

# Mind The Gap

## Closing the Methane Emissions Gap Between The Obama Administration's Promise and Proposals



Oil well and tanks near Williston, North Dakota

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**M**ethane, a global warming pollutant more than 80 times as potent as carbon dioxide over the near term, has been getting a lot of attention in recent years. And that's a good thing. Neither the United States, nor the world can meet their targets for greenhouse gas reductions and climate stabilization without dramatically reducing methane. Much of the attention in the U.S. has been focused on the oil and gas sector because it is the largest industrial source of methane<sup>1</sup> in the U.S., and because there are many low or zero-cost solutions and technologies available to reduce oil and gas methane pollution.

In the Spring of 2014, President Obama announced his Administration's *Strategy to Reduce Methane Emissions*.<sup>2</sup> And, in January 2015, the President's Strategy set a goal to reduce methane pollution from the oil and gas sector by 40–45% from 2012 levels by 2025. This ambitious but achievable goal played an important role in the U.S.'s commitments in Paris to a global solution to climate change.

To date, the U.S. has taken some very positive steps forward in reducing air emissions from the oil and gas sector, though we only recently began focusing directly on methane reductions. In 2012, EPA finalized standards targeting volatile organic compounds (VOC) from some sources within the oil and gas industry.

While this standard achieved the co-benefit of some methane reductions, entire segments of the industry were ignored because VOC, not methane, was the target pollutant. Moreover, even with the 2012 VOC standards in place, methane emissions from the oil and gas sector are currently still expected to rise compared to 2012 levels.<sup>3</sup>

In a positive step toward remedying the problem posed by rising methane emissions, in August 2015 EPA proposed the first federal oil and gas methane standards in the U.S.—and the first greenhouse gas standards for the oil and gas sector—covering a much larger list of sources in oil and gas production, natural gas processing, and the previously unaddressed gas transmission and storage industries.<sup>4</sup> Specifically, these proposed methane standards would require industry to use a number of key, common-sense practices that will reduce harmful emissions. Owners and operators will need to:

- Capture gas from completion of hydraulically fractured oil wells, instead of dumping the gas in the air (EPA's 2012 VOC rules only require this for gas wells).
- Periodically check wellpads and compressor stations for equipment leaks, and promptly fix them.
- Apply proven pollution reduction technologies that are currently required at new production sites at natural gas transmission facilities.

### The Methane Gap

And yet, these concrete steps forward still won't reduce methane emissions to the levels targeted by the Administration. This is due primarily to the fact that EPA's proposed methane standards are limited to new and modified sources, and will not apply to existing sources of methane pollution in the oil and gas sector. In fact, a 2014 study by ICF International predicts that emissions from sites that existed in 2011 (which will not be subject to either EPA's 2012 or the proposed 2015 rules) will represent 90% of the sector's total methane emissions in 2018.<sup>5</sup> Additionally, the proposed regulations omit a number of key emissions sources, including liquids unloading events and intermittent bleed pneumatic controllers.

The methane pollution standards EPA proposed last year would reduce expected annual emissions from the oil and gas sector in 2025 by about 28 million metric tons of carbon dioxide equivalent (CO<sub>2</sub>e).<sup>6</sup> However, in order to meet the goal of reducing methane pollution 40–45% below 2012 emission levels, the U.S. would need *at least* an additional 75 million metric ton CO<sub>2</sub>e reduction in methane emissions. **This is the methane emission gap** (see Figure 1, p. 3).

### Good News About the Gap

The good news is that the Administration has the opportunity to meet its methane reduction goal by issuing strong existing source methane rules this year. **We project that such rules would reduce methane emissions by nearly 77 million metric**

**tons CO<sub>2</sub>e, on top of the reductions from currently proposed rules, resulting in an emissions level low enough to meet the goal.**

In order to close the gap, existing source rules will need to require the use of a few proven technologies that, unfortunately, EPA's current and proposed standards do not require.<sup>7</sup> As such, the Administration needs to strengthen the proposed standards for new and modified sources by requiring industry to use non-emitting technologies when possible instead of using pneumatic equipment that is designed to emit natural gas, and requiring use of devices and practices that can dramatically reduce venting from well bore liquids unloading. EPA also needs to strengthen the proposed rule for leak detection and repair (LDAR).<sup>8</sup> Then, correspondingly robust existing source standards are needed.<sup>9</sup> **If the new and modified source standards are strengthened and corresponding strong existing source standards are issued, the Administration will be able to meet its 2025 goal.**

