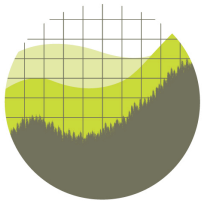

Institute *for*
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November 28, 2011

Environmental Protection Agency
Mailcode: 2822T
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Washington, DC 20460

Office of Information and Regulatory Affairs,
Office of Management and Budget (OMB)
Attn: Desk Officer for EPA, 725 17th St., NW.
Washington, DC 20503

Attention: Docket No. EPA-HQ-OAR-2010-0750

To Whom it May Concern:

The Institute for Policy Integrity at New York University ("IPI") respectfully submits this comment in response to the Environmental Protection Agency ("EPA") Proposed Rule, "New Source Performance Standards Review for Nitric Acid Plants" ("Proposed Rule").[1]

EPA began the New Source Performance Standards ("NSPS") review process for nitric acid plants in order to comply with a consent decree entered into with the Sierra Club and the Environmental Integrity Project. In anticipation of the rulemaking process, IPI submitted comments in June 2011 urging EPA, first, to establish a nitrogen oxide emissions level that maximizes benefits by engaging in a cost-benefit analysis as part of the rule's review and revision; second, to include nitrous oxide as a regulated pollutant in the new NSPS; and, third, to consider implementing a flexible compliance program when regulating nitrous oxide.

Without any explanation, the Proposed Rule implements none of these suggestions. Accordingly, IPI renews several of these arguments in the sections that follow. In Part I, IPI explains that EPA's failure to consider the marginal costs and benefits of the Proposed Rule results in a standard that may not maximize net benefits. In Part II, IPI urges EPA to revise the Proposed Rule to include nitrous oxide as a regulated pollutant. Failure to do so would likely be arbitrary and capricious, and would conflict with the statutory guidelines for regulating additional pollutants emitted from already listed sources. Finally, in Part III, IPI argues that EPA must also regulate emissions of nitrous oxide from existing sources.

**Background**

IPI is a non-partisan think tank dedicated to improving the quality of government decisionmaking through advocacy and scholarship in the fields of administrative law, cost-benefit analysis, and public policy.

Congress passed the Clean Air Act ("CAA") in 1963 and amended it in 1970 to include an NSPS program for categories of sources that significantly contribute to air pollution that endangers

[1] 76 Fed. Reg. 63,878 (Oct. 14, 2011).

public health or welfare.[2] In 1971, EPA listed nitric acid plants as a category of sources requiring regulation under 42 U.S.C. § 7411, CAA Section 111, and promulgated such "standards of performance" for nitrogen oxide ("$NO_X$") air pollutants.[3] The current nitric acid NSPS regulations are applicable to any plant constructed or modified after August 17, 1971.[4]

Under the CAA, EPA must review and, if necessary, revise the NSPS every eight years.[5] EPA has not reviewed the standards of performance for nitric acid plants since 1984,[6] and has not revised or otherwise updated the substantive emissions standard for $NO_X$ since the initial promulgation of the NSPS in 1971, nearly forty years ago. This lack of action recently prompted the Sierra Club and the Environmental Integrity Project to sue EPA to compel it to revise the NSPS. Ultimately, the parties entered into a consent decree, which stipulates that EPA will revise the NSPS for nitric acid plants or make a determination under CAA Section 111(b)(1)(B) that no such revision is necessary.[7] EPA issued a Notice of Proposed Rulemaking ("NPRM") in October 2011.[8] The Proposed Rule revises the $NO_X$ emissions limit from 3.0 pounds of $NO_X$ per ton of nitric acid produced to 0.50 pounds of $NO_X$ per ton of nitric acid produced and proposes additional monitoring and reporting requirements.

In addition to emitting $NO_X$ air pollutants, the process of producing nitric acid also releases significant quantities of nitrous oxide ("$N_2O$").[9] In 2009, nitric acid production emitted eighty-eight percent of all industrial $N_2O$ emissions[10]—the equivalent of the annual greenhouse gas

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[2] *See* Clean Air Act Amendments of 1970, Pub. L. No. 91-604, 84 Stat. 1683 (codified as amended at 42 U.S.C. § 7401 *et seq.*).

[3] Part 60—Standards of Performance for New Stationary Sources, 36 Fed. Reg. 24,876, 24,876 (Dec. 23, 1971).

[4] Standards of Performance for Nitric Acid Plants, 40 C.F.R. § 60.70(b) (2010). Currently, the performance standards for nitric acid plants stipulate that "no owner or operator subject to the provisions of this subpart shall cause to be discharged into the atmosphere from any affected facility any gases" containing either $NO_X$ in excess of 1.5 kg per metric ton (or 3 lb per ton) or exhibiting ten percent opacity, or greater. 40 C.F.R. §§ 60.72(a)(1)–(2).

[5] Clean Air Act, 42 U.S.C. § 7411(b)(1)(B) (2010).

[6] Review of Standards of Performance for New Stationary Sources; Nitric Acid Plants, 49 Fed. Reg. 13,654 (Apr. 1984). Prior to 1984, EPA conducted one other review in 1979. Review of Standards of Performance for New Stationary Sources; Nitric Acid Plants, 44 Fed. Reg. 35,265 (June 19, 1979). Neither of these reviews resulted in any significant revisions to the nitric acid NSPS.

[7] EPA agreed to, by November 2010, "sign and submit for publication in the Federal Register one or a combination of the following: (a) A proposed rule containing revisions to NSPS Subpart G pursuant to CAA 111(b)(1)(B); and/or (b) a proposed and/or final determination under CAA 111(b)(1)(B) not to revise NSPS Subpart G." Proposed Consent Decree, 74 Fed. Reg. 58,954 (Nov. 16, 2009).

