Climate Action Plan:
Strategy to Reduce Methane Emissions

March 2015
The Interagency Methane Strategy

- In June 2013, President Obama issued Climate Action Plan that included:
  1) **Steps to cut greenhouse gas pollution**
  2) **Steps to prepare US for impacts of climate change**
  3) **Continue US leadership in international efforts to combat climate change**

- Under Step 1: Interagency Methane Strategy
  - EPA, USDA, DOE, DOI, DOT were directed to develop a comprehensive methane strategy (March 28, 2014)
  - Takes into account data on where methane pollution is coming from
  - Builds upon best practices and activities under way to tackle methane waste
Overview

• The plan focuses on four sectors:
  – Landfills (EPA)
  – Agriculture (EPA, USDA, DOE)
  – Coal Mines (DOI, EPA)
  – Oil & Gas (EPA, DOE, DOI)

• **Reducing Methane Emissions**: Builds on best practices and activities to reduce methane emissions
  – Combination of regulatory and voluntary domestic activities, depending on sector

• **Improving Methane Data**: Also calls for assessment of current methane emissions data
  – Identifies ways in which EPA can improve the GHG inventory and GHGRP
  – Focusses on improving global estimates
Reducing U.S. Methane Emissions

• Overview
  – Landfills and Oil and Gas have both complementary EPA regulatory and voluntary activities acknowledged in the plan.
  – Agriculture and Coal are primarily voluntary programs and initiatives
  – Will focus primarily on EPA’s reduction activities discussed in the plan

• Landfills (EPA)
  – Regulatory:
    • EPA will update existing NSPS standards that reduce methane pollution from new landfills (June 2014), and
    • EPA will issue an advance notice of proposed rulemaking (public process) to consider revising standards for existing landfills (June 2014)
  – Voluntary:
    • Continue our voluntary collaborations through LMOP
    • Partner with industry, state and local leaders, encourage landfill gas to energy projects
Reducing U.S. Methane Emissions

Oil and Gas (EPA, DOE, DOI)

- **Regulatory:**
  - In April 2014, EPA released five draft technical white papers sources of VOC and methane emissions from the oil & gas sector, currently undergoing peer review.
  - EPA will use the papers, along with input from peer review and the public, to determine how to best pursue additional reductions from these sources.
    - If additional regulatory action is taken, the agency will ensure both rulemaking and any ensuing regulatory requirements are completed by the end of 2016.
  - In addition to EPA regulations, BLM/DOI developing draft rule (Onshore Order 9) to minimize venting and flaring on public lands (2014).

- **Voluntary:**
  - In addition to current Natural Gas STAR Program, EPA is proposing a new voluntary, facility-based, methane-reduction program for leading oil and gas companies (aka “Gas STAR Gold”).
  - Other key O&G activities and initiatives:
    - DOE methane roundtables and support for development of new technologies.
    - Downstream initiative with natural gas utilities to address barriers and promote methane reductions.
Reducing U.S. Methane Emissions

**Agriculture (EPA, USDA, DOE)**

- Continue voluntary collaborations to promote the recovery and use of methane from animal manure through Ag STAR
- Biogas Roadmap:
  - USDA (lead), EPA, DOE working with US dairy industry
  - Will demonstrate that biogas recovery technologies are commercially viable and identify areas where existing government resources can be streamlined, leveraged to increase implementation of biogas recovery technologies (August 2014)
- Food Recovery Challenge (led by ORCR/OSWER) to advocate diversion of food waste from landfills such as composting and anaerobic digestion (June 2013)

**Coal Mines (DOI, EPA)**

- Continue voluntary outreach to promote coal mine methane recovery and use through CMOP
- In addition to EPA activities, BLM released an ANPRM (April 2014) to solicit input on options (e.g., technologies, partnerships, incentives) for capture, sale or disposal of waste mine methane from Federal leases.
U.S. Leadership in Reducing Global Methane Emissions

• Climate and Clean Air Coalition to Reduce Short-Lived Climate Pollutants (SLCPs) – HFCs, methane, black carbon
  – Now has nearly 40 country partners plus many non-state actors (e.g., World Bank, UN Environment Program) and over $45 million in donor country pledges
  – Tackling methane through sector-specific initiatives such as Municipal Solid Waste, Oil & Gas, Agriculture

• Global Methane Initiative – voluntary public private partnership
  – 43 Partner countries, over 1200 private sector participants
  – Five sectors: agriculture, oil & gas, MSW, coal mining, wastewater
  – On the ground, best practices implementation, country-level action plans
  – US chairs steering committee

• Arctic Council Task Force on Black Carbon and Methane
  – US is working with other Arctic countries (Canada, Russia, Norway, Finland, Sweden, Denmark) to address / work to achieve enhanced emissions reductions in the Arctic
EPA Clean Power Plan Proposal Deals With the Largest Source of GHG Emissions in the U.S.

