

March 30, 2012

Administrator Lisa Jackson  
U.S. Environmental Protection Agency  
1200 Pennsylvania Ave NW  
Washington DC, 20460

**Re: New Source Performance Standards for the Oil and Natural Gas Sector, Docket No.  
EPA-HQ-OAR-2010-0505**

Dear Administrator Jackson:

Please accept the attached supplemental comments submitted on behalf of the Clean Air Task Force, Earthjustice, Natural Resources Defense Council, Sierra Club, and WildEarth Guardians. We strongly urge you to finalize a rule that is no weaker than the proposed rule.

As the Administration is aware, the oil and gas production sector is both rapidly expanding and highly polluting. In particular, an advisory panel of the Department of Energy has made clear that cleaner gas production is a critical and necessary next step for our country. To approach that goal, this rule must achieve at least the VOC and SO<sub>2</sub> reductions expected from the rules as proposed. As our supplemental comments explain, industry's last minute attempts to weaken the rule – citing lower emission numbers and higher costs – are unfounded, and its suggested *de minimis* exemption is unlawful.

We also write to respond in more depth to several questions raised by the Office of Management and Budget in our meeting of March 28, 2012:

- Streams containing less than 10% VOC are not “de minimis” sources qualifying for exemptions from regulatory requirements because: (a) such streams can produce significant emissions both individually and cumulatively across sources, *see* attached comments at pp. 11-13 (sources upstream of gas processing plants) and 16 (sources downstream of gas processing plants), and (b) the cost of controlling such streams is reasonable, *id.* at 13-15 (upstream sources) and 16-17 (downstream sources). VOC tonnage from these sources is very substantial, and the fact that the VOC is diluted with methane is no reason to exempt the sources from cost-effective emissions controls.
- Flaring is manifestly not the “best system of emission reduction” (BSER) if a pipeline can readily be made available – i.e., for all non-exploratory, non-delineation wells. In such cases, green completions are clearly BSER, as they can be done at reasonable cost at all levels of VOC content. (*See id.* at pp. 2-6 and 9-16). Well field flares, in contrast, are very crude

devices, and emissions from them, while known to be significant, are relatively poorly understood. However, for climate, health and safety reasons, if pipeline availability is genuinely problematic, flares are preferred to straight venting of large amounts of gas.

- Geological differences across the country do not justify variable standards and controls because: (a) variable numeric standards are infeasible and therefore a work practice standard (requiring REC) is necessary, and (b) there is no justification for exempting sources on the basis of gas stream VOC content, as the emissions would be significant and can be controlled at reasonable cost, as shown by experience in a large number of basins and states, including Texas, Oklahoma, Colorado, Wyoming, Louisiana, Pennsylvania, Arkansas, and other states as demonstrated by EPA's Gas STAR program and separately by data submitted by industry in comments to this proposed NSPS.

For these reasons, the law requires a final NSPS rule at least as strong as the proposal. We also briefly note that, as set forth in our previous comments, we are very concerned that the proposed National Emissions Standards for Hazardous Air Pollutants rule falls short of fulfilling EPA's legal duties, and that the agency is missing a significant opportunity to promote and protect public health in that portion of the combined rulemaking.

Respectfully submitted,

David McCabe  
Ann Weeks  
**Clean Air Task Force**  
18 Tremont Street, Suite 530  
Boston, MA 02108  
(617) 624-0234  
dmccabe@catf.us  
aweeks@catf.us

Meleah Geertsma  
**Natural Resources Defense Council**  
1152 15th Street NW, Suite 300  
Washington, DC 20005  
(202) 289-2382  
mgeerstma@nrdc.org

Craig Holt Segall  
**Sierra Club Environmental Law Program**  
50 F St NW, Eighth Floor  
Washington, DC, 20001  
(202)-548-4597  
Craig.Segall@sierraclub.org

Robin Cooley  
**Earthjustice**  
1400 Glenarm Place, #300  
Denver, CO 80202  
(303) 623-9466  
rcooley@earthjustice.org

Jeremy Nichols  
**WildEarth Guardians**  
1536 Wynkoop, Suite 301  
Denver, CO 80202  
303-573-4898 x 1303  
jnichols@wildearthguardians.org

cc: Cortney Higgins, OMB/OIRA  
Manisha Patel, CEQ  
Bruce Moore, OAQPS, EPA

**Comments of Clean Air Task Force, Earthjustice, Natural Resources Defense Council, Sierra Club, and WildEarth Guardians on EPA's New Source Performance Standards for the Oil and Natural Gas Sector, Docket No. EPA-HQ-OAR-2010-0505**

March 30, 2012 (correcting and adding to comments of March 28, 2012)

**I. EPA Should Not and Cannot Dilute the Protections Afforded by Its Proposed Rule.**

The need to adopt rigorous performance standards to control harmful pollution from the oil and gas production sector cannot be overstated. Such standards are necessary to prevent significant public health risks from volatile organic compounds (VOC), including increased ground level ozone pollution arising from VOCs and other sector pollutants in areas across the country where the public is facing a rapid ramp-up in oil and gas production, with states struggling to develop their own regulations to protect public health. In addition, the ever-more pressing need for near-term reductions in greenhouse gases makes control of methane from this sector a particularly valuable co-benefit. As domestic natural gas production booms, and the electrical sector becomes more reliant upon this fuel, it is imperative that the sector be made to clean up its operations. It has enjoyed lax oversight for too long.

In EPA's proposed rule this past summer, the agency set forth a number of critical protections under the New Source Performance Standards (NSPS) program, most notably the requirement to use "green completions" or "reduced emissions completions" (RECs) on hydraulically fractured natural gas wells. The requirements will control VOCs, contributors to ground level ozone that threatens lung health, and, as a co-benefit of these controls, also methane, a highly potent greenhouse gas. Although the rules are entirely reasonable and based upon many practices which industry already undertakes, some industry groups, including the American Petroleum Institute (API) and the Interstate Natural Gas Association of America (INGAA), have still challenged the proposal. They claim, among other things, that EPA's cost estimates are too low and the time for compliance is too short. On these bases they ask for broad permanent exemptions that would badly weaken the rule and extended timelines that would allow it to keep polluting for many years into the future.

