Comments on the Proposed Federal Plan and Model Trading Rules for the Clean Power Plan

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

Submitted to the U.S. Environmental Protection Agency by
Advanced Energy Economy

January 21, 2016

ADVANCED ENERGY ECONOMY
the business voice of advanced energy

January 21, 2016

Gina McCarthy
Administrator, U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, NW
Washington, D.C., 20460

RE: Proposed Federal Plan and Model Trading Rules for the Clean Power Plan, Docket ID No. EPA-HQ-OAR-2015-0199

Administrator McCarthy:

Advanced Energy Economy (AEE) is pleased to submit these comments on the design and implementation of EPA's Proposed Federal Plan and Model Trading Rules.

AEE is a national organization of businesses making the energy we use secure, clean, and affordable. Thanks to technological advances and innovation, we now have more options for meeting energy needs than ever before in history. We call these options "advanced energy."

AEE and its state and regional partner organizations, which are active in 26 states across the country, represent more than 1,000 companies and organizations that span the advanced energy industry and its value chains. Some of the technologies represented include energy efficiency, demand response, natural gas, wind, solar photovoltaics, solar thermal electric, ground source heat pumps, advanced metering infrastructure, transmission and distribution efficiency, smart grid, fuel cells, nuclear power, combined heat and power, and advanced transportation systems. Used together, these technologies and services will create and maintain a higher-performing energy system—one that is reliable and resilient, diverse, cost-effective, and clean—while also improving the availability and quality of customer-facing services.

AEE welcomes the Proposed Federal Plan as a means to ensure that the Clean Power Plan creates a uniform market signal across the country, and appreciates the Model Trading Rules as vital tools for facilitating state planning. AEE furthermore supports EPA's use of market-based trading in both the mass- and rate-based plans. However, AEE believes that certain elements of each plan type will impede the deployment of cost-effective advanced energy measures. Our comments identify revisions that will ensure these measures can compete fairly in the market for emission reductions, allowing states to capture the economic benefits of these technologies while reducing implementation costs.

Sincerely,

Matt Stanberry
Advanced Energy Economy
Vice President, Market Development

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Executive Summary

Advanced Energy Economy ("AEE") is pleased to submit these comments on the Environmental Protection Agency's ("EPA") proposed rule for the Federal Plan and Model Trading Rules ("Proposed Federal Plan and MTR") for the Clean Power Plan ("CPP").[1]

AEE is a national organization of businesses making the energy we use secure, clean, and affordable. Thanks to technological advances and innovation, we now have more options for meeting energy needs than ever before in history. We call these options "advanced energy."

AEE and its state and regional partner organizations, which are active in 26 states across the country, represent more than 1,000 companies and organizations that span the advanced energy industry and its value chains. Technology areas represented include energy efficiency, demand response, natural gas, wind, solar photovoltaics, solar thermal electric, ground source heat pumps, advanced metering infrastructure, transmission and distribution efficiency, smart grid, fuel cells, nuclear power, combined heat and power, and advanced transportation systems. Used together, these technologies and services will create and maintain a higher-performing energy system—one that is reliable and resilient, diverse, cost-effective, and clean—while also improving the availability and quality of customer-facing services.

AEE strongly supports the CPP, and believes that it represents a vital step toward modernizing the U.S. electric power system for greater efficiency, reliability, and resilience, while also creating more value for consumers, states, and the economy as a whole. AEE applauds the CPP's recognition and incorporation of advanced energy technologies as compliance options, which will allow states to adopt policies and plans that capture the carbon reduction and economic benefits of these technologies.

AEE also commends EPA's proposal to implement a market-based trading program as a part of the Federal Plan, as well as its proposal to include a market-based trading system in the MTR. AEE believes that a market-based program, like that proposed by EPA, will provide maximum flexibility for affected electric generating units ("EGUs") and states to achieve emission reductions at the lowest cost, while creating the potential for a robust market for advanced energy technologies to emerge to compete with traditional energy options to reduce emissions.

At the same time, certain design elements of the Proposed Federal Plan and MTR will unnecessarily restrain advanced energy participation in such markets and limit the use of

[1] Federal Plan Requirements for Greenhouse Gas Emissions From Electric Utility Generating Units Constructed on or Before January 8, 2014; Model Trading Rules; Amendments to Framework Regulations; Proposed Rule, 80 Fed. Reg. 64,996 (October 23, 2015) [hereinafter "Proposed Federal Plan and MTR"].

advanced energy technologies as effective compliance tools. AEE believes that it is critical to fix these design flaws in light of the importance of the Federal Plan and MTR to the overall effectiveness of the CPP. AEE recommends design elements and principles that will ensure that the Federal Plan and MTR: (1) sufficiently recognize the value of advanced energy technologies; (2) provide business certainty to encourage investment; and (3) encourage technology-neutral solutions to facilitate competition.

In order to achieve these goals and capture the benefits of advanced energy, AEE makes the following recommendations to improve upon the foundation provided in the proposed Federal Plan and MTR:

1. **EPA should reconsider its proposed allocation of allowances under the mass-based Federal Plan and MTR.** As currently structured, EPA's proposed mass-based Federal Plan and MTR would reward utilities locked into the electricity system of the 20th century and penalize those moving towards the electricity system of the 21st century. Even worse, it would increase compliance costs and restrict advanced energy such that deployment will not approach the levels EPA predicts and relies upon in its Regulatory Impact Analysis ("RIA"). Without a direct mechanism for crediting emission reduction measures, advanced energy technologies will be marginalized in favor of familiar and expensive actions over which EGU owners retain complete control. To achieve timely and cost-effective compliance outcomes across all states, the Agency needs to do much more to ensure that these technologies are able to compete equally.
2. **As the primary allocation method, AEE supports a technology-neutral allocation to low- and zero-emitting resources and EGUs that perform below their applicable rate.** EPA should provide allowances to *all* eligible zero- and low-emitting advanced energy technologies, as well as to efficient EGUs, in direct proportion to their emission reduction benefits based on their generation in the previous year. This allocation methodology would be analogous to the assignment of credit for emission reductions under rate-based plans, and would provide market certainty and price discovery while avoiding windfall profits for EGUs. Aside from this primary allocation, some allowances would go to the CEIP set-aside, and the remainder would be auctioned, in order to support price discovery and efficient market outcomes while avoiding the perverse potential for windfall profits.
3. **EPA should include a broad and growing range of advanced energy resources as eligible measures to generate Emission Rate Credits ("ERCs") under the rate-based Federal Plan and MTR.** EPA should expand the list of advanced energy technologies eligible to generate ERCs under a rate-based federal plan to include all technologies

eligible under the MTR.[2] A Federal Plan's failure to recognize and reward these emission reduction opportunities risks minimizing this emission reduction potential in the medium term and will discourage the development of advanced energy industries in rate-based Federal Plan states over the long-term. By expanding the list of ERC-eligible resources, EPA can assure that CPP compliance costs for EGUs in rate-based Federal Plan states are minimized and on par with the costs in states opting to submit their own rate-based compliance plans.

4. **EPA should strengthen the Clean Energy Incentive Program ("CEIP") to ensure that the program fulfills its potential to promote early deployment of advanced energy.** AEE welcomes the concept of the CEIP as a tool to accelerate the deployment of renewable energy and energy efficiency prior to the start of the Clean Power Plan. If implemented to its full potential, the program would be a step toward modernizing the U.S. electric power system while expediting emission reductions and lowering the cost of compliance. However, AEE believes the current structure of the program contains significant flaws that could harm renewable energy and energy efficiency markets, preventing the program from achieving its goals. Our comments on the CEIP, submitted December 15, 2015, identify a number of commonsense revisions and clarifications, such as changes to the timeline and eligibility requirements, that will ensure that the CEIP fully realizes its potential to promote early deployment of advanced energy.[3]

5. **EPA should revise the design, size, and eligibility restrictions for the proposed RE set-aside.** AEE has several concerns with the RE set-aside in the mass-based plan as proposed by EPA, and would instead address leakage within AEE's proposed primary allocation approach. AEE proposes a "floor" on the number of allowances that would be awarded to all technologies that address the risk of leakage. The size of the "floor" would be set at an appropriate level to address leakage and allowances under this floor would be available only to those measures that address the risk of leakage. If instead, EPA decides to keep its proposed allocation methodology in whole or in part, AEE strongly encourages EPA to designate a larger set-aside in order to adequately control leakage, and to expand eligibility in order to equally incent all measures that address leakage, including demand-side energy efficiency, CHP, WHP, and other measures as long as they meet the eligibility requirements outlined in the final CPP.[4]

6. **Under the mass-based MTR, EPA should provide states with multiple options for allowance allocation.** First, EPA should provide states with a clear pathway under the MTR to adopt the new source complement. Second, regardless of whether states select

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[2] Proposed Federal Plan and MTR at 64994-64995 (requesting comment on this issue).

[3] Advanced Energy Economy, Comments on the Clean Energy Incentive Program, Docket ID No. EPA-HQ-OAR-2015-0734 (Dec. 15, 2015), http://www.regulations.gov/#!documentDetail;D=EPA-HQ-OAR-2015-0734-0044.

the new source complement or choose to address leakage through allowance allocation, AEE requests that EPA develop a rank-order set of presumptively-approvable alternative allocation methods as a part of the MTR in order to provide states with options, which is important given that each state has unique policy, political, and legal considerations. Namely, EPA should consider as presumptively approvable (1) an allocation method based on AEE's primary proposal; (2) an allowance auction to distribute allowances; (3) allocation to load-serving entities ("LSEs") with a requirement to pass on the value to ratepayers, such as by investing in energy efficiency or demand-side energy projects.

7. **AEE recommends that EPA streamline the process and reduce the administrative burden of ERC and allowance issuance and tracking by leveraging designated agents and third-party developed infrastructure.** The mass-based and rate-based Federal Plans and MTRs as well as the CEIP rely on efficient and reliable infrastructure and protocols for project application and qualification, on the front end, and ERC or allowance issuance and tracking, on the back end. AEE outlines how EPA and the states can use highly qualified third-parties and reliable third-party systems that are in use today, as well as others that are in development, to facilitate crediting and tracking in federal and state plans.

8. **A single plan type (mass or rate) should be used for all Federal Plan States, but EPA should finalize both a mass-based and a rate-based MTR.** A single plan type—either mass-based or rate-based—for all Federal Plan states would create larger trading markets, thus allowing EGUs greater access to least-cost compliance options and creating clearer and less fragmented market signals. AEE would support either the mass-based or rate-based Federal Plan provided that significant changes are made to the proposed design of either. Additionally, in order to provide guidance to states as they are developing their plans, EPA should finalize both a mass-based and a rate-based MTR.

I. Introduction and Background

Advanced Energy Economy ("AEE") is pleased to submit these comments on the Environmental Protection Agency's ("EPA") proposed rule for the Federal Plan and Model Trading Rules ("Proposed Federal Plan and MTR") for the Clean Power Plan ("CPP").[5]

AEE has also submitted additional comments on evaluation, measurement and verification ("EM&V") issues related to energy efficiency raised by the Proposed Federal Plan and MTR, as well as on EPA's EM&V Guidance for Demand-Side Energy Efficiency. On December 15, 2015, AEE submitted separate comments on the Clean Energy Incentive Program ("CEIP").[6]

A. About Advanced Energy Economy

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AEE has been an active participant in proceedings involving the CPP. AEE submitted recommendations to EPA on program design on March 5, 2014, before the CPP proposal was

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[5] Federal Plan Requirements for Greenhouse Gas Emissions From Electric Utility Generating Units Constructed on or Before January 8, 2014; Model Trading Rules; Amendments to Framework Regulations; Proposed Rule, 80 Fed. Reg. 64,996 (October 23, 2015) [hereinafter "Proposed Federal Plan and MTR"].

[6] Advanced Energy Economy, Comments on the Clean Energy Incentive Program, Docket ID No. EPA-HQ-OAR-2015-0734 (Dec. 15, 2015), http://www.regulations.gov/#!documentDetail;D=EPA-HQ-OAR-2015-0734-0044.

released, and AEE submitted comments on the proposed CPP on November 5, 2014[7] and December 1, 2014,[8] as well as recommendations for improving the design of the Clean Energy Incentive Program ("CEIP") on December 15, 2015.[9] The organization has also written a number of public papers related to the CPP, and AEE has filed a motion in support of EPA in the litigation in the United States Court of Appeals for the District of Columbia Circuit on the CPP.

B. Overview of AEE's Perspective on the Federal Plan and MTR for the CPP

AEE strongly supports the CPP, and believes that it represents a vital step toward modernizing the U.S. electric power system for greater efficiency, reliability, and resilience, while also creating more value for consumers, states, and the economy as a whole. AEE applauds the CPP's recognition and incorporation of advanced energy technologies as compliance options, which will allow states to adopt policies and plans that capture the carbon reduction and economic benefits of these technologies.

AEE also commends EPA's proposal to implement a market-based trading program as a part of the Federal Plan, as well as its proposal to include a market-based trading system in the MTR. AEE believes that a market-based program, like that proposed by EPA, will provide maximum flexibility for affected electric generating units ("EGUs") and states to achieve emission reductions at the lowest cost, while creating the potential for a robust market for advanced energy technologies to emerge to compete with traditional energy options to reduce emissions.

At the same time, certain design elements of the proposed Federal Plan and MTR will unnecessarily restrain advanced energy participation in such markets and limit the use of advanced energy technologies as effective compliance tools. AEE believes that it is critical to fix these design flaws in light of the importance of the Federal Plan and MTR to the overall effectiveness of the CPP.

The Federal Plan is important to the overall success of the CPP, because it ensures that affected EGUs will achieve the requisite level of emission reductions even if a state fails to submit an approvable plan. The Federal Plan thus serves as an important safeguard on the integrity of the CPP and helps to ensure that all states are achieving emissions reductions on a level playing field. The Federal Plan is also important because it can function as a full or partial

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[7] Advanced Energy Econ., Comments on the Clean Power Plan, Docket ID No. EPA-HQ-OAR-2013-0602 (Nov. 5, 2014), http://www.regulations.gov/#!documentDetail;D=EPA-HQ-OAR-2013-0602-22276.

[8] Advanced Energy Econ., Supplemental Comments on the Clean Power Plan, Docket ID No. EPA-HQ-OAR-2013-0602 (Dec. 1, 2014), http://www.regulations.gov/#!documentDetail;D=EPA-HQ-OAR-2013-0602-22924.

[9] Advanced Energy Econ., Comments on the Clean Energy Incentive Program, Docket ID No. EPA-HQ-OAR-2015-0734 (Dec. 15, 2015), http://www.regulations.gov/#!documentDetail;D=EPA-HQ-OAR-2015-0734-0044.

state plan, as some states could conclude that it is most efficient and effective simply to use the Federal Plan as their state plan, either temporarily or permanently.[10] Similarly, the proposed MTR is also a very important component of the CPP, because it provides critical guidance and a model for states that are developing their own plans and will send a strong signal to states about what policy designs EPA considers approvable. States can also adopt all or part of the MTR as their state plan with limited effort or can use the MTR as a contingent federally-enforceable "backstop" that would be triggered if a state adopts a "state measures plan" that fails to achieve the required emission reductions on schedule.[11] AEE and its partner regional organizations have been actively engaged with states as they have started considering how to design their compliance plans, and AEE will be issuing a white paper in the near future highlighting best practices for state compliance plan design. The Federal Plan and MTR are already influencing states' thinking regarding compliance options, and states will be paying close attention to the plans as finalized by EPA.

Given the importance of the Federal Plan and MTR, it is imperative that they integrate and promote advanced energy solutions so that states can achieve their targets at low cost, while achieving maximum economic and environmental benefits.

The purpose of AEE's comments is to provide EPA with recommendations on design elements and principles that will ensure that the Federal Plan and MTR: (1) sufficiently recognize the value of advanced energy technologies; (2) provide business certainty to encourage investment; and (3) encourage technology-neutral solutions to facilitate competition. Based on these principles, these comments include the following:

- AEE's recommendation that EPA implement a single plan type for all states subject to the Federal Plan, but issue both a rate-based and a mass-based MTR in order to provide guidance to states (Section II.B).

[10] There is precedent for this approach. In past rulemakings, EPA has offered a section 110(c) Federal Implementation Plan ("FIP") as a kind of "stand-by" state plan, allowing a state to adopt the FIP until such time as the state can replace the FIP in whole or in part (e.g., with state-specific allowance allocations or opt-in provisions). EPA adopted this approach in various forms in prior proceedings on the Clean Air Interstate Rule and the Cross State Air Pollution Rule. *See* Federal Implementation Plans To Reduce Interstate Transport of Fine Particulate Matter and Ozone; Revisions to the Clean Air Interstate Rule, 71 Fed. Reg. 25,328 (2006) [hereinafter "CAIR FIP"]; Federal Implementation Plans: Interstate Transport of Fine Particulate Matter and Ozone and Correction of SIP Approvals, 76 Fed. Reg. 48,208 (Aug. 8, 2011) [hereinafter "CSAPR"].

[11] Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units, 80 Fed. Reg. 64668 (Oct. 23, 2015) [hereinafter "Final CPP"].

- AEE's request that EPA provide greater clarity regarding design differences between the Federal Plan and the MTR (Section II.C).
- AEE's perspective and recommendations regarding EPA's proposed changes to the section 111(d) framework regulations (Section II.D).
- AEE's comments on the Clean Energy Incentive Program (Section III)
- AEE's recommended approach to allocating allowances under the mass-based Federal Plan (Section IV.A).
- AEE's request that EPA provide alternative models to guide states in their choice of allowance allocation method as a part of the mass-based MTR (Section IV.B).
- AEE's recommendations regarding the allocation of allowances to affected EGUs that retire, modify, or reconstruct before and during the CPP (Section IV.C).
- AEE's recommendations to transform or improve the RE set-aside for both the Federal Plan and MTR (Section IV.D).
- AEE's recommendations regarding the desirability of other set-asides (Section IV.F).
- AEE's recommendations regarding EPA's treatment of affected combined heat and power ("CHP") units under the mass-based Federal Plan and MTR (Section IV.G).
- AEE's recommendations regarding the tracking and administration of allowance distribution to advanced energy measures under the mass-based Federal Plan and MTR (Section IV.H).
- AEE's support for the inclusion of a broad and growing range of advanced energy resources as eligible to generate ERCs under the MTR and Federal Plan (Section V.A).
- AEE's recommended revisions to the gas shift ERC (GS-ERC) provisions of the rate-based Federal Plan and MTR (Section V.B).
- AEE's support for and recommended changes to the ERC eligibility application and issuance process (Section V.C).
- AEE's perspective on the effectiveness of a "buyer liability" approach for ERCs (Section V.D).

- AEE's recommendations regarding EM&V criteria for renewable energy, energy efficiency, and other eligible measures (Section VI).
- AEE's support for trading between sources in states subject to a Federal Plan and states that have implemented a state plan (Section VII).

II. General Comments on EPA's Authority and Overall Approach to the Federal Plan and MTR

This section provides comments on EPA's overall approach to the Federal Plan and MTR. To this end, it discusses: (1) AEE's perspective on EPA's broad authority to implement the Proposed Federal Plan and to recognize the contribution of advanced energy technologies; (2) AEE's recommendation on the plan types that EPA should finalize under both the Federal Plan and MTR; (3) AEE's request that EPA provide greater clarity as to how the Federal Plan design diverges and differs from the MTR design; and (4) AEE's support for EPA's proposed amendments to the section 111(d) framework regulations.

A. EPA Has Strong Legal Authority to Implement the Proposed Federal Plan and to Recognize the Emission Reduction Contributions of Advanced Energy Technologies.

EPA's proposal to implement a market-based trading program in states subject to the Federal Plan is backed by strong legal authority. EPA's authority to issue a Federal Plan is directly tied to its authority to issue a Federal Implementation Plan ("FIP") through a cross reference to section 110 of the Clean Air Act ("CAA") (which establishes EPA's FIP authority).[12] Section 302 in turn defines "federal implementation plan" as

> a plan (or portion thereof) promulgated by the Administrator to fill all or a portion of a gap or otherwise correct all or a portion of an inadequacy in a State implementation plan, and which includes enforceable emission limitations or other control measures, means or techniques (including *economic incentives, such as marketable permits* or auctions of emissions allowances) . . . .[13]

Thus, the CAA expressly authorizes EPA to utilize "other control measures"—including a market-based program—as a part of a FIP, and also expressly states that EPA will have the *same authority* under section 111(d) to issue the Federal Plan as it has to issue a FIP. Under the plain

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[12] CAA § 111(d)(2); 42 U.S.C. § 7411(d)(2) (2012) (EPA "shall have the same authority-- . . . to prescribe a plan for a State in cases where the State fails to submit a satisfactory plan as he would have under [section 110] of this title in the case of failure to submit an implementation plan . . . .").

[13] CAA § 302(y); 42 U.S.C. § 7602(y) (emphasis added).

language of the statute, EPA therefore has authority to include a market-based emissions trading system as a part of the Federal Plan. Consistent with this authority, EPA has proposed and utilized market-based measures in the past to implement federal requirements under both section 111(d) and section 110(c) of the CAA.[14]

Moreover, courts have broadly interpreted EPA's FIP authority—and therefore EPA's Federal Plan authority. Specifically, courts have found that this authority includes "all of the rights and duties that would otherwise accrue to the state" to develop a CAA plan.[15] In effect, when issuing a Federal Plan, EPA "stands in the shoes of the defaulting state," and thus may exercise the same authority as a state in regulating affected EGUs under the Federal Plan.[16] Thus, because the CPP authorizes a state to incorporate tradable credits into its compliance plan,[17] EPA may do the same for the Federal Plan.

Additionally, to the extent a state can include measures in its plan that allow EGUs to utilize advanced energy as a compliance tool,[18] so too can EPA include such measures as compliance options in a Federal Plan.[19] The authority to recognize advanced energy as a compliance tool is also supported by the definition of "federal implementation plan," which

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[14] *See* CAIR FIP, 71 Fed. Reg. 25,328; CSAPR, 76 Fed. Reg. 48,208. *See also* Federal Implementation Plans To Reduce the Regional Transport of Ozone, 63 Fed. Reg. 56,394 (Oct. 21, 1998); Federal Plan Requirements for Clean Air Mercury Rule, 71 Fed. Reg. 77,100 (Dec. 22, 2006) [hereinafter "Proposed CAMR Federal Plan"]; *see also* Standards of Performance for New Stationary Sources and Emission Guidelines for Existing Sources; Municipal Waste Combustors, 60 Fed. Reg. 65,387 (Dec. 19, 1995) (trading rules codified in 40 C.F.R. § 60.33b(d)(1)-(2)).

[15] *Cent. Ariz. Water Conservation Dist. v. EPA*, 990 F.2d 1531, 1541 (9th Cir. 1993) (citation omitted); *see also S. Terminal Corp. v. EPA*, 504 F.2d 646, 669, 677-78 (1st Cir. 1974) ("The statutory scheme would be unworkable were it read as giving to EPA, when promulgating an implementation plan for a state, less than those necessary measures allowed by Congress to a state to accomplish federal clean air goals. . . . We are inclined to construe Congress' broad grant of power to the EPA as including all enforcement devices reasonably necessary to the achievement and maintenance of the goals established by the legislation.").

[16] *Central Arizona*, 990 F.2d at 1541 (citation omitted).

[17] In the CPP and in previous rules, EPA has interpreted section 111(d) to allow state compliance plans to utilize trading. *See* Standards of Performance for New Stationary Sources and Emission Guidelines for Existing Sources; Municipal Waste Combustors, 60 Fed. Reg. 65,387, 65,402 (Dec. 19, 1995).

[18] EPA already allows states to utilize advanced energy as a compliance tool in state implementation plans to address criteria pollutants. *See* Roadmap for Incorporating Energy Efficiency/Renewable Energy Policies and Programs into State and Tribal Implementation Plans, EPA-456/D-12-001a (July 2012), *available at* http://epa.gov/airquality/eere/pdfs/EEREmanual.pdf.

[19] Of course the Federal Plan may not exceed constitutional limits on federal power. *See New York v. United States*, 505 U.S. 144 (1992); *but see id.* at 167 ("where Congress has the authority to regulate private activity under the Commerce Clause, we have recognized Congress' power to offer States the choice of regulating that activity according to federal standards or having state law pre-empted by federal regulation"). The mere fact that states have traditionally regulated electric sector entities does not itself preclude EPA from regulating those same entities. *South Terminal Corp.*, 504 F.2d at 677-78 (holding that EPA's authority to use certain regulatory tools under section 110 does not usurp state police powers in violation of the Tenth Amendment and is not limited merely because states have historically had power over a particular means of regulation (e.g., parking regulation through zoning)).

broadly "includes . . . other control measures, means or techniques [that] provide for attainment of the relevant . . . standard."[20] EPA's authority to issue "other control measures" could include measures that limit emissions from EGUs indirectly, such as by recognizing the emission reduction contribution of energy efficiency and renewable energy.[21] Accordingly, while the Federal Plan imposes primary obligations on affected EGUs, the Federal Plan may also authorize affected EGUs to utilize credits issued to advanced energy resources as a compliance mechanism.[22]

In recognition of EPA's broad authority, AEE's comments fully support EPA's market-based trading approach and encourage EPA to more fully recognize the emission reduction contributions of zero- and low-emitting resources, consistent with this authority.

B. EPA Should Finalize a Single Plan Type for All Federal Plan States in Order to Maximize Trading Opportunities and to Reduce Compliance Cost Under the CPP, but Should Finalize *Both* a Mass-Based and Rate-Based MTR in Order to Provide Guidance for States Considering Either Plan Type.

EPA has currently proposed both a mass-based and a rate-based Federal Plan. EPA will implement a single plan type (mass or rate) for each state in which it implements a Federal Plan, and has expressed a preference to finalize only one type of plan such that all Federal Plan states have the same plan.[23] However, EPA could decide to implement a rate-based Federal Plan in some states and a mass-based Federal Plan in other states.

AEE encourages EPA to implement a single plan type—either mass-based *or* rate-based—in all Federal Plan states in order to maximize flexibility and interstate trading options. Larger trading markets will allow greater access to least-cost compliance options, ultimately reducing overall compliance costs, giving EGUs more latitude in how they choose to meet their targets, and providing eligible advanced energy measures with clearer and less fragmented development opportunities. With some design changes detailed in these comments, AEE believes that either plan type would allow advanced energy technologies to effectively participate and

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[20] CAA § 302(y); 42 U.S.C. § 7602(y).

[21] This interpretation would be consistent with the First Circuit's interpretation of EPA's FIP authority to include the regulation of "indirect sources" of pollution. *South Terminal Corp.*, 504 F.2d 668. Congress explicitly removed the ability to issue a Federal Plan containing regulation of a limited set of "indirect sources"—those related to mobile source emissions. However, this does not limit the ability to regulate indirect sources of stationary source emissions.

[22] In the context of the Title IV acid rain trading program, EPA explicitly allows advanced energy to participate by providing energy efficiency and renewable energy the opportunity to receive emission allowances. 42 U.S.C. § 7651c(f)(2)(A); *see* David R. Wooley, The Clean Air Act Amendments of 1990: Opportunities for Promoting Renewable Energy (Technical Report NREL/SR!620-29448, Dec. 11, 2000), *available at* http://www.nrel.gov/docs/fy01osti/29448.pdf.

[23] Proposed Federal Plan and MTR at 64,968-69.

provide low-cost compliance solutions. For this reason, AEE does not express a view on which design option EPA should select for the Federal Plan.

AEE also supports EPA's proposal to finalize both a mass-based *and* a rate-based MTR in order to provide comprehensive guidance to states considering either plan type.

C. EPA Should Provide Greater Clarity Regarding the Ways in Which the Federal Plan Diverges from the MTR.

Although the proposed Federal Plan overlaps significantly with the MTR, there are some important ways in which the Federal Plan is more restrictive than the MTR. However, it is not always clear that many of the design decisions in the Federal Plan are driven by fundamental restrictions in EPA's authority that do not apply to state plans. Nor is it always clear from the regulatory text (or the preamble) where or to what extent the Federal Plan diverges from the MTR.

AEE anticipates that EPA's publication of the two MTRs later this year, completely separate from the Federal Plan, will partially resolve this issue. However, given the significant ambiguity that has already been introduced, AEE urges EPA to clarify to states that many of the restrictions in the Federal Plan do not apply in the context of state plans, such as by compiling a comprehensive list of the design differences between the Federal Plan and the MTR to highlight where these differences occur. Furthermore, EPA should make clear that states could adopt certain portions of the MTRs without following them in their entirety, and should provide multiple model options within certain areas of the MTRs—such as the allocation of allowances in mass-based plans—to better assist states as they pick a plan suited to their individual needs.[24]

Relatedly, AEE urges EPA to give some indication of changes it expects to implement in the Federal Plan. To the extent that some states may be "choosing" whether to submit a plan or not, understanding the likely form of the Federal Plan would provide clarity to regulators, affected units, and the advanced energy industry.

D. AEE Supports EPA's Proposed Amendments to the Section 111(d) Framework Regulations.

EPA proposes to revise the section 111(d) framework regulations, which provide the generally applicable procedures for implementing rules under section 111(d).[25] EPA's proposed

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[24] *See* Section IV.B.

[25] *See* 40 C.F.R. part 60, subpart B (2015).

revisions would apply to all future section 111(d) rules, not just the CPP.[26] Many of EPA's proposed revisions would provide EPA with more options and flexibility in approving or disapproving state plans, and more options in imposing a Federal Plan.

AEE supports EPA's proposed amendments to the section 111(d) framework regulations, because they generally provide EPA and states greater flexibility in designing and implementing compliance plans. For instance, EPA's proposal to allow states to submit "abbreviated state plans" will appropriately allow states to retain control over policy questions and design issues that are important to the state, while ensuring that the integrity of the program is maintained.

AEE also strongly supports EPA's proposal to adopt a procedural mechanism allowing EPA to call for plan revisions—similar to "SIP calls" under section 110 of the CAA—for multiple reasons.[27] First, it is essential for EPA to be able to call for a state plan revision if that plan is not achieving the requisite emission reductions or the state is not properly implementing its state plan. Second, EPA's authority to call for plan revisions is also important because it would allow for EPA to call for state plan revisions if and when it reevaluates and revises the applicable standard under section 111(d). AEE recommends that EPA treat the 2030 final state goals as a *default*, and further commit to reviewing and strengthening the 2030 final emissions goals in the near future. This approach is consistent with the strong emphasis in section 111—and in the CAA generally—on protecting the environment and public health and promoting technological innovation.[28] Such an updating approach is consistent with the statute, with the kind of authority normally available to a regulatory agency, and with EPA's interpretation in past section 111(d) rulemakings.[29] Indeed, the rapid pace of technological development and the rapid improvement in technology costs provide compelling rationales for EPA to revisit and strengthen the stringency of the CPP *well before* the outer limits specified in the CAA.

Lastly, the authority to call for section 111(d) plan revisions is important if EPA revises the New Source Performance Standards ("NSPS") under section 111(b) for affected EGUs. Under section 111(b), EPA is required to review the NSPS every 8 years, and if appropriate,

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[26] Proposed Federal Plan and MTR at 65,034.

[27] *See* Proposed Federal Plan and MTR at 65,035-36.

[28] *See, e.g., Sierra Club v. EPA,* 657 F.2d 298, 346 (D.C. Cir. 1981) (statutory factors that EPA must weigh in determining a "standard of performance" under section 111 include "subfactors such as technological innovation.").

[29] *See* 79 Fed. Reg. 41,772, 41,774 (July 17, 2014) ("The EPA is not statutorily obligated to conduct a review of the emission guidelines, but has the discretionary authority to do so when circumstances indicate that this is appropriate. Based on changes in the landfills industry and changes in size, ownership, and age of landfills since the emission guidelines were promulgated in 1996, the EPA has concluded that it is appropriate to review the landfills emission guidelines at this time.").

revise the standards.[30] If EPA revises the NSPS, state plans (and the Federal Plan) will need to be revised in order to incorporate all sources built prior to that time. In past rulemakings, EPA has determined that new sources effectively become "existing" sources—and may be subject to state and federal plans under section 111(d)—once the NSPS that applied to those new sources is reviewed and revised.[31] EPA should take this same approach for the purposes of the CPP, and should clarify in the rule finalizing the framework regulations that formerly new sources will become "existing" sources, subject to section 111(d), when EPA revises the NSPS. It is important for EPA to make this clarification now—rather than in 8 years time—so that states can consider the possibility that EPA will revise the NSPS as a part of their state plan development process, and so that industry is aware of and can plan for the fact that any "new" sources built would become subject section 111(d) if and when EPA revises the NSPS for affected EGUs.

III. AEE's Comments on the Clean Energy Incentive Program

AEE welcomes the concept of the Clean Energy Incentive Program ("CEIP") as a tool to accelerate the deployment of renewable energy and energy efficiency prior to the start of the Clean Power Plan. If implemented to its full potential, the program would be a step toward modernizing the U.S. electric power system while expediting emission reductions and lowering the cost of compliance. In the context of the proposed Federal Plan and MTR, AEE supports the inclusion of the CEIP in both the mass-based and rate-based Federal Plans and MTRs.

While AEE supports the CEIP, the current structure of the program contains significant flaws that could harm renewable energy and energy efficiency markets, preventing the program from achieving its goals. AEE's comments on the CEIP, submitted December 15, 2015, provide solutions that would rectify these shortcomings and maximize the potential to drive early action.[32]

In Sections IV.D. and V.C. of these comments, AEE provides EPA with recommendations for incorporating a broad section of advanced energy technologies, including

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[30] 42 U.S.C. § 7411(b).

[31] *See* Standards of Performance for New Stationary Sources and Emission Guidelines for Existing Sources: Hospital/Medical/ Infectious Waste Incinerators, 74 Fed. Reg. 51,368, 51,375 (Oct. 6, 2009) (providing that "All HMIWI that complied with the NSPS as promulgated in 1997 are 'existing' sources" following the promulgation of amendments to the NSPS, and requiring those sources to comply with applicable emission guidelines to the extent they are more stringent than the NSPS); Standards of Performance for New Stationary Sources and Emission Guidelines for Existing Sources: Commercial and Industrial Solid Waste Incineration Units, 80 Fed. Reg. 3,018, 3,023 (Jan. 21, 2015) (explaining that following February 2013 revisions to the NSPS, EPA intended to regulate sources covered by the prior 2000 NSPS as ''existing'' sources under the more stringent EGs once these units were covered under an approved state plan or federal plan implementing the 2013 CISWI final EGs).

[32] Advanced Energy Econ., Comments on the Clean Energy Incentive Program, Docket ID No. EPA-HQ-OAR-2015-0734 (Dec. 15, 2015), http://www.regulations.gov/#!documentDetail;D=EPA-HQ-OAR-2015-0734-0044.

energy efficiency, into the rate-based and mass-based Federal Plan, and how EPA (and states) may do so in a streamlined fashion at low administrative cost using designated agents and third-party developed infrastructure. These recommendations are also applicable to the issuance of ERCs and allowances to certain renewable energy and all energy efficiency projects under the CEIP.

As EPA has indicated in the final CPP regulations, in order to be eligible to receive credits (ERCs or allowances) under the CEIP, renewable energy and energy efficiency projects must meet all ERC-issuance requirements otherwise required during the interim and final step periods, including approval of a third-party verified EM&V plan, issuance of credits based on third party-verified M&V reports, and the tracking and trading of ERCs in a registry.[33] AEE's recommendations for developing streamlined and robust systems and infrastructure to facilitate the issuance of compliance instruments for verified MWh of generation and savings is therefore critical for the success of the CEIP in Federal Plan states.

AEE looks forward to working with states and EPA on implementation of the CEIP and in aiding states and EPA to adapt infrastructure developed for that purpose to create a flexible, low-cost ERC-issuance process for a broad range of advanced energy technologies during CPP compliance.

Finally, as a clarification, AEE would like to note that in its CEIP comments, it unintentionally omitted the term "ground source heat pump" both in the context of the Investment Tax Credit ("ITC") and in the context of eligible demand-side energy efficiency measures. The comments should be read with this term included.

IV. Detailed Comments on Strengthening the Design of EPA's Proposed Mass-Based Federal Plan and MTR

This section discusses AEE's recommendations for changing the current design of the proposed mass-based Federal Plan and MTR. As stated previously, AEE commends EPA's proposal to implement a market-based trading program as a part of the mass-based Federal Plan and MTR. AEE also appreciates EPA's recognition of the emission reduction contributions of advanced energy technologies.

However, as currently structured, EPA's proposed mass-based Federal Plan and MTR would fail to reward utilities that have made efforts to diversify their portfolio, provide a significant windfall to affected EGUs, increase compliance costs, and restrict advanced energy such that deployment will not approach the levels EPA predicts and relies upon in its Regulatory

[33] Final CPP at 64943 (codified at 40 CFR § 60.5737(e)).

Impact Analysis ("RIA"). AEE's proposed design changes in this section will ameliorate these design flaws and will enhance the ability of advanced energy technologies to provide low-cost compliance solutions, while more fully addressing EPA's concerns regarding leakage to new EGUs under the mass-based Federal Plan.

