Interstate Natural Gas Association of America

April 24, 2014

Environmental Protection Agency
EPA Docket Center (EPA/DC)
Mailcode 28221T
Attention: Docket ID No. OAR-2011-0512
1200 Pennsylvania Avenue, NW
Washington, D.C. 20460

Re: Docket ID No. EPA-HQ-OAR-2011-0512 – Comments Regarding the Proposed Rule, Greenhouse Gas Reporting Rule: Revisions and Confidentiality Determinations for Petroleum and Natural Gas Systems, dated March 10, 2014 (79 FR 13394)

Dear Docket Clerk:

The Interstate Natural Gas Association of America (INGAA), a trade association of the interstate natural gas pipeline industry, respectfully submits these comments regarding EPA's Proposed Rule, *Greenhouse Gas Reporting Rule: Revisions and Confidentiality Determinations for Petroleum and Natural Gas Systems;* dated March 10, 2014 (Proposed Rule)[1]. INGAA and its members are concerned with EPA's proposal, specific to greenhouse gas (GHG) estimates and reporting for the transmission and storage (T&S) segments, especially in regard to requirements for compressors. Many T&S facilities are subject to the GHG Reporting Program (GHGRP) with requirements to report under Subpart C, "General Stationary Fuel Combustion Sources" and Subpart W, "Petroleum and Natural Gas Systems." The latter focuses on emissions from vents and equipment leaks and is amended by the Proposed Rule.

INGAA member companies transport more than 85 percent of the nation's natural gas, through some 190,000 miles of interstate natural gas pipelines. Pipelines operate in a highly competitive market, which affects service offerings and prices, including competition between gas supply basins, competition among pipelines, and increased competition with firm shippers who can sell their excess capacity on a secondary market. INGAA member companies operate over 6,000 stationary natural gas-fired spark ignition reciprocating internal combustion engines and over 1,000 stationary natural gas-fired combustion turbines, which are installed at compressor stations along the pipelines to transport natural gas to local gas distribution companies, industrials, gas marketers, and industrial and gas-fired electric generators.

INGAA and its members have worked with EPA on GHG projects dating back to the Gas Research Institute (GRI) project with EPA in the early 1990s that estimated methane emissions from natural gas systems. The GRI-EPA Reports remain a seminal reference for natural gas operations GHG estimates two decades after its completion. Over the past five years, INGAA has worked with EPA on Subpart W rulemakings in an effort to improve T&S national inventories and emission estimates. INGAA and its

[1] "Greenhouse Gas Reporting Rule: Revisions and Confidentiality Determinations for Petroleum and Natural Gas Systems," 79 Fed. Reg. 13394 (March 10, 2014).

members have demonstrated their commitment and cooperation in developing an accurate T&S GHG emission inventory based on a robust reporting rule by identifying and prioritizing GHG sources, implementing voluntary GHG reduction through the Natural Gas STAR program, supporting site visits, and providing host sites for testing. INGAA also has submitted detailed comments and supporting technical documents, which explain implementation challenges and provide alternative rule text. INGAA also has initiated data compilation and analysis to facilitate a better understanding of Subpart W data.

The U.S. national GHG inventory indicates that methane emissions from T&S are a small percentage of the national GHG inventory and have decreased since the initial, 1990 national inventory was reported. In addition, Subpart W reporting indicates that T&S emissions are *significantly* lower than the national inventory report. Despite this, the Proposed Rule continues to require significant measurement and reporting burden for the T&S segments as reflected in several key INGAA concerns:

(1) The Proposed Rule is unlikely to achieve the objective of an improved GHG inventory that supports reporting and policy objectives. Since the original 2009 proposal, INGAA has proposed alternatives that we believe would better address data gaps and ensure quality data.

(2) The Proposed Rule arbitrarily retains, without adequate justification, ongoing measurement and monitoring for natural gas industry segments that is more rigorous than other industries subject to the GHGRP. Alternative methodologies are available that can better achieve program objectives, especially for key sources such as compressor related emissions.

(3) INGAA strongly believes that access to alternative methodologies is imperative through Missing Data or Best Available Monitoring Method (BAMM) provisions. The Proposed Rule eliminates BAMM provisions, which may compromise the ability of affected sources to comply, especially where annual measurement may be impossible or impractical due to safety or operational concerns. INGAA recommends revisions so that the Missing Data provisions address, in its entirety, the significant void caused by eliminating BAMM.

Based on these comments and through ongoing dialogue with EPA, INGAA hopes the final rule will meet EPA's reporting and policy objectives while ensuring safe, reasoned, and technically sound regulatory requirements that clearly afford compliance certainty to INGAA members. INGAA appreciates your consideration of these comments. Please contact me at 202-216-5935 or lbeal@ingaa.org if you have any questions. Thank you.

Sincerely,

Lisa S Beal

Lisa Beal
Vice President, Environment and Construction Policy
Interstate Natural Gas Association of America

cc by email: Sarah Dunham, US EPA
Paul Gunning, US EPA
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COMMENTS ON THE PROPOSED AMENDMENTS TO SUBPART W OF THE GREENHOUSE GAS MANDATORY REPORTING RULE

Proposed Amendments to Code of Federal Regulations Title 40, Part 98, Subpart W

79 Federal Register 13394, March 10, 2014

Submitted by:
Interstate Natural Gas Association of America (INGAA)
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April 24, 2014

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ATTACHMENTS

(Attachments are provided as separate electronic files)

Attachment 1: Docket document number EPA-HQ-OAR-2008-0508-0480.1; INGAA June 9, 2009 comments in response to April 10, 2009 GHGRP Proposed Rule

Attachment 2: Docket document number EPA-HQ-OAR-2009-0923-1039; INGAA June 11, 2010 comments in response to the April 12, 2010 Proposed Subpart W Rule

Attachment 3: Docket document number EPA-HQ-OAR-2011-0147-0029; INGAA September 19, 2011 comments in response to August 4, 2011 Proposed Subpart W Amendments

Attachment 4: Docket document number EPA-HQ-OAR-2011-0512-0029; INGAA October 24, 2011 comments in response to September 9, 2011 Proposed Subpart W Amendments

Attachment 5: Docket document number EPA-HQ-OAR-2011-0147-0047; INGAA June 20, 2012 comments in response to May 21, 2012 Proposed Subpart W Amendments

EXECUTIVE SUMMARY

INGAA members share EPA's desire to collect accurate, reliable and reasonably complete data on greenhouse gas (GHG) emissions. In fact, INGAA members have voluntarily worked with EPA to develop improved tools to collect emissions data and estimate GHG emissions from natural gas systems for two decades. INGAA members also acknowledge EPA's desire to improve the quality of data on equipment leaks and vented emissions of methane from natural gas transmission and storage (T&S) facilities. However, INGAA cannot support the Proposed Rule, because INGAA believes that EPA has not addressed important compliance implementation and data quality issues required to meet EPA's GHG Reporting Program (GHGRP) objective – an accurate inventory of methane emissions from the natural gas and other industries. Clearly, additional time and resources are required to develop a final rule that meets GHGRP objectives. INGAA members are committed to working with EPA to meet this mutual objective.

The Proposed Rule is the ***tenth*** rulemaking addressing Subpart W requirements, commencing with the initial GHGRP rule proposal on April 10, 2009. Additional GHGRP rulemakings, such as revisions to Subpart A reporting and global warming potential values, have also impacted Subpart W reporting. While there have been significant improvements in Subpart W since the original April 2009 proposal, this Proposed Rule is the first rulemaking to address substantive outstanding and unresolved compressor requirements since EPA published the Subpart W final rule on November 30, 2010.

INGAA remains concerned that, the Proposed Rule retains deficiencies and poses implementation challenges and unnecessary burdens. Data quality objectives remain undefined or uncommunicated. Reporting inequities remain across the various industries subject to the GHGRP. Ultimately, INGAA's primary concern is that under the Proposed Rule significant compliance challenges remain and INGAA members would continue to expend resources for monitoring and measurement that may not provide results that achieve the program objective – a reasonably accurate estimate of GHG emissions that fills data gaps and reduces the uncertainty in GHG emission estimates for T&S sources.

INGAA supports EPA's proposed Subpart W amendments that improve clarity and add flexibility, such as reorganization of the compressor emission estimation sections and clearly allowing default or site data for gas composition. However, emission estimation methods and measurement methods warrant further revision. Important issues remain that must be reconciled to improve GHG estimates from T&S sources, facilitate implementation of Subpart W reporting, provide clear compliance criteria and access to alternative methods for subject facilities, and address unnecessary burdens for ongoing compliance.

INGAA's primary issues include:

- <u>The Proposed Rule is unlikely to meet the GHGRP goal of an improved inventory that supports reporting and policy objectives.</u> Since the original 2009 proposal, INGAA has proposed alternatives that it believes would better address data gaps and ensure quality data. EPA has not justified why these alternatives, which INGAA believes are superior to EPA's proposal, are not acceptable.
- <u>The Proposed Rule arbitrarily retains ongoing measurement and monitoring requirements for T&S sources.</u> By requiring T&S direct measurements, the Proposed Rule treats similarly situated entities differently without a reasoned explanation and substantial evidence in the record. Thousands of vent measurements and component surveys have been completed at T&S facilities in the first three years of Subpart W reporting. Such physical measurement is uncommon across other industries regulated by the GHGRP.
- <u>Alternatives to prescribed emission estimation methods have not been adequately considered.</u> It is unclear how EPA has used data reported for 2011 and 2012 in this rulemaking, especially vent measurement and leak survey data. EPA has not indicated whether it believes perceived data gaps

are being addressed. EPA should develop a plan and implement a strategy to use measured data to develop alternative emission estimation methods and move beyond ongoing annual measurement for this inventory reporting rule.

- New reporting is not justified. Numerous new reporting elements have been arbitrarily added that are not needed to calculate GHG emissions and will add unnecessary paperwork burden for reporters.
- EPA Support Documents are inadequate. The background support documents discuss technical items and financial impacts, but do not adequately justify EPA decisions.
- Access to alternative methods must be available via BAMM or Missing Data provisions. The Proposed Rule eliminates the BAMM section and significantly revises the missing data section. Access to alternative methods of compliance is fundamental to regulatory compliance, especially when direct measurement is required. For example, the T&S segments must have alternative compliance methodologies when vent configuration precludes measurement. In addition, situations arise that prevent measurement due to safety concerns. INGAA members will not compromise personnel safety. Thus, the missing data provisions must address the void caused by eliminating BAMM, or BAMM sections must be retained.
- Compressor measurements should be completed "as found" without mandating mode-specific measurements. The Proposed Rule attempts to address issues associated with the current rule's requirements to complete a test in shutdown, de-pressurized mode every three years. INGAA does not believe that the Proposed Rule remedies this issue. INGAA recommends testing in "as found" mode and not mandating any mode-specific tests on a prescribed frequency. 2011 and 2012 data show that operators completed ample tests in shutdown mode. INGAA also does not support the newly proposed requirement that mandates centrifugal compressor tests in each of the two modes at least once every three years.
- The proposed rule should include measurement method flexibility and not arbitrarily exclude viable methods. Subpart W measurement methods have improved considerably since the original 2009 proposal, but EPA continues to exclude viable measurement methods or inconsistently applies some methods. For example, an acoustic instrument can be used to detect whether a valve is leaking (into a vent), but optical imaging (i.e., an infrared (IR) camera) cannot be used to screen compressor vents. EPA has not addressed requests to use an IR camera to screen a compressor vent for leakage to determine if measurement is required.
- The Proposed Rule prescribes or requests comment on more prescriptive approaches without adequate justification. INGAA recommends compliance flexibility where warranted. In response to comments requesting additional flexibility, the Proposed Rule adds prescriptive requirements (e.g., mandating use of gas compressibility in blow down calculations for typical transmission operating conditions) or requests comments on whether optional approaches should be mandatory (e.g., the use of site-specific data on natural gas composition for T&S facilities). Flexibility (i.e., credible options) should be retained where feasible. In addition, mandating use of site data rather than default natural gas composition values would undermine previous, positive Subpart W revisions.
- EPA needs to reevaluate confidential business information (CBI) determinations. EPA fails to understand the competitive nature of the natural gas transmission industry when determining whether particular data elements should be considered CBI.

As reflected in these comments, INGAA believes that substantive issues requiring review and discussion must be addressed in the final rule. Consistent with its past work with EPA on GHG and other Clean Air Act rulemakings, INGAA prefers to address the Proposed Rule issues in these comments through cooperative engagement. INGAA offers its assistance to reconcile the issues herein and facilitate the development of viable, effective, and reasonable Subpart W requirements for natural gas T&S facilities.

Detailed Comments:

Introduction and Background

1. INGAA and its members have a strong record of support for GHG programs and efforts to improve methane emission estimates from natural gas transmission and storage operations. INGAA remains committed to working with EPA on improving Subpart W and achieving GHGRP objectives.

INGAA recommends rule revisions to leverage measurement data collected to date and to focus ongoing data collection on significant emission sources and data gaps, and to address potential flaws that remain in the Proposed Rule that raise questions about inventory integrity. The primary purpose of Subpart W is to estimate methane emissions from equipment leaks and venting associated with natural gas operations. Subpart W includes significant direct measurement requirements to address Greenhouse Gas Reporting Program (GHGRP) objectives. INGAA is concerned that the Proposed Rule will not achieve GHGRP objectives due to data quality concerns and flaws that the Proposed Rule fails to remedy.

A. INGAA's record of support for GHG programs and Subpart W development

INGAA and it members have supported greenhouse gas (GHG) programs related to natural gas industry methane emissions dating back to the original "Methane Emissions from the Natural Gas Industry" study completed by the U.S. EPA and Gas Research Institute (GRI) in the early 1990s. INGAA and its members participated on the GRI Environmental Project Advisory Group that secured GRI funding, reviewed and approved the project plan, provided host sites for testing, and peer reviewed project reports. That effort culminated in the 1996 publication of the multi-volume EPA-GRI Reports that remain the seminal reference for methane emissions from natural gas operations.

Support from natural gas transmission and storage (T&S) operators did not end with that publication. Through ongoing support of the GRI environmental research program in the late 1990s and ongoing activities through 2014, INGAA and its members have continued to support projects and programs to improve T&S sector estimates of methane emissions, and to identify and implement GHG reduction programs to minimize natural gas losses. The core objective of this ongoing effort is to understand methane emissions from T&S operations, improve emission estimation methods, provide tools and technologies to characterize emissions, and identify and implement reduction opportunities. Throughout, INGAA and its members have worked cooperatively with EPA for over two decades.

An overview of select activities that demonstrate the continuum of project and program participation is provided. This overview demonstrates the commitment of INGAA and its members to improving the technical basis for GHG emission estimates and methane measurement for natural gas systems. Through knowledge gained from these efforts and our understanding of natural gas operations, considerable technical expertise resides within the INGAA community. Example projects and programs include:

- As discussed above, from 1992 through 1996, INGAA participated in the original GRI-EPA project on methane emissions from the natural gas industry;
- Provided ongoing support to the GRI program by providing co-funding and host sites for projects to develop and commercialize methane detection and measurement instrumentation, including the passive infrared camera (i.e., "optical imaging") and high volume sampler;

- Provided ongoing support to the GRI program by providing co-funding and host sites for projects to investigate and document methane reductions, such as "directed inspection and maintenance" (DI&M) programs for equipment leaks;
- Supported and peer reviewed GRI's development of GHGCalc, a software tool to facilitate inventory development based on emission factors from the EPA-GRI study;
- Collaborated in U.S. and Canadian studies that continue to gather emissions data from transmission and storage operations and validate performance of new instruments;
- INGAA and many of its members participated in the Natural Gas Star voluntary methane emission reduction program from its inception;
- In 2005, INGAA developed GHG Emission Estimation Guidelines for T&S operations based on the techniques, data, and emission factors available at that time;
- Collaborated with the World Resources Institute and California Climate Registry in the development and review of draft protocols for GHG reporting and certification;
- Starting in late 2004, collaborated with EPA and other trade associations to develop a project plan for a methane "emission factor reconciliation" project[2] [3], which developed a prioritized list of methane emission factors across all natural gas sectors and initiated an effort to secure funding.
  - This program ended when EPA was charged with developing the GHGRP and EPA resources were diverted to that effort. Since 2008, most of INGAA's efforts associated with GHG and methane emissions have been dedicated to providing information to and commenting on GHGRP and Subpart W rulemakings.
- In 2013 and 2014, INGAA and six member companies are participating in a field study with the Environmental Defense Fund to measure methane emissions from transmission and storage operations and estimate a national inventory for these segments.

Using the skill sets and acumen gained from these efforts, INGAA strives to provide thoughtful, thorough, and constructive comments to EPA in response to Subpart W rulemakings. INGAA has been actively engaged in GHGRP rulemakings since the original 2009 proposal, and INGAA and many of its members have provided hundreds of pages of comments, related support documents, meeting material, and recommended alternatives. The underlying objective of these actions is to support a rule that effectively and efficiently addresses data gaps, and develops quality data and GHG estimates from T&S sources. However, these activities have been challenging due to the Subpart W rule development and implementation process to date.

Starting with the 2009 proposed rule, there have been ***ten*** Subpart W rulemakings in less than five years. This does not include other GHGRP amendments related to the Subpart A general provisions and Subpart C combustion equipment that also affect Subpart W facilities. The sheer number of rulemakings is unprecedented in our experience with numerous air quality regulations over several decades. In previous Subpart W comments, INGAA recommended a delayed or staged implementation approach to address the challenges evident in earlier versions of the rule. The iterative rulemaking

[2] "*INGAA/API/AGA Natural Gas Systems GHG Emission Factor Comparison, Gap Assessment, & Improvement Collaborative Project,"* Executive Summary (May 17, 2006).
[3] *"Summary of EPA-Natural Gas Group Meeting – July 5, 2006,"* EPA Meeting Summary (July 2006).

process needed to support the initial years of Subpart W implementation appear to confirm the validity of INGAA's request.

To support Subpart W improvement, INGAA has expended extraordinary effort over the last five years. In addition to the commenting on multiple rulemakings, EPA has provided additional material to EPA. For example, in 2011 INGAA provided a quick response to EPA requests to recommend Subpart W revisions related to errors and lack of clarity in the compressor emission sections. Unfortunately, EPA failed to respond to this requested material in the two late 2011 rulemakings, and the material was re-submitted in subsequent INGAA comments[4].

Despite these challenges, INGAA remains committed to providing constructive comments and working with EPA to improve Subpart W. Although there have been numerous Subpart W rulemakings, the Proposed Rule is the first substantive revision of compressor-related emission estimation issues since the 2010 re-proposal. Several issues remain that have been longstanding concerns.

INGAA comments in response to primary Subpart W rulemakings are referenced within these comments and provided as attachments**,** including:

- Docket document number EPA-HQ-OAR-2008-0508-0480.1; INGAA June 9, 2009 comments in response to April 10, 2009 GHGRP Proposed Rule (Attachment 1);
- Docket document number EPA-HQ-OAR-2009-0923-1039; INGAA June 11, 2010 comments in response to the April 12, 2010 Proposed Subpart W Rule which significantly revised the original 2009 Subpart W proposal (Attachment 2);
- Docket document number EPA-HQ-OAR-2011-0147-0029; INGAA September 19, 2011 comments in response to August 4, 2011 Proposed Subpart W Amendments (Attachment 3);
- Docket document number EPA-HQ-OAR-2011-0512-0029; INGAA October 24, 2011 comments in response to September 9, 2011 Proposed Subpart W Amendments (Attachment 4);
- Docket document number EPA-HQ-OAR-2011-0147-0047; INGAA June 20, 2012 comments in response to May 21, 2012 Proposed Subpart W Amendments (Attachment 5).

