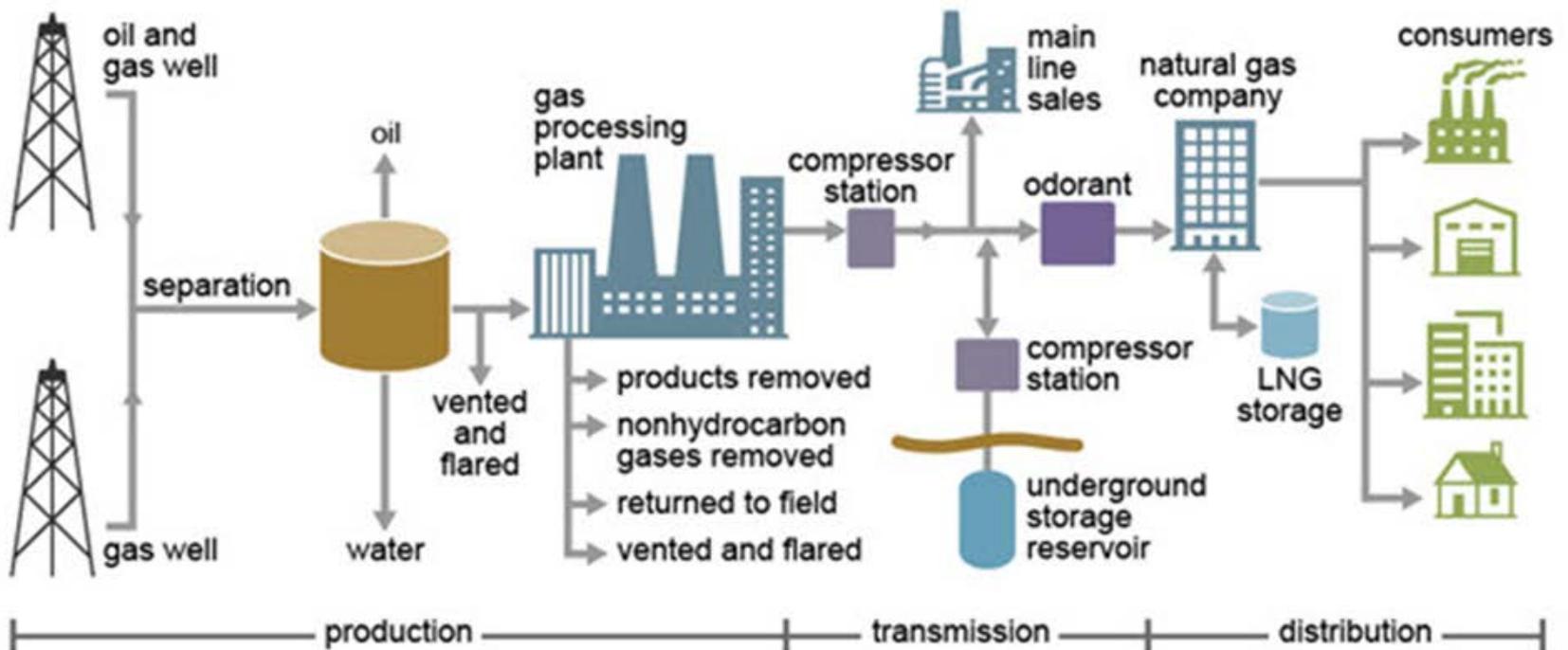


METHANE EMISSIONS FROM CALIFORNIA'S NATURAL GAS SYSTEM

Symposium Overview and Context
June 6, 2016



Natural gas production and delivery



National Perspective

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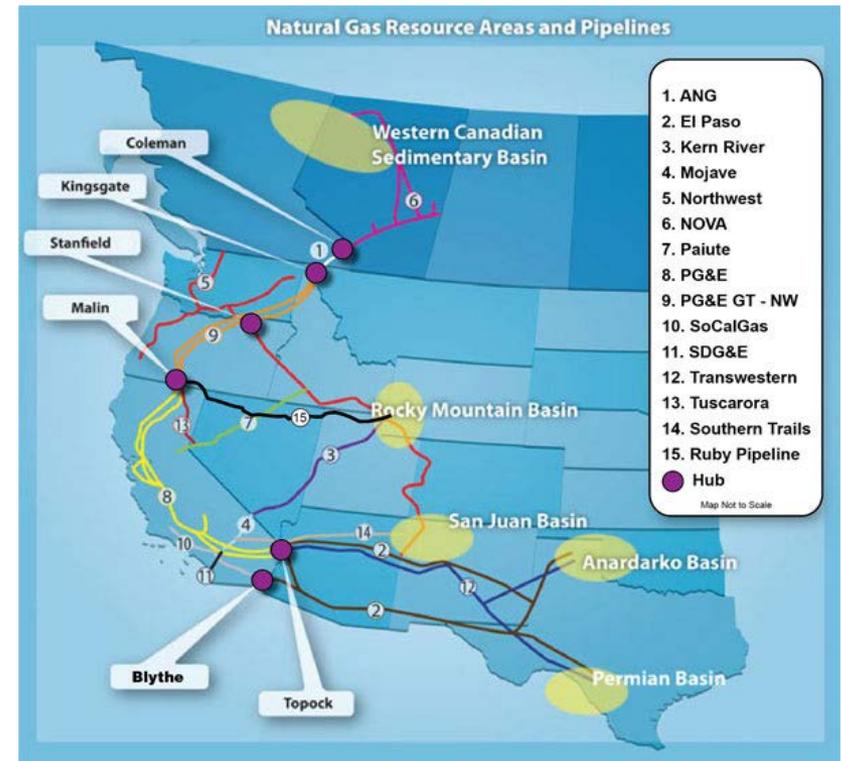
- 26.8 trillion cubic feet of natural gas consumed in U.S. (2014)
- Five states account for 36% of total U.S. natural gas consumption (2014)
 - Texas—12.7%
 - California—8.6% (Gas Demand 6-11 MMcf/day)
 - Louisiana—4.9%
 - New York—4.9%
 - Florida—4.9%
- Top end-uses: Electric power (30%), industrial (29%) and residential (19%)



