions to adopt these Guidelines as their respective statewide reporting template. Commensurate with such adoption is to identify the entity that will be responsible for completing the Statewide Annual Report, as discussed above. Starting in 2011, Forum resources should provide technical support for state implementation of the Guidelines, including: 1) developing an on-line, user-friendly spreadsheet tool for the reporting templates; and 2) providing Forum staff resources to assist with state implementation where needed/requested (e.g., training, education and technical support to use the Guidelines and on-line tools).

b) Common State Annual Reports to be Accessible: We recommend that common State Annual Reports be posted to the Forum website to give interested stakeholders easy and ready access to view consistent state- and regional-level energy efficiency data (where NEEP's activities will include aggregating and analyzing statewide data to regional levels). To accomplish this, we recommend that states provide their annual report for posting to the EM&V Forum with a link to relevant state and efficiency program administrator websites. Ideally, as noted above, moving towards a consistent reporting timeframe across the region would support timely accessibility to statewide reports and the ability to aggregate statewide efficiency data across the region.

c) Coordinate Guidelines with National Energy Efficiency Reporting Efforts: Finally, as efficiency becomes an increasingly greater strategy in energy policy and climate change mitigation efforts across the country, we encourage other states and federal agencies to refer to these Guidelines to inform similar efforts in other regions and nationally.

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COMMON STATEWIDE ENERGY EFFICIENCY REPORTING GUIDELINES

These Guidelines include recommended reporting templates for:

Tables 1.0-1.3: Electric and gas energy efficiency program energy and demand savings;

Tables 2.1-2.3: Electric and gas energy efficiency program expenditures, and cost of saved energy;

Table 3.0: Air Emission Data from electric and gas energy efficiency program impacts, and associated process recommendations for improved data exchange between key stakeholders; and

Table 4.0: Job Impacts Data from electric and gas energy efficiency program impacts.

Definitions - General Guideline

To encourage increasing consistency in reported elements over time and to inform readers of specifically what each reporting element represents, each jurisdiction should indicate or include a clear definition for each reported element. Ideally, the definitions used by jurisdictions will be consistent with the definitions in the **Regional EM&V Forum - Glossary of Terms and Acronyms** ("Forum Glossary") which is a living document that is updated annually. Each table is followed by a list of supporting definitions, consistent with the Forum Glossary. Each table also includes, however, flexibility in certain definitions recognizing that important differences in definitions may exist across jurisdictions for which consistency will not be achieved for this first version of *Common Statewide Energy Efficiency Reporting Guidelines*, if at all. In these cases, a simple checklist format is provided to describe various terms/categories, with space provided for further description in some places.

A note on Natural Gas Energy Efficiency Savings and Expenditures: The inherent conflict for jurisdictions reporting a combination of gas savings from energy-efficiency programs sponsored by gas utilities, and gas savings from electric programs that offset use of gas, may lead to a situation of double counting. In the reporting tables, it is important for each state to define the source of reported gas savings—either from an electric or gas efficiency program. As for associated expenditures, in cases where programs provide both electric and gas savings, guidance is provided herein on options for allocating such costs to either electric or gas programs.



1. Reporting of Electric and Gas Energy and Demand Savings

Table 1 series includes various tables that report electric and gas energy and demand savings, and associated supporting data. The tables include:

Table 1.0: Description of Reported Energy Efficiency Savings

Table 1.1: Incremental Annual Energy Savings

Table 1.2: Lifetime Energy Savings

Table 1.3: Electric System Demand Savings

Table 1.3.1: Summer Peak Demand Savings

Table 1.3.2: Winter Peak Demand Savings

Each table is followed by a list of supporting definitions.

The reporting categories are relatively high level, where savings are reported at the customer sector level. The tables do not prescribe specific program types/categories. Rather, states can and are encouraged to report program level savings according to their program administrator(s) specific program types/levels.

Table 1.0: Description of Reported Energy Efficiency Savings

Jurisdiction/State: XXXXX		Program Year: 20YY
1. General Information on Reported Data		
1.1 Final annual savings data reported in what quarter of the following program year.	<input type="checkbox"/> 1st Qtr. <input type="checkbox"/> 2nd Qtr. <input type="checkbox"/> 3rd Qtr. <input type="checkbox"/> 4th Qtr.	
1.2 Link(s) to supporting Program Administrator or State Annual Reports	www.providelink.com	
1.3 Reported data can be characterized as: <ul style="list-style-type: none"> <input type="checkbox"/> Tracking Estimates. Where reported savings are based on year-end tracking data that incorporate impact factors from previous year evaluation studies, but where impact factors are the same ones used to project savings in the program year Energy Efficiency Plan filings. <input type="checkbox"/> Savings Estimates Informed by Program Year Evaluation. Where adjustments are made to Tracking Estimates based on program year evaluation activities (e.g., third party review such as verification of installations, impact evaluations, etc. Please generally describe types of EM&V activities: _____ <p>Are evaluation results systematically incorporated into following year Savings Tracking Estimates?</p> <input type="checkbox"/> Yes or <input type="checkbox"/> No		
2. Gross Savings		Applied to Some or All Programs?
2.1 Adjusted Gross Energy Savings Please indicate types of adjustments made to Gross Energy Savings (or that are included in Realization Rate). Indicate if adjustments are made to some or all programs/measures. (Check all that apply)	Adjustments include: <ul style="list-style-type: none"> <input type="checkbox"/> Data Errors <input type="checkbox"/> Measure Persistence Factor <input type="checkbox"/> Savings Persistence Factor <input type="checkbox"/> In-Service Rate <input type="checkbox"/> Interactive Effects <input type="checkbox"/> Other _____ <input type="checkbox"/> Other _____ 	<input type="checkbox"/> Some or <input type="checkbox"/> All Programs <input type="checkbox"/> Some or <input type="checkbox"/> All Programs <input type="checkbox"/> Some or <input type="checkbox"/> All Programs <input type="checkbox"/> Some or <input type="checkbox"/> All Programs <input type="checkbox"/> Some or <input type="checkbox"/> All Programs <input type="checkbox"/> Some or <input type="checkbox"/> All Programs <input type="checkbox"/> Some or <input type="checkbox"/> All Programs
3. Net Savings		Applied to Some or All Programs?
3.1 Net Savings Indicate types of adjustment incorporated in reported net savings. (Check all that apply.)	Adjustments include: <ul style="list-style-type: none"> <input type="checkbox"/> Free Ridership <input type="checkbox"/> Participant Spillover <input type="checkbox"/> Non-Participant Spillover <input type="checkbox"/> Other _____ 	<input type="checkbox"/> Some or <input type="checkbox"/> All Programs <input type="checkbox"/> Some or <input type="checkbox"/> All Programs <input type="checkbox"/> Some or <input type="checkbox"/> All Programs <input type="checkbox"/> Some or <input type="checkbox"/> All Programs



4. Generation and Meter Level Savings

4.1 Generation Level Savings

Definition: Meter or premise level savings adjusted upward for T&D line losses. Generation level savings are also known as wholesale level savings.

