Comments on the EPA's Proposed Federal Plan and Model Trading Rules

Docket ID No. EPA-HQ-OAR-2015-0199

Southwest Energy Efficiency Project (SWEEP)

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BACKGROUND

The Southwest Energy Efficiency Project (SWEEP) is a non-profit organization that advances energy efficiency in Arizona, Colorado, Nevada, New Mexico, Utah and Wyoming. SWEEP has worked on building up energy efficiency (EE) policies and programs in these states for over 13 years. We work closely with nine investor-owned utilities and a number of publicly-owned utilities on the design, implementation and evaluation of all types of energy efficiency programs; we work with state policy makers and public utility commissions on utility energy efficiency policy; and we work with state energy offices and other state agencies on building energy codes, financial incentives, financing programs and other state programs to advance more efficient energy use. In short, we are "in the trenches" and we have a wealth of real world energy efficiency policy and program experience that informs the comments provided below.

SWEEP applauds the Environmental Protection Agency (EPA) for supporting energy efficiency as a compliance strategy in the Clean Power Plan and encouraging each state to consider energy efficiency as an option for achieving their emissions rate reduction goals. Furthermore, SWEEP appreciates that states are allowed to include a wide range of energy efficiency policies and programs in their emissions reduction implementation plans.

Including energy efficiency prominently, as the EPA has done, will enable states and utilities to meet the emissions reduction goals at least cost and potentially with net economic benefits for households, businesses and the economy as a whole. Indeed, the EPA estimates that CO_2 emissions will decline 32% by 2030 from 2005 levels and that net benefits will be in the range of $26-45 billion.

When looking at the potential benefits from best practice utility energy efficiency programs in Arizona, Colorado, Nevada, New Mexico, Utah and Wyoming during the 2010-2020 time period, we found that 2.0% annual energy savings are possible, 28,000 jobs could be created in the region, and households and businesses could obtain nearly $20 billion in net benefits (economic and public health).[1] This savings potential is from utility efficiency programs only; it does not include

[1] H. Geller et al. The $20 Billion Bonanza: Best Practice Electric Utility Energy Efficiency Programs and Their Benefits for the Southwest. Boulder, CO: Southwest Energy Efficiency Project. Oct. 2012. http://www.swenergy.org/programs/utilities/20BBonanza.html

potential savings from building codes, state appliance and equipment efficiency standards, state financing or financial incentive programs, or other non-utility policies and programs.

In addition to the economic and public health benefits mentioned above, residential energy efficiency efforts can increase occupant comfort, improve health and safety factors, increase property values, and provide some financial relief to low and middle income households. Commercial and industrial programs can increase worker comfort and productivity, reduce waste in production processes, and lower environmental compliance costs. All of these efforts also conserve our water resources, something that is a significant and growing concern in the Southwest.

SWEEP is an active participant in discussions in the Southwest regarding the energy efficiency provisions in EPA's proposed Clean Power Plan rule. In addition, we are assisting Southwest states and utilities as they prepare their state plans, in particular to help them incorporate strong, cost-effective energy efficiency policies and programs into their plans.

While we applaud EPA's general support of energy efficiency in the Clean Power Plan, we are deeply concerned about the lack of support for energy efficiency in the Proposed Federal Plan and, by extension, in the Model Trading Rules as applied to states subject to a Federal Plan. Our comments address this issue as well as a few other aspects of the Proposed Federal Plan and Model Trading Rules.

These comments were prepared under the leadership of Howard Geller, SWEEP's Executive Director. He was assisted by Ann Livingston, Program Manager for State and Local Engagement and Neil Kolwey, Senior Associate, Industrial Program. Questions regarding the comments should be sent to Howard Geller at hgeller@swenergy.org or Ann Livingston at alivingston@swenergy.org. These comments represent the views of the staff of SWEEP and not those of individuals or organizations represented on SWEEP's Board of Directors. For more information on SWEEP, please visit www.swenergy.org.

COMMENTS AND RECOMMENDATIONS

While we support the EPA's proposal in general, we also believe that there are some areas that should be modified, clarified, or strengthened in order to best meet the goals of the Clean Power Plan (CPP) at least cost as well as support state level goals, programs, and regulatory requirements. Our comments are presented below for the most part in the order that they are brought up in the Proposed Rules, with reference to the page numbers in the Federal Register notices published October 23, 2015.

Federal Plan

1. The Proposed Federal Plan Should Provide Support for Energy Efficiency as a Compliance Option

SWEEP has a significant concern regarding the Proposed Federal Plan and Model Trading Rules due to the fact that they don't include Emissions Rate Credits (ERCs) or allowances for energy efficiency measures/programs. Research by the Lawrence Berkeley National Laboratory and ACEEE shows that at a range of about 2 to 5 cents per kilowatt-hour (kWh) and an average of 2.8 cents per kWh, energy efficiency programs cost two to three times less than generating power from traditional sources.[2] Expanding energy efficiency efforts is the least cost strategy for reducing utility sector CO_2 emissions.

However, energy savings from energy efficiency efforts, even with appropriate EM&V, are not eligible for ERCs in the proposed emissions rate-based federal plan. This contrasts to the CPP Final Rule which allows ERCs for energy efficiency measures/programs with appropriate EM&V for states that submit an acceptable rate-based plan to the EPA. This lack of consistency should be corrected—the EPA should allow states and utilities to obtain ERCs for energy efficiency measures/programs with appropriate EM&V in the case where a state is achieving compliance with rate-based standards through the federal plan process.[3]

"The EPA requests comment on the inclusion of various types of demand side EE as eligible measures for ERC issuance under the federal plan, such as state and utility EE programs, project based demand-side EE, state building codes, state appliance standards, and conservation voltage reduction."[4] SWEEP believes that these measures and others should be included as eligible measures, just as they are under other Clean Power Plan provisions. For example, in many of the states we serve, building codes are adopted locally and not at the state level; the states we serve also have a strong marketplace supported by non-utility programs and policies implemented by local governments, non-profits, and the private sector. Allowing for utility and non-utility programs that are state administered or approved allows for an appropriate level of support for energy efficiency as the least cost compliance option (see SWEEP's Clean Energy Incentive Program comments, Attachment A, and SWEEP's comments on the EM&V Guidance, Attachment B).

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[2] Megan A. Billingsley, Ian M. Hoffman, Elizabeth Stuart, Steven R. Schiller, Charles A. Goldman, and Kristina LaCommare, *The Program Administrator Cost of Saved Energy for Utility Customer-Funded Energy Efficiency Programs*, Lawrence Berkeley National Laboratory (2014), https://emp.lbl.gov/sites/all/files/lbnl-6595e.pdf. See also Maggie Molina, *The Best Value for America's Energy Dollar: A National Review of the Cost of Utility Energy Efficiency Programs,* Washington, DC: ACEEE, 2014, aceee.org/research-report/u1402.

[3] 80 Fed. Reg. 64990, Oct. 23, 2015, "Proposed Rule: Federal Plan Requirements for Greenhouse Gas Emissions From Electric Utility Generating Units Constructed on or Before January 8, 2014"

[4] Id at 64994.

A related concern is that the proposed mass-based federal plan includes emissions allowance set-asides for the Clean Energy Incentive Program (CEIP) and for renewable energy generators, but not for energy efficiency in general (outside of the CEIP). If emissions allowance set asides are included in the mass-based federal plan, it would be reasonable to include some allowance set asides for energy efficiency measures and programs with each state. States should also be given the authority to distribute them to programs and/or measures that generate legitimate energy savings should they pursue a state allowance-distribution option. SWEEP provides recommendations on set aside options below.

Additionally, the process required to include new demand-side energy efficiency measures should be the same under the Federal Plan as the process required to include new measures in state plans (see below as well).[5] This creates consistency across plan types, promotes emissions reductions, and supports a robust trading marketplace. It also streamlines a transition from a federal plan to state plan compliance path should a state choose to do so.

CHP and WHP

We acknowledge that EPA desires to simplify and streamline the implementation of a federal plan, since EPA will need to administer a federal plan on behalf of a state. Including energy efficiency and CHP in the federal plan will help ensure that it provides for the lowest cost emission reduction options. As described below, relying on the EM&V Guidance and independent verification requirements in the rule provide an efficient and reliable path for inclusion of CHP and WHP in a Federal Plan.

Emission rate credits (ERCs) are awarded to resources that produce electricity more cleanly than the target emission rate. Non-renewable resources can earn ERCs if they "deliver energy to or save electricity on, the electric grid."[6] Notably, the final rule's emission guidelines (EGs) explicitly identify CHP and WHP as resources that qualify for the issuance of ERCs in rate-based state plans.[7] Accordingly, CHP and WHP should likewise be included as eligible measures in the rate-based model rule and EPA should include CHP and WHP ERCs should it develop a rate-based federal plan. In fact, EPA has already proposed detailed requirements and an accounting mechanism for CHP and WHP in the rate-based model rule, both of which are simple to apply. Below we provide our recommendations on exactly how the credits for CHP and WHP should be calculated. EPA can efficiently conduct evaluation, measurement, and verification for CHP and WHP projects in a federal plan using the same approach, although we ask EPA to address certain flaws in its proposed credit quantification methodology as described below.

[5] Id at 64995.
[6] 80 Fed. Reg. at 64950.
[7] *Id.* (§60.5800(4)(v)) ("What other resources qualify for issuance of ERCs?") (listing "A non-affected combined heat and power unit, including waste heat power").

2. The EPA Should Rely on the EM&V Requirements to Support Demand Side Energy Efficiency in the Federal Plan as it Has With the Other Compliance Paths

The EPA has requested comment on how an ERC issuance process would apply to other measures, including energy efficiency, under the rate-based Federal Plan should such additional measures be considered eligible under the final guidelines.[8] SWEEP does not see any reason why the measures eligible under state plans should not be eligible under a rate-based or mass-based Federal Plan. EPA staff has stated that data access and verification are concerns that led to demand side energy efficiency not being included in the proposed Federal Plan—lack of authority for the EPA to act in the place of a state PUC was also raised.[9] However, this can easily be addressed by requiring compliance with the EM&V requirements that apply under state plans including using independent third party verification as is already proposed under the EM&V Guidelines and Model Trading Rules (see below in reference to the Model Trading Rules). In fact, in many states verification processes will need to be expanded or a new process will need to be adopted as many energy efficiency program and project providers are not regulated by the state PUCs. This can be implemented if a state wants to make use of energy efficiency, CHP or WHP as a compliance strategy, regardless of whether a state is complying with the CPP through a state plan or federal plan.

3. EPA Should Allow States to Choose Either a Mass-based or Rate-based Federal Plan

The EPA has indicated that it will choose only one approach, either a rate-based federal plan or a mass-based federal plan, for the final federal plan and has solicited comment on which approach is preferable.[10] In our view, it would be reasonable for EPA to issue both rate-based and mass-based federal plan options and then allow a state to choose one or the other. However, if the state refuses to choose between the two options, the EPA can and should make the designation. In this case we recommend that EPA choose the mass-based approach for the state given that implementation of this approach is simpler and will be easier to monitor and enforce. For the same reason, we recommend that the EPA choose the mass-based approach if the EPA decides it is not able or does not want to allow states to choose between a rate-based and mass-based Federal plan options (i.e., if the EPA decides to support only one compliance option through the Federal Plan).

4. Transitioning from Federal Plan to State Plan Should be Facilitated

The EPA has requested comments on the ability of states to transition from a federal plan to a state

[8] Id.
[9] Region 8 Stakeholder Meeting, 12/09/15.
[10] Id 64969.

plan or replace federal plan allocations with a state allowance-distribution methodology.[11] SWEEP supports allowing states to transition from a federal plan to a state plan or to a state allowance-distribution methodology if they desire to do so.

The EPA has also requested comment on the timing for transitioning from a federal plan to a state plan with respect to allowance distribution considerations. "The EPA proposes that a mass-based trading federal plan could only be replaced by a state plan for a future compliance period for which allowances have not yet been recorded."[12] SWEEP agrees that this approach is sound as it supports certainty for regulated entities and provides for a smooth transition. Transitioning during a period within which allowance distributions have already occurred would create additional complexities, particularly if the transition includes a transition from mass-based compliance to rate-based compliance (or vice versa).

Model Trading Rules

1. General

SWEEP is concerned that EPA has proposed not allowing ERC trading between states with a state developed rate-based plan and states that end up with a rate-based federal plan via the FIP process, should the Federal plan be based on or allow for a rate-based approach. This trading should be allowed as long as the rate-based plans are equivalent (i.e., EGUs of a particular type have the same emissions rate standard in different states). This would enhance the scope and potentially the effectiveness the trading marketplace by allowing more states to participate.

2. A Broad Range of Energy Efficiency Measures Should be Supported in the Model Trading Rules Such That They are Consistent with the Final Rule and EM&V Guidance

SWEEP has consistently encouraged the EPA to include a broad range of energy efficiency measures in the Clean Power Plan and the EPA has done much to support energy efficiency as a compliance option in general. However, the Model Trading Rules reflect a more limited set of energy efficiency options than the Final Rule indicates are available as compliance options. The Model Trading Rules definition of energy efficiency should be clarified and expanded in order to make it consistent with the Final Rule.

The Model Trading Rules include the following definition:

> Examples of potentially eligible demand-side EE program and project types include:

[11] Id at 65029.
[12] Id.