[8] ENVIRONMENTAL PROTECTION AGENCY RULEMAKING GATEWAY, http://yosemite.epa.gov/opei/RuleGate.nsf/byRIN/2060-AQ10 (last visited Nov. 10, 2011).

[9] The amount of $N_2O$ is a function of "combustion conditions in the oxidizing unit, catalyst compositions, catalyst age, and burner design." ENVIRONMENTAL PROTECTION AGENCY, AVAILABLE AND EMERGING TECHNOLOGIES FOR REDUCING GREENHOUSE GAS EMISSIONS FROM THE NITRIC ACID PRODUCTION INDUSTRY 7 (2010), *available at* http://www.epa.gov/nsr/ghgdocs/nitricacid.pdf.

[10] For EPA analysis, $N_2O$ is treated as having 310 times the global warming potential ("GWP") of carbon dioxide when normalized over 100 years. ENVIRONMENTAL PROTECTION AGENCY, U.S. ADIPIC ACID AND NITRIC ACID N2O EMISSIONS 1990-2020: INVENTORIES, PROJECTIONS AND OPPORTUNITIES FOR REDUCTIONS 1 (2001), *available at* http://www.epa.gov/nitrousoxide/pdfs/adipic_nitric_n20.pdf. Part of the reason that $N_2O$ has such a high GWP is its long atmospheric lifetime relative to $CO_2$ (120 years). ENVIRONMENTAL PROTECTION AGENCY, AVAILABLE AND EMERGING TECHNOLOGIES, *supra* note 9, at 2.9, at 2. In 2009, nitric acid plants emitted approximately 47 Gg of $N_2O$, or 14.6 Tg

("GHG") emissions from 2.6 million cars.[11] The Proposed Rule, however, fails to set a standard of performance for $N_2O$. The Rule states only that some $NO_X$ control technologies are also effective at controlling $N_2O$ and recommends that owners and operators "consider" installing such technologies. The Proposed Rule also explains, "[w]e expect any controls applied to control $NO_X$ emissions would not preclude installing cost effective $N_2O$ control technologies in the future."[12] Although the EPA acknowledges the existence of $N_2O$ emissions from nitric acid plants and refers to cost effective ways to control the emissions, it only hints at the possibility of $N_2O$ regulation and provides no explanation of why it decided against regulating this powerful GHG.

## I. The Proposed Revised $NO_X$ Performance Standard Fails to Maximize Net Benefits

According to the EPA's analysis, the change in the performance standard from 3.0 pounds of NOx per ton of nitric acid produced to 0.50 pounds of NOx per ton of nitric acid will result in no additional costs for nitric acid producers.[13] New monitoring requirements will cost an average of forty-five dollars per ton.[14] The revised performance standard, however, may result in little to no emission reductions "because the majority of control systems installed on future affected facilities would likely result in emissions at or below the proposed emissions limit even in the absence of these proposed revisions."[15] Considering only average costs of reduced emissions, EPA set a revised standard without taking into account whether further net benefits might be achieved by a more stringent rule.

White House policy instructs agencies to base their significant regulations on an evaluation of costs and benefits, unless prohibited by statute.[16] Section 111 of the CAA does not prohibit—and, in fact, encourages—careful consideration of the benefits and costs of performance standards. Section 111(a)(1) defines the term "standard of performance" as "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 . . .* ) the Administrator determines has been adequately demonstrated."[17] This definition explicitly directs EPA to balance emissions reduction goals (i.e., "achiev[e] . . . the best system of emission reduction") with costs (i.e., "tak[e] into account the costs"). While courts have determined that this language does not

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equivalent of carbon dioxide ("Tg $CO_2$ Eq."). ENVIRONMENTAL PROTECTION AGENCY, 2011 U.S. GREENHOUSE GAS INVENTORY REPORT: INDUSTRIAL PROCESSES, http://www.epa.gov/climatechange/emissions/downloads11/US-GHG-Inventory-2011-Chapter-4-Industrial-Processes.pdf (last visited Nov. 10, 2011).

[11] Cars emit 5.5 metric tons $CO_2$ Eq./yr.; therefore, 14.6 Tg $CO_2$ Eq. = 2.6 million cars. EPA, EMISSIONS FACTS: GREENHOUSE GAS EMISSIONS FROM A TYPICAL PASSENGER VEHICLE, http://www.epa.gov/otaq/climate/420f05004.htm (last visited Nov. 10, 2011).

[12] Proposed Rule, 76 Fed. Reg. at 63,880.

[13] Proposed Rule, 76 Fed. Reg. at 63,885.

[14] Proposed Rule, 76 Fed. Reg. at 63,886.

[15] Proposed Rule, 76 Fed. Reg. at 63,885.

[16] Exec. Order No. 12866 Section 1(a), 58 Fed. Reg. 51,735 (Sept. 30, 1993); Exec. Order No. 13563 Section 1(b), 76 Fed. Reg. 3,821 (Jan. 18, 2011) (stipulating that agencies must "propose or adopt a regulation only upon a reasoned determination that its benefits justify its costs (recognizing that some benefits and costs are difficult to quantify)").

[17] Clean Air Act, 42 U.S.C. § 7411(a)(1) (2006) (emphasis added).

*mandate* that EPA ultimately base its determination on a formal cost-benefit analysis, they have stated, "because Congress did not assign the specific weight the Administrator should accord each of these factors, the Administrator is free to exercise his discretion in this area."[18] Given EPA discretion, statutory instructions, and executive orders, the agency should use a cost-benefit analysis to develop its nitric acid performance standards.

