



2018
Carbon Neutral Government
Operations Report

1. Introduction

Resolution 315 of 2019¹ was adopted by the Ulster County legislature in September of 2019 to establish a policy regarding Ulster County's use of renewable energy. This policy reinforces Executive Order 1 of 2019 signed by the County Executive in June of 2019.

The resolution committed Ulster County to:

- Purchase 100% of the County's electricity for government operations directly from local renewable energy sources, or as an interim solution only, by obtaining Green-e Energy certified Renewable Energy Certificates (RECs).
- Continue to operate a net carbon neutral government.
- Decrease greenhouse gas emissions associated with its operations by 25 by the year 2025 and 80 by the year 2050 using the County's 2012 greenhouse gas emission inventory as a baseline.
- Ulster County shall supply 100% of its annual building and fleet electricity usage from locally generated renewable energy sources by the year 2030.
- Endeavor to achieve the Department of Environmental Conservation's Gold Climate Smart Community designation by the year 2025.
- Assist and support our towns and communities in increasing the use of green power and decreasing community wide greenhouse gas emissions by 80% by the year 2050.

The following report, prepared by the Ulster County Department of the Environment, is submitted to detail the status of each of these goals, and to inform whether these goals remain attainable and whether they should be modified or amended.

This report builds on the Annual Green Fleet Report, due for submittal by March 1st for the prior year of data, and the Building Benchmarking report, due for submittal by September 1st for the prior year of data. Based on this reporting cycle, building energy usage data has not been fully compiled for calendar year 2019. As such, this report reviews and analyzes 2018 data.

2. Renewable Electricity Usage

Per Executive Order 1-2019, Ulster County purchases 100% of its electricity for government operations from renewable sources through a combination of on-site generation, distributed generation, renewable energy certificates and utility green power products. Per Resolution 315 of 2019, Ulster County distinguishes between local renewable electricity and non-local renewable electricity acquired through the purchase of RECs. Ulster County defines local generation as generation from a renewable source that occurs within the same utility territory and NY Independent System Operator (NYISO) zone as the load it serves.

Local Renewable Generation

In 2018, purchased 7.8% of its electricity from local renewable sources. This electricity was generated at the following locations:

¹ Available here: https://ulstercountyny.gov/sites/default/files/315.1%20-%2019_0.pdf

Table 1: Sources of Local Generation

Site	System capacity	Interconnection Type	Installation year	Ownership
New Paltz Substation Salt Shed	30.6 KW DC	Behind the meter	2011	Ulster County
Town of Ulster Landfill ²	1.9 MW DC	Remote net metering	2018	Third Party

Table 2 below shows the local electricity generation used by Ulster County government operations per year since the GHG inventory baseline year.

Table 2: Total Renewable Electricity Generation

Year	Electricity Generation (kWh)
2018	927,285
2017	37,447
2016	42,164
2015	37,793
2014	36,862
2013	40,358
2012	31,203

Renewable Energy Credits

Since June of 2014, Ulster County has purchased RECs to ensure 100% of the electricity used for government operations is renewable. The renewable claim is made through the purchase and retirement of RECs certified by Green-e®, a third-party verification firm. Because they were not locally generated, these offsets are not counted as actual reductions in emissions (i.e. as progress toward GHG reduction goals). The GHG accounting in this inventory report assumes the absence of all offsets.

Table 3 shows the quantity of RECs retired each year to ensure Ulster County is using 100% renewable electricity for its government operations.

Table 3: Renewable Energy Credits Retired for Ulster County Government Operations

Year	RECs Retired (MWH)
2018	10,892
2017	11,914
2016	12,217
2015	12,215
2014	6,000

3. Greenhouse Gas Inventory

In 2018, Ulster County produced 9,238 metric tons of CO₂-equivalent (CO₂e) emissions. The following tables detail the County's emissions by scope and sector respectively.

