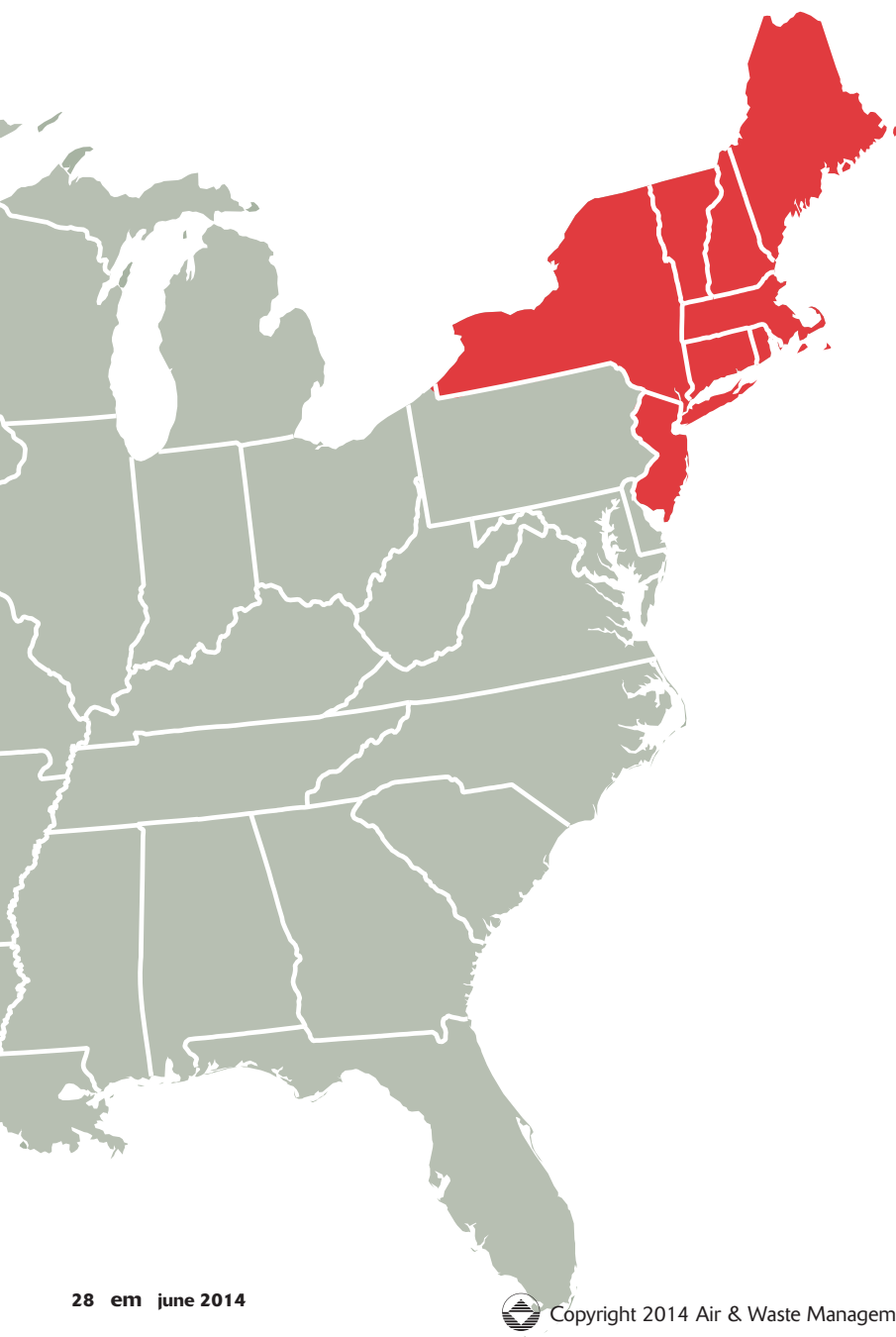


by **Brian Keaveny** and  
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# Compliance with Flexibility

## State Approaches to Reduce GHG Emissions from Existing Power Plants



The Northeast States for Coordinated Air Use Management (NESCAUM) considers the forthcoming greenhouse gas requirements for existing fossil fuel-fired power plants.