A. AEE's Recommendations Regarding the Allocation of Allowances under the Mass-Based Federal Plan

If a state does not submit its own allowance allocation plan, EPA would allocate allowances on behalf of that state under the mass-based Federal Plan. Specifically, EPA proposes to allocate a state's pool of allowances to affected EGUs *pro rata*, based on each affected EGU's average historic generation in 2010-2012.[34] The total number of allowances that EPA would distribute to affected EGUs through this historical generation method would be the number of allowances that remain in each state's total mass-based budget *after* three different allowance set-asides have been taken out.[35] These set-asides are: (1) an RE set-aside; (2) an output-based allocation set-aside to existing NGCC units, during the second and third step periods; and (3) a CEIP set-aside, during the first step-period only. These set-asides would be subtracted from the amount of allowances equivalent to the state's total mass-based goal for each step period *before* the remaining allowances are allocated to affected EGUs using EPA's proposed historic generation method. The RE set-aside and the output-based set-aside are both intended to address leakage concerns, while the CEIP set-aside is intended to promote early action prior to the start of the CPP.[36] EPA broadly requests comment on the method it should use to allocate allowances under the Federal Plan, as well as the design of the three set-asides.

This section first considers the drawbacks of EPA's proposed allocation approach, then discusses principles to guide the development of a revised allocation approach, and finally provides a detailed overview of AEE's proposal for allowance allocation under the mass-based Federal Plan.

1. Drawbacks of EPA's Proposed Allocation Approach

While AEE supports the flexibility of mass-based trading under the proposed Federal Plan and MTR, AEE does not support EPA's proposed initial allocation approach based on historic-generation, and is confident that there are several preferable approaches well within the Agency's legal authority when promulgating a Federal Plan. As currently proposed, the allocation approach for the Federal Plan and MTR rewards utilities that have been slow to

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[34] Proposed Federal Plan and MTR at 65,015-16.

[35] Proposed Federal Plan and MTR at 65,016.

[36] Proposed Federal Plan and MTR at 65,019, 65,022.

transition towards advanced energy while missing an opportunity to reward early action; (b) will result in windfall profits for affected EGUs in certain markets; (c) introduces several market barriers that will dampen the deployment of advanced energy technologies and services, which are key to achieving cost-effective and lasting emission reductions; and (d) fails to adequately address these market barriers, including the risk of emission leakage.

a. The Proposed Approach Penalizes Utilities that have Taken Early Action and Misses an Opportunity to Incent Progress Prior to the Start of Compliance

As currently structured, EPA's proposed mass-based Federal Plan and MTR would reward utilities locked into the electricity system of the 20th century and penalize those moving towards the electricity system of the 21st century. Specifically, EPA proposes to allocate allowances during the step period (2022 through 2030) to affected EGUs based on historic generation (2010 through 2012). This means that any utilities that ramped down their fossil fuel-fired capacity and increased their reliance on advanced energy prior to 2010 will actually be *worse off* given EPA's proposed allocation methodology than they would be had they waited until 2022—a full 12 years—to make the same shift.[37]

Moreover, because the level of allocation has already been determined based on generation in previous years, the primary proposed allocation methodology also fails to reward utilities that take action between now and 2022, thus providing little incentive to do so.[38] As AEE will describe in greater detail when describing recommended changes, this is an entirely avoidable outcome. Awarding allowances to eligible measures installed after 2013 that generate (or save) energy during the step period would not only reward states that have already taken steps towards transitioning their electricity systems, but also would reward utilities that continue to do so between now and 2022. In contrast to EPA's proposed methodology, this would provide an effective incentive for utilities to begin their transition towards compliance prior to the start of the interim compliance period.

EPA's proposed allocation methodology is therefore inconsistent with one of the main stated goals of the CPP; namely, to "support continued investments by the industry in cleaner power generation to ensure reliable, affordable electricity *now and into the future.*"[39]

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[37] Burtraw, D., Palmer, K., Bharvirkar, R. and Paul, A., "The Effect on Asset Values of the Allocation of Carbon Dioxide Emission Allowances," The Electricity Journal, 15.5 (2002): 51-62, http://www.rff.org/files/sharepoint/WorkImages/Download/RFF-DP-02-15.pdf. "Grandfathering is based on history and thereby provides no incentives to change behavior because the allocation is predetermined." *Id.*

[38] The CEIP, which AEE fully supports, does support early action, but in a limited capacity. The comment here refers specifically to EPA's primary allocation approach, which would provide approximately 90% of allowances to existing EGUs based on historical generation.

[39] Final CPP at 64,664. Emphasis added.

b. The Proposed Approach Will Result in Windfall Profits for Affected EGUs

In addition to failing to reward and incentivize early action by affected EGUs, free allocation would unfairly produce windfall profits for these EGUs, particularly in competitive markets—that is, it would more than compensate incumbent EGUs for the costs of compliance. EPA itself recognizes this risk in the *Allowance Allocation Proposed Rule Technical Support Document,* which states, "Economic theory indicates that direct allocation to generators could result in profits to generators that, despite receiving allowances free of charge, include in the marginal cost of producing electricity some or all of the opportunity cost of having to surrender an allowance (which has an economic value) to cover the emissions associated with the marginal production of electricity."[40] Windfall profits are well understood both in theory[41] and in practice, with the first phase of the European Union emission trading system ("EU ETS") market providing a particularly stark example of windfall profits.[42] These windfall profits would distort market signals, and give affected EGUs an advantage over other actors in the electricity sector. Additionally, economic literature generally agrees that free allocation to affected EGUs is less efficient than alternative options, such as an auction, and furthermore disadvantages new market participants by allocating only to existing units.[43]

Under EPA's proposed historical-generation approach, on a nationwide basis, EPA would distribute 90% of the total allowances to affected EGUs for the first step period, and distribute

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[40] *See* EPA Office of Air & Radiation, *Allowance Allocation Proposed Rule Technical Support Document (TSD)* at 10 (Aug. 2015).

[41] *See* Goulder et al., *Impacts of alternative emissions allowance allocation methods under a federal cap-and-trade program,* (Aug. 2010), Journal of Environmental Economics and Management, vol. 60, p. 161-181, http://web.stanford.edu/~goulder/Papers/Published%20Papers/Impacts%20of%20Alternative%20Emissions%20Allowance%20Alloc%20Methods%20(Goulder-Hafstead-Dworsky,%20JEEM%202010).pdf. *See also* Congressional Budget Office, *Trade-Offs in Allocating Allowances for CO_2 Emissions* (Apr. 2007), https://www.cbo.gov/sites/default/files/cbofiles/ftpdocs/89xx/doc8946/04-25-cap_trade.pdf. An analysis by the Congressional Budget Office concluded that, "…giving away allowances (or the proceeds from selling allowances) to certain parties would lower their costs, but at the expense of missing the opportunity to greatly reduce the total cost to the economy… In essence, such a strategy would transfer income from energy consumers—among whom lower income households would bear disproportionately large burdens—to shareholders of energy companies, who are disproportionately higher-income households. *Id,* at 3.

[42] In Phase I of the EU ETS, windfall profits for the coal, gas, and oil power sectors were an estimated $16.6 billion, equal to 1.5% of the total value of the European utilities market. Windfall profits were especially high in areas where higher-emitting sources often set the marginal price, since it is the marginal unit that will determine the embedded cost of carbon in the price of the electricity. *See* Lucas Merrill Brown, Alex Hanafi, and Annie Petsonk, Environmental Defense Fund, *The EU Emissions Trading System: Results and Lessons Learned,* at 19-21 (2012), https://www.edf.org/sites/default/files/EU_ETS_Lessons_Learned_Report_EDF.pdf.

[43] *See* Cramton and Kerr, *Tradable Carbon Allowance Auctions: How and Why to Auction* (1998), Center for Clean Air Policy. *See also,* National Commission on Energy Policy, *Allocating Allowances in a Greenhouse Gas Trading System* (Mar. 2007), http://bipartisanpolicy.org/library/allocating-allowances-greenhouse-gas-trading-system/

89% of the total allowances to affected EGUs for each subsequent step period.[44] Thus, under this approach, existing affected EGUs would receive a substantial windfall and the lion's share of the allowance value.[45]

c. The Proposed Approach Will Marginalize Advanced Energy Measures for Clean Power Plan Compliance.

Advanced energy technologies and services offer several key advantages for Clean Power Plan compliance. Most importantly, these technologies are often the most cost-effective options for reducing emissions. For example, Lazard estimated a levelized cost of electricity ("LCOE") for energy efficiency between zero and $50/MWh,[46] and found that over the past five years, the LCOE for wind power has declined by 58%, while the LCOE for utility-scale solar and concentrating solar power has dropped by 78% and 59% respectively.[47] Unsurprisingly, these measures lead the way for cost-effective compliance options, according to regional transmission operator/independent system operator ("RTO/ISO") studies,[48] and AEE Institute's modeling

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[44] *See* U.S. EPA, *Allowance Allocation Proposed Rule Technical Support Document* at 5 (Aug. 2015). Because the CEIP and OBA set-asides are not based on fixed percentages and vary by state, the percentage of total allowances that EPA would distribute to these set-asides varies by state. Thus the percentage of allowances that the EPA would allocate to affected EGUs using the historic generation approach also varies by state. *See id*.

[45] For these same reasons, AEE would also oppose any initial allocation approach that would allocate a greater proportion of the total allowances to steam generating units when compared to EPA's proposed historic-generation-based method. For instance, an approach based on 2010-2012 historical CO_2 *emissions*, rather than generation, would allocate more allowances to higher emitting sources and would still result in windfalls for EGU owners. *See* Proposed Federal Plan and MTR at 65,017. Similarly, EPA's alternative approach that divides the total pool of allowances into source subcategories in proportion to the product of the historic generation in each source subcategory multiplied by that source subcategory's emissions performance rate would also favor steam generating units, while still resulting in windfalls to EGUs. *See id*. AEE views both of these alternative approaches as even *less* favorable that EPA's current proposed approach as they provide a greater windfall to higher emitting sources.

[46] Lazard's LCOE for energy efficiency measures the cost of avoided electricity, not the cost of generation, but is an appropriate point of comparison as an alternative to generating a unit of power. Advanced Energy Econ. Inst., *Competitiveness of Renewable Energy and Energy Efficiency in U.S. Markets*, at 9, 13 (June 2015), http://info.aee.net/competitiveness-of-renewable-energy-and-energy-efficiency-in-us. Similarly, the Lawrence Berkeley National Laboratory recently estimated that the U.S. average "total cost of saved energy" by customer-funded utility energy efficiency programs across all sectors is $46/MWh (or $0.046/kWh), based on an analysis of programs in 20 states from 2009-2013. Lawrence Berkeley Nat'l Lab., *The Total Cost of Saving Electricity through Utility Customer-Funded Energy Efficiency Programs*, at 11 (April 2015), https://emp.lbl.gov/sites/all/files/total-cost-of-saved-energy.pdf.

[47] Advanced Energy Econ. Inst., *Competitiveness of Renewable Energy and Energy Efficiency in U.S. Markets*, at 8-9 (June 2015), http://info.aee.net/competitiveness-of-renewable-energy-and-energy-efficiency-in-us (citing Lazard's Levelized Cost of Energy Analysis, Versions 8.0 (2014) and 3.0 (2009)). These percentages represent the average percentage decrease of high and low LCOE ranges for each technology.

[48] For example, PJM Interconnection predicted higher levels of advanced energy capacity and energy efficiency to varying degrees under different model runs, with renewables and efficiency cited as cost-reducing compliance options. *See* PJM Interconnection *Economic Analysis of the EPA Clean Power Plan Proposal* (Mar. 2015), https://www.pjm.com/~/media/documents/reports/20150302-pjm-interconnection-economic-analysis-of-the-epa-clean-power-plan-proposal.ashx. Similarly, the Southwest Power Pool (SPP) modeled a compliance case calling for

using the State Tool for Electricity Emissions Reduction ("STEER"), which consistently finds that measures such as reducing energy waste, renewable energy sources like solar and wind, and cogeneration combined with natural gas dominate under least-cost optimization scenarios for CPP compliance.[49]

By helping affected EGUs achieve compliance in a timely and cost-effective manner, advanced energy solutions are key to both the short-term and long-term success of the Clean Power Plan. In the short-term, the widespread availability of cost-effective compliance options will help ease the transition into the compliance period while also reducing ratepayer impacts. In the long-term, increased deployment of advanced energy technologies will contribute to further technology and price improvements.[50] When the Agency revisits the standards for existing sources in the future, as explained in *supra* Section II.D., the increased availability of cost-effective compliance measures will give the Agency more options for determining the best system of emission reductions.

These technologies and services also provide lasting grid benefits not limited to emission reductions. For example, demand side energy efficiency, along with other advanced energy options like distributed generation, combined heat and power ("CHP"), and transmission and distribution efficiency, avoids the need for capital expenditures such as expensive peaking units, and lessens the wear and tear on existing infrastructure. Renewable generation provides a long-term price hedge against uncertain and fluctuating fuel costs. CHP and waste heat and power ("WHP") make use of otherwise unused energy while providing reliable on-site electricity.[51]

In the final rule, EPA has clearly allowed for the use of advanced energy for compliance purposes, and the Agency has adequately demonstrated that EGUs under all market structures and all types of utility and merchant ownership can access these eligible compliance measures under any type of compliance plan.[52] Furthermore, EPA's modeling of the final rule predicts that

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5.6 GW of wind capacity and 1.2 GW of gas capacity above currently planned additions. *See* Southwest Power Pool, *SPP Clean Power Plan Assessment* (Apr. 2015), http://www.spp.org/publications/SPP%20Regional%20Compliance%20Assessment%20Report.pdf.

[49] Advanced Energy Economy Inst., *AEE's State Tool for Electricity Emissions Reduction* (2016), http://info.aee.net/steer.

[50] *See* Advanced Energy Econ. Inst., *Markets Drive Innovation*, at 28 (July 2015), http://info.aee.net/market-response-to-epa-clean-power-plan. "The relationship between cost and deployment is often referred to as the *learning rate* and visualized as an *experience curve* or *learning curve*. Quite simply, the learning rate refers to cost reductions that accompany every doubling in the market deployment of a technology due to economies of scale and technological improvements." *Id*. For instance, "[w]ind turbine efficiency has improved by 260% since 1999, and general efficiency of flat plate solar PV is expected to increase from 16% in 2011 to 25% by 2030, reducing costs by 35%." *Id*.

[51] *See* Advanced Energy Econ. Inst., *This Is Advanced Energy* (Jan. 2016), http://info.aee.net/this-is-advanced-energy.

[52] Final CPP at 64,804-64,806.

these resources will contribute significantly to compliance, and that energy efficiency in particular will be key to keeping costs down.[53]

However, while EPA has demonstrated that EGUs *can* access advanced energy measures, and while in many cases advanced energy is an optimal choice from both a cost and a performance perspective, the allocation methodology proposed in the mass-based Federal Plan and MTR both introduces and fails to address several market barriers that will actually prevent deployment of these measures for compliance purposes. In other words, even when advanced energy deployment is an *available* and *optimal* compliance solution, these measures will go underutilized given the proposed approach to allocation. Specifically, without a direct mechanism for crediting measures that reduce emissions, these measures will be marginalized in favor of familiar actions over which EGU owners can retain complete control.

EPA has clearly explained (and AEE agrees) that the electricity system is an interconnected grid of fluctuating supply and demand. This means that energy efficiency implemented on one part of the grid can reduce generation elsewhere on the grid—even in a different utility territory or a different state. Equally, when a wind farm in one state starts generating electricity, the plant that cycles down in response may not even be in a neighboring state.

In mass-based and rate-based plans in which there is *direct recognition* of the emission reduction contributions of beyond-the-fence measures (through issuance of ERCs or allowances to such measures), the compliance benefit of the reduced emissions in the examples above would go to the provider of the wind farm or of the energy efficiency project or program. The provider would then sell these allowances or ERCs to an affected EGU that needs them for compliance purposes. Ultimately, the entity that invested in the measure sees the financial benefit from the emission reductions of the investment. By aligning the incentives to invest in measures that produce emission reductions, direct recognition of emission reductions for compliance purposes through ERC or allowance issuance ensures that such emission reduction measures are financed and deployed in the first place.

However, the default historic-generation based approach proposed by EPA in the mass-based Federal Plan and mass-based MTR does not provide direct recognition of the vast majority of emission reductions caused by these measures. Rather than receiving an allowance, a provider would, in theory, be incentivized to deploy a project due to favorable market conditions, namely, the inclusion of the cost of emission reductions in electricity market prices. When modeling for least-cost compliance options, as EPA does in its Regulatory Impact Analysis ("RIA"), this price

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[53] U.S. EPA, *Regulatory Impact Analysis for the Clean Power Plan Final Rule* (Aug. 2015) at 3-23 [hereafter "RIA"].

signal predicts significant participation by advanced energy. However, while the carbon price generated by an emissions cap is important to facilitate the deployment of advanced energy, it is not in itself sufficient to achieve compliance at the lowest cost due to market barriers not captured by least-cost models. Specifically, these models cannot reflect the reality of different electricity market structures and regulatory structures, nor can they capture decision-making by EGU owners and operators, consumers, financial markets, investors, or advanced energy providers.[54] Indeed, the Stern Review Report on the Economic Impacts of Climate Change argues that "the presence of a range of other market failures and barriers mean that carbon pricing alone is not sufficient."[55]

Given these realities, AEE is very concerned that the allocation methodology as proposed under the Federal Plan and MTR will create or fail to address three key market barriers to advanced energy deployment that will substantially outweigh any incentive to deploy these measures, namely (i) dampened demand for beyond-the-fence measures due to free rider issues, (ii) a weak or distorted price signal for emission reductions caused largely by free allocation to existing EGUs, and (iii) existing barriers to advanced energy deployment caused by energy market structures.

i. Free Rider Issue.

Because of the interconnected nature of the electricity grid, a lack of a mechanism for directly crediting emission reduction measures introduces a free-rider issue that will dampen demand for advanced energy resources, even when they are least-cost compliance options. Beyond-the-fence emission reductions in a mass-based system have an emission reduction impact on the grid overall, so investing in a new solar farm, for example, would reduce demand for fossil-fuel fired generation on the entire grid—thus contributing to aggregate compliance—but would not produce identifiable emissions reductions that any single investor or EGU owner could harness. In other words, the value of these emission reductions would be broadly "shared" by all affected EGUs, while the costs would be borne solely or disproportionately by the investors in those technologies. This would create a free-rider problem that would limit economically efficient incentives to invest in any advanced energy technologies. Under EPA's proposal, advanced energy resources will therefore be disadvantaged relative to emission

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[54] In fact, energy efficiency is exogenous to the model runs used to analyze the final CPP. RIA, at ES-8.

[55] Nicholas Stern, *Stern Review Report on the Economics of Climate Change,* at 308 (Oct. 2006), http://webarchive.nationalarchives.gov.uk/20100407172811/http://www.hm-treasury.gov.uk/d/Part_IV_Introduction_group.pdf. This finding is echoed by other sources, e.g., Richard Cowart, Regulatory Assistance Proj., *Prices and Policies: Carbon Caps and Efficiency Programmes for Europe's Low-Carbon Future* (2011), http://www.raponline.org/document/download/id/931. Cowart argues, "…global experience teaches that a climate programme that attempts to reduce emissions through price alone will be more costly and less certain than a comprehensive programme that includes proven techniques to deliver low-carbon resources, especially cost-effective efficiency resources." *Id.,* at 2.

reduction options implemented *at* EGUs or *by* EGU owners—even if advanced energy options would otherwise provide the lowest-cost emission reduction solution.

To be sure, there are some market structures in which these concerns would be minimized for certain technologies. For example, in a state dominated by a single vertically-integrated utility that controls its own dispatch, owns or controls renewable generation facilities, owns its own transmission and distribution infrastructure, and runs or sponsors energy efficiency programs or projects, these measures are likely to be implemented regardless of whether they are eligible to receive ERCs or allowances under the CPP. However, even in such a market, there are other resources—including energy efficiency delivered by energy service companies (ESCOs), distributed generation, CHP, and WHP—that, in the absence of unrelated supportive state policies, are likely to be underutilized in these markets relative to their economic potential. Moreover, typically risk-averse utilities and other EGU owners may not be the best positioned to deploy cutting-edge advanced energy technologies. EPA's methodology, therefore, will increase overall costs by shifting compliance strategies away from the experts and entrepreneurs best capable of deploying them at the lowest cost. Overall, these non-utility measures represent a huge potential for emission reductions, and an opportunity for investment outside of the electricity sector.[56] Furthermore, EPA should not design a Federal Plan and MTR that will work only for *certain* eligible measures in *certain* markets.

ii. Weak or Distorted Price Signal.

A second market failure likely to develop under EPA's proposed allocation methodology for the Federal Plan and MTR is an artificially weak or distorted price signal for emission reductions. The result will be an inefficient market for emission reductions that will impede the ability of advanced energy measures to compete as providers of these reductions, and could occur for several different reasons.

First, when EGUs start out with free allowances that cover a major portion of their emissions, as they would under EPA's proposal, they will have little need to investigate the wide array of readily-available emission reduction possibilities or to trade with other market actors. A lack of trading limits allowance liquidity and price discovery, producing market inefficiencies as market participants operate under imperfect information. Even if they choose not to trade, according to economic theory, EGUs should still compare the costs of maintaining EGU generation, with the opportunity costs of selling allowances and investing in advanced energy projects. However, EGUs are not perfect economic actors. When EGUs start with most of the

[56] Bloomberg New Energy Finance estimates that the total U.S. market for energy efficiency reached nearly $14 billion in 2013, of which more than $6 billion came from performance contracts through ESCOs. Advanced Energy Econ. Inst., *Competitiveness of Renewable Energy and Energy Efficiency in U.S. Markets*, at 15 (citing Bloomberg New Energy Finance, *Sustainable Energy in America, 2015 Factbook*, at 114 (February 2015)).

allowances they need, they have limited need to compare these costs, and in reality there is substantial cost to exploring other potential emission reduction actions. Additional factors that further inhibit EGUs from acting in an economically-efficient manner include the *endowment effect,* which may reduce trading by causing a firm to overvalue freely allocated allowances already in its possession; a desire to minimize organizational complexity; competing organizational priorities such as staffing preferences that conflict with least-cost compliance; and reluctance to trade during the early stages of the market.[57]

Second, if free allocation results in one firm gaining market power, that firm may artificially inflate or deflate allowance prices, depending on whether it is a likely seller or purchaser of allowances.[58] Market power issues are a larger concern in markets in which most EGUs are owned by a small number of firms, but these issues are less likely to occur if a broader spectrum of entities—such as advanced energy providers— are eligible to earn allowances.

Third, AEE is concerned that, as proposed, EPA's allowance allocation methodology will not adequately address the risk of leakage to new units not covered under section 111(d).[59] Leakage would not only jeopardize the integrity of the regulation, but would also distort the market for emission reductions. Specifically, unless the potential for emission leakage to new sources not regulated under the Clean Power Plan is fully addressed, new unaffected emitting units will tend to replace generation from existing affected units, thus diminishing demand for allowances and suppressing allowance prices. As currently designed, there is a high likelihood that the set-asides to address leakage under the proposed mass-based federal plan and model trading rule will fail to fully address leakage, thereby preventing optimal deployment of beyond-the-fence measures.

iii. Energy Market Structure.

There are also structural issues related to how technologies compete in energy markets that will impede the implementation of beyond-the-fence measures to their full economic potential even if clear and sufficient price signals for emission reductions were provided.

First, some fundamental aspects of the utility regulatory structure dis-incentivize the use of advanced energy technologies; these problems will persist under the mass-based Federal Plan and MTR given EPA's proposed allocation approach. For example, the well-documented *throughput incentive* in both vertically integrated and restructured markets incentivizes utilities

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[57] Robert W. Hahn and Robert N. Stavins, *The Effect of Allowance Allocations on Cap-and-Trade System Performance,* at 9-10 (Mar. 2010) [hereinafter "Hahn and Stavins"], http://www.nber.org/papers/w15854.

[58] Hahn and Stavins at 6. EPA requests comment on whether the mass-based or rate-based Federal Plan would create market power concerns. *See* Proposed Federal Plan and MTR at 64,977.

[59] As defined by EPA in the final CPP. *See* CPP at 64,823.

to increase volumetric electricity sales in order to increase revenue and profit.[60] Advanced energy technologies—specifically energy efficiency, distributed generation, and transmission and distribution ("T&D") efficiency—reduce throughput that in turn reduces utility revenue, unless the state has adopted revenue decoupling, whereby utility revenues are no longer tied to volumetric electricity sales. Although decoupling represents a good interim solution to the throughput incentive, it has limitations as the level of energy efficiency and distributed generation deployment rises.[61]

In vertically-integrated markets, the throughput incentive affects all assets along the electricity supply chain, from generation to transmission to distribution. By reducing load, advanced energy technologies reduce the utilization of existing power generation infrastructure, raising the specter of stranded assets, in addition to reducing revenues from electricity sales. Here again, while policies such as revenue decoupling can partially and temporarily address this issue, not all states have adopted electric decoupling, and significant market barriers to advanced energy deployment still exist in many states.[62] In the context of CPP compliance, the *throughput incentive* will encourage EGUs to devalue advanced energy options such as energy efficiency or distributed generation relative to options such as heat rate improvement, unless a mechanism for directly recognizing emission reduction measures is implemented under the CPP to correct this market barrier. In restructured markets, utilities primarily make money from installing new transmission and distribution infrastructure, and although the potential for stranded assets is not the main issue, the potential for lower capital asset utilization from reduced electricity throughput raises similar barriers to advanced energy deployment as in vertically-integrated markets.

Second, regardless of whether utilities are or are not incentivized to increase throughput, they may still be incentivized to meet customer demand with new utility-owned resources, rather than with advanced energy resources that are not owned by the utility. These non-utility advanced energy resources could include supply-side resources like merchant generation or customer-sited resources like energy efficiency and distributed generation. This is because new regulated capital investment, as opposed to overall utility performance, is what drives revenue growth and allows utilities to achieve greater shareholder profit. Traditionally, these regulated capital expenditures have included investments in generation, transmission, and distribution assets. For example, in states that have not allowed utilities to profit from energy efficiency

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[60] Regulatory Assistance Proj., *Electricity Regulation in the U.S.: A Guide,* at 60 (Mar. 2011), http://www.raponline.org/document/download/id/645.

[61] Specifically, it results in cost shifting from customers that have deployed energy efficiency and distributed generation to those that have not. As the level of energy efficiency and distributed generation deployment rises, the degree of cost shifting may become unacceptably high.

[62] Center for Climate and Energy Solutions, *Decoupling in Detail* (accessed Jan. 2016), http://www.c2es.org/us-states-regions/policy-maps/decoupling/detail.

program spending, such as by adopting performance incentives, there will be a tendency to achieve emission reductions through supply-side capital spending instead, even if energy efficiency offers a more cost-effective solution and provides greater value to customers.[63] Similarly, in many states utilities cannot earn a rate of return on power purchase agreements ("PPAs," e.g., for renewable energy). Instead PPAs are generally treated as a pass-through cost, although in some states utilities can receive incentives. These inherent biases driving utility investment decisions result in sub-optimal economic outcomes by dis-incentivizing deployment of cost-effective advanced energy options. In the context of the CPP, ignoring cost-effective advanced energy measures would raise the cost of compliance.

Third, many advanced energy measures do not respond directly to changing wholesale generating prices by increasing or decreasing their dispatch. Renewable energy resources with zero fuel costs and low operating costs, such as wind and solar, will generate when available regardless of the marginal price, while energy efficiency does not directly participate in wholesale electricity markets.[64] Thus, the marginal cost of emission reduction will not provide an incentive for existing projects or programs to contribute additional emission reductions. Instead, the availability of these measures to reduce emissions will depend largely on whether upfront investment costs for new projects or programs can be met, which is a barrier that will not be overcome through higher market prices alone. For energy efficiency, consumers face upfront equipment or installation costs that may prevent investment even if an embedded cost of emissions would increase overall savings and reduce the project payback time. In fact, demand for electricity is relatively inelastic, meaning that very large price increases would be required to drive relatively small savings. This means that direct program spending results in more efficient

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[63] According to the Am. Council for an Energy Efficient Economy ("ACEEE"), there are about 25 states that currently have or are considering some form of performance incentive for energy efficiency. *See* Am. Council for an Energy Efficient Economy, *Incentivizing Utility-Led Efficiency Programs: Performance Incentives* (Accessed Jan. 2016), http://aceee.org/sector/state-policy/toolkit/utility-programs/performance-incentives. *See also,* U.S. EPA, *Aligning Utility Incentives with Investment in Energy Efficiency* (Nov. 2007), http://www.epa.gov/sites/production/files/2015-08/documents/incentives.pdf. *See also* Wallace E. Oates and Diana L. Strassmann, *Effluent fees and market structure* (June 1984) Journal of Public Economics Volume 24 Issue 1, http://www.sciencedirect.com.ezp-prod1.hul.harvard.edu/science/article/pii/0047272784900033. Oates and Strassmann take this argument one step farther, saying, "It would be quite plausible, for example, for …[a regulated] firm to extend abatement activity beyond the level at which marginal abatement cost equals the effluent fee, if by doing so the firm could expand its capital stock through the use of pollution-control equipment. The rationale from the perspective of the firm is the higher level of absolute profits that the expanded capital stock would allow." *Id.,* at 43.

[64] In ISO-New England and PJM Interconnection, energy efficiency participates in forward capacity markets. However, it does not participate in wholesale electricity markets. *See* Neme, C., Energy Futures Group, and Cowart, R., Regulatory Assistance Proj., *Energy Efficiency Participation in Electricity Capacity Markets – The U.S. Experience* (2014) Montpelier, VT: The Regulatory Assistance Proj., http://www.raponline.org/document/download/id/7303

delivery of efficiency savings.[65] For renewable energy, higher wholesale prices may help a project achieve its upfront financing.[66] However, given the higher upfront costs and low marginal costs of some renewable generation technologies, a high and sustained carbon price would be needed to overcome the initial investment needs.[67] Furthermore, the generation profile of a particular project may or may not align with a time when the marginal unit on the grid has a high emission rate, a factor that in the early years may be hard to predict and therefore difficult to incorporate into project financing.

The opportunity to earn sellable credits over the life of a project provides a clear upfront market signal that can help with project financing. The importance of forward contracts for Renewable Energy Credits ("RECs") in securing financing for renewable energy projects in certain markets demonstrates the role that allowances and ERCs could play for projects that contribute to CPP compliance.[68] However, the upfront opportunity to contract future credits will only materialize if these projects are eligible to directly receive allowance value associated with their emission reduction contribution.

Fourth, for energy efficiency in particular, a price signal for emission reductions will not eliminate the extensive existing market barriers that already prevent the deployment of cost-effective efficiency measures. This is true for both utility and non-utility energy efficiency programs and projects across all ratepayer classes. For example, there are several barriers to the uptake of energy efficiency measures that are independent of the cost of the resource, including access to information, split incentives (e.g., the landlord-tenant problem), imperfect competition,

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[65] Richard Cowart, Regulatory Assistance Proj., *Prices and Policies: Carbon Caps and Efficiency Programmes for Europe's Low-Carbon Future,* at 5-6 (2011), http://www.raponline.org/document/download/id/931. As an example, this paper considers the emission reductions under two policy scenarios in the United Kingdom, noting that the results would be similar in other jurisdictions with a high fraction of fossil generation. Specifically, the paper considers the impact on CO_2 emissions of (1) a 3% increase in electricity prices, and (2) using the same amount of money to invest in utility-sponsored energy efficiency programs. The second option reduced CO_2 by 7 to 9 times more than the price increase alone. *Id.* at 19.

[66] Joshua N. Ryor and Letha Tawney, World Resources Inst., *Utility-Scale Renewable Energy: Understanding Cost Parity* (Feb. 2015), https://www.wri.org/sites/default/files/WRI14_Factsheets_Utility_Scale_v4.pdf

[67] Richard Cowart, Regulatory Assistance Proj., *Prices and Policies: Carbon Caps and Efficiency Programmes for Europe's Low-Carbon Future,* at 8 (2011), http://www.raponline.org/document/download/id/931.

[68] The Nat'l Renewable Energy Laboratory ("NREL") looked at the role of RECs in enabling projects to go forward using stakeholder interviews and data. The paper ultimately concludes that while there are some projects in which RECs "may have little impact," there are also "…situations in which REC revenues are essential to project economics." Edward Holt, Jenny Sumner, and Lori Bird, Nat'l Renewable Energy Laboratory, *The Role of Renewable Energy Certificates in Developing New Renewable Energy Projects,* at 38 (June 2011), http://www.nrel.gov/docs/fy11osti/51904.pdf.

"bounded rationality" (i.e., imperfect decision-making), and the tendency to overemphasize upfront costs and de-emphasize operational savings.[69]

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AEE is very concerned that the free rider issue, distorted price signals, and existing market barriers will prevent the deployment of advanced energy measures and increase compliance costs. While any one of these three market failures could limit the incentive to deploy cost-effective advanced energy measures, together, the uncertainty they cast on outcomes under the Clean Power Plan presents an additional challenge for providers of these potential compliance options. Even though future allowance prices are unknown, the opportunity to earn allowances would align the incentives of advanced energy providers with those of affected EGUs, and would provide significant clarity around the incentives that will exist during the compliance period. Advanced energy measures represent a significant opportunity for cost-effective emission reductions, and a mass-based allocation system disadvantaging the participation of advanced energy would forego significant savings to consumers and affected units.

d. The RE Set-Aside, as Proposed, is Insufficient to Address These Shortcomings, and Insufficient to Address Leakage.

While AEE agrees with the intent of the RE set-aside, as proposed the set-aside is problematic for four primary reasons. First, it excludes many technologies that, like renewable energy, will compete with new fossil fuel-fired EGUs to replace reduced generation from affected EGUs due to the declining emission budget established by the Clean Power Plan, as discussed in detail in Section IV.D.2. Second, the RE set-aside as proposed would place a false cap on the value of renewable energy deployment by assigning only 5% of allowances to the set-aside. AEE believes that this cap is too low for several reasons, outlined in Section IV.D.1. Third, given the market barriers to advanced energy deployment outlined in detail above, an extra margin is justified. Otherwise, the set-aside may start to overcome the many market barriers, yet still fail to adequately address leakage. Fourth, no matter what size EPA settles on for the set-aside, a capped set-aside is inappropriate to address leakage. If the set-aside becomes oversubscribed, as is likely given its small size, the first projects to dissipate as the incentive from the set-aside decreases would be those least likely to happen under a business-as-usual scenario, which are the ones most needed to address leakage.

i. The "RE Set-Aside" Artificially Restricts Eligibility, Excluding Various Measures that

[69] Am. Council for an Energy Efficient Economy, *Overcoming Market Barriers and Using Maker Forces to Advance Energy Efficiency* (Mar. 2013), http://aceee.org/sites/default/files/publications/researchreports/e136.pdf.

Address Leakage from Competing Equally for Allowances.

Under EPA's proposal, the list of advanced energy resource types eligible for allowances under the mass-based Federal Plan would be significantly restricted. Specifically, EPA proposes that only "on-shore utility scale wind, solar, geothermal power, or utility scale hydropower"[70] that is capable of being measured with a revenue quality meter[71] would be eligible for allowances under the mass-based Federal Plan.[72] Thus, other measures including demand-side energy efficiency (including demand response), CHP, WHP, off-shore wind, biomass, fuel cells, transmission & distribution ("T&D") efficiency, and most distributed generation would be ineligible for allowances under EPA's proposal.

However, the excluded technologies are also viable means to fill capacity needs and avoid leakage, as described in detail in Section IV.D.2. Given the market barriers described above, these excluded technologies will not be deployed to optimal levels, even without the incentive for leakage to new NGCC units. Furthermore, by excluding these technologies, EPA artificially restricts the suite of measures available to address leakage. This, in turn, risks marginalizing cost-effective resources and creates an unequal market for measures equally capable of reducing leakage to new units.

ii. The Size of the Set-Aside is Based on Flawed Assumptions and is Unlikely to Adequately Address Leakage.

AEE is concerned that the set-aside as designed by EPA will be insufficient to address leakage to new units not covered under section 111(d). In particular, AEE is concerned that EPA's methodology involves several assumptions that are likely to diminish the incentive

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[70] Proposed Federal Plan and MTR at 65,068 (proposed 40 C.F.R. § 62.16245(a)(2)(i)).

[71] Proposed Federal Plan and MTR at 65,002, 65,023; *id.* at 65,071 (proposed 40 C.F.R. § 62.16260(c)(1)). As discussed in more detail *infra* Section VI.A.1, AEE opposes the requirement to use a revenue quality meter for distributed generation sources.

[72] In addition to these criteria, EPA also proposes additional criteria that the resource (1) must be located in a mass-based state for which the set-aside has been designated; (2) must be installed or implemented after January 1, 2013; (3) must be connected to and deliver energy to the electric grid in the contiguous United States; and (4) must not have received ERCs for any period of time for which it receives set-aside allowances. *See* Proposed Federal Plan and MTR at 65,068 (proposed 40 C.F.R. § 62.16245(a)(2)). AEE supports these criteria as proposed by EPA, except that AEE believes that EPA's proposed geographic eligibility criterion is overly restrictive. AEE proposes a modified version of the geographic criteria, as described *infra* Section IV.D.3.. EPA also requests comment whether it should impose an additional requirement that would limit eligibility to project providers that are also the owners/operators of affected EGUs. *See* Proposed Federal Plan and MTR at 65,023. AEE emphasizes that it opposes this additional criterion as it would unfairly limit the universe of advanced energy projects that are eligible to receive allowances and would thus unnecessarily exclude myriad low-cost emission reduction opportunities from being used to achieve compliance under the CPP.

provided by the set-aside and therefore risk undermining its effectiveness.