² Generation data available here: <http://s44709.mini.alsoenergy.com/Dashboard/2a566973496547374143454b772b71413d>

Table 4: 2018 Government Operations Emissions by Scope (Metric Tons CO2e)

	CO ₂ e ³	CO ₂	CH ₄	N ₂ O
SCOPE 1 – Direct Emissions				
Mobile Combustion	5,019	4,922	5	92
Stationary Combustion	2,756	2,749	2	5
SCOPE 2 – Indirect Emissions				
Purchased Electricity	1,463	1,456	3	4
TOTAL	9,238	9,127	10	101

Table 5: 2018 Government Operations Emissions by Sector (Metric Tons CO2e)

	SCOPE 1	SCOPE 2
Buildings and Other Facilities		
Purchased Electricity	0	1,452
Stationary Combustion	2,749	0
Streetlights and Traffic Signals		
Purchased Electricity	0	4
Transit Fleet:		
Mobile Combustion	1,579	0
Vehicle Fleet		
Mobile Combustion	3,440	0
Purchased Electricity	0	1
Water Delivery Facilities		
Purchased Electricity	0	6
Stationary Combustion	7	
TOTAL	7,775	1,463

Biogenic Emissions

In 2018, Ulster County emitted 178 metric tons of CO₂e from biogenic sources. These emissions are entirely attributed to the mobile combustion of ethanol and biodiesel.

Table 6: 2018 Biogenic Emissions (Metric Tons CO2e)

Sector	Biogenic Emissions (MT CO ₂ e)
Transit Fleet	52
Vehicle Fleet	137
TOTAL	190

Optional Scope 3 Emissions

In 2018, Ulster County estimated the anthropogenic Scope 3 emissions attributed to employee commutes as 2,111 MT CO₂e. See Appendix C for assumptions and calculations.

Table 7: 2018 Scope 3 Emissions (Metric Tons CO2e)

	CO ₂ e	CO ₂	CH ₄	N ₂ O
SCOPE 3				
Mobile Combustion	2,111	2,071	2	37

³ Carbon dioxide equivalent or CO₂e is calculated by adjusting the emissions of non-CO₂ greenhouse gases using the global warming potential of each gas.

Progress Toward GHG Reduction Goals

Between the baseline year of 2012 and the most recent GHG inventory for 2018, Ulster County's actual emissions from government operations decreased by 2.4%.

The following figure compares Ulster County's 2018 emissions to the levels required to meet the County's 2025 and 2050 reduction goals.

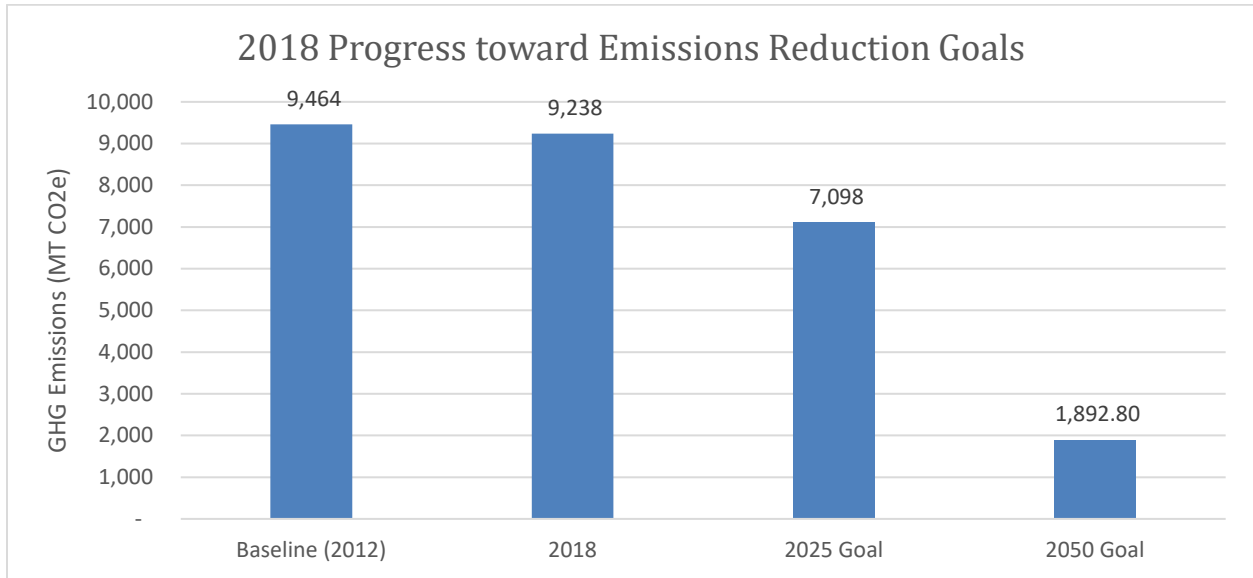


Figure 1: Progress Compared to 2025 and 2050 Goals

Figures 2 and 3 below show emissions trends by sector and energy type respectively.

