

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

STATE OF WEST VIRGINIA, et al. )

Petitioners, )

v. )

Case No. 15-1363

UNITED STATES ENVIRONMENTAL )

PROTECTION AGENCY, and REGINA A. )

McCARTHY, Administrator, United States )

Environmental Protection Agency )

Respondents. )

ENERGY & ENVIRONMENT )

LEGAL INSTITUTE )

Petitioner, )

v. )

Case No. 15-398  
(consolidated with No.  
15-1363 and other  
consolidated cases)

UNITED STATES ENVIRONMENTAL )

PROTECTION AGENCY )

Respondent. )

**ENERGY & ENVIRONMENT LEGAL  
INSTITUTE PETITIONERS' RESPONSE  
IN SUPPORT OF MOTIONS TO STAY**

Energy and Environment Legal Institute (EELI), the Petitioner in Case No. 15-1398  
(consolidated under Lead Case No. 15-1363), files this response in support of the six motions to

stay the U.S. Environmental Protection Agency's ("EPA") Final Rule<sup>1</sup> at issue in this case pending completion of judicial review.<sup>2</sup> EELI made several comments during the administrative process on the legal and technical flaws of this rule and its sister rule regarding New Power sources.<sup>3</sup>

Rather than submit its own motion for a stay,<sup>4</sup> EELI submits this Response to support other petitioners' motions and to adduce, through cited exhibits, evidence to the argument that petitioners are likely to prevail on the merits through judicial review of this rule, a critical factor in determining whether a stay should be granted.<sup>5</sup>

The rule at issue here, Carbon Pollution Emission Guidelines for Existing Sources: Electric Generating Units, was developed through a flawed administrative process which included impermissible ex parte communications prior to the Notice of Proposed Rulemaking (NPRM), and a failure on the part of the Environmental Protection Agency to docket into the administrative record available to parties during the notice and comment process, documents necessary to show how the rule was developed.

---

<sup>1</sup> Carbon Pollution Emission Guidelines for Existing Sources: Electric Generating Units, 80 Fed. Reg. 64,662 (October 23, 2015) ("Final Rule").

<sup>2</sup> The six motions were filed by the Chamber of Commerce of the United States of America in Case No. 15-1382 (Doc. No. 1580020), the National Mining Association in Case No. 15-1367 (Doc. No. 1580004), the State of Oklahoma in Case No. 15-1364 (Doc. No. 1580577), the State of North Dakota in Case No. 15-1380 (Doc. No. 1580920), the State of West Virginia in Case No. 15-1363 (Doc. No. 1579999), and the Utility Air Regulatory Group in Case No. 15-1370 (Doc. No. 1580014).

<sup>3</sup> See Comments of Energy & Environment Legal Institute and Free Market Environmental Law Clinic on EPA's Proposed Rule "Standards of Performance for Greenhouse Gas Emissions from New Stationary Sources: Electric Utility Generating Units" which comments noted equally applied to the rule at issue here. EPA-HQ-OAR-2013-0495-3593 and EPA-HQ-OAR-2013-0495-10044

<sup>4</sup> Petitioner notes that it filed its petition for review on 10/30/15, and the petition was then consolidated with existing cases under Case No.15-1363 on 11/2/15. These existing cases were under a Per Curiam order issued 10/29/15, requiring all stay's to be filed by 11/5/15. This order, which predated petitioners filing, made submitting a separate motion for a stay impractical, and thus prompting this Response in Support of existing motions.

<sup>5</sup> The four factors the Court will consider in deciding whether a stay should be granted are (1) the likelihood that the party seeking the stay will prevail on the merits of the appeal; (2) the likelihood that the moving party will be irreparably harmed absent a stay; (3) the prospect that others will be harmed if the Court grants the stay; and (4) the public interest in granting the stay. See *Cuomo v. U.S. Nuclear Regulatory Comm'n*, 772 F.2d 972, 974 (D.C. Cir. 1985).

As this Circuit found in *Home Box Office v. Federal Communications Commission*, 567 F.2d 9 (D.C. Cir. 1977), ex parte communications prior to the NPRM had to be disclosed when these contacts formed the basis of the agency action. Through numerous Freedom of Information Act (FOIA) requests to the Environmental Protection Agency, and other federal agencies, and extensive FOIA litigation, petitioner has gathered documents showing that it was through these undisclosed ex parte contacts that the agency developed the rule it did, one designed to create a standard impossible or economically ruinous for industry to meet. Michael Goo, then EPA's Associate Administrator for the Office of Policy, was tasked with writing the initial memo on EPA's options regarding regulating coal-fired power plants. As the evidence gathered through FOIA litigation shows, Mr. Goo shared his draft options secretly, using his private email, rather than his official, EPA issued email, with high-level staffers at the Sierra Club and the Natural Resource Defense Council, who in turn, also using his non-official account, told him how to draft or alter the policy which EPA would implement in the present rule. See Exhibits A-C.

