

# EPA's Proposed Clean Power Plan: What it Might Mean for Wyoming

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## **CONTENTS**:

Introduction	4
Section 111(d) Proposal: Overview	6
EPA's Guidelines for State Plans	8
Wyoming's Electrical Energy Portfolio	13
Wyoming's Goal Calculation and Application of the Four Building Blocks in Wyoming	. 15
What does this mean for Wyoming?	. 29

# EPA's Proposed Clean Power Plan: What Might it Mean for Wyoming?<sup>1</sup>

#### **INTRODUCTION**

The Obama Administration is pursuing a variety of initiatives to arrest rising greenhouse gas (GHG) emissions and the resulting effects on our climate. One of those efforts is the Environmental Protection Agency's (EPA) proposed Clean Power Plan (CPP), released in June 2014.<sup>2</sup> The CPP follows through with the President's commitment in 2013 to address climate change and an earlier settlement where EPA agreed to proposed standards for new and existing power plants.<sup>3</sup> The CPP implements section 111(d) of the Clean Air Act (CAA), and it proposes a suite of options for reducing GHG from existing fossil-fuel-fired power plants, particularly coal plants and natural gas combined-cycle (NGCC) generating units. The CPP also complements a preexisting proposed rule to reduce GHG emissions from new, modified, or reconstructed facilities proposed under section 111(b) of the CAA. The CPP proposes to set state-specific levels of GHG emissions reduction that EPA deems achievable, labeled 'goals' under the proposed rule. The proposed rule provides states with a set of guidelines to meet these goals, from there the states are left with the task of developing plans consistent with those guidelines and that spell out standards of performance sufficient to achieve the level of GHG emission reduction prescribed by EPA. The EPA calculates that the CPP would reduce emissions of GHG from the power sector by

<sup>&</sup>lt;sup>1</sup> This document is an adaptation of a document prepared by the law firm of Beatty & Wozniak, P.C., Denver, Colorado, for the University of Wyoming. The original document can be obtained upon request.

<sup>&</sup>lt;sup>2</sup> 79 Fed. Reg. 34,830 (June 18, 2014). The EPA announced the proposed rule on June 2, 2014, and initially provided a 120-day public comment period. The agency subsequently extended the comment period an additional 60 days. By the end of the comment period, the EPA claims it received over 2 million comments. Brief for Respondent EPA, In re: Murray Energy Corp. v. EPA, No. 14-112 & No. 14-1151 (Filed Feb. 12, 2015). The Natural Resources Defense Council claims that eight million comments were filed in support of the CPP over the course of three years. http://switchboard.nrdc.org/blogs/fbeinecke/7\_million\_comments\_filed\_in\_su.html (last visited December 7, 2014). When, on January 7, 2015, EPA announced that it was postponing issuance of the final rule until mid-summer 2015, the media reported that the agency cited the four million comments it received on the proposals for new, modified and reconstructed, and existing facilities. www.nytimes.com/2015/01/08/US/politics/for-states-that-don't-file-carbon-cutting plans-epa-will-impose-model-rule.html (last visited Jan. 10, 2015).

<sup>&</sup>lt;sup>3</sup> See EPA, Proposed Settlement Agreement, 75 Fed. Reg. 82,392 (Dec. 30, 2010); White House, Memorandum for the Administrator of EPA, re: Power Sector Carbon Pollution Standards, June 25, 2013. *See also* 79 Fed. Reg. 1430 (Jan. 8, 2014) (performance standards for new power plants); 79 Fed. Reg. 34,960 (June 18, 2014) (standards for modified and reconstructed power plants).

approximately 30% when measured against 2005 levels,<sup>4</sup> and correspondingly achieve net climate and health benefits of \$48-\$82 billion.<sup>5</sup> The CPP has precipitated a wide-ranging dialogue, including about its potential impact on the reliability of the electric grid,<sup>6</sup> the practical ability of state implementation, as well as its consistency with the CAA or even constitutional principles.<sup>7</sup> Some states and members of the regulated community support the CPP, while others, including the State of Wyoming, are presently questioning the proposal.<sup>8</sup> All indications suggest that the proposed CPP will likely change in response to public input, but presently it is unclear precisely how it will change.<sup>9</sup>

<sup>7</sup> While the majority of academics reject any suggestion that the CPP might have constitutional infirmities, the issue nevertheless has received national attention because Harvard Law Professor Lawrence Tribe, on behalf of a client, expressed concerns over the proposal's constitutionality. *See* Jody Freeman, Richard Lazarus, *Larry Tribe and Mitch McConnell's Flagrant Constitutional Error*, POLITICO, March 25, 2015.

<sup>&</sup>lt;sup>4</sup> 79 Fed. Reg. at 34832.

<sup>&</sup>lt;sup>5</sup> Id.

<sup>&</sup>lt;sup>6</sup> Initially, some within the Federal Energy Regulatory Commission (FERC) as well as other energy regulators questioned how well the CCP accounted for electric grid reliability. See Phillip D. Moeller, Letter to Administrator McCarthy, Re: Docket ID No. EPA-HQ-OAR-2013-0602, Dec. 1, 2014 (on file with author). See generally Andrew Childers, FERC Commissioners Recall Little Input on EPA Rule to Curb Power Plant Emissions, BNA DAILY ENVT., Jan. 20, 2015; Mark Drajem, Utility Group Urges Delay in EPA Power Plant Carbon Rule to Shield Electric Grid, BNA DAILY ENVT., Nov. 6, 2014. A recent report by the Brattle Group, however, suggests that those concerns may be overstated. See Andrew Childers, EPA's Proposed Clean Power Plan: No Threat to Grid Reliability, Report Says, BNA DAILY ENVT., Feb. 13, 2015. Cf. Patrick Ambrosio, Clean Power Plan Includes Time, Flexibility To Address Grid Reliability, EPA Official Says, BNA DAILY ENVT., Jan. 7, 2015 (EPA "placed a significant focus on grid reliability in developing its proposed carbon dioxide standards for existing power plants"). FERC is currently developing grid reliability recommendations to EPA on the CPP. See Rebecca Kern, FERC to Provide Grid Reliability Input for EPA's Clean Power Plan, BNA DAILY ENVT., April 9, 2015. As part of its effort, FERC initiated a series of technical conferences exploring grid reliability and is working "urgently on reliability options." Rod Kuckro, FERC Staff Working Urgently on Reliability Options for Clean Power Plan, E&E NEWS, April 10, 2015; see also Jeffrey Tomich, Diverse Central States Echo Reliability Concerns at Final Clean Power Plan Conference, E&E NEWS, April 1, 2015. For a recent analysis of the CPP impacts on electrical grid reliability see generally North American Electric Reliability Corporation, Potential Reliability Impacts of EPA's Proposed Clean Power Plan-Phase I, NERC.COM, http://www.nerc.com/pa/RAPA/ra/Reliability%20Assessments%20DL/Potential%20Reliability%20Impacts%20of% 20EPA's% 20Proposed% 20Clean% 20Power% 20Plan% 20-% 20Phase% 20I.pdf (last visited April 21, 2015).

<sup>&</sup>lt;sup>8</sup> "State regulators are exploring their compliance options even as some state officials have questioned the proposed rule's legality." Andrew Childers, *Governors Association to Help Four States Identify Compliance Options for Carbon Rule*, BNA DAILY ENVT., March 23, 2015. *See also* Andrew Childers, *States Say Clean Power Plan Targets Achievable Despite Criticisms of Proposal*, BNA DAILY ENVT., March 11, 2015 ("States said they have the tools to meet the [EPAs] [CPP] targets even as they quibble over how the final rule should be structured."). Recently, EPA suggested that a state's failure to comply with the CPP will not likely result in withholding state highway funds—a sanction generally available when a state fails to comply with a proposed call for changes in a state implementation plan. *See* Jean Chemnick, *Agency Won't Withhold Highway Funds for Clean Power Plan\_McCarthy*, E&E NEWS, March 30, 2015.

<sup>&</sup>lt;sup>9</sup> E.g., "The [EPA] remains open to modifying interim targets for reducing carbon emissions under final rules." Anthony Adragna, *EPA Open to Interim Goal Changes In Final Power Plant Rules, McCarthy* Says, BNA Daily Envt., Feb. 18, 2015; *see also* Andrew Childers, *EPA Unsure About Deadline Extensions for State Clean Power Plan Compliance*, BNA DAILY ENVT., April 13, 2015. Also, many details for implementing the CPP may occur after the plan is finalized. See Andrew Childers, *Questions Likely to Remain for States Even After Clean Power Plan is Finalized*, BNA DAILY ENVT, April 9, 2015.

This report briefly examines the proposed CPP (recognizing it is only a proposal), exploring the legal structure and assumptions, as well as how the CPP applies to Wyoming and the issues prompted by its proposed application. In Wyoming, for instance, the CPP expects a 19% reduction in emissions from in-state electric generating sources. This report then surveys Wyoming's existing electric energy resources and identifies hurdles associated with the application of the CPP to Wyoming.

