Building a Common Approach to Integrating Energy Efficiency Into Air Quality and Climate Change Planning and Reporting

Niko Dietsch, U.S. Environmental Protection Agency
Julie Michals, Northeast Energy Efficiency Partnerships
Lynn Hoefgen, NMR Group
Cynthia Kan, Cadmus Group

ABSTRACT

Public utility commissions and other entities charged with oversight of electric and natural gas energy efficiency programs currently require evaluation results to be reported for the purpose of documenting compliance with utility-specific savings targets. This practice has historically been conducted to achieve energy-related objectives, without regard to state and regional air and climate objectives. However, there is an emerging interest in how efficiency savings can address air quality planning and regulations, and regional climate change objectives.

To explore the opportunities and issues associated with these policy objectives, the Regional Evaluation, Measurement, and Verification Forum ('the Forum') – a project managed and facilitated by Northeast Energy Efficiency Partnerships (NEEP) – recently conducted an analysis of stakeholder perspectives in eleven jurisdictions in the Northeast and mid-Atlantic (New England states,[1] New York, New Jersey, Maryland, Delaware, and the District of Columbia). The study engaged air quality officials, energy regulators, program administrators, and system planners to examine the need for common energy efficiency reporting practices to support a range of state and regional energy, economic and environmental policies. This paper focuses on the reporting and data needs to support achieving air quality and climate objectives.

The project researched what efficiency impact data are currently reported by program administrators, and what information is needed to meet air regulator needs. The study recommends how data analysis, exchange, and reporting can be improved to effectively link efficiency impacts with air quality goals, including a common reporting template for the region.

Background

In the last decade, policymakers and state regulators in Northeastern and Mid-Atlantic States have increasingly turned to energy efficiency as a least-cost energy resource to address critical energy, economic and environmental policy objectives. These include:

- Mitigating rising energy costs and customer bills
- Meeting resource adequacy and transmission expansion needs in congested areas
- Increasing fuel diversity in order to ensure greater energy security and reliability
- Reducing air pollution and greenhouse gas emissions to achieve state and regional goals and regulations
- Creating jobs

[1] Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont

This trend reflects the hard work and persistence of the community of efficiency advocates, agency staff, and other parties working in these jurisdictions of the country. In addition to a growing utilization of the efficiency resource to tackle state and regional energy system objectives, state air officials who are responsible for overseeing compliance with Clean Air Act requirements such as State Implementation Plan (SIP) development, are likewise seeking to understand whether efficiency can be utilized to improve ozone (O3) and nitrogen oxide (NOx) air pollution levels. This is because many jurisdictions have already implemented a large number of traditional emissions reductions strategies, and are now seeking innovative options, such as through energy efficiency strategies, for achieving compliance with existing and pending air regulations.

Despite this interest in energy efficiency, there are additional steps necessary to lay the groundwork for long-term success of efficiency to achieve the policy goals listed above. One of these steps is to ensure that robust and consistent evaluation, measurement, and verification (EM&V) procedures, methods and definitions are in place and actively utilized in each state. The Forum is developing, as a separate project, common EM&V methods and savings assumptions guidelines. This paper focuses on one aspect of an effective EM&V policy: the need to understand whether efficiency reporting is conducted in a manner that is consistent and supports key policy objectives, in particular to meet air quality and climate change objectives, and what (if any) changes are necessary to current practices to improve consistency, transparency and coordination of information sharing.

Currently, states in the Northeast and mid-Atlantic estimate and report their efficiency program savings according to methodologies, cost-effectiveness frameworks, and assumptions approved by state regulatory commissions. The methods and frameworks used within each state have, to date, provided reliable savings data for the purposes they were developed:

- To describe the cost-benefit ratios of programs and portfolios
- To ensure overall ratepayer value and provide oversight of expenditures
- To assist investor-owned utilities (IOUs) recovery of lost revenues
- To award performance incentives based on achieved goals (NEEP, 2006)

However, there is growing awareness that scaling up the efficiency resource to help meet air quality and climate change goals will likely require an increased level of coordination and consistency in approaches to efficiency-savings reporting. This is necessary to ensure that energy efficiency savings reported across states are consistent and transparent with regard to definitions and underlying EM&V methods and levels of saving certainty, so that the associated emissions impacts are comparable and reliable for air quality and climate change planning.