If reported definition differs from definition to the left, please describe:

4.2 Meter Level Savings

Definition: Savings at the customer meter or premise level. Indicate types of adjustments to Generation Level Savings

Adjustments include:

T&D Adjustments - Utility specific values (or weighted avg): _____

T&D Adjustments - Other source(s), please describe: _____

5. Supporting State Energy Savings Assumptions and EM&V Process Information

5.1 Supporting Savings Data and Assumptions. For more detailed information regarding supporting data, refer to:

- a) [STATE] Program savings documents (or technical reference manuals): www.providelink.com
- b) [STATE] or [PA] Energy efficiency program plans: www.providelink.com
- c) Program administrator annual reported data, where applicable: www.providelink.com
- d) [STATE] achievable potential studies: www.providelink.com
- e) Other

5.2 Review and Approval of Reported Data. The savings and cost information reported have been reviewed and/or approved by (check those that apply):

- [STATE PUC]
- [STATE ENERGY OFFICE]
- Other _____

5.3 Evaluation, Measurement and Verification (EM&V) Protocols/Methods. The EM&V protocols or methods used to support the reported savings are based on and/or include (check those that apply):

- State PUC prescribed guidelines/methods: www.providelink.com
- Energy Efficiency M&V standards required by regional system operator [ISO New England] OR [PJM] for demand resources participating in the wholesale electricity forward capacity markets: www.providelink.com
- The Regional EM&V Forum Methods and Savings Assumptions Guidelines: www.providelink.com
- Other (Describe) _____

6. Sources of Funding For Reported Energy Efficiency Activities (check all that apply):

- Electric Ratepayer Funded Programs
- Natural Gas Ratepayer Funded Programs
- Regional Greenhouse Gas Initiative (RGGI) Allowance Proceeds
- Wholesale capacity market revenues (ISO NE Forward Capacity Market/PJM Reliability Pricing Model)
- Weatherization Assistance Programs (WAP)
- American Recovery and Reinvestment Act (ARRA) Funds
- Other (Describe): _____



Table 1.0 Supporting Definitions:

Adjusted Gross Savings: Gross Savings that are adjusted to include what can be physically counted and reliably measured, such as installation/in-service rates, breakage of equipment, data errors, hours of use, measure persistence rates, etc. Adjusted Gross Savings can also be calculated by applying a Realization Rate to Gross Savings estimates (see Realization Rate definition below).

Energy Savings: Reduction in electricity use (kWh) or in fossil fuel use in thermal unit(s).

Free Rider: A program participant who would have implemented the program measure or practice in the absence of the program. Free riders can be 1) total, in which the participant's activity would have completely replicated the program measure; 2) partial, in which the participant's activity would have partially replicated the program measure; or 3) deferred, in which the participant's activity would have completely replicated the program measure, but at a future time rather than the program's timeframe.

Free Ridership Rate: The percent of savings attributable to free riders.

Generator Level Savings: Meter or premise level savings adjusted upward to include T&D line losses. Generator level savings are also known as wholesale level savings.

Gross Savings: The change in energy consumption and/or demand that results directly from program-related actions taken by participants in an efficiency program, regardless of why they participated.

In-Service Rate: Percentage of incentivized measures in service.

Installation Rate: Percentage of incentivized measures installed.

Interactive Effects: The impact of an energy efficient measure on the operation of other electrical or gas-fired equipment at the facility in which the measure is installed.

Measure Persistence Factor: The duration of an energy consuming measure, taking into account business turnover, early retirement of installed equipment, and other reasons measures might be removed or discontinued.

Meter Level Savings: Savings at the customer meter or premise level.

Net Savings: The total change in energy consumption or demand that is attributable to an energy efficiency program. This change in energy consumption and/or demand may include, implicitly or explicitly, the effects of free drivers, free riders, energy efficiency standards, changes in the level of energy service, and other causes of changes in energy consumption or demand.

Realization Rate: A comparison of observed or measured (or evaluated) information to original estimated savings. Evaluations may include multiple realization rates (e.g., energy realization rate, demand realization rate, etc...). A Realization Rate is typically used to adjust Gross Savings to Adjusted Gross Savings, and reflects adjustments such as: data errors, persistent factors, in-service rate, interactive effects, etc.

Savings Persistence Factor: A factor that reflects changes in program impacts over time (e.g. retention and degradation of measures).



Spillover: Additional energy-efficient equipment installed by a customer due to program influences, but without any financial or technical assistance from the program.

- **Non-Participant Spillover:** Non-participant spillover refers to energy efficient measures installed by program non-participants due to the program's influence. The **non-participant spillover rate** is savings from spillover measures expressed as a percentage of savings installed by non-participants through an energy efficiency program.
- **Participant Spillover:** The situation where a customer installed equipment through the program and then installed additional equipment of the same type due to program influences, but without any financial or technical assistance from the program. The **participant spillover rate** is savings from spillover measures expressed as a percentage of savings installed by participants through an energy efficiency program.

Third Party Review: Review of program savings by an independent third party.

Transmission & Distribution Adjustments: Adjustments made to gross savings to adjust for T&D line losses.

Table 1.1: Incremental Annual Energy Savings

Table 1.1 provides the reporting template for electric, gas and other fuel incremental annual energy savings from energy efficiency programs (and demand response programs, if relevant). These savings reflect changes in energy use (measured in megawatt hours or therms) caused in the current reporting year by new program participants in existing energy efficiency programs, and all participants in new energy efficiency programs (i.e., programs begun during the current reporting year). Reported Annual Incremental Savings should be annualized.

