

Chapter 4. Current Emissions

DEC is required to release an annual report on GHG emissions as a measure of progress toward reaching the Climate Act's emission limits and net zero emissions goal. The first annual report was released in 2021 and covers the years 1990 through 2019. Additional details on data, methods, and historical trends are provided in that report. The second annual report is expected in 2022 and will cover the years 1990 through 2020. However, 2020 was an anomalous year for GHG emissions due to the economic impact of the COVID-19 pandemic. Emissions associated with certain sectors were significantly lower in 2020 compared with 2019 but are expected to have rebounded in 2021. As such, 2019 emissions are provided as more representative and appropriate for this Scoping Plan. In addition, some of the co-pollutants discussed in this Scoping Plan affect both human health and climate change, even if they are not included in the suite of greenhouse gases (GHGs) listed in the Climate Act. For example, actions to address particulate matter, including black carbon, also contribute to the State's broader climate strategy.

The Climate Act requirements for GHG emissions accounting are different in two important ways from the methodology provided by the Intergovernmental Panel on Climate Change (IPCC) Taskforce on National GHG Inventories. First, GHG emissions must be measured in terms of carbon dioxide equivalent (CO₂e) using a 20-year rather than a 100-year time interval. This results in a higher numeric value for some gases, such as methane, even if the emission rate was the same. Secondly, "statewide" GHG emissions under the Climate Act include out-of-state GHG emissions associated with imported electricity and the extraction and transmission of imported fossil fuels. This greatly expands the scope of GHG emission sources typically included in governmental GHG reduction goals and inventories. Addressing some of these GHG emission sources may require action at the federal level. Additionally, the emission values provided here include carbon dioxide (CO₂) associated with the combustion of biogenic fuels, although this comprises a very small portion of statewide emissions (less than 4%). Therefore, the emission values provided here are not comparable to those reported by other governments, nor are they comparable to values reported by New York State in the past. The economic sectors described here may not represent the same emission sources as presented in other GHG reports.

Based on this assessment, emission reductions are needed from all sectors of the economy to achieve the goals and requirements of the Climate Act. For the purposes of the Scoping Plan, emissions are categorized according to the economic sectors covered in *Sector Strategies* (Chapters 11 through 16), *Chapter 18. Gas System Transition*, and *Chapter 19. Land Use*.

The transportation, buildings, and electricity chapters include not only GHG emissions from fuel use, but also GHG emissions associated with imported fuels. In summary, *Chapter 11. Transportation* includes GHG emissions associated with on-road transportation; non-road transportation such as aviation, rail, and marine; and other mobile equipment, as well as HFCs used for mobile heating, ventilation, and air conditioning (HVAC) and refrigeration. *Chapter 12. Buildings* includes fuels used in residential and commercial buildings and HFCs used in HVAC and refrigeration. *Chapter 13. Electricity* includes fuels used for generating electricity within the State, imported electricity, and the transmission and distribution of electricity. The remaining economic sectors (Chapters 14 through 16) include industry, agriculture and forestry, and waste. Industrial emission sources include fuels used in industrial buildings and for industrial processes as well as emissions from the oil and gas industry in the State. The waste sector includes emissions associated with solid waste management, wastewater management, and waste combustion. GHG emissions from the agriculture and forestry sector are from livestock and soil management practices. These practices, as well as land use in general, also contribute to carbon removals.

Figure 2 provides an estimate of statewide GHG emissions across these major economic sectors. Gross total emissions for 2019 were 379.4 million metric tons (MMT) CO₂e (GWP-20). Figure 3 is an estimate of annual emission removals, or carbon sequestration. Net total emissions, or gross emissions minus emission removals and biogenic CO₂, were 338.5 MMT CO₂e (GWP-20) in 2019.⁴²

Importantly, emission removals were equivalent to less than 8% of gross emissions in 2019, suggesting that all emission sources from every segment of the economy must be addressed to achieve net zero emissions. More than half of current emissions are related to emission sources covered in *Chapter 11. Transportation* and *Chapter 12. Buildings* (approximately 60%). These sources include the direct use of fossil fuels, “upstream” emissions from the fuel system, and HFCs.

⁴² If measured using the methodology provided by the IPCC, gross emissions were 194.6 MMT CO₂e (GWP-100) and net emissions were 165.5 MMT CO₂e (GWP-100) in 2019.