As the exhibits note, Michael Goo, the EPA staffer tasked with initially drafting the rule at issue, sent from his personal email, on May 6, 2011, his draft of what is entitled the "NSPS Option X" laying out the proposed rule. He received back, also via his personal email, memos from high level staff at the Sierra Club and the National Resource Defense Council which told him how to draft the rule and how to ensure the rule would impossible to meet. "EPA can therefore establish a performance standard for existing plants that is not achievable by any plant nearing the end of its "remaining useful life" as defined by EPA" See Exhibit B.

These interactions were not docketed in the public record when the rule at issue was released as a NPRM for comments. Thus commenters could not know that it was through ex parte contacts that the rule was drafted with third parties with whom Mr. Goo previously worked

prior to joining EPA, and which then lobbied him at EPA on these two rules, to ensure a particular outcome. The failure to properly make this material available in the public docket justifies the vacating of this rule. As this Circuit has noted, the most important data and information must be made available to the public for scrutiny at the proposed rule stage. *See Ass'n of Data Processing Serv. Orgs. v. Bd. of Governors*, 745 F.2d 677 (D.C. Cir. 1984). The failure by the agency to properly undertake the proposed rulemaking process, and provide the public with critical information on how this rule came to be, along with the other reasons presented by petitioners in the motions for stay, show that petitioners are likely to succeed on the merits.

Date: November 11, 2015

Respectfully Submitted,

ENERGY AND ENVIRONMENT  
LEGAL INSTITUTE

By Counsel:



Chaim Mandelbaum  
Free Market Environmental  
Law Clinic  
Litigation Manager  
D.C. Circuit Bar No. 56152  
726 N. Nelson St, Suite 9  
Arlington, VA 22203  
(703) 577-9973  
Chaim12@gmail.com

*Counsel for Petitioner*

**CERTIFICATE OF SERVICE**

I hereby certify that on November 5, 2015, one copy of Energy & Environment Legal Institute Petitioners' Response in Support of Motions to Stay was served electronically through the Court's CM/ECF system on all registered counsel.

Date: November 11, 2015

Respectfully Submitted,

ENERGY AND ENVIRONMENT  
LEGAL INSTITUTE

By Counsel:



Chaim Mandelbaum  
Free Market Environmental  
Law Clinic  
Litigation Manager  
D.C. Circuit Bar No. 56152  
726 N. Nelson St, Suite 9  
Arlington, VA 22203  
(703) 577-9973  
Chaim12@gmail.com

*Counsel for Petitioner*



**From:** michael Goo [Ex. 6 - Personal Privacy]  
**Sent:** Monday, August 19, 2013 2:18 PM  
**To:** goo.michael@epa.gov  
**Subject:** Fw: nsps idea  
**Attach:** NSPS Option X V-J.docx

---

----- Forwarded Message -----

**From:** michael Goo [Ex. 6 - Personal Privacy]  
**To:** john.coequyt@sierraclub.org  
**Sent:** Friday, May 6, 2011 10:25 PM  
**Subject:** Fw: nsps idea

sorry dont use the one in the message use the updated one in the attachment and let me know if you cant open the attachment

----- Forwarded Message -----

**From:** michael Goo [Ex. 6 - Personal Privacy]  
**To:** john.coequyt@sierraclub.org  
**Sent:** Fri, May 6, 2011 9:54:33 AM  
**Subject:** nsps idea

### NSPS Option X

- Set a single<sup>[1]</sup> uniform emission rate or heat rate standard for all Da sources
- Standard would be somewhere in the range of 1600 (with trading) to 2100 (less or no trading) lbs CO<sub>2</sub> per megawatt hour
- Use 2100 lbs CO<sub>2</sub> per MW hour as straw proposal= roughly a heat rate of 10,000
  - o According to CATF guesstimates about 38% of existing capacity and would already meet this standard.
  - o About 28.5% of capacity are units with heat rates between 10,000-10,500 and these represent the outer boundary of units that would attempt to meet the standard through improved efficiency
  - o The total percentage of units that can meet the standard easily without improvements and units that are close to the standard is about 65% of the coal fired fleet.
  - o Units above 10,500 heat rate would constitute about 34% of existing capacity.

o If all units above 10,500 heat rate retire BAU power systems emissions would drop by about 16%.

