



# Benchmarking Report

March 27, 2024

Compiled by Emily Giovanni, Assistant to the Village Manager

## Background

In August 2018, the Village Board of Trustees adopted an [Energy Benchmarking Policy](#) which requires the collecting, reporting, and sharing of building energy data on a regular basis. This allows municipal officials and the public to understand the energy performance of municipal buildings relative to similar buildings nationwide.

The following Village-owned buildings are covered by this policy:

1. Stanley H. Kellerhouse Municipal Building
2. Harmon Engine Firehouse
3. Grand Street Firehouse
4. Washington Engine Firehouse
5. Department of Public Works Garage

Each year, the Manager's Office is responsible for entering the total energy consumed by each covered building into an online portfolio, as well as creating a report containing summary statistics on annual energy consumption. These data points are available to the public on the Village website at [crotononhudson-ny.gov/benchmarking](http://crotononhudson-ny.gov/benchmarking).

## Methodology

The Village monitors and records its energy usage in three distinct categories:

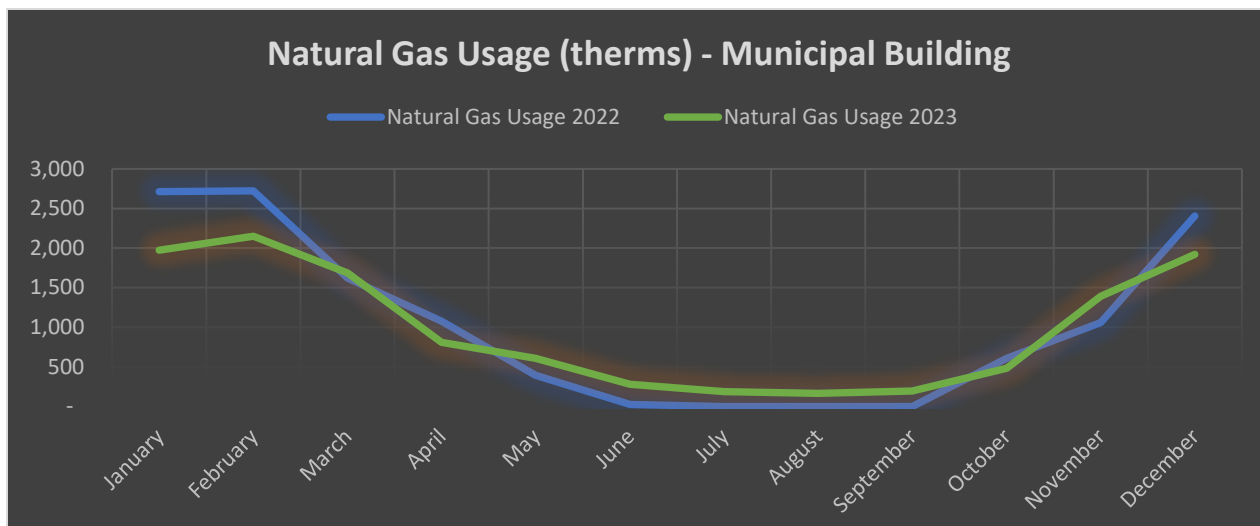
1. **Natural Gas (therms):** This refers to the consumption of natural gas, measured in units called "therms." A therm is a unit of heat energy equal to 100,000 British thermal units (BTU), commonly used for billing purposes by gas companies.
2. **Electric (kWh):** This indicates the usage of electricity, measured in kilowatt-hours (kWh). A kilowatt-hour is a unit of electrical energy equivalent to one kilowatt (1 kW) of power expended for one hour.
3. **Oil (Gallons):** This represents the consumption of oil. It refers to the volume of oil consumed for heating purposes.

By tracking these three categories of energy consumption, the Village can monitor its overall energy usage, identify trends, analyze patterns, and potentially implement measures to improve energy efficiency or reduce consumption in specific areas.