Moreover, the use of cost-benefit analysis advances EPA's general policy goals. Regulation should maximize social welfare, and cost-benefit analysis is the best tool that agencies can use to achieve that end.[19] An additional benefit of implementing a cost-benefit analysis in this case is that agency accessibility will be increased. Cost-benefit analysis, since it demands a level of transparency in regulatory decisionmaking, allows the public to more fully understand the policy choices of agency actors.

Any revisions to the nitric acid plant NSPS can and should be based on a cost-benefit analysis that takes into account the costs of implementing the newest and best technologies for $NO_X$ emissions as well as the benefits of continued reduction and regulation of $NO_X$ pollutants. Specifically, EPA should set the performance standard at a rate for which the marginal cost of increasing pollution control equals the marginal benefit of increasing control.

## A. Benefits of a More Stringent Standard May Outweigh Costs

*Benefits of $NO_X$ Regulation*

The primary benefit of the current NSPS for nitric acid plants is reduction of the negative environmental and public health and welfare impacts of $NO_X$ air pollution. Since EPA promulgated the 1971 standard, there is an increased scientific understanding of the adverse health effects of particulate matter and ground-level ozone, for which $NO_X$ is a precursor.[20] Because it is now known that the potential for harm resulting from $NO_X$ emissions is greater than previously thought, there is a correspondingly greater benefit to EPA's heightened regulation of such emissions.

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[18] New York v. Reilly, 969 F.2d 1147, 1150 (D.C. Cir. 1992). This position is also consistent with recent Supreme Court decisions. *See, e.g.*, Entergy v. Riverkeeper, 129 S. Ct. 1498, 1510 (2009) ("[W]hether it is 'reasonable' to bear a particular cost can very well depend on the resulting benefits."). *See also* INSTITUTE FOR POLICY INTEGRITY, THE ROAD AHEAD: EPA'S OPTIONS AND OBLIGATIONS FOR REGULATION GREENHOUSE GASES 63 (2009), *available at* http://policyintegrity.org/files/publications/TheRoadAhead.pdf ("When the CAA gives EPA regulatory discretion, the agency frequently uses cost-benefit analysis to determine how best to exercise its authority. Under Executive Orders that have been in place for nearly thirty years, all major regulatory actions are subjected to cost-benefit analysis, unless specifically prohibited by statute. Although the use of cost-benefit analysis is prohibited in some areas of the CAA, many other provisions permit or even require EPA to consider costs, benefits, and efficiencies." (citations omitted)).

[19] RICHARD L. REVESZ & MICHAEL A. LIVERMORE, RETAKING RATIONALITY: HOW COST-BENEFIT ANALYSIS CAN BETTER PROTECT THE ENVIRONMENT AND OUR HEALTH 10 (2008) ("The goal of cost-benefit analysis is straightforward: It seeks to maximize the net benefits of regulation.").

[20] Last year, EPA tightened the $NO_X$ standard under the National Ambient Air Quality Standards program "in order to provide requisite protection of public health." This revision was in large part based on scientific reports demonstrating increased understanding of adverse health effects of $NO_X$. Primary National Ambient Air Quality Standards for Nitrogen Dioxide, 75 Fed. Reg. 6,474 (Feb. 9, 2010); *see also* ENVIRONMENTAL PROTECTION AGENCY, INTEGRATED SCIENCE ASSESSMENT FOR OXIDES OF NITROGEN —HEALTH CRITERIA (2008), *available at* http://cfpub.epa.gov/ncea/cfm/recordisplay.cfm?deid=194645 (go to "Downloads" and click on report PDF link).

There are also crucial ancillary benefits from revising the performance standard for $NO_X$: namely, stricter standards for $NO_X$ could have a beneficial impact on the abatement of N2O. Several available technologies reduce both $NO_X$ and N2O emissions simultaneously (such as nonselective catalytic reduction).[21] Even if EPA does not issue separate performance standards to control N2O emissions from nitric acid plants—and it must, see *infra* Part II—the EPA still must consider the potential effects on N2O emissions when setting its $NO_X$ standards. This approach is consistent with executive orders, statutory instructions,[22] and good policy.

EPA failed to assess any of these benefits, let alone estimate the marginal benefit rate.

*Costs of $NO_X$ Regulation*

The primary costs of a stricter standard are the technology upgrades and process changes required for industry to comply. EPA estimates that the only costs associated with the revised standard in this case will be the increased costs of monitoring. EPA assessed average costs of emissions reductions, but it failed to consider marginal costs.

When estimating costs, it is important for EPA to accurately assess the baseline (i.e., costs under existing regulations) and to account for the potential for technological growth. Since EPA originally issued the 1971 standards, research has developed many newer, cheaper, and more effective means to reduce $NO_X$ emissions.[23] In fact, many plants have already voluntarily implemented technologies that reduce $NO_X$ emissions below the level articulated in the current NSPS.[24] EPA's analysis considered these current practices when determining the burden on the industry of using newer technologies to achieve emissions reductions.[25] But EPA failed to consider the possibility that plants could meet the revised standard with existing technology and

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[21] *See* ENVIRONMENTAL PROTECTION AGENCY, AVAILABLE AND EMERGING TECHNOLOGIES, *supra* note 9, at 9.

[22] Section 111 instructs EPA to consider "any nonair quality health and environmental impact" of its performance standards. It is possible that the climate impacts of N2O reductions could count as a "nonair quality impact"; EPA has discretion to define the scope of these statutory terms.