- BDT for subpart Da would be met by 65% of the units already therefore EPA can argue that it represents BDT.

- All units would be able to meet this standard through conversion to natural gas boilers therefore no unit would be required to shut down to meet the standard. Query whether many units would choose to do so.

- Many units could meet the standard through natural gas co-firing query whether units would choose to do so and at which level---one could adjust the standard level downward to tune the standard to achieve the desired policy outcome and taking natural gas co firing into account. Not all units can natural gas cofire.

- Standard could be made effective anywhere between 2018 and 2025. Use 2020 as a straw proposal.

- Could add a trading module for generation of credits within existing DA or within new and existing Da.

- o Credits would be generated by setting a baseline for all existing sources using their 2008-2010 actual emissions.

- o Sources with 2008-2010 baselines above the 10,000 heat rate could generate credits by emitting below 10,000 (including by shutting down) during the period between rule promulgation and the effective date of the standard (2020)

- o A second tranche of credit generating units could be included---for instance those units with heat rates between 8000 and 10,000. It's not clear what the rationale would be for allowing those units to generate credits and not others. Modeling could help figure out if a second tranche is necessary or advisable.

- Remaining useful life safety valve: Instead of (or in addition to) trading, remaining useful life could be defined in terms of the impact of meeting the standard on a state (or RTO's) average electricity price. If a state determined that the impact of a specific unit meeting the standard would result in an electricity price impact greater than x% (say 2%) then the state could determine that the source in question should not meet the standard.

- State equivalency: Draft model rule allowing states to determine equivalency with this standard looking at all DA units in their state.

- CCS use demonstration provision to allow first 10 GW of CCS

to meet an 1800 lbs CO<sub>2</sub> per MW hour and to generate credit for all generation below that level.

## Draft Deliberative

## NSPS Option for Existing Utilities: Single Emission Rate Approach

## AKA V-J

- Set a single<sup>1</sup> uniform emission rate or heat rate standard for all subpart Da sources.
- Standard would be somewhere in the range of 1600 to 2100 lbs CO<sub>2</sub> per megawatt hour (MW-hr)
- Use 2100 lbs CO<sub>2</sub> per MW-hr as straw proposal= roughly a heat rate of 10,000
  - According to CATF rough projections, about 38% of existing capacity<sup>2</sup> would already meet this standard.
  - About 28.5% of existing capacity<sup>3</sup> is composed of units with heat rates between 10,000- 10,500 and these represent the outer boundary of units that would attempt to meet the standard through improved efficiency.
  - The total percentage of capacity that can meet the standard easily without improvements, plus the units that are close to the standard and would attempt to make changes is about 66.5% of the coal fired fleet.
  - Units above 10,500 heat rate would constitute about 33.5% of existing capacity<sup>4</sup>.
  - If all units above 10,500 heat rate retire as a result of this policy, and the energy produced by those units was replaced with new natural gas, projected BAU power system CO<sub>2</sub> emissions would drop by about 16%.
- BDT for subpart Da would be met by 65% of the existing units already, therefore EPA should be able to argue that a 2100 lbs CO<sub>2</sub> per MW-hr standard meets the legal test as BDT.
- All units would be able to meet this standard through conversion to natural

<sup>1</sup> I believe this same approach could be used under the subcategorization approach being authored by Kevin, using differing efficiency levels.

<sup>2</sup> Or 37% of recent coal fired generation

<sup>3</sup> 28 % of recent coal fired generation

<sup>4</sup> 32% of recent coal fired generation

gas boilers, therefore no unit would be required to shut down to meet the standard. Query whether many units would choose to do so.

