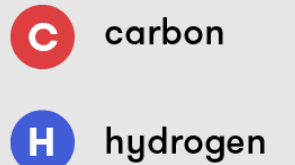
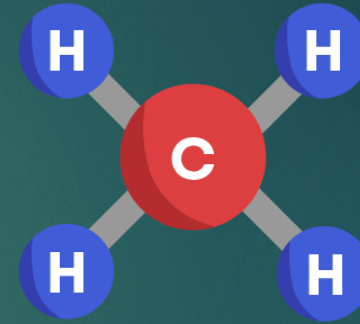


Bipartisan Strategies to Reduce Methane Emissions



NATIONAL CONFERENCE OF STATE LEGISLATURES
ENERGY POLICY SUMMIT

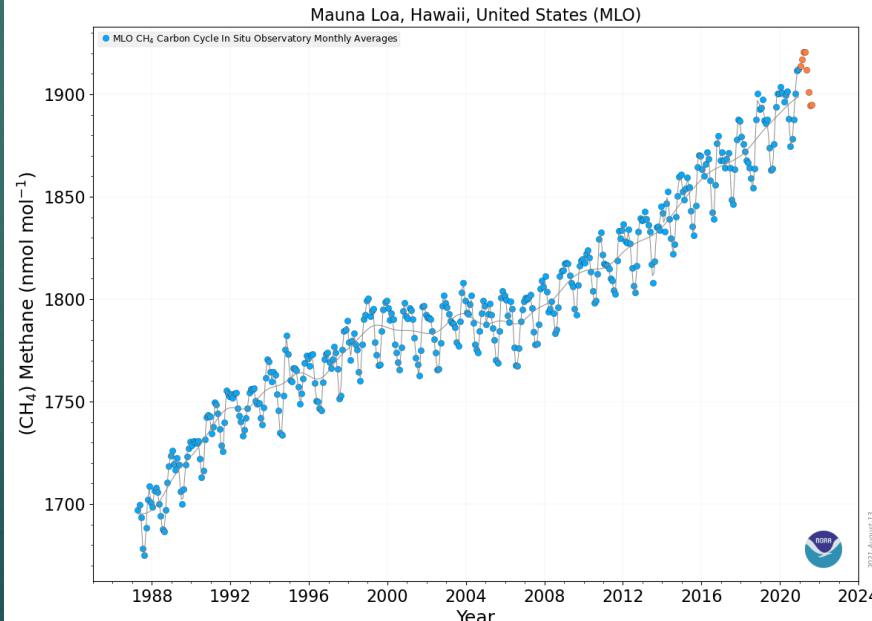
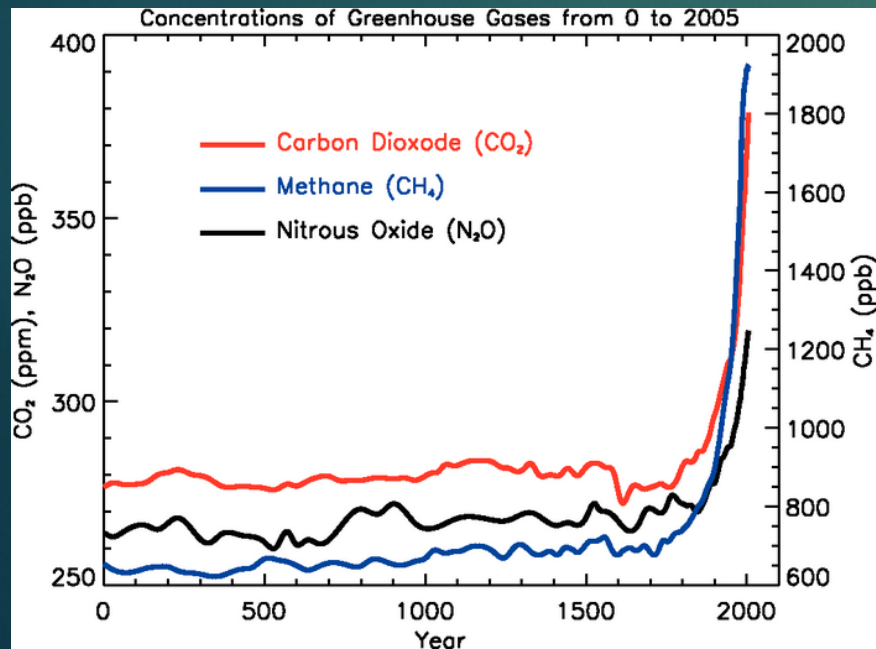
SUNDAY, JULY 31, 2022

