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U.S. Environmental Protection Agency
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**RE: Docket numbers EPA-HQ-OAR-2009-0234 (Utility MACT) and
EPA-HQ-OAR-2011-0044 (Boiler NSPS)**

The American Clean Skies Foundation (ACSF) is a non-profit organization founded to advance America's energy independence and promote measures to achieve a cleaner environment through the expanded use of natural gas, renewable energy and energy efficiency. On May 3, 2011, EPA issued a proposed rule (the "Proposed Rule") that addresses: (1) hazardous air pollutants from coal- and oil-fired electric utility steam generating units (the "Utility MACT" portion of the proposal), and (2) the new source performance standards for fossil-fuel-fired electric utility and industrial-commercial-institutional steam generating units (the "Boiler NSPS" portion of the proposal). ACSF has provided input on a variety of EPA and related rulemakings, and considers this MACT and NSPS rulemaking critical for achieving national public health goals by reducing large amounts of toxic air pollution.¹

A. Summary of Comments

ACSF supports reducing hazardous air pollutant emissions from power plants. The Proposed Rule notes that power plants "are by far the largest U.S. anthropogenic sources" of mercury emissions, and almost all of these mercury emissions are from coal-fired power plants.² Regulating these emissions is critical as mercury and other toxic air emissions from coal-fired power plants cause significant public health and environmental problems. Mercury is a potent neurotoxin known to reduce the cognitive

¹ ACSF has also commented on EPA's proposed tightening of smog standards, and as well as EPA's "transport rule" for the control of power plant emissions that drift across state lines and cause smog, acid rain and various harms to human health in downwind states. In each case, ACSF has supported practical and effective approaches to cleaning the air and improving public health, including the increased use of natural gas and renewable energy to reduce power sector emissions. ACSF has also issued a detailed white paper, *Growing the Market for Clean Power: The EPA's New Power Plant Regulations and What They Mean for Utilities and Public Health* (2010). For information on these and other related technical analyses by ACSF, see <http://www.cleanskies.org/>.

² 76 FR 24977.

functioning of young children. EPA has found that approximately seven percent of women of child-bearing age are exposed to mercury “at a level capable of causing adverse effects in the developing fetus.”³

Other hazardous air pollutants controlled by the Proposed Rule also have harmful health impacts that include both chronic and acute health disorders involving the lungs, nervous system, and kidneys, and several of these pollutants cause cancer.⁴ EPA notes that as a result of controlling these emissions and the co-benefits, “many premature deaths from exposure to air pollution will be avoided by the application of controls that are well-known, broadly applied, and available.”⁵

In contrast to coal-fired power plants, natural gas plants emit no mercury and a negligible amount of the other hazardous air pollutants targeted for reductions from the power sector. Accordingly, switching from coal-fueled power generating electricity to generation from natural gas or renewable energy can achieve substantial reductions in toxic air emissions. Moreover, numerous modern, low-emitting, high-efficiency natural gas combined cycle plants (NGCC) are available today, with significant unused capacity, to replace existing coal-fired generation.⁶ Dramatically expanded U.S. natural gas reserves and infrastructure have reduced gas price volatility and provide the opportunity to cost effectively expand the use of natural gas in the United States, including for power generation.⁷

³ 76 FR 24978.

⁴ 76 FR 24978. A report prepared for the American Lung Association notes that acid gases such as hydrogen chloride and hydrogen fluoride emitted by coal power plants are “strongly corrosive acids” that can restrict the airways of people with asthma and “damage tissue of the eyes, nasal passages and lungs.” As an example of adverse impacts, the report notes a recent major children’s study found also acid gases and particulate pollution were associated with reduced lung function, and a similar study involving 13,000 children in 24 U.S. and Canadian cities found comparable impacts associated with bronchitis, reduced lung function and asthma. See Environmental Health & Engineering, *Emissions of Hazardous Air Pollutants from Coal-fired Power Plants* (March 7, 2011), prepared for the American Lung Association, available at <http://www.lungusa.org/assets/documents/healthy-air/coal-fired-plant-hazards.pdf>.

⁵ 76 FR 24979.

⁶ See e.g., Congressional Research Service, *Displacing Coal with Generation from Existing Natural Gas-Fired Power Plants* (2010), available at http://assets.opencrs.com/rpts/R41027_20100119.pdf. See also, Massachusetts Institute of Technology Energy Initiative, *The Future of Natural Gas* (June 2011) at page 2, a report for which funding was contributed, in part, by ACSF and available at <http://www.cleanskies.org/>; Deutsche Bank Group, *Natural Gas and Renewables: A Secure Low Carbon Future Energy Plan for the United States* (November, 2010), available at <http://www.dbcca.com/dbcca/EN/media/NaturalGasAndRenewables.pdf>.

⁷ See e.g., the American Clean Skies Foundation and Bipartisan Policy Center, *Task Force on Ensuring Stable Natural Gas Markets* (2011), executive summary at pp. 7-13, available at <http://www.cleanskies.org/>.

Despite the foregoing facts, EPA inaccurately states that fuel-switching to gas is more expensive than “other retrofit options available.”⁸ However, in making this comparison, EPA focuses on only one type of fuel-switching: converting existing coal boilers to burn natural gas, which results in a loss in boiler efficiency. A more logical option is that utilities will compare the expensive retrofits facing coal plants versus retiring the aging plants and either (1) using *existing*, high-efficiency natural gas generation, or (2) building new NGCC at the location of retired coal plants (or at new sites that can serve the same load). EPA’s analysis also ignores the possibility of co-firing natural gas in coal or oil-fired boilers as a compliance option.