To date, a number of INGAA comments have been addressed and Subpart W has improved significantly since the original 2009 proposal. For example: EPA has added measurement method flexibility and additional methods for some applications (but measurement methods remain an issue in some cases); EPA added default natural gas methane and CO_2 composition for emission estimates from T&S and other segments downstream of processing; and EPA added emission factors for pneumatic device emission estimates. In addition, rule revisions provided technical corrections (e.g., correcting units and references to standard temperature and pressure in various equations) and improved rule clarity in some instances.

However, fundamental issues remain for key T&S sources. Examples include:

- Access to alternative methods is a tenant to regulations, especially when measurement is required. Deleting the BAMM section may strand sources that become subject to GHG reporting, where

[4] *"INGAA Comments Regarding the Proposed Rule, Mandatory Reporting of Greenhouse Gases, dated September 9, 2011; Attachment 2,"* EPA-HQ-OAR-2011-0512-0029 (October 24, 2011).

unpredictable future events occur, or where vent measurement is unsafe or infeasible. It is not clear if revisions to the missing data section are intended to balance the elimination of BAMM.

- Measurement requirements should be designed to ensure high quality data to address perceived data gaps, and fulfill GHGRP objectives to improve GHG estimates to support future policy decisions. As discussed in these comments, INGAA is concerned those objectives will not be attained without implementation of INGAA recommended revisions.
- Requirements for GHG estimates should provide flexibility for calculations, input parameters, and measurement methods based on defined data quality objectives and consistent application of those objectives across source types, segments, and industries.
- The Proposed Rule essentially continues the current measurement program while adding additional restrictions. INGAA understood EPA's desire in the original 2010 final rule to gather additional measured data to address data gaps for key sources. With thousands of measurements already completed, it is unclear how or if EPA has used that data in developing the Proposed Rule. A path should be defined for data analysis, development of alternative emission estimation methods, and elimination or substantial reduction of the burden of ongoing annual measurements.
- EPA memos on impacts and technical support are inadequate, fail to support conclusions, and sometimes demonstrate a lack of understanding of natural gas systems, associated processes, and implementation challenges and impacts.

These issues are discussed further in comments below, and INGAA offers its continued assistance to further explain our concerns and work towards reasonable solutions.

B. Alternative approaches that build on INGAA members commitment to measurement

Based on our experience and technical expertise gained from implementing ongoing GHG programs, previous INGAA comments recommended a programmatic approach for reporting and T&S inventory improvement where focused data collection and measurement would address primary data gaps. For example, INGAA recommended conducting high quality measurement over the initial years of the program to fill data gaps. Analysis of that data could provide a path to improved alternative methods for ongoing emission estimates.

In addition, INGAA has consistently requested equitable requirements for data collection and reporting for the natural gas industry, including T&S sources. Other industrial sectors subject to the GHGRP are generally allowed to estimate emissions rather than being required to conduct physical measurements. Other industries are allowed to use emission factors, engineering estimates, measurements already conducted for other purposes or generally available (e.g., fuel measurement), or minimal or simplistic additional measurements. In contrast, T&S and other natural gas segments are required to complete annual measurements and surveys of numerous process vents whose primary purpose is to safely vent gas away from personnel and equipment. Measurement or monitoring of vented emissions from these numerous vent lines has not previously been required for other EPA regulatory or emission inventory purposes. Consequently, Subpart W has required implementation of equipment modifications and the development of new practices and systems for these operations – e.g., for T&S, this includes installation of measurement ports and development of procedures to sample compressor valve and rod packing leakage, and implement facility-wide leak surveys that require screening of inaccessible components.

While its members abided by EPA's requirement to complete measurements for Subpart W, INGAA has consistently recommended a process to collect quality data, and use that data to develop emission factors or other streamlined estimation methods for emissions from compressor vents and equipment leaks. INGAA recommendations are based on the fundamental premise that emission factors, engineering estimates, and related estimation methods are the longstanding technical approach to emission inventory development and are consistent with the requirements for other industries subject to the GHGRP. Subpart W measurements completed to date provide a voluminous data set in comparison to the amount of data typically available for developing emission factors that are used for inventory development – including emission factors used for other GHGRP industrial sectors.

INGAA strongly believes that future Subpart W inventories for the T&S segments should be developed by leveraging the numerous data already collected, identifying and filling data gaps, and developing a reasonable engineering estimate approach based on these data (e.g., emission factors), and retiring the annual measurement requirement after a reasonable timeframe. INGAA members have consistently indicated and exhibited a willingness to complete measurements and to assist in development of new emission factors for the T&S sector. Since 2009, Subpart W measurements from the T&S sector have produced an extensive data set of methane emissions from compressors, process vents, and other sources in multiple operating modes. Data from 2011 and 2012 reporting are publicly available, and significant additional measurement data will be available from 2013 and 2014 reporting.

INGAA members have completed thousands of measurements in 2011 to 2013 and reported associated emissions to fulfill Subpart W requirements. For the 2011 and 2012 reports currently available (2013 reporting was completed by March 31, 2014), INGAA member companies reported:

- For T&S reciprocating compressors, more than 5,000 measurements of compressor valve and rod packing leakage from over 1,400 affected compressors across the three compressor modes in Subpart W (i.e., operating, standby pressurized, and not operating, depressurized). Similar numbers of measurements were completed in each mode.
- For T&S centrifugal compressors, nearly 1,000 measurements from more than 475 compressors across the two modes in Subpart W (i.e., operating and not operating, depressurized).
- For 2011 and 2012, INGAA member companies have collectively conducted over 600 facility leak surveys, with a resulting conservative estimate of over a million components screened for leaks.

With 2013 activities recently reported and 2014 testing underway, data from these two years will approximately double the available reported data. Thus, a considerable and substantial data set is available for review and analysis. The Proposed Rule essentially continues with the status quo rather than assessing the significant resource available from these thousands of measurements, making correction where warranted, and devising a plan to utilize the measured data to develop alternatives to ongoing annual measurement.

Because it appears EPA has failed to assess and scrutinize data collected to date, INGAA is very concerned that the Proposed Rule would retain flawed Subpart W requirements and fail to achieve the objective of an improved GHG emission estimate for T&S sources. Instead, a likely outcome is additional years of measurement and continued inventory uncertainty and questions about data gaps. Thus, the technical and policy objectives of the GHGRP will not be achieved. This outcome would also

fail to fulfill the following key objectives in the recently released White House methane strategy[5]: improving methane measurement (e.g., addressing areas of significant emissions and higher uncertainty in bottom up inventories, such as compressors); promoting a common understanding of methane emissions from natural gas systems and related abatement opportunities; and, identifying downstream emission reduction opportunities (e.g., develop strategies for cost-effectively reducing methane emissions from natural gas processing, transmission and storage, LNG, and distribution).

Comments that follow provide additional details. Special concerns include potentially flawed Subpart W requirements that will fail to meet inventory objectives and recommended alternatives that can ensure inventory objectives are met, as discussed in Comments 13 and 14.

2. EPA arbitrarily requires more rigorous and higher cost approaches for the natural gas industry, including transmission and storage sources, than for other industries subject to the GHGRP.

INGAA has consistently questioned EPA's decision to require ongoing annual measurement for the natural gas industry, including T&S sources, while other industries and sources are allowed to use standard inventory approaches such as emission factors and engineering estimates, or straightforward measurements that are generally already conducted for other purposes. GHGRP requirements and the associated burdens for natural gas T&S facilities subject to Subpart W are disproportional to those of other covered industries with a similar magnitude of GHG/methane emissions. By requiring T&S direct measurements, the Proposed Rule treats similarly-situated entities differently without a reasoned explanation and substantial evidence in the record.

Natural gas T&S facilities have a multitude of new and complex data collection and reporting requirements for the GHGRP that include significant new measurement requirements for vent lines that have historically not been measured for any purpose and were not designed or constructed with measurement access considered. Requirements include:

- Annual (or more frequent) facility-wide equipment leak surveys;
- Annual (or more frequent) transmission storage tank surveys and measurements;
- Tracking and recording of compressor mode and annual leakage / vent measurements for reciprocating and centrifugal compressors at affected T&S facilities. In many cases, these new measurement requirements have required installation of sample ports, and vent line modifications or man-lift rental for safe access;
- On-going blowdown event tracking (type, location, frequency, volume, temperature, and pressure) following procedures that may differ from existing practices;
- Collection of combustion equipment emissions data for Subpart C;
- Emission calculations and reporting for the multiple emission sources;
- Annual population counts of gas driven pneumatic devices and storage wellhead components; and
- Setup, ongoing maintenance, and populating the recordkeeping systems used to compile and retain the thousands of data elements and measurements.

[5] *"Climate Action Plan – Strategy to Reduce Methane Emissions."* White House (March 2014). http://www.whitehouse.gov/sites/default/files/strategy_to_reduce_methane_emissions_2014-03-28_final.pdf

INGAA reviewed requirements for other industries, and Landfills and Underground Coal Mining (two of the industries addressed by the White House "Climate Action Plan") have similar magnitudes of methane emissions as natural gas systems, and sources within these industries have annual methane emissions similar in magnitude to compressors from T&S and gas processing. However, while gas processing and T&S require annual compressor measurement, the other industries have much simpler and less burdensome GHGRP requirements. Table 1 compares methane emissions based on EPA's 2012 draft U.S. GHG Inventory[6], i.e., estimates are based on the EPA U.S. GHG Inventory report; Subpart W estimates are considerably lower for compressor related emissions.

Table 1. U.S. GHG Inventory Methane Emission Estimates for Natural Gas Systems, Landfills, and Coal Mining.

Industry - emission source	**2012 US GHG Inventory CH_4 Emissions (metric tons)**	**40 CFR 98 Subpart**
Natural Gas Systems	**6,052,000**	W
- Reciprocating Compressors: processing + transmission + storage [A]	1,134,000	W
- Centrifugal Compressors (wet seals): processing + transmission + storage [A]	409,000	W
- Centrifugal Compressors (dry seals): processing + transmission + storage [A]	54,000	W
Landfills	**4,897,000**	
- Municipal Solid Waste (MSW) landfills [B]	4,652,000	HH
- Industrial waste landfills [B]	245,000	TT
Coal Mining	**2,660,000**	
- Ventilation systems (underground coal mines)	1,800,000	FF
- Degasification systems (underground coal mines)	140,000	FF
- Surface mines and post-mining activities	770,000	N/A

A. Based on data in the 2012 U.S. GHG Inventory report, total emissions estimated to be 83% of calculated potential emissions to account for reductions reported but not allocated in detail.

B. Based on data in the 2012 U.S. GHG Inventory report, MSW landfills emissions estimated to be 95% of total emissions and Industrial Waste landfills estimated to be 5% of total emissions.

GHG emissions for Landfills are covered by Subpart HH (MSW Landfills) and Subpart TT (Industrial Landfills). Emissions are predominately from MSW landfills (i.e., about 95%), and the methane emission estimation methods are similar for both subparts. The mass of waste deposited in the landfill each year is determined and the volume of methane generated is estimated using a carbonaceous waste decay model. The volume of methane emitted to the atmosphere is calculated by adjusting the modeled emissions for methane oxidation by soil using a factor and the volume of methane destroyed by gas collection and combustion systems. Data collection requirements include:

[6] *"Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2012,"* EPA 430-R-14-003 (April 15, 2014). http://www.epa.gov/climatechange/Downloads/ghgemissions/US-GHG-Inventory-2014-Main-Text.pdf

- Mass of waste loads deposited in the landfill by mass scales or counts of vehicles and containers and capacity estimates. It is expected this is an ongoing activity (i.e., pre-dates the GHGRP) for billing and / or other purposes; and
- Volume of methane destroyed by gas collection and combustion systems by monitoring collected landfill gas flowrate and collecting samples to determine landfill gas methane concentration. This could be a new requirement for the GHGRP or could be an ongoing activity for operations, regulatory, or other purposes.

Summary data collected by the GHGRP for 2012[7] indicate that over 50% of the MSW landfills do not report combustion emissions under Subpart C and it is assumed these landfills do not have gas collection and combustion systems. Thus, it appears that over 50% of the MSW landfill facilities were not required to collect additional (i.e., new) data for the GHGRP, and the remaining facilities only have a single new data collection requirement.

GHG emissions for Underground Coal Mines are covered by Subpart FF and two emission sources are covered: ventilation systems which include ventilation shafts or vent holes where mine ventilation air is emitted; and, degasification systems which include degasification wells and gob gas vent holes deployed before, during, or after mining operations are conducted.

- Data collection requirements for ventilation systems include quarterly measurements of CH_4 emissions. Results of the quarterly (or more frequent) testing performed by the Mine Safety and Health Administration (MSHA) for methane flowrate may be used for the GHGRP. This is an ongoing activity (i.e., pre-dates the GHGRP) and appears to add minimal burden to the facilities.
- Data collection requirements for degasification systems include weekly measurements of CH_4 emissions. This could be a new requirement for the GHGRP or could be an ongoing activity for operations, regulatory, or other purposes.

Thus, it appears that additional data collection requirements for the GHGRP for underground coal mine facilities is limited to a single new emission source.

Contrasting these limited new GHGRP data collection requirements for landfills and underground coal mines (i.e., single new emission source or sink for each industry) with the multitude of new and complex GHGRP measurements and data collection requirements for the many emission sources at T&S facilities, it is apparent that the burden for T&S facilities is much greater and disproportionate to the magnitude of GHG emissions. INGAA members have collected thousands of data points to date for the first three years of reporting, and it is reasonable to expect that data gaps associated with inventory development should be addressed and measurement burden should decrease over time.

BAMM and Missing Data

3. Regulations requiring measurement and monitoring must have access to alternative methods.

INGAA strongly believes that the measurement requirements unique to Subpart W are integrally linked to the need for alternatives within Subpart W that may not be necessary for other GHGRP subparts with fewer or more simplistic measurement demands. However, the Proposed Rule would eliminate the Best

[7] http://www.epa.gov/climate/ghgreporting/ghgdata/2012data.html

Available Monitoring Methods (BAMM) section[8] in its entirety. This action may be reasonable if other amendments (i.e., Missing Data revisions in §98.235) address the resulting void. As discussed in this comment and the three following comments, Subpart W includes more measurement and more complex measurement than other GHGRP subparts, so robust and thorough Subpart W missing data provisions are needed if the BAMM section is eliminated.

It is common for air quality regulations, such as regulations that address criteria pollutants or hazardous air pollutants, to include measurement, testing, or monitoring to verify compliance. An integral component of measurement requirements is access to alternative methods. The GHGRP includes measurements for some emission estimates, but those are often based on processes already in place (e.g., fuel measurement, CEMS for utilities that have existing requirements under 40 CFR, part 75). Subpart W requires vent measurement for lines not previously measured, for processes and equipment not designed with measurement access considered. Following the established standard for air quality regulations, access to alternative methods or procedures is integral when measurement is required.

BAMM provisions in §98.234(f) provides access to alternatives for Subpart W measurements, and approaches that provide representative alternative data needed to perform Subpart W emission estimates.

Examples of access to alternative monitoring, methods, and related QA/QC procedures are common in air quality regulations, and are often included in the general provisions. In addition, access to alternative emission standards or operating limits is typically provided. Several examples follow:

- National Emission Standards for Hazardous Air Pollutants (NESHAPs) in 40 CFR, Part 63 typically include compliance testing or monitoring and emission standards. Alternative options that are available include:
  - §63.7 – Performance Testing Requirements: Includes major alternatives to test methods in §63.7(e)(2)(ii) and (f);
  - §63.8 – Monitoring Requirements: Includes reference to alternatives throughout, with details in §63.8(f);
  - §63.6 – Compliance with standards and maintenance requirements: Includes alternative emissions and operating limitations in §63.6(g)
  - §63.90 includes definitions related to major and minor changes in monitoring, test methods, etc. and includes examples of the wide array of alternatives that are accessible to sources subject to NESHAPs.
- New Source Performance Standards (NSPS) in 40 CFR, Part 60 typically include compliance testing or monitoring to ensure compliance with emission standards. Alternative options that are available include:
  - §60.8 – Performance Tests: Includes alternatives in §60.8(b);
  - §60.13 – Monitoring Requirements: Includes alternatives in §60.13(i) – (j);
- Part 75 addresses Continuous Emission Monitoring Systems (CEMS) for utilities subject to the Acid Rain Program and includes Subpart E – Alternative Monitoring Systems.

[8] *See* 40 C.F.R. §98.234(f).

This list shows that regulations that require compliance with emission limits provide access to regulatory alternatives for the emission standard, monitoring, and performance tests. Subpart W should include this common regulatory paradigm, especially since the outcome for an inventory rule such as Subpart W has less environmental consequence than for an emission standard.

4. INGAA has consistently commented that measurement and BAMM are inextricably linked.

INGAA has consistently commented that method flexibility and access to alternative methods is important, especially when measurement is required. Safety and access concerns for vent measurement have been consistent themes in INGAA comments, along with the fact that some measurement challenges cannot feasibly be remedied. Therefore, the alternative (e.g., use of emission factors for a small set of lines that cannot be measured) will always be needed for those cases. As long as measurement is required in Subpart W, access to alternatives is needed. As discussed in Comment 3, regulations commonly provide access to alternative methods, and the use of BAMM has served that purpose for Subpart W. Compared to other GHGRP subparts, Subpart W requires more measurement, measurement of more lines, and access to existing lines that were not designed with measurement in mind. Thus, it is reasonable to retain BAMM sections in Subpart W while it may not be necessary for other industrial sectors.

The importance of BAMM is evident by the rulemaking activity that has transpired since the original Subpart W final rule was published. Of the ten Subpart W rulemakings noted in Comment 1, several have dealt specifically with BAMM specifications and schedules, thus demonstrating the importance of BAMM for Subpart W compliance.

INGAA has previously commented that the sunset of BAMM provisions could strand sources that subsequently become subject to GHG reporting (i.e., alternatives are not available to address initial implementation challenges) or where unpredictable future events occur. INGAA has commented that method flexibility is important so that progress (e.g., new technology development) is not stymied. INGAA has commented that EPA should consider allowances if facility design precludes reasonable access to vent lines or condensate tank vents at a safe measurement location, and that criteria for approving alternatives should more fully recognize employee safety. These issues have been expressed repeatedly in INGAA written comments, in meetings, and in other communications with EPA.

The thousands of measurements completed in 2011 – 2013 confirm the commitment of INGAA members to completing measurements when feasible. In addition, the number of BAMM requests related to compressor vent measurement demonstrate that access to alternatives is imperative. In the current Subpart W rule, allowances for missing data are limited in scope, but revisions to §98.235 will likely address many scenarios previously covered by use of BAMM. However, it is not clear if those revisions comprehensively address scenarios evident based on implementation (and BAMM requests) to date. It is imperative that alternatives are available when measurement is required – whether via BAMM provisions (the current rule approach) or via missing data provisions (the apparent approach in the Proposed Rule).

