

CREDITING CO2 EMISSION REDUCTIONS ACHIEVED THROUGH END-USE ENERGY EFFICIENCY UNDER SECTION 111(d):

A WORKABLE FRAMEWORK IS NEEDED TO TAP THE POTENTIAL OF
PRIVATE SECTOR EFFICIENCY INVESTMENTS

Authored by Honeywell, Ingersoll Rand, Johnson Controls, Schneider Electric, Siemens
and United Technologies

1/8/2014

Honeywell

IR *Ingersoll Rand*

Johnson
Controls 

Schneider
Electric 

SIEMENS

 **United
Technologies**

This paper was submitted to US EPA by the companies listed above on December 2nd, 2013

Executive Summary

EPA's 111(d) regulation should embrace the vast potential of end-use energy efficiency measures. We are six of the leading companies in the United States that manufacture energy efficient technologies and provide energy efficiency services.¹ Together our companies represent 218,000 U.S. employees, 330 U.S. manufacturing facilities, and tens of billions of dollars in annual sales of energy efficient equipment and services in the United States.

In that capacity, we urge EPA – as it develops its section 111(d) Guideline Document for regulation of carbon dioxide (CO₂) emissions from existing electricity generators – to fully capture the vast potential of State-, utility- and private sector-delivered energy efficiency (EE) actions to achieve substantial, low-cost CO₂ emission reductions.

If State plans can credit and incentivize EE measures, they not only will spur enormous amounts of cost-effective emission reductions but could also generate over 300,000 new jobs and a more efficient and productive U.S. economy.²

EPA has asked stakeholders which approaches to reducing CO₂ emissions from power plants – onsite actions at individual regulated sources, shifts in electricity generation among regulated sources, and/or offsite actions that reduce or avoid emissions at regulated sources – should be included in the evaluation of the “best system of emission reduction” (BSER) that is used to determine the performance level(s) that State plans must achieve.³ Our group does not take a position on the issue of what BSER should be used for purposes of setting the stringency of the performance levels for State plans.

¹ The companies putting forward this framework are: Ingersoll Rand, Johnson Controls, Honeywell, Schneider Electric, Siemens and United Technologies.

² According to Deutsche Bank, a significant scale up of energy efficiency investment could yield 3.3 million job years. Rockefeller Foundation & Deutsche Bank Group Climate Change Advisors, *United States Building Energy Efficiency Retrofits: Market Sizing and Financing Models*, 28 (March 2012). Synapse Energy Economics Inc. has used 10 years as the average duration of an energy efficiency job. Rick Hornby et al, *Avoided Energy Supply Costs in New England*, A-39 (Aug., 2009), <http://www.mass.gov/eea/docs/dpu/energy-efficiency/avoided-energy-supply-costs-in-new-england/2009-av-eng-scs.pdf> Based on these calculations, 3.3 million job years correspond to 330,000 jobs.

³ EPA, Considerations in the Design of a Program to Reduce Carbon Pollution from Existing Power Plants (September 20, 2013 version), 3, at <http://www2.epa.gov/sites/production/files/2013-09/documents/20130923statequestions.pdf>.

However, regardless of the BSER assumptions and the performance level, we strongly believe that the EPA Guideline Document should specifically allow States to credit EE activities in their compliance plans. Furthermore, the Guideline Document should provide clear guidance to the States on permissible means of integrating EE measures. Integrating EE measures will lower the cost of meeting *any* CO₂ performance standards for existing electricity generating units.

Build on existing State and utility programs, and private sector capabilities. EPA's Guideline Document should build on the many successful existing State- and utility-established EE programs. Importantly, beyond the existing State- and utility-established programs lies substantial potential for increased investment in EE measures. To fully realize this potential, EPA should encourage the expansion of existing State and utility programs – and also recognize the well-established evaluation, measurement, and verification (EM&V) protocols and energy management systems (EnMS) currently used in the private sector to measure energy savings from sales of energy efficient equipment and from EE projects in homes, buildings, and industrial facilities.

In addition, the section 111(d) policy for EE measures must be adaptable and future-looking. The EE sector is highly innovative, so EPA should keep an open door to approval of new EE programs, EM&V and EnMS protocols, and crediting mechanisms in the years to come.

General Policy Principles. Part B of this paper outlines general principles for incorporating EE into section 111(d) policy. The key points are:

1. End-use energy efficiency should be an available means of compliance with the section 111(d) requirements.
2. The Guideline Document should provide guidance to States on presumptively approvable EE provisions in State compliance plans.
3. Existing State and utility programs should be recognized and scaled up.
4. Mechanisms for crediting private-sector-delivered energy efficiency activities, in addition to State and utility activities, should be available.
5. EE can and should be credited in both rate- and mass-based compliance systems.
6. Criteria for approving EE elements of State plans should prioritize environmental rigor, administrative ease, and adaptability.

Key Elements of an EE Crediting Mechanism. Part C of this paper provides recommendations on the key elements of any EE crediting mechanism for private sector-delivered EE measures.