[23] These include "(1) extended absorption, (2) nonselective catalytic reduction (NSCR), and (3) selective catalytic reduction (SCR)." ENVIRONMENTAL PROTECTION AGENCY, ALTERNATIVE TECHNIQUES DOCUMENT 5-1 (Dec. 1991), http://www.epa.gov/ttn/catc/dir1/nitric.pdf. According to EPA's 1991 study, the extended absorption technique is capable of reducing $NO_X$ emissions to .59 to 1.28 kg per metric ton, well below the standard of 1.5 kg per metric ton. Nonselective catalytic reduction plants have reduced $NO_X$ emissions to .2 to 1.0 kg per metric ton.

[24] The current standard of performance for nitric acid plants mandates that $NO_X$ emissions be reduced by 93 percent below emissions produced by an uncontrolled facility, with a maximum output of 1.5 kg nitrogen dioxide per ton of nitric acid produced. ENVIRONMENTAL PROTECTION AGENCY, BACKGROUND INFORMATION, Doc. EPA/APTD-0711 (Aug. 1971). However, more recent industry information indicates that nitric acid plants are fully capable of reducing their emissions to 95 to 98 percent below the uncontrolled facility emissions level. ENVIRONMENTAL PROTECTION AGENCY REPORT, Doc. EPA-450/3-91-026 (Dec. 1991). Current technologies used by nitric acid plants in the European Union demonstrate the availability of more cost-effective reduction solutions. There, model studies have identified technologies that reduce emissions to 0.42 kg/ton of nitric acid, roughly one-third of the requirement outlined in 40 C.F.R. part 60. EUROPEAN UNION REPORT, NITRIC ACID INDUSTRY: SYNOPSIS SHEET (2005), *available at* http://www.citepa.org/forums/egtei/13-Synopsis-sheet-nitric-acid29-09-05.pdf. These studies are based on model data and do not necessarily represent current recommendations for regulation of $NO_X$ emissions. However, they do provide an excellent baseline by which to determine best demonstrated technology.

[25] *See* Clean Air Act, 42 U.S.C. 7411(b)(1)(B) (2010) ("When implementation and enforcement of any requirement of this chapter indicate that emission limitations and percent reductions beyond those required by the standards promulgated under this section are achieved in practice, the Administrator shall, when revising standards promulgated under this section, consider the emission limitations and percent reductions achieved in practice.").

that further reductions may be possible. This history illustrates the potential for industry to adapt to regulatory requirements by finding cheaper, more effective ways to comply; in other words, technology can bring down compliance costs over time.

### B. EPA Should Use Data from Trading Programs to Inform the Revised $NO_X$ Standard

The $NO_X$ Budget Trading Program could assist EPA in setting an emissions standard for nitric acid plants that is cost-benefit justified. Despite the fact that the Clean Air Interstate Rule's ("CAIR") $NO_X$ ozone season program (which has been replaced by the new Cross State Air Pollution Rule) superseded this program, data from the $NO_X$ Budget Trading Program reports in 2008 could provide insight into the quantified benefits of $NO_X$ emissions reductions. As of the close of 2008, the cost of a $NO_X$ permit was $592 per ton.[26] Under a market system like the $NO_X$ Budget Trading Program, if the emissions budget is set efficiently, the permit price will equal the marginal cost of abatement, which should also equal the marginal benefits of reducing emissions. In short, the benefit of reducing $NO_X$ emissions from sources within the trading program is roughly $592 per ton.

Using this figure as a benchmark, EPA can approximate the benefits of reducing $NO_X$ emissions from nitric acid plants,[27] and should design its nitric acid performance standards so that marginal costs equal marginal benefits. Therefore, EPA should set the emissions standard such that nitric acid plants spend the necessary amount to comply with the regulation, up to the cost of the $NO_X$ Budget Trading Program permit price.

In sum, in the Proposed Rule, EPA estimates only average costs, ignoring both marginal costs and marginal benefits of the proposed revision. Before issuing a final rule, EPA should also estimate the marginal costs of further reduction and compare those costs to the marginal benefits of further reduction. It should then set the revised performance standard at the level where marginal benefits equal marginal costs.

## II. EPA Must Set an $N_2O$ Performance Standard for Nitric Acid Plants

N2O is a potent GHG—310 times more potent than carbon dioxide.[28] Therefore, even when emitted in small quantities, this gas can pose a significant threat to public health and welfare. Nevertheless, N2O has never been included in the NSPS program. EPA must utilize the opportunity of NSPS review to regulate N2O emissions from nitric acid plants. Although EPA has some discretion to set standards of performance for particular air pollutants under NSPS, its discretion is limited.

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[26] ENVIRONMENTAL PROTECTION AGENCY, THE $NO_X$ BUDGET TRADING PROGRAM: 2008 EMISSION, COMPLIANCE, AND MARKET DATA 4 (2009), *available at* http://www.epa.gov/airmarkt/progress/NBP_1/NBP_2008_ECM_Data.pdf. However, in the Proposed Transport Rule, EPA determines that significant $NO_X$ reductions can occur at $500 per ton. *See* 75 Fed. Reg. 45,210, 45,275 (Aug. 2, 2010). Additionally, while this appears to be the most current publicly available data, EPA should use the most updated information it possesses when setting the price level.

[27] So long as relevant factors such as population density are similar between the locations in which the $NO_X$ trading program applies and the locations in which nitric acid plants are located, the benefits per unit of $NO_X$ reduction are the same for areas subject to the trading program and for nitric acid plants.