• Publicly or utility-administered EE programs, including those implemented in low-income residences and facilities.

• Project-based EE evaluated site-by-site, for example those implemented by ESCOs at commercial buildings and industrial facilities.

• State and local government building energy code and compliance programs.

• State and local government incremental product energy standards.[13]

This is narrower and less inclusive than the programs and measures supported in the Final Rule which states:

> "EE measures, for the purposes of this section, may consist of EE measures installed as the result of individual EE projects, such as those implemented by energy service companies, as well as multiple EE measures installed through an EE deployment program (e.g. appliance replacement and recycling programs, and behavioral programs) administered by electric utilities, state entities, and other private and non-profit entities. EE measures, for the purposes of this section, may also consist of state or local requirements that result in electricity savings, such as building energy codes and state appliance and equipment standards. Other interventions that result in electricity savings may also be considered an EE measure for the purposes of this section, provided the intervention can be specified and quantified and verified in accordance with EM&V requirements in the emission guidelines."[14]

Additionally, SWEEP believes that in general the EM&V guidance is helpful and clearly presented. However we have a number of substantive recommendations that we present by program type. Our comments under building energy codes in particular are intended to make the guidance easier to implement and more cost effective for states and local jurisdictions, while providing what we believe to be appropriate energy savings credit. (See Attachment B for SWEEP's comments on the EM&V Guidance.)

Demand-Side EE Programs

Section 3.1 of the draft Guidance includes lists of common direct action and indirect action programs. The list of indirect action programs should include "Upstream incentives provided to retailers, distributors, and/or manufacturers." This type of program has proven to be a very effective strategy for stimulating greater adoption of certain energy efficiency measures such as LED lamps and high efficiency air conditioning equipment, and is growing in popularity. In

[13] 80 Fed. Reg. 65007
[14] 80 Fed. Reg. 64901, "Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units; Final Rule"

addition, the applicable guidance for indirect action programs should include the same EM&V methods that are specified for direct action programs; i.e., project based measurement and verification and deemed savings, in addition to comparison group approaches. All three approaches can be applied to upstream incentive programs where information is available or can be obtained on consumers that obtained energy efficiency measures through this type of program.

Building Energy Codes

Section 3.3 of the draft guidance discusses evaluation of building codes. Building codes are one of the major energy efficiency policies states and local jurisdictions can use to advance greater energy efficiency. However, the potential for states and local jurisdictions to receive energy savings credits for their building code efforts is almost entirely nullified by footnote 58 on page 41 of the draft guidance which states that "adopting codes that the federal government has already determined to be cost-effective cannot be used for compliance with EPA's emissions guidelines." **We strongly recommend that the EPA delete this provision.** Under existing law, the U.S. DOE is supposed to speedily review model energy codes for energy savings and cost-effectiveness. Thus this footnote leaves only a small time window for states or local governments to receive credit for energy savings resulting from the adoption and enforcement of new building codes – at most the window extends from when a model code is published until when DOE determines the code to be cost-effective.

Furthermore, even when DOE determines that a code is cost-effective, it does not mean that states or local governments must adopt this code. Many states or local governments are slow to adopt new model energy codes and some states never adopt these codes, for reasons other than cost effectiveness. In practice, adopting model energy codes is not mandatory even when DOE indicates that a new code is cost effective from a national perspective. There are no adverse consequences if a state does not adopt a new code and even DOE recognizes that in some states "home rule" laws prohibit adoption of a mandatory code at the state level. Allowing states and local governments to receive ERCs for adopting new building codes would provide further incentive to spur such adoption.

Likewise, numerous utilities including APS, SRP, Xcel Energy, Rocky Mountain Power and Public Service Company of New Mexico in our region implement building energy code support programs. Utilities that implement such programs should be able to obtain ERCs for energy savings after appropriate EM&V is performed, whether or not the DOE has determined that the energy code is cost-effective at the national level. In addition, both code adoption advocacy and support efforts as well as efforts to improve code compliance should be eligible for ERCs.

It is also important to recognize that the type of restriction indicated in footnote 58 of the guidance document is not applied to other energy efficiency measures or programs that DOE may find to be cost-effective, such as LED lights or other lighting efficiency measures that are promoted through

demand-side programs, ESCO projects and the like. It would be inconsistent to apply the restriction to building energy codes and not other policies or measures. Moreover, the restriction should not be applied to any energy efficiency policies or measures unless they are explicitly mandated by federal law such as through new federal appliance or equipment minimum energy efficiency standards.

In addition, we have concerns about the portion of Section 3.3.2 of the draft guidance which directs states to document NOMAD (naturally occurring market adoption) and then use NOMAD to establish a Common Practice Baseline (CPB). This requirement would be complicated and costly for many states or local governments to comply with, and is not something they normally do or contemplate doing in conjunction with adoption and enforcement of building energy codes. This provision could inhibit the adoption of stronger building energy codes if states are unwilling or unable to comply with this requirement, in those states that adopt a rate-based approach to Clean Power Plan compliance.

Instead, we recommend that EPA provide guidance on what states can presumptively use as a CPB for determining code savings, and we have a specific recommendation in this regard. For the first new code adopted after the publication of the final Rule, we recommend that whatever energy code a state or local jurisdiction had in place as of the date of publication of the CPP Final Rule in the Federal Register be used as the baseline. If a state or local jurisdiction had no energy code in place, then common practice as of this date would need to be documented. Then for subsequent code revisions, the baseline for the new code would be the prior code, as suggested on page 39 of the draft EM&V guidance. In addition, programs that focus on improving code compliance and that can document energy savings based on appropriate EM&V following the guidance should be eligible for energy savings credits or allowances under the federal plan.

Effective Useful Life and Persistence of Savings

EPA requires that EM&V Plans address how the duration of EE program or project electricity savings will be determined, using industry 'best-practice' protocols and procedures involving annual verification assessments, industry-standard persistence studies, deemed estimates of effective useful life (EUL), or a combination of all three. We note that Chapter 13 of the Uniform Methods Protocols, Assessing Persistence and Other Cross-Cutting Methods Protocols, provides a helpful discussion of the data/benchmarking approach and periodic field studies. We support all of the methods identified by EPA, but expect many states to ultimately rely most heavily on industry-standard persistence studies and deemed estimates.

In the past, utilities have tended to not analyze EE measure life and energy savings persistence because of the costs and inherent research challenges presented, particularly by long lived measures. In addition, utilities have primarily focused on first year energy savings in the past. A number of industry-standard survival curves have been published and make it easier for utilities

and states to estimate EUL for common measures. We recommend that the guidance document support the use of and provide references to these curves.

Some utilities or regions have conducted meta-analyses and other cross-cutting studies to estimate EUL and/or energy savings degradation over time for commonly used measures or collections of measures (e.g. HVAC system improvements). We recommend that the EPA encourage greater use of this approach. Also, states or utilities that currently lack such studies should be allowed to reference and use measure life or savings persistence studies from other states or utilities, as long as there are no apparent reasons why EUL or energy savings degradation would vary from state-to-state or utility-to-utility.

CHP and WHP

States will undoubtedly look to the model rule as a starting point in designing their own compliance plans. By providing for ERCs from non-affected CHP and WHP units in the model rule, EPA can send an important signal to the states about the appropriate treatment of these resources under a rate-based approach. ERCs are intended to incentivize activities that reduce CO_2 emissions from power plants. EPA should seek to promote greater investment in CHP and WHP because these technologies have additional benefits when compared to other compliance options, including cost-effectively reducing CO_2 emissions and enhancing electric reliability. Moreover, there is significant potential for expanding the adoption of CHP and WHP systems throughout the country.

The Proposed Accounting Approach for Non-Affected CHP Undervalues Its Emissions Benefits and Should Be Modified

The final rule recognizes that non-affected CHP and WHP units can generate ERCs. The EPA acknowledges the need to provide technical assistance to help states include CHP in their plans,[15] and that the rule seeks to provide some of this initial guidance. The proposed model rule for a rate-based emission-trading program includes an accounting method for determining the ERCs from non-affected CHP units. EPA suggests that this accounting method could be a "presumptively approvable accounting approach."[16] EPA seeks comment on the proposed accounting method.[17]

We believe that the proposed approach significantly undervalues CHP's emission benefits and thus fails to create an adequate incentive for increasing investment in CHP. Our comments suggest an

[15] 80 Fed. Reg. at 64705 ("In particular, the states requested training on how to use programs such as combined heat and power … to reduce carbon emissions. The EPA will continue to work with states to tailor training activities to their needs").
[16] 80 Fed. Reg. at 64902.
[17] *Id.* ("the agency has provided detailed requirements for the issuance of ERCs for CHP, and we request comment on these requirements for inclusion in the federal plan.")

alternative approach that would more accurately account for the CO_2-free MWhs generated by CHP, while still creating an appropriate incentive for new projects.

As EPA recognizes in the final rule, the accounting approach must both "take into account the fact that a non-affected CHP unit is a fossil fuel-fired emission source, as well as the fact that the incremental CO_2 emissions related to electrical generation from a non-affected CHP unit are typically very low."[18] EPA lays out its approach for determining ERCs from non-affected CHP in the final rule:

> [A] non-affected CHP unit's electrical MWh output that can be used to adjust the reported CO_2 emission rate of an affected EGU should be prorated based on the CO_2 emission rate of the electrical output associated with the CHP unit (a CHP unit's "incremental CO_2 emission rate") compared to a reference CO_2 emission rate. This 'incremental CO_2 emission rate' related to the electric generation from the CHP unit would be relative to the applicable CO_2 emission rate for affected EGUs in the state and would be limited to a value between 0 and 1.[19]

The final rule does not define the phrases "reference CO_2 emission rate" or "applicable CO_2 emission rate for affected EGUs." Instead, these terms are defined in the model rule, and thus remain open to public comment.

The proposed rate-based model rule provides that a non-affected CHP unit's electrical output be prorated as follows:[20]

> *Prorated MWh = (1 – (Incremental CHP electrical emission rate / Applicable affected EGU emission rate standard)) * CHP MWh output*

The approach EPA prescribes in the final rule for determining the "incremental CHP emission rate" is based on the avoided emissions approach. We support the use of this approach and believe that it appropriately accounts for the modest increase in on-site emissions associated with a CHP system. Under this approach, the incremental emissions rate is calculated by subtracting from the measured emissions of the CHP system the emissions that would have been produced on-site to provide the same thermal output without the CHP system, such as from a boiler. These incremental emissions are then divided by the net electric output of the CHP system to calculate the incremental emissions rate.

Thus:

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[18] *Id.*
[19] 80 Fed. Reg. at 64902 (emphasis added).
[20] 80 Fed. Reg. at 64990.

Incremental Emission Rate = (Annual CHP CO_2 Emissions – Annual Displaced Boiler CO_2 Emissions) / (Annual CHP Electricity Output)

The incremental emission rate is then inserted into the previous formula to determine the prorated output (MWh) for a CHP system. That, in turn, determines the number of ERCs to be awarded to a CHP installation.

As noted above, the final rule does not define the terms "reference CO_2 emission rate" or "applicable CO_2 emission rate for affected EGUs," which is used in the denominator of the proration formula. However, the proposed model rule outlines a detailed approach for determining CHP ERCs under a rate-based plan and defines the term "reference CO_2 emission rate" in a footnote as the "the applicable CO_2 emission rate standard is in Table 6 of this preamble."[21] Table 6 is presented below:

Table 6. Glide Path Interim Performance Rates (Adjusted Output-Weighted-Average Pounds of CO_2 Per Net MWh From All Affected Fossil Fuel-Fired EGUs)

Technology	2022-2024 Compliance Rate	2025-2027 Compliance Rate	2028-2029 Compliance Rate	Final Rate
SGU or IGCC	1,671	1,500	1,380	1,305
Stationary combustion turbine	877	817	784	771

It is unclear from EPA's Table 6 whether the "applicable CO_2 emission rate" is intended to refer to the interim glide path performance rates or the final targets for SGU or stationary combustion turbines. We understand however that the "reference CO_2 emission rate" for natural gas CHP is intended to be the performance rates for stationary combustion turbines in Table 6 above (i.e., 817 lbs/ MWh in 2025-2027).[22] While we support EPA's adoption of the avoided emissions approach to determine the incremental emissions rate, we are concerned that the applicable reference CO_2 emission rate proposed in the model rule significantly undervalues the emissions benefits of a CHP system and will – as a practical matter – eliminate CHP as a potential compliance option.

To illustrate the impact of EPA's proposed approach, Table 2 calculates the incremental emissions rate for two typical natural gas CHP systems, a 1 MW gas engine and a 7 MW gas turbine. As shown, the incremental CO_2 emissions rate for these systems calculated using the avoided emissions approach described above ranges from 519 to 665 lbs/MWh.

[21] *Id.* at n. 64.
[22] Personal communication, Jennifer Kefer *et al* with EPA staff (including Neeharika Naik-Dhungel, Christopher Sherry, Christian Fellner, Matt Clouse), Sept. 25, 2015.

