



## THE EFFECTS OF PERFORMANCE STANDARDS ON OFFSETS SUPPLY UNDER H.R. 2454

### Nicholas Institute Discussion Memo on H.R. 2454 American Clean Energy and Security Act of 2009

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#### Introduction

The American Clean Energy and Security Act (H.R. 2454), recently passed by the House, contains potentially contrasting provisions for uncapped activities: offsets for the cap-and-trade program and regulatory performance standards for stationary sources. If performance standards regulate uncapped activities that would otherwise be allowed to produce offsets, the standards could impact offsets supply. The magnitude of the impacts, however, will depend on how the standards are set.

If the standards are set at a business-as-usual level of emissions for a given industry, they could simply represent a baseline beyond which emissions reductions would be additional and eligible for offsets. In this case the performance standards would have little impact on the offsets supply, and could actually be beneficial by standardizing the baseline for an industry, which could reduce transaction costs.

If the standards are set at a higher level, however, the reductions they mandate will not be eligible for offsets. In this case the offsets supply would clearly be negatively affected. Reductions beyond what is mandated by the performance standards, however, would still be eligible for offsets.

Because the performance standards have not yet been issued, it is difficult to provide significant quantitative insight regarding the overall change in offsets supply. This memo, however, provides an initial rough assessment of the intersection of the offsets and performance standards provisions. Because in-depth quantitative analysis of this question is not possible at this time, it is simply a first attempt to explore which parts of the offsets supply could be affected.

#### Performance Standards and Offsets

Title VIII, Section 811(a)(1)(A) of H.R. 2454 states:

“the Administrator shall publish...an inventory of categories of stationary sources that consist of those categories that contain sources that individually had uncapped greenhouse gas emissions greater than 10,000 tons of carbon dioxide equivalent and that, in the aggregate, were responsible for emitting at least 20 percent annually of the uncapped greenhouse gas emissions.”

Section 811(a)(1)(B) then states:

“The Administrator shall include in the inventory under this paragraph each source category that is responsible for at least 10 percent of the uncapped methane emissions in 2005.”



Section 811(a)(2)(B) states that the Administrator must promulgate standards of performance and corresponding regulations for each category of uncapped sources, to cover 80% of them within three years of enactment, and to cover all of them within 10 years.

The language from H.R. 2454 is not completely clear, and there seem to be multiple ways to interpret which sources would be covered. This memo examines the effects of performance standards looking at different interpretations of the text, as well as additional scenarios.

Clearly the effects of the standards will depend on how broadly or narrowly categories are defined. Nevertheless, it seems likely that virtually none of the uncapped non-methane sources would meet the requirements as written.

One interpretation of the text of the bill suggests that all uncapped sources within a category would be eligible for performance standards, as long as the category has at least one individual source with emissions greater than 10,000 tons *and* the category was responsible for at least 20% of annual uncapped emissions.

Another interpretation of the text would limit the performance standards only to those sources with more than 10,000 tons of emissions, although the category would still have to be responsible for at least 20% of uncapped emissions. EPA could choose to interpret the bill this way by defining a source category as only those sources of a certain type with emissions above 10,000 tons.

The difference in the interpretation is somewhat irrelevant, however, as there do not appear to be any sources that would be affected in either case. Data from the 2009 EPA GHG Inventory suggests that 20% of uncapped emissions would be roughly 140 million tons<sup>1</sup> of carbon dioxide equivalent (MtCO<sub>2</sub>e) per year, and there are almost no categories of emissions sources that would approach that threshold. Agricultural soils emit in aggregate more than 200 MtCO<sub>2</sub>e per year in combined CO<sub>2</sub> and N<sub>2</sub>O emissions (2009 EPA GHG Inventory). However, according to the Nicholas Institute Report “Size Thresholds for Greenhouse Gas Regulation: Who Would Be Affected by a 10,000-ton CO<sub>2</sub> Emissions Rule?”<sup>2</sup> individual farms do not emit more than 10,000 tons per year, and would therefore not be eligible for performance standards under H.R. 2454.

Most manufacturing sectors have at least one facility with emissions greater than 10,000 tons, but since they do not account for 20% of uncapped emissions, they would also not be eligible for performance standards. Therefore, there do not appear to be any sources to which section 811(a)(1)(A) would apply under either interpretation of the text.

