

January 21, 2016

U.S. Environmental Protection Agency
Air and Radiation Docket and Information Center
Mail code: 28221T
1200 Pennsylvania Avenue, NW
Washington, DC 20460

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

Re: 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 (80 FR 64966; October 23, 2015)

To Whom It May Concern:

The Department of Environmental Protection (DEP or Department) appreciates the opportunity to submit comments on the U.S. Environmental Protection Agency's (EPA) proposed rule concerning the "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 FR 64966; October 23, 2015). It is important to note that the comments submitted by DEP represent the Department's official position on this proposal. Any comments submitted on behalf of an organization of which DEP might be a member represents the comments of that organization and not those of the Department.

General Comments

The Department applauds EPA's efforts in reducing carbon dioxide (CO₂) emissions from fossil fuel-fired electric generating units (EGUs). The proposal is likely to result in significant emission reductions from the utility power sector. The Department appreciates EPA's efforts in drafting model rules to assist the States in the preparation of State Plans. The Department urges EPA to finalize the model trading rule or rules as soon as possible, considering that the summer of 2016 projection is very close to the initial submission deadline of September 6, 2016. The Department intends to submit a State Plan prior to the September 6, 2016 deadline.

Placement of the Model Rule Under 40 CFR Part 60

The preamble to the proposed federal plan and model rules states that EPA intends "*to finalize one or both of the model trading rules by next summer so that they may be available to states as soon as possible to help inform their state plan development efforts prior to the initial submittal*

deadline of September 6, 2016, and 2 years before the states' final plan deadline of September 6, 2018" and "that they anticipate that the model rules' text could be finalized either in a new subpart or subparts of 40 CFR part 62 of title 40 of the CFR as proposed, or in a final document that is not published in the CFR." In addition, EPA states they "are drafting the model trading rule so that it can be adopted or incorporated by reference with a minimum of changes..."

The Department recommends that EPA finalize the model trading rules under 40 CFR Part 60. This approach would be consistent with how EPA has developed other emission guidelines that have model rules. For instance, the emission guidelines under 40 CFR Part 60, Subparts BBBB, DDDD, FFFF, and MMMM all have model rules under their respective subparts. Consequently, it would be appropriate for EPA to be consistent in its approach and place the model rule in this proposal, not under Part 62, but under 40 CFR Part 60, Subpart UUUU. As EPA correctly notes, many states, including Pennsylvania, incorporate Part 60 by reference. Pennsylvania incorporates Part 60 by reference in 25 Pa. Code Chapter 122. This means that if the Department decided to do so, it could use the model rule as its legal mechanism to implement the Clean Power Plan requirements under Subpart UUUU. While Pennsylvania may ultimately develop regulations that differ from the model rule, placing the model rule under Part 60 gives the Department another option when considering how to comply with the Clean Power Plan requirements.

Provide States with Allocation Flexibility

In addition, to encourage greater use of the model rules by the states, the EPA should include various allocation methods, like a menu of options, in the final model rule as opposed to the proposed model rule which is a one-size-fits-all approach. Doing so would assist states that wish to adopt the model rule from having to undergo a lengthy rulemaking process should they prefer one allocation method over another. It is for this reason that the Department urges EPA to provide measures for all allocation methods mentioned in the preamble. This includes, but is not limited to historical generation allocation, historical emissions allocation, output based allocation, allocation to load-serving entities, and auction allocation provisions.

By establishing a menu of options for the above allocation methods, it is likely that more states would use the model rule, which is EPA's preferred approach, rather than developing a state-specific rule, which EPA is discouraging. So long as a state selects one of the options within the menu, a state plan would be presumptively approvable. Moreover, by providing this optionality or flexibility in the final model rules, as it relates to allocation methods, more states are likely to submit timely final state plans and less likely to submit initial state plans with a request for an extension. For all of these reasons, DEP strongly encourages EPA to move the final model rules to Part 60 and to provide for a menu of options for allocation methods within those final model rules.

Disposition of a Modified or Reconstructed Source

40 CFR Part 60 Subpart TTTT (NSPS) is applicable to modified and reconstructed sources. Since 40 CFR Part 60 Subpart UUUU (EGs) exempts any source subject to the NSPS, existing

sources that undergo a modification or reconstruction as defined in the NSPS should be removed from the Clean Power Plan affected Electric Generating Units (EGU) list. This would liberate any allowances they are due from a state that demonstrates compliance on a mass-basis to be either used in the renewable set-aside or to be allocated to other affected EGUs. In a state that demonstrates compliance on a rate-basis, the emissions and generation of the modified or reconstructed unit would be removed from the calculation, which would make compliance more difficult. In a rate-based state, it is therefore proposed that a modified or reconstructed unit be allowed to register as an eligible resource, earning emission reduction credits (ERCs) for its generation as long as it is below the appropriate subcategory rate.

