

# NRDC SUMMARY OF EPA'S CLEAN POWER PLAN

## Carbon Pollution Standards for Existing Power Plants



### SUMMARY OF EPA'S PROPOSAL:

- EPA has developed a flexible approach that allows for significant emissions reductions at low cost. It is an approach that draws on a wide range of tools to reduce carbon pollution, and it can pass legal muster. EPA estimates the proposal will reduce CO<sub>2</sub> emissions on a national basis (rolled up estimates of the impact of state standards) 26% below 2005 emissions by 2020 and 30% by 2030. That is equivalent to:
  - 18% below EPA's forecast of what would happen without the standards (i.e., business-as-usual) by 2020 and 25% by 2030 or
  - 13% below 2012 emissions by 2020 and 17% by 2030.
- These savings are significant. The Clean Car Standards set in 2010 and 2012 are projected to reduce CO<sub>2</sub> emissions by 4,140 million metric tons from 2020 to 2030. This proposal would deliver 5,344 million metric tons over the same period --almost 30% more.
- EPA's proposal can and should be strengthened. EPA is taking comments for 120 days on the assumptions it made to develop the state standards. NRDC believes the pollution reductions could be greater at a reasonable cost. In particular, states could do more to increase energy efficiency and the use of renewables than EPA assumed in setting the targets in its current proposal. (The final standards will be issued by June 2, 2015.)
- EPA's proposal takes a sensible approach of calculating a state's emission target using four basic building blocks and "best system of emissions reduction," including a wide range of cost-effective methods to reduce emissions. EPA does not prescribe how a state should meet its goal. Instead, EPA sets a state-specific goal and each state develops its plans and policy approaches to meet the target. The states asked for flexibility and EPA has provided it. This state-by-state approach has been used repeatedly to successfully cut pollution under the Clean Air Act.
- EPA has set modest and achievable targets for each state based on that state's current energy mix. EPA started with each state's 2012 energy mix. EPA then applied the same set of emission reduction tools to each state. EPA's formula is based on what states around the country are already doing. EPA determined each state's target emission reduction target by calculating how much the emission reduction tools could reduce a state's 2012 energy portfolio. Because each state has a unique energy mix, the various pollution reduction techniques achieve significantly different savings in each state and thus significantly different targets.



- The four tools used to set the state targets are:
  - Making existing coal plants more efficient.
  - Using existing gas plants more effectively.
  - Increasing renewables and nuclear.
  - Increasing end-use energy efficiency.

Note that states do not have to take the precise steps EPA used to calculate the target. They can choose to attain the targeted level of pollution reductions however they choose; but the target calculation shows what level is reasonable (and required).

EPA is proposing a two-part goal structure: an “interim goal” that a state must meet on average over the ten-year period from 2020-2029 and a “final goal” that a state must meet at the end of that period in 2030 and maintain thereafter. A state could adopt either the goal established by EPA, which is stated in terms of carbon intensity (i.e., amount of carbon per unit of power generation) or the state can set a mass-based goal of an equivalent amount of pollution (i.e., number of tons of carbon emitted).

The states must submit a state plan to EPA by June 30, 2016. However, EPA is allowing for conditional approval of a plan with some additional time to address state legislative and rulemaking activities, as well as development of multi-state plans.

## BACKGROUND

We have an obligation to protect our children and future generations from the impacts of climate change, and we can do so by setting the first-ever limits on carbon pollution from power plants. Carbon pollution fuels climate change, which triggers more asthma attacks and respiratory disease, worsens air quality, and contributes to more frequent, destructive, costly and deadly extreme weather events. Power plants are responsible for 40 percent of the carbon pollution in the United States, the single largest contributor to dangerous climate change, the effects of which we are already seeing. Right now we limit mercury, arsenic, lead, soot and other dangerous pollutants from power plants, but not the carbon pollution driving climate change.

On June 2, 2014, the U.S. Environmental Protection Agency, under President Obama’s Climate Action Plan, proposed a common-sense plan to cut carbon pollution from power plants. The detailed information from EPA on their Clean Power Plan is available at: <http://www2.epa.gov/carbon-pollution-standards/clean-power-plan-proposed-rule>

The draft EPA standards are a proposal. EPA is seeking public comment over the next 120 days after the proposal is published in the Federal Register. EPA is proactively working with states and other stakeholders to refine and improve its framework before finalizing it in June 2015.

