HARVARD LAW SCHOOL
Environmental Law Program
POLICY INITIATIVE

January 21, 2016

The Honorable Regina A. McCarthy
U.S. Environmental Protection Agency
William Jefferson Clinton Building
1200 Pennsylvania Avenue, N.W.
Mail Code 1101A
Washington, D.C. 20460

Re: Comments in Docket ID No. EPA-HQ-OAR-2015-0199

The Harvard Environmental Policy Initiative is pleased to submit the following comments on the Clean Power Plan (CPP) Federal Plan Requirements and Model Trading Rules. This rulemaking gives EPA an opportunity to inform state planning efforts and facilitate efficient and transparent compliance systems for affected electric generating units (EGUs). Our comments focus on aspects of the proposal that will shape the design of well-functioning trading markets. To develop these comments, we listened to state and utility officials, and consulted with electricity and pollution market design experts from academia, non-profits and the private sector.[1]

In summary, we urge EPA to:

1. Choose a mass-based emission budget trading program as the Federal Plan;
2. Enable and encourage automatic "linkage" between all mass-based plans, and between rate-based plans applying the subcategory-specific performance rates;
3. Retain the proposal's flexibility for states subject to a Federal Plan to submit partial plans for allocating allowances;
4. Allow states submitting a partial plan to bring new sources under the cap;
5. Include a robust look-back and adjustment mechanism for the set-aside allowances in the Federal Plan and the Model Trading Rule, and distribute the output-based allocation (OBA) allowances to new NGCCs before the first compliance period;
6. Ensure that allocations to retired units do not delay retirement or create a windfall for companies with retired units; and
7. Set up market mechanisms sufficiently in advance to enable and motivate early market activity.

[1] This group includes: Paul Allen, Senior Vice President, MJ Bradley & Associates; Laurie Burt, Laurie Burt LLC and former Commissioner of the Massachusetts Department of Environmental Protection (MassDEP); Jennifer Macedonia, Principal, JLM Environmental Consulting; and, Robert Stavins, Albert Pratt Professor of Business and Government, John F. Kennedy School of Government, Harvard University. These comments are not intended to reflect the recommendations of any individual listed.

These recommendations are based on three propositions. First, mass-based plans are preferable because they enable the creation of "compliance regimes that mirror the interconnected operation of the electricity system" (80 Fed. Reg. 64,732). The fungibility of emission allowances is consistent with the "transactional nature of the industry" (80 Fed. Reg. 64,733). Mass-based programs have been used for more than two decades to reduce pollution from this sector.

Second, broader allowance markets will minimize abatement costs, provide greater liquidity, and reduce the ability for an entity to exert market power. EPA should therefore enable and encourage trading between EGUs under mass-based Federal Plans and EGUs under any mass-based state plan. EPA should also provide the option for states to submit partial plans that regulate new EGUs even when a state's existing EGUs are subject to a Federal Plan. Covering additional EGUs in the program is consistent with the final Clean Power Plan emission guidelines (EGs) and the interconnected functioning of the power sector, and will reduce opportunities for emissions leakage.

Third, market activity will generate meaningful price signals and help the power sector make more informed long-term planning decisions. Therefore, EPA should look for opportunities to motivate trading early in the program. We recommend that if EPA finalizes OBA to mitigate emissions leakage to new sources, it should provide the OBA before the first compliance period. We also urge EPA to finalize the tracking system sufficiently in advance to enable market participants to register and states to run shadow auctions before the first interim compliance step.

Our recommendations are discussed in more detail below.

1. Choose a mass-based emission budget trading program as the Federal Plan.

EPA has proposed a Model Trading Rule for a rate-based and a mass-based plan, and proposes selecting one of these plans as the basis for a Federal Plan. Economic efficiency, environmental and electricity market integrity, industry familiarity, and administrative simplicity favor a mass-based Federal Plan.

An emission budget trading program curbs total emissions from affected EGUs by requiring each EGU to hold, and then retire, a tradable emission allowance for every ton of CO_2 it emits. The allowance price may fluctuate, reflecting supply and demand and revealing emitters' willingness to pay for scarce allowances. Under idealized market conditions, this allowance price is equivalent to marginal abatement costs across all emitters. By trading allowances, market participants are essentially finding the lowest cost opportunities to reduce emissions. In this way, the program achieves pollution reductions at the minimum cost.[2] By reducing the number of allowances available, the program administrator ensures that regulated sources reduce absolute emissions.

[2] *See* Richard Schmalensee and Robert Stavins, The Harvard Project on Climate Agreements, "Lessons Learned from Three Decades of Experience with Cap-and-Trade," (Nov. 2015), *available at:* http://belfercenter.ksg.harvard.edu/files/dp80_schmalensee-stavins.pdf.

An emission budget trading program is a flexible compliance option that works well with the operations of the power sector. In general, electric grid operators dispatch power generators based on their marginal costs. Plants with the lowest variable costs are called on first, and as the system needs more power to meet demand, system operators dispatch more expensive plants. A CO_2 allowance price can easily and transparently be incorporated into each plant's marginal cost, allowing system operators to maintain existing economic dispatch procedures. For EGUs, an allowance market provides a readily accessible source of compliance instruments, affording each EGU with the short-term flexibility it needs to meet the power system's needs. Over the long-term, an allowance price can drive investment decisions. As noted in Recommendations 2 and 3, broader allowance markets send a more consistent price signal to industry.

The power sector has anticipated[3] and sometimes advocated for[4] mass-based CO_2 abatement programs in the past decade. Industry's view is informed by the successful cap-and-trade programs it participates in for criteria pollutants. The 1990 Clean Air Act Amendments established a sulfur dioxide cap-and-trade program for coal-fired power plants. The program achieved pollution reductions faster and at a much lower cost than anticipated. In 2003, several northeastern states established a cap-and-trade program for power plants and other large sources to comply with EPA's NOx SIP call. EPA then created cap-and-trade programs for power plants in nearly thirty "upwind" states through the Clean Air Interstate Rule (CAIR) and Cross-State Air Pollution Rule (CSAPR). In addition, several northeastern states have run a successful cap-and-trade program for CO_2 from power plants since 2009, and EGUs in California have been covered by that state's CO_2 cap-and-trade program since 2013.

An emission budget trading program is also relatively straightforward to administer. EPA's existing Allowance Tracking and Compliance System (ATCS), an online platform for distributing, holding, retiring, and tracking allowances, has been used to administer other power sector cap-and-trade programs. The program's simplicity minimizes the regulatory burden for EGUs, states, and EPA.

Some have suggested that an emission budget trading program could constrain growth in a state's electricity supply because it places an absolute cap on emissions from existing EGUs. These critics of a mass-based approach contrast it with a rate-based plan, which would require

[3] Synapse Energy Economics, "2015 Carbon Dioxide Price Forecast," (Mar. 3, 2015), at 25, *available at*: http://www.synapse-energy.com/sites/default/files/2015%20Carbon%20Dioxide%20Price%20Report.pdf (stating that 23 of the 56 utility integrated resource plans it reviewed from 2008 to 2011 included a CO_2 price forecast); Georgia Power's Application for The Certification of Units 3 and 4 at Plant Vogtle and Updated Integrated Resource Plan, GA. P.S.C. Docket No. 27800-U (May 1, 2008), at 90−102 (responding to the Public Utility Commission's directive to evaluate potential impacts of "CO_2 abatement legislation" by analyzing alternatives to new nuclear plants under various prices of CO_2 prices).

