Sullivan County Greenhouse Gas Emissions Benchmarking Report 2024

Benchmarking helps the County measure progress in improving energy efficiency, deploying renewable energy resources, reducing GHG emissions, and reducing energy costs in County facilities. For 2024, Sullivan County benchmarked 19 County owned buildings that are larger than 1,000 square feet and use energy to heat or cool at least 50% the occupied space, using the EPA's Portfolio Manager benchmarking software. Unless otherwise noted, the County uses benchmarking data from 2016 as the baseline year against which year-to-year changes in energy use and GHG emissions are measured. For buildings that were constructed or acquired after 2016, the baseline year starts one full year after the date of the building's full occupancy by the County.

Energy Performance

Sullivan County facilities that have undergone systematic energy efficiency retrofits guided by energy audits continue to perform well with respect to overall reduced energy consumption and operational efficiency. Increased energy use at the landfill correlates with the increased tonnage of municipal solid waste (MSW) delivered to the tipping floor of the facility. Propane use for landfill operations increased by 2,795 gallons and electric consumption increased by 698,075.4 kilowatt hours (kWh).

Emissions Performance

A review of the emissions performance of the county's building portfolio for 2024 points out two powerful drivers of greenhouse gas (GHG) emissions in county building operations, the use (or non-use) of fossil fuels to heat our buildings, and sourcing the electricity used to power our buildings from renewable resources.

1. The elimination of #2 fuel oil to heat the Sullivan County International Airport Terminal due to its deconstruction to prepare for the construction of the new terminal and a significant reduction in fuel oil use at the District Attorney's Office and the Callicoon Storm Station contributed to a decrease in GHG emissions of 33.03 metric tons CO_2e.
2. The hydroelectric station at Goodyear Lake in Cooperstown was offline during 2024 due to turbine repair. Had the system been operational, the renewable generation attributes which flow to the county would have avoided emissions of 1449.0 metric tons of CO_2e.

Additionally, the County owns two small photovoltaic arrays, a pole mount system at the Transportation Building in White Lake and the ground mount array at the Travis Building in Liberty. The electricity generated by these two arrays, and used onsite, avoided 29.98 metric tons of CO_2e. This is the equivalent of avoided emissions from 10.6 tons of municipal solid waste being recycled instead of landfilled.

The change-over from oil heating to air source heat pumps (ASHP) at the SC District Attorney's offices was completed in November of 2024. 2025 will let us see the full effect of moving this building from #2 fuel oil for heating and chill water for cooling in GHG emission reduction.

Heating and Cooling Degree Days in 2024

Energy consumption and cost savings may vary year to year due to variations in the number of Cooling Degree Days (CDD) and Heating Degree Days (HDD). In 2024, there was no significant disparity of heating and cooling degree days.

Other factors that influence overall building performance

Benchmarking of County buildings demonstrates that energy and GHG data are complex and mutable. In addition to variance in the number of CDD and HDD, year-end fuel deliveries at individual facilities can skew the annual average, since Portfolio Manager automatically books fuel as "consumed" in the year it was delivered. When benchmarking includes efforts to account for the timing of fuel consumption as opposed to the date of delivery, a more accurate annual fuel consumption analysis is possible. For example, the documented consumption of fuel oil at the Government Center in Monticello was reduced by 1,309,799 kBtu (9,431 gallons) in 2023 due to more accurate accounting for timing of consumption based on size and date of deliveries. The County could address this problem further by installing meters at the three County facilities that receive large bulk purchases of fuel oil. This would also allow monthly readings of fuel consumption which would facilitate more granular data on weather normalized fuel consumption.

The 2024 data is shown in 3 tables that compare 2023 and 2024 data:

Table 1: Energy Performance
Table 2: Emissions Performance
Table 3: Fuel Performance

Energy Data Glossary

Btu: A British thermal unit (Btu) is a standard unit of energy, defined as the amount of heat needed to raise the temperature of one pound of water by one degree Fahrenheit. In tracking building energy use, the Btu provides a single unit of measure that allows us to analyze the efficiency of systems that use a variety of fuels.

Energy Star: ENERGY STAR is a U.S. Environmental Protection Agency voluntary program that helps businesses and individuals achieve superior energy efficiency. Energy Star building ratings are based upon 150 separate metrics such as each building's size, location, the number of occupants, number of computers, and other characteristics, 1 being the worst, 100 being the most efficient.