EPA proposes to set aside 5% of each state's allowances for distribution to renewable energy technologies during each step period.[73] EPA's stated goal in proposing the RE set-aside is to "to address concerns regarding leakage by lowering the marginal cost of production of the incented clean energy technologies within the state. This will make RE more competitive against new sources, reducing the potential for leakage to new sources."[74]

EPA calculates this size based on the marginal cost needed to incent the level of renewable energy deployment EPA estimates is necessary to counteract leakage.[75] This methodology results in a set-aside that is far too small for multiple reasons. First, several of the assumptions that EPA uses to calculate the size of the set-aside are flawed and cause EPA to underestimate both the amount of renewable MWh necessary to counteract leakage *and* the appropriate number of allowances necessary to promote this amount of renewable MWh, as described in more detail in Section IV.D.1. Second, the level set by EPA does not account for reduced deployment of energy efficiency due to the risk of leakage to new NGCC. However, based on EPA's definition of leakage, accounting for energy efficiency is key to determining the level of leakage that must be addressed through the set-aside. Specifically, EPA defines leakage as "…the potential of an alternative form of implementation of the BSER (*e.g.,* the rate-based and mass-based state goals) to create a larger incentive for affected EGUs to shift generation to new fossil fuel-fired EGUs relative to what would occur when the implementation of the BSER took the form of standards of performance incorporating the subcategory-specific emission performance rates representing the BSER."[76] However, when calculating the risk of leakage to new NGCC units, EPA has failed to account for the level of energy efficiency in the rate-based IPM model run from EPA's RIA, which is an appropriate baseline for the level of energy efficiency that *should* occur in the absence of leakage, as defined by EPA, since this level defines "what would occur" under the subcategory-specific emission performance rates.

iii. Market Barriers to Advanced Energy Deployment will Undermine the Effectiveness of the Set-Aside in Addressing Leakage.

As described in great detail in Section IV.A.1., above, there are many factors likely to prevent the deployment of advanced energy in any mass-based plan that fails to include

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[73] Proposed Federal Plan and MTR at 65,022, 65,064 (proposed 40 C.F.R. § 62.16235(c)).

[74] Proposed Federal Plan and MTR at 65,022.

[75] *See* U.S. EPA, Office of Air and Radiation, Renewable Energy (RE) Set-aside Technical Support Document (TSD) at 2 (August 2015).

[76] Final CPP at 64,822.

provisions for adequately crediting these measures. While the RE set-aside does provide a mechanism to award allowances to some advanced energy, the eligibility restrictions and small size render the set-aside an inadequate tool to negate these other market issues. As proposed, the RE set-aside is therefore unlikely to overcome the barriers that risk undermining the contributions of advanced energy to low-cost compliance outcomes.

In turn, a failure to overcome barriers to advanced energy deployment will exacerbate the risk of leakage. Therefore, if the set-aside is to adequately address leakage, it will need to be larger and more inclusive, and will need to be part of a broader allocation strategy that also addresses market barriers. Otherwise, the RE set-aside may *start* to partially address the market barriers for some types of renewable energy, but fail to address the barriers for other advanced energy measures and also fall short of adequately addressing leakage.

iv. The Set-Aside Should Not be Based on a "Capped" Number of Total Allowances.

AEE opposes putting a "cap" on the allowances that measures can earn under the proposed RE set-aside. Designating a limited or "capped" number of allowances to address leakage means that the incentive for eligible projects will be diluted if more MWh become eligible than anticipated by EPA—a likely outcome given the issues described above. If this occurs and the set-aside becomes oversubscribed, the first projects to drop off as the incentive from the set-aside decreases would be those least likely to happen under a BAU scenario. Failure to incent these marginal projects would undermine the goal of the set-aside, as those projects are the ones most needed to address leakage.

Due to the difficulty of designing the set-aside at an appropriate level to fully address all the issues discussed above, the use of a "cap" risks allowing leakage to occur and thus undermines the emission reduction goals. Furthermore, while sizing the set-aside too small would result in leakage and threaten the integrity of the rule itself, sizing the set-aside too large would merely incent a few projects not necessary to address leakage and would have no impact on the emission reduction outcome of the rule. Therefore, while AEE disagrees with a limited set-aside, any "cap" that EPA does designate should be designed with generous margins of error to reduce the risk that the set-aside will become diluted and fail to adequately address leakage concerns.

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For all of the above reasons, AEE feels that EPA should reconsider its proposed allocation methodology. Section IV.A.2 provides an overview of core principles that should guide EPA in redesigning allowance allocation under a Federal Plan, and Section IV.A.3. explains AEE's proposed allocation methodology that best fulfills those principles.

2. Core Principles that Should Guide EPA's Selection of the Initial Allocation Method

Five guiding principles inform AEE's recommendations on the method that EPA should use to allocate allowances under the mass-based Federal Plan: the allocation method should (1) avoid penalizing utilities that have taken action early, and where possible incentivze action prior to the start of the interim compliance period; (2) ensure that all eligible emission reduction measures can compete equally to provide least-cost compliance outcomes; (3) effectively avoid emission leakage to new sources; (4) provide clear market signals through a straightforward design that enables price discovery; and (5) remain strictly within EPA's authority under section 111(d) of the CAA.

First, AEE believes that the initial allocation method should reward utilities that are taking action towards diversifying their energy mix rather than rewarding utilities and affected EGUs locked into a generation mix of the 20th century and making no strides towards modernization. AEE explained that EPA's current proposal does not fulfill this principle in Section IV.A.1., above, and describes a potential remedy below.

Second, AEE believes that EPA's allocation method should reward all investments in emission reductions on a technology-neutral basis. By recognizing emission reduction contributions with the allocation of allowance value, EPA will allow all technologies to effectively compete for investment aimed at reducing emissions under the CPP, which will in turn enable states and affected EGUs to harness the lowest-cost compliance options and thus reduce the overall cost of achieving compliance under the CPP.

Third, EPA's allocation methodology should adequately address the risk of leakage to new NGCC units not covered under the CPP. Leakage would not only jeopardize the integrity of the regulation, but would also distort the market for emission reductions.

Fourth, EPA's allocation methodology should be straightforward and should encourage market liquidity and price discovery, providing a clear market signal to investors, affected EGUs, and providers of emission reduction measures.

Fifth, EPA has a legal obligation under section 111(d) to ensure that any mass-based plan results in emissions performance (including advanced energy deployment) equivalent to and no less stringent than the (BSER) determination in the Clean Power Plan emission guideline. The market failures outlined in Section IV.A.1. above demonstrate that EPA's proposed allocation method will not result in the needed level of advanced energy to do so. Therefore, EPA needs to provide an allocation approach or approaches that correct those market failures that will otherwise keep the mass-based plan from meeting the equivalence requirement.

3. AEE's Proposed Allocation Approach Under the Federal Plan

For the aforementioned reasons, AEE strongly encourages EPA to move away from an approach that relies primarily on free allocation to affected EGUs based on historic generation that is outlined in the Federal Plan proposal. AEE recommends that EPA adopt an allocation method for the Federal Plan that levels the playing field for emission reduction solutions, increases competition on a technology-neutral basis, and minimizes windfalls to existing EGUs. To this end, AEE recommends the following approach:

- First, EPA should maintain its currently proposed CEIP set-aside in the first step period.
- Second, as the *primary* allocation method, EPA should provide allowances to *all* eligible zero- and low-emitting advanced energy technologies in direct proportion to their emission reduction benefits, analogous to the assignment of credit for emission reductions under rate-based plans. This primary allocation method is consistent with the five principles outlined above, providing a technology-neutral allocation approach, rewarding utilities that have made shifts in their generation mix, and staying well within EPA's authority. EPA should use a uniform *tons per megawatt-hour* ("MWh") conversion factor to award allowances each year to these resources based on the number of MWh each resource generated or saved in the previous year. This tons/MWh conversion factor would be updated each step period based on the average carbon intensity of the electric sector nationally in the previous step period. Zero-emitting units would earn full credit for each MWh generated, low-emitting resources would earn allowances on a pro-rated basis, and affected EGUs would earn allowances for emitting below their relevant subcategory specific emission performance limit. The number of allowances distributed by EPA through this process would not be artificially capped; the only cap would be the total number of allowances in the state's mass-based goal.

- Third, the primary allocation method described above is constructed in such a way as to address leakage concerns by allocating allowances to new and existing resources on an updating output bases. However, to ensure that this approach is at least as effective as EPA's leakage-prevention set-asides AEE recommends that EPA create a "floor" that represents the *minimum* number of allowances that would be distributed through the primary allocation method to low- and zero-emitting technologies that qualify as resources to address leakage. This "floor" would be based on the number of allowances that EPA determines is necessary in order to prevent leakage to new units. Thus, the former "cap" on the number of allowances that would be distributed to advanced energy sources, would transform into a "floor" that sets the minimum number of allowances that would be distributed to these resources. If in early years this "floor" is higher than the

number of allowances that would go to these resources under the primary allocation method, the allowances would be granted on a pro-rated basis, in order to encourage early development of these technologies to avoid leakage.

- Fourth, any allowances that remain after the first three steps would be sold at auction, rather than distributed on a historic generation basis to affected EGUs. This approach would eliminate the downsides of free allocation to affected EGUs and create a more efficient market for emission reductions by enabling price discovery and encouraging least-cost compliance outcomes. Congress would then determine the most effective use of the revenues from this auction, which could serve numerous policy goals. While there are many advantages to auctioning these allowances, AEE also notes that there are several alternative options should EPA choose not to auction them.

AEE expands on the design and rationale of each of these steps in more detail below.

a. Allocation to the CEIP Set-Aside

AEE does not propose to change the number of allowances that would be set aside for the CEIP program in the first step period. AEE discusses the rationale and importance of the CEIP set-aside in detail in its comments submitted on December 15, 2015.[77]

b. AEE's Primary Approach: Technology-Neutral Allocation to Zero- and Low-Emitting Advanced Energy Technologies and Affected EGUs that Perform at a Rate Better than the Applicable Sub-Category Specific Rate

AEE proposes that as the primary allocation, EPA should allocate allowances on a technology-neutral basis according to emission reduction contributions of eligible compliance measures. Specifically, instead of setting aside a circumscribed number of allowances for renewable energy resources, EPA should distribute allowances to all new[78] zero- and low-emitting resources based on their MWh generation (or savings, as applicable) on a technology-neutral basis. Under this approach, any resource eligible for ERCs under the CPP would be eligible to receive allowances based on the emissions reductions associated with its MWh generation or savings.[79] Through this approach, EPA would also award allowances to affected EGUs, but *only* to the extent that their emission *rate* is lower than the applicable sub-category

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[77] Advanced Energy Econ., Comments on the Clean Energy Incentive Program, Docket ID No. EPA-HQ-OAR-2015-0734 (Dec. 15, 2015), http://www.regulations.gov/#!documentDetail;D=EPA-HQ-OAR-2015-0734-0044.

[78] "New" refers to post-2012 installations, per the eligibility requirements under the final CPP. *See* Final CPP at 64,950.

[79] Final CPP at 64,950 (to be codified at 40 C.F.R. § 60.5800). See also AEE's detailed recommendations on ERC-eligible measures in Section V.A., below.

specific rate.[80] This technology-neutral allocation approach would be the primary form of allocation under AEE's proposal and would mirror EPA's proposal to distribute ERCs to zero- and low-emitting sources under the rate-based MTR.

In order to determine the allowance allocation rate—*i.e.*, the number of allowances a resource would receive per MWh of eligible generation or savings—EPA would calculate a uniform tons/MWh conversion rate based on historic carbon intensity of the electric sector in a prior baseline period. For the first step period, AEE would recommend an allowance rate of 0.8 tons/MWh, because this was the U.S. carbon intensity in 2012—the baseline year for the CPP—and is the MWh-to-tons conversion rate that EPA used to determine the size of the CEIP.[81] The allocation rate should stay constant for the duration of the first step period in order to provide certainty to project providers and to reduce the administrative burden of allocating allowances. In the second step period, EPA would update the allocation rate to reflect the average national carbon intensity during the first step period. Specifically, EPA would calculate the average carbon intensity over the three years of the first step period using the same methodology it used to calculate 0.8 tons/MWh for 2012. The average carbon intensity for the first step period would then be used to determine the credits per MWh each low- and zero-emitting source would receive in the second step period. This updating process would be repeated for every subsequent step period. AEE supports this process because it correctly recognizes the reduction in carbon intensity that will occur over time during the CPP, yet avoids the need for a complicated emission reduction accounting framework.[82]

New zero-emitting sources of generation and energy efficiency would receive full credit for every MWh of generation or savings, i.e., the total MWh generation from each resource would be multiplied by the allocation rate to determine the number of allowances each resource is entitled to receive. Under AEE's approach, low-emitting resources would receive credit similar to the way they receive ERCs under the CPP, i.e., the number of MWh these resources generate would be adjusted/prorated to reflect the fact that they are low-emitting rather than zero-emitting. New low-emitting resources eligible under the CPP include qualified biomass, fuel cells, non-affected CHP, and waste heat power ("WHP"). EPA proposes methodologies for pro-rating the MWh of each of these resources in the MTR. Under AEE's proposal, these low-

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[80] For affected CHP units, the unit's emission rate would reflect the additional MWh of generation associated with useful thermal output, equivalent to the treatment of affected CHP under a rate-based plan. *See* Final CPP at 64,756. Consistent with AEE's recommendations in Section IV.G.1., below, these units would be required to hold allowances *only* for emissions associated with electric output. As noted in Section IV.A.3.c. below, EPA could also choose to allocate allowances to affected NGCC units consistent with the way that these units would earn gas shift ERCs ("GS-ERCs") under a rate-based plan using the sub-categorized performance rates.

[81] Final CPP at 64,830.

[82] AEE notes that each MWh of generation or savings need not receive allowances in exact proportion to its individual actual emissions reductions in order to maintain the integrity of the mass-based program, because the overall cap on emissions, *i.e.* the state goal, will ensure the overall integrity of the program.

emitting resources would receive allowances equal to their number of prorated MWh multiplied by the allocation rate (i.e., 0.8 tons/MWh). Lastly, under AEE's proposal, EGUs that perform at a rate that is better than their sub-category specific rate also could be eligible for allowances. Eligible affected EGUs would receive an allocation based on the number of ERCs they would be eligible for under the rate-based Federal Plan and MTR[83] multiplied by the allocation rate. For instance, if an efficient NGCC unit has a rate less than the subcategory-specific emission performance rate, and would be eligible for 100 ERCs under a rate-based plan, the unit would receive allowances equal to the allocation rate times that number of ERCs (For instance, 0.8 tons/MWh x 100 MWh = 80 allowances). Section IV.H. discusses the administration of this allocation approach.

The number of allowances for which each resource is eligible under this approach would need to be determined on an annual, *ex post* basis. At the beginning of each year, EPA would award allowances based on emissions reductions from eligible generation or savings verified in the preceding compliance year. For example, at the beginning of 2023, EPA would award allowances based on qualifying emissions reductions in 2022.[84] Annual allowance issuance would still maintain the flexibility within and across the step periods, because EGUs would not be required to retire allowances for compliance purposes until the end of each step period and would be allowed to bank allowances for future use.

AEE proposes this approach as the primary methodology that EPA should use for distributing allowances under the mass-based Federal Plan. The number of allowances issued to low- and zero-emitting technologies under this methodology would be uncapped (unlike the current RE set-aside). The only cap on available allowances would be the hard cap imposed by the state's total mass-based goal, i.e., the number of allowances issued could not exceed the state's total mass-based goal minus the CEIP set-aside discussed above.

AEE's proposed primary allocation approach has many benefits. First, it avoids all the perverse impacts that result from free allocation to EGUs because it only awards allowances to affected EGUs to the extent they would be eligible for ERCs under a rate-based plan, i.e., to the extent that they would reduce emissions by performing at a rate better than the applicable sub-category specific rates. As such, AEE's proposal avoids the potential for windfall profits, allows for greater allowance liquidity and price discovery, ensures that EGUs will evaluate all possible

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[83] *See* Proposed Federal Plan and MTR at 64,991 (providing the formula for the number of ERCs an affected EGU would receive under a rate-based plan if it performs below the sub-category specific rate).

[84] For the first year of the program, there is no preceding compliance year, so EPA would need to distribute allowances in a somewhat different manner. AEE recommends that EPA auction the allowances that remain after it sets aside the appropriate number of allowances for the CEIP set-aside. This is consistent with AEE's proposal to auction any allowances that remain after the set-asides are taken out and allowances are distributed to all eligible resources in proportion to their emissions reductions via AEE's proposed primary allocation method.

options for emission reduction, and corrects the market distortions that will otherwise result in an unequal market for emission reductions and ultimately raise the price of compliance, as described in Section IV.A.1. Furthermore, it also avoids the many difficulties associated with distributing allowances to EGUs that retire, as discussed in more detail *infra* Section IV.C. Rather, instead of granting allowances based on past behavior and in a way that does not incent emissions reductions, AEE's approach grants allowances to those EGUs that achieve emission rates lower than the applicable sub-category specific rate. This will incent more efficient existing EGUs to increase their output relative to older, inefficient EGUs, consistent with EPA's assumptions under BB2 of the BSER, and will lead to emission reductions.

Another benefit of AEE's approach is that it allocates allowance value on a technology-neutral basis to zero- and low-emitting advanced energy technologies in proportion to their contribution to achieving emission reductions. By allowing these technologies to compete equally, and by placing greater value on greater reductions, this allocation methodology will drive down costs. As discussed above, the carbon price generated by an emissions cap is important but not in itself sufficient to achieve full participation by advanced energy technologies to the level anticipated by EPA's modeling. This is because in reality, unlike in least-cost models, these technologies face several market barriers. In contrast to EPA's proposed allocation methodology, which actually exacerbates some existing market barriers, the primary allocation proposed by AEE would break down these barriers by aligning the incentives of advanced energy providers with those of affected EGUs. Additionally, as recognized by EPA, allocating allowances to these technologies also will minimize the risk of leakage to new fossil fuel-fired EGUs.[85]

AEE's proposed approach also appropriately parallels EPA's approach to distributing ERCs to zero- and low-emitting resources under the EPA's proposed rate-based Federal Plan and MTR, and avoids creating an asymmetry in how EPA treats these resources under the two plan types. AEE believes that EPA's proposed approach under the rate-based plan correctly recognizes the significant contribution of zero- and low-emitting technologies to providing emissions reductions and achieving low-cost compliance, and thus provides the correct incentives for investment in the deployment of these technologies. The ability to generate ERCs allows these resources to compete on an even playing field with other types of investments aimed at reducing emissions, and thus allows the market to select and utilize the lowest-cost compliance options. However, under EPA's current mass-based proposal, the number of allowances that could be distributed to such resources is artificially restricted to only 5% of the

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[85] *See* Final CPP at 64,890 ("The increased availability of RE generation can serve as another source of generation to satisfy electricity demand. Increased demand-side [energy efficiency ("EE")] will reduce the demand that sources need to meet. Therefore, both RE and demand-side EE can serve to reduce the incentive that new sources have to generate, and therefore align their incentives with affected EGUs. Thus, increased RE and demand-side EE, supported by a dedicated set-aside, can also serve to address potential emission leakage.").

total number of allowances, while approximately 90% of allowances would be distributed to affected EGUs on a historic generation basis.

AEE's approach also has a strong legal foundation. Under section 111(d) and its implementing regulations, states must submit emission standards for affected sources that are "no less stringent" than the applicable EPA emission guideline, which reflects the Agency's BSER determination.[86] In the case of the Clean Power Plan, EPA has made clear that the applicable benchmark for state plans is the *performance rates* that EPA has determined for the affected EGUs—and those standards are based on the Agency's BSER determination. As EPA itself has stated: "The subcategory-specific CO_2 emission performance rates are the quantitative expression of the BSER as determined by the EPA."[87] EPA has also made clear that a state plan meets the requirements of section 111(d) if the plan imposes the performance rates and allows affected EGUs to comply using the BSER measures or alternative compliance methods that achieve equivalent reductions in emissions or carbon intensity – such as purchases of credits from demand-side energy efficiency or other abatement activities deemed eligible for ERCs.

The Clean Power Plan also offers states an "alternative"[88] to the performance rates in the form of mass-based goals. However, EPA appropriately has made clear that a state plan using this alternative mass-based approach must demonstrate that its plan is "equivalent" to a plan applying the subcategory-specific emission performance rates. Under the Clean Power Plan, this equivalence demonstration has two steps. The first step is a demonstration that the state is using a mass-based goal supplied by EPA, which is a state-specific "mathematical derivation" of the performance rates.[89] However, the equivalence demonstration does not end there. The state plan must "further" demonstrate "that it has measures in place to ensure that any alternative to the performance rates [including a mass-based approach] *does not result in affected EGUs' failing to implement either the BSER measure themselves or alternative methods of compliance*."[90]

The Agency identifies "one way" that a mass-based plan could fail to meet this equivalence requirement, i.e., through failing to address the incentive to shift generation from existing affected EGUs to new fossil fuel-fired EGUs (referred to as "leakage").[91]

However, as EPA implicitly recognizes, new-unit leakage is not the *only* way that a mass-based plan could fail to meet the equivalence requirement. Even if a state (or EPA, under a federal plan) effectively curbed leakage, it is still possible that, absent other measures, affected

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[86] 40 C.F.R. § 60.24(c).
[87] CPP, at 64,820.

[88] CPP, at 64,820.

[89] CPP, at 64,820.

[90] CPP, at 64,820 (emphasis added).

[91] CPP, at 64,820.

EGUs subject to a mass-based plan could meet their allowance surrender requirements through strategies that would result in outcomes inconsistent with the BSER, i.e., less utilization of renewable generation or other methods of compliance contemplated through the BSER determination. The result could be higher emissions or higher carbon intensity than would result through application of the performance rates. To be sure, a mass-based emissions trading system will drive some amount of the advanced energy captured in BSER; however, as outlined in Section IV.A.1. above, this diffuse price signal is not enough to fully capture the levels on which EPA's subcategory-specific emission performance rates depend.

For these reasons, a state (or EPA) using a mass-based plan will fail to meet the section 111(d) requirements for equivalence unless it also applies allowance distribution strategies that correct the market failures identified above– which otherwise prevent deployment of abatement measures and emissions performance consistent with BSER.[92] This requirement still accommodates a range of allocation methods, and therefore afford states significant discretion in crafting specific allocation methods tailored to state circumstances. However, all state and EPA mass-based plans must use allocation methods that provide the same incentives to develop advanced energy compliance measures as exist under the subcategory-specific emission performance rates in order to comply with section 111(d), including state plans that otherwise meet the requirements to address leakage (e.g., by including new fossil fuel-fired EGUs as a matter of state law).

By directly allocating allowances to those advanced energy resources based on their emission reduction contribution, AEE's proposal mirrors the rate-based approach upon which the CPP is based, supplements the price signal of a mass-based emission budget trading program, and drives deployment of advanced energy consistent with the levels incorporated into the subcategory-specific emission performance rates. AEE's approach thereby correctly recognizes the value of all emission reduction technologies and allows them to compete on an even playing field to let the market determine the lowest cost emissions reductions and drive investment accordingly.

c. EPA Should Reserve a Sufficient Minimum Number of Allowances Under the Primary Allocation Method for Eligible Advanced Energy Measures in Order to Address the Risk of Leakage.

AEE is very concerned that the allocation methodology proposed by EPA will not adequately address the risk of leakage to new NGCC units not covered under section 111(d),

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[92] In this way, the Clean Power Plan is not a typical cap-and-trade program in which achievement of the environmental outcome is assured by the emissions cap and therefore the distribution of allowances is simply a matter of equitable distribution of costs and compliance burdens. In the case of the Clean Power Plan, the environmental benchmark is not the cap but the *BSER*, and therefore EPA and the states cannot be indifferent to allowance distribution because the particular distribution of allowances has a distinct effect on whether EGUs implement actions consistent with the BSER.

which would damage the market signal for emission reductions, as explained in *supra* Section IV.A.1. Given that EPA does not feel it has the authority to implement the *new source complement* when promulgating a Federal Plan, AEE recommends that EPA take a very conservative approach when assessing the risk of leakage.[93] As such, AEE believes that the currently proposed set-asides to address leakage should be replaced by a new approach.

AEE's proposed approach eliminates the weaknesses in the proposed OBA set-aside and the RE set-aside. AEE explained the inadequacies of the current RE set-aside in Section III.A.1., above. EPA itself expresses that the OBA to existing NGCC could, if not designed at the perfect level, lead to a "reduction in incentives to invest in new zero- or low-emitting generation as a result of the downward pressure the allocation approach may place on electricity prices."[94]

Instead of these set-asides, AEE recommends that EPA address leakage through the primary allocation methodology proposed above.[95] Specifically, as part of the primary allocation method, EPA should reserve a minimum number of allowances necessary to prevent leakage. This would be similar to the RE set-aside, but would eliminate the concerns expressed previously. EPA would designate a *minimum*—rather than maximum—number of allowances that would be distributed to low- and zero-emitting resources in any given year, and affected EGUs would *not* be eligible for allowances from this reserve.[96] This minimum number, or "floor," should be based on EPA's assessment of the number of allowances it would need to allocate to zero- and low-emitting generation and savings in order to avoid leakage to new NGCC units. This is the same fundamental approach used by EPA in setting the size of the RE set-aside in the current proposal, although AEE has identified important improvements to that approach, including by expanding the size based on a more complete assessment of leakage, and broadening eligibility beyond renewable energy, outlined in Section IV.D.2., below.

By way of illustration, assume EPA were to determine under this methodology that 15% of the allowances should be set aside. Under AEE's proposal, at least 15% of each state's allowances would be reserved for qualifying low- and zero-emitting resources that have been identified as measures that address leakage. However, this 15% would not provide a cap. If low- and zero-emitting resources were eligible for a greater number of allowances under AEE's proposed methodology discussed above, those resources would receive a greater number of allowances equivalent to their aggregate eligible MWh multiplied by the allocation rate. In

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[93] AEE urges EPA to include the new source complement as part of the MTR, as explained in Section IV.B., below.

[94] U.S. EPA, *Allowance Allocation Proposed Rule Technical Support Document* at 9 (Aug. 2015).

[95] AEE notes that should EPA reject AEE's proposed allocation methodology, the Agency should adopt AEE's proposal to address leakage as described in this section.

[96] In addition, AEE proposes several necessary adjustments to EPA's methodology for determining the size of the RE set-aside in Section IV.D.1 below.

contrast, if low- and zero-emitting resources would otherwise be eligible for *less* than the floor, then each eligible resource would receive a *pro rata* share of the reserved allowances, similar to the current RE set-aside.[97] AEE believes that it is appropriate to allocate this minimum number of allowances to low- and zero-emitting resources in order to ensure that they are adequately incentivized in order to minimize leakage to new fossil-fuel fired units, particularly at the beginning of the interim compliance period.

In lieu of the OBA set-aside to existing NGCC units, under AEE's primary approach, existing NGCC units performing below their subcategorized rate will be eligible to earn free allowances. EPA could also choose to include an additional incentive for existing NGCC units to increase their generation through a crediting methodology analogous to that for gas shift ERCs ("GS-ERCs") under a rate-based system. Rather than earning pro-rated GS-ERCs for each MWh of generation, existing NGCC units would be eligible for pro-rated allowances for each MWh of generation, on top of allowances for performing below their subcategorized rate. Specifically, EPA would determine the number of ERCs the resource would be eligible for under the rate-based plan and then multiply this number by the allocation rate. As with GS-ERCs, allowances distributed using this methodology could only be used by steam generating units, and not NGCC units, for compliance. This proposal would be consistent with AEE's primary proposal for allowance allocation that mimics the awarding of ERCs under a rate-based system.

d. Any Remaining Credits Would Be Auctioned.

If any allowances remain after EPA distributes allowances to all qualifying resources according to the method discussed above, AEE recommends that EPA distribute these remaining allowances via an auction. An auction-based approach has many benefits. First, as with AEE's primary allocation approach, an auction avoids granting a windfall to existing EGUs. Second, economic research and real world experience suggests that, if properly designed, this option is economically efficient and can minimize the overall cost of an emission budget trading program.[98] Third, an auction provides an effective means of conducting price discovery for

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[97] *See* Proposed Federal Plan and MTR at 65,024; *see also infra* Section IV.D.3.

[98] Dallas Burtraw, Carbon Emission Trading Costs and Allowance Allocations: Evaluating the Options, at 13-16, *Resources* (Fall 2001), http://www.rff.org/files/sharepoint/WorkImages/Download/RFF-Resources-145-c02emmis.pdf; *see also* National Commission on Energy Policy, *Allocating*

Allowances in a Greenhouse Gas Trading System, (Mar. 2007), http://www.energycommission.org/site/page.php?report=32; *see also* Peter Cramton and Suzi Kerr, *Tradable Carbon Allowance Auctions: How and Why to Auction* (Mar. 1998), http://ccap.org/assets/Tradable-Carbon-Allowance-Auctions-How-and-Why-to-Auction_CCAP-March-1998.pdf; *see also* Goulder et al., *Impacts of alternative emissions allowance allocation methods under a federal cap-and-trade program,* (Aug. 2010), Journal of Environmental Economics and Management, vol. 60, p. 161-181,

http://web.stanford.edu/~goulder/Papers/Published%20Papers/Impacts%20of%20Alternative%20Emissions%20Allowance%20Alloc%20Methods%20(Goulder-Hafstead-Dworsky,%20JEEM%202010).pdf; *see also* Proposed Federal Plan and MTR at 65,018 ("Another allowance allocation approach that could minimize the difference

allowances, enhancing the liquidity of the market, and prevents the accumulation of market power. Lastly, EPA has strong legal authority to implement an auction-based approach under the Federal Plan.[99]

AEE acknowledges EPA's concern that revenues from an auction under a Federal Plan would go to the U.S. Treasury,[100] but believes that the benefits of an auction outweigh any downsides, particularly given the fact that the size of the auction is likely to be relatively small. Furthermore, auction revenues could still be used for any number of policy goals, as determined by Congress.

Although AEE believes that an auction provides the best mechanism to distribute any remaining allowances for the above reasons, EPA could adopt an alternative approach for distributing the remainder allowances, while still adopting AEE's primary allocation method. AEE believes that any such alternative approach for distributing the remainder should be guided by the core principles identified by AEE above and should avoid windfalls to existing EGUs, mitigate the risk of leakage, limit costs for consumers, and should favor lower-emitting sources over higher-emitting ones. Some allocation approaches for EPA to consider might include allocation to LSEs, or an out-put based allocation that provides a greater proportion of allowances to lower-emitting sources—for instance an approach that allocates allowances based on output, but in inverse proportion to CO_2 emissions.

To the extent EPA does not adopt AEE's recommendation to auction allowances not otherwise distributed based on the emission reduction contribution of advanced energy measures, as outlined above, EPA should nonetheless exercise its authority to auction some allowances, even if that number is small, in order to facilitate the formation of a private Clean Power Plan allowance market. The Title IV Acid Rain Program, established as part of the 1990 Clean Air

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between the initial allowance allocation and the ultimate distributional pattern of allowance use for compliance is to conduct an auction, a process whose express intent is to align the allocation of a scarce good (in this case, the limited authorization to emit CO_2) with the parties most willing to pay for its use. Many ascribe benefits, in terms of economic efficiency, to the use of auctioning as a means of allocating allowances.").

[99] As discussed above *infra* Section II.A, EPA's authority to issue a Federal Plan under section 111(d) is directly tied to its authority to issue a FIP through a cross reference to section 110 of the CAA, which establishes EPA's FIP authority. Section 302 in turn defines "federal implementation plan" as "a plan (or portion thereof) promulgated by the Administrator to fill all or a portion of a gap or otherwise correct all or a portion of an inadequacy in a State implementation plan, and which includes enforceable emission limitations or other control measures, means or techniques (including economic incentives, such as marketable permits or *auctions* of emissions allowances) . . . ." 42 U.S.C. § 7602(y) (emphasis added). Thus, the CAA expressly authorizes EPA to use an auction as a part of a FIP, and also expressly states that EPA will have the *same authority* under section 111(d) to issue the Federal Plan as it has to issue a FIP. EPA therefore has the authority to use an auction to implement the Federal Plan.

[100] *See* Proposed Federal Plan and MTR at 65018.

Act Amendments, serves as a useful example regarding the importance of allowance auctions in the initial set up of emission budget trading programs. Section 416(d)(2) of the CAA requires EPA to hold an annual auction of a small percentage (approx. 3%) of the allowances distributed under the Acid Rain Program.[101] Economic research suggests that even this relatively small auction was critical for allowance price discovery and reducing the hording of allowances based on initially high estimates of the cost of emission reductions, ultimately facilitating the emergence of an effective private allowance market.[102] AEE therefore urges EPA to auction at least some of the remaining allowances, and recommends that EPA also communicate the benefits of even small allowance auctions to states through the Model Trading Rule

B. Allowance Allocation under the Mass-Based MTR

The MTR serves an important function by providing states with a model and sending them strong signals about what plan designs EPA considers approvable. States are permitted to adopt the MTR in its entirety and, at the very least, many states will likely use the MTR as a starting point that directs their thinking on how to design their state plans. For this reason, it is very important that the MTR provide a model for states that adequately integrates and promotes advanced energy solutions and thus allows for states to achieve their targets at the lowest cost possible while achieving the maximum benefit for the energy system.

EPA's proposed initial allocation method for the mass-based MTR is the same as that proposed for the mass-based Federal Plan, because EPA has determined that the approach appropriately addresses leakage in a scenario in which new EGUs are not subject to obligations under the CPP compliance plan. As explained above, however, AEE does not support this approach—even as a means of addressing leakage—and believes that a substantially different approach is necessary to ensure that the mass-based MTR minimizes windfalls to EGUs and encourages competition amongst emission reduction options. AEE is concerned that—because the historic-generation-based allocation method is the *only* allocation method proposed by EPA as a part of the MTR—states will gravitate towards this method as the path of least resistance since it ensures that their chosen methodology will be approved by EPA.

First, therefore, AEE requests that EPA provide states with a clear pathway under the MTR to adopt the new source complement. States may not be aware of the benefits of the new source complement, such as the long-term market certainty that will provide clear incentives and

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[101] 42 U.S.C. § 7651*o*(d)(2).

[102] Richard Schmalensee, Paul L. Joskow, A. Denny Ellerman, Juan Pablo Montero, & Elizabeth M. Bailey, *An Interim Evaluation of Sulfur Dioxide Emissions Trading, J. of Econ. Perspectives,* Summer 1998, at 53, 66 ("the allowance auctions that the EPA was required to conduct seem to have facilitated both the price discovery process and the development of the allowance market").

avoid the potential for future stranded assets.[103] States may also feel that the new source complement is administratively burdensome, an issue that EPA can help to address by providing a presumptively approvable pathway for states to regulate new EGUs as a matter of state law while still achieving the requirements of a "trading-ready" plan.

Second, regardless of whether states select the new source complement or choose to address leakage through allowance allocation, AEE requests that EPA develop a rank-order set of presumptively-approvable alternative allocation methods as a part of the MTR in order to provide states with options, which is important given that each state has unique policy, political, and legal considerations. In particular, AEE believes that EPA should provide states with three possible allocation methods ranked as follows:

1. An allocation method based on that proposed by AEE above, which rewards all low- and zero-emitting technologies on a technology-neutral basis and does not cap the number of allowances these technologies are entitled to. This approach embodies all of the principles outlined in *supra* Section IV.A.2.; most notably, it would provide a clear incentive for emission reductions that would allow all eligible measures to compete on the basis of cost-effectiveness, thus overcoming market barriers that would otherwise prevent many advanced energy measures from being deployed to optimal levels for least-cost compliance.
2. An allocation method that uses an auction to distribute allowances. Under this technique, the state—or a third party to which the state would delegate authority—would sell all or a portion of the total pool of allowances to the highest bidders. Firms that would gain the most economic benefit from each allowance would bid the highest price, ensuring that allowances would be distributed efficiently. Economic research and real world experience suggests that, if properly designed, this option can minimize the overall cost of an emission budget trading program in the near term.[104] Key auction design features include using a uniform-price auction, setting a reserve price for allowances, and opening the auction to any financially stable entity rather than restricting it to just affected EGUs. In addition to lowering costs, this option would also avoid windfall profits to EGUs, enable price discovery, improve market liquidity, and overcome institutional barriers that might otherwise prevent trading of allowances, as described in more detail in *supra* Section IV.A.1. Furthermore, by investing auction revenue in activities such as energy efficiency, research and development, infrastructure needs, and reduced ratepayer

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[103] *See* Section II.D.

[104] Dallas Burtraw, Carbon Emission Trading Costs and Allowance Allocations: Evaluating the Options, *Resources* (Fall 2001), at 13-16, available at http://www.rff.org/files/sharepoint/WorkImages/Download/RFF-Resources-145-c02emmis.pdf.

impacts for low-income households, states can achieve additional complementary policy goals while in many cases reducing the cost of compliance.

3. An allocation method by which states would allocate allowances to load-serving entities ("LSEs"), with model provisions that require that the LSEs pass on the value of those allowances to ratepayers by investing in resources that will benefit ratepayers.[105] With the proper design, providing allowance value to LSEs can help insulate electricity consumers from price impacts of the emission budget trading program. In order to accomplish this policy goal, the distribution of allowances to LSEs should be coupled with the requirement that the allowance value be spent on consumers rather than to increase profits. This can be enforced through existing regulatory frameworks such as state public utility commissions. It is important to note that states should *not* permit allowance value to be used to limit electricity *rate* increases. While this approach may appear attractive, it will drive up the overall cost of the emission budget trading program with little benefit. Instead, allowance value should be spent on activities that reduce consumer electricity *bills*, such as through energy efficiency and other demand-side energy projects and programs, or through lump-sum payments to ratepayers. While this technique is an important tool in the state arsenal to mitigate any cost impacts on consumers, it should not be considered a substitute for the previous two options. Unlike the other options, it cannot reduce non-price market barriers to cost effective emission reduction measures, such as advanced energy, nor can it facilitate technology development and cost decreases. Therefore, it will not minimize program costs over the long-run.

