The United States leads the world in greenhouse gas (GHG) emission reductions, and the primary reason is natural gas. The incredible progress has been made without the use of heavy-handed government policies like a carbon tax, cap-and-trade or international treaties. Rather, we’ve enabled the United States to reduce greenhouse gas emissions 10.2% below 2005 levels through a market-driven increase in natural gas electricity generation.¹

Natural gas, as acknowledged by the U.S. Energy Information Administration (EIA) and the International Energy Agency (IEA), is the number one reason the United States has reduced more greenhouse gas emissions than any other country over more than a decade.

Fuel switching from coal to natural gas in the electricity sector has reduced more greenhouse gas emissions than have wind and solar energy combined. Because natural gas has 55% lower carbon dioxide emissions than coal,² it delivers huge GHG reductions in the electricity sector, where emissions are nine times higher.³ Natural gas has delivered 61% of the reduction in greenhouse gases resulting from fuel switching in the electricity sector, removing 2, 823 million metric tons of carbon dioxide.

equivalents (MMT CO₂ Eq) since 2005. In contrast, wind and solar have only reduced GHG emissions by 1,799 MMT CO₂ Eq, or 39% of the total reduction. That trend continued from 2018 to 2019, as the United States led the world in reducing energy-related CO₂ emissions by 2.9%, largely due to the displacement of coal with natural gas power generation.

Figure 9. Electricity generation CO₂ savings from changes in the fuel mix since 2005

Reducing Methane Emissions

When looking at the full balance of emissions from development and production, EPA finds the entire oil and natural gas industry accounts for 2.64% (176.2 MMT CO₂ Eq) of total U.S. GHG emissions (6,676.6 MMT CO₂ Eq), with the upstream sector accounting for just 1.15% (76.6 MMT CO₂ Eq) of that. Of total U.S. GHG emissions, nearly 10% are from methane, with the vast majority (81.3%) being CO₂. Oil and natural gas emits 27.8% of U.S. methane emissions while agriculture is the largest contributor of anthropogenic methane emissions at 39.9%. On balance, annual greenhouse gas emissions from the entire oil and natural gas industry (176.2 MMT CO₂ Eq) were more than offset by the 444 MMT CO₂ Eq reduction in emissions our industry delivered in 2018.

But we’re not satisfied even with that low relative contribution. In collaboration with universities and regulators, the oil and natural gas industry continues to develop and deploy new technologies such as remote sensing and airborne detection with satellites, aircraft and drones to more quickly detect and fix methane leaks in the field. We’ve decreased emissions from gathering lines, pipelines, and compressor stations, and replaced high- with low-bleed pneumatic controllers. This continual innovation has

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4 Id., p.12.
7 Id., p. ES-7-8. Note that EIA and EPA use carbon dioxide equivalents in their inventories and analyses of GHGs. By doing so, the higher potency of methane is taken into account.
8 EIA, November 2019, p.18.
enabled the American oil and natural gas industry to decrease methane emissions by 23.2% since 1990, even as oil and natural gas production have increased 49% and 71%, respectively.

The body of scientific literature that measures actual leaks shows a 1.1% to 1.65% range of leakage rates. EPA’s estimate of a 1.2% leakage rate is right in line with this range. Regardless, all estimated and measured leakage rates are well below the 3.2% recognized to be the threshold under which natural gas delivers a net benefit for the climate.

9 EPA, April 2020, p.2-3.
10Id., p. 2-15, p. 3-69, p.3-84
12 EPA, April 2020.