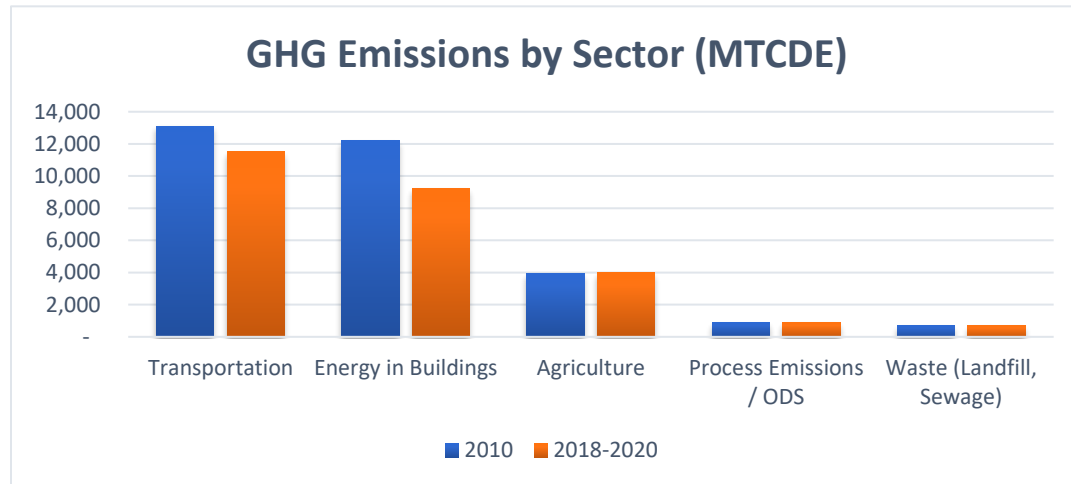


New Lebanon Community Greenhouse Gas (GHG) Emissions Inventory 2018-2020

Total GHG emissions: 26,536 MTCDE

Top Three Sources: Vehicles, heating fuels, and agriculture.



Summary

The New Lebanon Climate Smart Task Force created a 2018-2020 community GHG inventory that updates 2010 GHG inventory prepared previously by Capital District Regional Planning Commission (CDRPC)¹. The Task Force chose to average the 2018-2020 period to compensate for the impact the Covid-19 pandemic. Emissions are counted as “Metric Ton of Carbon Dioxide Equivalent (MTCDE)” which is a standard way to count greenhouses gases.

Our town is a rural agricultural community of 36 square miles with a population of 2,305. We produce emissions from driving, using energy in our buildings, and from our agricultural practices. There is a small number of emissions from treating sewage, generating solid waste, and from our use of certain chemicals like HFC refrigerants.

Because we are sparsely populated, driving creates the most emissions at 43% from burning gasoline and diesel in vehicles and farm equipment. Transportation emissions declined modestly from 2010 because the average fuel economy of new vehicles increased. Fuel oil and propane used for heating is the next largest sources at 29% of emissions. Residents also heat with wood- about 50% of the energy

¹ This inventory was prepared by the New Lebanon Climate Smart Task Force with the support of Climate Action Associates LLC, a NYSERDA-sponsored contractor provided by CDRPC.

equivalent of oil they use- but those emissions are considered renewable biomass and are not countable per GHG protocols.

Residents also use a lot of grid electricity that has a GHG footprint associated with power plants, but those emissions are only 6% of the community's total and are *less than a quarter* of fuel oil / propane emissions. Grid electricity is getting produced with less and less fossil fuels, and the carbon intensity of the grid dropped more than 50% between 2010 and 2020 (from 498 to 232 lbs. CO₂ / MWh). Based on the goals of New York's Climate Leadership and Community Protection Action (CLCPA) goal of zero-emission electricity by 2040, emissions will decline even more.

New Lebanon's livestock and use of nitrogen fertilizer create methane (CH₄) and nitrous oxide (N₂O) both of which are GHGs that together count for 15% of town's total. Diesel and gasoline used in agricultural, construction, and off-road lawn equipment also create significant emissions, 1443 MTCDE. Those are counted in the transport sector, representing 13% of that sector.

Other noteworthy points:

- Residential electricity consumption is trending upwards in the town, which is unusual since LED technologies generally push down consumption. It could be a sign that residents are switching to electric heat pumps or residents are simply building larger homes. Commercial electricity use is declining. See figure on next page.
- In 2010, CDRPC reported that average town residents spend 12% of take home income on energy. With the costs of petroleum rising rapidly that pressure may increase if residents remain on fuel oil.
- Total emissions declined by 15% from 2010 to 2018-2020 due to improvements in vehicle fuel economy and a cleaner grid electricity mix.