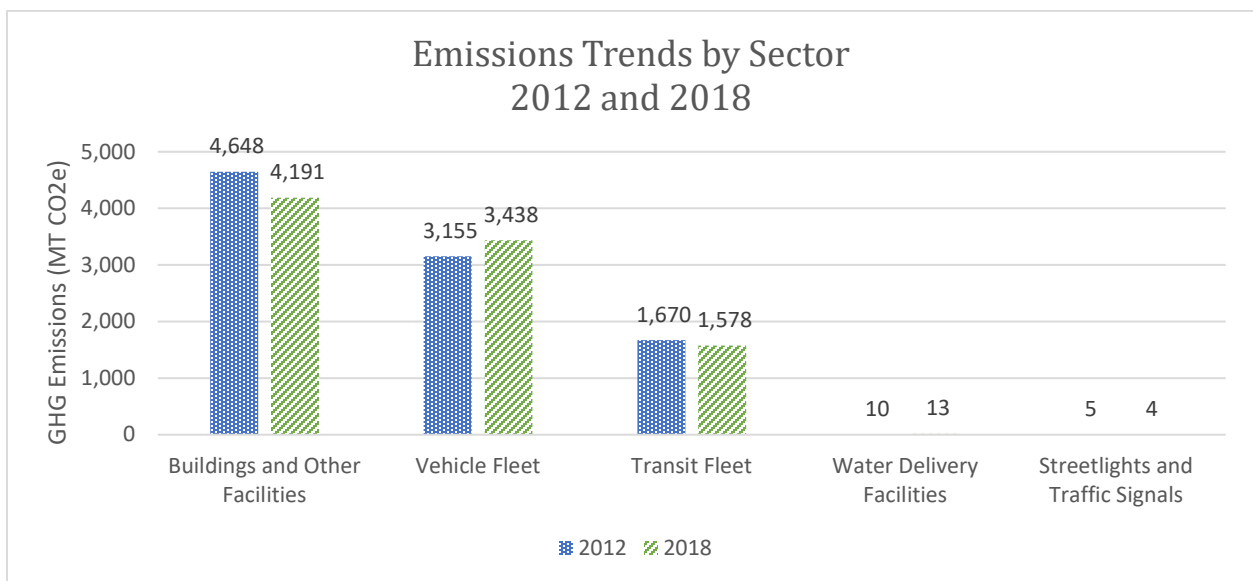


Figure 2: Emissions Trends by Sector

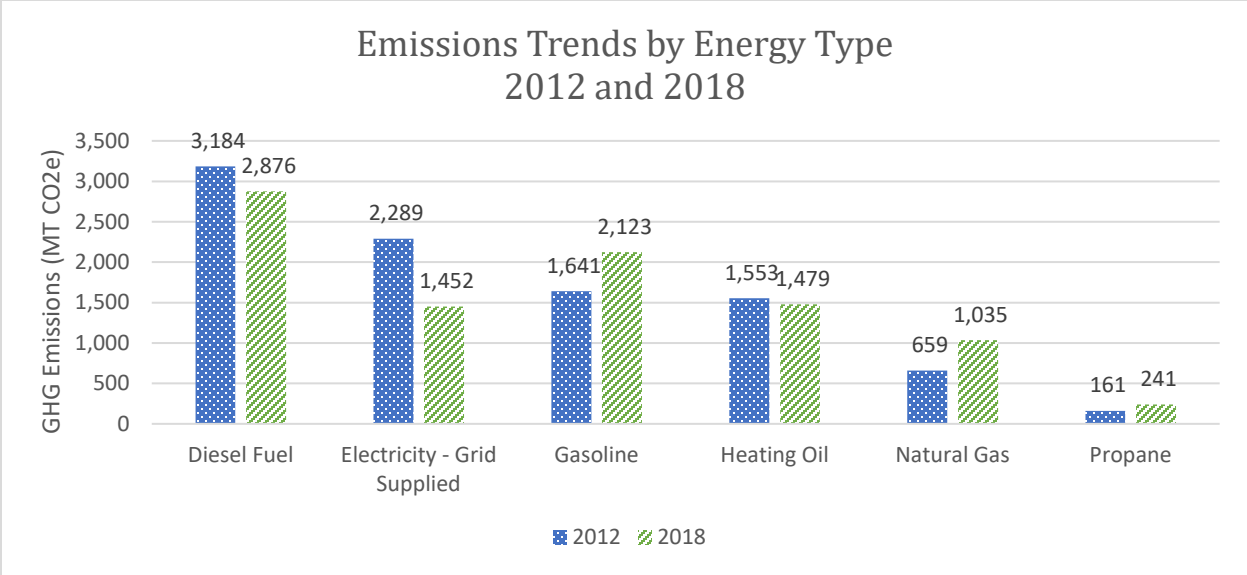


Figure 3: Emissions Trends by Energy Type

4. Carbon Neutral Government Operations

Ulster County achieves net carbon neutrality through the purchase of offsets. Since 2015, Ulster County has purchased carbon offsets on the voluntary market to offset 100% of Scope 1 emissions and Scope 3 emissions attributed to employee commutes. Scope 2 emissions are offset by the purchase of Renewable Energy Credits (RECs). These offsets are not counted as actual reductions in emissions (i.e. as progress toward GHG reduction goals). The GHG accounting in Section 3 of this inventory report assumes the absence of all offsets.

Table 8: Distinction between GHG measures as applied toward reduction goals

Mitigation Type	Measure
Actual Reduction (counts toward operational goals)	<ul style="list-style-type: none"> Onsite generation (behind the meter) Local Remote Net Metering Local Community Distributed Generation (CDG)