[4] Edison Electric Institute, EEI Global Climate Change Points of Agreement (Jan. 14, 2009), *available at:* http://www.eenews.net/features/documents/2009/01/14/document_pm_03.pdf (stating that EEI, the industry's major trade association "remains committed to working with Congress on enactment of legislation that will produce substantial [CO_2] emissions cuts" and "will focus its efforts on a cap-and-trade program").

EGU owners to offset CO_2 emissions with Emission Rate Credits but would not necessarily constrain their total emissions.

Notably, the EGs establish mass-based state budgets for existing EGUs that include emissions associated with generation growth beyond 2012 production levels. The state budgets are illustrated in Appendix A, to show the portion of each state's budget that is associated with electricity growth, over and above the portion added to each budget when a state opts to include new sources in the program. Moreover, the notion that economic growth necessitates a growth in emissions from the power sector no longer holds water. According to the U.S. Energy Information Administration, "the growth in electricity demand has been significantly slower than GDP growth for decades."[5] Meanwhile, the correlation between electricity growth and emissions growth has all but disappeared. From 1997 to 2013, total electricity generation grew by 17 percent while CO_2 emissions *decreased* by four percent. Emissions fell in thirty states during this time frame, while GDP and population grew in each of these states.[6]

Some also voice the concern that mass-based trading regimes may lead to "hot spots" of pollution (in particular, co-pollutants of carbon dioxide) in vulnerable communities. Empirical evidence from other trading programs in the U.S. shows that trading has no intrinsic tendency to increase hot spots in low income or minority communities.[7] However, past experience in other trading programs does not definitively rule out the possibility that implementation of the CPP could increase hot spots.

We encourage the EPA to use its proximity report and the detailed procedures outlined in the EGs (80 Fed. Reg. 64,915-17) for pre-plan consultations – supplementary to notice and comment – to understand community hot spot concerns in states where it will apply a Federal Plan. We also encourage EPA to apply the adaptive management approach it encourages in the EGs (80 Fed. Reg. 64,918-19) to monitor and respond to distributional effects of mass-based federal plans. These procedures should be incorporated into the Federal Plan and Model Trading Rule.

If EPA or states conclude there is a need to mitigate hot spots, they have a number of mechanisms to deploy, including individual permit limits, retirement allocation schemes, and enhanced allowance retirement requirements for specific EGUs. These mechanisms would work within or complement a mass-based compliance framework.

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[5] U.S. Energy Information Administration, "U.S. Economy and Electricity Demand Growth Are Linked; but Relationship is Changing" (Mar. 22, 2013), *available at:* https://www.eia.gov/todayinenergy/detail.cfm?id=10491.
[6] Emissions, generation, and state GDP data are from the U.S. Energy Information Administration, U. S. electric power industry estimated emissions by state, back to 1990 (EIA-767 and EIA-906), *available at:* http://www.eia.gov/electricity/data/state/emission_annual.xls; Table 7.2B: Electricity Net Generation: Electric Power Sector, *available at:* http://www.eia.gov/totalenergy/data/browser/xls.cfm?tbl=T07.02B&freq=m; Appendix D: Real Gross Domestic Product by State, *available at:* http://www.eia.gov/state/seds/sep_use/notes/use_gdp.pdf.
[7] *See, e.g.*, Evan J. Ringquist, "Trading Equity for Efficiency in Environmental Protection? Environmental Justice Effects from the SO_2 Allowance Trading Program," 92 Social Sciences Quarterly 297 (June 2011); Meredith Fowlie, Stephen P. Holland, Erin T. Mansur, "What Do Emissions Markets Deliver and to Whom? Evidence from Southern California's NOx Trading Program, 102 American Economic Review 965 (Apr. 2012).

2. Enable and encourage automatic "linkage" between all mass-based plans, and between rate-based plans applying the subcategory-specific performance rates.

Under the final EGs, states need not engage in formal negotiations to forge multi-state compliance strategies.[8] Instead, EPA sanctioned "trading-ready" plans that link to one another automatically (40 C.F.R. § 60.5750(d); 80 Fed. Reg. 64,892). The final EGs indicate that a "trading ready" plan must (1) allow "affected EGUs to interact with affected EGUs in other states" to acquire allowances, and (2) administer the trading program "using an EPA-approved (or EPA-administered) emission and allowance tracking system" (40 C.F.R. § 60.5750(d)).

Here, EPA proposes that states adopting the mass-based Model Trading Rule would be able to link to a like Federal Plan. Largely echoing the EGs, EPA proposes that a mass-based state plan is "trading-ready" so long as it is approved by EPA specifically as a "ready-for-interstate-trading" plan; uses an EPA-administered tracking system; and, measures allowances in short tons of carbon dioxide (80 Fed. Reg. 64,976-77).

We strongly support the concept of "trading-ready" plans and urge EPA to encourage and enable as much automatic linkage as possible. Specifically, therefore:

- We support EPA's proposal to enable all approved mass-based state plans to be trading-ready and to link with a state where the Federal Plan is in effect.
- We recommend that EPA allow linkages between state plans that do not use an EPA-administered tracking system, so long the alternative tracking system is interoperable[9] with EPA's system and approved by EPA. Use of a single tracking system has several advantages – simplicity, lower cost, and less oversight needed to prevent and uncover fraud and error. However, using an EPA-administered system should not be a requirement for a trading-ready plan.
- We urge EPA to clarify that to "be approved as a ready-for-interstate-trading plan" (80 Fed. Reg. 64,977) a plan must merely state that it will allow affected EGUs to use allowances initially allocated in other states for compliance. Other plan distinctions, as discussed in the next bullet, should not affect plan linkage and trade readiness.
- We recommend that EPA clarify that state customized trading plans are still "trading-ready" and able to link with the Federal Plan and all other "trading-ready" plans. States are considering additional market design elements to achieve various policy goals, including retirement by the state of some allowances; price collars to establish minimum and/or maximum carbon allowance prices; inclusion of new sources; adjustment

[8] Multi-state compliance strategies could be narrower and allow for inter-company transfers of allowances, rather than trading. While our comments focus on shaping well-functioning trading markets, we recognize the benefits of linked plans do not necessarily include trading.

[9] We define "interoperable" as being able to link seamlessly to enable integration of data across systems (important for market knowledge and to identify fraud and error more quickly). In addition, some of our experts suggested the creation of a central transaction log to track transfers between allowance trading systems and prevent double-counting. An international transaction log currently operates under the Kyoto Protocol.

mechanisms for banked allowances; and allowance auctions. The market can accommodate these differences.

- We urge EPA to encourage, but not require, alignment of compliance periods and auctions across plans. Allowance markets may benefit from harmonized timelines for receiving, purchasing, and surrendering allowances, in the form of smoother price trends.
- We support the Federal Plan using short tons as the currency, and urge states to use the same metric; however, if EPA imposes a uniform method for converting allowances denominated in metric tons to short tons, selection of metric tons as the currency in a state should not close that state off from linking with other states.

Finally, while our discussion about linkages has focused on mass-based plans, we support the same concept of a broad, liquid market for states with rate-based plans. We support EPA's proposal to enable rate-based plans applying the subcategory-specific performance rates to link automatically, so long as they allow EGUs to use emission rate credits (ERCs) generated in other states, and rely on an ERC tracking system that is interoperable with EPA's tracking system (80 Fed. Reg. 64,977). We urge EPA to finalize these requirements for rate-based linkage, and to clarify that additional plan diversity will not foreclose interstate trading.

3. Retain the proposal's flexibility for states subject to a Federal Plan to submit a partial plan for allocating allowances.

