ANGUS DUNCAN*

Clean Air Act Section 111(d) CO_2 Reduction Compliance Pathways for the Pacific Northwest and Intermountain West States

* Angus Duncan is the founding President of the Bonneville Environmental Foundation, which supports renewable energy development and watershed restoration in the Pacific Northwest. This Article was written for the Natural Resources Defense Council (NRDC), in consultation with these Pacific Northwest and Intermountain West regional organizations: Climate Solutions; Environment Oregon; Environment Washington; Idaho Conservation League; Montana Environmental Information Center; Northwest Energy Coalition; Powder River Basin Resource Council; Renewable Northwest Project; Sierra Club; Snake River Alliance; Utah Clean Energy; Washington Environmental Council; Western Resource Advocates. It was revised in December, 2014, for submission and publication.

ABSTRACT

The Article describes the architecture of a regional electric grid extending across nine[1] Intermountain West (IMW) and Pacific Northwest (PNW) states, characterized by coal-fired generation on the east and south serving loads across the region including states to the west with few or no coal facilities but with significant loads and energy efficiency opportunities. This multi-state system architecture argues for an Environmental Protection Agency (EPA) Clean Air Act § 111(d) strategy[2] that calculates the required Best System of Emissions Reduction (BSER) standard on both a state-by-state and a regional basis, and for a rule that affords states wide flexibility to enter into a range of multi-state compliance arrangements. Voluntary

1 Arizona, Colorado, Idaho, Montana, Nevada, Oregon, Utah, Washington, and Wyoming all have coal plants serving PNW/IMW loads. *See infra* p. 107. Coal-generation is also imported at times from New Mexico, Texas, and other states in lesser amounts.

2 Clean Air Act § 111(d), 42 U.S.C. § 7411(d) (2012), *available at* http://www.gpo.gov/fdsys/pkg/USCODE-2012-title42/pdf/USCODE-2012-title42-chap85.pdf.

state-to-state agreements could then identify least-cost[3] compliance strategies involving single or multiple shared facilities in one or more states. Such strategies might continue full plant operations at the most efficient plants in "producer" states, reduced output from or retirement of less efficient units, and replacement of lost generation with a least-cost portfolio of low-carbon resources in both "producer" and "consumer" states. The desired outcome is overall regional "system" emissions that are in compliance with the sum of state-specific allowable emissions reductions, achieved at least cost and with fewest required operational adjustments in the regional electricity system.

INTRODUCTION

The Obama Administration intends to regulate greenhouse gas (GHG) emissions from existing power plants consistent with the larger objective of reducing overall U.S. GHG emissions by 17% below 2005 levels by 2020.[4] The Environmental Protection Agency (EPA), in its draft rule issued June 18, 2014, proposes to use section 111(d) of the Clean Air Act (CAA) to develop an existing power plants rule by mid-2015, and require state compliance plans thirteen months later.[5] Those state plans will be developed relying upon EPA-issued "best system of emissions reduction" (BSER) guidelines, and will require EPA approval as sufficient to meet the state-by-state targets proposed in the draft rule, and to be adopted by EPA in its final administrative rule.

In the draft rule, EPA proposes to afford substantial flexibility to states and plant owners in developing compliance plans, including allowing a "systems-based" approach under which emissions from two or more electrical system resources can be aggregated and

---

3 "Least-cost" as the term is used in the Northwest Power Act of 1980 to include all costs and benefits, including environmental costs and benefits, whether monetized, quantified, or described, and whether presently internalized or externalized. Pacific Northwest Electric Power Planning and Conservation Act of 1980 §§ 3(4)(A)(ii), 7(g), 16 U.S.C. §§ 839a(4)(A)(ii), 839e(g) (2012), *available at* http://www.nwcouncil.org/media/5227150/poweract.pdf.

4 Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units, 79 Fed. Reg. 34,830 (proposed June 18, 2014) (to be codified at 40 C.F.R. pt. 60), *available at* http://www.gpo.gov/fdsys/pkg/FR-2014-06-18/pdf/2014-13726.pdf.

5 *Id.* at 34,915.

averaged across the state's system and counted for compliance.[6] EPA proposes that new low-carbon supply and demand-side replacement resources—principally, renewable energy and energy efficiency, but possibly also new gas-fired combustion turbines[7]—may be counted toward compliance (to the extent they displace real emissions within the state system subject to compliance requirements).[8]

Interstate electricity sales will complicate this regulatory structure. It is not clear what compliance pathways will be workable for states whose utilities import significant quantities of power from coal-fired or other carbon-based generation[9] and for the different set of states generating significant output from such facilities for export to loads in other states. Reconciling state-by-state compliance plans with multi-state utility architecture will be challenging.

At its most basic, the inquiry is simply stated:

1. What emissions reduction trajectory for existing thermal power plants serving the customers and states of this region is consistent with the state-specific requirements of the Clean Air Act (including cost consequences); and,
2. How will the costs of compliance be allocated among plant owners and power consumers?

EPA can perform the calculations to answer the first question. Utility regulators have tools to answer the second question (not without some interstate wrangling), including in circumstances where plants and loads are distributed among two or more states. An EPA section 111(d) rulemaking process could choose to stop here.

The harder third inquiry is not a legal requirement of EPA's rulemaking,[10] but it is essential to undertake if the desired outcome for the region for the appropriate emissions reduction is also politically achievable:

---

6 *Id.* at 34,855–92 (Section VI. Building Blocks for Setting State Goals and the Best System of Emission Reduction).

7 Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units, 79 Fed. Reg. 64,543, 64,546–47 (Section II.B.1. Stringency of Building Block 2) (proposed Oct. 30, 2014) (to be codified at 40 C.F.R. pt. 60), *available at* http://www.gpo.gov/fdsys/pkg/FR-2014-10-30/pdf/2014-25845.pdf.

8 *Id.*

9 The reverse complication may exist for a state that imports substantial quantities of low-carbon power (e.g., hydro, wind, or nuclear) and finds that EPA attributes higher carbon content to the state based solely on in-state generation.

10 EPA must establish the overall cost parameters of its rule, but states are free to select compliance pathways that involve higher or lower costs so long as their emissions meet targets set in the rule. *See infra* note 13.

3. What is a *least-cost* compliance pathway for customers of affected utilities, and for affected states in devising compliance plans that will provide the necessary facilities and operational changes in the power system, while coping with the attendant community, employment, and tax effects of potential plant cutbacks or closures; and does EPA's rule enable or obstruct states in devising such pathways?

A least-cost pathway could be expected to rely on a system-wide portfolio of high-efficiency gas (including coal-to-gas conversion), energy efficiency, renewable resources, integrating resources outside the plant fence line, and extending compliance strategies across state boundaries as replacement resources for reduced or terminated coal-fired generation. The revised resource portfolio must meet load and operational requirements while lowering carbon emissions to EPA-set target levels.

EPA's 2015 final rule should be written with the flexibility to allow such least-cost pathways, and with a framework that enables states and utilities to devise and propose them. In addition, it is the premise of this Article that, for western states in particular, the rule needs to welcome a range of multistate carbon transactions that can turn off the most costly carbon sources first, without respect to State boundaries.

While the CAA does not impose a direct legal obligation on states to seek a least cost path, there are reasons to do so that should be compelling to all parties. The first reason is that EPA is obliged to consider cost when setting a performance standard[11] (in effect, the benefits of the regulation must outweigh the costs imposed by the regulation).[12] That test is expansive, allowing EPA to include both immediate and downstream societal costs and benefits, not just the transactional costs to the plant owners and their customers. If the cost test were applied only to emissions reduction actions that could be

---

11 The term "standard of performance" means a standard for emissions of air pollutants which reflects the degree of emission limitation achievable through the application of the best system of emission reduction which (*taking into account the cost of achieving such reduction* and any non-air quality health and environmental impact and energy requirements) the Administrator determines has been adequately demonstrated.

Clean Air Act § 111(a)(1), 42 U.S.C. § 7411(a)(1) (2012) (emphasis added).

12 *See infra* pp. 314–15.

obtained from technical fixes within the power plants themselves, the reductions are likely to be modest and fall far short of the President's goal.[13] EPA addresses this limitation by defining BSER as inclusive of system changes characterized as Building Blocks 1 through 4: capturing coal plant efficiencies, re-dispatch to under-utilized existing gas generation, new renewable generating facilities, and energy efficiency resources. States are to develop compliance plans that include these building blocks in any combination that suits the state and achieves the state's EPA-set emissions reduction target. With the exception of Building Block 3—renewable generation—EPA's draft rule assumes these resources are all within a state's boundaries, a limitation that by limiting choice and resource diversity may result in higher compliance costs.[14]

Second, if EPA issued more permissive guidelines that allowed for regional strategies to cross state lines, optimizing Building Block choices for cost and operational efficiency, then plant owners and their power customers would be able to achieve equal or greater emissions reductions at lower costs. Regulatory flexibility enabling more regional solutions is more likely to invite cooperative efforts among producer states, consumer states, and utilities to devise cooperative compliance strategies. At least some states with more

---

13 EPA assumes obtainable reductions from efficiency (heat rate) improvements (Building Block 1) at coal steam plants of 6%. Thus Kentucky's initial "Coal Rate" imputed by EPA is 2,166 lbs./MWh. After 6% efficiency gains, coal facility emissions decline to 2,036 lbs./MWh. Kentucky's (2020) Interim Goal is 1,844 lbs./MWh and its (2030) Final Goal is 1,763 lbs./MWh. The balance of reductions must come from a combination of re-dispatch to gas generation, plus new renewable energy and energy efficiency. *See generally Clean Power Plant Proposed Rule Technical Documents*, U.S. ENVTL. PROTECTION AGENCY, http://www2.epa.gov/carbon-pollution-standards/clean-power-plan-proposed-rule-technical-documents (last updated Dec. 2, 2014).