- 1. Crediting Energy Savings from Sale of Highly Efficient Energy-Efficient Appliances and Equipment.** Building on “deemed savings” systems in existing State and utility-run programs, this mechanism would issue credits for sales of highly energy efficient appliances and equipment.
- 2. Crediting Energy Savings from Facility Energy-Efficiency Projects.** This mechanism for crediting major EE investments under a section 111(d) compliance plan can build on widely accepted approaches already implemented in the private sector for major energy-efficiency projects. The key policy elements are:
 - i. *Project start date:* EE measures commenced after the date that EPA proposes the Guideline Document should be eligible for credit.
 - ii. *Protocols for Determining Energy Savings:* The Guideline Document should include a clearinghouse of pre-approved EM&V and EnMS protocols based on State and industry best practices, but also provide criteria for approval of other protocols.
 - iii. *Recordkeeping, Recording, and Auditing of Energy Savings:* The Guideline Document should allow States to audit or sample projects to affirm energy savings, including through independent, non-governmental auditors.
 - iv. *Crediting Period:* The Guideline Document should allow an EE measure to earn credits for a period of five years. States should be allowed to accept longer periods for earning credits from efficiency measures in appropriate circumstances, including for installations of long-lived equipment for which energy savings are subject to periodic verification.
 - v. *Credit Issuance:* The Guideline Document should require entities involved in an EE measure to designate in their application for credit how credits should be distributed.
- 3. Converting energy savings to emission reductions:** Regardless of the compliance mechanism, methodologies for converting energy savings to emission reductions should strike a reasonable balance among the priorities of precision, administrative ease, and investment predictability.

* * * * *

May 31st, 2013

EPA and the States face substantial challenges in developing a cost-effective CO₂ regulatory program for existing electricity generating units under the Clean Air Act. We strongly urge EPA and the States to tap the vast potential of investments in end-use energy efficiency to provide low-cost emission reductions under such a program. This paper outlines both policy principles and specific design elements for crediting EE activities in a manner consistent with the requirements of the Clean Air Act. Our group of companies is prepared to offer our experience and expertise as a resource to EPA and the States throughout this rulemaking and in the State plan development process.

A. Background

The Environmental Protection Agency (EPA) is preparing to propose a rule to guide the State establishment of carbon dioxide (CO₂) performance standards for existing electricity generating units under section 111(d) of the Clean Air Act. There are many perspectives about how EPA can best enable State flexibility and creativity in giving electricity generating units a menu of compliance paths that reduce compliance costs while maintaining environmental rigor. Regardless of the stringency of any performance standards, integrating end-use energy efficiency (EE) measures as a means of compliance will dramatically lower the costs of regulation both for regulated entities and consumers.

1. Who We Are

As large multinational manufacturers of high efficiency equipment and technology and providers of efficiency retrofits and services for buildings and facilities,⁴ we can assist in the development of compliance mechanisms for EE measures under section 111(d). We have decades of experience in the energy efficiency market, with many billions of dollars invested, and thousands of customers satisfied with our delivery, measurement, verification and assurance of energy savings. Together our companies represent 218,000 U.S. employees, 330 U.S. manufacturing facilities, and tens of billions of dollars in annual sales of energy efficient equipment and services in the United States.

We therefore have first-hand knowledge about the immense opportunity that energy efficiency can provide in reducing emissions and the barriers that policy-makers will need to address to make sure end-use efficiency results in measurable and verifiable emissions reductions. With that foundation, we propose a framework and set of policy design principles to help EPA and the States best take advantage of energy efficiency as a tool for regulatory compliance.

2. Understanding the Opportunity of EE as a Climate Change Mitigation Policy

As one of the least expensive CO₂ emissions reduction opportunities, end-use energy efficiency can and should play a critical role in helping the United States meet its

⁴ The companies putting forward this framework are: Ingersoll Rand, Johnson Controls, Honeywell, Schneider Electric, Siemens and United Technologies.

climate policy objectives. EE is already playing a significant role in reducing CO₂ emissions.

EE has significant and unique benefits as a means of reducing CO₂ emissions. First, EE is available at low cost. In a 2013 paper, the American Council for an Energy-Efficient Economy (ACEEE) estimates that the average cost of energy savings is \$0.025 per kWh, which is significantly lower than the cost of additional generation, which is \$0.07 and \$0.15 per kWh.⁵

In addition, EE is available wherever there are energy consumers – and therefore throughout the country. Including EE as a compliance mechanism can reduce the disparity of available and cost-effective compliance tools across regions. Finally, EE provides significant environmental co-benefits. For example, EE programs can be integrated into State Implementation Plans for conventional pollutants.⁶ Solving the policy design challenges in this context presents an opportunity for States to recognize the environmental benefits of efficiency in meeting other Clean Air Act requirements. Such opportunity exists equally either within a rate-based or a mass-based approach to curbing CO₂ emissions.

