



Department of  
Environmental  
Conservation

Department of  
Public Service

Agriculture  
and Markets

Soil and Water  
Conservation  
Committee

NYSERDA

# METHANE REDUCTION PLAN

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Images: Pipe and fittings-Flickr Jeremy Buckingham  
Composting-Amboy facility [www.ocrra.org](http://www.ocrra.org)  
Cows-Wyoming county SWCD spring newsletter trees for tribes page 1  
Manure Cover-NY Dairy Farm Courtesy of Fessenden Dairy

## Methane Reduction Plan

Under the leadership of Governor Andrew M. Cuomo, New York State has set ambitious greenhouse gas emissions reduction targets, and achieved major milestones. To date, the State has focused on reducing emissions of carbon dioxide, which is the most prevalent greenhouse gas (GHG). From 2000 to 2014, those efforts have resulted in an 18.6% reduction overall in carbon dioxide emissions.<sup>1</sup>

Methane accounts for 9% of New York State greenhouse gas emissions<sup>2</sup> and is second to carbon dioxide in its contribution to climate change as a result of its high volume in the atmosphere and strong radiative effects. Moreover, we may not fully understand the extent of methane emissions, as estimates of methane leakage from oil and natural gas infrastructure, landfills, and farm activities continue to increase with new research and improved reporting.

To reduce methane emissions, Governor Cuomo directed State agencies to develop proposals and policies to inventory emissions and identify strategies for methane capture and elimination. Five New York State agencies and organizations -- Department of Environmental Conservation (DEC), Department of Public Service (DPS), Department of Agriculture and Markets (DAM), Soil and Water Conservation Committee (SWCC), and Energy Research and Development Authority (NYSERDA) -- have worked in collaboration to address this commitment by investigating the sources of methane emissions in the state and identifying the primary areas where methane capture standards and programs could be implemented to reduce these emissions, along with complementary methane mitigation actions already underway.

This Methane Reduction Plan is a framework to reduce emissions from the three sectors responsible for the majority of methane emissions as identified in the most recent New York State Greenhouse Gas Inventory: oil and gas, landfills, and

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<sup>1</sup> NYSERDA 2016. New York State Greenhouse Gas Inventory: 1990 – 2014. Final Report. <https://www.nyserra.ny.gov/About/Publications/EA-Reports-and-Studies/Energy-Statistics>

<sup>2</sup> *ibid*

agriculture. The plan contains recommendations to evaluate programs, policies, and regulatory actions for methane emission reductions throughout New York.

This plan identifies ongoing work and directs new actions to reduce emissions and enhance accounting. It lays out a platform to proceed with regulations that complement the United States Environmental Protection Agency's (EPA) New Source Performance Standards for oil and natural gas emissions and fill the void left by EPA's abandonment of its regulatory process to address emissions from existing oil and gas sources, while concentrating on New York-specific considerations. The plan also takes into account new EPA standards for landfill emissions, proposed New York State regulations for landfill management, and actions to support the diversion of organics from landfills. Lastly, the plan outlines the work that will continue to lower methane emissions in the agricultural sector, including those associated with manure management and livestock.

## **Goal and Timeline**

The suite of 25 actions identified below are expected to reduce methane emissions in alignment with New York State's commitment to reduce greenhouse gas emissions 40% by 2030 and 80% by 2050, from 1990 levels. Implementation of these actions will begin in 2017.

## **Sector Specific Actions**

### **Oil and Gas Sector**

Natural gas is used throughout New York State in industrial, commercial and residential applications, including electricity generation and building heating. Methane is the primary component of natural gas and the processing and transport of natural gas results in leakage and emissions of methane. Methane emission sources in New York's oil and gas infrastructure include natural gas and oil storage facilities; transmission and distribution networks; and active, closed and abandoned natural gas wells. NYSERDA's 2014 New York State GHG Inventory reports that natural gas leakage makes up about 11% of methane emissions (1% of all NYS greenhouse gas emissions). Existing oil and gas production wells are also a source of methane leakage, although these sources

were not part of the 2014 GHG Inventory. Portions of the oil and natural gas infrastructure are overseen by DEC, DPS, and federal agencies. To effectively mitigate methane emissions, DEC and DPS will undertake actions in three areas: reducing methane leakage and otherwise addressing methane emission sources, enhancing reporting requirements, and improving regulatory consistency.