Program Linkage Issues

Part of issuing a single model trading rule would be broadening the scope of states “ready-for-interstate-trading” by providing linkages to those states based on four of the five bullets listed in the preamble. The one which should be discarded, especially in the case of a unified model rule, is the condition that the state plan must “*implement the same type of trading program as the federal plan*”. This was then qualified by stating that “*mass-based trading programs can link to mass-based trading programs only, and rate-based trading programs can link to rate-based trading programs only.*” This limitation appears to be arbitrary, considering EPA’s assertions that the mass-based and rate-based programs are equivalent and based on BSER. Also, EPA does not commit to one approach, thereby making it impossible for a state to “*implement the same type of trading program as the federal plan trading program.*”

Also, the EPA’s condition of linkage between a state plan and the federal plan being an identical compliance instrument defies the assertion that both programs are equivalent. This falls especially short when considering a simple unit conversion issue like one state issuing allowances in metric tons and another issuing allowances in short tons. For example, if State A were to issue allowances in metric tons, and an affected EGU purchased allowances from an eligible resource in State B, which issues allowances in short tons, the EGU would have to purchase two allowances to cover its first allowance (since one metric ton is 1.1 short tons). The remaining 0.9 short tons would be held in the EGUs compliance account until used up (i.e., until another nine short tons are purchased). The reverse is also true; if State A issued allowances in short tons and State B in metric tons, the EGU would purchase one allowance, with the remaining 0.1 short ton held in its account until such a time as there are nine other metric tons purchased. Then the remainders would total one short ton, which could then be used for compliance. The serial numbers of the original allowances could be used to track the remainders, until such a time as there are enough to either use up the remainder (in Case 1) or there are enough to generate a new allowance (Case 2) which would be issued an independent serial number, but be linked to the ten original allowances.

Non-affected EGUs, such as combined heat and power (CHP) units smaller than 25 MW capacity should be considered an eligible resource if they meet that definition. However, their eligibility for ERCs or allowances should be carefully considered to preserve the integrity of the program.

Market Monitoring Activities

EPA has already stated that they intend to use their existing allowance and tracking compliance system (ATCS) for both ERCs and allowances; states should be able to use the ATCS, also holding both types of accounts. By using a common system, both EPA and the states would be able to work together to monitor the market. The Department proposes that states handle credit generation, the EPA verifies the credits, and all involved agencies track credits as they are used or traded.

EPA also seeks to ensure a degree of liquidity in compliance instruments in either of the proposed trading approaches, while maintaining the stringency of the EGs. Liquidity deals with the price sensitivity of a commodity in response to the speed of the transactions involved. The Department is unsure that liquidity will have an effect of pricing, and if it does the effect should be marginal. The Department urges that EPA should be more concerned with the scarcity of compliance instruments. If ERCs or allowances are too scarce the prices would be extremely high, requiring affected EGUs to pay a high premium to comply with the rule. In addition, banking of ERCs or allowances by eligible resources should be limited by the compliance status of the affected EGUs (i.e., if there are no instruments otherwise available, and an affected EGU does not hold enough to comply, an eligible resource must sell their instruments).

Third party trading can cause distortions and price disruptions based on speculation and unfair business practices (i.e., buying ERCs or allowances to bank with no intention of allowing them to reenter the market). It could create an artificial shortage of allowances. Consequently, it should not be allowed or discouraged.

Data Submission

Much of the data that EPA requires to be submitted for compliance with any proposed model rule or federal plan is already submitted to many different agencies. For example, generation and fuel consumption data is reported to the Energy Information Administration (EIA) and emissions data is reported to the EPA and many state agencies. It should not be burdensome for affected units and eligible resources to use the reports they are submitting to these agencies to inform the Administrator as required by this rule. By using the data from other required reports, small entities should be minimally impacted by the requirements of the proposed model rules and federal plans. As most affected EGUs and eligible resources have an annual reporting requirement to other agencies, an annual reporting requirement should be maintained for this rule. The timing of the annual report should coincide with the latest of the required submissions to other agencies.

Evaluation, Measurement, & Verification

Evaluation, Measurement, and Verification (EM&V) should be a revenue quality meter or the equivalent for all generating sources. For CHP sources, steam data should also be submitted and verified using calibrated instrumentation for the calculation of useful thermal output (UTO).

The Department submits that the EM&V requirements for small renewable energy (RE) sources to meet the requirements of Pennsylvania's Alternative Energy Portfolio Standards (AEPS) should satisfy EPA's EM&V requirements, allowing those small sources to qualify as eligible resources. The participants in the AEPS would be able to participate, and the Pennsylvania Public Utilities Commission (PA PUC) as custodian of the AEPS data, could serve as the aggregator and pro-rate the sale of any ERCs generated by small RE sources based on the individuals share of generation to the total generation. For small RE sources, it should not matter what type of renewable energy is included in the aggregation. The limit of 1 MW capacity for aggregated sources should not apply to sources aggregated under the PA PUC.

Non-generation eligible resources, such as demand side energy efficiency (DSEE) should have EM&V requirements at least as stringent as for generation sources. In this regard, the Department submits that the EM&V requirements of Pennsylvania's Act 129 would enable DSEE to be included as an eligible resource. This would allow the PA PUC to verify DSEE data to the Department, who could then distribute allowances based on that data.

The Clean Energy Incentive Program

According to the EGs, the Clean Energy Incentive Program (CEIP) is an option that states can use in developing their state plans. It incentivizes the early development of wind, solar, and low income DSEE programs by awarding generation or energy savings in 2020 and 2021 with either ERCs or allocations, depending on the nature of the state plan. The CEIP source must be constructed after the date of the state plan finalization in order to qualify for the program.

The Department believes that EPA should not limit the types of sources that qualify for the CEIP, but rather include all eligible resources that meet the construction requirements with verified generation or savings in 2020 and 2021. The location of the eligible resource need not limit the resource's eligibility for the ERCs or allowances. The Department recommends that model rule should include provision to award additional ERCs or allowances to the eligible sources located in low-income communities.