Table 1.1: Incremental Annual Energy Savings

Jurisdiction: XX	Program Year: 20YY	Adjusted Gross Annual Energy Savings			Net Annual Energy Savings				
		Electric (MWH)		Gas Meter Level (Therms)	Other Fuel Savings* (MMBTU)	Electric (MWH)		Gas Meter Level (Therms)	Other Fuel Savings* (MMBTU)
		Gen. Level	Meter Level			Gen. Level	Meter Level		
ENERGY EFFICIENCY PROGRAM SAVINGS:									
Residential Non-Low Income Sector Energy Savings by Program									
Electric Efficiency Programs 1, 2, 3 etc (list)									
Nat. Gas Efficiency Programs 1, 2, 3 etc (list)									
SUBTOTAL									
Residential Low Income Sector Energy Savings by Program									
Electric Efficiency Programs 1, 2, 3 etc (list)									
Nat. Gas Efficiency Programs 1, 2, 3 etc (list)									
SUBTOTAL									
Commercial & Industrial Sector Energy Savings by Program									
Electric Efficiency Programs 1, 2, 3 etc (list)									
Nat. Gas Efficiency Programs 1, 2, 3 etc (list)									
SUBTOTAL									
Other Customer Sector Energy Savings by Program									
Electric Efficiency Programs 1, 2, 3 etc (list)									
Nat. Gas Efficiency Programs 1, 2, 3 etc (list)									
SUBTOTAL									
TOTAL ENERGY EFFICIENCY SAVINGS:									
DEMAND RESPONSE PROGRAM SAVINGS:									
Demand Response Program 1									
Demand Response Program 2 etc.									
TOTAL DEMAND RESPONSE SAVINGS:									
TOTAL INCREMENTAL ANNUAL ENERGY SAVINGS:									

*Other fuels can include propane, fuel oil, etc.



Table 1.1 Supporting Definitions:

Adjusted Gross Savings: Gross Savings that are adjusted to include what can be physically counted and reliably measured, such as installation/ in-service rates, breakage of equipment, data errors, hours of use, measure persistence rates, etc. Adjusted Gross Savings can also be calculated by applying a Realization Rate to Gross Savings estimates (see Realization Rate definition below).

Annualized Energy Savings: The savings associated with an energy saving measure, project, or program calculated based on a full year's installation and operation.

Energy Savings: Reduction in electricity use (kWh) or in fossil fuel use in thermal unit(s).

Generator Level Savings: Meter or premise level savings adjusted upward to include T&D line losses. Generator level savings are also known as wholesale level savings.

Incremental Annual Savings: These savings reflect changes in energy use (measured in megawatt hours or therms) caused in the current reporting year by new program participants in existing energy efficiency programs and all participants in new energy efficiency programs (i.e., programs begun during the current reporting year). Reported Annual Incremental Savings should be annualized.

Low Income: Households with income not more than a stated percentage of state or area median income or meeting low income requirements based on the number of family members in the household. (Note that "low income" housing is different from "affordable" housing. For purposes of common reporting guidelines, respondents are asked to clarify whether affordable housing is included in the low income program sector or otherwise.)

Meter Level Savings: Savings at the customer meter or premise level.

Net Savings: The total change in energy consumption and/or demand that is attributable to an energy efficiency program. This change in energy consumption and/or demand may include, implicitly or explicitly, the effects of free drivers, free riders, energy efficiency standards, changes in the level of energy service, and other causes of changes in energy consumption or demand.

Non-Low Income: Households with incomes that exceed the level required to qualify for participation in low income programs. (Note that qualifying low income levels may vary across states/jurisdictions.)

Realization Rate: A comparison of observed or measured (or evaluated) information to original estimated savings. Evaluations may include multiple realization rates (e.g., energy realization rate, demand realization rate, etc.). A Realization Rate is typically used to adjust Gross Savings to Adjusted Gross Savings, and reflects adjustments such as: data errors, persistent factors, in-service rate, interactive effects, etc.



Table 1.2: Lifetime Energy Savings

Table 1.2 provides the reporting template for electric, gas, other fuel lifetime energy savings from energy efficiency programs (and demand response programs, if relevant). These savings reflect changes in energy use (in megawatt hours or therms) caused over the lifetime of installed measures, calculated by multiplying the annual MWH or therm reduction associated with the measures by the expected lifetime of the measures.

Table 1.2: Energy Efficiency Program Lifetime Energy Savings

Jurisdiction: XX	Program Year: Year 20YY	Adjusted Gross Lifetime Energy Savings				Net Lifetime Energy Savings			Weighted Average Measure Life			
		Electric (MWH)		Natural Gas (Therms)	Other Fuel Savings* (MMBTU)	Electric (MWH)		Natural Gas (Therms)	Other Fuel Savings* (MMBTU)	Electric	Natural Gas	Other Fuels
		Gen. Level	Meter Level			Gen. Level	Meter Level					
ENERGY EFFICIENCY PROGRAM SAVINGS:												
Residential Non-Low Income Energy Savings by Program												
Electric Programs 1, 2, 3 etc. (list)												
Nat. Gas Programs 1, 2, 3 etc. (list)												
Subtotal Residential Non-Low Income:												
Residential Low Income Energy Savings by Program												
Electric Programs 1, 2, 3 etc. (list)												
Nat. Gas Programs 1, 2, 3 etc. (list)												
Subtotal Residential Low Income:												
Commercial & Industrial Energy Savings by Program												
Electric Programs 1, 2, 3 etc. (list)												
Nat. Gas Programs 1, 2, 3 etc. (list)												
Subtotal Commercial & Industrial:												
Other Customer Sector Energy Savings by Program												
Electric Programs 1, 2, 3 etc. (list)												
Nat. Gas Programs 1, 2, 3 etc. (list)												
Subtotal Other Sector:												
TOTAL ENERGY EFFICIENCY SAVINGS:												
DEMAND RESPONSE PROGRAM SAVINGS:												
Demand Response Program 1, 2, 3 etc. (list)												
TOTAL DEMAND RESPONSE SAVINGS:												
TOTAL LIFETIME ENERGY SAVINGS:												

*Other fuel savings can include propane, fuel oil, etc.



Table 1.2 Supporting Definitions:

Adjusted Gross Savings: Gross Savings that are adjusted to include what can be physically counted and reliably measured, such as installation/ in-service rates, breakage of equipment, data errors, hours of use, measure persistence rates, etc. Adjusted Gross Savings can also be calculated by applying a Realization Rate to Gross Savings estimates (see Realization Rate definition below).

Energy Savings: Reduction in electricity use (kWh) or in fossil fuel use in thermal unit(s).

Generator Level Savings: Meter or premise level savings adjusted upward to include T&D line losses. Generator level savings are also known as wholesale level savings.

Lifetime Energy Savings: The expected electric or gas energy savings over the lifetime of an installed measure(s), calculated by multiplying the annual MWh or therm reduction associated with a measure(s) by the expected lifetime of that measure(s).

Low Income: Households with income not more than a stated percentage of state or area median income or meeting low income requirements based on the number of family members in the household. (Note that "low income" housing is different from "affordable" housing. For purposes of common reporting guidelines, respondents are asked to clarify whether affordable housing is included in the low income program sector.)