ACSF has assessed scenarios regarding when it becomes more economical to use gas generation versus retrofit coal plants. ACSF has found that the break-even gas price for increasing the use of existing NGCC versus retrofitting coal plants with a scrubber and SCR is on average approximately \$6/MMBtu (in other words, at gas prices below this level, it is more economical to retire the coal plant and increase gas use versus retrofit the coal plant). And the breakeven price for building *new* NGCC (which could be done at the site of a retired coal plant), is \$5.50/MMBtu.⁹ Thus, using the natural gas prices EPA assumes in its fuel-switching analysis (\$5.74/MMBtu), increasing the use of *existing* NGCC is the economical choice, and building new NGCC is at virtual parity.¹⁰ Whereas EPA considered a natural gas fuel switching option that reduced the efficiency of the generating unit, NGCC offers *improved* efficiency, thus improving the economics of fuel switching to natural gas. And the economics of using natural gas are better (versus retrofitting coal plants) if one considers additional costs that may be imposed on coal-fired power plants under other EPA regulatory initiatives.

In view of the above, given prior judicial precedent,¹¹ ACSF urges EPA to use this docket to issue specific guidance and to indicate in the preamble to the utility MACT final rule that fuel switching to natural gas is a means to comply with the utility MACT standard. This guidance should clarify how the various types of fuel switching to natural gas can allow either coal or oil-fired units to comply with the MACT standard, including through the four fuel-switching options mentioned above: (1) converting existing coal boilers to use natural gas, (2) retiring coal plants and building new natural gas generation

⁸ 76 FR 25046, citing the EPA Technical Support Document, *Coal-to-Gas Conversion (C2G)* (March 4, 2011). EPA finds coal to gas retrofits more expensive than other retrofit options based on fuel prices of coal at \$2.13 and natural gas at \$5.74 lb/MMBtu. This is despite the capital and O&M costs of the coal-to-gas retrofits being less expensive than other options.

⁹ See Joel N. Swisher, *The Business Case for Integrating Clean Energy Resources to Replace Coal* (June 2011), pp. 10-14, available at www.cleanskies.org.

¹⁰ Regarding EPA’s assumed natural gas price of \$5.74/MMBtu, see the *Coal-to-Gas Conversion* technical support document, *supra*, p. 2. It should also be recognized that Dr. Swisher’s analysis only assumed the installation of scrubbers and SCRs, but if additional controls on coal plants are required to address the utility MACT or other EPA rules (such as to address coal ash and cooling water issues), it can actually become more economical to shutter old coal plants and build new combined cycle gas plants.

¹¹ See *Nat’l Lime Ass’n v. EPA*, 233 F.3d 625, 635 (D.C. Cir. 2000)(finding that EPA had to consider fuel switching to natural gas as part of the MACT process).

(either at the same location or a new location), (3) increased co-firing with natural gas, and (4) simply increasing the use of existing, underutilized natural gas power plants.

Taking existing coal or oil-fired units and increasing the use of natural gas (e.g., either through a boiler conversion, repowering with new NGCC on-site, or co-firing with natural gas), can fit squarely within the MACT regulatory framework. Furthermore, retiring a coal plant and using either existing NGCC or building new gas generation (even if at a new location) can significantly reduce emissions and eliminates the need for the retired coal plant to undertake costly retrofits to comply with the MACT standards.¹²

To reduce toxic air emissions from power plants, ACSF also suggests the following to EPA regarding the Proposed Rule:

1. The Proposed Rule can and should promote the orderly retirement of old, high-emitting power plants.
2. The utility MACT should not be weakened for fear that retiring aging coal power plants will cause reliability concerns, because readily-available, cleaner natural gas generation can provide replacement power.
3. An extra year for compliance with the MACT standard should only be granted where warranted, such as when necessary for converting boilers to cleaner generation.
4. Output-based standards in the NSPS portion of the proposed rule are appropriate.
5. The proposed PM and opacity exemptions for natural gas are appropriate, as is the option to integrate combustion turbines and/or fuel cells with steam generating units to reduce emissions.

The Clean Air Act amendments of 1990 squarely put the regulation of toxic air emissions from power plants on the regulatory agenda. After over 20 years of studying these emissions and false starts, EPA should not further delay controlling these harmful emissions. ACSF urges EPA to promptly promulgate a final rule in conformity with the points made in these comments, to promote the important human health and environmental concerns that underlie the Proposed Rule.

B. Discussion

1. The Proposed Rule can and should promote the orderly retirement of old, high-emitting power plants.

It is widely recognized that the current fleet of coal-fired power plants includes many old, uncontrolled, inefficient units that lack up-to-date and effective controls for hazardous emissions. Many of these units are slated to retire. In fact, over 20 gigawatts (GW) of coal-fired generation have been

¹² With respect to co-firing with natural gas, EPA notes that "For the oil-fired subcategory, we did not include data obtained from EGUs co-firing natural gas in the existing-source MACT floor analysis because those emissions are not representative of EGUs firing 100 percent fuel oil." 76 FR 25045. EPA should clarify in guidance that co-firing with natural gas can reduce the emissions of either coal or oil-fired units and may be an effective means of compliance.

recently announced for retirement.¹³ However, current regulatory provisions do not always sufficiently promote utility planning for these retirements, causing some in the utility sector to delay action and then raise concerns regarding perceived threats to electric system reliability that would not otherwise exist if more advance planning had been done.

In the Proposed Rule, EPA recognized that “Although most RTOs/ISOs only require 90-day notifications for retirements, construction schedules for all but the simplest retrofits will be longer, so sources should be able to notify their RTOs of their retirements earlier.”¹⁴ To provide an incentive for early planning, EPA said that it “encourages State environmental regulators to consider the extent to which a utility engages in early planning when making a decision regarding granting a 4th year for compliance” with the Utility MACT.¹⁵

ACSF supports EPA’s approach of encouraging utilities to engage in early planning and to timely announce the retirements of the oldest and highest-emitting power plants in the fleet. Notifications of only 90 days are clearly inadequate, and waiting so long maximizes the chance that a reliability issues may occur, rather than minimizing it.

