

## UDAQ response to EPA Comments on Changing the Intermittent Pneumatic Controller Emission Factor for the Utah Air Agencies 2014 Emissions Inventory

July 27, 2017

On July 10 staff from UDAQ, EPA R8, and the Ute Tribe convened a conference call to discuss changing the emission factor for intermittent pneumatic controls in the 2014 Air Agencies emissions inventory. On the call two technical memos were discussed: The UDAQ memo sent to EPA R8 and the Ute Tribe on 6/7/2017 which provided the rationale for updating the emission factor, and EPA’s response dated 7/6/2017.

During the call UDAQ suggested that an EPA paper published in April 2015<sup>i</sup> supported the contention that the default emission factor of 13.5 scf/hr used in the Air Agencies inventory is not appropriate. Since EPA staff had not had time to review the document it was decided that staff from UDAQ and EPA would review other literature on the subject and then reconvene later in the month to find a mutually agreeable and scientifically defensible emission factor to be used for the 2014 inventory. After review of the EPA paper, as well as the Gas Research Institute Report (GRI/EPA 1996)<sup>ii</sup> <sup>iii</sup> which is the technical basis for the 13.5 scf/hr emission factor, UDAQ feels strongly that the default emission factor should be discarded completely based upon data collected by Thoma, et al<sup>iv</sup> and Allen, et al<sup>v</sup>.

| Study and reference        | Year      | Random/representative | Sites/measurements                       |
|----------------------------|-----------|-----------------------|--|
| <i>EPA 2015</i> ; i,ii,iii | 1996/1992 | No/no                 | 22/44 includes intermittent & continuous |
| <i>EPA Uinta</i> ; iv      | 2017      | No/somewhat           | 8/77 intermittent only                   |
| <i>Dave Allen</i> ; v      | 2014      | Somewhat/somewhat     | ~3/25 intermittent only                  |

**Table 1.** Studies referenced in this paper. Random/representative refers to the sampling method and whether the samples representative of the Uinta Basin. Sites/measurements are the number of well sites visited while measurements refer to the total number of samples used to create the emission factor for each study.

The three documents, collectively referred to as “*EPA 2015*”, provide the basis for UDAQ’s contention that the intermittent pneumatic controller emission factor used as a default in Utah Air Agencies 2014 emissions inventory should be changed.

- Data from *EPA 2015* is 25 years old. “... the project reached its accuracy goal and provides an accurate estimate of methane emissions for 1992 gas industry practices”. (pg 10 ii ).
- The number of measurements is extremely low considering that it represents the entire country. “Data were collected from 22 sites to determine the fraction of continuous bleed devices versus intermittent bleed devices. A total of 44 measurements of various device types in field operation were used to estimate the emission factor” ( Section 4.3.1, pg 53, iii ).
- The field sampling campaigns on which the subpart W emission factors are based were not random. The following statements are made in regard to sample selection: “... These factors made selection of representative samples for measurement or observation difficult, and

traditional random sampling methods, such as random or stratified random sampling were not directly applicable in most cases.” “... companies contacted were not required to participate and a complete list of all sources in the United States was generally not available; therefore, site selection was not truly random.” ( Section 5.4.1, pg 84, iii ).

Recent subpart W greenhouse gas inventories have adjusted the default 13.5 scf/hr factor to account for changes in technology since the original study was done. However, UDAQ does not feel that such an approach is advisable for the Uinta Basin because it does not change the underlying emission factor that is used. Also, current, region-specific measurements are available with arguably less bias than the emission factors based on EPA 2015.

### **UDAQ Proposes to Use the Emission Factor from Dave Allen Rather than EPA Uinta**

UDAQ agrees that the whole gas intermittent pneumatic controller emission factor of 0.32 scf/hr from *EPA Uinta* potentially underestimates VOC from pneumatic controllers for the reasons given in EPA Region 8’s response to UDAQ’s original memo. For that reason we provide the following rationale for using the *Dave Allen* Rocky Mountain Region Intermittent controller whole gas emission factor of 1.72 scf/hr as the most appropriate alternative.

- Measurements were taken from 25 intermittent vent controllers specifically in the Rocky Mountain region. This is almost as many measured devices as the *EPA 2015* study measured for all pneumatic device types across the entire country in 1992.
- In the initial development of the Air Agencies emissions inventory it was decided not to use the *Dave Allen* pneumatic controller emission factors based on concern about the proposed high and low bleed factors. In the *Dave Allen* study the emission factor for intermittent controllers, unlike the ones for high and low bleed continuous controllers was not skewed low by the inclusion of controllers with zero observed actuations (during the 15 minute measurement period) and 0 scf/h assumed bleed rate.
- Hi Flow sampler measurements, like those used in the *Dave Allen* study, have recently come under fire for underreporting emissions. However, the *EPA Uinta* study used multiple measurement methods in conjunction with Hi Flow measurements and did not note any significant differences in measurements taken via the Hi Flow versus other methods.
- Sampling in the *Dave Allen* study was more representative than in other studies. As noted in the study, sites visited were limited to only two or three participating companies. However, the companies provided descriptions, or lists of well pad sites, or central facilities in the area to be sampled. The study team, rather than the company, then selected all of the sites to visit either randomly or based on the relative proximity to the starting location. The goal was to sample a cross section of typical facilities. If a company had a mix of old and new facilities, or acquired and company built facilities, the study team selected pad types in proportion to the population of sites in the area<sup>vi</sup>.

Based on the points above, an emission factor based on the *Dave Allen* study provides an intermediate emission factor. Use of a new factor acknowledges that the EPA 2015 factor is indeed an over estimate

and not specific enough to the Uinta Basin or Rocky Mountain region, and provides an alternative to the insufficiently supported *EPA Uinta* factor.

## Conclusion

UDAQ expects the Utah Air Agencies emissions inventory will go through a wide range of improvements as data is collected and understanding of processes and equipment increases with time. It is important to UDAQ that all three agencies involved in the inventory continue to use a consensus-based approach to decision making as these changes and adjustments are made. UDAQ also believes that adhering to an objective, evidence-based approach to inventory improvements will pay dividends in the long term stakeholder process. Finally, it is important that the regulated community, researchers, and other agency staff recognize the value of keeping high standards in the development and maintenance of the oil and gas emissions inventory.

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<sup>i</sup> Inventory of U.S. Greenhouse Gas Emissions and Sinks: Potential Revisions to Pneumatic Controller Emissions Estimate (Production Segment), <https://www.epa.gov/sites/production/files/2015-12/documents/ng-petro-inv-improvement-pneumatic-controllers-4-10-2015.pdf>

<sup>ii</sup> Methane Emissions from the Natural Gas Industry, Volume 1: Executive Summary, [https://www.epa.gov/sites/production/files/2016-08/documents/1\\_executiveummary.pdf](https://www.epa.gov/sites/production/files/2016-08/documents/1_executiveummary.pdf)

<sup>iii</sup> Methane Emissions from the Natural Gas Industry, Volume 2: Technical Report, [https://www.epa.gov/sites/production/files/2016-08/documents/2\\_technicalreport.pdf](https://www.epa.gov/sites/production/files/2016-08/documents/2_technicalreport.pdf)

<sup>iv</sup> Thoma, E., et al. (2017), *Assessment of Uinta Basin Oil and Natural Gas Well Pad Pneumatic Controller Emissions*. Journal of Environmental Protection.

<sup>v</sup> Allen, D., et al. (2014), *Methane Emissions from Process Equipment at Natural Gas Production Sites in the United States: Pneumatic Controllers*. Environmental Science & Technology.