If EPA is to fulfill its legal obligations, and address a pressing need for modern rules comprehensively controlling the pollution from this growing sector, it must not issue final rules compromised by the loopholes industry seeks. Such exemptions and further delays are not warranted and would do serious damage to these long-delayed regulations. For the reasons set forth below in this supplemental comment letter, none of these arguments put forward in the industry letters are valid and therefore provide no basis for EPA to dilute its proposal in the final rule to be issued on April 3<sup>rd</sup>.

## **II. Industry's Inflated Cost Claims are Methodologically Flawed, Not Supported by Actual Data, and Not Credible.**

Industry groups make widely varying claims about REC costs, all of which greatly exceed EPA's already conservative and well-supported estimates and none of which are credible. Industry relies upon these contentions to argue for more limited REC requirements, and/or a lengthy phase-in period for controls. Relaxing well completion requirements in the midst of a major shale gas production boom would illegally permit large amounts of excess pollution. There is no justification for doing so.

EPA estimates that REC costs about \$30,000 per well. This number is reasonable but conservative: EPA has documented that REC costs are typically lower than this, based on reports from a number of gas production firms, representing a large number of wells. In contrast, API claims that REC costs about \$180,000 per well.<sup>1</sup> More recently, Advanced Resources International Inc. (ARI), has separately claimed a cost for REC of about \$63,000 per well.<sup>2</sup>

These arguments are based on quantitative claims that are methodologically flawed, are not supported by actual cost data, and are not credible. For these reasons, they provide no basis for EPA to deviate from its proposal.

### **a. EPA's conservative estimate of REC costs.**

In the Technical Support Document for the proposed NSPS, EPA estimates that REC equipment costs approximately \$4,146/day to lease, and is needed for a 7 day period.<sup>3</sup> The agency adds \$691 in setup costs (transportation of equipment) to come up with a total cost of \$29,713:

$$\$4,146 \times 7 + \$691 = \$29,713$$

(EPA adds this cost to the cost of flaring gas that operators are unable to capture during REC to arrive at a total cost of NSPS compliance for a non-exploratory, non-delineation well, where REC is required, of \$33,237. These figures, and those discussed in section b and c below, do *not*

---

<sup>1</sup> API, Comments on Proposed Oil and Gas Sector Regulations, November 30, 2011 (EPA-HQ-OAR-2010-0505-4266) ("API November Comments"), at 108.

<sup>2</sup> ARI, *Estimate of impacts of EPA Proposals to reduce air emissions from hydraulic fracturing operations*, February 2012 ("ARI February Report"). This study, prepared for API, has not to date been submitted to the docket for this rulemaking, and thus is not properly part of the record at the time of this letter.

<sup>3</sup> U.S. EPA, Oil and Natural Gas Sector: Standards of Performance for Crude Oil and Natural Gas Production, Transmission, and Distribution, Background Technical Support Document for the Proposed Rules (EPA-HQ-OAR-2010-0505-0045) ("TSD"), at 4-16.

account for the revenue obtained by selling gas conserved with REC, so the net cost of REC to industry is considerably lower.)

EPA has documented a number of producer reports of the total cost per well of REC; *all* of these report that the per-well cost is close to or below the \$29,713 figure used by EPA in the TSD – often much below EPA’s figure. For example, Noble recently reported total costs of \$32,500 per well for REC on 10 wells in Oklahoma. An unnamed producer reported marginal costs of only \$8,700 per well for REC for 30 wells in the Fort Worth Basin.<sup>4</sup> Other reports of the actual cost of REC, all below \$20,000 per well, are tabulated in earlier comments we have submitted on EPA’s proposed NSPS.<sup>5</sup> Together these reports account for over 1,700 wells drilled.

b. API claims on REC costs are not credible.

In contrast to these reasonable documented costs, API claims that REC costs about six times as much as EPA’s conservative estimate. API roughly agrees with EPA’s per-day cost of REC, reporting that it costs about \$5,000 per day.<sup>6</sup> However, API argues that operators must rent REC equipment for a minimum of 30 days, at this \$5,000 per day cost.<sup>7</sup> Further, API argues that mobilizing REC equipment to a well costs \$30,000, for a total cost of \$180,000. These estimates are API’s conclusions based on a survey conducted of natural gas producers – a document which it does not provide.<sup>8</sup> The estimates calculated from this non-objective survey are methodologically flawed and are not credible.

The first, and largest, discrepancy between EPA’s result and API’s result stems from API’s argument that REC equipment must be leased for a minimum of 30 days. If this is the case, it does not follow that REC equipment must be leased for 30 days *per well* because gas producers do not drill single wells in isolation. Gas drilling practice has shifted such that multiple wells are regularly drilled and completed from a single pad in a short period of time, and a single production firm typically has multiple active pads in a small geographic area. REC equipment would be used multiple times by an operator, in a small geographic area (without even being moved when used to complete multiple wells on a single pad) during a single lease

---

<sup>4</sup> U.S. EPA, Lessons Learned from Natural Gas STAR Partners: Reduced Emissions Completions for Hydraulically Fractured Natural Gas Wells (submitted as Exhibit 58 to Sierra Club et al. Comments, *infra* n. 6) (“REC Lessons Learned from Natural Gas STAR”).

<sup>5</sup> Sierra Club *et al.*, Comments on “New Source Performance Standards: Oil and Natural Gas Sector; Review and Proposed Rule for Subpart OOOO,” November 30, 2011 (EPA-HQ-OAR-2010-0505-4240) (“NGO November Comments”), at 127.

<sup>6</sup> API November Comments, at 108.

<sup>7</sup> *Id.*

<sup>8</sup> See Appendix G of API November Comments. The results of this survey are only described selectively in summary form by API, so it is not possible for any outside party to evaluate the survey.

term. As a result of multiple uses during a lease term, API's argument about minimum lease time is not credible with regards to the per-well costs of REC.

Second, API's claim that it costs \$30,000 just to "mobilize" REC equipment for a single well is not credible. REC equipment can be truck mounted for ease of deployment, and can be used for at least 25 wells per year.<sup>9</sup> As noted above, industry practice today is to drill multiple wells from a single pad, so that a single mobilization accounts for several wells.