Natural Gas Consumed in California

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- CA's Natural Gas comes from:
 - ▣ California (10%),
 - ▣ Canada (16%),
 - ▣ Southwest (38%),
 - ▣ Rocky Mountains (36%)
- Interest in CA emissions as well as emissions associated with imported NG



http://energyalmanac.ca.gov/naturalgas/interstate_pipelines.html



California-Based Efforts to Reduce Methane Emissions

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- 2030 Greenhouse Gas Targets
- 2016 Integrated Energy Policy Report Update
- CPUC proceedings on natural gas transmission and distribution
- Short-Lived Climate Pollutant Strategy (SB 605, Lara)
- ARB Proposed regulation for GHG Emission Standards for Crude Oil and Natural Gas Facilities

**Strategies reduce in-state emissions
from oil and gas systems by 40-45%**



California-Based Efforts to Understand Life Cycle Emissions of Methane

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- Includes emissions from entire life-cycle for NG used in CA, both in and out of state
- Low Carbon Fuel Standard include life-cycle emissions (a methane “leakage rate”)
- Informs other programs such as incentives
- ARB funded contract to evaluate life-cycle emissions



Moving Forward

7

- Are there additional sources we should consider?
- Are there any gaps that would better inform California-specific emissions?
- Addressing emissions related to imported gas



California Energy Commission's Integrated Energy Policy Report (IEPR)

8

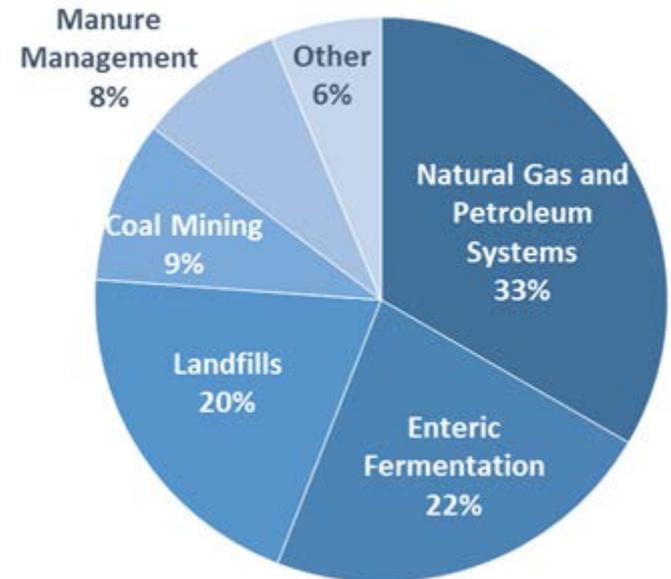
- Biennial report with an update in even years
- Assesses and makes recommendations to the Governor and Legislature on trends and issues concerning electricity, natural gas, transportation
- *2016 IEPR Update* to include “an assessment of the available studies...covering production, transmission, distribution, storage, and end-uses of natural gas.”



Federal Action on Methane

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- NG and Petroleum System make the largest contributions to CH₄ in the U.S. (2016 GHGI)
- Climate Action Plan-Strategy to Reduce Methane Emissions (March 2014)
- Reduce methane emissions by 40-45% from 2012 levels by 2025
- Final NSPS
- **Existing sources**-Draft Information Collection Request



Note: All emission estimates from the [*Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2014*](#).



Methane Symposium Objectives

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- Discuss the current science on life-cycle methane emissions from associated and dry natural gas used in California
- Determine research and policy gaps
- Inform future policy discussions to determine the next steps in reducing methane emissions from natural gas used in California



Symposium Agenda

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- Session 1: Research Initiatives
- Session 2: Methane Measurements
- Session 3: Current and Emerging Technologies
- Session 4: Big Data and Natural Gas
- Session 5: Moving forward with effective policies
- Showcase (inside 2nd floor Monday/Tuesday) and outside-Tuesday only



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Sacramento, CA June 6-7, 2016