EPA finds that “the expected number of retirements is less than many have predicted and that these can be managed effectively with existing tools and processes for ensuring continued grid reliability,” and that industry “has adequate resources to install the necessary controls and develop the modest new capacity required within the compliance schedule provided for” under the MACT provisions.¹⁶ ACSF agrees with these statements. And numerous studies have found that no reliability crisis is likely to result from the application of EPA rules, in particular the Utility MACT.¹⁷

Comments from Exelon Corporation, one of the nation’s largest utilities, reveal that utilities can plan, and have planned, to meet the utility MACT requirements:

¹³ Matthew Most, *Natural Gas for Power Generation*, presentation for conference on EPA power sector regulation co-sponsored by the Edison Electric Institute and the American Bar Association (May 17th, 2011), p. 14.

¹⁴ 76 FR 25056.

¹⁵ 76 FR 25057.

¹⁶ 76 FR 25054.

¹⁷ See e.g., M.J. Bradley & Associates, *Ensuring a Clean, Modern Electric Generating Fleet while Maintaining Electric System Reliability* (June 2011) available at <http://www.mjbradley.com>; Deutsche Bank report, *supra*, p. 5 (the total industry costs of the new fuel mix, including increased natural gas use, brought about by pending EPA regulations “are manageable, due in large measure to an improvement in utilization of already built natural gas plants”); Credit Suisse, *Growth from Subtraction: Impact of EPA Rules on Power Markets* (September 23, 2010), p. 45, available at http://epw.senate.gov/public/index.cfm?FuseAction=Files.View&FileStore_id=b42de70d-b814-4410-831d-34b180846a19 (constructing replacement generation for coal power plant retirements that may result from proposed EPA air regulations is “not totally onerous in a historical context” based on the amount of natural gas generation that has been built in the past).

While some companies want to delay the rules hoping to squeeze a few more years of profit from plants that have no pollution controls, many companies have already made pollution control investments and are prepared to work with EPA. The deadlines are no surprise to any of us. When President Bush signed the Clean Air Act amendments in 1990, the entire industry knew that EPA was moving towards establishing federal standards for toxic pollutants like mercury, selenium, arsenic, and hydrochloric and sulfuric acid from power plants.¹⁸

EPA should continue to promote common-sense utility planning, by encouraging State environmental regulators to consider the extent to which a utility engages in such planning when making a decision regarding granting a 4th year for compliance with the utility MACT. Furthermore, EPA should consider the role of appropriate utility planning in any related permitting actions or consent decrees or similar agreements which EPA concludes with power generators.

2. The utility MACT should not be weakened for fear that retiring aging coal plants will cause reliability concerns, because readily-available, cleaner natural gas generation can provide replacement power.

Unlike coal, natural gas emits no mercury. And compared to other fossil fuels used to generate electricity, natural gas emits dramatically lower amounts of other hazardous air pollutants (“HAPs” or “air toxics”). In fact, has EPA found that for natural gas-fired power plants, regulation of HAP emissions “is not appropriate or necessary because the impacts due to HAP emissions from such units are negligible.”¹⁹

Furthermore, EPA recognizes that “Fuel switching to natural gas is an option that would reduce HAP emissions.”²⁰ Fuel switching can take several forms, including: (1) converting existing coal boilers to use natural gas, (2) retiring coal plants and building new natural gas generation (either at the same location or a new location), (3) increased co-firing with natural gas, and (4) simply increasing the use of existing, underutilized natural gas power plants.

This fuel switching to natural gas is made more feasible by the fact that dramatically expanded U.S. natural gas reserves and infrastructure have reduced gas price volatility and are projected to make natural gas affordable for the foreseeable future. The EPA Regulatory Impact Analysis (RIA) for the Proposed Rule includes projections that natural gas prices are not expected to exceed their 2008 levels

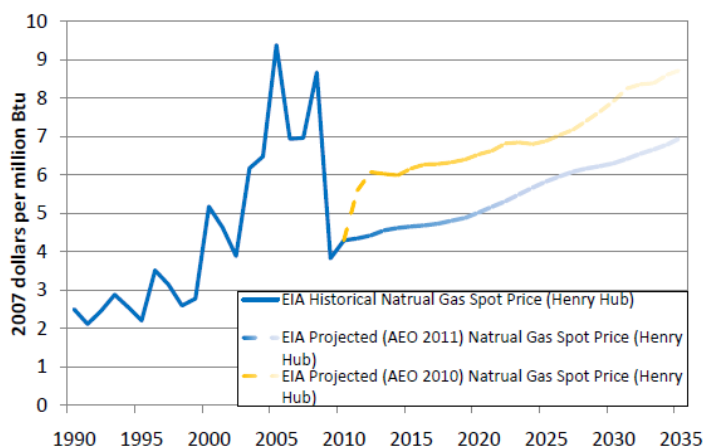
¹⁸ Bruce Alexander, Environmental Regulatory Strategy Director, Exelon Corporation, prepared remarks submitted on May 24, 2011 as part of an EPA hearing on the Proposed Rule held in Philadelphia, Pennsylvania, available at http://www.exeloncorp.com/assets/newsroom/speeches/docs/speech_Alexander_PhilEPAHearing_110524.pdf.

¹⁹ 76 FR 24985.

²⁰ 76 FR 25046.

through 2035.²¹ This analysis also shows the impact that increased natural gas supply has had in reducing natural gas prices in just one year (from the 2010 Annual Energy Outlook to the 2011 Annual Energy Outlook of the Energy Information Agency)(see Figure 1 immediately below). EPA projects that the proposed MACT standard would increase power sector-delivered natural gas prices by only about 1% percent from 2015-2030.²² This is a negligible increase and shows the ability of natural gas to provide fuel to power plants without dramatically increasing natural gas prices.