SENATOR SCOTT A. SUROVELL

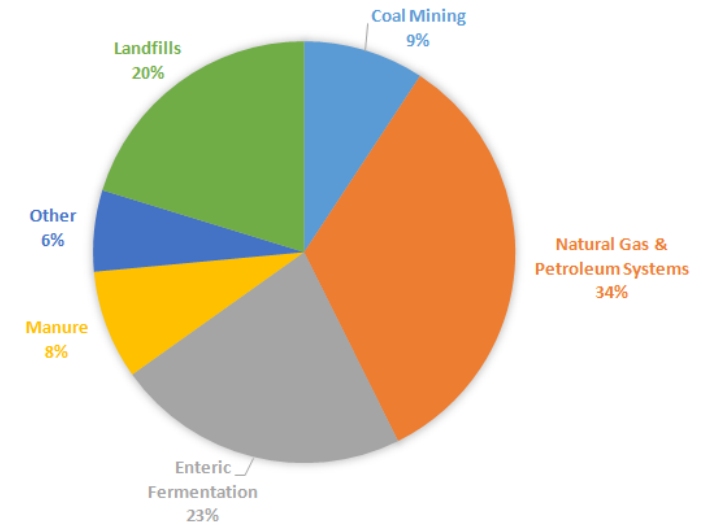
36TH SENATE DISTRICT, MT. VERNON, VIRGINIA

Scope of the Problem

- ▶ Why is methane emissions a problem?
 - ▶ Methane is ~11% of U.S. greenhouse emissions & 1/3rd of the problem
 - ▶ Atmospheric methane up 150% since 1750
 - ▶ American emissions are down, but global emissions are up



US Anthropogenic Methane Emissions, By Source



Data from EPA "[Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2014](#)" (updated 2016 data)

Scope of the Problem

- ▶ Methane Characteristics
 - ▶ Dissipates from atmosphere more quickly than CO₂
 - ▶ 85% more potent at capturing greenhouse energy than CO₂ over 20 year-lifespan
- ▶ Uses - Methane is 32% of American energy consumption
 - ▶ Fuel – ovens, homes, water heaters, kilns, vehicles, turbines, rockets
 - ▶ Feedstock
 - ▶ Fertilizer
 - ▶ Nylon 6 (made from Caprolactam/Ammonia) – Surgical Sutures, Carpet, Packaging
- ▶ State Utility Commissions
 - ▶ Most commissions are economic regulators, not environmental regulators focused on ratepayer impact and not societal costs of externalities associated with fugitive methane emissions without explicit authority
 - ▶ Many LDCs are unwilling to risk disapproval of a plan or projects without better legal certainty