Table 2 - Incremental CO_2 Emissions for Typical CHP Units[23]

CHP System Type	1 MW Recip. Engine	7 MW Gas Turbine
Net Electrical Efficiency	36.8%	28.9%
Total CHP Efficiency	78.5%	70.4%
Incremental CO_2 Emissions Rate (lb/MWh)	519	665

As shown in Table 3 below, applying the glide path interim performance rates for stationary combustion turbines (i.e., 817 lbs/ MWh in 2025 - 2027) to the incremental CO_2 emissions of the typical systems depicted in Table 1 yields a prorated output eligible for ERCs ranging from 19% to 36% of the CHP system output.[24] This approach undervalues the actual CO_2 emissions benefits of CHP, and it also places CHP at a significant disadvantage compared to energy efficiency and renewables, which would receive ERCs for their full electrical output.

Table 3 - Percent of CHP Output Credited Using EPA's Proposed Approach

CHP System Type	1 MW Recip Engine	7 MW Gas Turbine
Incremental CO_2 emissions rate (lb/MWh)	519	665
2025 – 2027 Compliance Rate for Stationary Combustion Turbine (Table 6)	817	817
Percent of CHP Output (MWh) Credited	**36.4%**	**18.6%**

We believe that EPA has chosen to compare CHP to the natural gas target rate because it has characterized CHP as a "low-emitting generation resource,"[25] and believes that it must therefore treat CHP in the same manner that it treats all other "low-emitting generation resources." The final rule allows affected EGUs that perform better than the emission standard to generate ERCs, and we agree that ERCs for such units should be calculated based on the specific emission rate target for those affected units. However, unlike high-performing affected natural gas generating units,

[23] Based on typical performance for a 1.12 MW reciprocating engine and a 7.04 MW gas turbine from U.S. EPA, 2015, "Catalog of CHP Technologies," Tables 2-2 and 3-2 (http://www3.epa.gov/chp/documents/catalog_chptech_full.pdf).

[24] While EPA provided no specific guidance, we assume that the compliance rate to be used in the proration calculation is the applicable rate for the time period in which the ERCs are being generated. We used the 2025 – 2027 interim performance rates in this calculation as a general illustration of the impact of the proposed approach on CHP ERCs.

[25] *See* 80 Fed. Reg. at 64902 ("CHP units are low-emitting electric generating resources").

non-affected CHP units do not have specific emissions targets and therefore do not need to be compared to a specific emission standard. Instead, the emissions benefits from CHP can be converted to an equivalent amount of zero-emission MWh generated by using a "reference emissions rate" that reflects the emissions rate of affected EGUs being displaced by non-affected CHP, similar to the way that MWhs of savings from demand-side efficiency results from reductions in generation from affected units. In fact, CHP is the *only* non-affected low-emitting generation resource identified in the rule. As such, concerns about consistent treatment are unwarranted.

EPA's proposed "reference rate" for CHP systems suffers from two key flaws:

1. It compares the CHP output to natural gas generation, rather than the generation that is most likely to be avoided due to CHP deployment; and
2. It compares the CHP output to emission rate targets, rather than actual emission rates.

We do not believe it is appropriate to base the proration of the electrical output from a natural gas CHP system on the compliance goals for stationary combustion turbines. Instead, we believe EPA should define the reference rate using actual affected EGU emissions data from the previous calendar year. We propose two alternative approaches for EPA to consider. Both of these approaches would more accurately account for the actual emission reductions from CHP and increase the value of ERCs for CHP over EPA's proposed approach. The two approaches for reference CO_2 emissions rate determination that we recommend the EPA consider are:

1. The average affected EGU emission rate for the eGRID subregion in which the CHP project is located;
2. The average affected EGU emission rate for each state.

These options are described in detail below. Table 4 (p. 11) summarizes the reference rates and percent of credited CHP output under each option. We recommend the EPA select one of these approaches and direct states to use it in determining the ERCs from CHP projects. Selecting one approach that all states are required to use will avoid states "cherry picking" the most favorable approach in their case and will lead to greater consistency in methodology among states in the ERC trading marketplace.

The data on actual affected EGU emission rates will be readily available during the compliance period, since states must submit emissions data to EPA as part of their Clean Power Plan compliance. Under these options, EPA would update the reference rate each year, sorting emissions (lb of CO_2) and output (MWh) from all EGU's into the appropriate eGRID subregion or state. [26]

[26] It should be relatively easy for EPA to sort the affected EGU CO_2 emissions and output into the eGRID subregions in order to calculate these average emission rates.

During the CPP compliance periods, owners of affected EGUs may adjust the dispatch orders of their generation assets to achieve targets, varying the consumption of coal and natural gas. It is fair to assume that CHP would offset emissions from a *mix* of fossil resources. Using a reference rate based on the average affected EGU emission rates for the state or regional electricity grid is a reasonable way to estimate the emissions benefits of CHP. CHP would offset fossil-based generation; it would not offset baseload nuclear or hydro, nor would it offset wind or solar resources.

Using the eGRID subregions for the average emission rates (option 1) may provide a better estimation of emissions impacts than using state averages (option 2), because there can be significant exports and imports of electricity across state borders. The eGRID subregions were defined to approximate regional power pools, for which exports and imports are minimal.[27]

However, it may be more practical to use the state-average affected EGU emissions rate, especially for states that are part of more than one eGRID subregions. While we feel that eGRID subregion level data more accurately reflects the potential emissions impact of CHP projects, the state-average EGU emissions rates would provide a reasonable proxy for the emissions savings from reduced generation from affected EGUs resulting from CHP projects. The EPA may want to choose option 2 for this reason.[28]

[27] "Fuel and Carbon Dioxide Emissions Savings Calculation Methodology for Combined Heat and Power Systems," EPA CHP Partnership, February 2015, p. 25.

[28] A third, even simpler option, would be to choose a national average emissions rate for all affected EGUs in the country. However, a uniform national rate would undervalue the CO2 emissions benefits of CHP in states or regions with a more coal-intensive resource mix, while overvaluing these benefits in less carbon-intensive states/regions.

Table 4 – Percent of CHP Output Credited Using Alternative Reference Rates[29]

Approach for Reference Emissions Rate	Reference Emissions Rate (lb CO_2/MWh)	Percentage of CHP Output (MWh) Credited	
		1 MW Recip Engine; incremental emissions rate of 519 lb CO_2/MWh	7 MW Gas Turbine; incremental emissions rate of 665 lb CO_2/MWh
EPA's proposed approach: Interim compliance goal for Gas turbines	817[30]	36.4%	18.6%
Option 1: 2025 eGRID subregional EGU emission rate	~980 - 1937[31]	47.0% - 73.2%	32.1% - 65.7%
Option 2: State 2025 EGU emission rate	~883 - 2155[32]	41.2% - 75.9%	24.7% - 69.1%

Using either of these options has several advantages compared to EPA's current approach. First, as mentioned above, using these reference rates would allow the calculated ERCs to best reflect the

[29] All of the credited percentages are calculated using the same formula, but with the various reference CO_2 emissions rates noted. The formula is:

Prorated percentage of CHP output eligible for ERCs =

1 – CHP incremental CO_2 emissions rate/Reference CO_2 emissions rate

Note that these percentages do not take into account T&D losses (for simplicity), but the actual calculation of ERCs for non-affected CHP units should do so, as noted in our comments below. This can be done by dividing the prorated percentage of CHP output by the factor: (1 - %T&D losses). Incremental emissions rates for representative CHP systems are from EPA's Catalog of CHP Technologies (2015).

[30] 80 Fed. Reg. 64990 (Table 6).

[31] This range of 980 – 1937 lb CO_2/MWh is based on several assumptions. We started with the 2012 eGRID subregional fossil emission factors, which range from 980 lb/MWh for the NPCC New England subregion to 2152 lb/MWh for the MRO West subregion. As discussed above, these factors are a good approximation of subregional EGU CO_2 emission rates (using data available now). Then we assumed by 2025 the lowest subregional fossil/EGU emission rate would stay the same, and the higher value (2152 lb/MWh) would be reduced by about 10%, to 1937 lb/MWh. These seem like reasonable assumptions for emission reductions from EGUs between now until 2025; EPA can also change these assumptions based on its own projections.

[32] This range of 883 – 2156 lb CO_2/MWh is based on several assumptions. We started with the 2012 eGRID state all-fossil emission factors, which range from 883 lb/MWh for CT to 2395 lb/MWh for MT. These factors are a good approximation of the actual state EGU CO_2 emission rates. Then, as in footnote 31, we assumed by 2025 the lowest state EGU emission rate would stay the same, and the higher value (2395 lb/MWh) would be reduced by about 10%. Again, EPA can modify these assumptions based on its own projections.

actual emissions-free MWh generated by a CHP system. Second, using the EGU emission rates would be consistent with the approach recommended by the EPA CHP Partnership for calculating avoided CO_2 emissions from CHP.[33] Third, as shown in Table 4 (below), both of these reference rates would allow a much larger portion of CHP electricity output to be counted as ERCs, thus providing CHP projects with greater incentives that are more commensurate with their actual emissions benefits.

3. ERC Time Periods Should be Established in a Manner that Supports Efficient Implementation

The EPA has requested comment on the minimum and maximum time periods for which ERCs should be issued—this is requested in the Federal Plan section of the proposed rule as well, but as this impacts the Model Trading Rule we are commenting here.[34] Issuing energy efficiency related ERCs on time intervals of less than a year may make some sense when solely considering market liquidity, however, other issues arise with shorter time periods. Most utility energy efficiency programs are evaluated and measured on a calendar year basis. Additionally, energy efficiency savings often vary throughout the year. For example, evaporative cooler programs produce savings in the summer months and lighting efficiency programs produce more savings in winter months. As a result, a one-year time period makes sense from both EM&V and transactional efficiency perspectives. Generally speaking, the annual ERC time period is likely the most cost-effective option—we support the annual issuance as EPA has proposed.[35]

On a related note, the Reporting Timeframes and Considerations section of the draft EM&V guidance discusses the issue of forward adjustments to energy efficiency measure savings as new evaluation data become available. We first note that this type of ongoing evaluation of the energy savings from energy measures over the lifetime of the measures is not typically carried out in energy program evaluation work today. Most ex-post program evaluations are done one time after a program is implemented, with annual energy savings estimates for the program and measures adjusted based on the results of the evaluation. SWEEP supports using this type of process for determining ERCs under the CPP, namely adjusting actual energy savings values after ex-post EM&V studies are completed for programs (including adjustments to savings in the year of program implementation and measure installation). This is a Best Practice if not standard practice in energy efficiency programs today.

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[33] The EPA CHP Partnership recommends using the eGRID subregional "all-fossil" CO_2 emission rates to approximate the types of generation that are most likely to be replaced by customer-sited CHP. (See footnote 36.) Using the actual emissions from regulated EGUs would be very similar to the eGRID all-fossil emissions rates, except that the data would be more current than eGRID data (which is not updated annually), and would exclude any fossil generation units smaller than 25 MW. Using the eGRID subregional averages would be the most consistent with the EPA CHP Partnership's methodology (and most accurate).

[34] 80 Fed. Reg. 64997

[35] Id at 64998-64999

4. The Mass-based Model Trading Rules Should Adequately Support Energy Efficiency

The EPA has requested comments on a number of items related to the Model Trading Rules and the mechanisms by which allowances will be distributed and managed.[36] In a mass-based compliance regime, giving out emissions allowances based on historical generation would provide little or no benefit to consumers in the form of increased support for energy efficiency and renewable energy. Distributing allowances according to one of the alternatives outlined below would increase the ability of energy efficiency and renewable energy to lower carbon emissions while increasing economic benefits for consumers. We urge EPA to add these alternatives in the model trading rules and federal plan so that states have a clear and unambiguous message that these allowance distribution methods are acceptable to the Agency and can be used by states.

We understand that under a Federal Implementation Plan, alternative allocation approaches that auction off or charge a fee for allowances may be unworkable as means of supporting energy efficiency because revenues generated might need to go to the U.S. Treasury. However, there are other ways to allocate allowances under a Federal Plan that would not require any funds to come to any governmental entity—federal or state. We feel strongly that such allocation methods should at the very least be included in the model trading rules as alternatives for states to consider. Of course, states could still consider alternative approaches that aren't in the model rules, but inclusion therein would increase the likelihood that states would consider these options. Further, inclusion in the model rules would make them presumptively approvable, again increasing the likelihood that states would consider and perhaps adopt approaches to allowance allocation that could spur renewable energy and energy efficiency, and prevent generation leakage to new power plants.

We see four main alternatives to fully distributing allowances for free to generators based on historical emissions which should be included as acceptable paths in the model trading rules:

- Auction some or all allowances to affected electric generating units (EGUs) and use some or all of the revenue to fund increased renewable energy and energy efficiency efforts.
- Allow EE/RE providers to claim allowances first for verified energy savings, and give only the remaining allowances to generators based on historical generation.
- Create an updating output-based allocation system in which all MWh generated by any source, plus MWh reduced from certified EE projects, would receive a share of allowances.
- Allow the use of allowance set-asides for energy efficiency.

All of these methods are preferable from both economic and environmental viewpoints than simply

[36] Id at 65018-65023

giving all of the allowances for free to generators, yet none of them are in the proposed model rules or federal plan. We think they should be added to the model trading rules and, where revenues would not be collected by the federal government, in the federal plan as well. Each is described below, followed by a description of a national energy efficiency registry which could help certify energy efficiency delivered under any of these approaches in state or federal plans, providing greater certainty and liquidity to facilitate states' and industry's compliance efforts.[37]

Auction Allowances

In a mass-based structure, a state may choose to distribute some or all allowances by auction, administered either through the environmental agency or an independent party. On a set schedule (e.g., annually), a fixed number of allowances would be offered for bid. In the RGGI auction example, allowances are sold directly to the generators of fossil fuel power plants connected to the grid and 25 MW or larger. Selling allowances at auction to affected EGUs would provide a direct and transparent economic signal for generators to choose between the expected auction price and the cost of reducing their own emissions. The cost of compliance is built into the generators' electricity price, wholesale (in an organized market) or retail (in a vertically integrated market).