While end-use EE has many benefits as a means for reducing CO₂ emissions, and many programs exist to encourage its deployment, current government and utility programs barely scratch the surface of EE potential. For example, Deutsche Bank and the Rockefeller Foundation estimate that there is \$279 billion in potential investment to increase the efficiency of existing buildings in the United States, which could save \$100 billion in energy costs and mitigate more than 600 million metric tons of CO₂ per year.⁷ Similarly, the Rhodium Group estimates that there is the potential for \$189 billion in net savings in 2030 from a doubling of energy productivity in buildings and industry, resulting in a reduction of 786 million tons of CO₂ emissions.⁸ The American Council for an Energy-Efficient Economy estimates that systems-based “intelligent efficiency” in the

⁵ Seth Nowak, et al., *Leaders of the Pack: ACEEE’s Third national Review of Exemplary Energy Efficiency Programs*, Rept. No. U132, at 3 (June 2013), <http://www.aceee.org/sites/default/files/publications/researchreports/u132.pdf>.

⁶ EPA, *Roadmap for Incorporating Energy Efficiency/Renewable Energy policies and Programs into State and Tribal Implementation Plans*, EPA-456/D-12-001a (July 2012), <http://www.epa.gov/airquality/eere/>; see also John Shenot, *Quantifying the Air Quality Impacts of Energy Efficiency Policies and Programs*, Regulatory Assistance Project (Aug. 2013), available at <http://www.raponline.org/document/download/id/6680>.

⁷ Rockefeller Foundation & Deutsche Bank Group Climate Change Advisors, *United States Building Energy Efficiency Retrofits: Market Sizing and Financing Models*, 13 (March 2012).

⁸ Trevor Houser, Rhodium Group, *American Energy Productivity: The Economic, Environmental, and Security Benefits of Unlocking Energy Efficiency*, at 10, 16 (Feb, 2013), http://rhg.com/wp-content/uploads/2013/02/RHG_AmericanEnergyProductivity.pdf.

commercial and industrial sectors could produce \$55 billion worth of energy savings annually by 2035.⁹

Therefore, EE's ability to contribute to reducing the cost of compliance with CO₂ performance standards will be a function of whether robust compliance mechanisms are made available in the EPA section 111(d) Guideline Document and State compliance plans. Ensuring such mechanisms are available will require proactive and thoughtful policy design.

B. General Principles for Incorporating End-Use Energy Efficiency into Section 111(d) Policy

1. End-Use Energy Efficiency Should Be an Available Means of Compliance with the Section 111(d) Requirements.

The section 111(d) regulations should authorize end-use energy efficiency activities as an available means of compliance. Specifically, EPA's section 111(d) Guideline Document should make clear that State compliance plans may include policies allowing regulated electricity generating units to use emission reduction credits associated with reduced demand caused by EE activities to meet their obligations.

EPA and the States have already done important work (*e.g.*, through the EPA Roadmap for Incorporating Energy Efficiency/Renewable Energy Policies and Programs into State and Tribal Implementation Plans) in opening the door for EE as a Clean Air Act (CAA) compliance mechanism. However, the limited mechanisms and modest engagement to date of energy efficiency as a compliance tool has allowed EE investment to have only a marginal role in CAA programs. If energy-efficiency is going to meet its enormous potential to lower the cost of CO₂ reductions at existing electricity generating unit, business as usual will not be sufficient. Programs that incorporate EE as a CAA compliance tool must be significantly scaled up.

EPA has asked stakeholders which approaches to reducing CO₂ emissions from power plants – onsite actions at individual regulated sources, shifts in electricity generation among regulated sources, and/or offsite actions that reduce or avoid emissions at regulated sources – should be included in the evaluation of the “best system of emission reduction” (BSER) that is used to determine the performance level(s)

⁹ Ethan A. Rogers *et al.*, Intelligent Efficiency: Opportunities, Barriers and Solutions, ACEEE Rept. No. E13J, 34 (Oct. 2013) <http://www.aceee.org/sites/default/files/publications/researchreports/e13j.pdf> .

that State plans must achieve.¹⁰ Our group does not take a position on the issue of what BSER should be used for purposes of setting the stringency of the performance levels for State plans.

However, regardless of the BSER assumptions and the performance level, we strongly believe that the EPA Guideline Document should specifically allow States to credit EE activities in their compliance plans. Furthermore, the Guideline Document should provide clear guidance to the States on permissible means of integrating EE measures. Integrating EE measures will lower the cost of meeting *any* CO₂ performance standards for existing electricity generating units.

2. The Guideline Document Should Provide Guidance to States on Presumptively Approvable EE Provisions in State Compliance Plans.

In order for States to embrace EE as a compliance mechanism – and for EE to meet its substantial potential for generating low-cost emission reductions – States need reasonable predictability about what kinds of approaches to EE in State compliance plans will be approved by EPA.

However, EPA’s guidance should not inadvertently stifle innovation in EE policies, technologies, business models, or other solutions – which could unlock even more low-cost emission reductions. EE is a rapidly evolving area. The convergence of energy infrastructure and information technology is enabling a new generation of verifiable and sustainable EE solutions. Private sector performance-based solutions driven by new energy management systems will facilitate collection of verifiable data that will drive continued energy savings in complex systems. For this reason, it is important to ensure that the section 111(d) regulatory program provides scope for ongoing learning and innovation.

We recommend that the Guideline Document include both: (1) a list of presumptively approvable, reasonably detailed EE policy mechanisms for State compliance plans (including mechanisms for private sector-delivered projects); and (2) criteria EPA will use to approve other EE mechanisms submitted by States.

