

Southern Oregon Climate Action Now

**SOCAN**

Confronting Climate Change

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## Natural Gas as a Bridge to Nowhere

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While carbon dioxide is the most important greenhouse gas in terms of its warming impact and atmospheric concentration, it is not the only culprit. In addition to this gas, we know also that methane, nitrous oxide and an array of fluorinated gases (halocarbons) are responsible. Regrettably, each of these other gases has a much greater warming capacity than does carbon dioxide as measured on a pound-for-pound basis (Global Warming Potential or Carbon dioxide equivalent). Methane, for example, is 86 times worse than carbon dioxide when assessed over a 20-year basis and 34 times worse over a 100-year basis. Two values are given because its longevity in the atmosphere is measured in terms of about a decade rather than the several centuries that carbon dioxide molecules last. Nitrous oxide, meanwhile, is about 300 times worse than carbon dioxide and the halocarbons (ozone and fluorinated hydrocarbons) are several thousand times worse. When the 2007 Intergovernmental Panel on Climate Change (IPCC) report was released, Carbon dioxide was identified as imposing a Radiative Forcing (warming) relative to 1750 values of 1.66 watts per meter squared while methane (0.48), the halocarbons (0.34), and nitrous oxide (0.16) combined for a total impact of 0.98  $\text{wm}^{-2}$ . However, by the 2013/2014 IPCC report, carbon dioxide had increased only slightly to 1.68, while the other gases revealed methane alone had risen to 0.97  $\text{wm}^{-2}$ , the halocarbons dropped to 0.18  $\text{wm}^{-2}$  (maybe an outcome of the effectiveness of the International Montreal Protocol controlling chlorofluorocarbon emissions), while nitrous oxide was reasonably steady at 0.17  $\text{wm}^{-2}$ . In other words, while carbon dioxide did not increase very much, the impact of methane rose sharply. Ten years ago, the other gases had relatively a much lower impact compared to carbon dioxide. That we must include all gases from whatever source seems abundantly clear.

Natural gas is some 90% methane. When natural gas is burned, it is more efficient at producing energy per unit of carbon dioxide released - hence the notion of natural gas as 'the clean fossil fuel.' But this overlooks the fugitive emissions of methane that occur from source to sink, especially during the hydraulic fracturing (fracking) of shale. Indeed, because of the high carbon dioxide equivalent of methane, in 2014 Howarth reported that only 2.8% of natural gas has to leak in order for that fuel to become worse than coal as a contributor to global warming. Several studies since then<sup>1</sup> have revealed that the leakage of natural gas during its fracking, processing, and transmission are considerably higher than that value. For conventional natural gas, the value ranges from 1.7 – 6% (mean 3.8%), while for shale fracked natural gas, the range has been calculated as 3.6 – 7.9% (mean 5.8%). The message is clear: counting full life cycle emissions of greenhouse gases, natural gas is not cleaner than coal, and may actually be much worse. This means that promoting compressed natural gas, if there is any likelihood it will stimulate further fracking, will undermine the goals of HB2020.

The second problem with promoting compressed natural gas is that it will likely stimulate the fracking of shale to extract the gas. Because of the so-called Halliburton loophole introduced by Dick Cheney into

the 2005 Energy Bill hydraulic fracturing is exempted from the EPA Clean Water Regulations<sup>2</sup>. The problem is that fracking involves the pressurized insertion of a cocktail of toxic and carcinogenic chemicals deep into the ground, potentially contaminating groundwater. Furthermore, because of proprietary trade protections, the frackers are not required to reveal the chemicals that they are employing in this process.

The essential problem is that if we wish to promote greenhouse gas emissions reductions through HB2020, we should not be promoting activities that encourage natural gas, whether compressed or not.

Sincerely,

A handwritten signature in black ink that reads "Alan Powell". The signature is written in a cursive, somewhat stylized font.

1 - Recent (2019) discussion of the significance of fugitive emissions of natural gas; Studying Full Methane Life Cycle Critical to PNW Climate Policy by Tarika Powell, <https://www.sightline.org/2019/02/12/study-methane-life-cycle-critical-pacific-northwest/>; Earlier discussions of fugitive emissions: Howarth RL & Ingraffea T, 2015 Still A Bridge to Nowhere: Methane Emissions and the Greenhouse Gas Footprint of Natural Gas, [http://www.eeb.cornell.edu/howarth/documents/2015\\_04\\_14\\_HowarthRL\\_Ingraffea\\_4th\\_Anniversary\\_LeLectu.pdf](http://www.eeb.cornell.edu/howarth/documents/2015_04_14_HowarthRL_Ingraffea_4th_Anniversary_LeLectu.pdf) ; Howarth RL 2014 A bridge to nowhere: methane emissions and the greenhouse gas footprint of natural gas, [https://www.eeb.cornell.edu/howarth/publications/Howarth\\_2014\\_ESE\\_methane\\_emissions.pdf](https://www.eeb.cornell.edu/howarth/publications/Howarth_2014_ESE_methane_emissions.pdf)

2 <https://www.nytimes.com/2009/11/03/opinion/03tue3.html>, [https://earthworks.org/issues/inadequate\\_regulation\\_of\\_hydraulic\\_fracturing/](https://earthworks.org/issues/inadequate_regulation_of_hydraulic_fracturing/)