Because the threshold from section 811(a)(1)(B) is lower for methane sources, it is more likely that performance standards would apply to them. In 2005, 10% of uncapped methane emissions was equal to 53 MtCO<sub>2</sub>e. Categories of sources with methane (CH<sub>4</sub>) emissions greater than this level include landfills, uncapped natural gas systems, and coal mines, with annual emissions of 133 MtCO<sub>2</sub>e, 105 MtCO<sub>2</sub>e, and 58 MtCO<sub>2</sub>e, respectively. Enteric fermentation (emissions from animals) is the single largest source of methane emissions at 139 MtCO<sub>2</sub>e, but it is specifically excluded from performance standards in section 811(a)(1)(B). Although total GHG emissions (CH<sub>4</sub> and N<sub>2</sub>O) from manure management are greater than

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<sup>1</sup> All tons (t) referred to in this memo are metric tons (1 metric ton = 1,000 kg = 2,204.62 lbs.).

<sup>2</sup> <http://www.nicholas.duke.edu/institute/10Kton.pdf>.

53 MtCO<sub>2</sub>e, its methane emissions alone are not responsible for at least 10% of uncapped methane emissions, and it would not be subject to performance standards. Smaller methane sources would also not trigger performance standards, including emissions from forestry, wastewater treatment, and rice cultivation, with annual emissions of 32.3 MtCO<sub>2</sub>e, 29.3 MtCO<sub>2</sub>e, and 6 MtCO<sub>2</sub>e, respectively.

### **Other Scenarios for the Enforcement of Performance Standards**

Because there is some uncertainty over which sources will be covered by performance standards under the H.R. 2454 language, this memo examines the following two other scenarios for applying performance standards to uncapped stationary sources:

1. All sources within a category are covered by performance standards, as long as that category has at least one source with 10,000 tons, and regardless of whether or not the category is responsible for 20% of uncapped emissions.
2. All sources with emissions greater than 10,000 tons are covered by performance standards; sources with emissions less than 10,000 tons are not covered.

Scenario 1 is similar to one interpretation of the language from H.R. 2454, with the exception that it does not have the requirement that the category of sources would have to be responsible for 20% of uncapped emissions to be eligible for performance standards. This would open the door to have standards cover many more sources. In the manufacturing sector, for example, most industries have at least one facility with emissions greater than 10,000 tons, so virtually all emissions from manufacturing would be eligible for performance standards.

Agriculture would not be affected because it does not have sources that cross the 10,000-ton threshold. It is possible that a large forestry operation could have emissions greater than 10,000 tons, if for example, the emissions from the short-lived paper products from a pulp and paper operation were included.

Most methane sources would be affected, including landfills, coal mines, and animal manure storage facilities, all of which have at least one source with emissions greater than 10,000 tons. Enteric fermentation would also be covered, unless it is again specifically excluded, as data from a University of Iowa study<sup>3</sup> suggests that there are at least some hog and cattle operations large enough to exceed the 10,000-ton threshold.

Scenario 2, in which only sources with emissions greater than 10,000 tons would be covered by performance standards, would result in far fewer sources being covered as compared to Scenario 1. Essentially this scenario would only affect facilities with emissions between 10,000 and 25,000 tons. Facilities with fewer emissions would not be covered by performance standards, and facilities with greater emissions would be covered by the cap, and thus ineligible to supply offsets.

In the manufacturing sector, data from the aforementioned 2007 Nicholas Institute report on facilities affected by a 10,000-ton rule suggest that 82.5% of emissions come from facilities that emit more than 10,000 tons per year. However, data from the recent companion report updated for a 25,000-ton rule<sup>4</sup>

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<sup>3</sup> <http://www.public-health.uiowa.edu/ehsrc/CAFStudy.htm>.

<sup>4</sup> <http://www.nicholas.duke.edu/institute/25Kton.pdf>.

suggests most of those emissions would be included in the cap under H.R. 2454, leaving only around 18 MtCO<sub>2</sub>e, or about 2%, eligible for performance standards.