3. Existing State and Utility Programs Should be Recognized and Scaled Up.

¹⁰ EPA, Considerations in the Design of a Program to Reduce Carbon Pollution from Existing Power Plants (September 20, 2013 version), 3, at <http://www2.epa.gov/sites/production/files/2013-09/documents/20130923statequestions.pdf>.

States and utilities have invested significantly in energy efficiency. These utility and State programs have many advocates and supporters for good reason. States should be allowed and encouraged to include in their section 111(d) compliance plans both State-run and PUC-approved, utility-run efficiency and demand response programs. In this way, States can take advantage of the policies and expertise they have already developed. Examples of State and utility programs that have been recognized as exemplary are available in the ACEEE report *Leaders of the Pack: ACEEE's Third National Review of Exemplary Energy Efficiency Programs*.¹¹

However, given the size of the challenge, simply continuing successful, established State and utility programs will not drive sufficient EE investment to address the current need. Accordingly, EPA's Guideline Document should allow and encourage States to scale up these programs.

The EPA Guideline Document should provide simple mechanisms for States to include such programs as an element of their compliance plans, and thereby encourage expansion of such programs where they exist and adoption of such effective programs where they are not yet in place.

4. Mechanisms for Crediting Private Sector-Delivered Energy Efficiency Activities Should be Available.

Private sector-delivered EE investments have the potential to significantly reduce energy use and therefore CO₂ emissions. Companies like ours regularly manufacture and sell new equipment and technologies that use significantly less energy.

We also work with large energy users in a number of market segments – including institutions such as municipal buildings, universities, schools, and hospitals; large commercial buildings; residential buildings; and industrial plants – to engineer and install systems of energy efficiency measures, technologies, demand response, and energy management. These systems result in – and are often contractually guaranteed to produce – substantial reductions in the customer's overall energy use. Already, these major efficiency projects are typically subject to monitoring requirements, and therefore produce highly measurable and verifiable results.

For more complex projects involving large buildings and industrial facilities, existing and evolving international and national standards provide a proven approach to plan, manage, measure, and continually improve energy performance. Energy

¹¹ Seth Nowak, et al., *Leaders of the Pack: ACEEE's Third National Review of Exemplary Energy Efficiency Programs*, Rept. No. U132, at 3 (June 2013), <http://www.aceee.org/sites/default/files/publications/researchreports/u132.pdf>.

management systems, such as under ISO 50001, provide transparent systems for measuring and verifying annual improvements in energy performance – particularly when coupled with facility-specific measurement protocols such as the Department of Energy’s Superior Energy Performance protocol.

It is important to recognize that market economics are not sufficient for energy efficiency to reach its full potential. End users typically expect a pay-back of EE investments of no more than 3-4 years, even when the activity will yield energy savings for a decade or more.¹² Accordingly, without upfront incentives, end users will fail to make the most of existing energy saving equipment, technologies and practices. Significant opportunities remain to deepen the penetration of energy saving projects in all market segments, including in those segments that have been historically most receptive to them, such as energy service contracts in the municipal, university, schools, and hospitals segment.¹³ According to a Lawrence Berkeley National Laboratory report, “barriers to implementing performance contracts remain high in private sector commercial and industrial facilities,” resulting in a penetration rate of less than 10%.¹⁴

For these reasons, we urge EPA to specify in its Guideline Document that it will approve State compliance plans that incorporate and credit the full range of EE measures, including verifiable activities and projects implemented by the private sector. Beyond State-run and utility-run EE programs, we propose that EPA affirmatively allow two additional compliance mechanisms to provide incentives for private-sector energy efficiency activities:

- *Credit savings from the sale of highly energy efficient appliances and equipment.* By providing credit for sales of high efficiency equipment, consumers will be encouraged to purchase these more efficient items, resulting in energy savings and emission reductions at regulated electricity generating units.
- *Crediting Energy Savings from Facility Energy Efficiency Projects.* Major energy-efficiency projects, including the sophisticated energy efficiency upgrades we provide for owners of large buildings and facilities, can reduce energy use significantly. Service providers are already responsible for measuring, monitoring, verifying, and, in many cases, sustaining the resultant energy savings over long

¹² Institute for Building Efficiency, 2012 Energy Efficiency Indicator: Global Results, 7 (June 2012), <https://www.multivu.com/players/English/55309-johnson-controls-2012-energy-efficiency-indicator-global-survey/flexSwf/impAsset/document/74daad4d-2de3-41db-89c4-ae65c3c92ab1.pdf>.

¹³ Elizabeth Stuart, et al., Lawrence Berkeley National Laboratory, *Current Size and Remaining Market Potential of the U.S. Energy Service Company Industry*, 34 (Sept. 2013).

¹⁴ *Id.*

periods of time. With the right policy design, providing credit for these projects represents an opportunity to drive very large emission reductions at low cost.

In some instances, 111(d) credits will be available for EE activities that also qualify for incentives under State or ratepayer funded programs (e.g., tax credits, utility rebates). As companies that implement EE activities, part of our job in such cases will be to optimize the activity considering all available incentives, thereby scaling up the resulting energy savings. To avoid double counting of 111(d) credits, it will be important to develop simple methodologies for fair attribution of energy savings in circumstances in which there are multiple incentives.