The price of the allowances is determined by stacked offer price. In other words, the bids are "stacked" from highest to lowest bid until the volume offered is met. The lowest bid which falls within the volume offered for sale sets the market clearing price for all allowances sold.

Revenues from the auction of allowances may be used to fund complementary state administered, utility administered, or other approved energy programs that further reduce carbon dioxide, such as energy efficiency and renewable energy programs. This creates a virtuous cycle of emissions reductions that limits the cost of compliance for consumers. An independent study of the net impact on retail electricity costs to RGGI consumers was less than 1%, while reductions of CO_2 emissions reached 45%.[38]

Allow EE/RE Providers to Earn Allowances First

States could elect to enable all verified energy efficiency and renewable energy to receive allowances first[39]. Energy efficiency reduces carbon dioxide but there is a misalignment of interests, especially in a mass-based system where energy efficiency implicitly helps with compliance as opposed to rate-based where efficiency is explicitly awarded emissions rate credits. The misalignment occurs because generators generally have a disincentive for energy efficiency as

[37] In the discussion below, energy efficiency refers to eligible CHP and WHP projects as well as energy savings projects and programs.

[38] Hibbard, Paul J., et. Al. (2015). *The Economic Impacts of the Regional Greenhouse Gas Initiative on Nine Northeast and Mid-Atlantic States.* http://www.analysisgroup.com/uploadedfiles/content/insights/publishing/analysis_group_rggi_report_july_2015.pdf

[39] AJW, Inc. (2015). *Simplifying Energy Efficiency for States: Utilizing and Incentivizing Energy Efficiency-Related Greenhouse Gas Reductions Under the Clean Power Plan's Mass Based Approach.*

it lowers sales, and those that implement energy efficiency often have no compliance obligation under the CPP (industrial users, commercial building owners, distribution utilities, builders, developers, etc.). To fix this misalignment, EPA should stipulate in the model trading rule that states can issue allowances to EE/RE providers first if they so choose. Energy efficiency providers would earn allowances only for the amount of CO_2 reduced and only for projects certified in an approved state or national registry which makes sure that proper evaluation, measurement, and verification (EM&V) has occurred. This approach does require a conversion of MWh savings to avoided CO_2 emissions, in the same manner as energy savings in the CEIP in states that elect mass-based compliance. The conversion methodology can be specified in the Federal plan or left up to states in states that adopt a state plan. For example, the EPA could indicate that the conversion should be based on up-to-date average emissions rates at the regional level in the eGRID database.

Output-Based Allowance Allocation

An allowance allocation system that distributes allowances to low-emitting and/or non-emitting technologies based on their electricity output or savings could provide revenue and a competitive advantage to energy efficiency programs and projects. Called "output-based allocation," these allocation systems are likely to be a feature of mass-based state plans that only include existing sources (instead of existing *and new* sources), because they give an incentive to covered low-emitting and non-emitting technologies to increase output, which would reduce generation leakage from existing power plants to new combined cycle natural gas plants.

Output-based allocation systems distribute allowances to resources proportionately based on their share of total electricity generation (MWh). If eligible resources together produced 500 MWh of electricity, and there were 100 allowances, for each MWh of production, a project owner would earn 1/5 of an allowance. To provide an incentive for eligible low-emitting and non-emitting technologies to continue to increase production, it is important that the allocation adjust over time based on recent generation data. This is termed "updating output-based allocation."

Under an updating output-based allocation system that included energy efficiency, verified energy savings would be eligible to receive an appropriate share of the allowances allocated by the regulator. Energy efficiency providers would receive allowances based on the contribution of their energy efficiency efforts to meeting electricity demand during the covered time period (i.e., if the measures installed from 2013 to the covered time period saved 100 MWh in the covered time period, and total electricity generation was 400 MWh during the covered time period meaning the combination of generation and energy savings was 500 MWh, the energy efficiency providers would collectively receive 1/5 of the available allowances). In subsequent time periods, the contribution of energy efficiency would be adjusted based on the impact of new efforts and the degradation of past savings.

Energy efficiency providers could then earn revenue by selling these allowances to CPP compliance entities, or they could retire the allowances, further reducing emissions. Energy

efficiency as well as CHP and WHP projects, as a non-emitting or low-emitting resources, should be included in an output-based allocation system.

Energy Efficiency Set-Asides

Energy efficiency set-asides are pools of allowances that would be awarded to verified energy efficiency projects that reduce emissions. Set-asides can serve as a useful tool for incentivizing energy efficiency within a mass-based compliance structure. Among the advantages of set-asides are their relative simplicity, as well as the incentive they would provide to maximize energy savings and conduct proper EM&V. An energy efficiency set-aside could work in the following manner. The amount of allowances that are set aside in any compliance period could be distributed to providers of energy savings (either program implementers or owners of eligible energy efficiency projects that are not part of such programs) in proportion to the amount of verified energy savings achieved during the compliance period (e.g., if a utility provides 20% of the total verified energy savings achieved, it would receive 20% of the allowances that are set aside. Entities receiving the allowances could either use them to offset CO_2 emissions in the case of utilities or sell them to generators who need them. In this manner, individual utilities as well as non-utility program implementers or owners of individual projects would be incentivized to maximize energy savings as well as conduct the appropriate EM&V required by the EPA for issuance of emissions rate credits in states that select the emissions rate-based approach. In this case the state would be responsible for the verification that energy savings claims are legitimate and that proper EM&V was conducted, in the same manner that a state would place this role for ERC issuance.

Energy Efficiency Registry

Under any of these allowance distribution methods, whether within state or federal plans, it will be necessary to ensure that savings from energy efficiency are properly evaluated and verified. In order to do this, states should have the option to create a registry, or participate in a regional or national energy efficiency registry if one is created. A registry would certify energy savings and convert MWh saved to tons of CO_2 reduced (as appropriate). It would also ensure that ownership of the allowance is clear, that a serial number is created to prevent any duplicate allowances, and that allowances can be easily traded or retired.[40]

An energy efficiency registry will allow states to ascertain all of the verified efficiency-related CO_2 reductions that have occurred in the state during the applicable compliance timeframe. This tool will allow states to view the sum total of registered energy efficiency projects as they make annual allocations. A reliable energy efficiency registry can catalog verified CO_2 reductions for

[40] For more information see National Association of State Energy Officials (July 2015). *Energy Efficiency Strategies for Clean Power Plan Compliance: Approaches and Selected Case Studies*. Pgs. 19-22. http://111d.naseo.org/Data/Sites/5/naseo-ee-for-cpp-2015-working-draft_7-30-15.pdf

state and federal officials and is essential to any effort to simplify and encourage the use of efficiency-related CO_2 reductions for CPP compliance.

In the model rule, EPA has indicated the need for registries to assure resources are only counted once and to facilitate inter- and intra-state trading. EPA has proposed that it might support or contribute to the development of an energy efficiency project registry. Although a broad, regional or national energy efficiency registry does not exist today, many of the fundamental elements for such a registry are already in place as a result of states' experience with renewable portfolio standards and renewable energy certificates (RECs) tracking. The National Energy Efficiency Registry (NEER) project, being led by the State of Tennessee and funded by a Department of Energy grant could prove to be a useful platform for this activity, as could expansion of regional renewable energy registries such as the Western Renewable Energy Generation Information System (WREGIS).

5. Energy Efficiency Should be Supported Through the Reservation of Early Action ERCs and Allowances Under the CEIP

The EPA has requested comment on some aspects of the CEIP as part of the Federal Plan and Model Trading Rule proposal.[41] SWEEP has addressed these items in our comments on the proposed CEIP—please see Attachment A. Other early actions should also be supported as described below.

SWEEP recommends that further guidance be provided regarding EM&V for EE programs and measures that were implemented during 2013-15 that will continue to provide energy savings in 2022 and beyond, and thus be eligible for ERCs in states that choose emissions rate-based compliance. For previous programs that have already been evaluated or are in the process of being evaluated, we recommend that ERCs be based on gross energy savings if it can be shown that the EM&V was done in compliance with the requirements in the Rule and with the EM&V guidance once it is finalized. However, if this is not the case and not all of the EM&V requirements were met in the EM&V that was already conducted or is in the process of being conducted (e.g., if a common practice baseline was not used in the EM&V or in deemed savings estimates), we recommend allowing ERCs to be granted for energy savings starting in 2022 based on the net savings of the programs and measures previously implemented if the program implementer chooses not to redo the EM&V. Net savings estimates by and large are lower than gross energy savings estimates. However, if the program implementer chooses to redo the EM&V following all the EM&V requirements and guidance, ERCs should be granted based on gross savings.

In addition, we recommend that the ERCs for these previously implemented and evaluated programs be limited to the gross savings (i.e., if the net savings are projected to be greater than

[41] 80 Fed. Reg. at 65001 and 65026

100% of gross savings, ERCs should be based on gross savings). There are examples of programs with net savings estimates in excess of gross savings taking into account an estimated spillover effect. However, there is considerable uncertainty in these estimates and thus we recommend that ERCs be limited to gross savings.

For those programs or projects implemented during 2013-15 that have not been evaluated yet, the program or project should be evaluated following the requirements in the Rule and final EM&V Guidance once it becomes available for the purpose of determining ERCs under the Clean Power Plan. Likewise, SWEEP recommends that the EPA insist that the EM&V requirements and guidance be used for evaluating programs and projects implemented in 2016 or beyond, for the purpose of applying for and issuing ERCs. Doing so will ensure the accuracy and credibility of ERCs issues for legitimate energy savings programs and projects.

Based on our experience working with electric utilities large and small over the past 14 years as well as with other energy efficiency program implementers, we recommend that the EPA insist that all program and project implementers follow the EM&V requirements and guidance. They are feasible to implement and should apply whether a utility or other program or project sponsor has been implementing energy efficiency measures for decades or is new to energy efficiency implementation. We base this comment on our experience observing numerous utilities including APS, NV Energy, Public Service Company of New Mexico, Rocky Mountain Power, Salt River Project, Southwestern Public Service Company and Xcel Energy implement high quality EM&V shortly after initiating new energy efficiency programs.

As we noted in our comments on the draft Clean Power Plan Rule, SWEEP does not support multiple tiers or levels of EM&V and discounting of savings if substandard EM&V is carried out. This would cause confusion and invite mischief in our opinion, and is not necessary given the widespread adoption of many the methodologies and protocols recommended by the EPA, the flexibility provided in the EM&V guidance, and the strong base of EM&V professionals that are available to assist utilities and other program or project implementers carry out Best Practice EM&V in accordance with EPA's requirements and guidance.

6. The EPA Should Rely on the EM&V Guidance and Independent Verification Requirements to Support Energy Efficiency in the Model Trading Rules

As stated above, given the EPA's guidance on EM&V, the independent verification requirements, and the long-standing track record of proven performance of energy efficiency programs and measures, we believe that energy efficiency should be strongly supported through both the Model Trading Rules and Proposed Federal Plan. The EM&V Guidance and the independent verification requirement provide enough certainty to support inclusion of energy efficiency in the Federal Plan and, subsequently, in the Model Trading Rules as applied to states with Federal Plans.

In fact, the EPA recognizes the important role of independent verification within the context of the Federal Plan as well as existing state efforts:

> Inclusion of an independent verification component provides technical support for the EPA in the context of the proposed federal plan, and the states in the context of their plans, to ensure that eligibility applications and monitoring and verification reports are appropriately reviewed prior to issuance of ERCs. Inclusion of an independent verification component is also consistent with similar approaches required by state PUCs for the review of demand-side EE program results and GHG offset provisions included in state GHG emission budget trading programs.[42]

As a result, SWEEP encourages the EPA to rely on the EM&V guidance and independent verification requirements as sufficient include energy efficiency in the Federal Plan and, by extension, the Model Trading Rules as applied to states with a federal plan.

7. EM&V in Model Rule as Opposed to Guidance

There are a few key points that we believe should be included in the Model Trading Rule in addition to being included in the EM&V Guidance. Those key points are as follows:

- The three general categories of acceptable EM&V methods
- Use of gross energy savings in conjunction with a common practice baseline
- Use of industry-standard best practice EM&V protocols and guidelines
- The revision of deemed savings estimates at least once every three years based on ex-post evaluations
- The independent verification requirement contained in the EM&V Guidance (and also referenced in the current Model Trading Rule)

Additional comments on the EM&V Guidance are included here as Attachment B.

8. ERC Expiration, Banking, and Borrowing Should be Aligned to Support Emissions Reductions and the Marketplace

The EPA has requested comment, in relation to rate-based trading, on whether ERCs should expire, whether they can be banked between the interim and final compliance periods, and whether ERCs can be borrowed against a future compliance period where emissions reductions are planned

[42] Id at 65001

to occur.[43] SWEEP supports the proposal that ERCs not expire as the lack of an expiration date will increase their value and promote early action. This is also true with respect to allowing ERCs to be banked in the interim period and retired later. However, we do not support the concept of "borrowing" ERCs to achieve compliance where those emissions reductions are to occur in the future. This creates uncertainty in the marketplace and possibly delays real world emissions reductions.

