

ORAL ARGUMENT NOT YET SCHEDULED

No. 24-1120  
(and consolidated cases)

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**UNITED STATES COURT OF APPEALS  
FOR THE DISTRICT OF COLUMBIA CIRCUIT**

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STATE OF WEST VIRGINIA, et al.,  
Petitioners,

v.

U.S. ENVIRONMENTAL PROTECTION AGENCY, et al.,  
Respondents.

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On Petitions for Review of Final Action  
by the United States Environmental Protection Agency

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**RESPONDENTS' OPPOSITION TO MOTIONS TO STAY FINAL RULE**

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## GLOSSARY

Act                      Clean Air Act

EPA                     Environmental Protection Agency

Rule                    “New Source Performance Standards for Greenhouse Gas Emissions From New, Modified, and Reconstructed Fossil Fuel-Fired Electric Generating Units; Emission Guidelines for Greenhouse Gas Emissions From Existing Fossil Fuel-Fired Electric Generating Units; and Repeal of the Affordable Clean Energy Rule,” 89 Fed. Reg. 39798 (May 9, 2024).

## INTRODUCTION

Fossil fuel-fired power plants are the nation's largest stationary sources of greenhouse gases. Greenhouse gas emissions are driving severe, and potentially catastrophic, climate change impacts that are already manifesting themselves in the form of prolonged and intense heat waves, rising sea levels, extreme weather, and other harms. The challenged Rule properly executes EPA's statutory mandate to control this dangerous pollution. 89 Fed. Reg. 39798 (May 9, 2024).

The Rule will achieve substantial greenhouse gas reductions through proven and feasible technologies, including installation of controls to capture carbon dioxide and store it safely underground. Promoting such controls comports with Congress's recent decision to support, through tax incentives and infrastructure investment, the widespread adoption of this very same demonstrated technology.

But the Rule does not impose a one-size-fits-all approach. It allows plants to select into appropriate subcategories based on their circumstances, with standards for each that are based on available and cost-effective control technologies. And, consistent with the Clean Air Act's cooperative-federalism scheme, the Rule maintains a key role for States in implementing standards for existing plants.

In requesting a stay, Movants aim to impede progress toward achieving the important emission reductions that the statute directs EPA to secure. But Movants fail to make any of the showings required for such extraordinary relief.

Movants are unlikely to succeed on the merits. Most of their arguments challenge EPA's technical, record-based determinations about which control technologies can be feasibly installed, and how soon. Those findings are sound, and the costs of compliance are reasonable. Even Movants' claims that the Rule exceeds EPA's authority are premised on disagreements with EPA's record-based determinations that certain technologies are "adequately demonstrated." 42 U.S.C. § 7411(a)(1). As those determinations are not arbitrary or capricious, Movants' major questions doctrine and related arguments fall away—and fail, in any event.

Movants' hyperbolic claims that the Rule will "destroy" power generation or threaten "economic ruin," Ohio Mot. 1, are wrong. Like previous EPA rules for the power sector controlling different pollutants, the Rule will secure substantial climate and public health benefits at reasonable cost. And while pollution standards may entail more widespread adoption of demonstrated technology, that is precisely what Congress intended. Movants also exaggerate the extent to which the Rule will affect the market share of different forms of power generation. A significant transition away from coal-fired power is occurring wholly independent of regulation, and this trend is projected to continue, regardless of what types of pollution controls are required for those plants remaining in operation.

Nor do Movants establish any irreparable harm during the time needed for judicial review. This Rule allows lengthy lead times before emission standards

must be met and authorizes States to consider source-specific circumstances where appropriate. The Rule will not adversely impact grid reliability, and Movants overstate the relatively modest costs associated with any necessary near-term planning activities. If the accumulation of even those costs over the ordinary period of judicial review gives the Court pause, then it has the option to expedite merits disposition of the petitions without staying the Rule.

The public interest and balance of harms strongly weigh against Movants' stay request. The Rule will secure critical reductions in greenhouse gas emissions from the largest emitters in the United States. Because carbon dioxide in the atmosphere is long-lived and is already having destructive and costly impacts across the United States, any unnecessary delay in implementing the Rule and securing these achievable emission reductions is highly consequential.

The stay motions should be denied.

## **BACKGROUND**

### **I. Clean Air Act Section 7411**

The Clean Air Act (the "Act") establishes a comprehensive and detailed program for air pollution control with shared federal and state responsibility. Section 7411 directs EPA to list "categories of stationary sources" that "caus[e], or contribut[e] significantly to, air pollution which may reasonably be anticipated to endanger public health or welfare." 42 U.S.C. § 7411(b)(1)(A). For each category

or subcategory, EPA must prescribe federal “standards of performance” for new, modified, and reconstructed sources, *id.* § 7411(b)(1)(B), based on the “degree of emission limitation achievable through the application of the best system of emission reduction” (accounting for other enumerated factors) that EPA “determines has been adequately demonstrated,” *id.* § 7411(a)(1), (b)(2). In *Essex Chemical Corp. v. Ruckelshaus*, this Court held that an “adequately demonstrated” system is “one which has been shown to be reasonably reliable, reasonably efficient, and which can reasonably be expected to serve the interests of pollution control without becoming exorbitantly costly in an economic or environmental way.” 486 F.2d 427, 433 (D.C. Cir. 1973).

Promulgation of a new-source standard triggers EPA’s duty to address emissions from existing sources in that source category. 42 U.S.C. § 7411(d) (excluding certain pollutants regulated under other provisions). These regulations—known as “emission guidelines”—do not regulate existing sources directly, but instead guide each State in submitting to EPA a satisfactory plan to establish, implement, and enforce standards of performance for sources in that State. *Id.* EPA “decides the amount of pollution reduction that must ultimately be achieved” by determining the “best system of emission reduction” for the sources in question. *West Virginia v. EPA*, 597 U.S. 697, 710 (2022). But States may set less (or more) stringent standards if justified by circumstances particular to an



individual source, or group of sources, including the source’s “remaining useful life.” 42 U.S.C. §§ 7411(d)(1), 7416.

While States set the existing-source standards, EPA retains a key oversight role in assuring that States’ plans are “satisfactory.” *Id.* § 7411(d)(2). EPA has separately promulgated implementing regulations establishing procedures for States’ submission and EPA’s approval of plans. 40 C.F.R. pt. 60, subpt. Ba. For States that do not submit a plan, or that submit unsatisfactory plans, EPA must directly regulate existing sources in the State’s stead. 42 U.S.C. § 7411(d)(2).

## **II. Factual Background**

### **A. Greenhouse gas emissions and climate change**

The concentration of carbon dioxide and other greenhouse gases in the atmosphere has risen to unprecedented levels because of human activities, and these gases are the root cause of ongoing climate change. 74 Fed. Reg. 66496, 66517 (Dec. 15, 2009). In *Massachusetts v. EPA*, 549 U.S. 497 (2007), the Supreme Court held that the “sweeping definition of ‘air pollutant’” in the Clean Air Act unambiguously covers “greenhouse gases”—so named because they “act[] like the ceiling of a greenhouse, trapping solar energy and retarding the escape of reflected heat.” *Id.* at 505, 528-29 (citing 42 U.S.C. § 7602(g)). In response, EPA comprehensively assessed the effects of greenhouse gas pollution, concluding that it endangers the public health and welfare of current and future generations and

thus requires Clean Air Act regulation. 74 Fed. Reg. at 66516-36. EPA determined that the risks include sea-level rise, extreme weather events, drought, and harm to agriculture and water resources, as well as sickness or mortality from reduced air quality, intensified heat waves, and increases in food- and water-borne pathogens. *Id.* at 66497, 66524-36.

Climate change is already occurring at an alarming rate. Last year was the hottest ever recorded, and the ten warmest years on record are 2014 to 2023.<sup>1</sup> The federal government’s latest preeminent report on climate change impacts found that “the effects of human-caused climate change are already far-reaching and worsening across every region of the United States.”<sup>2</sup> It concluded that without rapid and deep reductions in global greenhouse gas emissions, severe climate risks will continue to grow. *Id.*

## **B. Fossil fuel-fired power plants**

Fossil fuel-fired power plants include steam units (generally coal-burning plants) and combustion turbines (generally gas-burning plants). 89 Fed. Reg. at 39811.<sup>3</sup> A combustion turbine can be either a simple cycle facility, in which a

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<sup>1</sup> Nat’l Oceanic and Atmospheric Admin., Annual 2023 Global Climate Report, <https://www.ncei.noaa.gov/access/monitoring/monthly-report/global/202313>.

<sup>2</sup> Fifth National Climate Change Assessment, <https://nca2023.globalchange.gov>.

<sup>3</sup> For simplicity, we use the phrases “coal plants” and “gas plants” in this brief as shorthand for the respective regulatory terms “coal-fired steam generating units” and “fossil fuel-fired stationary combustion turbine electricity generating units.”

turbine powers a generator, or a combined cycle facility, in which a turbine powers a generator and the hot exhaust from that turbine is captured and converted to steam to power a second generator. *Id.*

In 1971, EPA listed fossil fuel-fired steam units as a source category for regulation under Section 7411. 42 U.S.C. § 7411(b)(1)(A); 36 Fed. Reg. 5931 (Mar. 29, 1971). EPA similarly listed combustion turbines in 1977. 42 Fed. Reg. 53657 (Oct. 3, 1977).

Fossil fuel-fired power plants are by far the highest-emitting stationary sources of greenhouse gas emissions, responsible for 25% of overall domestic emissions. 89 Fed. Reg. at 39812. Greenhouse gas emissions from the power sector are higher than the emissions from all other industrial sectors combined. *Id.* Because of their outsized contribution to overall emissions, no serious effort to address the monumental problem of climate change can succeed without meaningfully limiting fossil fuel-fired plants' emissions.

### **C. Power sector emission control technologies**

The Rule focuses on two available technologies that can be cost-effectively and widely used to substantially limit greenhouse gas emissions from coal plants. The one that can achieve the most emission reductions is carbon capture and storage (“carbon capture”). This method removes carbon dioxide from a plant’s exhaust stream using chemical solvents. 89 Fed. Reg. at 39846. By heating the

resulting mixture, the absorbed carbon dioxide can be isolated and processed into a pure form that can be transported via pipeline and then permanently stored underground. *Id.* In recent years, the cost of carbon capture has declined, in part because of process improvements learned from earlier deployments and other technological advances. *Id.* at 39800. In addition, the Inflation Reduction Act, enacted in 2022, extended and significantly increased the tax credit for carbon sequestration under Internal Revenue Code section 45Q. *Id.*

The second available method for coal plants is the substitution of natural gas for some coal so that the unit fires a combination of coal and natural gas. *Id.* at 39815. This method is called natural gas co-firing. Many coal plants across the United States already co-fire natural gas. *Id.* Installing natural gas co-firing or increasing the level of existing co-firing generally involves relatively minor modifications to existing boilers, including the installation of gas burners, and may also involve the construction of a natural gas pipeline. *Id.*

For new combined cycle combustion turbines, the available method that can most successfully limit greenhouse gas emissions is carbon capture. *Id.* at 39924-38. For both new combined cycle and new simple cycle turbines, other available methods include improving efficiency (to generate more electricity while combusting less fuel) and using lower-emitting fuels. *Id.* at 39815, 39897.

#### **D. Power sector trends**

In the last twenty years, market forces and other factors have been driving a transition of the electric power sector away from coal generation. 89 Fed. Reg. at 39816-22; EPA, Power Sector Trends Technical Support Document (“Power Sector Trends”) at 19, EPA-HQ-OAR-2023-0072-8920 (Apr. 2024).<sup>4</sup> While coal power has historically been the nation’s foremost source of electricity, coal generation has declined steadily in recent years because of, among other things, competition from lower-cost gas and renewable generation. 89 Fed. Reg. at 39817. The share of net generation by coal plants decreased 60% from 2007 through 2022. Power Sector Trends at 6.

The market-driven decrease in coal generation is expected to continue. Prior to this Rule, more than half of existing coal plants had announced plans to retire or convert to gas generation by 2039. 89 Fed. Reg. at 39817-18. Power sector modeling by EPA projects that even in the absence of the Rule, additional coal generation will retire, with coal capacity projected to fall from 181 gigawatts in 2023 to 52 gigawatts in 2034. *Id.* at 39822. Forces underlying this projected decline include declines in natural gas prices, declines in renewable and battery storage costs, increasing coal plant age, increased government incentives and

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<sup>4</sup> Documents identified by “EPA-HQ-OAR” identification numbers are part of the rulemaking record and are available on the electronic docket at <https://www.regulations.gov/docket/EPA-HQ-OAR-2023-0072>.

consumer demand for clean energy, and voluntary industry emission reduction commitments. 89 Fed. Reg. at 39818-23; Power Sector Trends at 7-18.

### **E. Recent Federal legislation**

In the last three years, major climate and infrastructure legislation has accelerated these trends in the power sector, as Congress has recognized the urgent need to control greenhouse gas emissions from the power sector and incentivized the development of cleaner power generation. 89 Fed. Reg. at 39818-20; Power Sector Trends at 7. In 2021, the Infrastructure Investment and Jobs Act (also known as the Bipartisan Infrastructure Law) provided significant new funding for clean energy infrastructure and technology. Pub. L. No. 117-58, 135 Stat. 429 (2021). In 2022, the Inflation Reduction Act provided further support and incentives. Pub. L. No. 117-169, 136 Stat. 1818 (2022). In particular, the Inflation Reduction Act includes a substantially increased tax credit under Internal Revenue Code section 45Q intended to accelerate the adoption of demonstrated carbon capture technology. 89 Fed. Reg. at 39819; 26 U.S.C. § 45Q.

## **III. Regulatory Background**

### **A. Previous Clean Air Act rules**

After determining that elevated concentrations of greenhouse gases in the atmosphere pose endangerment, EPA for the first time addressed carbon dioxide emissions from power plants in two 2015 Clean Air Act rules, commonly called

the New Source Rule and the Clean Power Plan. 80 Fed. Reg. 64510 (Oct. 23, 2015); 80 Fed. Reg. 64662 (Oct. 23, 2015).

### **1. The New Source Rule**

The 2015 New Source Rule established standards of performance for new fossil fuel-fired power plants. The New Source Rule is currently in effect.<sup>5</sup> For new steam units, the New Source Rule is premised on the installation of a carbon capture system. 80 Fed. Reg. at 64549. For new combustion turbines, the New Source Rule established standards for three subcategories based on the degree of plant utilization, with efficient combined cycle turbines required for new “base load” plants contributing significant power to the grid, and the use of “clean fuels” required for the other two subcategories. *Id.* at 64515.

### **2. The Clean Power Plan**

The 2015 Clean Power Plan established Section 7411(d) emission guidelines for States to follow in developing plans limiting carbon dioxide from existing power plants. 80 Fed. Reg. at 64662. For the first time, EPA established guidelines for States based on the premise that the best system of emission reduction for existing plants was to shift power generation from higher-emitting plants to lower-emitting sources, including shifting power generation from

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<sup>5</sup> Petitions for review of the New Source Rule remain before the Court in *North Dakota v. EPA*, No. 15-1381 (D.C. Cir.). *North Dakota* has been held in abeyance since March 2017, and standards for new steam units are not at issue in this case.

regulated plants to non-regulated renewables. The Supreme Court stayed the Clean Power Plan near the outset of litigation, and its requirements never went into effect. *West Virginia v. EPA*, 577 U.S. 1126 (2016).

### **3. The Affordable Clean Energy Rule and *West Virginia***

In 2019, EPA repealed the Clean Power Plan and replaced it with a set of de minimis and largely indeterminate source-specific emission guidelines. 84 Fed. Reg. 32520 (July 8, 2019). In the new guidelines, called the Affordable Clean Energy Rule, EPA determined that the best system of emission reduction for coal plants would be a combination of equipment upgrades and operating practices that would improve facilities' efficiency. *Id.* at 32535-42. EPA concluded that the application of such measures, however, would result in only very small, unspecified reductions in emissions. *Id.* at 32561.

On judicial review, this Court did not reach the merits of the Affordable Clean Energy Rule but held in relevant part that EPA's repeal of the Clean Power Plan was unlawful because, in this Court's view, it rested on a mistaken reading of the Clean Air Act—namely, EPA's new conclusion that shifting power generation is not a permissible “system of emission reduction” under Section 7411. *Am. Lung Ass'n v. EPA*, 985 F.3d 914 (D.C. Cir. 2021).

In *West Virginia*, the Supreme Court reversed. The Supreme Court confirmed that Section 7411 authorizes EPA to determine the “best system of



emission reduction” and the “degree of emission limitation” that sources must achieve. 597 U.S. at 709-10. Applying the major questions doctrine, however, the Court concluded that EPA lacked authority to identify shifting power generation to cleaner sources (“generation-shifting”) as the best system of emission reduction.

The Supreme Court distinguished generation-shifting from traditional, technology-based control measures that focus on improving the performance of individual sources. In explaining why the latter types of measures may properly be a best system of emission reduction even though they also have indirect generation-shifting consequences, the Court explained that “there is an obvious difference between (1) issuing a rule that may end up causing an incidental loss of coal’s market share, and (2) simply announcing what the market share of coal, natural gas, wind, and solar must be, and then requiring plants to reduce operations or subsidize their competitors to get there.” *Id.* at 731 n.4.

On remand from the Supreme Court, this Court in an October 2022 order amended its judgment in *American Lung Ass’n* to deny the petitions for review challenging EPA’s repeal of the Clean Power Plan. This Court held the remaining petitions challenging the Affordable Clean Energy Rule in abeyance pending completion of new rulemaking by EPA. Order, *Am. Lung Ass’n v. EPA*, No. 19-1140 (Oct. 27, 2022), ECF#1970895.