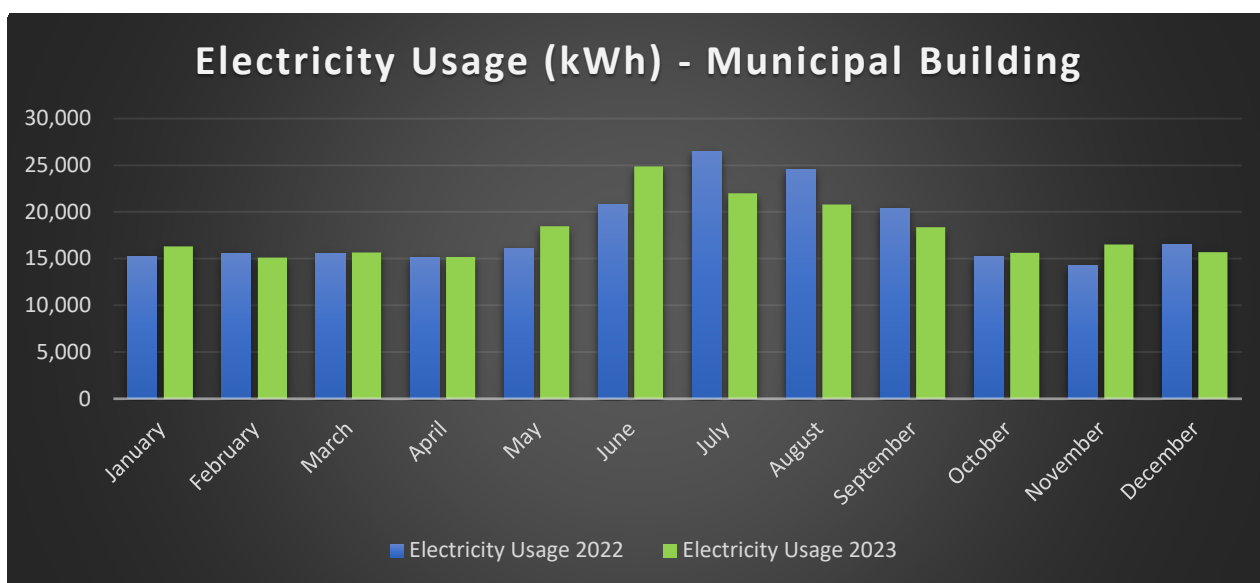
The usage data is collected from monthly billing statements provided by utility companies or service providers for natural gas, electricity, and oil consumption. Each month, the Village receives detailed invoices that outline the amount of energy consumed within the billing period, typically measured in therms for natural gas, kilowatt-hours (kWh) for electricity, and gallons for oil.

## Stanley H. Kellerhouse Municipal Building

The Village reduced its annual natural gas usage by approximately 6.2% between 2022 and 2023. The reduction in natural gas usage signifies a concerted effort to optimize energy efficiency and minimize environmental impact.