- Some units could meet or partially meet the standard through natural gas co-firing. Query whether units would choose to do so and at which level---one could adjust the standard level downward to tune the standard to achieve the desired policy outcome and taking large amounts of natural gas co-firing into account. Not all units can natural gas co-fire. It does not appear that using natural gas co-firing would be economic for a large percentage of the capacity above the 10,000 heat rate.
- The standard could be made effective anywhere between 2018 and 2025. Use 2020 as a straw proposal.
- EPA could add a trading module for generation of credits within existing subpart Da or within new and existing subpart Da as follows
  - Credits would be generated by setting a baseline for all existing sources using their 2008-2010 actual emissions (or 2005-2010).
  - Sources with 2008-2010 baselines above the 10,000 heat rate could generate credits by emitting below 10,000 (including by shutting down) during the period between rule promulgation and the effective date of the standard (2020)
  - A second tranche of credit generating units could be included---for instance those units with heat rates between 8000 and 10,000. It's not clear what the rationale would be for allowing those units to generate credits and not others. Modeling could help figure out if a second tranche is necessary or advisable.
- Remaining useful life safety valve: Instead of (or in addition to) trading, remaining useful life could be defined in terms of the impact of meeting the standard on a state (or RTO's) average electricity price. If a state determined that the impact of a specific unit meeting the standard would result in an electricity price impact greater than x% (say 1%) then the state could determine that the source in question should not meet the standard.
- State equivalency: Draft model rule allowing states to determine equivalency with this standard looking at all Da units in their state.
- CCS---use demonstration provision to allow first 10 GW of CCS to meet an 1800 lbs CO<sub>2</sub> per MW hour and to generate credit for all generation below

that level.

Pros:

- This option provides a “traditional NSPS” approach for establishing standards for this sector that is relatively simple and noncontroversial on its face.
- It should result in retirements of inefficient units (and thus total CO<sub>2</sub> reduction), while allowing units on the margin to make efficiency changes to meet the standard.
- The mechanism is straight-forward and initially appears legally defensible. State equivalency issues will need to be more fully addressed, but should not be a heavy lift for this rule



**From:** michael Goo [Ex. 6 - Personal Privacy]  
**Sent:** Monday, August 19, 2013 2:18 PM  
**To:** goo.michael@epa.gov  
**Subject:** Fw: Memo  
**Attach:** 111d Memo 5.30.doc

---

----- Forwarded Message -----

**From:** John Coequyt <John.Coequyt@sierraclub.org>  
**To:** michael Goo [Ex. 6 - Personal Privacy]  
**Sent:** Tuesday, May 31, 2011 2:33 PM  
**Subject:** Memo

Michael:

First, you might want to change your personal email address, now that you have new job and all.

Attached is a memo I didn't want to send in public.

## Standards of Performance for Existing Sources

**Issue:** Must a standard of performance under Clean Air Act section 111(d) be achievable by every source in a given category?

**Analysis:**

The definition of a “standard of performance” in section 111(a)(1) requires that the standard be “achievable” based on the best “demonstrated” “systems of emission reduction.” It provides:

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

This definition applies to standards for both new and existing sources. See 111(b)(1)(B), 111(d)(1). The statute does not define “achievable,” nor does it state that every existing source in the category must be able to achieve the standard. The term “achievable” is ambiguous and EPA therefore has discretion to adopt its own reasonable interpretation.

The case law makes it clear that when establishing performance standards under section 111 for a given source category, EPA need not set standards that are achievable by every existing source in that category. Performance standards can be technology-forcing:

Recognizing that the Clean Air Act is a technology-forcing statute, we believe EPA does have authority to hold the industry to a standard of improved design and operational advances, so long as there is substantial evidence that such improvements are feasible and will produce the improved performance necessary to meet the standard.

Sierra Club .v Costle, 657 F.2d 298, 364 (D.C. Cir. 1981)(footnote omitted). In fact, for new sources, the D.C. Circuit has held that the standard need not be achievable by *any* existing source. It can go beyond the current state of the art as long as it is a reasonable projection of what will be achievable based on existing technology. *Portland Cement Ass’n v. Ruckelshaus*, 486 F.2d 375, 391 (D.C. Cir. 1973). The court held:

We begin by rejecting the suggestion of the cement manufacturers that the Act's requirement that emission limitations be “adequately demonstrated” necessarily implies that any cement plant now in existence be able to meet the proposed standards. Section 111 looks toward what

may fairly be projected for the regulated future, rather than the state of the art at present, since it is addressed to standards for new plants—old stationary source pollution being controlled through other regulatory authority.

*Id.* The court’s reasoning distinguishes new and old sources, relying on section 111’s focus on new sources for its conclusion that existing sources do not necessarily need to be able to meet the standard.

For existing sources, unlike new sources, it obviously would not be a reasonable interpretation of the statute for EPA to set a standard that no existing plant can achieve. But EPA does have discretion to set a standard under 111(d) that (1) no existing plant is currently achieving, and (2) not every existing plant is capable of achieving. That discretion arises from the ambiguity of the “standard of performance” definition and the language of section 111(d).

