ULSTER COUNTY
Greenhouse Gas Emissions Report

The *Ulster County Greenhouse Gas (GHG) Emissions Report* summarizes the total amount of heat-trapping gases that are released into the atmosphere as a result of energy used in County operations and county-wide activity. Ulster County will use these baseline inventories to develop climate mitigation strategies and to measure future GHG reductions.

Figure 1: Ulster County Government Emissions Equivalency

2012 Government Operations GHG Emissions

13,777 MT CO2e

= Driving 32.8 Million Miles/Year

Source: EPA GHG Equivalencies Calculator

GHG Emissions from County Operations (2012)

Ulster County conducted a GHG inventory to measure energy consumption and GHG emissions resulting directly and indirectly from County operations and services. This includes emissions from stationary fuel combustion, purchased electricity, and mobile emissions for government-owned vehicles, as well as emissions from government employee commutes.[1]

Ulster County chose 2012 as a baseline year based on the availability and comprehensiveness of data. In 2012, operations in Ulster County were responsible for emitting 13,777 metric tons of carbon dioxide equivalent (MT CO_2e). This is the same as driving a car 2.8 million miles in one year, which is almost the same distance as driving around the Earth 1,317 times (Figure 1). [2]

To report and summarize GHG emissions from County operations and services, emissions sources have been categorized into four sectors of GHG emissions as shown in Figure 2.[3] Buildings and facilities account for the largest portion (42 percent) of GHG emissions, which includes fossil fuels and purchased electricity for lighting, heating, or cooling of buildings and facilities. The County's main energy sources are from electricity (71 percent), heating oil (20 percent), natural gas (8 percent), and liquefied petroleum gas (LPG, 1 percent). To reduce the GHG emissions from buildings and facilities, the County has implemented energy tracking systems to monitor and manage energy resources. The County legislature adopted an energy policy for government operations and green building standards that require new or renovated facilities to meet the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED™) Silver standards. Ulster County offsets 100 percent of GHG emissions associated with electricity consumption through the purchase of renewable energy credits (RECs).

Figure 2: Ulster County Government Operations GHG Emissions by Source (2012)

Buildings & Facilities: Energy Use
5,804 MTCO2e

Employee Commute
2,992 MTCO2e

County Fleets
4,899 MTCO2e

22%

43%

35%

Electricity, 71%

Heating Oil, 20%

Natural Gas, 8%

LPG, 1 %

Portion Offset by RECs

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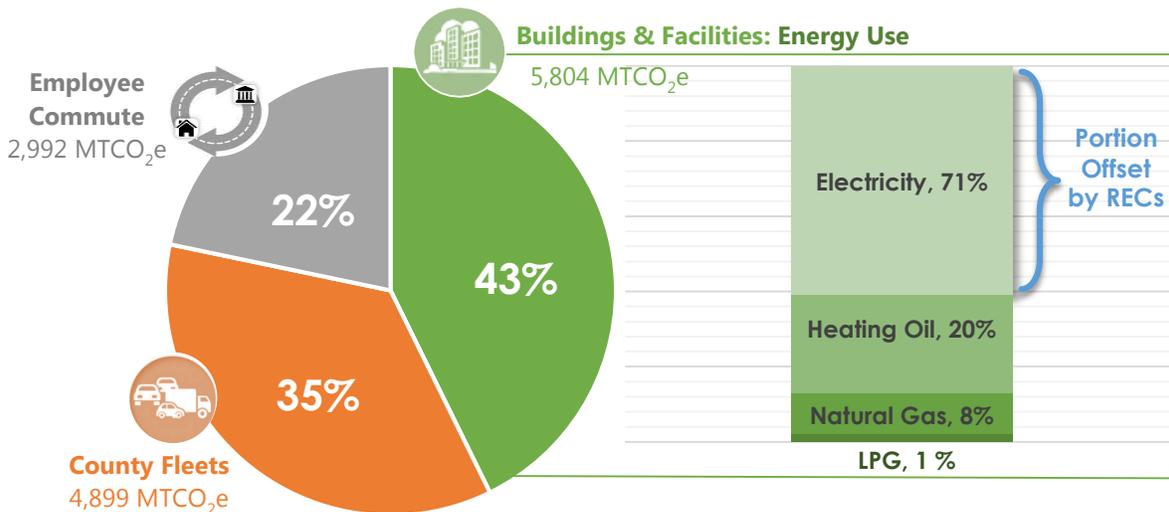
[1] The GHG inventory methods used by the County were guided by ICLEI-USA's U.S. Community Protocol for Accounting and Reporting Greenhouse Gas Emissions.