5. Eliminating BAMM compromises the ability to comply unless Missing Data provisions address alternative approaches.

The Proposed Rule deletes the BAMM section, §98.234(f), and significantly revises §98.235, which addresses Missing Data. Since access to alternatives is a regulatory imperative, especially when

measurement is required, INGAA presumes that proposed Missing Data revisions are intended to address all types of BAMM requests previously approved by EPA.

Several new provisions are proposed for the missing data section. Section 98.235(b) contemplates a measurement issue associated with transmission tanks; §98.235(d) contemplates certain aspects of missing data associated with a measurement, §98.235(e) and (f) consider facility and source-level issues, and §98.235(g) broadly covers situations other than those addressed in those defined in §98.235(a) – (f).

If the BAMM section is deleted, it is imperative that §98.235 address all scenarios that have been addressed for 2011 through 2014 compliance using BAMM requests. Comment 6 recommends revisions to clarify and improve proposed revisions to §98.235 based on example scenarios where missing data provisions would need to be applied.

In some cases, it is apparent that missing data provisions would apply. For example:

- BAMM has been requested to address the occurrence of (or potential for) a late year event (e.g., unexpected blowdown) that results in a facility that has not reported becoming newly subject. §98.235(e) addresses the scenario by allowing best engineering estimates.
  - However, INGAA recommends the rule allow the use of best estimates for the first reporting year. As an example, facility emissions could be well below the reporting threshold for many years, until a single late year (e.g., December) pipeline blowdown within the station boundary triggers applicability. A six month allowance for using best engineering estimates does not provide enough coverage, and in this scenario, the facility should be allowed to use best engineering estimates for the initial reporting year. The ongoing reporting obligation would require measurements, data collection, etc., in the second year, shortly after applicability changes following a late year triggering event. INGAA recommends the following revision to §98.235(e):

    "~~For the first six months of required data collection~~ **For the first reporting year**, facilities that become newly subject to subpart W may use best engineering estimates for any data that cannot reasonably be measured or obtained according to the requirements of this subpart."
- §98.235(b) addresses the situation where transmission tank monitoring is not completed, and indicates that leakage for the entire year should be assumed.
  - However, the provision does not indicate what leak rate should be assumed. Previous data could be used if available. If previous data is not available, a leak rate equivalent to the leak threshold defined in §98.234(a)(5) could be used. The reporting obligation in §98.236(bb)(5) would identify how this missed data scenario would be avoided in the future. There may be scenarios where safe access is precluded.

For a number of examples where BAMM was previously requested, similar scenarios will occur in 2015 and beyond. Missing data provisions should apply to these situations. Revisions are needed to add or clarify applicability of the missing data provisions and EPA's intent must be clearly understood to avoid implementation or compliance problems. Primary concerns include:

- Late year changes at a facility that trigger reporting for the first time or where a new source is added at a subject facility. Data many not be available and best engineering estimates should be allowed.

Applicability is clear for the former case (newly affected facility) but not the latter (subject facility with new emissions source);

- Vent lines that cannot be safely or feasibly measured and where acoustic device measurement is not an option;
- Data that is not available for compressor measurements mandated in a specific mode, especially when a wealth of measurement data is available to develop operator emission factors for modes not measured.

Several more specific examples and related discussion follows:

- §98.235(f) applies for subject production facilities when new wells are added. INGAA supports this provision, but its applicability should be broadened to cover similar scenarios for all Subpart W segments – i.e., the scenario where there is a change (e.g., new source) at a subject facility, and the reporter cannot reasonably acquire necessary data.
  - For example, BAMM has been requested to address unforeseen changes, especially late in the year, at an affected facility because it may not be feasible or reasonable to collect all required data for a newly affected source at an existing, reporting facility. For example, at an existing compressor station, new compression capacity may be added to address anticipated demand. The compressor may come on-line late in the year (e.g., December) in preparation for the heating season. In this case, the new source (compressor) should be provided the same allowance afforded to wells in §98.235(f). Comment 6 provides recommended revisions to §98.235(f).
- INGAA has consistently requested reasonable approaches for vent lines that cannot safely be measured or are inaccessible (e.g., cannot add a port at a lower elevation). EPA has provided the acoustic device method to address some cases, but there are still instances where measurement is not possible. For example:
  - Vent line access is not safe or feasible to access and acoustic device measurement of the relevant valve is not possible. Some valves are buried and not accessible unless exhumed; other valves may include insulation or have other accessibility problems that eliminate the acoustic method as an option.
  - Vent line is not safe or feasible to access (e.g., wet seal degassing vent) and valve leakage measurement (i.e., acoustic method) is not applicable.
- For "missing" vent measurements, §98.235(d) contemplates missing data associated with a measured parameter. However, it does not appear to address the situation where an annual measurement is not completed, such as a vent line where measurement is not feasible. This implies that §98.235(g) would need to apply for missing vent measurements.
  - It is not clear if §98.235(g) is intended to include missing compressor vent measurements. Comment 6 recommends revisions to §98.235(g) to clarify applicability. Alternatively and as discussed above, a provision similar to §98.235(b) could be added to address compressor vents in a similar manner as tank vents.
  - Missing data provisions must apply for scenarios when vent measurement is not feasible. If not, INGAA strongly opposes eliminating BAMM. Clarity is needed and can be provided through revision to one or more subsections in §98.235.

  - In addition to or as an alternative to the revisions recommended below for section §98.235(g), missed compressor vent and rod packing measurements could be added to the tank monitoring provisions in §98.235(b). Or, a similar, separate provision could be added for compressor measurements. In this case, the operator should use reporter emission factors to estimate emissions for all operating modes for the vent not measured.

- Mandating measurements in a particular mode on a defined frequency is discussed in Comment 7. For 2013 and 2014, BAMM requests were submitted for mandatory testing in shutdown, de-pressurized mode every three years. As discussed in Comment 7, mandatory testing on a defined schedule for any operating mode is not warranted. If such provisions are retained, then missing data provisions should apply to preclude unnecessary shutdown, and should consider the logistical challenges of completing a prescribed test without a well-defined schedule. In addition, some operations may retain compressors in standby, pressurized mode except for rare circumstances. Measurement in shutdown mode should not be mandated and missing data provisions, as discussed above, should apply.

Comment 6 provides recommended revisions to clarify the missing data provisions and other recommendations are discussed above. In addition, this data should be discussed in the final rule preamble or support documents so that implementation intent is more clearly stated. For example, the technical support memo should provide additional details on EPA's basis for deleting BAMM and applicability of missing data provisions.

6. Recommended revisions to Missing Data sections to improve clarity and applicability.

The previous comment discusses scenarios where missing data requirements need clarification. Additional specific rule text revisions are recommended in this comment to improve clarity and address applicability. This includes revisions to broaden the source types covered by §98.235(f) and revisions to clarify applicability of §98.235(g). If EPA does not agree that missing data provisions apply, then Subpart W does not provide reasonable access to alternatives and INGAA strongly opposes the elimination of the BAMM section.

A. <u>§98.235(f) should be revised to address all Subpart W sources and segments.</u>

§98.235(f) addresses a situation where a change (i.e., new well) occurs at a facility already subject to Subpart W and allows best engineering estimates in lieu of measured data for six months. INGAA strongly supports the concept addressed by §98.235(f), where a change at an affected facility is allowed to use best estimates for an abbreviated period. However, similar complications can arise for sources other than wells, and this section should be broadly applicable to all Subpart W affected segments and source types that are required to report. There are many scenarios where additions to an affected facility could result in complications similar to the well scenario addressed in the Proposed Rule.

For example, compressors are a listed source type for T&S operations. A new compressor (i.e., additional or replacement capacity) could be added at a compressor station that reports under Subpart W. Since pipeline demand typically increases over the winter months, new capacity may be brought on-line late in the year to accommodate the heating season. In this scenario, it may be difficult and overly burdensome to require measurements from newly commissioned equipment, and the logistics associated with scheduling and conducting a test do not warrant this level of effort for the minimal operation that would occur within the calendar year. In this scenario, §98.235(f) should apply and the operator would likely use

reporter emissions factors for emission estimates from the new compressor. Many similar scenarios can be envisioned for facilities already subject to Subpart W.

To address changes that occur at existing facilities already subject to GHGRP reporting, §98.235(f) should be revised to accommodate all segments. INGAA recommends the following revision:

> (f) For the first six months of required data collection, facilities that are currently subject to subpart W and that acquire **a** new **source(s) listed in §98.232** ~~wells that were not previously subject to subpart W~~ may use best engineering estimates for any data related to those newly acquired **sources** that cannot reasonably be measured or obtained according to the requirements of this subpart.

B. §98.235(g) and related reporting requirements in §98.236(bb) should be revised to clarify broad applicability.

As discussed above, it is imperative that missing data provisions address situations where measurement cannot be conducted or alternatives are necessary. Since §98.235(g) addresses "other" situations not specifically defined within other missing data subsections, it appears that §98.235(g) is intended to have broader applicability than the provisions in §98.235(a) – (f). However, INGAA recommends that EPA include clarifications in order to clearly address measurement and monitoring related issues. Additional explanation of §98.235 terminology (e.g., "activity data") is also needed. This can be accomplished via additional discussion and explanation in the preamble or related background memos (e.g., the technical support memo), but INGAA's preferred approach for clarifying applicability to measurement data is to also include minor clarifying revisions to §98.235(g):

> "(g) For each missing value of any activity data **or measurement** not described in this section you must substitute data value(s) using the best available estimate(s) of the parameter(s), based on all available process data (including, but not limited to, processing rates, operating hours) **or other measurements**."

INGAA also recommends complementary discussion in the preamble of the final rule. In addition, the associated reporting obligation should be revised for consistency and clarity. INGAA recommends the following revisions to §98.236(bb):

> "…
>
> (3) The description of the unique or unusual circumstance **or measurement barriers** that led to missing data use, including information on any equipment or components involved and any procedures that were not followed.
>
> (4) The description of the procedures used to substitute an unavailable value of a parameter.
>
> (5) The description of how the owner or operator will avoid **or minimize** the use of missing data in the future, such as mitigation strategies or changes to standard operating procedures."

As discussed in comments above, Subpart W measurement requirements are inextricably linked to access to alternative measurement and estimation methods when measurement is precluded. These revisions are requested to provide clarity, and additional discussion in the preamble or support documents should further elucidate EPA's intent. Without this interpretation and clear applicability of missing data provisions, INGAA strongly objects to the elimination of BAMM provisions.

Compressors

7. Annual tests should be completed "as found" and Subpart W should not mandate a defined measurement frequency for any specific compressor operating mode.

The Proposed Rule includes two new requirements that define the frequency for completing compressor vent measurements for a specific compressor operating mode. One requirement is a derivative of the current requirement to test reciprocating and centrifugal compressors in shutdown, de-pressurized mode (hereinafter referred to as "shutdown mode" in this comment). The other is a new requirement to test centrifugal compressors in operating mode once every three years, or the next calendar year that compressor operation exceeds 2,000 hours if operating mode is not measured in the previous three years. This is a new requirement, never before raised by EPA, and its addition has not been justified in the preamble or support documents. INGAA does not support these requirements and recommends testing compressors in the "as found" mode. Subpart W data collected to date indicates that collectively, measurements are being completed in all required compressor modes so industry data exists (and will continue to grow) to characterize emissions for each compressor mode – source combination in §98.233(o) and (p). In summary, compressor measurements should be completed in the "as found" mode and EPA should not prescribe test frequency for any particular mode.

The preamble discusses options related to mandatory testing in shutdown mode and requests comment. It is INGAA's understanding that inclusion of a mandatory frequency for shutdown mode tests in the current rule dates back to EPA concerns circa 2009 – 2010 that there would be a lack of data collected in this mode. However, 2011 and 2012 data demonstrate that T&S sources completed hundreds of measurements in this mode and there is approximately the same number of "as found" tests completed in shutdown mode as other modes. Thus, it is not necessary to mandate testing in this or any mode. Mandating shutdown measurement frequency will result in unnecessary, additional emissions and costs, as well as logistical issues for scheduling out-of-sequence tests. For example, to accommodate logistical complications from mandatory shutdown tests, in some cases operating units will be shut down and blown down while test crews are completing their scheduled site visit. This results in unnecessary emissions and can have a cascade affect for other units and facilities where the mode may also be changed to address facility or system demands.

EPA should review the existing Subpart W measurement data available for reciprocating and centrifugal compressors for T&S sources in 2011 and 2012. For reciprocating compressors, the reported compressor-mode data indicates that similar counts of measured data are being acquired in each of the three modes (i.e., operating; standby pressurized; not operating, depressurized or shutdown). Data from the first two years indicates an adequate number of measurements are being completed in each mode. This includes over a thousand reciprocating compressor measurements for each mode-source combination; hundreds of centrifugal compressor measurements for both isolation valve (shutdown mode) and blowdown valve (operating mode) leakage; and, nearly two hundred measurements of wet seal oil degassing vents. This data also indicates that there are far fewer centrifugal compressors with wet seals than previously estimated by EPA; thus estimated emissions from centrifugal compressors wet seal degassing are likely much lower than current estimates in EPA's U.S. GHG Inventory.

As noted above, INGAA members have completed thousands of measurements in 2011 to 2013 and reported associated emissions in response to Subpart W requirements. Additional detail is provided for 2011 and 2012 measurements. INGAA member companies reported more than 5,000 measurements

from over 1,400 affected reciprocating compressors in the T&S sector across the three modes with a similar number of measurements in each of the three modes. During the same period, member companies reported nearly 1,000 measurements from more than 475 centrifugal compressors across two modes (i.e., operating and shutdown). GHGRP 2013 reporting was completed by March 31, 2014, and is expected to increase the number of measurements by about 50% . Coupled with 2014 measurements currently underway, the number of reported measurements publicly available will approximately double. An initial review of these data records indicates modal tests provide operators the ability to calculate reporter specific emission factors.

Thus, a substantial data set is currently, and will remain, available for analysis. These GHGRP Subpart W measurements could be significantly augmented with a myriad of additional existing data from a variety of sources. These sources include: earlier GRI EPA sponsored studies; GRI Canada, Canadian Association of Petroleum Producers (CAPP) and Petroleum Technology Alliance Canada (PTAC) sponsored studies; 2011 University of Texas Natural Gas Industry Methane Emission Factor Improvement Study; and T&S data that will become available from a current industry – EDF project being conducted by Colorado State University. Other than a desire to continue with the status quo, the need for mandating mode-specific tests has not been explained or justified. The provisions requiring shutdown mode measurements on a defined frequency should be eliminated.

As discussed below, there are additional questions and concerns about Proposed Rule revisions.

For centrifugal and reciprocating compressors, the Proposed Rule specifies similar measurement requirements for not operating-depressurized-mode:

§98.233(o)(1)(i)(C):

> "You must measure the compressor as specified in paragraph (o)(1)(i)(B) of this section at least once in any three consecutive calendar years, **provided the measurement can be taken during a scheduled shutdown**. If three consecutive calendar years occur without measuring the compressor in not-operating-depressurized-mode, you must measure the compressor as specified in paragraph (o)(1)(i)(B) of this section **at the next scheduled depressurized shutdown**." [emphasis added]

§98.233(p)(1)(i)(D):

> "You must measure the compressor as specified in paragraph (p)(1)(i)(C) of this section at least once in any three consecutive calendar years, **provided the measurement can be taken during a scheduled shutdown**. If there is no scheduled shutdown within three consecutive calendar years, you must measure the compressor as specified in paragraph (p)(1)(i)(C) of this section **either prior to or during the next compressor shutdown when the replacement of the compressor rod packing occurs**." [emphasis added]

Although the rule text includes a necessary qualification "*provided the measurement can be taken during a scheduled shutdown*," ambiguity remains regarding what constitutes a shutdown. Although EPA attempts to address issues with mandatory shutdown mode testing that resulted in many BAMM requests in 2013 (and likely 2014), practical concerns remain. It is unclear how a requirement for a test at the next "shutdown" would be interpreted. A number of companies have a corporate safety policy prohibiting or limiting standby, pressurized mode of operation when compressor operation is not

required. In these cases, when a compressor is taken offline, it is depressurized (i.e., de-energized) within a specified time frame for safety reasons. Transmission compressors often start up and operate to meet pipeline demand; these compressor are then taken offline (i.e., "shutdown") when demand decreases. It is not clear if this "shutdown" meets the intent of the revised rule text, and this interpretation would be a logistical impossibility to implement.

In most instances, a unit taken offline (i.e., operation not needed due to pipeline demand) should not be considered "scheduled shutdown." Planning and mobilization of a third party test group is not possible in this case and would be logistically difficult if not impossible. Third party mobilization would be extremely complicated even for planned shutdowns with a significant lead time. As noted above, INGAA members have tested nearly 1,000 total compressors, and tracking and scheduling systems will need to be developed and implemented to address this EPA requirement. It is not feasible or practical to mobilize a test crew to address a unit shut down on short notice. Most companies use third party contractors to complete annual measurements. Contractor crews are actively engaged in schedules where they proceed to affected facilities along a pipeline to complete annual measurements and then move on to the next pipeline. EPA has not considered the logistical issues for scheduling third party "out-of-sequence" tests or the additional costs and added burdens imposed by this requirement. As discussed in Comment 9, EPA cost estimates show a fundamental lack of understanding of measurement program requirements. While some situations may be able to accommodate this schedule, other situations will not have such flexibility. As a result, mandating shutdown measurement frequency in any form will yield an outcome that EPA wants to avoid: unnecessary vented methane emissions will occur as operators accommodate a mandatory shutdown mode test within the required three year (or five year) period.

INGAA strongly believes that mandatory testing in shutdown mode is not warranted and has not been justified. Several items related to compressor "scheduled shutdown" and test scheduling must be considered:

- Some compressors start up and shut down frequently to meet pipeline demand, but may be operating or in standby mode when the "as found" test is conducted. EPA should acknowledge that Gas Control operations dispatches compressors as necessary to meet demand and that unit shutdowns may occur that preclude a measurement. The rule text includes a necessary caveat regarding a scheduled shutdown. It would appear to indicate that EPA intends for this requirement to apply to a shutdown of longer duration, such as those associated with major maintenance and a unit's unavailability for dispatch. If EPA retains this approach, clarifying text should be provided (e.g., preamble discussion) as well as a rule definition for "scheduled shutdown." Due to logistics, including test crew commitments and availability, significant lead time (e.g., multiple months) may be required to accommodate testing during a "scheduled" shutdown, and these complications must be considered in rule definitions and requirements.
- Even if EPA intends for scheduled shutdown to mean extended compressor shutdown for major maintenance, scheduling and logistical issues remain – e.g., getting a test team to a site with relatively short notice; tracking shutdown test status and operations shutdown plans for each individual compressor. Most companies rely on third party service providers to conduct site surveys and measurements, which are often scheduled up to 6 months or more in advance, especially for the spring through fall (i.e., after early year cold weather and 1st quarter reporting is addressed and well in advance of the year-end deadline). Attempting to align station operations and maintenance with service providers increases the burden and costs, and may result in circumstances where a crew is

not available, or would charge a significant additional fee. In addition, major maintenance activities may preclude safe measurement and source access due to the nature of the engine driver or compressor maintenance activities. In some cases, only essential staff members are allowed in proximity due to safety concerns.