Also, the Department believes that EPA should not cap the amount of ERCs or allocations that could be awarded as by doing so the EPA is in effect capping the incentive to build these desirable sources. There should be no limit to the size of the 'reserve' since the eligible projects should be awarded ERCs, not allocations. A state that participates in a mass-based trading program can easily convert the ERCs to allocations by applying the purchasing unit's subcategory rate, the NGCC subcategory rate, or the state's emissions rate target.

There seems to be a discrepancy in the nature of the CEIP between the Clean Power Plan EGs and the proposed mass-based trading rule. In the proposed rule, EPA states that the Administrator will implement the CEIP in the federal plan. It is assumed that a state could choose not to participate in the CEIP based on the EGs. However, §62.16235(e)(1) of the proposed model rule states that the CEIP set-aside for each state must contain an amount of allowances shown in Table 4 of the Subpart. The language of this section seems to imply that a

state must set those allowances aside whether they participate in the CEIP or not. The Department suggests that the revised provision should read “For each State covered under this subpart, a State that opts to participate in the Clean Energy Incentive Program must set aside an amount of allowances...”

The EPA should craft the model rule to follow the EGs and leave the CEIP as an option for a state plan. States that wish to adopt it may, while states that do not would not be penalized. By having a menu of options regarding allocation approaches and compliance determinations, states would be able to finalize state plans that are more inclusive than the partial state plan approach proposed.

Renewable Energy Sources and Energy Efficiency Programs

The Department concurs with EPA’s proposal that eligible resources such as renewable energy sources and energy efficiency programs that were constructed on or after January 1, 2013 should qualify to receive ERCs or allowances. The Department believes that renewables should include all resources as listed in the green energy and renewable energy categories of the Green Power Defined webpage (www3.epa.gov/greenpower/gpmarket). Also, as is allowed in the CEIP, DSEE programs should qualify; in any case, issuance of any compliance instrument should be limited to those sources that provide adequate EM&V demonstrations.

The Department suggests that EPA allow quarterly applications for eligible resources as it will provide structured submission dates and spread submissions throughout the year so as not to overwhelm the Administrator. The timing of the approval of an eligible resource application would determine when a unit would be eligible to receive ERCs or allowances. The Department suggests that eligible resources be allowed to enter into a compliance period at the beginning of a compliance year. In a rate-based state, this would allow it to begin generating ERCs at the beginning of the compliance year. In a mass-based state, this would allow it to earn allowances depending on the allocation method. An output based allocation would allow the eligible resource to earn allowances at the beginning of the next year. A historical generation allocation would require the eligible resource to wait until the next compliance period unless an allocation schedule different than the one proposed is used.

Also, the Department agrees with the EPA that eligible resources must abide by the designated representative provisions in 40 CFR §62.16485. This brings the same level of accountability to eligible resources, and allows prosecution for misrepresentation of data to earn ERCs or allowances to which the eligible resources would not have been entitled. This is especially important in the proposed historical generation allocation method as eligible resources are awarded based on projected generation.

The Department does not believe that ownership of an affected EGU should be a requirement for the determination of an eligible resource. Also, because of the interconnectedness of the electrical grid, limiting eligible resources geographically is unnecessary. As long as the eligible resource has a power purchase agreement (PPA) with an entity in the state, that should be enough of a linkage for it to be eligible. In fact, should an eligible resource have a PPA with

entities in several states, the eligible resource could be awarded ERCs or allowances from all of the states, as long as the total instrument awards do not exceed the total generation of the eligible resource.

The Rate-Based Model Trading Rule

Because the subcategory rates allow an ERC to be fungible across jurisdictional borders, this is the Department's preferred method in a rate-based model trading rule and federal plan. This allows ERCs to be issued to affected EGUs for their performance relative to the appropriate subcategory rate in a manner that is consistent and would allow interstate trading. ERCs should also be issued to renewables and nuclear generation that is the result of new capacity or incremental capacity uprates. The Department believes that renewables should include all resources as listed in the green energy and renewable energy categories of the Green Power Defined webpage. Also, as is allowed in the CEIP, DSEE programs should qualify for ERC issuance. In any case, ERC issuance should be limited to those sources that provide adequate EM&V demonstrations.

It is the Department's concern that the methodology for the issuance of gas-shift ERCs (GS-ERCs) may over-compensate affected NGCC. Affected NGCC units should be awarded ERCs for their generation below EPA's assumed 55% capacity threshold only if their emission rate is below the subcategory rate. If their emission rate is not below the subcategory rate an affected NGCC should be awarded ERCs for generation above the EPA's assumed 55% capacity threshold based on the SGU subcategory rate. For example, if an affected NGCC does not operate below the subcategory rate, but generates at 60% capacity, the generation above 55% can generate ERCs based on the unit's emission rate compared to the SGU subcategory rate.

Assuming an NGCC with a capacity of 100 MW, an emission rate of 925 lbs/MWh, operating at 60% capacity during the first compliance period, the GS-ERCs generated would be equal to:

$$\left(\frac{1,671 \frac{\text{lbs}}{\text{MWh}} - 925 \frac{\text{lbs}}{\text{MWh}}}{1,671 \frac{\text{lbs}}{\text{MWh}}} \right) * (100 \text{ MW} * 8760 \text{ hr} * (0.60 - 0.55)) = 19,554 \text{ ERCs}$$

Using EPA's methodology, the same unit would generate:

$$(100 \text{ MW} * 8760 \text{ hr} * 0.60) * 0.22 * \left(\frac{1,671 \frac{\text{lbs}}{\text{MWh}} - 925 \frac{\text{lbs}}{\text{MWh}}}{1,671 \frac{\text{lbs}}{\text{MWh}}} \right) = 51,622 \text{ GS-ERCs}$$