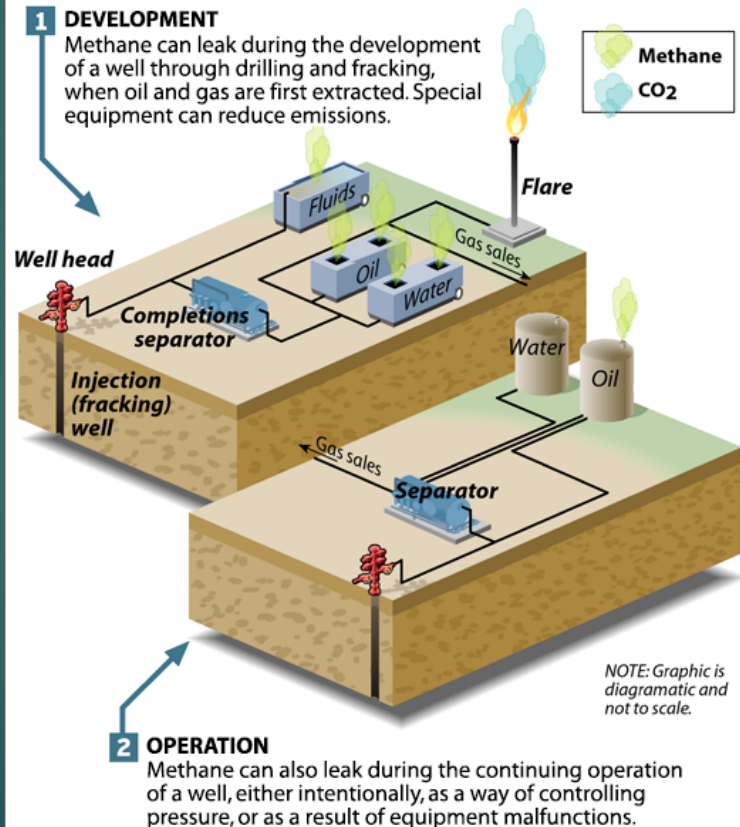


Where does Methane Come From?

- ▶ Biodegradation/Decomposition
- ▶ Ruminants – Livestock (Cow Burps)
 - ▶ 22-37% of Human Related Generation
- ▶ Gas System Leaks
- ▶ Coal Mining
- ▶ Well Head Leaks
- ▶ Landfills
- ▶ Sewage Treatment
- ▶ Oil Refining

Gas and Oil's Methane Problem

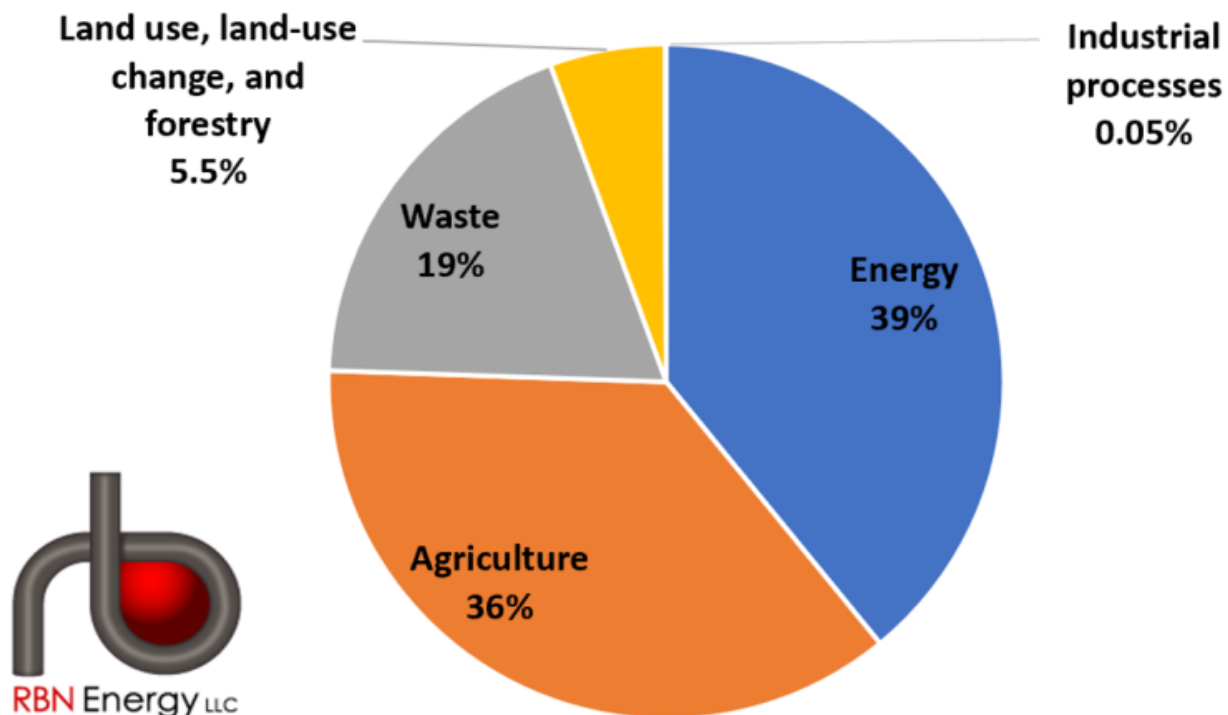
The primary component of natural gas, methane is a potent greenhouse gas. Oil and gas development can emit methane at different points in the supply process. Here's a diagram of some common sources of emissions during the development and operation of a well.