## **B. The Rule**

On May 23, 2023, EPA published a notice of proposed rulemaking to repeal the Affordable Clean Energy Rule and replace it with revised emission guidelines for existing coal plants. 88 Fed. Reg. 33240 (May 23, 2023). EPA also proposed revised, more protective standards for new and reconstructed gas plants. *Id.*

In May 2024, EPA published the final Rule now under review. 89 Fed. Reg. 39798. The published Federal Register notice encompasses three independent rules: (1) a repeal of the Affordable Clean Energy Rule, (2) revised Section 7411(d) emission guidelines for existing coal plants, and (3) revised Section 7411(b) performance standards for new and reconstructed gas plants. For simplicity, this brief refers to all three of these rules collectively as “the Rule.”

Consistent with EPA’s traditional approach, the Rule’s final emission guidelines and performance standards are based on technologies that can be applied to individual power plants and reflect EPA’s consideration of the factors set forth in Section 7411. Specific Rule components that are pertinent to the stay motions are further outlined below.

### **1. Emission guidelines for existing coal plants**

For existing coal plants, EPA assessed to what extent control technologies would be feasible and cost-reasonable, considering the significant capital expenditures required to implement controls and the fact that more than half of the

fleet had already announced retirements. Based on this assessment, the Rule establishes an applicability exemption and two subcategories based on how far into the future a plant intends to operate. *Id.* at 39841.

First, coal plants that will not operate past 2031 are exempted and have only recordkeeping and reporting obligations—in recognition of the fact that new emissions controls would not be cost-effective at these sources given the short period for amortizing new control costs. *Id.*<sup>6</sup> Second, for “medium-term” coal plants that intend to operate no longer than 2038, EPA determined that the best system of emission reduction is 40% gas co-firing. *Id.* EPA then specified a presumptively approvable standard of performance for States to apply to plants in this subcategory, which plants are due to meet by January 1, 2030. *Id.* Third, for “long-term” plants that intend to operate beyond 2038, EPA determined that the best system of emission reduction is 90% carbon capture. *Id.* EPA then specified a presumptively approvable standard of performance for States to apply to plants in this subcategory, which plants are due to meet by January 1, 2032. *Id.*

For plants not subject to the applicability exemption, each individual plant’s final and controlling performance standard is to be more specifically established

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<sup>6</sup> National Mining Mot. 8 is incorrect in asserting that eligibility for this applicability exemption requires States to include federally enforceable retirement commitments in their plans.

and implemented by States through plans that are due to be submitted for EPA approval by May 2026. *Id.* at 39997.

## 2. New source performance standards for gas plants

For new gas plants, EPA assessed—as it did in its 2015 New Source Rule—to what extent control technologies would be feasible and cost-reasonable for different kinds of plants depending on their utilization. Based on that assessment, the Rule establishes three subcategories. *Id.* at 39917. New base load gas plants—defined as units that generate at least 40% of their maximum capacity<sup>7</sup> on both a 12-month operating period and a three-year rolling average basis—are subject to a two-phase standard. “Phase one” is based on efficient design and operation and must be complied with immediately, and “phase two” is based on 90% carbon capture, with a compliance date of January 1, 2032. *Id.* at 39922-39. New intermediate load gas plants—defined as units that are generating between 20 and 40% of their maximum annual capacity—are subject to a standard based on efficient design and operation. *Id.* at 39917-18. New low load gas plants—defined as units that are generating less than 20% of their maximum annual capacity—are subject to a standard based on lower-emitting fuel. *Id.* at 39918-22.

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<sup>7</sup> Generation is the measure of a unit’s actual output, while capacity is a measure of its maximum potential production. 89 Fed. Reg. at 39810 n.58. A unit’s capacity factor is its electricity output as a percentage of its total generation capacity. *Id.* at 39811.

The Section 7411(b) new source performance standards are all effective July 8, 2024, and do not require any implementation action by States.

#### **IV. Procedural History**

The Court consolidated thirteen petitions challenging the Rule. Eight motions to stay the Rule pending judicial review were filed. West Virginia Mot., ECF#2054190 (May 13, 2024); NRECA Mot., ECF#2054191 (May 13, 2024); Ohio Mot., ECF#2055522 (May 21, 2024); Midwest Ozone Mot., ECF#2056262 (May 24, 2024); NACCO Mot., ECF#2056264 (May 24, 2024); Edison Electric Mot., ECF#2056352 (May 24, 2024); Electric Generators Mot., ECF#2056364 (May 24, 2024); National Mining Mot., ECF#2056359 (May 24, 2024).

While Movants contest certain Section 7411(b) standards and the Section 7411(d) emission guidelines, no Movant contests EPA's repeal of the Affordable Clean Energy Rule. As ordered by the Court, this consolidated response addresses all eight stay motions. ECF#2055014 (May 17, 2024).

#### **STANDARD OF REVIEW**

Movants have the burden to justify the “extraordinary remedy” of a stay. *Cuomo v. NRC*, 772 F.2d 972, 978 (D.C. Cir. 1985). They must demonstrate: (1) a likelihood of success on the merits; (2) irreparable injury if relief is withheld; (3) lack of harm to other parties from a stay; and (4) that a stay would serve the

public interest. *Nken v. Holder*, 556 U.S. 418, 434 (2009). The third and fourth criteria merge here. *Id.* at 435.

On the merits, review is limited to the administrative record under an arbitrary-and-capricious standard. 42 U.S.C. § 7607(d)(7)(A), (9). The record for review consists exclusively of materials before the agency at the time of decision and does not include post-decision declarations submitted during judicial review. *Id.* § 7607(d)(7)(A). In applying the arbitrary-and-capricious standard, this Court cannot substitute its policy judgment for EPA's. *Bluewater Network v. EPA*, 370 F.3d 1, 11 (D.C. Cir. 2004). Where EPA has considered the relevant factors and articulated a rational connection between the facts found and the choices made, its decisions should be upheld. *Catawba Cnty. v. EPA*, 571 F.3d 20, 41 (D.C. Cir. 2009). The Court must defer to EPA's "evaluation of scientific data within its technical expertise." *Miss. Comm'n on Env't Quality v. EPA*, 790 F.3d 138, 150 (D.C. Cir. 2015).

## ARGUMENT

Movants fall short on every prong of the stay analysis.

### **I. Movants are unlikely to succeed on the merits.**

None of Movants' merits arguments are likely to succeed. Section 7411 provides EPA with well-established authority to promulgate standards for emissions of greenhouse gases from power plants. Unlike the Clean Power Plan

invalidated in *West Virginia*, this Rule adheres to EPA’s traditional approach to regulation and relies solely on technology-based emission controls that are “adequately demonstrated” and can be implemented by sources to reduce their own emissions. *Infra* Argument I.A.1. The Rule also properly respects the States’ role under the Act’s program of cooperative federalism. *Infra* Argument I.A.2.

EPA’s technical, record-based judgments about the degree of emission reduction that can be achieved by applying technology-based controls are well-supported and entitled to considerable deference. *Infra* Argument I.B. The parties agree that the standard in this Court’s *Essex Chemical* decision governs what qualifies as an “adequately demonstrated” “system of emission reduction” and an “achievable” “standard of performance.” *Infra* Argument I.B.1. The merits thus turn simply on whether EPA’s standards are the product of reasoned technical judgments, and the record reflects that they are. *Infra* Argument I.B.2 to I.B.10.

**A. EPA has authority to promulgate the Rule.**

**1. The Rule does not implicate the major questions doctrine.**

The Rule falls within the heartland of EPA’s standard-setting authority, and Movants’ threshold authority arguments fail. Section 7411 directs EPA to assess “adequately demonstrated” “system[s] of emission reduction” for sources contributing to an endangerment and then determine the “degree of emission limitation achievable” through the application of the “best” such system,

considering factors including “cost” and “energy requirements.” 42 U.S.C. § 7411(a)(1), (b), (d); *see also West Virginia*, 597 U.S. at 709-10. EPA adhered precisely to this direction in crafting the Rule.

Though they purport to raise statutory interpretation questions, at bottom, Movants actually contest the reasonableness of EPA’s technical judgments on the feasibility, cost, and installation timeframe of technology-based controls. We address in Section I.B below why their arbitrary-and-capricious arguments lack merit, applying the correct deferential review standard. But their attacks on EPA’s assessment of technical facts should not masquerade as a reason that EPA lacks statutory authority.

Movants’ invocation of the major questions doctrine is misplaced. That doctrine is an interpretive canon applied in extraordinary situations where agencies apply a novel statutory interpretation to advance significant newfound power. *West Virginia*, 597 U.S. at 724. It is not a doctrine that speaks to whether an agency has properly grappled with the technical evidence before it, in a situation where the agency is, once again, exercising longstanding authority it has repeatedly exercised previously, applying the same interpretation it has always applied.

To the extent there were any doubt regarding the application of the major questions doctrine to technology-based regulation, the Supreme Court has already removed it. In two prior decisions addressing the same emissions and sources



addressed in the Rule, the Supreme Court confirmed EPA's authority to promulgate technology-based standards notwithstanding any anticipated large indirect economic and political consequences. *Id.* at 697; *Am. Elec. Power Co. v. Connecticut*, 564 U.S. 410 (2011).

The Supreme Court first addressed Section 7411 regulation of power plants' greenhouse gas emissions in *American Electric Power*. In that case, the existence of EPA authority to regulate such emissions was central to the Supreme Court's holding that the Act displaces any federal common-law right to seek abatement of such emissions. *Am. Elec. Power*, 564 U.S. at 424. In so holding, the Court underscored that Congress had authorized EPA to make weighty regulatory decisions that could have considerable collateral consequences. *Id.* at 426. As the Court put it, Congress entrusted EPA to engage in the "complex balancing" task of weighing "the environmental benefit potentially achievable" with "our Nation's energy needs and the possibility of economic disruption." *Id.* at 427. The Court did not see any problem with Congress entrusting EPA to engage in such balancing because EPA is an "altogether fitting" "expert agency" that is "best suited to serve as primary regulator of greenhouse gas emissions." *Id.* at 428.<sup>8</sup>

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<sup>8</sup> Likewise, in *Massachusetts v. EPA*, the Supreme Court rejected the invocation of major questions principles in finding EPA authorized to regulate greenhouse gases emitted by new motor vehicles, explaining that "there is nothing counterintuitive to the notion that EPA can curtail the emission of substances that are putting the global climate out of kilter." 549 U.S. at 531.

In *West Virginia*, the Supreme Court defined the outer limits of that authority, finding that EPA's Clean Power Plan had exceeded those limits. But in doing so, the Court affirmed EPA's core authority to impose standards that would require individual power plants to install technological controls to "improve" their "pollution performance," notwithstanding collateral consequences. *See* 597 U.S. at 709-10, 731 n.4, 734.

The Court explained that the unlawful components of that Plan did not require the installation of any controls or cleaner operation by each regulated source. *Id.* at 727-29. Instead, EPA had applied a novel emission reduction approach premised on shifting the mix of energy generation at the grid level from coal plants to gas plants and renewables (the latter of which are not even subject to Section 7411 regulation). Some regulated coal plants could achieve their required degree of emission reduction only by curtailing their operations and being displaced by their non-regulated competitors. In rejecting that system, the Supreme Court drew a line between: (a) EPA requiring control measures focused on improving the emissions performance of individual sources, such as "efficiency improvements," "fuel-switching," and "add-on controls" (all permissible systems), and (b) EPA deciding how much aggregate fossil-based power generation there should be over the coming decades and who should provide it (impermissible). *Id.* at 727. In this Rule, EPA returned to its traditional manner of regulation.

In distinguishing between the Clean Power Plan and every power sector rule that came before it, the Supreme Court in *West Virginia* acknowledged that *any* EPA pollution control rule for the power sector will have indirect effects on the nation's energy generation mix by affecting the relative costs of competing energy-producing technologies. *Id.* at 731 n.4. The Court explained that such indirect effects do not raise major questions concerns. As the Court put it, “there is an obvious difference between (1) issuing a rule that may end up causing an incidental loss of coal’s market share, and (2) simply announcing what the market share of coal, natural gas, wind and solar must be, and then requiring plants to reduce operations or subsidize their competitors to get there.” *Id.*

The present Rule conforms with *West Virginia*. EPA accepted the Court’s direction and adhered to its traditional approach of considering only technological systems (e.g., add-on controls or fuel-switching) that could be applied at the level of an individual plant. In doing so, EPA made no judgments as to what an appropriate market share would be for various forms of power production. Instead, EPA straightforwardly applied technological measures where they are feasible and cost-reasonable to identify an achievable degree of emissions control—just as

Congress instructed.<sup>9</sup> Any resulting effects on the market share of regulated facilities are incidental.

In invoking the major questions doctrine, Movants claim that the Rule requires generation-shifting because in their view, the required degree of carbon capture or co-firing is unachievable, and thus they believe that power plants will be compelled to retire or reduce their operations. The premises for Movants' argument are incorrect. The standards are achievable, *infra* Argument I.B, and all plants are free to remain in operation and generate as much power as they wish.

Regardless, as a doctrine only of statutory interpretation, the major questions doctrine does not bear upon this Court's assessment of EPA's technical judgments. Those judgments are reviewed on the administrative record that was before EPA and under an arbitrary-and-capricious standard. 42 U.S.C. § 7607(d)(7)(A), (9). Where the record shows that EPA "considered all relevant factors" and "articulated a rational connection between the facts found and the choices made" (and the record so shows, *infra* Argument I.B), that is the end of the analysis. *Catawba Cnty.*, 571 F.3d at 41.

To be sure, some power producers might elect, for business reasons, to develop alternative forms of generation rather than incur the expense of installing

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<sup>9</sup> Thus, even if the major questions doctrine were implicated, "the requirement of 'clear congressional authorization'" would be met. *West Virginia*, 597 U.S. at 723.

controls and risk losing market share. But that does not mean that the Rule compels power producers to do so. Power producers operate in a competitive energy market and respond to market forces, and every regulation has competitive implications for those plants that need to do more to comply.

Movants' assertion that EPA selected the best system of emission reduction for sources based on EPA's view of the "optimal mix of energy sources in the Nation" is unsupported and false. *Electric Generators Mot. 6*. EPA reviewed the available technologies; carefully considered how long, or how much, a unit needed to operate to render those controls feasible and cost-reasonable; and selected the best systems for each subcategory based on that assessment. EPA appropriately concluded that carbon capture is the best system for any plant with adequate time to amortize the capital expenditures that technology entails. Tellingly, Movants fail to identify any alternative system of emission reduction for such plants that better conforms to Congress's direction.

Having appropriately identified carbon capture as the generally applicable best system for typical long-term plants, EPA created the subcategory for medium-term plants and the applicability exemption for short-term plants in recognition of the fact that many coal plants have already announced plans to cease operation for reasons unrelated to this Rule. 89 Fed. Reg. at 39891. Because the planned retirements of these plants bear directly on factors that EPA must consider when

determining the best system of emission reduction, particularly cost, EPA appropriately considered operating lifetimes in establishing the medium-term subcategory. But EPA is not directing any State or any unit as to the choice of when to cease operation. *Id.* Nor is the Rule intended to force retirements. Instead, the Rule is intended to accommodate the existing plans of the many sources that intend to retire for their own reasons and for which installation of carbon capture systems may not be cost-reasonable, given the shorter window for amortizing costs associated with installing new controls. *Id.* Notably, industry commenters specifically requested and supported the creation of subcategories based on retirement dates. *Id.* And one stay movant—Edison Electric Institute—has intervened in support of EPA’s creation of these subcategories. *See* Edison Electric Mot. to Intervene 15-16 (May 22, 2024), ECF#2055667.

The major questions doctrine is inapt for other reasons as well. Movants’ claimed compliance costs provide no “reason to hesitate before concluding that Congress meant to confer [the disputed] authority.” *West Virginia*, 597 U.S. at 721 Even where (unlike here) statutory authority is genuinely in question, large projected compliance costs alone do not trigger a requirement for clearer-than-ordinary congressional authorization. In challenges to federal programs implicating billions of dollars, courts still apply ordinary principles of statutory interpretation. *See, e.g., Becerra v. Empire Health Found.*, 597 U.S. 424 (2022);

*Am. Hosp. Ass'n v. Becerra*, 596 U.S. 724 (2022); *EPA v. EME Homer City Generation, L.P.*, 572 U.S. 489 (2014); *New York v. FERC*, 535 U.S. 1 (2002).

Nor are the Rule's projected costs particularly large when viewed in context. The costs for this Rule are around, or lower than, the costs for other power sector Clean Air Act rules. 89 Fed. Reg. at 39882 (comparing costs); EPA, Response to Comments, ch. 2, at 143-44, EPA-HQ-OAR-2023-0072-8914 (Apr. 2024) (same). Regardless, the major questions doctrine applies only where large costs are incurred in connection with "extraordinary" and "transformative" assertions of agency power. *West Virginia*, 597 U.S. at 721, 724. No such power has been claimed here. *Cf. Biden v. Missouri*, 595 U.S. 87, 92-97 (2022) (upholding vaccination mandate for all healthcare facilities receiving federal funding).<sup>10</sup>

Movants also considerably overstate the projected impacts of the Rule on plant retirements. *See, e.g.*, National Mining Mot. 13; Electric Generators Mot. 13. As EPA explained, more than half of existing coal plants have already announced that they will retire prior to 2039 or convert to gas plants regardless of this Rule. 89 Fed. Reg. at 39817-18; *see also* Edison Electric Mot. 22 (acknowledging that "the majority of EEI members that own generation have made *voluntary*

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<sup>10</sup> *Biden v. Nebraska*, 143 S. Ct. 2355 (2023), which is cited by Movants, is inapposite. In *Biden*, the Supreme Court held that the Education Secretary's authority to "modify" provisions within the Higher Education Act could not be stretched to allow the Secretary to make fundamental changes to Congress' scheme. *Id.* at 2368. Here, EPA has not made any such fundamental changes.

commitments to reduce their [carbon dioxide] emissions to net-zero and are on a path to accomplish those goals” (emphasis added)).