The EPA has requested comment, in relation to mass-based trading, on whether allowances should expire, whether they can be banked between the interim and final compliance periods, and whether allowances can be borrowed against a future compliance period where emissions reductions are planned to occur.[44] SWEEP supports the proposal that allowances not expire as this will increase their value and promote early action. This is also true with respect to permitting allowances to be banked in the interim period and retired later during the final compliance period. However, we do not support the concept of "borrowing" allowances to achieve compliance where those emissions reductions are to occur in the future. This creates uncertainty in the marketplace and possibly delays real world emissions reductions.

9. EPA's Proposal to Account for T&D Losses Should be Modified

Regarding T&D savings adders, the EPA proposes to use the smaller of six percent or the calculated statewide annual average T&D loss rate (expressed as a percentage), calculated using the most recent data published in the Energy Information Administration's State Electricity Profiles. We recommend that in case of utility-sponsored efficiency programs, utilities be directed to use their own T&D savings adders instead, as they routinely do so for reporting energy efficiency program savings to their state utility commissions. Using utility-specific values will be more accurate than statewide averages or an arbitrary six percent adder. In addition, states and utilities should be encouraged to use different T&D savings adders for different types of energy efficiency programs because there can be significant differences across program types; e.g., between programs targeted to residential customers and those targeted to higher voltage commercial and industrial customers. State-average values should be used for programs that are truly statewide, such as adoption of updated state building energy codes or state appliance efficiency standards. In the case of third-party implemented individual EE measures, including CHP and WHP projects, utility-specific values should be used in the case of projects that are implemented in states with vertically integrated utilities. However, in deregulated states where transmission and distribution systems are owned by different entities, it may be more practical to use state-average T&D loss values.

[43] Id at 65010
[44] Id at 65014

ATTACHMENT A:

Docket ID Number EPA-HQ-OAR-2015-0734:

Comments on the Clean Energy Incentive Program (CEIP)

By the Southwest Energy Efficiency Project (SWEEP)

December 15, 2015

Summary

The following comments are provided by the Southwest Energy Efficiency Project (SWEEP). They draw heavily from comments prepared by the Midwest Energy Efficiency Alliance (MEEA)[45]. SWEEP is a non-profit organization with a 14-year track record working on utility, building efficiency, transportation and industrial policy and programs in Arizona, Colorado, New Mexico, Nevada, Utah, and Wyoming. We work closely with state and local governments, energy efficiency businesses, utility companies, and other clean energy advocates.

Specifically, we are offering input on the following questions: 1) How should EPA define key terms and eligibility requirements under the CEIP; 2) What should EPA consider when designing the mechanics of the CEIP; and 3) What should EPA consider regarding the timing and distribution of allowances under the CEIP.

With respect to the first question, we recommend generally that EPA incorporate significant flexibility into its eligibility requirements, in order to ensure that the CEIP optimally achieves the objectives of assisting low-income communities (defined herein) while incentivizing the early implementation of proven, low-cost energy efficiency measures. The CEIP should be designed to provide incentives for energy efficiency measures that benefit low-income communities in urban and rural areas, as well as for residents that are homeowners or renters living in single-family homes and multifamily buildings alike.

With respect to the second question, we recommend generally that EPA provide early guidance on the evaluation, measurement and verification (EM&V) of energy efficiency projects as well as the translation of megawatt-hours (MWh) of energy savings to carbon reductions (denominated in tons of CO_2) in order to give program implementers greater certainty. This, in turn, should induce

[45] MEEA is a membership organization working to advance energy efficiency in North Dakota, South Dakota, Kansas, Nebraska, Minnesota, Iowa, Missouri, Wisconsin, Illinois, Michigan, Indiana, Ohio, and Kentucky. For more details, see www.mwalliance.org

increased participation in the CEIP.

Finally, with respect to the third question, we recommend generally that EPA distribute all matching incentives[46] to CEIP-eligible projects, with at least 50% of all matching incentives awarded to low-income energy efficiency projects. This recommendation will ensure that the CEIP program addresses the concerns of "…community leaders, environmental justice advocates, faith based organizations and others that the benefits of this rule [are] shared broadly across society and that undue burdens [will] not be imposed on low-income ratepayers."[47] In addition, this recommendation provides support for EPA's stated goal to ensure "that bill-lowering measures such as demand-side EE continue to be a major compliance option" of the CPP.[48] The comments below provide greater detail with respect to these recommendations.

Detailed Recommendations

We offer the recommendations below to guide EPA's final determination of eligibility requirements for low-income energy efficiency projects under the CEIP. We encourage the EPA to establish definitions and eligibility criteria that support existing efforts (i) to increase energy efficiency in low-income households and communities, (ii) to avoid creating additional administrative burdens, (iii) that are inclusive of all forms of demand-side energy efficiency, and (iv) that anticipate future programmatic and technological innovation in energy efficiency delivery.

Recommendation 1: EPA should clarify that energy efficiency measures, projects, and programs are eligible to receive credit under the CEIP, provided that these measures, projects or programs meet all other eligibility requirements.

EPA has on certain occasions stated that the CEIP will incentivize demand-side energy efficiency measures, while stating on other occasions that the CEIP will incentivize energy efficiency projects.[49]

In general, an energy efficiency measure is defined as a piece of equipment or system that is installed at an end-use energy consumer facility; a strategy that is aimed at changing consumer energy use behaviors; or the "modification of equipment, systems, or operations that reduces the

[46] For purposes of these comments, the term "incentives" refers both to allowances under a state mass-based program and Emission Rate Credits under a rate-based program.
[47] Environmental Protection Agency, Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units; Final Rule, 80 Federal Register 205 (23 October, 2015), pp. 64676- 64677.
[48] Id.
[49] *See* EPA, Clean Energy Incentive Program Factsheet, August 2015, http://www2.epa.gov/sites/production/files/2015-08/documents/fs-cpp-ceip.pdf ("The Clean Energy Incentive Program is a voluntary "matching fund" program that states can use to incentivize…demand-side energy efficiency projects that are implemented in low-income communities."); EPA, Clean Energy Incentive Program Next Steps, October 21, 2015, http://www2.epa.gov/sites/production/files/2015-10/documents/ceip_next_steps_10_21_15.pdf ("..a program that states may use…to incentivize early investments in…energy efficiency measures in low-income communities.").

amount of energy that would otherwise have been used to deliver an equivalent or improved level of end-use service."[50] An energy efficiency project is generally defined as "an activity or course of action involving one or multiple energy efficiency measures at a single facility or site."[51] Examples of energy efficiency measures include lighting or HVAC retrofits, while an example of an energy efficiency project is a commercial new construction project or a single whole-home retrofit involving one or more energy efficiency measures. Energy efficiency programs generally consist of a group of energy efficiency projects with similar characteristics installed in similar applications, undertaken by a single program implementer or administrator. Examples of energy efficiency programs include low-income home weatherization, or coordinated efforts to improve compliance with building energy codes.[52]

Energy and demand savings in low-income communities occur as a result of the installation or implementation of energy efficiency measures, projects and programs (among other strategies; see Recommendation 2 below). For example, adding wall or attic insulation would constitute an energy efficiency measure, while a refrigerator replacement program would constitute an energy efficiency program. EPA should clarify that energy savings achieved from measures, projects, and programs will all be eligible to receive credit under the CEIP. In the alternative, EPA should consistently use the term "energy efficiency measures", as both projects and programs are composed of energy efficiency measures.

Recommendation 2: EPA should clarify that the "energy efficiency measures" eligible for incentives under the CEIP in mass- and rate-based states are consistent with all demand-side energy efficiency that is eligible to receive ERCs under the final Emission Guidelines.

Under EPA's final Carbon Pollution Emission Guidelines for Existing Stationary Sources ("Emission Guidelines"), a wide range of demand-side energy efficiency measures are included as eligible resources for adjusting the CO2 emission rate of affected units (and are thereby deemed eligible to receive Emission Rate Credits (ERCs)). These include: energy efficiency measures that reduce electricity use in residential and commercial buildings, industrial facilities, and other grid-connected equipment; water efficiency programs that improve energy efficiency at water and wastewater treatment facilities; measures installed by energy service companies; measures installed as a result of programs administered by electric utilities, state entities, and other private and non-profit entities; building energy codes; and state appliance and equipment standards, inter alia.[53]

Each of these energy efficiency measures has the potential to deliver energy savings and lower bills, while providing a range of non-energy benefits to low-income households and communities –

[50] State and Local Energy Efficiency Action Network, *Energy Efficiency Program Impact Evaluation Guide*, 2-2. December 2012.
[51] Id.
[52] Id.
[53] 80 Fed. Reg. 64901 (Oct. 23, 2015).

in the same manner as each measure would in households or communities that are not considered low-income. There is, therefore, no compelling reason to distinguish between the types of energy efficiency measures that are eligible to receive incentives under the CEIP, and those that are eligible to receive ERCs under the Emission Guidelines. Each of these measures has a relatively short deployment period, and can produce energy savings by 2020. EPA should clarify that the range of energy efficiency measures eligible for incentives under the CEIP is the same as the range of energy efficiency measures eligible to receive ERCs under the Emission Guidelines. Critically, opening CEIP-eligibility to a broad range of energy efficiency measures will help account for continuing evolution and innovation in the delivery of energy efficiency in low-income communities between now and 2021, and thereby ensure that quantifiable, verifiable energy savings occurring in low-income communities in the years 2020 and 2021 are not arbitrarily excluded from the benefits of the CEIP.

Recommendation 3: EPA should employ flexible, differentiated eligibility requirements for the CEIP in order to capture and reward all energy-efficiency installed in low-income households and communities.

Before addressing the issue of how the EPA should define low-income communities and eligibility requirements, we want to note that SWEEP supports the requirement that energy efficiency credits during the CEIP only go to energy efficiency projects and measures in low-income communities. We do not support broadening the CEIP to allow all energy efficiency projects and measures to qualify. Doing so would greatly dilute the focus and do very little to advance energy efficiency in low-income households and communities as this is a challenging and often higher cost energy efficiency market.[54] If the CEIP is opened up to all energy efficiency projects and measures, program implementers undoubtedly would focus their efforts on easier and lower cost markets (such as commercial buildings broadly or residential lighting broadly), to the detriment of energy efficiency targeted to low-income households and communities.

Recommendation 3.1: Where existing ratepayer-funded energy efficiency programs explicitly target "low-income" households or communities, and where these programs have established eligibility or qualification requirements, the measures constituting such programs should be considered eligible for credit under the CEIP (provided that all other eligibility requirements are met).

Ratepayer-funded energy-efficiency programs targeting low-income customers define "low-income" in a number of different ways, typically due to local conditions. Some programs use a threshold that is some fraction of the federal level, such as households earning up to 200% of the federal poverty level. Other programs use a definition tied to the area median income, such as households earning up to 80% of the area median income. In a nutshell, we recommend that EPA

[54] For example, see *The $20 billion Bonanza: Best Practice Electric Utility Energy Efficiency Programs and Their Benefits for the Southwest*. Boulder, CO: Southwest Energy Efficiency Project. Oct. 2012, p. 8. http://www.swenergy.org/programs/utility/20-billion-bonanza

accept any of these definitions.

Requiring administrators of existing[55] low-income programs to identify participants falling under a new, CEIP-specific definition of "low-income" would create unnecessary costs, confusion and administrative burdens, and would likely dampen participation in the CEIP. Conversely, by allowing existing programs to maintain their definition of qualifying "low-income" households, and by granting eligibility to measures installed through these programs, EPA will help ensure that mature low-income programs benefit from – and expand as a result of – the CEIP. For these reasons, notwithstanding any definition of "low-income communities" established by the EPA for the purposes of the CEIP, the EPA should allow savings occurring through existing low-income energy efficiency programs to count towards credit under the CEIP, provided these programs meet all other eligibility requirements.

Recommendation 3.2: EPA should borrow the definitions of "low-income communities" used by other federal incentive programs.

In addition to extending eligibility to energy efficiency measures implemented through existing low-income programs, EPA should look to other federal incentive programs for guidance on defining "low-income communities." In order to define the parameters for "low-income communities", EPA might borrow from the following federal programs that deliver incentives to low-income communities.

The federal New Markets Tax Credits (NMTC) program is an example of an existing federal program that identifies "low-income communities" as the beneficiaries of a federal incentive. The NMTC program defines "low income communities" as any population census tract where the poverty rate is at least 20%, or in the case of a tract not located within a metropolitan area, median family income for such tract does not exceed 80% of statewide median family income, or in the case of a tract located within a metropolitan area, the median family income for such tract does not exceed 80% of the greater of statewide median family income or the metropolitan area median family income.

Similarly, the Department of Housing and Urban Development (HUD) designates Empowerment Zones (EZs), Enterprise Communities (ECs) and Renewal Communities (RCs), with the objective of directing tax incentives and grants to distressed communities. Communities are designated pursuant to 26 U.S.C. §§ 1391-1393, 1400E, and are based on population size, geographic size, poverty rate, unemployment rate, and household income, among other factors.