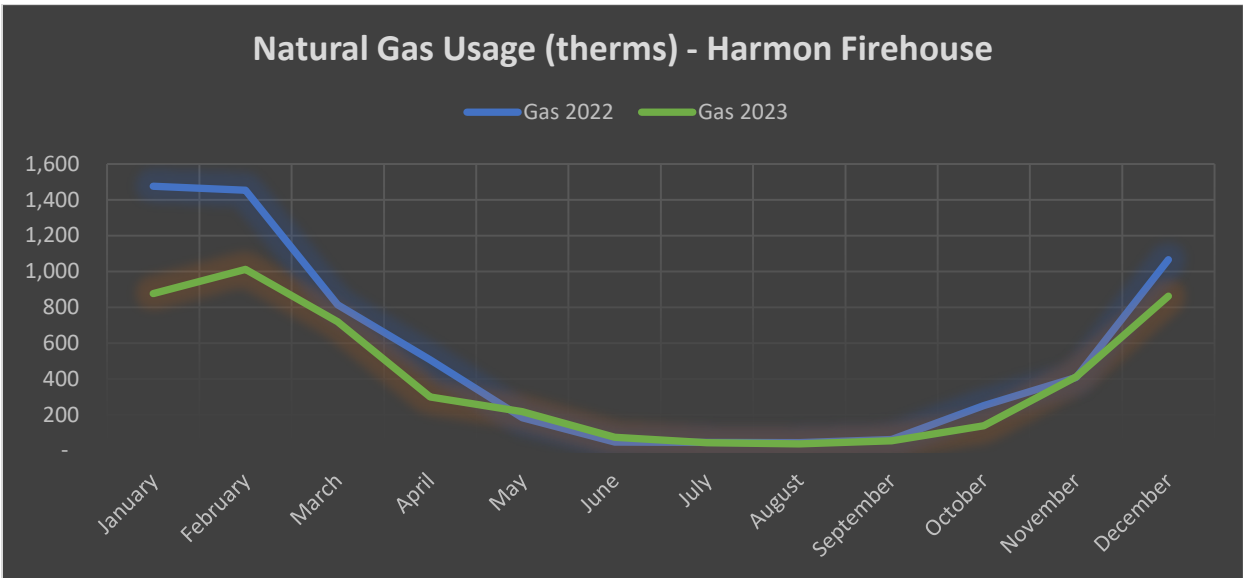


In comparing electricity usage between 2022 and 2023, 2022 recorded slightly higher total electricity consumption and average monthly usage. Both years exhibited peak usage during the summer months, with July being the highest for 2022 and June for 2023, reflecting typical patterns driven by increased cooling needs. Despite minor fluctuations, both years followed a similar trend of higher usage in summer and lower usage in cooler months. Additionally, in May 2022, the Village enrolled in the Con Edison GridRewards Program, voluntarily adjusting thermostat settings at the Municipal Building upon request to alleviate strain on the grid during peak demand hours, particularly on hot summer days.