[2] The sum of 13,777 MTCO2e is equivalent to annual GHG emissions from 32,802,381 miles per year driven by an average passenger vehicle. The circumference of the Earth at the equator is 24,901.55 miles. Ulster County's emissions are almost equivalent to driving around the circumference of the Earth 1,317 times in one year.

[3] All GHG emissions in this report are provided in units of metric tons of carbon dioxide equivalent (MT CO_2e). One MT CO_2e is equal to 1,000 kilograms of CO_2.

Ulster County's vehicle fleet is the second largest source of GHG emissions (35 percent). Mobile emissions are released through the combustion of gasoline or diesel used to power government-owned and operated fleets, many of which are essential to public health and safety. This includes the Ulster County Area Transit (UCAT), highway and bridge maintenance vehicles and equipment, emergency vehicles, and police vehicles. Ulster County also chose to include indirect mobile emissions caused by government employee commutes, which accounts for almost a quarter of the County's emissions (22 percent). Transit incentives are offered to County employees to encourage the use of public transportation. The County has already begun efforts to track and improve the efficiency of county fleets by developing a guide to ensure fuel efficient vehicle purchases. The County plans to significantly reduce the climate impact from mobile emissions through long-term vehicle procurement planning and management.

County-wide GHG Emissions (2010)

Ulster County's community-scale data was included in the Mid-Hudson Regional Greenhouse Gas Inventory with a 2010 baseline year. The county-wide GHG inventory accounts for emissions generated by residents, visitors, and commercial industries for buildings, vehicles, waste collection and wastewater treatment facilities, as well as, emissions generated by government operations.

In 2010 county-wide GHG emissions in Ulster totaled 2,052,894 MT CO_2e. This is equivalent to the amount of GHG emissions from driving a passenger car 5.3 billion miles per year, which is the same distance as driving a car to the sun 53 times in one year.[3] Though below average when compared to other counties in the region,[4] the transportation sector was still the largest source of GHG emissions (49 percent), which includes commercial fleet operation, County-operated transit, and private vehicle use by visitors or residents. County policies, such as the Pedestrian and Bicycle Policy, will be critical to reducing traditional vehicle use. The second and third largest contributors to GHG emissions in Ulster County is from energy used in residential housing (22 percent) and commercial buildings (17 percent), which include electricity, natural gas, fuel oils, wood and propane used to heat, cool, power homes, buildings, and facilities. Local organizations, such as Ulster County Community Action and Rural Ulster Preservation Company (RUPCO), are helping homeowners and renters increase energy efficiency through affordable improvement projects. Figure 3 summarizes Ulster County-wide GHG emissions by sector in 2010.

Figure 3: Ulster County-wide GHG Emissions by Sector (2010)

Transportation
1,016,519 MTCO$_2$e
49%

Industrial
133,910 MTCO$_2$e
6%

Commercial
349,919 MTCO$_2$e
17%

Residential
451,256 MTCO$_2$e
22%

Other
6%

Solid Waste: 2% — 36,203 MTCO$_2$e
Wastewater Treatment: 1% — 17,754 MTCO$_2$e
Agriculture: 1% — 15,645 MTCO$_2$e
Energy Supply: 2% — 31,688 MTCO$_2$e