Figure 2. 2019 New York State GHG Emissions by Scoping Plan Sector

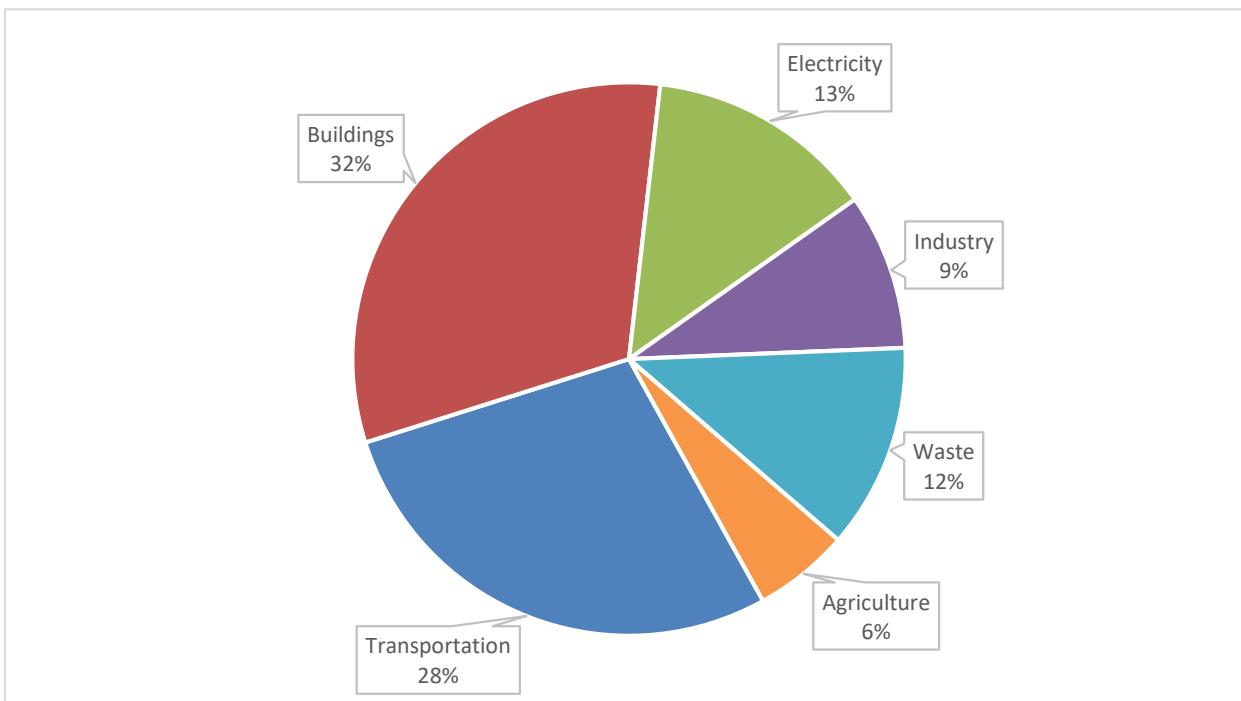
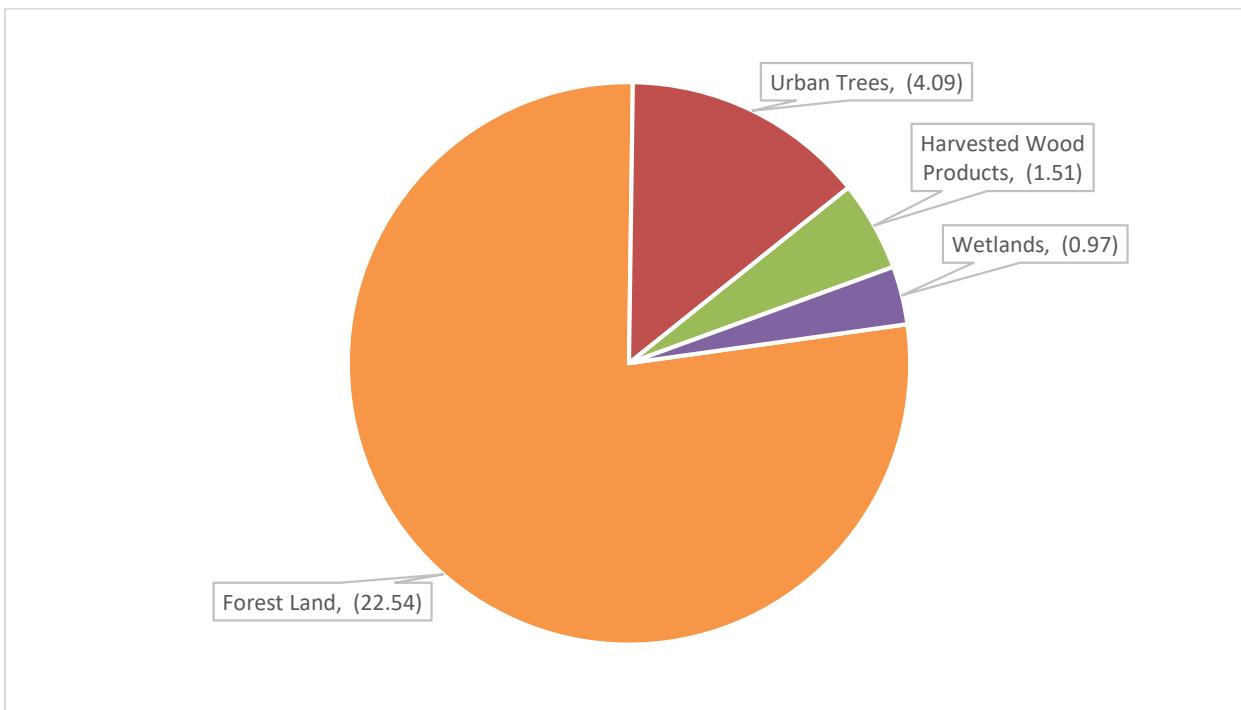