Research Methods

With the goals of (a) understanding the uses for efficiency data in air quality policymaking, (b) identifying the data needs of air regulators, and (c) determining what improvements to current reporting practices are necessary, the Forum proposed a research approach centered on a ‘gap analysis.’ The centerpiece of the study was a series of interviews conducted with air officials and utility regulators to identify the perspectives, policy goals, and data needs of these stakeholders with respect to energy efficiency. A survey instrument was developed to guide the interviews and help study authors compare the set of energy efficiency

impact data that are actually reported by program administrators, versus what data are needed to address the expanding set of state and regional policy objectives for efficiency (see above for the list of objectives). Air regulators in Maryland, New Hampshire, Massachusetts, Connecticut, New York, and New Jersey were interviewed (six interviews). Interviews with system planners included representatives of ISO New England, PJM and New York ISO (three interviews).

In addition to the interviews with environmental officials, a literature review was also completed in support of study objectives. Materials surveyed included:

- Annual energy efficiency reports submitted to state regulators in the eleven states participating in the Forum (New England states, New York, New Jersey, Maryland, Delaware and District of Columbia)
- Commission orders/directives that set forth energy efficiency reporting requirements
- Reported energy efficiency savings data provided to regional transmissions owners (RTOs) or Independent System Operators (ISOs) for energy and capacity system planning purposes, including ISO New England, New York ISO, and PJM. This included gathering information on ISO/RTO development of regional emission factors

Results from these surveys indicated that important discrepancies exist between current practices and emerging energy, economic and environmental policy and market needs. With that in mind, the study team developed a common reporting template for use by program administrators in their annual reporting. This template is to be included in the Forum *Common Statewide Energy Efficiency Reporting Guidelines*, to be released by the Forum in the summer of 2010. The specific reporting elements include energy and demand savings, program expenditures, job impacts, and emissions impacts. The Guidelines also include process recommendations with regard to improved collaboration and information sharing to support air quality and climate change planning. As a complementary activity, the Forum intends to support the findings of this research through outreach activities aimed at educating policymakers, sharing best practices, and increasing policy uptake.

Findings

The Forum project's study team's research results are presented in three parts. First, we review the study team's observations about the policy issues and quantification methods currently used to link efficiency program results to air quality planning. Second, we summarize the current energy and emissions reporting practices in Forum states. Third, we outline energy and emissions reporting and data needs for air quality and climate change planning.

(1) Understanding Opportunities to Link Efficiency to Air Quality Planning

Despite growing interest by environmental officials and other policymakers in linking efficiency savings data to air quality improvements, a key policy barrier is the lack of consistent and transparent efficiency reporting and availability of certain data. These reporting discrepancies may make it difficult to establish a transparent and replicable model for states seeking to more closely link efficiency and air quality decisions, and may impede the identification and collection of critical data elements. An initial survey (NEEP 2006) of air and energy regulators indicated an interest in efficiency reporting that is increasingly:

- Reasonable and defensible, providing sufficient credibility, accuracy, and certainty
- Transparent, based on documented sources that are readily available
- Consistent, in terms of reporting requirements so that savings can be tracked and aggregated on a comparable basis

As a first step in addressing the efficiency reporting needs of air quality officials, it is necessary to understand how savings data are linked to air quality improvements under the Clean Air Act's State Implementation Plan (SIP) process. The emissions reductions from energy efficiency can be accounted for in SIPs in three different ways. Emissions can be:

1. Included in an EPA and state reference case (baseline) that assesses how emissions will change in the future based on various economic, energy and environmental variables;
2. Part of the weight of evidence (WOE) analysis included in the SIP emissions baseline projection that is submitted to EPA. In this context, WOE is a qualitative analysis used by an air quality agency to demonstrate attainment with the NAAQS; and
3. A specific control strategy where SIP credits are "guaranteed" emissions reductions achieved by a technology or program requirement, with accompanying enforcement of that strategy.