[28] ENVIRONMENTAL PROTECTION AGENCY, U.S. ADIPIC ACID AND NITRIC ACID N2O EMISSIONS, *supra* note 10, at 1.

### A. EPA Has Some Discretion to Decide Whether to Set Standards of Performance

EPA is required to "establish Federal standards of performance for new sources within [the nitric acid source category],"[29] but the CAA does not expressly lay out a decisionmaking framework by which EPA must determine which "air pollutants" get standards of performance and which do not. The Act does specify that standards of performance only apply to "air pollutants."[30] However, there is no question that N2O satisfies this requirement, as both the Supreme Court and the EPA have concluded greenhouse gases, of which N2O is a constituent, are "air pollutants" under the CAA.[31] The primary decisionmaking framework laid out in Section 111 applies only to listing categories of sources: any category which, in EPA's judgment "significantly contributes to air pollution that endangers public health or welfare"[32] should be included. Determining which of the pollutants emitted by already-listed source categories should be regulated, however, need not be based on a finding of "significant contribution" and "endangerment."[33] As EPA has stated in its guidance for establishing NSPS:

> An endangerment finding would be a prerequisite for listing additional source categories under section 111(b), but is not required to regulate GHGs from source categories that have already been listed, such as EGU's at power plants and refineries.[34]

Because nitric acid plants have been listed as a source category since March 1971,[35] EPA need not determine that N2O from nitric acid plants significantly contributes to air pollution that endangers public health or welfare in order to set a standard of performance for that pollutant.

It also bears mentioning that although the definition of "standard of performance" specifies a particular emissions *standard* (i.e., "best," "cost," "demonstrated"),[36] it does not specify *when* a standard must apply to a particular pollutant. Accordingly, EPA has some discretion to make this determination.

### B. The Arbitrary and Capricious Limitation

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[29] Clean Air Act, 42 U.S.C. § 7411(b)(1)(B) (2010). While EPA will be acting to set emissions standards for N2O during a review and not upon a new listing of a category, once it commences a review, EPA must "follow[] the procedure required by this subsection for promulgation . . . ." *Id.* Therefore, because cost-benefit analysis is not precluded as a standard for determining which pollutants to regulate *at promulgation*, it is likewise not precluded during review.

[30] 42 U.S.C. § 7411(a)(1) ("[S]tandards of emissions *for air pollutants*.") (emphasis added).

[31] Massachusetts v. EPA, 549 U.S. 497, 529 (2007) ("[N]itrous oxide . . . are without a doubt 'physical [and] chemical . . . substance[s] which [are] emitted into . . . the ambient air.' The statute is unambiguous."); Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act, 74 Fed. Reg. 66,496 (Dec. 15, 2009).

[32] 42 U.S.C. § 7411(b)(1).

[33] Even if such findings were required, they would likely be met for N2O from nitric acid plants. *See infra*.

[34] ENVIRONMENTAL PROTECTION AGENCY, BACKGROUND ON ESTABLISHING NEW SOURCE PERFORMANCE STANDARDS (NSPS) UNDER THE CLEAN AIR ACT, *available at* http://www.epa.gov/airquality/pdfs/111background.pdf.

[35] List of Categories of Stationary Sources, 36 Fed Reg. 5,931 (March 31, 1971).

[36] 42 U.S.C. §7411(a)(1).

To the extent EPA does have discretion to select which pollutants to regulate, it must exercise that discretion in a non-arbitrary way.[37] A cost-benefit framework provides a clear and rational basis for choosing the standards of performance for any given pollutant— it should use this discretion to target pollutants where analysis indicates benefits will justify costs.[38] Consistent with the requirements of executive orders, EPA should assess the costs and benefits of setting standards of performance for each potential pollutant emitted from a source, and then target those pollutants where regulation would maximize net benefits.

In this case, cost-benefit analysis counsels toward setting standards for N2O emissions from nitric acid plants. Strong evidence indicates that the benefits of regulating N2O will justify the costs. The benefits of regulating any pollutant primarily consist of the mitigation of harm otherwise caused by its emission. For N2O, the benefit of regulation is predominantly the reduction of the negative impacts of global climate change. As EPA has previously determined, GHGs, of which N2O is a constituent, pose a danger to public health and welfare.[39] EPA has quantified the harm of a marginal unit of the most common GHG, carbon dioxide, as the "social cost of carbon."[40] Though it must be done carefully, the social cost of carbon can also be used to approximate the benefits of reducing N2Os, once N2O pollution has been translated into carbon-dioxide equivalent units (based on the relative global warming potential of the two pollutants).[41] Because of scientific and economic uncertainty, EPA has not prescribed a single monetized number for the social cost of carbon; instead it uses four different quantifications, ranging from $4.70 to $64.90 per ton.[42] Many reasons support using values on the higher end of that spectrum.[43] However,

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[37] *See* Motor Vehicle Mfrs. Ass'n v. State Farm Mut. Auto. Ins. Co., 463 U.S. 29, 43 (1983) (defining arbitrary and capricious standard in rulemaking).

[38] As argued above, Administration and EPA policy support that, when not otherwise prohibited, the agency should set regulation based on a cost-benefit analysis, at the level that maximizes net benefits. See *supra* Part I. EPA has interpreted Section 111 to provide flexibility as to when to regulate additional pollutants from listed source categories. Standards of Performance for Petroleum Refineries, 73 Fed. Reg. 35,838, 35,859 (June 24, 2008) ("The Agency has always interpreted this initial requirement as providing the Administrator with significant flexibility in determining which pollutants are appropriate for regulation under section 111(b)(1)(B)."). A cost-benefit framework is appropriate in the context of that broad discretion, or in the context of the narrower scope of discretion that statute actually provides for. *See infra* Part II.B.

