

Prepared Remarks for the testimony of David Allen for the methane leakage hearing of the Environment and Public Works Oversight Subcommittee of the U.S. Senate

November 5, 2013

Thank you for inviting me to appear in this hearing of the Environment and Public Works Oversight Subcommittee on methane leakage. My name is David Allen and I am a Professor in the Cockrell School of Engineering and Director of the Center for Energy and Environmental Resources at the University of Texas at Austin.

Since January of 2012, I have been leading a research team, funded by Environmental Defense Fund and nine natural gas producers. The nine large and mid-sized companies that have participated in the study account for 16% of natural gas production and roughly half of new gas well completions in the United States. The research team making the measurements consists of personnel from UT Austin's Cockrell School of Engineering and environmental testing firms URS and Aerodyne Research. The team has been making measurements of methane emissions from natural gas production sites throughout the United States, in locations ranging from Pennsylvania to the Gulf Coast and Rocky Mountains. In September of 2013, our first results were published by the *Proceedings of the National Academy of Sciences*. In these prepared remarks, I will summarize the main findings of our work to date.

The overall goal of the study was to measure methane emissions during natural gas production at a large number of recently developed sites, and to assess the national implications for methane emissions. The team performed the first-ever direct measurements of methane emissions from some of these sources.

- Our study is based on measurements made directly at 190 production sites throughout the United States, with access provided by nine participating energy companies.
- The collaboration of the energy companies and unprecedented access to their natural gas production facilities and equipment allowed our research team to acquire direct measurements of methane emissions from natural gas production operations where hydraulic fracturing is used.
- During the yearlong study, the UT-led study team selected times and general locations for sampling activities, and companies provided access to sites. The sampling was designed to be representative of company operations in the Gulf Coast, Mid-Continent, Rocky Mountain and Appalachian regions.
- We measured methane emissions from hydraulically fractured well completions, a process that clears sand and liquids from a fractured well. For two thirds of the completion flowbacks sampled during the study, reduced emission completion equipment was used to reduce methane

emissions. This equipment reduced emissions by 99 percent; for these wells, only 1% of the methane leaving the well during the completion flowback was emitted to the atmosphere. Because of this equipment, our estimates of national methane emissions from well completions are significantly lower than calendar year 2011 national emission estimates, released by the Environmental Protection Agency (EPA) in April 2013.

- We found that emissions from certain types of pneumatic devices, which control devices such as valves on well sites, are 30 percent to several times higher than calendar year 2011 EPA estimates for this equipment; we estimate that, combined, emissions from pneumatics and equipment leaks account for about 40 percent of national emissions of methane from natural gas production.
- We found that the total methane emissions from natural gas production, from all sources measured in the study, were comparable to the calendar year 2011 EPA estimates.

Having summarized the findings, I will briefly comment on the manner in which the work was reviewed. The nine natural gas producers and Environmental Defense fund provided technical reviews throughout the study. In addition, a Scientific Advisory Panel made up of six independent academic experts reviewed the study. The panel reviewed project plans before data collection and preliminary findings during data collection. Its members reviewed the draft final report and co-authored the published manuscript. Prior to publication, the study also went through the peer review process of the *Proceedings of the National Academy of Sciences*, which involved responding to the comments of anonymous reviewers, selected by the editors.

In addition, I note that our study, which focused on natural gas production, is part of a larger research effort spearheaded by Environmental Defense Fund to measure methane emissions throughout the natural gas supply chain. Results for the studies addressing other parts of the supply chain will be reported during the next 12-18 months.

Finally, I note that the University of Texas at Austin is committed to transparency and disclosure of all potential conflicts of interest of its researchers. For more details, I call your attention to the disclosures that appear with our published manuscript.

Thank you for the opportunity to describe our work.