### A Closer Look at the Gap

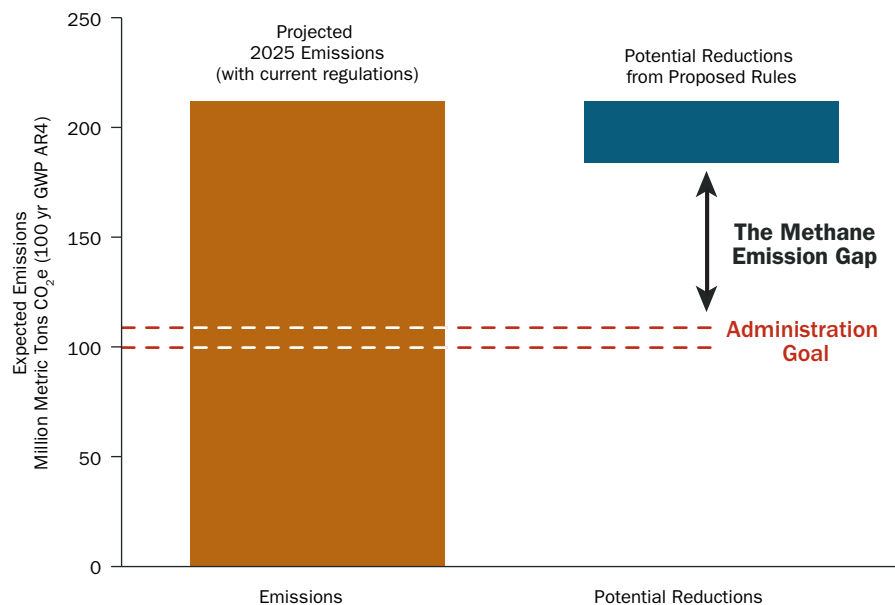
In addition to the proposed methane New Source Performance Standards (NSPS), the Administration's proposed rules also include Control Technique Guidelines (CTGs), and the recently unveiled methane rule from the Bureau of Land Management (BLM).<sup>10</sup> The proposed NSPS, by its nature, would only achieve reductions at new and modified facilities—and, as noted above, the vast majority of projected emissions come from existing sources. The CTGs would apply to VOC emissions from



Oil well and flare in North Park, Colorado

FIGURE 1

### The Methane Emissions Gap between What the Obama Administration Promised and What It Proposed (2025)<sup>11</sup>



**Even with reductions from proposed rules, in order to close the methane emission gap, oil and gas methane emissions will need to be reduced an additional 75 million metric tons CO<sub>2</sub>e to meet the Administration's reduction goal of 40–45% from 2012 levels.**

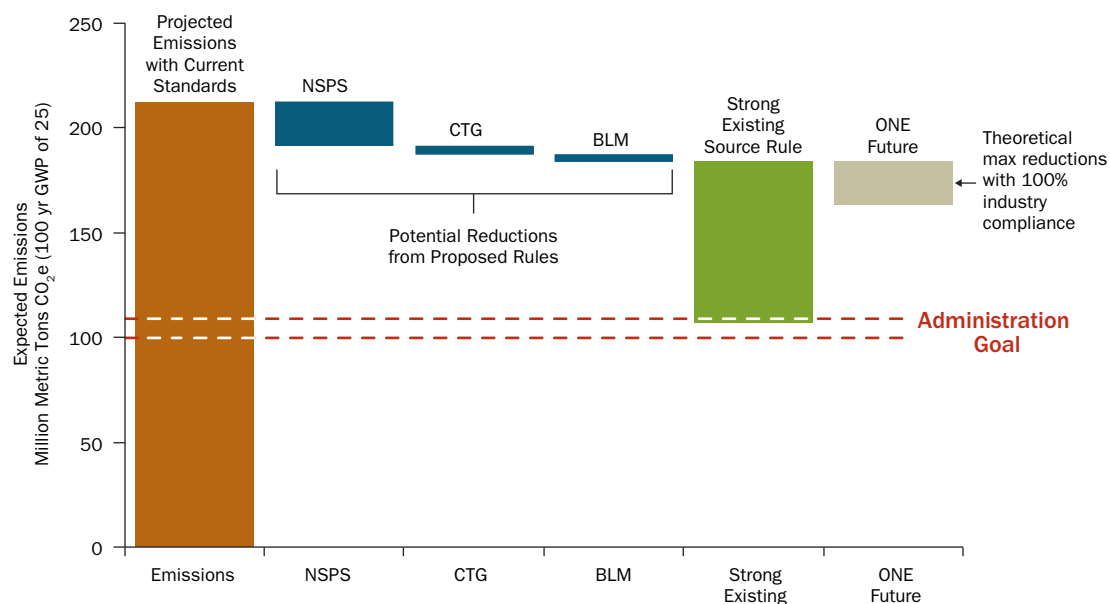
both new and existing facilities, but only to oil and gas production and natural gas processing sources and only in places deemed to be moderate or worse ozone nonattainment areas or in the Ozone Transport Region (e.g., Pennsylvania). We anticipate that there will be methane reduction co-benefits from controlling VOCs at these facilities. Finally, the BLM rules cover methane venting and flaring but only at facilities on public lands.<sup>12</sup> Taken together, these three sets of standards will make only a modest impact on overall methane emissions (see Figure 2, p. 4).