- EPA has either not estimated or significantly under-estimated costs and has not defined the benefit (or even demonstrated the need for a prescribed measurement interval) for this mandate. The existing count of mode-specific Subpart W measurement data from 2011 and 2012 contradicts EPA's perception that this provision is necessary
- As discussed in Comments 3 through 6, access to alternatives is imperative to address measurement challenges. Missing data provisions should be relied on when needed.

In addition to mandatory shutdown mode tests, the Proposed Rule adds a new requirement for centrifugal compressors to complete *operating mode* tests every three years or the next year that compressor operation exceeds 2,000 hours if operating mode measurement is not completed in the previous three years. Thus, for centrifugal compressors, EPA has increased stringency without providing the regulatory basis, identifying the benefit, or justifying the data need. INGAA is strongly opposed to this revision since its need is unsubstantiated and Subpart W measurement data reported to date indicates hundreds of operating mode tests were completed in the first two years.

The new requirement mandates measurement in operating mode at least once every three years or in a subsequent year when unit operation next exceeds 2,000 annual hours. EPA does not provide explanation or justification for this new requirement in the preamble or within any of the supporting documents. The time interval has no basis, and it is premature to establish any mandatory interval without first reviewing the 2011 – 2013 measurement data that has already been provided. Without any record supporting this arbitrary and capricious change, INGAA recommends deleting the requirement proposed in §98.233(o)(1)(i)(D). Similar to the discussion above, this requirement will add logistical problems, incur costs far in excess of EPA's presumed costs for completing measurements, and result in scenarios where scheduling a third party contractor is not feasible.

Based on experiences in 2011 and 2012, INGAA was surprised that the Proposed Rule retained – and expanded – mandatory schedules for mode-specific tests. EPA should revise the proposed rule to eliminate mandatory mode-specific test schedules and require annual measurement in the "as found" mode. As demonstrated in data reported to date, there is an abundance of data to review and analyze across all mode-source combinations for both reciprocating and centrifugal compressors. Reported 2011 and 2012 data provide a reasonable number of measurements in each mode, and additional data will be available from recently submitted 2013 data and data collected in 2014. Retaining the proposed requirements is unnecessary and will further increase compliance costs, introduce significant logistical challenges, and require access to testing alternatives through missing data provisions.

8. Proposed rule requirements for measuring emissions from manifolded compressor sources are not rationalized and will be infeasible in some cases.

The requirements for measurement of manifolded compressor lines are not supported by EPA technical support documents, would greatly increase the burden on operators, and would produce measurement data of limited utility (i.e., data are not comparable to non-manifolded compressor source data). Requirements for measuring emissions from manifolded compressor sources should be limited to only

non-comingled, safely accessible, and technically feasible to measure manifolded compressor sources, and to a single annual measurement.

A. Proposed Rule revisions for measuring manifolded compressor sources are not adequately supported, and implemenation will not be safe or practical in some cases.

It appears that EPA proposed rule revisions for measuring centrifugal and reciprocating compressor source emissions routed to a common vent manifold without review and analysis of available information. EPA has not defined the prevalence of manifolded systems that preclude individual compressor source measurement, and has not included justification for these proposed revisions. EPA is in possession of e-GGRT data and BAMM requests that could assist in defining the population of affected units. EPA has not adequately supported the need to independently categorize this subset of compressor source measurements or to require more frequent (i.e., three times per year) measurements. EPA should justify why emissions estimated from reporter emission factors obtained from other existing measurements do not provide a suitable and viable emissions estimate from compressors with manifolded vent lines.

The Proposed Rule and EPA technical support document (TSD)[9] fail to address the following fundamental practical issues that may preclude measurement from many manifolded compressor sources: unsafe to access and technically infeasible measurement locations; and vent gas from manifolded compressor sources that is comingled with gas from other emission sources. Previous industry comments and discussions, as well as numerous BAMM requests, have addressed the safety and technical feasibility issues with accessing and measuring certain vent lines. The discussion below explains how the Proposed Rule requirement to measure manifolded compressor source emissions at a single point in the manifold downstream of all compressor inputs and where emissions cannot be comingled with other non-compressor emission sources retains the fundamental issue precluding measurement of *individual* compressor sources that are manifolded. All the manifolded compressors and other comingled sources would need to be shutdown, blown down, and purged, thus resulting in unnecessary GHG emissions, in order to safely install sample ports and re-pipe vent lines (as needed to avoid comingling) to isolate emissions from the manifolded compressor sources.

The Proposed Rule requires three measurements per year for manifolded compressor sources,, taken before emissions are comingled with other non-compressor emission sources. This requirement appears to be arbitrary and is not supported by data or conclusions drawn from 2011 or 2012 reported data or by defined data quality objectives. EPA has randomly concluded that three measurements per year are necessary to address "annual process variability" representative of an entire year. However, EPA has failed to demonstrate what additional insight may be obtained from three dissimilar measurements (e.g., compressor modes may or may not be the same from one test to the next) that could not be ascertained from a single measurement.

The following two paragraphs from the TSD illustrate EPA opinions that are unsupported by credible data or basis for belief. These opinions have been used to establish a test frequency based on a perception that accuracy will be improved. Data quality and accuracy estimates are precluded by the inability to drawn meaningful conclusions from manifolded compressor source emissions measurements

[9] *"Greenhouse Gas Reporting Rule: Technical Support for Revisions and Confidentiality Determinations for Petroleum and Natural Gas Systems; Proposed Rule,"* EPA-HQ-OAR-2011-0512-0065 (February 20, 2014).

(discussed further below). For example, EPA has failed to explain or expound on how manifolded source-mode emissions data are expected to be different from other compressor source emissions data and why three measurements are expected to reduce measurement uncertainty associated with dissimilar measurements. In addition, three measurements per year are not supported by a cost-effectiveness determination as discussed below. Example text from the TSD or preamble follows.

> "The EPA **considered requiring only one or two measurements per year** for these manifolded sources (as opposed to the EPA proposal above for the average of three measurements). The **EPA concluded that the annual process variability for these sources was high enough to warrant more than one or two measurements per year**." [79 FR 13402] [**emphasis added**]

> "However, the **process variation** in a manifold fed by several sources over the year **could be high enough** that **overall data quality** could be reduced if **one or two measurements are not representative of the entire year's operations**. The option to require three annual measurements from a single point in a manifold would likely reduce overall burden on reporters, while **ensuring a more representative data set and better data quality than collecting one or two data points**. Any of these options to require annual measurements would **resolve the reporter's concerns about the technical and safety issues with installing and utilizing sampling ports in manifolded lines. The accuracy of these options would vary with the number of annual measurements that would be required**." [**emphasis added**]

Following this logic, one would conclude that using an emission factor developed from tens, hundreds, or thousands of measured data points would be more accurate, provide even greater data accuracy, be more representative, and reduce uncertainty and improve data quality. An emission factor approach (e.g., reporter emission factor) for manifolded sources reduces uncertainty and provides a viable emission estimation method that could be based on thousands of data measurements if developed from the entire data set of measurements completed to date. Adding 2013 and 2014 data, the uncertainty would be further reduced and the emissions estimate would be improved. So EPA is essentially requiring that the reporter develop an "emission factor" based on three measurements of a conglomerated set of units operating in various modes accounting for various emission sources; yet, as discussed in comments on emission estimation alternatives, EPA ignores an approach that uses a source-mode specific emission factor based on potentially hundreds of measurements. The lack of consistent logic relates to EPA's failure to consistently apply reasonable data quality objectives, as discussed in Comment 11.

B. <u>Proposed Rule revisions would substantially increase industry burden and EPA has inaccurately estimated costs</u>.

EPA has misrepresented the rule revision as a positive change beneficial to industry and a reduction in burden:

> "Reporters would no longer be required to annually measure compressor sources that are manifolded individually. Instead, reporters would measure the manifolded group of compressor sources three times per year. Therefore, this proposed change is a burden reduction for reporters that have more than three compressor sources manifolded together. " [10]

[10] *"Assessment of Impacts of the 2014 Proposed Revisions to Subpart W*," EPA-HQ-OAR-2011-0512-0063 (February 20, 2014).

> "For example, if a reporter operates seven compressors that have their blowdown vent stacks manifolded, the reporter would no longer have to conduct seven measurements every year (one for each blowdown vent stack) as required by the current rule. Instead, for this example, the reporter would be required to only conduct a measurement three times per year on the common vent stack that is associated with the manifolded group of seven compressor sources, which would decrease burden for the reporter compared to the seven measurements currently required." [79 FR 13402]

In concluding that the burden is lessened, EPA has failed to address the cost and potential logistical problems associated with mobilization of a test team two additional times per year (i.e., total of three times a year) to conduct measurements on manifolded compressor sources. Comment 9 provides additional discussion of actual costs associated with three separate annual measurements, and discusses logistical and scheduling issues associated with third party crews that are often committed to other surveys (as opposed to mobilizing for a single measurement). In addition, there are logistical costs to mobilize operations personnel and coordinate with Gas Control to complete these additional measurements. Alternatively, costs would be incurred to acquire equipment and train staff at each site to conduct the two additional measurements.

Further, EPA has not addressed the burden (possibly exorbitant if it is necessary to repipe existing systems to avoid co-mingling) associated with installing sample ports on manifolded configurations. All compressors that are connected to the common manifold would be required to be shutdown, blown down (increasing GHGs), and purged in order to safely install sample ports and enable manifolded measurements unless the measurements could be safely conducted at the vent line exhaust. Further, the Proposed Rule requires that manifolded compressor source emissions must be measured "at a single point in the manifold downstream of all compressor inputs and where emissions cannot be comingled with other non-compressor emission sources." [§98.233(p)(4)(i)] Thus, for compressor sources with emissions comingled with other sources, a sample port would need to be installed prior to the comingling of gases from the compressor sources and the non-compressor sources, and the manifolded compressors and other sources would need to be shutdown, blown down (increasing GHGs), and purged in order to safely install sample ports and re-plumb vent lines (as needed to avoid comingling) and enable manifolded measurements. Operational costs include manpower across multiple disciplines (e.g., operations coordination, selection of test port location, welders with hot work permits, etc.) and equipment to coordinate and execute port installation.

Feasibility issues concerning both the technical issues and costs for re-plumbing are not considered and could be significant problems. Adding the option to conduct measurements of manifolded compressor sources was intended to reduce burden by not requiring all compressors to be simultaneously shutdown to safely install sample ports on individual units. However, the requirement to conduct a measurement at a location where compressor source emissions cannot be comingled with other non-compressor emission sources would in many cases require the shutdown of all associated equipment.

C. <u>The manifolded compressor source measurement data will have limited utility (i.e., data that are not comparable to non-manifolded compressor source data).</u>

Treatment of other industries in the GHGRP is clear – the objective is not to require measurement of every emission source and alternatives to measurement (e.g., emission factors, engineering estimates) are common for developing the facility inventory. Similar treatment should be afforded for T&S sources. For manifolded lines, other options, such as use of emission factors specific to the emission source and operating mode of interest, are available (i.e., reporter emission factors). It is unclear what

EPA expects to learn from measurements that will likely include different operating modes (i.e., different emission sources), because information on the individual compressor sources cannot be discerned. Numerous compressor mode-source combinations are possible for each manifolded measurement, and measured emissions cannot be associated with an individual compressor source. That is, measurements from a common vent outlet cannot be used to characterize or understand annual emissions from individual compressors where multiple dissimilar vents (compressor source and mode) have been routed together.

EPA has not provided data or analysis to compare or contrast manifolded compressor sources with non-manifolded compressor sources. Further, EPA has not explained how manifolded compressor source emissions data will be integrated in the inventory – or will be used to address the GHGRP objective to inform future policy. Simplifying assumptions that apportion the emissions by unique compressor mode-source combinations are likely to result in larger emissions uncertainties and fail to provide better data quality than emission factor approaches.

The proposed rule requirements for manifolded measurements will provide dissimilar data that cannot be merged with existing 2011 – 2013 data and cannot be used to inform a heretofore undefined issue or concern that EPA has identified. Similarly, EPA has not supported its position for requiring measurements from all sources (refer to Comments 11 and 13). These measurements will not provide meaningful information regarding compressor source emissions.

D. Emissions from manifolded compressor sources that are comingled with other sources, unsafe to access, or technically infeasible to measure should be estimated using emission factors. Emission measurement requirements for measureable-manifolded compressor sources should be limited to a single annual measurement.

Manifolded compressor sources that are comingled with other sources, unsafe to access, or technically infeasible to measure should be exempt from emissions measurements, and their emissions can be estimated using emission factors. As discussed above, extraordinary effort to measure emissions from these sources is not warranted because the measurement data would have limited utility.

Annual emissions measurements from measureable manifolded groups of compressor sources should be treated the same as non-manifolded vent sources, and required to conduct a single annual emissions measurement. The same feasibility issues (safety, other access issues) that apply to single compressor vents also may apply to manifolded lines. EPA has not supported the need to differentiate this subset of emission sources nor provided a viable alternative to improve the emissions estimates from manifolded sources. As proposed, this alternative will not provide a greater understanding or meaningful insight into GHG emissions from manifolded compressor sources, as the sources will likely be measured in different modes and then averaged together. The resulting reported emissions from this alternative will provide a value for that measurement, but will not provide useful data or information to enhance the understanding of compressor sources. The proposed requirement also does not address concerns regarding the burden and costs associated with three separate measurements, the installation of sample ports, or shutdown complications (i.e., shutting down all units at the same time) for port installation.

Should EPA disregard the above request to revise measurement requirements for manifolded compressor sources and retain tri-annual measurement requirements, EPA should:

- Demonstrate that manifolded compressor source emissions data are necessary (e.g., identify data gaps and information voids in the absence of direct source measurements) through thoughtful consideration of existing reported data for these sources;
- Establish data quality objectives and define the purpose and end use of these measurements (i.e., explain how dissimilar data will be utilized and the expected outcome from these emission data);
- Support claims that three measurements will provide more insight on variability than one measurement per year and that three measurements support the associated data quality objective;
- Discuss representativeness of manifolded compressor source measurements in different modes;
- Justify the cost and burden necessary to meet data objective(s);
- Provide an alternative for sources that are physically unable to safely access a location in the manifold downstream of all compressor streams and where emissions are not comingled with other non-compressor emission sources.

Impact Assessments and Technical Support Document

9. EPA has significantly under-estimated the costs to implement the Proposed Rule and Subpart W reporting.

EPA documents assessing costs to conduct compressor measurements and implement other Proposed Rule requirements are inadequate. Implementation costs are underestimated by an order of magnitude or more, which suggests the authors lack a fundamental understanding of both the type of activities and level of effort required to collect data for Subpart W reporting.

The Proposed Rule docket includes two documents that address incremental costs associated with the proposed Subpart W revisions:

- EPA-HQ-OAR-2011-0512-0063: Assessment of Impacts of 2014 Proposed Revisions to Subpart W (hereafter referred to as "AI"); and
- EPA-HQ-OAR-2011-0512-0066: ICR Supporting Statement (hereafter referred to as "ICR")

In general, the documents greatly over-simplify the impact of the Proposed Rule and under-estimate the associated incremental costs. Following is a partial sampling (i.e., not every issue is addressed) of EPA estimates of incremental costs associated with proposed Subpart W revisions that appear to be severely under-estimated (e.g., by one to two orders of magnitude or more), and other information and data associated with the estimates.

- Many of the EPA estimated incremental costs for reporters associated with the proposed Subpart W revisions are severely under-estimated. Examples include:
  - Regarding incremental management support for Proposed Rule revisions, EPA states:

    "None of the proposed amendments require an adjustment to middle and senior management labor hours" (AI page 1).

    The cost estimates do not include management tasks including review of the proposed rule and final revisions, Monitoring Plan revisions, internal communications, coordination with technical staff, training, systems updates, associated budgeting and planning, etc.

- EPA estimated that for compressor stations with manifolded compressor sources, the cost of annual compressor source gas emission measurements would decrease because one measurement (at the manifold) would be conducted rather than a measurement at each compressor source.

  > "This proposed change is a burden reduction for reporters that have more than three compressor sources manifolded together" (AI page 3)

  This analysis fails to consider that manifolded vents would require three separate measurements (i.e., *three separate trips* to a compressor station) separated by a minimum of 60 days during the calendar year. EPA fails to consider the costs associated with each separate measurement/trip including test personnel scheduling and facility coordination, mobilization (equipment preparation, travel to and from the facility), on-site set up, daily safety orientation, man-lift rental, operations staff support, etc.

  Further, the EPA cost analysis assumes an **incremental time of 10 minutes** for a technician to conduct each additional compressor source measurement. That is, to conduct blowdown valve leakage measurements on four compressors would require 30 minutes more than conducting blowdown valve leakage measurements on a single compressor. This fails to consider the time required to move personnel and equipment (likely including a man lift or a ladder) from compressor to compressor in the tight confines of a compressor station, and the cautious pace of work and work practices (e.g., use of lanyard and/or other fall protection) for safely working at elevated locations. Finally, this 10 minute per measurement estimate appears to assume that the technician is working alone. Personnel working at elevated locations should **never** work without assistance. This time allotment also fails to consider all of the time associated with logistics and mobilization discussed above (AI page 3).

  In contrast, compressor source measurement cost estimates provided by INGAA members range from about **$1,300 to $3,000+ per facility per test (i.e., these incremental costs would be incurred at least two times a year)**. Actual costs would depend on numerous parameters including number of manifolded compressor sources and accessibility, test team travel time and costs, number of test team members, and number of facilities that can be visited by a test team in a single mobilization. Further, these costs are only for the testing contractor and do not include facility and company costs including scheduling, coordination, test team support, burden, etc. As an alternative, EPA may have assumed that tests would be conducted by staff on site. This fails to understand that annual surveys are typically completed by third party contractors.

  Even for companies that have increased staff to conduct the Subpart W measurements, there would be dedicated teams that move from station to conduct the measurements, similar to conducting the measurements using third party contractors. It would be cost prohibitive to equip and train personnel at every compressor station to conduct the Subpart W monitoring based on the substantial costs associated with equipment acquisition (e.g., infrared cameras, high volume samplers, and other meters and equipment required to conduct the Subpart W monitoring), and the specialized training that differs from current skill sets and would thus require ongoing oversight.

  In the preamble, EPA states, "This proposed measurement option would allow the EPA to correctly characterize and analyze GHG emissions from all compressors at individual facilities in

the petroleum and natural gas systems source category while potentially reducing burden to industry." This requirement would not reduce burden to industry; instead, it adds two additional annual measurement trips in perpetuity.

- Regarding incremental costs associated with proposed revised requirements for Blowdown Vent Stacks, EPA states:

  > "The EPA is proposing to add a compressibility term to the blowdown vent stack calculations. It is anticipated that reporters handle gas within the proposed compressibility factor default ranges; therefore, it is unlikely that adding this compressibility factor term into the blowdown vent stack calculations would increase burden to reporters. Therefore, the EPA did not estimate the potential burden impact to reporters for this change." (AI page 6)

  Processing, transmission, and storage facilities all handle gas with compressibility outside the proposed compressibility factor default range of less than 5 atmospheres (73.5 psi). Operating pressures commonly exceed 74 psi, for segments required to complete blowdown vent reporting. This is another example of EPA's fundamental lack of understanding of natural gas system operations for the two primary segments (processing, transmission) that are required to report blow downs. EPA's estimate of the Proposed Rule implementation costs (i.e., zero) is obviously grossly underestimated. Further, this statement directly conflicts with information and data considered by EPA in the Technical Support Document.