The following is a summary of EPA’s proposal, mostly in the agency’s words. Quotes from EPA are in italics. NRDC’s initial reaction to the proposal is included at the end of this document.

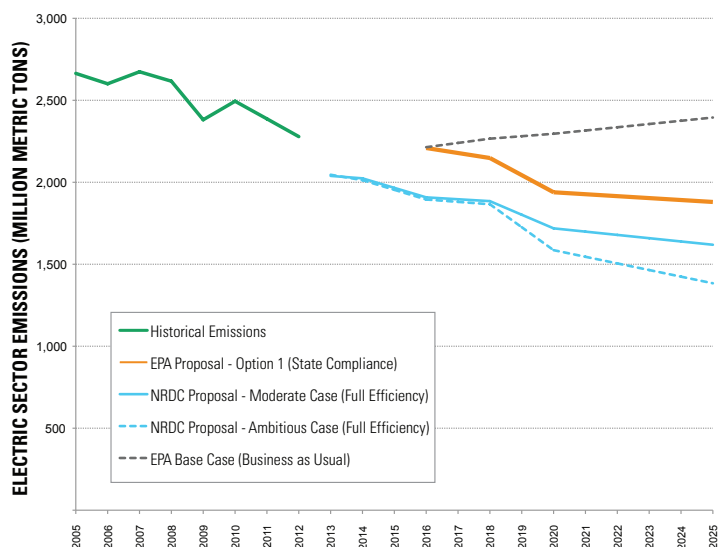
## ESTIMATE OF BENEFITS FROM THE EPA PROPOSAL:

- The Clean Power Plan will help cut carbon pollution from the power sector by 30 percent from 2005 levels.
- The proposal will also cut pollution that leads to soot and smog by over 25 percent in 2030.
- The Clean Power Plan will lead to climate and health benefits worth an estimated \$55 billion to \$93 billion in 2030, including avoiding 2,700 to 6,600 premature deaths and 140,000 to 150,000 asthma attacks in children.
- These climate and health benefits far outweigh the estimated annual costs of the plan, which are \$7.3 billion to \$8.8 billion in 2030. From the soot and smog reductions alone, for every dollar invested through the Clean Power Plan, American families will see up to \$7 in health benefits.
- EPA projects that the Clean Power Plan will continue to increase energy efficiency and reduce growth in demand for electricity. Nationally, this means that, in 2030 when the plan is fully implemented, electricity bills would be expected to be roughly 8 percent lower than they would [have] been without the actions in state plans. That would save Americans about \$8 on an average monthly residential electricity bill, savings they wouldn’t see without the states’ efforts under this rule.

## ESTIMATES OF CO<sub>2</sub> EMISSIONS FROM THE ELECTRIC SECTOR

EPA has established state-by-state targets on a rate (or “intensity”) basis (lbs/MWh, that is, how many pounds of pollutant come out of the smokestack for every unit of energy produced). EPA has also developed estimates of national CO<sub>2</sub> emissions reductions in 2020 and 2030. The national estimates for EPA’s proposal are shown below. The estimated level of emissions reductions from [NRDC’s proposal](#) is also shown in the figure below.

**FIGURE 1: Historic National CO<sub>2</sub> Emissions vs. EPA Clean Power Plan Proposal & NRDC Proposal Estimates**



## EPA'S PROPOSED REGULATIONS:

The proposal has two main elements:

1. state-specific emission rate-based CO<sub>2</sub> goals and
2. guidelines for the development, submission and implementation of state plans.

While this proposal lays out state-specific CO<sub>2</sub> goals that each state is required to meet, it does not prescribe how a state should meet its goal. CAA Section 111(d) creates a partnership between the EPA and the states under which the EPA sets these goals and the states take the lead on meeting them by creating plans that are consistent with the EPA guidelines.