Meter Level Savings: Savings at the customer meter or premise level

Net Savings: The total change in energy consumption and/or demand that is attributable to an energy efficiency program. This change in energy consumption and/or demand may include, implicitly or explicitly, the effects of free drivers, free riders, energy efficiency standards, changes in the level of energy service, and other causes of changes in energy consumption or demand.

Non-Low Income: Households with incomes that exceed the level required to qualify for participation in low income programs. (Note that qualifying low income levels may vary across states/jurisdictions.)

Realization Rate: A comparison of observed or measured (or evaluated) information to original estimated savings. Evaluations may include multiple realization rates (e.g., energy realization rate, demand realization rate, etc...). A Realization Rate is typically used to adjust Gross Savings to Adjusted Gross Savings, and reflects adjustments such as: data errors, persistent factors, in-service rate, interactive effects, etc.

Weighted Average Measure Life: Reflects the average life of the installed measures that takes into account the proportional relevance of each measure/program measure life, weighted by annual savings. Weighting by annual savings is also the same as simply dividing lifetime savings by annual savings. For example, if there is a portfolio with two measures, each saving 100 kWh/year but with measure lives of 5 and 15 years respectively, they get equal weight and the weighted average measure life is 10 years. If the 15 year measure savings is 200 kWh instead, its life would get twice the weight and the weighted average life would be 11.7 years.



Table 1.3: Electric System Demand Savings

Tables 1.3.1 and 1.3.2 provide the reporting template for summer peak and winter peak savings, respectively, for electric system demand savings from energy efficiency and demand response programs. Reporters may complete one or both tables, as they apply.

Table 1.3.1: Summer Peak Annual Demand Savings

Jurisdiction XX	Program Year 20YY	Adjusted Gross Demand Savings		Net Demand Savings	
		Generation Level (MW)	Meter Level (MW)	Generation Level (MW)	Meter Level (MW)
Summer Peak Demand Savings By Sector and Program					
ENERGY EFFICIENCY PROGRAM SAVINGS					
Residential Non-Low Income Customer Sector					
Program 1					
Program 2 etc.					
SUBTOTAL					
Residential Low Income Customer Sector					
Program 1					
Program 2 etc.					
SUBTOTAL					
Commercial & Industrial Customer Sector					
Program 1					
Program 2 etc.					
SUBTOTAL					
TOTAL ENERGY EFFICIENCY PROGRAM SAVINGS					
DEMAND RESPONSE PROGRAM SAVINGS					
Program 1					
Program 2 etc.					
TOTAL DEMAND RESPONSE PROGRAM SAVINGS					
TOTAL SUMMER PEAK DEMAND SAVINGS					
Summer Annual Demand Savings - coincident with:					
<input type="checkbox"/> Utility Peak Demand or <input type="checkbox"/> ISO/RTO System Peak or <input type="checkbox"/> Other Provide description of peak coincidence hours (e.g., average hours, maximum hours during peak): _____					



Table 1.3.2: Winter Peak Annual Demand Savings

Jurisdiction XX	Program Year 20YY	Adjusted Gross Demand Savings		Net Demand Savings	
		Generation Level (MW)	Meter Level (MW)	Generation Level (MW)	Meter Level (MW)
Winter Peak Demand Savings By Sector and Program					
ENERGY EFFICIENCY PROGRAM SAVINGS					
Residential Non-Low Income Customer Sector					
Program 1					
Program 2 etc.					
SUBTOTAL					
Residential Low Income Customer Sector					
Program 1					
Program 2 etc.					
SUBTOTAL					
Commercial & Industrial Customer Sector					
Program 1					
Program 2 etc.					
SUBTOTAL					
TOTAL ENERGY EFFICIENCY PROGRAM SAVINGS					
DEMAND RESPONSE PROGRAM SAVINGS					
Program 1					
Program 2 etc.					
TOTAL DEMAND RESPONSE PROGRAM SAVINGS					
TOTAL WINTER PEAK DEMAND SAVINGS					
Winter Annual Demand Savings - coincident with: <input type="checkbox"/> Utility Peak Demand or <input type="checkbox"/> ISO/RTO System Peak or <input type="checkbox"/> Other Provide description of peak coincidence hours (e.g., average hours, maximum hours during peak): _____					

Table 1.3 Supporting Definitions:

Adjusted Gross Savings: Gross Savings that are adjusted to include what can be physically counted and reliably measured, such as installation/ in-service rates, breakage of equipment, data errors, hours of use, measure persistence rates, etc. Adjusted Gross Savings can also be calculated by applying a Realization Rate to Gross Savings estimates.

Annual Demand Savings: The expected reduction in demand associated with the higher efficiency equipment or installation in a given year coincident with a specific peak period(s).

Coincident Demand: The demand of a device, circuit, or building that occurs at the same time as the peak demand of a utility’s system load or at the same time as some other peak of



interest, such as building or facility peak demand. Because jurisdictions currently report a mix of summer/winter/annual demand impacts in annual energy-efficiency reports, in order to be useful from a regional perspective, it is recommended that all reported peak demand impacts be clearly defined. Examples of peak demand definitions include the following:

- Demand coincident with utility system peak load
- Demand coincident with ISO/RTO summer or winter peak, or according to performance hours defined by wholesale capacity markets
- Demand coincident with high electricity demand days

Coincidence Factors: Coincidence factors are defined as the ratio of the average hourly demand reductions that actually occur during seasonal coincident peak periods (e.g., summer, winter) to the average connected load reductions. They account for both the portion of connected load that is used in individual buildings during peak periods and the diversity of usage patterns across populations of buildings during peak periods. As such, a coincident demand reduction is simply the product of the coincidence factor and the connected equipment load reduction.

Generator Level Savings: Meter or premise level savings adjusted upward to include T&D line losses. Generator level savings are also known as wholesale level savings.

Low Income: Households with income not more than a stated percentage of state or area median income or meeting low income requirements based on the number of family members in the household. (*Note that "low income" housing is different from "affordable" housing. For purposes of common reporting guidelines, respondents are asked to clarify whether affordable housing is included in the low income program sector.*)

Meter Level Savings: Savings at the customer meter or premise level.

Net Savings: The total change in energy consumption and/or demand that is attributable to an energy efficiency program. This change in energy consumption and/or demand may include, implicitly or explicitly, the effects of free drivers, free riders, energy efficiency standards, changes in the level of energy service, and other causes of changes in energy consumption or demand.

Non-Low Income: Households with incomes that exceed the level required to qualify for participation in low income programs. (*Note that qualifying low income levels may vary across states/jurisdictions.*)

2. Reporting of Electric and Gas Energy Efficiency Expenditures

Table 2 series provides information regarding efficiency program funding sources, electric and gas energy efficiency program expenditures, and associated costs of saved energy.