The study team documented several state examples of how energy efficiency is incorporated in SIPs from the Northeast and Mid-Atlantic region.

Connecticut. In Connecticut, the Department of Environmental Protection (DEP), a member of the Ozone Transport Commission (OTC), researched whether the energy efficiency programs managed by Connecticut Light and Power and the United Illuminating Company could reduce electricity consumption and NOx emissions on 'high electricity demand days.' Responding to OTC information that peak load electricity demand on the hottest days was growing two to three times faster than base load demand, the Connecticut DEP established a team of technical experts to analyze the effect of energy efficiency and renewable projects - including high efficiency air conditioners, compact fluorescent lighting, and solar photovoltaic energy - on reducing NOx emissions at critical/peak times (James, 2008).

District of Columbia region. In 2004, Montgomery County, Maryland led a multi-county buying group to purchase wind power and undertook a first-of-its-kind analysis to estimate its effect on air quality. The reductions were ultimately included in the Maryland SIP, which was approved by EPA in 2005. Building on this success, Metropolitan Washington Council of Governments (MWCOG) developed a regional air quality plan for the eight-hour ozone standard for the DC Region non-attainment area that also included clean energy provisions. This 2007 MWCOG air quality plan increased municipal RE purchases fourfold from 2004 to 2009 and included the installation of LED traffic lights in place of conventional incandescent lights. The plan was adopted by Virginia, Maryland, and the District of Columbia and the respective ozone SIPs were approved by the EPA regions in 2007.

New Jersey. The DOE pilot project for New Jersey focused on refining a method for calculating summer NOx emissions reductions from energy efficiency and renewable programs to facilitate attainment of the eight-hour ozone standard. The effort was notable for conducting detailed

electric-sector modeling of a broad range of EE/RE programs, including new construction and retrofits of commercial and industrial and residential buildings, ENERGY STAR air-conditioning and lighting, high-efficiency central air-conditioning and ground source heat pumps, and solar photovoltaic projects. Analysis showed that NO_x reductions during the summer ozone season for 2012 should be 480-950 tons, depending on the specific assumptions employed for program growth, duration of measures, and other factors.

Massachusetts. In Massachusetts, the NOx Budget program is part of the state SIP, and has a number of elements designed to promote efficiency. The program provides for a "public benefit set aside" in which the set-aside provision allocates between 10 and 12 percent of the annual NOx Budget to a set-aside account. The MA DEP awards those allowances to projects that meet the requirements for Energy Efficiency and Renewable Energy projects calculated as per the terms prescribed the regulation (310 CMR 7.32(5)(c)2. pgs 393 of 601

Using these (and other) examples, the study team identified the key steps that policymakers and energy officials need to be familiar with in order to optimize the reporting of efficiency data:

- **Step 1.** Establish consistent EM&V practices and methods, and consistent reporting of energy efficiency program savings
- **Step 2.** Use those savings to quantify decreases in power plant emissions and corresponding improvements in ambient air quality for the jurisdiction of interest
- **Step 3.** Engage energy, environmental, and other stakeholders to develop a clear policy path for integrating efficiency and air planning

Although the study team focused its research activities on Step 1, it recognized the importance of understanding the subsequent two steps and the information resources available to states that are working to link air and energy.

For example, the National Action Plan for Energy Efficiency (the Action Plan) has developed detailed reference materials to assist with Step 2, estimating power plant emissions reductions from energy efficiency programs and activities (Action Plan 2007, see chapters 3 and 6). To complement this resource, US Environmental Protection Agency (EPA) has developed policy guidance (US EPA, 2004) to document the general quantification approach that state and local governments must follow to be eligible for SIP credit. This guidance requires that where efficiency data are considered in an air quality SIP, the state must meet the following criteria:

- Quantifiable – must include procedures to evaluate/verify emission reductions over time
- Surplus – emission reductions must not be currently relied on to meet other Clean Air Act requirements (taking important considerations when cap and trade program exists)
- Enforceable – against another party responsible for EE or RE activity or under voluntary measures policy
- Permanent – savings persist throughout program or measure life