The Community Reinvestment Act (CRA), 12 U.S.C. § 2901 (implemented by 12 C.F.R. parts 25, 228, 345 and 195) provides another useful model for directing benefits towards low-income communities. The CRA encourages banks to help meet the credit needs of low-income (and

[55] For the purposes of this recommendation, we consider "existing programs" as those ratepayer-funded programs that have undergone some level of regulatory review and/or approval.

moderate-income) individuals and communities, and incorporates both geographic and individual definitions of low-income.[56] The CRA defines "low-income" as those persons who have an individual income that is less than 50 percent of the area median income, or those census tracts where the median family income is less than 50 percent of the area median income.[57]

It would be reasonable for the EPA to apply these definitions of low-income communities, and allow energy efficiency measures implemented within these communities to receive incentives under the CEIP, so long as states identify which definition or definitions they are utilizing. In conjunction with allowing states to employ a reasonable geographic parameter defining low-income communities, we recommend that EPA allow any sort of energy efficiency measure that is implemented within the geographic boundary to qualify for the CEIP, including efficiency measures installed in the residential, commercial or industrial sectors. All of these efficiency measures provide important energy and economic benefits to low-income communities. Reducing energy costs for businesses in low-income communities can enhance competitiveness, profitability, productivity[58] and product quality for these businesses, while improving the working environment and promoting job growth.[59] By borrowing an existing definition of "low-income communities,"[60] EPA might leverage prior efforts to identify and map low-income communities, thereby potentially reducing costs for states and efficiency providers.

Although any definition of low-income community used in the CEIP program may risk rewarding residential energy efficiency measures installed in households that are not considered low-income households, even though part of a low-income community, this risk is offset by the long-term value of attracting energy efficiency providers to low-income communities. This step, once achieved, may ease the path to increased participation in efficiency programs from low-income households going forward. In addition, the community benefits overall from any such upgrades to its housing stock.

Recommendation 3.3: Where residential energy efficiency measures are implemented outside of "low-income communities" as defined in Recommendation 3.2, and outside of existing "low-income programs" as discussed in Recommendation 3.1, these measures should receive incentives under the CEIP if the households in which these measures are implemented fall below 200% of the federal poverty level or meet some other state criterion that is more inclusive.

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[56] See 12 C.F.R. §228.12.
[57] 12 C.F.R. § 228.12(m)(1).
[58] The value of the productivity and operational benefits derived from industrial energy efficiency measures, for example, can be up to 250% of the value of the energy savings delivered by these measures. See International Energy Agency, Capturing the Multiple Benefits of Energy Efficiency, 2014. PDF File, https://www.iea.org/Textbase/npsum/MultipleBenefits2014SUM.pdf.
[59] International Energy Agency, *Capturing the Multiple Benefits of Energy Efficiency*, 2014. PDF File, https://www.iea.org/Textbase/npsum/MultipleBenefits2014SUM.pdf.
[60] The New Markets Tax Credit program, for example, has been operational for over 15 years, and was established as a part of the Community Renewal Tax Relief Act of 2000.

In order to capture and appropriately reward all energy efficiency measures installed in low-income households, beyond those installed through existing low-income programs, EPA should not circumscribe project eligibility based solely on geographic boundaries. This is because it is likely that a non-negligible proportion of low-income households are located outside of "low-income communities" as defined in Recommendation 3.2. Excluding these households from the benefits of the CEIP would be arbitrary, and would not comport with EPA's stated objective of "leveling the playing field" for the implementation of energy efficiency.61

We recommend that EPA allow residential energy efficiency measures to receive incentives under the CEIP if the households in which the measures are implemented fall below 200% of the Federal Poverty Level.62 Several existing low-income efficiency programs tie program eligibility to the federal poverty level. The federal Weatherization Assistance Program awards eligibility to households falling below 200% of the Federal Poverty Level. Tying eligibility to a threshold that is familiar to low-income households and program administrators will likely reduce costs associated with the CEIP and increase participation in the program.

We recognize that several other viable eligibility thresholds have been used by low-income efficiency program administrators in states across the country – one of the more common thresholds is: "households with an income at or below 80% of the area median income (AMI)."63 Therefore, we recommend that EPA allow states the flexibility to choose an alternate threshold for low-income household eligibility, provided that the state's chosen threshold is more inclusive than a threshold set at 200% of the Federal Poverty Level. Any alternate eligibility threshold chosen by a state must however be consistent with a definition of "low-income households" used by existing or new state-administered or state-approved programs in the state.

Recommendation 4: Definition of "Commence Operations"

The EPA has solicited comments on the definition of "commence operations" for purposes of the CEIP. We believe that measures should be considered to have "commenced operations" in the year in which installation was completed, regardless of the month of installation. We recommend that a state be able to claim a full year of savings in 2020 for measures installed in 2020, independent of the month the measures are installed. The same would be true for measures installed in 2021. Obviously eligible measures installed prior to 2020 would get full credit for the energy savings they provide during the CEIP period (2020-21). This is consistent with current EM&V practices, as well as EPA's draft EM&V Guidance for State Measures plans. And for consistency, the effective useful lifetime for a measure would start on January 1 of the year in which the measures are installed.

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[61] *See* EPA, Clean Energy Incentive Program Factsheet, August 2015, http://www2.epa.gov/sites/production/files/2015-08/documents/fs-cpp-ceip.pdf.
[62] *See supra* fn. 1.
[63] *See, e.g.* Illinois Department of Commerce and Economic Opportunity's definition of low-income households, 220 ILCS 5/8-103 (f)(4).

In addition, SWEEP supports the current proposal to provide ERCs or emissions allowances starting in 2020 for energy efficiency measures implemented in low-income communities (as well as certain renewable energy projects) after a state submits its final plan to the EPA. This provides some incentive for states to complete their plan as soon as possible. Moving up the eligibility date, which we do not support, would increase the likelihood that CEIP credits are provided to projects or measures that are already planned and will go ahead in any event, rather than providing credits for incremental efforts that occur at least in part because of the CEIP.

Mechanics of the CEIP

Recommendation 5: EPA should apply the same EM&V requirements to CEIP-eligible projects as it does to a project seeking ERCs during the compliance period.

In the interest of reducing uncertainty for efficiency providers and minimizing the costs associated with developing robust evaluation, measurement, and verification (EM&V) methodologies, we recommend that the EPA make it a priority to finalize its EM&V Guidelines, and apply the same requirements to projects applying for incentives under the CEIP as it would to projects applying for ERCs during the compliance period.

Recommendation 6: EPA should provide guidance on the translation of MWh saved through demand-side energy efficiency to tons of CO2.

The EPA has not provided guidance so far on how to translate MWh saved through demand-side energy efficiency to carbon reductions in terms of tons of CO2. Doing so is important for two reasons: 1) states electing a mass-based goal under the CPP need a method for determining the number of state allowances to award energy efficiency projects eligible for incentives under the CEIP, and 2) states electing a rate-based goal under the CPP must understand how federal credits (from the total pool of 300 million short tons of CO2) will be converted into ERCs and awarded to energy efficiency projects eligible for incentives under the CEIP.

Balancing concerns for accuracy and practicality, we recommend using the state average emissions rate for affected EGUs to convert from MWh to CO2 emissions reductions. In particular, we recommend that the 2019 state average emission rates be used for the 2020-2021 time period covered by the CEIP. This value should become available and known in 2020, and can be provided by the state environmental agency to CEIP program implementers based on data the environment agency collects from owners of EGUs in the state. For planning purposes, low-income energy efficiency program administrators (and others) could estimate this value based on historical or projected state average emissions rates. But we recommend that the CO2 allowances granted for CEIP activities be based on a state's actual average emissions rate in 2019 in order to maximize accuracy in this conversion from MWh saved (or generated by renewable energy technologies) to avoided CO2 emissions.

Allocation of Allowances or ERCs to States and Distribution to Eligible Projects

Recommendation 7: The allocation of federal credits to states should be based on their respective required emission reductions.

In the final Emission Guidelines, EPA states that the agency "will create an account of matching allowances or ERCs for the state that reflects the pro rata share – based on the amount of the reductions from 2012 levels the affected EGUs in the state are required to achieve relative to those in the other participating states – of the 300 million short tons CO2 emissions-equivalent matching pool."[64] We support allocating the pool of matching federal credits among participating states in this manner. Doing so acknowledges the relative burden faced by each state, and proportionally incentivizes each state to adopt early carbon reduction strategies. We recommend that EPA finalize state allocations as early as possible after each state has indicated whether or not it will participate in the CEIP (September 2016), in order to allow states to incorporate the available matching credits into their compliance planning efforts.

Recommendation 8: EPA should allow states flexibility in dividing their allocation of matching federal incentives between renewable energy and low-income energy efficiency projects, provided that each state distributes at least 50% of its allocated incentives to low-income energy efficiency.

Once incentives are allocated among states, determining the optimal division of incentives between renewable energy and low-income energy efficiency projects requires a balancing of competing considerations: resource potential on one hand, and compelling environmental justice objectives on the other. Here, we present what we believe is a reasonable resolution of these competing considerations.[65]

EPA should allow states a measure of flexibility in deciding how their respective incentives should be divided between renewable energy projects and energy efficiency projects in low-income communities. Each state has a very different resource potential mix, and failing to account for these differences could result in inefficiencies; including large quantities of unused matching incentives. Redistribution of these unused incentives (discussed in Recommendation 9, below) mitigates, but does not eliminate, these inefficiencies, as incentives delivered through redistribution would be far too uncertain to inform project planning.

We recommend, however, that states be required to reserve a minimum of 50% of their state

[64] 80 Fed. Reg. 64830 (Oct. 23, 2015).

[65] While our recommendation is applicable to states implementing the CEIP, it may be tailored to those states under a Federal Plan as well. EPA should distribute a minimum of 50% of matching credits to low-income energy efficiency projects in each state under the Federal Plan. A state would maintain the flexibility to choose to go beyond 50% where resource potential (or other reasonable justification) exists .

allocation of CEIP allowances or ERCs eligible for matching federal incentives for energy efficiency projects in low-income communities. A reservation of 50% of the allowances or ERCs eligible for federal matching incentives for energy efficiency projects in low-income communities is an administratively simple allocation method, providing greater certainty than other, more complex divisions. This simplicity and certainty should encourage state participation in the CEIP, consistent with the EPA's goal of incenting early investment in both renewable energy and energy efficiency in low-income communities.

In addition, an allocation of 50% of the CEIP incentives to energy efficiency projects in low-income communities provides the necessary support and certainty for such projects in light of the barriers often faced in low-income communities. As EPA has acknowledged, low-income energy efficiency projects have historically faced significant real and perceived barriers to market entry, despite the health, environmental and community economic development benefits they promise. These barriers (and, in most cases, these direct benefits to low-income households and communities) are not shared by large-scale wind and solar renewable energy projects. As such, it is critical that EPA support energy efficiency projects for low-income households and communities with an allocation of at least half of the CEIP incentives.

Low-income EE may not compare favorably with utility-scale wind and solar on a levelized cost basis (although it may compare favorably with distributed wind and solar). Given this reality, without the certainty of at least 50% of CEIP credits allocated to energy efficiency in low-income communities, such projects may not be favored in comparison to renewable energy projects. Energy efficiency projects installed in low-income communities, however, provide benefits of price suppression, bill savings, employment, and community development that may not result from utility-scale renewable energy. Moreover, low-income populations spend a disproportionate amount of their income on energy needs, enhancing the positive impact of energy efficiency on this particular population.

As the EPA final rule indicates, the CEIP program was established to address the concerns, shared by the EPA, of "…community leaders, environmental justice advocates, faith based organizations and others that the benefits of this rule [are] shared broadly across society and that undue burdens [will] not be imposed on low-income ratepayers."66 A clear division of the CEIP incentives to energy efficiency projects in low-income communities will provide the certainty and support for addressing these concerns that the benefits of the CPP are shared by low-income communities. The CEIP is the single most important element of EPA's effort to ensure that low-income, historically marginalized communities benefit directly from the transformation of our electricity sector, and as such, EPA should ensure that this policy objective is not diluted. In addition, this recommendation provides support for EPA's stated goal to ensure "that bill-lowering measures

[66] Environmental Protection Agency, Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units; Final Rule, 80 Federal Register 205 (23 October, 2015), pp. 64676- 64677.

such as demand-side EE continue to be a major compliance option" of the Clean Power Plan.67

Recommendation 9: EPA should redistribute all unused matching federal incentives to renewable energy and low-income energy efficiency projects, and allow states to extend the time-period for eligibility

EPA should retain the authority and right to redistribute matching federal incentives where such incentives have not been distributed to eligible projects by the end of 2021. EPA should not distribute these incentives to affected electrical generating units (EGUs), as this may compromise the integrity of the CPPs environmental goals (particularly in states choosing a rate-based goal). We recommend that where a state does not use its entire allocation of matching federal incentives by the end of 2021, but has demonstrated significant progress towards utilizing the allocation by 2021, the EPA allow that state to extend eligibility until 2024 for programs operational in 2021—this would align with the end of the first compliance period.68 If states have made significant progress during the 2020-2021 time period, but have not been able to realize all of the state's allocation under the CEIP by the end of 2021, they should be allowed to extend CEIP programs in place by 2021 through 2024. Significant progress could be defined as using at least half of the state's initial CEIP allocation. If a state has not gained traction to this degree by 2021, no extension would be granted. Also, we suggest that if there is an extension, CEIP credits in 2022 and beyond can only come from programs that were in place and operating before 2022. States would not be allowed get credits from entirely new programs started after 2021, the end of the CEIP period. These limitations would incentivize states to "move early" while allowing continued credits beyond 2021 if a state's full allocation has not been used up during 2020-21.