#### I. <u>SECTION 111(d) PROPOSAL: OVERVIEW</u>

The EPA is proposing the CPP under section 111(d) of the CAA. Section 111, or the New Source Performance Standards (NSPS) program has been a part of the Clean Air Act since 1970.<sup>10</sup> Section 111 requires the EPA Administrator to designate source categories that, in her judgment, cause or contribute significantly to "air pollution which may reasonably be anticipated to endanger public health or welfare."<sup>11</sup> Having made such a determination for a source category, the Act then authorizes the Administrator to establish "standards of performance" for new sources within that source category.<sup>12</sup> Once EPA decides to regulate new sources under 111(b), which EPA has proposed for Electric Generating Units, it can then establish standards of perform under 111(d) for existing sources. The term "standards of performance" are emission standards that "reflect the degree of emission limitations achievable through the application of the best system of emission reduction which (taking into account the cost of achieving such reduction and any nonair quality health and environmental impact and energy requirements) the Administrator determines has been adequately demonstrated."<sup>13</sup> That definition is often shortened to "best system of emission reduction" or BSER. Under the CAA's model of cooperative federalism, section 111(c) allows states to develop and implement standards of performance for new sources through the states' State Implementation Plans (SIPs).

<sup>&</sup>lt;sup>10</sup> In company with the proposed guidelines, EPA also published a number of technical support documents as well as a *Legal Memorandum for Proposed Carbon Pollution Emission Guidelines for Existing Electric Utility Generating Units* that canvasses the legislative history of section 111 as well as EPA's interpretation of section 111(d). <u>http://www2.epa.gov/carbon-pollution-standards/clean-power-plan-proposed-rule-legal-memorandum</u> (last visited Oct. 27, 2014) (*hereinafter Legal Memorandum*).

<sup>&</sup>lt;sup>11</sup> 42 U.S.C. § 7411(b)(1)(A); EPA has regulated four pollutants from five source categories under section 111(d). "In addition, the agency has regulated additional pollutants under CAA section 111(d) in conjunction with CAA section 129." 79 Fed. Reg. 34844-34845.

<sup>&</sup>lt;sup>12</sup> 42 U.S.C. § 7411(b)(1)(B).

<sup>&</sup>lt;sup>13</sup> 42 U.S. Code § 7411(a).

Section 111(d) presents an unusual, perhaps unique legal issue. When the Congress enacted the 1990 amendments to the CAA, the House of Representatives and Senate adopted different versions of section 111(d). The House adopted a version excluding from regulation under section 111(d) *source categories* regulated under section 112 of the Act. That language would preclude regulating electric generating units (EGUs) under section 111(d), if EGUs were being regulated under section 112. And EPA has, in the Mercury Air Toxics (MATs) rule, recently regulated EGUs under section 112. The Senate version, however, would limit 111(d)'s purview only in cases where a specific air pollutant is regulated under section 112, thus allowing regulation of CO<sub>2</sub> emissions from EGUs. These differences were never reconciled, and how this drafting error unfolded is explained in a recent history of the provision,<sup>14</sup> and yet undoubtedly the matter will be resolved once a court decides how much weight to afford EPA's argument that its interpretation favoring the Senate version ought to enjoy sufficient deference because the language is ambiguous. Several states as well as others have filed legal challenges to EPA's proposed guidelines, arguing the agency is proscribed from regulating these sources.<sup>15</sup>

Next, the CPP's approach toward establishing BSER that relies upon activities beyond the fenceline (outside the confines the regulated source) has precipitated a similar dialogue over whether the agency exceeded its authority.<sup>16</sup> The EPA started with establishing performance standards that "reflect the degree of emission limitation achievable through application of the 'best system of emission reduction' that, taking into account the cost of achieving such reduction and any non-air quality health and environmental impacts and energy requirements, the administrator determines has been adequately demonstrated."<sup>17</sup> The agency relied heavily on the term "system" within the phrase "best *system* of emissions reductions" and in lieu of requiring end-of-the-pipe

<sup>&</sup>lt;sup>14</sup> See Robert R. Nordhaus, Avi Zevin, *Historical Perspectives on Section 111(d) of the Clean Air Act*, 44 ENVT. L. REP. 11095 (2014). See also Institute for Policy Integrity, New York University School of Law, Comments on Proposed Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units, Dec. 1, 2014.

<sup>&</sup>lt;sup>15</sup> See, e.g., In Re Murray Energy Corp., D.C. Cir., No. 14-1112; Murray Energy Corp. v. EPA, D.C. Cir., No. 14-1151; State of West Virginia v. EPA, No. 14-1146, D.C. Cir., Nov. 26, 2014. The case has been argued, and it is quite possible that it will be dismissed on procedural grounds; a decision is expected later this year. Jeremy P. Jacobs, *Skeptical Judges Question Attack on EPA's Proposed Rule*, E&E NEWS, April 16, 2015.

<sup>&</sup>lt;sup>16</sup> See generally Roger R. Martella Jr., *The Legal Scrutiny Surrounding 111(d): Will It Survive or Stumble?*, 44 ENVT. L. REP. 11058 (2014); Allison D. Wood, Andrew D. Knudsen, *EPA's Novel Interpretation of "Best System of Emission Reduction" for Existing Electric Generating RTOUnits Violates the Clean Air Act*, 44 ENVT. L. REP. 11064 (2014); Robert R. Nordhaus, IIan W. Gutherz, *Regulation of CO<sub>2</sub> Emissions From Existing Power Plants Under §111(d) of the Clean Air Act: Program Design and Statutory Authority*, 44 ENVT. L. REP. 10366 (2014).
<sup>17</sup> 79 Fed. Reg. at 34834.

controls to reduce emissions of the targeted pollutant from the particular source instead prescribed state-specific emission rate-based CO<sub>2</sub> goals.<sup>18</sup> If, however, the agency is not permitted to go beyond the fenceline, "the Section 111(d) rules could not lead to anywhere close to the emissions reductions that EPA is seeking," according to Columbia's Michael Gerrard. Indeed, Gerrard continues that "[t]he argument that the statutory language . . . does not allow EPA to go beyond the fenceline is closely related to its opponents' suggestion that the proposed rules would turn EPA into an energy regulator that is inappropriately making broad choices about such matters as fuel choice."<sup>19</sup>

#### II. EPA'S GUIDELINES FOR STATE PLANS

The CPP establishes, on a state-by-state basis, individual state-wide emission rate goals for existing fossil-fuel power plants. These rates are expressed as lbs. of CO<sub>2</sub> per megawatt hour (MWh), although the CPP does afford states the option of converting their specific emission ratebased goal into an alternative mass-based equivalent expressed in total tons of CO<sub>2</sub>. The EPA established these rates by employing four emission reduction strategies, termed "building blocks," which would impact CO<sub>2</sub> emission rates for each state. "The EPA used this building block approach to develop and propose a 2030 emission rate goal for each state and an interim goal that the state must meet, on average, between 2020 and 2029."<sup>20</sup> When developing its proposal, EPA relied heavily on the interconnected nature of the electrical grid and existing practices for balancing load and generation. The EPA emphasized that its proposed rule was designed to preserve diversity in fuel types and to maintain reliability of the grid while working within the existing investment trends favoring development of natural gas and renewable energy generation, as well as deployment of energy efficiency resources. The EPA and other commentators have stated that

<sup>&</sup>lt;sup>18</sup> 79 Fed. Reg. at 34852, 34885-35886. Some argue that EPA "has repeatedly instituted statewide emissions limits and trading programs to address air pollution, where the statute refers to controlling emissions form individual sources." Institute for Policy Integrity, New York University School of Law, Comments on Proposed Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units, Dec. 1, 2014. Others disagree, and the issue likely will require judicial resolution.

<sup>&</sup>lt;sup>19</sup> Michael B. Gerrard, *Legal Challenges to Obama Administration's Clean Power Plan*, NEW YORK LEGAL JOURNAL, Sept. 11, 2014.

<sup>&</sup>lt;sup>20</sup> Kyle Danish, Doug Smith, Avi Zevin, *Early Clean Power Planning: A Hedging Strategy for Sec. 111(d)*, PUBLIC UTILITIES FORTNIGHTLY (Feb. 2015).

section 111(d) provides states with the flexibility to develop individual state plans.<sup>21</sup> And in many places, EPA's proposed rule references offering states significant flexibility in establishing standards of performance for existing electric generating units.