[39] Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act, 74 Fed. Reg. 66,496 (Dec. 15, 2009).

[40] *See generally* EPA, TECHNICAL SUPPORT DOCUMENT: SOCIAL COST OF CARBON FOR REGULATORY IMPACT ANALYSIS UNDER EXECUTIVE ORDER 12866 (2010), *available at* http://www.epa.gov/oms/climate/regulations/scc-tsd.pdf.

[41] In evaluating the benefits of N2O reduction, EPA should be aware of one challenge in using existing social cost of carbon values. N2O has similar global warming properties to carbon dioxide; however, EPA has noted that due to differences in radiative forcing and atmospheric lifetimes, a simple arithmetic conversion between the global warming potential of $CO_2$ and $N_2O$ will not yield an accurate social cost of $N_2O$. *Id.* at 1. While this methodological consideration adds a level of complexity to monetizing the benefits of N2O reduction, it should not foreclose regulation. Factors exist that would cause the social cost of non-$CO_2$ gases to be higher than $CO_2$ in some respects and lower in others. *Id.* There is little reason to believe the economic benefits of N2O reduction are so drastically different that they would lead to a different outcome as to *whether* EPA should set emissions standards for nitric acid plants. EPA can utilize the social cost of carbon values it currently has and update the *level* of the standard as additional work on non-$CO_2$ GHG gas costs is developed.

[42] *Id*.

even using all but the lowest possible values, NSPS for N2O will likely produce benefits that exceed costs. Using the central value of $21 would produce benefits that far exceed the costs.

Specifically, those costs would include the technological upgrades and process changes that new and modified plants must implement to comply with regulation.[44] EPA has recently conducted a thorough review of current and emerging technologies specifically available for nitric acid plants to reduce N2O emissions.[45] This study indicates that the costs of reduction are relatively low. Utilizing technology "*demonstrated in practice,*" nitric acid plants can reduce over eighty percent of their N2O emissions at a cost of $2.32 - $6.49 for every ton of carbon-dioxide equivalent reduced.[46]

In conducting its cost-benefit analysis, EPA should also consider the interactive effects that controlling N2O will have on the reduction of $NO_X$.[47] The costs and benefits of additional $NO_X$ reductions should then be included in any cost-benefit analysis that EPA conducts with regard to N2O. Following this approach will decrease costs and increase benefits of N2O regulation, resulting in net public health and welfare improvement.

Because of these interactive effects, EPA should set a N2O standard at the same time EPA revises the $NO_X$ standard. By setting concurrent standards, EPA can maximize net benefits across both pollutants. In most cases, it is more cost effective for plants to design emissions reductions as part of the initial construction rather than adding them to existing plants. Therefore, as new or modified plants are faced with added capital expenditures to meet a more stringent $NO_X$ standard, it would be cost-effective for them to simultaneously meet a N2O standard, rather than requiring expensive capital investment to comply with future N2O regulation.

In fact, EPA already considers joint review of standards to be a cost-effective form of regulation. EPA strives, whenever possible, to utilize a sector-based approach to regulation. These integrated assessments consider the interactive effects of different regulatory measures for multiple pollutants to determine the "optimum strategies, considering feasibility, costs, and benefits across the different pollutant types while streamlining administrative and compliance complexities and reducing conflicting and redundant requirements, resulting in added certainty and easier implementation of control strategies for the sector under consideration."[48]

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[43] *See* Institute for Policy Integrity & Environmental Defense Fund, Comments on Proposed Vehicle Emission and Fuel-Economy Standards (2009), *available at* http://policyintegrity.org/what-we-do/update/comments-on-proposed-vehicle-emission-and-fuel-economy-standards/.

[44] Plants would also face compliance costs such as monitoring. In the case of N2O at nitric acid plants, however, these costs are likely to be minimal; importantly, plants are already required to monitor and report their N2O emissions under a separate EPA rule. 74 Fed. Reg. 56,260 (Oct. 30, 2009); Mandatory Greenhouse Gas Reporting: Nitric Acid Production, 40 C.F.R. pt. 98.222 ("You must report $N_2O$ process emissions from each nitric acid production train as required by this subpart.").

[45] ENVIRONMENTAL PROTECTION AGENCY, AVAILABLE AND EMERGING TECHNOLOGIES, *supra* note 9.

[46] *Id.* at 9.

[47] *See supra* Part I.A.

[48] National Emissions Standards for Hazardous Air Pollutants from Portland Cement Manufacturing Industry and Standards of Performance for Portland Cement Plants, 75 Fed. Reg. 54,970, 54,997 (2010).

For these reasons, considering the costs and benefits of regulating N2O as an additional pollutant at the same time that EPA revises the $NO_X$ standard is a sensible strategy that will lead to more efficient overall levels of regulation.

The Proposed Rule itself provides no justification for choosing not to regulate N2O. Instead, the Proposed Rule acknowledges that some $NO_X$ control technologies could also control for N2O and concludes that "any controls applied to control $NO_X$ emissions would not preclude installing cost effective N2O control technologies in the future."[49] In the final rule, EPA must provide a rational basis for its failure to include N20 in the Nitric Acid NSPS.[50] But given EPA's efforts to begin to regulate GHG emissions from other sectors, the current availability of control technology, and the fact that the benefits of regulation of N2O emissions from nitric acid plants outweigh the costs, no such rational basis may exist. Accordingly, failure to include nitrous oxide standards of performance for nitric acid plants would be arbitrary and capricious.