The EGs require a state to distribute allowances prior to the beginning of each compliance period but do not otherwise restrict a state's approach to allowance distribution (40 C.F.R. § 60.5815). We strongly support giving the same flexibility under a Federal Plan, by authorizing states to submit partial state plans (80 Fed. Reg. 65,026, 65,029).

Allocation decisions can be a way for states to address state-specific needs and policy objectives. States could freely allocate allowances to EGUs or other entities, use updating output-based approaches, or auction allowances to raise revenues for clean energy investments, electric utility bill relief, and other consumer benefits and state priorities.

As discussed in the previous recommendation, state plans should be able to link despite different plan design choices, including allocation schemes. Allowance allocation choices merely have the potential to affect the equilibrium allowance price; and the broader the market, the less of an effect a distinct design feature in one state will have on the allowance price.

Two allowance allocation choices have been discussed as having potential distributional consequences: auctioning some or all of a state's allowances; and capping new sources. Auctioning allowances require EGUs in that state to incur a cost that EGUs elsewhere may not incur. However, if the market is of sufficient size, this differential should not affect the equilibrium allowance price.

Moreover, auctioning some of the allowances in a market should not affect the price of electricity in organized markets. Generators participating in wholesale auction markets, such as those operated by PJM and MISO, will include the allowance price in their offers, regardless of whether they received allowances for free or purchased them through auction. Meanwhile, auctioning allowances provides market participants with an immediate price signal about the costs of emission reductions, which can contribute to greater market efficiency. And within a state or region that chooses to auction allowances, allocation is more equitable because it puts all participants on equal footing and prevents regulated firms from earning windfall profits.

Some are concerned that capping new sources could create a competitive disadvantage for a state, because new NGCCs may choose to locate in states where they are not subject to a cap. First, it is important to recognize that an allowance price will be only one factor that will determine where NGCCs choose to locate. Other factors include transmission availability, natural gas pipeline capacity, the presence of state and local incentives, and state and local permitting processes. Second, states that do not elect to include new sources under their cap must demonstrate that "emissions leakage" is not a problem or mitigate the potential for new sources to displace generation from existing sources. The incentives they provide for existing NGCCs and/or renewable energy or efficiency will blunt the competitive advantage of NGCCs not subject to a cap. As we state in Recommendation 5, EPA must ensure that any allocation method deployed to prevent leakage has the intended effect.

4. Allow states submitting a partial plan to bring new sources under the cap.

EPA stated in the EGs and the proposed Model Trading Rules that it believes it cannot include new EGUs under a mass-based Federal Plan.[10] Therefore, EPA proposes to prevent leakage to new EGUs in a Federal Plan through allowance set-asides (80 Fed. Reg. 65,019).

However, an emission budget trading program under a state plan clearly may include new sources as a matter of state law. Therefore, we recommend that EPA allow a state to submit a partial state plan to replace the Federal Plan allowance set-aside provisions. The partial state plan would identify state enforceable emission standards on new sources. Including this option in the Federal Plan ensures a robust environmental outcome, relieves EPA of the burden of tracking renewable energy production in that state, and provides a consistent economic signal to existing and new sources with similar emissions profiles.

A partial state plan for new sources would be consistent with the flexibility that EPA proposes to provide by enabling a state to handle allowance distribution under a Federal Plan (80 Fed. Reg. 65,027). As discussed in Recommendation 3, we urge EPA to retain this flexibility for the states

[10] *But see* Standards of Performance for New and Existing Stationary Sources: Electric Utility Steam Generating Units; Final Rule. 70 Fed. Reg. 28606, 28610 (May 18, 2005) (subjecting new EGUs to rate-based standards and a mass-based trading program for mercury).

in the final Federal Plan. A state could build on that partial plan by including new sources. EPA would then allow that state to distribute the number of allowances provided by the Mass-Based Goal plus New Source CO_2 Emission Complement.

EPA has also proposed to add a partial approval/disapproval mechanism for section 111(d) state plans (80 Fed. Reg. 65,035). Approval or disapproval of a partial state plan that addresses new sources would utilize the same process that EPA envisions for other types of partial state plans. EPA would evaluate a partial state plan using the standards articulated in the EGs. Specifically, the partial state plan must "describe[] state-enforceable regulations for, at a minimum, all new grid- connected fossil fuel-fired EGUs that meet the applicability standards for EGUs subject to CAA section 111(b)" (80 Fed.Reg. 64,888). EPA would then evaluate compliance based on whether the affected EGUs regulated under the Federal Plan, and any new sources regulated as a matter of state law, hold a sufficient number of allowances to cover their collective emissions.

Including new sources under an emission budget trading program assures that mass-based implementation does not create an incentive for affected EGUs to shift generation to new fossil-fired EGUs. As discussed in Recommendation 5, allowance set-asides can mitigate the incentive, but their efficacy is less certain. Allowing states to submit partial plans that address new sources thus guarantees the best environmental outcome.

Including new sources will allow the Federal Plan to be as economically efficient as state plans choosing this option. Preventing new sources from being included in a Federal Plan could skew investment decisions. Because it is not required to hold allowances under a Federal Plan, a new NGCC might have lower operating costs than existing NGCCs, despite the allowance set-asides. This disparity could cause premature retirements of existing units, ultimately harming ratepayers if otherwise viable assets are retired, or if new NGCCs are subjected down the road to CO_2 limits and treated as stranded assets. Including new sources in the program could avoid this outcome and assist long-term planning by sending a consistent economic signal to existing and new sources with similar emissions profiles.[11]

A partial state plan also relieves EPA of tracking renewable energy production and awarding allowances to renewable energy generators in that state. In the proposed Model Trading Rules, EPA provides procedures for registration of eligible renewable energy generators, measurement and verification of renewable energy production, and independent verification of that data. EPA proposes to award allowances to renewable energy generators each year, and to make allocation adjustments due to errors, misstatements, and suspensions. These extensive requirements are appropriate because they safeguard the integrity of the program and are consistent with the EGs (40 CFR §§ 60.5830, .5835). However, they place administrative requirements on states and, in

[11] Sarah Adair and David Hoppock, Duke University Nicholas Institute, "New Sources and the Clean Power Plan: Considerations for Mass-Based Plans." (Dec. 2015), *available at:* https://nicholasinstitute.duke.edu/sites/default/files/publications/ni_pb_15-06_0.pdf.

the context of a Federal Plan, EPA. Allowing for a partial state plan that includes new sources will reduce this administrative burden.

5. Include a robust look-back and adjustment mechanism for set- aside allowances in the Federal Plan and the Model Trading Rule, and distribute OBA allowances to new NGCCs before the first compliance period.

In the EGs, EPA expresses concern that allowing new EGUs to operate outside of a mass-based cap could drive a premature shift in generation from existing to new, uncapped sources. The resulting emissions leakage could undermine the environmental goals of the CPP, and induce an over-build of NGCCs. The most efficient and effective way to blunt this concern is for states to cap new sources and adopt a mass-based budget with New Source CO_2 Emission Complements. We urge EPA to encourage states to adopt this approach for preventing leakage.

EPA believes that it cannot directly regulate new sources under a Federal Plan, so it proposes to prevent leakage to new sources under a mass-based Federal Plan through an allowance set-aside scheme. Specifically, EPA proposes two allowance set-asides, one for renewable energy generators and the other for existing NGCCs. The set-asides are production subsidies for these generators that aim to reduce the competitive advantage of an uncapped new source.