In any event, the energy savings from private-sector-delivered actions offer a large amount of efficiency not captured in either current utility offerings or State-run efficiency programs. It is critical that the energy savings from such private sector investments are credited in the section 111(d) compliance regime. In Section C, below, we provide recommendations for specific policy elements to ensure that these private sector-delivered actions result in measurable and verifiable reductions in energy use and emissions.

5. EE Activities Should Be Credited in Both Rate- and Mass-Based Compliance Systems.

We recognize that EPA faces the question of whether to frame performance standards in terms of a required emission rate (e.g., lbs. CO₂/MWh) or a mass emissions limit (e.g., tons CO₂/yr). Some entities advocate that EPA set the emission guidelines on a rate basis, but also offer interested States a means to convert requirements to a mass-based obligation.

We do not take a position on whether EPA must or should adopt a rate-based or mass-based approach. Our view is that EE measures can and should be credited under either approach. However, each approach requires a different EE crediting mechanism. Accordingly, we urge EPA in the Guideline Document to outline these mechanisms in order to provide guidance to States.

If regulated electricity generating units are subject to rate-based performance standards, it is possible and necessary to integrate EE activities through a system of tradable credits. Absent such crediting, there would be no incentive for end-use energy efficiency – because even though EE measures reduce CO₂ emissions, they do not necessarily reduce emission rates at the electricity generating unit. Specifically, electricity generating units could purchase credits representing the emission reductions resulting from EE measures, which they could use to offset their total emissions.

Electricity generating units would then calculate their emissions rates using their emissions net of credits and their actual energy output.

If regulated electricity generating units are subject to mass-based performance standards, EE-specific policies are still necessary. Some have asserted that a mass-based system by itself provides sufficient incentive for EE activities. This is incorrect. One common misimpression is that a mass-based system will result in higher electricity prices, which in turn will drive EE investments. However, it is well established that a range of barriers prevent end-users from making EE investments in response to higher prices.¹⁵ Accordingly, absent more direct policies to incentivize EE measures, there is a risk that a mass-based system simply would raise electricity prices without spurring significant EE investment.

In addition, it is erroneous to assume that, under a mass-based system, owners of particular electricity generating units will have incentives to make direct investments in end-use EE measures. A unit owner has no way of knowing whether an EE activity will reduce emissions at its unit or some other unit. For this reason, even in those States currently operating under a mass-based cap, the emissions limit itself is unlikely the driver of emission reductions through energy efficiency. These States have seen fit to adopt complementary EE-specific policies in order to achieve their CO₂ emission targets at low cost.

EE measures under a mass-based system could take the form of allowance set-asides or, as in some of the Regional Greenhouse Gas Initiative States, use of allowance auction revenues to directly fund EE programs. Some groups are developing other innovative policy ideas for integrating EE measures into State mass-based programs.¹⁶

¹⁵ See Kenneth Gillingham, Richard G. Newell, and Karen Palmer, Resources for the Future, *Energy Efficiency Economics and Policy*, 7, <http://www.rff.org/documents/rff-dp-09-13.pdf> (discussing market barriers to energy efficiency deployment including “underinvestment in energy efficiency relative to . . . the socially optimal level”).

¹⁶ In a recent proposal to the State of California, a coalition of organizations has outlined a means of ensuring that EE activities would get the benefit of upfront State funding through the State’s cap-and-trade program. Under the proposed approach, a building or facility would develop an EE project, which would be verifiable and contractually based. A qualified energy firm would review and aggregate EE investments in hundreds or thousands of buildings and then sell the associated CO₂ reductions into the State’s cap-and-trade market. The revenues would be returned to the building owners in order to help finance the projects, and to facilitate deeper energy and emissions savings. The owner would have two financial streams to offset the investment: 1) the operating savings from the reduced energy consumption, and 2) the value of the avoided emissions.

All such policy approaches should ensure that there is a sufficient incentive for cost-effective EE investments while avoiding double-counting.

We urge EPA to include in the Guideline Document guidance to the States on approvable EE crediting mechanisms under either rate-based or mass-based approaches.

6. Criteria for Approving EE Elements of State Plans Should Ensure Environmental Rigor, Administrative Ease, and Adaptability.

The Guideline Document should outline the following criteria for evaluating EE elements in State compliance plans:

Environmental Rigor. We believe that EE activities should be creditable only if the energy savings are quantifiable, enforceable, and sustainable, and result from new investments. We also believe that EE crediting policies should preclude double-counting. The Guideline Document should identify best practices for measuring, monitoring, and verifying energy savings and resulting emission reductions. It should also identify accepted systems for trusted data, voluntary reporting, and industry standard business practices, while providing the flexibility for new systems to evolve.

Administrative Ease. Overly onerous administrative requirements will be difficult for States to manage, resource-intensive for EPA to approve, and expensive for EE providers to comply with—resulting in under-investment in worthwhile EE activities. One need only look at the example of the set-aside for EE activities in the Acid Rain Program, which established such onerous criteria that it was more or less unused. Furthermore, it is important to recognize that the degree of precision that might be necessary for criteria or toxic pollutant policies – where even small differences in reductions can translate into significant health impacts – is not necessary for policies addressing greenhouse gas emissions.