EPA's guidance also documents the specific quantification steps necessary for translating efficiency savings data into air quality improvements. To illustrate, a state seeking credit under an ozone SIP would be required to:

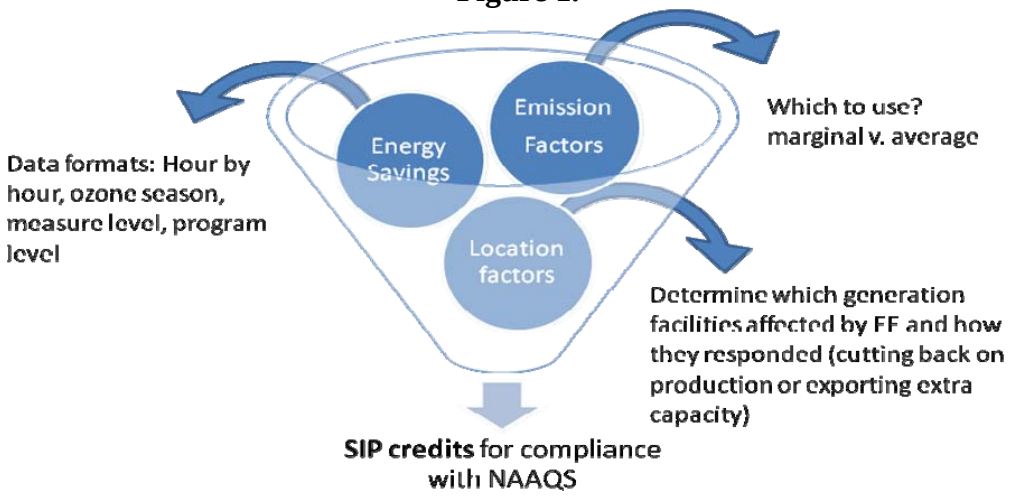
- Determine the amount, type, and location of electric generation that would be displaced by EE/RE measures being pursued in the jurisdiction
- Estimate the annual and summer ozone season NOx emission rates from power plants serving the state/region
- Quantify the impact on annual and ozone-season NOx emissions on ambient air quality during key time periods

The illustration in Figure 1 demonstrates examples of various factors that must be synthesized to support air regulator activities when incorporating emissions reductions from energy efficiency in the SIP process. Through air regulator interviews and a review of current energy efficiency reporting practices among the Forum states, the study team learned, and ultimately makes recommendations (as discussed later herein) regarding where and how data are best shared between program administrators and air regulators, and where respective responsibilities lie with regard to reporting energy efficiency date and developing emission impact estimates among different stakeholders.

The study team also determined that Step 3—that is, engaging energy, environmental, and other stakeholders to develop a clear policy path for integrating efficiency and air planning—is critical to understanding and addressing the efficiency data needs to support air regulators ability to incorporate efficiency into their air planning processes.

By exploring how efficiency data are utilized under Steps 2 and 3, the study team positioned itself to identify the key areas of intersection between efficiency data and air quality planning, and to make specific recommendations for the reporting of efficiency data through common statewide reporting templates and/or the need for data sharing through research and other activities.

Figure 1.



(2) Identifying Current Emissions Reductions Reporting Practices

A particular focus of the gap analysis was reviewing current reporting practices in Forum states with respect to program-related emission reductions, and to research and report on the extent to which these impacts are being incorporated into air quality and climate change plans. The study team found that the specific emissions reported by the Forum program administrators

(in energy efficiency annual reports or other publicly available literature) include SO_2, NO_x, and CO_2, as shown in Table 1. These quantities are usually given in tons of emissions reduced due to energy saved by the program. Out of the eleven jurisdictions in the Forum region, however, program administrators in Maryland, Delaware, and D.C. either did not provide emissions reductions information of some type in their annual energy efficiency reports or did not have a report available. Carbon dioxide (CO_2)/greenhouse gases (GHG) were the most commonly reported type of emission savings, but the methodology for calculating emissions reductions is usually not described and the units and gases reported are sometimes not consistent across program administrators from different states. For example, Connecticut's Clean Energy Program 2007 report includes annual, lifetime, and cumulative (2001- 2007) reductions for CO_2, NO_x, SO_2 and Hg in metric tons (or lbs for Hg). However, National Grid's 2008 Energy Efficiency Annual Report to the MA Department of Public Utilities only mentions CO_2 emission reduction benefits in dollars.