In either case, the NGCC would require:

$$\left(\frac{877 \frac{\text{lbs}}{\text{MWh}} - 925 \frac{\text{lbs}}{\text{MWh}}}{877 \frac{\text{lbs}}{\text{MWh}}} \right) * (100 \text{ MW} * 8760 \text{ hr} * 0.60) = -28,768 \text{ ERCs}$$

In a case similar to the one above, where the described NGCC has an emission rate of 825 lbs/MWh, under the Department's proposed methodology, it would be awarded:

$$\left(\left(\frac{877 \frac{\text{lbs}}{\text{MWh}} - 825 \frac{\text{lbs}}{\text{MWh}}}{877 \frac{\text{lbs}}{\text{MWh}}} \right) * (0.55) + \left(\frac{1,671 \frac{\text{lbs}}{\text{MWh}} - 825 \frac{\text{lbs}}{\text{MWh}}}{1,671 \frac{\text{lbs}}{\text{MWh}}} \right) * (0.05) \right) * (100 \text{ MW} * 8760 \text{ hr}) = 50,742 \text{ ERCs}$$

Under the EPA's methodology, it would generate:

$$\left(\frac{877 \frac{\text{lbs}}{\text{MWh}} - 825 \frac{\text{lbs}}{\text{MWh}}}{877 \frac{\text{lbs}}{\text{MWh}}} \right) * (100 \text{ MW} * 8760 \text{ hr} * 0.60) = 31,164 \text{ ERCs}$$

$$(100 \text{ MW} * 8760 \text{ hr} * 0.60) * 0.22 * \left(\frac{1,671 \frac{\text{lbs}}{\text{MWh}} - 825 \frac{\text{lbs}}{\text{MWh}}}{1,671 \frac{\text{lbs}}{\text{MWh}}} \right) = 58,542 \text{ GS - ERCs}$$

EPA's methodology generates many more ERCs than the Department's proposed method, and may result in an oversupply that results in no meaningful emissions reductions. The Department also proposes that an ERC be an ERC regardless of the reason it is issued, allowing NGCC to retire ERCs they generate for their own compliance or for the compliance of any other affected EGU. It is not necessary to issue ERCs with restrictions to maintain the integrity of the program. If the Department's methodology is used, there will not be an overabundance of ERCs, and even if a unit requires ERCs and generates ERCs due to generation above the threshold, it is unlikely they will be able to self-comply. It is more likely to be an issue under EPA's approach; however, it may balance out by reducing the number of ERCs that enter the market.

In regards to the generation of ERCs from renewable eligible resources, if that source is also a CO₂ emitter, the number of ERCs should be offset to represent those emissions. For example, a municipal solid waste (MSW)-to-energy project should only be awarded for the biogenic portion of generation that exceeds the non-biogenic portion (i.e., if 2,000,000 MWh are generated, 52% from biogenic sources and the other 48% from non-biogenic sources, the plant should be awarded 80,000 ERCs). This may be problematic for biomass eligible resources, because they do not have a non-biogenic portion to consider, however the Department has a couple of recommendations for how to handle ERC issuance to biomass eligible resources. The first recommendation is the simplest, and is just a proration on its generation (i.e., for every 2 MWh of generation it earns 1 ERC). The second is more complex, and may have broader implications, as it is based on the environmental benefit associated with the use of the biomass as fuel. For example, if 1,000 tons of agricultural waste decomposes, it will generate approximately 7,520 tons CO_{2e} of methane assuming 50% of the carbon goes to methane. Combusting the 1,000 tons of agricultural waste will generate 14,000 MMBtu of heat, which assuming a 33% efficiency generates approximately 1,350 MWh and 1,650 tons of CO_{2e} of carbon dioxide. This yields a multiplier of 0.78, and the unit would be awarded 1,053 ERCs.

The Department concurs with the EPA's described treatment of CHP, as long as this method is allowed for both affected EGUs and eligible resources. This would allow fossil-steam units that

are CHP (i.e., topping cogeneration) to count their efficiency gains due to cogeneration in their compliance. The proposed methodology appears adequate based on the Department's analysis of an actual CHP unit's data (the prorated generation was 8,986 MWh for which it would be awarded ERCs). The Department also agrees with EPA's treatment of waste-heat power (WHP) (i.e., bottoming cogeneration) units and that their generation should be counted as emissions free and therefore all eligible to be awarded ERCs.

As for new and incremental nuclear generation, the Department disagrees with EPA that such generation that originates in a mass-based state should be excluded from being awarded ERCs. As proposed, the mass-based model rule excludes nuclear generation from receiving allowances, so it should be eligible to be awarded ERCs by a rate-based state that signs a PPA for the eligible generation (i.e., generation from the new or incremental uprate capacity).

EPA has expressed concern that issuing ERCs through the CEIP could be problematic in that it could potentially overproduce ERCs since there is no pool from which to draw against future ERCs. However, the Department does not see the lack of ability to draw ERCs from the future as an issue, especially since the CEIP is intended to incentivize non-emitting generation or energy savings. Because an ERC represents 1 MWh of non-emitting generation or energy savings in the present, there is no limit to the potential of the eligible resource to generate or save energy in the future. By limiting the number of ERCs in a future period based on ERC issuance in the CEIP period, EPA would in effect be creating a cap on non-emitting generation or energy savings. While a cap on emissions is acceptable (i.e., reducing the number of future emission allowances to credit the program), capping non-emitting generation or energy savings would be counter to the intent of the EGs. Therefore, the Department recommends to EPA that ERCs be awarded based on actual eligible generation in the CEIP or the various compliance period without concern to the impact on compliance in the future.