Table 2.1 Efficiency Program Funding Sources provides a list of possible funding sources from which to identify the percentage that applies to both efficiency expenditures and efficiency reported energy savings (as reported in Table 1.1)

Table 2.2 Electric and Gas Energy Efficiency Program Expenditures provides a summary of program expenditures according to the following five expenditure categories:

- **Administration/Marketing/Other Costs:** Program administration and marketing costs, and other costs associated with implementation of programs, including direct installation costs, program implementation contractor services, etc.
- **Customer Rebates/Incentives:** Direct financial rebates/incentives paid to customers to support investment in energy efficiency (i.e., incremental cost of higher efficiency equipment, or portion thereof). Financial rebates do *not* include direct installation costs - these should be reported under Administration/ Marketing/Other costs.
- **Performance Incentive Costs:** Utility shareholder or program administrator incentives earned for achieving specific performance metrics.
- **Research & Evaluation Costs:** Costs related to evaluation, measurement and verification (EM&V) activities, and research or studies to support EM&V activities.
- **Other:** Includes other costs not identified or included in the above categories.

The expenditure categories “Administration/Marketing/Other” and “Customer Rebates/Incentives” represent direct program costs. While it would be informative to break these cost categories down further, the Guidelines do not provide such detail given current inconsistencies in how “Administration,” “Marketing,” and other implementation costs are defined by program administrators in the region (and which are often embedded in program tracking systems). It is recommended, however, that the Forum work to develop more consistent definitions for these cost categories going forward.

Table 2.3 Cost of Saved Energy Reporting provides reporting of cost of saved energy in terms of both *Levelized Cost per kWh* (or therm) and *Lifetime Cost per kWh*⁴ (or therm). The underlying calculations differ in that a Lifetime Cost of Saved Energy is a simpler calculation that does not discount costs to a net present value. A Levelized Cost of Saved Energy is a more complex, economically accurate calculation that captures the cost of efficiency as a resource, and provides a comparable value to the cost of new supply-side resources. The

⁴ Lifetime costs are also sometimes referred to as *lifecycle* costs, although the latter has varied definitions and can be expressed as a levelized cost. Lifecycle costs can include costs that go beyond measure installation and program administration/operation, such as disposal of efficiency measures (e.g., CFLs). For purposes of these Guidelines, both Levelized and Lifetime Cost of Saved Energy include costs associated with disposal of efficiency measures where such costs are covered under the efficiency program.



levelized cost represents the level of payment needed each year to recover the total investment and interest payments (at a specified interest rate) over the life of the measure(s).

It is recommended that the primary cost of savings value reported be a Levelized Cost where possible.⁵ However, Table 2.2 also includes a Lifetime Cost of Saved Energy, recognizing that inconsistencies currently exist within some jurisdictions in the variables used by program administrators/utilities to calculate capital recovery factors and discount rates. Until states are able to address such inconsistencies, Table 2.2 supports the reporting of both a Levelized and Lifetime Cost of Saved Energy. It is also recommended that the cost of saved energy be reported as *With Participant Costs* (not only utility or program administrator costs); and *Without Participant Costs*. Recognizing not all Forum states currently collect participant cost, some states may be able to report only a cost of saved energy without participant costs. It is encouraged that such information be collected given the value of reporting the full incremental cost of energy efficiency investments.

Lifetime Cost per kWh (or Therm) is calculated as follows:

$$(1) \text{ Lifetime Cost of Electric Energy Savings} = \frac{\text{Total Program}^6 \text{ Expenses}}{\text{Lifetime Net kWh Savings}}$$

$$(2) \text{ Lifetime Cost of Natural Gas Energy Savings} = \frac{\text{Total Program Expenses}}{\text{Lifetime Net Therm Savings}}$$

Levelized Cost per kWh (or Therm) is calculated as follows:

$$(1) \text{ Levelized Cost of Electric Energy Savings} = \frac{\text{Total Program Costs} \times \text{CRF}}{\text{Incremental Annual Net kWh Savings}}$$

$$(2) \text{ Levelized Cost of Gas Energy Savings} = \frac{\text{Total Program Costs} \times \text{CRF}}{\text{Incremental Annual Net Therm Savings}}$$

$$\text{Where: Capital Recovery Factor (CRF)} = \frac{i(1+i)^n}{(1+i)^n - 1}$$

i = real discount rate

n = weighted average measure life for portfolio of programs

In reporting the levelized cost per kWh or therm, it is recommended that key underlying assumptions be noted, specifically for the weighted average measure life (for portfolio of

⁵ See also recommendations on use of levelized cost by ACEEE at: Friedrich Katherine, et al. *Saving Energy Cost-Effectively: A National Review of the Cost of Energy Saved Through Utility Sector Energy Efficiency Programs*. American Council for an Energy Efficient Economy. September 2009, Report No. U092.

⁶ In some cases, Total Program Expenses for electric programs may include gas program expenses, where gas programs provide electric savings. Table 2 provides space to indicate/estimate cost allocation in these cases.



programs) and the real discount rate used. There is a range of discount rates that can be used to determine levelized cost of savings, including:

- a utility’s weighted average cost of capital or weighted cost of debt and equity;
- a 12-month rolling average rate on the 10-year T-note;
- an average homeowner’s discount rate; and/or
- some average of all of these.⁷

It is recommended that states and the region move toward greater consistency in the definition of discount rate used.

NET Levelized Cost per kWh (or therm or MMBTU): Net levelized cost calculations capture the fact that energy efficiency provides numerous and diverse benefits, and yet is often compared to a total cost with just one type of benefit (e.g., comparing levelized cost of energy efficiency to market clearing prices for energy on the supply side). As such, when calculating a levelized cost per kWh, a state may opt to first subtract the Net Present Value (NPV) of benefits of certain savings e.g., fossil fuel savings (gas and/or oil), water savings, O&M savings, in order to determine the net levelized cost value. Calculating the cost of saved energy also typically ignores the impact of peak demand savings, and therefore makes portfolios of programs targeting peak savings measures look worse than those just promoting energy savings (e.g., CFLs). Net levelized cost per kWh (or Therm, MMBTU) can therefore subtract the benefits of peak demand savings.

The challenges of reporting Net Levelized cost per kWh (or Therm, MMBTU) often lies in developing estimates for the value of benefits, which are either difficult or costly to determine. As such, these Guidelines do not necessarily recommended reporting Net Levelized Cost per kWh, but to the extent a state is able to do so, providing this type of cost information is useful and informative.