  > "The natural gas processing and transmission compression segments covered by subpart W can operate systems at pressures higher than 25 atmospheres."
  >
  > "Natural gas transmission compressor station components and main line pressures are in the range of 500 to 1000 psi (34 to 68 atmospheres). See page 6-32, American Petroleum Institute (August 2009), *Compendium of Greenhouse Gas Emission Methodologies for the Oil and Natural Gas Industry*."

  Indeed, because of this pressure limitation of less than 5 atmospheres, and because of typical operating pressures at these facilities, reporters will almost always have to calculate the compressibility factor. Even if the factor at actual conditions is greater than 0.98 (where EPA proposes to allow the reporter to use the default factor of 1), the reporter must still undergo the burden of *determining whether* the factor is above 0.98.

- For reporting of proposed new data elements, EPA assumed that *3 minutes* would be required to find, document, and report each new data element:

  > "The EPA then multiplied the adjusted number of new and revised data elements by 3 minutes per data element—the amount time that the EPA estimated an engineer would need to ***access the data element from readily available data [Emphasis added]*** and submit the value…" (AI page 8)

  This estimate does not consider the level of effort required to determine who collects such data, how it is documented (e.g., records in a database or hard files, multiple potential data systems to assess), associated Subpart W recordkeeping, revising data collection systems and templates, etc. It appears to assume that some sort of simple company-level database search is conducted for each data new element. Estimates of incremental effort should consider the number of hours, rather than minutes, per data element, and EPA likely under-estimates implementation costs by two or more orders of magnitude. An INGAA member estimated that the company-wide implementation of system revisions to identify, collect, document, and report the new data

elements will be $150,000 or more, with additional ongoing annual costs to fulfill the reporting obligation for the new data elements.

- It is inconceivable that data review and oversight costs would exceed the costs to gather the data, develop new systems to accommodate the data, quality assure the data, perform calculations, report the data, and follow-up on questions that may be asked. EPA estimates its costs, and estimates that EPA's incremental costs for the proposed Subpart W revisions for EPA for the first three years will include about $436,000/yr for headquarters oversight and implementation, plus $783,000/yr for third party verification for a total of about $1,200,000/yr. EPA estimates the incremental cost for Industry/Public will be about $543,000 per year for the first three years. Thus, EPA estimates that the Proposed Rule will cost EPA more than twice the cost incurred by the 2,000+ reporting facilities for the Petroleum and Natural Gas Systems Industry. (ICR Pages 12 – 15).
- EPA estimates the average total (not incremental) annual number of hours for each facility to comply with Subpart W is 53.5 (hr/yr).
  - "The annual public reporting and recordkeeping burden for this collection of information is estimated to average 53.5 hours per response." (ICR page 21)

  This is an absurdly low estimate of the level of effort required for rule implementation that includes planning and coordination, training, data collection including direct measurements and validation, running software simulations, performing calculations, recordkeeping, and reporting.
- EPA acknowledges the definition of 'burden' from the Paperwork Reduction Act but it does not appear that EPA considered each element when developing the estimated costs for Industry.

  "Burden means the ***total*** time, effort, or financial resources expended by persons to generate, maintain, retain, or disclose or provide information to or for a federal agency. This includes the ***time needed to review instructions***; develop, acquire, install, and utilize technology and ***systems for the purposes of collecting, validating, and verifying information***, processing and maintaining information, and disclosing and providing information; ***adjust the existing ways to comply with any previously applicable instructions and requirements***; ***train personnel to respond to a collection of information***; ***search data sources***; ***complete and review the collection of information***; and transmit or otherwise disclose the information."[11] (***emphasis added***)

There are additional examples in the impact assessments. The general theme is consistent: EPA significantly under-estimates costs and impacts to the affected community. Implementation burden should be assessed when justifying rule requirements; the erroneous estimates fail to fulfill that obligation. In considering INGAA's comments and responses necessary to complete the final rule, EPA should reassess under-estimated industry cost impacts to meet its obligation to justify decisions reflected in Subpart W.

10. EPA's Technical Support Document is inadequate and does not support numerous Proposed Rule items.

Rulemakings typically include a detailed Technical Support Document. Technical support for the Proposed Rule is provided via a very brief memo (barely 13 pages in length). This memo is inadequate

[11] "*Information Collection Request for the Greenhouse Gas Reporting Program,"* EPA-HQ-OAR-2011-0512-0066, at 21 (February 20, 2014) (citing 44 U.S.C. § 3502(2)(1995)).

because it does not provide technical support or support conclusions for a number of Proposed Rule items, fails to address a number of Proposed Rule requirements, and sometimes demonstrates a fundamental lack of understanding of natural gas systems, associated processes, and rule implementation challenges and impacts. Select examples include:

- Section 98.233(o)(1)(i)(D) requires centrifugal compressors be measured in the *operating* mode:
  - "…at least once in any three consecutive calendar years, provided that the measurement can be taken when the compressor is in operating-mode. If three consecutive calendar years occur without measuring the compressor in operating-mode, you must measure the compressor as specified in paragraph (o)(1)(i)(A) of this section in the next calendar year that the compressor is in operating-mode for more than 2,000 hours."

  This new requirement in the Proposed Rule is not mentioned, discussed, or justified in the TSD. Further, the TSD fails to consider available data (i.e., reported emissions data by mode for 2011 and 2012) when assessing mandatory test frequencies for centrifugal compressors in the operating mode, and reciprocating and centrifugal compressors in the not operating, de-pressurized mode. EPA has not demonstrated that data from thousands of tests show a shortage of measurements for any particular compressor mode-source combination, or the need for the rule to mandate testing in any particular mode.
- When discussing the removal of the BAMM provisions for measuring compressor emissions, the TSD only addresses sampling from manifolded vents and fails to address unsafe to access and technically infeasible vent measurements for both individual and manifolded compressor sources. These are the primary issues requiring both historical and continued use of BAMM provisions.
- The discussion of compressibility in the blowdown vent stacks section indicates confusion and a lack of understanding of natural gas systems including typical operating pressures (see Comment 15 for details). Further EPA states:
  - "The EPA has determined that at high pressures and low temperatures, the accuracy of the emission estimate would be improved if a compressibility factor were included in the calculation."

  EPA provides no discussion of the expected improved accuracy or support for the need for improved accuracy (see Comment 15) especially relative to other Subpart W or GHGRP uncertainties and accuracy requirements.

INGAA can provide additional examples, which, in sum with the examples provided here, demonstrate that the TSD does not meet EPA's obligation to provide technical support for proposed revisions.

Data Quality Objectives, Measurement Methods, and Alternative Estimation Methods

11. Data quality objectives (DQOs) and inventory uncertainty targets are not defined and are needed to rationally guide data collection requirements and develop a reliable inventory.

Rule design, implementation, and end results (i.e., a reliable inventory consistent with GHGRP objectives) would greatly benefit from definition of and consistent adherence to DQOs for inventory uncertainty and completeness (e.g., first determine inventory uncertainty and completeness objectives and then design data collection to achieve these objectives). For compressor valve leakage and vent gas measurements, Subpart W has an apparent completeness objective of 100% for both the number of

subject compressors tested and measurement of one or more vents associated with the "as found" operating mode for each compressor. INGAA comments since 2009 have documented many barriers to this objective (e.g., safe access to vent lines, technical feasibility), and alternatives to the "all vents" target (i.e., 100% measured) have been offered.

Instead of considering alternatives, in an attempt to achieve "100% completeness," EPA adopted an indirect method (see Comment 13 on the acoustic method) and still labored with the BAMM request and approval process over the first four years of Subpart W reporting. The Proposed Rule would eliminate BAMM in 2015 and the measurement program would continue unabated.

A cursory review of 2011 and 2012 data indicates that Subpart W compressor methane emissions are *substantially* lower than the estimate from the annual U.S. GHG Inventory. The relative count of facilities (and compressors) that report under Subpart W versus the count in the national inventory does not account for all of the difference. Several contributing factors could be hypothesized, including whether Subpart W measurements were completed using a direct or indirect measurement method. However, the Proposed Rule does not introduce a systematic approach to reconcile these differences, other than additional years of data collection (i.e., annual measurements) and requiring several additional data elements to be reported. In addition to exacerbating the current confusion regarding the "real" methane emissions attributable to T&S operations, failure to reconcile these differences in a timely manner does not comport with the White House methane strategy. INGAA strongly believes a much more efficient and effective approach could be designed and implemented *that would provide improved and more complete results much quicker and at lower cost*.

The inferred DQO of "measuring 100% of compressor vented emissions" is overly burdensome and unrealistic. EPA has made other decisions regarding covered compressor operating mode-source combinations, sources included, estimation methods prescribed, etc., that do not appear to consistently follow defined objectives. Several examples where INGAA has raised questions about inventory uncertainty due to methods used, compressor modes tested, and emission factor flexibility are identified in Comment 14.

Based on background provided in Comment 13, the record indicates that the 100% completeness objective for vent measurement is not achievable without some combination of unsafe work practices, inordinate costs (e.g., substantial redesign and re-plumbing on inaccessible vent lines, exhuming buried valves), and non-standard and indirect measurement methods. A more rational approach would be to set a completeness objective for "valid data" that considers the population of compressors and compressor vent lines that can be safely and efficiently tested. This population can be determined from emissions data, measurement records, BAMM requests for 2011 – 2013, and additional communications with affected stakeholders. The representativeness of this "accessible" population can be considered against the total compressor population. Additional actions, such as screening inaccessible vents using an IR camera, can further document the status of vents where emission rate cannot be measured. This would allow the universal and consistent use of standard direct measurement test methods.

Such an approach could target an inventory uncertainty objective(s) that will result in a better understanding of emission sources and a data set suitable for its intended use (e.g., fill data gaps to improve GHG estimates and inform future policy). Continuing to burden operators with questionable measurements serves no useful purpose – and alternatives are available. INGAA recommends that EPA

consider this comment in conjunction with related details below regarding the acoustic method, and EPA's decision to add the method the Subpart W. The background provided below may be informative to EPA because there has been staffing turnover and a lack of continuity through the multiple Subpart W rulemakings. INGAA welcomes the opportunity to discuss this topic further.

12. The Proposed Rule arbitrarily excludes viable measurement methods. INGAA recommends measurement flexibility.

Since the original rule proposal in 2009, INGAA has consistently requested measurement method flexibility that allows the use of viable technologies and methods for detecting leaks and for vent or leak rate measurement. The 2010 Subpart W final rule and subsequent amendments have accommodated some of the requests and significantly improved the rule. However, examples remain where EPA has excluded viable methods or included unnecessarily prescriptive criteria. INGAA recommends measurement method flexibility when feasible.

A. Comparable use of the IR camera and acoustic instrument for screening purposes.

When vent measurement is required, Subpart W includes methods for detecting or pre-screening for leaks prior to measuring the vented emission rate, such as screening a transmission condensate tank dump valve for leakage. §98.234(a)(5) allows the use of an acoustic instrument to check for leakage, and vent emission rate measurement is not required if leakage through the valve is not detected. Although the rule text is not completely clear, this approach also appears to be allowed for leakage from compressor isolation valves in §98.233(o) and (p). Use of acoustic instruments for *detecting* leakage through valves was requested by INGAA and others in June 2010 comments and added to Subpart W. Similarly, Subpart W allows optical imaging (i.e., "IR camera") for leak surveys required in 98.233(q) and for screening transmission condensate tank vented emissions from dump valve leakage in §98.233(k). INGAA has recommended that the IR camera also be allowed for screening other vents that require measurement. It is not clear why EPA selectively applies IR camera or acoustic instrument screening for some applications but not others, and this decision has never been explained or justified. INGAA recommends the flexibility to allow use of the IR camera for this purpose whenever vent measurement is required.

Similar to using an acoustic instrument to detect leaks across dump valves or isolation valves, or using the IR camera to screen for dump valve leakage through tank vents, the IR camera can be used to screen for leaks from compressor isolation valves, blowdown valves, or rod packing released through a vent and identify whether vent measurement is needed. This is especially important for screening vents that are unsafe or impractical to access. INGAA understands that several companies have received approval of BAMM requests to use the IR camera to screen these compressor sources for emissions. The use of the IR camera should not be unnecessarily restricted, and inconsistencies regarding methods (i.e., acoustic instrument or IR camera) and applications (e.g., dump valve, isolation valve, blowdown valve) in Subpart W have never been explained or justified by EPA. In fact, INGAA expected the Proposed Rule to include revisions to §98.233(o) and (p) to allow the use of the IR camera method in §98.234(a)(1) for compressor vent screening. INGAA recommends revisions to the Final Rule to address this issue.

B. The proposed revision that eliminates acoustic device measurement for blowdown valves is arbitrary and capricious.

The previous comment notes instances where acoustic instruments are allowed for leak *detection*, and Subpart W also includes the acoustic leak detection device for leak rate *quantification* in §98.234(a)(5).

However, the Proposed Rule introduces new limitations for using the acoustic device method for quantifying through-valve leakage. As discussed in Comment 13, EPA must re-visit its decisions in previous amendments to understand the significant problem this change causes, because EPA added the acoustic method for leak *quantification* in an attempt to remedy June 2010 comments on the re-proposed Subpart W rule.

The 2010 Subpart W Final Rule added the acoustic method for leak quantification for measurements where through-valve leakage is the emission source, including transmission condensate tank dump valves, compressor isolation valves, and compressor blowdown valves. The Proposed Rule eliminates use of the acoustic method for blowdown valve leakage measurements for reciprocating compressors in operating mode or standby pressurized mode, and centrifugal compressors in operating mode. This revision is not explained or justified. In addition, as discussed in the following comment, eliminating this method will introduce significant compliance challenges for operators. Since EPA added the method to Subpart W in an attempt to respond to comments regarding safety issues for some vent measurements, elimination of the acoustic method for vent measurements associated with blowdown valve leakage undermines EPA's perceived solution to INGAA's comments. Since addition of the acoustic method was EPA's solution to measurement challenges, this proposed revision compromises the ability of operators to comply. During the 2010 rulemaking, other recommendations offered by INGAA were not implemented by EPA. Operators did not necessarily agree with EPA's decision to add the acoustic method, as opposed to alternative approaches or other measurement methods, including the IR camera. However, the acoustic method is now integral to Subpart W compliance. Revisions to method applicability is unsupported in the preamble or background documents. Elimination of the acoustic method for blowdown valves is untenable unless the original comments from INGAA and others are revisited. Comment 13 provides additional background and details regarding this issue.

13. EPA cannot eliminate use of acoustic device measurement unless significant other issues are addressed.

The Proposed Rule eliminates acoustic device measurement for compressor blowdown valve leakage. As discussed above, EPA has not explained this revision. During the 2010 Subpart W rulemaking, INGAA offered other recommendations to address vents that are unsafe to access or technically infeasible to measure through both its written comments and during industry meetings with EPA; INGAA would be open to revisiting this issue. However, *based on EPA's 2010 decisions* as reflected in the November 2010 Subpart W Final Rule and explained in EPA's responses to comments, the acoustic method is integral to the ability of operators to meet Subpart W measurement obligations. Use of the acoustic device must be retained without revisions or significant other issues must be addressed.

Since 2009, there has been considerable discussion about the inability of operators to safely access or feasibly measure all vents. Through comments and meetings with EPA, INGAA explained scenarios of concern and offered several recommendations. EPA can reference INGAA comments from June 2010, as well as other timeframes for additional detail, but example issues and recommendations included:

- The primary consideration in the design and construction of compressor-related vents is to safely convey potential gas leakage outside of the compressor house. Measurement or access to these vents was not contemplated in station design. In some cases, vent lines are only "accessible" at or above the compressor house roofline because compressor house equipment and other lines preclude adding access ports at a lower elevation. In addition, in some cases it may not be safe to access lines at the

roofline because ground-level piping and equipment in the vicinity preclude safe access. INGAA has explained this issue in detail and provided example pictures in previous comments and meetings.

- INGAA comments and discussions with EPA requested the ability to preclude measurement of vent lines that were inaccessible due to safety and other feasibility issues (e.g., line masked by other equipment). INGAA and its members were confident that the majority of lines could be accessed and measurements completed. However, since measurement had never been required for these lines, the prevalence of lines infeasible to measure was uncertain.
- It was noted that rule implementation would document the prevalence of vents infeasible to measure, and INGAA members were confident that the vast majority would be measured. In addition, other measures, such as IR camera screening of elevated inaccessible vents, could be completed to document the prevalence of leakage and vent emissions from inaccessible lines.
- INGAA and its members were confident that measurement program implementation would document a very high percentage of vent line measurements representative of the population of T&S compressors, especially after measures were implemented to address challenging situations. INGAA recommended phasing in the measurements over the first few years (or access to BAMM) to provide time for operators to engineer solutions (e.g., add sample ports during maintenance shutdown) for vent lines with access complications.
- INGAA and its members were willing to work with EPA to identify a minimum threshold of measured lines (i.e., the vast majority) and requirements to document measurement issues and leak frequency (based on IR camera screening) for vents not measured. This approach could have been linked to an alternative data quality objective to replace EPA's "100% measured" goal, as discussed in Comment 11.
- This approach would provide ample data to develop reporter emission factors and support documentation for vents not measured. In addition, proven *direct measurement* methods would have been used for the very high percentage of vent lines measured. It would not have been necessary to add the indirect acoustic method to Subpart W.