In addition to providing additional allocation methods, EPA should also explain the benefit of hybrid approaches. For example, AEE's proposal for the Federal Plan combines options (1) and (2) above, and therefore delivers the benefits of a clear market signal for cost-effective emission reduction measures (from the technology-neutral output-based allocation) and the economic efficiency, market liquidity, and price discovery benefits (from the auction). There are additional allocation methods that may be appropriate in certain instances for a portion of a state's allowance allocation. For example, in states where there is a high risk of emission leakage to surrounding rate-based states, where emissions are not capped, allocating a small portion of the allowances through an updating output-based allocation to all existing generation may be

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[105] The distribution of allowances to LSEs should be coupled with the requirement that the allowance value be distributed to consumers. States generally require such pass-through through existing regulatory frameworks such as state public utility commissions. However, EPA can encourage such behavior by including a condition on the receipt of allowances by LSEs that the value be spent on consumers as part of the MTR, even if such a requirement could not be included in a Federal Plan.[106] Dallas Burtraw, Karan L. Palmer, Sophie Pan, Anthony Paul, *A Proximate Mirror: Greenhouse Gas Rules and Strategic Behavior under the US Clean Air Act,* Resources for the Future, at 21-22 (May 2015), http://www.rff.org/research/publications/proximate-mirror-greenhouse-gas-rules-and-strategic-behavior-under-us-clean.

beneficial.[106] AEE believes that each of these allocation methods is preferable to EPA's current proposal to distribute allowances based on historic generation. Thus, by providing these examples, EPA will provide much needed guidance to states as to how they can design alternative allocation methods, while still meeting the requirements of the CPP.

Third, AEE also encourages EPA to provide states with a summary comparison of the relative merits of the different allocation methods, including their probable impact on actual implementation costs. States are unlikely to spend the time necessary to research the topic and substantial literature, so a summary would provide considerable value. This kind of resource would help states to make informed decisions as to the allocation method that is best-suited to their state.

C. AEE's Recommendations on Discontinuing Allowance Allocations to EGUs that Retire, Modify, or Reconstruct Prior to or During the CPP

AEE's proposed approach would not allocate allowances to affected EGUs based on historic generation, and there would thus be no need to devise a method for discontinuing allowance allocations to EGUs that retire, modify, or reconstruct under that approach. However, if EPA decides to retain its proposed historic generation based approach for any portion of the allowance allocation for the Federal Plan and/or MTR, AEE proposes the following recommendations for discontinuing allowance allocations to: (1) EGUs that retire during a step period; (2) EGUs that retire prior to the beginning of the first step period; and (3) EGUs that modify or reconstruct prior to or during a step period.

1. Treatment of EGUs that Retire During a Step Period

EPA proposes to discontinue allowances to a retired EGU if the EGU has not operated for two full consecutive calendar years. Allocations would be discontinued for the next step period for which allowances have not yet been recorded. Because EPA proposes to record allowances for each step period on June 1 of the last year of the prior step period, a unit that has not been retired for two full consecutive calendar years prior to this June 1 recordation deadline would continue to receive allowances for the entire next step period, even if it does not operate at all in that step period.[107] Thus, depending on when a unit decides to retire, it may receive allowances for an entire subsequent step period for which it does not operate. For example, if an EGU does not operate for the *first* two years of a three-year step period, it will have been non-

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[106] Dallas Burtraw, Karan L. Palmer, Sophie Pan, Anthony Paul, *A Proximate Mirror: Greenhouse Gas Rules and Strategic Behavior under the US Clean Air Act,* Resources for the Future, at 21-22 (May 2015), http://www.rff.org/research/publications/proximate-mirror-greenhouse-gas-rules-and-strategic-behavior-under-us-clean.

[107] Proposed Federal Plan and MTR at 65,026-27.

operational for two full consecutive calendar years prior to the June 1 deadline. Thus, EPA would not allocate any allowances to that EGU for the subsequent step period, and the EGU will receive allowances for three years in which it does not operate.[108] However, if the EGU does not operate during the *final* two years of the three-year step period, it will have only been non-operational for one full calendar year before EPA's proposed June 1 deadline. Thus, EPA would allocate allowances to the retired EGU for the entire next step period, and the EGU will thus *receive allowances for four to five years in which it does not operate*, depending on whether the subsequent step period is a two or three-year step period. EPA requests comment on its proposed treatment of allocations to retired EGUs, the number of years of non-operation for which a unit should continue to receive allowances, and an alternative approach whereby EPA would continue to allocate allowances to retired units.[109]

Once EPA discontinues allowances to a retired EGU, EPA proposes to reallocate the allowances that would have gone to the retired EGU to the RE set-aside in the state where the retired EGU is located.[110] However, EPA also requests comment on whether it should instead redistribute allowances from retired EGUs to the output-based set-aside or *pro rata* to the remaining affected EGUs, in lieu of the RE set-aside.

First, regardless of how EPA designs other aspects of the proposed provisions for units that retire, AEE supports and urges EPA to finalize its current proposal to reallocate the allowances that would have gone to a retired EGU to the RE set-aside in the state in which the retired EGU is located. Equally, if EPA adopts AEE's recommendation to expand eligibility (creating an advanced energy set-aside, or "AE set-aside," see Section IV.D.2.), and/or AEE's primary proposal to use the size of this set-aside as a "floor" for allocation to advanced energy rather than as a set-aside (see Section IV.A.3.), the allowances that would have gone to a retired EGU should also be added to this "floor."[111] It is appropriate to reallocate such allowances to this set-aside—or to the "floor" of allowances under AEE's primary proposal—because additional advanced energy deployment will likely be necessary in order to ensure that any capacity need left by retired EGUs will be filled by advanced energy resources, rather than leakage to new fossil fuel-fired EGUs. Advanced energy technologies—including renewable resources and demand-side energy efficiency—can quickly and cost-effectively backfill capacity needs for EGUs facing retirement decisions before 2022 and during the CPP step periods. Accordingly, it

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[108] Proposed Federal Plan and MTR at 65,026-27; *id.* at 65,067 (proposed 40 C.F.R. § 62.16240(a)(2)).

[109] Proposed Federal Plan and MTR at 65,027. AEE emphasizes that it would *not* support any alternative approach whereby EPA would continue to allocate allowances to retired units indefinitely, and urges EPA *not* to adopt such an approach.

[110] Proposed Federal Plan and MTR at 65,027; *id.* at 65,067 (proposed 40 C.F.R. § 62.16240(a)(2)).

[111] See AEE's proposal to address leakage in Section IV.A.3.

is appropriate to redistribute allowances ceded by retired resources to the minimum "floor" of allowances, or, under EPA's proposal, to the proposed RE set-aside or expanded AE set-aside.

In fact, for this reason, EPA should clarify that the provisions in the Federal Plan and MTR that redistribute allowances from units that retire to the RE set-aside is part of the allowance allocation methodology needed to prevent leakage. That is, for states adopting an allowance allocation methodology as their approach to addressing leakage, this redistribution of allowances from EGUs that retire to the minimum "floor" of allowances, or to the AE- or RE-set-aside, would be required in order for the allocation methodology to be a presumptively approvable approach to addressing leakage.

Second, AEE does not support EPA's current proposal for continuing to allocate allowances to retired EGUs, because AEE believes that EPA's proposed approach is likely to encourage strategic "gaming" behavior in retirement decisions. There are several dimensions in which this strategic behavior might emerge. First, as illustrated by the above example, EGUs are likely to time their retirement decisions in a manner that ensures that they receive allowances for four to five years after retirement instead of just three years.[112] Second, EGUs could easily stop operating on January 2 of a calendar year in order to avoid triggering an EPA finding that they were non-operational for two "*full*" consecutive "*calendar*" years. An EGU that engaged in this kind of strategic behavior could receive allowance allocations for up to almost *six* years (five years and 364 days to be exact). Similarly, an EGU might choose to run for a small amount of time each year (or generate a *de minimis* amount of electricity) in order to avoid triggering a determination that it has not operated for two full consecutive calendar years. AEE encourages EPA to redesign its proposal in order to eliminate these opportunities for strategic behavior and to eliminate the opportunity to obtain up to six years of additional allowances *solely* based on what year and what day in that year an EGU stops operating. Indeed, the disparity in the number of allowances one retired EGU can receive compared to another EGU—based merely on when it retires in relation to EPA's June 1 deadline—raises parity concerns and is likely to result in inefficient and poor environmental outcomes.

AEE has several recommendations to ameliorate these problems. Specifically, AEE recommends that EPA distribute allowances on an annual basis (rather than distributing allowances for all years of a step period at once) and discontinue allowance allocations to retired units for the next *year* for which allowances have not yet been allocated. Thus, if an EGU has been in operation for any part of the two years prior to June 1, EPA would record allowances for the next year only, rather than the entire next step period. This approach will ensure that the incentive for EGUs to retire will be the same for all years of CPP; no matter which year the EGU

[112] Under EPA's proposal, three years is the *minimum* amount of time that an EGU would continue to receive allowances after it has stopped operating. This is a function of the fact that an EGU must be non-operational for two full consecutive calendar years before the final year of the step period.

retires, if it is not deemed retired by June 1, it will only receive allowances for one additional year. Under EPA's current approach, the number of additional years of allowances that an EGU would receive would vary from two to three years, i.e., the number of years in the subsequent step period.

In addition, in order to minimize the degree to which EGUs can engage in strategic behavior to take advantage of the "two full consecutive calendar year" criterion, AEE encourages EPA to change this manipulable aspect of its current proposal. For instance, instead, EPA might determine whether an EGU should stop receiving credits based on whether that EGU operates below a certain threshold number of hours in the two-year period preceding the June 1 deadline. This would solve the problem of an EGU ceasing operation on January 2 and/or operating for one day during the two-year period in order to avoid a determination that it has not stopped operation for two *full calendar* years. While this recommendation would not totally eliminate the risk of strategic behavior, it would make it more difficult and less profitable for EGUs to engage in such behavior. In setting such a threshold, EPA should aim to essentially neutralize the incentive for an EGU to continue operating *just* to receive allowances. EPA should also consider whether there is a threshold level of generation below which it is uneconomic to operate such that it is likely a generator is engaging in strategic behavior.

As an alternative to the two-full-consecutive-calendar-year criterion, EPA might also determine whether a unit is retired based on whether that unit has submitted a notice of retirement to EPA or another regulatory entity.[113] For instance, EPA notes in its Allowance Allocation Proposed Rule Technical Support Document that EPA anticipates that it would know if an EGU is retired based on notifications that the unit owner or operator reports to EPA, e.g., a long term storage notification[114] or a retired unit exemption form, which is required for a unit to become exempt upon retirement from the Acid Rain Program, the CAIR, and the CSAPR. EPA is also considering using the retired unit exemption form for the purposes of the CPP.[115] EPA could cease allocation to units that submit these retirement forms based on the date they *actually* retire. If the retirement date is before June 1, the resource would not receive additional allowances for the next year. If the retirement date is after June 1, the resource would receive allowances for one more year and then would stop receiving allowances.

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[113] For instance, the U.S. Energy Information Agency's ("EIA") form EIA-860 requires generators to report retirements. *See* https://www.eia.gov/survey/form/eia_860/instructions.pdf. EIA also collects generator retirement data. *See* http://www.eia.gov/electricity/data.cfm .

[114] 40 C.F.R. § 75.61.

[115] *See* U.S. EPA, *Allowance Allocation Proposed Rule Technical Support Document,* at 4.

AEE's recommendations strike a better balance between using allowance value to encourage inefficient units to retire as soon as possible and avoiding windfalls.[116] Furthermore, the sooner these units retire (and cede their no-longer needed allowances), the sooner EPA can redistribute these allowances to the RE set-aside for the purposes of preventing leakage to new EGUs that may otherwise replace the retired units. AEE's recommended approach continues to allocate allowances to EGUs for some period of time after they retire,[117] while significantly reducing the risk of a situation in which an EGU engaging in strategic behavior can continue to receive allowances for as long as six years.

AEE opposes EPA's alternate compliance pathway for EGUs that retire before the end of the interim period.[118] This alternate option would shrink the size of the trading market by entirely excluding such EGUs and any allowances that would have been distributed to such EGUs from the market. Under EPA's general allocation approach, if an EGU were to retire, it would not receive its allowance allocation for later years and these allowances would be re-distributed to the RE set-aside to mitigate leakage. However, under the alternate compliance pathway, these allowances would be permanently removed from the system and thus could not be re-distributed to the RE set-aside, even if the EGU retires early. Furthermore, the alternative compliance pathway would entitle an EGU to emit in an amount equivalent to the *full* amount of the allowances that it would have received anyway under the historic-generation approach for the *entire* Interim Period, and would allow an EGU to emit this full amount at *any time* during the Interim Period. This pathway is thus likely to incent increased output and emissions from older, inefficient units during the early step periods. For these reasons, AEE does not support the alternate compliance pathway. Although AEE provides these recommendations in order to improve EPA's current proposal, AEE notes that its first choice is for EPA to abandon the historic generation allocation approach altogether. If EPA abandons this approach, discontinuing the allocation of allowances to retired EGUs becomes a non-issue. Under AEE's proposed *primary* allocation approach, there would be no opportunity for EGUs to engage in strategic

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[116] *See* Proposed Federal Plan and MTR at 65,026 ("Continuing allocations to non-operating units for a period of time reduces the incentive to keep a unit operating simply to avoid losing the allowance allocations for that unit (*e.g.,* a unit that would otherwise be retired due to age and inefficiency). On the other hand, non-operating units are no longer emitting and so do not need allowances. The EPA believes that the proposed approach of allocating allowances for a specified, but limited, period after a unit ceases operating is a reasonable middle ground approach.").

[117] For instance, if EPA maintains the two-years-of-non-operation criterion and an EGU stops operating at the beginning of 2023, that EGU would not operate for all of 2023 and 2024 and will thus not be eligible to receive allowances for 2026 when they are recorded on June 1, 2025. Thus, the EGU would thus still receive allowances for three years total (2023-2025) in which it did not operate. However, if EPA determines the retirement cutoff date based on a unit's actual retirement date (as determined through the retired unit exemption form), the time period for which a retired unit would continue to receive allowances after it stops operating would be shorter and would range from 7 months to 19 months depending on when the unit retires relative to the June 1 recordation date.

[118] U.S. EPA, *Alternative Compliance Pathway for Units that Agree to Retire Before a Certain Date Technical Support Document* (Aug. 2015).

behavior regarding retirements and the problems associated with allocations to EGUs that retire would disappear.

2. Treatment of EGUs that Retire Prior to the Beginning of the First Compliance Period

EPA requests comment on the treatment of affected EGUs that operated during the 2010-2012 historical data period, but retire *prior to* the first step period.[119] EPA has calculated allowance amounts for all units that operated in the historic 2010-2012 data set, even though some of these units will have retired prior to the start of the CPP program.[120]

AEE believes that EPA should not allocate allowances to affected EGUs that retire prior to the first step period. The start of the first step period is *six years* in the future and the value of any allowances that such EGUs might receive if they delay retirement is uncertain and would need to be discounted. AEE does not believe that the promise or amount of this future allowance revenue will be significant enough (especially after it is discounted to reflect this uncertainty and the time value of money) to incent EGUs that are on the brink of retirement to remain operational *just* to receive this allowance value. EGUs facing retirement in the next few years are likely facing significant and concrete costs *in the present* that are driving their decisions to retire, and the promise of an uncertain amount of future allowance value is unlikely to sufficiently counteract these costs to delay retirement. Additionally, if EPA adopts AEE's recommendation above to distribute allowances on an annual basis, any potential incentive to delay retirement would be even further diminished.

AEE believes that this proposal avoids granting a huge windfall to EGUs that have no compliance obligation under the CPP. Furthermore, as discussed above, allocating these allowances to the RE set-aside will incent deployment of zero-emitting resources to fill any capacity needs left by the retired EGUs and will thus mitigate leakage to new EGUs.

However, if EPA nevertheless decides to allocate allowances to some affected EGUs that retire prior to the start of the first step period, AEE believes that *in no circumstance* should EPA award allowances to EGUs that have *already* retired prior to when EPA finalizes the MTR (*i.e.*, in late 2016). Allowing these EGUs to receive allowances would serve no purpose—it would allocate allowances to an entity that has no compliance obligations (resulting in a windfall), without rectifying any kind of perverse incentive to remain operational—because the unit has *already* retired.

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[119] Proposed Federal Plan and MTR at 65,016.

[120] Proposed Federal Plan and MTR at 65,016.

3. Treatment of EGUs that Modify or Reconstruct During a Compliance Period or Prior to the Beginning of the First Compliance Period

EPA's proposed treatment for allocations to EGUs that modify or reconstruct during a step period is very similar to its proposed treatment of EGUs that retire during a step period. If an affected EGU modifies or reconstructs such that it is no longer subject to section 111(d), then EPA would discontinue allowance allocations to that EGU for the next step period for which allowances have not yet been recorded.[121] Allowances for each step period are recorded on June 1 of the last year of the prior step period. Thus, if a unit modifies after this June 1 recordation deadline, then it would continue to receive allowances for the entire next step period, even though it is no longer considered to be an affected EGU subject to section 111(d). EPA requests comment on its proposed treatment of allocations to modified and reconstructed EGUs, the number of years for which an EGU should continue to receive allowances after modification or reconstruction, and an alternative approach whereby EPA would continue to allocate allowances to modified and reconstructed units.[122]

Similar to retired EGUs, EPA proposes to reallocate allowances that would have been allocated to a modified or reconstructed EGU to the RE set-aside for the state in which that EGU is located.[123] EPA requests comment on whether EPA should redistribute allowances to other affected EGUs or to the output-based set-aside, in lieu of the RE set-aside.[124]

AEE opposes EPA's current approach to allocating allowances to modified/reconstructed units. As discussed above with respect to retired units, EPA's approach could lead to strategic behavior because, depending on when an EGU modifies/reconstructs relative to when allowances are recorded, affected EGUs could continue to receive allowances for an *entire step period* after they modify/reconstruct. For this reason, AEE recommends that EPA issue allowances on a yearly basis (rather than distributing allowances for all years of a step period at once) and discontinue allowances for sources that modify or reconstruct for the next *year* for which allowances have not yet been recorded. This would limit the amount of allowances that EGUs can receive after they modify/reconstruct,[125] while obviating the need for EPA to rescind allowances that have already been distributed to these sources.

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[121] Proposed Federal Plan and MTR at 65,027; *id.* at 65,067 (proposed 40 C.F.R. § 62.16240(a)(3)).

[122] Proposed Federal Plan and MTR at 65,027.

[123] Proposed Federal Plan and MTR at 65,027; *id.* at 65,067 (proposed 40 C.F.R. § 62.16240(a)(3)).

[124] Proposed Federal Plan and MTR at 65,027.

[125] If an EGU waited until June 2 to modify (one day after EPA distributes allowances), it would receive allowances for only one extra year, versus two to three years (depending on the compliance period) under EPA's proposal.

For retired units, continuing allowances for a discrete period of time makes some sense in order to prevent older, inefficient EGUs from continuing to operate just to receive allowances. However, unlike a retired unit—which ceases operating and emitting and can be replaced by a zero- or low-emitting resource—a modified/reconstructed unit will merely leave the section 111(d) program, but will keep operating and emitting. AEE does not see any persuasive reason for continuing allowance allocations in order to incent these sources to modify / reconstruct to intentionally leave the section 111(d) program, which could create leakage concerns. Thus, AEE sees little utility to continuing allocations to these resources, except to the extent that it is administratively burdensome to rescind allowances once they have already been distributed. AEE's proposal to allocate allowances to EGUs on an annual basis will thus significantly help to reduce the degree to which these sources can continue to receive windfall allowances after they have shed their compliance obligations under section 111(d).

D. AEE's Recommendations to Transform or Improve the RE Set-Aside

EPA seeks comment on all aspects of the proposed RE set-aside, including whether it should be included in the mass-based Federal Plan, the structure of the set-aside, eligibility requirements, and the process for distributing allowances.[126]

As explained in detail in Section IV.A.1.d. above, AEE has several concerns with the RE set-aside as proposed. AEE's preferred alternative to the RE set-aside is to address leakage within the primary allocation approach outlined above; specifically, AEE proposes setting a "floor" on the number of allowances that would be awarded on a technology-neutral basis to all technologies that address the risk of leakage. The size of the "floor" would be set at an appropriate level to address leakage, and allowances under this floor would be available only to those measures that help address the risk of leakage. Accordingly, the comments in this section regarding the size and eligibility requirements for a set-aside to address leakage would also apply in the context of AEE's preferred approach.[127]

If EPA decides to keep its proposed allocation methodology in whole or in part, AEE strongly encourages EPA to designate a larger set-aside in order to adequately counteract the risk of leakage, and to expand eligibility in order to equally incent all measures that address leakage, including demand-side energy efficiency (including demand response), CHP, WHP, biomass, fuel cells, and other measures as long as they meet the eligibility requirements outlined in the

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[127] With the exception of Section IV.D.3., which outlines AEE's proposal to improve the process for ex-ante distribution of allowances under the set-aside. Under AEE's proposal, allowances would be distributed on an ex-post basis, removing AEE's concerns around EPA's proposed approach.

[127] With the exception of Section IV.D.3., which outlines AEE's proposal to improve the process for ex-ante distribution of allowances under the set-aside. Under AEE's proposal, allowances would be distributed on an ex-post basis, removing AEE's concerns around EPA's proposed approach.

final CPP.[128] With these changes, the *RE set-aside* would become an *Advanced Energy or "AE" set-aside.* If EPA would prefer, there could be separate set-asides for the different eligible measures, but for clarity the expanded set-aside will be referred to hereafter as the AE set-aside.

This portion of AEE's comments will discuss recommendations for (1) sizing the set-aside to appropriately address the risk of emission leakage; (2) expanding the eligibility criteria for the proposed RE set-aside under the Federal Plan and MTR to create an AE set-aside; and (3) improving the process for distributing and obtaining allowances through the AE set-aside.

1. EPA Should Expand the Size of the Proposed RE Set-Aside or Revised AE Set-Aside for Both the Federal Plan and MTR.

Under both the Federal Plan and the MTR, EPA proposes that the size of the RE set-aside would be equivalent to 5% of a state's total allowances.[129] AEE supports EPA's stated goal in proposing the RE set-aside; namely, "to address concerns regarding leakage by lowering the marginal cost of production of the incented clean energy technologies within the state. This will make RE more competitive against new sources, reducing the potential for leakage to new sources."[130] However, the size of the proposed RE set-aside is inadequate to accomplish this goal. This section discusses (a) the importance of avoiding an underestimate for the proposed RE set-aside or revised AE set-aside; (b) EPA's flawed assumptions in determining the size of the proposed RE set-side; and (c) additional factors that EPA should consider in determining an appropriate size for the proposed RE set-aside or revised AE set-aside.

a. EPA Should Exercise Caution When Calculating an Appropriate Size for the Proposed RE Set-Aside or Revised AE Set-Aside Due to the Negative Repercussions of Underestimating the Size Necessary to Prevent Leakage.

Given that the stakes of failing to address leakage are high—doing so would mean jeopardizing the integrity of the Clean Power Plan—and given the uncertainties inherent in calculating the risk of leakage to non-affected fossil-fired EGUs, EPA should include wide margins of error when considering the appropriate size of the set-aside, and should seek to minimize the risk of leakage given these margins of error.

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[128] *See* Final CPP at 64950-51 (codified at 40 CFR § 60.5800(a)(4)); Proposed Federal Plan and MTR at 65094 (proposed to be codified at 40 CFR § 62.16435(a)(4)); *Id.* (proposed to be codified at 40 CFR § 62.16445(a)(2)(ii)-(v)) (outlining specific requirements for project-based energy efficiency, program-based energy efficiency, transmission and distribution efficiency, and distributed generation resources).

[129] Proposed Federal Plan and MTR at 65,024-25.

[129] Proposed Federal Plan and MTR at 65,022, 65,064 (proposed 40 C.F.R. § 62.16235(c)).

[130] Proposed Federal Plan and MTR at 65,022.

It is appropriate to rely on conservative assumptions in this instance because while there *are* significant negative consequences if EPA ends up under-allocating allowances to the RE set-aside, there would be no corresponding negative impacts on the overall outcome of the rule if EPA were to over-allocate allowances to the AE set-aside.

Furthermore, AEE notes that the option to pursue a mass-based plan is an alternative offered by EPA to provide states with additional flexibility. EPA is therefore justified in setting stringent requirements regarding leakage in order to eliminate any risk of deviation from the rate-based goals upon which the CPP is predicated. In the subsequent sections, AEE has noted areas where EPA should include additional margins to ensure that the risk of leakage will be adequately addressed.

b. EPA Should Rectify Several Flawed Assumptions in its Calculation of the Proposed RE Set-Aside and Increase the Size of the Revised AE Set-Aside in Order to Ensure that It Is Large Enough to Effectively Prevent Leakage.

EPA proposes that the size of the RE set-aside should equal 5% of each state's total pool of allowances, and requests comment on a range of sizes for the set-aside ranging from 1% to 10% of the total number of allowances.[131]

To estimate the appropriate size of the RE set-aside, EPA estimates the $/MWh incentive that the RE set-aside would support at different sizes. EPA then compares this $/MWh incentive to the projected difference in the LCOE between a representative NGCC unit and onshore utility-scale wind and solar photovoltaic ("PV") technologies "in order to evaluate whether it is reasonable to expect that a given incentive level is sufficient to mitigate emissions leakage to new NGCC sources."[132]

Specifically, EPA first determines the number of allowances that would be available in the set-aside if it comprised 1% to 10% of the total allowances. Next, EPA multiplies the number of available allowances by four possible allowance prices ($5, $10, $15, and $20 per ton) to determine the total monetary value of the RE set-aside—in the aggregate—at each percentage level and at each allowance price. From there, EPA divides the total aggregate value of all of the allowances by the number of MWh of renewable energy that EPA estimates would be consistent with mitigating emissions leakage to new NGCC units. This calculation yields a $/MWh

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[131] Proposed Federal Plan and MTR at 65,022, 65,064 (proposed 40 C.F.R. § 62.16235(c)).

[132] U.S. EPA, Office of Air and Radiation, *Renewable Energy (RE) Set-aside Technical Support Document (TSD),* at 2.

incentive for the development of renewable energy. EPA then compares this $/MWh incentive to the difference in LCOE between new NGCC and onshore utility-scale wind and solar PV. The difference between the NGCC LCOE and the wind LCOE was estimated to be $2.72 in 2030, while the difference between the NGCC LCOE and the solar PV LCOE was estimated to be $9.80 in 2030. EPA proposes to pick the set-aside size that produces a $/MWh incentive that roughly equates to $2.72—the LCOE difference between new NGCC and wind—at an allowance price of $13/ton. EPA rationalizes an allowance price of $13/ton on the grounds that this price is consistent with the mass-based compliance run in EPA's Integrated Planning Model ("IPM"). Using these assumptions, EPA determines that a set-aside size equal to 5% of the total allowances will produce an incentive of approximately $2.72 at an allowance price of $13/ton.

Similarly, to determine the upper limit of the RE set-aside size, EPA purports to pick the set-aside size that produces an incentive of approximately $9.80/ton (consistent with the LCOE difference between NGCC and solar PV). However, in determining this upper limit, EPA assumes that the allowance price is approximately *$19.75/ton* rather than $13/ton. Using the $19.75/ton allowance price, EPA determines that a set-aside size of 10% of the total allowances will produce an incentive of approximately $9.80/ton and concludes that this should determine the upper-bound for the size of the RE set-aside.

There are several flaws in EPA's assumptions that artificially suppress EPA's calculation of the size of the RE set-aside. Specifically, EPA should adjust certain assumptions with respect to (1) the LCOE difference between new NGCC and renewable energy technologies, (2) the projected allowance price, and (3) the amount of new NGCC generation associated with emissions leakage under the mass-based approach. EPA should rectify these flawed assumptions in order to avoid underestimating the appropriate size of the set-aside. AEE discusses each of these assumptions in more detail below.

i. EPA's Assumptions About the Allowance Price and the LCOE Difference Between New NGCC and Wind and Solar Depress EPA's Determination of the Appropriate Size of the RE Set-Aside.

EPA's determination of the appropriate size of the RE set-aside is flawed and arbitrary for multiple reasons. First, even using EPA's own methodology, the upper bounds of the size of the RE set-aside should be *15%* of the total number of allowances rather than 10%. EPA uses the LCOE difference between new NGCC and solar PV and an allowance price of $19.75/ton to estimate that the upper bounds for the size of the RE set-aside should be equal to 10% of the total number of allowances. However, EPA does not explain why it uses an allowance price of ~$19.75/ton to determine the upper bounds of the RE set-aside when the IPM run predicted an allowance price of *$13/ton*. Because EPA inexplicably assumes that each allowance is worth more money, fewer allowances are needed to achieve the aggregate allowance value that EPA

determines is necessary to incent enough renewable MWh to mitigate leakage. This arbitrary assumption thus depresses EPA's estimate of the number of allowances that will be necessary to mitigate leakage.

In order to rectify this arbitrary assumption, AEE recommends that EPA use an allowance value of $13/ton to calculate the upper bounds of the RE set-aside. This price is consistent with EPA's model run and is the price that EPA uses to determine what the size of the RE set-aside would be based on the LCOE difference between wind and NGCC. If EPA uses an allowance price of $13/ton, the size of the RE set-aside would need to be approximately *15%* of the total number of allowances—rather than 10%—in order to adequately mitigate leakage. Thus, even using EPA's own methodology, the upper bounds of the size of the RE set-aside should be 15% of the total allowances, rather than 10%.

Second, EPA's use of the LCOE difference between wind and NGCC to determine the proposed size of the RE set-aside—5% of the total number of allowances—does not appropriately manage risk. Given the significant risk of leakage, EPA should adopt a more conservative approach and use the LCOE difference between *solar* and NGCC to determine the proposed size of the RE set-aside. As explained above, this approach would produce a set-aside size equal to 15% of the total number of allowances. Consistent with Section IV.D.1.a., above, AEE urges EPA to build a safety margin into its estimate of the amount of allowances necessary to mitigate leakage, because there are significant negative consequences if EPA ends up under-allocating to the RE set—including emissions leakage, which would undermine the integrity of the rule.

It is also appropriate to use the difference in LCOE between new NGCC and solar (rather than wind), because EPA does not know *a priori* what percentage of the new renewable capacity additions will be wind additions versus solar additions. By using the wind LCOE difference of $2.72, EPA essentially assumes that *all* of the MWh that mitigate leakage will come from wind energy. However, recent history has demonstrated that new renewable capacity additions have been much more evenly split between wind and solar. For instance, 3,596 MW of wind was installed in the first three quarters of 2015,[133] while 4,110 MW of solar PV was installed in the first three quarters of 2015.[134]

At the very least, because capacity additions are likely to be relatively evenly split between wind and solar, EPA should use a value for the LCOE difference that averages that of

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[133] American Wind Energy Ass'n, *U.S. Wind Industry Third Quarter 2015 Market Report* (Oct. 2015), http://awea.files.cms-plus.com/FileDownloads/pdfs/3Q2015%20AWEA%20Market%20Report%20Public%20Version.pdf.

[134] Solar Energy Industries Ass'n, *Solar Market Insight 2015 Q3* (Dec. 2015), http://www.seia.org/research-resources/solar-market-insight-2015-q3.

wind ($2.72/MWh) and solar ($9.80/MWh), in order to get an average LCOE difference of $6.26/MWh. Using a $13/ton assumption and this average LCOE difference of $6.26/MWh, EPA's methodology would produce a size for the RE set-aside that approximates 10% of the total allowances.

In sum, a set-aside equal to 5% of allowances is far too low to ensure that leakage is adequately mitigated. Instead, EPA should take a more conservative approach to determining the size of the RE set-aside given the substantial harm to the basic principle and integrity of the rule that may occur if EPA underestimates the size of the set-aside. Accordingly, EPA should adopt a set-aside size equal to at least 15% of the total allowances, based on the difference in the LCOE value between new NGCC and solar and a corrected allowance price of $13/ton. At a minimum, AEE believes that EPA should adopt a set-aside size equal to 10% of the total allowances in recognition of the fact that new renewable capacity additions will come from *both* new wind and solar. If EPA averages the LCOE difference for wind and solar and uses an allowance price of $13/ton, EPA's methodology will produce a set-aside equal to 10% of the total allowances.

ii. In Determining the Appropriate Set-Aside Size, EPA Should Use the Average Projected Difference in LCOE Values For *Each Compliance Period*, Rather than Using the Difference in LCOE Values in *2030* to Determine the Size of the Set-Aside for All Years of the Program.

EPA uses the projected difference in LCOE between new NGCC and wind and new NGCC and solar in 2030 in order to determine the appropriate $/MWh incentive needed to promote the appropriate amount of renewable MWh to adequately mitigate leakage. However, because the LCOE difference between wind and solar and new NGCC will likely be *greater in the earlier years of the CPP*, EPA's decision to use the LCOE difference in 2030 will likely *underestimate the actual LCOE difference in all of the years prior to 2030*. The LCOE difference is likely to be greatest in the first step period and then decrease in the years leading up to 2030, because the LCOE for wind and solar will be higher in early years of the CPP and will likely fall over the course of the CPP.[135]

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[135] The growth in advanced energy markets has coincided with dramatic reductions in cost over the last 5-10 years, and further significant reductions are expected over the course of the CPP. For instance, according to one independent financial advisory firm, the levelized cost of electricity ("LCOE") for wind power has declined by 58% in the past five years, while the LCOE for utility-scale solar and concentrating solar power has dropped by 78% and 59% respectively over the same time period. Advanced Energy Econ. Inst., *Competitiveness of Renewable Energy and Energy Efficiency in U.S. Markets*, at 8-9 (June 2015), http://info.aee.net/competitiveness-of-renewable-energy-and-energy-efficiency-in-us (citing Lazard's Levelized Cost of Energy Analysis, Versions 8.0 (2014) and 3.0 (2009)). These percentages represent the average percentage decrease of high and low LCOE ranges for each technology.

Under EPA's methodology, the greater the LCOE difference between new NGCC and wind/solar, the greater the $/MWh incentive produced by the RE set-aside needs to be in order to adequately incentivize new renewables in an amount necessary to reduce leakage. Thus, using the 2030 LCOE difference to determine the size of the set-aside *prior to* 2030 will cause EPA to underestimate the size of the set-aside in the years leading up to 2030. Accordingly, AEE recommends that EPA determine the size of the set-aside based on the average projected LCOE difference in each step period. This will ensure that the incentive in the early years of the program will be sufficient to adequately mitigate leakage.

iii. EPA's Assumptions Regarding the Number of Renewable Energy MWh Necessary to Mitigate Leakage to New NGCC Are Questionable.

In estimating the amount of new NGCC generation associated with emissions leakage under a mass-based approach, EPA compared projected new NGCC generation levels between the rate- and mass-based approaches using EPA's IPM modeling framework. The IPM indicated that the mass-based model run without an RE set-aside was projected to have approximately 164 terawatt-hours ("TWh") more nationwide generation from new NGCC units than the rate-based approach in 2030. However, EPA next concludes:

> [N]ot all of that difference in generation is associated with emissions leakage. An important factor to consider is that the mass-based model run projects more than 12 GW of coal-fired EGU retirements additional to what is projected in the rate-based model run. If these incremental coal retirements are replaced by new NGCC units, this action represents the replacement of higher CO_2 emissions-intensive sources (e.g., coal-fired EGUs) with less CO_2 emissions-intensive sources (natural gas-fired EGUs). This outcome, which reduces overall utility power sector CO_2 emissions, is not consistent with how the EPA has defined emissions leakage and is therefore subtracted from the difference between projected mass- and rate-based new NGCC generation to produce the EPA's estimate of new NGCC generation associated with emissions leakage under a mass-based approach.

Based on this rationale, EPA subtracts approximately 92.5 TWh from the total difference in new NGCC between the mass-based and rate-based model runs (164 TWh) to conclude that an estimated 72 TWh of new NGCC capacity will result from leakage. Essentially, EPA appears to conclude that these extra 12 GW of coal retirements under the mass-based scenario—and the additional 92.5 TWh of new NGCC that replace those coal plants—do not constitute leakage, merely because the emission rate from new gas is less than that of existing coal.

This assumption is flawed because EPA's calculation omits the impact of freeing up additional allowances within the capped system. The retirement of existing coal units can still lead to leakage if those units are replaced by new NGCC that is not subject to the emissions cap. The mass-based cap under the section 111(d) program will stay the same regardless of whether coal units retire, and the amount of emissions from any remaining existing sources will always presumptively equal the cap. Thus, if some coal plants retire, this will just leave more allowances for the remaining existing sources to emit more. However, the new NGCC units that replace those retired coal units will not be subject to the cap, so the emission from these units are new emissions that are in addition to the cap.

In other words, whatever decrease in emissions occurs because of the shift in generation from the retired coal unit to new NGCC will be offset by the increase in emissions from existing EGUs that can make use of the allowances no longer needed by the retired coal unit. EPA's calculation does not take this second effect into account.