Determining the appropriate magnitude of the set-asides is critical. The details in the final Model Trading Rule are particularly important because state plan provisions that adopt identical set-asides will be presumptively approvable. However, there are numerous uncertainties and complexities associated with the set-asides that make this a particularly challenging task. We therefore recommend that EPA:

- Explain how it will periodically assess the effectiveness of the set-asides and state that EPA will modify the set-asides as necessary under the Federal Plan, and require states to do so under a state plan; and
- Distribute the proposed output-based set-aside during the first step compliance period, and update allocations to EGUs receiving the OBA each year of the compliance period.

EPA explains that the allowance set-asides are "economic incentives" that are employed here "as a means of pollution, prevention, and control" (80 Fed. Reg. 65,019). EPA proposes setting aside 5% of all allowances in a state for renewable energy generators, to be shared pro rata based on documented generation each year. In a Technical Support Document,[12] EPA details why it proposed a 5% renewable energy set-aside, but notes that its analysis is merely "illustrative." To arrive at 5%, EPA makes a number of assumptions about the power sector in 2030, including: total generation from new NGCCs absent the set-asides, retirements of coal-fired EGUs, total renewable generation under a national mass-based approach, future CO_2 allowance prices, and future costs of NGCC, wind, and solar.

[12] Technical Support Document: Renewable Energy Set-Aside, *available at:* http://www.epa.gov/sites/production/files/2015-11/documents/tsd-fp-re-setaside.pdf.

The second proposed set-aside benefits existing NGCC plants that increase their utilization rate over the previous compliance period.[13] In another Technical Support Document,[14] EPA explains how it established the size of this OBA and describes its potential effects. An OBA that is too small will not sufficiently lower NGCCs' marginal costs and will therefore not prevent leakage to new sources. An OBA that puts downward pressure on electricity prices could reduce incentives to invest in renewable generation. If the OBA provides too large of an incentive, it could increase total electricity production costs by incentivizing relatively higher-cost affected EGUs to crowd out relatively lower-cost generation from new EGUs. Meanwhile, the OBA may have different effects in different states, and in different electricity markets. Analysts have noted that modeling the OBA is a particularly challenging endeavor.[15]

Moreover, studies suggest that the proposed renewable energy set-aside and OBA will have only "a minor impact" on reducing leakage to new NGCC units.[16] Given the uncertainties embedded in the renewable energy set-aside calculation and the potential for perverse and inconsistent effects from the OBA, if EPA retains these mechanisms as options for preventing leakage to new NGCCs we recommend aggressive look-back and adjustment provisions.

The final Federal Plan and Model Trading Rule should establish a mechanism for EPA to assess the set-asides periodically during the interim compliance period. As necessary, EPA would modify the set-asides in the Federal Plan and require states to submit plan modifications. This approach is consistent with the EGs. In the section addressing the requirement that state plans mitigate leakage, EPA states that "once program implementation begins, [it] will assess how emission performance across states may be affected by the interaction of different regulatory structures implemented through state plans. . . . [and] will determine whether there are potential concerns and what course of action may be appropriate to remedy such concerns." (80 Fed. Reg. 64,890). While look-back and adjustment provisions make it more difficult for affected EGUs to plan, we believe these provisions are necessary to prevent the creation of a set-aside pool that fails to prevent leakage or creates a windfall for the set-aside recipients and a market distortion.

EPA proposes to provide the renewable energy set-aside allowances prior to the start of the program, but to wait until the second step compliance period to allocate the OBA. This delay could undermine the ability of the OBA to prevent leakage to new sources. We recommend that

[13] Of course, EPA need not limit an output-based allocation set-aside to NGCC plants that increase production. Different schemes might include allocations to all affected EGUs, or all affected EGUs plus incremental increases in non-emitting generators, just to name two possible alternatives.
[14] Technical Support Document: Allowance Allocation, *available at:* http://www.epa.gov/sites/production/files/2015-11/documents/tsd-fp-allowance-allocations.pdf.
[15] *See, e.g.*, PJM Interconnection, Clean Power Plan Analysis Draft Modeling Document (Nov. 17, 2015), *available at:* http://www.pjm.com/~/media/committees-groups/committees/mc/20151116-webinar/20151116-item-02-pjm-clean-power-plan-analysis-draft-modeling-document.ashx, at 31 (stating that "[f]rom a modeling perspective, the output based allocation represents a unique modeling constraint that is not easily represented in deterministic production costing models.")
[16] *See, e.g.*, M.J. Bradley & Associates LLC, "EPA's Clean Power Plan: Summary of IPM Modeling Results," (Jan. 13, 2016) at 19, *available at* http://www.mjbradley.com/sites/default/files/MJBA_CPP_IPM_Analysis.pdf.

EPA provide the OBA sooner, preferably before the first interim compliance period, and update it every year based on actual performance data. EPA could distribute the OBA in 2021 based on increased production since 2012 (or using some other formula). Alternatively, EPA could distribute the OBA in 2023, based on data from the first year of the interim compliance period. An earlier allocation of these set-asides might spur earlier market activity, as well.

EPA could make this change and still maintain its proposed timing for allocating allowances.

6. Ensure that allocations to retired units do not delay retirement or create a windfall for companies with retired units.

EPA proposes a default allowance allocation strategy for EGUs that are placed in cold storage or retired permanently. These EGUs would receive allowances for two years of non-operation as well as any additional years remaining in that compliance period and subsequent compliance periods for which allowances have already been allocated (40 C.F.R. § 62.16240(a)(2)). As EPA notes in the preamble, this strategy is similar to that set forth in the Cross-State Air Pollution Rule (80 Fed. Reg. 60,026 n. 113, noting retired units receive CSAPR allowances for four years), and marks a departure from the Acid Rain Program, which allocates allowances in perpetuity to EGUs whether they remain in operation or not.

States would be authorized to establish different schemes for allocating allowances to shut down or retired EGUs in their own state plans or in partial state plans alongside a Federal Plan. As discussed, we urge EPA to retain flexibility for states to determine all allocations, including allocations to units that are not producing. However, we also strongly support a default mechanism that avoids creating perverse incentives for inefficient units to continue operating.

As an initial matter, the proposed default strategy does not explicitly state how early an EGU may cease operations and still benefit from the allocation scheme (80 Fed. Reg. 65,026). There is no reason to provide allowances to EGUs that ceased operations more than two years before this rule is finalized. At the same time, if EGUs that do not operate in 2019 and 2020 are ineligible to receive allowances in the first interim compliance step, they will have an incentive to continue producing at least until 2021, when EPA distributes allowances. Therefore:

- We urge EPA to clarify that an EGU that has not operated for two consecutive years prior to publication of the final Federal Plan and Model Trading Rules will not receive allowances.
- We recommend that EPA allocate allowances based on historic production data to other EGUs including those that retire following publication of the final Model Trading Rules. This clarification provides an incentive for inefficient EGUs to retire prior to the start of the compliance period.

Next, the proposed default allocation scheme is based on production from 2010 to 2012 (80 Fed. Reg. 65,016). In combination with the proposed strategy to cease allocations to non-producing

plants after two years, this methodology provides an EGU that might otherwise cease operations with an incentive to produce at the margins in perpetuity, to receive allowances based on its historic production. The allowances would serve in those cases as a production subsidy, inducing otherwise uneconomic plants to continue operating, and rewarding owners with windfall profits from sales of excess allowances. To avoid this outcome:

- We recommend that EPA update the basis for allocating allowances periodically, at least every eight calendar years and not more frequently than prior to every interim compliance step or final compliance period. Allocating based on recent, rather than historic, production reduces the incentive for an uneconomic plant to operate solely for the purpose of receiving allowances.