Adaptability. We believe it makes sense for EPA to provide for periodic review of its Guideline Document and State plans. Such reviews can ensure that the latest advancements in measurement protocols are incorporated in compliance plans. These reviews would also provide a mechanism for the sharing of best practices among States and systematic evolution of the section 111(d) regulatory program as it applies to EE activities. Finally, if periodic reviews are used to determine the extent to which credited activities have delivered emission reductions, it is important to ensure that any resulting corrections or adjustments are applied prospectively.

C. Policy Design Elements for Crediting of Private-Sector EE Activities

As discussed above, we urge EPA to ensure that the Guideline Document provides specific guidance to the States on approvable mechanisms for crediting private sector-delivered EE activities. This section provides recommendations for how EPA might preapprove and the States might implement particular policy elements for crediting private sector-delivered EE activities related to equipment sales and building/facility energy upgrades, applicable in either a rate-based or mass-based regulatory program.

1. Crediting Energy Savings from Sale of Highly Energy Efficient Appliances and Equipment

Many State and utility energy efficiency programs provide models for determining energy savings from many discrete installations of highly energy efficient products. In these programs, rather than measure energy use over a baseline for each individual appliance or piece of equipment, energy savings are stipulated based on assumptions of how and how long the equipment will be used. By averaging energy savings for particular appliance and equipment sales over a geographic area, however, uncertainty can be minimized.

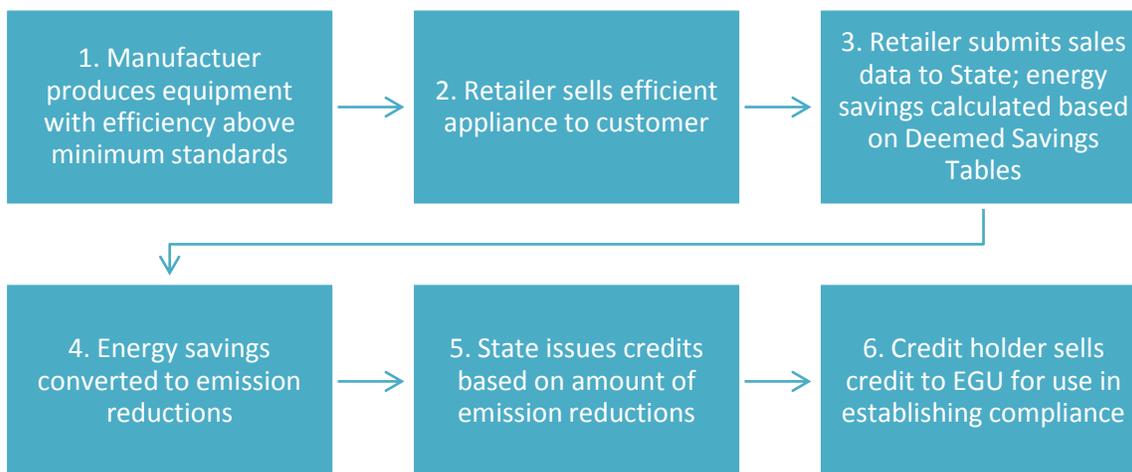
Accounting for the sale of energy-efficient appliances and equipment by private parties would operate similarly and with established, time-tested, and reasonably simple approaches to crediting. This mechanism could build on the stipulated energy savings values that States already have developed for these programs (*e.g.*, “deemed savings” tables). By approving this mechanism, EPA would merely allow States to extend the use of existing accounting tools.

Figure A illustrates one example of the steps involved in crediting sales of highly efficient equipment under a State section 111(d) compliance plan.

End users are unlikely to be well situated to be credit sellers, so credits would presumably be issued to retailers with the value of the credit reflected in a discounted retail price. Issuing credits to wholesalers and OEMs is another possible option.

Note that if a State has an existing program that issues credits for sales of highly efficient equipment – such as some existing Energy Efficiency Resource Standards – it is important to ensure that the State does not issue two credits for the same reduction.