Importantly, the emission impacts reported in statewide or program administrator annual reports, in most cases, are not developed by air regulators in the state, as discussed further below. This important finding demonstrates the divide and lack of communication and coordination between agencies and energy efficiency stakeholders within states, and thus the need for Step 3.

Table 1: Reporting of Emissions Reductions from Energy Efficiency

State/Jurisdiction	CT	D.C.	DE	MA	MD	ME	NH	NJ	NY	RI	VT
State Level Report	✓			✓	✓	✓	✓	✓	✓	✓	✓
SO2	✓					✓		✓	✓		✓
NOx	✓					✓		✓	✓		✓
CO2/eCO2	✓			✓		✓		✓	✓	✓	✓
HG	✓							✓			

(3) Identifying the Reporting and/or Data Needs of Air Quality Officials

To better understand mechanisms used, data needs, and barriers to incorporating energy efficiency in SIPs, air quality regulators from six Northeastern and Mid-Atlantic states responsible for SIP planning were interviewed to identify current reporting and data needs. Although the number of regulators interviewed was not very large, these organizations represented over half those in Forum states. It is important to note that observations reported here are often based on feedback from as few as one or two entities and reflect only those entities' knowledge. Further, findings and recommendations were also informed by feedback received from the project subcommittee.

The states with the most potential for having specific data needs from program administrators were chosen by the Forum for further study. Table 2 summarizes results from air quality regulator interviews. The key findings provide an overview of how the energy savings from energy efficiency are captured and barriers to using these data in planning activities. Overall, the results indicate that the Forum states interviewed are at diverse stages of incorporating the benefits of energy efficiency programs into air quality and climate change action plans. Areas in which differences were identified include: communication between agencies dealing with air quality and energy efficiency programs, awareness of available resources regarding efficiency program results, and understanding of how efficiency programs

are evaluated. Generally, regulators from one state are not aware of energy efficiency practices in other states and they only look at the rankings of the states.

Table 2 also divides states into two categories: those states that do incorporate energy efficiency benefits and those that do not. For states that do incorporate energy efficiency in their SIPs, various attributes are listed to describe what was in the SIP as well as a checklist of items those regulators desired. The regulators from states that do not incorporate energy efficiency in theirs SIP provided many examples of the barriers preventing them from doing so and their suggestions for how to overcome these barriers overlapped with some requests from the states that do incorporate energy efficiency in their SIPs. These results are discussed in greater detail in the rest of this section. When asked about additional data needs from program administrators, the responses varied from "nothing" to "everything available." Air regulators also mentioned that they needed process and regulatory-related support for their planning activities from EPA and appropriate legislation. These process-related needs constituted a greater concern for the interviewees than data requirements from program administrators—an unexpected finding.

Two states, NJ and CT, reported using energy efficiency as weight of evidence in their state implementation plan. A few states, like CT, consider efficiency benefits in their emissions baseline. No states interviewed currently claim SIP credits for energy efficiency activities.

Analysis/Interpretation

Analysis and interpretations of the study findings can be divided into three key categories, as follows.