And these trends are expected to continue. Because the additional costs of controls from this Rule, although reasonable, may increase the costs of electricity generation for some coal plants above the costs of gas or renewable generation, EPA does project that an incremental number of additional coal plants will voluntarily elect to retire. Response to Comments, ch. 2, at 43-44; EPA, Regulatory Impact Analysis at 3-27 to 3-32, EPA-HQ-OAR-2023-0072-8913 (Apr. 2024). But the number of such incremental voluntary retirements is small in comparison to the numerous retirements already expected because of existing market forces. *Id.* And the Rule itself is designed to allow sources, rather than EPA, to make that choice.<sup>11</sup>

Movants also ignore that EPA’s modeling projects that long-term coal plants that install carbon capture systems will generate power at much higher capacity than they would have otherwise, because the Inflation Reduction Act’s tax credits

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<sup>11</sup> While regulation of carbon dioxide emissions from fossil fuel-fired power plants may exacerbate some of the present economic headwinds this sector faces, it also potentially increases their long-term competitive position by providing a pathway for these sources to operate with far less pollution. *See* National Mining Mot., Bridgeford Decl. ¶ 10 (“[The National Mining Association] recognizes that any meaningful opportunity to achieve long-term sustainable reductions in global greenhouse gas emissions will depend on the development and deployment of new energy technologies such as [carbon capture].”).



incentivize sequestering as much carbon as possible. As a result of long-term units running at greater capacity with the installed controls, EPA projects that in 2040, the total amount of coal generation with the Rule will be only 7% less than in the base case without the Rule. Response to Comments, ch. 2, at 42.<sup>12</sup> In any event, any such incidental decrease or increase in coal-fired generation is not pertinent to the analysis. Either way, the Rule appropriately contemplates that coal plants will operate with the best emission controls in place, just as Congress intended.

Finally, the co-firing system for medium-term coal plants does not contravene *West Virginia* either. National Mining Mot. 13. As noted in *West Virginia*, “fuel-switching” has always been regarded as a “traditional air pollution control” that can improve the performance of individual sources. 597 U.S. at 727. Co-firing with 40% natural gas requires only minor changes to a coal unit’s boilers and does not transform a coal plant into a different kind of plant. Response to Comments, ch. 2, at 102-03. In fact, many coal plants are already capable of co-

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<sup>12</sup> As EPA noted, the Inflation Reduction Act 45Q tax credit is currently available for a 12-year period. Following the expiration of the 12-year period, higher operating costs could lead to reductions in the amount of generation if the tax credit is not extended (although tax credits are frequently extended), or if affected sources are not able to replace the revenue from the tax credit with revenue from other sources. 89 Fed. Reg. at 39902. Before the tax credit is currently scheduled to expire, EPA has committed to review by January 1, 2041, and, if appropriate revise, the emission guidelines based on its assessment of developments. *Id.*

firing gas without any modifications: 249 of the 565 coal units operating at the end of 2021 reported consuming natural gas as a fuel source. *Id.* at 103.

In short, the Rule falls within EPA’s plain statutory authority, and this case is not *West Virginia* redux. Movants’ invocation of the major questions doctrine should be seen for what it is: an attempt to circumvent the application of the deferential arbitrary-and-capricious standard.<sup>13</sup>

## **2. The Rule respects the Clean Air Act’s cooperative-federalism framework.**

State Movants’ federalism arguments also fail. *West Virginia* Mot. 10-13; *Ohio* Mot. 19-21. The Rule does not interfere with States’ roles under the Act’s cooperative-federalism structure. The Rule neither eliminates States’ ability to consider “remaining useful life” or “other factors” when applying EPA’s guidelines nor otherwise deprives States of discretion granted to them. Movants’ federalism arguments rest on inaccurate characterizations of the Act’s cooperative-federalism framework and amount to an improper collateral attack on EPA’s separately promulgated Section 7411(d) implementing regulations.

EPA “retains the primary regulatory role” under Section 7411(d). *West Virginia*, 597 U.S. at 710. EPA determines the “best system of emission

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<sup>13</sup> Ohio argues that because EPA already regulates coal plants under Section 7412, it cannot also do so under Section 7411(d). *Ohio* Mot. 21-22. As Ohio recognizes, however, this argument was already rejected in *American Lung Ass’n* and the Supreme Court declined to grant certiorari on that question. 985 F.3d at 977-88.

reduction” for existing sources that “has been adequately demonstrated,” and “the degree of emission limitation achievable through the application of the best system.” 42 U.S.C. § 7411(a). Those determinations are reflected in EPA’s presumptive standards. States “set the actual rules governing” specific existing plants, but it is the “Agency, not the States,” that “decides the amount of pollution reduction that must ultimately be achieved” via those rules. *West Virginia*, 597 U.S. at 710.

States retain discretion to set less stringent standards for particular sources when justified by the source’s “remaining useful life” or “other factors.” 42 U.S.C. § 7411(d)(1); 40 C.F.R. § 60.24a(e). While this discretion is meaningful, it is not unlimited, and EPA, through its authority to reject plans that are not “satisfactory,” retains an important oversight role in assuring that States exercise this discretion reasonably. 42 U.S.C. § 7411(d)(2). EPA has separately promulgated Section 7411(d) implementing regulations fleshing out the criteria it will apply in determining whether state plans are “satisfactory.” 40 C.F.R. pt. 60, subpt. Ba. Those regulations ensure that any variances reflect unusual or unforeseen circumstances, rather than mere objections to EPA’s regulatory conclusions. *Id.*

The Rule at issue does not amend those implementing regulations or otherwise restrict States’ discretion to depart from EPA’s emission guidelines based on remaining useful life or other factors. 42 U.S.C. § 7411(d)(2). Indeed,

EPA made this clear in the Rule. EPA reiterated that its “implementing regulations under 40 CFR 60.24a allow a state to consider a particular designated facility’s remaining useful life and other factors” and apply a less stringent standard or longer compliance schedule than in the emission guideline. 89 Fed. Reg. at 39962; *see also id.* at 39963-64 (stating that States “have the ability to consider, inter alia, a particular source’s remaining useful life when applying a standard of performance to that source”).

West Virginia partially quotes a sentence from the preamble in their effort to suggest that the Rule somehow supersedes the implementing regulations and requires sources to always achieve the presumptive standards. *See West Virginia Mot. 11* (citing 89 Fed. Reg. at 39956). But West Virginia misleadingly fails to state that in the remainder of that sentence, EPA made clear that the presumptive standards need not always be achieved. 89 Fed. Reg. at 39956 (stating that sources must achieve the standard “after accounting for any application of [remaining useful life or other factors]”).

Ignoring that the Rule clearly does not undermine States’ authority to deviate from the emission guidelines, Movants quibble with the separately promulgated implementing regulations in which EPA sets forth the general criteria it will apply in exercising its statutory authority to review whether state plans are “satisfactory.” *See West Virginia Mot. 12-13; Ohio Mot. 20.* But this argument

just amounts to an improper collateral attack on those separately promulgated implementing regulations, which were most recently revised in 2023 and cannot be challenged here. 88 Fed. Reg. 80480 (Nov. 17, 2023). EPA did not amend or supersede those regulations in the Rule under review, except that it provided an extended 24-month period for States to submit plans. 89 Fed. Reg. at 39997.

In any case, there is nothing amiss with those separately promulgated regulations. The general contours of the Section 7411(d) implementing regulations have remained the same since their original promulgation in 1975: States' standards for existing sources must be no less stringent than the presumptive standards in EPA's emission guidelines, unless a State demonstrates that a variance is justified. *Compare* 40 C.F.R. § 60.24(c) (1975), *with id.* § 60.24a(c) (2023). EPA will approve less stringent standards of performance for particular facilities if they cannot reasonably achieve the applicable presumptive standards based on circumstances specific to the facility, including “unreasonable cost of control resulting from plant age, location, or basic process design,” “physical impossibility or technical infeasibility of installing necessary control equipment,” or “other circumstances specific to the facility.” 40 C.F.R. § 60.24a(e) (2023); *see also id.* § 60.24(d) (1975). The 2023 amendments to the implementing regulations clarified that a State “must demonstrate that there are fundamental differences between the information specific to a facility” and “the information EPA

considered in determining the degree of emission limitation achievable” though application of the “best system of emission reduction.” *Id.* § 60.24a(e)(2) (2023).

State Movants express dissatisfaction with the “fundamental differences” language added by the 2023 amendments. *West Virginia Mot.* 12-13. Those amendments are being contested in a separate proceeding, in which nearly all of the State Movants are participating. *West Virginia v. EPA*, D.C. Cir. No. 24-1009. In any event, both the amendments and the underlying implementing regulations properly apply the cooperative-federalism scheme. EPA’s recent amendments to its implementing regulations restate factors that have been specified in those regulations since 1975 and retain States’ discretion to apply these factors. *See* 40 Fed. Reg. 53340, 53347 (Nov. 17, 1975); 88 Fed. Reg. at 80509, 80519. State Movants provide no substantive argument for why EPA’s requirement that States show “fundamental differences” when invoking this authority is unreasonable, or why a challenge to those implementing regulations is proper in this proceeding. 40 C.F.R. § 60.24a(e)(2); 88 Fed. Reg. at 80515-17.

State Movants’ remaining federalism arguments likewise fail. They claim that because EPA created subcategories for existing coal plants based in part on their closure dates, EPA has “bake[d]” “remaining useful life” into the guidelines and States are disabled from considering “remaining useful life” themselves. *Ohio Mot.* 20. Not so. While EPA did consider the lifetime of plants as part of the

subcategories, EPA explained that States remain free to further consider “remaining useful life” and “other factors” as part of any state plan, and EPA will consider whether such plans identify plant-specific circumstances warranting departure from EPA’s guidelines. 89 Fed. Reg. at 39963-64. Any speculation by Movants that EPA might hypothetically fail to approve a reasonable departure from the presumptive standards is not ripe for review. Future EPA action on a plan submission that includes a less stringent standard will be a new final EPA action, with a new record. Upon review of such action, a court can consider any analyses conducted by the State to support its plan and whether EPA has an adequate basis for any rejection. But it would be wholly improper for the Court to engage in speculation on actions that have not yet been taken, concerning plans that have not yet been submitted.

In short, the Rule does not impinge upon the State’s role under the Act’s cooperative-federalism scheme.

**B. EPA’s technical judgments are reasonable and amply supported by the record.**

EPA reasonably determined, based on voluminous record evidence, that carbon capture and storage is an adequately demonstrated system of emission reduction, and the best system for long-term coal plants and new base load gas plants, considering costs and other relevant factors. EPA further reasonably identified the degree of emission limitation achievable for these sources through

the application of the system. Movants' scattershot attacks improperly rely in substantial part on extra-record declarations, fail to overcome the substantial deference owed to EPA's technical determinations, and lack merit.

**1. Section 7411 authorizes EPA to set standards based on demonstrated technology that is not yet in widespread commercial use.**

Standards under Sections 7411(b) and (d) must “reflect[] the degree of emission limitation achievable through the application of the best system of emission reduction which . . . the Administrator determines has been adequately demonstrated.” 42 U.S.C. § 7411(a)(1), (b), (d). The concepts of “adequately demonstrated” and “achievable” are closely related. *See Essex Chemical*, 486 F.2d at 433 (“It is the system which must be adequately demonstrated and the standard which must be achievable.”). An “adequately demonstrated” system is “one which has been shown to be reasonably reliable, reasonably efficient, and which can reasonably be expected to serve the interests of pollution control without becoming exorbitantly costly in an economic or environmental way.” *Id.* An “achievable” standard is “one which is within the realm of the adequately demonstrated system’s efficiency and which, while not at a level that is purely theoretical or experimental, need not necessarily be routinely achieved within the industry prior to its adoption.” *Id.* at 433-34.



Section 7411's plain meaning, statutory context, and corresponding case law establish two primary themes. *See* 89 Fed. Reg. at 39830. First, Congress provided EPA with considerable discretion to exercise scientific and technological judgment to identify the best adequately demonstrated system and set an achievable degree of emission limitation. *Id.* Second, Congress authorized EPA to set standards that encourage broader adoption of demonstrated emissions-reduction technology, without requiring that such technology yet be in widespread use. *Id.*

Section 7411(a)(1) plainly confers a substantial degree of discretion in making an “adequately demonstrated” determination. *Id.* at 39830. Congress authorized EPA to “determine[]” that the demonstration is “adequate[]” without providing any more specific criteria or otherwise cabining EPA’s discretion. 42 U.S.C. § 7411(a)(1). The capacious term “adequately” underscores that Congress intended to provide EPA with considerable flexibility in analyzing the technical data before it. *Cf. Mississippi v. EPA*, 744 F.3d 1334, 1353 (D.C. Cir. 2013) (“Our case law has left EPA with a wide berth when it comes to deciding how best to account for an adequate margin of safety.”). Consistent with this understanding, this Court has indicated that it will provide considerable deference to EPA’s scientific and technological expertise in making standard-setting judgments under Section 7411. *Nat’l Asphalt Pavement Ass’n v. Train*, 539 F.2d 775, 786 (D.C. Cir. 1976) (“Since [Section 7411(a)(1) action] is one of those highly technical

areas, where our understanding of the import of the evidence is attenuated, our readiness to review evidentiary support for decisions must be correspondingly restrained.”).

This Court has also held that the “system of emission reduction” that EPA establishes as “best” need not already be in widespread use. *See Essex Chemical*, 486 F.2d at 433-34, 435-36. In *Essex Chemical*, this Court affirmed that Section 7411 standards may reflect EPA’s reasonable projection of what can be achieved using demonstrated technology, extrapolating from reliable data from a first-in-kind facility and technical literature. 486 F.2d at 433-34, 436 (upholding standard despite the underlying system being in use at only one U.S. facility and the standard having been achieved only three times in testing); *see also Sierra Club v. Costle*, 657 F.2d 298, 364 n.157 (D.C. Cir. 1981) (observing that extrapolation from pilot-project data to full-scale plant standards must be explained). When setting a standard more stringent than has regularly been achieved, EPA may justify its conclusion by identifying available improvements to a demonstrated system. *See Sierra Club*, 657 F.2d at 365, 367-68, 370-73 (upholding 90% sulfur dioxide removal standard, even though only 86% had been demonstrated on a continuous basis, where EPA reasonably expected that specific technological improvements would allow sources to achieve 90%). Relatedly, where performance data for a regulated source is lacking, the Court has held that EPA

may extrapolate based on testing at a different, related source. *See Lignite Energy Council v. EPA*, 198 F.3d 930, 933-34 (D.C. Cir. 1999) (upholding standard for industrial boilers based on extrapolated information from utility boilers).

Movants agree that this Court's decision in *Essex Chemical* and in the cases described above set forth the governing law. The dispute here thus concerns EPA's technical determinations, namely whether EPA reasonably selected systems of emission reduction that were adequately demonstrated and standards of performance that are achievable. The record confirms that EPA did.

**2. Carbon capture and storage is adequately demonstrated and achievable.**

EPA reasonably determined, based on extensive record evidence, that carbon capture is an adequately demonstrated system of emission reduction. Each component of the system has been demonstrated, both individually and together, for decades. 89 Fed. Reg. at 39846-78, 39888, 39925-31. Solvent-based carbon dioxide capture has been in use since the 1930s. *Id.* at 39846. Thousands of miles of carbon dioxide pipelines have been constructed and securely operated for over sixty years. *Id.* And tens of millions of tons of carbon dioxide have been permanently stored deep underground either for geologic sequestration or in association with enhanced oil recovery. *Id.* Indeed, EPA first determined nearly ten years ago that carbon capture was adequately demonstrated for reducing greenhouse gas emissions from power plants. 80 Fed. Reg. at 64510.

Industry sources have likewise long recognized that carbon capture is proven. For example, in 2011, power and transmission company Alstom Power stated in a press release that, based on the results of Alstom’s “13 pilot and demonstration projects and validated by independent experts . . . we can now be confident that [carbon capture] works and is cost effective.” 89 Fed. Reg. at 39813. The press release projected the technology would “be available at a commercial scale in 2015 and [would] allow [plants] to capture 90% of the emitted [carbon dioxide].” *Id.* The press release went on to note that “the same conclusion applies for a gas plant using [carbon capture].” *Id.*

EPA’s record shows that while carbon capture has been long established, its use has recently proliferated. In the last 15 years, technological advances, sharply falling costs, learning from full-scale carbon capture demonstrations, supportive policies in multiple States, and the Inflation Reduction Act’s financial incentives mean that carbon capture can be deployed broadly today. *Id.* at 39814, 39852-53. There are currently at least 15 operating carbon capture projects in the United States, and another 121 are under construction or in advanced stages of development. *Id.* There can be no serious dispute that carbon capture and storage, in general, is adequately demonstrated. Rather, the parties’ disagreement chiefly lies with the Rule’s prescribed rate of carbon dioxide capture: 90%.

**3. Ninety percent carbon capture is adequately demonstrated and achievable for existing coal plants.**

EPA reasonably determined that the capture of 90% of the carbon dioxide in a power plant's flue gas ("90% capture") has been adequately demonstrated and is achievable for existing coal plants. *Id.* at 39847. EPA's determination is supported by a robust record, including examples of actual coal plants achieving that result over set periods (Boundary Dam, Petra Nova, and Plant Barry), projects in advanced stages of development designed to exceed 90% capture (Project Tundra and Project Diamond Vault), and statements of carbon capture vendors guaranteeing capture rates of 90% and above.<sup>14</sup>

The experiences of existing coal plants show that 90% capture is feasible. *Id.* at 39848-50. One such example is Boundary Dam Unit 3, a coal plant in Canada. Boundary Dam was retrofitted with a system designed to achieve carbon capture rates of 90% of the entire plant's exhaust. *Id.* at 39848. In 2016, Boundary Dam completed a 72-hour test of its carbon capture system, capturing approximately 89.7% of the plant's carbon dioxide emissions with a peak capture rate of 3,341 metric tons of carbon dioxide per day. *Id.*

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<sup>14</sup> The evidence supporting EPA's determination that 90% capture is adequately demonstrated for new gas plants also supports EPA's parallel determination for existing coal sources because of the essential ways in which carbon capture at both types of power plants is identical. 89 Fed. Reg. at 39855, 39926; *infra* Argument I.B.4 (providing additional information on the similarities).