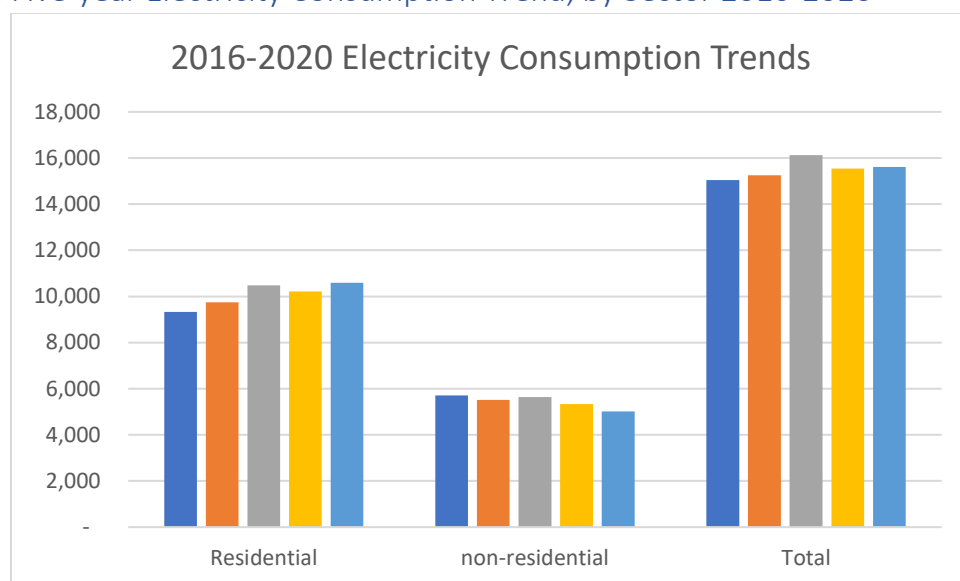
GHG Emissions, By the Numbers

By Source	2018-2020	Current Percent
Fuel oil / propane	7,590	29%
gasoline / diesel	11,552	44%
Electricity	1,635	6%
Agriculture (livestock/fertilizer)	3,990	15%
Waste (solid and sewage)	712	3%
Use of refrigerants (ODS)	912	3%
Total	26,390	100%

Macro Sector	2010	2018-2020	Current Percent
Transportation	13,109	11,542	43%
Energy in Buildings	12,211	9,235	35%
Agriculture (non-energy)	3,962	3,990	15%
Process Emissions / Refrigerants	906	912	3%
Waste (Landfill, Sewage)	707	712	3%

Total	30,895	26,390	100%
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Five-year Electricity Consumption Trend, by Sector 2016-2020



GHG Protocol / Methods

This inventory is based on the methods in 2015 Regional and Community GHG Inventory Guidance as required by the CSC program. It updates data and methods used in the 2010 Regional GHG inventory developed by CDRPC that includes the Town of New Lebanon.

The Town used a three-year average period to compensate for the Covid-19 pandemic impact on 2020. In general, direct data sources were updated using new sets available, such as from the Utility Energy Registry (UER), or from the US Energy Information Administration. Sometimes, where direct data was no available, the 2010 GHG emissions totals for the town were extrapolated based external drivers such as population, emission factors, and fleet fuel economy trends. Some sources are kept the same if there is reasonable justification to change them.

A summary of all the methods is listed below.

Built Environment	2010 Method Summary	2018-2020 Update Method
Tank Fuels (fuel oil, propane, kerosene, residual fuel oil)		
Residential	EIA SEDS data apportioned by home heating fuel choice 2010 Census	Scale 2010 emissions by population change, and by current SEDs use
Commercial	EIA SEDS data apportioned by Employment	Scale 2010 emissions by population change, and by current SEDs use
Industrial	Pie Slice Method. Point Source EPA/GHG MMR Data, NYSDEC DAQ, EPA Title 5 Data assigned as point sources. Take SEDs industrial sector for NY, remove point sources, and apportion remaining to municipalities by industrial electricity use as a proxy for small industry location.	Update point source data- keep pie slice data the same

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Energy Generation	EIA-932, assign as point sources to municipalities	Update EIA-923 data to 2018 (Most recent)
Utility Energy	Reported by Utilities	Use UER data for 2018-2020 period, update electricity emission factor to EGRID 2018
Transmission/Distribution Losses	Estimated as 2% LUGF for natural gas, and 2% T/D losses for electricity consumption	Use same method with new updated data
ODS / Refrigerants	2010 US GHG Inventory sector total apportioned by population	Scale emissions by population change
Industrial Process	EPA/GHG MRR data assigned as point sources	Keep the same - Not enough new data available. None in the town.
Transportation		
On-Road (gasoline, diesel)	VMT developed by CDTC for municipalities in four counties, and in the others VMT downscaled to municipalities from DOT-supplied county level data. VMT converted to fuel consumption using fleet-average fuel economy by vehicle type. Assumed 10% of gasoline is ethanol.	Scale 2010 emissions by population change, AND by fleet average fuel economy
Non-Road	DEC-supplied county data apportioned to municipalities by population and other factors. DEC DAQ data developed to support air quality compliance rules pursuant to EPA Title 5	Scale 2010 emissions by population change
Air (Scope 3)	Apportioned total US aircraft GHG footprint by total arrival and departure miles in the 8-county REDC compared to US flight miles. These apportioned that to Munis by population.	Scale 2010 emissions by population change
Rail	Based on a NYSERDA study on rail-sector fuel consumption	Keep the same - Not enough new data available
Marine	Based on the US National Emissions Inventory at a county level	Keep the same - Not enough new data available
Waste Management		
Landfills- Direct	Reported to DEC, Section 10 of landfill reports.	Update point source data from landfill reports
Landfills- Indirect	Total waste generated by counties from landfill reports is converted to GHG emissions, and then apportioned to municipalities by population.	Scale 2010 emissions by population change
Sewage - Indirect	Emissions from all WWTPs estimated using Lop methods, and then apportioned to municipalities by population.	Scale 2010 emissions by population change
Agriculture		
Livestock / Fertilizer	Not enough information to update in this scope	Keep the same - Not in scope