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COMMENTS ON EPA'S PROPOSED AMENDMENTS TO THE FINAL STANDARDS OF PERFORMANCE FOR PETROLEUM REFINERIES

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The Environmental Integrity Project, Natural Resources Defense Council, and the Sierra Club (together, Commenters) appreciate the opportunity to submit comments on the U.S. Environmental Protection Agency's (EPA) proposed amendments to the New Source Performance Standards (NSPS) for Petroleum Refineries, as published in the Federal Register on December 22, 2008 (73 Fed. Reg. 78,522). EPA has proposed several amendments to the final NSPS for Petroleum Refineries published in the Federal Register on June 24, 2008 (73 Fed. Reg. 35,838) pertaining to process heaters and flares.

Our specific comments are as follows:

I. EPA Should Require Continuous Emission Monitoring Systems (CEMS) to Demonstrate Compliance with the Nitrogen Oxide (NOx) Emission Limit for Process Heaters Equipped with Low-NOx or Ultra Low-NOx burners.

EPA should require the use of CEMS to demonstrate compliance with the NOx emission limit for process heaters. In the proposed amendments to the final rule, EPA proposes to allow owners and operators of process heaters with low-NOx or ultra low-NOx burners to choose between using a CEMS and conducting biennial source testing to demonstrate compliance with the NOx emission limit. 73 Fed. Reg. at 78,525.

A CEMS for NOx emissions is required under Title V of the Clean Air Act. Section 504(c) of the Act states that Title V operating permits must include monitoring requirements that "assure compliance with the permit terms and conditions." 42 U.S.C. § 7661c(c). A recent D.C. Circuit Court of Appeals decision requires EPA and state permitting agencies to include additional monitoring requirements in Title V operating permits if necessary to ensure compliance with an emission limit. The court concluded that there is in fact a *statutory duty* for agencies to implement more rigorous monitoring standards when a monitoring requirement is insufficient to assure compliance. Sierra Club v. U.S. Envtl. Prot. Agency, No. 04-1243 (D.C. Cir. Aug. 19, 2008). A source test conducted twice each year is not sufficient to demonstrate compliance with an emission limit that must be met on a 365-day rolling average. Under Title V, then, CEMS is likely required to ensure compliance with the NOx emission limit for process heaters.

In addition, EPA weakens NOx emission limits by relaxing the averaging period from a 24-hour rolling average to a 365-day rolling average based solely on CEMS data provided by Industry Petitioners. 73 Fed. Reg. at 78,527. EPA notes that CEMS data submitted by Industry Petitioners shows that "the 40 ppmv NOx emissions limit is not achievable on a 24-hour average basis; thus, a longer averaging time or a higher limit is needed." Id. at 78,526. If EPA chooses to rely on CEMS data to weaken emission standards for process heaters, EPA should at least require owners and operators to use CEMS to demonstrate compliance with the relaxed standard. A source test conducted twice each year is simply not sufficient to show compliance with the NOx emission limit. EPA should revise the proposed rule to require CEMS for NOx for process heaters with low-NOx and ultra low-NOx burners.

II. EPA's Proposed Amendments to the Final Rule Pertaining to Flaring are Unlawful and Arbitrary.

EPA proposes amendments to the final rule for several provisions pertaining to flares that are illegal and arbitrary. The proposed provisions violate the Clean Air Act; and are "arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with the law" pursuant to 5 U.S.C. § 706(2)(a). First, EPA abandoned its initial prohibition on routine flaring and its determination that flare gas recovery (FGR) and other similar technologies is "best demonstrated technology" (BDT) under section 111 without adequate justification. Second, the exemption from compliance with sulfur emission limits for fuel gas combustion devices during startup, shutdown, and upset/malfunction events is illegal. Finally, EPA's proposal to waive compliance with NSPS by allowing facilities to demonstrate compliance with state rules that may, or may not, be equivalent to federal requirements is contrary to the Clean Air Act and fundamental principles of reasoned decision making.

A. EPA's elimination of its initial ban on routine flaring and determination that FGR and similar technologies is BDT is unlawful and arbitrary.