EPA's selection of two to four years as the length of time a non-operating EGU can receive allocations is debatable. On the one hand, providing allowances to non-operating units incentivizes retirement of inefficient plants, which supports the program's environmental goal. On the other hand, providing allowances in perpetuity to non-operating EGUs results in a windfall to their operators. Rather than propose a specific number of years for providing allowances to non-operating EGUs, we suggest an allocation scheme that seeks to strike a balance between program goals.

Specifically, we propose that EPA update the basis for allocating allowances and provide a schedule in the final Model Trading Rule for those updates. Then, an EGU that commits to EPA to permanently retire prior to an update will lock in the same share of allowances in the post-update period as it did prior to the update. An EGU that continues to operate will receive a share of allowances based on its more recent output. This proposal provides EGUs that were historically large producers but have become marginal suppliers with an incentive to retire early, so they can capture a larger share of allowances. Any allocations made to retiring units could continue for some period after retirement as EPA proposed; we do not offer an opinion on the appropriate length of time for this allocation.

Finally, if EPA should determine it will update the basis for its allocation of allowances during the interim compliance period, we recommend using our approach for retiring EGUs rather than the Alternative Compliance Pathway. EPA's Alternative Compliance Pathway, described in a Technical Support Document, would exempt EGUs that commit to permanent retirement before December 31, 2029 from a mass-based trading program. Instead, each unit would be subject to a mass-based CO_2 emission limit for the duration of its life. EPA then proposes to remove the allowances equivalent to each EGU's limit from the state's interim compliance period budget.

If finalized, this proposal could have perverse effects. By allowing units to operate without holding allowances, they may produce more than would otherwise be economic and to continue operating until 2030. Were the allowances associated with that EGU permanently retired (from the final compliance period as well as the interim period budgets), there might be a net positive effect from this scheme. Absent this, the Alternative Compliance Pathway may not be useful.

7. **Set up market mechanisms sufficiently in advance to enable and motive early market activity.**

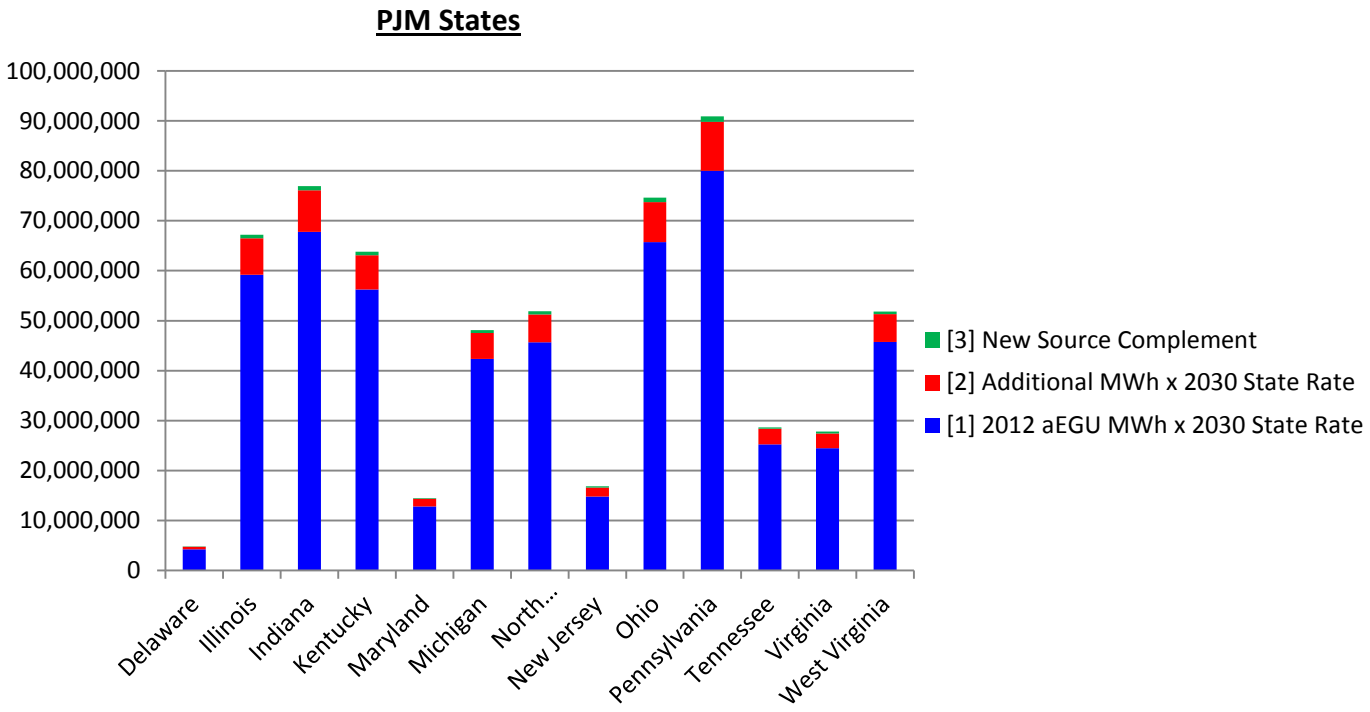
Establishing meaningful price signals early in the program will contribute to greater market efficiency and can help market participants make informed investment decisions. We urge EPA to consider how the Model Trading Rule could stimulate trading activity early in the program, as well as how it could support state efforts to move quickly to stimulate the markets. First, as we noted in Recommendation 5, earlier OBA allocations to NGCCs could drive market activity. Second, allocations to non-affected EGUs or other entities will stimulate trading. Third, technical support to states wishing to auction some or all of their allowances would be useful. And finally, EPA should ensure that its tracking system is ready to accommodate early registrants and to run shadow auctions for states wishing to use this service.