(1) States that Incorporate Efficiency Benefits in SIP

A review of the states that do report efficiency benefits in their SIP revealed that the impacts are calculated using either marginal or average emissions rates obtained from the regional systems operator. Estimated energy and/or demand savings are multiplied by a regional emissions factor to get an estimate of avoided emissions. We found that ISO New England provides a marginal rate while PJM Interconnection provides an average rate. It is likely that the emission factor in use (marginal or average) is simply the one that is available and will persist until guidance or requirements are provided to use a specific rate and methodology.
Findings from interviews included the following:

- Burden for obtaining SIP credit was felt to be too high
- Who is responsible for enforcement of savings (EPA, air regulators, program administrators or all) is unclear
- Treatment of energy efficiency savings captured as part of market-based emissions trading programs is unclear
- Weight of Evidence (WOE) is not intended as a mechanism for formally "crediting" emission reductions in a SIP.[2]

[2] Weight of Evidence is a qualitative supporting analysis used to help demonstrate attainment with the NAAQS

Table 2: Air Quality Regulator Interview Results

State/Jurisdiction	CT	MA	MD	NH	NJ	NY
EE in SIP						
Pollutants						
NO_x	✓	✓	✓		✓	
Ozone	✓		✓			
SO_x		✓			✓	
$PM_{2.5}$			✓			
Mechanism for Including EE in SIP						
Weight of Evidence	✓				✓	
Voluntary Bundle – DC region SIP			✓			
SIP Credit – EE treated as an independent control measure						
Other -Incentive for EE in SIP based program		✓				
Data sufficient?						
for Weight of Evidence	yes				yes	
for SIP credit	no		no		no	
Other -Incentive for EE in SIP based program		yes				
EE not in SIP						
Interested in incorporating EE in SIP?				✓		✓
Aware of program administrator Reports				✓		
Barriers Identified						
SIP credit criteria				✓		✓
Budget Constraints						
Consistent calculation (emissions factor)				✓		
Cap and trade complications						✓
Treatment of Imports/Exports				✓		
Needs – All States Interviewed						
Regional modeling to account for EE benefits			✓		✓	✓
Interagency Collaboration			✓		✓	✓
EPA approved process for EE incorporation	✓	✓	✓	✓	✓	✓
Energy Savings Data from Program Administration reports		✓	✓			✓
Awareness – Wholesale FCMs						
Requirements for EE as a resource	✓					
GHG Reporting						
RGGI	✓	✓	✓		✓	
Climate Change Action Plan	✓	✓	✓	✓		

The states would like to be able to claim SIP credit as the next step, but are struggling with the SIP credit enforceability requirement. In particular, air quality regulators from New Jersey raise the issue that efficiency programs are voluntary and they cannot claim SIP credit because they are uncertain if they can rely on these savings in future years. If the savings were enforceable, then New Jersey air regulators would consider applying for SIP credit in the future because the forecasting tools are available for them to predict the avoided emissions. EPA currently uses the Integrated Planning Model (IPM) to forecast regional energy use and emissions from the electric power sector. Being familiar with this model, New Jersey regulators hope to incorporate efficiency into the regional model, and that EPA could accept the analyses and results to support SIP credits due to energy efficiency.

(2) States that Do Not Currently Incorporate Efficiency Benefits in SIP

The group of regulators interviewed who do not include efficiency impacts in SIPs see energy efficiency as an increasingly important tool for reducing air emissions, and are interested in exploring opportunities to fully realize its benefits. Many of these states would like to or are planning to include the effects of energy efficiency in their SIP. All air quality regulators in this group expressed interest in process-related support from EPA to overcome several significant barriers preventing them from claiming SIP credit for efficiency programs:

- Difficulty satisfying all SIP credit requirements
- Separating out effects of electricity imports and exports (significant in Northeast states)
- Regional and interagency coordination

Air regulatory interviews revealed a mix of awareness and/or usefulness with regard to annual statewide or program administrator energy efficiency reports, including a) being not at all aware of available energy efficiency reported data, b) being of the opinion that little/no data are currently available due to recent development of a new state multi-year efficiency plan, or c) being aware that data are reported to the public utilities commission.

Air regulators from four states that do not currently incorporate efficiency in their SIPs indicated they would like the program administrators to calculate avoided emissions due to efficiency with input from the air quality agency. Additionally, they would like an audit trail to follow to support the credibility of the program administrator calculations. It is the opinion of the authors, however, that passing along the responsibility of calculating emissions impacts to program administrators is not advisable. Currently there is no agreement between EPA and air quality regulators on how emission impacts should be calculated. Due to the dependence on location, season, time of day, and other variables, the uncertainty involved in calculating emissions impacts from energy savings is quite large and is complicated by the lack of consensus on which emissions factors to use, determining which generators are affected by the energy savings, and the efficiency and fuel mix of those generators as a function of time.