EPA should revise its proposed flaring provisions to prohibit all routine flaring through the use of FGR and other similar technologies as it originally proposed in its initial rule. See 72 Fed. Reg. at 27,195.[1] Emission standards required under section 111 must reflect the best technology capable of capturing and eliminating the pollutants of concern. 42 U.S.C. § 7411(a)(1). The option of relying solely on so-called work practice standards, like the flare management plans EPA proposes in the amendments to the final rule, does not apply to flares. See id. § 7411(h)(2). EPA's initial proposal to eliminate routine flaring appears to reflect a determination that available technologies, such as flare gas recovery (FGR), could eliminate flaring during routine operations. See 72 Fed. Reg. at 27,195. EPA now proposes to abandon restrictions for routine flaring altogether, while allowing refineries to exceed sulfur limits in fuel gas combustion devices during startup and shutdown, opting to address these emissions through

[1] We note at the outset that EPA has sought comment "on all aspects of the final rule flare provisions on which the public has not previously had an opportunity to comment . . . ." 73 Fed. Reg. at 78,528. In the proposed rule, EPA proposed a ban on routine flaring. 72 Fed. Reg. at 27,195. However, the final rule abandoned the prohibition on routine flaring, and replaced it with a 250,000 scfd limit on flow rate to normal operations with an exemption for startup, shutdown, and malfunction events. 73 Fed. Reg. at 35,870. The public did not have an opportunity to comment on this last-minute reversal of a critical provision of the flare requirements.

flare management plans. 73 Fed. Reg. at 78,529–30. This series of decisions by EPA defies reasoned decision making, and is contrary to the Clean Air Act.

EPA's abandonment of its initial prohibition on routine flaring and determination that FGR and similar technologies is BDT is arbitrary and capricious. In the final rule, EPA explains that it abandoned the proposed prohibition on routine flaring because it could not determine how to define "routine" events. 73 Fed. Reg. at 35,854. However, EPA's final rule proposed a daily flow limit applicable to "normal" operations, excusing compliance during startup, shutdown, and malfunction events. 73 Fed. Reg. at 35,870; Id. at 35,855 (flow limit inapplicable to unplanned startups and shutdowns). All of these concepts in the final rule require distinguishing between routine and exceptional events, so EPA's explanation (offered for the first time in the final rule) for abandoning the prohibition of routine flaring is internally inconsistent, and therefore arbitrary and capricious.

EPA asserted that a "no routine flaring" requirement, based on FGR and other technologies, would provide far greater emission reductions at a reasonable cost, and that this is a demonstrated technology in its initial proposal.[2] See, e.g., 72 Fed. Reg. at 27,195. EPA stated that "flare gas recovery is cost-effective as an emissions control device. When properly sized, these flare gas recovery systems can eliminate all routine flaring. Therefore, eliminating routine flaring by use of fuel gas recovery, in-process fuel use, or system wide flare gas recovery is determined to be BDT." Id.

However, EPA abandoned its proposed ban on routine flaring, replacing the ban with a daily flow limit in the final rule, and now proposes to eliminate any restriction on flow rate and excuse compliance with sulfur limits during startup and shutdown periods. 73 Fed. Reg. at 78,529–30. EPA claims to address these flare emissions through work practice standards, or flare management plans. In doing so, EPA fails to articulate a rational basis for completely reversing itself and dismissing cost-effective and demonstrated technologies to significantly reduce or eliminate routine flaring.[3]

EPA's reversal of its prohibition on routine flaring is even more puzzling in light of its revised projected emissions reductions from flares.[4] In the final rule published on June 24, 2008, EPA determined that a flow limit rate of 250,000 scfd during "routine operations" was feasible

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[2] See, e.g., 72 Fed. Reg. at 27,195. EPA stated that "[F]lare gas recovery is cost-effective as an emissions control device. When properly sized, these flare gas recovery systems can eliminate all routine flaring. Therefore, eliminating routine flaring by use of fuel gas recovery, in-process fuel use, or system wide flare gas recovery is determined to be BDT. Id.

[3] Commenters note that routine flaring likely violates the Clean Air Act. See Office of Regulatory Enforcement, U.S. Envtl. Prot. Agency. Enforcement Alert: Frequent, Routine Flaring May Cause Excessive, Uncontrolled Sulfur Dioxide Releases (Oct. 2000), available at http://www.epa.gov/compliance/resources/newsletters/civil/enfalert/flaring.pdf. EPA noted over eight years ago, that routine flaring "may violate the [Clean Air Act] requirement that companies operate their facilities in a manner consistent with good air pollution practices for minimizing emissions." Id. The NSPS should be at least as stringent as existing requirements of the Clean Air.