In a June 2013 presidential memorandum, President Obama directed the U.S. Environmental Protection Agency (EPA) to propose carbon pollution reduction requirements for new and existing fossil fuel-fired power plants. In doing so, the President instructed the agency to build on state efforts,<sup>1</sup> and EPA has subsequently sought input from the states on ideas for the upcoming greenhouse gas (GHG) requirements.<sup>2</sup>

This article focuses on the forthcoming GHG requirements for existing power plants, which EPA is developing separately from GHG requirements for new power plants. President Obama has directed EPA to propose GHG emission guidelines for existing power plants by June 1, 2014, and issue final guidelines by June 1, 2015. Many states are calling on EPA to craft these guidelines with flexible compliance options as they seek to use their own experiences and programs for achieving the federal GHG reduction requirements.<sup>3</sup>

### GHG Emissions Reduction Target

In his June 2013 Climate Action Plan, President Obama set a national GHG emission reduction target in the range of 17% by 2020, in comparison to 2005 levels.<sup>4</sup> Toward this goal, EPA proposed in September 2013 GHG performance standards



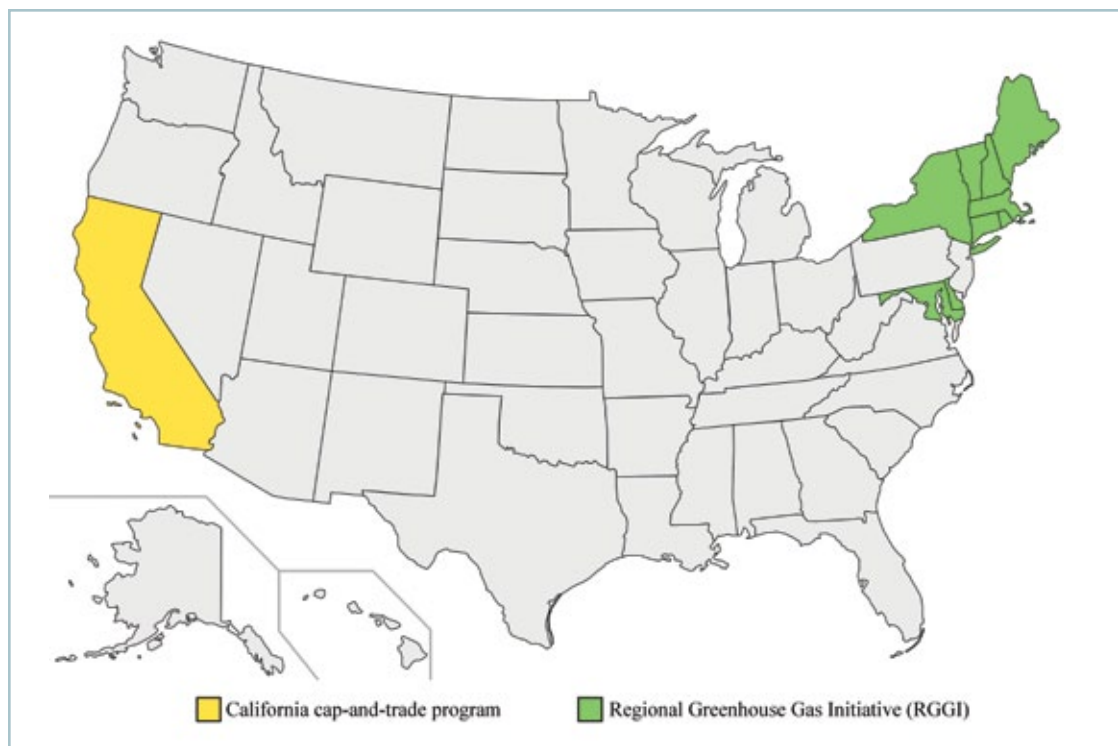


Figure 1. States participating in GHG cap-and-trade programs.<sup>7</sup>

for new fossil fuel-fired power plants. A second proposal in 2014 addresses GHG emissions from existing fossil fuel-fired power plants. Both proposals come under Section 111 of the U.S. Clean Air Act, but have an important distinction. Section 111(b) applies to new facilities, and EPA establishes federal performance standards for these. Existing plants are covered by Section 111(d), with EPA issuing guidelines to the states on the “best system of emission reduction” (BSER) that can take into account costs, non-air quality health and environmental impacts, and energy requirements. EPA, however, does not establish specific federal performance standards as with new power plants. For existing power plants, states are responsible for establishing GHG standards consistent with EPA’s BSER guidelines, and may consider the remaining useful life of the facilities and “other factors” not specifically defined in the Clean Air Act.

Section 111(d) has rarely been used, and there is little precedent on the scope of approaches that might be taken by the states. An industry group argues that the BSER for existing sources must be restricted to on-site measures at a power plant.<sup>5</sup> Others contend that BSER is flexible enough to credit GHG emission reductions achieved through measures across the power system.<sup>6</sup> This divergence of views is likely to be a subject for the courts.

For the purposes of this article, we are assuming “beyond the fence line” compliance flexibility. Given such flexibility, the following sections briefly describe the variety of current state approaches that might be used for reducing GHGs from existing power plants under the Clean Air Act.