It also allows states to pursue policies to reduce carbon pollution that:

1. continue to rely on a diverse set of energy resources,
2. ensure electric system reliability,
3. provide affordable electricity,
4. recognize investments that states and power companies are already making, and
5. can be tailored to meet the specific energy, environmental and economic needs and goals of each state.

Each state can do so alone or can collaborate with other states on multi-state plans that may provide additional opportunities for cost savings and flexibility.

EPA is required by the Clean Air Act to establish a “best system of emissions reduction” (BSER) in establishing state standards.

Overall, the BSER proposed here is based on a range of measures that fall into four main categories, or “building blocks,” which comprise improved operations at EGUs, dispatching lower-emitting EGUs and zero-emitting energy sources, and end-use energy efficiency. All of these measures have been amply demonstrated via their current widespread use by utilities and states.

While the state-specific goals that the EPA is proposing in this rule are based on consistent application of a single goal-setting methodology across all states, the goals account for these key differences. The state-specific CO<sub>2</sub> goals derived from application of the methodology vary because, in setting the goals for a state, the EPA used data specific to each state's EGUs and certain other attributes of its electricity system (e.g., current mix of generation resources). The agency is proposing state-specific final goals that must be achieved by no later than the year 2030. EPA also proposes “interim” goals that must be achieved, on average, during the 2020 to 2029 period.

## THE FOUR TOOLS IN THE TOOLBOX ARE:

- 1 **Making existing coal plants more efficient.** Hardware and software tweaks can produce, on average, 6% more electricity out of a ton of coal.
- 2 **Using existing gas plants more effectively.** Relying on already built gas power plants in a state and those in the pipeline achieves low-cost reductions by making better use of capital investments already made in each state. EPA forecasts that the plan will reduce our nation's gas use over time. Using conservative assumptions about what efficiency and renewables can do, gas use in the power sector would be 5% less in 2030 with the rule than without it.
- 3 **Increased renewables and nuclear.** The proposal evaluates renewables in various regions and applies the level of growth in renewables that is the average of the renewable promotion policies adopted in each region. It also assumes nuclear units under construction are completed.
- 4 **Increased end-use energy efficiency.** The proposal applies energy efficiency policies already adopted by many states. EPA assumes a slow ramp-up to levels in the middle of the pack, not leading-edge requirements.

**TABLE 1: SUMMARY OF THE BSER BUILDING BLOCKS**

BUILDING BLOCKS		DESCRIPTION	ASSUMPTIONS FOR GOAL SETTING FORMULA	NET COST ESTIMATE (\$/METRIC TON)
1	<b>Making existing coal plants more efficient</b>	Reducing the carbon intensity of generation at individual affected EGUs through heat rate improvements	Average heat rate improvement of 6% for coal steam electric generating units (EGUs)	\$6 to \$12
2	<b>Using Existing Gas Plants More Effectively</b>	Reducing emissions from the most carbon-intensive affected EGUs in the amount that results from substituting generation at those EGUs with generation from less carbon-intensive affected EGUs (including NGCC units under construction)	Dispatch to existing and under-construction natural gas combined cycle (NGCC) units to up to 70% capacity factor	\$30
3	<b>Increased Renewable and Nuclear</b>	Reducing emissions from affected EGUs in the amount that results from substituting generation at those EGUs with expanded low- or zero-carbon generation	Dispatch to new clean generation, including new nuclear generation under construction, moderate deployment of new renewable generation, and continued use of existing nuclear generation	\$10 to \$40
4	<b>Increased End-use Energy Efficiency</b>	Reducing emissions from affected EGUs in the amount that results from the use of demand-side energy efficiency that reduces the amount of generation required	Increase demand-side energy efficiency to 1.5% annually	\$16 to \$24



## EPA'S ASSUMPTIONS FOR RENEWABLES, NUCLEAR AND ENERGY EFFICIENCY

### ■ Increased use of Renewable and Nuclear Plants (Building Block 3):

- EPA's assumptions for the expansion of renewable energy are very modest and based on what states in each region have *already* committed to do. State renewable portfolio standard (RPS) commitments vary significantly, and as a result the scale of the renewables building block also varies by region. The EPA proposal also counts existing renewables towards the target, so in many cases the emissions reduction opportunity from new renewable resources is not considered.
- The proposal adjusts state targets to account for 6% of the existing nuclear fleet. It does this by adding 6% of current nuclear electricity generation, in megawatt hours (MWh), to the denominator of each state's target. This creates an incentive for states to retain existing nuclear plants. The proposal does not address the safety or the economic status of particular nuclear plants at risk of closing.

