

# Methodologies and Definitions

## Greenhouse Gas Emissions

Of the six Kyoto Protocol GHG emissions, the GHG emissions most relevant to Pioneer are carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>) and nitrous oxide (N<sub>2</sub>O). These GHG emissions are the basis for our GHG inventory and emission-reduction targets, reported in terms of CO<sub>2</sub>e. In addition to these GHG emissions, combustion and venting are sources of other emission constituents; volatile organic compounds (VOCs), nitrogen oxide (NO<sub>x</sub>), sulfur dioxide (SO<sub>x</sub>) air emissions and particulate matter (PM) are also considered in the management of emissions in our upstream oil and gas operations.

## Direct GHG Emissions (Scope 1)

These emissions are from sources that are owned or controlled by Pioneer, for example, emissions from combustion in owned or controlled equipment and emissions from oil and gas production in owned or controlled process equipment. Pioneer's GHG emissions inventory and emissions reduction targets include Scope 1 emissions under our operational control.

## Electricity Indirect GHG Emissions (Scope 2)

Emissions from the generation of purchased electricity consumed by Pioneer are Scope 2 emissions. Purchased electricity is bought or otherwise brought into the organizational boundary of the company. Scope 2 emissions physically occur at the facility where the electricity is generated. Pioneer GHG emissions inventory and emissions targets include location-based Scope 2 emissions for electricity purchased to power facilities and equipment under our operational control.

## Other Indirect GHG Emissions (Scope 3)

These emissions are a consequence of company activities but occur from sources not owned or controlled by Pioneer. Examples include

extraction and production of purchased materials and use of sold oil and gas.

## Scope 1 and Scope 2 Reporting

As a U.S. onshore company, the entirety of Pioneer's Scope 1 and 2 emissions falls within the regulatory jurisdiction of the U.S. Environmental Protection Agency (EPA). Although the EPA GHG Reporting Program is comprehensive for the oil and gas industry, the reporting of certain emissions may not be required. The program prescribes methodologies to quantify GHG emissions for each emission source category, including methane. In our GHG reporting, we provide data on non-reportable emissions, including indirect (Scope 2) emissions. The development of our extended inventory was based on both the U.S. EPA GHG Reporting Program requirements, The GHG Protocol, and the IPIECA/ American Petroleum Association (API)/ International Association of Oil and Gas Producers "Petroleum Industry Guidelines for Reporting Greenhouse Gas Emissions."

Pioneer Scope 3 emissions are quantified using an operational control approach consistent with Scope 1 and 2 accounting.

Lack of standardization in emissions calculation methodologies can lead to variability in emissions inventories reported by oil and gas operators. While we present an extended inventory that is more representative of our actual emissions, for comparability purposes, we will continue to provide details regarding our emissions as reported to the EPA in our Sustainability Performance Data Table.

## Target Definitions

- GHG emissions intensity performance will be based on Scope 1 and 2 GHG emissions divided by gross oil and gas production [tonnes carbon dioxide equivalent (CO<sub>2</sub>e)/thousand barrels of oil equivalent (MBOE)].

- Methane emissions intensity performance will be based on methane emissions in terms of CO<sub>2</sub>e divided by gross oil and gas production (tonnes CO<sub>2</sub>e/MBOE).
- Flaring intensity performance will be based on natural gas volumes flared during production operations, divided by gross natural gas production [thousand standard cubic feet (Mscf)/Mscf].

We recognize that EPA GHG Reporting Program methodologies are typically based on engineering estimates and emissions factors. To better align actual emissions with those reported through the EPA GHG Reporting Program, Pioneer is engaged in efforts to study and quantify emissions in actual field settings. For years, Pioneer has participated in academic research projects to improve quantification of emissions from various production equipment and activities. Through our internal methane detection program, we are also gathering data to better understand the rates and distribution of fugitive emissions in our operations, which are not quantified in this report. The results of this work could result in changes in the methodology of EPA GHG Reporting and the levels of the GHG and methane reported by the company. More detail on these initiatives can be found in the Monitoring, Reporting, and Verification section of the Emissions Management chapter.

Our emissions forecasting for planning purposes is also dependent upon publicly available information (e.g., fuel mix forecast for the ERCOT electrical grid). Should our assumptions throughout this process need to change, we will adjust our forecasting and goals as necessary.