The experiences of two other existing coal plants corroborate this result. Beginning in 2017, the Petra Nova project, a capture facility at the W.A. Parish plant in Texas, successfully captured and sequestered 92.4% of the carbon dioxide from a 240-megawatt slipstream<sup>15</sup> of the power plant's flue gas. *Id.* at 39849-50. The Petra Nova project was idled in 2020 due to the economics of enhanced oil recovery at the time, but it restarted in 2023. *Id.* Plant Barry, a coal plant in Alabama, also confirms that a 90% capture rate is adequately demonstrated. *Id.* at 39850. Starting in 2011, Plant Barry began using a fully integrated 25-megawatt carbon dioxide system with a capture rate of 90%. *Id.*

Since coming online, Boundary Dam and Petra Nova have not always sustained their high levels of capture. These first-of-a-kind projects unsurprisingly encountered technical difficulties, but all challenges were either surmounted or can be surmounted in future deployments using specific, identified fixes. *Id.* at 39889. The lessons learned can be put in place on new capture facilities during initial construction. *Id.* Furthermore, a key reason that these facilities have not consistently maintained high levels of capture stemmed from limited financial and regulatory incentives to do so, rather than technological capability. *Id.* at 39848. Petra Nova has maintained high rates of capture when it made financial sense to do

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<sup>15</sup> In this context, a slipstream is a part of a power plant's flue gas that is separated from the remainder. A 240-megawatt slipstream is a portion of a plant's flue gas equivalent to that resulting from an entire 240-megawatt coal plant.

so. *Id.* at 39849-50. Boundary Dam has more recently optimized its processes due to increasing requirements to capture carbon dioxide in Canada. *Id.* at 39848.

The feasibility of 90% capture is also supported by soon-to-be-implemented carbon capture projects. *Id.* at 39850-51. Project Tundra at the Milton R. Young Station coal plant in North Dakota is designed to capture carbon dioxide at a rate of about 95% of the plant's treated flue gas. *Id.* Specifically, the capture facility will treat all the flue gas from the plant's 455-megawatt Unit 2 and additional flue gas from the 250-megawatt Unit 1, treating an equivalent capacity of 530 megawatts in total. *Id.* Project Diamond Vault at the 600-megawatt Madison Unit 3 in Louisiana's petroleum coke- and coal-fired Brame Energy Center are designed to capture up to 95% of the plant's carbon dioxide emissions. *Id.*

Statements from technology vendors, including Shell, Mitsubishi Heavy Industries, Linde/BASF, Fluor, and ION Clean Energy, also confirm that 90% capture at fossil fuel-fired power plants is feasible. *Id.* at 39851-52. These vendors—who collectively have decades of experience developing the technology—state that the technology is “commercially proven,” and “available now,” and some offer guarantees that their systems achieve over 90% capture. *Id.*

Movants largely ignore this extensive record and instead rely on declarations and other extra-record evidence in an attempt to cast doubt on EPA's technical conclusions. But Movants' reliance on extra-record evidence to argue likelihood

of success on the merits—without asking this Court to supplement the record, a request EPA would oppose—is foreclosed by 42 U.S.C. § 7607(d)(7)(A). Extra-record evidence plays no role in the merits inquiry because documents “not part of the record . . . cannot undercut the Administrator’s conclusions on review.” *Am. Petroleum Inst. v. Costle*, 665 F.2d 1176, 1186 n.3 (D.C. Cir. 1981). It is “black-letter administrative law’ that a reviewing court cannot consider information that was unavailable to the agency when it made its decision.” *Del. Dep’t of Nat. Res. & Env’t Control v. EPA*, 895 F.3d 90, 102 (D.C. Cir. 2018). The Court must disregard Movants’ procedurally improper attempts to invoke extra-evidence.

Even where Movants properly rely on the record, their arguments lack merit. They take a kitchen-sink approach in challenging EPA’s determination that 90% capture is the best system of emission reduction for existing coal plants. None of their arguments are persuasive.

Movants contend that no commercial power plant is consistently achieving 90% capture. *E.g.*, Ohio Mot. 13; West Virginia Mot. 7. But the standard is “has been adequately demonstrated.” *See Sierra Club*, 657 F.2d at 364 (upholding performance standard “set at a level that is higher than has been actually demonstrated over the long term by currently operating” sources). That standard is met here. As explained above, EPA’s voluminous record amply supports EPA’s conclusion that 90% capture is adequately demonstrated. Moreover, Congress



meant to drive adoption of new (albeit demonstrated) technology, *id.* (explaining that “Clean Air Act is a technology-forcing statute”), an intent that Movants’ view would defeat. Movants’ argument is also wrong for presupposing that only one piece of data is relevant in the “adequately demonstrated” inquiry, i.e., whether currently operating commercial-scale power plants are consistently achieving 90% capture over a lengthy period. As discussed further below, there is no support for Movant’s presupposition in the case law or statute. Consistent with its prior determinations under Section 7411, EPA reasonably considered a wide range of data, and EPA’s approach to determining what data may support an “adequately demonstrated” determination merits deference. *Nat’l Asphalt Pavement Ass’n*, 539 F.2d at 786; *Miss. Comm’n on Env’t Quality*, 790 F.3d at 150.

Next, Movants seek to discredit EPA’s examples of existing power plants that have achieved 90% capture on the grounds that they are small power plants that operate carbon capture on a slipstream. As an initial matter, Movants’ argument is premised on mischaracterizations of the record. Boundary Dam is not particularly small, *contra, e.g.*, *West Virginia Mot. 7*; many power plants operate at the same scale as Boundary Dam—110 megawatts. There are at least 49 similarly sized plants. *See* EPA, Coal CCS Cost Calculations, EPA-HQ-OAR-2023-0072-9095 att.5 (indicating that, of 25 megawatt-or-greater steam generating units expected to be online in 2039 without plans to convert to gas, there are 49

units less than or equal to 110 megawatts, out of 202 total). Nor is Boundary Dam a slipstream project, *contra* NRECA Mot. 14-15; Boundary Dam's carbon capture system is designed to capture 90% of the carbon dioxide from the entire plant's flue gas, and testing has demonstrated that it can successfully do so. 89 Fed. Reg. at 39848. To be sure, in recent years, Boundary Dam has made a business decision to run less than 100% of the plant's flue gas through the capture equipment, but that reflects only the plant's limited financial and regulatory incentives to optimize carbon dioxide capture. *Id.* Boundary Dam has routinely achieved 90% carbon capture of the processed flue gas in the slipstream. *Id.*

Setting Movants' mischaracterizations aside, the scale arguments they assert are not well-founded. Movants set forth no support for the idea that carbon capture of a slipstream is somehow "categorically different" from capture of an entire plant's exhaust. *Contra* NRECA Mot. 15. And there is none. The record shows that carbon capture technology has successfully achieved high capture rates at both slipstream projects (Petra Nova) and entire units (Boundary Dam Unit 3)—the same technology and treatment processes work on each, regardless of the percentage of the flue gas being processed. *See* 89 Fed. Reg. at 39848-50; Response to Comments, ch. 4, at 39-41. As for Movants' unsupported argument that data from smaller carbon capture projects are not representative of what is possible at larger power plants, *see* West Virginia Mot. 7, EPA determined on the

record that the opposite is in fact true: carbon capture technology is scalable by a factor of 5-15 times. *See* Response to Comments, ch. 4, at 40.<sup>16</sup> This proposition is illustrated by Boundary Dam (110 megawatts), which is larger than its predecessors by several factors. *See id.* The same is true for 240-megawatt Petra Nova, which is more than twice the size of Boundary Dam and many times the size of earlier deployments. *Id.* The scale of capture projects in development at coal plants further corroborates the scalability of carbon capture: Project Tundra is 530 megawatts and Project Diamond Vault is 600 megawatts. *See* 89 Fed. Reg. at 39850-51. In-progress projects at gas plants are even larger: Sutter Energy Center is 550 megawatts; Baytown Energy Center is 896 megawatts; the Peterhead Power Station is 900 megawatts; and Deer Park Energy Center is a 1,200-megawatt power plant. *Id.* at 39927-28. Accordingly, EPA reasonably concluded that 90% capture has been demonstrated at scale for fossil fuel-fired power plants and is achievable regardless of the size of the unit. *Id.*

Movants also dismiss the Boundary Dam and Petra Nova carbon capture examples, citing the technical issues these two facilities have encountered. *E.g.*, States' Mot. 7. EPA considered these issues at length. *E.g.*, 89 Fed. Reg. at 39848-50; EPA, Greenhouse Gas Mitigation Measures for Steam Generating Units

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<sup>16</sup> Moreover, above a certain size, sources may use multiple series of carbon capture equipment. Response to Comments, ch. 4, at 40. For example, a 1,500-megawatt facility could use three series of 500-megawatt capture equipment. *Id.*

Technical Support Document (“Greenhouse Gas Mitigation Measures”) at 25-29, EPA-HQ-OAR-2023-0072-9095 (Apr. 2024). Two themes are evident from EPA’s analysis.

*First*, even considering the technical issues, the facilities’ capture systems have maintained high “availability”<sup>17</sup> and capture rates. Boundary Dam has frequently achieved availabilities of greater than 90% over long periods. Response to Comments, ch. 4, at 42. As for Petra Nova, the outages at the capture plant occurred, on average, less than 10% of the year, Greenhouse Gas Mitigation Measures at 28; 89 Fed. Reg. at 39850, which is a level of availability consistent with other industrial processes, including coal plants, Response to Comments, ch. 4, at 40-41. As for capture rates, Petra Nova successfully captured 92.4% of the carbon dioxide from the treated flue gas at W.A. Parish over a three-year period. 89 Fed. Reg. at 39889. Boundary Dam’s capture system has recently achieved similarly high rates, capturing at least 90% of the slipstream’s carbon dioxide over a three-year period. *Id.* at 39888-89.

*Second*, the technical issues encountered at these first-of-a-kind facilities are surmountable, and lessons learned at Boundary Dam and Petra Nova can be implemented in future carbon capture deployments during initial design and

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<sup>17</sup> The availability factor is a measure of the amount of time a system is in operation and not undergoing maintenance, repair, and unexpected down time. *See* Response to Comments, ch. 4, at 42.

construction. *Id.* at 39848-50. As the Court has recognized, technical issues do not foreclose a “best system of emission reduction” determination. *See Sierra Club*, 657 F.2d at 382. In *Sierra Club*, electric utilities challenged EPA’s performance standard for particulate matter emissions from coal plants. *Id.* at 381-82. The Court upheld the standard notwithstanding that the one example of a large unit employing the underlying system of emission reduction experienced operational difficulties. *Id.* at 382. The Court concluded that EPA had reasonably explained that these technical issues could be overcome and that the technical issues merely reflected “problems associated with working out bugs in a new system.” *Id.* So too here. In fact, projects in development employing the lessons learned at Boundary Dam and Petra Nova are targeting capture rates of 95% and above. 89 Fed. Reg. at 39851; *see also* International CCS Knowledge Centre, The Shand CCS Feasibility Study at ii, viii, EPA-HQ-OAR-2023-0072-0053 att. 32 (2018) (concluding that, with lessons learned from Boundary Dam, a 90% capture facility twice the size of the one at Boundary Dam is feasible, and at a lower cost).

Next, Movants criticize EPA for relying on “vendor statements” and projects in development, NRECA Mot. 10, but they cite no support for the proposition that EPA is limited in the type of evidence it may consider under Section 7411(a), and EPA is aware of none. On the contrary, Section 7411(a) directs EPA to “determine[.]” that the demonstration is “adequate[.]” conferring discretion on EPA

to determine the appropriate types of evidence. 42 U.S.C. § 7411(a)(1).

Accordingly, EPA’s reliance on vendor statements and projects in development—which present a fuller picture of how the industry actually views this technology—in conjunction with other evidence is reasonable and a judgment well within EPA’s expertise. *Sierra Club*, 657 F.2d at 364 (expressly endorsing consideration of vendor statements).

Regarding the projects in development, such as Project Tundra and Dry Fork Power Plant, the National Rural Electric Cooperative Association observes that they have taken years to plan and are still not operational.<sup>18</sup> Because the Association fails to develop its argument, the salience of these projects’ development timelines is unclear. Regardless, the timelines of projects predating the Rule, which were not previously subject to legally binding timing requirements or the tax incentives currently in place, say little about what is presently possible. *See Greenhouse Gas Mitigation Measures* at 43-49; *see also Wisconsin v. EPA*, 938 F.3d 303, 330 (D.C. Cir. 2019).

Movants also criticize EPA for basing its “adequately demonstrated” determination on projects funded by the Energy Policy Act of 2005, which constrains EPA’s reliance on such projects in determining whether technology is

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<sup>18</sup> National Rural Electric Cooperative Association improperly seeks to support its merits arguments with extra-record declaration evidence that must be ignored. NRECA Mot. 11; *see* 42 U.S.C. § 7607(d)(7)(A).

adequately demonstrated for the purposes of Clean Air Act Section 7411. West Virginia Mot. 8 (citing 42 U.S.C. § 15962(i)). EPA acknowledged those limitations in the Rule, explaining that the Energy Policy Act precludes EPA from relying *solely* on Energy Policy Act-funded projects for “adequately demonstrated” determinations. 89 Fed. Reg. at 39878-79. But, as EPA explained, the Act does not preclude EPA from relying on the experience of such facilities in conjunction with other information. *Id.*; *Nebraska v. EPA*, No. 4:14-CV-3006, 2014 WL 4983678, at \*4 n.1 (D. Neb. Oct. 6, 2014) (endorsing the same interpretation). Moreover, EPA expressly concluded that the record supports its best-system determinations even without corroboration from the Energy Policy Act-funded projects. 89 Fed. Reg. at 39855.

**4. Ninety percent carbon capture is adequately demonstrated and achievable for new base load gas plants.**

EPA reasonably determined that 90% carbon capture has been adequately demonstrated and is achievable for new base load gas plants. *Id.* at 39924. EPA’s determination primarily relied on three lines of evidence.

*First*, EPA incorporated by reference the evidence relating to 90% capture at coal plants. *Id.* at 39924. This Court has established that EPA may extrapolate based on data from one kind of source to conclude that the technology will also be effective at a similar source. *Lignite Energy Council*, 198 F.3d at 933-34; *cf. Ethyl*

*Corp. v. EPA*, 541 F.2d 1, 28 (D.C. Cir. 1976). This standard is satisfied because of the essential ways in which carbon capture at coal plants is identical to capture at gas plants. 89 Fed. Reg. at 39924.

*Second*, EPA corroborated its conclusions from long-term coal plants with direct evidence of 90% capture at gas plants, the primary example being the gas-fired unit at the 386-megawatt Bellingham Cogeneration Facility in Bellingham, Massachusetts. *Id.* This plant used the same type of solvent-based capture system as the examples in the coal-fired context discussed above. *Id.* Bellingham's system produced food-grade carbon dioxide and was in continuous commercial operation from 1991 to 2005 before being shut down due to the then-rising cost of natural gas. *Id.* at 39926-27. The capture system continuously captured 85-95% of the carbon dioxide that would have otherwise been emitted from the flue gas of a 40-megawatt slipstream. *Id.* at 39926. The other demonstrated example of carbon capture at a gas plant occurs at the Technology Centre Mongstad in Norway. *Id.* at 39927. This facility can treat a 12-megawatt flue gas stream from a gas plant at Mongstad power station, achieving capture rates over 98%. *Id.*

*Third*, EPA considered projects in development that are targeting capture rates of 90% and above. *Id.* at 39927-29 (describing numerous projects). For example, Chevron's Eastridge Cogeneration gas plant in Kern County, California is expected to install a 90% full-stream capture facility. *Id.* Likewise, in Scotland,



the proposed 900-megawatt Peterhead Power Station is anticipated to capture 90% of the facility's carbon dioxide and sequester up to 1.5 million metric tons of carbon dioxide annually. *Id.*

Movants' responses to this evidence miss the mark. For instance, Movants argue that the evidence relating to 90% capture at coal plants is not relevant for gas plants "given the different engineering." Edison Electric Mot. 14 n.44. Movants do not elaborate on this point, and it is mistaken. EPA addressed this issue in the record, explaining that carbon capture at coal plants is essentially identical to carbon capture at gas plants. 89 Fed. Reg. at 39926. The same technology (i.e., the same solvents and processes) can be applied at both sources. *Id.*

The primary differences between using post-combustion capture on a coal-combustion flue gas and natural gas-combustion flue gas are the level of carbon dioxide in the flue gas stream and the higher levels of other pollutants that must be removed from coal-combustion exhaust. *Id.* In general, EPA determined that carbon capture at gas plants faces *fewer* challenges than capture at coal plants. *Id.* at 39926 & n.761 (explaining that, for carbon capture at gas plants, "flue gas handling is simpler, solvent degradation is easier to prevent, and fewer redundancies may be necessary for various components (e.g., heat exchangers)"). Moreover, the fact that the Bellingham facility used the same exact solvent-based carbon capture technology as that which EPA has identified as the best system for

coal plants shows that EPA had a sound basis to reject Movants' claim of "engineering differences." *Id.*

Next, Movants set their sights on discrediting the demonstrated examples of 90% capture at gas plants. Electric Generators Mot. 10; Edison Electric Mot. 14-15. Their arguments fall short. Though Bellingham and Technology Centre Mongstad represent slipstream projects, such projects do not categorically differ from whole-flue capture, and the technology for carbon capture is scalable, *see supra* Argument I.B.3, which Movants do not refute. And though Bellingham was shut down in 2005 for economic reasons, Movants set forth no legal authority for the proposition that past examples of technology cannot be considered for Section 7411 purposes.

Finally, Movants insist that Bellingham is not representative because it did not have transport and sequestration components. Edison Electric Mot. 15. But EPA's preamble explained how its analysis for transport and sequestration at coal plants supports that the technology is demonstrated for gas plants. 89 Fed. Reg. at 39925. Indeed, it would be easier for new gas plants to implement transport and sequestration because they may site their facilities to account for the Rule's carbon capture requirement.