Figure 1:



Source: EIA

Together with the Bipartisan Policy Center, ACSF recently completed a widely-reported study on the implications of new natural gas supply projections for gas use by power plants and other industrial users. The study was adopted unanimously by a task force that represented natural gas producers and distributors, consumer groups and large industrial users, as well as independent experts, state regulatory commissions and environmental groups. The study found that abundant natural gas supplies, coupled with increased storage and import capability, as well as the ability to use long-term contracts and hedging arrangements, provide for a stable natural gas price horizon and the opportunity to expand its use in the United States.²³

Renewable energy also provides opportunities to reduce power sector emissions. However, intermittent sources of renewable energy (such as wind and solar power) require back-up generation to balance the loads they serve (e.g., for times when the wind stops blowing or the sun stops shining). If this load balancing is provided by coal, rather than gas-fired power, renewables may actually increase

²¹ Regulatory Impact Analysis, p. 7-16.

²² 76 FR 25073.

²³ See ACSF and Bipartisan Policy Center report, *supra*, and <http://www.cleanskies.org/?publication=task-force-on-ensuring-stable-natural-gas-markets>.

the pollution that EPA is trying to reduce.²⁴ That is why it is important for renewables to be matched with appropriate, “fast start” clean generators which do not off-set the environmental advantages they provide. Highly efficient natural gas can provide this load balancing. Another recent report released by ACSF highlights the interrelationship between the oldest, least-efficient, uncontrolled coal-fired power plants and renewable energy:

Extending the life of out-of-compliance coal plants, by retrofitting or delaying environmental enforcement, will impede the flexibility needed to integrate an increasing share of renewable generation. It would also impose unnecessary economic, environmental and/or health costs.²⁵

This second ACSF report also notes that gas-fired capacity can provide the flexibility needed to integrate a portfolio of clean energy resources and enable substantial reductions in local and regional pollution. Although directly promoting renewable energy such as wind and solar is outside the scope of this utility MACT and NSPS rulemaking, the point is this: numerous reports have shown that concerns regarding increased natural gas use – or the more strident concerns regarding electric system reliability – are unfounded.²⁶

Reducing some measure of coal-fired generation (e.g., by retiring the oldest, uncontrolled units in the fleet), and increasing the use of natural gas, will require planning by utilities. And, as noted above, ACSF believes that early utility planning should be incentivized through this rulemaking. But alternatives to higher emitting coal-fired generation exist, and unfounded concerns regarding natural gas supply and grid reliability should not cloud EPA’s analysis of the Proposed Rule or cause the MACT limits to be weakened.

In particular, EPA must take into account recent studies, such as the second ACSF report *supra*, and MIT’s June *The Future of Natural Gas* report,²⁷ showing that available gas-fired generation capacity exists in most regions of the U.S. to replace much of the out-of-compliance coal-fired capacity that may retire under the EPA’s proposed rules.

This ACSF report found that in 2008, combined cycle gas turbine (CCGT) plants operated with only a 33% capacity factor. If only the more efficient group of CCGT plants, with a heat rate of 9,000 Btu/kWh, were operated at 60% of capacity (still below full capacity) instead of at 33%, ACSF’s report indicates that could replace up to 60,000 MW of out-of-compliance base load units that may be retired.

²⁴ See Bentek Energy LLC, *How Less Became More: Wind, Power and Unintended Consequences in the Colorado Energy Market* (April 16, 2010), p. 76.

²⁵ See Joel N. Swisher, *The Business Case for Integrating Clean Energy Resources to Replace Coal*, *supra*, p. 25.

²⁶ See e.g., the ACSF and Bipartisan Policy Center report, and footnote 17, *supra*.

²⁷ See MIT report, *supra* note 6.

The geographic distribution of this available CCGT capacity is rather well aligned with the location of most vulnerable coal-fired units. See Figure 2 below.²⁸

Figure 2

Geographic Distributions, by NERC Region, of Available CCGT Generation and Coal-Fired Generation Vulnerable to Retirement

NERC Region	A. 2008 CCGT Total Annual Generation (million MWh)	B. Potential Additional Generation (million MWh)	C. Equivalent Baseload Capacity (thousand MW) of B. Potential Additional Generation	D. Potential Retired Coal Generation Capacity (thousand MW)	E. Production during 2008 (million MWh) from D. Potential Retired Coal Generation Capacity
ERCOT	114	36	5.1	4.8	21
FRCC	86	22	3.1	1.6	7
MRO	6	18	2.5	4.2	18
NPCC	72	32	4.5	7.1	31
RFC	56	108	15.4	16.9	74
SERC	86	121	17.2	21.7	95
SPP	39	35	5.0	1.9	8
WECC	187	59	8.4	8.6	37
Total:	648	430	61.4	66.9	292

- A. 2008 CCGT Total Annual Generation (million MWh): The energy generated by CCGT units
- B. Potential Additional Generation (million MWh): Additional energy that could be generated each year if CCGT units with heat rates below 9000 Btu/kWh were operated at 60% capacity factor.
- C. Equivalent Baseload Capacity (thousand MW) of B. Potential Additional Generation: The amount of baseload capacity (assuming 80% capacity factor) that would be needed to produce the same amount of energy as B., the incremental energy that could be generated by operating the CCGT units with heat rates below 9000 Btu/kWh at 60% capacity factor.
- D. Potential Retired Coal Generation Capacity (thousand MW): Estimated out-of-compliance coal-fired capacity that is vulnerable to retirement.
- E. Production during 2008 (million MWh) from D. Potential Retired Coal Generation Capacity: The energy generated by D. the out-of-compliance coal-fired capacity that is vulnerable to retirement.

²⁸ See generally, *The Business Case for Integrating Clean Energy Resources to Replace Coal*, pp. 11-12. CCGT is another way of referring to natural gas combined cycle power plants.