### C. Statutory Limitations

Several aspects of the text and structure of the CAA prevent EPA from exercising unlimited discretion in promulgating standards of performance.

First, as detailed above, Section 111(b) requires EPA to list categories of sources that cause or contribute significantly to air pollution that may reasonably be anticipated to endanger public health or welfare and then set standards of performance for those source categories. At the very least, once a source category is listed, EPA has a non-discretionary duty to set standards of performance for any air pollutants, emitted from that source category, which would sufficiently endanger public health and welfare. In other words, if the emission of the pollutant would be sufficient to justify listing the source category pursuant to Section 111(b)(1)(A), then EPA must set

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[49] Proposed Rule, 76 Fed. Reg. at 63,880.

[50] *Motor Vehicle Mfrs. Ass'n*, 463 U.S. at 41–42. Justifications EPA has relied on in the past are inapplicable in this context. *See* Standards of Performance for Coal Preparation and Processing Plants, 74 Fed. Reg., 51,950, 51,958 (2009) (citing past examples where it has refused to include a new pollutant when promulgating an NSPS standard). For instance, in a 1984 rulemaking for natural gas processing which included sulfur dioxide and volatile organic compounds, but not a number of other pollutants, EPA justified its deicision to exclude those pollutants by arguing that the technology implemented to control sulfur dioxide effectively reduced unregulated pollutants. Standards of Performance for New Stationary Sources; Onshore Natural Gas Processing $SO_2$ Emissions From Onshore Natural Gas Processing, 49 Fed. Reg. 2,656, 2,659 (Jan. 20, 1984). That is not the case for N2O. Although some of the same technology that limits $NO_X$ emissions *can* control $N_2O$, without a specific standard such technology will not be widely implemented. This is indicated by EPA reports that show only seventeen percent of plants are using NSCR technology, the only technology shown to control the emissions of both $NO_X$ and N2O. ENVIRONMENTAL PROTECTION AGENCY, GREENHOUSE GAS INVENTORY REPORT, *supra* note 10, at 4-19. Likewise, in a 1987 rulemaking for various manufacturing processes, the agency decided to regulate only the pollutant that was emitted in the greatest quantity. Standards of Performance for New Stationary Sources; Polypropylene, Polyethylene, Polystyrene, and Poly(ethylene terephthalate) Manufacturing Industry, 52 Fed. Reg. 36,678, 36,682 (Sept. 30, 1987) ("These pollutants, however, are emitted at much lower quantities . . . and, as a result, standards development for this industry is focusing initially on limiting emissions of VOC."). This approach is improper, however, because quantity of emissions does not necessarily correlate to the cost of emissions reductions or the relative net benefits of pollutant reduction. Basing the decision on the quantity emitted could be considered unreasonable. Lastly, EPA has looked to *Nat'l Lime Ass'n v. EPA* to support its argument in favor of discretion; however, in that case, the agency cites cost and the unavailability of adequate technology as reasons for not regulating certain pollutants. 627 F.2d 416 (D.C. Cir. 1980).

a standard of performance for that pollutant. N2O emissions meet this standard.[51] EPA itself has already determined that GHGs, of which N2O is a constituent, endanger the public health and welfare. And nitric acid plants unquestionably contribute significantly to that endangerment. EPA has identified nitric acid plants as a one of the most important sources of N2O pollution. It is the largest industrial manufacturing source[52] and the fourth largest source overall (after agricultural soil and manure management and mobile combustion, which are all very complicated to regulate).[53] Accordingly, because N2O emissions would be sufficient to require listing nitric acid plants if they were not already listed, the EPA must set standards of performance for N2O emissions from nitric acid plants.

Second, the use of the word "any" as a modifier for "air pollutant" limits the EPA's discretion to decline to set NSPS for pollutants emitted from a listed source category. Although "any" is not included as a modifier for "air pollutant" in Section 111(a)(1)'s definition of "standard of performance," it *is* included in the definitions of the term "modification."[54] Under Section 111(b), NSPS standards apply to facilities constructed or modified after standards have been set.[55] If an existing facility undergoes a modification—a physical change that increases the emission of "*any*" air pollutant—it is a structure now subject to NSPS. Reading Section 111 to allow for unlimited agency discretion on which pollutants require performance standards could lead to the peculiarity that a facility could become subject to NSPS regulation by increasing its emissions of a pollutant for which EPA has chosen not to set standards. A clearer reading, limiting EPA discretion and requiring EPA to regulate any pollutant emitted from a listed source category when it is cost effective to do so, would easily avoid such absurdity.

Moreover, legislative history explains why Section 111(a) does not include the word "any." In order to remove a scheme where different fuels were subject to different definitions of "standard of performance," Congress consolidated the definitions in the 1990 Amendments to the CAA. This change was not intended to give EPA complete discretion over which pollutants it could regulate under NSPS but instead to *consolidate* the definition to apply to all sources broadly.[56]

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[51] EPA has already determined that N2O, along with other GHGs, is an air pollutant that endangers public welfare. Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act, 74 Fed. Reg. 66,495, 66,516 (Dec. 15, 2009) ("The Administrator finds that elevated concentrations of greenhouse gases in the atmosphere may reasonably be anticipated to endanger the public health and to endanger the public welfare of current and future generations. The Administrator is making this finding specifically with regard to to six key directly-emitted, long-lived and well-mixed greenhouse gases {including] nitrous oxide.").