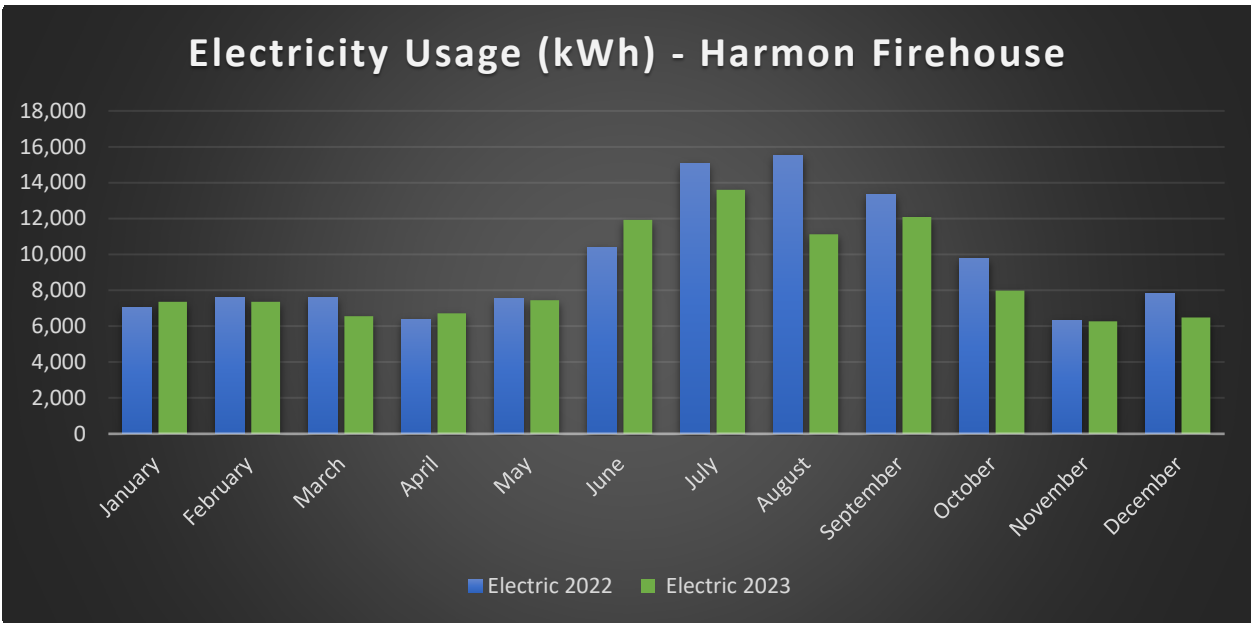


## Harmon Engine Firehouse

There is a notable 25% decrease in natural gas usage at the Harmon Firehouse from 2022 to 2023. Such a reduction implies a significant improvement in energy efficiency or a change in operational practices within the firehouse during that period.

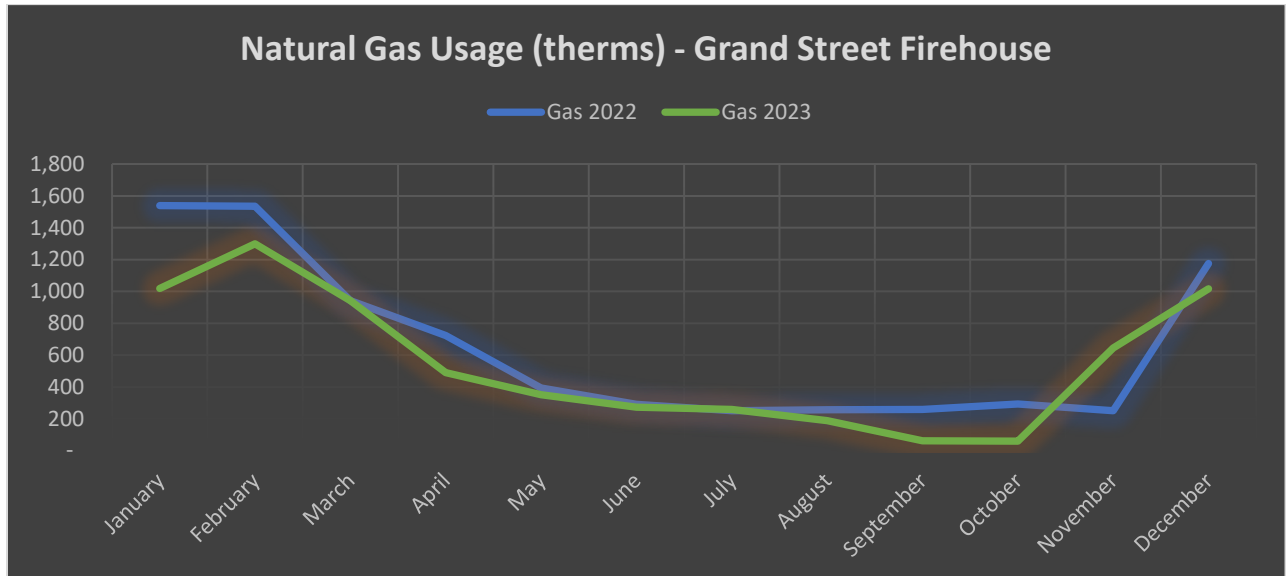


Overall, there is a slight decrease in electric usage from 2022 to 2023 at the Harmon Firehouse, with some months showing consistent usage patterns while others exhibit more significant changes. There are noticeable peaks in summer months, likely due to increased use of air conditioning systems, and lower usage in winter months.