The Administration has suggested that new voluntary methane reduction programs could fill this methane emission gap between the proposed standards and its 2025 goal.<sup>13</sup> However, our analysis suggests that even full participation by industry in the most aggressive voluntary program would still fall well short of the 40–45% goal. Under the proposed “ONE Future Coalition” program, industry participants commit to reducing methane emissions from the gas industry to an equivalent of 1% of gas production<sup>14</sup> (currently, official inventories estimate that the industry emits about 1.4% of

production). *Assuming optimistically that 100% of the industry participates in this voluntary program*, these commitments would only reduce methane emissions by 21 million metric tons CO<sub>2</sub>e (on top of the reductions from proposed rules).

There are two problems with this result. First, it would still leave a gap of 54 million metric tons CO<sub>2</sub>e between the resulting methane emissions and the Administration's goal. And second, 100% industry participation in a voluntary program is extremely unlikely given the track record to date of the EPA's voluntary methane reduction program.<sup>15</sup> More realistically, based on the eight currently announced participants in ONE Future,<sup>16</sup> somewhere between 10 and 20% of the industry may choose to participate—and actual reductions from voluntary programs will likely be proportional to participation.<sup>17</sup> Accordingly, the reductions associated with the ONE Future voluntary program would drop from 21 million metric tons CO<sub>2</sub>e to about 2 to 4 million metric tons CO<sub>2</sub>e, demonstrating that voluntary action is a very poor substitute for a strong existing source methane rule.

FIGURE 2  
A Strong Existing Source Rule Would Close the Gap (2025)



**Additional standards on oil and gas equipment in use today could reduce methane pollution from the industry by more than 75 million metric tons CO<sub>2</sub>e, beyond the reductions from the rules EPA and BLM have recently proposed, putting us on track to meet the Administration's methane goal.**

### Strong Existing Source Rules

As detailed in the *Waste Not* report released in December 2014,<sup>18</sup> methane is emitted from dozens of types of equipment and processes throughout the oil and gas sector, such as wells, completion operations, storage tanks, compressors, and valves. A strong existing source rule could cut emissions dramatically in just a few years and would achieve the Administration's goal of a 40–45% reduction by 2025. To do this EPA would need to issue regulations for:

- **Leaks from valves, connectors, and other equipment.** These leaks can be curbed by requiring monthly or quarterly surveys to find and fix leaks at facilities throughout the sector, from well pads all the way to large aboveground distribution facilities in cities.
- **Older equipment.** Methane pollution from existing compressors and automatic pneumatic valve controllers can be cut dramatically by

using up-to-date technology and maintenance practices to reduce emissions, consistent with standards EPA set in 2012 for certain types of new equipment, and with recent regulations in Colorado that apply to both new and old equipment.

- **Intentional release of gas from oil and gas wells.** Many oil wells produce and then vent large quantities of natural gas. These emissions can be curbed by requiring oil producers to capture or control gas otherwise emitted from oil wells during oil production, consistent with standards EPA put in place for hydraulically fractured gas wells.
- A similar approach can control venting from gas wells during liquids unloading, when water is removed from the well.

Together, these actions would reduce methane emissions from the oil and gas sector by 77 MMT CO<sub>2</sub>e by 2025 and close the methane gap.



Compressor station near Blue Mound, Texas as seen through a regular camera and a specialized infrared camera used to detect gas leaks.