**U.S. GREENHOUSE GAS POLLUTION INCLUDES:**

- **CARBON DIOXIDE (CO2)**: 82%
  - Enters the atmosphere through burning fossil fuels (coal, natural gas, and oil), solid waste, trees and wood products, and also as a result of certain chemical reactions (e.g., manufacture of cement).

- **FLUORINATED GASES**: 3%
  - Hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride are synthetic, powerful greenhouse gases that are emitted from a variety of industrial processes.

- **NITROUS OXIDE (N2O)**: 6%
  - Emitted during agricultural and industrial activities, as well as during combustion of fossil fuels and solid waste.

- **METHANE (CH4)**: 9%
  - Emitted during the production and transport of coal, natural gas, and oil as well as from landfills.

**TOTAL U.S. GREENHOUSE GAS EMISSIONS BY ECONOMIC SECTOR IN 2012**

- 32% ELECTRICITY
- 28% TRANSPORTATION
- 20% INDUSTRY
- 10% AGRICULTURE
- 10% COMMERCIAL & RESIDENTIAL

**SOURCE:** EPA
EPA Establishes a Goal for Every State

• EPA analyzed the practical and affordable strategies that states and utilities are already using to lower carbon pollution from the power sector.
• Proposed goals are based on a consistent national formula, calculated with state and regional specific information.
• The result of the equation is the state goal.
• Each state goal is a rate – a statewide number for the future carbon intensity of covered existing fossil-fuel-fired power plants in a state.
  – Encompasses the dynamic variables that ultimately determine how much carbon pollution is emitted by fossil fuel power plants.
  – Accommodates the fact that CO₂ emissions from fossil fuel-fired power plants are influenced by how efficiently they operate and by how much they operate.
• The state goal rate is calculated to account for the mix of power sources in each state and the application of the “building blocks” that make up the best system of emission reduction.
• States will need to meet an interim goal and a final goal.
<table>
<thead>
<tr>
<th>Building Block</th>
<th>Strategy EPA Used to Calculate the State Goal</th>
<th>Maximum Flexibility: Examples of State Compliance Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Make fossil fuel-fired power plants more efficient</td>
<td>Efficiency Improvements</td>
<td>Efficiency improvements&lt;br&gt;Co-firing or switching to natural gas&lt;br&gt;Coal retirements&lt;br&gt;Retrofit CCS (e.g., WA Parish in Texas)</td>
</tr>
<tr>
<td>2. Use lower-emitting power sources more</td>
<td>Dispatch changes to existing natural gas combined cycle (CC)</td>
<td>Dispatch changes to existing natural gas CC</td>
</tr>
<tr>
<td>3. Build more zero/low-emitting energy sources</td>
<td>Renewable Energy Certain Nuclear</td>
<td>New NGCC&lt;br&gt;Renewables&lt;br&gt;Nuclear (new and up-rates)&lt;br&gt;New coal with CCS</td>
</tr>
<tr>
<td>4. Use electricity more efficiently</td>
<td>Demand-side energy efficiency programs</td>
<td>Demand-side energy efficiency programs&lt;br&gt;Transmission efficiency improvements&lt;br&gt;Energy storage</td>
</tr>
</tbody>
</table>
States Choose How to Meet the Goals

- Demand-side energy efficiency programs.*
- Generating electricity from low/zero-emitting facilities.*
- Expanding use of existing NGCC units.*
- Transmission efficiency improvements.
- Energy storage technology.
- Working with utilities to consider retiring units that are high emitting.
- Energy conservation programs.
- Retrofitting units with partial CCS.
- Use of certain biomass.
- Efficiency improvements at higher-emitting plants.*
- Market-based trading programs.
- Building new renewables.
- Dispatch changes.
- Co-firing or switching to natural gas.
- Building new natural gas combined cycle units.