**5. Transport of carbon dioxide is adequately demonstrated and achievable.**

EPA reasonably determined that transport of carbon dioxide is adequately demonstrated and achievable. *Id.* at 39855-61, 39929. As EPA recognized, carbon dioxide has been transported through pipelines for over 60 years, and in the past 20 years, 500 million metric tons of carbon dioxide moved through over 5,000 miles of carbon dioxide pipelines. *Id.* at 39860. Thus, there can be no serious doubt that pipeline transport of carbon dioxide is a proven technology. Moreover, Pipeline and Hazardous Materials Safety Administration standards are already in place and designed to ensure that captured carbon dioxide will be securely conveyed to a sequestration site. *Id.*

EPA further reasonably projected that existing coal plants will be able to feasibly construct transport capacity to a sequestration site. *Id.* Most plants are near deep saline formations that have the potential to be used as long-term carbon dioxide storage sites. *Id.* at 39855. Of existing coal plant capacity with planned operation during or after 2039, more than 50% is located less than 20 miles from potential deep saline sequestration sites, 73% is located within 31 miles, 80% is located within 62 miles, and 91% is within 100 miles. *Id.* Due to the proximity of sources to storage, EPA reasonably determined it would be feasible for existing sources to build smaller and shorter source-to-sink lateral pipelines, rather than

needing to rely on a trunkline network buildout.<sup>19</sup> *Id.* at 39889. In addition, for new base load gas plants, sources may consider access to carbon dioxide transport and storage in deciding where to build. *Id.* at 39925. Finally, EPA determined that carbon dioxide can also be transported via vessel, highway, or rail. *Id.* at 39889.

Movants' challenges to EPA's record-based conclusions lack merit.

Movants argue that carbon capture should not be considered the best system of emission reduction because the transportation of carbon dioxide is too dangerous. Ohio Mot. 16-17. Movants' argument impermissibly relies on extra-record evidence. *See supra* Argument I.B.3. Regardless, EPA carefully considered the safety and security of carbon dioxide transport. 89 Fed. Reg. at 39860-61. EPA explained that the Pipeline and Hazardous Materials Safety Administration regulates the safety of carbon dioxide pipelines, setting standards concerning design, operation, and incident reporting and response. *Id.* at 39861. The overwhelming majority of carbon dioxide pipelines have been operating safely for more than 60 years. *Id.* And the handful of incidents otherwise have prompted regulatory corrections: following one significant pipeline rupture, the Pipeline and Hazardous Materials Safety Administration initiated a rulemaking and took other

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<sup>19</sup> The U.S. carbon dioxide pipeline network includes major trunkline (i.e., large capacity) pipelines as well as shorter, smaller capacity lateral pipelines connecting a carbon dioxide source to a larger trunkline or connecting a carbon dioxide source to a nearby carbon dioxide end use. 89 Fed. Reg. at 39856.

actions to develop and implement new measures to strengthen its safety oversight of carbon dioxide pipelines. *Id.* Given the federal regulation of carbon dioxide pipelines and the steps that the Pipeline and Hazardous Materials Safety Administration is taking to further improve pipeline safety (which will be in place before capture is required under the Rule in 2032), EPA reasonably determined that carbon dioxide can be safely transported by pipeline.

Next, Movants challenge EPA's feasibility determination on the ground that "no [carbon dioxide] transport network exists to link units to storage." NRECA Mot. 14; *see also* Edison Electric Mot. 17. But, as explained above, EPA's best system of emission reduction was not predicated on the existence or buildout of such a network. 89 Fed. Reg. at 39855. Rather, EPA's determination is premised on the feasibility of constructing relatively short lateral pipelines to extend from the source to the nearest geologic storage reservoir. *Id.* While EPA anticipates that sources would likely avail themselves of an interstate pipeline network if one were constructed, EPA's more conservative analysis focuses on reasonably achievable steps that individual sources can take to access carbon dioxide storage independently. *Id.*

Under this analysis, if all existing long-term coal plants adopt carbon capture, EPA's modeling shows that approximately 5,000 miles of carbon dioxide

pipelines would be constructed by 2032.<sup>20</sup> 89 Fed. Reg. at 39856. Movants contend that EPA’s analysis relies on “best-case assumptions” and is unduly optimistic. West Virginia Mot. 9. Neither point is accurate. EPA’s model is conservative. It does not factor in the possibility that trunk pipelines under development would be usable, and it assumes every plant that has not announced retirement will install carbon capture and will not qualify for a less stringent source-specific standard (as discussed further below). 89 Fed. Reg. at 39856. Moreover, the prospect of 5,000 miles of pipeline by 2032 is a reasonable one and equates to an average buildout of 1,000 miles of carbon dioxide pipeline per year over five years. *Id.* This conservative estimate reflects the high end of EPA’s analysis of necessary pipeline buildout during this timeframe. *Id.* This projected mileage of new pipeline is comparable to or less than that of other types of pipelines that are regularly constructed in the United States each year. *Id.* For example, the total annual mileage of natural gas pipelines constructed over the 2017-2021 period ranged from approximately 1,000 to 2,500 miles per year. *Id.*

Next, Movants contend that permitting and right-of-way issues preclude EPA’s Rule from being achievable. *See* NRECA Mot. 12; Ohio Mot. 16; Edison

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<sup>20</sup> Movants cite a Congressional Research Service report that purportedly analyzes how much carbon dioxide pipeline would be required to achieve all “*national* greenhouse gas reduction goals” by 2050. Electric Generators Mot. 12 (emphasis added). This irrelevant extra-record document must be ignored. *See supra* Argument I.B.3.

Electric Mot. 8, 17. Not so. EPA reasonably determined on the record that those issues are surmountable. 89 Fed. Reg. at 39858. EPA pointed out the many examples of pipeline developers successfully navigating the hurdles—including obtaining the requisite federal and state permits as well as easements from landowners—and completing carbon dioxide pipeline projects. *Id.* at 39858-59. Moreover, States and the federal government are actively seeking to facilitate pipeline siting and construction. *Id.* at 39858-61. EPA further explained that the permitting and right-of-way challenges are especially acute for large multi-state trunkline projects, but the best system of emission reduction here is premised on shorter pipelines, which are less challenging to permit and build. *Id.* at 39861.

Movants disagree that shorter pipelines are likely easier to permit and build than long, interstate pipes. Edison Electric Mot. 17.<sup>21</sup> In support of their counterintuitive proposition, Movants cite a single example of a pipeline project that involved six years of regulatory proceedings and litigation. *Id.* (citing *PennEast Pipeline Co. v. New Jersey*, 594 U.S. 482, 490-92 (2021)). But a pipeline project that was litigated all the way to the Supreme Court is not representative of the typical permitting timeline for shorter pipelines. The record

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<sup>21</sup> Movant Edison Electric relies on extra-record evidence to make a merits argument about the electrical grid. Mot. 17-18. This evidence must be disregarded. *See supra* Argument I.B.3.

indicates that carbon dioxide-pipeline permitting, right-of-way acquisition, and construction should take no more than 4.5 years total. *See infra* Argument I.B.8.

And even if a source were subject to delays outside its control, the Rule affords flexibilities to accommodate such circumstances. The Rule includes a mechanism for a compliance-date extension in cases where a plant faces delays outside its control. 89 Fed. Reg. at 39874 (coal), 39952 (gas). And for existing coal plants, if there are unexpected site-specific impediments to getting pipelines or a storage site permitted in time (or to getting to 90% capture), that can be addressed through the state planning and standard-setting process, with the State able to set less stringent standards or provide an extended deadline when justified by a plant's site-specific circumstances. *Id.* at 39836.

Finally, Movants contend that power plants cannot themselves successfully implement the transport and storage components of carbon capture, as pipelines and storage locations are managed by third parties. NRECA Mot. 12. This argument lacks merit. Regulated sources can contractually arrange for captured carbon dioxide to be properly transferred and stored by third parties, just as they can arrange for proper disposal of other components of their waste streams. Response to Comments, ch. 2, at 5-6. Indeed, implementing technological controls at a power plant normally requires that the source interact with third parties, such



as manufacturers and installers of pollution control equipment, suppliers of lower-emitting fuels, and providers of fuel-cleaning or waste disposal services. *Id.*

**6. Geologic storage of carbon dioxide is adequately demonstrated and achievable.**

EPA also reasonably determined that geologic storage—the long-term containment of a carbon dioxide stream in subsurface geologic formations—is adequately demonstrated and achievable. 89 Fed. Reg. at 39862. As EPA determined, geologic storage for carbon dioxide is broadly available throughout the United States. *Id.* at 39862-65. EPA performed a geographic availability analysis in which it examined areas of the country that the Department of Energy has determined to have storage potential. *Id.* at 39863. The analysis shows that of the coal plant capacity with planned operation during or after 2039, 91% of the units are located within 100 miles of potential deep saline storage sites. *Id.* at 39864. Furthermore, the Department of Energy has estimated the available geologic storage capacity in the country to be at least 2.4 trillion metric tons, and as high as 21 trillion metric tons. *Id.* This capacity is approximately 1,000 times greater than the volume of carbon dioxide that would be sequestered under this Rule. *Id.*

Geologic storage of carbon dioxide is also proven. Department of Energy research has demonstrated geologic storage through a series of field research projects that increased in scale over time. *Id.* In total, these projects have stored more than twelve million tons of carbon dioxide with no indications of negative

impacts to either human health or the environment. *Id.* EPA’s record shows that, at present, there are thirteen operational and one post-injection phase commercial carbon dioxide storage facilities in the United States. *Id.* at 39865. As of March 2024, forty-four more projects with 130 injection wells are under review by EPA. *Id.* at 39864.

The Rule’s preamble describes the regulatory framework for geologic storage, including the Underground Injection Control program regulations promulgated by EPA under the Safe Drinking Water Act. *Id.* The injection of carbon dioxide for geologic sequestration requires an Underground Injection Control permit. *Id.* These permits ensure that injection wells are protective of underground sources of drinking water, operators maintain financial responsibility, and there are plans for eventual site closure, among other requirements. *Id.* at 39866. EPA is the permitting authority for States, tribes, and territories that have not elected to operate their permitting programs. *Id.* at 39870. States may apply to EPA to administer the permitting programs within their States. *Id.* at 39871.

Movants’ criticisms of EPA’s geologic storage determination lack merit. Movants argue that “[f]ederal land-use policy” impedes underground storage in “much of the West” and that underground storage locations are scarce or absent in “other parts of the country.” NRECA Mot. 14. Movants neither explain which federal policies impede storage, nor specify where in the United States

sequestration locations are lacking. The Court should not credit undeveloped arguments. *Schneider v. Kissinger*, 412 F.3d 190, 200 n.1 (D.C. Cir. 2005). Regardless, Movants are incorrect. Federal policy actively encourages development of geologic storage opportunities. Storage sites may be considered covered projects under Title 41 of the FAST Act, a statutory program designed to improve the timeliness, predictability, and transparency of the federal environmental review and authorization process for significant infrastructure projects. *Id.* at 39866 n.514. And potential storage locations are broadly available in the United States, as explained above. *Id.* at 39863-64.

Movants criticize the Rule on the ground that existing plants cannot consider proximity to storage sites—that is, they cannot relocate to be closer to storage sites. West Virginia Mot. 9. But EPA was keenly aware of this issue, making existing plants' proximity to potential sequestration sites a central focus of EPA's modeling. *Id.* at 39863-64. EPA's analysis showed that, given the broad availability of storage potential in the United States, the vast majority of long-term coal plants are relatively close to sequestration potential. *Id.* at 39863-64. And to the extent that a particular plant is unable to use sequestration because of excessive distance to a sequestration site, that site-specific problem can be handled through the state implementation process, which allows States to adjust requirements to account for unanticipated circumstances. *Id.* at 39836.

Movants also criticize EPA’s analysis for relying on “*potential* geologic sequestration sites.” Ohio Mot. 17 (emphasis in original); *accord* West Virginia Mot. 9. But the case law is clear that Section 7411(a) is forward-looking. *Sierra Club*, 657 F.2d at 364. For a system of emission reduction to be adequately demonstrated, it need not already be in widespread commercial use, and accordingly, there is no requirement that potential sequestration sites be already commercially utilized for EPA to properly rely on their availability. *E.g.*, *Essex Chemical*, 486 F.2d at 435-36. Thus, EPA’s decision to rely on potential storage sites was reasonable. Moreover, EPA’s analysis did not rely on potential sites alone. As discussed above, there are over a dozen commercial carbon storage facilities in the United States. 89 Fed. Reg. at 39865. While these existing facilities relied on federal funding, multiple commercial sequestration facilities that used no federal funds will soon be operational, and more are forthcoming—at least 44 projects with 130 injection wells, as noted above. *Id.* at 39864.

As to these projects under review, Movants criticize EPA for having issued only eight Underground Injection Control permits to date, while 130 applications remain under review. West Virginia Mot. 9; Edison Electric Mot. 18. But EPA was clear in the record on its timeline for these applications; it aims to review complete applications and issue permits (when appropriate) within approximately 24 months. 89 Fed. Reg. at 39871. Moreover, Movants’ criticism ignores critical

context. Due to increased incentives for geological storage, EPA has seen a considerable uptick in permit applications in recent years. 89 Fed. Reg. at 39870. Most of the pending 130 applications (63%) were received within the past year.

*Id.* To ensure expeditious processing of the applications, EPA has taken several proactive steps, including (i) increased resource allocation to the permitting program, including increased staffing; (ii) improvements to the permitting process to reduce the time needed to make final decisions; (iii) the creation of resources for applicants, such as upgrading the Geologic Sequestration Data Tool to guide applicants through the process; (iv) the creation of resources for permit writers, including training and guidance to build capacity for storage permitting; and (v) the issuance of internal guidelines to streamline and create uniformity and consistency in the permitting process—all of which should reduce permitting timeframes. *Id.* Moreover, EPA is working with several States that wish to obtain the authority to issue permits themselves, which could also reduce the permit processing timelines. *Id.* EPA thus reasonably expects that it will expeditiously process the pending and future permit applications. *Contra* Edison Electric Mot.

18. In any case, the increased interest in these projects confirms EPA's determinations about the availability of storage. Movants cannot reasonably claim both that there are too many of these projects and too few.

**7. Simultaneous carbon capture and storage is adequately demonstrated and achievable.**

EPA reasonably determined that all components of carbon capture and storage have been demonstrated concurrently, with each component operating simultaneously and in concert with the other components. 89 Fed. Reg. at 39846-47. Two lines of evidence support EPA’s determination: industrial applications of carbon capture, and applications of carbon capture at coal plants. *Id.* at 39847. There are currently at least 15 operating “industrial application[]” carbon capture projects in the United States and an additional 121 are in development. *Id.* at 39847. EPA’s preamble described several industrial-application examples, including the Quest carbon capture facility in Alberta, Canada, which captures and sequesters approximately 80% of the carbon dioxide that the facility produces. *Id.* As for carbon capture applications at coal plants, simultaneous demonstration of all three components occurs at Boundary Dam Unit 3 and Petra Nova, discussed at length above. *Id.* Both systems capture carbon dioxide from their respective power plant’s flue gas, compress it onsite, transport it via pipeline offsite, and store the captured carbon dioxide underground via enhanced oil recovery. *Id.*

Movants fail to show EPA’s simultaneous demonstration determination is unreasonable. Movants insist that none of the evidence adequately demonstrates simultaneous demonstration. In conclusory fashion, they broadly reject the evidence of “industrial applications” of carbon capture as unrepresentative of “*the*

*power sector.*” Edison Electric Mot. 9 (emphasis in original).<sup>22</sup> But the idea that EPA cannot rely on evidence from a separate, related sector for an adequate demonstration determination was soundly rejected by the Court in *Lignite Energy Council*. 198 F.3d at 933-34. Elsewhere, Movants criticize the individual industrial application examples for not precisely matching EPA’s best system of emission reduction and related performance standard. Edison Electric Mot. 9-11. But again, the case law is clear that Section 7411 does not require EPA to set performance standards that sources “currently in operation . . . can at all times and under all circumstances meet.” *Essex Chemical*, 486 F.2d at 433-34. Rather, EPA need only show that simultaneous carbon capture and storage is “reasonably reliable, reasonably efficient, and . . . can reasonably be expected to serve the interests of pollution control”—and that standard is easily met by EPA’s examples. *Id.* at 433. Nor have Movants demonstrated, in any case, why carbon capture in other industrial contexts would not be sufficiently analogous to capture in the power sector. The fundamentals of this technology are common across sectors. *See Greenhouse Gas Mitigation Measures* at 21-25. And EPA found no reason to conclude that any superficial distinctions between industrial contexts undermined its conclusions here.

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<sup>22</sup> Edison Electric also challenges EPA’s simultaneous demonstration determination by seeking to discredit the examples of carbon capture and storage at coal plants. EPA explains why these arguments fail above in Argument I.B.3.

**8. The Rule's compliance timelines for carbon capture are reasonable and include flexibilities.**

EPA reasonably determined the Rule's compliance timeframes for carbon capture and storage.<sup>23</sup> EPA considered the initial time for state plan development (for existing sources), as well as the technical (and bureaucratic) steps necessary to install and implement the system of emission reduction. The resulting timeline is consistent with other expert estimates and real-world experience. 89 Fed. Reg. at 39874-75 (existing coal plants), 39938 (new base load gas units).

EPA finalized a compliance date of January 1, 2032, for covered sources to start achieving emissions performance consistent with 90% carbon capture. *Id.* at 39874, 39938. EPA's compliance timeline for existing coal plants allows for six years and seven months for both initial feasibility studies and more substantial design, permitting, contracting, and construction work. *Id.* at 39874. EPA's compliance timelines for base load gas plants, whose timeline does not include a state planning process, allows sources more than seven years to start achieving the requisite emissions performance. *Id.* at 39938. EPA's compliance timelines are consistent with the approximately six years Boundary Dam and Petra Nova took to implement carbon capture with a high capture rate. *Id.*

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<sup>23</sup> The timeline for 40% co-firing is discussed below in Argument I.B.10. No other subcategory's compliance timeline is challenged in the stay motions.