Offset (counts toward carbon neutral government initiative only)	<ul style="list-style-type: none"> Renewable energy credits (RECS) Carbon credits

Table 9: 2018 Net Zero Emissions Compared to 2012 Baseline (Metric Ton CO2e)

Category	2012	2018	% Change
Total Government Activity Emissions¹	9,464	9,360	-1.1%
Local Electricity Generation	0	-122	
Actual Government Emissions	9,464	9,238	-2.4%
RECs	0	-1,463	
Carbon Credits	0	-7,775	
Net Government Operations Carbon Emissions	9,464	0	-100%

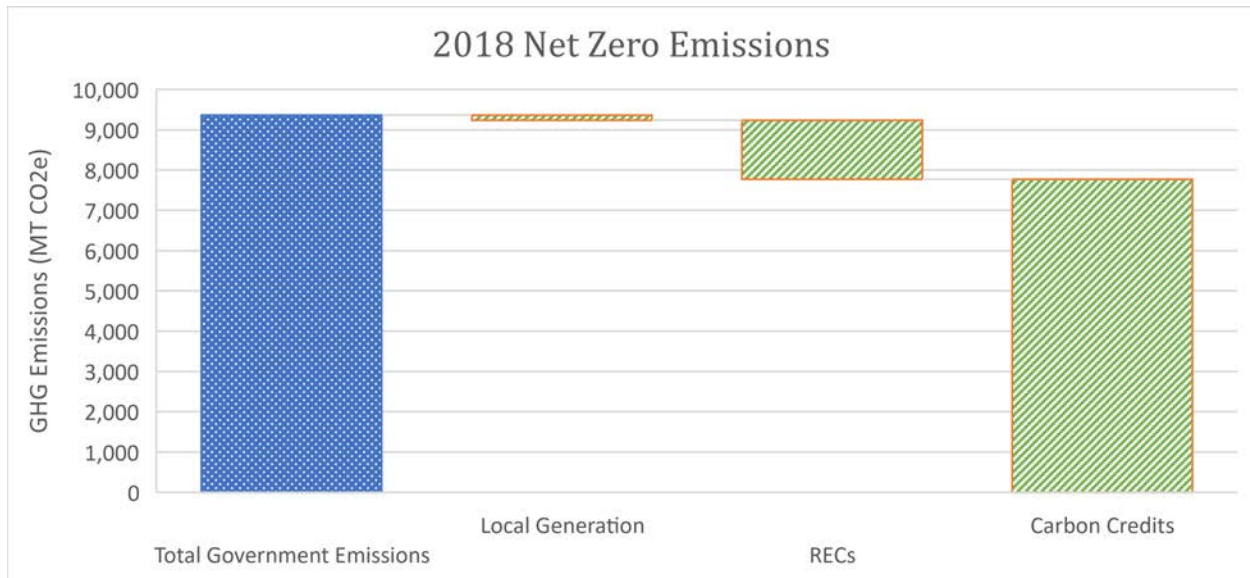


Figure 4: 2018 Net Zero Carbon Emissions

The following table details the offsets retired to meet the carbon neutral government operations mandate. The table compares the cost of offsets to both the annual utility budget cost for all reported GHG emissions sectors and the EPA’s social cost of carbon metric. Table includes offsets for 100% of Scope 1 and 2 emissions only.

