NJ Clean Air Council Public Hearing

METHANE

PSEG

We make things work for you.

We have the
energy
to make things better
... for you, for our investors
and for our stakeholders.

PSEG Has Recognized & Adapted to the Impacts of Climate Change

PSEG has recognized for several decades that climate change is a real phenomenon that impacts our Planet. Inclusion of climate change in our business plans has been a part of the PSEG culture since 1990. PSEG recognizes that there is no simple or short-term solution to address both mitigation and adaptation of global climate change. As new challenges arise, we have adapted our business plans to develop cost-effective solutions meet these challenges.

Mitigation

- ✓ New Jersey – In 1991 PSEG embraced the goals of the First NJ Energy Master Plan (EMP) and actively sought actions to support these goals.

- ✓ United Nations Framework Convention on Climate Change (UNFCCC) in 1992 - PSEG accepted the challenge and was the first electric utility in the United States to volunteer to participate in President Clinton's Climate Challenge Program in 1993. We successfully met this challenge and stabilized our CO_2 emissions from our New Jersey plants to 1990 levels by 2000.

- ✓ PSEG sought additional opportunities to reduce our carbon footprint. PSE&G signed on to the EPA's voluntary Natural Gas STAR Program in 1993. The Natural Gas STAR Program is designed to promote the implementation of cost-effective technologies and practices to reduce CH_4 emissions.

Mitigation

- ✓ Governor Corzine's Executive Order No. 54 and the subsequent passage of the Global Warming Response Act of 2007 (GWRA) established goals to reduce GHG emissions by 80% below 2006 levels by 2050. In 2007, PSEG established a new goal of reducing economy-wide GHG emissions by 25% from 2005 levels by 2025. PSEG met this goal 14 years ahead of schedule.

- ✓ This goal was achieved through implementation of energy efficiency programs, deployment of renewable energy, increasing nuclear output and building clean, efficient natural gas plants and replacement of PSE&G's old cast iron and unprotected steel gas mains through the implementation of the Gas System Modernization Program (GSMP).

- ✓ In 2016, PSE&G became a founding partner of EPA's Natural Gas STAR Methane Challenge by committing to replace 1.5% of PSE&G's cast iron and unprotected steel mains and associated service lines by 2021.
  - ✓ Annual reporting includes data submitted to EPA's Mandatory Reporting Program

New Goal

In 2018 PSEG announced a new goal of eliminating 13 million metric tons of CO_2 equivalent emissions from 2005 levels by 2030. Actions to reach this goal include:

- ✓ Avoided emissions from post-2005 uprates at our nuclear facilities
- ✓ Retirement of our coal units in New Jersey and Connecticut
- ✓ Efficiency upgrades of our existing natural gas combined cycle fleet
- ✓ Solar and energy efficiency investments and programs
- ✓ Replacement of old cast-iron and unprotected steel gas mains with new plastic pipelines
- ✓ Continued replacement of traditional fleet vehicles with hybrid vehicles and the installation of idle mitigation technology on fleet vehicles
- ✓ Electric vehicle charging programs for our employees and our commercial/industrial customers
- ✓ Recycling of industrial waste under the EPA's WasteWise program
- ✓ Emission reductions in fulfilling PSEG Power's REC commitments

GSMP I

- ✓ Approved by New Jersey Board of Public Utilities (NJBPU) in November 2015
- ✓ Three-year term to replace up to 510 miles of cast iron and unprotected steel mains and related service lines
- ✓ PSE&G collaborated with the Environmental Defense Fund to conduct a study on methane emissions in grids that were selected for the program.
- ✓ The study included a survey of 30 one-square-mile grids in PSE&G's service territory using a Google Street View car outfitted with methane sensors
- ✓ The collaboration resulted in a sub-prioritization that takes into account leak history
- ✓ PSE&&G was able to reduce methane emissions more quickly by replacing significantly fewer miles of gas lines than would have been necessary to achieve the same emissions reductions without the survey data

GSMP II

- ✓ Approved by NJBPU in May 2018
- ✓ Five-year term to replace up to 875 miles of cast iron and unprotected steel mains and related service lines
- ✓ PSE&G agreed to retain a third-party vendor to conduct and complete a methane leak survey of approximately 280 miles of utilization pressure case iron mains and associated services
- ✓ PSE&G will use the same sub-prioritization for grids of similar hazard as used in GSMP I

EPA Mandatory Reporting Program

- ✓ Subpart W – Natural Gas Distribution Facilities

- ✓ Natural gas distribution means the distribution pipelines and metering and regulating equipment at metering-regulating stations that are operated by a Local Distribution Company (LDC) within a single state that is regulated as a separate operating company by a public utility commission or that is operated as an independent municipally-owned distribution system.
  - ✓ Excludes customer meters and regulators, infrastructure, and pipelines (both interstate and intrastate) delivering natural gas directly to major industrial users and farm taps upstream of the local distribution company inlet

- ✓ Facilities must report emissions from the natural gas distribution industry segment only if emission sources specified below emit 25,000 metric tons of CO_2 equivalent or more per year.