The CPP, therefore, relies upon two major components: (1) statewide goals; and (2) the identification of four building blocks for achieving those goals. As explained above, EPA established statewide goals, ostensibly in recognition of the interconnected nature of the electrical grid. It calculated individual goals for each state, taking into account the state's fuel mix, its electricity market, and numerous other factors. Each state's goal, consequently, is an emission rate representing the deployment of BSER (utilizing the building blocks) against 2012 state-level data. That emission rate reflects the amount of  $CO_2$  emissions from fossil-fuel fired powers plants, expressed in lbs., divided by electricity generation from fossil-fuel fired plants and certain low or zero-emitting power sources in MWhs. And again that rate can then be transformed into a mass-based equivalent.<sup>22</sup>

EPA expects to complete its 111(d) rulemaking by July 2015. States intending to work independently would be required to submit their plans one year later, while states working together on regional plans would have two years to submit their plans to EPA for review, with a possible one-year extension under either option.<sup>23</sup>

<sup>&</sup>lt;sup>21</sup> E.g., Letter from Frank Prager, Xcel Energy, to Administrator Gina McCarthy, U.S. Environmental Protection Agency (Mar. 20,2014) (on file with the author); J. Tarr &T. Profeta, Regulating Carbon Dioxide Under Section Clean 111(d)Air Act, Nicolas Institute Report (Jan. ofthe 2013), available at (http://nicholasinstitute.duke.edu/sites/default/files/publications/ni r 13-01.pdf) (last visited Oct. 27, 2014); M. Ceronsky & T. Carbonell, Section 111(d) of the Clean Air Act – The Legal Foundation for Strong, Flexible, & Cost-Effective Carbon Pollution Standards for Existing Power Plants, Environmental Defense Fund (Feb. 2014), available at http://www.edf.org/sites/default/files/section-111-d-of-the-clean-air-act the-legal-foundation-for-strong-flexiblecost-effective-carbon-pollution-standards-for-existing-power-plants.pdf) (last visited Oct. 27, 2014).

<sup>&</sup>lt;sup>22</sup> A mass-based standard may have advantages for a heavily coal-dependent state such as Wyoming, if Wyoming chooses to submit a state-only plan. Just weeks before the close of the comment period, EPA announced the availability of a Technical Support Document outlining two possible methodologies for translating a rate-based goal to a mass-based goal. 79 Fed. Reg. 67406 (Nov. 13, 2014). The Technical Support Document can be found at http://www2.epa.gov/sites/produciton/files/2014-11/documents/20141106tds-rate-to-mass.pdf, (last visited Jan. 2, 2015) (Translation of the Clean Power Plan Emission Rate-Based CO<sub>2</sub> Goals to Mass-Based Equivalents).

<sup>&</sup>lt;sup>23</sup> EPA acknowledges this is an ambitious timeline for those states requiring legislative authorization, and it allowed states the ability to seek an additional year if they provide an outline of their plan by the first deadline. Nevertheless, some states have expressed concerns about the challenges in meeting these timelines. Letter from National Association of Clean Air Agencies to Gina McCarthy, U.S. Environmental Protection Agency (Dec. 1, 2014), available at <a href="http://www.4cleanair.org/sites/default/files/Documents/111d-NACAACommentsFinal-12-14\_LETTERHEAD.pdf">http://www.4cleanair.org/sites/default/files/Documents/111d-NACAACommentsFinal-12-14\_LETTERHEAD.pdf</a>.

<u>The Four Building Blocks To Achieve BSER</u>. Based on extensive analysis, EPA concluded that, in setting greenhouse gas performance standards for emissions of greenhouse gases from fossil plants, it would rely upon four "building blocks" to assist states in achieving the BSER:

- 1. **Make Fossil Fuel Plants More Efficient.** Improve the heat rate at fossil-fuel fired electric generating units by 6 percent to reduce those units' carbon intensity;<sup>24</sup>
- 2. Use Lower Emitting Power Sources Such as Natural Gas More. Revise the way in which electrical energy capacity is "dispatched" to call upon the least-carbon intensive resource (i.e. natural gas EGUs) first and the most-carbon intensive resource last. In EPA's calculation, this building block anticipates that states would increase generation from existing combined cycle natural gas generating units up to a 70 percent utilization target;
- 3. Use More Zero and Low Emitting Power Sources. Substitute generation from renewable energy resources and existing nuclear energy plants for energy produced at fossil plants. The calculation of each state's renewable energy target is described below; and
- 4. Use Electricity More Efficiently. Offset energy produced at fossil plants by increasing investment in demand-side energy efficiency to reach a 1.5 percent annual electricity savings rate in the 2020-2029 time period.

The EPA characterized these building blocks as the "most cost-effective system of emission reductions for GHG emissions from the power sector under" section 111(d) of the CAA.<sup>25</sup> Nevertheless, EPA stressed throughout the preamble to the CCP that it was not prescribing precisely how each state must reach the established emissions rate, and EPA acknowledged that, for some states, particularly those that have adopted emissions trading regimes, a mass-based standard might be more appropriate. The EPA intends to afford states flexibility when designing systems that best fit each state's energy and environmental objectives. Individual states (or

<sup>&</sup>lt;sup>24</sup> While EPA's rationale is multi-faceted, an important reason for blocks 2-4 is that, otherwise, there would be a significant economic incentive to run units at which heat rate improvements had already been accomplished, thereby diluting the carbon reductions attainable with heat rate improvements. EPA is silent on how state economic regulators will assure regulated utilities that they can recover the costs of heat rate improvements for units that would, presumably, run less and generate less revenue. <sup>25</sup> 79 Fed. Reg. at 34832.

regional efforts)<sup>26</sup> would be free to select measures or combinations of measures that each state (or regional groups of states)<sup>27</sup> concludes would enable it to achieve the state's goal.<sup>28</sup> A state (or regional group of states) also may select measures or other building blocks not identified by EPA in its BSER determination, provided those other measures or building blocks achieve reductions at affected units that are sufficient to meet the state's interim and final goals.<sup>29</sup>

Toward that end, EPA offered states two very different approaches for allocating responsibility for achieving the state's goals. Under one approach, states could structure their programs to impose the full responsibility for meeting the state's goals (all four building blocks)

<sup>&</sup>lt;sup>26</sup> In some parts of the United States, Independent System Operators (ISOs) or Regional Transmission Operators (RTOs) could provide a mechanism for collective action across states. For states that are members of the Regional Greenhouse Gas Initiative (RGGI) in the Northeastern and New England states, RGGI may be well situated to provide a regional basis for complying with the EPA mandate in section 111(d). A collaborative effort of stakeholders from the Midwest submitted comments seeking greater clarity from EPA on how regional arrangements could be structured. *See Midwestern Power Collaborative's Final Comments to the U.S. EPA on Draft 111(d) Guidelines*, December 1, 2014,

http://www.betterenergy.org/sites/www.betterenergy.org/files/MPSC%20Consensus%20Comments%20to%20EPA\_ 12-1-2014 Final.pdf (last visited Jan. 4, 2015). The Clean Energy Group, a group of electric companies, commissioned a study on potential regional approaches to compliance with 111(d). M.J. Bradley & Associates, Multi-State Responses to GHG Regulation Under Section 111(d) of the Clean Air Act (April 2014), http://www.mjbradley.com/sites/default/files/Multi-State%20Responses%20to%20GHG%20Regulation.pdf (last visited Jan 3. 2014). A report from the Center for the New Energy Economy at Colorado State University: A State Planning Guide for Clean Air Act Section 111(d), at 19 (June 2014), includes links to various reports and studies on the benefits of regional cooperation in developing 1119d) state plans. http://cnee.colostate.edu/graphics/uploads/CNEE\_CAA-Section-111d-State-Planning-Guide-6\_2014.pdf (last visited Jan. 3, 2015).

<sup>&</sup>lt;sup>27</sup> States participating in the Regional Greenhouse Gas Initiative (RGGI) may rely upon that institutional mechanism to meet the member state's carbon reduction goals. Other states may rely upon ISOs or RTOs to meet the participating states' carbon reduction goals. The Midwest system operator, for instance, explored the impact of a regional approach in its analysis. See MISO, GHG REGULATION IMPACT ANALYSIS-INITIAL STUDY RESULTS (Sept. 14, 2014). The Southwest Power Pool similarly analyzed compliance on a regional basis. See SPP ENGINEERING, SPP CLEAN POWER PLAN COMPLIANCE ASSESSMENT (April 8, 2015); see also Edward Klump, Grid Operator Says Regional Approach to Clean Power Plan Possible, Yet Costly, E&E NEWS, April 9, 2015 (discussing report an reactions). And others have suggested how regional plans "make sense." Kristi E. Swartz, "A Lot of Benefit" Seen on Regional Approach to EPA Climate Rule, E&E NEWS, April 1, 2015. There are no ISOs or RTOs in the Intermountain West, however, and the CPP's time constraints may inhibit forming such organizations, even if the political will exists. Recently, eleven western states urged the EPA to be flexible on the kind of regional plans that western states may submit. Western States' 111(d)**Comments** to EPA (Oct. 30, 2014), available at http://www.azdeq.gov/environ/air/download/Western\_State\_111\_d\_Comment\_Letter\_October\_30\_2014.pdf (last visited Jan. 10, 2015). Similarly, Utah opposes the CPP but nonetheless has joined (as the lead) with Montana, Idaho and Oregon to seek a DOE grant to explore regional collaboration options. Emily Holden, Western States Studying Regional Clean Power Plan Options, Despite Reservations, E&E NEWS, April 14, 2015. <sup>28</sup> *Id.* at 84835.

