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**Committee on Anthropogenic Methane Emissions in the US:  
Improving Measurement, Monitoring, Presentation of Results, and Development of Inventories**

**Workshop: March 28, 2017**

University of Colorado Boulder  
Sustainability, Energy, and Environment Complex (SEEC)  
Sievers Room

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**BACKGROUND**

The committee is charged to examine approaches for measuring, monitoring, presenting, and developing inventories of anthropogenic methane emissions to the atmosphere, with focus on the United States. Specifically the committee will write a report that:

- (1) discusses how methane emissions measurements, monitoring data, and inventories are used and usable for managing emissions, scientific research, and other purposes;
- (2) assesses scientific understanding with respect to published inventories of US anthropogenic methane emissions, including estimates of current emissions, recent trends, and projections of future emissions;
- (3) describes and evaluates approaches used to measure and monitor methane emissions;
- (4) recommends how to present results of methane emissions studies to facilitate comparisons among studies and to ensure results are useful for policymaking;
- (5) describes and evaluates approaches used to develop inventories of past, present and future methane emissions;
- (6) recommends best available approaches for addressing key uncertainties, areas of incomplete understanding, and technical challenges in developing methane inventories; and
- (7) recommends research needed to improve methane emissions measurement, monitoring, and inventory development.

This workshop serves as the first of several meetings that will be held to inform the committee in the development of their report. The committee anticipates gathering information on a wide variety of topics related to their charge throughout the study. Because this workshop will take place in Boulder, some emphasis has been placed on topics relevant to the expertise of local scientists and stakeholders.

**Tuesday, March 28, 2017**

8:00 A.M

**Breakfast at SEEC**

8:30 A.M.

**Welcome and introductions**

James White, U of Colorado Boulder  
Committee Chair

- Context and purpose of the study
- Objectives of the workshop

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8:45 A.M.      **Session 1: Overview of methodologies for measuring and monitoring methane emissions**  
*Session objective: to improve understanding of recent trends in atmospheric methane concentration and some of the common emissions measurement approaches*

Committee moderator: Lori Bruhwiler, NOAA

**Ed Dlugokencky, NOAA** – methane monitoring and observed trends

**Sourish Basu, NOAA** – space-based methane measurement methodologies

**Stefan Schwietzke, NOAA** – aircraft/basin-scale measurements

**Scott Herndon, Aerodyne** – bottom-up measurements (tracer-flux)

**John Miller, NOAA** – isotopic approaches to methane source attribution

Discussion questions:

- What are the strengths of each approach relative to other techniques and what are the primary sources of uncertainty?
- Are there specific questions or analyses that lend themselves best to one approach vs. another? Which techniques are used for inventory development?
- Can these approaches attribute methane to nature vs. anthropogenic sources and individual source sectors?

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10:30 A.M.      **Break**

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11:00 A.M.      **Session 2: Reconciling top-down and bottom-up methane measurements**  
*Session objective: to learn about the latest research in identifying methane sources in the oil and gas sector and reconciling top-down and bottom-up measurements*

Committee moderator: David Allen, University of Texas, Austin

**Gaby Petron, NOAA** – use of ethane to methane ratios; general issues surrounding top down – bottom up flux estimates

**Dan Zimmerle, CSU** – Barnett Shale and other recent reconciliation research

**Tim Skone, NETL** – Synthesis of EDF supported studies

Discussion questions:

- What are limitations of top-down vs. bottom-up methods (in general)?
- How does new research affect our understanding of methane sources, their comparison/reconciliation (spatially and temporally), and the uncertainties associated with current measurement approaches?
- Can new research help to reconcile the existing discrepancies between top-down vs. bottom-up measurement approaches?
- How does that latest research compare with existing inventories?

12:15 P.M.      **Lunch**

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1:15 P.M.      **Session 3: Sectoral and local-scale emissions sources and measurement methodologies**

*Session objective: learn about methane emissions quantification in specific sectors and urban landscapes, that are outside the specific expertise of the Committee*

Committee moderator: Jean Bogner, University of Illinois, Chicago

**Arlene Adviento-Borbe, USDA ARS** – rice

**Diego Rosso, UC Irvine** – wastewater

**Rob Jackson, Stanford** – urban landscapes

**Paul Shepson, Purdue University** – urban landscapes

Discussion questions:

- What are the largest uncertainties associated with methane measurements and/or activity data in these sectors/settings?
  - Are improved methodologies needed to estimate the magnitude of emissions from these sources relative to the sectors known to dominate anthropogenic methane emissions?
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2:45 P.M.      **Break**

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3:15 P.M.      **Session 4: Presenting study results to meet user needs**

*Session objective: to learn about how methane inventories are used at the state level and discuss how study results can best be reported and presented for policymaking.*

Committee moderator: Lisa Hanle

**Martha Rudolph, Colorado Dept. of Public Health & Environment** – use of methane inventories to inform state-level policy decisions

**Jana Milford, University of Colorado, Boulder** – state rulemaking and methane information needs

Discussion questions:

- What are the challenges for using existing methane inventories?
  - What changes in reporting study results and emissions data would facilitate easier use by policymakers and others interested in comparisons across measurement approaches?
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4:15 P.M.      **Townhall discussion**, to allow all workshop participants to offer additional contributions to the discussion.

Committee moderator: Jim White

5:15 P.M.      **Adjourn**

6:00 P.M.      **Participant dinner at SEEC**

**NOTE FOR PUBLIC MEETINGS:** This meeting is being held to gather information to help the committee conduct its study. This committee will examine the information and material obtained during this, and other public meetings, in an effort to inform its work. Although opinions may be stated and lively discussion may ensue, no conclusions are being drawn at this time; no recommendations will be made. In fact, the committee will deliberate thoroughly before writing its draft report. Moreover, once the draft report is written, it must go through a rigorous review by experts who are anonymous to the committee, and the committee then must respond to this review with appropriate revisions that adequately satisfy the Academies' Report Review Committee and the NAS president before it is considered an official Academies report. Therefore, observers who draw conclusions about the committee's work based on today's discussions will be doing so prematurely.

Furthermore, individual committee members often engage in discussion and questioning for the specific purpose of probing an issue and sharpening an argument. The comments of any given committee member may not necessarily reflect the position he or she may actually hold on the subject under discussion, to say nothing of that person's future position as it may evolve in the course of the project. Any inference about an individual's position regarding findings or recommendations in the final report is therefore also premature.