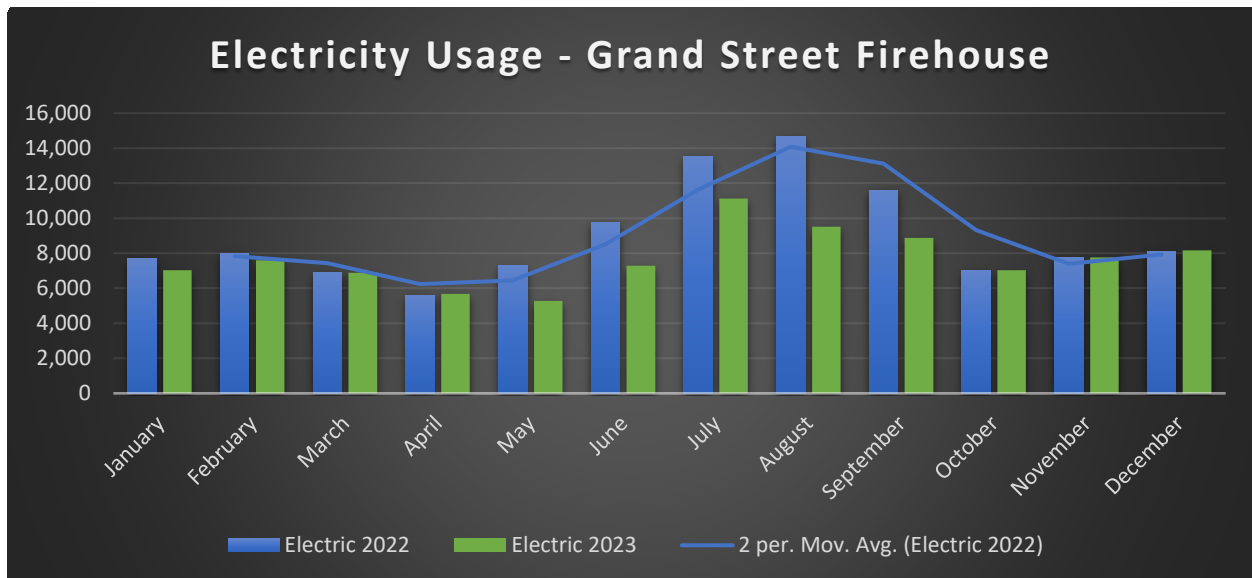


## Grand Street Firehouse

Grand Street Firehouse saw a 16.5% decrease in natural gas usage from 2022 to 2023. Such a reduction implies a significant improvement in energy efficiency or a change in operational practices within the firehouse during that period.