The recommended formula for calculating Net Levelized Cost per kWh (or Therm, MMBTU) is as follows:

$$\text{Net Levelized Cost of Saved Energy} = \frac{(\text{Net Electric or Gas or Other Energy Costs}) \times (\text{CRF})}{\text{Incremental Annual Net kWh, Therms or MMBTUs}}$$

Where Net Electric or Gas or Other Energy Costs = $NPV \text{ Total Program Costs} - NPV \text{ Total Benefits of other Fuels} - NVP \text{ Water Savings} - NVP \text{ O\&M benefits}$ ⁸

If the Net Levelized Cost is reported in Table 2, a description should be provided that identifies parameters that are “netted” out of the total cost.

⁷ The ISO New England Market Monitor requires Market Participants seeking to submit Demand Resource offers below 0.75 times Cost of New Entry in the Forward Capacity Market to report costs as part of their offer justification using a discount rate that reflects corporate and consumer credit risks. See http://www.iso-ne.com/markets/othrmkts_data/fcm/qual/forms/index.html

⁸ As discussed above, for net electric costs one could also subtract the NPV of value of coincident peak demand savings.



Table 2.1 Efficiency Program Funding Sources

Percent of Program Expenditures Funded by:	Electric	Gas
<input type="checkbox"/> Ratepayer Funded Programs	%	%
<input type="checkbox"/> Regional Greenhouse Gas Initiative (RGGI) Proceeds	%	%
<input type="checkbox"/> Wholesale Capacity Market Revenues	%	%
<input type="checkbox"/> Weatherization Assistance Programs (WAP)	%	%
<input type="checkbox"/> American Recovery & Reinvestment Act (ARRA) Funds	%	%
<input type="checkbox"/> Other (Describe: _____)	%	%
Percent of Program Incremental Annual Savings (per Table 1.1) Funded by:	Electric	Gas
<input type="checkbox"/> Ratepayer Funded Programs	%	%
<input type="checkbox"/> Regional Greenhouse Gas Initiative (RGGI) Proceeds	%	%
<input type="checkbox"/> Wholesale Capacity Market Revenues	%	%
<input type="checkbox"/> Weatherization Assistance Programs (WAP)	%	%
<input type="checkbox"/> American Recovery & Reinvestment Act (ARRA) Funds	%	%
<input type="checkbox"/> Other (Describe: _____)	%	%



Table 2.2: Electric and Gas Energy Efficiency Program Expenditures
(Supporting definitions provided further below)

Jurisdiction/State XX	Program Year 20YY	Energy Efficiency Program Expenditures*	
Expenditure Category		Electric (dollars)	Gas (dollars)
ENERGY EFFICIENCY PROGRAMS			
Residential Non-Low Income Sector			
Customer Rebates/Incentives:		\$	\$
Administration/Marketing/Other:		\$	\$
Performance Incentives:		\$	\$
Research and Evaluation:		\$	\$
Other (Describe: _____)		\$	\$
Subtotal Residential Non-Low Income Sector			
Residential Low Income Sector			
Customer Rebates/Incentives:		\$	\$
Administration/Marketing/Other:		\$	\$
Performance Incentives:		\$	\$
Research and Evaluation:		\$	\$
Other (Describe: _____)		\$	\$
Subtotal Residential Low Income Sector			
Commercial & Industrial Sector			
Customer Rebates/Incentives:		\$	\$
Administration/Marketing/Other:		\$	\$
Performance Incentives:		\$	\$
Research and Evaluation:		\$	\$
Other (Describe: _____)		\$	\$
Subtotal Commercial & Industrial Sector			
TOTAL ENERGY EFFICIENCY PROGRAM EXPENDITURES		\$	\$
* In cases where electric (or gas) programs provide gas (or electric) savings, please estimate cost according to allocation by either: <input type="checkbox"/> Estimated Savings <input type="checkbox"/> NVP of Benefits <input type="checkbox"/> Other Method – Describe: _____			
TOTAL DEMAND RESPONSE PROGRAM EXPENDITURES		\$	



Table 2.3: Cost of Saved Energy
(Supporting definitions provided further below)

Jurisdiction/State XX	Program Year 20YY	Cost of Saved Energy	
Cost of Saved Energy Methodology		Electric Cost (\$/kWh)	Natural Gas Cost (\$/Therm)
Levelized Cost per kWh or Therm (using formulas provided on previous pages)			
Levelized Cost per kWh (With Participant Costs)			
Levelized Cost per kWh (No Participant Costs)			
NET Levelized Cost per kWh (optional) Cost Parameters Excluded:			
Real Discount Rate (i) Weighted Avg. Measure Life (n) Source of Discount Rate (describe):		i =	n =
Levelized Cost per Therm (With Participant Costs)			
Levelized Cost per Therm (No Participant Costs)			
NET Levelized Cost per Therm (optional) Cost Parameters Excluded:			
Real Discount Rate (i) Weighted Average Measure Life (n) Source of Discount Rate (describe):		i =	n =
IF LEVELIZED COST PER KWH OR THERM IS NOT AVAILABLE, PLEASE PROVIDE:			
Lifetime Cost per kWh or Therm (using formulas provided on previous pages)			
Lifetime Cost per kWh <input type="checkbox"/> with participant costs OR <input type="checkbox"/> no participant costs			
Lifetime Cost per Therm <input type="checkbox"/> with participant costs OR <input type="checkbox"/> no participant costs			

Tables 2.1 - 2.3 Supporting Definitions:

Administration/Marketing/Other Costs: Program administration and marketing costs, and other costs associated with implementation of programs, including direct installation costs, program implementation contractor services, etc.

Customer Rebates/Incentives: Direct financial rebates or incentives paid to customers to support the investment in energy efficiency (i.e., incremental cost, or portion thereof, of higher efficiency equipment). Financial rebates do *not* include direct installation costs - these should be reported under Administration/ Marketing/ Other costs.

Energy Savings: Reduction in electricity use (kWh) or in fossil fuel use in thermal unit(s).



Gross Savings: The change in energy consumption and/or demand that results directly from program-related actions taken by participants in an efficiency program, regardless of why they participated.

Incremental Annual Savings: These savings reflect changes in energy use (measured in megawatt hours or therms) caused in the current reporting year by new program participants in existing energy efficiency programs and all participants in new energy efficiency programs (i.e., programs begun during the current reporting year). Reported Annual Incremental Savings should be annualized.

Levelized Cost per kWh (orTherm): The level of payment needed each year to recover the total investment and interest payments (at a specified interest rate) over the life of the measure(s). This calculation is useful for comparing the value of energy efficiency to other resources.

Lifetime Cost per kWh (orTherm): The cost of saved energy over the lifespan of the measures implemented.