Furthermore, the leasing costs reported by API – \$150,000 per month – are not credible given the documented costs of REC equipment. This equipment is not inherently complex: essentially, it consists of tanks and traps which use gravity (not moving parts) to separate natural gas from flowback water and solids, and direct the gas to a sales line.<sup>10</sup> Even without a mandate to direct gas to a sales line or flare gas, producers need to carefully handle flowback fluids. The large volume of high-pressure water requires special handling for safety, and flowback water must not escape into the environment due to impurities and additives. The extra equipment needed to handle the gas so it can be sold is limited, and is relatively simple for the gas industry.<sup>11</sup> EPA has estimated that a set of this equipment costs about \$500,000 to fabricate,<sup>12</sup> and API reports a slightly lower figure, \$467,000.<sup>13</sup> Simple depreciation and interest arguments suggest that a lease cost of \$150,000 per month for equipment with this relatively modest fabrication cost is not credible – reasonable lease costs would be less than \$20,000 per month for this equipment, based on conservative assumptions about equipment lifetime and interest rates.<sup>14</sup> Simply put: It strains credulity to suppose that *any* rational market participant would be willing to pay \$150,000 *per well* to lease equipment which it could simply construct (and own and use in multiple locations on multiple wells) for just three times more.

---

<sup>9</sup> REC Lessons Learned from Natural Gas STAR, at 3-5.

<sup>10</sup> *Id* at 2.

<sup>11</sup> EPA has considered that in some cases RECs require the use of extra dehydrators, which can be more complex (see REC Lessons Learned from Natural Gas STAR, at 3). Given the large amount of water used during fracking which does not flow back immediately after fracking, gas from fracked wells will generally require dehydration, at least at some point. For temporary setups, portable desiccant dehydrators are available to simplify operation (no moving parts) and reduce capital costs.

<sup>12</sup> REC Lessons Learned from Natural Gas STAR, at 9.

<sup>13</sup> API November Comments, at 95.

<sup>14</sup> If we assume a lifetime of 5 years and an interest rate paid by the builder of 15%, \$467,000 equipment would require lease rates of about \$11,000 per month to cover the lessor's capital costs. If, more conservatively, we assume a lifetime of 3 years and a 20% interest rate, then a \$17,000 lease rates will cover capital costs. If lease rates are higher than this, builders and lessors will respond by fabricating more equipment, or lessees will intervene to have more equipment fabricated.

It is important to note that, to our knowledge, no firm or industry organization has reported *actual* costs of REC approaching \$180,000.<sup>15</sup> In addition to the many hundreds of wells included in industry reports received by EPA, the gas industry has reported on 1,076 wells with REC in separate comments on this proposed rule.<sup>16</sup> Despite all of this data, industry commenters have provided no documentation of actual REC costs similar to API's estimates. Rather, they have essentially taken estimates of the costs per day of leasing REC equipment for use, and multiplied it not by the number of days that the equipment is used, but by a lease minimum period. Due to the use of equipment on multiple wells in a short period, these results are not relevant to the cost-per-well.

And, even if for some reason REC equipment could only be leased at the rates that API claims (which ARI also puts forth),<sup>17</sup> gas producers could clearly purchase it or have it fabricated directly. Given the large amount of gas that can be conserved for sale using REC equipment, the equipment has a short payback time even at today's low gas prices. Using a slightly higher estimate for the cost of REC equipment (\$500,000), EPA estimates a payback time of 7 *months* for purchase of REC equipment with gas at \$3/Mcf.<sup>18</sup>

c. ARI claims on REC costs are not credible.

A recent report by Advanced Resources International Inc. (ARI), prepared for API, claimed higher costs for REC than reported by EPA. ARI uses the per day cost (\$4,146) of REC equipment used by EPA, in addition to the set-up cost (\$691).<sup>19</sup> ARI points to a separate statement by EPA that states that REC equipment can be used on 25 wells a year and thus infers that operators must use REC equipment for 15 days ( $365 / 25 = 14.6$  days) per well, and must pay the per day cost EPA reports for that whole time. Substituting 15 days for the 7 in EPA's formula, ARI concludes that REC costs \$62,881 per well.

Again, EPA's estimated cost for REC (\$29,713 per well), calculated using the 7 day figure, is generally *higher* than the *actual costs of REC reported by gas producers*. The discrepancy between ARI and EPA's figures arises because ARI has assumed that the per-day costs reported by EPA will be paid by operators 375 days out of the year (15 days per well  $\times$  25 wells = 375

---

<sup>15</sup> Notably, many of the gas producers included in API's survey (*see infra* n. 7) have also reported *actual* costs of REC to EPA as mentioned above. EPA's *direct* reports of REC cost from these producers are more compelling than API's *indirect* claims based upon separate factors from these producers.

<sup>16</sup> See Attachments to URS, Summary of New Data on Gas Well Completions, November 28, 2011 (itself included as "Attachment 3: Gas Well Completion Emissions Data" appended to America's Natural Gas Alliance and American Exploration and Production Council Comments on proposed NSPS, November 30, 2011 (EPA-HQ-OAR-2010-0505-4241)).

<sup>17</sup> ARI February Report.

<sup>18</sup> REC Lessons Learned from Natural Gas STAR, at 9.

<sup>19</sup> ARI February Report.

days). This assumes, of course, that equipment is rented literally all of the time, which is improbable.

Given EPA's direct evidence of lower REC costs and ARI's unsupported assumption that equipment is leased every day of the year, ARI's claim that operators must be paying these lease rates over a 15-day period for each well are not credible.

d. Conclusions on cost.

Given the producer costs of a REC that EPA has documented, the methodological flaws in API and ARI's analyses, and the costs of REC equipment to fabricate, it is clear that the cost estimates presented by ARI and API are not credible. EPA should stand by its estimates of costs, which are supported and conservative, and reasonable for the industry to bear.

### III. REC Equipment Will Be Available for Compliance in the Near-Term.

In the ARI February Report, ARI projects that U.S. production of natural gas and oil will be substantially reduced if US EPA finalizes the proposed NSPS, without a substantial phase-in time for the NSPS requirement that reduced emissions completion (REC) be used at most unconventional gas wells. According to ARI, this reduction in both oil and gas production would arise due to a shortage of available REC equipment, a claim it bases on API figures.