Section 111(d) contemplates that the states will implement performance standards for existing sources, and that “[r]egulations of the Administrator under this paragraph shall permit the State in applying a standard of performance to any particular source . . . to take into consideration, among other factors, the remaining useful life of the existing source to which such standard applies.” The statute does not define “remaining useful life,” so EPA has discretion to adopt a reasonable definition. That definition need not be based solely on age; it can also consider factors such as efficiency, capacity factor, investment in pollution controls, etc.

By allowing consideration of the remaining useful life of the existing source, the statute anticipates that some sources will not ultimately meet the standard before they reach the end of their remaining useful life and shut down. EPA has already interpreted 111(d) to authorize states to establish compliance schedules for sources to achieve the standard. 40 CFR 60.24. If states are to phase in compliance for particular sources on a schedule that takes into consideration their remaining useful life “among other factors,” it is a simple matter – and perfectly acceptable under the statute – to allow plants nearing the end of their remaining useful life to operate without achieving the standard and then require them to shut down at the end of that remaining useful life. EPA has already acknowledged this concept in applying the “remaining useful life” provision in the regional haze context. See 40 CFR pt. 51, App. Y, IV.D.STEP 4.k.2(2) (if decision by the facility to shut down affects the BART determination “this date should be assured by a federally- or State-enforceable restriction preventing further operation”); see also 42 U.S.C. §7491(g)(2) (statutory BART factors include “remaining useful life of the source”). EPA can therefore establish a performance standard for existing plants that is not achievable by any plant nearing the end of its “remaining useful life” as defined by EPA.



**From:** michael Goo [Ex. 6 - Personal Privacy]  
**Sent:** Thursday, May 9, 2013 5:01 PM  
**To:** goo.michael@epa.gov  
**Subject:** Fw: Retire v Co-fire  
**Attach:** retire v cofire.docx

---

----- Forwarded Message -----

**From:** "Lashof, Dan" <dlashof@nrdc.org>  
**To:** [Ex. 6 - Michael Goo]  
**Cc:** "Hawkins, Dave" <dhawkins@nrdc.org>; "Doniger, David" <ddoniger@nrdc.org>  
**Sent:** Wednesday, June 8, 2011 6:39 PM  
**Subject:** Retire v Co-fire

Michael

This is a pretty basic analysis, but it makes me even more concerned that a coal-only standard is not likely to achieve significant emission reductions. I'm sending this only to you, Hawkins and Doniger. Attached and pasted below.

-Dan

#### Retire v Co-fire

Start with a moderately inefficient coal plant.

Heat rate: 11,000 Btu/kWh

Emission rate: 2286 lbs/MWh (at national average carbon content of 25.7 kgC/MBtu)

Fuel Cost: \$23.21/MWh (at EIA projected coal cost of \$2.11/MBtu in 2015)

Assume target emission rate is 2100 lbs/MWh.

Option 1: Retire coal plant and replace with efficient natural gas combined cycle (NGCC)

NGCC heat rate: 7200 Btu/KWh

NGCC emission rate: 842 lbs/MWh

Fuel cost operating on gas: \$33.62/MWh (at EIA projected gas cost of \$4.67/MBtu)

Option 2: Co-fire with natural gas in existing boiler, heat rate remains 11,000 Btu/KWh

Emission rate with gas: 1287 lbs/Mbtu

Co-firing percentage required to meet target: 18.6% gas

Fuel cost operating on gas: \$51.37/MWh (at EIA projected gas cost of \$4.67/MBtu)

Average fuel cost: \$28.44/MWh

Observations:

Even though using gas in an NGCC is much more efficient than co-firing gas in the existing coal boiler, the average fuel costs for operating the coal plant co-fired with gas to meet the standard are considerably lower than the fuel costs to run an efficient NGCC (by \$5/MWh). That means that, all other things being equal, it's cheaper to keep the coal plant online and co-fire with gas to meet the standard rather than to retire the coal plant and replace all of its output with increased utilization of NGCC capacity. The comparison is even more favorable to retaining the coal plant if a new gas plant would have to be built to replace the capacity.

In fact, the emission rate standard would have to be lowered by 17% to 1915 lbs/MWh, requiring 37% gas co-firing, to bring the average fuel costs of the coal plant up to \$33.7/MWh, the level required to make it cheaper to retire the coal plant and operate the NGCC, rather than co-fire (see below). It's hard to see how EPA could defend such a standard, which raises the fuel costs of the affected units by almost 50%, or over \$10/MWh [particularly when the same reduction could be achieved by re-dispatching 26% of the coal plants MWhs to NGCC, at an incremental cost of less than \$3/MWh if the standard were structured so that re-dispatch can count toward compliance.]