[4] See Memorandum from Bob Lucas, U.S. Envtl. Prot. Agency, on Documentation of Revised Flare Recovery and Fuel Gas System Impact Estimates to Petroleum Refinery NSPS Docket No. EPA-HQ-OAR-2007-0011 (Nov. 20, 2008) (noting that "the SO2 emissions per flaring event and emissions reductions per root cause analysis were significantly underestimated").

and cost-effective for refineries.[5] EPA's cost-effective determination was based on projected emission reductions of 211 tons annually from sulfur dioxide (SO2), nitrogen oxides (NOx), and volatile organic compound (VOC).[6] Based on a projected emission reduction of 211 tons, EPA concluded that "a flare gas recovery system designed to recover an average of 250,000 scfd or greater will pay for itself."[7] We note that in the proposed amendments to the final rule, EPA amended projected annual emission reductions of SO2, NOx, and VOC to *24,977 tons*, which more accurately reflects actual emissions from flares. 73 Fed. Reg. at 78,533. EPA provides no explanation as to why the flow limit significantly reducing flaring during routine operations or a prohibition on routine flaring is suddenly no longer cost-effective even though its projected emissions reductions exponentially increases. EPA must provide an analysis assessing the cost-effectiveness of a prohibition on routine flaring using FGR and other technologies in light of the dramatically revised projected emissions reductions.

FGR is the primary example of a cost-effective, demonstrated technology to eliminate routine flaring that EPA effectively dismisses in the final rule and the proposed amendments.[8] FGR is not a new technology, and is commonly used in existing refineries to capture and recycle process gases to be used as fuel in the refinery, or as feedstock for refinery processes.[9] Refineries using FGR can reduce total flaring to just a few hours each year and significantly reduce or eliminate routine flaring completely.[10]

There is no question that FGR is "adequately demonstrated" technology. Existing refineries are currently operating FGR, or planning to install FGR, to significantly reduce or eliminate routine flaring,[11] and courts have generally held that when assessing whether a technology has been adequately demonstrated, "section 111 'looks toward what may fairly be projected for the regulated future, rather than the state of the art at present.'" Lignite Energy Council v. U.S. Envtl. Prot. Agency, 198 F.3d 930, 934 (D.C. Cir. 1999) (citing Portland Cement Ass'n v. Ruckelshaus, 486 F.2d 375, 391 (D.C. Cir. 1973)).

Furthermore, FGR technology can save refineries money, while significantly reducing dangerous air pollution.[12] These gases include hydrocarbons which can be used in the refinery as fuel, and hydrogen, which is expensive to make at refineries, but is often present in flare gases.[13] When these gases are recovered and recycled within the refinery, not only is major air pollution

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[5] Memorandum from Bob Lucas, U.S. Envtl. Prot. Agency, on Documentation of Flare Recovery Impact Estimates to Petroleum Refinery NSPS Docket No. EPA-HQ-OAR-2007-0011 (Apr. 26, 2008) ("[A] flare gas recovery system designed to recover an average of 250,000 scf per day (scfd) or greater will pay for itself.").

[6] Id.

[7] Id.

[8] See Memorandum from Bob Lucas, U.S. Envtl. Prot. Agency, on Documentation of Revised Flare Recovery and Fuel Gas System Impact Estimates to Petroleum Refinery NSPS Docket No. EPA-HQ-OAR-2007-0011 (Nov. 20, 2008) (noting that only about 10% of affected flares will need to install flare gas recovery systems under the revised flaring provisions).

[9] See, e.g., Jim Peterson et al., Special Report: Minimize Facility Flaring, Hydrocarbon Processing 111–115 (June 2007), available at http://www.johnzink.com/products/flares/pdfs/flare_hydro_proc_june_2007.pdf.

[10] See, e.g., id. (noting that, with use of FGR, the Flint Hills Resources' Corpus Christi, TX refinery reported only 1.77 hours during the first half of 2006) and 72 Fed. Reg. at 27,195.

[11] See, e.g., id.

[12] See Attachment A.