Once a compliance period is over, the true-up period should begin based on the availability of data. Then, no later than one year after the availability of data, the true-up period should end and the compliance demonstration be submitted. A shortage of ERCs in an affected EGUs compliance account represents a unique problem related to an ERC representing generation in the present. If there are no banked ERCs available, there should be no penalty on the number of ERCs needed to comply in a future compliance period. The normal penalties for non-compliance should be in effect and an additional fine for non-compliance could be assessed based on the value ERCs during the compliance period were trading at. If there are banked ERCs available, the state or EPA could act as an arbiter between the holder of the account with banked ERCs and the non-compliant unit.

As to the 'shelf-life' of an ERC, it is the Department's belief that while an ERC represents non-emitting generation from a fixed moment in time, it should be eligible to be used in the future. The Department does not believe that there is likely to be a large amount of banking of ERCs because they will be generally scarce. However, under no circumstances should ERC borrowing be allowed, as there is no guarantee that the borrowed ERC will be generated.

The EPA proposes that a rate-based federal plan may be replaced by a state plan for a future compliance period. The Department suggests that a rate-based plan should have one-year compliance periods, as this would allow a state plan that replaces a federal plan to become effective at the beginning of the annual compliance period following its approval. This would eliminate the issue of 'double jeopardy' for affected EGUs being required to satisfy both plans.

The Mass-Based Model Trading Rule

As stated above in the Department's comments on the Rate-Based Model Trading Rule, eligible resources should include new and incremental uprate capacity for RE and nuclear generation. While this disagrees with EPA's proposed version of eligible resource under the mass-based model trading rule, it is consistent and recognizes nuclear generation's role in reducing emissions. Also, as stated above the definition of RE should include green energy and renewable energy on the Green Power Defined webpage. The current proposal limits the renewable set-aside eligibility to utility scale wind, solar, geothermal, and utility scale hydropower. DSEE should also be recognized as an eligible resource, as it is still a part of the CEIP under a mass-based plan.

EPA's proposal to limit evaluation of compliance to the multi-year compliance period is acceptable. However, states may desire to have intervening compliance requirements to ensure that affected EGUs are on track to meet their multi-year compliance obligation. Also, the multi-year compliance period may not lend itself to certain allocation methods, so EPA should be flexible in determining when to stay with a multi-year compliance period and when to have an annual compliance period.

EPA's proposal that allowances may be banked for use in any future compliance period, without restriction is acceptable to the Department so long as they are banked in the compliance account of an affected EGU or the general account of an eligible resource. Allowance borrowing under the mass-based plan could be allowed, under certain allocation methods. In a historical allocation, a unit would in effect be reducing its allocation in the future by the amount borrowed in the present. While this would make compliance in the future more difficult, it may present a suitable strategy for units that may be considered a stranded asset, delaying its retirement date until it runs out of allowances. The Department recommends that borrowing be limited to the allocations that unit is entitled to during the interim period only. Borrowing should not be allowed in an output based allocation, as similar to the issues with ERC borrowing, it would be against an unknown future.

Once a compliance period is over, the true-up period should begin based on the availability of data. Then, no later than one year after the availability of data, the true-up period should end and the compliance demonstration be submitted. An affected EGU that does not hold enough allowances in its compliance account should be assessed a penalty against its future allowances. While the Department states that allowance borrowing should be allowed as long as states cannot switch from one trading plan to the other above, the Department recommends that in any case borrowing to enforce against non-compliance be allowed. If borrowing is allowed, it should be

requested by the affected EGU prior to the compliance demonstration in order to avoid the penalty.

Units that retire during a compliance period should not be required to surrender allowances allocated to them beyond what is necessary to comply. They could then hold any remaining allowances in their compliance account to sell to other affected EGUs. However, the Department recommends that retired units should never be awarded allowances in a subsequent compliance period. The two consecutive calendar year proposal, contrary to what EPA hopes to prevent, would most likely incentivize EGUs to operate in a way that will maximize the number of allowances they would hold after retirement. Take, for instance, a unit that is awarded 2 million tons per year in the first compliance period. If the cost of compliance to continue operating is too high for that unit, it should retire. Normally, it would retire as soon as possible, and it would have 6 million tons of allowances in its compliance account, less the number needed to comply with the first year of the compliance period. However, if the same unit were to continue operations, even if it is not economical, for one year it would be awarded the allowances for the second compliance period (where it is awarded 1.8 million tons per year) as well and retire with 11.4 million tons less the number needed to comply with the first and second year of the first compliance period.

An affected EGU would most likely time its retirement to maximize the number of allowances it holds after retirement. If it were to retire during the second or third year of the first compliance period, it would be awarded six years of allowances. If it were to retire during the second or third year of the second compliance period, it would only be awarded four years of allowances. The Department predicts that many affected EGUs that see retirement as their most likely compliance option would retire by the second year of the first compliance period. Because of this, most would retire in the first compliance period, which could cause reliability issues.

This is not as much of an issue with modified or reconstructed units, as EPA proposes that a modified or reconstructed unit's allocations for a compliance period that have not been recorded would instead be placed in the renewable set-aside. The Department predicts that therefore most affected EGUs that are planning modification or reconstruction would do so at the beginning of the relevant compliance period.