The MIT report also found that there is sufficient surplus NGCC capacity to displace roughly one-third of U.S. coal generation.²⁹ According to MIT, substitution of this NGCC capacity would reduce CO₂ emissions from the power sector by 20% and yield a major contribution to the control of criteria pollutants. MIT found that the greatest opportunities for substituting unused NGCC capacity exists in the PJM region (mid-Atlantic) although significant opportunities also exist in ERCOT (Texas) and other electric reliability regions.³⁰

3. EPA made unsupported factual assumptions in rejecting natural gas as a compliance option and EPA should promote the use of cleaner generation such as that fueled by natural gas.

Under the Clean Air Act MACT provisions, EPA must require “the maximum degree of reduction” in hazardous air pollutants that EPA “taking into consideration the cost of achieving such emission reduction, and any non-air quality health and environmental impacts and energy requirements, determines is achievable.”³¹ Congress specified that eligible compliance options include “process changes, substitution of materials or other modifications.”³² This requirement is called a “beyond-the-floor” requirement because it requires EPA to consider regulatory options that are more stringent than the minimum “floor” emission control requirements that EPA must set based on the performance of existing units.

EPA acknowledges “fuel switching to natural gas is a potential regulatory option.”³³ However, in the Proposed Rule EPA then summarily overstates the difficulties in fuel switching to natural gas and then dismisses natural gas as a beyond-the-floor option. The record should be corrected; this will allow sources to better evaluate fuel switching. Furthermore, EPA should consider how it can promote the use of natural gas based on the “beyond the floor” requirements. In particular, EPA should more accurately address the following issues raised in its “beyond the floor” and related analysis.

a. Natural gas supply is widely available throughout the United States.

In the Proposed Rule, EPA states that “Natural gas pipelines are not available in all regions of the U.S., and natural gas may not be available as a fuel for many EGUs.”³⁴ EPA’s statement that natural gas is not available in all regions of the United States lacks foundation, and is contradicted by EPA’s own data. More specifically, EPA as part of this rulemaking undertook an analysis for every coal boiler in the U.S. to “determine the miles and associated cost of extending pipeline laterals from each boiler to the

²⁹ *Id.*, p. 86.

³⁰ *Id.*, pp. 82-84.

³¹ Clean Air Act Section 112(d)(2).

³² *Id.*

³³ 76 FR 25048.

³⁴ 76 FR 25046.

interstate natural gas pipeline system.” Significantly, this study found that the median connection length is only approximately 26 miles and the median incremental cost is only approximately \$14 million.³⁵ Given that environmental retrofits for coal plants may cost hundreds of millions of dollars, \$14 million for the median cost of a new gas lateral connection is comparatively minor. Furthermore, EPA may have used various assumptions that could overstate the length and cost of these new gas interconnections, and EPA should continue to assess its assumptions to determine whether it has overstated these costs.

Furthermore, EPA’s statement that natural gas may not be available for “many” power plants could create a misimpression that natural gas is not widely available. EPA should correct the record. For instance, in addition to EPA’s own data referenced above, the Department of Energy has found that that natural gas lines can “deliver fuel to power plants in most locations in the lower 48 states.”³⁶ EPA’s own data and DOE’s statement recognizes that a robust natural gas distribution system crosses the United States – a significant, national energy infrastructure asset – and it is often feasible to build a lateral extension to power plants where direct gas lines do not currently exist.

b. Abundant supplies of natural gas exist, and natural gas is not subject to routine curtailment, even in times of peak energy use.

The Proposed Rule misleadingly states that “even where pipelines provide access to natural gas, supplies of natural gas may not be adequate, especially during peak demand (e.g., the heating season).”³⁷ Natural gas supply shortages and curtailment is not a routine occurrence. The development of shale gas has vastly increased onshore gas production in multiple geographic areas, which virtually eliminates concerns regarding gulf-coast hurricanes temporarily disrupting supply. EPA seems to have failed to notice that vast shale-gas reserves have been widely recognized as a “game changer” for U.S. energy supplies, providing over a 100-year supply at current consumption levels, and allowing for increased natural gas use in the power sector.³⁸ Additionally, gas storage capacity has greatly increased over the last few years.³⁹ Additionally, the nation’s already robust gas distribution system has been enhanced to meet demand, and pipeline owners and the FERC have been responsive to the need for

³⁵ See EPA, *Documentation Supplement for EPA Base Case v4.10_PTOx - Updates for Proposed Rule* (March 2011)(pp. 27-31), available at <http://www.epa.gov/airmarkt/progsregs/epa-ipm/docs/suppdoc.pdf>.

³⁶ DOE, *National Electric Transmission Congestion Study* (2009), p. 24, available at http://congestion09.anl.gov/documents/docs/Congestion_Study_2009.pdf.

³⁷ 76 FR 25046.

³⁸ For instance the EIA has recognized that shale gas “enables growth in U.S. reserves, production, and consumption” and “reduces projected gas prices.” See EIA, *Shale Gas: A Game Changer for U.S. and Global Gas Markets?* (2010), available at <http://www.eia.gov/ncic/speeches/newell030210.pdf>.

³⁹ See the ACSF/Bipartisan Policy Center report, *supra*, pp. 43-45, noting that in 2009, total U.S. natural gas storage reached nearly 20 percent of the annual market, a new high both in absolute and percentage terms.

additional pipeline capacity to bring new gas to market.⁴⁰ While it is possible that unforeseen emergencies may create temporary curtailment, these types of emergencies are manageable, and not different from other energy delivery issues that can occasionally occur, such as major electric power outages.

c. EPA's fuel-switching analysis fails to adequately consider fuel-switching options.

EPA inaccurately states that fuel-switching to gas is more expensive than "other retrofit options available."⁴¹ However, in making this comparison, EPA focuses on only one type of fuel-switching: converting existing coal boilers to burn natural gas, which results in a loss in boiler efficiency. A more logical option is that utilities will compare the expensive retrofits facing coal plants versus retiring the aging plants and either (1) using *existing*, high-efficiency natural gas generation, or (2) building new NGCC at the location of retired coal plants (or at new sites that can serve the same load). EPA's analysis also ignores the possibility of co-firing natural gas in coal or oil-fired boilers as a compliance option.