## State Approaches

State programs currently reduce power sector GHG emissions through an array of initiatives, although not all these programs specifically require GHG reductions. Emission reductions are achieved at existing fossil fuel-fired power plants through improvements in plant efficiency and through the use of lower carbon fuels.<sup>3</sup> States also achieve GHG reductions through demand- and supply-side approaches across the electric power system. Examples include GHG cap-and-trade programs, renewable energy standards, energy efficiency requirements, and other programs where GHG reductions are achieved as a co-benefit alongside other energy or environmental goals.

## Cap-and-Trade

State and regional GHG cap-and-trade programs operate in 10 states, as illustrated in Figure 1.<sup>7</sup> In the eastern United States, nine states participate in the Regional Greenhouse Gas Initiative (RGGI), a carbon dioxide (CO<sub>2</sub>) cap-and-trade program

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Section 111(d) of the Clean Air Act has rarely been used, and there is little precedent on the scope of approaches that might be taken by the states.

covering fossil fuel-fired power plants since 2009.<sup>8</sup> Under RGGI, power sector CO<sub>2</sub> emissions are capped at the regional level, with states auctioning emission allowances that power plants need to obtain to show compliance. This system enables power plants to operate based on market forces while ensuring that their combined CO<sub>2</sub> emissions do not exceed the regional cap.

California is implementing a multi-sector cap-and-trade program that regulates GHG emissions from power plants, large industrial plants, and fuel distributors. The state will integrate this program with Quebec's GHG cap-and-trade program, and also intends to establish a regional climate plan with British Columbia, Oregon, and Washington.<sup>9,10</sup>

### Energy Efficiency

While most states do not regulate power sector GHG emissions directly, 25 states have long-term binding energy savings targets being pursued through energy efficiency requirements.<sup>11</sup> Energy efficiency programs are attractive to states, as they

can provide environmental benefits while cost-effectively easing stress on power system generation, transmission, and distribution assets. Moreover, energy efficiency offers the potential to provide emission reductions at a cost that can be lower than traditional control measures at power plants.<sup>12</sup>

### Renewable Energy

Twenty-nine states and the District of Columbia have mandatory renewable energy portfolio standards, and eight states have non-binding renewable portfolio goals.<sup>13</sup> These initiatives encourage the development of renewable generation that can alleviate demand on fossil fuel-fired generation. Like energy efficiency, renewable energy can provide emission reductions at a cost that can be lower than traditional control measures at power plants.<sup>12</sup>

### Other Programs

States also reduce power sector GHG emissions as a co-benefit of energy and air quality programs intended to reduce emissions of other pollutants. For example, the 2010 Colorado Clean Air–Clean Jobs