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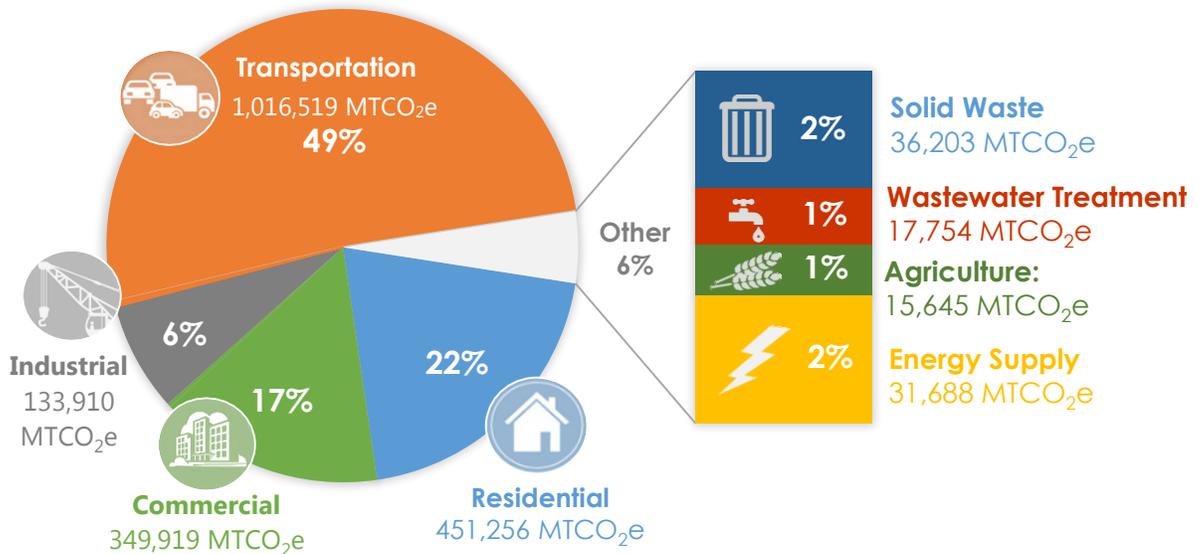
[3] The sum of 2,052,894 MTCO$_2$e is equivalent to annual GHG emissions from 4,887,842,857 miles per year driven by an average passenger vehicle. The distance to the Sun from Earth is 92,960,000 miles. Ulster County's emissions are equivalent to driving to the sun 52.58 times per year.

[4] The county average for transportation emissions in the Mid-Hudson Region is 1,297,274 MT CO_2e. Ulster County's transportation emissions are 1,016,519 MT CO_2e.

APPENDIX A:
External support, data collection, tools and resources

CLIMATE SMART COMMUNITIES OVERVIEW

Ulster County participates in the Climate Smart Communities (CSC) program, which is a New York State initiative to help local governments reduce greenhouse gas (GHG) emissions, prepare for effects of climate change and save taxpayers money. As part of this program, the State offers technical support to communities that have adopted the CSC Pledge. Ulster County adopted the CSC Pledge in 2011 and held an in-person technical assistance consultation with VHB Engineering, Surveying and Landscape Architecture, P.C (VHB) on March 20, 2013. As a result of this consultation, the County identified completion of its government operations GHG inventory as a priority for moving forward on its climate action efforts and for addressing Pledge Element two of the CSC Pledge: *Set Goals, Inventory Emissions, Plan for Climate Action*.

BACKGROUND: COUNTY GOVERNMENT GHG EMISSIONS INVENTORY

VHB, in coordination with ICF International, developed an Excel-based tool that assists local governments with conducting a GHG emissions inventory according to the standards in the Local Government Operations Protocol.[1] Ulster County agreed to participate as a pilot community to test the tool and completed a GHG inventory with the assistance of VHB. In November 2013, they completed the GHG inventory which included energy use and emissions related to the County's functions and services. The County's government operations GHG emissions inventory serves as a foundation for measuring the total emission reductions from baseline year 2012. VHB worked with the Ulster County Environmental Department to produce the *Ulster County Greenhouse Gas Emissions Report to* summarize all County operations emissions from Ulster County's GHG inventory.