[52] Nitric acid plants are the largest industrial contributor to N2O air pollution, comprising over eighty-eight percent of total industrial $N_2O$ emissions in 2009. *See* ENVIRONMENTAL PROTECTION AGENCY, INVENTORY OF U.S. GREENHOUSE GAS EMISSIONS AND SINKS: 1990-2009, at 4-2, table ES-2, *available at* http://www.epa.gov/climatechange/emissions/downloads11/US-GHG-Inventory-2011-Chapter-4-Industrial-Processes.pdf.

[53] *Id.* at ES-5, table ES-2.

[54] Clean Air Act, 42 U.S.C. § 7411(a)(4) (2010) ("The term 'modification' means any physical change in . . . a stationary source which increases the amount of *any air pollutant* emitted by such source or which results in the emission of *any air pollutant* not previously emitted." (emphasis added)).

[55] *Id.* § 7411(a)(2).

[56] *See* Clean Air Watch Comments 4, *available at* http://www.regulations.gov/#!documentDetail;D=EPA-HQ-OAR-2007-0877-0065.1.

EPA has also argued that it has discretion over which pollutants to regulate because of language in Section 111(b)(1)(B) directing the Administrator to "promulgate within one year of [] publication, such standards with such modifications *as he deems appropriate*."[57] But "as he deems appropriate" qualifies "with such modifications." The language simply means that EPA is not required to adopt all modifications commenters suggest or that the agency considers. It does not provide unlimited discretion for EPA to promulgate "such standards." The inconsistent use of "as appropriate" in the CAA lends further support to this reading.[58]

To conclude, choosing *not* to regulate N2O not only fails to maximize social welfare, is inconsistent with Administration and current EPA policy, and could create the possibility of an arbitrary and capricious challenge, but it also conflicts with the directives of the CAA, which require, at the very least, that EPA set standards of performance for any pollutants emitted from a listed source category, whose emission would itself justify listing that source category.

## III. Regulation of N2O for New Sources Triggers Regulation for Existing Sources

Section 111(d) provides direction for regulating existing sources within the NSPS framework. That section requires that EPA promulgate procedures by which each state must submit performance standards for those air pollutants not included in Section 108 (National Ambient Air Quality Standard program) or 112 (Hazardous Air Pollutant program), and that would otherwise be regulated under the NSPS program if they were emitted by new sources.[59] Section 111(d) explains that states should develop plans for the implementation and enforcement of those performance standards.[60]

Should EPA decide to regulate N2O emissions from nitric acid plants under Section 111(b), states would need to submit plans to control these emissions at designated existing facilities.[61] In the absence of regulation of GHGs under either Section 108 or 112, regulation under 111(b) automatically triggers regulation under 111(d).

Because EPA has indicated that it will not regulate GHGs through either Section 108 or 112, Section 111(d) provides a useful alternative method. First, use of Section 111(d) avoids the grandfathering problem inherent in the sole use of Section 111(b). Section 111(b) applies only to new and modified sources, which means that if the cost of regulating $N_2O$ is high enough, there

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[57] Clean Air Act, 42 U.S.C. § 7411(b)(1)(B) (emphasis added); Standards of Performance for Petroleum Refineries, 73 Fed. Reg. 35,838, 35,858 (2008)(setting out EPA's argument that it has discretion because of the "appropriate" language").

[58] *See* POLICY INTEGRITY, THE ROAD AHEAD, *supra* note 18, at 50–51.

[59] *See* 42 U.S.C. § 7411(d)(1)(A)(i)–(ii) ("The Administrator shall prescribe regulations which shall establish a procedure . . . under which each State shall submit to the Administrator a plan which (A) establishes standards of performance for any existing source for any air pollutant (i) for which air quality criteria have not been issued or which is not included on a list published under section 7408(a) of this title or emitted from a source category which is regulated under section 7412 of this title but (ii) to which a standard of performance under this section would apply if such existing source were a new source.").

[60] *Id.* § 7411(d)(1)(B).

[61] *See, e.g.*, Approval and Promulgation of State Plans for Designated Facilities and Pollutants; State of Iowa, 69 Fed. Reg. 51,957 ("Section 111(d) of the CAA requires states to submit plans to control certain pollutants (designated pollutants) at existing facilities (designated facilities) whenever standards of performance have been established under section 111(b) of the same type, and EPA has established emission guidelines for such existing sources.").

may be a disincentive to build new, more environmentally friendly sources or to modify existing sources that fall below the emissions standards set by the NSPS. Section 111(d)'s application to existing sources provides a ready solution for this problem. Second, regulating N2O from nitric acid plants through both Section 111(d) and 111(b) will increase net benefits: more N2O emissions will be reduced if EPA uses both avenues of regulation.

Although there may be increased costs associated with regulating existing sources, it is unclear that these costs would be so great as to preclude regulation under Section 111(d). As discussed above, existing sources can readily implement relatively inexpensive technologies to reduce $N_2O$ emissions. Additionally, Section 111(d) provides for significant flexibility in regulating pollutants otherwise regulated under the NSPS for new and modified sources.

Under the current regulations governing the use of 111(d), EPA is required to first publish a guideline document "containing information pertinent to control of the designated pollutant from designated facilities."[62] Subsequently, each state must submit a plan for the control of the designated pollutant. These plans must specify emissions standards, which can take the form of either "an allowance system or prescri[ption of] allowable rates of emissions."[63]

**Conclusion**

Prior to issuing a final rule, EPA should reevaluate the proposed nitrogen oxide standard to ensure that it maximizes net benefits and must propose a standard of performance for N2O. Such a standard is required both by the CAA and by reason.

These comments were prepared with the assistance of the Institute for Public Representation at the Georgetown University Law Center.

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[62] 40 C.F.R. § 60.22 (2010).

[63] *Id.* § 60.24(b)(1).