Sincerely,

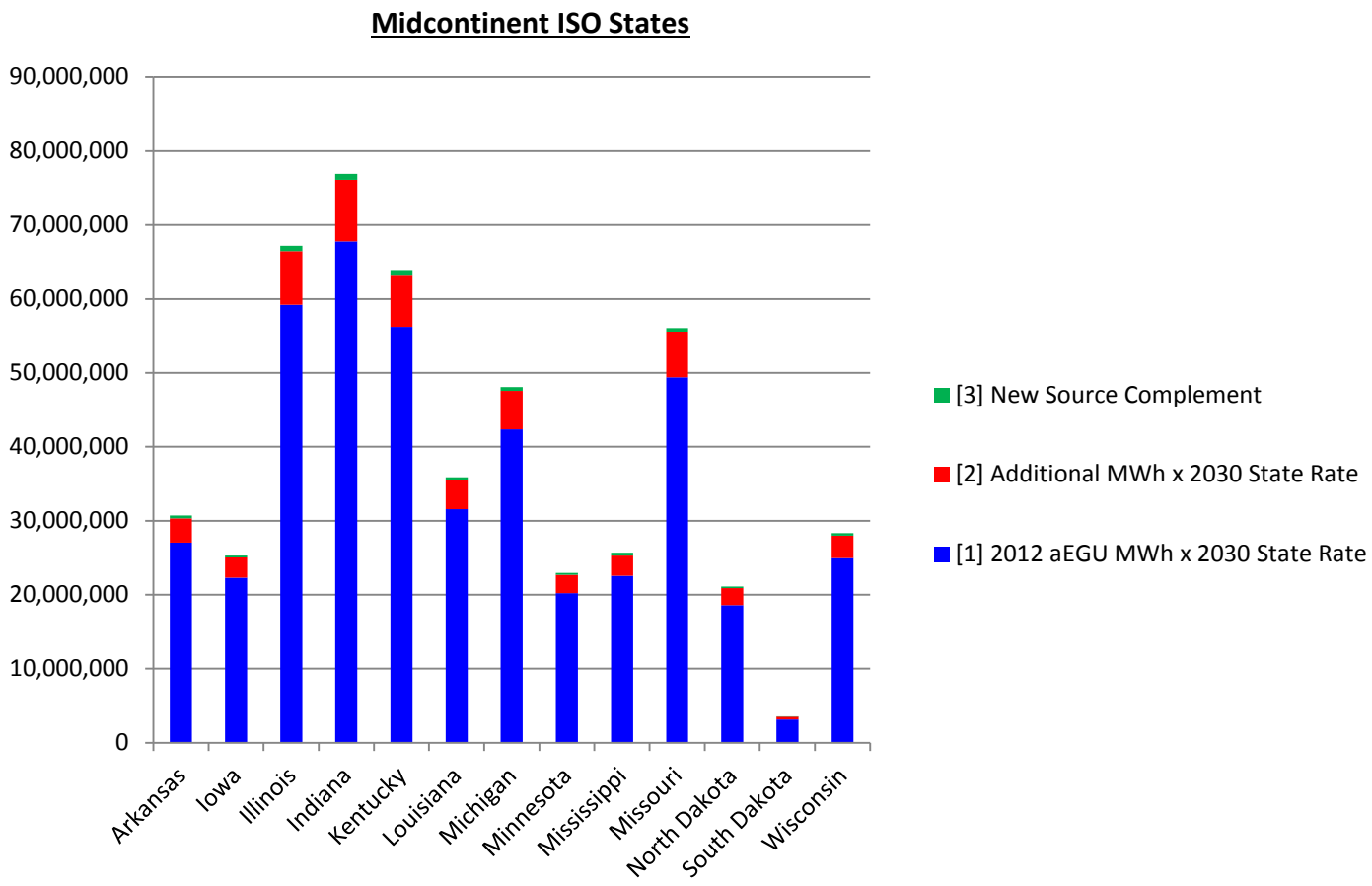
Kate Konschnik
Director
Harvard Environmental Policy Initiative

Appendix A: State Budgets with New Source Complements

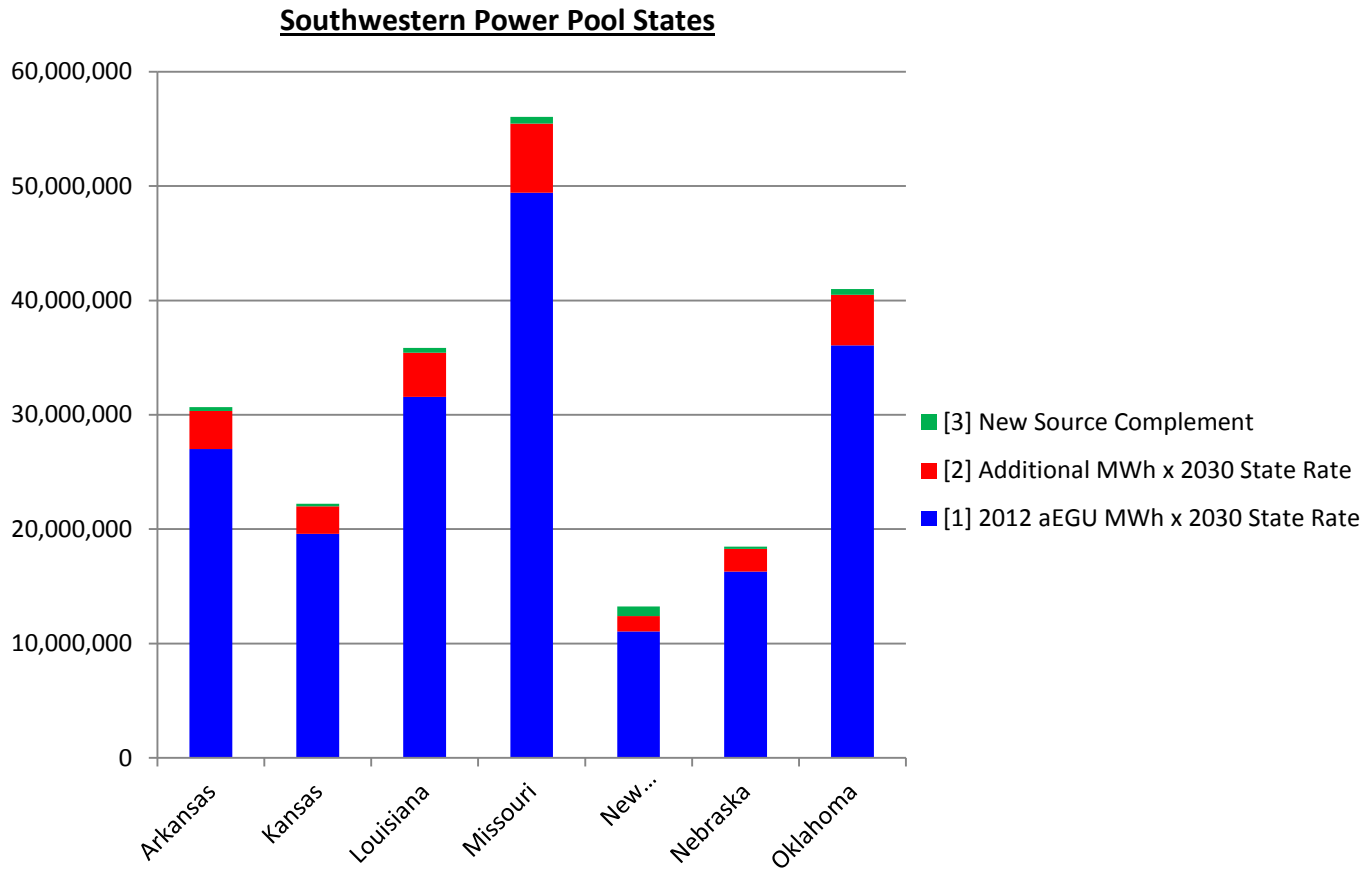
The blue illustrates each state's 2030 rate multiplied by its affected EGUs' 2012 generation. The green represents the New Source Complement, tons provided to states that bring new EGUs under the cap. Lost sometimes in this discussion is that EPA already provided additional tons/allowances (depicted in red) when it converted rate-based standards to equivalent mass goals. The states are grouped by electricity market and geography. Some states appear in more than one grouping.