 $<sup>^{29}</sup>$  *Id.* The agency identifies new natural gas combined cycle units as one measure the state might employ. 79 Fed. Reg. at 84837. Elsewhere, however, EPA appears to reject the notion that a state might elect to construct new NGCC units as a 111(d) compliance measure, because new NGCC units would be covered by 111(b) rather than 111(d). The agency also suggests that new nuclear plants could be a compliance measure. *Id.* 

on the affected electricity generating units.<sup>30</sup> Under the second approach, a state might choose a suite of measures and strategies (a portfolio approach) that do not impose the entire responsibility for meeting the state's goals on the electricity units; rather, the state plan could include measures that place the responsibility of meeting some or all of the measures and policies, particularly those relating to renewable energy and energy efficiency goals, on the state (and therefore on energy service providers). As one observer notes, "[i]n implementing a portfolio approach, states have the flexibility to employ a wide range of policies that would be implemented 'outside the fence' of a typical power plant, such as renewable portfolio standards" or energy efficiency programs.<sup>31</sup>

<u>Compliance Deadlines</u>. Once the individual state and regional plans are submitted and approved, EPA's proposal indicates that states should implement building blocks one and two, heat rate improvements and re-dispatch, by 2020 (a mere four years after promulgation of the final guidelines). The CPP otherwise requires that each state meet its emissions goal by 2030. In addition to the emission goal deadline of 2030, the CPP also contains an interim target deadline. Under these requirements, a state must meet an interim emission performance goal beginning in 2020 and on each year from 2020 to 2029.<sup>32</sup> Further, as explained more fully below, the interim target – an average of the interim goals for 2020-2029 – would require a state to meet an interim goal in 2020 that represents an average of the annual goals for the years 2020 through 2029 for building blocks three (renewable energy) and four and energy efficiency goals.

<u>State Plan Specificity & Enforcement</u>. Once a state (or regional group of states) determines the emissions performance levels necessary to achieve its CO<sub>2</sub> reduction goal, the state would then identify the specific measures and policies it intends to set in place to achieve those goals. The CCP assumes, but does not mandate, a combination of measures that would reduce emissions along

<sup>&</sup>lt;sup>30</sup> 79 Fed. Reg. at 34833. EPA does not address how a state might impose on EGUs that provide no retail service the responsibility for developing energy efficiency programs (Building Block Four) that cannot easily be carried out at the wholesale market. While the agency adverts to the potential for use of integrated resource plans (IRP) in identifying implementing measures and policies, the agency's schedule for implementation may not account for the time typically involved in reviewing and approving an IRP.

<sup>&</sup>lt;sup>31</sup> See Danish, Smith & Zevin, at 39.

<sup>&</sup>lt;sup>32</sup> 70 Fed. Reg. at 34838. This provision has been the source of significant controversy. The effect of averaging performance levels over a ten-year period is to force significant emissions reductions by year one. Some utilities have described that as a "cliff" rather than a "glide path," and have asserted it would be an impediment to greater emissions reductions by 2030. Testimony of Henry Darwin, Arizona Department of Environmental Quality Before the Subcommittee on Energy and Power, House Committee on Energy and Commerce (Sept. 9, 2014), available at <u>http://docs.house.gov/meetings/IF/IF03/20140909/102623/HHRG-113-IF03-Wstate-DarwinH-20140909.pdf</u>; Letter from Joshua Epel, Colorado Public Utilities Commission to Gina McCarthy, U.S. Environmental Protection Agency (Dec. 1, 2014), available at <u>https://www.colorado.gov/pacific/sites/default/files/AP-PO-ColoradoGHGComments.pdf</u>.

with measures that avoid emissions, utilizing all four building blocks. The CPP provides that, to be acceptable, a state or regional plan must not only be enforceable but must contain emission standards and other measures that are quantifiable, non-duplicative, permanent and verifiable.<sup>33</sup> The agency furnished states with substantial guidance on how they could measure the efficacy of energy efficiency measures adopted as part of building block four, as well as clear direction in accounting for other building blocks. The CCP also provides that specific measures adopted in a state plan would be enforceable not only by EPA but also by nongovernmental organizations and others through the CAA's citizen suit provision.<sup>34</sup> If a state fails to submit plan, or submits an inadequate plan, EPA would issue a Federal Implementation Plan (FIP) that assures attainment of EPA's carbon goal for that state. On January 8, 2015, EPA announced it is beginning the process of developing a model FIP for the proposed rule, and it is expected to release that FIP by August 2015.<sup>35</sup>

#### III. WYOMING'S ELECTRICAL ENERGY PORTFOLIO

According to the U.S. Energy Information Administration, in 2012 Wyoming produced thirty-nine per cent of all the coal mined in the country. <sup>36</sup> Not surprisingly, almost eighty-nine per cent of the electricity generated that year in Wyoming came from coal, while renewable energy resources supplied approximately ten per cent. As of 2012, Wyoming had a net summer capacity of 8,380 megawatts (MW), and a net generation of 49,588,606 MWh. However, retail sales accounted for only 16,971,354 MWh of that total, with direct use accounting for another 1,282,643 MWh. Consequently, in 2012 almost two-thirds of the electricity generated in Wyoming was exported to other states.<sup>37</sup>

<sup>&</sup>lt;sup>33</sup> 70 Fed. Reg. at 84838.

<sup>&</sup>lt;sup>34</sup> 79 Fed. Reg. at 34902.

<sup>&</sup>lt;sup>35</sup> See <u>http://www2.epa.gov/carbon-pollution-standards/fact-sheet-clean-power-plan-carbon-pollution-standards-key-dates</u> (last visited Jan. 11, 2015).

<sup>&</sup>lt;sup>36</sup> See generally, U.S. Energy Information Administration,. *Wyoming State Profile and Energy Estimates, available at* <u>http://www.eia.gov/state/?sid=WY#tabs-5</u> (last visited Sept. 2, 2014).

<sup>&</sup>lt;sup>37</sup> See generally, U.S. Energy Information Administration, Wyoming Electricity Profile 2012, available at <u>http://www.eia.gov/electricity/state/wyoming/</u> (last visited Sept. 2, 2014). The Wyoming Public Service Commission provided more precise comments in its comments on the proposed 111(d) rules. Letter from Alan B. Minier, Wyoming Public Service Commission, to Gina McCarthy, U.S. Environmental Protection Agency, *Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units* at 15-16 (Nov. 21, 2014) (*hereinafter PSC Comments*), available at <u>http://psc.state.wy.us/pscdocs/dwnload/ChairmansLetter-GinaMcCarthy.pdf</u> (last visited Dec. 7, 2014).

While coal supplies eight out of nine kilowatt-hours of electricity generated in Wyoming, wind energy is gaining market share: it now accounts for nearly one-tenth of the state's electric energy generation. As a result, as many as six interstate transmission projects are in one stage or another, to transport Wyoming wind to out-of-state load centers. Wyoming only has a few small hydroelectric facilities, very little petroleum-based generation and no nuclear capacity.<sup>38</sup> In addition, Wyoming has only one natural gas combined cycle facility, and it only came on-line in October 2014.<sup>39</sup>

Wyoming is home to a wide range of entities that generate electrical energy either for sale to retail customers or for sale at wholesale. The Wyoming Public Service Commission (PSC) regulates four investor owned utilities as well as eighteen rural electric cooperative. The PSC regulatory authority embraces rate-setting, review of mergers and acquisitions, and review of proposals to construct major facilities such as generation units. For ease of reference, this report refers to all of the entities that generate electricity in Wyoming or for sale in Wyoming as utilities, even though that is not an accurate descriptor for those who practice in the field of regulated utilities.<sup>40</sup>

<u>Major Wyoming Utilities</u>. PacifiCorp has a major presence in the western states, including Wyoming. It is a vertically integrated company that has public utility status in six western states, including Wyoming and states to the West. Its subsidiary, Rocky Mountain Power, is also a public utility regulated by three states: Utah, Idaho and Wyoming. At the end of 2013, its rates were based on a Wyoming load (total demand) of 9,543,820,000 kwh, making it the dominant Wyoming utility. Rocky Mountain Power has an interest in coal-fired power plants located in Arizona (Cholla), Montana (Colstrip), Colorado (Craig), Utah (Hunter and Huntington) and Wyoming

<sup>&</sup>lt;sup>38</sup> "Wyoming has among the best wind resources in the nation, especially to its south and east. Sustained winds funneled through mountain passes and out across the high prairie give Wyoming wind farms high capacity factors. The number of wind-powered installations has increased rapidly in recent years. Several large-scale projects are in development, including a 3,000 megawatt project at Chokecherry-Sierra Madre, which may become the largest wind project in the nation. Wyoming officials are actively seeking customers for the state's wind power in California and Colorado. Both states have ambitious renewable energy requirements. The Wyoming Infrastructure Authority is encouraging two large transmission projects aimed at transporting Wyoming's wind-generated electricity to the West Coast." U.S. Energy Information Administration, *Wyoming State Profile and Energy Estimates, available at* http://www.eia.gov/state/analysis.cfm?sid=WY (last visited September 2, 2014).