VHB conducted a high-level QAQC review of Ulster County's government operations inventory for buildings and departments. The Local Government Operations GHG Emissions Inventory Accounting Tool was previously put through a rigorous QAQC process to ensure factors and calculations were correct. Therefore, those aspects of the tool were not reviewed again unless there were anomalies in the data. Also VHB was not responsible for confirming accuracy of the activity data entered by County staff. The review focused on ensuring results were consistent with the ICLEI-USA's U.S. Community Protocol for Accounting and Reporting Greenhouse Gas Emissions included all relevant emissions sources and that it made sense from a high-level perspective and that there were no unusual outliers in the inventory data.

BACKGROUND: COUNTY-WIDE GHG EMISSIONS INVENTORY

New York State commissioned regional greenhouse gas (GHG) emissions inventories using a consistent protocol for the ten Regional Economic Development Council regions using a 2010 baseline year. Ulster County was included in the 2010 Mid-Hudson Regional GHG Emissions Inventory. The sectors included in the county-wide inventory are described in Table 1. The emission generating activities selected for the regional inventory are based on those included in the New York GHG Protocol, the US Environmental Protection Agency's

Table 1: Regional GHG Inventory Sectors (2010)

SECTORS	DESCRIPTIONS
Buildings *(Stationary Energy)*	Energy used in Residential, Commercial, Industrial buildings & other non-mobile uses (e.g., electricity, natural gas, fuel oils, wood & propane).
Transportation *(Mobile Energy)*	Fuel consumption for on-road transportation, passenger & freight rail, aviation, marine transit & off-road vehicles.
Waste & Wastewater Treatment	Non-energy process emissions from landfills & wastewater treatment plants or septic systems. (e.g., methane emissions from anaerobic decay).
Industrial Processes	Non-energy process emissions from industrial activity & fugitive emissions from fuel systems (e.g., CO_2 from cement production, A/C coolants, & leakages).
Agriculture	Non-energy emissions from crops & livestock (e.g., methane & nitrous oxide emissions from fertilizers).
Energy Supply	Energy generation & fugitive emissions including energy losses during transmission & distribution of electricity and natural gas.

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[1] ICLEI-Local Governments for Sustainability, California Climate Action Registry, California Air Resources Board, the Climate Registry. "Local Government Operations Protocol: *For the quantification and reporting of greenhouse gas emissions inventories*." Version 1.1. May 2010

US Inventory of GHG,[2] and the Intergovernmental Panel on Climate Change.[3] The regional GHG inventories were conducted on a per capita basis using a blend of top-down data (e.g., state fuel consumption estimates) combined with bottom-up data (customer utility data) based on data availability for 2010. All GHG emissions in this report are provided in units of metric tons of carbon dioxide equivalent (MT CO_2e).

GHG Emission Sources by Department (MTCO$_2$e)

Legend: ■ Stationary ■ Electricity ■ Mobile ■ Employee Commute

Departments (top to bottom): Sheriff's Department, Golden Hill Health Care[4], Multiple Departments[5], Public Works, Courts, Rural Transportation, Social Services, County Clerk, Public Health, Probation, Information Services, Emergency Management

