Environmental Markets Association Comments

EPA Proposed Rule Section 111(d) Clean Air Act Amendments
40 CFR Part 60: Carbon Pollution Emission Guidelines for Existing Stationary Sources
Standards of Performance for Existing Sources-Electric Utility Generating Units

Supporting the Prospect for Converting to a Mass-based Program to Comply with Sec. 111(d) Guidelines

Position summary: The Environmental Markets Association has always strongly supported the use of cap and trade programs as the most environmentally-protective, cost-effective, and technologically-innovative policy approach to limit emissions[1]. We write in support of the efforts of the U.S. Environmental Protection Agency (EPA) to produce guidelines which provide the broadest possible flexibility to states to choose to comply with the proposed Section 111(d) guidelines[2] through the use of mass-based cap-and-trade programs. We are concerned that EPA's policies provide the maximum flexibility needed to underwrite adoption of mass-based programs, and that any regulatory guidance, (including technical support materials) be easily understood, readily adoptable, and supportive of mass-based programs, without being prescriptive.

Recommendations: To that end, we recommend that EPA augment the current guidance[3] it has offered on mass-based conversion to at a minimum include the following:

1. in-depth discussion of the attributes of mass-based vs. rate-based approaches to implementing carbon emissions standards, including side-by-side comparison as supported by the economic literature;
2. a regulatory impact analysis including detailed, realistic modeling of scenarios for the of mass-based vs. rate-based approaches given the actual configuration of power markets faced with state-by-state implementation 111(d);
3. a simplified step-by-step re-calculation for a sample jurisdiction [4]for different types[5] of mass-based budgets, with further explanation for how projections from electric sector models may be used in place of inputs from the goal computation calculation.

In order to support these efforts, we offer the following comments and documentary materials for your consideration as potential guidance on the conversion to mass-based program for compliance with Section 111(d) requirements.

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[1] see Appendix 1: EMA's "Best Practice Principles for Market-based Solutions" (Oct. 12, 2009) also at: *http://www.emahq.org/news-resources/principles*

[2] *Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units; 40 CFR Part 60 Proposed Rule* (June 18, 2014)
https://www.federalregister.gov/articles/2014/06/18/2014-13726/carbon-pollution-emission-guidelines-for-existing-stationary-sources-electric-utility-generating

[3] "Translation of the Clean Power Plan Emission Rate-Based CO_2 Goals To Mass-Based Equivalents "
http://www2.epa.gov/sites/production/files/2014-11/documents/20141106tsd-rate-to-mass.pdf

[4] replicating the step-by-step approach EPA took for Ohio in its Goal Computation technical support document

[5] including EPA's simplified calculation-based approaches for 1) "existing sources" and 2) "existing and new sources".

As a first step, to address to underscore the fundamental merits of the two approaches, EPA should provide a clear discussion of the benefits and costs of the use of mass-based emissions cap vs. a rate-based standard, including side-by-side comparison as summarized in Figure 1 below.

1. Comparison of rate-based vs. mass-based approaches to emission limits

In endeavoring to comply with the proposed Section 111(d) guidelines, states can select a combination of methods, including not just enforceable reduction requirements on affected sources but also a range of other types of programs:

1. CO_2 intensity limits (rate-based standard) implemented through portfolio approach covering a collection of programs, potentially including mandated portfolio standards for energy efficiency and renewable generation (such as renewable portfolio standards);

2. CO_2 intensity limits (rate-based standard) implemented through flexibility mechanisms such as a tradable performance standard, which among other things will necessitate development of method to credit energy efficiency and renewable generation, or

3. CO_2 emissions limit (mass-based standard) implemented through cap & trade, either by joining existing programs (such as RGGI and California's AB 32) or by creating new regional or state cap-and-trade markets.

The first critical decision that must be addressed is the level of responsibility for compliance, i.e., whether the utilities bear sole responsibility for compliance with 111(d) standards, or if responsibility will be shared across a broader range of affected entities. The state's approach is likely to vary depending on the status of restructuring in each state. For example the type of regulatory structure in place will influence the selection of utility- or state-driven approaches. A state-driven approach is more likely to be applied in states with a restructured electricity sector, while a utility-driven approach is better suited for a state with vertically integrated utilities[6] regulated by state public utilities commissions.

The next critical decision to make is whether to take advantage of the potential economies available through multi-state compliance, which may be accomplished for either rate-based or mass-based implementation. A significant component of the attractiveness of the choice of rate-based vs. mass-based standards for states will be their perceived adaptation to a flexibility mechanism (whether a tradable performance standard or cap-and-trade) in either a single- or multi-state context.