FIGURE A

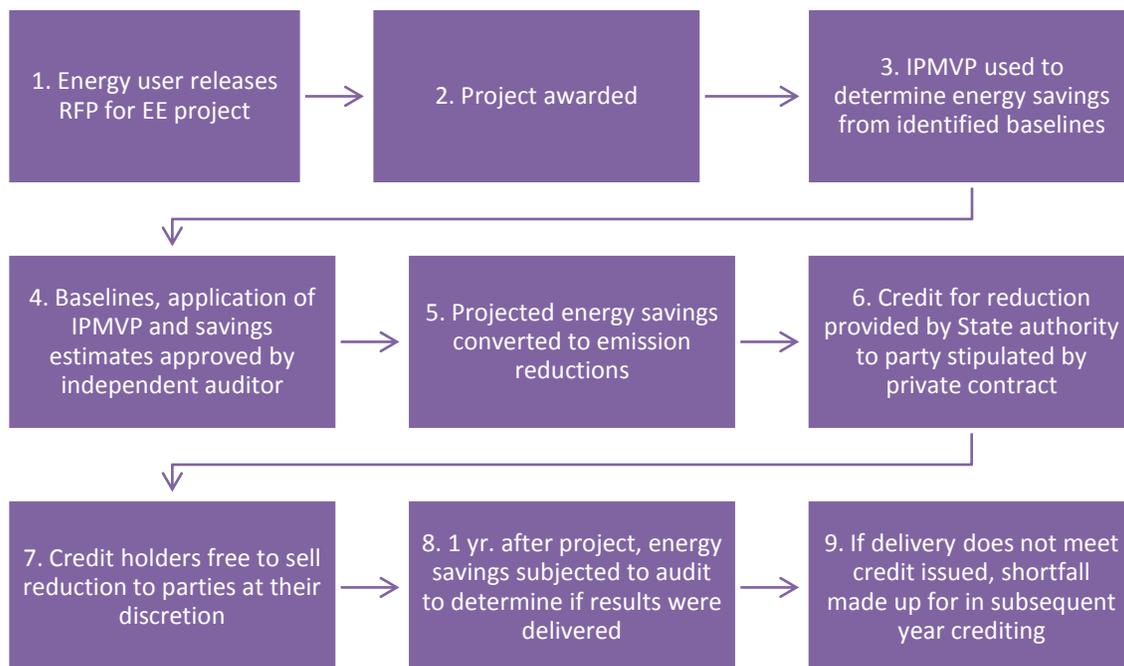


2. Crediting Energy Savings from Facility Energy-Efficiency Projects

This mechanism for crediting major EE investments under a section 111(d) compliance plan can build on widely accepted approaches already implemented in the private sector for major energy-efficiency projects. EPA should allow and encourage States to build on existing protocols for energy savings measurement, monitoring, verification, and reporting that are part of typical facility energy-efficiency retrofit projects while providing additional procedures needed to translate energy savings into emission reductions.

Figure B illustrates the steps involved in crediting a private-sector EE project under a State section 111(d) compliance plan.

FIGURE B ¹⁷



What follows is a discussion of policy design principles for this project crediting cycle.

i) Project Start Date

We recommend that EPA allow States to issue credits to EE sales made or projects commenced after the date that EPA proposes the Guideline Document. The rationale for this start date is that it is reasonable to presume that such sales and projects are responsive to the section 111(d) regulation. In addition, this approach avoids an outcome in which providers suspend or defer possible EE projects or consumers defer possible efficient appliance purchases until a later date in order to ensure they earn credits. Re-commissioning and retro-commissioning of buildings involves significant new interventions to achieve EE benefits and should also be encouraged and credited.

ii) Protocols for Energy Savings Determination

¹⁷ This process flow is an updated, more clear version of the one previously transmitted to EPA on Dec. 2nd, 2013.

EM&V protocols exist for various types of projects, and new and improved protocols are under development. Accordingly, we recommend EPA include in the Guideline Document a list of pre-approved EM&V protocols drawn from international standards, existing State-developed protocols and industry best practices, but also provide criteria for approval of other EM&V protocols that may be submitted by States.

For example, we recommend that EPA pre-approve the International Performance Measurement and Verification Protocol (IPMVP). IPMVP is internationally recognized and widely adopted. This standardized approach for measuring and verifying savings facilitates contractual agreements between providers of energy efficiency savings and their customers. In addition, IPMVP serves as a foundation for utility programs. IPMVP provides four basic MMV options for various applications. The full IPMVP standard is available from the Efficiency Valuation Organization (EVO),¹⁸ with supporting materials and analysis provided through Lawrence Berkeley National Lab.¹⁹

We also recognize that the Department of Energy is working on the Uniform Methods Project, a standardized set of EM&V protocols for specific EE actions. While most of the measures developed to date do not apply to institutional or industrial energy users, we expect further development of these protocols over time.

For more complex solutions at large commercial buildings and industrial facilities, a more flexible system of tracking and verifying energy savings should be allowed, such as Energy Management Systems under the ISO 50001 standard. EPA should consider a pre-approved menu of protocols to quantify facility-specific energy savings for enterprises utilizing EnMS. One example is the Department of Energy's Superior Energy Performance protocol, a measurement and verification protocol coupled with required certification by accredited third- parties.

iii) Recordkeeping, Recording, and Auditing of Energy Savings

State EE programs should have mechanisms for recordkeeping, recording, and auditing of savings. For the purposes of recordkeeping and recording of baseline and continual energy use, policymakers should utilize as an initial foundation tools that already exist and have seen significant commercial adoption. For example, EPA runs a free voluntary online tool, Portfolio Manager, that provides a means of tracking and assessing building energy consumption for commercial real estate. This tool is already in use, and is even required in some jurisdictions. New York City's Greener Greater

¹⁸ EVO, Products – IPMVP at http://www.evo-world.org/index.php?option=com_content&view=article&id=272&Itemid=504&lang=en.

¹⁹ Lawrence Berkeley National Laboratory, Measurement & Verification Portal, at <http://mnv.lbl.gov/>.

