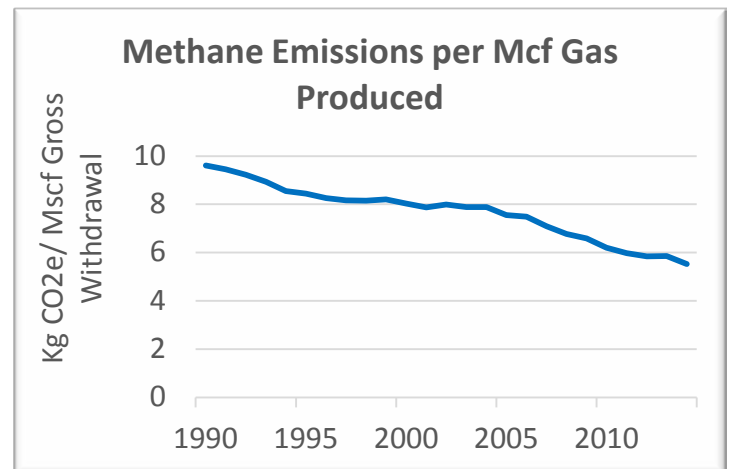




## Finding the Facts on Methane Emissions: A Guide to the Literature

The Natural Gas Council sponsored this report in order to provide an objective, fact-based resource for policymakers and others to help clear the confusion arising from so many different studies on methane emissions with differing conclusions over the last five years. The key findings of the report include:

- There have been a large number of studies of gas industry methane emissions over the last five years. This report reviews 75. While the results can be difficult to interpret and sometimes seem contradictory, they are improving our knowledge and understanding of this issue. Analysis of this new data is starting to converge and contributed to the revised EPA estimates, for example.
- The U.S. EPA *Inventory of Greenhouse Gases* is the only national economy-wide inventory of GHGs, including methane. The EPA recently completed a major review and update of methane emissions from the oil and gas industries in the inventory that was released in mid-April 2016.
- The new inventory finds that methane emissions from the natural gas industries accounted for 2.6% of total U.S. GHG emissions. The inventory estimated methane “leakage” of 1.4% of natural gas production. The inventory also finds that methane emissions per unit of gas produced have been declining continuously since 1990.
  - Absolute emissions have decreased by 15% between 1990 and 2014 and emissions per unit of gas produced have decreased by over 43% over that period.
  - The decrease is due to equipment turnover, voluntary actions, and regulation.
  - The decline happened despite a sharp increase in U.S. natural gas production.
  - The natural gas industry takes methane emissions very seriously. All segments of the gas industry have been active in voluntary reduction of methane emissions.
- Life-cycle analysis studies have shown that natural gas-based electricity generation has about half the emissions of coal-based generation including upstream emissions. The results for overseas electricity generation based on U.S. LNG exports are similar.
- Natural gas has the lowest CO<sub>2</sub> emissions from combustion of all fossil fuels as well as lower emissions of conventional pollutants.
  - Use of natural gas in the power sector, as well as direct use of natural gas, has displaced other fossil fuels and supported increased use of renewables, contributing to declining CO<sub>2</sub> emissions, near 20-year lows.
- Research on methane emissions should continue and should be an important input to any future policy or regulatory activities.



Data sources: U.S. Energy Information Administration and EPA *Inventory of Greenhouse Gases 1990-2014*, April 2016.

The Natural Gas Council collectively represents nearly all companies that produce, transport and distribute natural gas consumed in the United States. It includes members of the American Gas Association, the American Petroleum Institute, the Independent Petroleum Association of America, the Interstate Natural Gas Association of America and the Natural Gas Supply Association. NGC associate member, GPA Midstream Association, also participated in this study.