MID-HUDSON REGION, NEW YORK

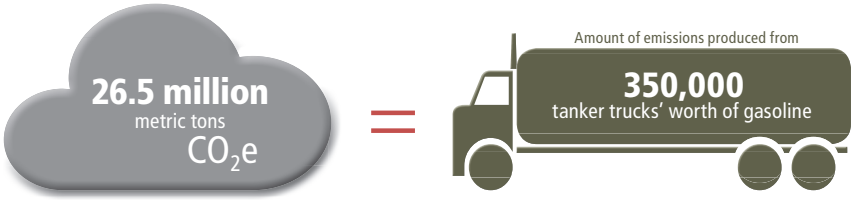
2010 Tier II Regional Greenhouse Gas (GHG) Emissions Inventory

EXECUTIVE SUMMARY

New York State has established the Climate Smart Communities Program as a state-local partnership to reduce greenhouse gas (GHG) emissions, save taxpayer dollars and advance community goals for health and safety, economic vitality, energy independence and quality of life. To advance these goals, five New York State Agencies have jointly sponsored the Climate Smart Communities Regional Coordinator Pilot Program: the New York State Energy Research and Development Authority (NYSERDA), the Department of State, the Department of Environmental Conservation, the Department of Transportation, and the Public Service Commission. The pilot program is testing different models of delivering technical support to municipalities that have adopted the Climate Smart Communities Pledge in four regions of New York State.

A key step in reducing GHG emissions is to conduct a baseline assessment of GHG emissions and energy use to help inform the development of strategies. NYSERDA provided the regions with a basic Tier I GHG Inventory that served as a first draft of regional GHG emissions. This report represents the more detailed Tier II GHG Inventory for the Mid-Hudson Region, which is comprised of Dutchess, Orange, Putnam, Rockland, Sullivan, Ulster, and Westchester Counties. The emissions inventory was developed for the region as a whole, and then supplemented with a municipal-level allocation for each of the villages, towns, and cities that populate the region. Understanding the sources of emissions will allow decision-makers to plan appropriately for emissions-reducing actions.

This Executive Summary provides a summary of baseline year 2010 GHG emissions for the entire Mid-Hudson region. The sectors evaluated for this inventory include stationary energy consumption; mobile energy consumption; energy generation and supply; industrial processes; solid waste and wastewater management; agriculture; and land use, land use change, and forestry (LULUCF). In 2010, GHG emissions in the Mid-Hudson region were estimated to be 26.5 million metric tons of carbon dioxide-equivalent ($MMTCO_2e$).[1] These emissions are comparable to the amount of emissions produced from the burning of nearly 350,000 tanker trucks' worth of gasoline.[2]



The single largest source of GHG emissions across the region is transportation fuel consumption, which accounts for 11.9 million $MTCO_2e$, or 45 percent of regional emissions. A large majority of that—10.3 million $MTCO_2e$, or 86 percent of all transportation emissions—result from on-road transportation (cars, trucks, buses, motorcycles). The second largest overall contributor is residential energy consumption, which includes fuels used directly for space and water heating as well as the indirect emissions resulting from the use of electricity. Emissions from residential energy consumption are responsible for 21 percent of emissions—or 5.6 $MMTCO_2e$. The third largest contributor is commercial energy consumption (18 percent—or 4.9 $MMTCO_2e$). Those three sources alone account for over 85 percent of the region's emissions. The remaining significant GHG contributors in the region are emissions related to industrial energy use, energy supply, waste management, and other modes of transportation.

[1] An additional significant contributor to net emissions in the region is actually the loss of carbon storage in previously-forested land, but since loss of storage is considered an optional source under the state protocol, we have not included it in the totals here. Forest carbon stocks lost due to land use change in 2010 are estimated to have stored over 5 million $MTCO_2e$. This loss can be primarily tied to changes in land use as a result of economic development such as the construction of new housing and businesses, as well as public infrastructure. It is also worth noting that emissions from electricity generation are attributed to the end users in each economic sector.

[2] EPA Greenhouse Gas Equivalencies Calculator, **http://www.epa.gov/cleanenergy/energy-resources/calculator.html#results**

Among the region's seven counties, over 38 percent of the regional total (about 10.2 $MMTCO_2e$), can be allocated to Westchester County. This can be attributed to the county's large population and significant economic activity. However, although more overall emissions can be allocated to Westchester County than to any other county, the greatest emissions per capita occur in Putnam County, primarily due to greater transportation emissions. GHG emissions from Putnam County were estimated as 16.1 $MTCO_2e$ per capita, compared to 10.6 $MTCO_2e$ per capita from Westchester County. Sullivan County, the least populated county in the region, also had the lowest overall emissions among the region's counties.

Table 1 shows total emissions for the Mid-Hudson region, by sector, demonstrating the relative contribution of each of these sectors to the total GHG emissions of the region.