ARI derives these projections by modeling the domestic energy market, working from two flawed assumptions that are critical to their results, as set forth below. As ARI's assumptions are flawed, its projections are not credible.

a. Not all unconventional oil wells are covered by the NSPS.

**Flawed Assumption 1.** *ARI assumes without question that all unconventional oil wells are subject to the REC equipment.* ARI notes that unconventional oil wells produce gas (which by and large they do) and uses this to justify assuming that EPA is requiring REC on *all* fracked oil wells:

For purposes of this assessment, we have assumed that [REC] will apply to all unconventional resources producing at least some natural gas, even if the primary product is liquids [i.e., crude oil].<sup>20</sup>

---

<sup>20</sup> ARI February Report, at 9-10.



However, the proposal is unclear as to the application of the REC requirement to unconventional oil wells. EPA's proposed REC rules (40 C.F.R. §60.5375) define a gas well subject to the REC requirement as:

*Gas well* means a well, the principal production of which at the mouth of the well is gas.

76 Fed. Reg. 52,738, 52,809 (August 23, 2011) (emphasis added). As commenters have pointed out to EPA, this definition is unclear as to its scope, as most wells produce both oil and gas and the term "principal" does not clearly delineate whether any individual well would be considered a "gas" well, oil, condensate, or hybrid well.<sup>21</sup> Thus, ARI's stated assumption that the proposed NSPS covers *all* unconventional oil wells, in the face of this definition, is incorrect and as a result their conclusions for oil production are meaningless.

We note that we do not support exempting unconventional oil wells from the REC requirement.<sup>22</sup> Even if the primary product of the well is oil, most or all such wells produce significant gas, as reported by ARI, and emissions of VOC and natural gas during flowback will be significant if REC is not used.<sup>23</sup> If flaring is used, and we note that associated gas from unconventional wells is often flared continuously for months until pipelines are built to the well, the pollutants from these flares will be very significant.<sup>24</sup> As the current hydrocarbon boom switches from unconventional natural gas to unconventional oil, the emissions from unconventional oil well completions will increase, and EPA must address these emissions. Further, as we note below, the oil and gas industry has proven quite capable of deploying enormous infrastructure in the past few years, and the claim that adequate equipment for REC for unconventional oil wells would take years to fabricate is not credible in light of this recent build-up.

If EPA clarifies the proposed definition of natural gas wells to include all wells that produce significant amounts of natural gas, as the agency must if the rule is to truly protect human health and the environment, the industry could readily accommodate the inclusion, as we next discuss. Finally, we note that ARI's false assumption that the proposed NSPS covers all unconventional oil wells also falsely exaggerates the shortage in REC equipment that they

---

<sup>21</sup> See, e.g., Colorado Department of Public Health and the Environment Comments, November 30, 2011 (EPA-HQ-OAR-2010-0505-4191), at 4.

<sup>22</sup> See NGO November Comments, at 32-33.

<sup>23</sup> 76 Fed. Reg. at 52,757; TSD §§ 4.1.1-4.1.2.

<sup>24</sup> See Clifford Kraus, *New York Times*, "In North Dakota, Flames of Wasted Gas Light the Prairie" (September 28, 2011), available at <http://www.nytimes.com/2011/09/27/business/energy-environment/in-north-dakota-wasted-natural-gas-flickers-against-the-sky.html?pagewanted=all>

predict for unconventional natural gas wells (see below), since the same equipment can be used for gas or oil wells.

- b. Industry can manufacture and deploy more than 200 REC sets per year.

**Flawed Assumption 2.** *ARI assumes that, as API has asserted<sup>25</sup>, industry can only fabricate 200 sets of REC equipment per year, despite the clear ability of this industry to very rapidly deploy complex infrastructure.* While REC equipment can be used for multiple well completions per year, ARI reports that the number of non-exploratory/non-delineation wells that can be drilled will be severely limited for several years by the low number of current REC sets, and the very slow maximum fabrication rate that API asserts, 200 REC sets per year.

This industry has, in the past few years, very rapidly ramped-up its production, gathering, processing, and transmission infrastructure in Texas, Pennsylvania, Louisiana, Arkansas, North Dakota, etc. In Pennsylvania alone, the gas industry deployed at least 90 natural gas compressors,<sup>26</sup> drilled over 3000 wells,<sup>27</sup> and installed thousands of miles of pipeline, in a single year, 2010. Nationwide, the gas industry is on pace to deploy over 11 million horsepower of hydraulic fracturing pumps in the three years leading up to the end of 2012.<sup>28</sup> Since the largest fracturing pumps are 3,000 horsepower,<sup>29</sup> this implies a lower limit of well over 1,000 fracturing pumps deployed per year.

As we describe above, REC equipment, which comprises a series of mechanical tanks and traps, is not complex – arguably it is far less complicated than the compressor stations and pumps that industry is so rapidly deploying.<sup>30</sup> Moreover, portions of the equipment – systems necessary to handle flowback fluids – should already be deployed at most every well because, even without a mandate to direct gas to a sales line, producers need to safely handle flowback fluids: flowback water must not escape into the environment due to impurities and additives. The extra equipment needed to handle the gas so it can be sold is limited, and is relatively

---

<sup>25</sup> API November Comments, at 94.

<sup>26</sup> Based on Clean Air Task Force analysis of notices of issuance of permits for compressor stations by Pennsylvania Department of Environmental Protection in *The Pennsylvania Bulletin* for 2010.

<sup>27</sup> Pennsylvania Department of Environmental Protection reports 3,052 oil and gas wells drilled (including both Marcellus Shale gas wells and non-Marcellus wells) between 1 Jan. 2010 and 31 Dec. 2010. See: [http://www.depreportingservices.state.pa.us/ReportServer/Pages/ReportViewer.aspx?/Oil\\_Gas/Wells\\_Drilled\\_By\\_County](http://www.depreportingservices.state.pa.us/ReportServer/Pages/ReportViewer.aspx?/Oil_Gas/Wells_Drilled_By_County)

<sup>28</sup> See Selam Gebrekidan, *Reuters*, “Insight: Natural gas pain is oil’s gain as frack crews head to N. Dakota,” March 19, 2012, available at: <http://ca.reuters.com/article/businessNews/idCABRE82I08620120319?pageNumber=3&virtualBrandChannel=0&sp=true>

<sup>29</sup> See, e.g., literature for 3,000 hp Gardner-Denver fracturing pump: [http://www.gardnerdenverproducts.com/microsite\\_product.aspx?id=3002&n=526](http://www.gardnerdenverproducts.com/microsite_product.aspx?id=3002&n=526)

<sup>30</sup> Exhibit 1 to REC Lessons Learned from Natural Gas STAR.

simple for the gas industry.<sup>31</sup> In other words, REC equipment can be readily assembled when needed.