EUI: Energy Use Intensity (EUI) expresses a building's energy use as a function of its size and other characteristics. For most property types in Portfolio Manager, the EUI is expressed as energy per square foot per year. It is calculated by dividing the total energy consumed by the building in one year (measured in thousands of British thermal units or kBtu) by the total gross floor area of the building. In general, a low EUI signifies good energy performance. EUI can be calculated on site energy use or source energy use, as explained in the following glossary entries.

GHG (as measured in MTCO2e): There are a number of greenhouse gases (GHG), including carbon dioxide, methane, nitrous oxide and ozone. CO2 equivalent or CO2e, is a unit of measure that allows us to express the impact of each different GHG in terms of the amount of CO2 that would create the same amount of warming. CO2e allows us to express a carbon footprint consisting of different GHGs as a single, consistent number.

Heating and **Cooling Degree Days:** Degree days measure the amount of heating or cooling necessary at a given property. Degree days are measured relative to a base of 65°F. Above 65°F, it is assumed that the building will need to have cooling, and below 65°F it is assumed that the building will need to have heating. **Heating Degree Days (HDD)** are calculated based upon the number of days a building would have to be heated by 1 degree to accommodate the heating requirement. For example, on a day on which the mean temperature is 55°F degrees, that day is worth 10 Heating Degree Days because it is 10 degrees below 65°F. HDD is calculated in this way for each day of the year and summed up to get the total annual HDD. **Cooling Degree Days (CDD)** are calculated based upon the number of days a building would have to be cooled by 1 degree to accommodate the cooling requirement. For example, on a day on which the mean temperature is 80°F degrees, that day is worth 15 Cooling Degree Days because it is 15 degrees above 65°F. CDD is calculated in this way for each day of the year and summed up to get the total annual CDD. [Mean temperature = (high temperature of a particular day + low temperature of that day) ÷ 2.]

Site Energy Use: Site Energy Use is the annual amount of all the energy a property consumes onsite, as reported on utility bills.

Site EUI: The Site Energy total for one year, as reflected in the building's energy bills, divided by the total square footage of the building, yields a number that represents Site Energy Use Intensity (Site EUI). Site EUI helps building managers understand how the energy use for an individual building changes over time.

Source Energy Use: Source Energy Use represents the total amount of raw fuel that is required to operate the building. It incorporates all production, transmission, delivery, storage, and transport losses for all fuel types. Source Energy Use is the basis for ENERGY STAR's rating system, which converts the consumption of each type of energy into a single common unit (kBtu) and expresses it as a score of 1-100, so that the energy performance of diverse buildings can be compared equitably.

Source EUI: The source energy use total for one year, divided by the total square footage of the building, yields a Source Energy Use Intensity (Source EUI) that provides the most comprehensive measure of a building's energy performance. By taking all energy use into account, the score provides a complete assessment of energy efficiency in a building.

Weather-normalized: Weather normalized metrics are adjusted to account for the actual weather in a given area, such as a hotter than usual summer or a colder than usual winter.

Table 1: Energy Performance 2024

Comparing Years Ending 12/23 with 12/24

Date Downloaded: 06/19/2025 10:56 AM EDT

Date Generated: 06/19/2025 10:55 AM EDT

Number of properties in report: 19

" Not Available" indicates that a fuel or technology is not utilized at a particular facility.

