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Fracking and methane: Regulators must look upstream

By Richard Revesz, contributor

Natural gas is at the core of President Obama's climate change agenda. Many recent Environmental Protection Agency (EPA) rules discourage coal use in favor of natural gas, which emits less carbon dioxide. The administration is hoping to capitalize on the fracking boom to help slow global warming.

However, the carbon benefits of natural gas might be undercut by emissions of methane, which have a global warming potential 21 to 25 times greater than those of carbon dioxide. Natural gas itself is composed of more than 80 percent methane, and during the production and distribution processes, some portion of that methane leaks (or is vented) into the air. Like carbon dioxide, these "fugitive" methane emissions become well-mixed in the atmosphere, making their harmful effects global rather than local.

Methane's interstate — and, indeed, international — impacts make it particularly well-suited to federal regulation. If lawmakers are serious about reducing risks from climate change, they will need to regulate fugitive methane emissions from "upstream" sources — the wells, pipelines and storage tanks used for gas extraction, processing and delivery.

The need for federal regulation

Fracking's most publicized environmental issues, such as groundwater contamination and increased seismic activity, are often localized and therefore suited for individual state oversight. But only the federal government is in a position to properly regulate fugitive methane.

States get the employment and fiscal benefits when they allow fracking, but the negative consequences from fugitive methane are mostly felt elsewhere. Because an individual state will suffer only a small fraction of the harm associated with its methane emissions, the state has a significant incentive to under-regulate methane-producing activities like fracking.

As I recently explained in a House Energy and Commerce Committee **hearing**, only federal regulation can fix these skewed incentives. The Supreme Court has firmly established the EPA's authority to regulate greenhouse gas emissions under the Clean Air Act, creating a clear legal framework for new rules.

Looking upstream

The EPA already began the process of regulating greenhouse gas emissions from the combustion of natural gas by proposing performance standards for new and existing power plants. But these standards fail to address pollution emitted during the upstream stages in the gas's lifecycle. Extraction, processing, storage and delivery account for an estimated 20 to 30 percent of total natural gas lifecycle emissions. And while fugitive methane emissions can result from all drilling techniques, some studies suggest that fracking is associated with significantly higher leakage rates. The EPA's inspector general, the agency's chief watchdog, also discussed a failure to control methane leaks from distribution pipelines in a **recent report**.

Upstream gas infrastructure is already subject to performance standards for the emission of hazardous air pollutants. Some of those standards indirectly help reduce methane emissions, but direct regulation of methane would generate significant additional reductions.

Similar regulations are already in the works for other sectors. The Bureau of Land Management recently proposed establishment of a program to capture, use or destroy methane that is released through underground mining operations on federal lands, and the EPA is in the process of tightening regulations on methane emissions from landfills.

In regulating upstream methane, the EPA should calculate stringency by balancing reduction costs with the social cost of methane — the cost that an additional unit of emissions is projected to impose on society. The government already models the **social cost of carbon** to evaluate regulations, and would benefit from developing a model for methane (in the meantime, methane can easily be converted into carbon dioxide-equivalent based on their relative climate impacts).

Natural gas offers promise as a "bridge fuel," helping us transition from coal and oil to cleaner energy sources as we work to stave off the worst effects of climate change. But this promise could be illusory unless regulators can adequately control fugitive methane emissions.

The EPA has made great strides in its recent attempts to reduce carbon pollution, but our climate policy cannot be effective without addressing methane. Hopefully regulators' attention is now focused upstream.

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TAGS: Hydraulic fracturing, fracking, Natural gas, Methane, Climate change, carbon emission