### ■ Increased use of End-use Energy Efficiency (Building Block 4):

- The energy efficiency building block assumes states expand programs at a very modest rate to achieve energy savings levels that 12 leading states have already committed to reach today – 1.5% annual savings. For states that are not already achieving this level, EPA ramps-up the expected energy efficiency savings slowly, at 0.2% per year.

- The proposal assumes very high energy efficiency program costs (almost double what most experts report) and assumes a short life-span for energy efficiency measures. Even with these very conservative assumptions, efficiency remains an important and low-cost tool in EPA's analysis. More reasonable assumptions, reflecting established market trends and empirical state program results, would significantly increase the projected emissions reductions delivered by this building block, thereby resulting in stronger state-by-state emissions reduction targets for 2020 and 2030.

### EPA IS PROPOSING A TWO-PART GOAL STRUCTURE:

- an “interim goal” that a state must meet on average over the ten-year period from 2020-2029 and
- a “final goal” that a state must meet at the end of that period in 2030 and thereafter.

A state could adopt the rate-based form of the goal established by the EPA or an equivalent mass-based form of the goal.<sup>1</sup> A multi-state approach incorporating either a rate- or mass-based goal would also be approvable based upon a demonstration that the state's plan would achieve the equivalent in stringency, including compliance timing, to the state-specific rate-based goal set by the EPA.

## STATE TARGETS

The following table shows the state intensity-based emission standards (lbs/MWh) EPA has set in comparison to historic emissions rates. As noted, the difference in each state's target is due to the different amount of carbon pollution reduced when EPA applied the four carbon pollution reductions tools to each state's energy portfolio.

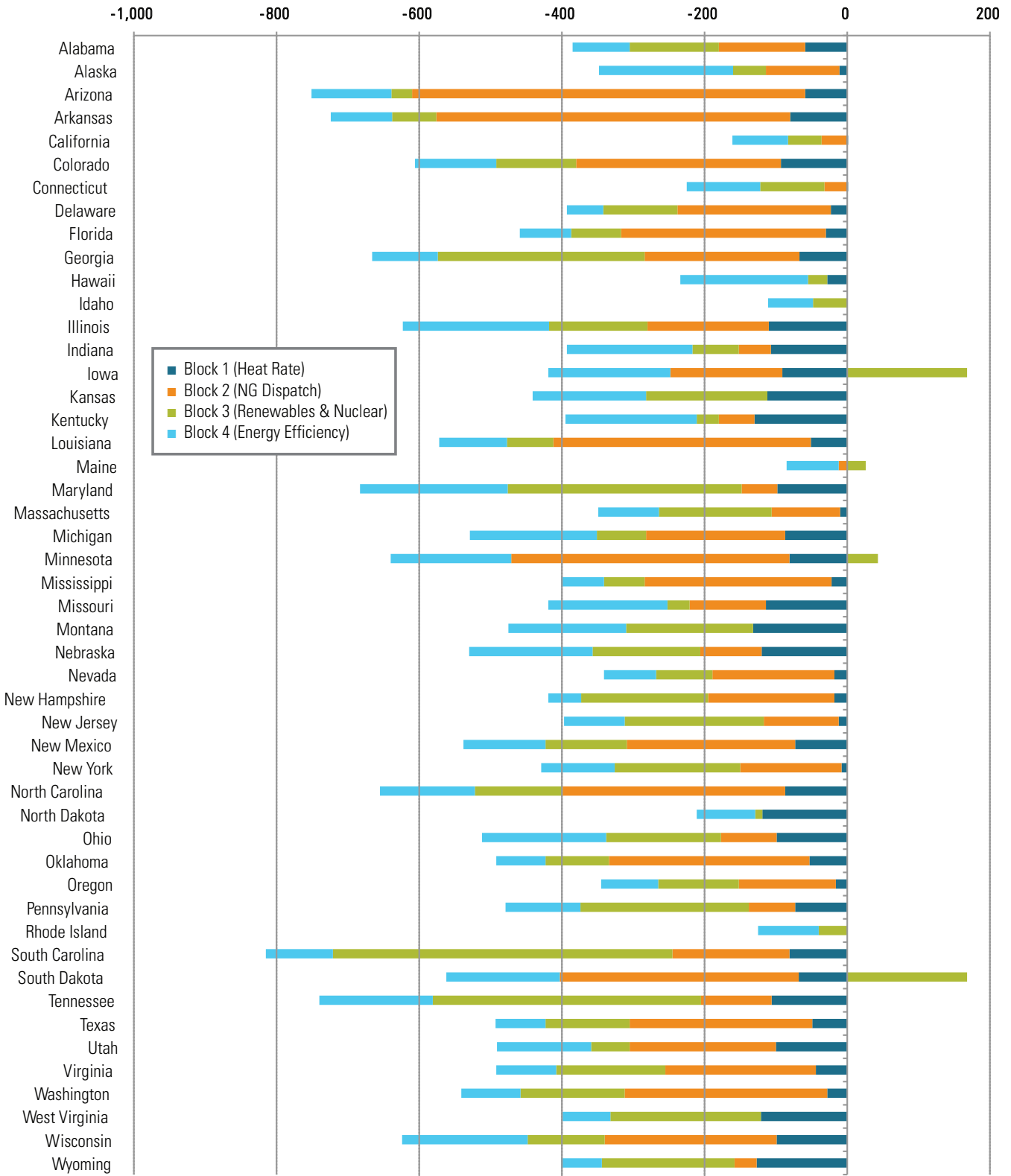
In order to depict how the four building blocks contribute to the state targets proposed by EPA, NRDC created the figure below, showing the relative contribution of each building block to each state's overall emissions target in 2030. The figure shows the relative contribution of each block – e.g., energy efficiency – to the target set for each state.<sup>2</sup>