Common to all air regulators interviewed is a desire for an EPA-approved process for guaranteeing SIP credits because the air quality regulators want their efforts documenting the impacts to pay off. They would like EPA to issue guidance on preferred ways to treat efficiency (as baseline, WOE, or SIP credit) and how to account for complications arising from cap-and-trade programs (such as credit retirement and ownership of credits).

(3) Treatment of Greenhouse Gases

With regard to carbon dioxide (CO_2)/greenhouse gases (GHG), most air quality regulators mentioned the Regional Greenhouse Gas Initiative (RGGI), and their responses indicated that reporting requirements vary from state to state. For example, in New Jersey, three different agencies implement and report how RGGI proceeds are spent along with the resulting GHG reductions according to NJ rule 727d. In contrast, for Connecticut the Energy Conservation Management Board reports GHG impacts to the Department of Public Utilities Control (DPUC). RGGI proceeds go into the system benefits pool for various conservation and load management programs in Connecticut and the resulting emissions avoided are then reported for those

programs. Additionally, Connecticut has a climate change action plan headed up by the governor's steering committee, which also reports GHG emissions impacts from energy efficiency programs.

Many states have also passed their own legislation dealing with climate change, such as the Massachusetts Global Warming Solutions Act and the New Jersey Global Warming Response Act. There is currently no formal process for assessing GHG emissions impacts, but some states, such as Maryland, expressed interest in incorporating GHG emissions into their SIPs. Many interviewees remarked that this is currently a work in progress, with one example being New Hampshire, where there is a dedicated team from University of New Hampshire developing the best means to assess emissions impacts of energy efficiency and renewable energy projects. In general, air quality regulators see energy efficiency as an important tool for mitigating greenhouse gases as frequently reflected in state climate change action plans, and going forward, it is expected that there will be increased scrutiny to demonstrate the impacts of energy efficiency on reducing GHG emissions.

Recommendations

The study team produced three sets of recommendations from its research, which are reflected in the Forum *Statewide Energy Efficiency Reporting Guidelines.* First is process recommendations captured in Table 3, which focus on specific actions needed by key organizations/stakeholders to advance the effective incorporation of energy efficiency into air quality reporting and planning. Key to these actions are further clarifications and guidance needed from US EPA on incorporating energy efficiency into air quality planning activities, and to improve interagency coordination and between program administrators and air regulators.

Table 3. Recommendations to Provide Process Related Support to Air Regulators

Organization	Action
EPA	Determine best approach(es) for incorporating EE emissions benefits into air quality regulatory programs
EPA	Create a mechanism to ensure enforceability of EE programs
EPA	Develop transparent, consistent and simplified methodology for air regulators to account for benefits
PUCs, PAs, DEPs	Coordinate with air regulators (DEPs) to identify best processes for sharing EE data
EPA, DEPs	Establish NO_x allowance set-aside process
DEPs	Retire NO_x allowances on behalf of EE program accomplishments
Air Regulators	Coordinate with regulators from other states or hold best-practice roundtable

The second set of recommendations focus on best vehicles for sharing energy efficiency data between program administrators and air regulators. Certain data, such as energy and demand savings impacts, are recommended for inclusion in statewide reporting templates. Air regulators can use these data to analyze annual emission impacts and develop emission forecasts. Air regulators, utility regulators and program administrators together can collaborate to identify detailed data needs that are too cumbersome and inappropriate for statewide reporting purposes.

These might include joint studies (e.g., load shape research to develop coincidence factors with HEDD), persistence studies, development of a regional database of measure/technology savings data and so forth.