However, EPA insisted on measurement of every vent. In response to comments from INGAA and others regarding vent lines that are not safe to access or infeasible to measure, EPA added the acoustic method *for leak quantification* to the Subpart W Final Rule in November 2010. Prior to its inclusion in the final rule, that method had not been discussed as an alternative. INGAA comments regarding flexibility for *leak detection* had requested the addition of acoustic instruments for detecting through valve leakage, and it was INGAA's understanding that the instrument functions well for leak *detection*. However, acoustic device *leak rate quantification* was added to Subpart W as EPA's solution to these concerns, as evident in the November 2010 Response to Comments Document[12] (as well as the 2010 Technical Support Document). For example, EPA responses to comments about safety and vent measurement feasibility repeatedly identify acoustic device measurement as the solution. Several example EPA responses are provided:

> "EPA recognizes the importance of ensuring safety. Rather than provide exemptions, EPA has added alternative reporting methodologies to ensure safety in the collection of data from certain

[12] *"Mandatory Greenhouse Gas Reporting Rule Subpart W – Petroleum and Natural Gas: EPA's Response to Public Comments,"* (November 2010).

sources. … EPA has added in today's final rule alternative emissions estimating methods which can be performed safely when direct, end of stack emissions measurement is deemed unsafe or less economical for the reporter. For gas processing, transmission, storage, LNG storage and LNG import/export terminals, today's final rule provides options of installing ports in vent lines which are unsafe to access the end of the vent stack, or, … the use of acoustic detectors which have algorithms for equating detector readings with through-valve leakage." [Response to Comments, Pages 2 – 3]

"Finally, EPA is very aware of safety issue, and today's final rule adds several alternative emissions detection and quantification options to be more cost-effective as well as less hazardous… today's final rule allows the alternative to use an acoustical detector calibrated for through-valve leak quantification as an alternative to condensate tank roof vent measurement. This same technique is included for through leaking compressor isolation valves." [Response to Comments, Page 267]

"In addition, EPA has added options for quantifying emissions as alternative to direct measurement of today's final rule. For example:

- For condensate tank emissions at transmission compressor stations (i.e. leaking scrubber dump valves), these emissions can also be estimated by the alternative of testing the dump valve directly with an acoustic detector that has an algorithm to estimate through valve leakage flow.
- Reciprocating compressor packing vents and blowdown vents also allow use of an acoustic detector that quantifies flow. Measurement can also be done by simple piping reconfiguration to put a leg of the vent piping out where it can be easily accessible for insertion of a portable flow meter (e.g. hot wire anemometer)
- Centrifugal compressor wet seal oil degassing vent and blowdown vents can also use the acoustic detector for through leaking blowdown valves.
- All compressor isolation valves can be measured at the blowdown vent or, alternatively, with an acoustic detector at the valves themselves." [Response to Comments, Page 291]

"EPA disagrees with the use of an engineering analysis to quantify venting emissions from through-valve leakage. These methods will not accurately quantify venting emissions from a significant source of emissions to adequately inform future policy decisions. However, today's final rule has been revised and EPA is allowing the use of an acoustic leak detection instrument to detect and measure venting emissions from through valve leakage from transmission tanks, and centrifugal and reciprocating compressor venting." [Response to Comments, Page 1297]

"EPA agrees that safety should be a primary concern of reporters when monitoring transmission storage tanks; please see the response to EPA-HQ-OAR-2009-0923-1024-11. Of particular note, EPA allows the installation of permanent flow meters and the use of acoustic instruments so reporters can monitor these sources remotely and therefore never compromise safety." [Response to Comments, Page 1456]

"In gas transmission compressor stations, EPA has included in today's final rule the alternative of using an acoustic leak detection instrument that has algorithms for through-valve leak quantification to estimate compressor scrubber dump valve leakage as an alternative to measuring the emissions from the tank roof vent. This alternative acoustic through-valve leak measurement technique is also added in today's final rule for compressor blowdown vent through-valve leakage." [Response to Comments, Page 1511]

These are just some of the examples; there are additional examples in the Response to Comments Document. The responses are sometimes specific to one or two of the types of valves related to vented emission measurement, but it is clear that EPA adopted the acoustic method for leak rate *measurement* as the solution to safety and vent measurement feasibility issues wherever through-valve leakage is the emission source that triggers a vent measurement requirement. This decision was intended to address EPA's desire to ensure that 100% of vents are measured.

This EPA decision has resulted in important implementation outcomes, including:

- In some instances, the acoustic method has been used for vent measurements where the associated valve is accessible and direct vent measurement was not required because of acoustic method availability.
- In the first three reporting years, many reciprocating compressor and centrifugal compressor measurements of isolation valve and blowdown valve leakage, and condensate tank dump valve leakage, have used the acoustic method. Data reported to e-GGRT for these years cannot discern acoustic method data from data acquired using direct measurement methods (e.g., meter or anemometer in the line, bagging, high volume sampler).
- There are questions arising about whether measurement methods contribute to the difference in compressor methane emission estimates for Subpart W versus the U.S. GHG Inventory.

Note that despite the addition of the acoustic method, BAMM requests have still been necessary to address cases where neither the vent line nor valve is accessible. For example, valves are sometimes buried or insulated and thus inaccessible. If the vent line is also inaccessible or infeasible to measure, INGAA does not expect that EPA wants a valve exhumed for acoustic device measurement.

Since EPA's solution to measurement challenges was addition of the acoustic method, the method has been used by operators to comply with Subpart W requirements. It is notable that an EPA GHG emission factor project being conducted in the same timeframe, managed by the same group that authored Subpart W, discussed acoustic method results in a 2011 report[13].

EPA's decision to rely on the acoustic method as the "silver bullet" for measurement concerns has resulted in a method that is now inextricably woven into the fabric of the rule – and must remain a measurement option unless the numerous issues raised since 2009 are revisited. In addition, any attempt to reconcile the issues will require time for operators to assess and implement any new "solution."

The history summarized above – and elaborated on in more detail in previous INGAA comments and EPA's 2010 Response to Comments document – demonstrates that the use of the acoustic method cannot be altered without undermining previous decisions that affect the ability of operators to comply. The Proposed Rule revision to eliminate use of the acoustic method in some cases cannot stand. INGAA welcomes additional conversation on this topic, with the understanding that any attempt to alter the current rule must undertake a thorough and thoughtful process to define acceptable alternatives to

[13] *Natural Gas Industry Methane Emission Factor Improvement Study*. Final Report, Cooperative Agreement No. XA-83376101, prepared for U.S. EPA by URS Corporation and University of Texas – Austin (December 2011).

the current measurement paradigm. It is imperative that revisions do not alter the current compliance path that EPA has prescribed without meaningful companion revisions to Subpart W.

14. INGAA's technical recommendations since 2009 provide approaches more likely to achieve GHGRP objectives than the Subpart W annual measurement mandate. Review and analysis of measurement data collected to date are recommended to assess lessons learned and to determine whether there are programmatic corrections that should be considered to improve data quality and achieve program goals.

Entering the fourth year of Subpart W implementation, questions remain about Subpart W methane estimates and the associated methane T&S inventory in comparison to historical data and other papers and analysis, including the annual EPA U.S. GHG Inventory. There is an abundance of recent papers and publications exploring methane estimates from natural gas systems – with a common thread of disparate estimates and conclusions regarding methane losses from T&S and other segments. With three years of Subpart W measurements complete and a fourth underway, INGAA believes that a well-designed program could have filled T&S data gaps and resolved uncertainties associated with source-level estimates and a bottom up inventory. In that regard, Subpart W has failed to meet GHGRP objectives and EPA has failed to meet its obligation to develop a robust program.

If uninformed, one may conclude that the use of alternatives (e.g., prevalence of BAMM) is a root cause. However, T&S operators have demonstrated a willingness to complete measurements, as evidenced by the thousands of measured data results in 2011 and 2012 reports. Additionally, many operators who used BAMM did so as a means to address rule inconsistencies, to ensure the ability to comply as EPA continued to revise and amend Subpart W, and to address a subset of inaccessible vents. INGAA does not believe that the Proposed Rule provides a clear and efficient pathway to resolve the issues encountered to date, and the significant resources committed to annual measurements at hundreds of facilities will be for naught – or at best will require too many additional years of measurements and too much time to understand the Subpart W data implications. As a result, Subpart W will be marginalized – or deemed inconsequential or unreliable – by other, more effective measurement programs and/or research. This does not have to be the script that is followed.

In its 2009 and 2010 comments, INGAA strongly recommended a programmatic approach to address data gaps and improve emission estimation, and INGAA believes that an alternative Subpart W program could have (and should have) been designed and implemented. INGAA strongly recommends reconsideration of the current path and revisiting the design and intent of measurement requirements for T&S sources. Subpart W measurements could fill data gaps, be used to develop improved emission factors and estimation methods, reduce emission estimate uncertainties, and meet EPA regulatory and policy objectives. These objectives are consistent with the objectives in the White House methane strategy released in March 2014. As currently implemented and as amended in the Proposed Rule, INGAA believes that Subpart W will either fail to meet these objectives for T&S sources, or will only arrive at conclusions after many additional, unnecessary years of annual measurement.

INGAA is not re-hashing previous recommendations in these comments, but refers EPA to previous comments – especially 2009 and 2010 comments, as well as other communications and programs that have been discussed in meetings since GHGRP inception. INGAA would welcome the opportunity to engage EPA in additional discussions on this topic and complementary projects.

A. INGAA and its members remain committed to projects that improve T&S GHG emission estimates. INGAA would welcome cooperative efforts with EPA.

Comment 1 reviews a partial list of INGAA and natural gas industry activities over the last two decades related to improving the understanding of GHG emissions from our operations, including many projects with EPA. These efforts continue, and an ongoing industry project could provide an opportunity to leverage Subpart W data and support the development of alternatives to current Subpart W requirements.

INGAA and the Pipeline Research Council International (PRCI, a pipeline collaborative research group) are collecting supplemental data from their members to provide additional insight into 2011 and 2012 Subpart W measurements. Analysis is planned that may provide insight into measurement method uncertainties. That program also plans to collect 2013 Subpart W data and supplemental data from members, and assess whether that data facilitates a better understanding of data quality and emissions for key Subpart W sources – especially compressors. The project is not prejudging the likelihood of success, and insights from data analysis will define the path forward. For example, the project may consider options such as:

- Segments covered will include transmission and storage, but could be expanded to include other segments (e.g., gas processing) where Subpart W measurement is required.
- Sources will focus on compressors and each of the compressor mode – emission source combinations defined in Subpart W. The project may also assess equipment leak survey results (e.g., prevalence of leaks by component type and service) and the frequency and volume of transmission condensate tank dump valve leakage.
- Data analysis will include the data elements submitted for Subpart W via the e-GGRT reporting form as well as supplemental data collected on operations, equipment, and measurement methods. Data review may indicate the need to revisit the supplemental data request and add more data elements – e.g., to address questions regarding test methods used and categorize measured data based on the measurement method used.
- Based on information collected to date, it appears that approximately 75% or more of the T&S facilities that are required to report per the GHGRP are INGAA and/or PRCI members sharing data for this project. At this time, the project does not plan to analyze publicly available data from other facilities, but quality control checks will likely be conducted to compare reported emissions for facilities within the INGAA/PRCI dataset to other facilities that reported. Similarly, data from other segments could be added by collaboration with third parties that facilitate access to supplemental data or other measurement reports.
- Following compilation and initial data analysis, the status will be discussed with INGAA and PRCI advisors to consider questions such as data representativeness and data quality. As appropriate, follow-up steps will be initiated and a determination will be made regarding whether: (1) analysis to initiate emission factor development is feasible, and/or (2) additional data and information is needed to facilitate emission factor development.
- If emission factor development is pursued, various approaches for segregating the data into different subsets will be considered based on equipment or operational characteristics, and other factors and alternatives that affect emission factor quality and emission estimation uncertainty. This could include consideration of approaches that include periodic tests or additional data gathering in an

effort to continue to refine estimates or ensure uncertainty targets are met and maintained. Potential approaches will be vetted with INGAA/PRCI project advisors.

INGAA has offered alternative approaches in previous comments, but these are the first comments submitted since the project with PRCI was initiated. INGAA believes it is imperative that we learn from the measurements being completed and the INGAA/PRCI project is intended to address that objective. At this time, it is unclear what type of analysis EPA has undertaken or plans for future efforts. INGAA welcomes the opportunity to discuss this further with EPA, and cooperatively define a path to utilize the thousands of measurements completed and continuing in 2014, including assessing whether programmatic changes should be considered to ensure data quality. INGAA is very concerned that the Proposed Rule appears to continue the annual measurement mandate without reviewing measurement data collected to date, assessing lessons learned from three years or measurement and reporting, or determining whether there are programmatic corrections that should be considered at this time to improve data quality.

In addition, INGAA has repeatedly raised questions on inventory completeness and accuracy that have not been specifically answered or were dismissed. In some cases, this may be detrimental to achieving GHGRP objectives. For example:

- INGAA raised questions about *excluded* sources that may be worth considering (e.g., source-mode related emissions for compressors that are not included);
- INGAA requested an alternative method that would allow operators to use optical imaging to qualitatively assess leakage through a vent that cannot be accessed for measurement;
- INGAA asked for the ability to use higher quality data for combustion methane – i.e., more accurate exhaust methane emission factors for reciprocating engines estimates under Subpart C so that this methane source is more accurately reported.

If a comprehensive programmatic approach is considered for updating Subpart W requirements, INGAA would also be interested in additional discussions regarding those previous EPA decisions. In summary, INGAA remains committed to improving GHG estimates from T&S sources and would welcome a cooperative effort with EPA to address data gaps, improve GHG estimates, and address GHGRP objectives.

Other Comments – Estimation Methods, Reporting, Confidentiality, and Minor Corrections

15. Compressibility factor: INGAA supports the optional use of a compressibility factor for blowdown vent calculations. EPA proposed revisions mandate its use at typical system pressures and this decision is not supported or justified; mandatory use is not necessary.

Current Subpart W equations W-14A and W-14B estimate natural gas emissions from equipment blowdowns using the ideal gas law: n = PV/RT, where "n" is the molar amount of the gas and is proportional to volume. As gas pressure increases from atmospheric, gas behavior deviates from ideal due to intermolecular forces. A compressibility factor, "Z", is added to the ideal gas law equation to account for the intermolecular forces. Adding the compressibility factor to the ideal gas law changes the equation to n = PV/ZRT. The inverse compressibility factor, "1/Z", is the difference between the moles (i.e., "n") or mass (i.e., n * molecular weight) of the gas (for a specific temperature, pressure and

volume) calculated using the ideal gas law and the moles or mass of gas calculated (for the specific temperature, pressure and volume) using the ideal gas law including compressibility.

The transmission segment is required to report blowdown emissions; underground storage does not have a requirement to report this source. INGAA requested including compressibility for transmission blowdown calculations *as an option*. This request was made to accommodate current practices where many operators already conduct blowdown calculations and use a compressibility term. These equations and calculations are embedded within longstanding company processes, and not using the compressibility term would result in unnecessary costs and two separate calculations (and values) within company records. However, others have implemented Subpart W reporting without the compressibility factor and have developed associated systems for data gathering and reporting. In some cases, these companies changed their existing practice to accommodate Subpart W requirements. As discussed in Comment 11, EPA has not defined or consistently applied data quality objectives. However, based on biases and uncertainties evident in Subpart W and for other GHGRP subparts, differences introduced through optional use of compressibility is relatively immaterial in comparison to other uncertainties. In addition, reporting could indicate whether compressibility was used so that EPA could understand the reporting basis. Because EPA defines operating bounds for application of Z, the Proposed Rule mandates its use for typical transmission operations.

A. The Proposed Rule mandates the use of Z at typical pressures for pipeline applications.

Rather than adding compressibility as an option as requested by INGAA, compressibility will be required for nearly all equipment blowdown calculations at T&S facilities. Proposed revisions to Subpart W would add Z to equations W-14A and W-14B and mandate that Z be determined for equipment blowdown emission calculations with pressures greater than or equal to 5 atmospheres (73.5 psia). This same mandate is included in equations W-33 and W-34 for converting volume from actual to standard conditions. For pressures less than 5 atmospheres (and temperatures greater than -10°F) or Z values greater than or equal to 0.98, a default Z value of 1 can be used. As acknowledged by EPA in its technical support memo, transmission pipelines typically operate in the range of about 500 to about 1,000 psig[14] [15]; thus, Z would likely be required for most, if not all, transmission segment blowdown emission calculations. It appears that EPA does not understand this outcome.

B. Preamble and technical support memo discussion indicate confusion and a fundamental lack of understanding of natural gas systems.

INGAA is concerned that EPA does not understand and appreciate the implications of the Proposed Rule changes. Discussions in the preamble and technical support memo indicate confusion and a fundamental lack of understanding of natural gas systems. In the preamble EPA states:

> "Because it is likely that most facilities handle gas within the proposed compressibility factor default ranges, it is unlikely that adding this compressibility factor term into the blowdown vent stack calculations will significantly increase the reporting burden." [79 FR 13400]

[14] *"Greenhouse Gas Reporting Rule: Technical Support for Revisions and Confidentiality Determinations for Petroleum and Natural Gas Systems; Proposed Rule,"* EPA-HQ-OAR-2011-0512-0065, Page 5 (February 20, 2014).

[15] "*Compendium of Greenhouse Gas Emission Methodologies for the Oil and Natural Gas Industry*," Page 6-32. American Petroleum Institute (August 2009).

This statement is not correct for most blowdown events at transmission facilities and is contradicted by information in the Proposed Rule TSD where EPA cites an API reference:

> "Natural gas transmission compressor station components and main line pressures are in the range of 500 to 1000 psi (34 to 68 atmospheres). See page 6-32, American Petroleum Institute (August 2009), *Compendium of Greenhouse Gas Emission Methodologies for the Oil and Natural Gas Industry*."

Additional text from the TSD, which presents natural gas compressibility for a range of temperatures and pressures, indicates confusion or a lack of understanding of natural gas system operations:

> "The compressibility of methane at standard conditions is close to 1. However, the compressibility of methane at low temperatures and high pressures is significantly different, as illustrated in Table 3.1. The natural gas processing and transmission compression segments covered by subpart W can operate systems at pressures higher than 25 atmospheres.[16]
>
> Table 3.1. Compressibility of Natural Gas at Sample Temperatures and Pressures.

Temperature (deg K / deg F)	1 atm (14.7 psia)	5 atm (73.5 psia)	10 atm (147 psia)	40 atm (588 psia)
150 / -190	0.9854	0.9225	0.8275	0.1411
200 / -100	0.9936	0.9676	0.9339	0.6784
250 / -10	0.9965	0.9838	0.9680	0.8682
350 / 170	0.9991	0.9954	0.9911	0.9662

> Although the EPA had previously considered including the compressibility term (76 FR 56010, September 9, 2011), the EPA ultimately did not propose including the factor. The EPA concluded at that time that including a compressibility adjustment could create a degree of uncertainty among reporters when trying to compare their reported blowdown values on a volume basis. The EPA noted at that time that although the compressibility of pure light hydrocarbon substances is well known, the compressibility of hydrocarbon mixtures is less well known and the composition of natural gas throughout the segments covered by subpart W can be variable. At that time, we determined that ideal gas law calculations were adequate for reporting purposes under Part 98.
>
> The EPA notes that the circumstances surrounding this issue are now different, because the EPA is proposing the ***option*** [***Emphasis added***] of using site-specific data for gas compositions, if available. Therefore, the original concern regarding the variation in the composition of natural gas at subpart W facilities and its effect on compressibility would be addressed through data collection on actual gas composition. The EPA has determined that at high pressures and low temperatures, the accuracy of the emission estimate would be improved if a compressibility factor were included in the calculation."

There are a number of areas of misunderstanding or confusion in the above support text, including:

- T&S and processing are the primary segments that report blowdown emissions. EPA's Table 3.1 lists compressibility factors for natural gas systems for temperatures well below typical blow down releases – e.g., -190°F and -100°F. Curiously, the table increases temperature in increments of 50 K (or 90 ^{o}F), but *skips* a temperature range more representative of the vented gas (e.g., 40 to 120°F)

[16] "*Compendium of Greenhouse Gas Emission Methodologies for the Oil and Natural Gas Industry,"* Natural gas transmission compressor station components and main line pressures are in the range of 500 to 1000 psi (34 to 68 atmospheres). See page 6-32, American Petroleum Institute (August 2009).

associated with transmission operations – i.e., the table jumps by 100 K from -10 ^{o}F to 170 ^{o}F and does not present information at typical temperatures. This oversight appears to indicate that EPA does not understand typical operations for the emission sources that would use these equations. Further, only one of the four pressures listed (40 atm / 588 psi) is indicative of the typical range representative of transmission operations.

- As noted in the cited text, EPA's explanation includes reference to gas composition, "EPA is proposing the ***option*** of using site-specific data for gas compositions." INGAA does not understand the explanation that follows, because default natural gas composition is still allowed for compressor station emission calculations. See Comment 26 for additional discussion on gas composition – and INGAA's support of revisions that clarify that T&S sources can use default natural gas composition or site data at the operator's discretion. INGAA hopes that EPA does not intend to somehow intertwine Proposed Rule revisions that allow optional use of gas composition based on site data with blowdown calculations.