Property Name	Electricity Use - Grid Purchase Change (kBtu)	Electricity Use – Generated from Onsite Renewable Systems and Used Onsite Change (kBtu)	Propane Use Change (kBtu)	Fuel Oil #2 Use Change (kBtu)	Site EUI Change (kBtu/ft²)	Source EUI Change (kBtu/ft²)	National Median Site EUI Change (kBtu/ft²)	National Median Source EUI Change (kBtu/ft²)	Green Power - Onsite and Offsite Change (kWh)	Avoided Emissions - Onsite and Offsite Green Power Change (Metric Tons CO2e)
Sullivan County Government Center	163911.2	Not Available	Not Available	-1605906.3	-12.8	-10.3	-9.2	1.6	-1080851.8	-452.35
Emergency Services Training Facility	9700.3	Not Available	-134356.8	Not Available	-11.9	-10.4	-8.6	0	0	0
Transportation Facility	10543.1	4732.5	-84640	Not Available	-6.1	-4.5	1.4	5.3	1387	0.58
Sullivan County Courthouse	-6748.9	Not Available	Not Available	-56718	-2	-2.3	0	1.6	-447900	-187.45
Human Services Complex (Liberty)	12871	10444.1	20515.9	577488.8	3.6	3.7	1.1	0	-2335229	-1088.32
Barryville Maintenance Shops	-49132.2	Not Available	-6283.6	208932.1	5.8	2.5	3.7	0	0	0
Callicoon Storm Station	-109692.4	Not Available	Not Available	-15649.2	-19.4	-50.2	5.4	0	-20457.7	-8.56
DPW Maplewood Facility	1282.9	Not Available	991484	206034	25.2	25.4	8.4	0	0	0
Livingston Manor Storm Station	-13641.9	Not Available	Not Available	5382	-3.9	-15.5	1.8	0	-31675	-13.26
Sullivan County International Airport	-105371.7	Not Available	6716	-607569	-10.6	-13.6	-7.3	0	-103789.3	-43.44
Landfill	34283.7	Not Available	379481.6	Not Available	5.8	6.6	3	0	0	0
Rockland Transfer Station	4940.6	Not Available	Not Available	Not Available	3	8.3	0	0	0	0
Ferndale Transfer Station	-5169.1	Not Available	Not Available	Not Available	-0.7	-2	0	0	0	0
Highland Transfer Station	-7053.6	Not Available	Not Available	Not Available	-1.8	-5.1	0	0	0	0
Mamakating Transfer Station	29640.1	Not Available	Not Available	Not Available	5.8	16.4	0	0	0	0
D&H Linear Park Museum Interpretive Center	-120.5	Not Available	-17480	Not Available	-6.8	-7	-7.5	0	0	0
Hurleyville Cultural Center	-17513.7	Not Available	Not Available	Not Available	-1.1	-3	0	0	0	0
Sullivan County Public Safety	83467.8	Not Available	-92368	Not Available	-0.1	0.9	-0.5	0	-1937206	-810.74
Sullivan County District Attorney	9454.6	Not Available	Not Available	-68310	-5.9	-4.2	-4.7	1.6	0	0

Table 2: Emissions Performance 2024

Date Downloaded: 06/19/2025 12:18 PM EDT

Date Generated: 06/19/2025 10:56 AM EDT

Number of properties in report: 19

Comparing Year Ending: 12/2023 with 12/2024

"Not Available" means that a fuel type or technology is not available at a facility.

Property Name	Total (Location-Based) GHG Emissions Change (Metric Tons CO2e)	Total (Location-Based) GHG Emissions Intensity Change (kgCO2e/ft²)	Direct GHG Emissions Change (Metric Tons CO2e)	Direct GHG Emissions Intensity Change (kgCO2e/ft²)	Indirect (Location-Based) GHG Emissions Change (Metric Tons CO2e)	Indirect (Location-Based) GHG Emissions Intensity Change (kgCO2e/ft²)	Avoided Emissions - Onsite and Offsite Green Power Change (Metric Tons CO2e)
Sullivan County Government Center	-113.16	-1	-119.16	-1.06	6	0.05	-452.35
Emergency Services Training Facility	-7.97	-0.76	-8.33	-0.79	0.35	0.04	0
Transportation Facility	-4.86	-0.43	-5.24	-0.46	0.39	0.03	0.58
Sullivan County Courthouse	-4.46	-0.14	-4.21	-0.13	-0.25	-0.01	-187.45
Human Services Complex (Liberty)	44.59	0.26	44.12	0.26	0.47	0	-1088.32
Barryville Maintenance Shops	13.32	0.5	15.11	0.57	-1.8	-0.07	0
Callicoon Storm Station - RT. 97	-5.18	-0.8	-1.16	-0.18	-4.02	-0.63	-8.56
DPW Maplewood Facility	76.76	1.61	76.71	1.61	0.05	0	0
Livingston Manor Storm Station	-0.1	-0.04	0.4	0.19	-0.5	-0.23	-13.26
Sullivan County International Airport	-46.77	-0.73	-42.9	-0.67	-3.86	-0.06	-43.44
Landfill	24.77	0.34	23.51	0.33	1.25	0.02	0
Rockland Transfer Station	0.18	0.11	0	0	0.18	0.11	0
Ferndale Transfer Station	-0.19	-0.03	0	0	-0.19	-0.03	0
Highland Transfer Station	-0.25	-0.07	0	0	-0.25	-0.07	0
Mamakating Transfer Station	1.08	0.22	0	0	1.08	0.22	0
D&H Linear Park Museum Interpretive Center	-1.09	-0.42	-1.09	-0.42	-0.01	0	0
Hurleyville Cultural Center	-0.64	-0.04	0	0	-0.64	-0.04	0
Sullivan County Public Safety	-2.66	-0.02	-5.72	-0.03	3.06	0.02	-810.74
Sullivan County District Attorney	-4.72	-0.47	-5.07	-0.51	0.35	0.03	0