AEE thus does not agree with EPA's assumption that the 92.5 TWh of new natural gas generation should not be considered "leakage." While EPA is correct that natural gas units emit less than coal units, one can expect that emissions will still increase in an aggregate amount equal to the emissions of those new natural gas units. AEE urges EPA to rethink this assumption.

c. EPA Should Consider Additional Issues, Including the Expected Level of Demand-Side Efficiency, When Determining the Size of the Set-Aside Required to Address Leakage.

By focusing exclusively on the level of RE required to avoid leakage based on the difference between new NGCC generation in the rate-based and the mass-based IPM model runs, EPA fails to adequately recognize the various additional factors that must also be addressed in order for the set-aside to adequately prevent leakage.

First and foremost, EPA ignores the potential that without a mechanism to ensure that energy efficiency is produced at the levels assumed by EPA—combined with the fact that mass-based plans without direct allocation to measures that reduce emissions reinforce market failures that limit the deployment of energy efficiency, as outlined in Section IV.A.1.—significantly more leakage may occur than EPA predicts in its leakage set-aside methodologies.

Specifically, the IPM modeling used by EPA to calculate the anticipated MWh of generation attributed to leakage assume *exogenously* that a certain amount of energy efficiency savings will occur.[136] However, neither EPA's modeling nor its mass-based Federal Plan or

[136] U.S. EPA, *Regulatory Impact Analysis for the Clean Power Plan Final Rule* at 3-14 (Aug. 2015), ("To reflect the implementation of the illustrative energy efficiency plan scenario in modeling, the IPM base case electricity demand was adjusted exogenously to reflect the estimated future-year demand reductions calculated as described above").

MTR include any mechanism by which this level of energy efficiency would be incentivized to come about. Without the modeled level of energy efficiency, the amount of leakage would almost certainly be much greater, because generation necessary to meet the increased demand would be higher and there will be strong incentives to meet that demand with new fossil fuel-fired generation that faces no regulatory obligation.

Thus, in order to appropriately recognize the amount of leakage that will be incentivized by the mass-based plan, and to cost-effectively limit that leakage, EPA should create an energy efficiency set-aside (or, under AEE's allocation approach, incorporate energy efficiency into the advanced energy allocation floor). This set-aside should be sized to encourage the MWh of energy efficiency expected under the rate-based IPM model run when calculating. This would be appropriate given that EPA defines leakage as "…the potential of an alternative form of implementation of the BSER (*e.g.,* the rate-based and mass-based state goals) to create a larger incentive for affected EGUs to shift generation to new fossil fuel-fired EGUs relative to what would occur when the implementation of the BSER took the form of standards of performance incorporating the subcategory-specific emission performance rates representing the BSER." The level of energy efficiency in the rate-based IPM model run from EPA's RIA therefore provides an appropriate baseline for the level of energy efficiency that *should* occur in the absence of leakage, as defined by EPA, since this modeling projects "what would occur" under the subcategory-specific emission performance rates. In contrast, if EPA does not incorporate the impact of energy efficiency, the total potential risk of leakage will be significantly underestimated.

Second, given the market barriers identified in Section IV.A.1., EPA should consider increasing the size of the set-aside to ensure that it addresses *both* the risk of leakage *and* the market barriers to advanced energy deployment. Otherwise, the set-aside may partially address market failures yet still fail to fully address leakage.

Finally, EPA should avoid diluting the market signal to deploy eligible measures that are proven to avoid emission leakage. To the extent that EPA expands eligibility under the set-aside as proposed by AEE in order to create an equal incentive for all measures available to avoid leakage, the size of the set-aside should be adjusted accordingly to avoid oversubscription.

2. EPA Should Expand Eligibility for the RE Set-Aside under the Federal Plan to Create an AE Set-Aside.

Although EPA proposes to allow only a limited subset of renewable resources to qualify for the RE set-aside under the Federal Plan, EPA requests comment on the inclusion of other resources, including incremental nuclear, demand-side energy efficiency, CHP, WHP, biomass,

and other measures as long as they meet the eligibility requirements outlined in the final CPP.[137] EPA also requests comment on how designating these other resource types as eligible for the RE set-aside will help to prevent leakage to new EGUs.[138]

AEE strongly urges EPA to expand eligibility for the RE set-aside to all advanced energy resources that are eligible under the CPP—on a technology-neutral basis. AEE believes that EPA should expand eligibility in order to provide a level playing field that gives other types of advanced energy resources the opportunity to compete to provide low-emission solutions and generation / savings that can obviate the need to build new fossil fuel-fired EGUs. This section first establishes that all of these measures do indeed help to prevent leakage, and then outlines why they should be included in a revised AE set-aside.

a. There Are Many Advanced Energy Measures Available to Help Address Leakage in Addition to Renewable Energy.

EPA explains that a primary goal of the RE set-aside is to lower the marginal cost of production of clean energy technologies to make them more competitive against new sources and thus reduce the potential for leakage.[139] Nearly all of the advanced energy technologies eligible for the CPP and MTR have the potential to help achieve this goal if their emission reduction contributions are properly valued. EPA does not explain why "on-shore utility scale wind, solar, geothermal power, or utility scale hydropower" are the only resources that meet this goal. In fact, to the contrary, EPA explicitly found in the CPP that both "increased RE *and demand-side EE*, supported by a dedicated set-aside, can . . . serve to address potential emission leakage."[140]

Moreover, EPA has only identified *one* resource that it believes is *not* likely to effectively reduce leakage: incremental nuclear capacity. In the Proposed Federal Plan, EPA explains that incremental nuclear capacity is not likely to be incented by the set-aside in a way that will help to reduce leakage "due to unique costs and development timelines for incremental nuclear power."[141] EPA recognizes that these higher costs and longer timelines for nuclear are "unique,"[142] and yet EPA still does not recognize the potential of other excluded sources—

Proposed Federal Plan and MTR at 65,022-23.

bly implementing EM&V for demand-side energy efficiency.

[139] Proposed Federal Plan and MTR at 65,022.

[140] Final CPP at 64,890 (emphasis added).

[141] Proposed Federal Plan and MTR at 65,023.

[142] EPA does not specify whether "incremental nuclear" refers to incremental utility-scale generation, uprates, and/or new modular nuclear power. There may be some justification in distinguishing between these categories given their different characteristics.

including demand-side EE, distributed renewable generation, CHP, WHP, T&D, and biomass—to avoid leakage.

Indeed, these advanced energy technologies have costs that are low enough and development times that are quick enough in order to significantly reduce leakage. For example, as recognized by EPA in the CPP,[143] demand-side EE has a demonstrated potential to reduce leakage through its ability to quickly and cost-effectively meet growing demand and to backfill capacity needs for EGUs facing retirement decisions during the CPP. A recent report analyzing the energy saving potential of four common energy efficiency policies[144]—a small subset of the many types of efficiency activities available to states—found that these four policies alone could save over 925 million MWh of electricity annually and obviate the need for 494 power plants nationwide in 2030.[145] These savings would avoid 600 million tons of carbon dioxide ("CO_2") pollution[146] in 2030 and would result in 611,000 additional jobs in that same year.[147]

The feasibility of achieving these environmental, economic, and anti-leakage benefits is borne out by experience. For instance, during 2010-2012, energy efficiency activities in California alone resulted in "approximately 7,745 gigawatt hours (GWh) in electricity savings, enough to power nearly eight hundred thousand homes for a year and potentially offset nearly 1,300 megawatts (MW) of summer peak electricity generation."[148] Similarly, California's 2016 Building Energy Efficiency Standards will save enough energy over 30 years to power 2.2 million homes, reducing the need to build 12 additional power plants.[149] In Minnesota, one

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[143] Final CPP at 64,890.

[144] These four policies were: (1) an annual energy efficiency savings target that ramps up to 1.5% annually; (2) electric savings achieved by adopting building energy codes in new buildings only; (3) deployment of a subset of cost-effective CHP, assuming no additional financial incentives; and (4) state equipment efficiency standards for only five products. *See* ACEEE, Change is in the Air: How States Can Harness Energy Efficiency to Strengthen the Economy and Reduce Pollution, at 5, 7, 10-12 (April 2014), *available at* http://aceee.org/research-report/e1401.

[145] ACEEE, Change is in the Air: How States Can Harness Energy Efficiency to Strengthen the Economy and Reduce Pollution, at 15 (April 2014), *available at* http://aceee.org/research-report/e1401. The power plant estimate is based on 500 MW power plants and assumes 5% line loses and the national average capacity factor of 45%. *Id*. at 15 n.23. In 2020, these same four policies could avoid the need for 71 GW, *i.e.*, 142 power plants using these same assumptions. *See id*. at 17.

[146] It is also estimated to also avoid 527,000 tons of additional NOx pollution and 980,000 tons of additional sulfur dioxide pollution. *Id*. at 16.

[147] *Id*. at 15-16.

[148] California Public Utilities Commission, *2010-2012 Energy Efficiency Annual Progress Evaluation Report,* at 11 (Mar. 2015), http://www.cpuc.ca.gov/NR/rdonlyres/052ED0ED-D314-4050-9FAA-198E45480C85/0/EEReport_Main_Book_v008.pdf. At the same time, these energy efficiency savings were cost-effective and are estimated to have cut CO_2 emissions by 5.3 million tons. *Id.*

[149] 2016 Building Energy Efficiency Standards Frequently Asked Questions at 1, http://www.energy.ca.gov/title24/2016standards/rulemaking/documents/2016_Building_Energy_Efficiency_Standards_FAQ.pdf. Additionally, since the 1970s, it is estimated that California has avoided the construction of at least 30-40 power plants through energy efficiency policies. *See* The Regulatory Assistance Project, *Reducing Greenhouse*

utility's (Xcel Energy) energy efficiency programs have avoided construction of 2,500 MW of new power plants since 1992.[150] Additionally, the 2016-2018 three-year adjusted gross electric annual savings for Massachusetts are projected to be 4,512,325 MWh, which would power 601,643 homes through energy savings alone. These savings in Massachusetts will result in $6,214,630,136 in benefits for the residential, low-income and commercial/industrial sectors. Virtually all programs will be producing annual savings in the step period.[151] These examples illustrate the significant potential for demand-side energy efficiency to prevent leakage nationwide.

In recognition of this potential, state public utility commissions and utilities are increasingly evaluating the potential for advanced energy resources to meet capacity needs in the face of generator retirements and growing demand. For instance, last year, the California Public Utilities Commission unanimously approved a plan requiring utilities in southern California to procure 575 MW of "preferred resources" (renewable energy, energy efficiency, demand response, and energy storage) to replace generation capacity lost when the San Onofre Nuclear Generating Station was permanently closed in 2013.[152] Similarly, the New York Public Service Commission also recently approved of an energy efficiency and demand response program as part of its contingency plan to meet capacity and reliability needs in the event that the Indian Point Energy Center nuclear plant retires.[153] Consolidated Edison in New York also deferred an estimated $1 billion in traditional infrastructure investments by spending $200 million on customer-side and non-traditional utility-side resources, including energy efficiency, energy

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Gases and Improving Air Quality Through Energy Efficiency Power Plants, at 2, http://111d.naseo.org/Data/Sites/5/media/documents/RAP-EFC-Cutting-Through-the-Fog-ACEEE-Summer-Study-2014-08.pdf; *see also* EPA Energy and Environment Guide to Action at 1-5.

[150] The Regulatory Assistance Project, *Reducing Greenhouse Gases and Improving Air Quality Through Energy Efficiency Power Plants,* at 2; *see also* Xcel Energy, *Partnering for a Better Energy Future,* at 1 (2013), http://xcelenergy.com/staticfiles/xe/Corporate/Corporate%20PDFs/PartneringforaBetterEnergyFuture.pdf ("By using our energy-efficiency programs, Minnesota Xcel Energy customers have saved enough energy since 1992 to avoid building 10 power plants.").

[151] Massachusetts Energy Efficiency Advisory Council, *Massachusetts Joint Statewide Three-Year Electric and Gas Energy Efficiency Plan,* at 251, 213, 334 (Oct. 2015), http://ma-eeac.org/wordpress/wp-content/uploads/Exhibit-1-Gas-and-Electric-PAs-Plan-2016-2018-with-App-except-App-U.pdf.

[152] California Public Utilities Commission, Decision 14-03-004 (March 14, 2014), *available at* http://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M089/K008/89008104.PDF. The preferred resources account for more than one-third of the total capacity needed.

[153] *See* Case 12-E-0503, *Proceeding on Motion of the Commission to Review Generation Retirement Contingency Plans*, Order Accepting IPEC Reliability Contingency Plans, Establishing Cost Allocation and Recovery, and Denying Requests for Rehearing (Nov. 4, 2013), *available at* http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId=%7B5AFE13E9-181F-40CF-A91C-5AEC0E066AC9%7D.

management and audit software, distributed energy resources, energy storage, customer engagement, and demand response.[154]

However, demand-side energy efficiency is not the only currently-excluded resource that should be eligible for allowances from the set-aside under the Federal Plan. Other types of advanced energy resources—including CHP, WHP, distributed generation, biomass, T&D, and off-shore wind—also have the potential to reduce leakage during the CPP and should be eligible. For instance, like demand-side energy efficiency, CHP and WHP have significant potential to cut demand and reduce the need for new power plants, and can be developed quickly. For instance, one recent study estimated that policies that support deployment of cost-effective CHP could avoid the need for 18 GW of new capacity in 2030, which would equate to approximately 36 500-MW power plants.[155] At the same time, CHP resources often have lead times shorter than those of new power plants,[156] making the technology competitive in the current marketplace and a prime candidate for reducing leakage. WHP potential across the country totals over 14,500 MW at more than 2,900 sites, according to the Oak Ridge National Laboratory.[157] There is also significant potential for demand response. The Federal Energy Regulatory Commission ("FERC") has found that, under an "Expanded Business as Usual Scenario," demand response can reduce peak energy demand by 82 GW in 2019—a 9% reduction in peak demand from a 2009 baseline.[158] As of the end of 2012, FERC reported that only 28.5 GW of this potential had

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[154] *See* Case 14-E-0302, *Petition of Consolidated Edison Company of New York, Inc. for Approval of Brooklyn/Queens Demand Management Program,* Order Establishing Brooklyn/Queens Demand Management Program (Dec. 12, 2014), *available at* http://documents.dps.ny.gov/public/MatterManagement/CaseMaster.aspx?MatterSeq=45800.

[155] *See* http://aceee.org/blog/2014/09/chp-should-also-be-part-epa-s-clean-p; *see also* U.S DOE, Oak Ridge National Laboratory, Combine Heat and Power: Effective Energy Solutions for a Sustainable Future at 4 (2008), http://www.energy.gov/sites/prod/files/2013/11/f4/chp_report_12-08.pdf ("If the United States adopted high-deployment policies to achieve 20 percent of generation capacity from CHP by 2030, it could save an estimated 5.3 quadrillion Btu (Quads) of fuel annually, the equivalent of nearly half the total energy currently consumed by US households."). As another example, Alabama Power found that CHP helped it avoid the construction of about 1,700 MW of new generation capacity. Anna Chittum, ACEEE, *How Electric Utilities Can Find Value in CHP,* at 4 (July 2013), *available at* http://aceee.org/white-paper/electric-utilities-and-chp. Yet another analysis found that "80 GW of strategically-placed [distributed generation], such as CHP and waste energy recovery could reduce the actual peak US generation and transmission requirements by 100-120 GW[.]" *Id*. at 6 (internal quotation marks omitted).

[156] Anna Chittum, ACEEE, *How Electric Utilities Can Find Value in CHP,* at 7 (July 2013), *available at* http://aceee.org/white-paper/electric-utilities-and-chp. ("The International Energy Agency (IEA) finds that typical construction time for large natural gas-powered CHP systems is about two years or less. In addition to the speedy construction time, one of CHP's greatest benefits is the fact that new land is not generally necessary, and new transmission infrastructure is not required. In contrast, significant time is spend just preparing to construct centralized power plants, during which land is acquired, transmission lines are sited, and other supporting infrastructure is developed. Once that is completed—and such preliminary work can take years—large centralized natural gas turbines have typical construction times of a little over two years.") (internal citations omitted).

[157] Oak Ridge National Laboratory, *Waste Heat to Power Market Assessment* (Mar. 2015), http://www.heatispower.org/wp-content/uploads/2015/02/ORNL-WHP-Mkt-Assessment-Report-March-2015.pdf.

been met, leaving over 50 GW of unrealized potential. [159] Increased T&D efficiency delivered by more stringent standards for distribution transformers alone is projected to save 350 million MWh over the next 30 years.[160]

Furthermore, even if certain resources have not *historically* been deployed at a rate quick enough to significantly reduce leakage, there are six years between now and the start of the CPP and 15 years between now and 2030, and many advanced energy resources are likely to achieve dramatic cost reductions and quicker lead times during this timeframe. For example, although off-shore wind has historically faced certain barriers to rapid deployment, the technology is gaining substantial momentum and has significant potential to grow in the years leading up to 2022 and beyond.[161] Offshore wind and other measures with significant near-term potential to mitigate leakage should be eligible for the RE set-aside. Furthermore, because advanced energy technologies currently at earlier stages of development could also achieve dramatic improvement in cost, development time, and scalability during the next decade and a half (and beyond), AEE also supports a clearly defined process for new technologies to become eligible to qualify for allowances under the Federal Plan.

b. All Measures that Help to Address Leakage Should Compete Equally Under an Expanded AE Set-Aside.

AEE supports an expanded AE set-aside that incorporates all technologies that help to address leakage as long as they are eligible measures included in the final CPP. By expanding eligibility under a revised AE set-aside, EPA would enable technology-neutral competition and ensure that the set-aside is used to its full potential to avoid the need to build new fossil fuel-fired EGUs.

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[158] Federal Energy Regulatory Commission Staff Report, *A National Assessment of Demand Response Potential,* at xi (June 2009), http://docplayer.net/1100429-A-national-assessment-of-demand-response-potential.html.

[159] Federal Energy Regulatory Commission Staff Report, *Assessment of Demand Response & Advanced Metering,* at 9 (Dec. 2014), http://www.ferc.gov/legal/staff-reports/2014/demand-response.pdf.

[160] National Association of Clean Air Agencies, *Implementing EPA's Clean Power Plan: A Menu of Options,* at 10-7 (May 2015), http://www.4cleanair.org/NACAA_Menu_of_Options.

[161] For instance, a recent National Renewable Energy Laboratory report on the offshore wind market found that the U.S. offshore wind development pipeline includes 21 projects totaling 15,650 MW of potential installed capacity as of June 30, 2015. National Renewable Energy Laboratory, *2014-2015 Offshore Wind Technologies Report*, at 33-34, 81 (Sep. 2015), *available at* http://energy.gov/sites/prod/files/2015/09/f26/2014-2015-offshore-wind-technologies-market-report-FINAL.pdf. Additionally, approximately 3,024 MW of U.S. projects have announced a commercial operation date *before* 2020. *Id*. at 25, 37, 81. Similarly, the Department of Energy's recent Wind Vision report found that offshore wind in the United States could reach 3 GW by 2020, using estimates based on projects in advanced stages of development in the United States and based on global offshore wind technology innovation projections. U.S. Dep't of Energy, *Wind Vision: A New Era for Wind Power in the United State*s, at xxxii-xxxiii (Mar. 2015), http://www.energy.gov/sites/prod/files/WindVision_Report_final.pdf.

EPA would be especially remiss to exclude energy efficiency given that the RIA model run scenarios upon which EPA's leakage calculations are based include energy efficiency exogenously, as described above in Section IV.D.1.c. Therefore, if the projected levels of energy efficiency do not materialize—which is especially likely given the lack of a mechanism for allocation to energy efficiency, combined with the risk of leakage—then there is likely to be *more* generation shifting to new NGCC. EPA can avoid this risk by providing an incentive for an appropriate level of efficiency savings, consistent with the definition of "leakage."

Furthermore, although all of these advanced energy technologies—demand-side EE (including demand response), CHP, WHP, off-shore wind, biomass, T&D, and most distributed generation—have the capability to significantly reduce leakage, leakage is not the only appropriate justification for allowing these zero- and low-emitting resources to qualify for allowances from the set-aside. Expanding eligibility for the set-aside would have many other benefits as it would (1) appropriately credit all emission reduction measures that are eligible for the CPP and thus would not risk minimizing emission reduction potential or discouraging the development of advanced energy industries in Federal Plan states; (2) decrease costs by allowing additional types of advanced energy resources to compete to provide the lowest cost emission solutions; (3) avoid geographically disparate impacts by allowing a diverse variety of advanced energy resources to obtain allowances; (4) increase reliability by including resources—including demand response, energy efficiency, distributed generation, CHP, small-scale hydroelectric power, and qualified biomass—that can be used to balance supply and demand, and provide significant additional ancillary services and operational flexibility to the grid; (5) expand economic opportunity in communities; and (6) provide regulatory certainty, among other benefits.[162] These and other benefits are discussed in more detail *infra* Section V.A.2. in the context of expanding eligibility for the rate-based Federal Plan, but each of these benefits also equally applies in the context of expanding the eligibility for the mass-based Federal Plan.

Additionally, as discussed *supra* Section IV.A.1., awarding allowances to all eligible measures that contribute to emission reductions appropriately recognizes the value and contributions of zero- and low-emitting technologies to reducing emissions and thereby overcomes significant market barriers to the deployment of these technologies. Given these barriers, if EPA fails to award allowances to these measures, the levels of deployment predicted in the RIA are unlikely to materialize. In contrast, by recognizing the emission reduction contributions of these technologies with allowance value, EPA will allow these technologies to effectively compete for investment by allowing investors and affected EGUs to harness this value and use it to achieve compliance with the CPP. Otherwise, there is no direct mechanism for an affected EGU to use these low-cost compliance options to actually achieve compliance.

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[162] *See* Advanced Energy Economy Inst., *EPA's Clean Power Plan and Reliability,* at 41-49 (Feb. 2015), http://info.aee.net/brattle-reliability-report.

Without the ability to earn allowances, resources excluded from eligibility for the RE set-aside will not be able to effectively compete with eligible resources, *even if* they would otherwise provide a low-cost compliance solution. For this reason, EPA should allow all advanced energy technologies to compete for allowance value on a technology-neutral basis under an expanded AE set-aside.

It is important to reiterate that AEE's primary proposal is to include these measures as eligible for allocation from the "floor" of allowances reserved to address leakage. However, should EPA reject AEE's primary proposal in full or in part, given the significant potential of advanced energy resources outside of renewables to fill capacity needs and prevent leakage, EPA should make these measures eligible for set-aside allowances. EPA could implement such a set-aside in one of two ways: (1) EPA could increase the size of the RE set-aside and expand eligibility to allow additional advanced energy technologies to receive allowances from a larger AE set-aside; or (2) EPA could create one or more dedicated set-asides reserved solely for additional eligible measures, separate from the RE set-aside. While either of these options could work, AEE sees benefit in creating a single set-aside of allowances for advanced energy technologies and making that set-aside available on a technology-neutral basis. However, if EPA chooses this first approach it will be even *more* important for EPA to increase the size of the RE set-aside such that this expanded eligibility does not result in the significant dilution of the available allowance value.

c. EPA Should Include Specific Provisions in the Regulatory Text to Allow New Technologies to Become Eligible for Allowances Under the Mass-Based Federal Plan.

AEE strongly supports the inclusion of such a mechanism that would allow for new technologies to be added to the list of measures eligible for allowances under the mass-based Federal Plan. The advanced energy sector is dynamic and growing and likely to experience significant technological breakthroughs during the duration of the Clean Power Plan. However, the currently proposed regulatory text of the mass-based Federal Plan includes no provision for the incorporation of new technologies. In fact, the proposed regulatory language requires that only the specific list of technologies included in regulatory text can be eligible to generate allowances.[163] This approach is problematic because it would require EPA to go through notice-and-comment rulemaking to make any change to the list of eligible technologies. Such a process is cumbersome and unnecessary to include new technologies.

AEE recommends that EPA revise the current regulatory language to provide a more flexible system that would allow approval of new technologies in a streamlined fashion. To this

[163] Proposed Federal Plan and MTR at 65,068.

end, EPA should identify a clear, but flexible, path by which new technologies and approaches (such as smart infrastructure solutions) may be approved for eligibility under the mass-based Federal Plan. This procedural pathway should include clear application requirements; rolling application acceptance; streamlined agency review process by EPA, DOE, or another designated agency; and a process for review and comment of such updates by the states and interested parties. The process should mirror, to the extent possible, existing industry best practices for updating similar lists of energy efficiency/advanced energy technologies.

d. EPA Should Revise the Regulatory Text to Clarify that All Advanced Energy Resources that Are Eligible for Allowances under the Final CPP Are Also Eligible for Allowances under the Mass-Based MTR.

EPA does not make clear in the proposed regulatory text the extent to which the resources that are eligible for allowances under the mass-based Federal Plan differ from the resources that are eligible for allowances under the mass-based MTR. Although EPA indicates that it is considering including a broader range of measures eligible for allowances under the mass-based MTR,[164] EPA does not clearly distinguish between eligibility for the mass-based Federal Plan and eligibility for the mass-based MTR in the regulatory text[165] as it does for the rate-based Federal Plan and rate-based MTR.[166]

AEE urges EPA to clarify and to include language in the final regulatory text that explicitly delineates the scope of eligibility for the mass-based MTR when compared to the mass-based Federal Plan, to the extent that they are different, in order to eliminate confusion for states seeking to utilize the MTR. As discussed above, AEE strongly supports expanding the scope of eligibility for the Federal Plan to include all resources that are eligible for credit under the Final CPP, and believes that all of these resources should be eligible for allowances under *both* the mass-based Federal Plan and the mass-based MTR. However, if EPA does not expand eligibility under mass-based Federal Plan, at the very least, EPA should make it very clear that eligibility under the mass-based MTR is broader and should explicitly state in the final

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[164] For instance, in the mass-based regulatory text, EPA includes EM&V requirements for resources other than those eligible under the mass-based Federal Plan, such as demand-side EE, distributed generation, CHP, waste-to-energy, *etc.*, which indicates that EPA is proposing or considering including these non-Federal Plan resources in the mass-based MTR—the same as it proposes to do for the rate-based MTR. *See* Proposed Federal Plan and MTR at 65,070-65072; *see also* Proposed Federal Plan and MTR at 64,968, 65,023. In any event the preamble is ambiguous as to this point, and AEE thus recommends that EPA make the differences in resource eligibility between the mass-based Federal Plan and mass-based MTR explicit in the regulatory text.

[165] *See* Proposed Federal Plan and MTR at 65,068.

[166] *See* Proposed Federal Plan and MTR at 65,093-94 (proposed 40 C.F.R. § 62.16435(a), (a)(4)).

regulatory text that it includes all resources that are eligible for credit under the Final CPP and rate-based MTR, including distributed renewables, demand-side EE, demand-side management that saves electricity, CHP, WHP, biogenic waste-to-energy, biomass, and T&D.[167] Specifically, EPA should separately and explicitly state in the final regulatory text (1) those resources that are eligible for the mass-based Federal Plan, (2) those resources that are eligible for the mass-based MTR, and (3) how and to what extent—if any—the scope of eligibility differs between the mass-based Federal Plan and mass-based MTR. This will eliminate much confusion for states seeking to use the MTR.

Although AEE requests that EPA clearly state which resources are eligible for the mass-based MTR, AEE urges EPA not make this list exclusive and to allow room for states to expand eligibility to new resources in the future. Thus, similar to AEE's recommendation for the mass-based Federal Plan discussed above, EPA should also include in the regulatory text a clear, but flexible pathway by which states may approve new technologies and emission reduction measures for eligibility. Providing such a mechanism in the regulatory text would allow for states to seek approval from EPA to credit new technologies without formally revising their state plans to change the list of eligible technologies. This issue is also discussed in more detail *infra* Section V.A.4. with regards to the rate-based Federal Plan and MTR and these same considerations apply to EPA's proposed mass-based Federal Plan and MTR.

3. AEE's Recommendations for Distributing Allowances from the Proposed RE Set-Aside or Revised AE Set-Aside

a. EPA Should Expand Geographic Eligibility for the Proposed RE Set-Aside or Revised AE Set-Aside under the Mass-Based Federal Plan and MTR.

For both the mass-based Federal Plan and MTR, EPA proposes that eligible renewable energy resources "must be located in the mass-based State for which the set-aside has been designated."[168] EPA requests comment "on whether capacity outside the state should be recognized, and how that could be implemented."[169]

AEE believes that this geographic limitation is overly restrictive and should be expanded in one of two ways depending on the circumstances. Specifically AEE proposes (1) geographic

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[167] *See* Proposed Federal Plan and MTR at 65,094 (proposed 40 C.F.R. § 62.16435(a)(4)) (providing eligibility for rate-based MTR).

[168] *See* Proposed Federal Plan and MTR at 65,068 (proposed 40 C.F.R. § 62.16245(a)(2)(iii)); *see also* Proposed Federal Plan and MTR at 65,023 ("The EPA is proposing that eligible RE capacity must meet the following conditions regarding geographic eligibility for both the federal plan and model rule. Eligible RE projects must be located in the mass-based state for which the set-aside has been designated.").

[169] Proposed Federal Plan and MTR at 65,023

criteria if EPA adopts the RE set-aside or an expanded AE set-aside to address leakage; and (2) geographic criteria if EPA accepts AEE's primary allocation method, with a "floor" of allowances reserved for advanced energy to prevent leakage.

First, if EPA adopts its current proposal to set aside a certain number of allowances for renewable energy or advanced energy to prevent leakage, AEE believes that the geographic eligibility criteria should be expanded to allow for advanced energy projects located in another state—rate-based or mass-based—to be eligible for allowances, as long as the project is (1) not provided allowances or ERCs by the other state (*i.e.*, there is no double-crediting), and (2) the advanced energy resource can demonstrate that its generation will meet load in the mass-based state for which the set-aside has been designated. As discussed in more detail below, *infra* Section V.A.6., this demonstration could be made using a PPA or contract for delivery; however, EPA should ensure that any proprietary information contained in such agreements and submitted as part of the eligibility application should be kept confidential, notwithstanding the general public disclosure provisions of the Federal Plan and MTR proposals. EPA should allow such out-of-state projects to qualify for credit, because such projects will deliver power to meet demand in the mass-based state issuing the allowances and will thus reduce the risk of leakage to new EGUs in that state to at least the same degree as resources physically located in that mass-based state.

If EPA adopts AEE's primary allocation method, with a "floor" of allowances reserved to address leakage, AEE proposes a modified version of this approach. Specifically AEE believes that different geographic criteria should apply depending on whether or not the out-of-state project in question is seeking allowances from the allowance "floor" reserved to address leakage. Because the "floor" is intended to mitigate leakage in a particular mass-based state (similarly to the RE set-aside), AEE believes that out-of-state projects seeking reserved "floor" allowances should only be eligible to receive allowances if they can demonstrate that their generation will meet load in the mass-based state for which the "floor" has been reserved. As described above, this demonstration could be made via a PPA or contract for delivery.

If, however, the advanced energy resource is not seeking allowances from the reserved "floor" to address leakage, a different, broader set of geographic eligibility criteria should apply. Specifically, an otherwise eligible project in any other state should qualify for allowances distributed through AEE's proposed primary allocation method, as long as there is no double-crediting with another state. There is no reason to restrict geographic eligibility for such allowances beyond this limit. First, the allowance distribution methodology proposed by AEE allocates allowances based on the unit's contribution to emission reductions. Just as EPA allows interstate trading of ERCs between all rate-based states, it should not matter which state provides such recognition and encouragement, so long as there is no double-crediting. Second, unlike with ERCs, there is no environmental integrity concern associated with these broad geographic restrictions (including allocation to resources located in rate-based states that do not sell power into mass-based states), because the mass-based cap will maintain the integrity of the mass-based

program. This approach is consistent with the CPP Final rule, which provides no restrictions on the allocation of allowances to out-of-state resources, as long as those allowances are not set aside for leakage purposes. At the very least, EPA should allow otherwise eligible projects from other mass-based states to qualify for allowances distributed through AEE's primary allocation method, as long as as long as those allowances are not reserved to the "floor" to address leakage and as long as there is no double-crediting with another state.

b. AEE Recommends Distributing Allowances from the Proposed RE Set-Aside or Revised AE Set-Aside on an Annual *Ex Post* Basis in Proportion to Actual MWh Provided by the Resource in the Preceding Year.

EPA proposes to distribute allowances to renewable energy projects before the beginning of each generation year based on each renewable energy project's *ex ante* estimates of its generation, rather than based on *ex post* generation data submitted after the generation year.[170] As proposed, allowances from the RE set-aside would be distributed *pro rata* to all qualified projects in a state based on each project's percentage of the total projected MWh approved in the state.[171] If the renewable energy provider overestimates its generation, the provider's estimate would be trued up to actual generation based on data submitted after each generation year.[172] Any unfulfilled MWh would be subtracted from the provider's eligible generation in the subsequent generation year.[173] EPA proposes to require a provider to explain any deficits in actual generation of greater than 10%, and would disqualify the provider from receiving future set-asides for the next step period if such deficits continue through all years of the step period.[174] EPA does not explain what would happen if a provider *underestimates* its generation. EPA requests comment on all aspects of this allowance distribution process, including whether allowances from the RE set-aside should instead be distributed on an *ex post* basis in an amount proportional to the actual MWh provided by the project in a prior year, or another form of historical generation data.[175]

AEE supports distributing allowances from the AE set-aside on an *ex post* basis, based on *actual* generation data from the prior year, consistent with how allowances would be allocated under AEE's proposed primary allocation method. AEE believes that allocating allowances on

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[170] Proposed Federal Plan and MTR at 65,023.

[171] Proposed Federal Plan and MTR at 65,024.

[172] Proposed Federal Plan and MTR at 65,023-24.

[173] Proposed Federal Plan and MTR at 65,024.

[174] Proposed Federal Plan and MTR at 65,024.

[175] Proposed Federal Plan and MTR at 65,024.

an *ex post* basis has multiple benefits. First, distributing allowances on an *ex post* basis would significantly reduce the administrative burden placed on project providers seeking allowances from the RE set-aside as well as reviewers at EPA or in states. Under EPA's *ex ante* distribution proposal, providers would still have to submit *ex post* data after each generation year for the purposes of true-up, but would *also* have to spend time and resources projecting their generation prior to each generation year in order to receive allowances. If EPA distributes allowances on an *ex post* basis, providers and EPA or state regulators will be able to skip this "projection" and true-up process. Moreover, renewable energy providers are familiar and comfortable with *ex post* credit distribution processes, because REC registries generally only issue financial instruments based on *ex post* measurement. Although *ex ante* allocation would theoretically provide allowances earlier, the industry is accustomed to *ex post* allocation and providers and investors have ways of capturing this value earlier while incorporating any associated risk into pricing and contractual structures.

Significant problems are also posed by the current design of the proposed "true-up" process. First, EPA proposes that providers that overestimate their generation by more than 10% would need to "explain" the shortfalls and could be disqualified from receiving allowances if a shortfall occurs for multiple years in a row. Second, it appears that *only overestimates* of generation would be trued up, but not underestimates. Thus, if a project provider underestimated its generation, it would receive no allowances for those underestimated MWh. AEE believes that these two aspects of the proposal, in combination, are problematic, because the prospect of penalties for overestimating could cause providers to underestimate their generation, and then they would have no recourse to obtain allowances for that underestimated generation. AEE thus believes that the benefit of receiving allowances earlier is outweighed by the increased administrative burden and risk created by the added "projection" and "true-up" steps.

AEE strongly recommends that EPA avoid the problems, risks, and extra work created by the proposed true-up process (and associated penalty system) by switching to an *ex post* distribution process. It is a far better approach. If for some reason, EPA does not adopt this recommendation and proceeds with an *ex ante* crediting approach, AEE recommends a few design changes that would help to reduce risk and to remove the perverse incentive for providers to underestimate their generation and to unnecessarily forgo allowances to which they would otherwise be entitled.

First, AEE recommends that EPA increase the margin by which a project provider's estimated generation has to exceed actual generation in order to incur a penalty. Specifically, AEE recommends that EPA should only penalize providers that overestimate generation by more than 30%, rather than 10%. Thus, a provider that overestimates by more than 30% would need to provide an explanation to EPA, and if the provider overestimated its generation by more than 30% for all years of a step period, it could be disqualified from receiving allowances in the next step period. AEE believes that it is necessary for EPA to increase the threshold for incurring

penalties, because year-ahead projections for some renewable resources in some regions can be difficult. While day-to-day forecasting is relatively easy for solar and wind resources, year-ahead forecasting can be harder, especially in years with volatile weather conditions or in regions of the country with less predictable weather patterns. For these same reasons, AEE also recommends that EPA provide a mechanism for project providers to avert penalties if they can demonstrate that they overestimated their generation for reasons beyond their control, e.g., if unanticipated or statistically significant variations in weather conditions contributed to a significant departure from the project's typical annual generation. This "safety valve" could allow providers to avoid disqualification in a subsequent step period if their overestimates were the product of unpredictable weather conditions. AEE believes that providers should bear some responsibility for accurately projecting their generation, yet at the same time believes that providers should not be punished if their projections are inaccurate for reasons beyond their control.

Second, AEE believes that EPA should allow true-ups for *underestimates* in generation up to a certain threshold. Specifically, EPA should true-up underestimates in generation in an amount up to 10% of the projected value. For instance, if a provider estimated that it would generate 100 MWh in a generation year, it should be able to receive credit for up to 110 MWh of generation for that year. Credit for the 100 MWh of projected generation would be distributed *ex ante*, while credit for the 10 MWh of underestimated generation would be deposited in the provider's account in the following year. This will avoid penalizing providers for making more conservative projections of their generation. It also avoids a lopsided compensation system in which overestimates are trued-up (and potentially penalized), while underestimates of generation result in a forgone opportunity to earn allowances for otherwise eligible generation.