In the proposal, states can establish an approach for the initial distribution of allowances that is tailored to the particular characteristics and preferences of their state. EPA states that this ability to determine the state plan's allocation method amounts to flexibility. However, if the EPA fails to detail the various allocation methods in the proposed model rule, it essentially prevents any state with a lengthy rulemaking process from adopting the model rule. It is for this reason that the Department urges EPA to provide measures for all allocation methods mentioned in the preamble. This includes, but is not limited to historical generation allocation, historical emissions allocation, output based allocation, allocation to load-serving entities, and auction provisions. By establishing the provisions for the above allocation methods, EPA also allows those options to be implemented in a federal plan. This could help guide EPA to craft a federal plan that is similar to a state plan that was not approvable by selecting the type of allocation method the state proposed. In the case that no plan was submitted by the state, EPA can either

choose an allocation method that they determine would best suit the state or default to the historical generation procedure mentioned in the proposed federal plan.

Historic Generation or Emissions Based Allocation

In this allocation approach, a state must determine which EGUs are affected EGUs under the EGs and compile a list. The state then takes the 2010, 2011, and 2012 data for the affected EGUs and determines an average generation rate for each EGU. Then the total average historic generation of the entire field of affected EGUs is calculated and is used to determine the percentage of the mass emissions cap each affected EGU will be issued. In the case an affected EGU did not have generation in one of the baseline years, that year is ignored in the average (i.e., sum 2011 and 2012 and divide by two instead of three). In the case that an affected EGU was not in existence during the baseline period, EPA proposes that the affected EGU would use a pre-determined capacity factor to calculate its "historic" generation.

For the historic emissions based allocation, the allocation determination could either be a reduction from the average historic emissions over the same baseline period (i.e., a 30% reduction from the baseline), or on a percentage basis of total average historic emissions calculated in the same manner as the percentage in the historic generation allocation method. If this type of allocation strategy is included in the model rule, EPA must be sure to detail how an affected EGU that was not in existence during the baseline period would be treated.

In either case, EPA's modeling of the emissions guidelines suggests that without provisions to address the transfer of generation to new sources, the Clean Power Plan most likely would not achieve its CO₂ emissions reduction goals in a mass-based plan. The transfer of generation to new sources is referred to as leakage, and the EPA requires that it be addressed in the federal plan, the model rule, or any state plan that is submitted to comply with the emission guidelines. One method to address leakage under a historical allocation is to include new sources under an expanded mass cap, as proposed in the emission guidelines. Doing so, however, exposes new sources to two standards.

EPA's second proposed method to address leakage is to include set aside allowances to incentivize generation for existing sources under a historical allocation. There are two set-asides to address leakage, the renewable set-aside and the output-based set-aside. In the renewable set-aside, eligible resources are awarded a percentage of the set-aside based upon the percentage their projected generation is of the total renewable projected generation. In the output-based set-aside, existing NGCC are awarded additional allocations based on a unit's average net generation in the previous compliance period over 50% multiplied by the NSPS NGCC emission rate of 1,030 lbs/MWh-net. The output-based set-aside is not a part of the first compliance period because of the eligibility requirements and the dependence on the unit's average net generation. It also proposes to use the net summer capacity for the determination of the 50% generation; the Department maintains that nameplate capacity will suffice for this calculation with minimal impact to the proposed model rule.

The Department disagrees with the EPA that the proposed requirements for renewable recognition through the described allocation method are robust in any sense. The procedures outlined seem to imply that allowances could be awarded to a renewable project before said project is actually constructed. In fact, this appears to be the basis for the EPA's exclusion of new and incremental nuclear from the proposed mass-based model rule due to their "unique costs and development timelines." It would be a grave error on the EPA's part to allow this methodology to persist as some renewable projects are never constructed. Also, awarding allocations based on projected generation as a percentage of a total pool from a set-aside is much less stringent than the requirements that exist for ERC issuance. In the proposed rate-based model rule, an ERC is only issued with proof of generation, while in the proposed mass-based model rule, an allowance is issued on the premise that generation may occur at the level projected.

To this end, a cap should be established on the number of allowances each eligible resource can receive from the renewable set-aside. The Department recommends that the model rule should establish this cap based on either historical performance if the unit existed prior to the current compliance period or limiting the allocation to the product of the unit's projected generation and the state's rate goal or NGCC subcategory rate.

EPA also seeks comment on the inclusion of other types of generation in the output-based set-aside. While this may lead to more emissions than modeled under the set-aside including only existing NGCC, it would help to reduce leakage. It would also be acceptable to the Department to include renewables in the output based allocation system, using either the state emission rate goal or the NGCC subcategory rate as the allocation multiplier. In fact, this is preferable to the proposed projected generation approach described in the renewable set-aside as it removes the issue of addressing projects that fall short of their projections, and provides a limit on the number of allowances they are eligible to receive. By moving away from the projected generation approach to the output based allocation approach, the "unique costs and development timelines" of new and incremental nuclear would also no longer be an issue.

While a set-aside does provide bonus allocations to certain units to incentivize generation that will serve to reduce emissions and fulfill policy goals, it may or may not actually address leakage to new sources. Under the proposed renewable set-aside methodology, renewable projects are awarded allocations based on projected generation. If generation falls short, leakage to new sources may still occur. Also, in the case there is only one project that applies for allowances through the renewable set aside, the total generation of that project may not meet the required demand alone and still allow leakage. The output based set-aside suffers some of the same limitations, although it is at least based on actual generation.