[6] A Southeastern Snapshot: EPA's Clean Power Plan & Section 111(d) of the Clean Air Act, Southeast Energy Efficiency Alliance (Oct. 2014) *http://www.seealliance.org/wp-content/uploads/111d-Fact-Sheet-FINAL.pdf pg. 8*

FIGURE 1: Side-by-side Comparison- Use of flexibility mechanisms with intensity limit *(rate-based standard)* **vs. emission caps** *(mass-based standard)*

	CO_2 intensity limit *(rate-based std)*	**CO_2 emission cap** *(mass-based std)*
Precedent for trading	limited cases	well-established
Ease of 111(d) trading program design	more complex	less complex, more clear-cut
Environmental certainty	no firm limit on emissions	cap = upper-bound on emissions
Economic certainty	rate limit accommodates growth	no accommodation for growth
Electricity price impact	rate trading credits cleaner units	full cost of CO_2 bid into price
Electricity production impact	rate trading =output subsidy	higher electricity prices cut output

First, when it comes to the precedent established for emissions trading, rate-based programs suffer from a lack of experience, with few examples to cite (EPA's lead trading program being the most prominent[7].) Such a lack of familiarity within the trading community can be a hindrance to the early acceptance and eventual adoption of programs with tradable performance standards. On the other hand, mass-based programs were designed for emissions trading, and have clearly established performance records. Despite their recent legal challenges, the acknowledged success of the trading in these markets (Title IV/Title I, RGGI, AB 32, etc.) makes the mass-based option a logical candidate for consideration by many states.

Next, another disadvantage for rate-based implementation is that (as discussed above) these tradable performance standard (rate-based) programs require mechanisms to credit energy efficiency and renewable generation. Though the crediting mechanism can be created within a particular state to satisfy its requirements, the necessary "evaluation, monitoring, and verification (EM&V) programs can be resource intensive and air pollution control agencies may not have the appropriate staffing or

[7] Opportunities for Flexibility and Cost Savings within EPA's Greenhouse Gas Rules, Resources for the Future D. Burtraw, A. Fraas, S. Grauz, J. Linn, K. Palmer, & N. Richardson (July 2011) *http://www.rff.org/RFF/Documents/RFF-Burtraw.etal_workshop%20summary.pdf pg. 1 footnote 2*

expertise to certify energy efficiency reduction credits[8]." Furthermore, for multi-state rate trading programs the handling of these special reduction credits must then be coordinated to ensure consistent treatment. On the other hand, for mass-based programs there is no such need, as "investments in these alternative resources are accounted for under a state budget approach by lowering overall emissions, making a special crediting system unnecessary.[9]"

Then from a policy perspective, one of the advantages of mass-based cap and trade programs is "the environmental certainty that results from limiting total allowable emissions.[10]" On the contrary, for a rate-based program there is the risk that if economic growth rate exceeds rate of the targeted carbon reduction in carbon intensity, we would experience lower than expected CO_2 reductions. Conversely, for a rate-based program, a rate limit accommodates economic growth. So we have greater economic certainty when emissions and electricity demand growth are highly correlated.

Thus on balance, from our perspective, for states that are seeking to maximize their flexibility and ensure the most economic compliance outcomes, mass-based programs represent a well-established, easier to implement, and environmentally-certain approach.

2. Need for Extensive and Realistic Modeling of Mass- vs. Rate-Based Scenarios for Actual Configuration of Power Markets

EPA's extraordinary outreach during the development of the Section 111(d) proposal is a testament to its recognition of the need for extensive cooperation and information-sharing between the state and federal government bodies involved and those affected by the rule. Given the ambitious nature of the changes proposed for the electric sector it is important that the Agency maintain and even accelerate that maximal information-sharing role in development of the final rule.

One key area in which additional information is required is in how carbon limits would be imposed by states (or groups of states) given the complex and dynamic structures of current U.S. power markets. The dominant factors in wholesale power markets are the pricing practices of the independent system operators (ISOs) and regional transmission operators (RTOs), superimposed on the patchwork rate regulatory structure of different states, particularly in the Eastern U.S. One of the obstacles hindering the ability to consider the opportunity for multi-state cooperation was the lack of reliable information on potential economies in carbon reduction potential available in neighboring states or regions.