As we described in our initial comments on the NSPS, industry experience demonstrates as much. When the states of Colorado and Wyoming required RECs at many wells, oil and gas production continued and increased.<sup>32</sup> Operators were able to readily accommodate air pollution requirements, contrary to ARI's predictions.

The assertion that the natural gas industry, which has so rapidly built up complex infrastructure in several shale gas plays, can only obtain 200 sets per year of fairly simple REC equipment nationwide, is simply not credible. ARI's projections of reduced natural gas production, if the NSPS is finalized as proposed, rest on API's highly flawed assertion and are therefore not realistic.

c. Conclusions on REC availability.

In short, all available evidence shows that the industry can readily manufacture REC equipment, with no meaningful impact on drilling and production rates. Industry has presented no evidence that would justify delaying EPA's much-delayed rules still further.

#### **IV. An Exemption Based on VOC Content is Unjustified and Would Greatly Reduce the Rule's Protections.**

In addition to arguing for broad delays, some industry voices, including API and the Interstate Natural Gas Association of America (INGAA) have instead argued for large exemptions for sources processing gas streams containing relatively low percentages of VOC by weight. A blanket exemption for all (or many) emissions sources handling natural gas mixtures composed of below 5-10% VOCs by weight, as requested by industry,<sup>33</sup> is both contrary to law

---

<sup>31</sup> EPA has accounted for the fact that in some cases RECs require the use of extra dehydrators, which can be more complex. See REC Lessons Learned from Natural Gas STAR, at 3. Given the large amount of water used during fracking which does NOT flow back immediately after fracking, gas from fracked wells will generally require dehydration, at least at some point. For temporary setups, portable desiccant dehydrators are available to simplify operation (no moving parts) and reduce capital costs.

<sup>32</sup> NGO November Comments, at 161-166.

<sup>33</sup> API November Comments, at 18-20 (requesting a limitation on § 60.5365, the applicability provision of the proposed subpart OOOO covering various facilities in the production, transmission and distribution sectors, to cover only streams "in VOC service" (i.e., exempt equipment in "wet gas service") and to define "in VOC service" as containing or contacting "a process fluid that is at least 10 percent VOC by weight.") and API, Supplemental Comments on Proposed Oil and Gas Sector Regulations, March 2, 2012 (EPA-HQ-OAR-2010-0505-4473) ("API March Comments"), at 1 (10% VOC content by weight threshold for RECs); see also Interstate Natural Gas Association of America Comments on the Proposed Oil and Gas Sector Rules, November 22, 2011 (EPA-HQ-OAR-2010-0505-4104) ("INGAA Comments"), at 8-9.

and bad policy. Such a blanket exemption would violate EPA's duty under Section 111 to control significant sources of harmful air pollution, vitiating many of the important public health and welfare benefits from the proposed rule and in some cases exempting entire portions of the industry.

An exemption is not supportable because these sources emit significant amounts of pollution and can be controlled using available methods that do not impose unreasonable costs. See § 42 U.S.C. 7411(a)(1) (definition of standard of performance), (a)(1) (duty to list categories of sources that cause or contribute significantly to "air pollution which may reasonably be anticipated to endanger public health or welfare") and (b)(1)(B) ("The Administrator shall, at least every 8 years, review and, if appropriate, revise such standards").<sup>34</sup> EPA has proposed cost-effective controls for significant sources of VOCs that in many cases also produce methane-related savings for industry, a proposal that is entirely reasonable.

Several Section 111 guiding principles set forth in our previous comments in this docket are worth reiterating at the outset. First, Section 111 grants EPA "a great degree of discretion" in its consideration of the statutorily-listed factors, including costs. See *Lignite Energy Council v. EPA*, 198 F.3d 930, 933. Second, EPA is not required to determine that every well or other source of emissions will face costs of a certain level or below, but that the costs will not be exorbitant for the industry as a whole. See *Portland Cement Ass'n v. EPA*, 513 F.2d 506, 508 (D.C. Cir. 1975) (cost issue before the agency is whether the cost of new source control is "greater than the industry could bear and survive"); see also *Lignite Energy*, 198 F.3d at 933 ("EPA's choice will be sustained unless the environmental or economic costs of using the technology are exorbitant"). Thus, EPA must impose emissions controls on the industry as a whole and is to evaluate the costs of the regulations across the industry. The fact that some relatively low-VOC sources may have comparatively (but not unreasonably) high control costs per ton of VOC reduced does not warrant excluding them from all regulation. Instead, EPA has the authority, and obligation, to regulate the listed category's significant contributions to air pollution, even though the precise amount of emissions from sources within the industry may vary. Even if some sources were situated so differently that controlling them in the same manner as the majority of sources would be markedly more difficult, those differences would argue for a tailored approach to setting standards, not to a blanket exemption from *any* control.

---

<sup>34</sup> See also NGO November Comments at 6-8 (BSER obligation) and 73-74 (EPA has based its appropriateness decision under Section 111(b)(1)(B) on two factors, amount of emissions from a source and the availability of demonstrated control measures); Comments of Sierra Club, et al. (Jan. 30, 2012) ("NGO January Comments"), at 9-10 (describing EPA's broad authority to define regulated facilities).

- a. Control of VOCs upstream of gas processing plants is reasonable.

Because wells with gas streams containing significantly less than 10% VOCs still produce significant amounts of pollution and are controlled at reasonable cost, the VOC threshold(s) proposed by API would be arbitrary and capricious.

- i. Well completions and recompletions are significant sources of VOCs, and RECs can control a large portion of these emissions.

According to the best information available to EPA on emissions from the sector, oil and natural gas well completions and recompletions annually account for almost 506,000 tons of VOCs per year.<sup>35</sup> RECs are a key control for reducing these emissions, yielding reductions of over 468,000 tons/year nationwide.<sup>36</sup> Such reductions will help ensure that areas experiencing significant oil and natural gas development will not also experience increasingly dirty air that may in many instances violate national ambient air quality standards.