14 See OFFICE OF AIR QUALITY PLANNING AND STANDARDS, U.S. ENVTL. PROT. AGENCY, REGULATORY IMPACT ANALYSIS FOR THE PROPOSED CARBON POLLUTION GUIDELINES FOR EXISTING POWER PLANTS AND EMISSION STANDARDS FOR MODIFIED AND RECONSTRUCTED POWER PLANTS ES-8, Table ES-4 (2014), *available at* http://www2.epa.gov/sites/production/files/2014-06/documents/20140602ria-clean-power-plan.pdf for a cost comparison of state-by-state vs. regional compliance alternatives, finding a $1.5 billion compliance cost savings from regional vs. state-by-state action. Note that NRDC, using the same Integrated Planning Model and updated energy efficiency and renewable efficiency (EE/RE) assumptions, find a $2.5 billion delta value. David Doniger, *EPA's Plan to Curb Pollution Can Save Billions, NRDC Finds*, SWITCHBOARD NAT'L RESOURCES DEF. COUNS. STAFF BLOG (posted Nov. 19, 2014), http://switchboard.nrdc.org/blogs/ddoniger/epas_plan_to_curb_carbon_pollu.html. *See also* PJM INTERCONNECTION PJM INTERCONNECTION ECONOMIC ANALYSIS OF THE EPA CLEAN POWER PLAN PROPOSAL 77–84 (2015).

aggressive GHG reduction targets than those EPA has set could use such cost reductions to reach further to their state-adopted goals.

The optimum outcome, toward which EPA and those supporting an effective rule must bend their efforts, is the one that achieves material emissions reductions at least cost while staying within the legal metes and bounds of the Clean Air Act.

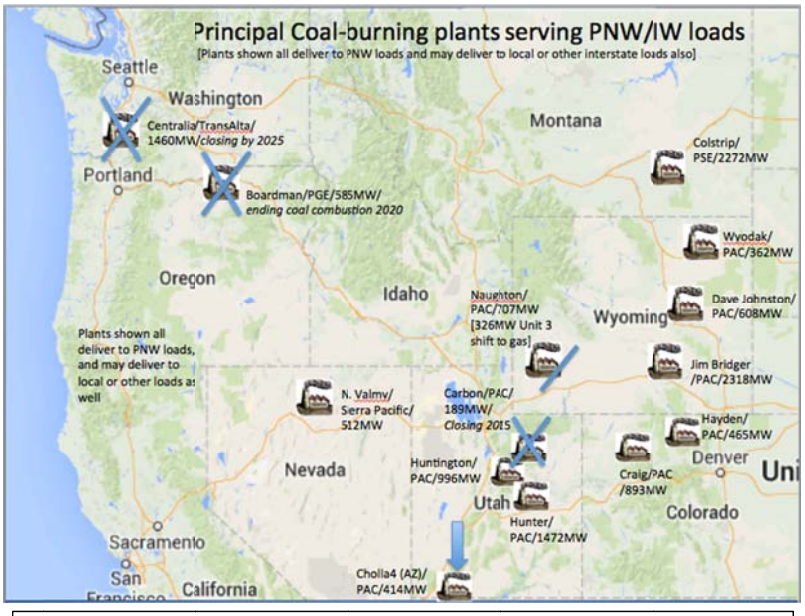
I
THE PACIFIC NORTHWEST/INTERMOUNTAIN WEST ELECTRICITY SYSTEM

The Pacific Northwest/Intermountain West Electricity System is especially complicated because a substantial part of the load lies along the Interstate 5 (I-5) corridor (the Seattle and Portland Metro Areas), but most of the coal-fired generation imported to serve these loads is located in Montana, Wyoming, Nevada, and Utah. Most of this generation in at least Montana and Wyoming is committed to out-of-state loads.[15] The respective coal-generation capacities are:

Montana	2717 MW
Nevada	521 MW[16]
Oregon	585 MW
Utah	5204 MW
Washington	1460 MW
Wyoming	4627 MW
Arizona	414 MW

15 The largest shares of the Wyoming and Montana capacities and costs shown are allocated to out-of-state loads, but that share by state will vary with utility ownership share, the location of that utility's loads, seasonal load variability, and market conditions. Some facilities in Colorado, Arizona, New Mexico, and Nevada also export to out-of-state loads in this PNW/IMW region, and all of the region's utilities purchase "system power" that may originate in coal or other power plants across the western grid.

16 This is the North Valmy Generating Station, 50% owned by Idaho Power which imports generation into the PNW. Nevada has one other coal facility—Reid Gardner Station/612 MW—that will be fully closed in response to state regulatory action by 2017.



Note: Plant capacity values may be stated slightly differently in different documents and proceedings.

This difference becomes greater still in 2020 (when coal combustion ends at Boardman and Centralia) and 2025 (when the other Centralia plant is retired).[17] Neither Oregon nor Washington will then have any coal combustion remaining within their borders. Idaho is already coal-free. Yet all three will remain in significant degree[18] dependent on imported coal generation to meet loads.

The largest share of the remaining coal plants in the region is owned by PacifiCorp (PAC), but substantial shares in certain plants are divided up among multiple owners[19] and serve loads in multiple

17 If EPA sets a baseline year earlier than 2020, both Oregon and Washington will likely be in compliance with any EPA existing power plant rule, and might even have reduction "credits" to trade to out-of-compliance facilities and their owners. Electricity customers in all three "in-compliance" states will still be financially responsible for plants located elsewhere but serving their needs.

18 After 2020, coal's estimated share of load in Washington will be around 15%; in Oregon, around 25%; and in Idaho, over 35%. IDAHO LEGISLATIVE COUNCIL'S INTERIM COMM. ON ENERGY, ENV'T AND TECH. & IDAHO STRATEGIC ENERGY ALLIANCE AND PUB. COMMENTS, 2012 IDAHO ENERGY PLAN 27, 40–41 (2012), *available at* http://www.energy.idaho.gov/energyalliance/d/2012_idaho_energy_plan_final_2.pdf.

19 Colstrip/2272 MW shares in four units owned variously by Puget Sound Energy, Portland General Electric, Avista, PacifiCorp, Northwestern, and PPL Montana. Similarly, two-thirds of Jim Bridger/2318 MW is owned by PacifiCorp and the remaining balance by Idaho Power.

states, complicating decision making. The plants also have different useful life designations. All regional coal plants forty years and older are fully owned or controlled by PAC. The selection of a baseline from which coal emissions reductions are measured, and the level of reductions required in each state under the rule, will affect plant owners differently. But PAC stands to be most challenged because of the makeup and age of its fleet, and because it operates (generates and serves loads) in multiple states.

While this discussion centers on the coal assets of investor-owned Pacific Northwest (PNW) and Intermountain West (IMW) utilities, there are also some one hundred and thirty consumer-owned utilities in the PNW and more in the IMW. Most Consumer-Owned Utilities (COUs) are served from their own resources or from the federal hydropower system through the Bonneville Power Administration or Western Area Power Authority, and are not expected to be significantly affected by an EPA carbon rule. In addition, there are both merchant coal plants (e.g., Centralia) and coal units owned and operated by other utilities that deliver power into the PNW grid which will be accounted for in an EPA rulemaking. To make this already complex subject slightly less complicated, this Article excludes these facilities. State air regulators will need to deal with them however, and it is possible they could be wrapped into a system compliance strategy to collective benefit.

Planning is further complicated by other Clean Air Act regulatory proceedings underway[20] to which different plants have different exposures, by price pressure from growing new sources of natural gas and declining cost curves for renewable technologies.

Much of the region's long-distance transmission mileage is dedicated to east-to-west movement of power from these coal plants,[21] and the economics of this transmission is substantially intertwined with the destinies of these facilities as well as with any replacement resource strategies for displaced coal generation. Calculating emissions liabilities for each state and utility involved in these transactions, as well as the distribution of cost impacts, will depend on how EPA treats interstate sales and deliveries of energy as

---

20 *E.g.*, regional haze, SO_2/NOx, water, particulate, ash waste, mercury, and the downstate transport rule.

21 Substantial transmission capacity in Oregon/Washington and from northwest Montana and Canada south and westward is used for hydroelectric generation.

well as their effects on utility determination of least-cost replacement resources, future energy contracts, and transmission investments and management of existing assets.