Table 10: Offsets and Social Cost of Carbon

Year	2018
Carbon Offsets Retired (MT CO2e)	7,775
RECs Retired (MT CO2e)	1,463
Offset Cost (% of annual utility budget)	0.5%
Social Cost of Carbon ⁴ (% of annual utility budget)	14.4%

5. Climate Smart Communities Certification Status

Ulster County is currently Silver certified in the New York State Department of Environmental Conservation’s Climate Smart Communities⁵ program. The County received its original certification at the Bronze level in September of 2016 with a score of 264 points earned from completing 63 actions. The certification was increased to the Silver-level automatically when the DEC revised the program rules in 2018. Ulster County’s certification is valid for 5 years and will expire on August 31, 2021.

⁴ Social Cost of Carbon values taken from the EPA’s Technical Update of the Social Cost of Carbon for Regulatory Impact Analysis Under Executive Order 12866 (May 2013, Revised July 2016)

⁵ The DEC’s program website is available here: <https://climatesmart.ny.gov/>

Appendices

Appendix A: GHG Inventory Methodology and Assumptions

To track progress toward our GHG emissions goals, all energy usage is monitored and tracked by the Ulster County Department of the Environment. The annual GHG emissions inventory is calculated by aggregating this data by sector, scope, source and type and converting to metric tons of CO₂-equivalent (MTCO₂e) using EPA conversion factors.

Ulster County Government Operations GHG Inventory Methodology

The County references the Local Government Operations Protocol, Version 1.1 (LGOP) as a standard for accounting and reporting GHG emissions from government operations. This protocol was developed by Local Governments for Sustainability (ICLEI).

To the extent possible, Ulster County sets organizational boundaries for emissions accounting using the operational control approach. Per the ICLEI definition, Ulster County has operational control over a building or facility if either of these two conditions exist:

- Ulster County owns the building or facility, OR
- Ulster County has full authority to introduce and implement operational and health, safety and environmental policies.

The County accounts for leased facilities where it is possible to obtain the necessary data. Currently, the County does not estimate emissions for spaces where only part of the building is leased and the space is not sub-metered.

ICLEI Reporting Sectors

The County currently reports the following sectors and scopes:

- Buildings and Other Facilities: Scope 1 & 2
- Streetlights and Traffic Signals: Scope 2
- Transit Fleet: Scope 1
- Vehicle Fleet: Scope 1 & 2
- Water Delivery Facilities Scope 1 & 2

Ulster County does not own or operate facilities in the following sectors:

- Wastewater Facilities
- Port Facilities
- Airport Facilities
- Power Generation Facilities
- Solid Waste Facilities

Other Process and Fugitive Emissions

Ulster County currently does not collect data or estimate values for process and fugitive emissions.

Biogenic source emissions

CO2 Emissions from biofuel usage are not included as Scope 1 emissions in this inventory in accordance with ICLEI protocol, as the carbon concerned is of biogenic origin and would have been emitted to the atmosphere through the natural process of decay. Biogenic emissions totals from combustion of biofuels are tracked and reported as supplemental information in this report.

Ulster County assumes all gasoline purchased for fleet, transit and non-road purposes is an E10 ethanol blend (10% ethanol). Since 2015, the Ulster County transit fleet has used a B5 biodiesel (5% biodiesel) blend in the summer months.

Optional Scope 3 Emissions

Ulster County currently reports one Scope 3 source: Employee Commute. Usage data was estimated for each reporting year based on current number of employees and assumptions based on employee home of record data.

Appendix B: 2012 Baseline GHG Inventory

Ulster County completed its first GHG inventory for government operations in 2012, which was subsequently set as the baseline year. The 2012 report included emissions from purchased electricity, stationary fuel combustion, mobile combustion from government vehicle fleets, as well as emissions from County employee commutes.

Baseline adjustments

The scope of Ulster County government operations has undergone structural changes since the 2012 baseline inventory. To accurately compare current operating conditions to the baseline year and quantify GHG increases or decreases over time, Ulster County normalizes its baseline to account for changes that are due to a change in the services provided by the government.