Moreover, well completions and recompletions on wells with lower VOC content gas streams will produce significant amounts of VOCs if uncontrolled. For example, at 9,175 Mscf per well completion, EPA's estimate of uncontrolled well completion emissions,<sup>37</sup> a single well with 2.5% VOC by weight – four times lower than the upper limit of the exemption requested by API – will emit 5.4 tons of VOC during well completion without REC over a period of just a few days.<sup>38</sup> Almost all of this VOC pollution is avoided by REC.<sup>39</sup> Completions at wells with higher content VOC streams that still fall below the industry's 10% threshold result in upwards of 18 tons of VOCs per completion.<sup>40</sup> Multiply these figures times numerous wells in a single basin and local air quality impacts are very significant. For these reasons, EPA's decision to include the proposed REC requirement is reasonable, and adopting a blanket threshold of 10% VOC or even 5% would be arbitrary and capricious.

---

<sup>35</sup> See TSD, Table 4-4, at 4-13.

<sup>36</sup> See U.S. EPA, Regulatory Impact Analysis – Proposed New Source Performance Standards and Amendments to the National Emissions Standards for Hazardous Air Pollutants for the Oil and Natural Gas Industry, July 2011 (EPA-HQ-OAR-2010-0505-0075), Table 3-3, at 3-16.

<sup>37</sup> U.S. EPA, Greenhouse Gas Emissions Reporting from the Petroleum and Natural Gas Industry, Background Technical Support Document, November 2010, at 87. Available at [http://www.epa.gov/climatechange/emissions/downloads10/Subpart-W\\_TSD.pdf](http://www.epa.gov/climatechange/emissions/downloads10/Subpart-W_TSD.pdf)

<sup>38</sup> Based on composition of 90% methane, 9% ethane, and 1% propane, which is 2.5% VOC by weight (only propane, of the three constituents, is considered VOC), 9,175 Mscf of natural gas weighs 215 tons, of which 5.4 tons is VOC. See also Table G-6 in API November Comments (reporting tons per flowback of about 5-10 tons for wells with VOC contents of about 2.5-5%).

<sup>39</sup> TSD, at 4-15.

<sup>40</sup> See, e.g., API November Comments, at Table G-6 (reporting 18 tons of VOC/flowback for well GRI11 with a VOC content of 9.8%).

Despite these significant emissions, API attempts to argue, in a passage buried in its comments, that a 10% threshold is warranted under the *de minimis* doctrine:

This is not a matter of requesting an exemption for facilities that are sources of the regulated pollutant, but rather it is a matter of recognizing that below certain *de minimis* thresholds of concentration, a facility is not reasonably deemed a source of that pollutant and thus is not part of the source category.<sup>41</sup>

This doctrine, however, is limited to sources whose regulation would “yield a gain of trivial or no value.” See *Alabama Power v. Costle*, 636 F.2d 323, 361 (D.C. Cir. 1979); see also *Shays v. Federal Elections Comm’n*, 414 F.3d 76, 114 (D.C. Cir. 2005) (“situations covered by a *de minimis* exemption must be truly *de minimis*”). Emissions of many tons of VOCs from a single well as set forth above, summed across a number of wells drilled in the same area, can hardly be considered trivial. Notably, API focuses on the “thresholds of concentration” – only one part of the calculation of total emissions that ignores the other key factor, volume of gas emitted. Moreover, where, as here, an available and reasonable-cost control can eliminate most or all of that pollution, regulation of the source will yield significant value for air quality.

Exempting wells with gas streams having less than 10% VOC content will have serious implications for air quality. If emissions are not controlled during well completion, even a 1% VOC well emitting 2.2 tons of VOC over the course of a 7-day well completion will emit more VOC per day than a 100-ton-per-year continuous source. Such relatively short-term emissions certainly can contribute to exceedances of ambient air quality standards, as the primary standard ozone is set on an eight-hour basis (reflecting significant acute health effects from short-term elevated pollution levels).

Moreover, many wells may be drilled in a single small airshed. We have noted in earlier comments that emissions from natural gas production have driven ozone levels in some gas basins to very dangerous levels.<sup>42</sup> As an illustration of the density of gas well completion, 429 Marcellus Shale gas wells were drilled in Bradford County, Pennsylvania, in a single year (2010).<sup>43</sup> This is not a huge area (Bradford County is less than 1,200 square miles). Using the figures submitted by API for Marcellus Shale gas composition<sup>44</sup> (assuming there are no VOC

---

<sup>41</sup> See API November Comments, at 115-116.

<sup>42</sup> See NGO November Comments, at 14-15 (discussing air quality problems attributed to natural gas production in Wyoming, Utah, and other states).

<sup>43</sup> Pennsylvania Department of Environmental Protection reports Marcellus Shale wells drilled between 1 Jan. 2010 and 31 Dec. 2010. See:

[http://www.depreportingservices.state.pa.us/ReportServer/Pages/ReportViewer.aspx?/Oil\\_Gas/Wells\\_Drilled\\_By\\_County](http://www.depreportingservices.state.pa.us/ReportServer/Pages/ReportViewer.aspx?/Oil_Gas/Wells_Drilled_By_County)

<sup>44</sup> See Table G-5 in API November Comments.

compounds heavier than propane in the gas), gas from these wells averages 6.9% VOC by weight, and average wells in this basin would be exempt from REC requirements under API's suggested 10% VOC exemption. Such an average well would emit 15.7 tons of VOC if left uncontrolled. Over the 429 wells drilled in this county in 2010, API's logic would consider as *de minimis* over 6,700 tons of VOC in a single year. Even if the gas in this county were only 1% VOC, at 2.2 tons of VOC emitted per uncontrolled well, such high well density would result in up to 940 tons of VOC release in one county in a single year. Shale gas development in and around Fort Worth, Texas, in the Barnett Shale, has been similarly dense. We note that API's average composition for Barnett Shale gas composition<sup>45</sup> is 4.8% VOC by weight, so that average Barnett wells would be exempt from emissions controls under both thresholds suggested by API. In effect, a 10% exemption would remove coverage for many wells in the most important shale plays.