Agriculture would not be affected by performance standards under Scenario 2, and many forestry operations would likely be below the 10,000-ton threshold. Landfills, however, would be mostly covered. Data from the technical support documents for the EPA proposed rule on mandatory GHG reporting<sup>5</sup> suggests that 94% of landfill emissions would be covered by a 10,000-ton rule, which would leave roughly 6.3 MtCO<sub>2</sub>e unaffected by performance standards. Similarly, 86% of emissions from coal mines would be covered by a 10,000-ton rule, leaving roughly 5.6 MtCO<sub>2</sub>e unaffected.

## Conclusions

Depending on the final language of the bill that passes Congress and how standards are set by EPA, performance standards for greenhouse gas emissions from stationary sources could have a significant effect on the supply of offsets. H.R. 2454 allows for up to one billion tons of domestic offset credits, although some sources suggest actual supply could be much less, at least initially. It is difficult to quantify the effects of performance standards on offsets supply, but under Scenario 1, in which most large uncapped sources except agriculture and wastewater treatment would be covered, the standards would apply to 703 MtCO<sub>2</sub>e of uncapped emissions. Under Scenario 2, in which only sources above 10,000 tons are covered, the pool of emissions affected would be much smaller, at around 205 MtCO<sub>2</sub>e.

The standards as written in H.R. 2454 would primarily affect large methane sources, such as landfills and coal mines, and they would cover a pool of emissions of about 296 MtCO<sub>2</sub>e. In most of the scenarios mentioned here the agriculture and forestry sectors would likely not be covered, although there is some chance that forestry could be affected by Scenario 1.

Performance standards will not necessarily have a detrimental effect on the supply of offsets. The effects will depend on how the standards are set by EPA. If the standards are set at a high level, the regulated emissions reductions would not be eligible for offsets, and the effects on the offsets supply would be negative. Emissions reductions would have to go beyond what is mandated by the performance standards to be eligible for offsets.

However, if the standards are set at a business-as-usual level for the industry, most emissions sources would not have to make major reductions. In this case the performance standard could simply be used as an emissions baseline for an industry, potentially making the offset program easier to implement by reducing transaction costs.

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<sup>5</sup> [http://www.epa.gov/climatechange/emissions/ghg\\_tsd.html](http://www.epa.gov/climatechange/emissions/ghg_tsd.html).

**Table 1.** Emissions covered and not covered by performance standards for greenhouse gas emissions from stationary sources under three scenarios. The first scenario is as written in H.R. 2454, in which standards apply to categories that represent 20% of uncapped GHG emissions or 10% of uncapped methane emissions. Scenario 1 would cover the entire category of sources with a performance standard, as long as that category has at least one source with annual emissions over 10,000 tons. Scenario 2 would cover only sources with annual emissions greater than 10,000 tons. Units are in million metric tons of carbon dioxide equivalent (MtCO<sub>2</sub>e).

Emissions Source	As written in H.R. 2454		Scenario 1		Scenario 2	
	Covered	Not Covered	Covered	Not Covered	Covered	Not Covered
Agricultural soils		208		208		208
Enteric fermentation <sup>a</sup>		139	139		no data	
Manufacturing <sup>b</sup>		149	149		18	131
Manure management		59	59		8	51
Forestry <sup>c</sup>		32	32			32
Petroleum systems		28	28		no data	
Wastewater treatment plants		24		24		24
Landfills	133		133		127	6
Natural gas systems	105		105		no data	
Coal bed methane	58		58		52	6
<b>Totals</b>	<b>296</b>	<b>639</b>	<b>703</b>	<b>232</b>	<b>205</b>	<b>458</b>

a Enteric fermentation is specifically excluded from performance standards in H.R. 2454. The other scenarios do not assume it will be excluded.

b Tons reported for manufacturing are uncapped emissions only.

c Tons reported for forestry are annual emissions of non-CO<sub>2</sub> gases (CH<sub>4</sub> and N<sub>2</sub>O), not the carbon sequestration potential for offsets under forestry projects such as afforestation. Scenario 1 assumes that there is at least one forestry operation with 10,000 tons of emissions, if emissions from short-lived paper products are counted. Scenario 2 assumes that the total number of these operations is small, and that only a small percentage of emissions would be affected.

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