Of course, by switching to an *ex post* distribution approach, EPA would avoid all of the potential problems and risks created by this true-up process and the associated penalty system—as well as the additional administrative burden—which is why AEE strongly recommends an *ex post* approach.

c. AEE Supports EPA's Proposal to Allocate Allowances from the RE Set-Aside *Pro Rata*.

EPA proposes "to distribute set-aside allowances to approved RE providers *pro rata*, with the number of allowances distributed to each provider according to the percentage of total approved RE MWh for that state that the approved MWhs from their project represent."[176] EPA does not appear to otherwise limit the number of allowances a project could receive per MWh, and notes that this method "inherently provides a more significant incentive in states with less

[176] Proposed Federal Plan and MTR at 65,024. This means that a projected MWh of renewable energy in a state with a high emission budget and very little renewable energy would earn a greater share of allowances than a projected MWh of renewable energy in a state with a small total budget and a lot of renewable energy.

eligible RE generation, but will become less significant as RE generation increases."[177] EPA requests comment, however, as to "whether to restrict projects to a maximum number of allowances [projects] can receive per MWh of generation, such as 1 allowance per MWh."[178]

AEE supports EPA's proposal to distribute allowances to providers *pro rata* based on their relative generation. However, if the set-aside is significantly undersubscribed in early step periods in some states, some projects may receive a windfall amount of allowances under the *pro rata* method that could otherwise have been more evenly distributed to RE projects in future years (when the set-aside may be over-subscribed). Thus AEE would support placing a limit on the maximum number of allowances a project can receive per MWh, *provided that* any excess allowances remaining in the set-aside after distribution in a given year would be *remain in the RE set-aside* and would be carried over for distribution to renewable energy providers in future years. AEE would *not* support any such limitation on the number of allowances per MWh a project can receive if EPA decides to redistribute excess allowances to affected EGUs (as explained in more detail below). It is imperative that allowances "set aside" for renewable energy to address leakage *remain* in the RE set-aside if it is to adequately address leakage. Otherwise, there will be fewer allowances in the RE set-aside than the number that EPA determined was necessary to adequately mitigate the risk of leakage, which could compromise the integrity of the rule.

In terms of what the maximum number of allowances per MWh should be, AEE believes that it is important for the RE set-aside to provide a greater incentive for renewable generation in states with less renewable energy, thus opening new markets and incenting new development in states where such an incentive is likely needed most in order to provide low-cost emission reduction opportunities and to avoid leakage. Accordingly, because under-subscription will likely be an indication that projects need *more* rather than *less* of an incentive to pursue development in a given state, the limit should be 1.5 allowances or 2 allowances per MWh in order to provide an effective incentive to projects in states with a nascent renewable energy industry in early years.

4. Any Surplus Allowances in the RE Set-Aside in a Given Year Should Remain in the RE Set-Aside for Distribution in Future Years.

EPA proposes that any allowances that remain in the RE set-aside in a given year would be redistributed to affected EGUs *pro rata*, consistent with the same method used for initial

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[177] Proposed Federal Plan and MTR at 65,024.

[178] Proposed Federal Plan and MTR at 65,024.

allocations.[179] AEE strongly opposes this approach, and recommends that EPA instead *carry over* the surplus allowances for distribution to renewable projects in future years of the RE set-aside.

AEE notes that it is unclear why or to what extent there would be surplus allowances in the RE set-aside if EPA plans to distribute allowances *pro rata* to renewable energy providers, with no limit on the maximum number of allowances a project can receive per MWh.[180] However, if EPA does adopt a maximum number of allowances per MWh for the RE set-aside, there could be surplus set-aside allowances in a given year. In this situation, AEE strongly recommends that EPA keep these allowances in the RE set-aside for distribution to renewable energy projects in subsequent years. The purpose of the RE set-aside is to help mitigate the risk of leakage, and EPA proposes to determine the size of the RE set-aside based on the amount of renewable energy EPA believes is needed to reduce this risk. Thus, any allowances that remain in the RE set-aside should likewise be distributed to renewable energy resources in order to mitigate leakage and maintain the integrity of the mass-based program. For this reason, AEE believes it is more appropriate to carry over these allowances for future distribution through the RE set-aside.

E. EPA Should Redistribute Any Surplus Allowances in the Output-Based Allocation Set-Aside to the RE Set-Aside.

As explained in Section IV.A.3., AEE recommends addressing leakage through the primary allocation method proposed above, which would replace the OBA set-aside. However, if EPA retains the OBA set-aside, AEE suggests a key change. EPA proposes that if there are surplus allowances remaining in the output-based allocation set-aside after EPA has distributed allowances to all eligible NGCC generation, EPA will redistribute these surplus allowances to affected EGUs using the historical-generation based approach.[181] AEE does not support this approach and believes that EPA should instead reallocate any surplus allowances to the RE set-aside or AE set-aside for that step period, which is consistent with the goal of the output-based allocation set aside: to reduce emissions leakage to new sources. In contrast, providing allowances on a historical basis does not help to prevent leakage, because an existing unit will receive the same number of allowances (based on its historical output) regardless of whether it increases its current output. Because EPA has already ear-marked the allowances in the output-based set-aside for leakage prevention purposes, these allowances should instead be diverted to the RE set-aside to serve that same purpose over the course of the step period.AEE Recommendations Regarding Additional Allowance Set-Asides

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[179] Proposed Federal Plan and MTR at 65,024, 65,069 (proposed 40 C.F.R. § 62.16245(a)(6)).

[180] EPA notes that this situation might occur if set-aside allowances were designated for projects that no longer exist. Proposed Federal Plan and MTR at 65,024.

[181] Proposed Federal Plan and MTR at 65,022.

1. AEE Agrees with EPA that a Reliability Set-Aside is Not Necessary.

EPA proposes that a set-aside to address reliability concerns is not necessary in light of the flexible nature of the Federal Plan, but nevertheless requests comment on whether it should implement such a set-aside.[182] AEE agrees with EPA's conclusion that a reliability set-aside is unnecessary in light of the significant flexibilities and opportunities for trading offered by the Federal Plan.

The Federal Plan is unlikely to pose reliability concerns for two reasons. First, the Federal Plan "provides more than 6 years before reductions are required and an 8-year period from 2022 to 2029 to meet interim goals. This allows time for planning and steady, measured implementation."[183] Second, and perhaps more importantly, the Federal Plan "allows affected EGUs to obtain tradable allowances and credits to meet obligations which assures that reliability can be maintained without disruption to the electricity system."[184] This is because:

> Such a program does not restrict unit-level operational decision-making beyond requiring units to hold a sufficient number of tradable permits (*e.g.,* allowances or ERCs) to cover emissions. It, therefore, inherently allows for unit-level operational flexibility to facilitate the maintenance of reliability and makes the program enormously resilient. If a unit finds it needs to run more than anticipated, the market-based compliance system provides a way for the EGU to meet its generation needs while it maintains compliance with the federal plan.[185]

Put simply, sources needed for reliability purposes can simply buy allowances instead of reducing their output. AEE thus believes that a reliability set-aside is not necessary. For these same reasons, a reliability safety-valve is also not needed for the rate-based Federal Plan and MTR, as discussed in more detail *infra* Section V.E..

2. EPA Should Consider Whether a Set-Aside for Affected CHP Thermal Emissions is Necessary to Put Affected CHP on a Level Playing Field.

As outlined in Section IV.G below, the Clean Power Plan currently disadvantages affected CHP under a mass-based plan by requiring such EGUs to hold allowances for emissions associated with thermal, in addition to electric, output. AEE recommends EPA clarify that

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[182] Proposed Federal Plan and MTR at 64,981-82.

[183] Proposed Federal Plan and MTR at 64,981.

[184] Proposed Federal Plan and MTR at 64,981.

[185] Proposed Federal Plan and MTR at 64,981.

affected CHP units need not hold allowances for such emissions under the Federal Plan or a state plan adopting the MTR.

However, if EPA does not adopt this recommendation, EPA should ensure that affected CHP is not disadvantaged by establishing an Affected CHP set-aside. This set-aside is described in more detail in Section IV.G.2.

3. If EPA Does Not Adopt AEE's Recommended Allowance Allocation Approach it Should Consider a Set-Aside for Voluntary Renewable Energy Purchases.

EPA should design its allowance allocation provisions so as not undermine market-based expectations for the carbon emission contributions of voluntary purchases of renewable energy. Voluntary purchasers of renewable energy, including purchasers of RECs, have done so largely based on the carbon reduction benefits of purchasing that electricity. In many states, the purchase of a REC has historically included the purchase of environmental attributes associated with the carbon reductions of that power.

However, to the extent EPA provides allowances to EGUs for free based on historic generation, EPA may undermine these voluntary purchaser commitments because voluntary purchases of renewable energy will no longer represent a "regulatory surplus" of emission reductions. Moreover, such an allocation methodology provides an added windfall to EGUs because other market participants have already committed to purchases to will reduce EGU emissions and have paid for those emission reductions. EPA should design the allowance allocation system in the Federal Plan and mass-based MTR to recognize these market backed expectations. A number of existing programs have done so through the establishment of a voluntary purchaser set-aside in which allowances are allocated to power purchasers that have committed to pay for emission reductions through voluntary clean energy purchases.[186]

Alternatively, as AEE proposes above, this can be done by allocating allowances to resources that *reduce* emissions rather resources that emit. Doing so will allow advanced energy resources to fulfill any contracted-for obligations to transfer allowances to purchasers under existing power purchase agreements. Those purchasers can then choose to do what they wish with the allowances they have already contracted for. This gives purchasers the choice to retain these allowances if they wish to preserve the project's "regulatory surplus."

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[186] *See* Cal. Code Regs. tit. 17, § 95841.1 (outlining the California Cap-and-Trade Program Voluntary Renewable Electricity allowance set-aside); Regional Greenhouse Gas Initiative Model Rule at 44-47 (Dec. 23, 2013), available at http://www.rggi.org/docs/ProgramReview/_FinalProgramReviewMaterials/Model_Rule_FINAL.pdf (outlining a similar set-aside under RGGI).

F. AEE's Recommendations Regarding EPA's Treatment of Affected CHP under the Mass-Based Federal Plan and MTR.

While the efficiency and emission reduction benefits of affected CHP are inherently recognized by EPA's formula for calculating affected EGU emission rates, no such recognition is inherent in a mass-based plan. Under a mass-based compliance plan, the relevant metric for affected EGU compliance is the number of tons emitted by that EGU in a step period. To the extent that CO_2 is measured at the stack, regulated emissions at affected CHP units will include those that result from electric generation *as well as those that result from production of useful thermal output.*

In the preamble to the CPP, EPA specifically recognizes the risk that emissions accounting under a mass-based plan has the potential to discriminate against CHP in a way that does not occur under a rate-based plan.[187] For example, under a mass-based plan that takes the form of a cap-and-trade program, affected CHP units will be required to procure CO_2 emission allowances for all emissions, including emissions *not* associated with electric generation, but rather associated with useful thermal output (e.g., district heat, process steam, hot water). Yet, production of the same types of useful thermal output at a non-CHP facility—such as a stand-alone boiler—would not be subject to regulation under the CPP and would not be required to procure CO_2 emissions allowances. The non-CHP facility therefore would be regulatory advantaged relative to the CHP facility—despite the negative system efficiency, economic, and emissions implications.

Without a specific modification or clarification regarding EPA's current policy, CHP units will face unfair treatment. To this end, EPA should modify the mass-based Federal Plan and MTR to ensure that CHP—which is more efficient and lower-emitting than separately generating electricity and useful thermal output from a conventional EGU and a thermal boiler—should, at the very least, not be treated worse than conventional EGUs.

AEE identifies two potential policy options to avoid this discrimination. AEE urges EPA to adopt the first of these options, because it provides similar treatment of useful thermal output as EPA has provided under the rate-based plan, and it provides equivalent regulatory treatment for affected CHP as is provided to separate energy production from non-CHP EGUs and steam-only boilers.

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[187] Final CPP at 64,756. ("[For a rate-based plan, t]he final rule allows an owner/operator applying CHP technology to an affected EGU to account for the increased efficiency by counting the useful thermal output as additional MWh of generation, thereby lowering the unit's computed emission rate and assisting with achievement of an emission rate-based standard of performance. (The EPA notes that unless the unit also reduced its fuel usage, the addition of the capability to capture waste heat and produce useful thermal output would not reduce the unit's mass emissions and therefore would not directly help the unit achieve a mass-based standard of performance.)").

1. EPA Should Require Affected CHP to Hold Allowances *Only* for Emissions Associated with Electric Output.

One option is to permit affected CHP units to calculate their emissions for which they have regulatory obligations only with respect to CO_2 emitted due to electricity production and not with respect to CO_2 emissions associated with useful thermal output. For example, under a mass-based program, when determining an affected CHP unit's emissions allowance compliance obligation, emissions associated with useful thermal output would be deducted from the unit's total emissions. This solution is comparable with how useful thermal output from CHP is treated under California's AB32 cap-and-trade program, in which emissions associated with thermal output from certain district heating facilities and cogeneration units do not face a compliance obligation.[188] There are a number of specific potential calculation methodologies that EPA could employ to implement this policy option. AEE would be pleased to provide additional comment on the details of this solution to EPA to the extent it would be helpful.

AEE acknowledges that there may be some uncertainty as to whether this solution is permitted under the CPP. On the one hand, the CPP's monitoring and reporting rules require that affected EGUs report *all* mass emissions, regardless of whether those emissions are associated with electric generation or useful thermal output. However, the monitoring and reporting obligations for EGUs do not constitute or dictate the regulatory obligations that EPA or states must impose on affected EGUs. For example, while stack emissions must be monitored and reported under 40 C.F.R. § 60.5860, EPA has made clear that stack emissions associated with biomass production need not carry regulatory obligations under certain circumstances.

In addition, EPA has made clear that states electing to use mass-based compliance plans must demonstrate that such plans are "equivalent" to the rate-based BSER with respect to emissions from new fossil fuel-fired EGUs. Under the same logic, because incentives to generate power and useful thermal output from efficient affected CHP are not equivalent as between rate-based and mass-based plans, EPA should permit (if not require) mass-based compliance plans to include policies that make these incentives equivalent, such as by requiring affected CHP units to hold allowances only for emissions associated with electric generation, and *not* for emissions associated with useful thermal output.

In any event, given this uncertainty, AEE requests that EPA make clarifying modifications to the Proposed Federal Plan and MTR that implement AEE's recommended approach.

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[188] Cal. Code Regs. tit. 17, § 95852(j). Note that because the California cap-and-trade program regulates industrial sources of CO_2 that emit over a certain threshold, this carve-out is only necessary if the CHP unit has emissions associated with useful thermal output less than that threshold.

2. In the Alternative, EPA Should Establish an Allowance Set-Aside for CHP Units to Account for Their Emissions Associated with Useful Thermal Output.

To the extent that EPA does not clarify that emissions associated with useful thermal output are exempt from holding allowances under the mass-based Federal Plan and MTR, EPA should implement an allowance set-aside that allocates allowances to affected CHP in an amount equal to the tons of CO_2 emissions associated with useful thermal output. The purpose of this useful thermal output set-aside would be to offset the affected CHP unit's allowance surrender requirements for emissions associated with useful thermal output. By providing an allowance for each ton of emissions associated with useful thermal output, affected CHP units would have the same economic incentive to produce useful thermal output as if those emissions were not regulated; there would be no incentive to produce useful thermal output from less efficient thermal-only facilities.

In order to ensure non-discriminatory treatment of useful thermal output, this allowance set-aside should be *in addition* to any other allowance set-asides, and should be implemented regardless of the baseline allowance allocation methodology(s) selected by EPA in the final Federal Plan and MTR (i.e., allocation based on AEE's proposed primary approach, allocation to EGUs based on historic generation, allocation to load serving entities, or auctioning of allowances). That is, an allowance should be allocated to an affected CHP unit for each ton of emissions associated with useful thermal output, and useful thermal output allocation should not be prorated as the state-wide cap declines in each step period. The size of the useful thermal output set-aside and the distribution of allowances from the set-aside should be based on the actual thermal output of CHP units in the state so as not to penalize units that increase useful thermal output in a particular year or that expand over time. As such, the set-aside size and distribution should be determined on an *ex post* retrospective basis.

This approach to mitigating the disparate treatment of affected CHP under a mass-based plan is consistent with how CHP is treated under a number of state mass-based programs under Regional Greenhouse Gas Initiative, including in Connecticut and Maine, and is specifically identified as an acceptable approach as part of the CPP preamble.[189] However, it may not be as protective as the first option discussed above, which is AEE's preferred alternative and which would exclude emissions associated with useful thermal output from an affected CHP's compliance obligation.

G. AEE's Recommendations Regarding the Tracking and Administration of Allowance Distribution to Advanced Energy Resources

[189] Final CPP at 64,756 n.441.

AEE has provided detailed comments on the process of accounting, EM&V, and tracking of ERC generation in the context of the rate-based Federal plan and MTR (see Section V.C.).

Because the Clean Power Plan requires that allowance allocation to advanced energy must follow the same eligibility and issuance rules and process as that established for the issuance of ERCs under a rate-based plan,[190] AEE's comments in those sections—including the use of designated agents and third party-developed infrastructure to minimize the administrative burden of issuing credits to advanced energy resources such as energy efficiency—are equally applicable in the context of crediting the same measures under a mass-based plan. AEE urges EPA to adopt these recommendations, where appropriate, for any mass-based Federal Plan and its mass-based MTR.

In addition, AEE's comments in Section V.C.3. regarding the importance of third-party (that is, entities other than EGUs and entities directly issued credits) participation in ERC trading are equally applicable to the participation of third-parties in allowance trading. As under the rate-based Federal Plan and MTR, AEE recommends that EPA explicitly indicate in the final mass-based MTR and any final mass-based Federal Plan that the participation of third-parties is allowed and encouraged, and facilitate that participation by allowing such entities to hold and retire allowances in ATCS.

V. Detailed Comments on Strengthening the Design of EPA's Proposed Rate-Based Federal Plan and MTR

AEE supports EPA's proposal that the rate-based Federal Plan and rate-based MTR fundamentally rely on market-based mechanisms to facilitate individual EGU compliance.[191] Market-based compliance approaches such as the ERC trading program that EPA has identified in the rate-based Federal Plan co-proposal and rate-based MTR will provide opportunities for power generators and third parties to cost-effectively access a wide variety of emission reduction measures and will ensure that those resources that are able to reduce emissions at lowest cost do so while maintaining grid reliability and maximizing compliance flexibility.

Rate-based credit trading has been shown to work in previous emission reduction programs under the CAA,[192] and, with appropriate design, will work for states under the CPP. In

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[190] Final CPP at 64951 (codified at 40 C.F.R. § 60.5815(c) ("Provisions for allocation of set-aside allowance, if applicable, must be established to ensure that the eligible resources must meet the same requirements for the ERC eligible resource requirements of § 60.5800, and the State must include eligibility application and verification provisions equivalent to those for ERCs in § 60.5805 and EM&V plan and M&V report provisions that meet the requirements of § 60.5830 and § 60.5835").

[191] Proposed Federal Plan and MTR at 64989.

[192] *See* Advanced Energy Economy Inst., *Markets Drive Innovation: Why history shows that Clean Power Plan will stimulate a robust industry response,* at 4-6 (July 2015), http://info.aee.net/hubfs/PDF/AEEI-Market-Response-

this section, AEE outlines a number of suggested revisions that EPA can make to its rate-based Federal Plan co-proposal and proposed rate-based MTR that will facilitate low-cost compliance.

A. AEE's Recommendations on the Issuance of ERCs to Low- and Zero-Emitting Resources

Inclusion of advanced energy technologies and practices as eligible measures under the rate-based Federal Plan and MTR would bring a number of benefits to states. Not only do advanced energy technologies and practices bring the cost of compliance down, they also provide additional advantages, such as increased customer options, long-term price stability, and reliability benefits.

The Federal Plan and MTR provide EPA with an opportunity to signal the presumptive approvability of state plans that incorporate advanced energy, and to demonstrate the advantages of such a plan. EPA has taken an important first step by proposing an MTR that incorporates a broad range of advanced energy technologies. However, this alone is not sufficient. EPA must also offer clear guidance to states regarding simple means to administer a rate-based plan that incorporates these measures, as well as to EGUs and project providers regarding how to participate. However, the most convincing demonstration of the ease and value of incorporating these technologies and practices would be for EPA to include them as eligible under the Federal Plan, and thus to directly model the required administration and significant advantages of including advanced energy.

This section provides AEE's recommendations on the issuance of ERCs to advanced energy measures under the rate-based Federal Plan and MTR.

1. AEE Supports the Rate-Based MTR Proposal to Deem a Broad Range of Advanced Energy Technologies Eligible to Generate ERCs.

In the final CPP rule, EPA indicates that approvable state plans may deem a wide range of advanced energy technologies eligible to generate ERCs. EPA includes the full list of technologies in its rate-based MTR. The listed technology types include:

- renewable generation, including wind, solar, geothermal, hydroelectric, hydrokinetic (wave and tidal), and qualified biomass power;
- nuclear energy;
- non-affected CHP including WHP;

Report.pdf?t=1436575590466http://info.aee.net/hubfs/PDF/AEEI-Market-Response-Report.pdf?t=1436575590466 (describing and outlining successes of rate credit trading program for lead).

- biogenic waste-to-energy;
- end-use energy efficiency, such as state and utility energy efficiency programs (including behavioral energy efficiency), water system efficiency, project-based energy efficiency, building codes, appliance standards, and other private and utility energy efficiency infrastructure and service investments outside the scope of formal state or utility program;[193]
- demand-side management ("DSM") that reduces energy; and
- T&D efficiency such as CSV/VoltVar and smart infrastructure solutions.[194]

AEE strongly supports EPA's decision in the final CPP rule to permit states to deem a wide range of advanced energy measures eligible to generate ERCs. The list of eligible resource types includes most of the technologies discussed in AEE's *Advanced Energy Technologies for Greenhouse Gas Reduction* report.[195]

AEE also strongly supports EPA's proposal, embodied by the rate-based MTR, to encourage states to recognize that this broad array of advanced energy resources can reduce emissions at existing EGUs and so qualify to generate ERCs. AEE and its partner regional organizations continue to work with states on smart compliance plan designs. Our ability to point to EPA's explicit listing and inclusion of these measures in the MTR is an invaluable resource in our work with states as they develop plans that appropriately recognize the emission reduction contributions of advanced energy.

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[193] Note that EPA's definition of qualified energy efficiency is quite broad and includes all "demand-side EE . . . measure[s] that save[] electricity and [are] calculated on the basis of quantified ex poste savings, not 'projected' or 'claimed' savings." Proposed Federal Plan and MTR at 65094 (to be codified at 40 C.F.R. § 62.16435(a)(4)(vi)). This should be read to include energy efficiency investments by consumers in the residential sector outside the scope of a state or utility program, such as residential performance contract projects. So long as such measures meet all other eligibility and EM&V requirements, such investments should be eligible for ERC generation (either for the individual investor or aggregated by contractors, installers, manufacturers, utilities, or service providers).

[194] *See* Final CPP at 64950-51 (codified at 40 CFR § 60.5800(a)(4)); Proposed Federal Plan and MTR at 65094 (proposed to be codified at 40 CFR § 62.16435(a)(4)); *Id.* (proposed to be codified at 40 CFR § 62.16445(a)(2)(ii)-(v)) (outlining specific requirements for project-based energy efficiency, program-based energy efficiency, transmission and distribution efficiency, and distributed generation resources). EPA should permit other T&D efficiency measures to beyond CSV/VoltVar to be counted as eligible resources. For example. investments in smart infrastructure solutions that combine advanced metering technologies with communications technologies and data analytics enable utilities to run their operations more efficiently by sensing and pinpointing issues in the distribution network faster and more reliably than with current methods. To the extent utilities make operational changes based on these investments which can be shown, through appropriate EM&V, to result in energy savings, those actions should be ERC-eligible.

[195] Advanced Energy Economy, *Advanced Energy Technologies for Greenhouse Gas Reduction: 40 Solutions for Cutting Carbon Emissions from Electricity Generation* (2014), http://info.aee.net/epa-advanced-energy-tech-report.

2. EPA Should Permit Any Measure Eligible to Generate ERCs under the CPP to Generate ERCs in Rate-Based Federal Plan States.

EPA should expand the list of advanced energy technologies eligible to generate ERCs under a rate-based federal plan to include all technologies eligible under the MTR.[196] While the list of ERC-eligible advanced energy technologies included in the final CPP rule, and mirrored in the rate-based MTR proposal, is long, EPA has proposed that the resources eligible to generate ERCs under a rate-based federal plan would be *significantly* more limited. Specifically, EPA proposes to limit ERC-eligible resources to:

- on-shore utility scale wind;
- utility scale solar PV;
- concentrated solar power;
- geothermal power;
- nuclear energy; and
- utility scale hydropower.[197]

This leaves out a wide range of resources that are otherwise permitted to generate ERCs under an approved state plan, including under the presumptively approvable rate-based MTR, including:

- off-shore utility scale wind;
- distributed wind;
- distributed solar PV;
- hydrokinetic power;
- small hydropower;
- qualified biomass;
- fuel cells;
- non-affected CHP including WHP;
- biogenic waste-to-energy;

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[196] Proposed Federal Plan and MTR at 64994-64995 (requesting comment on this issue).

[197] Proposed Federal Plan and MTR at 65093 (proposed to be codified at 40 CFR § 62.16435(a)).

- end-use energy efficiency such as state and utility energy efficiency programs (including behavioral energy efficiency), project-based energy efficiency, building codes, and appliance standards;
- DSM that reduces energy; and
- T&D efficiency such as CSV/VoltVar and smart infrastructure solutions.[198]

EPA should abandon its proposal to consider only a limited set of resources to be eligible to generate ERCs under a federal plan.[199]

a. Broadening Those Resources Eligible for ERCs Under a Federal Plan Carries Many Benefits.

Recognizing additional advanced energy resource types as ERC-eligible under the federal plan would carry a number of benefits for EGUs, advanced energy developers, consumers, and states.

- ***Recognize All Emission Reduction Actions.*** The advanced energy resources states are permitted (and, through the MTR ostensibly encouraged) to include in their compliance plans but that are not included in the Federal Plan are cost-effective means to reduce emissions at affected EGUs. A federal plan's failure to recognize and reward these emission reduction opportunities risks minimizing this emission reduction potential in the medium term and will discourage the development of advanced energy industries in Federal Plan states over the long-term. The perverse impacts of failing to allocate allowances to measures that provide emission reductions are described in detail the context of mass-based plans in Section IV.A.1. However, because ERC issuance and trading is pivotal to compliance in a rate-based system, the impacts of this oversight would likely be even greater in a rate-based context for any measures not able to earn credits. Specifically, such measures would not be compensated for the value of the emission reductions they supply, and would thus be deployed at sub-optimal levels relative to their potential to provide cost-effective emission reductions.

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[198] *See* Final CPP at 64950-51 (codified at 40 CFR § 60.5800(a)(4)); Proposed Federal Plan and MTR at 65094 (proposed to be codified at 40 CFR § 62.16435(a)(4)); *Id.* (proposed to be codified at 40 CFR § 62.16445(a)(2)(ii)-(v)) (outlining specific requirements for project-based energy efficiency, program-based energy efficiency, transmission and distribution efficiency, and distributed generation resources). Fuel cells are mentioned in the Final CPP at 64,757.

[199] Note that, as outlined in Section IV.D.2., the discussion in this section apply equally to the expansion of resources that should be eligible to receive allowances under AEE's proposal allowance allocation approach and under EPA's set-aside methodology.

- ***Decrease Costs.*** As EPA has demonstrated, the costs of CPP compliance are *reasonable* using only the activities included in the Building Blocks. However, the costs of compliance using only these tools are not *optimal*. Expanding the types of resources that may generate ERCs will reduce overall compliance costs in states subject to the Federal Plan, enabling a smoother and faster transition into the interim step period.

  For example, as discussed in Section IV.A.1., energy efficiency is almost always the least cost resource for meeting the next MWh of electricity demand and is also generally the least-cost option for meeting the CPP targets. EPA's own economic analysis reflects this. In its Regulatory Impact Analysis accompanying the final CPP, EPA models rate-based compliance assuming a certain level of energy efficiency would be used for compliance.[200] However, unless demand-side EE projects and programs are eligible to generate ERCs, it is unlikely that this level of energy efficiency will manifest in a state under a rate-based federal plan. Again, EPA implicitly recognizes the critical role of policy support for energy efficiency in its RIA, stating, "the demand-side energy efficiency plan scenario represents a reasonable assumption about the level of demand-side energy efficiency investments *that may be encouraged in response to the final CPP*."[201] EPA's RIA clearly indicates that a failure to include energy efficiency as a compliance measure will increase the overall cost of the CPP, including to electricity customers.[202]

  Similar cost reductions can result from the inclusion of other advanced energy technologies that reduce overall energy generation needs, such as distributed generation, demand response, T&D efficiency, CHP, and WHP. For instance, of the 14,500 MW of WHP potential at 2,900 sites across the country, over 4,000 MW is estimated to have a project payback time of 3 years or less.[203] The Internal Market Monitor at the PJM Interconnection found that demand response and energy efficiency saved customers

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[200] RIA at 3-12. ("These scenarios include a representation of demand-side energy efficiency compliance potential because energy efficiency is a highly cost-effective means for reducing CO_2 from the power sector, and it is reasonable to assume that a regulatory requirement to reduce CO_2 emissions will motivate parties to pursue all highly cost-effective means for making emission reductions accordingly, regardless of what particular emission reduction measures were assumed in determining the level of that regulatory requirement".).

[201] RIA at 3-13.

[202] RIA at 3-22 ("Relative to the base case, we expect a decrease in the total cost to generate sufficient supply for demand, which, together with the costs of demand-side energy efficiency measures, we project will result in net cost estimates of $8.4 billion in 2030 for the rate-based scenario."); RIA at 3-40 (reduced electricity bills reflect the combined effects of changes in both average retail rates (driven by compliance approaches taken to achieve the state goals) and lower electricity demand (driven by demand-side energy efficiency)."

[203] Oak Ridge National Laboratory, *Waste Heat to Power Market Assessment* (Mar. 2015), http://www.heatispower.org/wp-content/uploads/2015/02/ORNL-WHP-Mkt-Assessment-Report-March-2015.pdf.

nearly $11,800,000,000 in just one year.[204] T&D efficiency can also deliver cost-effective savings. For example, Commonwealth Edison, an Illinois utility, found that voltage optimization could reduce electricity consumption by 2%, with a levelized cost of saved energy of less than 2 cents per kWh, well below the cost of purchased energy.[205] System prices for residential and commercial PV declined 6% to 8% per year, on average, from 1998 to 2013, and are expected to keep dropping.[206] A 2015 Deutsche Bank report predicts that U.S. installed solar prices will see a further 40% reduction to achieve grid parity in 41 states by 2017, driving installed DG solar capacity to 20-30 GW by the end of 2017.[207] In many states, fuel cell solutions are already cost competitive with power from the grid, with Bloom Energy fuel cells producing electricity at 8-10 cents per kWh.[208]

- ***Avoid Geographically Disparate Impacts.*** EPA's exclusion of certain resources in the Federal Plan is likely to have a geographically skewed impact. The particular resources that EPA has proposed to deem eligible to generate ERCs under a federal plan may be less available in some states relative to others. However, some form of advanced energy is available in every state. Broadening the types of resources eligible to generate ERCs will ensure that EGUs in *each state* face minimal economic impact, and that state economic development is not significantly impacted by the choice to accept a federal plan. Moreover, disparate treatment of similarly situated resources in adjacent interconnected states can create market distortions and inefficient capital flows, increasing the overall cost of compliance for Federal Plan states.

  By expanding the list of ERC-eligible resources, EPA can assure that CPP compliance for EGUs in Federal Plan states will be as low as possible and on par with compliance costs in states opting to submit their own rate-based compliance plans.

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[204] Monitoring Analytics, Analysis of the 2013/2014 PJM Base Residual Auction Revised and Updated, at 53 (September 20, 2010), http://www.monitoringanalytics.com/reports/Reports/2010/Analysis_of_2013_2014_RPM_Base_Residual_Auction_20090920.pdf.

[205] ComEd, *Voltage Optimization* (Mar. 2013), http://blogs.edf.org/energyexchange/files/2015/04/ComEd-study.pdf.

[206] U.S. Department of Energy, *Photovoltaic System Pricing Trends: Historical, Recent, and Near-Term Projections* (Sept. 2014), http://www.nrel.gov/docs/fy14osti/62558.pdf.

[207] Deutsche Bank, *Crossing the Chasm* (Feb. 2015), https://www.db.com/cr/en/docs/solar_report_full_length.pdf.

[208] Breakthrough Technologies Institute, *The Business Case for Fuel Cells: Reliability, Resiliency & Savings* (2013), http://www.fuelcells.org/pdfs/2013BusinessCaseforFuelCells.pdf

- ***Increase Reliability.*** While the advanced energy resources that EPA has included under the rate-based Federal Plan will help to maintain the reliability of the electric grid,[209] EPA has left out many additional advanced energy measures that play a key role in enhancing reliability. Many resources, including demand response, small-scale hydroelectric power, qualified biomass, and flexible transmission infrastructure, can be used to balance supply and demand, and provide significant additional ancillary services and operational flexibility to the grid.[210] Distributed renewable resources are subject to fewer losses through transmission and expand the geographic footprint of renewable resources; in this way.[211] In order to provide appropriate incentives for the deployment of these reliability-enhancing resources, EPA should incorporate them into the rate-based trading program where they will result in reduced utilization of (and therefore reduced emissions from affected EGUs).
- ***Expand Economic Opportunity in Communities.*** Advanced energy deployment provides economic benefits beyond the electric power system. As a robust and expanding industry, advanced energy is a source of economic activity, and an important and growing source of employment. The U.S. market for advanced energy technologies and services was $200 billion in 2014, equal to the pharmaceutical industry, and the United States is a leader in advanced energy, accounting for 15% of the global revenue in advanced energy in 2014. Advanced energy is also a rapidly growing industry. U.S. advanced energy revenue grew 14% from 2013 to 2014—five times the rate of overall U.S. economic growth.[212]
- ***Provide Regulatory Certainty.*** The Federal Plan's limited list of ERC-eligible technologies is unclear and unworkable. EPA limits the eligibility of wind, solar, and hydropower resources to "utility scale" resources. However, EPA does not define, or even discuss, what it means in this regard. While it may be a colloquial term used to denote relatively large renewable facilities constructed primarily to serve off-site load, there is no clear bright-line definition of what would constitute a "utility-scale" resource from one that is not "utility-scale." Some renewable installations located behind a

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[209] In fact, multiple groups have found that the Clean Power Plan does not threaten the reliability of the electric grid, and advanced energy resources including utility-scale wind and solar can contribute to reliable outcomes. *See* American Wind Energy Ass'n., *Wind energy helps build a more reliable and balanced electricity portfolio* (Feb. 2015),http://awea.files.cms-plus.com/AWEA%20Reliability%20White%20Paper%20-%202-12-15.pdf; *See also* Advanced Energy Economy Inst., *EPA's Clean Power Plan and Reliability* (Feb. 2015), http://info.aee.net/brattle-reliability-report.

[210] *See* Advanced Energy Economy Inst., *EPA's Clean Power Plan and Reliability* (Feb. 2015), http://info.aee.net/brattle-reliability-report.

[211] *Id.* at 42-43.

[212] Advanced Energy Economy, *Advanced Energy Now: 2015 Market Report* (Mar. 2015), http://info.aee.net/aen-2015-market-report.

customer's utility meter are large, such as renewable capacity at a large industrial facility. Some relatively small installations are directly connected to the utility distribution system, such as community solar installations or renewables located on residential or commercial roofs but interconnected "in front of" the customer's meter. Under the regulatory language of the rate-based Federal Plan co-proposal, it will be difficult to tell whether certain facilities would qualify to generate ERCs–leading to significant uncertainty and potential litigation. Moreover, EPA has not provided any reasoned explanation why either the size of a resource or the location of that resource's meter would be relevant in determining whether new zero-emitting generation has offset generation (and therefore emissions) from existing EGUs. Because there is no reason why size and meter location would, in fact, impact the extent to which zero-emitting generation reduces emissions, they are not appropriate considerations in determining the eligibility of a resource.

- ***Signal the Value of These Resources to States.*** While EPA has clearly indicated that resources eligible to generate ERCs under state plans include a much wider range than is included in the Federal Plan, the fact that EPA has constrained that set in the Federal Plan is, nonetheless, acting as a problematic signal to states. EPA should revise its rate-based Federal Plan co-proposal so as to demonstrate to states that the optimal market-based ERC trading policy design includes a wide variety of advanced energy, including distributed generation, CHP, and energy-efficiency including demand-side management such as demand response. In addition, by including these resources under the Federal Plan, EPA would model for states how these resources could be incorporated into a compliance plan, including the administrative aspects of verifying and tracking generation or savings, such that states would have additional guidance and confidence when setting up their own programs.

b. The Concerns Raised by EPA in the Proposed Rule Preamble Justifying Its Decision Are Misplaced

In the preamble of the Propose Rule, EPA provides three primary justifications for why it has included particular resources—and, by implication, why it has not included others; (1) the proposed ERC-eligible resources were included as part of BSER; (2) the proposed ERC-eligible resources are deployable on an economic basis; and (3) the proposed ERC-eligible resources, and their associated EM&V, are administratively simple to incorporate in a federal plan using existing infrastructure.[213] We believe these concerns are misplaced and address them in turn below.