EPA based its compliance timeframes on: (i) a baseline carbon capture plant project schedule developed by architect engineering firm Sargent & Lundy<sup>24</sup> and a review of carbon capture projects that have moved more expeditiously; and (ii) a review of the available information for installation of carbon dioxide pipelines and sequestration sites, including a timeline summary developed by ICF International, an expert consultant. *Id.* EPA explained its projected timelines in detail in the preamble. *Id.* at 39874-75, 39938-39. The key points of the compliance timeline for coal plants are summarized below.<sup>25</sup>

The timeline starts with feasibility work, which is projected to take less than one year (June 2024 through June 2025) for each component of carbon capture and storage. For existing coal plants, feasibility studies are necessary for state plan development because they inform the implementation strategies States will include in their plans; thus, the timeline assumes that feasibility work occurs during the period for developing state plans (June 2024 through June 2026). *Id.* (New

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<sup>24</sup> Sargent & Lundy is an architect engineering firm with extensive expertise in fossil fuel-fired power plants and carbon capture projects. Sargent & Lundy, CO<sub>2</sub> Capture Project Schedule and Operations at 10, EPA-HQ-OAR-2023-0072-9095 att. 17 (Apr. 2024). The firm regularly provides comprehensive project services to clients in the public and private sectors, including consulting, planning and design, permitting, and implementation to construction management, commissioning, and operations/maintenance. *Id.* Over the last 16 years, the firm has worked on 146 carbon capture projects for 85 clients across 12 industries. *Id.*

<sup>25</sup> The timeline for development of a carbon capture project for gas plants would be similar, and EPA reasonably expects these projects could be completed in the same amount of time. 89 Fed. Reg. at 39938-39.

sources are directly regulated by EPA.) Once state plans are submitted to EPA 24 months after publication of the Rule, EPA's timeline assumes that more substantial work (e.g., Front-End Engineering Design studies for capture plants, permitting, land use and right-of-way acquisitions) will occur starting in June 2026. *Id.*

Of the components of carbon capture and storage, EPA explained that the carbon capture component is the most time-consuming and therefore is the primary driver for EPA's ultimate compliance date. *Id.* EPA projects that covered sources will need four years to install and make operational the capture component. *Id.* at 39875. While this timeline is slightly faster than Sargent & Lundy's baseline (by 2 months), it is consistent with completed projects (Boundary Dam Unit 3 and Petra Nova) and project schedules developed in completed Front End Engineering Design studies. *Id.* Moreover, EPA reasonably expects that newly authorized tax credits and this Rule will incentivize expeditious action. *Id.*

For the remaining components of carbon capture and storage—transport and sequestration—EPA reasonably based its timeline on a review of the available information for installation of carbon dioxide pipelines and sequestration sites, including ICF International's timeline summary. *See* Greenhouse Gas Mitigation Measures at 43-49 (citing ICF, Typical CO<sub>2</sub> Transportation Pipeline and Sequestration Site Development Schedule, EPA-HQ-OAR-2023-0072-9095 att. 2). EPA's compliance date anticipates that storage and pipelines for the captured

carbon dioxide will be installed concurrently with deployment of the capture system. 89 Fed. Reg. at 39875. EPA’s timeline reasonably projects that storage can be permitted and constructed in four years. *Id.* This assumes three years (June 2026 to June 2029) for final site characterization, pore-space acquisition, and permitting, and one year (June 2029 to June 2030) for sequestration construction. Greenhouse Gas Mitigation Measures at 47. As for pipelines, EPA reasonably projects up to 4.5 years total, composed of three years for final routing, permitting activities, and right-of-way acquisition, and 1.5 years for pipeline construction. *Id.*

Movants’ criticisms of EPA’s compliance timelines lack merit. Movants generally argue that “the Rule also allows too little time to build and deploy [carbon capture and sequestration],” but their argument is premised on factual inaccuracies. West Virginia Mot. 8. For instance, Movants contend that the “first [carbon capture and sequestration] demonstration projects won’t go online until 2030 to 2032.” *Id.* But demonstration projects have already been online. Bellingham, Plant Barry, Boundary Dam, and Petra Nova started operations in 1991, 2011, 2014, and 2017, respectively. 89 Fed. Reg. at 39850, 39926. Next, Movants misleadingly quote the Rule’s preamble, saying Project Tundra initially “planned completion in April 2024,” but “now slates commercial operations for

2028.”<sup>26</sup> *Id.* at 39850-51. But the full quotation makes clear that Project Tundra planned completion of its final Front End Engineering Design study in April 2024. *Id.* The record further indicates that Project Tundra plans to commence construction in 2024, not operations. *Id.*

Inaccuracies aside, the point that Movants seek to make—that these projects are time-intensive—does not undermine the Rule. EPA’s nearly seven-year compliance timeline provides sufficient lead time, as described above (and indeed, far more time than typically provided for emissions controls under the Clean Air Act).<sup>27</sup> The Rule also recognizes that there may be circumstances outside a source’s control that delay their inability to comply. In these circumstances, there are safety valves such as the compliance date extension, 89 Fed. Reg. at 39960 (existing coal plants); 39952 (new base load gas plants), and, for existing coal plants, the state implementation process, which allows States to adjust requirements, including timelines, to account for unanticipated circumstances. *Id.* at 39836.

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<sup>26</sup> Movants’ second assertion refutes their first. Moreover, Movants’ declaration evidence is irrelevant on the merits and must be ignored. *See supra* Argument I.B.3.

<sup>27</sup> *E.g.*, 89 Fed. Reg. 16820, 17010-11 (providing presumptive date of 36 months after state plan submittal for compliance with oil & gas standards for existing sources); 81 Fed. Reg. at 59276, 59287 (providing presumptive date of 30 months after applicability is triggered for compliance with municipal solid waste landfills standards).

Movants fail to discredit the evidence supporting EPA’s compliance timeline. They argue EPA erred by relying on Sargent & Lundy’s “baseline project schedule” to set a compliance timeline that applies to all plants. Edison Electric Mot. 16. But setting compliance timelines through consideration of a typical high-level schedule—one developed by an expert drawing upon 146 projects—is consummately reasonable. In setting emission guidelines for a category of sources, EPA appropriately is not endeavoring to assess the individualized features and circumstances of each existing covered source and to set bespoke compliance timelines for each.

While Movants raise the specter of supply-chain bottlenecks due to many carbon capture projects being developed at once, Edison Electric Mot. 16, EPA explained in the record that sufficient resources and the necessary workforce for carbon capture are readily available. 89 Fed. Reg. at 39877-78. As EPA explained, a Department of Energy study found that sufficient materials are available and that plants are unlikely to “encounter any bottlenecks in the supplies of specialized equipment . . . because of the large pool of potential suppliers.” *Id.* at 39877 & n.600. There is also an adequate existing workforce with the necessary skills, as well as support for additional workforce development. *Id.* And if a coal plant encounters an unavoidable delay in installing necessary controls, the Rule allows States to grant a compliance-date extension. *Id.* at 39960.

Movants also criticize EPA for assuming “without support” that sources could install storage and pipelines concurrently with deployment of the capture system. Edison Electric Mot. 15. Movants waived this argument by failing to raise it during the notice-and-comment process. *EME Homer City Generation, L.P. v. EPA*, 795 F.3d 118, 137 (D.C. Cir. 2015); 42 U.S.C. § 7607(d)(7)(B). Movants’ unsupported argument would fail anyway. Common sense and basic economics dictate that the installation of capture equipment, pipelines, and sequestration infrastructure will generally occur in parallel to minimize the cost of the project. Deployment of one component far in advance of the other would lengthen the project schedule and drive up cost, leave newly constructed assets unused for years, and delay the ability of the source to recoup any investment in capital. Moreover, contrary to Movants’ contention, EPA *did* have support for its projection that power plants could implement carbon capture components simultaneously. The 81-mile pipeline associated with Petra Nova was constructed at the same time (July 2014 to July 2016), *see* 89 Fed. Reg. at 39859, as the carbon capture facility (March 2014 to December 2016), *see* Greenhouse Gas Mitigation Measures at 46, Table 6. At Boundary Dam, the associated sequestration project was developed between 2010 and April 2015, *see* International Energy Agency Greenhouse Gas Report at 96-107, EPA-HQ-OAR-2023-0072-8727 (June 2015), concurrent with the construction of the capture plant from May 2011 to October

2014, *see* Greenhouse Gas Mitigation Measures at 46, tbl. 6. Thus, Movant's contention is waived and, in any event, fails.

Finally, Movants' reliance on *Portland Cement Ass'n v. Ruckelshaus*, 486 F.2d 375 (D.C. Cir. 1973), is predicated upon a misunderstanding of the record. EPA's compliance timeline is not set "in the hope [carbon capture] technology develops." *Contra* Edison Electric Mot. 18-19. The technology is adequately demonstrated *now*. EPA's compliance timeline simply allows sources sufficient time to install the technology. The circumstances here are thus fundamentally different than the problematic situation contemplated by *Portland Cement*. In that case, the Court explained that, while EPA can set forward-looking performance standards based on existing technology, the reasonableness of those standards must be considered in terms of "lead time." 486 F.2d at 391-92. That is, if a source must comply with a performance standard immediately, a standard that is too forward-looking may be unachievable and therefore unreasonable. *Id.* Here, contrarily, EPA is not making a prediction of what may be possible in the future. Ninety percent carbon capture is available *now*. Sources just need time to install it, and the Rule reasonably accounts for that.

**9. The costs of carbon capture are reasonable.**

EPA appropriately determined that the costs of carbon capture are reasonable for long-term coal plants and new base load gas plants. 89 Fed. Reg. at

39879-83, 39932-35. The costs of carbon capture have substantially declined. This is partly because of technological developments that have lowered capital costs<sup>28</sup> and partly because the Inflation Reduction Act extended and substantially increased the available Internal Revenue Code section 45Q tax credit for carbon storage, so that this credit now defrays a much higher portion of the technology's significant capital costs. *Id.* at 39838, 39882.

Taking these developments into account, EPA considered the costs of all aspects of carbon capture, including capture, transport, and storage costs. *Id.* at 39879, 39933-34. In doing so, EPA applied two metrics it has traditionally used for assessing cost reasonableness: the change in the cost of electricity due to controls, measured in dollars per megawatt-hour, and the cost associated with removing a ton of pollutant. *Id.* at 39879. In assessing these metrics, EPA further accounted for anticipated increases in utilization that would occur to take maximum economic advantage of the benefits from the carbon capture tax credit (\$85 per metric ton of carbon sequestered). *Id.*

EPA's analysis projects that—assuming coal plants run at a capacity and for a duration to maximize their tax gains—the use of carbon capture would *secure an*

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<sup>28</sup> A 2022 National Energy Technology Laboratory report estimated the incremental levelized costs of carbon capture a new coal facility had fallen to \$44 per megawatt hour of generation, a substantial decrease from a 2015 report estimating such costs at \$74 per megawatt hour. 89 Fed. Reg. at 39882.



*overall economic benefit. Id.* Specifically, EPA projects that under those assumptions, the average coal plant installing carbon capture secures an additional \$4 in revenue per megawatt hour of generation or, put a different way, secures an additional \$5 in revenue per ton of carbon dioxide emissions avoided. *Id.*

In other words, the average annual tax credit under Section 45Q would be so substantial for long-term plants (on the order of hundreds of millions of dollars) it would render generating electricity *less expensive* than it would have been absent investing in the technology. *See* 89 Fed. Reg. at 39879; Response to Comments, ch. 2, at 38-39; Greenhouse Gas Mitigation Measures at 53. Accordingly, as EPA observed, the cost-effectiveness metrics under these conditions compare favorably (and rather obviously so) to other past rules for the power sector, which required significant expenditures per megawatt hour of generation, and to the costs of controls for greenhouse gases in other industries, which required more significant costs per ton of carbon dioxide reduced. 89 Fed. Reg. at 39879, 39882.<sup>29</sup>

Reinforcing the conclusion that installing carbon capture can be highly cost-effective, EPA's modeling projects that some sources are expected to install carbon

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<sup>29</sup> Similarly, EPA concluded that the costs of carbon capture for a new base load stationary combustion turbine would generally be lower than the costs of controls in other EPA rules for fossil fuel-fired plants and lower than the costs of other rules controlling greenhouse gases. 89 Fed. Reg. at 39935.

capture so as to take advantage of the tax credit even in the absence of any EPA rule addressing carbon dioxide emissions. 89 Fed. Reg. at 39882.

EPA additionally evaluated the cost-effectiveness metrics that would apply to coal plants assuming alternative shorter amortization periods. Based on those additional analyses, EPA concluded that such metrics remain favorable for plants which operate past January 1, 2039 (i.e., plants where the period of tax credit recovery is at or above seven years). *Id.* at 39879. Accordingly, for coal plants, EPA reasonably applied carbon capture as the best emission reduction system for plants falling in the long-term category, but not for other plants. *Id.*

EPA also examined the reasonableness of costs in other ways beyond these cost-effectiveness metrics, including by considering the total annual costs as compared to past rules for the power sector and as compared to the industry's annual revenues and capital expenditures, and by considering the effects on electricity prices. *Id.* at 39880. These additional analyses further support EPA's cost conclusions.

The two Movants who challenge EPA's cost assessment, NRECA Mot. 12-13; National Mining Mot. 12-13, do not make any successful case, based on record evidence, that EPA's assessment of costs was arbitrary. For its part, the National Rural Electric Cooperative Association does not address EPA's cost analysis or reasoning, but instead relies solely on extra-record declarations, which cannot be

considered for purposes of assessing the merits. 42 U.S.C. § 7607(d)(7)(A). The National Mining Association also does not address EPA's cost analysis and reasoning. It points to the costs for one previous carbon capture project, but that project preceded the availability of the expanded section 45Q tax credit and recent developments lowering capital costs.<sup>30</sup>

**10. Forty percent gas co-firing is adequately demonstrated and achievable.**

EPA reasonably determined that natural gas co-firing at the level of 40% of annual heat input ("40% gas co-firing") is adequately demonstrated and achievable for the medium-term subcategory of existing coal plants. 89 Fed. Reg. at 39892-94. Many existing coal plants already use some amount of natural gas, and several have co-fired at or above 40% in recent years. *Id.* As of 2021, 249 of the 565 existing coal-fired steam generating units reported burning natural gas as a primary fuel or startup fuel. *Id.* While startup fuels are generally used at low levels, EPA observed that some coal plants have co-fired natural gas at considerably higher rates. *Id.* EPA's data shows that 29 coal-fired units co-fired natural gas at or over 40% on an annual heat input basis from the start of 2015 through the end of 2020.

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<sup>30</sup> In their motions, Movants do not contend that EPA erred in accounting for the 45Q tax credit. While any such argument has been forfeited, EPA did appropriately consider the tax credit. The credit reduces the cost to the source of installing and operating carbon capture, and Congress intended for EPA to consider it in setting Section 7411 standards. *See* 89 Fed. Reg. at 39881 (addressing Inflation Reduction Act legislative history).

*Id.* EPA therefore reasonably determined that 40% gas co-firing is adequately demonstrated for the medium-term subcategory of existing coal plants.

Forty percent gas co-firing is also achievable. Indeed, in recent years, many coal plants have already added gas-firing capability. *See* Greenhouse Gas Mitigation Measures at 14. The Rule recognized that covered sources that do not already have co-firing capability can take two primary actions. 89 Fed. Reg. at 39892. First, covered sources can modify their existing boilers to enable or increase gas firing. *Id.* Second, covered sources can connect the facility to the natural gas pipeline transmission network via the construction of a lateral pipeline. *Id.* at 39892-93. Based on EPA's analysis, most of the individual lateral pipelines needed will be less than 15 miles in length. *Id.*

EPA also determined that the costs of adopting 40% gas co-firing were reasonable. *Id.* at 39894. The detailed assumptions underlying its cost assumptions are set forth in Greenhouse Gas Mitigation Measures at 17-19. EPA made its cost assessments based on the fleet of coal plants that existed in 2021 and that do not have known plans to cease operations or convert to gas by 2032, while assuming that each of those units continues to operate at the same level as it operated over 2017-2021. 89 Fed. Reg. at 39894. EPA determined that, on average, the cost of 40% gas co-firing on an annual basis is approximately \$73 per ton of carbon dioxide reduced, or \$13 per megawatt-hour. *Id.* With this cost

information, EPA evaluated a variety of amortization periods and determined that costs are consistent with cost-reasonableness metrics for most sources that will operate past January 1, 2032, and therefore most sources will have an amortization period of at least 2 years and up to 9 years. *Id.* To the extent a particular source has costs of 40 percent co-firing that are fundamentally different from the cost reasonability metrics, EPA explained that a State may consider this fact during the state implementation process. *Id.* at 39836. Based on its detailed cost analysis, alongside the EPA's overall assessment of the costs of this rule, EPA reasonably determined that the costs of gas co-firing are reasonable for the medium-term coal plant subcategory.

Movants fail to show that EPA's 40% gas co-firing determination is unreasonable. Movants argue that most covered sources would need to make boiler modifications and construct natural gas lines to comply with EPA's standard, so EPA's standard is not achievable "for the industry as a whole." Electric Generators Mot. 13 (quoting *Nat'l Lime Ass'n v. EPA*, 627 F.2d 416, 431 (D.C. Cir. 1980)).<sup>31</sup> *National Lime* does not support Movant's position. There, the

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<sup>31</sup> State Movants' challenges to the same EPA determination amount to a series of undeveloped, one-line criticisms. West Virginia Mot. 10. State Movants generally fail to connect these criticisms to the governing legal standards and the Court should deem them waived. *Schneider*, 412 F.3d at 200 n.1. To the extent the Court considers State Movants' criticisms, they should be rejected for the same reasons as Electric Generators' argument.