Table3: Fuel Performance 2024

Comparing Year Ending 12/2023 with 12/31/2024

Date Downloaded: 06/18/2025 09:38 AM EDT

Date Generated: 06/18/2025 09:24 AM EDT

Number of properties in report: 19

"Not Available " means that a fuel source is not used at a particular facility

Property Name	Electricity Use - Grid Purchase Change (kWh)	Fuel Oil #2 Use Change (kBtu)	Propane Use Change (kBtu)	Site Energy Use Change (kBtu)	Fuel Oil (No. 2) Cost Change ($)	Propane Cost Change ($)	Electricity (Grid Purchase) Cost Change ($)	Energy Cost Intensity Change ($/ft²)	Energy Cost Change ($)
Sullivan County Government Center	48039.7	-1605906.3	Not Available	-1441995.1	-44874.18	Not Available	19584.17	-0.22	-25290.01
Emergency Services Training Facility	2843	Not Available	-134356.8	-124656.6	Not Available	-2342.11	538.07	-0.17	-1804.04
Transportation Facility	3090	Not Available	-84640	-69364.4	Not Available	-926.48	849.27	-0.01	-32.21
Sullivan County Courthouse	-1978	-56718	Not Available	-63466.9	-2414.85	Not Available	8627.1	0.19	6212.25
Human Services Complex (Liberty)	3772.2	577488.8	20515.9	621319.7	166349.37	203.68	31240.95	1.14	197794.01
Barryville Maintenance Shops	-14399.8	208932.1	-6283.6	153516.3	2221.68	143.72	-938.93	0.06	1426.47
Callicoon Storm Station - RT. 97	-32149	-15649.2	Not Available	-125341.6	-479.74	Not Available	-1526.84	-0.32	-2006.58
DPW Maplewood Facility	376	206034	991484	1198800.9	3997.96	14464.87	4368.75	0.47	22831.58
Livingston Manor Storm Station	-3998.2	5382	Not Available	-8259.9	-211.76	Not Available	-229.52	-0.21	-441.28
Sullivan County International Airport	-30882.7	-654745	6716	-682478.5	Not Available	298.81	-117172.45	-2.02	-130043.44
Landfill	10048	Not Available	379481.6	413765.2	Not Available	6195.37	2003.35	0.11	8198.93
Rockland Transfer Station	1448	Not Available	Not Available	4940.6	Not Available	Not Available	-78.22	-0.05	-78.22
Ferndale Transfer Station	-1515	Not Available	Not Available	-5169.1	Not Available	Not Available	276.06	0.03	276.06
Highland Transfer Station	-2067.3	Not Available	Not Available	-7053.6	Not Available	Not Available	-223.39	-0.06	-223.39
Mamakating Transfer Station	8687	Not Available	Not Available	29640.1	Not Available	Not Available	2735.03	0.54	2735.03
D&H Linear Park Museum Interpretive Center	-35.3	Not Available	-17480	-17600.5	Not Available	-253.66	177.71	-0.03	-75.95
Hurleyville Cultural Center	-5133	Not Available	Not Available	-17513.7	Not Available	Not Available	3568.35	0.222	3568.35
Sullivan County Public Safety	24463	Not Available	-92368	-8900.2	Not Available	4719.19	39382.43	0.28	44101.62
Sullivan County District Attorney	2771	-68310	Not Available	-58855.3	-1569.42	Not Available	1760.81	0.02	191.39