X-axis: - , 500, 1,000, 1,500, 2,000, 2,500, 3,000, 3,500

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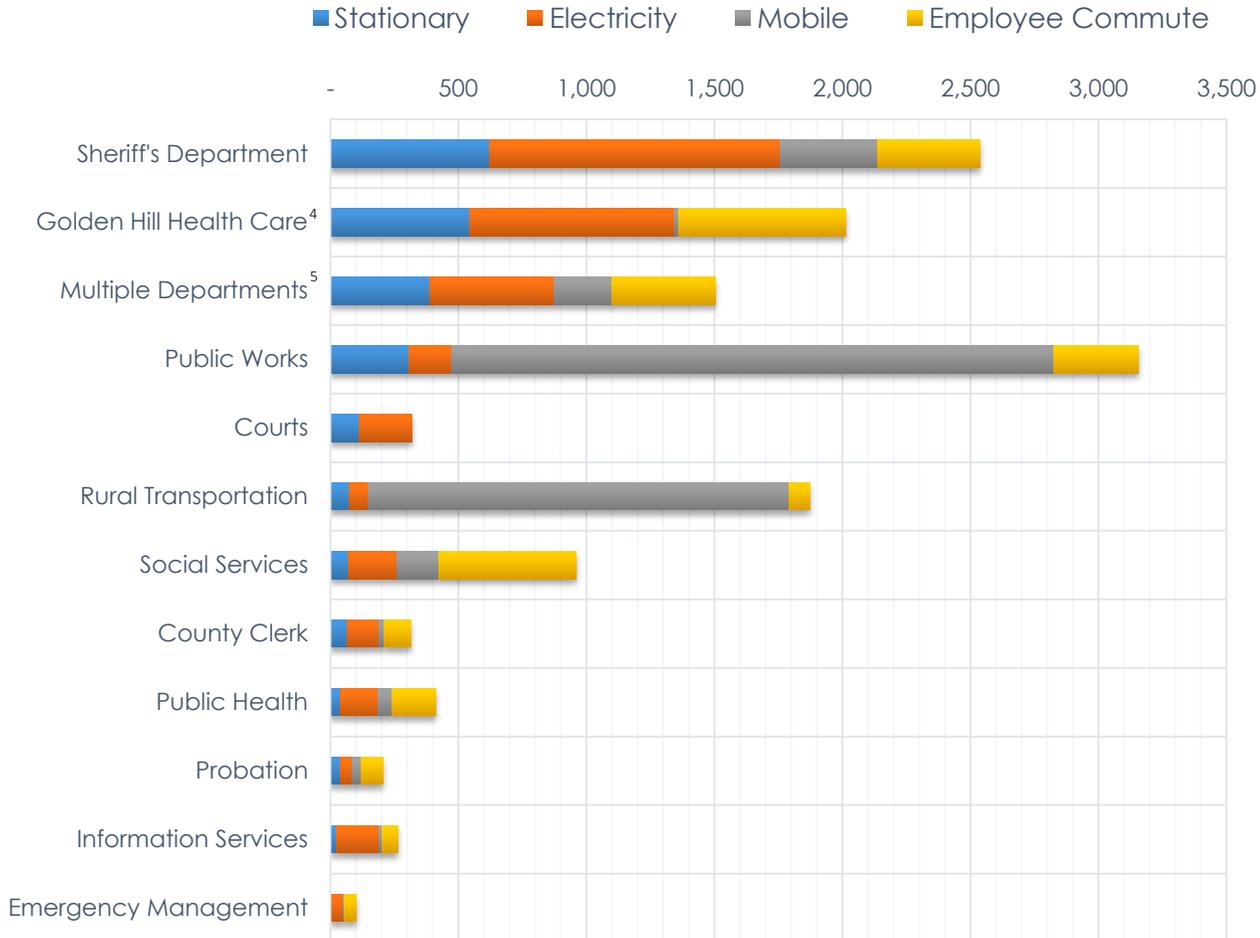
[2] U.S. EPA, Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990–2010, April 2012.
[3] IPCC, 2006 IPCC Guidelines for National Greenhouse Gas Inventories.
[4] The Golden Hill Health Care Center is no longer a part of the County's energy portfolio.
[5] The Multiple Departments category encompasses buildings, facilities, and vehicles in the following departments: Environmental Management, Central Auto, Community Service, Arson Task Force, Public Defender, County Executive, Child Services, District Attorney, Fire Coordinator, Traffic Safety, Office of the Aging, Purchasing Department, Real Property, UC SPCA, Safety, Soil & Water, Veteran's Administration, Election Board, UC Tourism Department, Weights & Measures, and Stop DWI.