#### **A. Reduce Infrastructure Emissions**

1. Evaluate and identify best technology and methods to identify leaks in each portion of the system. [DEC, DPS]
2. Reduce methane emissions from production and transmission infrastructure that can be regulated by DEC as air emission sources. [DEC]
  - Implement new EPA rules: New Source Performance Standards<sup>3</sup> for new/modified sources of methane emissions (40 CFR 60 Subpart OOOOa).
  - Develop, propose and adopt regulations, as necessary, to limit emissions from existing transmission facilities (e.g., compressor stations) not regulated by the federal New Source Performance Standards. Regulatory development will include the collection of data on emissions from existing sources, due to EPA's abandonment of its information-gathering efforts in March 2017. DEC will base potential regulations in part on EPA's Control Techniques Guidelines for existing sources of volatile organic compounds from natural gas industry emission sources. DEC will also evaluate other natural gas infrastructure for potential air emissions and the feasibility of reducing identified emissions, and increase monitoring and accounting of emissions from gas component infrastructure.
3. Reduce methane emissions from gathering lines.
  - Propose policy or changes to permitting programs to require odorization<sup>4</sup> of existing gathering lines, for both enhanced safety and methane monitoring. [DPS]

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<sup>3</sup> EPA-HQ-OAR-2010-0505: Oil and Natural Gas Sector: Emission Standards for New, Reconstructed, and Modified Sources

<sup>4</sup> Adding an odorant to natural gas, which does not have a noticeable odor by itself.

- Modify existing requirements to address repairs of leaks on gathering lines and leak monitoring, as necessary. [DPS]
4. Reduce methane emissions from oil and gas storage, abandoned wells, and other infrastructure that is not directly regulated as an emission source.<sup>5</sup> [DEC, DPS]
- Revise or establish policy or guidance to promote best practices that result in the identification and reduction of emissions in operation, monitoring, emergency response, and other plans required for permit/registration approval, evaluations, and renewals.
  - Evaluate and implement changes to regulations, policy, or guidance to address emissions from non-permitted, orphaned or abandoned infrastructure.
  - Continue to properly plug abandoned natural gas and oil wells that otherwise may be a long-term source of methane emissions. One hundred and fifty abandoned oil wells and thirty abandoned natural gas wells are scheduled for proper plugging by 2020.
  - Continue to inspect active natural gas wells for methane leaks and require leaks to be repaired. Investigate and utilize, to the extent feasible, additional technology for detection of leaks.
  - Modify existing requirements to align with Pipeline and Hazardous Materials Safety Administration (PHMSA) rules<sup>6</sup> to address safety issues and emissions related to underground natural gas storage.
5. Prioritize leak repairs in the distribution system. [DPS]
- Utilize rate cases to incentivize utilities to maintain a low backlog of leaks and replace leak-prone pipe for State jurisdictional pipeline operators.<sup>7</sup>
  - Intervene at the Federal Energy Regulatory Commission to prioritize leak repair when interstate pipelines file rate cases.

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<sup>5</sup> This covers sources that rely on site specific plans rather than specific component leakage rates.

<sup>6</sup> Interim Final Rule to Address Safety Issues Related to Underground Natural Gas Storage Facilities (PHMSA–2016–0016; Amdt. Nos. 191-24; 192-122).

<sup>7</sup> "Pipeline" and "Operator" as defined in 16 NYCRR Parts 255.3 and 258.2 for intrastate pipelines and 49 CFR Parts 192.3 and 195.2 for interstate pipelines. Local Distribution Companies (LDCs) are considered pipeline operators.

- Refine current methodology and ranking system for repair of non-health and safety-related leaks<sup>8</sup> and determine if incentives are required in rate cases to ensure higher volume leaks are addressed by utilities, regardless of classification.
- Identify alternative funding or business models for leak repair, particularly leaks on customer-owned infrastructure, that do not rely on ratepayers and that prioritize the safety of low-income communities such as the Quadrennial Energy Review’s Natural Gas Infrastructure Modernization Initiative.<sup>9</sup>
- Remove barriers to replacement of leak-prone infrastructure through local tax reform. Work with localities to establish tax policies which help to limit rate pressure due to infrastructure replacement for safety and environmental improvement.

## **B. Improve Management of Methane Emissions by Requiring Monitoring and Reporting**

6. Revise regulations and policy to improve accounting, including inventory, of infrastructure emissions, repairs, operations, equipment, and components. [DEC lead; DPS]
7. Revise regulations to support adoption of new technologies to meet monitoring requirements. [DEC lead; DPS]
8. Develop and implement residential methane detection and educational outreach to enhance safety and GHG emissions control (e.g., ‘soft-offs’, gas leak and odor reporting) including widespread installation of stationary methane detection and advancing largescale deployment and commercialization of a new technology for residential methane detection. [DPS]

## **C. Improve Consistency Across Regulatory Jurisdictions and Programs**

9. Establish an interagency Memorandum of Understanding to share knowledge across regulatory boundaries and facilitate effectiveness and consistency across

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<sup>8</sup> These methane emissions are not immediate health and safety threats but could be contributing to air pollution.