SOURCE: University of Texas at Austin Center for Energy and Environmental Resources

Where are the Methane Emission Sources?

U.S. Methane Emissions by Sector, 2020



■ Energy ■ Agriculture ■ Waste ■ Land use, land-use change, and forestry ■ Industrial processes

What's the opportunity?

- ▶ 50% Reduction in Methane is Equal to a 50% Reduction in CO₂
 - ▶ <https://www.globalmethane.org/methane/>
- ▶ Oil & Gas Industry releases 13 Million Metric Tons of Methane Per Year – 12% of total emissions
 - ▶ <https://www.science.org/doi/10.1126/science.abj4351>
 - ▶ System Leak Rate is 1.6-2.3% - enough to fuel 10 million homes (more households than State of Texas) ▶ X
 - ▶ <https://www.usatoday.com/story/news/nation/2018/06/21/emissions-greenhouse-gas-methane-higher-than-epa-thinks/722391002/>
- ▶ 16,000 Wastewater Plants in America & Only 1,269 Digesters in Operation
 - ▶ World Resources Institute – [“Wastewater: The Best Hidden Source of Energy You’ve Never Heard Of”](#)
- ▶ 2,000 Active Landfills in America & Only 636 Landfill Gas Systems in Operation
 - ▶ 10,000 Inactive Landfills in America
- ▶ 450,000 Concentrated Feeding Operations (CAFO's) & Only 259 Digesters
 - ▶ 99% of American Farmed Animals
- ▶ Only 39 Food Waste Digesters in Operation in USA
 - ▶ <http://www.worldbiogasassociation.org/wp-content/uploads/2018/07/AD-Market-Report-America.pdf>



Regulations Are Coming

- ▶ 2016 Obama Administration implemented regulations requiring Oil & Gas operators to reduce emissions from operations
 - ▶ Watered down by Trump Administration
 - ▶ Mostly focused on existing drilling operations
- ▶ **November, 2021 UN COP 26 Global Methane Pledge, Glasgow, Scotland**
 - ▶ 100 Countries Pledged to Cut Methane by 30%
 - ▶ https://ec.europa.eu/commission/presscorner/detail/en/IP_21_4785
- ▶ 11/2/21 Biden Administration proposed new rules
 - ▶ Mostly focused on oil/gas well leaks & new facilities
 - ▶ Mandates new leak detection technology
 - ▶ Projected to reduce emissions 41 millions tons = equal to 200 million cars off the road
- ▶ Multiple Proposals in Congress to proposed Methane tonnage fees or fugitive methane emission trading markets similar to RGGI



Virginia Energy Innovation Act – SB565/HB558

- ▶ Senate Bill 565 (**Surovell**)/House Bill 558 (**O'Quinn**)
 - ▶ Passed 37-2 & 60-37
 - ▶ Bipartisan Support & Opposition
 - ▶ Supported by all 5 Virginia LDC's
 - ▶ Opposed by Most Environmental Groups (Mainly Due to CAFO's)
 - ▶ No objections to two of three components of legislation
 - ▶ Effective 7/1/22
- ▶ Four Strategies – Allow Cost Recovery For:
 - ▶ Enhanced Leak Detection
 - ▶ Certified Low Emissions Natural Gas, Biogas & Hydrogen
 - ▶ LDC Investment in Biogas Capture/Recovery/Distribution
 - ▶ Additional Energy Efficiency Programs