Should a state elect to extend CEIP-eligibility until 2024, then savings occurring between 2022-2024 through renewable energy or low-income energy efficiency projects would be eligible to receive matching federal incentives. Should a state elect not to extend CEIP-eligibility until 2024 despite having unused federal incentives in its allocation, EPA should redistribute these incentives among participating states that do not have any unused incentives, on the same pro rata basis on which it bases initial allocations. In this manner, EPA would ensure that the majority of the 300 million tons of CO2 emissions-equivalent incentives would be used to incentivize renewable energy and low-income energy efficiency projects occurring relatively early within the context of compliance with the CPP.

Recommendation 10:

The EPA has solicited comments regarding maintaining stringency in rate-based states during the compliance periods while accounting for the issuance of ERCs during the CEIP period.

Our recommendation is that CEIP-period ERCs should be tracked by states and offset in later

[67] Id.

[68] Similarly, in states where a Federal Plan is imposed, EPA should extend eligibility until 2024, allowing eligible projects in that state to receive credit for savings occurring in 2022-2024.

compliance years. This is consistent with the approach suggested for allowances in mass-based states. The matching federal credits do not need to be offset (i.e., only the actual ERCs that are obtained through CEIP programs would need to be offset). And it should be up to the state as to how they are offset (i.e., a state could achieve the offset using a pool of ERCs from their own activities during the compliance period, a state could require low-income programs to come with the offsets, or a state could come up with some other approach as long as the offset occurs). The same requirement applies in mass-based states with respect to emissions allowances obtained during the CEIP period. Note that this requirement only applies to ERCs or allowances granted to CEIP activities for energy savings (and renewable energy generation) in 2020 and 2021. It would not apply to ERCs or allowances granted to CEIP activities in 2022 or beyond, assuming the EPA accepts Recommendation 9 in these comments and allows for a time extension for the CEIP for states that request this.

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ATTACHMENT B

SWEEP'S COMMENTS ON THE EM&V GUIDANCE

Major Recommendations Concerning the Clean Power Plan Evaluation Measurement and Verification (EM&V) Guidance for Demand-Side Energy Efficiency (EE) and Responses to EPA's EM&V Questions

SWEEP – Jan. 20, 2016

SWEEP has extensive experience accompanying the evaluation, measurement and verification (EM&V) of energy efficiency programs implemented by the electric utilities we work with in the Southwest. In addition, we met with and discussed the draft EM&V guidance document with a number of the major electric utilities in our region. Our comments are informed by these discussions but do not represent the views of the utilities. Our recommendations regarding EM&V of energy efficiency programs and measures are organized around the questions posed in the draft EM&V Guidance document issued by the EPA on Aug. 3, 2015.

1. Does the guidance provide enough information to help EE providers determine what EM&V methods (i.e., project-based measurement and verification, comparison group methods, and deemed savings) to use for purposes of quantifying savings from specific EE programs, projects, and measures?

In general the guidance does provide enough information to help EE providers determine what EM&V methods to use, while at the same time providing considerable flexibility for EE providers to select the most appropriate techniques and build on the EM&V practices already underway. The guidance takes into account the strong base of EM&V methodology and Best Practices that currently exists. The EM&V provisions in the Rule itself as well as the draft EM&V guidance document build on existing EM&V Best Practices. The provisions should increase both the quality and consistency of EM&V across the country.

SWEEP recommends that further guidance be provided regarding EM&V for EE programs and measures that were implemented during 2013-15 and that will continue to provide energy savings in 2022 and beyond, and thus be eligible for ERCs in states that choose emissions rate-based compliance. For previous programs that have already been evaluated or are in the process of being evaluated, we recommend that ERCs be based on gross energy savings if it can be shown that the EM&V was done in compliance with the requirements in the Rule and with the EM&V guidance once it is finalized. However, if this is not the case and not all of the EM&V requirements were met in the EM&V that was already conducted or is in the process of being conducted (e.g., if a common practice baseline was not used in the EM&V or in deemed savings estimates), we recommend allowing ERCs to be granted for energy savings starting in 2022 based on the net savings of the programs and measures previously implemented if the program implementer chooses not to redo the EM&V. Net savings estimates by and large are lower than gross energy savings estimates. However, if the program implementer chooses to redo the EM&V

following all the EM&V requirements and guidance (or if EM&V was never done previously and is going to be done in accordance with the requirements and guidance), ERCs should be granted based on gross savings.

In addition, we recommend that the ERCs for these previously implemented and evaluated programs be limited to the gross savings; i.e., net savings can be used as long as net savings are equal to or less than gross savings. If the net savings are projected to be greater than gross savings, ERCs should be based on gross savings.

For those programs or projects implemented during 2013-15 that have not been evaluated yet, the program or project should be evaluated following the requirements in the Rule and final EM&V Guidance once it becomes available for the purpose of determining ERCs under the Clean Power Plan. Likewise, SWEEP recommends that the EM&V requirements and guidance be used for evaluating programs and projects implemented in 2016 or beyond, for the purpose of applying for and issuing ERCs. Doing so will ensure the accuracy and credibility of the ERCs that are issued for energy savings programs and projects, and provide for consistency across states.

Based on our experience working with electric utilities both large and small over the past 14 years as well as with other energy efficiency program implementers, we recommend that the EPA direct all states and all program and project implementers to follow the EM&V requirements and guidance. They are feasible to implement and should apply whether a utility or other program or project sponsor has been implementing energy efficiency measures for decades or is new to energy efficiency implementation. We base this comment on our experience observing numerous utilities including APS, NV Energy, Public Service Company of New Mexico, Rocky Mountain Power, Salt River Project, Southwestern Public Service Company and Xcel Energy that began to implement high quality EM&V shortly after initiating new energy efficiency programs.

As we noted in our comments on the draft Clean Power Plan Rule, SWEEP does not support multiple tiers or levels of EM&V and discounting of savings if substandard EM&V is carried out. Allowing multiple EM&V options could lead to confusion as well as less accuracy and credibility for energy savings credits. Multiple EM&V options are not necessary given the widespread adoption of many the methodologies and protocols recommended by the EPA, the flexibility provided in the EM&V guidance, and the strong base of EM&V professionals that are available to assist utilities and other program or project implementers carry out Best Practice EM&V in accordance with EPA's requirements and guidance.

2. Does the guidance include sufficient information about the appropriate circumstances and safeguards for the use of deemed savings values? For project-based measurement and verification and comparison group methods?

In general we believe it does. Regarding use of deemed savings values, we support the requirements in the Rule and in the draft Federal Plan/Model Trading Rules. These requirements are important so that deemed savings values are not misused or result in excessive energy savings claims. In particular, we support requiring that deemed savings values be updated where appropriate based ex-post EM&V studies conducted at least once every three years to ensure that deemed savings values are as up-to-date and as accurate as possible. Conducting EM&V studies at least once every three years has become standard practice in the utility energy efficiency program

evaluation field and can be extended beyond utility efficiency programs in those states that choose to obtain ERCs for energy savings from non-utility energy efficiency programs. In addition, we support use of Technical Reference Manuals (TRMs) to document energy savings values, input factors, and algorithms. Many utilities in our region maintain and use TRMs.

Regarding the revision of deemed savings values after new EM&V studies have been conducted, we recommend use of the revised values for energy savings estimates from recently implemented programs and measures in situations where ERCs have not yet been issued. But if ERCs have already been issued based on the previous (i.e., unrevised) deemed savings values, we recommend that there be no retrospective adjustment to these ERCs. Trying to revise them after they have been issued would be problematic in our view, and in the view of the utilities we consulted with.

Regarding applying the results of new EM&V studies to energy savings going forward over the remaining useful life of the programs or measures previously implemented (i.e., more than three years previously) but where ERCs have not been issued yet for the remaining useful life of the programs or measures ("so-called forward adjustments"), we have some comments which we provide in the Reporting Timeframes and Considerations section below.

3. Should the guidance specifically encourage greater use of comparison group approaches? Under what circumstances is the application of such empirical methods practical and cost-effective? Would additional guidance be useful on "top-down" econometric EM&V methods, and the ways in which such methods can be used to verify savings at a high level of aggregation?

The Model Rule and the EM&V guidance encourage the use of Comparison Group methods for energy savings evaluation. We think this is a reasonable recommendation, with discretion left up to program managers and project implementers as to when to employ this approach. The Comparison Group approach is widely used for certain types of programs, such as behavior change programs involving large numbers of customers in the treatment group but not all customers. In addition, it may be possible to use this approach for other types of energy efficiency programs. For example, the Salt River Project in Arizona has used it to evaluate the energy savings from its building energy code advocacy and support program by comparing the electricity use of new homes in local jurisdictions that have adopted a state-of-the-art building energy code to the electricity use of home in local jurisdictions that have not.

The growing availability of AMI data and advance data analytical tools can support greater use of Comparison Group evaluation methods. However, Comparison Group approaches are not applicable to evaluation of all types of energy efficiency programs or projects. As an enhancement to the current draft, we recommend that the final guidance include a list the types of programs where Comparison Group methods are a reasonable approach to energy savings evaluation (and by absence from the list those where it is not).

Regarding the merit of "top-down" econometric EM&V methods and whether or not EPA should provide additional guidance concerning them, we first note that this approach has not been widely used to evaluate energy savings and that some past attempts to use it have met with data limitations and issues about whether or not model forms or variables are correctly specified. If

variables that influence energy consumption are left out of the model due to absence of data or if data are missing or of poor quality, the results of econometric analyses can be biased or imprecise. Examples of top-down econometric analyses that have suffered from these problems include attempts to analyze savings from utility DSM programs in this manner[69], and to evaluate savings in the residential sector as a whole[70]. Given these limitations and challenges, we think it is premature for EPA to recommend top-down econometric methods as a preferred approach to energy savings EM&V.

4. Is the guidance in Section 3 on particular EE program types (consumer-funded EE programs, project-based EE, building energy codes, and appliance standards) helpful, clearly presented, and sufficient/complete? Can this guidance be reasonably implemented, considering data availability, cost effectiveness, accuracy of results, and other factors?

In general the guidance is helpful and clearly presented. However we have a number of substantive recommendations that we present by program type. Our comments under building energy codes in particular are intended to make the guidance easier to implement, while providing what we believe to be appropriate energy savings credit.

Demand-Side EE Programs

Section 3.1 of the draft Guidance includes lists of common direct action and indirect action programs. The list of indirect action programs should include "Upstream incentives provided to retailers, distributors, and/or manufacturers." This type of program has proven to be a very effective strategy for stimulating greater adoption of certain energy efficiency measures such as LED lamps and high efficiency air conditioning equipment, and is growing in popularity. In addition, the applicable guidance for indirect action programs should include the same EM&V methods that are specified for direct action programs; i.e., PB-MV and deemed savings, in addition to comparison group approaches. All three approaches can be applied to upstream incentive programs where information is available or can be obtained on consumers that obtained energy efficiency measures through this type of program.

Building Energy Codes

Section 3.3 of the draft guidance discusses evaluation of building codes. Building codes are one of the major energy efficiency policies states and local jurisdictions can use to advance greater energy efficiency. However, the potential for states and local jurisdictions to receive energy savings credits for their building code efforts is almost entirely nullified by footnote 58 on page 41 of the draft guidance which states that "adopting codes that the federal government has already determined to be cost-effective cannot be used for compliance with EPA's emissions guidelines." **We strongly recommend that the EPA delete this provision.** Under existing law, the U.S. DOE is supposed to speedily review model energy codes for energy savings and cost-effectiveness.

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[69] Arimura et al. 2009. *Cost-Effectiveness of Electricity Energy Efficiency Programs.* Washington, DC: Resources for the Future. http://www.rff.org/files/sharepoint/WorkImages/Download/RFF-DP-09-48.pdf.

[70] Foster, et al. 2012. *The 2012 State Energy Efficiency Scorecard*. Washington, DC: ACEEE. http://aceee.org/research-report/e12c.

Thus this limitation leaves only a small time window for states or local governments to receive credit for energy savings resulting from the adoption and enforcement of new building codes – at most the window extends from when a model code is published until when DOE determines the code to be cost-effective.

Furthermore, even when DOE determines that a code is cost-effective, it does not mean that states or local governments must adopt this code. Many states or local governments are slow to adopt new model energy codes and some states never adopt these codes, for reasons other than cost effectiveness. In practice, adopting model energy codes is not mandatory even when DOE indicates that a new code is cost effective from a national perspective. There are no adverse consequences if a state does not adopt a new code and even DOE recognizes that in some states "home rule" laws prohibit adoption of a mandatory code at the state level. Allowing states and local governments to receive ERCs for adopting new building codes would provide further incentive to spur such adoption.

Likewise, numerous utilities including APS, SRP, Xcel Energy, Rocky Mountain Power and Public Service Company of New Mexico in our region implement building energy code support programs. Utilities that implement such programs should be able to obtain ERCs for energy savings after appropriate EM&V is performed, whether or not the DOE has determined that the energy code is cost-effective at the national level. In addition, both adoption of more stringent building energy codes and programs or efforts focused on improving code compliance should be eligible for ERCs.