[213] Proposed Federal Plan and MTR at 64,994.

EPA Has Legal Authority to Include Additional Measures. While EPA may not be *required* to include measures that were not incorporated into BSER as eligible compliance tools under a federal plan, it is clearly *permitted* to do so. For example, EPA proposes to deem generation from new nuclear capacity—a resource not included in BSER[214]—to be eligible for ERC generation under the rate-based Federal Plan.[215] In fact, this is a fundamental feature of section 111 performance standards, in which any emission reduction measures (or combination of measures) that achieve the identified performance level may be used by a regulated source, even if they were not determined to be BSER.[216] The fact that certain resources were not included in BSER, therefore, need not be a barrier for inclusion of those resources in the Federal Plan.

Additional Measures Are Deployable on an Economic Basis. As outlined above, those measures that EPA has left out of the Federal Plan are deployable on an economic basis. For example, the levelized costs of energy provided by biomass combustion and by commercial and industrial solar PV are on-par with that of nuclear energy,[217] which EPA has determined is "deployable on an economic basis." Moreover, the costs of distributed PV have been and are expected to continue to decline rapidly.[218] In fact, many of these measures carry the lowest potential cost of all compliance options. The levelized cost of energy provided by energy efficiency is lower than all competing alternatives.[219] Furthermore, these and other, newer technologies such as off-shore will continue to drop in price as deployment continues to rise—excluding them from the Federal Plan will only slow this progress.[220]

EPA Has Administrative Capacity to Include Additional Measures. Notwithstanding EPA's proposal, EPA can include additional advanced energy technologies, including demand-side EE, in the rate-based Federal Plan with relative administrative ease. EPA can ensure that these

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[214] CPP at 64,757.

[215] Proposed Federal Plan and MTR at 64,994; *id.* At 65093 (proposed to be codified at 40 CFR § 62.16435(a)).

[216] 42 U.S.C. § 7411(a)(1) (defining "standard of performance" to be "a standard for emissions of air pollutants which reflects the degree of emission limitation achievable through" BSER) (emphasis added).

[217] AEE Institute, *Competitiveness of Renewable Energy and Energy Efficiency in U.S. Markets* 8 (June 2015).

[218] *Id.* at 11-12.

[219] *Id.* at 13-14.

[220] *See* Advanced Energy Econ. Inst., *Markets Drive Innovation*, at 28 (July 2015), http://info.aee.net/market-response-to-epa-clean-power-plan. "The relationship between cost and deployment is often referred to as the *learning rate* and visualized as an *experience curve* or *learning curve*. Quite simply, the learning rate refers to cost reductions that accompany every doubling in the market deployment of a technology due to economies of scale and technological improvements." *Id*. For instance, "[w]ind turbine efficiency has improved by 260% since 1999, and general efficiency of flat plate solar PV is expected to increase from 16% in 2011 to 25% by 2030, reducing costs by 35%." *Id*.

advanced energy technologies provide a "physical basis for the ERC . . . [that] is adequately evaluated, measured and verified and that there is an adequate administrative process for tracking credits."[221]

First, as part of the MTR, EPA has already outlined approvable eligibility, EM&V, and accounting criteria for additional advanced energy resources, including qualified biomass, CHP, and end-use energy efficiency.[222] These provisions provide a "streamlined" set of rules that EPA can adopt as part of a federal plan in multiple states.

Second, for a number of advanced energy technologies, *direct measurement* of generation and/or savings *is* possible and consistent with industry best-practice.

- As outlined in Section VI.A on EM&V, behind the meter renewable generation such as rooftop PV is able to directly measure the level of generation to a high degree of accuracy.
- Generation resources such as biomass, fuel cells, CHP, WHP, waste-to-energy, off-shore wind, hydrokinetic power, and small (i.e., non-"utility-scale") hydroelectric resources are "directly metered."
- Due to advancements in advanced metering infrastructure and other technologies in the energy-efficiency sector, a growing portion of energy efficiency savings can be measured with accuracy.[223] .
- T&D system improvements can be directly measured using advanced metering infrastructure installed at different points along the T&D system.[224]

EPA should, at the very least, include any measure whose generation or savings can be directly measured in the Federal Plan on the same grounds that EPA has included utility-scale renewables and nuclear power.

Third, as further outlined in Section V.C, EPA need not administer all aspects of the ERC issuance process itself. EPA can delegate some of this responsibility to a designated agent with the administrative capacity and substantive expertise to mitigate any concerns EPA has in administering an ERC issuance program for additional advanced energy technologies. For example, a designated agent can assist EPA in accrediting third party verifiers or determining appropriate accreditation bodies, determining individual project eligibility, verifying generation

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[221] Final CPP at 64757.

[222] *See* Proposed Federal Plan and MTR at 64995-97; *Id.* at 65005-08.

[223] See *AEE EM&V Guidance Comments,* Section III.C.

[224] *Id.,*Section III.F.4

and savings, issuing credits , and auditing to ensure compliance.. AEE will be developing additional material outlining how EPA can incorporate energy efficiency and other advanced energy technologies into an EPA-administered market-based trading program with relatively low administrative burden.

Finally, it is important to note that EPA has already committed to administering the CEIP in states subject to the Federal Plan. EPA's administration of the CEIP would include the distribution of ERCs (where appropriate) for energy savings from energy efficiency in low-income communities.[225] As EPA has indicated in the final CPP regulations, in order to be eligible to receive these ERCs (or allowances in a mass-based system), energy efficiency projects must meet all ERC-issuance requirements otherwise required during the interim and final step periods, including approval of a third-party verified EM&V plan, issuance of credits based on third party-verified M&V reports, and the tracking and trading of ERCs in a registry.[226] To that end, by 2020, EPA *will already have developed* the capability to administer (or will have delegated the administration of) all of the necessary components for ERC (and, as outlined in Section IV.H., allowance) issuance to end-use energy efficiency measures with measured and verified savings. During the interim and final step periods, EPA can use any infrastructure developed for this purpose—including EM&V requirements, third party verification requirements, ERC issuance tracking systems, and the use of designated agents—to issue ERCs to end-use energy efficiency and other advanced energy measures. Moreover, EPA can and should permit states to take advantage of any infrastructure developed for this purpose by incorporating it into the rate-based MTR. AEE looks forward to working with states and EPA on implementation of the CEIP and in aiding states and EPA to adapt infrastructure developed for that purpose to create a flexible, low-cost ERC-issuance process for a broad range of advanced energy technologies during CPP compliance.

3. AEE's Recommendations for ERC Accounting for CHP and WHP

AEE appreciates that EPA has proposed to include non-affected CHP and WHP as part of the rate-based MTR, and has proposed a particular accounting methodology for the pro-rating of MWh generated by non-affected CHP and WHP in generating ERCs. AEE believes the details of this proposal, combined with the Part 75 monitoring and reporting requirements these units are already subject to, provide sufficient data for EPA to include CHP as an ERC-eligible resource in any rate-based federal plan. AEE believes that while this accounting framework is a positive starting point, its details are unclear on a number of issues, and it can be revised to better reflect the emission reduction potential of non-affected CHP. AEE associates itself with the comments

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[225] *See* Proposed Federal Plan and MTR at 65000; *id.* at 65093-94 (proposed to be codified at 40 CFR § 62.16431(a)(1)(iii), (d)(2)).

[226] Final CPP at 64943 (codified at 40 CFR § 60.5737(e)).

of the Alliance for Industrial Efficiency,[227] and urges EPA to finalize an accounting methodology in the rate-based Federal Plan and MTR consistent with those comments.[228]

Furthermore, with respect to WHP, AEE requests that EPA clarify the eligibility requirements for this resource. Specifically, in the final rule EPA specifies, "The MWh of electrical output from a WHP unit that can be recognized may not exceed the MWh of industrial or other thermal load that is being met by the WHP unit, prior to the generation of electricity."[229] This statement is unclear and risks barring certain beneficial WHP units from participation. In particular, many industrial applications that have high WHP potential are powered primarily by thermal power. For example, natural gas compressor stations are powered directly by natural gas streamed out of the pipeline, and thus have very little electrical load. Presumably the inclusion of the phrase, "or other thermal load," would render such projects eligible, but this is not clear as written, and therefore risks inadvertently excluding such units. EPA should resolve this uncertainty, such as by providing an approvable means to translate between electrical and thermal load for the purpose of determining the eligibility of a WHP unit.

4. EPA Should Implement Specific Provisions to Allow New Technologies to Become ERC Eligible.

EPA requests comment on whether there should be a process for incorporation of new technologies into the list of ERC-eligible measures for a rate-based federal plan.[230] AEE strongly supports the inclusion of such a mechanism.

The advanced energy sector is dynamic and growing. For example, near-term developments in energy analytics, energy management systems, and advanced metering infrastructure may significantly reduce the technical and administrative hurdles to measuring energy savings achieved using demand-side efficiency measures. In addition, investments made now in technological development may lead to entirely new industry segments before the CPP is fully implemented in 2030. EPA should recognize this dynamism by incorporating a specific

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[227] Alliance for Industrial Efficiency, *Comments on Model Trading Rules: Federal Plan Requirements for Greenhouse Gas Emissions From Electric Generating Units Constructed on or Before January 8, 2014,* at 6-13 (Jan. 2016), http://alliance4industrialefficiency.org/wp-content/uploads/2016/01/Alliance-Comments-_MTR-and-Fed-Plan_1_21_16-2.pdf.

[228] In addition, AEE urges EPA to indicate, in the final MTR or in subsequent guidance, that because they will be effectively regulated under the Clean Power Plan, any emissions associated with electric output that are used to discount the number of ERCs issued to each MWh generated by a non-affected CHP unit will not be treated as industrial sector emissions under a future regulation of existing industrial sources under section 111(d).

[229] CPP at 64903.

[230] Proposed Federal Plan and MTR at 64995.

process by which any list of ERC-eligible resources included in a federal plan can be easily supplemented.

EPA's approach to ERC eligibility as proposed in the rate-based Federal Plan does *not* facilitate such change. The proposed regulatory text of the rate-based Federal Plan co-proposal includes no provision for the incorporation of new technologies. In fact, EPA has proposed language that specifically requires that only the specific list of technologies included in regulatory text can be eligible to generate ERCs.[231] This approach is particularly problematic because it would require EPA to go through notice-and-comment rulemaking to make any change to the list of eligible technologies. Such a process is cumbersome and unnecessary to include new technologies.

AEE recommends that EPA adopt a more flexible system that would allow approval of new technologies in a streamlined fashion. Such a process could include a simple procedural pathway with clear application requirements, rolling application acceptance, a streamlined agency review process, and initial or final review by a designated agent such as an expert federal agency, state, or private third-party. Similar ideas have been proposed to streamline the renewable fuel standard technology pathway process.[232]

Relatedly, EPA has not included any provisions for how a state would deem new resource types to be ERC-eligible when adopting the rate-based MTR. EPA should revise the rate-based MTR proposal to incorporate such a step. This process should require EPA approval of any new resource type but, for the same reasons outlined above regarding notice-and-comment rulemaking, should make clear that a formal plan revision would *not* be required.

5. EPA Should Clarify the Eligibility Date for ERC Generation.

The rate-based Federal Plan co-proposal and rate-based MTR indicate that, for a low- or zero-emitting resource to be eligible to generate ERCs, it must be "installed or implemented" after January 1, 2013.[233] However, EPA does not specify what it means by "installed or implemented."

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[231] Proposed Federal Plan and MTR at 65094 (proposed to be codified at 40 CFR § 62.16435(a)(4), (b)).

[232] *See* Bipartisan Policy Center, *Options for Reforming the Renewable Fuel Standard* at 23-26 (Dec. 2014), *available at* http://bipartisanpolicy.org/wp-content/uploads/2014/12/BPC-Options-for-Reforming-the-RFS1.pdf

[233] Proposed Federal Plan and MTR at 65093 (proposed to be codified at 40 CFR § 62.16435(a)(1)).

As we outlined in our comments on the CEIP, for resources that generate electricity, there are a number of potential definitions to determine on which date a resource was "installed."[234]

It is even less clear on which date an energy efficiency project, program, or measure was "installed or implemented." For example, the rate-based Federal Plan co-proposal and proposed rate-based MTR are not clear whether new actions taken pursuant to programs that were already in place before January 1, 2013 would constitute "new electrical savings measures."

EPA should clarify the definitions of "installed" and "implemented" in this context to reduce uncertainty.

6. EPA Should Clarify How Renewable Energy Projects Located in Mass-Based States Can Demonstrate Eligibility to Generate ERCs.

AEE supports EPA's proposal in the rate-based Federal Plan and rate-based MTR that, consistent with the final CPP rule, renewable energy projects located in a state that opts for a mass-based compliance plan nonetheless can be eligible to generate ERCs issued by a rate-based state (or, EPA implementing a rate-based federal plan) so long as the project is not provided allowances by the mass based state (i.e., there is no double-counting) and the renewable resource can demonstrate that its generation will meet load in a rate-based state. AEE also supports EPA's proposal that resources can meet this obligation through a power purchase agreement with load in a rate-based state or with a contract for delivery to a rate-based state.[235] It is common business practice for renewable energy resources to sign power purchase agreements ("PPA") with electricity purchasers such as distribution utilities or large energy consumers.

EPA should clarify the process by which such a "demonstration" may be made. One viable option is for the ERC tracking systems used by EPA and by states adopting the MTR to include a feature whereby a resource applying for ERC eligibility that is physically located outside the state to which it is applying may include evidence such as a PPA or contract for delivery as part of its eligibility application. Because PPAs contain proprietary information, such as the purchase price of electricity, any documents submitted to the tracking system for this purpose should be kept confidential, notwithstanding the general public disclosure provisions of the rate-based Federal Plan and MTR proposals.[236] Moreover, the Federal Plan and MTR should *not* require this information for all eligibility applications—rather it should only be required for

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[234] Advanced Energy Econ., Comments on the Clean Power Plan, Docket ID No. EPA-HQ-OAR-2013-0602, at Section III.C.1 (Nov. 5, 2014), http://www.regulations.gov/#!documentDetail;D=EPA-HQ-OAR-2013-0602-22276.

[235] Proposed Federal Plan and MTR at 65094 (proposed to be codified at 40 CFR § 62.16435(a)(3)).

[236] *See* Proposed Federal Plan and MTR at 64999 ("It would provide for transparent access to RE project and program eligibility applications").

those resources located in states with a mass-based plan applying for ERC issuance by a rate-based compliance program.

B. AEE's Recommendations Regarding Gas Shift-ERCs

In the rate-based Federal Plan co-proposal and rate-based MTR, EPA proposes that, in addition to earning ERCs for generation at emission rates below their subcategory-specific emission performance rate, existing NGCC EGUs earn "gas shift ERCs" ("GS-ERCs") for generation that reflects redispatch from existing coal units over the 2012 baseline.[237]

AEE has only only,two specific comments related to the issuance of GS-ERCs, which are outlined below.

First, AEE supports EPA's alternative approach to determining *which* MWhs of generation from existing NGCC units are considered to be MWhs shifted from existing steam generating units and so eligible to receive GS-ERCs. Under this alternative approach, EPA (implementing a federal plan) or a state (adopting the MTR) would award GS-ERCs to each NGCC unit *only for the generation from that unit in a particular year that exceeded a threshold baseline level of generation, such as that unit's MWh of generation in 2012*.[238] EPA could also consider calculating a unit's baseline generation by averaging its 2010-2012 generation, which would be more consistent with EPA's proposed approach to allowance allocation for affected EGUs.[239]

This would be more consistent with EPA's proposed approach to allowance allocation to existing NGCC units from the output-based set-aside, which, like GS-ERCs is meant to reflect the contribution of redispatch to existing NGCC that formed BB2.[240] In addition, this approach better reflects EPA's calculation of the contribution of existing NGCC to emission reduction at steam generating units as part of BSER. In calculating the emission reduction impact of BB2,

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[237] Proposed Federal Plan and MTR at 64991-94.

[238] Proposed Federal Plan and MTR at 64993-94.

[239] Proposed Federal Plan and MTR at 65016 ("The EPA proposes to use a 3-year historical period (i.e., 2010 through 2012) to reflect unit-level operations over time"). For affected NGCC that commenced construction before January 8, 2014 but had not yet commenced operation by 2013, EPA should set a baseline assuming the unit could operate at a 55 percent capacity factor. This would be consistent with EPA's treatment of such units under the subcategory-specific emission performance rate calculation methodology, Final CPP at 64817, and EPA's methodology for constructing each state's new source complement. EPA, New Source Complements to Mass Goals Technical Support Document for CPP Final Rule at 4 (August 2015).

[240] Proposed Federal Plan and MTR at 65021 ("The EPA also proposes that this approach be targeted towards marginal generation that may not have otherwise occurred absent this set-aside, by providing allocations under this set- aside only to eligible EGUs that exceed a 50 percent capacity factor on a net basis over the compliance period, and only for the portion of their generation that exceeds that capacity factor.").

EPA started with each NGCC unit's 2012 baseline. EPA then reduced steam generating unit generation and emissions based on the MWhs above that baseline.

Moreover, this approach assures that redispatch from existing steam generating units to existing NGCC units is neither over-recognized nor under-recognized. Under EPA's proposed approach, by contrast, units that already generated at a high capacity factor would be overcompensated for continuing their previous level of generation; units that started at a low capacity factor and increased generation significantly—and so contributed more to reducing emissions—would be undercompensated for this significant shift. Similarly, under EPA's proposed approach, in states that relied more on renewable energy than was included as part of BSER, NGCC units would be over-compensated. By the same logic, in states that relied even more on redispatch than was included as part of BSER, NGCC units would be under-compensated. By adopting the alternative proposal and using each unit's 2012 baseline generation, the Federal Plan and MTR can properly allocate the benefits of emission reduction to the proper resource.

Second, AEE supports EPA's proposal to calculate the number of GS-ERCs an NGCC unit would receive based on that particular unit's emission rate. The Federal Plan and MTR should recognize the investments that firms make in developing lower emitting NGCC technology and units. EPA's proposal does this by including the actual emission rate of an NGCC unit when calculating the GS-ERC Emission Factor for that unit. It should be noted that this does not create additional administrative burdens since each unit already has to calculate its rate for compliance purposes. AEE supports this proposal and opposes the alternative proposals outlined by EPA that would use the national average NGCC emission rate or the average emissions rate of NGCC units in a unit's region or in the region used to set BSER in a particular step period.[241] The alternative proposal does not properly reward investments in low emitting NGCCs and does not provide any other benefits in AEE's view.

C. AEE's Recommendations for ERC Issuance, Tracking, and Trading

Some of the most important aspects of a rate-based trading system are the rules for the issuance and tracking of ERCs. In this section, AEE identifies areas where EPA's rate-based Federal Plan co-proposal and rate-based MTR can be revised to reduce the administrative burden on EPA and states in administering a program that incorporates a broad range of advanced energy resources while maintaining the environmental integrity of the program.

1. AEE's Recommendations for ERC Eligibility Application and ERC Issuance

[241] *See* Proposed Federal Plan and MTR at 64993.

AEE generally supports the two-step process included in the rate-based Federal Plan co-proposal and rate-based MTR proposal for the issuance of ERCs to eligible resources.[242]

AEE appreciates the detailed implementation provisions included in the rate-based MTR, including presumptively approvable state plan components related to eligibility applications; M&V reports; independent verifiers; tracking system registration, ERC issuance, ERC trading, ERC retirement; and information disclosure.[243] These provisions will make state adoption of such a system relatively straightforward.

ERC Issuance for Advanced Energy in Addition to Utility-Scale Renewables and Nuclear Under the Federal Plan. EPA requests comment on how the ERC issuance process should apply for emission reduction measures that are not proposed to be included in the rate-based Federal Plan.[244] EPA has already included detailed provisions for the issuance of ERCs to such measures as part of the rate-based MTR, including proposed EM&V requirements.[245] These detailed provisions, in combination with the tracking infrastructure discussed below, should provide an administratively straightforward and environmentally robust process for the issuance of ERCs under the Federal Plan to all resources eligible to generate ERCs under the rate-based MTR.

Using Agents in ERC Issuance. EPA has proposed that, for the Federal Plan, the Agency "may designate an agent to coordinate the project application process and assist with review of applications,"[246] and that the Agency "may designate an agent to coordinate and assist with M&V reports."[247] AEE strongly supports this approach to ERC issuance. By designating an agent to process and review eligibility applications and M&V reports needed to issue ERCs, EPA can leverage the expertise of a third-party such as a relevant federal agency, an expert state agency such as a state public utility commission or energy office, or an independent private or non-profit entity. In addition, a designated agent could:[248]

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[242] Proposed Federal Plan and MTR at 64999.

[243] *See generally* Proposed Federal Plan and MTR at 64999-65001; *Id.* at 65093-65096 (proposed to be codified at 40 CFR § 62.16434 through 40 CFR § 62.16450); *Id.* at 65104-65110 (proposed to be codified at 40 CFR § 62.16515 through 40 CFR § 62.16565).

[244] Proposed Federal Plan and MTR at 64999.

[245] *See, e.g.* Proposed Federal Plan and MTR at 65094 (proposed to be codified at 40 CFR § 62.16445 (a)(2)(i)(B), (ii), (iii), (iv) (v) (describing issuance process for small renewable generation; energy efficiency programs; energy efficiency projects; transmission and distribution measures; and distributed resources).

[246] Proposed Federal Plan and MTR at 65000.

[247] Proposed Federal Plan and MTR at 65000.

[248] Peggy Kellen. *Introduction to the National Energy Efficiency Registry*. Presentation to the U.S. Department of Energy, State Energy Efficiency Action Network (SEE Action Network), November 5, 2015. https://www4.eere.energy.gov/seeaction/sites/default/files/pdfs/TCR SEE Action Webinar 11-05-15.pdf

- Provide independent verifier accreditation;
- Act as a central repository for all documentation needed to issue an ERC to an advanced energy project based on MWh of generation or savings including: (a) EM&V plans associated with eligibility applications, (b) third party verification reports approving such plans, (c) M&V reports identifying MWhs of generation or savings consistent with a measure's EM&V plan, and (d) third party verification reports of M&V reports;
- Evaluate the submission of eligibility applications (including EM&V plans) and M&V reports (including for consistency with EM&V plans) to ensure consistency with the eligibility and M&V report requirements established by EPA;
- Periodically review eligible resource EM&V plans to ensure that they remain consistent with EM&V developments including evolving industry best practices and advancing technological progress;
- Act as an agent to issue eligibility determinations and/or compliance instruments based on a review of the information provided in eligibility applications and M&V reports (subject to compliance jurisdiction oversight);
- Facilitate tracking and interstate transfer of certificates representing MWhs of generation or energy savings;
- Perform compliance auditing; and/or
- Assist in interpreting and updating EM&V requirements and guidance in conjunction with industry best practices, consistent with EPA's use of outside experts in the context of the Science Advisory Board and Clean Air Science Advisory Committee.

Importantly, EPA and states can use a variety of different designated agents and other partners for each of these various functions (or could perform some or all functions themselves). [249]

In fact, as outlined in Section V.A.2.b., this approach may be an effective way for EPA to incorporate those emission reduction measures not currently proposed to be included in a federal plan. By designating an agent to operate components of the ERC issuance process, EPA need not commit resources to develop expertise in all advanced energy technologies that reduce emissions in the power sector while still permitting EGUs to benefit from the low-cost emission reduction opportunities that advanced energy resources can provide.

[249] In fact, one benefit of this model is that it allows EPA to elect the *degree* to which they want staff participating in the process of determining the eligibility and issuing compliance instruments for eligibility measures and the degree to which vendor(s) can be designated to handle additional services, in accordance with the standards set by the compliance jurisdiction. For example, vendors could provide protocols and procedures for EPA to designate individuals (employees of the state or an agent) who are authorized to determine project qualification and to certify that a claim for certificate issuance is approved.

ERC Issuance Timelines. EPA proposes that eligibility applications will be accepted annually, that M&V reports must be submitted annually, and that ERCs will be issued annually after a six-month review period and a 30-day comment period.[250] While AEE supports the annual issuance of ERCs in order to reduce the administrative burden of operating the program, AEE recommends that EPA accept eligibility applications on a rolling basis. Annual eligibility determinations can lead to inefficient and suboptimal incentives. For example, because resources are only eligible to generate ERCs for MWh of generation or savings that occur after the approval of a project application,[251] if a new advanced energy project is constructed in the early months of a compliance year, under EPA's current proposal, that resource would not be eligible to generate ERCs until the start of the next year. Any zero-emission generation or energy savings in that first year would not be eligible to receive ERCs. This policy, therefore, may have the unintended economically inefficient effect of delaying projects until the end of the year so that they are able to begin generating ERCs immediately. A *rolling* eligibility application and determination process will eliminate this incentive.[252]

2. AEE's Recommendations Regarding ERC Tracking

For the Federal Plan, EPA has proposed to use its Allowance Tracking & Compliance System ("ATCS") for the tracking of ERCs, and that it would establish a complementary ERC issuance tracking system.[253] States adopting the MTR would also be free to use ATCS to track ERC issuance, transfers, and retirement.[254]

AEE supports the use of ATCS and complementary EPA-administered systems to track ERC issuance, transfers, and surrender. EPA's Clean Air Markets Division has a long and successful history of operating such tracking systems. AEE notes, however, that there are a number of efforts to develop administrative and tracking infrastructure at the state and regional level that EPA should leverage for its rate-based Federal Plan and rate-based MTR.

First, for a number of advanced energy resources, existing tracking infrastructure is technically sufficient to meet the needs of CPP compliance. In a recent study, the Cadmus Group found that each of the 10 systems for REC tracking currently used in the United States "provide[] all of the essential capabilities and the necessary functionalities to track, establish transfer of

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[250] Proposed Federal Plan and MTR at 64999-65000.

[251] Proposed Federal Plan and MTR at 65000.

[252] For measures that are already subject to legally binding requirements to meet a certain level of generation or savings, such as through a performance contract, EPA should consider allowing ex-ante ERC issuance, with a true-up based on quantified ex-post savings. This would be consistent with how these projects are currently financed, and would enable them to more smoothly and efficiently participate in rate-based trading.

[253] Proposed Federal Plan and MTR at 64999.

[254] Proposed Federal Plan and MTR at 64998.

ownership, retire, and generate compliance reports for 111(d)-eligible [renewable energy] and [energy efficiency] activities."[255] While some additional features of existing tracking systems may be needed, the report found that there were no technical barriers to building out these features. This conclusion underscores that, with some adjustments, existing infrastructure for REC and EEC trading should provide a secure foundation for the issuance of ERCs to a broad range of emission reducing resources, including distributed renewable generation, demand-side energy efficiency, demand-side management, and other resources not currently included as part of the rate-based Federal Plan co-proposal.

In fact, the CPP has already stimulated a concerted effort by states, third-party experts and data-system providers to amend existing tracking and accounting systems and to build new ones to meet all tracking system requirements outlined in the final CPP rule. In May 2015, APX announced that its "North American Renewables Registry (NAR) will be adding key features to support state implementation efforts for the [CPP]" and that "[w]ith the new features NAR will serve as a viable prototype of what we believe is necessary for cost-effective market-based solutions to implement" CPP requirements.[256] In addition, in fall 2015, the U.S. Department of Energy provided a grant to a partnership consisting of six states (Tennessee, Georgia, Michigan, Minnesota, Oregon, Pennsylvania), The Climate Registry, and the National Association of State Energy Officials to develop the National Energy Efficiency Registry (NEER).[257] NEER will:

- Provide a consistent, robust framework for energy efficiency to be included as "eligible resources" in federal and/or state plans;
- Demonstrate the eligibility and verification of energy efficiency projects according to eligibility standards proposed by individual states, a group of states or EPA; and
- Facilitate inter- and intra-state trading under individual state plans, multi-state plans or the Federal Plan.[258]

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[255] Steven Michel and John Nielsen, *Carbon Reduction Credit Program: A State Compliance Tool for EPA's Clean Power Plan Proposal, Western Resource Advocates* (November 12, 2014), http://www.westernresourceadvocates.org/energy/pdf/CRC%20Program%20-%20WRA%20working%20paper%2011%2012%2014.pdf.

[256] APX Research, *The North American Renewables Registry Adds Functionality to Support Clean Power Plan Implementation* (May 13, 2015), http://www.narecs.com/2015/05/13/the-north-american-renewables-registry-adds-functionality-to-support-clean-power-plan-implementation/.

[257] U.S. Dep't of Energy, Office of Energy Efficiency & Renewable Energy, *State Energy Program 2015 Competitive Award Selections* (2015), http://energy.gov/eere/wipo/state-energy-program-2015-competitive-award-selections.

[258] *See* The Climate Registry, *Energy Efficiency* (2016), *http://www.theclimateregistry.org/thoughtleadership/energy-efficiency/*.

This will allow participating states (and EPA under a Federal Plan) to minimize the costs and administration associated with incorporating energy efficiency into CPP compliance, address concerns about potential double counting of energy savings, and create greater transparency of the impacts of energy efficiency programs and projects.

Efforts to expand the use of existing tracking and accounting infrastructure and to build new infrastructure specifically targeted at CPP compliance, coupled with the significant engagement of state regulators, utilities, grid operators, and other stakeholders, indicates that the necessary infrastructure will be in place by the time compliance begins and can be relied on by states and EPA in administering compliance plans.

Given that both EPA and third-party ERC issuance and tracking infrastructure is being developed, AEE makes four primary recommendations for EPA's rate-based Federal Plan co-proposal and rate-based MTR proposal:

Recognize Use of Third-Party Administrative Infrastructure in Federal Plan. EPA should leverage third-party-administered administrative infrastructure—such as, but not limited to, NEER—which can act as the administrative "front end" to facilitate ERC issuance to advanced energy resources other than those EPA has proposed to include under a rate-based federal plan. To that end, EPA should provide criteria for what may constitute an acceptable "front end" registry and should give itself the ability to rely on designated agents to perform needed administrative functions.

Incorporate the Option to Use Third-Party Administrative Infrastructure into the MTR. Similar to EPA, states are concerned with the administrative, expertise, and resource requirements of operating ERC issuance and tracking infrastructure. This is one of the primary hurdles for states to incorporate a broad set of advanced energy measures into rate-based compliance planning, and is reinforced by EPA's current exclusion of these resources in the proposed Federal Plan. EPA should make it clear to states that the use of third-party administrative infrastructure, including for ERC issuance and tracking, is acceptable. By indicating that states may use ATCS for ERC tracking, EPA has taken a step in the right direction. EPA should similarly indicate in the MTR regulatory text, that the delegation of the administrative functions of ERC issuance is an approvable approach to state compliance plan implementation so long as the issuance process meets the requirements in the final CPP. The MTR should also indicate that any infrastructure used by EPA as part of the Federal Plan would be presumptively approvable to be used by states.

Authorize EGUs in Federal Plan States to Use ERCs Generated in States that Use an EPA-Approved Tracking System, Not Just an EPA-Administered Tracking System. AEE supports EPA's proposal to allow the interstate trading of ERCs among Federal Plan states as well as with other "ready-for-interstate-trading" states. However, AEE does not support EPA's

proposal that EGUs subject to a federal plan may only use ERCs issued by states using an EPA-*administered* tracking system (e.g., ATCS).[259] Instead, EGUs in Federal Plan states should be permitted to use ERCs issued by any rate-based "ready-for-interstate-trading" plan utilizing an EPA-*approved* tracking system, so long as it is interoperable with ATCS. EPA has proposed to provide states with the necessary software and support for interoperability.[260]

Clarify that Any Confidential Business Information Submitted as Part of an ERC Application or M&V Report Will Be Protected. EPA has indicated that an EPA-administered tracking system such as ATCS will provide public access to information, including to ERC eligibility applications and activities of third-party verifiers.[261] AEE generally supports the transparency and public disclosure requirements of the rate-based Federal Plan co-proposal and proposed MTR. However, AEE notes that a number of the detailed submission requirements incorporated into the eligibility application and third party verification report may require applicants and/or verifiers to submit sensitive, confidential or proprietary business information. EPA should explicitly build into its ERC issuance rules provisions that permit the submission of such information in such a way as that the applicant can be assured that such information will be protected.

3. EPA Should Clarify that Entities Other Than Affected EGUs and Eligible Resources Should Be Able to Trade ERCs

AEE supports EPA's implicit proposal not to restrict participation by entities other than affected EGUs and entities that directly receive ERCs (or allowances) from the holding or trading of these compliance instruments.[262] As EPA is well aware from its long history of facilitating an open markets approach in the trading programs that it currently manages, the participation of third parties in the trading of ERC will carry many benefits, including increasing the liquidity of ERC (and allowance) markets, providing a straightforward means by which project developers can secure financing, and reducing the potential for market participants to exercise market-power or other anti-competitive behaviors that negatively impact the efficiency and efficacy of the market.

As such AEE recommends that EPA explicitly indicate in the final MTR and any final Federal Plan that the participation of third-parties is allowed and encouraged, and facilitate that participation by allowing such entities to hold and retire ERCs (or allowances) in ATCS.

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[259] Proposed Federal Plan and MTR at 64977.

[260] Proposed Federal Plan and MTR at 65011.

[261] Proposed Federal Plan and MTR at 64999 ("[ATCS] would provide for transparent access to RE project and program eligibility applications).

[262] See Proposed Federal Plan and Model Trading Rules at 64998 ("General accounts could be used by any person or group for holding or trading ERCs") (emphasis added); id. at 65030 ("General accounts could be used by any person or group for holding or trading allowances") (emphasis added).

D. AEE's Perspective on Buyer-Liability Issues

EPA proposes that "[t]he responsibility for the validity of the ERC rests with the affected EGU."[263] Under this approach, if an ERC turned out to be invalid due to paperwork errors, fraud, or any other reason, liability would rest with the affected EGU that holds the ERC or used it for compliance. Under such a liability framework, one would expect that the generator or entity selling the credits and the buyer affected EGU would apportion liability for invalid credits via contract.

AEE wishes to note that this approach has some potential drawbacks that EPA might want to consider. First, buyers may not always be in a good position to assess the risk of a credit being invalid, so they might build a discount into the price they are willing to pay for it in order to reflect this risk—similar to how one might discount a used car. Additionally, this approach could inhibit the creation of secondary markets. The further removed a potential buyer is from the original seller/developer, the more the buyer would be discounting based on incomplete information not only about the validity of the underlying issuance to the project but also about the credit worthiness of a daisy chain of prior sellers. This approach therefore could drive down demand for credits in secondary markets, decrease liquidity in those markets, and reduce the value of credits to a level below the value associated with their level of invalidity risk.

Other credit programs have addressed such problems in several ways. For instance, one way to reduce risk is to impose a statute of limitations on buyer liability. Under this approach, a buyer might be liable for up to two years after it surrenders a credit, but after two years, the buyer would not be liable, even if the credit was later found to be invalid. Another approach could be to allow for a buyer to avoid liability if the seller conducts extra verification or due diligence procedures regarding the validity of a credit. For example, EPA has adopted an approach under Renewable Fuel Standard for Renewable Identification Numbers (RINs) under which liability for invalid RINs shifts to the project's independent verifier if the project has utilized a more extensive set of monitoring and verification procedures. Lastly, EPA could create a reserve bank of credits or insurance pool of credits that could be used by affected EGUs that "buy-in" to the pool and would be used to compensate affected EGUs in the event that some of their credits are invalidated through no fault of their own.

In any event, if EPA adopts a buyer liability approach, it needs to resolve several additional questions about the liability regime[264], including the following:

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[263] Proposed Federal Plan and MTR at 64991.

[264] Although AEE does not necessarily support each of the particular solutions adopted, we note that the California Air Resources Board (CARB) has worked through many of these issues in implementing a buyer liability approach

- **What are the grounds for invalidation of an already-issued ERC**? Overstatement of the number of ERCs issued for a project? Fraud? Double issuance? If overstatement of ERCs for a particular project is grounds for invalidation, is there a *de minimis* threshold (e.g., only an overstatement of more than five percent in a particular year)? If EPA or the state adopts a different EM&V or M&V protocol for a particular type of project, are projects or ERCs that already have been registered or issued under the prior protocol grandfathered or can they also be invalidated because they do not conform to the new protocol?
- **Which ERCs from a project can be invalidated?** In the event of overstatement, are *all* ERCs from the project invalidated – or only an amount equivalent to the overstatement? If it is the latter, and multiple EGUs hold or have retired ERCs from a single project, *which* ERCs are invalidated? Does an EGU have to replace *any* invalidated ERC – or just those invalidated ERCs that the EGU has retired for compliance purposes?
- **What process should be used for invalidation?** Would the EPA or state notify ERC holders that an investigation is underway? Would there be a temporary suspension of transactions in the relevant ERCs so that there is not an effort to "unload" ERCs under investigation to unsuspecting buyers? Would there be a dispute resolution process?

AEE encourages EPA to more thoroughly evaluate and consider the full range of approaches to addressing invalidity risk.