- ✓ For natural gas distribution, report CO_2, CH_4 and N_2O emissions from the following sources:
  - ✓ Equipment leaks from connectors, block valves, control valves, pressure relief valves, orifice meters, regulators, and open-ended lines at above grade transmission-distribution (T-D) transfer stations
  - ✓ Equipment leaks at below grade transmission-distribution (T-D) transfer stations
  - ✓ Equipment leaks at above grade metering-regulating (M&R) stations that are not above grade transmission-distribution transfer stations
  - ✓ Equipment leaks at below grade metering-regulating (M&R) stations
  - ✓ Distribution main equipment leaks
  - ✓ Distribution services equipment leaks
  - ✓ Emissions from stationary fuel combustion sources

Reported Data

- ✓ Quantity of natural gas received at all custody transfer stations
- ✓ Quantity of natural gas withdrawn from in-system storage
- ✓ Quantity of natural gas added to in-system storage
- ✓ Quantity of natural gas delivered to end users
- ✓ Quantity of natural gas transferred to third parties such as other LDCs or pipelines

Reported Data

- ✓ Quantity of natural gas consumed by the LDC for operational purposes
- ✓ Estimated quantity of gas stolen
- ✓ Number of equipment leak surveys conducted during the calendar year (if used to calculate emissions)
- ✓ Emission factors determined through the survey data for T-D and M&R stations (Equation W-31)
- ✓ Inventory of sources
- ✓ Calculated emissions (Equation W-32A)

Annual Reports

- ✓ Must be submitted to EPA by March 31 of each year
- ✓ Must be submitted electronically using the electronic Greenhouse Gas Reporting Tool (e-GGRT)

Comparison of Default Methane Emission Factors for Mains (scf/hour/mile)

Unprotected steel	12.58
Protected steel	0.35
Plastic	1.13
Cast iron	27.25

Comparison of Default Methane Emission Factors for Services (scf/hour/number of services)

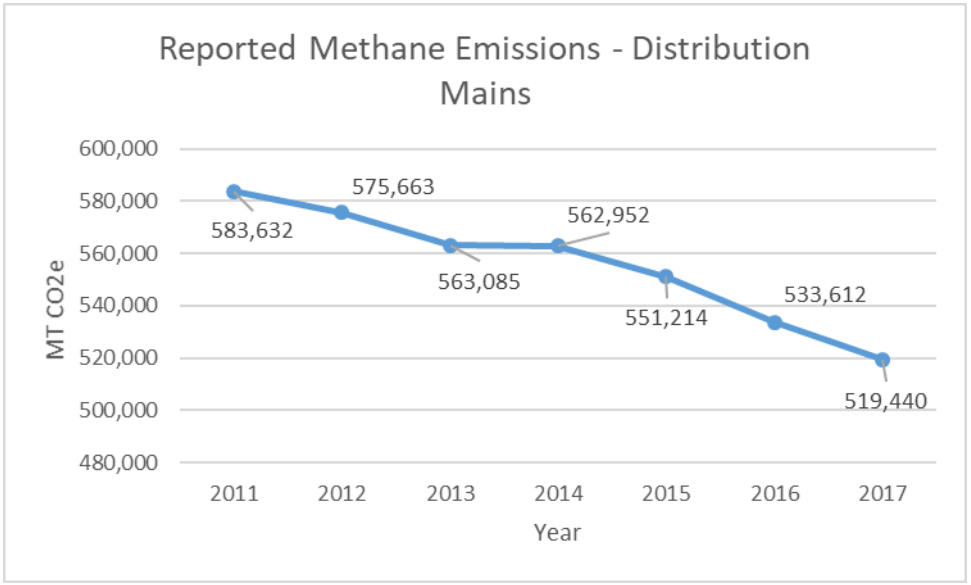
Unprotected steel	0.19
Protected steel	0.02
Plastic	0.001
Copper	0.03

PSE&G Natural Gas Distribution System

Total Number of Above Grade Stations	41
Miles of Distribution Mains	17,895
Number of Distribution Services	1,258,025
Facility Service State and Territory	New Jersey

Based on 2017 data submitted in 2018

PSE&G Reported CH_4 Emissions – Distribution Mains



PSE&G Reported CH_4 Emissions – Distribution Services