<sup>&</sup>lt;sup>39</sup> It appears that EPA assumes the Cheyenne Prairie Generating Station would have a capacity of 220 MW. The Wyoming Public Service Commission notified EPA that the facility would have a net output of 95 MW. PSC Comments, at 13.

<sup>&</sup>lt;sup>40</sup> The Public Service Commission's statutory authority and mandate are found at Wyo. Stat. Ann. § 37-1-101, *et seq*. The Public Service Commission's web site provides a useful summary of the Commission's responsibilities. http://psc.state.wy.us/.

(Dave Johnston, Jim Bridger, Naughton, and Wyodak). Because of the complex relationships engendered by such a system, the states where PacifiCorp and its subsidiaries operate have agreed to a system for allocating costs, known as the multi-state protocol.<sup>41</sup>

Another major Wyoming utility, Black Hills Corporation has two subsidiaries in Wyoming: Cheyenne Light, Fuel and Power, and Black Hills Power. Together, at the end of 2013 these entities had a total annual load of 2,322,932,902 kwh.<sup>42</sup> According to the PSC, within the next year Cheyenne Light will purchase the ownership interest in the coal-fired power plants Wygen 1 and 2 located in Wyoming. Black Hills Power also has ownership interests in Wyodak, Neil Simpson II, and Wygen 3, all of which operate on coal. While all of these facilities are located in Wyoming, more than ninety per cent of Black Hills' customers in is South Dakota, a further complication.<sup>43</sup>

Other entities operate generating facilities within Wyoming, but are not regulated by the PSC. For example, Basin Electric Power Cooperative operates the Laramie River Station, a 1,710 megawatt (MW) coal-fired power plant, which is owned by entities in six states. The Laramie station delivers electrical energy to both the western and eastern interconnection, which is yet another complicating factor in the crafting of a state 111(d) plan that encompasses the wide diversity of affected units in a state.

### IV. <u>WYOMING'S GOAL CALCULATION AND APPLICATION OF THE FOUR</u> <u>BUILDING BLOCKS IN WYOMING</u>

In its proposed rule, and as described above, EPA provided each state's 2012 baseline emissions as well as the EPA's calculation of achievable  $CO_2$  reductions under each of the four building blocks tailored to each specific state. The EPA emphasized numerous times that while the building blocks represent the Administrator's determination of the BSER, the EPA rule would not prescribe how each state meets its goal.<sup>44</sup> Instead, each state would be free to design a program

EPA's Proposed Clean Power Plan – What Might it Mean for Wyoming

<sup>&</sup>lt;sup>41</sup> Letter from Alan B. Minier, Wyoming Public Service Commission to Janet McCabe, U.S. Environmental Protection Agency (Dec. 16, 2013), *available at* <u>http://psc.state.wy.us/pscdocs/dwnload/ChairmansLetter-JanetMcCabe.pdf</u> (last visited Oct. 27. 2014).

<sup>&</sup>lt;sup>42</sup> *Id*.

<sup>&</sup>lt;sup>43</sup> Id.

<sup>&</sup>lt;sup>44</sup> 79. Fed. Reg. at 34833.

that "reflects its particular circumstances and energy and environmental objectives,"<sup>45</sup> so long as the measures the states choose allow the state to meet its emission reduction goals within the utility sphere. For example, this means states would be free to emphasize one building block over another. States also would be free to include, if they would have the effect of reducing greenhouse gas emission from the utility sector in the state plan technologies and strategies that were not part of EPA's BSER determination, so long as a state's plan shows it can achieve its interim and final target.<sup>46</sup>

Those targets, however, will be final once the CPP becomes effective:

Once the final goals have been promulgated, a state would no longer have the opportunity to request that the EPA adjust its  $CO_2$  goal. The final state-specific  $CO_2$  goals would reflect any adjustments as appropriate based on comments provided to the EPA to address any data errors in the analysis for the proposed goals.<sup>47</sup>

The finality of these goals arguably accounts for the intense interest in the data calculations on the part of states and other stakeholders. Not only does EPA assign final goals, but also interim goals, and in so doing provides a timeline for state implementation measures. One important feature in the design of the program is the heavy front-loaded nature of emissions reductions that Wyoming would have to achieve. By using the average of goals in the 2020-2029 time period to set the 2020 goal, and using the 2012 emissions and operations data as the baseline, Wyoming would have to reduce its 2012 emissions by eighty-five percent in order to meet its 2020 goal (a mere four years from now). Rather than a "glide path" to meeting emission reduction goals, this might more appropriately be described as a "compliance cliff."

Looking at Wyoming specifically, EPA calculated that the State's 2012 baseline CO<sub>2</sub> emission rate for coal was 2,331 lbs/MWh. EPA further offered that the following emissions under each of the four building blocks were achievable for Wyoming, which will be described in more detail in the following section:

<sup>&</sup>lt;sup>45</sup> Id.

 $<sup>^{46}</sup>$  *Id.* at 34837. While initially it was unclear how new natural gas combined cycle units could be used to meet a state's goal, the Notice of Data Availability appears to envision the potential of significant new natural gas combined cycle capacity as a compliance tool.

<sup>&</sup>lt;sup>47</sup> 79 Fed. Reg. 34835.

Wyoming's Baseline (2012) Emissions. Sum plant-specific data to state level; divide by total energy output. 2012 emission rate for coal = **2331 lbs/MWh.** 

**Building Block One** – reduce the carbon intensity of the existing stock of coal units: increase heat rate by 6% in the fleet by 2020; adjust state-level coal emissions downward by 6%.

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# Adjusted coal rate = 2191.

**Building Block Two**– displace more carbon intensive generation (i.e., coal) with less intensive resources: existing Natural Gas Combustion Cycle (NGCC) units plus units under construction. Operate all NGCC units at 70% load factor, re-dispatch gas over coal by 2020. Nameplate capacity of NGCC X 8,784 hrs X 70% -- ramp down historic oil and coal by equivalent amount. Repeat for NGCC under construction. Re-dispatch 289,872 MWh.

**Building Block Three**—replace carbon-intensive capacity (i.e., coal) with low-or zero-carbon capacity (nuclear and renewable), based on average of RPS in region – phase in. Nationwide average of 13% by end of 2029. 2020 baseline = 5,535,669 MWH. In 2029 = 9,427,996 MWh.

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**Building Block Four**—reduce consumption of electricity through demand-side measures – increase rate by 0.2% annually until reach incremental annual savings of 1.5%

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Interim State Goal: average of the adjusted yearly emission rates for the 2020-2029 period.

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Final State Goal: 2029 emission rate becomes the 2030 state goal and in out years

In its proposed rule, EPA also established interim and final CO<sub>2</sub> reduction goals for Wyoming. Those goals are:

Wyoming's Interim and Final CO2 Reduction Goal		
2012 Rate	2,331 lbs/MWh	
2020 goal	1,899	
2021	1,881	
2022	1,862	
2023	1,841	
2024	1,819	
2025	1,798	
2026	1,777	
2027	1,756	
2028	1,735	
2029	1,714	
Interim goal		
(2020-2029 average)	1,808	
2030 and		
Out years	1,714	

The following examines each of the four building blocks as they relate to Wyoming:

<u>Building Block One</u>. The EPA concludes that, an "average CO<sub>2</sub> emissions reductions of 1.3 to 6.7 per cent could be achieved by coal-fired steam EGUs by adoption of best practices and that additional average reductions of up to four percent could be achieved through equipment upgrades."<sup>48</sup> Using that as its foundation, EPA settled on a goal for Building Block One of reducing CO<sub>2</sub> by between four and six percent on average from heat rate improvements.<sup>49</sup>

EPA's Proposed Clean Power Plan - What Might it Mean for Wyoming

<sup>&</sup>lt;sup>48</sup> 79 Fed. Reg. 34856.

<sup>&</sup>lt;sup>49</sup> Id.

The goal of a four to six percent average in heat rate improvements may prove to be a challenge as utilities and states have pointed out that many electricity generating units already have achieved much, if not all of the available heat rate improvements that are financially and technically feasible. Wyoming seemingly faces that challenge. EPA's proposal indicates that Wyoming could achieve a 6 percent heat rate improvement; however, utilities and the State of Wyoming have disagreed with that assessment—suggesting that many of the best practices and equipment upgrades EPA proffers in order to achieve a heat rate improvement have already been implemented. In its comments on the proposed rule, the Wyoming Department of Environmental Quality (DEQ) asserted that a heat rate improvement of 2% is more realistic for Wyoming's electricity generating units, as opposed to EPA's calculation that a heat rate improvement of six percent.<sup>50</sup> In its comments DEQ also pointed out alleged errors in EPA's data; explained that a number of plants had already undergone turbine upgrades; suggested that that the compliance period should be based on a three-year average since hours of operation can vary significantly from year to year; asserted that the requirement to achieve heat rate improvements by 2019 is unrealistic given that at best state plans will not have been approved by EPA before mid-2018; and argued that the requirement to use net generation does not account for parasitic load to operate emissions controls and creates unfair comparisons.<sup>51</sup> The Wyoming Public Service Commission's comments and the comments offered by Wyoming Governor Matthew Mead offered similar arguments.