[13] Id.

prevented, but money is saved.[14] Furthermore, less steam generation (which takes substantial energy and generates costs) is needed when FGR is in place, because routine flaring events never occur, so steam-assist of flaring events is greatly reduced as well.[15]

EPA itself asserted that FGR is cost-effective. 72 Fed. Reg. at 27,195 ("[F]lare gas recovery is cost-effective as an emissions control device."). The U.S. Department of Energy (DOE) has also found FGR to be cost-effective.[16] At the Valero refinery in Texas, the FGR system provided payback in just 2.4 years, saving the refinery $420,000 per year.[17] In addition, the South Coast Air Quality Management District (SCAQMD) found during its rulemaking for regulation of flares at *existing* refineries that flare minimization, including FGR, is cost-effective.[18]

Although EPA claimed that a prohibition on routine flaring, based upon technologies like FGR is cost-effective and BDT in the initial proposed rule, EPA now reverses itself and asserts that FGR "is not considered technically feasible" where the refinery produces more fuel gas than it needs to power its equipment." 73 Fed. Reg. at 35,855. But EPA fails to provide data or analysis supporting this claim, which is arbitrary on its face. The mere fact that a refinery produces more fuel gas than it needs at a given point in time does not necessarily mean that the only alternative is flaring. Furthermore, there are a variety of technologies available to refineries to comply with a ban on routine flaring. EPA fails to consider other options, such as the possibility of building on-site storage for excess gas, or of selling the gas to third parties. In fact, EPA initially claimed that other options to capture and recycle flare gases existed for fuel rich refineries.[19] At the very minimum, EPA must clearly demonstrate why FGR and other technologies to eliminate routine flaring are not feasible or cost-effective in light of EPA's drastically revised projected emissions reductions.

B. The exemption of startup, shutdown, and malfunction events from compliance with the sulfur emission limits for fuel gas combustion devices is illegal.

EPA unlawfully exempts owners and operators of fuel gas combustion devices from compliance with emission limits during startup and shutdown events, opting instead to address these, along with upset/malfunction, emissions through flare management plans. In the proposed amendments to the final rule, EPA proposes to exempt facilities operating a fuel gas combustion device from compliance with sulfur limits during startup and shutdown. 73 Fed. Reg. at 78,529 (proposing to include "flaring events from startups and shutdowns in the definition of 'process upset'").

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[14] Id.
[15] Id.
[16] See Attachment B.
[17] Id.
[18] S. Coast Air Quality Mgmt Dist., Environmental Assessment for Proposed Amended Rule 1118: Control of Emissions from Refinery Flares (Oct. 2005).
[19] 72 Fed. Reg. at 27,195 (noting that "we believe that other options exist, such as building an electric co-generating unit" for "fuel gas rich" refineries).

The Clean Air Act mandates *continuous* compliance with emission limits promulgated under section 111. See 42 U.S.C. §§ 7411(a)(1), 7602(k). Section 111 requires EPA to adopt "standards of performance" for new and modified stationary sources that "reflect[] the degree of *emission limitation* achievable through the application of the best system of emission reduction . . . the Administrator determines has been adequately demonstrated." Id. § 7411(a)(1) (emphasis added). A "standard of performance . . . means a requirement of *continuous* emission reduction . . . ." and "[e]mission limitation . . . means a requirement . . . which limits the quantity, rate, concentration of emissions of air pollutants on a *continuous* basis . . . ." Id. § 7602(k), -(l). A blanket exemption from compliance during startup and shutdown events is not BDT, and the agency may not regulate these emissions through work practice standards. The exemption from compliance with the sulfur limits during periods of startup and shutdown unlawfully excuses owners and operators from compliance with the Clean Air Act.

Just three days prior to EPA's issuance of the proposed amendments to the final rule, the D.C. Circuit Court of Appeals vacated a similar regulation authorizing a blanket exemption during startup, shutdown, and malfunction events. See Sierra Club v. U.S. Envtl. Prot. Agency, Slip Op. No. 02-1135 (D.C. Cir. Dec. 19, 2008). The court held that EPA's SSM exemption from section 112 emission standards violated the Clean Air Act. Id. at *16–17. The court stated that, "[w]hen sections 112 and 302(k) are read together, then, Congress has required that there must be continuous section 112-compliant standards." Id. at *15. The court found that the section 111 general duty to minimize emissions during SSM events[20] was not a section 112-complaint standard. Id. In other words, the blanket SSM exemption did not reflect "the maximum degree of reduction in emissions" as required by section 112. Id. The blanket SSM exemption, therefore, violated the plain text of the Clean Air Act.