* Measures EPA used in calculating the state goals
Next Steps

• The proposed rule, as well as information about how to comment and supporting technical information, are available online at: http://www.epa.gov/cleanpowerplan

• EPA held 4 public hearings during the week of July 28th in Denver, Atlanta, Pittsburgh and Washington, D.C. Over 2700 individuals attended the public hearings, with 1322 making oral comments for the record.

• There was a 165-day public comment period on the proposal. The comment period closed on December 1, 2014. EPA is currently reviewing in excess of 3.8 million comments.

• Comments on the proposal are located on the regulations.gov website and can be searched under Docket ID No. EPA-HQ-OAR-2013-0602.
By Mid Summer, 2016
State submits multi-state plan and request for 2-year extension

State submits Negative Declaration

by Mid Summer, 2016
State submits negative declaration

EPA publishes FR notice

EPA reviews plan and
publishes final decision within 12 months on approval/disapproval

EPA reviews plan and
publishes final decision within 12 months on approval/disapproval

EPA reviews plan and
publishes final decision within 12 months on approval/disapproval

EPA reviews plan and
publishes final decision within 12 months on approval/disapproval


Proposed Implementation Timeline

State submits initial Plan by Mid Summer, 2016 and request 1-year extension

by Mid Summer, 2016
State submits initial plan and request for 1-year extension

EPA reviews initial plan and determines if extension is warranted

by Mid Summer, 2017
State submits complete plan

State submits initial multi-state Plan by Mid Summer, 2016 and request 2-year extension

By Mid Summer, 2016
State submits initial multi-state plan and request for 2-year extension

EPA reviews initial plan and determines if extension is warranted

by Mid Summer, 2017
State submits progress report of plan

by Mid Summer, 2018
States submits multi-state plan

EPA reviews plan and publishes final decision within 12 months on approval/disapproval

EPA reviews plan and publishes final decision within 12 months on approval/disapproval

EPA reviews plan and publishes final decision within 12 months on approval/disapproval

EPA reviews plan and publishes final decision within 12 months on approval/disapproval

Compliance period begins 2020

Emission Guideline Promulgation
Mid Summer 2015
2015 White House Methane Strategy

► January 14 – Administration announces additional measures to reduce methane emissions

► New goal to reduce methane emissions from oil & gas sector by 40 to 45% from 2012 levels by 2025

► U.S. oil production is at the highest level in nearly 30 years.

► U.S. is now the largest natural gas producer in the world.
Improving Methane Data and Measurements

• Identifies key actions to improve methane emissions data for all sectors, particularly oil and gas

• Enhancing the GHG Inventory and GHGRP
  – EPA will continue to update and enhance the annual GHG Inventory as new data and information emerges and make ongoing improvements to the GHGRP regulatory requirements

• Improving Global Emissions Monitoring and Estimates
  – EPA will continue to collect emission reduction data through GMI and will continue to update and publish detailed emissions estimates through the Global Mitigation of Non-CO2 GHGs and Global Anthropogenic Non-CO₂ GHG Emissions
  – Also highlights NOAA, DOE, and NASA activities

• Other Activities:
  – Building a National Methane Monitoring Network (NOAA)
  – Encouraging the Development of Cost-Effective Measurement Technologies (DOE’s ARPA-E) program new methane fund to develop methane sensing
Common Sense Standards for Methane and Ozone-forming Emissions

► EPA issued standards for volatile organic compounds (VOCs) from the oil and gas industry in August 2012.

► Based on five technical white papers issued in 2014, EPA will initiate rulemaking to set standards for methane and VOC emissions from new and modified oil and natural gas production sources, and natural gas processing and transmission sources.

► EPA will develop Control Techniques Guidelines to assist states in reducing ozone-forming pollutants from existing oil & natural gas systems in areas that do not meet ozone NAAQS and states in the Ozone Transport Region.

► EPA will strengthen the greenhouse Gas Reporting Program and explore potential opportunities for applying remote sensing technologies to improve identification and quantification of emissions.
Multi-Agency Approach Continues

► BLM will conclude revision of standards for oil & natural gas wells on Federal lands. This action will enhance the nation’s energy security and economy by boosting America’s natural gas supplies and insuring that the taxpayers obtain maximum royalties from the development of these public resources.

► The Department of Transportation’s Pipeline and Hazardous Materials Safety Administration will propose natural gas pipeline safety standards in 2015, which would also be expected to reduce emissions from pipelines.

► DOE’s proposed 2016 budget calls for additional funding to develop and demonstrate more cost-effective technologies to reduce emissions from natural gas transmission and distribution systems.