## ENDNOTES

- 1 See US EPA, US Sources of Methane Emissions. <http://www3.epa.gov/climatechange/ghgemissions/gases/ch4.html>.
- 2 See the White House fact sheet at: <https://www.whitehouse.gov/the-press-office/2015/01/14/fact-sheet-administration-takes-steps-forward-climate-action-plan-anno-1>.
- 3 Emissions are anticipated to rise in proportion to oil and gas production as projected in EIA's Annual Energy Outlook 2015 Reference Case, accounting for the benefits of the 2012 standards.
- 4 See a complete list of EPA regulatory actions for the oil and gas sector at: <http://www.epa.gov/airquality/oilandgas/actions.html>.
- 5 See ICF Economic Analysis of Methane Emission Reduction Opportunities in the U.S. Onshore Oil and Natural Gas Industries, March 2014. [https://www.edf.org/sites/default/files/methane\\_cost\\_curve\\_report.pdf](https://www.edf.org/sites/default/files/methane_cost_curve_report.pdf). Some of the 90% will be impacted by the BLM and CTG standards.
- 6 The figures for methane pollution reductions in this report use 25 for the 100-year global warming potential of methane to calculate CO<sub>2</sub>e figures, in line with US Government practice. If we used the more recent recommendation for the 100-yr GWP of 36 from IPCC's Fifth Assessment Report, the CO<sub>2</sub>e values stated in this report would be 44% higher.
- 7 If the EPA simply extended its proposed new source rules to existing sources, this would only reduce methane emissions to 151 million metric tons CO<sub>2</sub>e (a reduction of 33 million metric tons CO<sub>2</sub>e), far away from the 40–45% reduction target's goal (which would equate to emissions of roughly 100 to 109 in 2025).
- 8 Clean Air Task Force, Earth Justice, Environmental Defense Fund, et al. Comments on EPA's proposed Emission Standards for New and Modified Sources. (December 2015). [http://www.catf.us/resources/filings/oil\\_and\\_gas/NGO\\_methane\\_comments.pdf](http://www.catf.us/resources/filings/oil_and_gas/NGO_methane_comments.pdf).
- 9 See Waste Not: Common Sense Ways to Reduce Methane from the Oil and Gas Industry, Clean Air Task Force, Natural Resources Defense Council, and the Sierra Club, December 2014. <http://www.catf.us/resources/publications/view/205>.
- 10 BLM's rule targets waste of oil and gas resources on federal lands, but will result in methane emission reductions, as well as VOC, CO<sub>2</sub> and Black Carbon reductions.
- 11 Projected emission reductions from EPA's proposed new source standards are based on an analysis of the regulatory language. The emissions reductions are higher than EPA projected in its Regulatory Impact Assessment for the rule. For full methodology, see [http://www.catf.us/resources/publications/files/Mind\\_the\\_Gap\\_Methodology.pdf](http://www.catf.us/resources/publications/files/Mind_the_Gap_Methodology.pdf).
- 12 BLM's rule was announced just prior to the completion of this report, and we are still studying the rule so that we can more precisely model its benefits in 2025. We will update this report in the near future once this is complete. The estimate of the benefit of the rule here is close to the estimates provide by BLM. See [http://www.catf.us/resources/publications/files/Mind\\_the\\_Gap\\_Methodology.pdf](http://www.catf.us/resources/publications/files/Mind_the_Gap_Methodology.pdf).
- 13 <https://www.whitehouse.gov/the-press-office/2015/01/14/fact-sheet-administration-takes-steps-forward-climate-action-plan-anno-1>.
- 14 See <http://www.onefuture.us/our-goal>. Note: EPA's Methane Challenge Program includes the ONE Future Coalition and a Best Management Practice program. <http://www3.epa.gov/gastar/methanechallenge/index.html>. Because the Best Management Practice program, as proposed by EPA, will recognize industry commitments to address a number of sources of methane, including relatively minor sources, and because we cannot estimate the level of industry engagement with the program, we don't provide an estimate of the mitigation that might occur as a result of voluntary measures under this program. The Downstream Initiative (<http://www.mjbradley.com/content/downstream-natural-gas-initiative>) is another voluntary initiative recognized by the Administration as a potential contributor to the methane reduction goal. To date the Downstream Initiative has not publicized methane reduction goals, so we provide no estimate of its benefit.
- 15 <http://blogs.edf.org/energyexchange/2015/06/01/reducing-methane-emissions-voluntary-efforts-alone-wont-get-the-job-done>.
- 16 Founding members of ONE Future: AGL Resource, Apache, BHP Billiton, Columbia Gas Transmission, Hess, Kinder Morgan, National Grid, Southwestern.
- 17 Based on an analysis of company owned infrastructure and methane emissions reported to the GHGRP. For full methodology, see [http://www.catf.us/resources/publications/files/Mind\\_the\\_Gap\\_Methodology.pdf](http://www.catf.us/resources/publications/files/Mind_the_Gap_Methodology.pdf).
- 18 See *Waste Not: Common Sense Ways to Reduce Methane From the Oil and Gas Industry*, Clean Air Task Force, Natural Resources Defense Council, and the Sierra Club, December 2014. <http://www.catf.us/resources/publications/view/205>.



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