**Natural Gas is not a bridge fuel**

The composition of natural gas is about 95% methane. Methane leaks or is vented at all stages of the natural gas process (extraction/production, gathering, processing, transmission, storage, local distribution and consumption). Methane is 86 times more efficient than CO2 at trapping heat over a 20-year period and 34 times more efficient over a 100-year period.[[1]](#footnote-1) To achieve accuracy in calculating the effect of methane on heating the atmosphere and subsequently feeding climate change, it is essential to consider the greenhouse gas impacts from methane from a full life cycle perspective.

30% to 60% of the global increase in atmospheric methane between 2010 and 2014 was due to emissions in the lower 48 U.S. states and 63% of the increase in gas production over the past decade has been from shale gas.[[2]](#footnote-2) Natural gas systems emit more anthropogenic methane than any other source in the United States, and are the third highest source for carbon dioxide emissions nationally.[[3]](#footnote-3) Pennsylvania is the second largest producer of natural gas in the nation, second only to Texas, making us a large part of the increase of methane emissions, fueling atmospheric warming and climate change. If Pennsylvania continues to develop natural gas, we will be digging ourselves into a climate change hole, a downward tailspin.

A Cornell University study shows[[4]](#footnote-4) the greenhouse gas potency of natural gas is greater than coal or oil. Pennsylvania’s problem is worsening as fracking continues and the use of fracked gas for energy and manufacturing expands. For instance, if development of natural gas continues to increase, demand created by the industry will increase, resulting in an additional 1600 to 2000 new fracked gas wells each year. That will cause natural gas production to nearly double by about 2030, tripling Pennsylvania’s contribution to greenhouse gas emissions from shale gas (relative to 2012 levels).[[5]](#footnote-5)  The growth of demand is being induced by new end uses being developed by the industry for the shale gas being produced such as the 55 new natural gas power plants given permits by PADEP since 2014. If these plants are all built, Pennsylvania will increase its use of natural gas as an energy source by at least 75%.[[6]](#footnote-6) Instead of reducing greenhouse gas emissions towards the COP21 warming limit of 2.0 degrees C, Pennsylvania will be increasing our greenhouse gas footprint, making it impossible to meet state climate goals as well.

Overall, the impact of methane leakage from natural gas systems is systematically underestimated and imprecisely characterized[[7]](#footnote-7), which ultimately affects the analyses of the volume and sources of greenhouse gas emissions and can lead to ineffective planning for how to reduce our greenhouse gas footprint. According to a recent study, one underestimated and poorly tracked source of leakage, in addition to gas-fired power plants, is industrial manufacturing of such materials as plastics, fertilizer, aluminum, steel, and cement.[[8]](#footnote-8) Estimating and subsequently controlling methane leakage presents huge challenges that are not easily met. For instance, natural gas system leakage from plastics manufacturing emits a larger volume by far than any other use, including electricity generation, due to the unavoidable action of heating the gas in the manufacturing process.[[9]](#footnote-9) In addition, uncontrolled leakage and venting during the extraction of fracked gas is largely unavoidable and leakage from orphan and abandoned wells is intractable.

A recent study on the emissions from natural gas systems increases the full lifecycle rate from somewhere in the 2.6-3.5% range to 4.1%.[[10]](#footnote-10) 2.5% of the emissions are from transportation, storage, and distribution and 1.6% from production, gathering, and processing.[[11]](#footnote-11) Add this to the carbon emissions from combustion when gas is burned results in natural gas greenhouse gas emissions surpassing all other fossil fuels. Natural gas is simply not capable of being a so-called “bridge fuel” due to these emissions and the powerful effect they have on atmospheric warming. There is no advantage to substitute natural gas for other fossil fuels if the goal is to reduce greenhouse gas emissions and climate change; natural gas actually has greater effect at speeding up atmospheric warming at this moment in time, the time when it is most urgent to substantially reduce these emissions to meet the 2 degrees C. COP21 warming limit.

In fact, according to Dr. Howarth of Cornell University, the planet is going to continue to warm to 1.5 degrees C in 12 years and to 2 degrees C in 35 years or less unless we substantially cut methane emissions.[[12]](#footnote-12) He points out that the planet responds much faster to methane than carbon dioxide. There is already so much carbon in the atmosphere that the ONLY hope of meeting global climate targets is to address methane because that can quickly reduce greenhouse gases and slow the warming of the atmosphere.[[13]](#footnote-13) **The most effective action Pennsylvania can take to address climate change is to curtail natural gas development and use in the state.**

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8. Ibid. p. 7-8. [↑](#footnote-ref-8)
9. Ibid. p. 8. [↑](#footnote-ref-9)
10. Dr. Robert Howarth, Cornell University, <https://www.youtube.com/watch?v=1NPuYr1LGMI> [↑](#footnote-ref-10)
11. Ibid. [↑](#footnote-ref-11)
12. Dr. Robert Howarth, Cornell University, “COP21 Reflections on the Historic Paris Climate Agreement”, <http://events.cornell.edu/event/cop21_reflections_on_the_historic_climate_agreement> [↑](#footnote-ref-12)
13. Ibid. [↑](#footnote-ref-13)