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[8] Letter to Regina McCarthy, Administrator, U.S. EPA. From the National Association of Clean Air Agencies. August 21, 2013 *http://airweb.timberlakepublishing.com/rc_files/5537/Principles_letter_to_EPA-final_Letterhead.pdf*

[9] Structuring Power Plant Emissions Standards Under Section 111(d) of the Clean Air Act, M.J. Bradley (Oct 2013) *http://www.mjbradley.com/sites/default/files/Options%20for%20Regulating%20Power%20Plants%20Under%20Section%20111%20Final.pdf* pg. 19

[10] *ibid .,* M.J. Bradley (Oct 2013) pg. 19

Such an effort requires scenario modeling of power markets of the sort EPA itself undertakes in its own analysis of proposed regulations using such tools as the Integrated Planning Model. The scenarios released in the regulatory impact analysis (RIA) which accompanied the Section 111(d) proposed guidelines[11] provided a useful set of conceptual bounding cases for initial consideration of the rule. While not considering the particular approach taken by a given jurisdiction, (whether mass-based or rate-based), the initial IPM scenarios did produce carbon price estimates[12]. Among the most common characterizations of the RIA results was the identification of high cost of CO_2 compliance states (such as West Virginia) which would potentially benefit from multi-state cooperation.

However, the generalized formulation of the initial bounding IPM scenarios does not lend itself to the kind of detailed consideration of alternatives needed by states to make practical decisions regarding implementation strategies. For example, states do not have any indication as to what would happen if states engaged in strategic behavior, e.g., what would regional carbon prices be if only the relatively higher cost entities agreed to engage in multi-state markets, while relatively lower cost entities planned on "go-it-alone" state-specific compliance plans?

Even absent strategic behavior, those states considering cooperative approaches to Section 111(d) compliance planning must have a realistic baseline against which to gauge the effect of their proposed actions. One clear dilemma is endeavoring to understand how a state which participates in more than one ISO/RTO plans for implementation when it might face different carbon price signals imposed within its own jurisdiction.

Our preliminary consideration of these issues suggests to us that a mass-based approach can have advantages in addressing such real-world implementation issues in Section 111(d) compliance. In the case of strategic behavior by states, the fact that mass-based approaches are more straightforward in design (e.g., no need for special crediting of renewables and energy efficiency programs) suggests that they are likely to less susceptible to such strategic maneuvers than rate-based approaches. Furthermore, as the RGGI precedent suggests, mass-based programs have already demonstrated themselves to be amenable to operating in a multiple ISO environment.

3. Need for revised step-by-step re-calculation of mass-based budgets/discussion on use of model-based generation results

Finally while we appreciate the added clarity provided in the revised Technical Support Document (TSD)[13] on how to convert the rate-based standards proposed in the Section 111(d) guidelines into mass-based budgets, we would urge EPA to take two additional steps in the final rule: 1) provide a step-by-step re-calculation for a sample jurisdiction for different types of mass-based budgets, and 2)

[11] including the Option 1 Regional and Option 1 State IPM simulation result sets
[12] reflected in shadow price for the CO2 constraint in each of the modeled jurisdictions.
[13] Translation of the Clean Power Plan Emission Rate-Based CO_2 Goals To Mass-Based Equivalents " *http://www2.epa.gov/sites/production/files/2014-11/documents/20141106tsd-rate-to-mass.pdf*

offer further explanation for how projections from electric sector models may be used in place of inputs from the goal computation calculation.

We salute the EPA's inclusion of a complete dataset[14] to support the two examples of conversion to a mass-based budget for the rate-based standards included in the proposed Section 111(d) guidelines. For clarity of exposition, we urge that in the final rule EPA (as it did in the original goal computation technical support document for the state of Ohio) provide a written step-by-step deconstruction of the conversion process, culminating in the state mass-based budgets. Such a demonstration would eliminate the need to trace development of the components of the building blocks through the formulas in each cell of the accompanying spreadsheet.

EPA elected to use a "calculation-based" approach to mass-based conversion in the revised TSD which relies on the data used in computing the building blocks components of the final state goals. We sympathize with EPA's concern not to tie the hands of the states in planning for mass-based programs by being overly prescriptive here. However, we believe that EPA should provide general guidance as to how forecast information could be used to generate mass-based budgets. As one plausible guideline which could improve the reliability and consistency of CO_2 budgets generated using forecast information, EPA should recommend that the states choose to rely on forecast models which are most commonly relied upon to produce planning studies in their region.

We would welcome the chance to further discuss any of these points with Agency personnel as you proceed toward development of the final Section 111(d) rule.

[14] Rate_to_mass_translation.xls

APPENDIX 1: Excerpts from Best Practice Principles for Market-Based Principles

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http://www.emahq.org/news-resources/principles

EMA members have decades of extensive, first-hand experience with cap-and-trade initiatives, including the Clean Air Act's groundbreaking 1990 acid rain program that has decreased sulfur dioxide (SO2) emissions by 52% from 1990 levels and abatement costs reduced to an estimated 43%- 55% due to the flexibility inherent in trading. The price signals created by that U.S. initiative have spurred technological innovations to optimize both environmental and economic efficiencies. Its overwhelming success makes EMA confident that a GHG cap-and-trade program will similarly ensure that GHG emissions will fall, unleash market forces to settle on the most cost-effective means to reduce GHG emissions, and precipitate a revolution of innovation in energy efficiency and GHG emission reduction technologies.