INGAA supports the optional choices for gas composition and, correspondingly, supports the ***option*** of using gas compressibility (Z) in equations W-14A and W-14B, and equations W-33 and W-34.

C. <u>INGAA has advocated for the optional use of Z in blowdown emission calculations since the onset of the Subpart W rulemaking</u>.

In comments on the 2010 proposed rule [75 FR 18608], INGAA requested the optional use of existing company algorithms and programs, which may include the compressibility factor, to calculate and document blowdown emissions. This option was requested by INGAA so that longstanding facility blowdown emission systems and calculations did not have to be changed. The exclusion of Z required changes to some of these systems and calculations. Additional detail is available in previous INGAA comments, which are referenced in Comment 1.

D. <u>Compressibility does not introduce significant bias at typical T&S facility operating conditions.</u>

Transmission pipelines typically operate in the range of about 500 to 1000 psi. Table 2 lists estimated compressibility factors for natural gas at temperature and pressure ranges more typical for transmission operations. The gas temperature exiting a compressor is typically higher than ambient due to the energy added to the gas during compression. Thus, the table considers "1/Z" factors for gas temperatures ranging up to 130°F. At these temperatures and the highest pressures (i.e., 900 – 1, 000 psig), 1/Z values are estimated to be about 1.1; at lower temperature and moderate pressures (i.e., prior to compression), 1/Z is also on the order of 1.1. Thus, for typical operations, the bias from using the ideal gas law would be about 10%. Higher bias (e.g., about 20%) could occur in some cases but is not typical for most events.

Table 2. Estimated Natural Gas Compressibility Factors (Z) for Range of Operating Pressures and Temperatures.[17]

Temperature:	40°F		70°F		100°F		130°F	
Pressure (psia)	Z	1/Z	Z	1/Z	Z	1/Z	Z	1/Z
14.7	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
100	0.98	1.02	0.99	1.01	0.99	1.01	0.99	1.01
150	0.97	1.03	0.98	1.02	0.98	1.02	0.99	1.01
200	0.97	1.04	0.97	1.03	0.98	1.02	0.98	1.02
300	0.95	1.06	0.96	1.04	0.97	1.04	0.97	1.03
400	0.93	1.07	0.94	1.06	0.95	1.05	0.96	1.04
500	0.91	1.09	0.93	1.07	0.94	1.06	0.95	1.05
600	0.90	1.11	0.92	1.09	0.93	1.07	0.94	1.06
700	0.88	1.13	0.90	1.11	0.92	1.09	0.93	1.07
800	0.87	1.15	0.89	1.12	0.91	1.10	0.93	1.08
900	0.85	1.17	0.88	1.14	0.90	1.11	0.92	1.09
1,000	0.84	1.19	0.87	1.15	0.89	1.12	0.91	1.10

To summarize, the operating temperatures and pressures for natural gas transmission compressor station blowdowns, including compressibility in blowdown calculations will typically change calculated emissions 10% or less relative to the ideal gas law; EPA has not explained what accuracy improvement is anticipated or how any reduced bias relates to data quality objectives.

In the TSD, EPA states:

> "The EPA has determined that at high pressures and low temperatures, the accuracy of the emission estimate would be improved if a compressibility factor were included in the calculation."

EPA has not explained how the "improved emission factor accuracy" associated with including Z relates to GHGRP data quality objectives or compares with other uncertainties or biases in the GHGRP. INGAA believes that potential bias or uncertainty of about 10% or less for a single source type is small relative to other Subpart W and GHGRP emission estimation methods (e.g., emission factors for many estimates). Further, it is not evident that EPA has considered how this uncertainty impacts the overall blowdown vents emission estimate uncertainty and then justifies the incremental costs based on the perceived benefit. In addition to compressibility factor inclusion / exclusion, the blowdown vent emission estimate uncertainty includes contributions from uncertainties in:

- Physical volume estimate ("determined by engineering estimates based on best available data" [§98.233(i)(1)]);
- Actual temperature and pressure estimates ("For actual conditions, reporters must use average atmospheric conditions or typical operating conditions" [§98.233]); and
- Inherent assumption in equations W-14A and W-14B that the gas temperature in the unique volume is the same at the beginning and end of each blowdown.

[17] Compressibility factors calculated using the California Natural Gas Association (CNGA) method. "Gas Pipeline Hydraulics" by Shashi Menon and Pramila Menon

It is anticipated that compressibility factor inclusion / exclusion would have negligible impact on the overall emission estimate uncertainty for blowdown vent stacks.

E. If the compressibility factor is mandatory rather than optional, then missing data provisions must apply.

The proposed missing data provisions do not specifically include compressibility factor as a calculation input that may not be available if process data is not collected at the time of a blowdown event or cannot be estimated. If the compressibility factor is not optional, the Proposed Rule must be revised to ensure that missing data provisions apply. This could be accomplished by adding the compressibility factor to one of the currently proposed missing data provisions or by clarifying that the compressibility factor is considered activity data that would be covered under broadly applicable provisions in §98.235(g).

F. Mandating the compressibility factor in blowdown vent calculations will add implementation costs that have not been considered by EPA.

Some companies have revised their blowdown vent tracking and calculations systems to comply with current Subpart W requirements and would incur costs to undo those system-wide changes. Optional use of Z would allow operators to use existing calculations and systems that are otherwise consistent with Subpart W and minimize Proposed Rule implementation costs. In the Proposed Rule Assessment of Impacts memo, EPA incorrectly concludes that the proposed rule change would have no impact on implementation costs:

> "The EPA is proposing to add a compressibility term to the blowdown vent stack calculations. It is anticipated that reporters handle gas within the proposed compressibility factor default ranges; therefore, it is unlikely that adding this compressibility factor term into the blowdown vent stack calculations would increase burden to reporters. Therefore, the EPA did not estimate the potential burden impact to reporters for this change."

As demonstrated above, reporters typically handle gas over a broader pressure range than the proposed compressibility factor default pressure range, and mandating the use of the compressibility factor in blowdown vent calculations would require changes to existing systems and increase implementation costs. EPA has not considered or justified these costs, nor demonstrated that compressibility factor inclusion will significantly and cost-effectively reduce the overall perceived uncertainty of the blowdown vent emission estimates, especially when these uncertainties are considered within the context of other GHGRP sources. Many operators have developed and implemented blowdown tracking systems and calculation methods consistent with the Subpart W final rule (i.e., using the ideal gas law). Revising Subpart W to allow the ***optional*** use of the compressibility factors would allow operators to continue to use existing calculations and systems and would not significantly impact the reported emissions.

16. Tracking blowdowns by equipment type: INGAA supports categorizing and reporting blowdowns by equipment / event type rather than by unique volume. However, some of the proposed revisions are unclear and revisions are needed.

Proposed Rule revisions require categorizing and reporting blowdown emissions by equipment type according to the following seven categories: station piping, pipeline venting, compressors, scrubbers/strainers, pig launchers and receivers, emergency shutdowns, and all other blowdowns greater than or equal to 50 cubic feet. INGAA recommended reporting by equipment type rather than "unique

volume" because this provides more pertinent data and is also more consistent with existing approaches for tracking blowdowns. However, rule revisions and clarifications are recommended:

- Six of the categories are equipment types; however, "emergency shutdowns" would be more accurately described as an event type or a reason for a blowdown, but the blowdown could also be associated with a listed equipment type. The rule should clearly indicate that emergency shutdowns would be categorized under the "emergency shutdown" event category and not a related equipment category. This could be accomplished within the rule text or explanation in the preamble.
- Other than compressors, the categories of equipment types are not defined in the rule or discussed in the preamble. Definition and/or discussion of these equipment types are recommended to clarify data collection and reporting requirements, and to promote consistency among reporters. For example, the difference between "station piping" (i.e., within the compressor station boundary) and "pipeline venting" (i.e., pipe external to the compressor station that is vented within the station boundary) should be explained. Additional discussion and description is recommended to differentiate these two categories. Alternatively, these two types of blowdowns could be combined into one category called, "Piping – Blowdowns and Purges".
- Similarly, the reporting obligation for compressors could be clarified by re-labeling the "compressors" category as "Compressors – Blowdowns and Purges."
- The category "all other blowdowns greater than or equal to 50 cubic feet" should be "all other equipment with a physical volume greater than or equal to 50 cubic feet."

Operators are given the option of calculating emissions for each unique volume and tracking / reporting by equipment type per §98.233(i)(2) or by directly measuring blowdown vent emissions using a flow meter per §98.233(i)(3). For section (i)(2) and related reporting, suggested revisions follow (added text in **bold underline**, deleted text in ~~strike-through~~) for rule text related to data collection and reporting:

- In §98.233(i)(2):

  "(2) Method for determining emissions from blowdown vent stacks according to equipment type. If you elect to determine emissions according to each equipment type, using unique physical volumes as calculated in paragraph (i)(1) of this section, you must calculate emissions as specified in paragraphs (i)(2)(i) through (i)(2)(iii) of this section for each equipment type. Equipment **or event (i.e., emergency shutdown)** types must be grouped into the following seven categories: station piping, pipeline venting, compressors, scrubbers/strainers, pig launchers and receivers, emergency shutdowns, and all other ~~blowdowns~~ **equipment with a physical volume** greater than or equal to 50 cubic feet. **If a blowdown event resulted in emissions from multiple equipment types and the emissions cannot be apportioned to the different equipment types, then categorize the blowdown event as the equipment type that represented the largest portion of the emissions for the blowdown event**."

  And, related reporting in §98.236(i)(1):

  "Report by equipment type. If you calculated emissions from blowdown vent stacks by ~~equipment types~~ **the seven categories listed in 98.233(i)(2)**, then you must report the equipment type~~s~~ and the information specified in paragraphs (i)(1)(i) through (i)(1)(iii) of this section for each equipment type. If a blowdown event resulted in emissions from multiple equipment types **and the emissions cannot be apportioned to the different equipment types**, then you must

report the information in paragraphs (i)(1)(i) through (i)(1)(iii) of this section for the equipment type that represented the largest portion of the emissions for the blowdown event."

17. EPA should reconsider new reporting requirements. Numerous data elements have been arbitrarily added, are not needed to calculate GHG emissions, and will add unnecessary burden for reporters.

The Proposed Rule significantly increases the number of data elements to report under §98.236. Although the preamble includes confidentiality determinations, and a docket memo tabulates the changes, EPA has not explained or justified the need for these data elements. As discussed in Comment 9, the new reporting requirements increase costs, and EPA should justify its decision for each data element added to §98.236.

If INGAA understood EPA's objective for adding the data elements, it is possible that specific feedback on various data elements could be provided. A partial list of data elements added for T&S sources that should be reconsidered and justified if included follows:

- For transmission storage tank vent stack, whether scrubber dump leakage is occurring for the underground storage vent – §98.236(k)(l)(iii) ; see Comment 18 regarding the need for clarification;
- Compressor power rating – §98.236(o)(1)(xiii), §98.236(p)(1)(xiii);
- Year compressor was installed – §98.236(o)(1)(xiv), §98.236(p)(1)(xiv);
- Compressor model name and description – §98.236(o)(1)(xv), §98.236(p)(1)(xv);
- Date of last maintenance shutdown that compressor was depressurized – §98.236(o)(2)(viii);
- Date of last maintenance shutdown for rod packing replacement – §98.236(p)(1)(xvi);
- If emission vent is routed to flare, combustion, or vapor recovery, report the percentage of time the device was operational – §98.236(o)(2)(viii), §98.236(p)(2)(viii);
- Average time surveyed components were found leaking and operational – §98.236(q)(2)(iii);
- Average upstream pipeline pressure, psig – §98.236(aa)(4)(iv);
- Average downstream pipeline pressure, psig – §98.236(aa)(4)(v);
- Whether compressor was measured in operating mode or not-operating depressurized mode – §98.236(o)(1)(iv);
- Whether compressor sources are routed to a flare – §98.236(o)(1)(vii), §98.236(p)(1)(ix);
- Whether compressor sources have vapor recovery – §98.236(o)(1)(viii), §98.236(p)(1)(x);
- Whether compressor sources are captured for fuel use or are routed to a thermal oxidizer – §98.236(o)(1)(ix), §98.236(p)(1)(xi);
- Whether compressor has blind flanges installed – §98.236(o)(1)(x), §98.236(p)(1)(xii);
- Whether compressor is part of a manifolded group of compressor sources – §98.236(p)(1)(viii);
- Quantity of gas injected into storage – §98.236(aa)(5)(i);
- Quantity of gas withdrawn from storage – §98.236(aa)(5)(ii);
- Number of compressors – §98.236(aa)(4)(ii);

- Total compressor power rating for all compressors combined, HP – §98.236(aa)(4)(iii);
- Total storage capacity for underground natural gas storage facilities – §98.236(aa)(5)(iii).

Several specific examples are discussed further to demonstrate INGAA questions and concerns:

- Compressor power rating (hp);
- Year compressor was installed;
- Compressor model name and description;
- Date of last maintenance shutdown where centrifugal compressor was depressurized.

INGAA questions the utility of these four parameters / data points for purposes of the GHGRP inventory. For example, compressor driver horsepower is very likely a poor indicator of potential GHG emissions since GHG emissions are largely dependent on compressor run time and other factors rather than power rating. Also, regulatory definitions are not consistent and actual working horsepower could be significantly less than site rated horsepower or manufacturer nameplate horsepower. The need for these data is unclear, and there is no indication that these parameters could be used to predict potential GHG emissions based on compressor type or horsepower. In addition, the preamble and background documents do not provide justification for adding all of these elements, or consider the costs or benefits. If there are certain objectives EPA is trying to achieve by increasing reporting burden, the objectives should be explained and decisions should be justified. INGAA would welcome the opportunity to discuss the utility of various data elements further.

For these examples, while general compressor information (model, installation date, date of last maintenance shutdown) could be compiled, this information is superfluous to the GHG inventory. In addition, EPA should review its determination of whether these data are CBI (see Comment 20).

18. EPA should address several issues related to new reporting requirements.

As discussed in Comment 9, EPA has significantly under-estimated Subpart W implementation costs, including costs associated with data compilation and reporting. For example, review of proposed new data elements by an INGAA member estimated that it would require 1,000 hours per year to track and report for their subject T&S facilities. In addition, systems would need to be established to reduce human tracking error. The cost of creating or adding data elements could cost an additional $100,000 per year to implement and maintain. It is important that EPA understands there are real and substantive costs for implementing systems to report new data, and these costs should be adequately considered and weighed against the purpose and value of the new data to be collected.

§98.236 reporting requirements are substantially revised to better comport with analogous §98.233 emission estimation requirements. In reviewing these revisions, some minor technical issues were identified:

- For each transmission storage tank vent, §98.236(k)(1)(iii) requires, "Indicator whether scrubber dump valve leakage occurred for the transmission storage tank vent." It is not clear what specifically is being requested by this item, and clarified text is required.
- Suggested edits to §98.236(p)(1):

(viii) Indicate ~~whether~~ **which, if** any**,** compressor sources are part of a manifolded group of compressor sources.

(ix) Indicate ~~whether~~ **which, if** any**,** compressor sources are routed to a flare.

(x) Indicate ~~whether~~ **which, if** any**,** compressor sources have vapor recovery.

(xi) Indicate ~~whether~~ **which, if** any**,** ~~emissions from any~~ compressor source~~s~~ **emissions** are captured for fuel use or are routed to a thermal oxidizer.

(xii) Indicate whether the compressor has blind flanges installed~~.~~ **and associated dates.**

- §98.236(p) states that the information in §98.236(p)(2) applies to *all* reciprocating compressors at a facility. However, §98.236(p)(2)(vii) is for reporting methane and CO_2 emissions, and these requirements would not apply for compressors that vent all gas to a flare, VRU or combustion unit.
- Suggested edits to §98.236(p)(2):

  (iii) Unique name or ID for the emission vent. If the emission vent is connected to a manifolded group of compressor sources, use the same emission vent ID for each compressor source **in the manifold group**.
- Suggested edits to §98.236(p)(3)(i):

  (B) ~~Sample~~ **Measurement** date.

  (E) For each compressor attached to the emission vent, report the **compressor operating** mode **during the measurement**~~of operation the compressor was in when the sample was taken~~.
- §98.236(p)(2)(vii) requires:

  "For emission vents associated with individual compressor sources that use an as found leak measurement(s), calculate emissions by summing all emissions from all compressor mode-source combinations for the emission vent"

  It is not clear why this would be required. Reporting the emissions for compressor mode-source combinations separately could provide additional insight into the emission source, and the values can be summed at any time. In addition, it is not clear if this requirement only applies when the emissions are all measured values, or if it applies when one or more of the emission rates are calculated from the reporter emission factor using equation W-27.

19. Confidentiality: EPA fails to understand the competitive nature of the natural gas transmission industry when determining whether particular data elements should be considered confidential business information (CBI).

EPA's decision to not designate T&S data as CBI is based, at least in part, on its understanding that the transmission industry is inherently less competitive than other industries. EPA's understanding is indicated in text from the preamble that explains the CBI determination for many transmission data elements:

"Companies operating in this (natural gas transmission compression sector) sector are subject to regulatory oversight by the Federal Energy Regulatory Commission (FERC), state utility commissions, and other federal agencies because they operate in an industry that is inherently uncompetitive. FERC controls pricing, sets rules for business practices, has the power to impose

> conditions on mergers and acquisitions, and has the sole responsibility for authorizing the location, construction and operations of companies operating in this sector. The rate charged for transporting gas is regulated. Hence the tightly regulated natural gas transmission sector is inherently less competitive than other industries."

EPA's understanding that the natural gas transmission industry is inherently less competitive than other industries is not correct. While interstate natural gas pipeline rates are established on a cost-of-service basis by the Federal Energy Regulatory Commission (FERC), the natural gas pipeline transportation market is quite competitive. In the mid 1980s, FERC began a major restructuring of pipeline companies' services, with the ultimate goal of enabling consumers to purchase gas directly from producers in a competitive market for natural gas. Since the mid 1990s, when FERC issued Order 636, the unbundling of pipelines' merchant and transportation services has been mandatory. The competitive culture fostered by Order 636 has replaced the public utility culture of the pre-restructuring natural gas industry. Pipelines face multiple forms of competition which affect service offerings and prices, including: competition with alternative fuels, competition between gas supply basins, competition among pipelines, and increased competition with firm shippers who can sell their excess capacity on a secondary market. Given the competitive alternatives that customers enjoy, a pipeline's FERC-approved maximum tariff rate is not an entitlement to collect such a rate. Rather, a pipeline's pricing power is disciplined by what the market will bear. As a result, a significant portion of interstate pipeline throughput is being transported at rates that have been discounted from the FERC-approved maximum tariff rates or under agreements where the pipeline and its customer have negotiated an alternative rate design and rate level. As a result, small changes in the delivered price of natural gas can affect competitiveness so it is imperative for pipelines to manage costs because there is no guarantee of cost recovery. If a pipeline's costs become too high, a customer could take its business to a competitor once its contract expires. The natural gas pipeline market is indeed competitive and INGAA urges EPA to recognize this.