A. Dramatis Personae

1. The Power Plants

There are thirty coal-fired power units at fourteen plant sites across eight states,[22] with a combined nameplate capacity of 15,528 MW,[23] in part or fully committed to serve loads in the Pacific Northwest and Intermountain West.[24] After coal combustion ends at the Boardman, Centralia, and Carbon facilities, and another plant (Naughton Power Plant "Unit 3") is converted to gas combustion, some 12,968 MW of coal-fired generation will, under current plans, continue to operate. Eight units, all owned by PacifiCorp (PAC) and comprising almost 1400 MW, are now forty years or older and relatively inefficient (with heat rates well above 11,000 BTU/kWh). Most of the region's older units will require additional pollution controls to comply with the CAA before CO_2 emissions come into play, but the extent of the obligations vary with each plant.[25]

2. The Utilities

Two-thirds of the residual (post-2025) regional coal capacity is owned and operated by PAC, making it by far the largest owner and operator of these facilities. Puget Sound Energy (PSE) follows with around 8%. Portland General Electric (PGE), Avista, Idaho Power, Northwestern, Sierra Pacific, and PPL Montana share ownership in the balance of the aggregated plant capacity.[26] Some utility service

---

22 PacifiCorp (PAC) has customers in six states: Oregon, Washington, Montana, Wyoming, Utah, and California. It owns coal generation (or shares) in Montana, Wyoming, Utah, Colorado, Arizona, and New Mexico.

23 *See infra* p. 332 and accompanying Attachment B: Northwest Utility Coal Plant Statistics.

24 Apart from plants largely dedicated to PNW loads, coal dependence varies from year to year with each utility and may vary with available hydropower supplies and sales/purchases of system power, some of it coal-generated, from western power markets.

25 See *infra* p. 332 and accompanying Attachment B: Northwest Utility Coal Plant Statistics for regional coal facilities data referenced in this paragraph.

26 There are also over 130 Consumer-Owned Utilities (COU's) in the four PNW States (Oregon, Washington, Idaho, and Montana) and more in the other producer states; but very little coal-generated electricity is delivered to the PNW COU's. IMW COU's that own substantial coal-generating assets are not considered in this case study.

territories are wholly contained within a state (e.g., PSE and PGE) while others may have territories and customers across two or more states (e.g., PAC, Avista, and Idaho Power).[27]

3. The Air Regulators

EPA regulates emissions at power plants, generally operating through State air and water quality regulatory agencies and requiring State rules to be equal to or more rigorous than EPA guidelines.[28] Prevailing federal air emissions regulation for these plants include, most importantly: ozone, SO_2/NOx, water, particulate, ash waste, mercury, and the air transport rule (for downwind effects of plant emissions).[29] Depending on when plants were built or underwent major modification, and whether an owner has systematically installed emissions control systems or was able to defer certain retrofits under "new source" exemptions, different rules will apply differently.[30] EPA either approves state compliance plans or, if necessary, will develop and impose a federal compliance plan.[31]

4. The Utility Regulators

Each State has a public utility regulatory commission that authorizes rates of return, customer tariffs, and terms of recovery of capital investment for each investor-owned utility with an assigned service territory. These commissions also review the resource planning and capital investments made by their regulated utilities, including investments made to comply with the Clean Air Act (CAA) and other regulatory requirements. Utility regulators have no air quality regulatory authority but must address cost allocation resulting from rules set by air quality regulators, so they are likely to be closely consulted on cost implications of different emissions regulatory

---

27 Centralia is a merchant plant privately owned by Trans-Alta Corporation. As such its operations come under Federal Energy Regulatory Commission (FERC) regulation but it is not subject to state utility commission rate-of-return regulation. This is also true for the PPL merchant plants in Montana, and for all COU-owned facilities.

28 Clean Air Act §§ 107, 112(l)(1), 116, 42 U.S.C. §§ 7407, 7412(l)(1), 7416 (2012).

29 See Clean Air Act (CAA) § 112(b)(1) for the complete list of "hazardous air pollutants" regulated under the CAA.

30 Clean Air Act § 111(a)(2). The definition of "new source" distinguishes between "any source, the construction or modification of which is commenced after publication of regulations" and "existing sources." Clean Air Act § 111(a)(6).

31 Clean Air Act § 111(c)(1).

approaches. The utility regulators oversee cost recovery on utility capital investments and measurement of energy efficiency gains, a critical task in the process of capturing least-cost emissions reductions. They also oversee utility Integrated Resource Planning (IRPs)[32] where each utility describes its CAA section 111(d) compliance strategy and the strategy's effects on their generating facilities and costs. PAC has customers in six states,[33] making for an especially challenging utility regulatory task as each regulatory body has authority to make decisions independent of the other five. The states over time have developed tools for allocating PAC costs among them, although each may allow or disallow recovery of different costs.[34] The formulas demand regular review among the utility and the six commissions to work through disagreements that may advantage or disadvantage one state and the customers therein. The good news is that much of the necessary allocation methodology and mechanisms exists; the challenge is that allocating the costs and emissions reduction responsibilities from section 111(d) compliance can be expected to place new stresses on these arrangements.

II
THE SECTION 111(D) REGULATORY PROCESS

There are extensive write-ups (and differing interpretations) of the contents and meaning of section 111(d) of the Clean Air Act[35] and the legal basis for applying it to GHG emissions from existing power plants[36] that will not be repeated here. But a brief introduction to

---

32 See *Integrated Resource Plan Laying the Groundwork for Oregon's Energy Future*, PORTLAND GEN. ELECT. ISSUES IN PERSP., Nov. 2009, *available at* http://www.portlandgeneral.com/our_company/news_issues/current_issues/docs/ip_irp.pdf and PORTLAND GEN. ELEC., 2013 INTEGRATED RESOURCE PLAN (2014), *available at* http://www.portlandgeneral.com/our_company/energy_strategy/resource_planning/docs/2014_03_stakeholder.pdf for an explanation of PGE's IRP and PGE's current 2013 IRP respectively.

33 *See supra* note 22.

34 In PAC's 2013 rate case before the Oregon Public Utility Commission (Oregon PUC), the regulators unilaterally declined to allow recovery from Oregon ratepayers of $17 million in PAC coal plant retrofit investments—equal to 10% of Oregon ratepayers' share of the utility's six-state cost recovery requested, treating these as not "prudent" expenditures. PacifiCorp, Order No. 12 493 (Or. Pub. Util. Comm'n Dec. 20, 2012), *available at* http://apps.puc.state.or.us/orders/2012ords/12-493.pdf.

35 Previously, EPA has applied section 111(d) of the Clean Air Act to plants producing sulfuric acid, phosphate fertilizer, aluminum, paper pulp, and to municipal solid waste landfills.

36 *See generally* the National Resources Defense Council (NRDC), EDF Renewable Energy, the Brattle Group, and Georgetown Climate Center.

section 111(d) will serve to delineate some of the critical choices facing utilities, regulators, and citizens of the Pacific Northwest and Intermountain West. From a September 2013 EPA memorandum on the subject:

> [President Obama's June 25, 2013] Memorandum directs EPA to issue proposed carbon pollution standards and guidelines, as appropriate, for modified and existing power plants by no later than June 1, 2014, and to issue final standards and guidelines, as appropriate, by no later than June 1, 2015. In addition, it directs EPA to include a requirement for state submittal of the implementation plans required under section 111(d) of the Clean Air Act by no later than June 1, 2016.
>
> . . . Under section 111(d) EPA issues guidelines for states to use in developing plans implementing standards of performance for the affected sources. . . .
>
> . . . [S]ection 111(d) of the Clean Air Act is broad and allows for collaboration between EPA and states to address pollutants that endanger the public health and welfare. Moving forward, there are different options available for addressing carbon pollution from existing power plants such as a "source-based approach" and a "system-based approach." A source-based approach evaluates emission reduction measures that could be taken directly at the affected sources—in this case, the power plants. A system-based approach evaluates a broader portfolio of measures including those that could be taken beyond the affected sources but still reduce emissions at the source.
>
> . . . .
>
> . . . EPA believes that its guidelines should identify for sources and states the required level(s) of performance prior to plan submittal. Under section 111:
>
> > "Standard of performance" means "a standard for emissions of air pollutants which reflects the degree of emission limitation 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."
>
> There are a number of ways to reduce CO2 emissions from existing power plants that might be included in an evaluation of the best system of emission reduction (BSER), including:
>
> - Onsite actions at individual affected section 111(d) sources.
>
> - Supply-side energy efficiency improvements ("heat rate improvements").

- Fuel switching or co-firing of lower-carbon fuel.

- Shifts in electricity generation among sources regulated under section 111(d) (e.g., shifts from higher- to lower-emitting affected fossil units).
- Offsite actions that reduce or avoid emissions at affected section 111(d) sources.
  - Shifts from fossil generation to non-emitting generation.
  - Reduction in fossil generation due to increases in end-use energy efficiency and demand-side management.[37]

A. Critical Terms for a Regional Compliance Strategy

How the EPA defines the following terms will be critical to the design of an effective regional compliance strategy. These definitions are likely to become the subject of legal actions by both regulated parties and other stakeholders.