Assume target emission rate is 1915 lbs/MWh.

Option 1: Retire coal plant and replace with efficient natural gas combined cycle (NGCC)

NGCC heat rate: 7200 Btu/KWh

NGCC emission rate: 842 lbs/MWh

Fuel cost operating on gas: \$33.62/MWh (at EIA projected gas cost of \$4.67/MBtu)

Option 2: Co-fire with natural gas in existing boiler, heat rate remains 11,000 Btu/KWh

Emission rate with gas: 1287 lbs/Mbtu

Co-firing percentage required to meet target: 37.1% gas

Fuel cost operating on gas: \$51.37/MWh (at EIA projected gas cost of \$4.67/MBtu)

Average fuel cost: \$33.66/MWh

Reduce utilization of coal plant, replace MWhs with efficient gas plant

NGCC heat rate: 7200 Btu/KWh

NGCC emission rate: 842 lbs/MWh

Re-dispatch percentage required to meet target: 25.7% gas

Fuel cost operating on gas: \$33.62/MWh

Average fuel cost: \$25.88

Daniel A. Lashof, Ph.D.

Director, NRDC Climate Center  
202-289-6868

Retire v Cofire

Start with a moderately inefficient coal plant.

Heat rate: 11,000 Btu/kWh

Emission rate: 2286 lbs/MWh (at national average carbon content of 25.7 kgC/MBtu)

Fuel Cost: \$23.21/MWh (at EIA projected coal cost of \$2.11/MBtu in 2015)

Assume target emission rate is 2100 lbs/MWh.

Option 1: Retire coal plant and replace with efficient natural gas combined cycle (NGCC)

NGCC heat rate: 7200 Btu/KWh

NGCC emission rate: 842 lbs/MWh

Fuel cost operating on gas: \$33.62/MWh (at EIA projected gas cost of \$4.67/MBtu)

Option 2: Co-fire with natural gas in existing boiler, heat rate remains 11,000 Btu/KWh

Emission rate with gas: 1287 lbs/Mbtu

Co-firing percentage required to meet target: 18.6% gas

Fuel cost operating on gas: \$51.37/MWh (at EIA projected gas cost of \$4.67/MBtu)

Average fuel cost: \$28.44/MWh

Observations:

Even though using gas in an NGCC is much more efficient than co-firing gas in the existing coal boiler, the average fuel costs for operating the coal plant co-fired with gas to meet the standard are considerably lower than the fuel costs to run an efficient NGCC (by \$5/MWh). That means that, all other things being equal, it's cheaper to keep the coal plant online and co-fire with gas to meet the standard rather than to retire the coal plant and replace all of its output with increased utilization of NGCC capacity. The comparison is even more favorable to retaining the coal plant if a new gas plant would have to be built to replace the capacity.

In fact, the emission rate standard would have to be lowered by 17% to 1915 lbs/MWh, requiring 37% gas co-firing, to bring the average fuel costs of the coal plant up to \$33.7/MWh, the level required to make it cheaper to retire the coal plant and operate the NGCC, rather than co-fire (see below). It's hard to see how EPA could defend such a standard, which raises the fuel costs of the affected units by almost 50%, or over \$10/MWh [particularly when the same reduction could be achieved by re-dispatching 26% of the coal plants MWhs to NGCC, at an incremental cost of less than \$3/MWh if the standard were structured so that re-dispatch can count toward compliance.]

Assume target emission rate is 1915 lbs/MWh.

Option 1: Retire coal plant and replace with efficient natural gas combined cycle (NGCC)

NGCC heat rate: 7200 Btu/KWh

NGCC emission rate: 842 lbs/MWh

Fuel cost operating on gas: \$33.62/MWh (at EIA projected gas cost of \$4.67/MBtu)

Option 2: Co-fire with natural gas in existing boiler, heat rate remains 11,000 Btu/KWh

Emission rate with gas: 1287 lbs/Mbtu

Co-firing percentage required to meet target: 37.1% gas

Fuel cost operating on gas: \$51.37/MWh (at EIA projected gas cost of \$4.67/MBtu)

Average fuel cost: \$33.66/MWh

Reduce utilization of coal plant, replace MWhs with efficient gas plant

NGCC heat rate: 7200 Btu/KWh

NGCC emission rate: 842 lbs/MWh

Re-dispatch percentage required to meet target: 25.7% gas

Fuel cost operating on gas: \$33.62/MWh

Average fuel cost: \$25.88