The inability of Wyoming to achieve a six percent improvement in heat rate means Wyoming would have to acquire additional reductions in carbon emissions from the other three building blocks or other measures that Wyoming could demonstrate produce verifiable and enforceable emission reductions. That has the effect of compounding Wyoming's challenge in meeting its emissions reduction goals through other building blocks.

<u>Building Block Two</u>. After calculating emission reductions that might be available by improving the heat rate at affected coal-fired units, EPA then turned to Building Block Two. EPA observed that generation of electricity using natural gas as a fuel generates approximately forty-

<sup>&</sup>lt;sup>50</sup> Letter from Todd Parfitt, Wyoming Department of Environmental Quality to Gina McCarthy, U.S. Environmental Protection Agency, *Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units* (Dec. 1, 2014) (*hereinafter DEQ Comments*), *available at* <u>http://www.csg.org/aapca\_site/news/documents/WYDEQfinalcomments-111d.pdf</u> (last visited Jan. 4, 2015).
<sup>51</sup> *Id.* at 10-13.

EPA's Proposed Clean Power Plan - What Might it Mean for Wyoming

six per cent less CO<sub>2</sub> emissions than does generation of the same amount of electricity by combusting coal. EPA's analysis also revealed that while most combined cycle natural gas plants are relatively new (196 gigawatts (GW) out of 245 GW of the existing capacity has been placed in service between 2000 and 2012), the potential utilization capacity rate of natural gas electricity generation in the U.S. is 46 percent.<sup>52</sup> The potential capacity leaves significant head room for greater reliance on combined cycle natural gas units.

The proposed CPP provides that the second building block of BSER would be to increase the dispatch of gas-generated electricity while also reducing the dispatch of more carbon-intensive electrical energy. As an alternative, EPA stated that permitting agencies (environmental agencies, not economic regulators) could impose limits on hours of operation for more carbon-intense resources, effectively constraining the ability of system operators to dispatch those resources.

Wyoming's ability to rely upon Building Block Two will be limited by the lack of combined cycle natural gas units in the state. Wyoming currently only has one cycle natural gas electricity generating plant, Black Hills Corporation's recently completed the Cheyenne Prairie Generating Station located in Cheyenne, Wy. At the Cheyenne Prairie Generating Station, Cheyenne Light, Fuel & Power (a Black Hills Corporation subsidiary) will own a simple cycle unit and will co-own a combined cycle unit at the facility with Black Hills Power (which will use the output to serve customers in Wyoming, Montana and South Dakota).<sup>53</sup> In its calculations, EPA assumed the Cheyenne Prairie Generating Station had a combined capacity of 220 MW. The DEQ and the Wyoming PSC, however, wrote in their comments that EPA erred and that the combined cycle unit's capacity as 95 MW.<sup>54</sup> That capacity will, in part, replace two coal units that recently were retired and will also enable Cheyenne Light, Fuel & Power to meet its growing load and to replace an expiring power supply agreement. As such, both units at the Cheyenne Prairie Generating Station will operate as baseload or intermediate load resources, running at or in excess of a sixty-five per cent capacity, and will have only a limited potential for offsetting generation

<sup>&</sup>lt;sup>52</sup> 79 Fed. Reg. at 34857.

<sup>&</sup>lt;sup>53</sup> See various published accounts of the decision to build this facility: <u>http://www.blackhillscorp.com/node/79989#.VFAEM\_nF8aY; http://www.cheyennelight.com/cpgn-construction-starts#.VFAES\_nF8aY; http://www.nasdaq.com/press-release/black-hills-corp-utility-subsidiary-receives-revenue-increase-approval-20140731-01807.</u>

<sup>&</sup>lt;sup>54</sup> DEQ Comments, at 13; PSC Comments, at 13.

from more carbon intensive units. As a consequence, DEQ indicated that the capacity would not be available for re-dispatch under Building Block Two.

An additional natural gas electricity generation facility located in Wyoming is also under contemplation. In May 2014, PacifiCorp announced plans to shut down the largest of the three coal fired units at its 700 MW Naughton Plant near Kemmerer, Wy at the end of 2017, and to convert the unit to burn natural gas to supply its summer peak load power for Wyoming and Utah. With an in-service date years out, however, it is unclear whether this facility would be categorized as a modified source or as a new source; but it likely would not be characterized as an existing natural gas combined cycle unit. Under the currently proposed rule it is unclear whether new combined cycle natural gas units will contribute or detract from State's CO<sub>2</sub> reduction goals. Numerous commentators have urged EPA to clarify the role of new combined cycle gas units in meeting a state's carbon reduction goals. As such, it remains unclear if the reductions in CO<sub>2</sub> emissions from the conversion of the Naughton Plant could be used by Wyoming to meet its carbon reduction goals.

Based on the foregoing, it appears that Wyoming's opportunities to reduce carbon emissions by implementing Building Blocks One and Two are limited. Building Blocks Three and Four offer some greater, but still limited potential (discussed in greater detail below). Moreover, as noted above, EPA repeated frequently throughout its proposal that states are not bound strictly to the building blocks to establish BSER. Instead, EPA suggests that states have some flexibility to identify other measures that could be implemented to directly or indirectly reduce the CO<sub>2</sub> emission rate from that state's EGUs.

<u>Building Block Three</u>. The third block contained in EPA's proposed rule reflects a turn away from the goal of reducing the carbon intensity of fossil-fuel fired generation to the concepts of reducing load through demand side management. Because Wyoming has no nuclear resources and no plans to construct new nuclear resources, and because the EPA proposed rule specifically states that hydropower cannot be used to achieve Building Block Three CO<sub>2</sub>, the emphasis for Wyoming would be on expansion of its renewable energy resources (solar, wind, and geothermal). However, as discussed below, there is a very large caveat currently contained within Building Block Three. As described in the goal-setting section above, the calculation of each state's renewable energy goal is complex, but EPA's proposed rule summarizes it as follows:<sup>55</sup>

- ✓ Quantify the amount of renewable energy generation (excluding existing hydropower) in each state as of 2012.
  - For Wyoming, that is nine per cent of total generation.
- ✓ Assign states to regions, informed by Regional Transmission Organizations and North American Electric Reliability regions.
  - Wyoming is in the Western Region, along with Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, and Washington.
- ✓ Average the Renewable Portfolio Standard requirements that will obtain in those states in 2020.
  - The regional renewable energy generation target for the West is twenty-one percent.
  - EPA assumed that renewable energy generation would begin in 2017 (one year after state plans were to be submitted for review by EPA), and would continue through 2029, by which time EPA assumed the region will have achieved (and would maintain) the region's aggregate renewable energy generation target.
- $\checkmark$  Multiply that percentage times the 2012 total net generation.
- ✓ EPA then calculated a state-specific "growth factor" to determine the amount of incremental increase in renewable energy generation needed to meet the 2030 target, starting in 2017 and continuing through 2029.
  - The annual growth factor for the West comes out to six per cent.

Using this methodology, EPA calculated that Wyoming's starting (2012) level of renewable energy generation is nine percent, and that it would need to increase the total percentage of total annual generation from renewable energy to fifteen per cent in 2020 and to nearly twenty

<sup>&</sup>lt;sup>55</sup> For a more detailed explanation of the goal calculations, *see* U.S. EPA, *Technical Support Document: GHG Abatement Measures* (June 2014), *available at* <u>http://www2.epa.gov/carbon-pollution-standards/clean-power-plan-proposed-rule-ghg-abatement-measures</u>.

percent in 2030.<sup>56</sup> This suggests Wyoming would need to double its gigawatt-hours of renewable energy generation between current levels and 2029. The EPA calculated Wyoming's interim goal at fifteen percent, or 7,329,040 MW, a goal presumably that would have to be met by 2020, only two years out from the date EPA proposes it will complete approvals of state plans. That would represent a nearly sixty percent increase in renewable generation by the year 2020, a very short period of time to plan considering the attendant siting, permitting, and financing issues associated with renewable energy. Based on the Notice of Data Availability released by EPA just over a month before the end of the proposed rule comment period, it appears that EPA recognizes this as an issue warranting further consideration before promulgating the final rule.<sup>57</sup>

All things being equal, Wyoming might be a strong candidate for significant increases in wind generation. As of 2011, Wyoming had an installed capacity of 1,415 MW of wind energy.<sup>58</sup> According to University of Wyoming's Wind Energy Research Center, Wyoming ranks seventh in the nation "in terms of total potential wind resources: and ranks first in the nation for class 6 and class 7 wind sites.<sup>59</sup> A study by the U.S. Department of Energy's National Renewable Energy Laboratory analyzing a renewable energy strategy for western states, described a scenario in which Wyoming could have 7,244 MW of installed wind capacity and a total renewable energy capacity of 7,272 MW.<sup>60</sup>

Perhaps the greatest potential hurdle to the development of additional renewable energy resources in Wyoming is tied to the current allocation of renewable energy "credits" under EPA's

<sup>&</sup>lt;sup>56</sup> 79 Fed. Reg. at 34866-34869; U.S. EPA, *Data File: Proposed Renewable Energy (RE) Approach (XLS), available at* <u>http://www2.epa.gov/carbon-pollution-standards/clean-power-plan-proposed-rule-technical-documents;</u> U.S. Environmental Protection Agency, *Technical Support Document: Goal Computation* (June 2014), *available at* <u>http://www2.epa.gov/carbon-pollution-standards/clean-power-plan-proposed-rule-goal-computation</u>.