1. "Rate-Based/Mass-Based Emissions Values"

EPA has proposed a rate-based standard—pollutant quantity emitted by a facility per unit of output (lbs./MWh)—for application in each state to apply at the point of plant emissions. On a state basis, EPA has made it possible for a rate-based value to be converted to a mass-based value (total lbs. GHG emissions within a state) and allocated among plants or accountable parties.[38] Utilities with resources and/or loads in more than one state can evaluate their least-cost pathways to delivering reductions in their service territories, but only by making assumptions about state-by-state determinations of compliance strategies. As a useful general rule, states are expected to find multi-state compliance exchange transactions more easily accomplishable if both states have elected mass-based targets that enable trades to be denominated in the common metric of tons of carbon. Exchanges among states electing rate-based targets—or between a state with a rate-based goal and another with a mass-based goal—will be more difficult since a ton of carbon reduced will have a

---

37 U.S. EPA, CONSIDERATIONS IN THE DESIGN OF A PROGRAM TO REDUCE CARBON POLLUTION FROM EXISTING POWER PLANTS 1-3 (2013) (underlined emphasis added), *available at* http://www2.epa.gov/sites/production/files/2013-09/documents/20130923statequestions.pdf.

38 OFFICE OF AIR & RADIATION, U.S. ENV'T PROT. AGENCY, TRANSLATION OF THE CLEAN POWER PLAN EMISSION RATE-BASED CO_2 GOALS TO MASS-BASED EQUIVALENTS (2014), *available at* http://www2.epa.gov/sites/production/files/2014-11/documents/20141106tsd-rate-to-mass.pdf.

rate-based value (tons/MWh) that will vary with the quantities of electricity generated in each state.

2. "Source-Based Approach/System-Based Approach"

A source-based approach is generally understood as a strategy that controls emissions at a single point source, e.g., a single power plant. While there are often capturable plant efficiencies that can reduce GHG emissions at the margin in such facilities, these will be limited technically or economically by the facility design, age, and prior retrofit choices (e.g., pollution control equipment installed to comply with other CAA requirements). A source-based approach may struggle to bring significant carbon reductions at costs consistent with Clean Air Act cost-effectiveness evaluation requirements.[39] A system-based approach, on the other hand, may permit a state or utility to aggregate multiple power plants (e.g., all power plants within a state, all power plants within a utility across a state, or across multiple states) within a plan, backing off power production (and emissions) at some less carbon-efficient plants and averaging these with other, more efficient plants that then may operate at higher capacity factors. A system-based approach might permit a multi-state emissions management structure like an Independent System Operator (ISO),[40] or like a Regional Greenhouse Gas Initiative (RGGI),[41] to aggregate and average emissions across multiple plants owned by multiple operators. The advantage of a system-based approach, of course, is that by being selective about which plant operations will be reduced and replaced by lower-carbon options and which may continue to be operated at higher capacities, facilities can be managed to optimize power operations for CAA compliance at the least cost. The wider and more inclusive the pool of resources, including a pool that is not obliged to stop at a state boundary, the more such cost-efficient

39 *See supra* note 9.

40 An Independent System Operator refers to an agency managing electrical system and grid operations in a state or region that has substantial private wholesale power suppliers.

41 RGGI is an operating multi-state carbon cap and trade arrangement involving nine states in the US Northeast. See REGIONAL GREENHOUSE GAS INITIATIVE, http://www.rggi.org (last visited Feb. 11, 2015) for more information including legal documentation and organizational governance.

choices there will be—theoretically—from which to assemble a compliance strategy.[42]

3. "Standard of Performance and Best System of Emissions Reduction (BSER)"[43]

In setting state targets, EPA has proposed Standards of Performance for individual plants (source-based) and aggregations of plants (system-based). In both cases EPA has an obligation to identify a BSER and issue guidelines for State implementation of the Standard that employs the BSER or another approach that yields equal or better emissions outcomes. Given the complex and interacting architecture of the power system, it is arguable that a BSER could *require* a systems-based approach, since a source-based approach is likely to result in both substantially higher emissions and costs. In its draft rule the EPA, by setting system (state) targets and allowing compliance across a state's system, appears to have adhered to such an interpretation.

4. "State Implementation Plan"[44]

EPA is expected to issue its Standard of Performance and compliance guidelines for States in mid-2015. States will develop implementation plans for submission to EPA by mid-2016. For states that fail to submit plans or fail to get them approved, EPA will develop a Federal Implementation Plan and require the state to adopt

---

42 *See supra* note 14; *see also* Lynn Garner, *EPA Clean Power Plan to Cut Reliability, Cost Billions of Dollars, FERC's Philip Moeller Says*, BLOOMBURG BNA ENV'T REP. (December 3) (quoting that Federal Energy Regulatory Commission (FERC) Chair Cheryl LaFluer prefers, "[A] broad regional approach by the states as they develop their plans to implement the EPA clean power plan. The electric grid operates regionally and not strictly along state boundaries . . . . There will be a great deal of opportunity for reaching regional solutions in order to implement the final rule . . . ."), http://www.bna.com/epa-clean-power-n17179917922/.

43 Clean Air Act § 111(a)(1), 42 U.S.C. § 7411(a)(1) (2012); *see also* Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units, 79 Fed. Reg. 34,830 (Section IV.A. Summary of Rule Requirements) (proposed June 18, 2014) (to be codified at 40 C.F.R. pt. 60), *available at* http://www.gpo.gov/fdsys/pkg/FR-2014-06-18/pdf/2014-13726.pdf.

44 See Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units, 79 Fed. Reg. at 34,851 (Section IV. Rule Requirements and Legal Basis) for authority to issue rule; *id*. at 34,853 (Section V. Authority To Regulate Carbon Dioxide and EGUs, Affected Sources, Treatment of Categories) for authority to issue the subject rule; and *id.* at 34,915 (Section VIII.E. Process for State Plan Submittal and Review) for schedule for states to submit plans.

and execute it.[45] For a systems-based approach that involves more than one state, the draft rule appears to require approved implementation plans from all involved states, in advance.[46]

III
A SYSTEMS-BASED STRATEGY FOR THE PACIFIC NORTHWEST/INTERMOUNTAIN WEST REGION

Given the dispersed nature of the regional electricity system, and the geographical separation of generation and loads across nine states,[47] EPA's rule-writing options are complicated. While generation and load are spread across what is truly a regional electrical system, there is no regional transmission authority or independent system operator.[48] A region-wide, multi-state pact like a RGGI is unlikely given the limited time for developing state compliance submissions to EPA,[49] and the highly divergent views among the PNW and IMW states on the threshold question whether GHG reductions are even necessary.[50]

---

45 Clean Air Act § 111(d)(2)(A), 42 U.S.C. § 7411(d)(2)(A) (2012); *see infra* p. 330 and accompanying Attachment A: Clean Air Act Section 111(d) to this Article for a copy of § 111(d).

46 Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units, 79 Fed. Reg. at 34,919–20 (Section VIII.F.3. Incorporating RE and Demand-Side EE Measures Under a Rate-Based Approach).

47 *See supra* note 2.

48 *See, e.g.*, the California Independent System Operator (California ISO) and PJM Interconnection, LLC (formerly Pennsylvania-New Jersey-Maryland Interconnection, a Regional Transmission Operator (RTO) operating the electrical grid for thirteen states and the District of Columbia in the eastern United States).

49 Rod Kuckro, *Electric Utilities See Merit in Multistate Plans to Meet EPA Rule*, E&E PUBLISHING, LLC (EnergyWire: Tuesday, Dec. 2, 2014) (quoting Edison Electric Institute Deputy General Counsel Emily Fisher, "It's not real clear to us that states have enough time between the filing of their plans in 2016 or 2017 to really get together and design multistate plans. It took at least five or six years for [the Regional Greenhouse Gas Initiative] to get together."), http://www.eenews.net/search/stories?from_day=10&from_month=4&from_year=2014&keyword=emily+fisher&to_day=9&to_month=4&to_year=2015.

50 The option of joining an existing aggregation like RGGI, or California's AB 32 cap-and-trade regime, presents its own complexities. This is especially so given the interdependence of PNW/IMW consumer and producer states, possibly requiring that most or all agree to such an affiliation. The option of rolling up state-to-state agreements into a larger regional aggregation would likely remain viable and could be accessed, post-EPA rule, by willing state governments.

Still, options exist for a least-cost system-based multi-state approach that the states and utilities may see as their best interests, albeit for different reasons.

When devising a least-cost reduction strategy, states and facility owners must bear in mind that there are three categories of costs to be evaluated:

1. Cost of emissions reduction retrofits at plants subject to compliance, if proposed. These may be as costly as carbon-capture-and-storage (CCS),[51] or as relatively modest as technical efficiency improvements in plant and transmission operations.
2. Cost of replacement resource for the reduced or terminated output of a fossil fuel power plant subject to the regulation. Resources may include generation (e.g., wind or other renewable resources, base-load gas turbines, and peaking/integrating gas turbines), storage (e.g., utility-scale batteries and Underground Compressed Air Storage (CAES)), and demand-side resources (e.g., energy efficiency and demand-response integrating resources such as electric vehicle batteries). Generally, energy efficiency has been the region's lowest cost resource, but it is not expected to be sufficient to the task of replacing a substantial amount of coal combustion.[52] Developing a resource (e.g., capturing energy efficiency) in one state and using it to reduce plant operations and emissions in another state will require some deft agreement writing and EPA oversight flexibility, or the development of a tradable allowance system.
3. Cost to communities of impacts attributable to reduction in coal plant operations or plant shutdown. These may include lost jobs (and related multiplier effects on local businesses) and lost tax revenues.