In all, the set-asides in the proposed mass-based model rule for Pennsylvania represent nearly 10% of the total cap. The Department recommends that the final model rule should set the minimum set-asides to address the leakage and allow individual states to choose the sizes of individual set-asides that match their compliance strategy and policy goals. For instance, if a state wanted to incentivize renewable energy, they could issue any portion of the set aside to renewables up to and including the entire 10%. If a state preferred to incentivize energy

efficiency, they could issue a portion to DSEE projects. A state with at risk nuclear units, or that wished to incentivize new nuclear units, or nuclear capacity uprates could issue a portion of their set-aside to that end. All of these policy goals and compliance strategies would be dependent on proper EM&V techniques being observed.

Output Based Allocation

The Department recommends that EPA include provisions to issue allocations to affected EGUs based on the appropriate subcategory emission rate and the unit's current generation. This removes some of the issues found in the historical allocation approaches, such as how to allocate to existing units that did not exist during the baseline. It also removes the issues regarding leakage, as it will incent generation to a degree. In fact, modeling results indicate an output based allocation incentivized generation from existing NGCC units.

The output based allocation approach should be resolved on an annual basis, similar to the proposed rate-based model rule. This would allow eligible resources to enter into the program at the beginning of the next compliance year, allowing them to earn allowances as soon as possible. It also allows affected EGUs to plan for the next compliance year by determining how many allowances they will be issued based on their projected generation and how many additional allowances they will need to purchase to meet their compliance obligation. The affected EGU will then be able to estimate the cost of the additional allowances when placing their bid into a competitive energy market.

An output based allocation approach would also correct some of the problems the Department sees with the EPA's proposed methodology for allocating to eligible resources from the renewable set-aside. By using an output based allocation approach, all of the issues EPA had to address such as over projection, unfulfilled generation, and generation deficits, are non-issues. Additionally, since EM&V is required for verification to address the above issues, it could instead be used to determine the output based allocation.

The output based allocation approach also resolves some of the problems associated with retiring affected EGUs. Because there is no incentive to extend operations to collect allocations from a future compliance period, affected EGUs would be incentivized to retire when the economics dictate. Since output based allocations are awarded post-fact based on actual output, affected EGUs would still be awarded allocations for their generation in their final year. The Department recommends the use of subcategory rates for allocations whether using a historical generation based procedure or output based procedure.

Allocation to Load-Serving Entities

The Department recommends that the final model rule should include optional provisions for allocating allowances to Load-Serving Entities (LSE). Some of those provisions should include the amount of allowances permitted to be given to LSEs, how the allowances are awarded, and the disposition of any profits from the sale of the allocations. The Department recommends that no more than 5% of the total mass cap for a state should be set-aside for LSEs, and that they

should be distributed based on either the customer base, or on realized energy efficiency measures such as found in Pennsylvania's Act 129. The Department also recommends that the majority of the income from the sale of allowances allocated to LSEs should be used to offset customer costs due to the projected increase in electricity price. The fact that it is recommended as a set-aside, lends itself to the historical allocation method where EPA determines the total size of the set-aside that offsets leakage and the states determine the disposition of the set-aside allowances.

The Hybrid Model Trading Rule

Part of issuing a single model trading rule would be broadening the scope of states "ready-for-interstate-trading" by providing linkages to those states based on four of the five bullets listed in the preamble. The one which should be discarded, especially in the case of a unified model rule, is the condition that the state plan must *"implement the same type of trading program as the federal plan"*. This was then qualified by stating that *"mass-based trading programs can link to mass-based trading programs only, and rate-based trading programs can link to rate-based trading programs only."* This limitation appears to be arbitrary, considering EPA's assertions that the mass-based and rate-based programs are equivalent and based on BSER. Also, EPA does not commit to one approach, thereby making it impossible for a state to *"implement the same type of trading program as the federal plan trading program."*

Also, the Department urges the EPA to finalize a single model trading rule that incorporates aspects of both the rate-based and mass-based trading plans with several options for compliance demonstration and allocation distribution. Doing so would allow all states that adopt portions of the model rule or that are assigned a federal plan based on the model rule to participate in a single trading program. This would provide the federal plan the maximum level of compatibility and flexibility with all state plans. As currently proposed, the mass-based model trading rule and the proposed federal plan focus only on historical allocation distribution which limits the flexibility available to the states that may seek to incorporate the rule by reference. Should EPA decide not to unify the proposed model rules, EPA should at a minimum provide multiple allocation options in the mass-based trading rule. The Department also urges EPA to finalize the model trading rule or rules as soon as possible, considering that the summer of 2016 projection is very close to the initial submission deadline of September 6, 2016.

To support the suggestion that EPA should finalize a single model trading rule, the Department has done an equivalency analysis of the rate-based plan and the mass-based plan (see Attachment A- Equivalency). The rate-based plan and the mass-based plan are identical if a purchased ERC is awarded at the subcategory rate of the unit that purchases the ERC (i.e., it is awarded mass based on the SGU subcategory rate if purchased by an SGU). A purchased ERC that is banked and used for compliance in a future year should be awarded the subcategory rate of the year it is used for compliance, not the rate of its vintage.

If all eligible resources are awarded ERCs, based on the EPA's definition of an ERC being one MWh of non-emitting generation, the equivalency mechanism to allow trading between states that demonstrate compliance on a mass-basis and states that demonstrate compliance on a rate-

basis is the ERC purchaser's subcategory rate. This truly establishes a national trading program as long as all non-emitting generation is awarded ERCs, regardless of a state's compliance strategy. In addition, by requiring non-emitting sources to be awarded ERCs, the EPA's concerns about eligible resources in mass-based states being awarded twice for their generation are addressed.