ACSF has assessed scenarios regarding when it becomes more economical to use gas generation versus retrofit coal plants. ACSF has found that the break-even gas price for increasing the use of existing NGCC versus retrofitting coal plants with a scrubber and SCR is on average approximately \$6/MMBtu (in other words, at gas prices below this level, it is more economical to retire the coal plant and increase gas use versus retrofit the coal plant). And the breakeven price for building *new* NGCC (which could be done at the site of a retired coal plant), is \$5.50/MMBtu.⁴² Thus, using the natural gas prices EPA assumes in its fuel-switching analysis (\$5.74/MMBtu), increasing the use of *existing* NGCC is the economical choice, and building new NGCC is at virtual parity.⁴³ Whereas EPA considered a natural gas fuel switching option that reduced the efficiency of the generating unit, NGCC offers *improved* efficiency, thus improving the economics of fuel switching to natural gas.

⁴⁰ See e.g., the ACSF/Bipartisan Policy Center report, *supra*, pp. 46-48, noting that over the last five years, FERC has approved approximately 9,000 miles of new pipeline construction.

⁴¹ See 76 FR 25046, citing the EPA Technical Support Document, *Coal-to-Gas Conversion (C2G)*, *supra*. EPA finds coal to gas retrofits 4 to 22 more expensive than other retrofit options based on fuel prices of coal at 2.13 and natural gas at 5.74 lb/MMBTU. This is despite the capital and O&M costs of the coal-to-gas retrofits being less expensive than other options.

⁴² See Joel N. Swisher, *The Business Case for Integrating Clean Energy Resources to Replace Coal*, *supra*. This analysis of fuel-switching assumes a heat rate of approximately 11,750 for older coal-plants targeted for retirement.

⁴³ Regarding EPA's assumed natural gas price of \$5.74/MMBtu, see the *Coal-to-Gas Conversion* technical support document, *supra*, p. 2. It should also be recognized that Dr. Swisher's analysis only assumed the installation of scrubbers and SCRs, but if additional controls on coal plants are required (such as to address coal ash and cooling water issues), it actually becomes more economical to shutter old coal plants and build new combined cycle gas plants.

EPA only succeeds in ruling out fuel-switching to natural gas by (1) only examining one type of fuel switching, and (2) ignoring the impacts of other EPA rules that have been proposed or are under development. At a minimum, EPA should correct the record in this MACT rulemaking and the limits of EPA's analysis acknowledged, so that utilities and the public can better evaluate the benefits of fuel switching, and so that EPA can more fully explore the regulatory implications of these fuel-switching options. EPA has made strides to consider the MACT and NSPS holistically for power plants, but EPA fails to consider the impacts of its other pending rules on this fuel-switching analysis.

d. EPA provides no support for its position that “non-air” impacts are a drawback to fuel-switching to natural gas.

EPA asserts that “uncertainties” associated with non-air quality health and environmental impacts “also argue against determining that fuel switching is [a] reasonable beyond-the-floor option.”⁴⁴ However, no foundation for this statement was identified in the preamble to the Proposed Rule. Moreover, natural gas does not involve issues as complex as those associated with nuclear waste disposal, the risks associated with nuclear accidents, the environmental damage caused by mountaintop mining for coal, the technical complexity of offshore deepwater oil drilling, or even the need for significant new high-voltage long-distance transmission and extremely large land footprints (up to thousands of acres for a single facility) needed for utility-scale renewable energy. And various state and federal regulations already regulate the natural gas industry. ACSF encourages ongoing operational excellence among natural gas producers. But, based on the record compiled by EPA, “non-air” issues do not provide a reasonable basis for EPA to discourage fuel switching from coal to natural gas.

e. Natural gas prices are not more volatile than for other comparable commodities.

Though not strictly part of EPA's “beyond the floor” analysis, EPA's Regulatory Impact Analysis also creates a misimpression by stating that “The natural gas market in the United States has historically experienced significant price volatility from year to year, between seasons within a year, and can even undergo major price swings during short-lived weather events.”⁴⁵ Simply put, natural gas prices today are not inherently more volatile than other comparable commodities, and the United States—given the abundance of natural gas—is likely to experience significantly less volatility than in the past. Indeed, as noted above, ACSF and the Bipartisan Policy Center have jointly commissioned an entire report that demonstrates why natural gas price volatility occurred in the prior decades (including due to the federal government discouraging production), and why these concerns are less likely to occur in the foreseeable future. These reasons include: an enhanced resource base due to shale gas, improved drilling technology, improved storage and delivery infrastructure, and the elimination of government price control that artificially constrained production. Furthermore, coal prices have experienced similar

⁴⁴ 76 FR 25048.

⁴⁵ Regulatory Impact Analysis, p. 7-15.

volatility in the past, and have been widely reported to be facing upward price pressure due to the export of coal to meet Asian demand.⁴⁶

f. *Because EPA has insufficient basis for rejecting natural gas as a beyond-the-floor option, it should consider how it can promote the use of natural gas.*

As noted above, EPA recognizes that “fuel switching to natural gas is an option” to control emissions under the power plant MACT. Furthermore, the Federal Court with jurisdiction over EPA rules has explicitly found that EPA must consider “switching to natural gas” as a means to reduce hazardous air pollutant emissions, and the court cited a document specifically referencing the ability of natural gas to reduce air toxics from power plants.⁴⁷

Taking into account the foregoing (including the foregoing documentary evidence on the potential scope for fuel shifting) there are several options EPA should pursue. First, EPA should issue guidance – and indicate in the preamble to the utility MACT final rule – that fuel switching is a means to comply with this MACT standard. This guidance should clarify how the various types of fuel switching to natural gas can allow either coal or oil-fired units to comply with the MACT standard, including through the four re-powering options mentioned above: (1) converting existing coal boilers to use natural gas, (2) retiring coal plants and building new natural gas generation (either at the same location or a new location), (3) increased co-firing with natural gas, and (4) simply increasing the use of existing, underutilized natural gas power plants. Taking existing coal or oil-fired units and increasing the use of natural gas (e.g., either through a boiler conversion, repowering with new NGCC on-site, or co-firing with natural gas), can fit squarely within the MACT regulatory framework. Furthermore, retiring a coal plant and using either existing NGCC or building new gas generation (even if at a new location) can significantly reduce emissions and eliminates the need for the retired coal plant to undertake costly retrofits to comply with the MACT standards.⁴⁸

Second, EPA should provide an extra year for compliance if fuel-switching to natural gas is elected as a compliance option at a power plant as further discussed below.