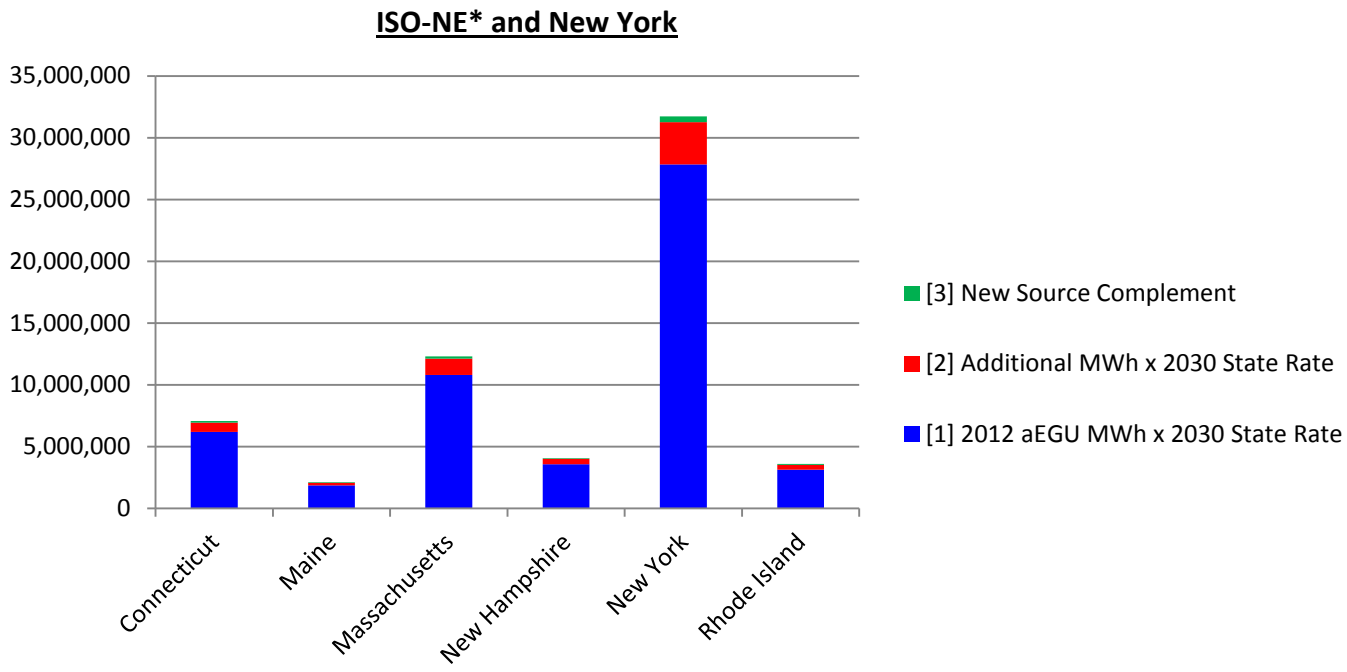
	[1] 2012 aEGU MWh x 2030 State Rate	[2] Additional MWh x 2030 State Rate	[3] New Source Complement	([2] + [3]) / [1]	2030 Mass Goal with New Source Complement
Delaware	4,197,800	514,024	69,561	13.9%	4,781,385
Illinois	59,225,006	7,252,150	722,018	13.5%	67,199,174
Indiana	67,810,396	8,303,438	828,769	13.5%	76,942,603
Kentucky	56,239,543	6,886,578	663,880	13.4%	63,790,001
Maryland	12,782,411	1,565,217	150,809	13.4%	14,498,436
Michigan	42,357,369	5,186,694	550,239	13.5%	48,094,302
North Carolina	45,673,479	5,592,755	610,623	13.6%	51,876,856
New Jersey	14,788,839	1,810,905	276,619	14.1%	16,876,363
Ohio	65,722,083	8,047,723	838,170	13.5%	74,607,975
Pennsylvania	80,023,379	9,798,928	1,109,330	13.6%	90,931,637
Tennessee	25,255,802	3,092,594	316,598	13.5%	28,664,994
Virginia	24,440,368	2,992,743	397,063	13.9%	27,830,174
West Virginia	45,726,138	5,599,203	531,966	13.4%	51,857,307



	[1] 2012 aEGU MWh x 2030 State Rate	[2] Additional MWh x 2030 State Rate	[3] New Source Complement	([2] + [3]) / [1]	2030 Mass Goal with New Source Complement
Arkansas	27,014,664	3,307,968	362,897	13.6%	30,685,529
Iowa	22,288,848	2,729,288	263,745	13.4%	25,281,881
Illinois	59,225,006	7,252,150	722,018	13.5%	67,199,174
Indiana	67,810,396	8,303,438	828,769	13.5%	76,942,603
Kentucky	56,239,543	6,886,578	663,880	13.4%	63,790,001
Louisiana	31,562,205	3,864,818	427,299	13.6%	35,854,321
Michigan	42,357,369	5,186,694	550,239	13.5%	48,094,302
Minnesota	20,204,331	2,474,037	252,806	13.5%	22,931,174
Mississippi	22,543,827	2,760,510	362,126	13.9%	25,666,463
Missouri	49,412,306	6,050,577	589,929	13.4%	56,052,813
North Dakota	18,605,030	2,278,201	216,446	13.4%	21,099,677
South Dakota	3,153,350	386,130	41,038	13.5%	3,580,519
Wisconsin	24,933,821	3,053,167	321,895	13.5%	28,308,883

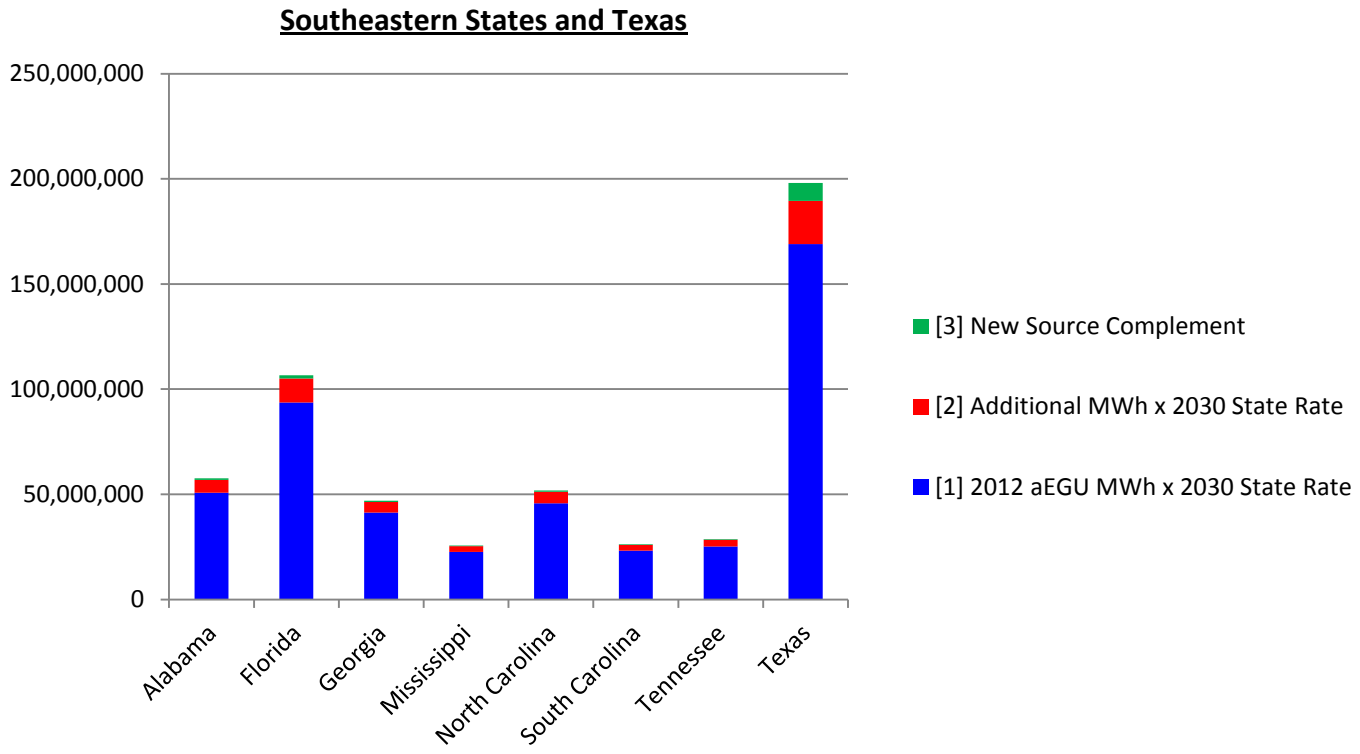


	[1] 2012 aEGU MWh x 2030 State Rate	[2] Additional MWh x 2030 State Rate	[3] New Source Complement	([2] + [3]) / [1]	2030 Mass Goal with New Source Complement
Arkansas	27,014,664	3,307,968	362,897	13.6%	30,685,529
Kansas	19,591,794	2,399,031	229,997	13.4%	22,220,822
Louisiana	31,562,205	3,864,818	427,299	13.6%	35,854,321
Missouri	49,412,306	6,050,577	589,929	13.4%	56,052,813
New Mexico	11,058,481	1,354,120	817,323	19.6%	13,229,924
Nebraska	16,279,322	1,993,416	190,706	13.4%	18,463,444
Oklahoma	36,071,245	4,416,954	512,654	13.7%	41,000,853