<sup>9</sup> <http://energy.gov/epa/natural-gas-infrastructure-modernization>

agencies. This will allow utilities and infrastructure owners to comply with requirements utilizing similar actions and equipment. [DEC lead; DPS]

10. Update and improve State Environmental Quality Review Act guidance for assessing greenhouse gas emissions including methane. This guidance will also address projected effects of climate change on infrastructure, including oil and gas infrastructure. [DEC]
11. Formalize and standardize DEC's review process regarding mitigation of methane emissions from new transmission infrastructure projects, including those subject to primary jurisdiction of the federal government. [DEC]

## **Landfill Sector**

Methane emissions from municipal solid waste landfills result from the decomposition of organic waste followed by the incomplete capture of that methane by landfill gas recovery systems. According to the NYS greenhouse gas inventory of 2014 emissions, landfill emissions make up about 58% of methane emissions (5% of NYS greenhouse gas emissions). To reduce methane emissions, DEC and NYSERDA will undertake actions in two areas: diversion of organic waste from landfills and management of landfills to reduce methane emissions from waste decomposition.

### **D. Reduce Future Sources of Methane Emissions by Diverting Organic Waste**

12. DEC will continue to develop and conduct outreach and other programs and policies to encourage large generators of food waste to donate edible food or compost, anaerobically digest or otherwise recycle what is not donated. [DEC]
13. Continue funding to support diversion of organics. [DEC, NYSERDA]
  - Environmental Protection Fund (EPF) funding for municipalities and Food Banks – Funding for food donation and food scraps recycling. Eligible projects include increasing cold storage devices for edible food and infrastructure for food scraps recycling such as composting or anaerobic digestion facilities.
  - Empire State Development (ESD) funding for Food Banks – Funding for the New York State Food Bank Association to provide statewide assistance for additional food donation including new collection trucks and other items.

- Evaluate what revisions can be made to DEC regulations to support funding of organics diversion.
- Clean Energy Fund – NYSERDA will align State programs that coach the development of anaerobic digesters at farms, wastewater facilities, food and beverage production facilities, and merchant-type treatment facilities, to highlight methods for and the financial value of reducing organic waste that would otherwise be deposited in landfills or exported out-of-state (also see Agriculture Sector actions).

14. Develop strategies for aligning future funding such as EPF budget categories to best support organics diversion goals and other methane emission reduction objectives. [DEC]

#### **E. Reducing Emissions From Landfills**

15. Proposed Part 360 revisions – The proposed Part 360 revisions would require horizontal gas collection systems to be installed in new landfills and subsequent developments of existing landfills. These revisions would help increase gas collection efficiencies at landfills, including those smaller facilities that are not currently required to capture gas and require additional monitoring to protect human health and the environment. DEC will finalize these regulations after assessment of public comments. [DEC]

16. Active and Closed Landfills<sup>10</sup> – The majority of municipal waste currently being disposed in New York is disposed at landfills that capture gas for energy generation. However, the total emissions from all waste are unknown and gas capture systems do not capture 100% of emissions. Additionally, not all inactive or closed landfills are capturing or destroying their methane emissions. DEC will pursue actions, including potential outreach and educational efforts, which will suggest best management practices for enhancing methane capture at landfills that are required to and/or voluntarily collect landfill gas to ensure that the maximum feasible amount of landfill-generated methane is captured and

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<sup>10</sup> There are 27 active MSW landfills and hundreds of closed landfills

destroyed. This effort will require analyzing, evaluating, and making recommendations on active, inactive, and closed landfills, based on:

- Age: As landfills age the generation of methane declines but still contributes to overall emissions.
- Size: Currently, capture systems are only required for large landfills (larger than 2.5 million tons capacity), but smaller landfills also emit methane.
- Emissions Criteria: Existing capture criteria are based on odors or non-methane organic compounds; establishing methane emissions criteria would provide more consistent methane emissions reduction.<sup>11</sup>
- Offset Eligibility: Because some landfills are collecting and destroying gas to generate offset credits for voluntary markets, requiring emission reductions could impact the ability of landfills to generate credits. As the offset credits have helped to enhance the economic feasibility of these smaller voluntary systems, DEC will investigate means through outreach and education to optimize the methane destruction efficiency of these systems. [DEC]

17. DEC will identify best practices, in conjunction with evaluations of potential revisions to regulations, to reduce methane emissions and diminish odors (e.g., establish active gas capture on working face of landfill, or portable flares), enhance the monitoring of landfills to achieve emissions reductions, and determine the most effective way to promote these practices at New York landfills. [DEC]

18. DEC will examine EPA GHG reporting criteria and assumptions for New York landfills and determine if DEC guidance should be developed to more accurately report methane capture and emissions and waste-in-place. [DEC]

19. Update and improve State Environmental Quality Review Act guidance for assessing greenhouse gas emissions and how to incorporate the projected effects of climate change on landfills. [DEC]

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<sup>11</sup> Several landfills voluntarily capture and destroy gas, but many landfills that are closed only vent landfill gas.