<sup>&</sup>lt;sup>57</sup> In the Notice of Data Availability (NODA), EPA solicited comment on a number of issues that EPA stated had arisen as part of the agency's extensive outreach to states, utilities, and other stakeholders. Among other things, the agency is seeking comment of whether it should consider ways in which the reductions assigned under Building Blocks 1 and 2 could be phased in as part of the agency's effort to address concerns about the size of emissions reductions or their equivalent needed to meet the 2020 interim goals. The agency also sought comment on alternative approaches for establishing and meeting renewable energy goals (Building Block 3), but may inadvertently have created additional confusion over who is eligible to claim credit for renewable energy generation. Among a number of other issues, the agency also solicited comment on whether it should set a state goal for energy generation from new natural gas combined cycle units, raising the prospect the agency might seek to require states to authorize or encourage new units. 79 Fed. Reg. 64543 (Oct. 30,2014).

<sup>&</sup>lt;sup>58</sup> J. Stafford, *Wyoming State Geological Survey, Wyoming's Electrical Generation – Summary Report* (2012) at 2, available at <u>http://www.wsgs.uwyo.edu/public-info/onlinepubs/docs/WYGeneration.pdf</u> (last visited Oct. 28, 2014).

<sup>&</sup>lt;sup>59</sup> University of Wyoming, Wind Energy Research Center, *Wind Energy in Wyoming*, available at <u>http://www.uwyo.edu/werc/wind-wyo.html</u>.

<sup>&</sup>lt;sup>60</sup> U.S. Dept. of Energy, National Renewable Energy Laboratory, *The Western Wind and Solar Integration Study Phase 2* (2012), available at <u>http://www.nrel.gov/docs/fy13osti/55588.pdf</u> (last visited Dec. 4, 2014).

proposed rule. Under the proposal, EPA assigns responsibility for carbon emissions from fossil plants to the state in which the plant is located, and allocates credit for renewable energy generated to the state that consumes the renewable energy, not the state that produces it. The result of this allocation scheme is two-fold. On one hand, Wyoming would be credited with all carbon emissions from fossil plants located in the state, regardless of where that energy is consumed (remember, two-thirds of the energy generated inside the state is exported for consumption elsewhere). Conversely, under the proposed rule, Wyoming would be credited only with the renewable energy consumed in the state, not for the renewable energy generated in Wyoming and exported to other states.

In such a circumstance, at least two problems could surface. First, importing states would have little incentive to share costs and burdens associated with renewable energy development from generating states like Wyoming. And second, there might be little incentive for Wyoming to add renewable energy capacity for in-state and out-of-state consumption. Wyoming might not perceive a sufficient incentive to host additional renewable energy development projects and transmission lines (and their associated impacts) if it would not receive credit for the energy generated but exported.

Wyoming could increase its consumption of renewable energy in-state, but at least for now, load growth in Wyoming is flat or growing only modestly.<sup>61</sup> Thus, building new renewable resources to serve in-state demand necessarily implies that an equivalent amount of existing fossil-generation would have to be mothballed or retired. There is a possibility that planned retirements in the 2020-2029 period could be matched with new renewable generation and additional natural gas generation as a backup resource with modest impacts to Wyoming ratepayers. But to the extent that is not the case, and resources must be retired prematurely (before the assets have been fully depreciated), Wyoming ratepayers might be forced to absorb increased rates both to compensate utilities for stranded costs and to construct new resources. If any such rate increases occur and are high enough, the State may see large industrial consumers of energy moving to self-generation of electricity, leaving fewer ratepayers to bear the financial burdens identified above.

Ideally, EPA's final rule could establish a different mechanism for allocating credit for exported renewable energy. In its comment letter to EPA, the Wyoming PSC provided a potential solution. The PSC suggested that, rather than using as a baseline of all renewable energy generated

<sup>&</sup>lt;sup>61</sup> PSC Comments, at 35.

in Wyoming (it cited 4,369,107 MWh) to determine future renewable energy consumption credits, EPA should instead use the amount of renewable energy actually consumed in the State (according to their calculations, 666,212 MWh (or 15.25 % of the total).

Additionally, in its comment letter, the PSC highlighted a discussion it had with EPA. The PSC related how EPA affirmed that a state that "contracts for a renewable energy project in another second state" would receive the credit for the new renewable energy project located outside the contracting state's border.<sup>62</sup> As noted, the combination of these two policies (using total net generation, and allocating credits to other states) would serve as significant impediments to the development of a Wyoming state plan that achieves the EPA-calculated state goal for CO<sub>2</sub> reductions through increased renewable energy development.

However, Wyoming may be one of only a few states in such a position, although Montana may be similarly situated.<sup>63</sup> In its final rule, it is likely that EPA may formally acknowledge Wyoming's predicament and outline a solution that accommodates the State's situation. That solution could include EPA accepting PSC's proposed calculation of a baseline based on consumption rather than generation or the development of a policy that balances the needs of both exporting and importing states' burdens in hosting renewable energy resources. Although any such decision might encounter resistance from states that already rely, or plan to rely, upon imported renewable energy or credits for renewable generated energy developed out of state. A change to the purposed rule that balances differently the needs of both exporting and importing states may also lead to the formation of regional institutions or agreements for complying with some or all of the 111(d) goals.

An additional potential hurdle to the development of additional renewable energy in Wyoming, a state where a large segment its land mass is owned and managed by the federal government, is the challenge of developing both wind energy and correspondingly major transmission lines that necessarily cross or are situated on federal land. Moreover, as noted by the DEQ in its comments to EPA, much of the higher quality wind resources (Wind Potential Class 4

<sup>62</sup> Id.

<sup>&</sup>lt;sup>63</sup> There are several sources of information about the various states' comments on the EPA proposal. The Bipartisan Policy Center has a web-based compilation of all of the states' comments. It is available at http://bipartisanpolicy.org/energy-

map/?\_cldee=am1hcnRpbkBid2VuZXJneWxhdy5jb20%3d&utm\_source=ClickDimensions&utm\_medium=email& utm\_campaign=Project%20Update%20%7C%20Energy . For a third party summary of the western states' comments, see <u>http://www.ieca-us.com/wp-content/uploads/WBK\_Section-111d-Comment-Summary\_Western-States\_12.17.14.pdf</u>.

or higher) are located on federal lands. As a result, any decision to construct new renewable generation or transmission on or across those lands will implicate multiple federal agencies, and trigger the need to conduct environmental analyses and, if necessary, revise existing land management plans for affected federal lands. Any such undertaking necessarily entails multiple layers of analyses that could consume years, with no certainty about the outcome.

Also, another potential complicating factor in Wyoming and ten other western states is the work by state and federal wildlife agencies to protect extensive areas of Western Sage-Grose habitat in order to avoid a listing of the species as threatened or endangered under the Endangered Species Act. Wyoming, in particular, has been a leader in this effort and has identified and protected core habitat areas, effectively remove almost sixteen million acres from wind energy development. As a result, the DEQ concludes that only 16.5% of the land identified by the EPA in its proposed rule as available for renewable energy generation is actually available when taking into account sage grouse restrictions.<sup>64</sup> The DEQ's comments suggest, therefore, that EPA adjust its calculations to reflect the amount of land actually available for development.

<u>Building Block Four</u>. While Building Blocks 1-3 deal in one way or another with the generation of electricity in less carbon-intensive ways, Building Block Four is different. It is designed to reduce demand for electricity at sites potentially large numbers of sites distant from generating resources of any kind. The EPA's rationale for including demand site measures – for ease of reference, both EPA and this paper use the short-hand of "energy efficiency" – is that by "reducing electricity consumption, energy efficiency avoids greenhouse gas emissions associated with electricity markets."<sup>65</sup> EPA also observed that because fossil fuel generation has higher variable costs than other forms of generation, fossil generation (and its associated greenhouse gas emissions) will be the first resource displaced as demand declines as a result of energy efficiency investments.<sup>66</sup>

In raw terms, Wyoming ranks in the lower tier of states in terms of energy savings from demand-side measures, both regionally and nationally:

State	Incremental Savings as a %	Cumulative Savings as a %	
	Of Retail Sales (2012)	of Retail Sales	

<sup>&</sup>lt;sup>64</sup> DEQ Comments, at 20.