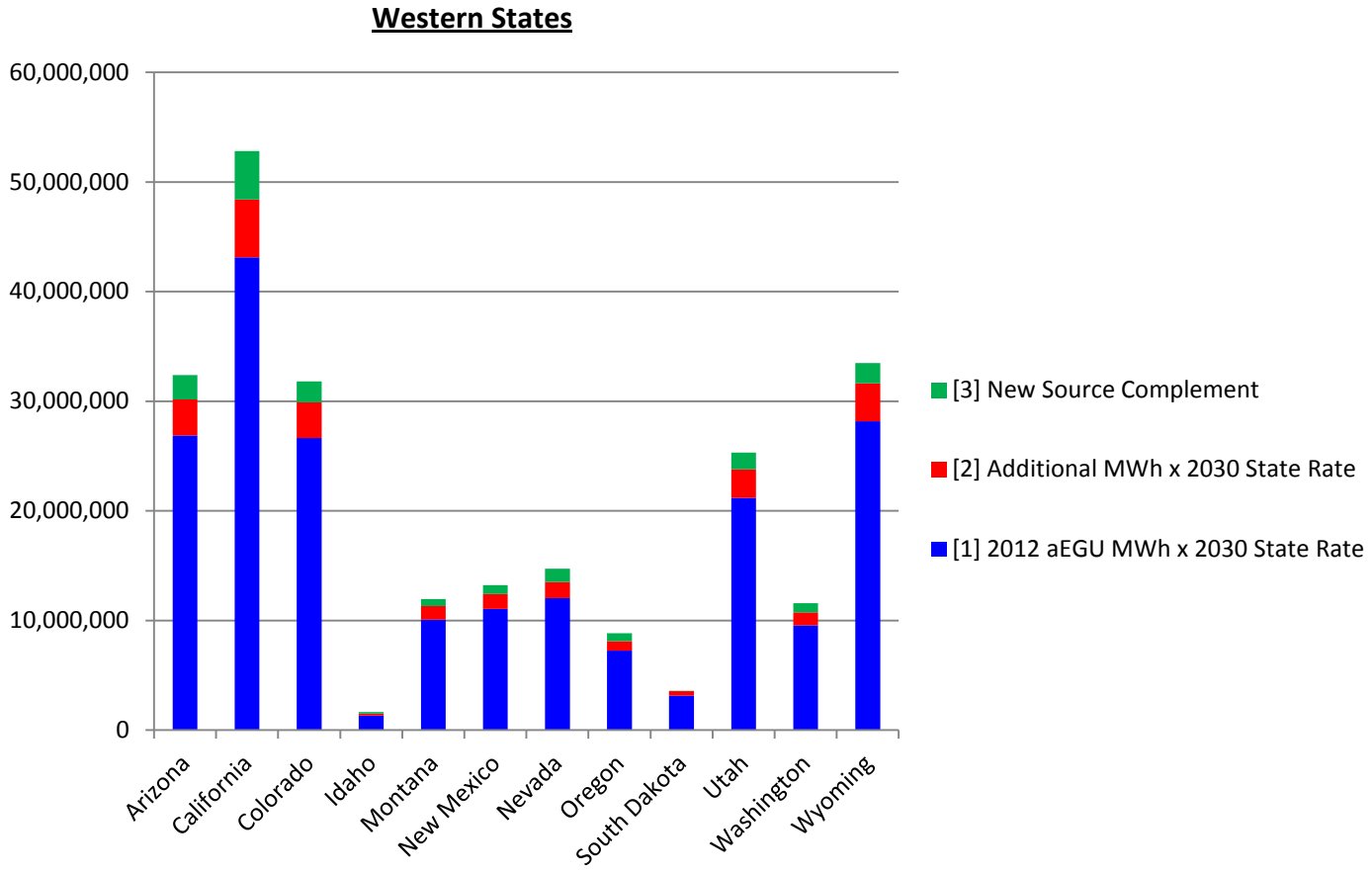


	[1] 2012 aEGU MWh x 2030 State Rate	[2] Additional MWh x 2030 State Rate	[3] New Source Complement	([2] + [3]) / [1])	2030 Mass Goal with New Source Complement
Connecticut	6,184,255	757,267	119,470	14.2%	7,060,992
Maine	1,847,691	226,251	36,026	14.2%	2,109,968
Massachusetts	10,784,211	1,320,535	198,626	14.1%	12,303,372
New Hampshire	3,561,474	436,105	63,012	14.0%	4,060,591
New York	27,847,481	3,409,947	460,753	13.9%	31,718,181
Rhode Island	3,137,977	384,248	61,791	14.2%	3,584,015

*Vermont is not included because it does not have an emissions budget under the Clean Power Plan.



	[1] 2012 aEGU MWh x 2030 State Rate	[2] Additional MWh x 2030 State Rate	[3] New Source Complement	([2] + [3]) / [1]	2030 Mass Goal with New Source Complement
Alabama	50,675,248	6,205,226	755,700	13.7%	57,636,174
Florida	93,629,673	11,465,030	1,546,891	13.9%	106,641,594
Georgia	41,290,758	5,056,087	597,559	13.7%	46,944,405
Mississippi	22,543,827	2,760,510	362,126	13.9%	25,666,463
North Carolina	45,673,479	5,592,755	610,623	13.6%	51,876,856
South Carolina	23,162,678	2,836,289	304,287	13.6%	26,303,254
Tennessee	25,255,802	3,092,594	316,598	13.5%	28,664,994
Texas	168,906,145	20,682,696	8,516,408	17.3%	198,105,249



	[1] 2012 aEGU MWh x 2030 State Rate	[2] Additional MWh x 2030 State Rate	[3] New Source Complement	([2] + [3]) / [1]	2030 Mass Goal with New Source Complement
Arizona	26,879,351	3,291,399	2,209,446	20.5%	32,380,196
California	43,128,945	5,281,175	4,413,516	22.5%	52,823,635
Colorado	26,638,491	3,261,905	1,922,478	19.5%	31,822,874
Idaho	1,329,996	162,859	146,158	23.2%	1,639,013
Montana	10,070,024	1,233,083	653,801	18.7%	11,956,908
New Mexico	11,058,481	1,354,120	817,323	19.6%	13,229,924
Nevada	12,048,264	1,475,320	1,194,523	22.2%	14,718,106
Oregon	7,232,970	885,683	703,399	22.0%	8,822,052
South Dakota	3,153,350	386,130	41,038	13.5%	3,580,519
Utah	21,184,173	2,594,019	1,522,500	19.4%	25,300,693
Washington	9,567,610	1,171,562	824,490	20.9%	11,563,662
Wyoming	28,183,339	3,451,073	1,838,190	18.8%	33,472,602