The third recommendation is to clarify respective responsibilities needed to develop avoided emissions data due to energy efficiency, where air regulators' primary responsibility be to calculate the emission impacts associated with reported energy savings data reported by program administrators (using transparent and documented EM&V methods and appropriate levels of rigor, such as those developed by the Forum). The Connecticut Energy Conservation Management Board is a model example of where the Board consists of all key stakeholders, and the energy efficiency savings reported by the program administrators are trusted and used by the Connecticut DEP, to develop the emission impacts values, which in turn are reported in the program administrators' and Connecticut Energy Efficiency Fund annual reports.

Table 4. Recommendations for Air Quality Regulator Energy Efficiency Data Needs

Organization	Action
EPA	Determine best approach(es) for incorporating EE emissions benefits into air quality regulatory programs
EPA	Create a mechanism to ensure enforceability of EE programs
EPA	Develop transparent, consistent and simplified methodology for air regulators to account for benefits
PUCs, PAs, DEPs	Coordinate with air regulators (DEPs) to identify best processes for sharing EE data
EPA, DEPs	Establish NO_x allowance set-aside process
DEPs	Retire NO_x allowances on behalf of EE program accomplishments
Air Regulators	Coordinate with regulators from other states or hold best-practice roundtable

Conclusion and Next Steps

As suggested by the preceding discussion, large variations exist in the processes, data, and linkages needed to support the connection between program administrator energy efficiency program reporting and accounting for the emissions impacts of such programs. None of the Forum states has a process in place that allows taking SIP credit for emissions reductions due to energy efficiency programs. All air quality regulators interviewed indicated a strong interest in solving the problem of accounting for emissions reductions from energy efficiency programs, but there are fundamental policy issues that have to be addressed to permit that to happen.

To ensure that stakeholders are aware of these issues and the options for addressing them, the Forum's next steps include coordinating efforts with US EPA, EPA Region 1, and the Northeast States for Coordinated Air Use Management (NESCAUM) to implement the recommendations above, and to monitor the progress of state and regional efforts working in this area. These activities include educating policymakers, and supporting the establishment of processes to foster sharing of best practices and energy efficiency information.

In addition to specific steps that NEEP and Forum states can take, there is a perception that EPA needs to take further action to provide a complete and coherent regulatory structure. This is recognized by Forum stakeholders as a key impediment to fully accounting for the emissions benefits of efficiency programs. As a result, air regulators are interested in launching a concerted effort by key parties (EPA, air regulators, program administrators, RTOs) to come to

some agreement on the best way to recognize the benefits of energy efficiency for air quality. These efforts will, we expect, ultimately support and apply to similar needs by states (and the region) to effectively integrate energy efficiency into climate change reporting and planning.

Acknowledgements

The authors wish to acknowledge the many stakeholders who provided input to this Forum project, including the study team (NMR Group and Cadmus Group), state air regulators interviewed, and the project subcommittee, including US EPA, EPA Region 1 and NESCAUM.

References

James, C. and Fisher, J. 2008. **Reducing Emissions in Connecticut on High Electric Demand Days (HEDD)**. http://www.synapse-energy.com/Downloads/SynapseReport.2008-07.EPA.CT-HEDD.08-020.pdf. Cambridge, Mass.: Synapse Energy Economics, Inc.

[Action Plan] National Action Plan for Energy Efficiency Leadership Group 2007. **Model Energy Efficiency Program Impact Evaluation Guide**. http://www.epa.gov/cleanenergy/documents/evaluation_guide.pdf. Washington, D.C.: U.S. Environmental Protection Agency.

[OAR] Office of Air and Radiation 2004. **Guidance on State Implementation Plan (SIP) Credits for Emission Reductions from Electric-Sector Energy Efficiency or Renewable Energy Measures**. http://www.epa.gov/ttn/oarpg/t1/memoranda/ereseerem_gd.pdf. Washington, D.C.: U.S. Environmental Protection Agency.

Northeast Energy Efficiency Partnerships, 2006. **The Need for and Approaches to Developing Common Protocols to Measure, Verify and Report Energy Efficiency Savings in the Northeast**. http://neep.org/uploads/EMV%20Forum/Protocols_report.pdf