Of course there are real and potentially offsetting benefits that may be realized under a well-designed compliance approach. States that

---

51 CCS is most likely to be a cost-effective emissions reduction strategy in limited applications at power plants where the carbon dioxide can be piped to nearby oil fields and used to increase oil recovery in older well fields.

52 For example, generating power plants are needed across the system to maintain voltage support and other power quality conditions within the transmission system. Energy efficiency capture in Oregon and Washington is already keyed to a cost-effectiveness test involving combined cycle gas generation, likely the same test that would be applied in gauging efficiency replacement resources available for reduced coal combustion.

are net importers of coal-generated power, such as Idaho, Oregon, and Washington, should see a reduction in dollars exported out of state to pay for those imports (e.g., over $300 million annually in fuel and operations costs for Oregon alone).[53] Substituting efficiency and renewable generating resources for coal generation will result in new jobs, additional environmental benefits, potentially lower electricity costs long-term (as hydropower has delivered over the last century) and an accelerated transition to the more flexible and distributed power (and electric vehicle transportation) systems of the future.[54]

There are many possible combinations of state compliance plans and utility actions, within a single state's boundaries or involving more than one state. The three that follow are the most discussed.

A. Plant-by-Plant Emissions Reduction[55]

EPA could have elected to assign emissions reductions (or maximum allowed emissions) for each power plant subject to regulation, similar to other point source pollution rules.[56] Enforcement at the plant would have been direct and straightforward,

---

53 Interview with Phil Carver, Senior Policy Analyst, Or. Dep't of Energy (Feb. 28, 2014) (based on utility filings described in FED. ENERGY REGULATORY COMM'N, U.S. DEP'T OF ENERGY, FERC FINANCIAL REPORT FERC FORM NO. 1 (2012), *available at* http://files.shareholder.com/downloads/POR/4074041810x0x647950/A0C4DE2A-88F0-41BE-8F4A-CBC55CC2E884/PGE_Form_1_-_2012.pdf).

54 Laurie T. Johnson et al., *Less Carbon, More Jobs, Lower Bills*, 13-07-A NRDC ISSUE BRIEF *passim* (2013) (citing Synapse Energy Economics, Inc. economic data), *available at* http://www.nrdc.org/globalwarming/files/less-carbon-more-jobs-IB.pdf. The report shows Oregon adding 1900 job-years and lowering the average utility bill by $0.65/month; *id.* at 4 (Table 1: Changes in Net Job Years and Utility Bills in the U.S. and by State from Carbon Standard in 2020); and Montana adding 3600 job-years while lowering the average utility bill by $1.25/month; *id.* (added jobs largely in energy efficiency). NRDC's 2014 update of the analysis reflects declining real costs of renewable generating technologies and of gas, and shows still greater reductions with accompanying greater benefits, at lower compliance costs. Dan Lashof et al., *Cleaner and Cheaper: Using the Clean Air Act to Sharply Reduce Carbon Pollution form Existing Power Plants, Delivering Health, Environmental, and Economic Benefits*, 14-03-A NRDC ISSUE BRIEF UPDATE *passim* (2014).

55 A "plant" may be a single coal burning power generation unit, or it may be a facility containing two or more such units (e.g., the Colstrip facility has four generating units that can each operate independently of the others and that has its own shared ownership).

56 Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units, 79 Fed. Reg. 34,830 (Section IV.B. Summary of Legal Basis) (proposed June 18, 2014) (to be codified at 40 C.F.R. pt. 60), *available at* http://www.gpo.gov/fdsys/pkg/FR-2014-06-18/pdf/2014-13726.pdf.

and arguably more legally defensible, but would have yielded only modest emissions reductions. EPA rejected this approach in favor of requiring reductions from actions across the electrical system within a state (or, potentially, in a multi-state arrangement) as its preferred Best System of Emissions Reductions.

B. State-by-State Emissions Reduction

For each state, EPA has proposed reduction targets that aggregate the range and scale of supply (generation) and demand-side resources (the "Building Blocks") available to that state, while deferring to the state the responsibility to devise a multi-resource strategy for achieving the indicated reductions.[57] The state must then develop, in consultation with in-state plant owners, energy efficiency delivery agencies, and others a strategy for allocating reductions among the four building blocks according to a least-cost or other state-selected methodology (that includes replacement of existing thermal, renewable, and efficiency resources and counts their associated emissions).

For the PNW, EPA's approach has left unclear some of the critical relationships between producer and consumer states. For example, EPA has proposed that lower emissions associated with renewable resources developed to serve loads in any state may be claimed by that state for compliance purposes, whether or not the resource is located within the state.[58] On the other hand, it is not clear which state will be allowed to claim reductions resulting from energy efficiency capture in one consumer state where the actual emissions reductions may occur at a plant in a producer state. Under these circumstances there is also substantial risk of double-counting, especially where the consumer state is pursuing a rate-based target while the producer state has adopted a mass-based target.[59] Another complication is that customers in consumer states would be obligated to pay for resource

---

57 Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units, 79 Fed. Reg. at 34,851–53 (Section IV.A. Summary of Rule Requirements and Section IV.B. Summary of Legal Basis).

58 *See* U.S. EPA, OFFICE OF AIR & RADIATION, TECHNICAL SUPPORT DOCUMENT (TSD) FOR CARBON POLLUTION EMISSION GUIDELINES FOR EXISTING STATIONARY SOURCES: ELECTRIC UTILITY GENERATING UNITS: STATE PLAN CONSIDERATIONS 87 (2014) (Section VII.B. Summary of Possible Approaches for Treatment of Interstate Emissions Effects), *available at* http://www2.epa.gov/sites/production/files/2014-06/documents/20140602tsd-state-plan-considerations.pdf.

59 *Id.* at 87 n.88.

replacement costs in their producer state, but would have little or no say over decisions setting emissions reduction levels and the resource replacement choices used by the air regulators in the producer states as the basis for setting emissions reduction levels and compliance determinations.[60] On the other hand, the producer states may have difficulty accessing lower cost efficiency resources for a replacement strategy since loads, and thus efficiency opportunities, would be in a consumer state not held by EPA to acquire the efficiency resources. Together, a producer state and a consumer state could jointly shape a single least-cost strategy to which each contributes, and for which the range and extent of compliance options is wider than would be available to either alone.

These and many other issues are being posed to EPA in the approximately two million comments received by the agency up to its December 1, 2014, deadline.[61] EPA has set June 2015 as the expected date for issuance of a final rule.

C. Regional Agreement

A multi-state regional agreement for the PNW states that shared emissions reduction burdens to minimize costs might be similar to RGGI.[62] Such an approach would require a state-to-state agreement covering emissions, power plants, and customer loads among the participating states. It would likely convert EPA rate-based values (lbs/kWh) to an aggregated regional mass-based value (total tons). The participating states could then use an allocation agreement or allowance system to assign reduction responsibilities among themselves, as RGGI has done. For compliance, reductions would be totaled and reported as a single sum to EPA.

Issues with this approach include: (1) the short time period (up to three years including allowable extensions) between when an EPA

---

60 Actual resource replacement decisions would be made by the utility involved, overseen by the utility regulators in the consumer states.

61 Maria Gallucci, *Obama EPA's Landmark Power Plant Proposal Draws 2M Comments from Detractors and Supporters*, INT'L BUS. TIMES (Dec. 03 2014, 12:17 PM EST), http://www.ibtimes.com/obama-epas-landmark-power-plant-proposal-draws-2m-comments-detractors-supporters-1732744.

62 *See, e.g.*, RGGI, BY-LAWS OF REGIONAL GREENHOUSE GAS INITIATIVE, INC. (2007), *available at* http://www.rggi.org/docs/RGGIinc/Docs/Legal/rggi_bylaws_12_12_07.pdf.

rule is published and when state compliance plans need to be in place, including any such regional arrangements; (2) institutional and political differences among the western states; (3) absence of a regional ISO or other institution that could help manage transactions; and, (4) substantially divergent views among the western states regarding the need to address the climate effects of fossil fuel combustion and the wisdom and legality of EPA's chosen method. EPA is clearly supportive of such multi-state approaches, and has provided analysis that supports the perspective that such approaches will lower compliance costs for participating states.[63] EPA's draft rule, however, leaves the decided impression that the "RGGI" multi-state approach, with its prior multi-state institutional agreements and pooling of emissions, is the favored model; while the criteria for getting other options approved is not specified.[64]

D. Bilateral or Multilateral State-to-State Agreements

There are alternatives to trying to assemble a "RGGI" regional approach up front that could still capture much of the least-cost value of collective regional action. Here are five such scenarios:

1. Multi-State Single Facility Agreement

Two or more states might negotiate a series of bilateral agreements around a single plant or multi-plant facility. As above, EPA would calculate a BSER value for each of the states, develop plant-specific rate-based values, and provide the methodology for converting to plant- or unit-specific mass-based values. Regulators in the producer and consumer states, together with the unit's owner, could negotiate a strategy for that unit's contribution to its resident state's compliance that included reductions in plant operations together with development of lower-carbon replacement resources in any or all of the participating states. Such agreements could work off a common model agreement that is replicable state to state, and that subsequently could be rolled up into more comprehensive multi-plant agreements (and as a logical conclusion, a voluntary multi-state agreement comparable to RGGI, over time).