EMA endorses the following principles in support of a GHG cap-and-trade program.

1) Market based cost containment

Economic analyses decisively demonstrate the importance of credible GHG offsets in modulating and containing the cost of complying with a federal GHG cap. EMA supports the goal of attaching an effective market-driven price on GHG emissions so as to encourage innovation and emission reductions, while at the same time making available a sufficient number of domestic and international offset credits to temper the volatility and cost of GHG allowances in a U.S. carbon market.

2) Market oversight and regulation

EMA supports appropriate regulation and oversight of environmental markets designed to maximizing the ability of companies to manage their risks while minimizing systemic risk. Appropriate regulation and oversight should include measures to encourage transparency and broad participation, while guarding against fraud and manipulation. Such measures may include provision of centralized clearing mechanisms for standardized contracts, as well as additional reporting requirements for non-standard agreements.

3) Transparent accounting and measurement systems to provide accurate price discovery

Market design infrastructures have an essential and significant impact on the effectiveness and efficiency of every environmental market. EMA promotes market design infrastructures that create reliable, accurate and publicly available price signals capable of facilitating market or auction objectives to channel the allowance or offset units to the participants who most highly value them. Design components should ensure that all participants have both an incentive and interest to ensure that efficient price discovery occurs and is revealed to the market in a timely and transparent manner.

4) Economically and scientifically driven targets

The stringency of GHG emission reduction targets should reflect equilibrium between the economic costs of inaction and the economic costs of action, with both sets of costs informed by the latest and most sophisticated scientific and economic evidence and technological development. EMA supports the goal of using the best scientific evidence to set GHG emission reduction targets at levels no more stringent than necessary to avoid preventable economic harm from high GHG levels.

5) Clear rules with long-term and consistent policy signals

Long-term regulatory and policy certainty will allow a robust market-based system to evolve with price discovery and liquidity. Constantly changing rules creates uncertainty and stifles market development. EMA supports legislative and rulemaking efforts to establish a complete, defined and transparent market regime for the long term. Moreover, EMA also promotes the inclusion of experienced market participants at all stages of the development process. Concerted stakeholder engagement and consultation will have a dramatic impact on the ultimate strength and vibrancy of the market.

6) Driving American innovation through a price on carbon

The next great global economic expansion will be an international race for sustainable energy, low carbon efficiencies, and technological invention. American competitiveness in this race will be determined by policies that put a market-based price on carbon emissions and other environmental attributes. EMA supports federal cap-and-trade legislation as the best mechanism to provide that price signal at the lowest cost to the consumer. An effective federal program will attract capital and harness the power of American enterprise to lead the world toward GHG emission reduction innovation and sustainability.

7) Recognition for early action

EMA supports maximum recognition of efforts undertaken by entities to reduce their carbon footprint prior to enactment of federal cap-and-trade legislation, provided proper documentation of such "early action" is required and observed. Early action should be rewarded with allocation of fully fungible offsets or allowances. Moreover, state and regional programs should be integrated into the federal program and recognized for early action.

8) Environmental integrity with sensible tradeoffs between precision and cost

The ability to certify that a GHG emissions reduction is real and additional is critical to underwriting the quality of an emission offset offered for sale. At the same time, there are significant up-front costs to development of procedures to certify emission reductions which can serve as an obstacle to a fully functioning market.

9) Harmonize standards with international and existing domestic program linkages

From an ideal carbon market perspective, one ton of GHG emissions should be indistinguishable from, and tradable with, any other ton. But no unitary carbon market exists. Fungibility relies on

policy and regulatory harmonization of relevant carbon standards, metrics, and methodologies. EMA therefore supports all policymaking efforts to facilitate or engender seamless regulatory infrastructures between national and international market regimes. Broad inter-market cooperation will dramatically enhance liquidity and reduce overall market costs.

10) Encourage market liquidity and broad market participation

EMA supports broad participation in environmental markets, since a competitive market containing a large number of buyers and sellers 1) reduces liquidity risk and 2) ensures that no one entity can influence the market. Any regulation that could potentially increase the cost for participants should be carefully evaluated as to its impact on market liquidity. Furthermore, EMA does not support efforts to limit participation in environmental trading markets or allowance auctions to only those confronted with compliance issues.

11) System level fungibility and temporal bankability

EMA supports maximizing banking and borrowing of emissions allowance and offsets based on clear and auditable rules. Banking results in environmental reductions earlier than expected as well as demonstrable cost savings. The inability to carry-forward allowances can act as an added mitigation mechanism against market price volatility.