Act requires state utilities to create plans to greatly reduce emissions of nitrogen oxides from a specified portion of their coal-fired power plants by the end of 2017.<sup>14</sup> Although this law does not mandate GHG reductions, CO<sub>2</sub> emissions from regulated facilities are expected to drop by more than 20% as coal-fired plants convert to using natural gas.<sup>14</sup>

## Flexibility Sought

As seen from the above examples, state initiatives that reduce power sector GHG emissions are widespread. Thirty-eight states have at least a renewable energy or energy efficiency program (see Figure 2).<sup>15</sup> States are likely to want the flexibility to use their existing approaches for complying with the upcoming GHG rule for existing power plants.

## Form of the Standard

State compliance plans will be crafted to conform to the coming BSER guidelines from EPA. To provide greater flexibility, states have asked EPA to provide options that would include rate-based approaches (e.g., pounds of CO<sub>2</sub> emitted per megawatt-hour of electricity generated) as well as mass-based, wherein the standard is expressed as an absolute level of GHG emissions (e.g., tons of CO<sub>2</sub>).<sup>3,16</sup> With a mass-based GHG emission budget, state compliance plans could potentially include emission reductions from a broader range of strategies, including

cap-and-trade, demand-side energy efficiency, and renewable energy programs.

## Multi-State Mechanisms

State approaches that reduce power sector GHG emissions typically affect multiple states, as power markets transcend state borders. For instance, the CO<sub>2</sub> cap in RGGI is regional, with GHG emission levels of states free to vary under the regional cap based on market conditions. Renewable energy requirements can encourage new carbon-free generation that serves multiple states directly through transmission lines, and indirectly through tradable renewable energy credits. Energy efficiency standards can drive reductions in generation and emissions across the power system, irrespective of state borders.

States are seeking the option to demonstrate compliance collectively by means of multi-state agreements like RGGI, and through an accounting of emission reductions realized across state lines.<sup>3,17</sup>

## Guidance Sought

States have requested that EPA provide specific guidance, presuming that the future rule will include the desired flexible compliance options. These states have asked EPA to clarify how it intends to account for state differences under the