It is also important to recognize that the type of restriction indicated in footnote 58 of the guidance document is not applied to other energy efficiency measures or programs that DOE may find to be cost-effective, such as LED lights or other lighting efficiency measures that are promoted through demand-side programs, ESCO projects and the like. It would be inconsistent to apply the restriction to building energy codes and not other policies or measures. Moreover, the restriction should not be applied to any energy efficiency policies or measures unless they are explicitly mandated by federal law such as through new federal appliance or equipment minimum energy efficiency standards.

In addition, we have concerns about the portion of Section 3.3.2 of the draft guidance which directs states to document NOMAD (naturally occurring market adoption) and then use NOMAD to establish a Common Practice Baseline (CPB). This requirement would be complicated and costly for many states or local governments to comply with, and is not something they normally do or contemplate doing in conjunction with adoption and enforcement of building energy codes. This provision could inhibit the adoption of stronger building energy codes if states are unwilling or unable to comply with this requirement, in those states that adopt a rate-based approach to Clean Power Plan compliance.

Instead, we recommend that EPA provide guidance on what states can presumptively use as a CPB for determining code savings, and we have a specific recommendation in this regard. For the first new code adopted after the publication of the final Rule, we recommend that whatever energy code a state or local jurisdiction had in place as of the date of publication of the CPP Final Rule in the Federal Register be used as the baseline. If a state or local jurisdiction had no energy code in place, then common practice as of this date would need to be documented. Then for

subsequent code revisions, the baseline for the new code would be the prior code, as suggested on page 39 of the draft EM&V guidance.

Regarding new energy codes adopted after January 1, 2013 but before the publication of the Final Rule, we recommend using the same approach, namely to indicate that the baseline for the new code be the prior code that was in place in the state or locality. States or local jurisdictions should be allowed to get energy savings credits for building energy codes (or efforts that increase code compliance) adopted after January 1, 2013 as long as they conduct proper EM&V.

5. Is the guidance on important technical topics (e.g., common practice baselines, accuracy and reliability, verification) helpful, clearly presented, and sufficient/complete? Can this guidance be reasonably implemented, considering data availability, cost effectiveness, accuracy of results, and other factors?

In general the guidance is helpful, clearly presented and complete. However we do have some substantive recommendations that we present by technical topic below.

Common Practice Baseline (CPB)

EPA proposes to use a CPB approach for purposes of establishing a baseline for EM&V savings estimates. As defined in the Model Rule and supporting draft EM&V guidance, CPB is used in conjunction with the gross energy savings. We support this approach. Some energy efficiency programs already use a baseline that is consistent with CPB, but other programs will need modify their baseline assumptions going forward for the purpose of obtaining ERCs under the Clean Power Plan.

While SWEEP supports the CPB approach including use of a dual baseline for equipment early replacement programs, we note that the approach may be new to some states, utilities and other energy efficiency policy, program and project implementers. These entities may need help in figuring out how to properly implement this approach. To address this concern, we recommend that EPA or DOE develop additional CPB methodological guidance as well as proxy values where possible for common energy efficiency measures. If EPA accepts this recommendation, the state-of-the-art proxy values should be updated periodically, and should vary by climate zone as appropriate. Use of these proxy values would not be required and should not be used if a program or project implementer has reason to believe the proxy values are not accurate in their situation, or if a program or project implementer has obtained locally-specific CPB values.

Accuracy and Reliability

The Model Rule provides that "Sampling of populations is appropriate, provided that the quantified MWh derived from sampling have at least 90 percent confidence intervals whose end points are no more than +/-10 percent of the estimate." We support this requirement and note that this level of confidence and precision is routinely used in EM&V studies which involve sampling of participants in energy efficiency programs today, and is considered a best practice. However, we recommend that the guidance note that there are situations where either a higher or lower confidence interval or level of precision is appropriate. For example, behavioral programs with very large participant and control groups are often evaluated with a 95% confidence interval while

an 80% confidence interval may be acceptable for individual programs that contribute minimal energy savings to the total savings achieved by a utility or other provider implementing a portfolio of energy savings programs. Regarding a quantitative threshold for minimal energy savings, we suggest a threshold of programs providing less than 1,000 MWh/yr of energy savings. Considering the programs implemented by utilities in the Southwest, programs providing less than 1,000 MWh/yr represent a small fraction of the total savings achieved by a single utility or state. In addition, we suggest that language along these lines be added to Section 2.6 of the guidance document.

Effective Useful Life and Persistence of Savings

EPA requires that EM&V Plans address how the duration of EE program or project electricity savings will be determined, using industry 'best-practice' protocols and procedures involving annual verification assessments, industry-standard persistence studies, deemed estimates of effective useful life (EUL), or a combination of all three. We note that Chapter 13 of the Uniform Methods Protocols, Assessing Persistence and Other Cross-Cutting Methods Protocols, provides a helpful discussion of the data/benchmarking approach and periodic field studies. We support all of the methods identified by EPA, but expect many states to ultimately rely most heavily on industry-standard persistence studies and deemed estimates of effective useful life.

In practice, field studies of energy efficiency measure life and energy savings persistence by utilities are rarely done as part of program evaluation because of the high cost and inherent research challenges especially with long-lived (e.g. over 5 year EUL) measures. A number of industry-standard survival curves have been published and make it easier for utilities and states to estimate EUL for common measures. These EUL tables and curves include the effects of factors that degrade energy savings over time. We recommend that the guidance document support the use of and provide references to these curves.

Some utilities or regions have conducted meta-analyses and other cross-cutting studies to estimate EUL and/or energy savings degradation over time for commonly used measures or collections of measures (e.g. HVAC system improvements). We recommend that the EPA encourage greater use of this approach. Also, states or utilities that currently lack such studies should be allowed to reference and use measure life or savings persistence studies from other states or utilities, as long as there are no apparent reasons why EUL or energy savings degradation would vary from state-to-state or utility-to-utility.

Reporting Timeframes and Considerations

The Reporting Timeframes and Considerations section of the draft EM&V guidance discusses the issue of forward adjustments to energy efficiency measure savings as new evaluation data become available. We first note that this type of ongoing evaluation of the energy savings from energy measures over the lifetime of the measures is not typically carried out in energy program evaluation work today. Most ex-post program evaluations are done one time after a program is implemented, with annual energy savings estimates for the program and measures adjusted in some cases for the year being evaluated as well as going forward and in other cases only going forward. SWEEP supports continued use of this type of process for determining ERCs under the CPP, namely adjusting actual energy savings values after ex-post EM&V studies are

completed for programs going forward and where feasible for energy savings in the year of program implementation and measure installation.

Regarding the concept of forward adjustments to energy savings after further evaluations of the same type of program is done as described in the box on page 15 of the draft EM&V guidance document, we note that such forward adjustments may be possible in some cases namely when energy efficiency measures and the types of consumers or businesses adopting them do not significantly changing over time. For example, some lighting efficiency measures such as LED lamps adopted by households may become a stable technology and market such that new evaluations of a residential lighting program can be used to adjust the annual energy savings for the same program implemented five years or seven years or ten years previously.

However, the energy efficiency measures in other types of efficiency programs do change significantly over time. For example, residential appliance and air conditioning technologies are changing in terms of their energy efficiency over time, as are consumer electronic products. Because of this, the ex-post energy savings per measure of program implemented in year X should not be used to adjust the energy savings of the same program implemented five or seven or ten years previously. The only way to accurately adjust the energy savings over time of older programs would be to re-evaluate the energy savings being provided by the measures installed five or seven or ten years previously. This is not done in efficiency programs today and would be complicated and costly to do in practice. We recommend that EPA acknowledge this situation in the EM&V guidance and provide these caveats about the feasibility and necessity of forward adjustment of energy savings.

At the same time, forward adjustments to energy savings should be made when facilities are shut down, buildings are heavily renovated, industrial operations are significantly modified or other actions are taken that significantly affect the energy savings occurring over time. These factors can be accounted for either directly or indirectly through use of standardized energy savings degradation curves and/or assumptions about effective useful lifetime that account for the effects for programs as a whole.

In the case of large or customized energy efficiency projects that provide a significant fraction of the total energy savings achieved by a utility or other program provider in a particular year (say any project providing at least 1,000 MWh/yr of savings or more than 1% of more of total portfolio savings), site visits should be made periodically over the lifetime of the projects to ensure that they are continuing to provide energy savings close to the initially assessed value. If initial conditions significantly change, forward adjustments to energy savings (either upwards or downwards) should be made.

Another concern we have regards timing of installations as described in Section 2.3.2 of the guidance document. EPA first recommends that when reporting savings, first year savings should be based pro rata on the day an efficiency measure was installed. EPA then indicates that for state measure plans, savings should be reported as if they started accruing on January 1 of the reporting year. This latter approach is standard practice in the energy efficiency industry. We recommend that EPA adopt this second approach for both a rate-based emissions standards plan and a state measures plan. Day of installation would be extremely complicated and difficult for utilities and other program providers to track given the thousands of energy efficiency measures installed

through energy efficiency programs each year. And in some cases such as in upstream programs where incentives go to retailers, distributors and/or manufactures, date of measure installation is not known.

If our recommendation is accepted and January 1 is the approved date for starting energy savings for all measures installed in a particular calendar year, then savings persistence should be adjusted appropriately so that energy savings are not assumed for longer than the estimated useful lifetime of different measures and projects, assuming installation as of January 1.

Transmission and distribution (T&D) savings adders

Regarding T&D savings adders intended to account for the reduction in line losses due to end-use energy efficiency improvements, the EPA proposes to use the smaller of six percent or the calculated statewide annual average T&D loss rate (expressed as a percentage), calculated using the most recent data published in the Energy Information Administration's State Electricity Profiles. We suggest a different approach. We recommend that in case of utility-sponsored efficiency programs, utilities be directed to use their own T&D savings adders instead, as they routinely do so for reporting energy efficiency program savings to their state utility commissions. Using utility-specific values will be more accurate than statewide averages or an arbitrary six percent adder.

In addition, states and utilities should be encouraged to use different T&D savings adders for different types of energy efficiency programs because there can be significant differences across program types; e.g., between programs targeted to residential customers and those targeted to higher voltage commercial and industrial customers. We recommend that state-average values be used for programs that are truly statewide, such as adoption of updated state building energy codes or state appliance efficiency standards.

6. **How useful and usable is the guidance, overall? Does the relationship between the component parts (i.e., Sections 1-3 and Appendices A-C) clear and relatively easy to follow? Is each of these sections and appendices helpful, clearly presented, and sufficient/complete? What specific examples, graphics, or other visual elements would help illustrate concepts described in the guidance.**

In general, we believe that the draft EM&V guidance is mostly workable for those who are familiar with EM&V but we are concerned that, as written, some of the language and description may be too complicated for some of the air regulators and others who are new to energy efficiency EM&V. Therefore, we recommend that simple explanations and graphics/visuals be prepared to help explain the key points to those without extensive EM&V experience. In addition, use of jargon and acronyms should be minimized (e.g. NOMAD and PB-MV). In the measurement and verification industry, project M&V and the supporting IPMVP framework is well known, and introducing the acronym PB-MV seems unnecessary. We suggest simply using the term project M&V. And rather than introducing the term NOMAD we suggest rewriting these sections to refer to the CPB instead.

7. **Does the guidance *not* cover any important EM&V topics relevant to fulfilling the EM&V related requirements of the emission guidelines? Is additional guidance needed to support**

the implementation of other eligible zero- and low-emitting measures that are directly metered? What topics, if any, are unnecessarily included?

We recommend that EPA provide sample EM&V plans for some common energy efficiency policies, programs and measures to help show states exactly what they need to include in their EM&V plans and provide a template that states could modify. For example, templates could be provided for new state or local building codes, residential appliance, lighting and weatherization programs, commercial and industrial prescriptive and custom rebate programs, behavioral change programs, and energy savings performance contracts.

8. How can the guidance most effectively anticipate the expected changes and evolution in quantification and verification approaches over time (given the time horizon for the emission guidelines)?

We recommend that guidance discuss and reference the emergence of new forms of data collection via AMI, wifi-enabled smart thermostats, and advanced data analytics. While current efforts around these technologies are primarily focused on serving as a customer engagement tool, these technologies are also evolving to serve as an automated EM&V tool, applicable specifically to either single measure or whole building programs where large scale billing or AMI energy use data analysis is used. AMI-based data and advanced analytics can also be used to help identify savings from large C&I projects in near real-time.[71] We suggest that the EM&V guidance make note of these developments and support their use, including referencing work being done to standardize testing of these advanced data analytic tools by Lawrence Berkeley National Laboratory.

In addition, we recommend that the EM&V guidance set forth how the guidance document will be updated, through what process, managed by what agency/entity, and in what timeframe or cycle. Specifically, we recommend that the EPA update the guidance document at least once every three years and solicit input from interested stakeholders at the beginning of the process and as well as on a draft of the updated guidance. In addition, we recommend that the list of recommended EM&V protocols and guidelines in Table 2-2 of the Guidance be periodically updated. New or revised protocols or guidelines should be added to the list as they become available. To this end, we recommend that EPA set up a web site that would provide the most up-to-date list of industry-standard EM&V protocols and guidelines.

For additional information on SWEEP's EM&V comments, please contact Howard Geller at hgeller@swenergy.org or 303.447.0078

[71] Rogers, Ethan, et al. 2015. *How Information and Communications Technologies Will Change the Evaluation, Measurement, and Verification of Energy Efficiency Programs.* Washington, DC: American Council for an Energy-Efficient Economy. Dec.