Figure 3. 2019 New York State GHG Emissions Removals by Sector (in MMT CO₂)



4.1 Summary of Sectoral Emissions

Transportation

The transportation sector was responsible for approximately 28% of the State's emissions in 2019, which includes on-road transportation (59%), non-road such as aviation (12%), emissions from imported fuels (26%), and HFCs used in vehicle air-conditioning and refrigeration (3%). Transportation sector emissions are about 16% higher today than they were in 1990. The transportation sector today is largely dependent on petroleum-based fuels such as gasoline, diesel, and jet fuel, but the State has made strong progress in transitioning from petroleum-based fuels to zero-emission technologies.

Buildings

The buildings sector was the largest source of emissions in 2019 and responsible for 32% of emissions, which includes the combustion of fossil fuels in residential (34%) and commercial buildings (19%), emissions from imported fuels (33%), and HFCs released from building equipment and foam insulation (14%). The fuels used in buildings today include fossil natural gas, distillate fuel (heating fuel oil #2), wood, propane, kerosene, and residual fuel oil.

Electricity

The electricity sector comprised 13% of emissions in 2019, including electricity generation within the State (44%), imported electricity (15%), emissions from imported fuels (41%), and the sulfur hexafluoride (SF_6) used in electricity distribution and transmission (<1%).

Industry

Industrial emissions made up 9% of emissions in 2019, including emissions from methane leaks and combustion from the oil and gas system in New York (45%), the direct combustion of on-site fuel (27%), emissions from imported fuels (20%), and non-combustion industrial processes (6%).

Agriculture and Forestry

Agricultural emissions represented approximately 6% of the statewide emissions in 2019 from livestock (92%) and soil management practices (8%). However, agriculture and forestry also provide carbon sequestration benefits and can provide significant contribution toward achieving net zero total emissions from all sectors in the State. For example, carbon sequestration in forestlands (77%) and urban forests (14%) and long-term storage of carbon in harvested wood products (5%) provided approximately 96% of the State's GHG emissions removals in 2019 – equal to mitigation of 11% of statewide emissions. Additional strategies related to agriculture and forestry are also included in *Chapter 19. Land Use*.

Waste

GHG emissions from the waste sector represent about 12% of statewide emissions, including landfills (78%), waste combustion (7%), and wastewater treatment (15%). Most of these emissions represent the long-term decay of organic materials buried in a landfill, which will continue to emit methane at a significant rate for more than 30 years. It also represents both the landfilling of waste in New York and the exporting of waste to landfills in other states.

Emissions Removals

The only current method for removing emissions from the atmosphere is through the process of natural carbon sequestration, which is a service provided by our forests, croplands, and wetlands. In 2019, these lands removed an amount of CO₂ equal to 8% of the State's GHG emissions.