<sup>&</sup>lt;sup>65</sup> 79 Fed. Reg. at 34871.

<sup>&</sup>lt;sup>66</sup> Id.

Colorado	0.84%	4.67%
Idaho	0.79%	6.20%
Montana	0.66%	5.85%
Nevada	0.54%	6.19%
North Dakota	0.07%	0.22%
South Dakota	0.13%	0.33%
Wyoming	0.14%	0.71%

The process of setting state goals for the energy efficiency element of BSER differs from the calculations used for Building Blocks Two and Three. The EPA first looked to the programs being used by twelve states that are achieving or have programs in place that will achieve annual incremental reductions in demand of at least 1.5 percent compared to what demand would have been absent those programs. The EPA described this as a "best practices" level of performance.<sup>67</sup> The EPA next calculated each state's savings rate in the base year of 2012, and then imposed an annual increase in their savings rate of 0.2 percent until each state reaches and maintains an annual savings rate of 1.5 percent. Based on this methodology, Wyoming would start at a low savings rate: its 2020 goal for cumulative annual electricity savings (measured as a percentage of annual sales) would be 1.6, and its 2029 goal would be 9.7 per cent.<sup>68</sup>

The calculation of energy efficiency goals was as complex and difficult to follow as any of EPA's calculations in its proposed rule. In its comments, the Wyoming PSC captured how EPA's methodology would be applied to Wyoming. That Wyoming-specific analysis is paraphrased below in steps:<sup>69</sup>

- 1) EPA used Energy Information Administration (EIA) data to calculate intrastate electricity sales by 23 entities that sell at retail: 16,971,354 MWh.
- 2) While only two entities report demand side management to EIA in 2012, EPA rounded efficiency savings to 24 gigawatt hours (GWH), and then subtracted those savings to get a 2012 business as usual case of 16,995 GWH.
- 3) EPA then applied an annual growth factor of 0.97% to calculate a business as usual case for those years post-2012.

<sup>&</sup>lt;sup>67</sup> *Id.* at 34872.

<sup>&</sup>lt;sup>68</sup> See generally, 79 Fed. Reg. at 34871-34875.

<sup>&</sup>lt;sup>69</sup> PSC Comments, at 20.

- 4) EPA next set annual savings goals starting in 2017 (presumably the year in which a state plan would take effect). To do that, it divided the 24 GWh estimated savings (see step 2, above) by the escalated business as usual sales (see step 3, above) and reached a 0.13% first year energy efficiency savings.
- 5) Then, for years 2018 and out, EPA increased the base percentage by 0.2% to reach a number for annual incremental savings. EPA continued to escalate the first year savings by 0.2% a year until the year 2024, when the percentage topped out at 1.5% in net incremental annual savings.

Based on these calculations, EPA calculated annual Wyoming goals from 2017 through 20299 to reflect net cumulative savings (netting out annual incremental savings and "expiring" savings). By following this methodology, EPA reached the net cumulative savings noted above: 9.73%, or 1,950 GWh.

The chart below compares the 2020 and 2029 goals for surrounding states as well as some energy efficiency leaders:

#### Figure X

	2020	2029
Wyoming	1.6	9.7
Colorado	3.9	11.0
North Dakota	1.4	9.7
Montana	3.4	10.9
South Dakota	1.6	9.9
Utah	3.6	11.0
California	5.0	11.6
Washington	4.2	11.3

Demand-Side Energy Efficiency State Goal Development: Cumulative Annual Electricity Savings (Percentage of Annual Sales) Resulting From Best Practices Scenario<sup>70</sup>

Even states (*e.g.*, California) with robust GHG emission reduction programs will have to make significant additional investments, but the delta between 2020 and 2029 goals are far greater for states with less aggressive existing programs like Wyoming.

<sup>&</sup>lt;sup>70</sup> 79 Fed. Reg. at 34873.

Wyoming, may confront several hurdles in pursing energy efficiency on the scale posited by EPA. Wyoming is a state with a large landmass but a small population (roughly 600,000) residents), where 11.5 percent of the population lives below the poverty line.<sup>71</sup> While it would be fair to say that home weatherization and similar programs would pay no smaller dividends in Wyoming than in other states, the smaller customer base, the rural nature of the state, the low total demand, and the resource constraints that would burden some energy providers (particularly rural electric cooperatives) could make it more difficult to attain economies of scale on efficiency programs that make for cost-effective programs.

Moreover, unlike some other states, in Wyoming the industrial sector consumes more than half of the electricity used in the state. Using data collected by the U.S. Energy Information Administration, in 2013, industrial sales accounted for sixty-four percent of PacifiCorp's total sales in Wyoming, and sixty-eight per cent of Black Hills Powers sales.<sup>72</sup> It is unlikely that many states, if any, have a similar electrical energy consumption profile. In addition, Wyoming's load growth is modest, if it is growing at all, and the Public Service Commission calculated that the effect of a Clean Power Plan would be to force a contraction in the state's economy as demand for coal declines. For that reason, and a number of others unique to Wyoming, the PSC forcefully urged EPA to adjust its calculation of the energy efficiency savings available in the state.

#### V. WHAT DOES THIS MEAN FOR WYOMING

After laying out its critique of EPA's methodology as it applies to Wyoming and correcting for data errors, the PSC outlined a pathway that addressed the State's concerns. That pathway would yield a 2030 carbon emission rate of 2,192 lbs/MWh. By way of contrast, EPA calculated a 2030 goal of 1,714/MWh. A significant part of the delta is attributable to the very significant renewable energy goal that EPA's methodology would impose on Wyoming. At the same time, the delta between those two numbers highlights the potential impact of EPA's calculated goal on Wyoming's energy infrastructure.

That, in turn, gives rise to a more specific scenario devised by the PSC for how Wyoming might achieve the carbon reduction goal. The PSC assumed that meeting EPA's goal would require

<sup>&</sup>lt;sup>71</sup> U.S. Census Bureau, State and County QuickFacts (2013), *available at* <u>http://quickfacts.census.gov/qfd/states/56000.html</u>.

<sup>&</sup>lt;sup>72</sup> U.S. Energy Information Administration, State Profiles and Energy Estimates, available by link from <u>http://www.eia.gov/electricity/data/eia826/</u> (last visited October 29, 2014).

the retirement of coal-fired electric power plants. The PSC also assumed that Wyoming would close plants in the order of the plants' scheduled depreciation dates, in order to eliminate stranded investment and risks to ratepayers.

Employing those metrics, the PSC concluded that the Dave Johnston plant would be the first ordered to close. The remaining two Naughton units would be next in line, followed by the Jim Bridger plant. It appears that the PSC calculated that these closures would be needed to meet the 2020 interim goal. The PSC, however, also suggested that closure of these plants would pose very real risks of regional reliability. Finally, the PSC assumed that the Wyodak plant would be closed, but that the state would still fall slightly short of meeting the 2029 goal under this scenario.

Figure X. Order of Closure				
Name of plant	Size	Capacity	Retirement Date	
Dave Johnston	3 units	762 MW	2027	
Naughton	3 units	707 MW*	2029	
Jim Bridger	4 units	2120 MW	2037	
Wyodak	1 unit	335 MW	2039	

\* PacifiCorp has proposed that Naughton 3 be converted to natural gas.

The potential risk to the reliability of the grid that would flow from the retirement of these plants on this schedule might cause concern well beyond Wyoming's borders. The PSC expressed concern about who will bear the costs of retiring plants well before their costs have been fully depreciated, as well as the added costs of replacing that capacity with reduced- or low-carbon resources. The PSC calculated that the stranded costs associated with these plants would be \$393,632,687 with the Dave Johnston plant, nearly as much for the Naughton plant, more than \$534 million for the Jim Bridger plant, and almost \$234 million for Wyodak plant. These calculations do not include costs being incurred at Jim Bridger in order to reduce regional haze in surrounding Class 1 areas.<sup>73</sup> The PSC further assumes that Wyoming ratepayers would be on the hook for 15.7% of the total stranded costs associated with early retirement of these plants.<sup>74</sup>

<sup>&</sup>lt;sup>73</sup> EPA has partially approved and partially disapproved Wyoming's Implementation Plan for Regional Haze, and issued a Federal Implementation Plan requiring more stringent controls at some units than had been proposed by Wyoming. 79 Fed. Reg. 5032 (Jan. 30, 2014).

<sup>&</sup>lt;sup>74</sup> The Commission suggested, as an alternative, that EPA permit Wyoming to close the plants on their probable retirement dates, three of which would occur before 2030, though barely. That would not address the costs of replacing a large amount of generating capacity, but it would reduce or eliminate the burden of stranded costs. To the extent a state adopts measures that are the responsibility of non-utility actors (including the state itself), the enforceability requirement could make the state vulnerable to challenges claiming the state must allocate more, or less, of its budget to one measure or another, as well as other claims limited only by the complainant's imagination.