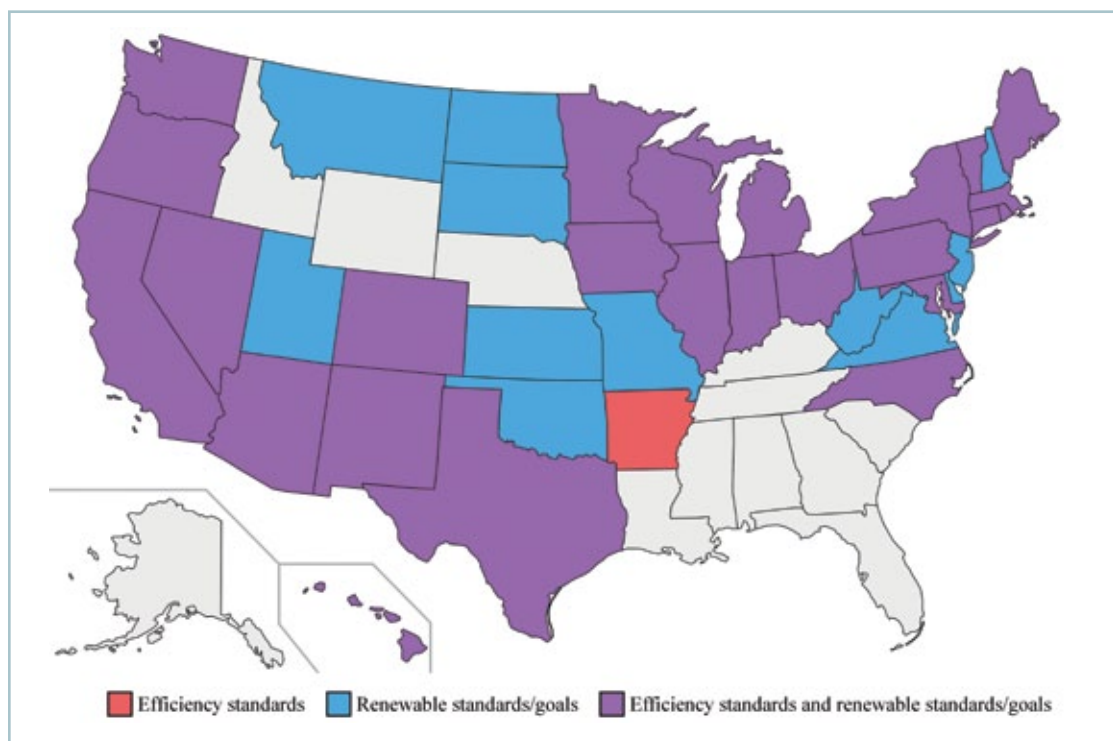


Figure 2. States with energy efficiency and renewable energy programs.<sup>15</sup>

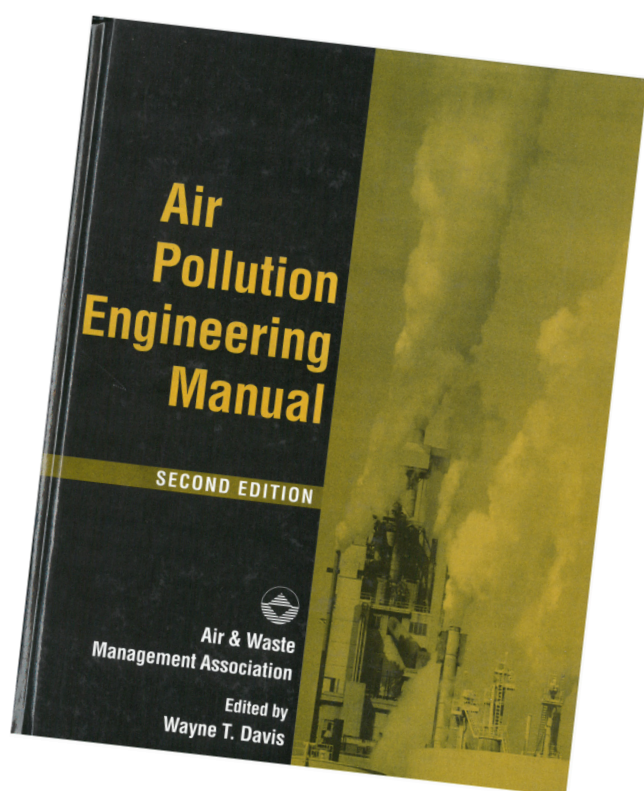
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future standard, and how states should quantify emission reductions to demonstrate compliance.<sup>3</sup>

### Accounting for Differences

Power systems and their GHG emission rates vary significantly across the United States, shaped by state policies, natural resource availability, and built infrastructure. States seek guidance from EPA on how future regulatory requirements will account for such differences.<sup>3</sup> For instance, some states that have already reduced the carbon intensity of their power systems have requested that EPA consider their past accomplishments when establishing future compliance responsibilities.<sup>3</sup>

### Quantifying Reductions

Energy efficiency and renewable energy programs can provide appreciable air quality benefits. States are interested in quantifying the emission reductions from these programs and incorporating them into

their state air quality plans. EPA has responded, providing a roadmap for states to help translate projections of energy savings into emission reductions that are suitable for inclusion in state air quality plans for criteria air pollutants.<sup>12</sup> States are calling for similar guidance on how to assess the GHG emission benefits of energy efficiency and renewable energy programs.<sup>3</sup>

### Conclusion

States have a diverse mix of demand- and supply-side programs across the power sector already achieving GHG emission reductions. Seeking to leverage these accomplishments, states have requested that EPA design the forthcoming GHG guidelines for existing power plants with flexible compliance options. Such flexibility could enable states to craft compliance plans that achieve GHG reductions through strategies that best align with their needs and interests. **em**

States are likely to want the flexibility to use their existing approaches for complying with the upcoming GHG rule for existing power plants.

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