Court remanded a Section 7411(a) performance standard where EPA had failed to identify and consider variable conditions in the regulated industry that could affect covered sources' ability to meet the relevant standard. *Nat'l Lime*, 627 F.2d at 433. Here, on the contrary, EPA identified the variable conditions and obstacles facing covered sources and explained why they were surmountable. 89 Fed. Reg. at 39892-93. In particular, EPA explained that gas co-firing is a common practice at coal plants, and for the covered sources that currently lack the capacity for gas co-firing, boilers can be modified, and gas lines can be constructed. The Rule here thus did precisely what the Court found to be lacking in *National Lime*.

Properly framed, Movants' argument boils down to a complaint that most sources cannot *presently* meet EPA's standard. This is completely unremarkable. Whenever EPA establishes a new requirement, under any Clean Air Act program, some sources will inevitably have to install or modify controls, or otherwise adjust their operations, to meet the requirement.

Movants make one additional conclusory contention: the Rule provides insufficient time for sources to comply with 40% gas co-firing. Electric Generators Mot. 13. Movants failed to properly develop this argument, and it should therefore be deemed forfeited. *Schneider*, 412 F.3d at 200 n.1. To the extent the Court entertains Movants' argument, EPA reasonably finalized a compliance date of January 1, 2030, which allows sufficient time for covered

sources to modify boilers and construct pipeline, as necessary. As for feasibility work, the Rule assumes 12 months for the pipeline and 6 months for boiler modifications (both to occur over June 2024 to June 2025). 89 Fed. Reg. at 39893. The Rule next assumes permitting and construction of natural gas pipelines would take no more than three years for most sources (June 2026 to June 2029), which is based on a review of 31 recent project timelines. *Id.* at 39893-94. The Rule assumes that the boiler modification could be completed in just over three years (June 2026 to August 2029), which is based on a baseline project schedule developed by Sargent & Lundy. *Id.* Finally, the Rule includes mechanisms that may provide sources additional time, as appropriate. *Id.* at 39960 (one-year compliance date extension); *id.* at 39966-67 (state implementation process). Movants provide no explanation why this reasonable, well-supported compliance timeline is unachievable.

This argument too should be rejected, and the motions denied for failure to establish likelihood of success on the merits.

## **II. Movants have not shown irreparable harm.**

Movants fail to show harm that is “certain and great” and “of such imminence” that there is a “clear and present” need for equitable relief. *Wis. Gas Co. v. FERC*, 758 F.2d 669, 674 (D.C. Cir. 1985). Irreparable harm is “a high

standard,” *Chaplaincy of Full Gospel Churches v. England*, 454 F.3d 290, 297 (D.C. Cir. 2006), that is “critical” to justifying a stay, *Nken*, 556 U.S. at 434.

To start, many of Movants’ harm arguments suffer from two general defects. First, they use the wrong timeframe. Movants must establish irreparable harm that would occur during the pendency of judicial review absent a stay. The relevant timeframe is short because this case can be fully briefed and argued within the next year, with decision shortly after. Merits disposition could even be expedited if necessary to ensure that the decision is not unduly delayed. Trying to widen the Court’s consideration of harms, Movants misleadingly assert, *e.g.*, NRECA Mot. 20, that the Clean Power Plan took seven years to litigate. That counts the entire time between the 2015 promulgation of the Clean Power Plan and the Supreme Court’s 2022 decision in *West Virginia v. EPA*. But that decision was about EPA’s subsequent rule, the Affordable Clean Energy Rule, not the Clean Power Plan itself. It is also speculative to presume Supreme Court review of the primarily factual and record-based issues in this case. The question here is not what harm Movants will suffer over many years to come, but what harm they will suffer in the considerably shorter period that it will take for this Court to resolve these petitions.

Second, many of Movants’ claims of harm conflict with the record. For instance, many asserted harms are premised on Movants’ merits arguments that carbon capture and gas co-firing are infeasible or too expensive—despite EPA’s



contrary record findings. Where Movants' harm arguments are premised on, or intertwined with, their merits arguments, the Court should focus on the agency record and consider the applicable arbitrary-and-capricious standard. 42 U.S.C. § 7607(d)(7)(A), (9). Focusing on the record is particularly appropriate given that Movants were able to participate in the rulemaking through the public comment process. Further, the Court is not well positioned to weigh the credibility of Movants' extra-record declarations against EPA's record findings. Such weighing would elevate the judgment of an unelected federal judiciary lacking the requisite expertise over that of an expert and politically accountable agency that fully evaluated the fact-intensive issues through notice-and-comment rulemaking. *Cf. South Bay United Pentecostal Church v. Newsom*, 140 S. Ct. 1613, 1613-14 (2020) (Roberts, C.J., concurring in denial of application for injunctive relief); *Am. Elec. Power*, 564 U.S. at 428.

Considering the limited period of judicial review and EPA's record findings on the effects of the Rule, Movants have not shown irreparable harm because: (A) the Rule imposes only limited near-term compliance costs on regulated entities; (B) the Rule will not threaten the reliability of the electric grid or cause related harms; and (C) the Rule does not harm States through unreasonable implementation costs or impairments of their sovereignty.

**A. The Rule imposes only minimal near-term compliance costs.**

EPA determined in the record that overall compliance costs are reasonable and, moreover, that only a low portion of the costs must be incurred in the near term. EPA found that the compliance burden for regulated entities in the first two years would be low because the Rule allows long lead times before more stringent standards must be met. Treating the modest near-term compliance costs as irreparable injury would be “inconsistent with [the] characterization of [equitable] relief as an extraordinary remedy.” *Winter v. NRDC*, 555 U.S. 7, 22 (2008).

As to existing coal plants, Movants assert that they will immediately incur significant compliance costs because the Rule’s preamble describes a series of steps toward compliance that begin in June 2024. *E.g.*, NRECA Mot. 20 (quoting 89 Fed. Reg. at 39874). But they ignore the context in which the preamble mentioned that date, which in fact affirmed that sources face only minimal near-term costs. EPA had proposed a 2030 compliance date for long-term coal plants, but EPA received comments requesting that it consider the state plan process in determining the compliance date. 89 Fed. Reg. at 39874. Thus, EPA finalized a 2032 compliance date for long-term coal plants that “does not require substantial work” during the state plan development period from June 2024 to June 2026. *Id.*

EPA determined that compliance date based on a representative project timeline, which EPA developed based on both a typical schedule from expert

engineering firms with extensive carbon capture experience and information available from past carbon capture projects. *Id.*; *supra* Argument I.B.8. The representative timeline is consistent with the schedules achieved by previously completed projects and the schedules planned in engineering and design studies that have been completed for ongoing projects. Greenhouse Gas Mitigation Measures at 46-47.

Under that representative project timeline, only limited feasibility work of less than one year would occur during the state plan development period of June 2024 to June 2026. 89 Fed. Reg. at 39874. That limited work includes initial conceptual design and other preliminary tasks as needed to aid in state plan development. *Id.* EPA determined that coal plants could meet the compliance date even if they defer all other work—including the full-scale front-end engineering design study, permitting, contracts, and land use and right-of-way acquisition—until after the state plan submission deadline in 2026. *Id.* at 39874-75. The same is true for medium-term coal plants, which will need to perform a year of initial feasibility work within the next two years but can otherwise hold off on any work to modify boilers for gas co-firing and to extend gas pipelines. *Id.* at 39893-94. These record judgments by EPA demonstrate that Movants can meet the compliance dates for existing coal plants without taking any steps toward

compliance in the next year. *See* Goffman Decl. (Ex. 1) ¶¶ 11-14, 16. Even after that, they need only take minimal initial steps toward compliance.<sup>32</sup>

EPA’s estimated timelines are “consistent with completed projects” that were “developed in the absence of any regulatory impetus,” and EPA determined that the schedule could even be further condensed. *Id.* at 39875; Greenhouse Gas Mitigation Measures at 43-44 (explaining that “regulatory impetus” tends to “fundamentally shift[]” timing and “tend to accelerate workflows where needed, compared to the timing of prior projects”); *see also Wisconsin*, 938 F.3d at 330 (recognizing that “installation can drag on when companies are unconstrained by the ticking clock of the law,” but “[t]hat does not establish how much time is technically *required* to complete installation”).

Movants cast doubt on EPA’s timeline analysis by asserting, without support, that immediate steps toward compliance are needed due to an anticipated labor and materials supply crunch. *E.g.*, NRECA Mot. 19-20. But EPA explained in the record that sufficient resources and the necessary workforce for carbon capture are readily available. 89 Fed. Reg. at 39877-78; *supra* Argument I.B.8.

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<sup>32</sup> Movants misleadingly cite a longer timeline in a Department of Energy funding opportunity announcement for advanced carbon capture projects. Edison Electric Mot. 20. The purpose of that document was not to determine the time necessary to deploy existing carbon capture technologies, but rather to provide guidance to applicants for funding to demonstrate more advanced technologies or substantial technological improvements. Klembara Decl. ¶¶ 9-12. In fact, projects selected by the program have publicly stated substantially shorter timelines. *Id.* ¶ 11.c.

The cost of the initial feasibility work, which is all that a coal plant would have to complete in the next two years, does not justify a stay. Many sources have already completed feasibility studies for carbon capture because of the tax credit incentives. Greenhouse Gas Mitigation Measures at 43-44 & n.100. For those sources, compliance planning will require little to no additional expenditures over the next two years. *Id.* For other sources, the costs are reasonable because the scope of the work is limited. For the capture component, the initial feasibility work is only a preliminary technical evaluation; for the transport component, the initial feasibility work is only a software exercise; and for storage, a general geologic characterization of regional areas has already been conducted in many cases. *Id.* at 44 n.100; 89 Fed. Reg. at 39874. Movants claim that sources must immediately incur large expenses, but Movants incorrectly include engineering, study, capital, and long-range operating costs that need not be incurred until after the period of judicial review. *E.g.*, NRECA Mot. 4, 19 (claiming costs beyond what is needed for limited feasibility work that EPA determined was necessary in the near term, as well as “astronomical compliance costs” that include costs through 2045, NRECA Mot., McCollam Decl. ¶ 11); Goffman Decl. ¶¶ 17-19.

As to new gas plants, Movants need not incur significant near-term costs, either. Again, that is because of the long lead time allowed in the Rule. The second-phase standard for new base load gas plants has a compliance date of

January 2032, which is a conservative deadline based on high-end, “extended” project timeline estimates and can be met without significant near-term expenditures. 89 Fed. Reg. at 39938. EPA determined that new gas plants will be able to design, plan, and construct a carbon capture system “in a similar amount of time as” projects for coal plants. *Id.* A new gas plant can thus comply without incurring significant costs during the pendency of judicial review. Goffman Decl. ¶ 15; Culligan Decl. (Ex. 2) ¶ 16. Should a new gas plant choose not to begin any immediate steps toward compliance and find itself unable to install the necessary controls by January 2032, the plant may select into a lower-load subcategory and then switch back to the base load subcategory whenever it can meet the more stringent emission standard. 89 Fed. Reg. at 39908.

In sum, the extended compliance dates in the Rule mean that the costs asserted by Movants do not actually need to be incurred in the near term. Over the likely period of judicial review, Movants have not shown that industry compliance costs will be significant enough to justify extraordinary preliminary relief.

**B. The Rule does not threaten grid reliability or cause other related harms, and no alleged harms could occur during the pendency of judicial review.**

Movants argue that the Rule will force coal plants to retire while hindering the development of replacement generation through new base load gas plants, which will threaten grid reliability and cause various other related harms. *E.g.*,

NRECA Mot. 19; Electric Generators Mot. 14. But EPA considered impacts on the energy sector, including grid reliability, as part of its best system analysis. 89 Fed. Reg. at 39886. Those record judgments must be reviewed on the record under an arbitrary-and-capricious standard.

The Rule is cost-reasonable and does not force any coal plant to retire. Some coal plants may choose to retire anyway rather than comply with the Rule's requirements. But even if some coal plants choose to retire, there is nothing in the Rule that would cause a coal plant to choose a retirement date that is sooner than seven years from now, so there would be no near-term harms to the grid. And any retirements would add only incrementally to the existing trend of coal plant retirements, which grid planners are already anticipating. Finally, the standards for new base load gas plants will not threaten reliability because the standards are cost-reasonable and there are various other options for resource adequacy.

The Rule does not force any coal plant retirements. Movants' argument to the contrary relies on their merits argument that carbon capture and gas co-firing are not adequately demonstrated and are too expensive, leaving coal plants with no way to comply with the Rule. *E.g.*, NRECA Mot. 19. But EPA had an ample record to conclude that coal plants can comply at reasonable cost. 89 Fed. Reg. at 39846-87, 39892-96; *supra* Argument Section I.B; Goffman Decl. ¶ 21; *see also* Klembara Decl. (Ex. 5) ¶¶ 6-8. As explained above, where Movants' irreparable

harm argument presumes their success on the merits, the Court should consider the agency's record findings on an arbitrary-and-capricious standard.

EPA has explained in an attached declaration how the record shows that each affected coal plant in the Movant States and in other states will be able to comply with the Rule without being forced to retire. Culligan Decl. ¶¶ 7-11 & addendum. The declaration explains how most coal plants can cost-effectively implement 90% carbon capture or 40% gas co-firing, as applicable. *Id.* Many companies have already taken steps toward carbon capture, and many Movant State officials and companies have lauded carbon capture. *Id.* The declaration also explains that coal plants that cannot meet the requirements are candidates for States to consider imposing less stringent requirements. *Id.* If a coal plant cannot reasonably achieve the presumptive standards because, for example, its carbon capture costs are fundamentally different from what EPA found to be reasonable, or if the plant has other site-specific circumstances that, for instance, make it physically impossible or technically infeasible to install the necessary control equipment, then a State may impose less stringent requirements on that plant. 89 Fed. Reg. at 39845; 40 C.F.R. § 60.24a(e)-(h). The Rule thus does not force any coal plant retirements.

To the extent that some coal plants may nonetheless choose to retire rather than comply with the Rule's requirements, nothing in the Rule would cause a coal



plant to choose a retirement date that is sooner than 2032—well after judicial review is complete. EPA’s modeling does project that some coal plants may choose to retire because they are already at marginal profitability and, with the added cost of controls, however reasonable, they will be outcompeted by other forms of generation. 89 Fed. Reg. at 39899; Goffman Decl. ¶¶ 21-41. These are merely modeling projections, and even if the projections prove accurate, the Rule imposes no requirements other than recordkeeping and reporting requirements on coal plants that choose to retire before 2032. 89 Fed. Reg. at 39842-43; *id.* at 40061-63 (40 C.F.R. § 60.5876b). As such, the Rule imposes no limits on those coal plants’ operational flexibility in the next 7.5 years. Nothing in the Rule would cause a coal plant to choose a retirement date that is sooner than that.<sup>33</sup> Goffman Decl. ¶ 42; Culligan Decl. ¶ 12. Thus, there would be no near-term grid harms.

Moreover, any such coal plant retirements would add only incrementally to the existing trend of coal plant retirements, which is driven by market forces. Data in the record shows that coal-fired power is already in steady decline. 89 Fed. Reg. at 39816. Coal plants now produce less electricity than renewables. Power Sector Trends at 5 & n.5. The record confirms that trend is expected to continue. 89 Fed.

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<sup>33</sup> It is speculative for Movants to claim that any coal plant’s economic decision to retire rather than comply with the Rule is irreversible if Movants were to ultimately prevail on the merits. *E.g.*, Edison Electric Mot. 19. Any retirement plans would still be years away, and a coal plant is not foreclosed from changing its plans in that case. *See* Goffman Decl. ¶ 41.

Reg. at 39817. The coal plant fleet is aging, which makes plants increasingly expensive to maintain and causes them to increasingly operate at a loss. *Id.* at 39817 & n.120; Power Sector Trends at 23, 25. Meanwhile, government incentives for clean energy, increased customer demand for decarbonized energy, and state and voluntary industry emission reduction commitments have accelerated the shift away from coal. 89 Fed. Reg. at 39818-22; Power Sector Trends at 7-18. More than half of coal plants have already announced plans to retire or convert to gas by 2039, and more retirements are expected because of the age of the remaining fleet. 89 Fed. Reg. at 39818-19, 39876; Power Sector Trends at 20-25.

EPA modeled the future of the power sector with and without this Rule. 89 Fed. Reg. at 39822 & n.165; Regulatory Impact Analysis at 3-7 to 3-10; Goffman Decl. ¶¶ 21-41. In the baseline scenario (in other words, even without this Rule), 72% of the remaining coal fleet is expected to retire by 2039. Power Sector Trends at 23-25. Under the baseline, coal generation is projected to fall to 3% of total generation in 2040 and 1% by 2045. Regulatory Impact Analysis at 3-28 to 3-30. Of the remaining coal plants, a large share is projected to apply carbon capture on their own by 2035 because tax credits cover the costs. 89 Fed. Reg. at 39886; Goffman Decl. ¶ 33. Meanwhile, under the baseline, zero-emitting sources will reach 76% of electricity generation by 2040. 89 Fed. Reg. at 39811. Given these trends, EPA determined that this Rule would have only an incremental additional

effect on coal plant retirements. Regulatory Impact Analysis at 3-27 to 3-32; Goffman Decl. ¶¶ 35-41. Movants thus overclaim the grid impacts of the Rule relative to the baseline.<sup>34</sup>

Replacement plans for retiring coal plants are in the works independent of the Rule or its compliance timelines. Rodrigues Decl. (Ex. 4) ¶¶ 17-20; Goffman Decl. ¶ 43. Plus, many industry members are already planning to meet voluntary emission reduction commitments and state emission reduction targets. 89 Fed. Reg. at 39820-22; Power Sector Trends at 9-18; Edison Electric Mot. 22. Movants have not addressed how any incremental additional coal plant retirements that might result from the Rule would disrupt that planning. On the contrary, long-term planning is an ongoing, iterative, and dynamic process that power producers perform in the ordinary course of business. Rodrigues Decl. ¶¶ 4-16. These planning processes consider multiple alternative scenarios that address a range of future possibilities and are updated frequently, often with significant changes. *Id.* And the Rule allows sufficient time to plan for any additional replacement generation that becomes necessary. The Rule allows coal plants that plan to retire without installing controls to continue operating for another 7.5 years. In

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<sup>34</sup> Any impacts on the mining industry, National Mining Mot. 18-19, also primarily result from the already planned retirements and existing economic trends and are not directly caused by the Rule. And any incremental additional effects on the mining industry will occur after the time for judicial review because nothing in the Rule would cause a coal plant to choose a retirement date that is sooner than 2032.

comparison, coal plants have on average announced their retirements only three years in advance, 89 Fed. Reg. at 39876; Goffman Decl. ¶ 42. Thus, there is sufficient time for grid planners to address any incremental additional coal plant retirements that might result from the Rule and ensure, through an orderly planning process, that there will be no threat to grid stability.