**TABLE 2: Proposed State Targets**

STATE	2012 Emission Rate (Fossil, Renew. and 6% Nuclear) (lbs/MWh)	Interim Goal (2020 - 2029 average)	Interim Goal Percent Reduction (Compared to 2012)	2030 State Goal (2030 and thereafter)	2030 Goal Percent Reduction (Compared to 2012)	STATE	2012 Emission Rate (Fossil, Renew. and 6% Nuclear) (lbs/MWh)	Interim Goal (2020 - 2029 average)	Interim Goal Percent Reduction (Compared to 2012)	2030 State Goal (2030 and thereafter)	2030 Goal Percent Reduction (Compared to 2012)
Alabama	1,444	1,147	-21%	1,059	-27%	Montana	2,245	1,882	-16%	1,771	-21%
Alaska	1,351	1,097	-19%	1,003	-26%	Nebraska	2,009	1,596	-21%	1,479	-26%
Arizona	1,453	735	-49%	702	-52%	Nevada	988	697	-29%	647	-34%
Arkansas	1,640	968	-41%	910	-45%	New Hampshire	905	546	-40%	486	-46%
California	698	556	-20%	537	-23%	New Jersey	932	647	-31%	531	-43%
Colorado	1,714	1,159	-32%	1,108	-35%	New Mexico	1,586	1,107	-30%	1,048	-34%
Connecticut	765	597	-22%	540	-29%	New York	983	635	-35%	549	-44%
Delaware	1,234	913	-26%	841	-32%	North Carolina	1,646	1,077	-35%	992	-40%
Florida	1,200	794	-34%	740	-38%	North Dakota	1,994	1,817	-9%	1,783	-11%
Georgia	1,500	891	-41%	834	-44%	Ohio	1,850	1,452	-22%	1,338	-28%
Hawaii	1,540	1,378	-11%	1,306	-15%	Oklahoma	1,387	931	-33%	895	-35%
Idaho	339	244	-28%	228	-33%	Oregon	717	407	-43%	372	-48%
Illinois	1,895	1,366	-28%	1,271	-33%	Pennsylvania	1,540	1,179	-23%	1,052	-32%
Indiana	1,923	1,607	-16%	1,531	-20%	Rhode Island	907	822	-9%	782	-14%
Iowa	1,552	1,341	-14%	1,301	-16%	South Carolina	1,587	840	-47%	772	-51%
Kansas	1,940	1,578	-19%	1,499	-23%	South Dakota	1,135	800	-29%	741	-35%
Kentucky	2,158	1,844	-15%	1,763	-18%	Tennessee	1,903	1,254	-34%	1,163	-39%
Louisiana	1,466	948	-35%	883	-40%	Texas	1,298	853	-34%	791	-39%
Maine	437	393	-10%	378	-14%	Utah	1,813	1,378	-24%	1,322	-27%
Maryland	1,870	1,347	-28%	1,187	-37%	Virginia	1,297	884	-32%	810	-38%
Massachusetts	925	655	-29%	576	-38%	Washington	763	264	-65%	215	-72%
Michigan	1,696	1,227	-28%	1,161	-32%	West Virginia	2,019	1,748	-13%	1,620	-20%
Minnesota	1,470	911	-38%	873	-41%	Wisconsin	1,827	1,281	-30%	1,203	-34%
Mississippi	1,130	732	-35%	692	-39%	Wyoming	2,115	1,808	-15%	1,714	-19%
Missouri	1,963	1,621	-17%	1,544	-21%						