For example, in 2013, the Golden Hill Health Care center was sold to a private service provider and the County no longer needed to provide this service to its constituents. This change reduced the County's purchase of utilities and fleet fuel significantly, saving approximately 3.5 MWh of electricity use, 53,000 gallons of fuel oil, and 1,500 gallons of fleet fuels per year. Because this was a divestiture of services, the 2012 baseline GHG inventory was updated to remove the emissions from this property and government function.

For its GHG inventory, the County uses the following set of rules to determine whether a baseline adjustment is warranted:

Table 11: Baseline Adjustment Methodology

Structural change	Baseline Adjustment?
New areas of government jurisdiction (or insourcing)	Yes
Acquisitions of property due to growth	No
Divestitures of property due to change in jurisdiction (or outsourcing)	Yes
Divestitures of property due to consolidation or efficiency of services	No
Access to energy use data that was not previously available	Yes

Table 11 shows the baseline adjustments that have been made to date.

Table 12: Adjustments to Normalize 2012 GHG Baseline

Baseline change	Effective Year	Reporting Sector	Scope	Change to Baseline Quantity (MT cO2e)
Golden Hill Health Care Center	2012	Buildings and Other Facilities / Vehicle Fleet	1 & 2	-1,216.4
Patriot's Project—Veteran's Housing	2014	Buildings and Other Facilities	1 & 2	+18.9
Sheriff's Substation Wawarsing**5	2015	Buildings and Other Facilities	1 & 2	+6.3
Family and Child Advocacy Center	2016	Buildings and Other Facilities	1 & 2	+9.7

Table 12 shows the 2012 baseline GHG inventory as updated for 2018.

Table 13: 2012 Baseline Government Operations Emissions by Scope (2018 Update)

	CO ₂ e	CO ₂	CH ₄	N ₂ O
SCOPE 1 – Direct Emissions				
Mobile Combustion	4,802	4,710	5	87
Stationary Combustion	2,373	2,366	2	5
SCOPE 2 – Indirect Emissions				
Purchased Electricity	2,290	2,282	2	6
TOTAL	9,464	9,358	9	98

Table 14: 2012 Baseline Government Operations Emissions by Sector (2018 Update)

	SCOPE 1	SCOPE 2
Buildings and Other Facilities		
Purchased Electricity	0	2,279
Stationary Combustion	2,369	0
Streetlights and Traffic Signals		
Purchased Electricity	5	5
Transit Fleet:		
Mobile Combustion	1,670	0
Vehicle Fleet		
Mobile Combustion	3,131	0
Purchased Electricity	0	0
Water Delivery Facilities		
Purchased Electricity	0	6
Stationary Combustion	4	0
TOTAL	7,174	2,290

Appendix C: Emissions Factors Disclosure

Ulster County uses emissions factors published by the EPA in the document *Emissions Factors for Greenhouse Gas Inventories*⁶ (last modified 3/9/3018).

⁶ Available here: https://www.epa.gov/sites/production/files/2018-03/documents/emission-factors_mar_2018_0.pdf

100-year global warming potential (GWP) multipliers were applied as published in the Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report.⁷

Ulster County does collect and maintain data on vehicle miles traveled (VMT) for vehicle fleet and transit fleet vehicles. However, to simplify the accounting process for mobile combustion, methane (CH₄) and nitrous oxide (N₂O) emissions were estimated on a per-gallon basis as described in the New York Community and Regional GHG Inventory Guidance (Version 1.0, September 2015). To do so, the CO₂ emission factors were multiplied by factors of 0.001 for CH₄ and 0.18 for N₂O to obtain an emissions factor.

Appendix D: Activity Data

The following table shows the quantities of energy purchased by Ulster County in 2018. These quantities form the basis for the greenhouse gas inventory.

Table 15: 2018 Activity Data

Energy Type	2018 Usage
Biodiesel (gal)	3,521
Diesel (gal)	276,476
Electricity (kWh)	10,811,574
Ethanol (gal)	26,562
Gasoline (gal)	239,060
Heating Oil (gal)	144,424
Natural Gas (CCF)	189,892
Propane (gal)	42,194

⁷ Available here: <https://www.ipcc.ch/site/assets/uploads/2018/02/ar4-wg1-chapter2-1.pdf>