Net Levelized Cost per kWh (or therm or MMBTU): Levelized cost per kWh that subtracts the net present value (NPV) of benefits of certain savings (e.g., fossil fuel savings (gas and/or oil), water savings, O&M savings, or even peak electric savings) in order to capture the fact that energy efficiency provides numerous and diverse benefits, yet is often compared to a total cost that provides just one type of benefit (e.g., comparing levelized cost of energy efficiency to market clearing prices for energy on the supply side).

Net Savings: The total change in energy consumption and/or demand that is attributable to an energy efficiency program. This change in energy consumption and/or demand may include, implicitly or explicitly, the effects of free drivers, free riders, energy efficiency codes and standards, changes in the level of energy service, and other causes of changes in energy consumption or demand.

Participant Costs: Costs incurred by participants as a result of their participation in a program, including participant contributions to the capital cost of installed measures as well as for technical assistance and/or energy ratings etc.

Performance Incentives: Can be earned by electric or gas distribution companies or energy efficiency program administrators if they meet established goals.

Real Discount Rate: Adjusted to eliminate the effects of expected inflation and used to discount constant year dollars or real benefits and costs. A real discount rate can be approximated by subtracting expected inflation from a nominal discount rate.

Rebates/Incentives: Financial rebates and incentives paid directly to participants in an energy efficiency program.

Research and Evaluation Expenses: All in-house and outsourced costs associated with evaluation activities, including costs related to cost-effectiveness evaluation, market research (e.g., baseline studies, market assessments, and surveys), impact and process evaluation reports, and other costs clearly associated with evaluating the program.

Weighted Average Measure Life: Reflects the average life of the installed measures that takes into account the proportional relevance of each measure/program measure life, weighted by annual savings.



3. Reporting of Air Emission Impacts

The purpose of this section of the Guidelines is to provide consistent reporting of air quality and greenhouse gas emissions avoided associated with energy efficiency programs, including data needs to support inclusion of energy efficiency in State Implementation Plans (SIPs). In order to calculate these impacts, program administrators need to provide consistent energy and demand savings data (from Tables 1.1-1.3), which can serve as the basis for air quality regulators to use in calculating the avoided emissions.

Table 3 provides the reporting template for avoided air emissions associated with electric and gas efficiency savings impacts, and includes the following reporting elements:

- General description of calculation methodology used to estimate the avoided emissions, with example calculation(s)
- Emission factors and types, with references
- Annual and peak avoided emissions

Other energy efficiency data may also be needed or referenced to support the avoided emissions calculations. See Table 1.0 - *Supporting State Energy Savings Assumptions and EM&V Process Information* which includes links to and/or information on:

1. Detailed energy savings supporting data, such as program savings documents (or technical reference manuals);
2. Energy efficiency program plans;
3. Program administrator reported data, where applicable;
4. State achievable potential studies;
5. Other relevant publicly available energy efficiency data; and
6. A description of EM&V practices and links to relevant documents used to support the reported energy savings and associated avoided emissions.

Process Recommendations to Support Reporting of Avoided Air Emissions: To fully support air regulators' incorporation of efficiency benefits into their air quality and climate change planning activities, these guidelines provide the following process-related recommendations for energy and air quality regulators and policymakers, and other relevant stakeholders:

- Coordination between state utility regulators, program administrators and air regulators is needed to identify and implement best processes for sharing energy efficiency impact data, and calculating emissions impacts to support Table 3, as well as to address additional air regulator needs, in particular with regard to forecasting emissions reductions from efficiency programs; and
- With US EPA starting a process to refine its State Implementation Guidelines, further coordination within US EPA departments and with state air regulators are encouraged in order to work together to develop a more structured approach for effectively incorporating efficiency benefits into air quality and climate change planning activities.



Table 3: Avoided Emissions

Table 3 provides estimated avoided emissions associated with energy and/or demand savings from energy efficiency programs administered by [NAME OF PAs] for the year 20__, where such estimates were developed based on savings reported in Tables 1.1-1.3 unless otherwise noted. The emission reduction calculations were developed in collaboration with the PAs, the [STATE AIR REGULATORY AGENCY] and the [STATE PUC]. Table 3 may be completed for the entire portfolio of EE programs or can be broken down by sector or program type, consistent with reporting levels in Tables 1.1-1.3.

Jurisdiction/State:						
			Annual Emissions Avoided (metric tons)		Annual Peak Emissions Avoided (metric tons)	
Pollutant	Emissions Calculation Method Used	Emissions Factor Used	From Electric Savings	From Nat. Gas Savings	From Electric Savings	From Nat. Gas Savings
eCO ₂		<input type="checkbox"/> Marginal <input type="checkbox"/> Other (Describe) Source: _____				
NO _x		<input type="checkbox"/> Marginal <input type="checkbox"/> Other (Describe) Source: _____				
SO ₂		<input type="checkbox"/> Other <input type="checkbox"/> Average Source: _____				
Other						
Based on Annual Demand Savings coincident with: <input type="checkbox"/> High Electricity Demand Days <input type="checkbox"/> Utility Peak Demand <input type="checkbox"/> ISO/RTO System Peak <input type="checkbox"/> Other Provide description of peak coincidence hours: _____ _____						



Table 3 Supporting Definitions:

Annual Demand Savings: The expected reduction in demand associated with the higher efficiency equipment or installation in a given year coincident with a specific peak period(s).

Coincident Demand: The demand of a device, circuit, or building that occurs at the same time as the peak demand of a utility's system load or at the same time as some other peak of interest, such as building or facility peak demand. Because jurisdictions currently report a mix of summer/winter/annual demand impacts in annual energy-efficiency reports, in order to be useful from a regional perspective, it is recommended that all reported peak demand impacts be clearly defined. Examples of peak demand definitions include the following:

- Demand coincident with utility system peak load
- Demand coincident with ISO/RTO summer or winter peak, or according to performance hours defined by wholesale capacity markets
- Demand coincident with high electricity demand days

Coincidence Factors: Coincidence factors are defined as the ratio of the average hourly demand reductions that actually occur during seasonal coincident peak periods (e.g., summer, winter) to the average connected load reductions. They account for both the portion of connected load that is used in individual buildings during peak periods and the diversity of usage patterns across populations of buildings during peak periods. As such, a coincident demand reduction is simply the product of the coincidence factor and the connected equipment load reduction.

eCO₂: CO₂e is used to translate emissions of gases other than CO₂ into CO₂ equivalents by using the gases' global warming potentials. This enables emissions of greenhouse gases to be expressed in a common metric so that their impacts can be directly compared, as some gases are more potent (have a higher global warming potential or GWP) than others.