⁴⁶ See generally the ASCF/ Bipartisan Policy Center report, *supra*, regarding the reasons for reduced natural gas price volatility, and page 25 therein for a graphical representation of natural gas and coal price variability from 1995 through 2010.

⁴⁷ See *Nat'l Lime Ass'n v. EPA*, 233 F.3d 625, 635 (D.C. Cir. 2000).

⁴⁸ With respect to co-firing with natural gas, EPA notes that “For the oil-fired subcategory, we did not include data obtained from EGUs co-firing natural gas in the existing-source MACT floor analysis because those emissions are not representative of EGUs firing 100 percent fuel oil.” 76 FR 25045. EPA should clarify in guidance that co-firing with natural gas can reduce the emissions of either coal or oil-fired units and may be an effective means of compliance.

EPA's proposed MACT rule provides no basis for concluding that the type of fuel-switching options outlined above are not a "reasonable approach."⁴⁹ Accordingly, natural gas should be considered, *on a case-by-case basis*, as a potential MACT beyond-the-floor requirement for all *new* fossil power plants, where the record demonstrates that using natural gas may be feasible and would reduce HAP emissions. This would allow weighing the costs and benefits of natural gas as a beyond-the-floor technology in individual circumstances.

For a newly proposed fossil electric generating unit, the MACT "floor" standards would set the minimum emission requirements, and natural gas could be pursued if the additional emission reductions that could be obtained are found to be cost-effective. Put another way, new fossil plants where natural gas is available could be considered as a "subcategory" for MACT standard-setting purposes. EPA, as part of issuing its "standard" for these types of new units could require the consideration of one aspect of the permitting (fuel type) on a case-by-case basis.

The case-by-case consideration of alternative fuels should remain limited to types of alternative fossil fuel-fired electric generating units that generate a similar product—e.g., non-intermittent electric power that can be generated from the same site footprint as proposed by the permit applicant.⁵⁰ Setting a MACT floor for the regulated HAPs for coal and oil-fired units and then requiring a case-by-case review if natural gas is available as an alternative fuel is consistent with the MACT regulatory structure. Consideration of this approach could be undertaken through a supplemental notice of proposed rulemaking following finalization of the Proposed Rule (and, therefore, need not delay finalization of the Utility MACT standards).

4. An extra year for compliance with the MACT standard should only be granted where warranted, such as when necessary for converting boilers to cleaner generation.

The default compliance time for a MACT standard is 3 years, with EPA (or states with delegated permitting authority) able to grant a 1-year extension "on a case-by-case basis, if such additional time is necessary for the installation of controls."⁵¹ EPA suggests that States consider applying the 1-year extension "both to the installation of add on controls ... and the construction of on-site replacement

⁴⁹ In the Proposed Rule, EPA states (at 46 FR 25049) that "even if we determined that natural gas supplies were available in all regions, we would still not adopt this fuel switching option because it would effectively prohibit new construction of coal-fired EGUs and we do not think that is a reasonable approach to regulating HAP emissions from EGUs." EPA provides no support for this conclusion and it is belied by the evidence addressed in this submission.

⁵⁰ Thus, stand alone intermittent renewable energy (as compared to dispatchable renewable electricity that is backed by gas co-located storage NGCC or other sources) should not be considered as a beyond-the-floor alternative, because it would not provide on-demand power (e.g., power isn't generated when the sun isn't shining or the wind isn't blowing), and it generally cannot be generated from the same site location (utility-scale renewable energy often requires thousands of acres). By comparison, fossil power, whether coal, gas or oil, can provide reliable, on-demand power (and each of these sources do not involve the extreme capital costs and risks of nuclear power).

⁵¹ See CAA Section 112(i)(3) and 76 FR 25054.

power (e.g., a case when a coal unit is being shut down and the capacity is being replaced on-site by another cleaner unit such as a combined cycle or simple cycle gas turbine.”⁵²

ACSF believes that, where necessary, granting a one-year for fuel conversions to gas is appropriate. This extension should apply to either building new on-site replacement power such as NGCC, as well as to projects that convert existing boilers to combust cleaner fuels such as natural gas. But a one-year extension should only be granted when necessary. Significant regulatory flexibility provided in the rule, such as emission averaging, may eliminate the need for an extra year where fuel conversions are not pursued.

Furthermore, there are many things that utilities can do to achieve compliance within the mandated time frame. First, various sources have suggested that controls can be installed within the 3-year time frame. For instance, Exelon Corporation has said regarding the Boiler MACT that “We know we can install controls in three years because many plants have already done it in that timeframe.”⁵³

Second, existing, high-efficiency natural gas combined cycle units are underutilized and can immediately increase generation, allowing for older, uncontrolled coal plants to be retired. Various analysts have found that switching more generation to underutilized natural gas plants in place of higher emitting coal-fired facilities can enable utilities to provide reliable power while reducing pollution.⁵⁴ This can be done without an extension of the MACT regulatory time frame. For instance, MIT has found that increased utilization of existing NGCC plants provides a relatively “low-cost short-term opportunity” to reduce power sector pollution (including mercury, NO_x, SO₂ and PM) “with minimal additional capital investment in generation and no new technology requirements.” In fact, MIT has found there is sufficient surplus NGCC capacity to displace “roughly one-third of U.S. coal generation.”⁵⁵

Third, various sources have shown that new natural gas generation can be built within the mandated 3-4 year time frame, particularly if planning begins in a timely fashion. ACSF does believe a 1-year extension can be appropriate when a utility is undertaking a technically complex project, such as converting an existing coal-fired boiler to burn natural gas or building new NGCC, but only where the utility has (1) timely gone about such action, and (2) can demonstrate that such action does in fact require an extra year to comply.⁵⁶

⁵² 76 FR 25055.