New Authorized Cost Recovery

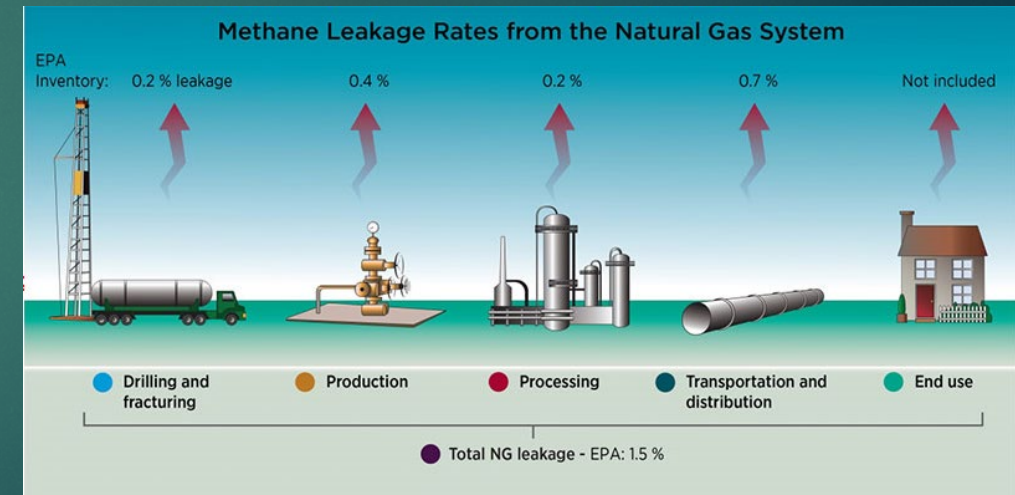
► Enhanced Leak Detection

► Statutory Definition:

"Enhanced leak detection and repair program" means a program that is designed to allow a natural gas utility to deploy advanced leak detection technologies to more accurately identify active leaks as part of the natural gas utility's leak management program and to prioritize the repair of leaks that present a risk to safety or the environment"

► Methods

- Optical Gas Imaging Surveys
 - Satellite imagery and drones
- Continuous Monitoring of Input/Output
- LiDAR Sensor Scans



New Authorized Cost Recovery

- ▶ Low Emission Natural Gas:
 - ▶ *"Low-emission natural gas" means natural gas produced from a geologic source that has a methane intensity of 0.20 or less (i) as reported under a protocol approved by the federal Environmental Protection Agency's Gas STAR Methane Challenge, (ii) as certified by the United Nations Environment Programme's Oil and Gas Methane Partnership 2.0, or (iii) as validated under a Qualified Attribute Commodities Platform.*
 - ▶ *"Qualified Attribute Commodities Platform" means a trading mechanism for natural gas or natural gas attributes that are nonfinancial intangible commodities that represents, packages, and certifies the qualifying attributes of an amount of low-emission natural gas. A Qualified Attribute Commodities Platform provides validation by an independent third party, provides natural gas or natural gas attributes capable of bilateral or exchange contract trading pursuant to standardized contracts for physical delivery that reasonably eliminate validation risk, and provides transparency for audit and reporting purposes.*
- ▶ Certified by NGO's
- ▶ Traded on CBL's natural gas trading platform which provides real time transparent data
- ▶ Produced using verified low-emissions methods
- ▶ Cost increase to average customer is about \$2.23/year If utilities sourced 100% of gas from LE Natural Gas (assuming sufficient supply)

The logo for Bloomenergy, featuring the word "Bloom" in black and "energy" in green, with a registered trademark symbol.The logo for MiQ, featuring a teal circle with a white outline and the letters "MiQ" in white.The logo for Equitable Origin, featuring an orange stylized "E" and "O" icon with a trademark symbol, and the words "EQUITABLE ORIGIN" in white below it.