---

63 *See supra* note 14.

64 *See infra* p. 131 and accompanying Attachment C: Regional Environmental Advocates Comments to EPA re Section 111(d) Multi-State Options.

2. Multi-State Single Utility Agreement

A multi-state approach might be constructed around a single utility with resources and loads in more than one state. PacifiCorp is the obvious but not the only example of a utility so positioned,[65] and in fact has developed data sheets and scenarios for its next Integrated Resource Plan (IRP) in 2015 relying, in part, on this premise. Thus, it calculates its share of a state's subject emissions based on utility resources in that state, aggregates its emissions reduction burden across all states within which it operates, and then optimizes for least cost compliance by shifting Building Block units from state to state. For example, energy efficiency gains from Oregon may be assigned to offset emissions in Utah in a manner that is presumed to lower costs for all ratepayers (although until the states allocate costs, by existing or modified formulas, ratepayer effects remain uncertain). The states served by PacifiCorp would have to agree to this approach, since each would be required to meet its EPA-assigned target. Whether a state otherwise under compliance pressure would agree to shift compliance resources to another state served by PacifiCorp is problematic. It is not difficult to construct a scenario in which the state's priorities, and the utility's, may diverge. It is also possible that such a divergence could more easily be reconciled in state-level arrangements in which more opportunities for trading value for value exist (e.g., one state trading reductions away to another for additional wind project investment financed by ratepayers in the second state).

3. "Compliance Modules"

The Western Interstate Energy Board (WIEB) is fielding a study of the potential contribution from renewable energy (RE) or energy efficiency (EE) "modules" to multi-state compliance.[66] "Modules" might be as limited as cooperation on monitoring and evaluation protocols (that could enable subsequent exchanges of emissions reductions) to partial or full multi-state common development and tracking of RE or EE reduction "blocks," either directly and programmatically or by relying on utility or other third party

65 *E.g.*, Idaho Power Company serves loads in Idaho and eastern Oregon. Avista serves loads in eastern Washington and Idaho.

66 Travis Kavulla, Mont. Pub. Serv. Comm'r, Scope of Work for SPSC Study: 111(d) Compliance "Module" Concept (Oct. 21, 2014) (unpublished manuscript) (on file with author).

developers, and then assigning resulting carbon reductions among participating states.

4. "Carbon Reduction Credits"[67]

Western Resource Advocates (WRA) has floated a discussion draft for a multi-state arrangement under which each generating facility (Electric Generating Unit (EGU)) in participating states would be issued credits based on the extent (measured in pounds/kWh) their CO_2 emissions rate falls below the applicable EPA 111(d) standard (or they are issued *negative* credits for being above the standard). Thus both fossil-fueled and RE generators, and EE savings owners, are issued credits or negative credits. EGU owners subject to the EPA rule periodically retire credits in amounts equal to their *negative* credits sufficient to demonstrate compliance. Owners can trade credits among each other, permitting carbon-emitting facilities to acquire, for retirement, credits from non-emitting EGU's. WRA proposes that this approach can be deployed either on a multi-state basis, or within one or more states with affiliation and cross-state trading taking place subsequently.

5. Adjusted Rate-Based to Mass-Based Conversion Exchange Rates to Enable State-to-State Trading

EPA expresses state reduction responsibilities on a rate-basis, as pounds/kWh. A state is entitled to submit its compliance plan using either its assigned rate-based target or a target that has been converted to a mass basis (total tons emitted) according to a protocol approved by EPA. Two states that adopt mass-based targets consistent with EPA protocols should be able to trade reductions without further institutional arrangements. Two such states might field an electronic trading floor where owners of regulated facilities in their respective states traded reductions to achieve lower costs or operational benefits (e.g., developing needed new generating or transmission facilities). Two states with rate-based targets, or states with both rate- and mass-based targets among them, will find trading more difficult; and EPA will be rightly concerned about any trades that may result in states taking a kind of arbitrage advantage of different rates of allowed emissions per kWh, and permitting leakage.[68] EPA might enable

---

67 Steven Michel, WRA Energy Program Chief Counsel, Carbon Credit Reduction Program (July 30, 2014) (unpublished manuscript) (on file with author).

68 *See supra* pp. 327–28.

trading even in these circumstances with conversion factors that are adjusted for the different assigned state rates (with reductions depreciating or appreciating in reporting value depending on the circumstances of each state). Or, EPA might construct a back-end post-trade calculation rule as suggested below.

IV
KEY MULTI-STATE ISSUES

Along with the cost and operational benefits to be secured from multi-state section 111(d) compliance arrangements, there are issues raised as well that are not resolved in the June 2, 2014, draft rule. This is especially the case for any non-RGGI design. This Article identifies the following as key and critical.

A. Timing

The draft rule encourages multi-state compliance by, in part, providing an extra year for the states involved to file a compliance plan.[69] If state performance during the comment period for section 111(d) is any indication, few states are likely to enter into the complex state-to-state and utility-to-utility negotiations required while they are simultaneously developing a primary or fallback state-specific compliance strategy. There is a real risk that a state could commit to a multi-state compliance pathway, negotiate in good faith with its counterparty state, but fail to reach agreement, and then find itself without its own compliance plan as EPA's deadline approaches. At the same time, it's unclear why EPA would find necessary a hard deadline for a multi-state filing from two or more states if they had taken the precaution of filing state-specific plans before they tested the multi-state route. In fact, Oregon and Washington included in their formal comments to EPA the recommendation that the agency keep its multi-state "window" open indefinitely for a state that has an acknowledged compliance plan and is current in its filings.[70] This

69 Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units, 79 Fed. Reg. 34,830, 34,838, 34,898–99 (Section I.A.2.c.iii. Process for State Plan Submittal and Review and Section VIII.E.1. Overview) (proposed June 18, 2014) (to be codified at 40 C.F.R. pt. 60), *available at* http://www.gpo.gov/fdsys/pkg/FR-2014-06-18/pdf/2014-13726.pdf.

70 See *Clean Power Plan Comments Map*, BIPARTISAN POL'Y CENTER (Wednesday, Dec. 10, 2014), http://bipartisanpolicy.org/energy-map/ for comment letters from all states.

would allow states the flexibility also to negotiate multi-state agreements anytime during the compliance period to 2030 if new opportunities arise and appear advantageous, not just at the outset of the rule when future circumstances may be more opaque.

B. Design

EPA could choose to offer states flexibility with respect to design as well as timing without compromising rule integrity. While EPA clearly has a comfort level with RGGI's design, and perhaps would also be agreeable to other states joining California's cap-and-trade mechanism, still other designs may appear functional and advantageous to other states. For example, agreement on attributing emissions reductions from a single generating unit that serves loads in two or more states; or agreement on allocating reductions from a new renewable energy project located in one state but paid for by ratepayers taking service in another state. Again, so long as the combined emissions reduction outcome for all the involved states is not less than for the states reporting separately, EPA should have no reason to deny an alternative design proposed by the involved states.

C. Double-Counting/Leakage

"Double counting" occurs when two states each claim a quantity of emissions reduction. This might occur if energy efficiency-driven emissions reductions are reported to EPA from State A. State B, which exports power to State A, sees lower demand and reduces power production, resulting in lower plant emissions. State B then reports to EPA the same efficiency-driven emissions reductions. "Leakage" occurs when emissions reductions are reported but in reality the emissions have only been shifted from State A to State B, or have been shifted from a facility that is regulated by the rule to one that is not, avoiding the rule and resulting in higher overall emissions. Both effects are likely, absent regulatory correction.[71] For a power system like that in the Western United States, with resources and loads distributed unevenly across many states, opportunities for both effects multiply (and the opportunities are greater when one state

71 The effect is particularly likely if a state assigned a high rate-based target (e.g., above the emissions rate of a new, high efficiency gas combustion turbine) has the option of shifting power production from a generating unit subject to a stricter carbon emissions limit (e.g., an existing coal plant subject to section 111(d)) to one subject to a less strict standard (e.g., a new gas combustion turbine regulated under section 111(b)).

adopts a rate-based standard while its neighbor opts for a mass-based standard; or when two rate-based states with different carbon intensity factors look to trade). Trading emissions reductions within a multi-state system can either aggravate or ameliorate the effects. EPA, in enabling multi-state transactions to reduce costs and operational complications, will need to ensure that combined emissions reductions across the involved states are not less than would have been achieved if the involved states had complied independently of each other. This could be done by requiring each state to file both multi-state and separate state calculations. It could be done by EPA requiring all exporting states (or all importing states) to make corrected submissions after accounting for exports (or imports). To avoid double-counting where new energy efficiency or renewable energy facilities involving more than one state are part of a compliance filing, EPA needs to give states clear direction on which state has the prior claim on a reportable reduction. For new renewable resources, the draft rule currently gives this deference by default to the state within which reside the ratepayers paying for the new facility.[72] The draft rule is less clear on how efficiency-related reductions are to be attributed.