E. AEE Agrees with EPA that a Reliability Safety Valve is Not Necessary as Part of the Rate-Based Federal Plan and MTR.

EPA requests comment on whether to include a reliability safety valve as part of the rate-based Federal Plan and/or rate-based MTR.[265] For the same reasons outlined above with regards to a potential reliability set-aside under the mass-based plan, AEE agrees with EPA that a reliability safety valve is not needed. Namely, because the rate-based Federal Plan and MTR allow affected EGUs to obtain tradable ERCs to meet obligations, reliability can be maintained without disruption to the electricity system as sources needed for reliability purposes can simply buy ERCs instead of reducing their output.[266] However, as discussed in greater detail *infra* Section V.A.2, EPA can further ensure that a rate-based Federal Plan does not present reliability issues by authorizing ERC eligibility for the full range of advanced energy resources and

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for its offset credit issuance regulations under the California state cap-and-trade program. *See* CARB, Guidance: Chapter 6: What are the Requirements for Offset Credits and How are They Issued? (Dec. 19, 2012), available at http://www.arb.ca.gov/cc/capandtrade/offsets/chapter6.pdf, at part 6.11 ("What Are the Rules for Invalidation of ARB Offset Credits?") *See also* 17 C.C.R. § 95985.

[265] Proposed Federal Plan and MTR at 64,982.

[266] *See* Proposed Federal Plan and MTR at 64,981.

measures otherwise eligible to earn ERCs under state compliance plans. Such a modification will ensure that EGUs can acquire whatever ERCs they need to maintain reliability.

VI. AEE's Recommendations on EM&V Issues under the Federal Plan and MTR

The EM&V of generation and energy savings from advanced energy resources is relevant under a number of circumstances in both the rate- and mass-based Federal Plan co-proposals and MTRs. Under the rate-based Federal Plan and MTR, ERC generation requires an eligibility application that includes a third-party verified EM&V plan, and issuance requires a third-party verified M&V report.[267] Under a mass-based plan that includes allocation to advanced energy—including the proposed mass-based Federal Plan and MTR—resources must meet the same eligibility, MWh measurement, and verification requirements in order to receive allowances out of the RE set-aside.[268] To the extent that EPA includes additional presumptively approvable allowance allocation models in the mass-based MTR, as outlined *supra* Section IV.B., AEE expects similar requirements. And the CPP indicates that in order to receive either allowances or ERCs as part of the CEIP, wind, solar, and energy efficiency must meet the same EM&V requirements.[269]

Given that EM&V requirements are an integral component to the use of advanced energy technologies under all relevant Federal Plan and MTR options, it is critical that the MTR and any final Federal Plan include requirements that permit the participation of the widest possible range of emission reducing resources.

In order to do so, these requirements should reflect the appropriate balance between environmental rigor and cost. The EM&V and M&V that meet the Federal Plan and MTR requirements should provide reasonable confidence in the generation or energy savings of a resource, but should not be so onerous that they erase the incentive for advanced energy deployment. One need only look at the example of the set-aside for energy efficiency activities in the Acid Rain Program, which established such onerous criteria that it was more or less unused.[270] Furthermore, it is important to recognize that the degree of precision that might be necessary for criteria or toxic pollutant policies—where even small differences in reductions can translate into significant health impacts—is not necessary for policies addressing greenhouse gas emissions.

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[267] Proposed Federal Plan and MTR at 65094-95 (proposed 40 CFR § 62.16445).

[268] Proposed Federal Plan and MTR at 65068-69 (proposed 40 CFR § 62.16245(a)(3)).

[269] Final CPP at 64943 (codified at 40 CFR § 60.5737(e)).

[270] Kenneth Gillingham, et al., Resources for the Future, DP 04-19 REV, *Retrospective Examination of Demand Side Energy Efficiency Policies,* at 35-37 (2004), http://www.rff.org/Documents/RFF-DP-04-19rev.pdf.

Fortunately, advanced energy industries are already held to high standards—whether in private transactions or under state regulatory authority. As such, the EM&V requirements should reflect industry best practices where possible.

EPA has requested comment broadly on whether certain criteria included in the Federal Plan and Model Trading Rules should instead be addressed in the final EM&V Guidance. To the extent possible, EPA should remove lengthy or overly prescriptive requirements currently included in the proposed Federal Plan and place a discussion of these requirements, and where and when the applicable requirements are appropriate, in the EM&V Guidance. In keeping with this perspective, AEE believes there are several technologies on which EPA should provide additional EM&V guidance that was absent from both the proposed Federal Plan and the EM&V Guidance.

This section discusses AEE's recommendations with respect to EM&V for renewable energy and energy efficiency under the Federal Plan and MTR. These recommendations generally apply to both the rate-based and mass-based Federal Plan and MTR, unless stated otherwise.

In addition, as noted above, AEE will be submitting additional comments on EM&V requirements, including on EPA's EM&V Guidance for Demand-Side Energy Efficiency.

A. AEE's Recommendations Regarding EM&V for Renewable Resources.

1. EPA's Proposed Requirement to Use a Revenue Quality Meter is Unnecessarily Stringent and Will Prevent Many Distributed Generation Sources from Qualifying for the RE Set-Aside under the Federal Plan and MTR.

EPA proposes that, for the purposes of the Federal Plan, all renewable generation must be measured using a revenue quality meter.[271] Similarly, as a part of the MTR, EPA has proposed an EM&V approach for issuing ERCs/allowances that requires the use of a revenue quality meter for renewable energy resources that have: (1) a nameplate capacity of 10 kW or more; and (2) a nameplate capacity of less than 10 kW and for which metered data are available.[272] For renewable resources with a nameplate capacity of less than 10 kW for which metered data are

[271] Proposed Federal Plan and MTR at 64,989-90, 64,994, 65,002.

[272] Proposed Federal Plan and MTR at 65,004, 65,071, 65,096-97. Under EPA's current proposed regulatory language, it is ambiguous whether a renewable energy resource with a nameplate capacity of less than 10 kW that is interconnected behind an individual business or household meter also would be required to use a revenue quality meter. *See id*.

not available, ERCs/allowances can be issued based on an estimate of the facility's output, but only if the state where it is located explicitly allows estimates to be used.[273]

EPA proposes to define a "revenue quality meter" as

> a meter used by a control area operator for financial settlements, or a meter that meets the [ANSI] No. C12.20., Code for Electricity Metering, metering accuracy standards, or a meter that meets an alternative equivalent standard that has been approved in advance of its use to measure generation pursuant to this regulation by the EPA.[274]

The ANSI C12.20 standard proposed by EPA would require meters to be rated to 0.2% or 0.5% accuracy.

AEE opposes the requirement to use a revenue quality meter for distributed generation resources of any size, because this requirement is unnecessary to ensure that generation is accurately measured and would likely preclude a very large number of distributed generation projects from qualifying for ERCs/allowances. Many distributed generation systems do not currently use revenue quality meters,[275] and installing them would be cost prohibitive in many markets—especially for smaller distributed systems—given the fact that ANSI C12 meters range in cost from approximately $100 for small residential systems to $10,000 or more for medium voltage commercial systems. However, the requirement to use a revenue quality meter would *not only* be costly, but also is unnecessary and would not carry environmental benefits. This is because the majority of solar systems without revenue quality meters already measure their generation internally by the solar inverter, which is extremely accurate.[276] In contrast, an ANSI C12 meter may only be marginally more precise.

Accordingly, instead of requiring the use of a revenue quality meter for distributed generation resources, AEE urges EPA to allow the use of inverter internal generation measurements, so long as those measurements carry a high degree of accuracy. It is consistent with current industry best practice to use inverter internal generation measurement with accuracy

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[273] Proposed Federal Plan and MTR at 65,004, 65,071, 65,096-97.

[274] Proposed Federal Plan and MTR at 65,071, 65,096.

[275] For instance, SolarCity, which accounted for approximately 1/3 of rooftop residential solar installation in the United States last year, estimates that currently half of its residential systems do not have revenue grade meters.

[276] All inverters meet at the very least UL 1741 which certifies all solar inverters to 1% accuracy on power measurement. Inverter internal energy measurement is generally rated to +/- 5% accuracy of actual system output by the manufacturer; in practice, AEE members have found the accuracy to be better than 2% in most cases. Accuracy of 2% is equivalent to an ANSI-C-12.1 meter.

at least +/- 5%).[277] Such an EM&V protocol for distributed generation systems will more than ensure that metering of those systems is sufficiently accurate, while not precluding distributed generation systems from qualifying to receive ERCs or allowances under the Federal Plan and MTR.

However, if EPA nevertheless decides to require revenue quality meters, EPA should exempt distributed generation systems with a nameplate capacity of 30 kW or less from this requirement and should allow those systems to use internal inverter generation measurement. Systems with a capacity of 30 kW and below are smaller-sized systems that are commonly residential and would be most burdened by the high cost of a revenue quality meter. For distributed generation systems with a nameplate capacity of greater than 30 kW, EPA should allow the use of ANSI C12.1-2008 meters (providing accuracy to 2%) in lieu of ANSI C12.20 meters. The ANSI C12.20 standard is incredibly stringent, could be difficult for some equipment manufacturers to meet, and would add meaningful costs to each installation. For distributed generation, where the systems are smaller and cost efficiency is paramount, the additional price is especially problematic. Moreover, the use of ANSI C12.1-2008 meters is the standard industry practice for larger systems.[278] In fact, AEE is unaware of any solar inverter vendor that currently offers a product meeting the ANSI C.12.20 standard. Because of the accuracy and widespread use of ANSI C12.1-2008 meters, EPA should allow the use of these meters in lieu of ANSI C12.20 meters. This would strike the right balance between ensuring that measurements are accurate, while avoiding the imposition of expensive and unnecessary requirements on distributed generation providers.

2. For Renewable Resources, Measurement of Generation Should Take Place at the Inverter, Rather Than the Bus Bar.

In the proposal EPA suggests that generation data for metered renewable energy resources must be

> measured at the generator's bus bar, or, for a renewable energy resource with a nameplate capacity of less than 10 kW that is interconnected behind an individual business or household meter, the generating data [must be] measured at the AC output of the inverter and adjusted to reflect the only [sic] energy delivered into

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[277] For example, California, New York, Arizona, and Colorado, states with leading solar markets, do not require revenue quality meters for small scale solar. To be eligible for incentives under the California Solar Initiative, distributed generation systems under 30 kW can use meters with accuracy of +/- 5%. *See* California Public Utilities Commission, California Solar Initiative Program Handbook at 34 (August 2014), http://www.gosolarcalifornia.ca.gov/documents/CSI_HANDBOOK.PDF.

[278] Both California and New Jersey require that solar systems that participate in state run incentive programs include meters that meet the ANSI C.12.1 standard.

either the transmission or distribution grid at the generator bus bar and not any energy used on-site at the generator.[279]

AEE urges EPA to reconsider this proposal. Especially for distributed generation sources, measurement almost always takes place at the inverter, and does not take place at the bus bar. This is also true for sources with nameplate capacity greater than 10 kW. Moreover, measurement at the bus bar will preclude accounting for that renewable energy generated and used on-site, which is further discussed below. Accordingly, EPA should revise this requirement to reflect current industry practice.

3. EPA Should Clarify That *All* Generation from Qualified Distributed Generation Resources Should Be Eligible for Allowances/ERCs under the Federal Plan and MTR, not Just Generation Delivered into the Grid.

AEE urges EPA to recognize that *all* generation from distributed generation resources should be eligible for credit under the Federal Plan and MTR, *not just* generation that is delivered to the grid. The full amount of generation from distributed generation resources should qualify for ERCs/allowances, *because the amount of renewable power that a home or business owner uses on-site also avoids fossil fuel generation from the grid*. Without the distributed generation resource, the home or business owner would demand that electricity from the grid.

Despite the fact that such generation also backs fossil fuel-fired generation off the grid—just as all other zero-emission generation and end-use energy savings do—EPA's proposed EM&V for renewable energy resources indicates that this generation would not qualify for ERCs or allowances under the MTR. For instance, for a renewable energy resource with nameplate capacity of less than 10 kW that is interconnected behind an individual business or household meter, the MTR provides that the generating data would be measured at the AC output of the inverter and adjusted to reflect only the energy delivered into either the transmission or distribution grid at the generator bus bar and *not* any energy used on-site at the generator.[280] Similarly, for resources of less than 10 kW for which metered data is unavailable, the resource's eligibility for ERCs/ allowances would only be based on generation transferred from the eligible resource to the transmission or distribution grid, and would not be based on the generation used on-site by the customer.[281]

AEE urges EPA to eliminate this restriction. Instead, EPA should allow the full amount of metered distributed generation, including the electricity that is used on-site by the homeowner

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[279] Proposed Federal Plan and MTR at 65,071, 65,096.

[280] *See* Proposed Federal Plan and MTR at 65,004, 65,071, 65,096.

[281] *See* Proposed Federal Plan and MTR at 65,071, 65,096.

or business, to qualify for credit under the Federal Plan and MTR in recognition of the fact that the home or business owner would otherwise derive this electricity from fossil fuel-fired sources through the grid. Moreover, crediting distributed generation in this manner is consistent with EPA's proposed approach for crediting energy efficiency, CHP, and other sources under the CPP. For instance, energy efficiency savings are calculated as a function of avoided generation on the customer-side of the meter. Similarly, CHP sources often produce power that they utilize onsite and thereby reduce demand on affected EGUs by replacing grid purchases with on-site generation. Although there is some ambiguity surrounding EPA's treatment of EM&V for CHP (discussed in more detail below *infra* Section VI.B.), EPA does not appear to propose to reward only that CHP generation which is delivered back onto the grid, and appears to propose to allow on-site loads (other than station service) to generate allowances/ERCs.[282] As EPA recognizes, "CHP units are low-emitting electric generating resources that can replace generation from affected EGUs."[283] EPA should recognize that distributed generation also can and does replace generation from affected EGUs. Accordingly, AEE requests that EPA eliminate this requirement such that *all* distributed generation is eligible for allowances/ERCs under the Federal Plan and MTR, not just the excess amount of generation that is delivered into the grid.

4. Recommendations Regarding Estimating Generation from Distributed Generation Resources under 10 kW.

For a renewable energy resource with a nameplate capacity of less than 10 kW that is not metered, ERCs/allowances can be issued based on an estimate of the facility's output, but only if (1) metered data are unavailable; (2) if "at least 1 MW of net energy output is generated to the distribution or transmission system over a continuous 365-day period;" and (3) the state where facility is located explicitly allows estimates to be used and provides rules for when it will be allowed ; and (3) if "at least 1 MW of net energy output is generated to the distribution or transmission system over a continuous 365-day period."[284] Calculations of system output also must be estimated at least monthly using the unit's capacity, estimated capacity factors, and an assessment of the local conditions that affect generation levels.

AEE believes that a separate guidance document on estimating generation from distributed generation resources similar to that issued for EM&V for energy efficiency would a more appropriate place to describe estimation methods rather than in the final Federal Plan.

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[282] Proposed Federal Plan and MTR at 65,071-72 (proposed 40 C.F.R. § 62.16260(c)(1)(v)(B), (c)(5)); Proposed Federal Plan and MTR at 65,096-97 (proposed 40 C.F.R. § 62.16455(c)(1)(v)(B), (c)(5)).

[283] CPP at 64,902.

[284] Proposed Federal Plan and MTR at 65,004, 65,071, 65,096.

AEE recommends a number of changes that should be made to the discussion of generation estimation in a guidance document, or, to the extent EPA does not adopt AEE's recommendation, in the MTR. First, AEE recommends that EPA increase the size threshold for allowing distributed generation resources to estimate their generation. Specifically, renewable energy resources with a nameplate capacity of 20 kW or less should be allowed to estimate their generation. Some providers of distributed generation work with a diverse array of contractors and inverter providers, do not currently have access to inverter data, and securing this data would be impracticable due to the large number of contractors that install inverters and the many different types of inverters on the market. Monitoring the data from these inverters would require software and web access and would require the provider to enter into contracts with each inverter manufacturer, installing contractor, and property owner in order to gain third-party access to the monitoring data. It would also require the provider to implement a program to monitor and report all of the data from the disparate inverter systems. The administrative burden and associated costs associated with establishing such a monitoring system would potentially be prohibitively expensive, and could exclude small scale distributed generation providers from eligibility. AEE thus encourages EPA to allow resources with a capacity of 20 kW or less to estimate their capacity.

Second, EPA should eliminate the requirement that systems less than 10 kW generate to the distribution system at least 1 MW of net energy output over a year in order to qualify.[285] This requirement makes little sense. As outlined above, EPA should not place requirements on the amount of generation sent to the distribution system but rather should be concerned with the total amount of generation, whether used on-site or sent to the distribution system (all of which displaces affected EGU generation and emissions). Further, EPA provides no justification for this requirement and AEE can identify none.

Third, AEE also encourages EPA to allow for metered data to be considered to be "unavailable," if it is economically infeasible or impracticable for the project provider to obtain that data.

5. Recommendations Regarding Aggregation.

AEE supports EPA's proposal to allow aggregation of distributed resources to improve the efficiency of cost-effectiveness of crediting these measures. However, AEE is concerned that EPA's proposed 1 MW size limit on the aggregation of distributed generation will undermine the efficacy of this provision. Instead, AEE supports a 10 MW limit. This slightly higher aggregation

[285] Proposed Federal Plan and MTR at 65071 (proposed to be codified at 40 C.F.R. § 62.16260(c)(2)(ii)).

cap will enable more streamlined EM&V and ERC tracking for these resources without sacrificing accuracy.

6. Recommendations Regarding Renewable Energy with Project-Tied Storage.

EPA should also clarify how renewable energy systems that use on-site energy storage (for example, electric battery storage) will be treated with respect to the EM&V and metering requirements. The final Clean Power Plan states that "energy storage may not be directly recognized as an eligible measure," and that "the electric generation that is input to an energy storage unit may be used to adjust a CO2 emission rate, but the output from the energy storage unit may not."[286] The Proposed Federal Plan and Model Trading Rule do not include any specific discussion of how the interaction of renewable energy and on-site storage impacts the proposed renewable energy metering and EM&V requirements. In many circumstances, no additional requirements will be needed because the renewable energy generation is measured separately and before power is used to charge on-site batteries. As outlined above, all such measured generation should be eligible to receive ERCs or allowances, regardless of whether that generation is used on-site (by customers or to charge batteries) or sold into the utility distribution system. However, because of the way that co-located renewable energy and batteries are sometimes interconnected to the grid, it is possible that the generation produced by the renewable energy resource will not be separately metered and will not go straight to the grid, but may instead go through an on-site battery. EPA's metering and EM&V rules should not preclude this generation for the purposes of ERC or allowance allocation eligibility.

EPA can be confident that measurement protocols can be designed to capture only the amount of renewable energy produced and should build these operational realities into its metering and EM&V requirements for resources that co-locate renewable energy and storage. Existing tax incentives and state requirements often require all or substantially all of the electricity used to charge electric battery storage to come from on-site renewables. For example, California Energy Commission Guidebook describes storage eligibility for RPS credits as follows: First, an energy storage device may be considered an additional or enhancement to a facility if the storage device is charging exclusively from the renewable generator. Second, if the energy storage device is directly connected with the facility and can show that exports to the grid are renewable:[287] Similarly, renewable energy plus storage systems may only receive the

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[286] Final CPP at 64900.

[287] California Energy Commission, *Renewables Portfolio Standard Eligibility, Eighth Edition* (June 2015), http://www.energy.ca.gov/2015publications/CEC-300-2015-001/CEC-300-2015-001-ED8-CMF.pdf.

investment tax credit ("ITC") if 80 percent of the electricity used to charge on-site batteries was from the co-located renewable energy.[288] EPA should allow EM&V protocols that recognize those resources that elect to receive benefits that require all or substantially all electricity used to charge the battery come from on-site renewable power. Additionally, even for storage that charges using both on-site renewables and grid power, EPA can be assured that the measured *net* output to the grid will be equivalent to the amount of generation from on-site storage. Therefore, a methodology which permits such units to receive ERCs for *net* output should be permitted.

B. AEE's Recommendations Regarding EM&V for CHP.

1. EPA Should Clarify that CHP Generation Used Onsite is Eligible for Allowances/ERCs under the Federal Plan and MTR and that Measurement Need Not Take Place at the Generator Bus Bar.

AEE urges EPA to clarify that (1) CHP generation used onsite is eligible for credit under the Federal Plan and MTR; and (2) measurement of CHP generation need not take place at the generator bus bar. As discussed above, with respect to renewables, EPA's regulatory text for renewable EM&V requires generation to be measured at the generator's bus bar and excludes generation from certain size resources that is used onsite from receiving credit. As currently drafted, the proposed regulatory text for EM&V for CHP incorporates these restrictions by reference. Specifically, the proposed CHP EM&V regulatory text requires E&MV plans for CHP to meet "the requirements of paragraphs (c)(1) or (2) of this section."[289] Paragraphs (c)(1) and (c)(2) contain the above-described EM&V requirements for renewable resources, including the restrictions related to onsite generation for some sources under 10 kW and the requirement to measure at the generator bus bar. However, Paragraph (c)(1) *also* provides that on-site loads other than station service *are* eligible for allowances/ERCs:

> For generators interconnected to transmission systems and with on-site loads other than station service drawing generation before the metering point, set-aside allowances may be issued for on-site load, if the owner or operator of the eligible

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[288] *See* Kelly Kogan, *IRS Confirms that Batteries Qualify for the Energy Tax Credit But Imposes Limitations,*RenewableEnergyWorld.com, April 19, 2013, available at http://www.renewableenergyworld.com/articles/2013/04/irs-confirms-that-batteries-qualify-for-the-energy-tax-credit-but-imposes-limitations.html; *see also* IRS Notice 2015-70 (Oct. 2015), *available at* https://www.irs.gov/pub/irs-drop/n-15-70.pdf.

[289] Proposed Federal Plan and MTR at 65071-72 (proposed 40 C.F.R. § 62.16260(c)(5)); Proposed Federal Plan and MTR at 65097 (proposed 40 C.F.R. § 62.16455(c)(5)).

> resource can demonstrate that the metering used is capable of distinguishing between on-site load and station service.[290]

This language explicitly provides that generation used for on-site load at CHP facilities *is* eligible for allowances, as long at the metering is capable of distinguishing station service. AEE believes that the requirement in Paragraph (c)(1) that generation must be measured at the bus bar is potentially in conflict with this language, and that the cross-reference to the renewable energy EM&V provisions creates confusion as to which of those two provisions actually apply to CHP.[291]

Accordingly, AEE requests that EPA explicitly clarify in the regulatory text that CHP generation used onsite (other than station service) is eligible for allowances/ERCs under the Federal Plan and MTR, and that this generation need not be measured at the bus bar in order to be eligible for credit. This clarification is necessary because requiring CHP units to measure their generation at the bus bar or imposing any similar metering restrictions could prevent these sources from receiving allowances/ERCs for generation that is used to serve on-site loads. Avoiding such a restriction is very important, because a large benefit of CHP facilities is that they increase reliability and efficiency and decrease transmission and distribution losses by serving onsite load.[292] EPA recognizes this benefit and indicates that such on-site load should qualify for credit by providing in the EM&V for CHP under 1 MW that "[f]or CHP units that directly serve on-site end-use electricity loads, avoided T&D system losses can be assessed as is commonly practiced with demand-side EE."[293] AEE thus urges EPA to eliminate the confusing cross-references to the renewable energy EM&V requirements in the CHP EM&V section, and to instead include CHP-specific provisions in the CHP EM&V section that explicitly state that CHP generation used onsite qualifies for allowances/ERCs, and that that generation need not be measured at the bus bar, and need only be capable of subtracting out that generation that is used for station service.

2. EPA Should Allow All CHP Units Serving On-Site Loads, Regardless of Size, to Assess and Gain Credit for Avoided T&D System Losses.

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[290] Proposed Federal Plan and MTR at 65071 (proposed 40 C.F.R. § 62.16260(c)(1)(v)(B)); Proposed Federal Plan and MTR at 65096 (proposed 40 C.F.R. § 62.16455(c)(1)(v)(B)).

[291] AEE notes that these cross-references to the renewable energy EM&V are also contained in the biomass and waste-to-energy EM&V sections in addition to the CHP section, and could also potentially create similar confusion there as to which EM&V requirements actually apply to those resource categories. AEE thus recommends that EPA eliminate these cross-references and instead explicitly describe what EM&V requirements are applicable to each category in the regulatory text.

[292] *See* U.S. EPA, *Energy and Environment Guide to Action,* at 6-2 to 6-5 (2015), http://www3.epa.gov/statelocalclimate/documents/pdf/guide_action_full.pdf.

[293] Proposed Federal Plan and MTR at 65072, 65097.

EPA should revise the proposed regulatory text to explicitly allow all CHP units serving onsite loads—regardless of size—to assess and gain credit for avoided T&D system losses. The proposed regulatory text for CHP EM&V currently provides separate requirements for CHP units of different sizes and types. Under the requirements for CHP less than or equal to 1 MW, the regulatory text provides that "[f]or CHP units that directly serve on-site end-use electricity loads, avoided T&D system losses can be assessed as is commonly practiced with demand-side EE."[294] However, the proposed regulatory text for EM&V for CHP units above 1 MW does not include this language. AEE requests that EPA clarify in the regulatory text that all CHP units are eligible to assess and gain credit for avoided T&D system losses, regardless of size. This ability should not be limited to CHP under 1 MW, because avoiding T&D loses is a significant benefit common to CHP resources of any size that serve on-site loads.[295]

C. AEE's Recommendations Regarding EM&V for Demand-Side Energy Efficiency.

1. EPA's EM&V Requirements in the Federal Plan and Model Trading Rule are Overly Prescriptive; the Agency Should Reserve Any Necessary Technical Specificity for the EM&V Guidance.

EPA has requested comment broadly on whether certain criteria included in the Federal Plan and Model Trading Rule should instead be addressed in the final EM&V Guidance.[296] AEE recognizes that EPA must maintain the flexibility inherent in industry best practice while ensuring that EM&V is reliable and accurate. At the same time, all of these considerations cannot be adequately reflected in a few pages of requirements in the Final Federal Plan. The EM&V Guidance is a lengthier document better suited to convey complexities, nuances and trade-offs in industry best practices and approaches.

Energy efficiency involves installing a wide variety of efficient measures or practices (that use energy more efficiently than the alternatives. There are tens of thousands of possible types, sizes, and vintages of equipment, and the savings vary by climate, building and industry type, occupancy, and a variety of other factors.

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[294] Proposed Federal Plan and MTR at 65072, 65097.

[295] AEE notes that EPA even allows for *affected* CHP units to account for T&D losses. Accordingly, EPA should allow for *non-affected* CHP of all sizes to gain credit for reducing T&D losses here.

[296] Proposed Federal Plan and MTR at 65007.

As a result, EM&V for energy efficiency is, in large part, a customized process that requires practitioners to carefully apply analytic concepts tailored to meet evaluation needs for a given situation. The industry has developed these approaches, concepts and guidelines over several decades. As evidenced by the number of protocols and guidelines referenced in the EM&V Guidance,[297] there are many factors to consider when designing an approach to assess savings from a particular program or project. Specifically, EPA should limit its discussion in the Final Federal Plan on the following topics: deemed savings, common practice baseline ("CPB"), allowable EM&V approaches, comparison group approaches, and Technical Reference Manuals (TRMs).

2. Deemed Savings, *ex ante* Estimates and Projections

The proposed Federal Plan includes language that appears to prohibit the use of "*ex ante"* savings estimates or "projections."[298] The use of these terms throughout the proposed Federal Plan is imprecise and may unintentionally prohibit the use of deemed savings, a well-established industry practice. EPA appears to conflate "deemed" or "*ex ante*" savings with "unevaluated estimates."[299]

AEE believes that it is EPA's intent that savings estimates should not be based on unevaluated engineering projections that do not take into account operational issues such as usage patterns, weather, technical degradation and so forth. AEE agrees with this intent. However, as the EM&V industry has evolved over many decades, *ex ante* estimates are increasingly based on an accumulated body of prior evaluations. Indeed, to some extent, all EM&V analysis is based on projections of some kind.[300]

AEE supports the notion that savings estimates should be subject to *ex post* review of key parameters (e.g., number of installations, usage patterns, etc.) and should be judged by EM&V to be of high quality and applied properly in a given situation. Determining which parameters, approaches and protocols would apply in a given situation is a complex process that derives from overall industry standard practice. Acceptable criteria for making this determination should be outlined in the EM&V Guidance rather than prescribed in the final Federal Plan.

As such, AEE urges EPA to modify language in the proposed Federal Plan that prohibits or could appear to prohibit use of *"ex ante"* energy savings estimates, or "projections"

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[297] *See* EM&V Guidance, Appendix C.

[298] Proposed Federal Plan and MTR at 65003. ("MWh values may not be determined using projections or other ex-ante quantification approaches.")

[299] Proposed Federal Plan and MTR at 65,072.

[300] See *AEE EM&V Guidance Comments,* Section III.B.1.

and reserve discussion of the parameters on which an estimate is deemed acceptable for the final EM&V Guidance.

3. CPB

AEE believes EPA's requirement to use a common practice baseline ("CPB") in the proposed Federal Plan is overly prescriptive, inconsistent with industry practice, and difficult to interpret and implement. EPA should eliminate the requirement for a CPB in the proposed Federal Plan in order to allow for the use of other baseline approaches and include a discussion in the EM&V Guidance on which particular baseline approach is appropriate under what circumstances.[301]

AEE applauds EPA for including the CPB as a presumptively approvable baseline approach in the proposed Federal Plan and Model Trading Rule. Indeed, CPB is often an appropriate baseline to use, for example, in instances where large numbers of particular measures are installed through a program, and where energy use from the baseline equipment is known or can be studied effectively. However, for other measure-types, particularly large, complex, and individualized sites, CPB is not an applicable concept. It would be impractical and, for some sites, impossible to identify a CPB for these numerous, diverse and complex systems with measure and practice updates that interact with one another. In these situations, industry EM&V best practices would be to measure savings in whole or in part from an "as built" or "existing conditions" baseline—not a CPB.

AEE urges EPA to remove the CPB requirement in the final Federal Plan. Instead, the final Federal Plan should require the use of an "appropriate" baseline and refer to the EM&V Guidance and industry best practices for selecting and describing the appropriate baseline from which to measure savings for a given project, program or portfolio. AEE would welcome an inclusion in the final Federal Plan of presumptively approvable baselines as long as the language in the final Federal Plan and Model Trading Rule does not prescribe the use of a particular baseline in all circumstances.

4. Allowable EM&V approaches (Project-Based Measurement and Verification (PB-MV), Comparison Group Approaches, and Deemed Savings

In keeping with the overarching principle of deferring to industry best practices, and refraining from over-specifying requirements in the Proposed Federal Plan, EPA should

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[301] Proposed Federal Plan and MTR at 65072; EM&V Guidance, Section 2.2.

eliminate language that limits to three the general types of EM&V approaches that must be incorporated into an EM&V plan.[302] The current language indicates that EM&V plans must include "the method applied: project-based measurement and verification (PB-MV), comparison group approaches, or deemed savings" and goes on to state, "All electricity savings must be quantified by applying one or more of the following methods: PB-MV, comparison group approaches, or deemed savings."[303]

These passages are overly prescriptive. It is clear in the expository language of the EM&V Guidance that these are broad categories, with many permutations, whereas the specific language in the Proposed Federal Plan unnecessarily limits EM&V now, and in the future, to three types with specific "names." Ye elsewhere in the proposed Federal Plan contemplates EM&V based on "real time" data (presumably data analytics and/or advanced metering). It is not clear that EM&V approaches using emerging technological and analytic capabilities fall neatly into one of the three categories, or even a combination thereof. The discussion of these three broad categories of EM&V is more appropriately situated in the EM&V Guidance discussion[304] rather than the proposed Federal Plan.

5. Comparison group Approaches

The proposed Federal Plan describes requirements for comparison group approaches.[305] This text is overly specific in the context of the proposed Federal Plan, and indeed is redundant in light of the similar, more complete, more nuanced discussion of comparison group approaches in the EM&V Guidance. EPA should remove this language from the final Federal Plan and maintain the lengthier discussion of comparison group approaches in the EM&V Guidance.

6. Technical Resource Manuals (TRMs)

AEE supports the use of deemed savings values, in appropriate situations, and supports EPAs intention of ensuring that deemed savings estimates are properly prepared, thoroughly documented, and vetted publically and professionally, and available throughout the life of the affected measures. Appropriate and careful use of deemed savings, developed for and published in TRMs, can provide accurate, tested, and cost-effective savings estimates for measures that tend to have widespread applications and to be installed in large numbers.

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[302] Proposed Federal Plan and MTR at 65006.

[303] Proposed Federal Plan and MTR at 65072.

[304] EM&V Guidance, at 8-11.

[305] Proposed Federal Plan and MTR at 65006.

However, the deemed savings discussion, as written in the proposed Federal Plan, is difficult to interpret and possibly incorrect. The proposed Federal Plan states that "If deemed savings are used, then the EM&V plan must specify that the deemed savings values will only be used for the specific EM&V measure for which they were derived."[306] The phrase "for the specific measure for which they were derived" does not have clear meaning in practice. Evaluators commonly, and appropriately, use savings estimates from other jurisdictions or other markets, while modifying key parameters that affect savings. For example, high quality estimates of pool pump energy usage in a temperate climate can be used effectively in a hotter climate, provided that operating hours for the equipment is modified to reflect that pools that, on average, are used during a longer season in hot climates vs. cold ones.

The Final Federal Plan should eliminate the requirements that EM&V plans that use deemed savings only use estimates "for the specific measure for which they were derived" and, instead, the EM&V Guidance should state that deemed savings should be crafted using estimates from appropriate "similar" measures, and should provide discussion about factors to consider – geography, climate, building type, comparability of the base-case and efficient measures in both situations, quality of the overall estimates, etc.

D. AEE's Recommendations Regarding EM&V for Other Measures

EPA has not provided guidance on certain eligible measures included in the final CPP, including demand response,[307] T&D efficiency, and fuel cells. While AEE appreciates that EPA has included these technologies and practices as eligible under state plans, it is important for the Agency to provide clarity around approvable means to measure and verify generation or savings from these measures, and, if applicable, guidance around acceptable accounting frameworks for ERC issuance. Without this clarity, states may not know how to include them as approvable measures, even if they would otherwise choose to do so. Furthermore, investors and project providers may lack confidence in the ability to actual earn credits from these measures. Accordingly, EPA should go further than listing these measures as eligible for compliance purposes. AEE has provided additional suggestions about the development of guidance for some

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[306] Proposed Federal Plan and MTR at 65072.

[307] In the final rule, EPA recognizes "DSM" as a compliance tool, which presumably includes measures such as demand response. EPA clarifies that not all DSM is eligible to be used as a compliance measure, stating that, "Eligible DSM actions are those that are zero-emitting and avoid, rather than shift, the use of electricity by an electricity end-user." *See* Final CPP at 64900. Other than a footnote regarding Direct Load Control programs, it does not appear that EPA has provided further guidance on how to determine whether electricity use has been shifted, and AEE members are unaware of any such guidance existing as it relates to EM&V.

of these measures in separate comments regarding EPA's proposed EM&V guidance document.[308]

VII. AEE Supports Trading Between Sources in Federal Plan States and Sources in States Implementing Their Own Programs.

EPA proposes that affected EGUs in a state covered by the Federal Plan can trade with EGUs in any other state covered by the Federal Plan or a state plan meeting the conditions for linkage to a federal plan.[309] EPA proposes the following conditions for state plans linking to a federal plan: (1) the state plan must be approved;[310] (2) the state plan must implement the same type of trading program as the Federal Plan trading program, i.e., only rate-based state programs can link to a rate-based Federal Plan and only mass-based state programs can link to a mass-based Federal Plan;[311] (3) the state plan must use an identical compliance instrument as the Federal Plan, i.e., for mass-based plans, allowances must be issued in short tons, and for rate-based plans, ERCs must represent one zero-emitting MWh;[312] (4) the state plan must be approved as a ready-for-interstate-trading plan according to the criteria specified in the CPP;[313] and (5) the state plan must use an EPA-administered tracking system.[314] Although EPA proposes that state plan allowances must be issued in short tons in order to link with the Federal Plan, EPA requests comment on whether it should allow trading with states that issue allowances in metric tons and how to convert from metric to short tons.[315] EPA also requests comment on whether to allow the use of an EPA-designated tracking system that is "interoperable" with the EPA-administered tracking system.[316]

AEE generally supports EPA's proposal to allow Federal Plan states to trade with other Federal Plan states, as well as non-Federal Plan states that meet certain linkage conditions. By facilitating a broad trading program, EPA will allow participating states—and affected EGUs in those states—to minimize costs and maximize flexibility by increasing the range of compliance options available to them.

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[308] See AEE EM&V Guidance Comments.

[309] Proposed Federal Plan and MTR at 64976.

[310] Proposed Federal Plan and MTR at 64976.

[311] *Id.* at 64976-77.

[312] *Id.* at 64977, 65,011.

[313] Proposed Federal Plan and MTR at 64977.

[314] Proposed Federal Plan and MTR at 64977.

[315] Proposed Federal Plan and MTR at 64977.

[316] Proposed Federal Plan and MTR at 64977.

AEE also supports EPA's proposed criteria for linkage to a Federal Plan state, with two small adjustments. First, EPA should allow trading between Federal Plan states and states that issue allowances in metric tons. EPA and states can easily convert between metric tons and short tons using a standard conversion factor.[317] Given the ease of making this conversion, it seems unnecessary to bar states from trading with each other on this ground. Second, EPA should allow trading between Federal Plan states and states with interoperable tracking systems, rather than restricting trading to states that use EPA-administered tracking systems. As long as tracking systems are interoperable, it should ensure that credits are not double-counted, while allowing states greater flexibility to use their own tracking systems.

[317] *See* U.S. Energy Information Administration, *How do I convert between short tons and metric tons?* (Dec. 2015), https://www.eia.gov/tools/faqs/faq.cfm?id=7&t=2.