By the same token, the Clean Air Act requires that a section 111-compliant standard must be in effect at all times. See 42 U.S.C. § 7411(a)(1); 7602(k). Section 111 directs EPA to promulgate "standards of performance" that "reflects the degree of *emission limitation* achievable through the application of the best system of emission reduction which . . . has been adequately demonstrated." 42 U.S.C. § 7411(a)(1). Thus, some section 111 standard that reflects BDT must be in effect at all times. See Sierra Club v. U.S. Envtl. Prot. Agency, Slip Op. No. 02-1135 (D.C. Cir. Dec. 19, 2008).

A blanket exemption from compliance with sulfur limits during startup and shutdown events is clearly not BDT. EPA notes that, in the final rule, BDT was the capture and treatment of gases produced during startup and shutdown events. 73 Fed. Reg. 78,522, 78,530. In fact, EPA itself admits that "[c]ertain refiners were able to nearly or completely eliminate flaring, including startup and shutdown events that normally released gases to their flares." Id. Here, EPA reverses itself in the proposed amendments to the final rule without an adequate explanation. Id. At a minimum, EPA must demonstrate that a blanket exemption from compliance with sulfur limits during startup, shutdown, and upset/malfunction events somehow reflects BDT, and EPA has failed to do so here.

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[20] 40 C.F.R. § 60.11(d) "At all times, including periods of startup, shutdown, and malfunction, owners and operators shall, to the extent practicable, maintain and operate any affected facility . . . consistent with good air pollution control practice for minimizing emissions." Id.

Furthermore, EPA may only opt for a work practice standard over a standard of performance in limited instances. 42 U.S.C. § 7411(h)(2). Specifically, EPA must show that a standard of performance is "not feasible to prescribe or enforce" because "(A) a pollutant . . . cannot be emitted through a conveyance designed and constructed to emit or capture such pollutant, or that any requirement for, or use of, such a conveyance would be inconsistent with any Federal, State, or local law, or (B) . . . the application of measurement methodology to a particular class of sources is not practicable due to technological or economic limitations." Id. None of these exemptions appear to be applicable to flare emissions, and EPA may not regulate flare emissions through work practice standards alone. See id. Thus, a blanket exemption on compliance with sulfur emission limits during startup, shutdown, and upset/malfunction events is not permitted under the Clean Air Act.

C. EPA may not waive compliance with NSPS by allowing facilities to demonstrate compliance with state rules that may, or may not be, equivalent to federal requirements.

Noting that SCAQMD's standards for flares (Rule 1118) contain requirements similar to the proposed amended subpart Ja flaring requirements, EPA has sought comment on whether the agency "could deem a facility in compliance with subpart Ja as proposed to be amended today if that facility was found to be in compliance with SCAQMD Rule 1118, or other equivalent State or local rules." 73 Fed. Reg. at 78,532. EPA's suggestion that it can waive compliance with the NSPS in this manner is contrary to the Clean Air Act and fundamental principles of reasoned decisionmaking.

Section 111 of the Act requires EPA to set standards of performance reflecting application of the best adequately demonstrated system of emission reduction. 42 U.S.C. § 7411(a)(1), –(b)(2). Where, as here, EPA determines that it is not feasible to prescribe or enforce a standard of performance, the Act requires EPA to instead "promulgate a design, equipment, work practice, or operational standard, or combination thereof, which reflects the best technological system of continuous emission reduction which . . . the Administrator determines has been adequately demonstrated." Id. § 7411(h)(1). As an initial matter, EPA's assertion that it is not feasible to prescribe or enforce a standard of performance to limit emissions from flares was grounded in an incorrect reading and arbitrary application of the statute.[21] However, even accepting for the sake of argument that work practice standards are the appropriate method of controlling emissions from flaring, EPA's suggestion that existing state and local requirements render the federal requirements irrelevant only confirms that EPA's proposed flaring requirements do not reflect the "*best* technological system of continuous emission reduction." Id. § 7411(h)(1) (emphasis added).