72 *See* U.S. EPA, OFFICE OF AIR & RADIATION, *supra* note 59.

ATTACHMENT A: CLEAN AIR ACT SECTION 111(D)[73]

(d) Standards of performance for existing sources; remaining useful life of source

(1) The Administrator shall prescribe regulations which shall establish a procedure similar to that provided by section 7410 of this title under which each State shall submit to the Administrator a plan which

(A) establishes standards of performance for any existing source for any air pollutant

(i) for which air quality criteria have not been issued or which is not included on a list published under section 7408(a) of this title or emitted from a source category which is regulated under section 7412 of this title but

(ii) to which a standard of performance under this section would apply if such an existing source were a new source, and

(B) provides for the implementation and enforcement of such standards of performance. Regulations of the Administrator under this paragraph shall permit the State in applying a standard of performance to any particular source under a plan submitted under this paragraph to take into consideration, among other factors, the remaining useful life of the existing source to which such standard applies.

(2) The Administrator shall have the same authority—to

(A) prescribe a plan for a State in cases where the State fails to submit a satisfactory plan as he would have under section 7410 (c) of this title in the case of failure to submit an implementation plan, and

(B) to enforce the provisions of such plan in cases where the State fails to enforce them as he would have under sections 7413 and 7414 of this title with respect to an implementation plan.

In promulgating a standard of performance under a plan prescribed under this paragraph, the Administrator shall take into consideration,

---

73 Clean Air Act § 111(d), 42 U.S.C. § 7411(d) (2012), *available at* http://www.gpo.gov/fdsys/pkg/USCODE-2012-title42/pdf/USCODE-2012-title42-chap85.pdf.

among other factors, remaining useful lives of the sources in the category of sources to which such standard applies.

ATTACHMENT B: NORTHWEST UTILITY COAL PLANT STATISTICS[74]

Northwest Utility Coal plant statistics

Plant Name	Plant State	Owner	Nameplate Capacity MW	Average Capacity Factor (%)	Average Age (Years)	Average Heat Rate (Btu/kWh)	Particulate Control	SO2 Control	NOx Control
Carbon (UT) 1	Utah	PAC (100%)	75	79	56	11,439	Y	N	N
Carbon (UT) 2	Utah	PAC (100%)	114	79	53	11,516	Y	N	N
Dave Johnston 1	Wyoming	PAC (100%)	114	77	51	11,773	Y	N	N
Dave Johnston 3	Wyoming	PAC (100%)	114	77	50	11,467	Y	Y	Y
Naughton 1	Wyoming	PAC (100%)	163	83	47	12,257	Y	N (Planned)	N
Dave Johnston 2	Wyoming	PAC (100%)	230	77	46	11,320	Y	N	N
Naughton 2	Wyoming	PAC (100%)	218	83	42	12,204	Y	N (Planned)	N
Naughton 3	Wyoming	PAC (100%)	326	83	39	11,728	Y	Y	N
Dave Johnston 4	Wyoming	PAC (100%)	360	77	38	12,488	Y	Y	Y
Centralia Complex 2	Washington	TransAlta (100%)	730	70	38	12,173	Y	Y	Y
Centralia Complex 1	Washington	TransAlta (100%)	730	70	37	12,284	Y	Y	Y
Jim Bridger 1	Wyoming	PAC (66.55%)	578	74	36	10,447	Y	Y	N
Huntington (UT) 1	Utah	PAC (100%)	498	76	36	10,228	Y	Y	N
Jim Bridger 2	Wyoming	PAC (66.55%)	578	74	35	10,983	Y	Y	N
Colstrip 1	Montana	PSE (50%)	358	76	35	11,656	Y	Y	Y
Jim Bridger 3	Wyoming	PAC (66.55%)	578	74	34	12,137	Y	Y	N
Colstrip 2	Montana	PSE (50%)	358	76	34	11,998	Y	Y	N
Huntington (UT) 2	Utah	PAC (100%)	498	76	33	11,760	Y	Y	N
Wyodak	Wyoming	PAC (80%)	362	85	32	13,677	Y	Y	N
Hunter 1	Utah	PAC (85.8%)	488	74	32	10,757	Y	Y	N
Jim Bridger 4	Wyoming	PAC (66.55%)	584	74	31	12,101	Y	Y	N
Hunter 2	Utah	PAC (85.8%)	488	74	30	10,856	Y	Y	N
Boardman (OR)	Oregon	PGE (100%)	601	74	30	10,217	Y	N (Planned for 2014)	N (Planned for 2011)
Hunter 3	Utah	PAC (85.8%)	496	74	27	10,550	Y	Y	N
Cholla 4	Arizona	PAC (100%)	414	72	29	10,616	Y	Y	N
Craig (CO) 1	Colorado	PAC (19.29%)	446	83	31	11,026	Y	Y	Y
Craig (CO) 2	Colorado	PAC (19.29%)	446	83	30	10,688	Y	Y	Y
Colstrip 3	Montana	PSE (25%) PAC (10%)	778	76	27	12,878	Y	Y	N
Colstrip 4	Montana	PSE (25%) PAC (10%)	778	76	24	12,878	Y	Y	N

74 Bonneville Power Admin., Corporate Strategy Landscape Perspective "The War on Coal" (Jan. 25, 2011) (unpublished manuscript) (on file with author); note that average age is calculated to 2011, and that emissions control data are out of date. Additionally, note: (a) the 521 MW North Valmy Generating Station in Nevada, not in this table, is 50% owned by Idaho Power which imports the power to its Idaho loads; (b) Idaho Power also owns one-third of the Jim Bridger units and 10% of Boardman; and (c) PGE now owns 80% of Boardman, not the 100% shown in the table.

ATTACHMENT C: REGIONAL ENVIRONMENTAL ADVOCATES COMMENTS TO EPA RE SECTION 111(D) MULTI-STATE OPTIONS[75]

The organizations submitting these comments operate in the Pacific Northwest and Intermountain West. We welcome and strongly support the draft Clean Power Plan Rule proposed by the Environmental Protection Agency (EPA). Our comments are designed to support EPA in adopting the strongest and most efficient final rule.

While many of our organizations will be submitting individual comments on a variety of issues, in these joint comments we focus solely on encouraging EPA to facilitate multi-state compliance approaches that are appropriate for the West.

Our regional grid is characterized by its multi-state architecture. Much of the generation that would be subject to this rule is located in the intermountain states, while a substantial proportion of the loads served are in the more populated coastal states. Thus, the power system components of EPA's state-by-state, demand and supply side building blocks are often scattered across several states, likely leading to cost and operational inefficiencies when regulated under a state-by-state approach.

A wider compliance platform, spread over multiple states, may afford more timely and cost-effective opportunities for carbon emissions reduction than are available to any single state. Some of the possible benefits include:

- Cost-effective emissions reduction opportunities may be spread unevenly across several states. Cooperative arrangements could reduce overall costs of compliance to utilities and consumers by enabling states to capture the best regional opportunities first.
- If new generation and transmission facilities are indicated, multi-state cooperation can enable more efficient introduction of such facilities and accompanying operational changes, leading to a stronger and more flexible grid design that improves system efficiency and reliability.
- A wider compliance platform, properly structured, may also help avoid double-counting emissions reductions.

---

75 Pacific Northwest/Intermountain West NGO Comments Submitted to EPA re Section 111(d) Multi-State Options (Nov. 30, 2014) (on file with author).

We encourage EPA to adjust the proposed rule, as outlined below, to further enable states to work together if they so choose to capture the greatest carbon emissions reductions at the lowest cost.

The EPA draft rule, in many of its provisions, explicitly invites and encourages multi-state compliance arrangements.[76] It is, however, equivocal on what would be an acceptable multi-state pathway apart from one which is substantially identical to the northeast states' Regional Greenhouse Gas Initiative (RGGI). EPA allows an extra year for compliance by states entering into a new multi-state arrangement. We believe the current timelines in the draft rule are ample for states to develop and submit their individual state compliance plans, and the extra year allowed for submitting a multi-state plan will help states with already aligned policies or states that intend to join an existing regional framework (RGGI). However, more timing flexibility for developing multi-state arrangements would help other states that file their state plans and then wish to consider multi-state opportunities. This is especially so given that important elements of EPA's final rule will remain uncertain until mid-2015. It appears most states are likely to focus first on their own compliance plans, looking later to multi-state options.

We recognize and support EPA's rationale for keeping this period short so as to ensure expeditious movement towards emissions limits and to not to allow extended delay for open-ended regional negotiations. Without compromising its current deadlines for final state plans, however, EPA can be flexible with respect to both design and timing of multi-state transactions, in order to capture the likely lower compliance costs available from a wider pool of reduction options that can be shared across utility and state boundaries.[77] States that wish to enter into such arrangements after the current EPA deadline for multi-state submissions should be expected to first have an accepted state implementation plan and be in compliance.

1. Basic Rule of Multi-State Carbon Transactions: EPA should be open to approving multi-state compliance arrangements so long as the collective outcome, for the states involved, results in emissions reductions equal to or greater than the sum of those

---

76 *See supra* p. 330 and accompanying Attachment A: Clean Air Act Section 111(d).