⁵³ Bruce Alexander, Environmental Regulatory Strategy Director, Exelon Corporation, prepared remarks submitted on May 24, 2011 as part of an EPA hearing on the Proposed Rule held in Philadelphia, Pennsylvania.

⁵⁴ See e.g., the Congressional Research Service, Massachusetts Institute of Technology, and Deutsche Bank Group reports, referenced *supra*.

⁵⁵ See e.g., Massachusetts Institute of Technology, *supra*, at pages 2 and 86.

⁵⁶ EPA also requested comment on its proposal to allow the 1-year extension for the “installation of controls” where needed for the installation of replacement power. See 76 FR 25055. ACSF agrees with EPA’s proposal that the “installation of controls” should be interpreted broadly and can include the installation of replacement power.

5. Output-based standards in the NSPS portion of the proposed rule are warranted.

This NSPS, included in the same proposed rulemaking with the MACT standard, amends the PM, SO₂ and NO_x limits for steam generating units built or modified after publication of the proposal in the Federal Register.⁵⁷ EPA notes that it has “to the extent that it is practical and reasonable to do so adopted a fuel and technology neutral approach and ... expressed the proposed emission limits on an output basis.”⁵⁸ Further, this approach “provides owners/operators of affected facilities an incentive to carefully consider fuel use, boiler type, and control technology in planning for new units so as to use the most effective combination of add-on control technologies, *clean fuels*, and boiler design based on the circumstances to meet the emission standards.”⁵⁹ ACSF supports this output based approach which encourages the use of fuels, such as natural gas, that can generate electricity more efficiently while also reducing emissions.

6. The proposed PM and opacity exemptions for natural gas are appropriate, as is the option to integrate combustion turbines and/or fuel cells with steam generating units to reduce emissions.

EPA proposes to “harmonize all of the steam generating unit NSPS by exempting all steam generating units combusting natural gas ... from PM standards and exempting all steam generating units burning natural gas from opacity standards.”⁶⁰ ACSF supports these exemptions for clean-burning natural gas.

The specific language in the Clean Air Act MACT provisions do not limit this phrase to conventional add-on, end-of-stack emission control equipment. Indeed, the Clean Air Act provisions that set the MACT standards specifically require a broad consideration of methods to “reduce” or “control” emissions, including “process changes” and the “substitution of materials or other modifications.” See Clean Air Act Section 112(d)(2). And EPA has already acknowledged that these MACT provisions require the consideration of natural gas. See 76 FR 25048 (“Fuel switching to natural gas is a potential regulatory option”). Moreover, EPA has broadly considered the use of emission control measures to include the use of cleaner fuels such as natural gas in other contexts under the Clean Air Act. For instance, the statutory definition of “best available control technology” specifically includes “clean fuels” as a type of control technology. See the BACT definition at CAA 169(3). Moreover, the BACT definition references clean fuels as a control technology in language that is nearly identical to that used in the Section 112 MACT provisions (referencing “processes, methods, systems, or techniques” to reduce emissions). Accordingly, switching to a clean fuel (including via replacement power) should qualify as the installation of controls for the purposes of this 1-year extension.

⁵⁷ 76 FR 25061.

⁵⁸ 76 FR 25062.

⁵⁹ 76 FR 25062 (emphasis added).

⁶⁰ 76 FR 25062.

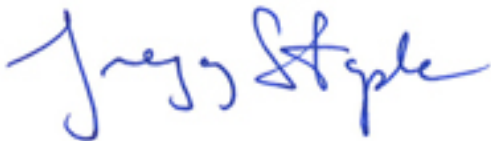
EPA also says in the Proposed Rule that “to provide additional flexibility and recognize the environmental benefit of efficient production of electricity we are proposing to expand the definition of the affected facility under 40 CFR part 60, subpart Da, to include integrated CTs and fuel cells.”⁶¹ ACSF agrees that it is appropriate to provide the *option* for regulated entities to integrate fuel cells and/or combustion turbines into the definition of steam generating unit for the permitting of a particular unit, which appears to be the intent of EPA. Obviously, due to their small HAP emissions, generally neither fuel cells nor combustion turbines should be regulated under the MACT standard. However, *if* the owner or operator of an otherwise regulated unit elects to connect through piping either a fuel cell or CT with a steam boiler, and use the waste heat from such fuel cell or CT to make the boiler more efficient, and *if* such owner/operator elects to have them considered as an integrated unit for compliance purposes, then doing so is reasonable. In addition to making a boiler more efficient, the natural gas used to fuel combustion turbines and fuel cells can lower the overall emission profile of the boiler, resulting in generation that is lower emitting on a per megawatt basis.

C. Conclusion

Increasing the use of natural gas in generating electricity can provide both immediate and long-term reductions of hazardous air pollutant emissions. EPA should recognize the ability of natural gas to provide dramatic emission reductions and promote the use of natural gas to achieve those reductions.

It has been 20 years since the 1990 Clean Air Act amendments squarely put toxic air emissions from power plants on the regulatory agenda, and EPA should not delay in controlling these harmful emissions. ACSF urges EPA to promptly promulgate a final rule in conformity with the above points, to promote the important human health and environmental concerns that underlie the Proposed Rule.

Sincerely,



Gregory C. Staple
Chief Executive Officer
American Clean Skies Foundation

⁶¹ 76 FR 25062, 25070.