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[21] EPA found that work practice requirements would apply to flaring "because either the pollution prevention measures eliminates [sic] the emission source, so that there are no emissions to capture and convey, or the emissions are so transient, and in some cases, occur so randomly, that the application of a measurement methodology to these sources is not technically and economically practical." 72 Fed. Reg. 27,195. However, the plain language of the Act recognizes that standards of performance leading to the "capture" of emissions are not infeasible, 42 U.S.C. § 7411(h)(2)(A), and EPA has proposed to apply measurement methodologies to flares in spite of the transience of their emissions.

Moreover, contrary to EPA's proposal to waive federal work practice requirements through regulation, the Act specifically provides for the implementation of alternative work practice standards in narrowly defined circumstances, and mandates procedural safeguards to prevent arbitrary application of such exceptions:

> If after notice and opportunity for public hearing, any person establishes to the satisfaction of the Administrator that an alternative means of emission limitation will achieve a reduction in emissions of any air pollutant at least equivalent to the reduction in emissions of such air pollutant achieved under the requirements of [42 U.S.C. § 7411(h)(1)], the Administrator shall permit the use of such alternative by the source for purposes of compliance with this section with respect to such pollutant.

42 U.S.C. § 7411(h)(3). In sum, the Act does permit EPA to authorize the use of alternative work practice requirements in place of the ones that EPA adopts, but it does so only on a case by case basis, after notice and an opportunity for a public hearing. In referring to "the source" as being permitted to apply the approved alternative requirements, the Act makes clear that EPA's authority to waive federal work practice standards is case specific. EPA may not make a blanket determination that any state or local regulation is a permissible substitute for meeting federal requirements.

Moreover, the adoption of a rule allowing compliance with state or local flaring requirements to stand in for meeting EPA's own requirements would be arbitrary and capricious. EPA has not explained how SCAQMD Rule 1118 achieves reductions equivalent to EPA's own requirements, nor could it, as EPA's requirements have not yet been finalized. EPA's proposed flaring regulations provide no basis for commenters to assess the ultimate comparative effectiveness of Rule 1118. EPA has also not explained what other state and local rules would satisfy the agency's test as a substitute for compliance with federal requirements, nor has EPA even explained what criteria it would use to determine that a state or local rule is sufficiently equivalent to the federal requirements. Without a more detailed proposal from EPA, it is impossible for stakeholders to meaningfully comment on this feature of EPA's proposed amendments.

III. EPA Should Ensure that Facilities that Only Produce Crude Oil from Oil Shale and Tar Sands Must Comply With Strict Emission Limits and Monitoring Requirements.

The proposed rule proposes to "*clarify* the definitions of 'petroleum refinery' and 'refinery process unit'" to exempt "[f]acilities that only produce oil shale or tar sands-derived crude oil for further processing using only solvent extraction and/or distillation to recover diluents." 73 Fed. Reg. at 78,526. While we acknowledge that facilities that only produce crude oil from oil shale and tar sands do not appear to fall within the regulatory definitions for "petroleum refinery" and "refinery process unit," it is absolutely critical that EPA regulate emissions from these facilities. These facilities have substantial impacts on the environment. Extraction of oil from tar sands and oil shale are energy intensive, producing up to three times

more greenhouse gas than extraction of conventional crude oil.[22] Oil shale extraction "release[s] harmful pollutants into the air, including sulfur dioxide (SO2), particulate, carbon monoxide (CO), ozone (O3), lead, and nitrogen oxides (NOx), as well as pollutants such as silica, sulfur compounds, metals, carbon dioxide (CO2), ammonia (NH3), trace organics, and trace elements."[23] Thus, it is imperative that EPA set strict emission limits and monitoring requirements for these facilities.

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Respectfully Submitted,

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Comments Submitted on Behalf of:

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Natural Resources Defense Council
Sierra Club

[22] Ben Wakefield and Matt Price, Envtl. Integrity Project, Tar Sands: Feeding U.S. Refinery Expansions with Dirty Fuel 2 (June 2008), available at http://www.environmentalintegrity.org/pub511.cfm.
[23] Ann Bordetsky et al., Natural Res. Def. Council et al., Driving it Home: Choosing the Right Path for Fueling North America's Transportation Future 12 (June 2007), available at http://www.nrdc.org/energy/drivingithome/drivingithome.pdf.