The Department suggests that the key elements to craft a unified model rule exist in the current proposed model trading rules and the EGs. By unifying the rules into a single rule, a state could choose either approach to demonstrate compliance to the EPA while requiring their affected EGUs demonstrate compliance to the state by incorporating the provisions they choose from the menu of options in the unified rule.

For example, State A prefers to demonstrate compliance to the EPA on a rate-basis, as this does not subject them to the mass cap or to the leakage issues in the mass-based plan. However, the affected EGUs in State A have expressed a desire to use mass allocations for accounting because of the simplicity of demonstrating compliance. State A could then select the rate-based compliance demonstration provisions, an allocation methodology that is based on the subcategory rate, and allow eligible resources to participate by awarding them ERCs based on their generation. State A would be linked to all other states through the model rule for trade, and the affected EGUs in the state would be able to purchase ERCs from eligible resources in their state, ERCs for sources in a rate-based state, or allocations from a mass-based state. Any ERCs purchased by an affected unit in State A would be surrendered to the state and placed in the state's compliance account and then the equivalent mass, based on the subcategory rate would be awarded from the state. State A would then demonstrate compliance to the EPA by totaling the emissions from affected EGUs, subtracting the imported mass allowances from the total, and dividing by the sum of the total generation and the surrendered ERCs.

Conclusion

The final model rule should be self-implementable. Instead of placing the model rule in 40 CFR Part 62, it should be finalized in 40 CFR Part 60. The model rule should be crafted in such a way that States such as Pennsylvania would have the option to incorporate the 40 CFR Part 60 requirements by reference as part of a State Plan that implements the provisions of the model rule. To this end, the EPA should include various allocation methods and compliance mechanisms in the final model rule to provide States additional flexibility. For this reason, the Department urges EPA to provide measures for all allocation methods mentioned in the preamble in the final model rule. This includes, but is not limited to historical generation allocation, historical emissions allocation, output based allocation, allocation to load-serving entities, and auction provisions. By establishing the provisions for the above allocation methods, EPA increases the chances that more states will use the model rule as a mechanism in complying with the Clean Power Plan requirements.

January 21, 2016

Thank you for the opportunity to comment on the proposed model rule and federal plan. Should you have questions or need additional information, please contact Patrick McDonnell, Director, Office of Policy, by e-mail at pmcdonnell@pa.gov or by telephone at 717.783.8727.

Sincerely,

A handwritten signature in dark ink, appearing to read "John Quigley". The signature is fluid and cursive, with the first name "John" and last name "Quigley" clearly distinguishable.

John Quigley
Secretary

Attachment A Equivalency Calculation

A tale of two generators in the first compliance period:

Generator A: Fossil-steam generating unit; 1,500 MW Capacity; 45% capacity factor; 2,200 lb/MWh emission rate; 11% Auxilliary Load

Generator B: Existing NGCC; 900 MW Capacity; 60% capacity factor; 950 lb/MWh emission rate; 7% Auxilliary Load

1,534	SGU Interim Average Rate
831	NGCC Interim Average Rate
1,260	Pennsylvania State Goal Rate

In a Rate-Based State: Where negative numbers mean a unit must purchase ERCs

	Capacity	Capacity Factor	Hours	Gross Generation	Auxilliary Load	Net Generation	Emission Rate	Subcategory Rate	ERCs Required
Generator A	1,500	45%	8,760	5,913,000	11%	5,262,570	2,200	1,671	-1,666,008
Generator B	900	60%	8,760	4,730,400	7%	4,399,272	950	877	-366,188

In a Mass-Based State with OBA (Case 1 Where ERC = NGCC Subcategory Rate): This Penalizes SGU by Requiring Them to Purchase Roughly Twice as Many ERCs

	Capacity	Capacity Factor	Hours	Gross Generation	Auxilliary Load	Net Generation	Emission Rate	CO2 Emissions	Subcategory Rate	Allowances Issued	Allowances Needed	ERCs Required
Generator A	1,500	45%	8,760	5,913,000	11%	5,262,570	2,200	5,788,827	1,671	4,396,877	1,391,950	3,174,344
Generator B	900	60%	8,760	4,730,400	7%	4,399,272	950	2,089,654	877	1,929,081	160,573	366,188

In a Mass-Based State with OBA (Case 2 Where ERC = Unit Subcategory Rate): This is Identical to the Rate-Based Case Above

	Capacity	Capacity Factor	Hours	Gross Generation	Auxilliary Load	Net Generation	Emission Rate	CO2 Emissions	Subcategory Rate	Allowances Issued	Allowances Needed	ERCs Required
Generator A	1,500	45%	8,760	5,913,000	11%	5,262,570	2,200	5,788,827	1,671	4,396,877	1,391,950	1,666,008
Generator B	900	60%	8,760	4,730,400	7%	4,399,272	950	2,089,654	877	1,929,081	160,573	366,188

In a Mass-Based State with OBA (Case 3 Where ERC = State Goal Rate): This Penalizes SGU, But Not as Harshly as in Case 1. NGCC are Benefitted.

	Capacity	Capacity Factor	Hours	Gross Generation	Auxilliary Load	Net Generation	Emission Rate	CO2 Emissions	Subcategory Rate	Allowances Issued	Allowances Needed	ERCs Required
Generator A	1,500	45%	8,760	5,913,000	11%	5,262,570	2,200	5,788,827	1,671	4,396,877	1,391,950	2,209,444
Generator B	900	60%	8,760	4,730,400	7%	4,399,272	950	2,089,654	877	1,929,081	160,573	254,878