**FIGURE 2: Contribution of Each Building Block to the State Goal**

**CHANGE IN STATE GOAL: 2012 BASELINE TO 2030 (LBS/MWH)**



## THE PROPOSAL OFFERS STATES SIGNIFICANT FLEXIBILITY IN CRAFTING STATE PLANS:

While this proposal lays out state-specific CO<sub>2</sub> goals that each state is required to meet, it does not prescribe how a state should meet its goal. CAA Section 111(d) creates a partnership between the EPA and the states under which the EPA sets these goals and the states take the lead on meeting them by creating plans that are consistent with the EPA guidelines. Each state can do so alone or can collaborate with other states on multi-state plans that may provide additional opportunities for cost savings and flexibility.

Addressing a concern raised by both utilities and states, the EPA is proposing that states could choose approaches in their compliance plans under which full responsibility for actions achieving reductions is not placed entirely upon emitting electric generating units (EGUs); instead, state plans could include measures and policies (e.g., demand-side energy efficiency programs and renewable portfolio standards) for which the state itself is responsible.

The EPA is proposing to evaluate and approve state plans based on four general criteria:

1. enforceable measures that reduce EGU CO<sub>2</sub> emissions;
2. projected achievement of emission performance equivalent to the goals established by the EPA, on a timeline equivalent to that in the emission guidelines;
3. quantifiable and verifiable emission reductions; and
4. a process for biennial reporting on plan implementation, progress toward achieving CO<sub>2</sub> goals, and implementation of corrective actions, if necessary.

The Presidential Memorandum also calls for a deadline of June 30, 2016, for states to submit their state plans. The EPA is proposing that each state must submit a plan to the EPA by June 30, 2016. However, the EPA recognizes that some states may need more than one year to complete all of the actions needed for their final state plans, including technical work, state legislative and rulemaking activities, coordination with third parties, and coordination among states involved in multi-state plans. Therefore, the EPA is proposing an optional two-phased submittal process for state plans. Each state would be required to submit a plan by June 30, 2016, that contains certain required components. If a state needs additional time to submit a complete plan, then the state must submit an initial plan by June 30, 2016 that documents the reasons the state needs more time and includes commitments to concrete steps that will ensure that the state will submit a complete plan by June 30, 2017 or 2018, as appropriate.

If the state develops a plan that includes a multi-state approach, it would have until June 30, 2018 to submit a complete plan. Further, the EPA is proposing that states participating in a multi-state plan may submit a single joint plan on behalf of all of the participating states.

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### Endnotes

- 1 The mass-based goal development appears to require the states to complete a modeling exercise to develop the tonnage targets. See TSD: Projecting EGU CO<sub>2</sub> Emission Performance in State Plans, section III, page 13.
- 2 Note: the increases in intensity for Block 3 in a few states appear to be due to a calculation or transcription error in EPA's tables.