## Agriculture

Agricultural methane emissions are primarily generated from manure management and enteric fermentation (animal digestion) and this sector has the potential to mitigate greenhouse gas emissions through enhanced soil carbon sequestration, diverting non-farm organics from landfills, nitrogen management, and methane destruction.

Agricultural emissions make up about 22% of methane emissions (2% of NYS greenhouse gas emissions), according to the NYS greenhouse gas inventory of 2014 emissions. DEC will work with DAM, SWCC, and NYSERDA, along with stakeholders and experts, to implement actions in three areas: farm management practices, monitoring and reporting of these practices, and through soil carbon sequestration on farms.

### F. Reduce Emissions Through Farm Management

20. Incorporate methane reduction into New York State programs related to manure management. Propose funding criteria to stimulate methane reductions and to promote economic benefits such as sales of marketable products (e.g., post-digester fiber) and reductions in fertilizer use, electricity demand, municipal waste/organics, and nitrous oxide emissions from land application.

- Expand implementation of Climate Resilient Farming: Continue funding existing program areas, explore additional scoring criteria (e.g., gas capture and energy generation), and evaluate funding additional program areas (e.g., enteric fermentation). [SWCC, DAM, NYSERDA]
- Agricultural Nonpoint Source Grant Program: Propose application criteria in the next round (Round 24, 2018) to encourage the design and construction of manure management storage systems that easily facilitate retrofitting with cover and methane capture systems. [SWCC]
- NYSERDA will coach projects that are developing on-farm digesters to consider the ability of proposed digesters to accept organic waste in priority regions of the state, e.g., areas with high waste production or limited access to landfills with gas capture. [NYSERDA]

- Evaluate and promote new financing mechanisms (e.g., carbon trading offsets) and opportunities described in the Clean Energy for Agriculture Task Force Strategic Plan. [DEC, NYSERDA, SWCC, DAM]

21. Develop strategies to reduce methane emissions from enteric fermentation.

Cornell Cooperative Extension (CCE) offices and other local partners already provide outreach and education to farms on best management practices for feeding, but State action may further help adoption. State agencies will convene a learning session with CCE and relevant experts on 1) the potential for improved animal feeding for reducing this source of methane, 2) strategies and barriers to adoption, and 3) how to measure emission reductions as well as the economic value to farms. [DEC, DAM, SWCC]

#### **G. Improve Management of Methane Emissions Through Monitoring and Reporting**

22. Improve greenhouse gas accounting and climate change impact considerations in the Agricultural Environmental Management (AEM) framework that farms use to identify best practices. [SWCC]

23. Address data gaps and prioritize research needs so that the State is able to monitor progress at reducing greenhouse gas emissions and to direct resources to successful programs in the agriculture sector. Specific gaps include lack of detailed information on manure management and feeding practices on farms and the resulting methane emissions. [DEC, DAM, SWCC]

#### **H. Increase Agricultural Soil Carbon Sequestration to Reduce GHG Emissions**

24. Convene a working group of DAM, SWCC, and DEC staff, with consultation from experts, to assess the potential for net greenhouse gas reductions through agricultural soil carbon storage. [DEC, DAM, SWCC]

- Identify challenges of maintaining permanence of carbon and avoiding related GHG emissions (e.g., nitrous oxide from fertilizer applications).
- Recommend program/policies to increase effective soil carbon sequestration in New York State.

25. Develop communication and funding strategies to effectively identify and promote the benefits of soil carbon sequestration including how managing soil carbon fits in with reducing fertilizer use and reducing nitrous oxide emissions. [SWCC, DAM, DEC]

## Next Steps

This Methane Reduction Plan provides a suite of priority actions that the identified agencies and organizations are undertaking to address and reduce emissions of this potent greenhouse gas. New York State plans to implement the suite of actions by 2020 as part of New York State's commitment to reduce greenhouse gas emissions 40% by 2030 and 80% by 2050, from 1990 levels. The agencies and organizations identified in this plan will also continue collaboration to develop steps to implement these identified actions and will seek stakeholder input on the development of specific programs, policies and regulations. This is a living document that can be revised as our understanding of the sources of methane emissions improves.