77 *E.g.*, EPA's IPM 5.13 analysis comparing regional to state-by-state compliance shows consistent lower compliance costs resulting from multi-state compliance arrangements. The NW Conservation and Power Planning Council this summer confirmed its sixth Power Plan finding of low consumer costs resulting from a regional (four state) carbon reduction strategy.

required of each state complying independently within its boundaries. This could allow states to use weighted average emissions rate targets and/or combined mass targets achieved across a regional power system. Such arrangements can and must ensure that reductions are not double-counted.[78]

2. Range of Multi-State Carbon Transactions: EPA's final rule should contain flexibility to allow other multi-state arrangements in addition to a "RGGI" design.[79] Multi-state arrangements should be allowed that may be broad enough to encompass all the covered emissions of two or more states, or as narrow as a single transactional exchange of compliance tons (e.g., from a coal plant closure or conversion) between two states. Any state may wish to, and should be able to, enter into multiple transactions with other states or aggregations of states. Arrangements might be structured to entrust an existing Independent System Operator (ISO) with the additional task of coordinating carbon trading, or states might establish a web-based trading window[80] where carbon units are tracked and exchanged. Another option is described by a Western Resource Advocates approach that relies upon tradable electric system carbon credits.
3. Timing of Entering into Multi-State Transactions: EPA should leave open-ended the opportunity to enter into multi-state arrangements at any time subsequent to a state having an approved implementation plan. EPA should be willing to approve such arrangements as amendments to approved plans of the involved states at any time following a final rule. Such amendments may include harmonizing of crediting protocols, timing and other state rules to allow for multi-state compliance. States can then proceed to devise and enter into multi-state arrangements for cost containment or other reasons on their own schedule without jeopardizing the effectiveness of the final rule.

---

78 *See infra* p. 336 and accompany text (5. Quantifying Value for Energy Efficiency Actions).

79 *E.g.*, multi-state platform for electronic exchange of reductions; intra-utility complementary actions when serving more than one state; RECS transactions.

80 A "WREGIS" model that could track both EE and RE-derived carbon reductions has been suggested elsewhere.

4. Adopt a Standard Approach to Avoiding Double-Counting Emissions Reductions from EE and RE: To avoid double-counting of emissions, EPA should adopt a standard approach and methodology for crediting emissions reductions from EE and RE where the activities or investments originate in one state and the reductions occur in another. Such a methodology should reinforce incentives for states to fully leverage their programmatic and regulatory tools (e.g., tax credits, codes and standards), and for utilities and their regulators to be willing to invest ratepayer dollars in EE and RE measures and projects. States that agree on an alternate formula for allocating reductions between or among themselves should be deferred to by EPA so long as double-counting is avoided and the Basic Rule is observed.[81]
5. Quantifying Value for Energy Efficiency Actions: For valuing emissions reductions resulting from energy efficiency measures, EPA should adopt a consistent valuation methodology. One approach, for illustrative purposes, would be to impute for each state an emission reduction value equal to the emissions rate of the power pool's marginal dispatched resource (or of the marginal dispatched coal generating unit); another would be to use the average emissions rate in the state for that year. Such approaches might be less precise than associating the effect of the measure with a specific EGU, but in the widely interconnected power pools this is arguable in either direction. There is a definite benefit to a predictable and easily calculable amount—and basis for calculating monetary value—for the measure that is consistent across the states within the power pool, facilitating multi-state transactions. Applying the same principle within all power pools should result in consistently valued reductions that can be traded between states in different power pools.

Submitted by:

Climate Solutions (OR, WA)
Citizen's Utility Board (OR)
Environment Oregon (OR)
Idaho Conservation League (ID)

---

81 *See supra* p. 334-35 and accompanying text (1. Basic Rule of Multi-State Carbon Transactions).

Montana Environmental Information Center (MT)
NRDC
Northwest Energy Coalition (ID, MT, OR, WA)
Oregon Environmental Council (OR)
Powder River Resource Council (WY)
Renewable Northwest (ID, MT, OR, WA)
Sierra Club
Snake River Alliance (ID)
Washington Environmental Council (WA)
Western Resource Advocates (CO, UT, AZ, NV, NM)
Western Organization of Resource Councils (CO, ID, MT, ND, OR, SD, WY)

References: Section 111(d) Draft Rule Direction on Multi-State Compliance

EPA's Clean Air Act section 111(d) draft rule, issued June 2014,[82] speaks in several sections to the option of states entering into a multi-state compliance arrangement, generally identifying the Regional Greenhouse Gas Initiative (RGGI) as a useful model.

> On page 34834, EPA notes that a state could act to reduce carbon emissions by adopting an allowance-based system and offers RGGI as an example.[83]
>
> On page 34897, EPA effectively invited the RGGI states to "submit a multi-state mass-based plan that demonstrates emission performance by affected EGUs on a multi-state basis."[84]
>
> On page 34899, EPA opens the door to goal-setting on a multi-state basis "reflecting the scope of existing regional transmission control areas" and requests comment on whether "EPA should incorporate greater consideration of multi-state approaches into the goal-setting process . . . ."[85]

---

82 Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units, 79 Fed. Reg. 34,830 (proposed June 18, 2014) (to be codified at 40 C.F.R. pt. 60), *available at* http://www.gpo.gov/fdsys/pkg/FR-2014-06-18/pdf/2014-13726.pdf.

83 *Id.* at 34,834.

84 *Id.* at 34,897.

85 *Id.* at 34,899.

On pages 34899 and 34900, "EPA [] recognizes that multi-state collaboration would likely offer lower-cost approaches to achieving CO_2 emission reductions,"[86] and "whether . . . potential cost savings associated with multi-state approaches should be considered in assessing the reasonableness of the costs of state-specific goals."[87]

On page 34910, EPA acknowledges that "ISOs and RTOs could play a facilitative role in developing and implementing region-wide, multi-state plans."[88]

But then, on page 34911, EPA sets terms for a multi-state arrangement: "only one multi-state plan would be submitted on behalf of all participating states" but with certain options for reporting collectively or individually.[89]

On page 34915, EPA sets June 30, 2017 as the due date for state compliance plans, with a one-year extension to 2018 for submitting multi-state plans.[90]

On page 34916, EPA directs that, "For states participating in a multi-state program, the initial submittal should include executed agreements among the participating states and a road map for both design of the multi-state program and its implementation at the state level."[91] EPA, tellingly, identifies RGGI as "an example of such an approach" and proceeds to describe the arrangements among the RGGI states as a useful template for other states considering a multi-state approach.[92] Other approaches are not suggested.

On page 34952, EPA specifies what a multi-state plan must include: "[A demonstration of] CO_2 emission performance jointly for all affected entities in all states participating in the multi-state plan . . . . [And assignment] among states, according to a formula in the multi-state plan, [of] avoided CO_2 emissions resulting from emission standards contained in the plan . . . ."[93]

---

86 *Id.* at 34,900.
87 *Id.* at 34,899.
88 *Id.* at 34,910.
89 *Id.* at 34,911.
90 *Id.* at 34,915.
91 *Id.* at 34,916.
92 *Id.*
93 *Id.* at 34,952.

The language of the proposed rule, while it does not exclude multi-state arrangements that differ from the RGGI template, gives few clues about what other arrangements might be allowed other than the suggestion that an ISO/RTO structure, where it exists, might "play a facilitative role."[94]

However, EPA's State Plan Considerations Technical Support Document is somewhat more forthcoming.[95] It suggests states may be able to include in their compliance plans, among other strategies: "3. Cooperative Multi-State Accounting of Interstate Emissions Effects;" "4. Tradable Regional EE/RE Credit Market;" "5. Regional Demonstration by States of Emission Performance;" and/or "6. Assessment of Interstate Effects by EPA in the Course of State Plan Review."[96]

Each of these last options appear to offer more flexibility to states to sort out multi-state effects of carbon reducing actions in one state and carbon reduction outcomes in another, and to invite cooperative agreements among the states to allocate reduction credit. They may also open the door to multi-state arrangements short of the structured RGGI template installed in the draft rule as the default authorized multi-state approach. And unlike the default approach, these options arguably could be entered into after states have filed and had approved their compliance plans.

We note also that EPA's "Notice of Data Availability" issued October 27, 2014,[97] addresses issues of state-by-state vs. multi-state compliance, including: whether Building Block 2 (re-dispatch of gas units) should be applied on a regional basis; and how best to conduct interstate allocation of RE in the establishment of state goals and in distributing the resulting carbon reductions. EPA requests comment on a regional structure based on existing interstate RE exchanges. The correct inference from EPA's enquiry is that these are issues more readily understood on a multi-state basis, and arguably more easily resolved.

---

94 *Id.* at 34,910.

95 U.S. EPA, OFFICE OF AIR & RADIATION, *supra* note 59, at 93–95.

96 *Id.*

97 Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units, 79 Fed. Reg. 63,882 (proposed Oct. 27, 2014) (to be codified at 40 C.F.R. pt. 60), *available at* http://www.gpo.gov/fdsys/pkg/FR-2014-10-27/pdf/2014-25486.pdf.