Certified/Low Emission Natgas Market is Rapidly Emerging

- ▶ Jonah Energy (Denver-based) and EQT (Pittsburgh-based) are two leading US producers who have joined the United Nations' Oil and Gas Methane Partnership 2.0 (OGMP 2.0) – very high standards for methane leak prevention
- ▶ 54 US companies are part of ONE Future – a voluntary program endorsed by EPA that has a leak-loss rate of 0.424% - well below US average
- ▶ GTI Energy and a range of stakeholders are developing Veritas (“truth”) – an initiative to better measure, reconcile, and validate emissions – transparent and auditable
- ▶ US-Euro Commission agreement to develop standards for the LNG market

New Authorized Cost Recovery

- ▶ Additional Energy Efficiency/Leak Reduction Programs
 - ▶ Vapor Recovery Units that redirect emissions normally vented
 - ▶ Methane-Reducing Catalysts – reduces emissions from gas burning engines & turbines
 - ▶ Rerouting Glycol Skimmer Gas
 - ▶ Electric Compressors (instead of gas compressors)
 - ▶ Microturbines/Mini-CNG or Mini-GTL (Gas to Liquid)
 - ▶ Enables liquefaction away from major facilities to avoid venting
 - ▶ Wet Seal Degassing Recovery
 - ▶ Retrofitting centrifugal compressors seals to capture degassing emissions

New Authorized Cost Recovery

▶ Biogas Capture & Distribution

- ▶ Types of Producers
 - ▶ Landfill Gas
 - ▶ Wastewater Plants
 - ▶ Composting Gas
 - ▶ Combined Feeding Operations
- ▶ Need to show cost effectiveness of investment coupled with connecting to system via infrastructure
 - ▶ Required to make public interest finding using standard cost of service methodology or performance-based regulation:
 - ▶ *The Commission shall approve such a plan upon a finding that it (i) is in the public interest, (ii) will result in a decrease of methane or carbon dioxide equivalent emissions, and (iii) will result in rates that are just and reasonable, after notice and an opportunity for a hearing in accordance with the provisions of this chapter.*
 - ▶ Limited to 3% of overall gas demand per project and 15% overall
 - ▶ Utilities allowed to recover 100 additional basis points to incentivize construction
- ▶ Provides new revenue sources to local governments
- ▶ Has all same uses/applications as fossil or fracked methane
- ▶ LDC's are required to provide annual reports per project so public can evaluate cost-effectiveness

Debate on Legislation

CRITICISMS

- ▶ Environmental Consensus Preference for Electrification
- ▶ Concentrated Feeding Operations have negative externalities
 - ▶ Water pollution & Smell
 - ▶ Heavy CO₂, water and energy intensity usage with livestock food consumption compared with lower food chain choices
- ▶ Projects should compete on a pure cost-effectiveness basis
 - ▶ Additional basis points should not be authorized

RESPONSES

- ▶ America has billions of dollars of usable natural gas distribution infrastructure in the ground and it's more efficient to use it
 - ▶ Fugitive methane emissions are a major problem and should be utilized
 - ▶ Methane need isn't going away
- ▶ Animal Consumption is not disappearing
 - ▶ We should capture fugitive methane when we can instead of allowing unlimited methane release
- ▶ Technology and production methods are being developed and need to be incentivized (just like solar 10 years ago or energy storage today)
 - ▶ LDC's need certainty to make investments
 - ▶ Many utility regulators are not good at measuring externality costs

Methane Bottom Lines

- ▶ **Methane emissions are a real problem**
- ▶ **Methane emissions are a major opportunity**
- ▶ **Federal actions are coming, but will likely be stalled in the courts which means this policy area is an opportunity for state action**
- ▶ **Capturing fugitive methane and biogas are good for the environment and good for business**
- ▶ **Supports Virginia's long-term need for critical Virginia industries:**
 - ▶ Newport News Shipbuilding, Navy, Pentagon & other critical manufacturing industries
- ▶ **Builds off existing efficiency programs & LDC's are already working to implement**

More Information?

Senator Scott A. Surovell

- Vice-Chair Senate Democratic Caucus
- District36@senate.virginia.gov
- W 571.249.4484

Delegate Israel O'Quinn

- Deputy House Majority Leader Republican Caucus
- DellOQuinn@house.virginia.gov
- W (276) 525-1311

Jim Kibler, Executive Director

- One Future
- jimk@nextparadigmadvisorsllc.com
- W 757.995.5603

David W. Clarke, Government Relations

- Eckert Seamans Cherin & Mellott, LLC
- Counsel to Virginia Oil & Gas Association
- dclarke@eckertseamans.com
- 804.788.7747