Buildings Plan requires large buildings to “benchmark” their energy consumption each year and to file energy use data through Portfolio Manager.²⁰ EPA tools such as Portfolio Manager could inform the development of a national and/or State registry program.

Finally, it may be important for States to implement auditing or sampling programs to verify the performance of EE projects. The Guideline Document should allow States to audit energy use data themselves, or to utilize independent non-governmental auditors.

iv) Crediting Period

A key issue in the crediting process is the time period after which a particular EE action is assumed to save energy and thus earn credits. As with many policy questions, the crediting period involves a balancing of priorities.

To be sure, crediting for a longer period promotes investment in EE activities and certainty for investors in EE measures. However, it is important to recognize that the savings achieved from any particular measure may become more uncertain over time.

With these principles in mind, the Guideline Document should make clear that EPA will approve a crediting period of five years for an EE action. A five year crediting period will allow efficiency investors to capture significant benefits of their projects while hedging against the possible erosion of environmental benefits over time. States willing to provide for auditing and verification of savings from long-term energy performance contracts should be able to grant credits for the life of a long-term contract. Similarly, credits for long-lived equipment should not be constrained to five years if certified energy savings extend beyond that period.

Regardless of the length of the crediting period, EPA should encourage States to maximize investment certainty by approving State plans that provide a commitment at the start of a project for the number of credits to be issued over the crediting period.

v) Credit Issuance

In our view, it is not necessary (and likely not workable) for the Guideline Document to specify criteria for determining which of the potentially multiple entities involved in an EE project should receive the credits. It is sufficient simply to require that the entities involved in a project designate in their application to the State how credits

²⁰ PlaNYC, Green Buildings & Energy Efficiency, LL84: Benchmarking, at <http://www.nyc.gov/html/gbee/html/plan/ll84.shtml>.

should be distributed, and to ensure that the same credit is not issued to two different entities.

This agnostic approach will make it possible for the entities involved in a project to work out among themselves – in accordance with their commercial interests – how credits from the project should be distributed. The approach could facilitate investment by financial entities who may be well positioned to market credits to the regulated electricity generators. Finally, the approach will free the State regulators from reviewing contracts or attempting to apply complicated criteria for determining which entity was the prime mover behind a project.

Another issue related to credit issuance is avoiding double-counting. Some States may already have program that issue credits for EE projects in the built environment, including some existing Energy Efficiency Resource Standards. As discussed above, it will be important to ensure that such States do not issue two credits for the same reduction.

3. Converting Energy Savings to Emission Reductions

A critical element of the crediting process is translating energy savings (as determined through deemed savings or MMV protocols) into emission reductions.

We recognize that determining the emission reductions resulting from energy savings potentially can involve a number of complicated determinations related to the time of day and time of the year of the energy savings and the generation patterns in the relevant power market. We understand that various methodologies are under development to make such calculation, such as EPA's efforts to develop the AVERT model. At this time, we do not have a preference for a particular methodology. However, we do have views on how to evaluate such methodologies for purposes of a section 111(d) program.

First, any approach should balance the benefits of more precise determinations with the costs of collecting the data needed to apply it. CO₂ emissions are global pollutants that impact our environment on a long time scale. Some uncertainty as to the exact emissions reductions associated with energy savings should be an acceptable tradeoff for dramatically lowering the costs of compliance with section 111(d) requirements. Requirements for determinations of detailed, hour-by-hour energy savings and determinations of hour-by-hour marginal plant emission rates, for instance, could impose significant administrative and compliance burdens without necessarily resulting in meaningful additional levels of environmental protection.

Second, data and analysis requirements on energy efficiency providers should not be so onerous as to make efficiency projects uneconomical. Determining hour-by-hour energy savings is not the norm and can be very expensive to implement.

Third, complicated *ex post* determinations of emissions reduced from particular energy efficiency projects are likely to create too much uncertainty as to the emissions reduction value of any efficiency project. While efficiency providers and end users have some level of control over the amount of energy saved in any particular time period, they do not have similar control over or foreknowledge of the dispatch of the grid. It will therefore be difficult to make investment decisions if the number of credits awarded for a project is unknown until after dispatch decisions are made. This will further reduce the incentive for energy efficiency.

Rather than require *ex post* evaluations of investment decisions, EPA should rely instead on the periodic review and updating of State plans to ensure that the mechanisms outlined here for energy efficiency are resulting in real energy savings and emission reductions on a prospective basis.

* * * * *

EPA and the States face substantial challenges in developing a cost-effective CO₂ regulatory program for existing electricity generating units under the Clean Air Act. End-use energy efficiency can be a critical resource in this rulemaking. We strongly urge EPA and the States to tap the vast potential of investments in end-use energy efficiency to provide low-cost emission reductions under such a program.

This position paper outlines both general policy principles and specific design elements for crediting EE activities in a manner consistent with the requirements of the Clean Air Act. Our recommendations urge EPA to encourage, and States to adopt, compliance plans that provide for crediting of emission reductions resulting from end-use energy efficiency investments. To this end, we provide views on a number of key EE crediting policy issues.

Our group of companies is prepared to offer our experience and expertise as a resource to EPA and the States throughout this rulemaking and in the State plan development process.