



SCIENTIFIC VERDICT ON INGRAFFEA SHALE EMISSIONS STUDY: **NOT GOOD**



In 2011, Cornell professors Tony Ingraffea and Bob Howarth issued a study on shale gas and GHGs that earned lots of attention – mostly for being a pretty poor piece of work. Within weeks, the paper had been fully debunked and discredited by actual experts in the field

Faced with withering criticism from their peers, Ingraffea and Howarth had a simple choice: acknowledge the fact they had gotten just about all their basic points wrong and correct them, or pretend that no such criticism even existed – and that anyone who suggested it did was just a hack for the industry.

Guess which they chose?

*“[We] have not received any of what we would consider intense peer criticism.”
(Anthony Ingraffea, Sept. 21, 2011)*

“[E]very paper that’s appeared in the last couple of months seems to support what we predicted.” (Ingraffea, March 2012)

Ignorance is bliss for Ingraffea and Howarth. But for the rest of us living on Planet Earth, here are the facts:

*“We don’t think they’re [Howarth et. al.] using credible data and some of the assumptions they’re making are biased. And the comparison they make at the end, my biggest problem, is **wrong**.”*

Paula Jaramillo, Carnegie Mellon Univ., Aug. 2011 * Research was funded in part by the Sierra Club.*



“Howarth, et al (2011b) it is assumed that all potential fugitive [methane] emissions are vented. This is an unreasonable assumption...”

Francis O’Sullivan and Sergey Paltsev Massachusetts Institute of Technology, Nov. 2012 * Paltsev is a Lead Author of the Fifth Assessment Report for the IPCC*

“Here we reiterate and substantiate our charges that none of [Howarth’s] conclusions are warranted.”

Lawrence Cathles, Cornell University, Feb. 2012





“Average natural gas baseload power generation has **life cycle GHG emissions 53% lower** than average coal baseload power generation.”

National Energy Technology Laboratory, Oct. 2011

“Vented emissions of the magnitudes estimated by Howarth would be extremely dangerous and subject to ignition. The simple fact that fires are rare in all gas-producing areas suggests that **this analysis grossly overestimates the quantities of methane that are leaking uncontrolled into the atmosphere at the well site.**”

IHS-CERA, Aug. 2011

“[T]he **life-cycle GHG footprint of gas is lower than coal under all GWPs [Global Warming Potentials] tested.**”

Worldwatch Institute, Aug. 2011



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“Alas, [the Cornell] analysis is based on extremely weak data, and also has a severe methodological flaw (plus some other questionable decisions), all of which means that his bottom line conclusions shouldn’t carry weight.”

Michael Levi, Council on Foreign Relations, Nov. 2010

“Professor Howarth’s conclusion that gas emits more heat trapping gas than carbon **flies in the face of numerous lifecycle studies done around the world.**”

John Hanger, Fmr. PA DEP Secretary, Apr. 2011

“One thing that disturbed me and some of the scientists I consulted was the big gap in the definitiveness of [Cornell’s] abstract summary and the actual paper. ... I find that they are more value judgments than scientific judgments.”

Andrew Revkin, New York Times, Dot Earth, Apr. 2011



“This paper is selective in its use of some very questionable data and too readily ignores or dismisses available data that would change its conclusions.”

Dave McCabe, Clean Air Task Force, Apr. 2011

“The Howarth estimates assume that daily methane emissions throughout the flowback period actually exceed the wells’ IP at completion. This is a fundamental error, since the gas stream builds up slowly during flowback. Compounding this error is the assumption that all flowback methane is vented, when industry practice is to capture and market as much as possible, flaring much of the rest. Vented emissions of the magnitudes estimated by Howarth would be extremely dangerous and subject to ignition.”

IHS CERA, Aug. 2011

