



pennsylvania

DEPARTMENT OF ENVIRONMENTAL PROTECTION



Office of Waste, Air, Radiation & Remediation

Reducing Methane Emissions From The Oil and Gas Sector

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Tom Wolf, Governor

John Quigley, Secretary

Agenda

- Background
- Current Status
- Areas of Change
- Q-and-A for Credential Media

A New Way Forward

“Today, we are announcing a new way forward that protects our environment, reduces climate change and helps businesses by reducing the waste of a valuable product.”

-- Pennsylvania Governor Tom Wolf

January 19, 2016

Pennsylvania Positioned to Lead

- Pennsylvania second-largest producer of natural gas in the nation (behind Texas)
- Uniquely positioned to be a national leader in addressing climate change while supporting Governor Tom Wolf's commitment to ensuring responsible energy development, creating new jobs, and protecting public health and our environment

Why Emission Reduction Matters

- Methane is the primary component of natural gas
- Identified by the U.S. Environmental Protection Agency (EPA) as the second-most prevalent greenhouse gas (GHG) emitted in the U.S. from human activities.
- More than 25 times more warming power than carbon dioxide (CO₂).

Natural Gas A Large Source

- Natural gas and oil industries account for about a quarter of U.S. methane emissions – U.S. EPA
- **Reducing methane leaks from the oil and gas sector** is one of the essential steps needed to reduce global greenhouse gas emissions and reduce the impacts of climate change

DEP Strategy A National Leader

- DEP has developed a cost-effective strategy to reduce methane emissions from the oil and natural gas industry

Based on Existing Best Practices

- These “best-in-class” measures are based on existing practices
 - Already in use by industry-leading companies
 - Required by Federal regulations
 - Or are mandated by other states

For Now, and the Future

- Current conditions:
 - 545 compressor stations at Marcellus shale facilities
 - 3,264 well pads
 - 12,000 miles of pipeline
- Still in early phase of an industry that is only going to grow

It's Not the Leak Rate, It's the Volume

- Fugitive emissions are difficult to quantify. Actual rate is unknown.
- Many studies, widely varying results
- DEP reported more than 5 million mcf (thousand cubic feet) – almost 115,000 tons -- of methane emissions from unconventional wells and mid-stream operations in Pennsylvania in 2014
- Actual emissions are higher than the emission reported to our inventory.

Emissions Wasteful, Harmful

- Even at 115,000 tons, lost gas is worth more than \$8 million even at today's depressed prices
- PA is the second largest producer of natural gas in the nation
- >4 trillion cubic feet in 2014
- 1% leakage = 900,000 tons of methane
- Worth > \$60 million
- = 3 months of ALL commercial natgas consumption in PA
- = Climate impacts of 5 coal-fired power plants

▶ Reducing Leaks = Good Business Sense

- Best companies understand the business case for reducing methane leaks
- Methane that doesn't leak into the atmosphere can be sold
- By adopting already available technologies and operating practices, industry could cut methane emissions by 40 percent over five years for just one penny per 1,000 cubic feet of produced gas -- *ICF International Report, 2014*
- High return on investment in capturing gas that's currently not getting to market

Some – But Not All -- Drillers Leading

- Pennsylvania Marcellus driller Southwestern Energy has joined the United Nations' Climate and Clean Air Coalition Oil & Gas Methane Partnership, which aims to have companies report and reduce their methane emissions
- Southwestern has also adopted a leak detection and repair (LDAR) program for its exploration, production, and midstream operations. It includes leak surveys, identifying leaking components/equipment, and repairing them

Requirements are Necessary

- Chevron, Shell, and CONSOL, certified members of the Center for Sustainable Shale Development, are leading in the deployment of inspection protocols and equipment to substantially reduce methane emissions
- But, without requirements, the industry as a whole won't take comprehensive action to address the methane problem

Builds on Federal Requirements

- EPA's new source performance requirements for the oil and natural gas sector will automatically take effect in Pennsylvania in 2016
- Pennsylvania can improve on Federal and other states' measures in cost-effective ways
- DEP will develop and implement four emission-reduction measures to focus on both gas production and transmission, requiring efficiency upgrades for equipment, implementation of best practices, and more frequent use of leak-sensing technologies

Four-Point Plan

- To reduce leaks at new unconventional natural gas well pads, DEP will develop a new general permit for oil and gas exploration, development, and production facilities
- Permit will require Best Available Technology (BAT) for equipment and processes, better record-keeping, and quarterly monitoring inspections, and make Pennsylvania the national leader in controlling emissions from unconventional sites

Four-Point Plan

- To reduce leaks at new compressor stations and processing facilities, DEP will revise its current general permit, and expand it to cover compressor stations, updating BAT and applying more stringent LDAR, other requirements to minimize methane leaks. A new condition will require the use of Tier 4 diesel engines that reduce emissions of particulate matter and NOx by about 90%

Four-Point Plan

- To reduce leaks at existing oil and natural gas sources – well pads, processing facilities, and compressor stations - DEP will develop a regulation for existing sources for consideration by the Environmental Quality Board

Four-Point Plan

- To reduce emissions along production, gathering, transmission and distribution lines, DEP will establish best management practices, including leak detection and repair programs

Maximize Protection, Efficiency

- Better product delivery efficiency
- Maximizing environmental/public health protection by requiring best industry practices
- Streamlined permitting process

Low Cost, High Value

- PA #2 natural gas producing state
- Production and transmission are multibillion dollar industries
- Billions of dollars are being invested in new pipeline capacity in Pennsylvania
- Cost of Pennsylvania's new requirements will be a **fraction of a percent of industry revenues in PA**
- These commonsense measures will pay for themselves – some almost immediately

DEP Mission

“To protect Pennsylvania’s air, land and water from pollution and to provide for the health and safety of its citizens through a cleaner environment. We will work as partners with individuals, organizations, governments, and businesses to prevent pollution and restore our natural resources.”