TABLE 1
2010 GHG EMISSIONS IN THE MID-HUDSON REGION, BY SECTOR

SECTOR	GHG EMISSIONS ($MMTCO_2E$)	% OF TOTAL EMISSIONS
Transportation Energy Consumption	11.9	44.9%
Residential Energy Consumption	5.6	21.2%
Commercial Energy Consumption	4.9	18.3%
Industrial Energy Consumption	1.7	6.4%
Industrial Processes	0.9	3.3%
Energy Generation and Supply	0.8	3.2%
Waste Management	0.6	2.2%
Agriculture	0.1	0.6%
TOTAL	**26.5**	**100%**

Note: totals may not sum due to independent rounding

Figure 1 illustrates the breakdown of emissions by sector within the Mid-Hudson region. The Transportation and Residential Energy Consumption sectors were the most significant sources of GHG emissions for the region. This is consistent with most local inventories, as these sectors are responsible for the emissions associated with burning fossil fuels in vehicles and for heating, cooling, and lighting buildings.

FIGURE 1
2010 GHG EMISSIONS IN THE MID-HUDSON REGION, BY SECTOR

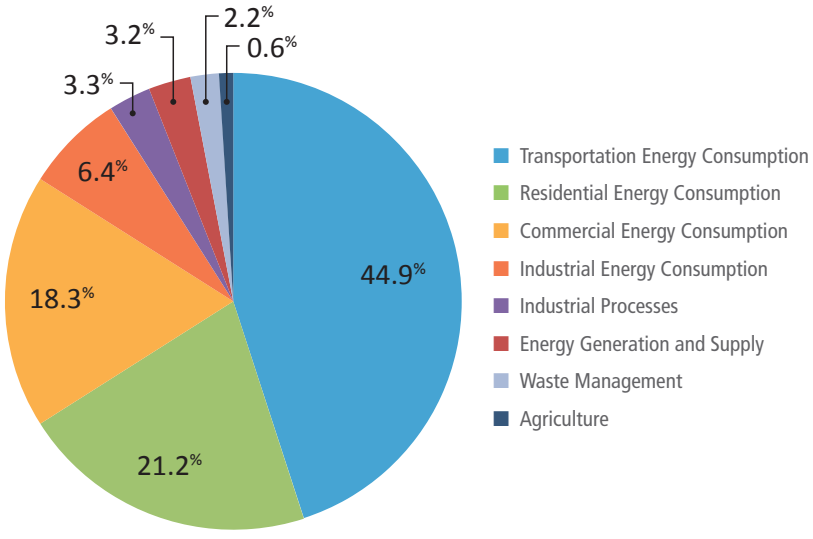
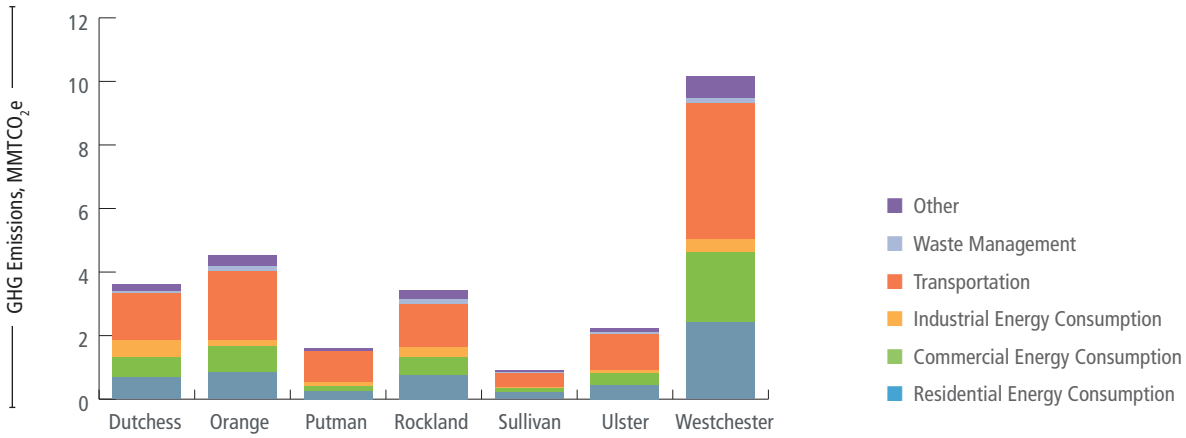


Figure 2 presents the total emissions by sector for each county in the region. As the most populous county in the region, Westchester County has the highest overall emissions, with roughly 38 percent of the regional total. The distribution of emission sources is roughly similar among the counties, although there are some large differences due to the variations in housing stock, land uses, and transportation options between the counties. Residential energy consumption averages 20 percent of emissions in each of the region's counties, commercial energy averages for 16 percent of emissions, and transportation accounts for 41-62 percent of emissions. Other sectors—which include industrial processes, agriculture, and energy supply—are considered in the inventory calculations but are not listed separately below since their contribution to total emissions is negligible. Note emissions from electricity generation have been rolled in to end use categories (such as residential, commercial, and industrial energy consumption).

FIGURE 2

2010 GHG EMISSIONS IN EACH COUNTY OF THE MID-HUDSON REGION, BY SECTOR



Per capita emissions by source are shown in **Figure 3.** This presents a different picture, as Westchester County now has the lowest and Putnam County has the highest per capita emissions. The most noticeable difference is the high per capita transportation emissions in Putnam County. This is likely a result of both the low overall population in the county (roughly one-tenth that of Westchester County) and the prevalence of major roads in the region (the junction of I-84 and I-684 is located in the region, as is a portion of the Taconic State Parkway).

FIGURE 3

2010 PER CAPITA GHG EMISSIONS IN EACH COUNTY OF THE MID-HUDSON REGION, BY SECTOR