API's real complaint is not with controlling insignificant sources of emissions – which the wells it seeks to exempt clearly are not – but on the cost of controls which, as set forth above, they inflate beyond reason. But a *de minimis* exemption from otherwise applicable statutory requirements cannot be based solely on cost-benefit considerations. See *Alabama Power*, 636 F.2d at 360-361. And, in any event, the costs are reasonable for industry to bear, under the Section 111 framework articulated by the courts and in light of the negative impacts on air quality that industry's operations create.

- ii. Costs associated with RECs are reasonable at very low VOC percentages, far below industry's proposed threshold.

Even at EPA's conservative estimate of REC costs per completion, requiring RECs on gas streams with VOC contents well below 10% by weight imposes reasonable costs on industry. Indeed, such RECs are cost effective in many instances even without considering savings from resale of captured gas; when such savings are considered, RECs are reasonable cost even at a natural gas price of \$2.25 per Mscf (roughly the current price of natural gas) for VOC content streams as low, or lower, than 1%. A 10% threshold – or even one as low as 1%, one-fifth of industry's proposed alternative threshold of 5% – therefore is not justified on the basis of cost. No threshold can legally be written into the rule.

As described above, EPA estimates the cost of a REC at \$33,237, based on reasonable, but conservative, assumptions. Using EPA's conservative estimate and 5.4 tons of VOC emissions per completion from a well with 2.5% VOC yields a cost effectiveness of \$6,157/ton VOC *even before considering revenue from sale of captured natural gas*. These costs, calculated solely on the basis of cost per ton of regulated pollutant controlled, are well within reason.

---

<sup>45</sup> *Id.*

Given that they are associated with a VOC content of half of API's lower proposed (5%) threshold, it is clear that a 5% threshold is unjustified.

In contrast, API claims implausibly high REC costs of nearly six times that figure – \$180,000 per REC – and on that basis concludes that control costs are too high for wells with a VOC content below 10% by weight. This cost estimate, however, is excessive and based on several flaws as set forth above. *See supra* 3-6.

Using EPA's conservative REC cost estimate instead of API's excessive estimate yields reasonable costs even for gas streams with VOC contents below 2.5%. For instance, a well with 1% VOC content produces 2.2 tons of VOC per well completion if emissions are not controlled.<sup>46</sup> EPA conservatively estimates that implementing REC at such a well will cost \$33,237, and the well owner will recover for sale 8,258 Mcf of gas.<sup>47</sup> With current gas prices (\$2.25 per Mscf), the net cost of REC is \$14,657. The net cost of this emissions control per ton of VOC reduced, in turn, is \$6,787/ton, not an unreasonable figure or one that is exorbitant for the industry to bear. Emissions control therefore is reasonable cost for wells with 1% natural gas VOC content – *one fifth* of the alternative threshold advocated by API, and *one-tenth* of the 10% threshold. Of course, REC for wells with much higher VOC contents, but which are still below the 10% threshold for exemption requested by API, will have far lower costs per ton of avoided emissions.

Adding in the revenue from sale of recovered gas to determine whether the costs of the standards can be borne by the industry is reasonable and within EPA's discretion under Section 111. EPA must consider "the cost of achieving such reduction [in the regulated pollutant]." 42 U.S.C. §7411(a)(1). The cost of achieving the reduction may reasonably be read to encompass any related savings that arise directly from use of that control, e.g., income from sale of captured gas. EPA has long considered such "product recovery credits" in justifying NSPS for other sectors, including those NSPS cited here by API in support of an exemption for lower VOC content streams.<sup>48</sup> As EPA explained in its NSPS for the synthetic organic chemical manufacturing industry, "EPA considers costs and achievable degrees of control and then applies reason to select a standard," and that exercise of reason may include product recovery

---

<sup>46</sup> These calculations are based on Barnett Shall Well 3 from: Bullin, K.E. and P.E. Kroushop, "Compositional variety complicates processing plans for US shale gas," *Oil and Gas Journal*, March 29, 2009. Available at: <http://www.ogj.com/articles/print/volume-107/issue-10/special-report/compositional-variety-complicates-processing-plans-for-us-shale-gas.html>. The gas composition used is 91.8% methane, 4.4% ethane, 0.4% propane (assuming that higher hydrocarbons are not present in the gas), 2.3% carbon dioxide, and 1.1% nitrogen.

<sup>47</sup> Based on recovery for sales of 8,258 Mcf of gas per well completion (the rest is flared), *see* TSD, at 4-18.

<sup>48</sup> *See* API November Comments, at 18 (citing NSPS Subparts VV, for VOC leaks in the synthetic organic chemicals manufacturing industry ("SOCMI"), and GGG, for VOC leaks at refineries).



credits.<sup>49</sup> Nor does the Act restrict EPA to considering only control-related cost savings generated by recovery of the regulated pollutant itself: it is only the reduction that must be of the regulated pollutant.<sup>50</sup> See 42 U.S.C. § 7411(a)(1).

For these reasons, EPA's proposal is justified and reasonable.

- iii. Industry's proposed compliance regime poses significant compliance problems and has the potential to create a "pay-to-pollute" system.

API's proposal that industry determine whether a well will exceed a 10% threshold based on data from nearby wells that do not use RECs,<sup>51</sup> poses numerous compliance problems and risks creating a system under which companies pollute now and pay fines – if at all – later. This is an unacceptable and unlawful framework for a new source performance standard. Rather, the standard must ensure protection of air quality in the first instance, and there is no basis in fact or in law for allowing the significant emissions from wells that will escape control under the proposed mechanism.

API specifically recommends that "the agency determine[ ] compliance with the VOC threshold based on the measured VOC content of the gas sampled within 30 days after the well begins production for gas wells that do not employ a REC procedures for flowback following hydraulic fracture." *Id.* As an initial matter, API does not justify why compliance should be determined on the basis of gas sampled within 30 days after the well begins production, when the VOC content of interest is that during the first several days during the flowback period. If the VOC content varies over the 30 days, a 30-day sample will not be representative of the key flowback period. Also, as the goal of the Act is to prevent air pollution, if EPA were to adopt such an unjustified threshold, it must require companies to immediately report the VOC content of the gas during the first day of flowback and for the duration of the flowback, and to immediately cease operations if the level at any point indicates that the well will exceed the threshold. Because this system allows companies to emit illegally if their estimates are wrong, and because it may not even be *possible* to readily halt production, once it has begun, such an emit-now, check-later system is unacceptable.