The planning costs themselves are not irreparable harm. Electric Generators Mot. 15. Movants already incur planning costs in the ordinary course of business, so those costs do not “directly result” from this Rule and do not justify a stay. *Wis. Gas*, 758 F.2d at 674. Any added replacement generation that may be needed based on the economic decisions that power producers make in light of this Rule will not require significant near-term expenditures. Rodrigues Decl. ¶¶ 8, 21-23. Power producers often identify retirements in their plans before they specifically identify how they will replace the retiring capacity, let alone start investing. *Id.* ¶¶ 8, 23.

Movants are also incorrect that the Rule’s new source standards will disrupt plans for replacement generation and threaten grid reliability by hindering the construction of new gas plants to replace any retiring coal plants. *E.g.*, Electric Generators Mot. 22. They argue that because the performance standards for new base load gas plants are unachievable, they will be forced to operate new gas plants at lower capacity factors and therefore must build twice as many plants to meet

demand. *Id.* at 23. This too devolves to a disagreement with EPA’s record analysis, which shows that the new base load gas plant standards are cost-reasonable and achievable. *Supra* Argument I.B.4, I.B.9; *see also* Culligan Decl. ¶¶ 13-15. The Rule imposes a two-phased standard on new base load gas plants. The first phase is based on highly efficient generation, a technology that has been demonstrated for decades and is cost-reasonable. 89 Fed. Reg. at 39922. The second phase, which is based on carbon capture, is also cost-reasonable and does not require compliance until 2032. That standard will not hinder the construction of new gas plants because with that ample lead time, power producers have more than seven years to plan for, construct, and implement necessary controls. *Id.* at 39932-35.

The Rule will also not threaten grid reliability because, independently of the Rule, companies and States have already identified various options for power other than coal and new base load gas plants. *Id.* at 39937; *see also id.* at 39820-22 (describing “range of strategies” by power producers to reduce greenhouse gas emissions); Power Sector Trends at 9-18. For instance, lower-load gas plants that operate at less than 40% capacity are feasible and economical, especially since many of the retiring coal plants that they might replace have already been running at lower capacity. Culligan Decl. ¶ 18. There is also a portfolio of technology solutions available to power producers to address capacity needs: new generation

and storage resources beyond new base load gas plants, grid expansion and enhancement options, and demand resources. Rodrigues Decl. ¶¶ 24-27; Culligan Decl. ¶ 19.

In any event, EPA specifically considered grid reliability in the rulemaking record and found no threat to the grid, either in the near or long term. 89 Fed. Reg. at 39803, 40011-20; EPA, Resource Adequacy Analysis Technical Support Document (“Resource Adequacy Analysis”) at 1, EPA-HQ-OAR-2023-0072-8916 (Apr. 2024); Goffman Decl. ¶¶ 102-115; *see also* Rodrigues Decl. ¶ 29. Before making this finding, EPA engaged extensively with power companies, grid operators, and energy regulators. 89 Fed. Reg. at 39803; Resource Adequacy Analysis at 1; Goffman Decl. ¶ 113; Rodrigues Decl. ¶ 28. EPA also considered higher electricity-demand scenarios, as well as other EPA rules affecting the power sector. 89 Fed. Reg. at 39803; IPM Sensitivity Runs Memo at 27-28, EPA-HQ-OAR-2023-0072-8917 (Apr. 2024) (explaining sensitivity analysis that modeled future scenarios with higher demand projections and concluded that the Rule’s requirements can still be met).

Maintaining grid reliability will not harm customers through rate increases, either. *E.g.*, NRECA Mot. 21. In fact, EPA’s record analysis projected that the Rule will slightly reduce national average retail electricity rates in 2030 because the Rule results in less investment in pollution controls for retiring coal plants as

compared to the baseline—indicating that there is no immediate harm to customers that justifies a stay. Regulatory Impact Analysis at 3-32 to 3-37. In later years, EPA projects that the Rule will result nationally in marginal rate increases of at most 1%. *Id.*; *see also* Goffman Decl. ¶¶ 116-118; Rodrigues Decl. ¶ 30. Rate increases of that scale, many years from now, do not justify extraordinary and preliminary judicial intervention.

Although EPA's record analysis did not reveal any adverse impacts on reliability, the Rule includes various mechanisms and compliance flexibilities that serve as additional safeguards. A short-term reliability mechanism allows both new and existing sources to operate more flexibly during grid emergencies. 89 Fed. Reg. at 40014-17. A reliability-assurance mechanism allows existing plants that are closing to remain operating for additional time if needed to support reliability. *Id.* at 40017-20. In addition, States may allow existing sources to meet a less stringent standard or longer compliance schedule based on demonstrated source-specific reliability considerations. *Id.* at 39971-73, 40013. States may also provide a compliance-date extension to existing sources that encounter uncontrollable delays in installing control technology, and a similar extension is available for new sources. *Id.* at 39952, 39960. In addition, States can submit a state plan revision if, for instance, an existing coal plant that intended to retire instead needs to be kept online for reliability or if source-specific considerations

justify a longer compliance schedule. *Id.* at 39973, 39999. Independent of the Rule, the Department of Energy has emergency authority to order temporary electricity generation in shortages, and a source following such an order is deemed not to be in violation of environmental requirements. *Id.* at 40012; 16 U.S.C. § 824a(c). For these reasons, any incremental additional coal plant retirements resulting from the Rule will not cause the alleged harms at any point, let alone in the near term.

The Court should bear in mind when considering Movants' request for extraordinary relief that similar prior warnings by industry that environmental regulation will disrupt the electricity supply and harm businesses and customers have not been borne out. Goffman Decl. ¶¶ 48-64; 89 Fed. Reg. at 39813 (explaining that Clean Power Plan targets were met about a decade ahead of time despite stay). Over and over, litigants have forecast grid disruptions leading to economic ruin, but regulated industries have always been able to innovate and adapt—often exceeding environmental standards without the sky falling or the lights going out. Goffman Decl. ¶¶ 48-56. Once a requirement is imposed, industry begins to implement the required controls on a widespread basis, leading to innovation and maturing of the technology, and actual compliance costs are frequently significantly lower than EPA's projections. *Id.* There is no reason to expect anything different here. In fact, the costs of carbon capture are already



declining because of process improvements learned from earlier deployments and other technological advances. 89 Fed. Reg. at 39800; Goffman Decl. ¶ 56.

In sum, Movants have not shown that the Rule will disrupt grid reliability because no coal plant is forced to retire; to the extent any coal plant chooses to retire, nothing in the Rule would cause a coal plant to choose a retirement date that is sooner than 2032; grid planners have time to adjust their existing coal replacement plans for any incremental additional retirements that might result from the Rule; and the new gas standards are achievable and thus do not hinder the development of replacement generation. Because Movants have not proven grid harms, the resulting parade of horrors—such as the dwindling of jobs and tax revenues, decline in productivity, and stagnation of innovation, *e.g.*, NRECA Mot. 21-22—will also not occur. Even more certainly, none of those alleged harms will occur before this Court has a chance to review the Rule and assess EPA’s record on its merits.

**C. The Rule does not impose unreasonable implementation costs on States or irreparably impair their sovereignty.**

State Movants claim a range of harms, but none justifies a stay. They claim that they will be harmed because the Rule disrupts the electric grid and because the Rule will impose additional near-term planning burdens on state energy authorities. State Movants have failed to prove those harms, particularly in the near term, for the reasons explained above in Argument II.B. This section addresses other unique

harms alleged by State Movants. The cost to States of developing state plans, which is the only action that is required of States in the near term, does not qualify as irreparable harm and is limited and reasonable anyway. The Rule does not infringe state sovereignty.

The cost to States of developing plans to implement the emission guidelines categorically does not qualify as irreparable harm. Section 7411(d) requires EPA to issue emission guidelines for existing fossil fuel-fired sources. Whether under this Rule or another issued in its place, States' participation in the planning process is part of the statutory design—not a source of harm to be avoided or repaired. And it is an inherent and foreseeable consequence of the Clean Air Act's basic design that States may devote resources to developing plans to implement the Act's requirements while an EPA rule undergoes judicial review. *Cf. Freedom Holdings, Inc. v. Spitzer*, 408 F.3d 112, 115 (2d Cir. 2005) (“[O]rdinary compliance costs are typically insufficient to constitute irreparable harm.”). Because the Act provides for judicial review during state plan development, 42 U.S.C. § 7607(b)(1), Congress contemplated that States would begin plan development before judicial review is complete. If that fact alone were irreparable harm, then any challenged emission guideline would be subject to a stay, subverting the principle that a stay of an agency action is an extraordinary remedy.

In any case, individual States may still decide not to incur the statutorily anticipated expense. If a State decides to forgo submitting a plan, there are no resulting sanctions. *See* 40 C.F.R. § 60.27a(c); Goffman Decl. ¶ 100. EPA would then take over the regulatory burden by developing a federal plan, 42 U.S.C. § 7411(d)(2)(A), but States would retain the ability to submit their own plan at any time, 89 Fed. Reg. at 40000; Goffman Decl. ¶ 100.

States' plan development costs are limited and reasonable anyway. Goffman Decl. ¶¶ 84-99. State planning under the Rule is no more burdensome, and in fact may be significantly less onerous, than the implementation of Clean Air Act requirements that States have performed for decades. *Contra* West Virginia Mot. 19. States have extensive experience developing implementation plans under the Clean Air Act, including plans that address the very same sources regulated under this Rule. Goffman Decl. ¶¶ 84-94, App. A. States have successfully developed more complex plans under other Clean Air Act programs and requirements. *Id.* Take, for example, State plans for attaining national ambient air quality standards for fine particulate matter. *Id.* ¶¶ 91-92. Those plans regulate multiple pollutants; address not only large stationary sources such as power plants, but also a range of large and small sources across multiple industries; and involve complex, resource-intensive modeling to design effective control strategies. *Id.* In contrast, state plans under this Rule will generally address fewer sources, all of which are of the

same type, and a single air pollutant. *Id.* ¶¶ 88-89. Moreover, States do not need to figure out which sources to regulate, for which pollutants, or the degree of emission limitation that those sources must achieve.

State Movants offer various estimates of the staff and other resources needed to develop state plans. *E.g.*, West Virginia Mot. 19. Many of those estimates are exaggerated, unsubstantiated, and not credible given that States have successfully implemented more complex programs under the Act's cooperative-federalism scheme. *E.g.*, West Virginia Mot. Ex. 28 at 11 (asserting that the Rule would require adding "95 full-time equivalent persons" to a currently 75-person state agency). States' inflated estimates for implementing the Rule also include staff time and resources that States will incur beyond the state plan development period. Goffman Decl. ¶ 97. EPA estimated the state implementation costs as part of the rulemaking and reached a more realistic estimate that the total cost—for *all* States combined—would be just under \$12 million per year for the next three years. EPA, Information Collection Request Supporting Statement at 7-8, EPA-HQ-OAR-2023-0072-8836 (Mar. 2024); Goffman Decl. ¶ 98.

Finally, the Rule does not impair state sovereignty interests. *E.g.*, West Virginia Mot. 20. The Rule appropriately balances federal and state prerogatives, consistent with the Act's cooperative-federalism scheme, and does not improperly limit state sovereignty. *Supra* Argument I.A.2. To the extent that state regulation

of existing sources is subject to EPA direction, that is consistent with the statutory design and is a proper exercise of federal authority under the Supremacy Clause. *See West Virginia*, 597 U.S. at 710; *Gregory v. Ashcroft*, 501 U.S. 452, 460 (1991); *Miss. Comm'n*, 790 F.3d at 174-75. Besides, the Rule allows flexibilities for States in various ways. Goffman Decl. ¶¶ 65-81. For instance, States have an important role to play in particularizing the standard to specific sources when justified by source-specific circumstances. 89 Fed. Reg. at 39962-73; 88 Fed. Reg. at 80511 (recognizing that States may consider, among other things, information that was not available to EPA or facility circumstances that have changed since EPA determined the best system). The Rule also leaves room for States to include various compliance flexibilities in their plans. 89 Fed. Reg. at 39978-89 (averaging, trading, and mass-based compliance). For these reasons, States are not irreparably harmed by the Rule.<sup>35</sup>

### **III. A stay would disserve the public interest.**

Any harm to Movants does not outweigh the harms to the government and the public interest, which merge here. *Nken*, 556 U.S. at 435. Climate change is the nation's most important and urgent environmental challenge. Climate change

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<sup>35</sup> The States' claims of harm to their businesses and residents, *e.g.*, *West Virginia Mot.* 17-18, should be disregarded because States may not raise such *parens patriae* claims against the operation of federal statutes, *Ctr. for Biological Diversity v. DOI*, 563 F.3d 466, 476-77 (D.C. Cir. 2009).

“touches nearly every aspect of public welfare,” causing various adverse health effects and other severe harms, including extreme weather-driven disruptions to the electric grid. 89 Fed. Reg. at 39807-10; *see also Massachusetts*, 549 U.S. at 526 (recognizing “risk of catastrophic harm”); Sarofim Decl. (Ex. 3) ¶¶ 5-22, 28-30.

Fossil fuel-fired power plants are “by far” the largest stationary source emitters of greenhouse gas in this country. 89 Fed. Reg. at 39812. The top five industrial emitters of carbon dioxide, and 81 of the top 100, are fossil fuel-fired power plants. *Id.*; Sarofim Decl. ¶¶ 9, 24. EPA’s Regulatory Impact Analysis projected that the Rule would reduce carbon dioxide emissions by nearly 1.4 billion metric tons systemwide. 89 Fed. Reg. at 40004.

Although the Rule imposes very little near-term burden, a stay could delay the substantial reductions required by the Rule upon full implementation and result in significant and irretrievable additional carbon dioxide emissions. Goffman Decl. ¶ 119. Atmospheric carbon dioxide is cumulative and long-lived, so any added emissions will have long-term consequences. Sarofim Decl. ¶¶ 6-7, 17, 23. For that reason, Movants are incorrect that the extended compliance dates diminish the public interest in avoiding climate harms. *E.g.*, *West Virginia Mot.* 20-21.

Congress’s recent actions show that reducing greenhouse gas pollution is a high priority, and the Court must recognize those congressional judgments in weighing the balance of interests. “[A] court sitting in equity cannot ignore the

judgment of Congress, deliberately expressed in legislation.” *United States v. Oakland Cannabis Buyers’ Co-op.*, 532 U.S. 483, 497 (2001). In the Clean Air Act, Congress directed EPA to address “air pollution which may reasonably be anticipated to endanger public health or welfare.” 42 U.S.C. § 7411(b)(1)(A). In more recent legislation, including the Inflation Reduction Act, Congress has recognized the need to reduce greenhouse gas emissions from the power sector and specifically recognized the role of carbon capture in doing so. *Supra* Background II.E. Indeed, EPA promulgated this Rule using funding that Congress allocated to EPA to use Clean Air Act regulatory authority to reduce greenhouse gas emissions from the power sector. 89 Fed. Reg. at 39901; 42 U.S.C. § 7435(a)(5)-(6). Congress’s clear expression of the public interest is entitled to great weight.

The Rule will reduce power sector carbon dioxide emissions beyond existing regulations and voluntary commitments, which is important to avoiding climate harms. Sarofim Decl. ¶¶ 23-27. Nor does the existing trend of coal plant retirements eliminate the need for further greenhouse gas reductions, *West Virginia Mot. 20*, given the public interest in avoiding every additional increment of carbon dioxide emissions, Sarofim Decl. ¶¶ 23-27.

Movants are wrong that EPA has undermined its claim to the public interest by delaying issuance of the Rule. *West Virginia Mot. 20*. EPA finalized the Rule less than two years after major relevant developments: the 2022 *West Virginia*

decision and the 2022 expansion of the section 45Q tax credit. EPA did so through an extensive rulemaking process that included considering nearly 1.4 million public comments collectively received on the proposed rules. Response to Comments, Foreword at 2.

Finally, Movants argue that the government may not act unlawfully even in furtherance of the public interest. *E.g.*, NRECA Mot. 21 (citing *Ala. Ass'n of Realtors v. HHS*, 594 U.S. 758, 766 (2021)). That argument presupposes Movants' success on the merits and negates the public-interest factor as an independent consideration for granting a stay. Full consideration of the balance of equities demonstrates that a stay is unwarranted.

## CONCLUSION

A stay should be denied.<sup>36</sup>

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<sup>36</sup> If this Court were inclined to grant interim relief, it should stay only the challenged portions of the Rule for which Movants have made the required showings. *See* 89 Fed. Reg. at 39802 (discussing the components of the Rule and explaining that the components are severable); *supra* Background IV (noting that no Movant contests EPA's repeal of the 2019 Affordable Clean Energy Rule).



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### **CERTIFICATE OF COMPLIANCE**

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/s/ Tsuki Hoshijima

### **CERTIFICATE OF SERVICE**

On June 11, 2024, I filed the foregoing using the Court's CM/ECF system, which will electronically serve all counsel of record registered to use the CM/ECF system.

/s/ Tsuki Hoshijima