Emissions Factors (marginal and average, other): An emissions factor is a representative value that attempts to relate the quantity of a pollutant released to the atmosphere with an activity associated with the release of that pollutant. These factors are usually expressed as the weight of pollutant divided by a unit weight, volume, distance, or duration of the activity emitting the pollutant (e.g., kilograms of particulate emitted per megagram of coal burned)."

Energy Savings: Reduction in electricity use (kWh) or in fossil fuel use in thermal unit(s).

High Electricity Demand Days (HEDD): Days in which electricity demand is extremely high, leading to considerably higher emissions than on other days. Electricity rates are usually the highest, and demand response programs are usually initiated on HEDD.

NO_x: Nitrogen Oxides

SO₂: Sulfur Dioxides



4. Reporting of Jobs Impacts

These Guidelines recognize that reporting job impacts from energy efficiency programs is important to demonstrate the state and regional economic benefits of energy efficiency. Currently, some but not all states report job impacts, and different methodologies are used, from fairly straightforward calculators to more comprehensive modeling. Given the difficulty of achieving a consistent methodology, it is premature to recommend a consistent calculation methodology in this version of the Guidelines. Rather, Table 4 provides for transparent reporting of job impacts by encouraging states to reference and generally describe the methodology it uses to develop estimates of gross and net job impacts, direct and indirect jobs. In addition, Table 4 includes a section to report the median wage of direct jobs in order to inform policy makers about the quality of jobs being funded through the programs.

Types of Jobs Created: **Direct jobs** are the actual, immediate jobs that result from an investment in an energy efficiency program or initiative. For example, the employment and wages for field employees working on low income weatherization (WAP) projects or HVAC and window/insulation contractors who install high efficiency equipment through the efficiency programs.

While harder to quantify, some states currently also report indirect or induced jobs, and net jobs associated with energy efficiency activities. To the extent such information is available for a given state, these Guidelines provide placeholders for such reporting. **Indirect jobs** result from “upstream” changes in business activity among firms supplying goods and services to the industries directly involved in the energy efficiency program or initiative. For example, sales and stock people at Home Depot or Lowes, and manufacturers of high efficiency materials/equipment installed. **Induced jobs** are those that result when the worker income generated from the direct and indirect jobs is re-spent in the local economy on consumer goods and services.

Net Jobs are calculated to get a sense of the broader economic impact of efficiency programs. Net jobs are defined generally as those created and sustained via energy efficiency program spending of ratepayer dollars *less* jobs that would have been created had the ratepayers kept the dollars and spent them on standard sets of goods and services typical for their sector.

Methodologies for Calculating Job Impacts: There are a variety of methods (models or resources) used to calculate net jobs which states may opt to use. One approach for calculating job impacts is to report the **direct** full-time equivalent (FTE) number of jobs funded through energy efficiency programs in accordance with [American Recovery and Reinvestment Act \(ARRA\) guidelines](#). Many state agencies are recipients of ARRA funding and are familiar with the ARRA guidelines. The following ARRA formula can be used to report the number of jobs created or retained within a calendar year:



Total Number of Hours Worked and Funded by Energy Efficiency Investments for Year
Annual Hours in a Full-Time Schedule⁹

Another resource to calculate direct jobs is the [ACEEE Jobs Calculator](#) (also see [User Guide](#)).

Comprehensive models are used to calculate indirect and net job impacts. For more information about such approaches and resources, see [Assessing the Economic Benefits of Clean Energy Initiatives](#), a publication of the US EPA that describes and compares a variety of approaches for quantifying the macroeconomic effects of energy efficiency programs.

Table 4: Job Impacts from Energy Efficiency Investments

Program Year(s):					
	Residential Program*		C&I Program	Total Program	Methodology
	L/I	Non L/I			
GROSS JOBS FTE job-years					
Direct Jobs:					Describe:
Indirect Jobs:					Describe:
Median Wage - Direct Jobs:				\$	Describe
NET JOBS: FTE job-years					Describe:
Other Metric (Describe): e.g., types of programs associated with Jobs created, etc.					

*Low Income (L/I) and Non-Low Income (Non L/I)

Table 4 Definitions (Definitions for Direct, Indirect and Net Jobs are provided on previous page)

Low Income: Households with income not more than a stated percentage of state or area median income or meeting low income requirements based on the number of family members in the household. (Note that "low income" housing is different from "affordable" housing. For purposes of common reporting guidelines, respondents are asked to clarify whether affordable housing is included in the low income program sector.)

Non-Low Income: Households with incomes that exceed the level required to qualify for participation in low income programs. (Note that qualifying low income levels may vary across states/jurisdictions.)

Median wage: The median wage of Direct jobs funded through the EE programs (in 2010 \$).

⁹ As defined by reporting entity.

5. Coordination with National Energy Efficiency Reporting Efforts

EIA Energy Efficiency Data Collection: The Energy Information Administration (EIA) collects energy efficiency program savings data using Form EIA-861 Schedule 6, which program administrators submit annually. Form EIA-861 is a straightforward, high level template in which many inputs are already reported in state annual reports. These reporting Guidelines reviewed the EIA-861 reporting elements to ensure consistency to the extent possible, given EIA-861 reporting tables were in process of being revised and open for comment. Assuming these Guidelines may evolve as well, it is recommended that there be coordination with EIA's efforts to ensure consistency between national and regional reporting efforts.

Other Federal Reporting Guidelines/Requirements: These Guidelines were shared with US DOE and US EPA staff, with the intent to help inform and coordinate with the development of other reporting guidelines/requirements at the federal level. Such efforts include reporting required to: support the American Recovery and Reinvestment Act (ARRA) funds used for energy efficiency projects/programs; weatherization assistance programs (WAP); and the joint US DOE and US EPA State Energy Efficiency Action Network (SEE Action) EM&V project, which is currently developing a national reporting template. The Forum will continue to monitor federal energy efficiency and other demand resource reporting developments, and share information with federal agencies regarding adoption and implementation of these Guidelines in the Forum region.

6. Incorporating Energy Efficiency into System Planning

Supporting research to these Guidelines included documenting current practice by ISO New England, New York ISO, and PJM Interconnection for incorporating energy efficiency into their system planning processes and models, where such practices generally vary across the three power pools (and in some cases rely only on efficiency data collected through the system operator's forward capacity markets). See reference to research report in footnote 2. While research efforts attempted to identify additional data needs and existing barriers to fully incorporating efficiency into system planning (energy system and not only capacity), it was concluded that further dialogue is needed with the region's three system planning bodies to better understand and address these issues. As such, the Forum is exploring a 2011 project to facilitate such a dialogue, where the outcome of this effort (potentially supplemented with additional research and/or guideline development), may lead to proposed modifications to these reporting Guidelines in terms of new/revised data needed to support integrating efficiency into system planning.