---

<sup>49</sup> See EPA Office of Air Quality Planning and Standards, VOC Fugitive Emissions in Synthetic Organic Chemicals Manufacturing Industry – Background Information for Promulgated Standards, EPA-450/3-80-033b (1982), at 7-7.

<sup>50</sup> Although, as we have raised in our comments on the proposed rule, EPA must directly regulate methane from the oil and gas sector under Section 111. See NGO November Comments, at 72-80. API does not provide any reasons in its comments as to why EPA can or should not regulate methane from the oil and gas sector. See API November Comments, at 16 (stating that EPA has not proposed such a standard so has not given the opportunity for comment, and noting that "many natural gas streams are mainly methane").

<sup>51</sup> API March Comments, at 1.

In addition, API fails to acknowledge that, at its own projected – though utterly implausible – REC costs of \$180,000 per completion, flowback periods of only several days and a statutory daily maximum penalty of \$25,000 for violations, *see* 42 U.S.C. § 7413(b), its suggested mechanism creates a pay-to-pollute regime because it will be more economically advantageous to avoid a REC and pay fines later. (Fines, of course, are appropriate in any situation where a company pollutes at levels above the NSPS. Operators must not be excused from compliance penalties if they take the risk of drilling a well that turns out to have higher VOC content than they estimate – for, if they do not bear the risk, the public does, in the form of increased air pollution.) The same may be said even at EPA’s lower REC costs, as in practice companies may decide to risk enforcement actions but not actually be cited, and/or may face reduced penalties if they claim that reliance on data from nearby wells gave them a good faith basis for believing that they would be in compliance.

- b. Control of VOCs in the transmission sector, downstream of gas processing plants, is reasonable.

Finally, INGAA argues that the transmission and storage sector, which it asserts has a 2.3% or lower VOC content, should be exempted entirely,<sup>52</sup> a claim which other industry groups have echoed. This request should be rejected because omitting the transmission and storage sector would leave out significant emission sources, in violation of Section 111: while this segment of the natural gas sector may emit gas with a lower portion of VOCs compared to other segments, the VOC tonnage is still quite significant, and thus should be controlled under the NSPS program. For example, pneumatic devices and wet-seal centrifugal compressors in this segment emit 8,370 tons and 8,180 tons of VOCs, respectively, per year.<sup>53</sup> Emissions of methane from these devices are 296,000 tons and 289,000 tons, respectively, per year.<sup>54</sup> Controls for these emissions are cost-effective. As EPA has documented, low-bleed pneumatics reduce VOC emissions in this sector for just \$262/ton, and dry-seal centrifugal compressors reduce VOC for \$3,495/ton.<sup>55</sup> Simply put, dilution of VOC with methane should not exempt the transmissions and storage sector from reasonable standards.

INGAA claims that EPA has over-represented the emissions reductions which will result from the standards for centrifugal compressors and pneumatic controllers because industry is already, to some extent, adopting these measures. It is important to note that INGAA’s claim does not bear on the cost-effectiveness calculation that EPA has presented. While INGAA’s argument is very likely true to some extent (indeed, this actually demonstrates the

---

<sup>52</sup> INGAA Comments, at 1-7.

<sup>53</sup> Based on the ratio of VOC to methane for this source in Table 3-3 in the Regulatory Impact Analysis.

<sup>54</sup> USEPA, *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2009* (2011), Table A-122. The figure for wet-seal centrifugal compressors excludes those in LNG facilities.

<sup>55</sup> See RIA, at Table 3-3.

reasonableness of the measures EPA is requiring, in line with the intention of New Source Performance Standards), it is important to realize that EPA's estimates of emissions reductions for these sources are *underestimates* for two significant reasons.

First, EPA's accounting for emissions reductions only includes new installations of centrifugal compressors and pneumatic controllers, and does not include replacement of existing equipment. Since the proposed standard requires that existing equipment be replaced with equipment meeting the performance standards (i.e., dry-seal compressors and low-bleed pneumatic devices), this is an underestimate of the emission reductions resulting from the rule. Due to the very large pool of existing equipment, emission reductions from replacement of existing equipment will likely be larger than emission reductions from new installations.

For example, EPA predicts that about 84 pneumatic controllers will be newly installed, not replacing older equipment, per year, in the transmission and storage segment of the gas industry, and predicts that a low-bleed controller will be usable for 80% (67) of those.<sup>56</sup> In comparison, the segment currently has almost 86,000 existing pneumatic controllers installed.<sup>57</sup> Assuming a long lifetime of 25 years for the existing devices, this implies that over 3400 replacement pneumatic controllers will be installed per year. Assuming 80% of them can be replaced with a low-bleed device, this means that over 2700 low-bleed controllers will be installed per year as a result of the proposed standard, far outweighing the 67 new installations.

Second, EPA's accounting for emission reductions only considers emission reductions due to a single year's new installations. Since this equipment will last for many years, emission reductions will accumulate. So, for example, after the rule has been in effect for 2 years, annual emissions from new installations of pneumatic devices will be reduced by 12 tons of VOC; after 5 years, annual emissions will be reduced by 30 tons of VOC, etc.

Emission reductions from these sources from replacement devices and new installations will become quite significant over time, as the enormous fleet of existing compressors and pneumatic devices is gradually replaced with cleaner, modern technology. EPA thus must capture these pollution reductions and deny INGAA's request for a waiver.

#### c. Conclusion on VOC content exemptions

In sum, a VOC-based exemption would allow a great deal of additional pollution across the sector and seriously weaken the rule, and its enforceability. Industry can readily bear the cost of the rule. Weakening it as industry advocates is simply not justified as a legal or policy matter.

---

<sup>56</sup> See TSD, at 5-10 and 5-12.

<sup>57</sup> U.S. EPA, *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2009* (2011), Table A-122.

## **V. Conclusion.**

Thank you for considering these comments. EPA should reject industry's last-minute efforts to weaken the rule and move forward with the comprehensive air pollution controls which the public urgently needs.