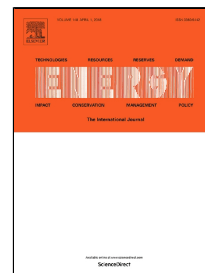


Accepted Manuscript

On Methane Emissions from Shale Gas Development

Evar C. Umeozor, Sarah M. Jordaan, Ian D. Gates



PII: S0360-5442(18)30560-7
DOI: 10.1016/j.energy.2018.03.151
Reference: EGY 12609
To appear in: *Energy*
Received Date: 14 November 2017
Revised Date: 24 March 2018
Accepted Date: 27 March 2018

Please cite this article as: Evar C. Umeozor, Sarah M. Jordaan, Ian D. Gates, On Methane Emissions from Shale Gas Development, *Energy* (2018), doi: 10.1016/j.energy.2018.03.151

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

On Methane Emissions from Shale Gas Development

Evar C. Umeozor¹, Sarah M. Jordaan², Ian D. Gates¹

¹ Department of Chemical and Petroleum Engineering, University of Calgary, Canada

² School of Advanced International Studies, Johns Hopkins University, USA

Abstract

Environmental and economic impacts of methane escaping from the natural gas supply chain remain uncertain. Flowback emissions from hydraulically fractured natural gas wells are a key component of emissions from unconventional gas wells. While reduced emission completions in the United States are required by regulation, Canada's proposed regulation will only be implemented in 2020 with the two highest producing provinces under exemption. To understand potential benefits of regulations, we use predictive modelling of well-level production data of 1633 hydraulically fractured shale gas wells in five plays to estimate pre-production emissions. The mean estimate for flowback emissions (2,346±95% confidence interval of 91 Mg CO₂e/completion) fall within the 95% confidence limits of measured potential emissions (2,566±777 Mg CO₂e/completion). Our results indicate that in 2015, the average emissions per shale gas well undergoing flowback was 2,347 Mg CO₂e/completion in the U.S. and 1,859 Mg CO₂e/completion in Canada. Mean potential profits from controlling methane emissions using reduced emission completions were US\$17,200/well in the U.S. and US\$11,200/well in Canada.

Keywords: Shale gas; Methane emissions; Flowback Emissions; Measurement; Modelling; Economics

*Corresponding Author:

Ian D. Gates

Phone: +1 (403) 220-5752

Email: ian.gates@ucalgary.ca

Download English Version:

<https://daneshyari.com/en/article/8071688>

Download Persian Version:

<https://daneshyari.com/article/8071688>

[Daneshyari.com](https://daneshyari.com)