EPA refers to public information available for natural gas companies subject to the jurisdiction of FERC because FERC Forms 2, 2-A, and 3-Q must be submitted. These reports are designed to collect financial and operational information, and are considered to be non-confidential public use forms. However, these forms do not contain all of the equipment, process, and operating data regarding industry operations and practices, and do not include all proposed Subpart W data elements. Thus, the confidentiality determinations for these data elements should consider whether disclosure of the data is likely to cause substantial harm to a natural gas transmission company's competitive position.

20. EPA should more thoroughly review the CBI status of T&S data elements. Several data elements should be considered CBI.

The Proposed Rule does not designate any data elements for the T&S segments as CBI. This is due, in part, to EPA's mistaken belief that the T&S segments are not competitive. Because of this faulty logic, T&S data CBI determinations discussed in the preamble should be revisited. INGAA recommends that EPA consider classifying several data elements as CBI. In some cases, EPA has already required reporting, but a non-CBI determination was not documented. The following data elments are all stand-alone parameters that are not required in any equations or methods for estimating GHG emissions, and their purpose is not defined. In each case, the parameter divulges important information on production, operations, or key process equipment. INGAA recommends EPA re-evaluate its classification as CBI

based on a thorough review following defined procedures and based on a competitive business environment for T&S data elements, including:

- Annual quantity of gas transported through the transmission compressor station, §98.236(aa)(4)(i);
- Annual quantity of gas injected and withdrawn into underground natural gas storage, §98.236(aa)(5)(i) and (ii);
- Annual quantity of LNG imported and exported for LNG import and export equipment, §98.236(aa)(6) and (7);
- Several parameters that have been added to reporting requirements are discussed in Comment 17, including compressor power rating (hp), year the compressor was installed, compressor model name and description, and date of last maintenance. These parameters should also be considered for classification as CBI, especially maintenance related data elements.

21. Several miscellaneous minor technical corrections and clarifications were identified.

The Proposed Rule has not been scrutinized for minor corrections. The limited time for comment preparation, and schedule overlap with reporting obligations due March 31, prevented such scrutiny. However, several minor technical corrections and requests for clarification are included here. In some cases, comments above could result in revisions that would make these items irrelevant (i.e., the item in question would not be in the Final Rule).

- Since timing did not provide the opportunity to "test" the data flow and calculations in the compressor sections, INGAA recommends that the compressor sections be carefully reviewed to ensure the source(s), and associated compressor(s) operation and measurements for all reported emissions are clear and concise, and are consistent with data collected and emissions calculated by the equations in §98.233(o) and (p).
- For the transmission segment, INGAA recommends that all unique blowdown volumes be summed into equipment types before applying gas compositions to determine CH_4 and CO_2 volumetric and mass emissions. As discussed in Comment 23, INGAA recognizes that this approach may not be preferred for other segments where gas quality varies within the facility.
- EPA should clarify the requirements for compressor sources routed to vapor recovery. The following recommendations to delete text clarify that no measurement or additional data are required if the compressor vent is routed to vapor recovery:
  - §98.233(o): "…If emissions from a compressor source are routed to vapor recovery, ~~the calculations specified in~~ paragraphs (o)(1) through (o)(12) of this section do not apply."
  - §98.233(p): "…If emissions from a compressor source are routed to vapor recovery, ~~the calculations specified in~~ paragraphs (p)(1) through (p)(12) of this section do not apply."
- Clarifying revisions are recommended to correct a grammatical inconsistency when referring to standard conditions. The following sections should be revised by replacing the word "Measure" with "Determine" for both reciprocating and centrifugal compressor sections. Neither should request "measurement" at standard conditions; rather, the measured values should be adjusted to standard conditions:

- §98.233(o)(2)(i)(A): "~~Measure~~ **Determine** the volumetric flow at standard conditions from the blowdown vent using calibrated bagging or high volume sampler according to methods set forth in § 98.234(c) and § 98.234(d), respectively."
- §98.233(o)(2)(i) (B): "~~Measure~~ **Determine** the volumetric flow at standard conditions from the blowdown vent using a temporary meter such as a vane anemometer according to methods set forth in § 98.234(b)."
- §98.233(p)(2)(i)(A): "~~Measure~~ **Determine** the volumetric flow at standard conditions from the blowdown vent using calibrated bagging or high volume sampler according to methods set forth in §98.234(c) and §98.234(d), respectively."
- §98.233(p)(2)(i) (B): "~~Measure~~ **Determine** the volumetric flow at standard conditions from the blowdown vent using a temporary meter such as a vane anemometer, according to methods set forth in §98.234(b)."

- Text that follows related to manifolded line measurements is confusing and appears to contain a typo. It appears that "two" should be "three". It is unclear whether each measurement must be 60 days apart or if there must be 60 days between the first and last (third) measurement.
  - §98.233(o)(1)(iii)(C): "The three required leak measurements must be separated by a minimum of 60 days. If more than ~~**two**~~ **three** leak measurements are performed, the first and last measurements in a calendar year must be separated by a minimum of 120 days."
- The subscript order is inconsistent in Equations W-22, W-23, W-27 and W-28. All of the other compressor equation subscripts use the subscript "s" as the lead with exception of the terms EFm,s and MTm,p,s in Equations W-22, W-23, W-27 and W-28. These should be revised to EFs,m and MTs,m,p for consistency with the other compressor equations.

INGAA Supports Proposed Rule Amendments that Improve Clarity and Add Flexibility

22. INGAA supports the improved organization and clarifications to the compressor emission estimation sections, but additional corrections and clarifications are needed.

The Proposed Rule revises §98.233(o) and (p), the emissions calculation sections for compressors. Compared to the current emission estimation paradigm, these proposed revisions improve rule organization and clarity, and correct and improve calculations and ties to the reporting sections. INGAA supports these revisions.

However, additional corrections, clarifications, and edits are needed. These include:

- Verification and clarification of the intent and implementation of the text in §98.233(p)(6)(iii)(B) (section 98.233(p)(7)(i)(A) in the current rule) is needed:

  "You must combine emissions for blowndown vents, measured in the operating and standby-pressurized modes."

  This requirement to combine blowdown valve leakage emissions from the two compressor modes is not consistent with the rule equations and the current reporting requirements of the e-GGRT Excel reporting form. Equation W-28 is used to calculate an emission factor for each compressor mode-source combination specified in §§98.233(p)(1)(i)(A)-(C):

- Operating mode-rod packing,
- Operating mode-blowdown valve leakage,
- Standby-pressurized-mode-blowdown valve leakage, and
- Not-operating-depressurized-mode-isolation valve leakage.

Calculation of emission factors for each mode is required by §98.233(p)(1)(iii). In addition, separate operating mode-blowdown valve leakage and standby-pressurized-mode-blowdown valve leakage emission factors are needed because it is unlikely that annual blowdown valve leakage emissions would be measured in both the operating- and standby-pressurized-modes. Separate emission factors are needed to estimate emissions in the unmeasured mode(s). For example, if the annual measurements for a compressor were conducted in the operating mode, then Equation W-26 would be used to calculate measured emissions for operating mode-blowdown valve leakage and Equation W-27 would be used to calculate unmeasured emissions for standby-pressurized-mode-blowdown valve leakage. Combining the emissions would eliminate the two separate emission factors.

Either the intent and use of this text should be explained and clarified, or this text should be deleted.

- The definition of "Compressor source" in §98.238 and referenced in §98.236(o) and (p) should be revised to improve clarity. Suggested revisions include:

  *"Compressor source***, for the purposes of Subpart W,** means ~~any~~ **a specific** type of ~~vent~~ **compressor seal** or valve**. These include** ~~(i.e.,~~ wet seal**s**, blowdown valve**s, and** isolation valve**s**~~, or rod packing)~~ on a centrifugal ~~or reciprocating~~ compressor **and blowdown valves, isolation valves, and rod packing on a reciprocating compressor**."

- Section 98.233(p) states that when emissions from a compressor source are routed to vapor recovery, the *calculations* specified in paragraphs(p)(1) through (p)(12) do not apply. It appears that this is intended to eliminate all requirements in paragraphs (p)(1) – (12), but this is not clear because "calculations" is referred to in the regulatory text (i.e., it could be interpreted that requirements not related to calculations apply). Text should be revised so that it is clear that *all of the requirements* in paragraphs (p)(1) – (12) do not apply. A similar clarification should be made for §98.233(o).

  "… If emissions from a compressor source are routed to vapor recovery, ~~the calculations specified in~~ paragraphs (p)(1) through (p)(12) of this section do not apply. …"

- To alleviate possible confusion and facilitate understanding of subsequent calculation and reporting requirements, it is recommended that the phrase "compressor mode – source combination" be introduced in §98.233(p)(1)(i) and that the four specific compressor mode – source combinations be listed. A similar revision should be made for §98.233(o)(1)(i) for the three centrifugal compressor mode-source combinations.

- In §98.233(p)(1)(i)(D), it is not clear what is meant by "scheduled shutdown". Clarification is needed to provide operators a clearer understanding – and there must be a reasonable, and potentially significant, lead time available to schedule and mobilize a test team. A similar clarification should be made for §98.233(o)(1)(i)(C). In both cases, significant lead time may be needed to address logistics, including test crew schedule and availability. This is better addressed as discussed in Comment 7. INGAA does not support mandatory testing in shutdown mode. If that issue is addressed, then guidance on "scheduled shutdown" would not be necessary.

- Suggested clarifying text revisions for §98.233(p)(2)(iii)(A):

"You must use the methods described in § 98.234(a) to conduct annual leak detection of equipment leaks from the packing case into an open distance piece, or **for compressors with a closed distance piece, conduct annual detection of gas emissions** from the **rod packing vent, distance piece vent,** compressor crank case breather cap or other vent **emitting gas from the rod packing** ~~with a closed distance piece~~."

- Suggested clarifying edits to §98.233(o)(6)(i) and §98.233(p)(6)(i)

  "Tm = Total time the compressor is in **the operating mode associated with** the mode-source combination m, for which Es,i,m is being calculated**,** in the reporting year, in hours."

- Suggested clarifying edits to §98.233(o)(6)(ii) and §98.233(p)(6)(ii)

  "Tm = Total time the compressor is in **the operating mode associated with** the unmeasured mode-source combination m, for which Es,i,m is being calculated**,** in the reporting year, in hours."

- The associated reporting sections for centrifugal and reciprocating compressors, §§98.236(o) and (p), report emissions from "emission vents" which trace back to "compressor sources," "compressors," and associated operating modes and measurement data. INGAA recommends that these sections be reviewed and "beta tested" to ensure the source(s), and associated compressor(s) operation and measurements for all reported emissions are clearly understood, and are consistent with data collected and emissions calculated by the equations in §98.233(o) and (p). With limited time to prepare these comments and schedule overlap with 2013 GHGRP reporting, time was not available to complete such a detailed review.

23. INGAA supports the addition of the method for determining blowdown vent emissions using a flowmeter. Minor revisions are needed to clarify method applicability and adjustments to measured emissions.

Section 98.233(i)(3) is added to allow the installation of flowmeters on blowdown vent stacks to measure gas emissions rather than tracking individual blowdown events. This has the potential to reduce reporter burden in some cases. However, minor clarifications and adjustments are needed that include:

- The rule should clearly indicate that both the method for determining emissions from blowdown vent stacks using a flowmeter [§98.233(i)(3)] and the method for determining emissions from blowdown vent stacks according to equipment type [§98.233(i)(2)] can be used at facility for different blowdown emission sources. For example, if a facility vent includes a flowmeter, some but not all equipment vents may be routed to that vent stack.

- When a flowmeter is used to report blowdowns, the reporting section implies that emissions are not tracked by equipment or event type and an annual total is reported. However, §98.233(i) does not clearly indicate this, and §98.233(i)(3) and/or (4) should be clarified to indicate that if the flowmeter option is used the emissions are not categorized and an annual total is reported.

- INGAA supports §98.233(i)(2)(iii) provisions, where the calculation to address gas composition uses the annual volume. However, INGAA recognizes that this approach may not be appropriate for upstream operations where gas quality may vary within the facility and separate calculations may be warranted. Thus, §98.233(i) revisions may be necessary to add flexibility and accommodate various scenarios.

24. INGAA supports proposed revisions that track blowdowns by equipment type.

INGAA supports tracking and reporting blowdown emissions by equipment type in accordance with proposed revisions to §§ 98.233(i)(2) and 98.236(i)(1). However, INGAA recommends minor clarifications to the revised rule text as discussed in Comment 16.

25. INGAA supports revisions to blowdown calculation equations that allow the *optional* use of a compressibility factor.

Previous INGAA comments requested the *optional* use of a gas compressibility factor for blowdown vent stack calculations in §98.233(i). EPA proposes adding the compressibility factor, "Z", to blowdown emissions calculations in Equations W-14A and W-14B. However, to provide flexibility and accommodate existing systems used for blowdown tracking, use of the compressibility factor should be *optional* to accommodate existing practices for some operators. Revisions should not prescribe new requirements for operators that employ the current Subpart W calculation method. The Proposed Rule mandates use of the compressibility factor for typical T&S operating pressures, and it appears that EPA does not understand this implication. INGAA does not support mandatory use of a gas compressibility factor. See Comment 15 for additional details and discussion.

26. Gas Composition: INGAA supports revisions that clarify *the optional* use of site data or default methane and CO_2 values for gas composition for T&S sources.

Subpart W currently includes default values for natural gas methane and CO_2 composition for T&S and other segments downstream of processing and also allows the use of site data. EPA added these default values in previous Subpart W amendments in response to INGAA comments. INGAA has also requested that the rule clearly allow operators to use specific data rather than the default values, with this choice *optional* at the discretion of the operator. For example, some operators are using site-specific gas quality data for other reporting purposes and prefer consistency. The optional use of site data or default values provides flexibility, while the use of default values simplifies reporting without compromising estimates, because gas quality downstream of processing is much less variable than upstream operations. Thus, INGAA supports the Proposed Rule revision to §98.233(u)(2)(iii) that clearly allows default values or site data based on best available data, "either a default 95 percent methane and 1 percent carbon dioxide fraction for GHG mole fraction in natural gas or site specific engineering estimates based on best available data."

A. <u>The Proposed Rule inadvertently omits analogous revisions for underground storage.</u>

EPA completed the revision noted above to §98.233(u)(2)(iii) and (v) – (vii), which encompasses all segments downstream of processing other than section (iv) for underground storage. INGAA had requested this revision for T&S – i.e., natural gas transmission compression and underground natural gas storage segments. The preamble indicates that EPA intended to include this revision for underground storage and this appears to be an oversight. If not, EPA has not explained why this option is not allowed for underground storage. The preamble text regarding underground storage follows:

> "We are proposing to allow either the use of site-specific composition data for natural gas transmission compression and underground natural gas storage facilities or the use of a default gas composition…" [79 FR 13398]

For consistency with (u)(2)(iii) and the preamble discussion, §98.233(u)(2)(iv) for underground storage should be revised consistent with the proposed text in §98.233(u)(2)(iii). It is appropriate to clearly provide the same flexibility to underground storage as is provided for transmission compression and other downstream segments.

B. Use of site data or default values should be optional at the reporter's discretion; otherwise, previous positive amendments are undermined.

In addition, at 79 FR 13398 EPA requests comment on whether the use of site data *should be required or optional*. INGAA strongly supports maintaining the option to use default values or site-specific data at the discretion of the reporter. As noted above, default values were added in previous amendments and EPA should not undermine earlier progress in this rulemaking. If additional background is desired, EPA should refer to earlier comments and decisions regarding the use of default composition for T&S.

27. INGAA supports revisions to §98.235 (Missing Data). It is imperative that this section provides access to alternatives for measurement and monitoring.

INGAA supports proposed revisions to §98.235 that address facility-level, source-level, and measurement and method circumstances that may result in missing data. As discussed in Comments 3 through 6 above, it is imperative that Subpart W include provisions that provide operators the ability to address unforeseen scenarios and measurement challenges. INGAA recommends clarifying revisions to §98.235 in Comment 6. With those revisions and with preamble or support document discussion to clarify potential implementation questions, INGAA supports the revisions to Missing Data provisions.

Topics Where EPA Requested Comment

28. INGAA's response to several topics where EPA requested comment.

In the Proposed Rule preamble, EPA requests comment on several topics. While comments above address each of the items in more detail, a summary is provided below.

Gas Composition: EPA requested comment on whether T&S sources should be required to use site data on gas composition or its use should be optional. The Proposed Rule clarifies that default gas composition or site-specific data can be used. INGAA requested and supports *the option* to use site data or default values at the operator's discretion. In addition, EPA should address an apparent oversight, and include the same text regarding optional use of site data in §98.233(u)(2)(iv) for the underground storage segment.

Frequency of Measurement in Shutdown, De-pressurized Mode: EPA discussed options related to mandatory testing in shutdown, de-pressurized mode and requested comment. It is INGAA's understanding that mandatory frequency for shutdown mode tests is included in the current rule due to EPA concerns that there would be a lack of data in this mode. However, 2011 and 2012 data show that T&S sources completed hundreds of measurements in this mode and there are about the same number of "as found" tests completed in shutdown mode as other modes. Thus, it is not necessary to mandate testing in this or any mode. Mandating shutdown measurement frequency will result in unnecessary emissions and costs as well as logistical issues for scheduling out-of-sequence tests.

Need for BAMM: EPA requests comments on the circumstances that would require BAMM after January 1, 2015. As discussed in Comments 3 through 6, it appears that revisions to the Missing Data section address scenarios that have required BAMM or could require BAMM in the future. INGAA requests clarifications and revisions to missing data provisions in those comments. Dependent upon that outcome, some longstanding issues that have required BAMM could remain. In some cases, the scenario is not necessarily "unique or unusual," depending on how those terms are viewed. Example scenarios include: vent lines that are unsafe to access or infeasible to measure and do not have the ability to assess through-valve leakage with an acoustic device; operating modes that are rarely employed (e.g., centrifugal compressor standard practice is to remain in standby mode) but nevertheless require measurement in shutdown, de-pressurized mode; and, subject T&S facilities where a late year addition of a new source at the facility precludes the ability to gather data (e.g., complete vent measurements). These are a few examples and INGAA has commented at length on BAMM scenarios in previous comments (referenced in Comment 1) which can be reviewed for more detail. In addition, BAMM scenarios have been discussed many times with EPA. Those circumstances and examples have not changed. Therefore, inclusion of BAMM or an equivalent alternative in Subpart W (e.g., to address access to alternative methods) is imperative.

Manifolded Lines: EPA seeks comment on the Proposed Rule requirement to measure manifolded compressor sources emissions at least three times per year at a location where compressor source emissions cannot be comingled with other non-compressor emission sources. As discussed in Comment 8, for measurement of manifolded compressor sources, EPA has not provided adequate technical justification for the proposed requirement for three measurements each year, and has greatly underestimated the costs associated with three separate measurement team mobilizations. Emission measurement requirements for measureable manifolded compressor sources should be limited to a single annual measurement. Manifolded lines where compressors sources are comingled with other emission sources should rely on reporter emission factors developed for individual compressors. See Comment 8 for additional details.

Confidential business information: CBI is discussed in Comments 19 and 20. INGAA recommends that EPA reconsider its view on the competitiveness of the natural gas transmission and storage segments. Since EPA's mistaken belief that T&S segments are not competitive was part of the process for determining whether data elements are CBI, EPA should revisit this analysis and some data elements should be classified as CBI.