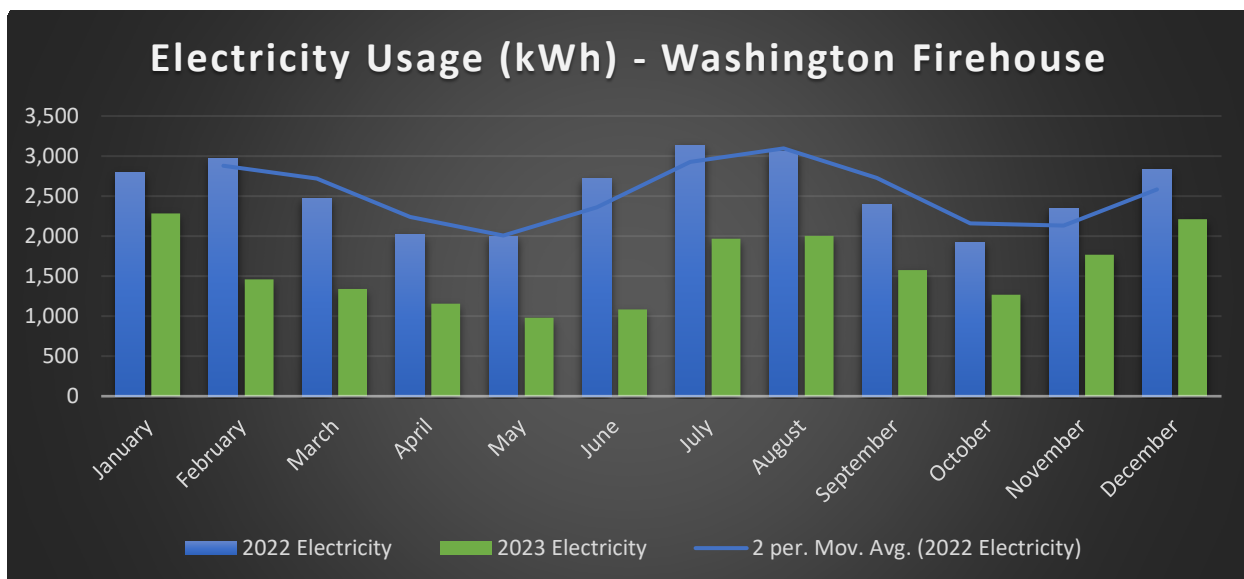


Grand Street Firehouse saw a 14.5% decrease in annual electricity usage from 2022 to 2023. Electricity usage during the summer months was markedly lower in Summer 2023 compared to Summer 2022.

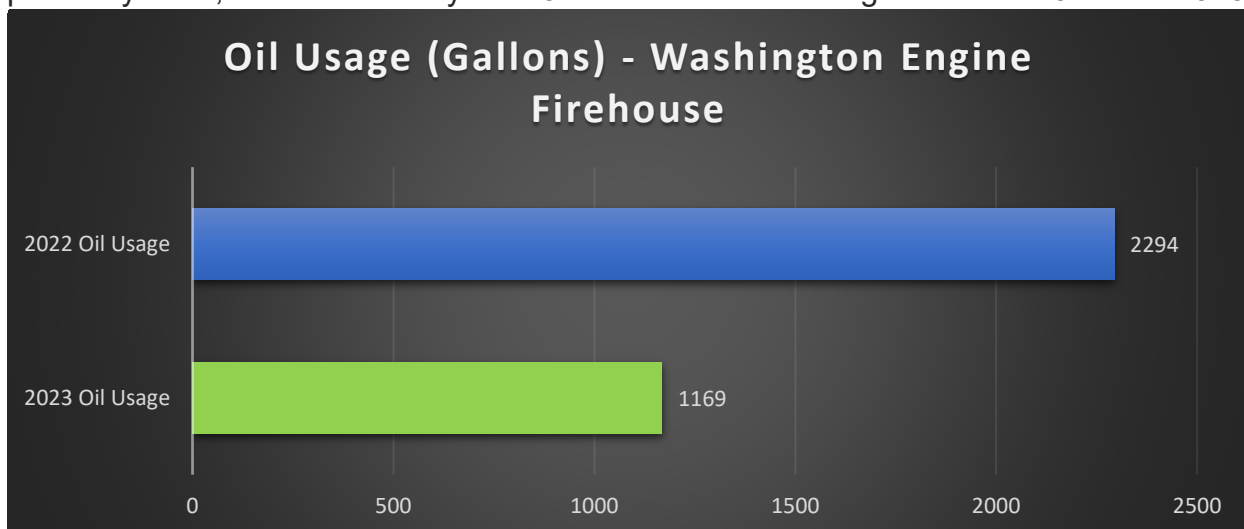


## Washington Engine Firehouse

Washington Engine Firehouse saw a **significant** 35.7% decrease in electricity usage from 2022 to 2023. In January of 2023, the Village of Croton-on-Hudson in Westchester County completed a [36 kilowatt \(kW\) solar installation](#) on the roof of its Washington Engine Firehouse, thanks to the efforts of the Village's Sustainability Committee and solar incentives provided by the New York State Energy Research and Development Authority (NYSERDA). The impact of this solar installation is evident in the data, which showcases significantly reduced electricity usage across all months following its implementation:

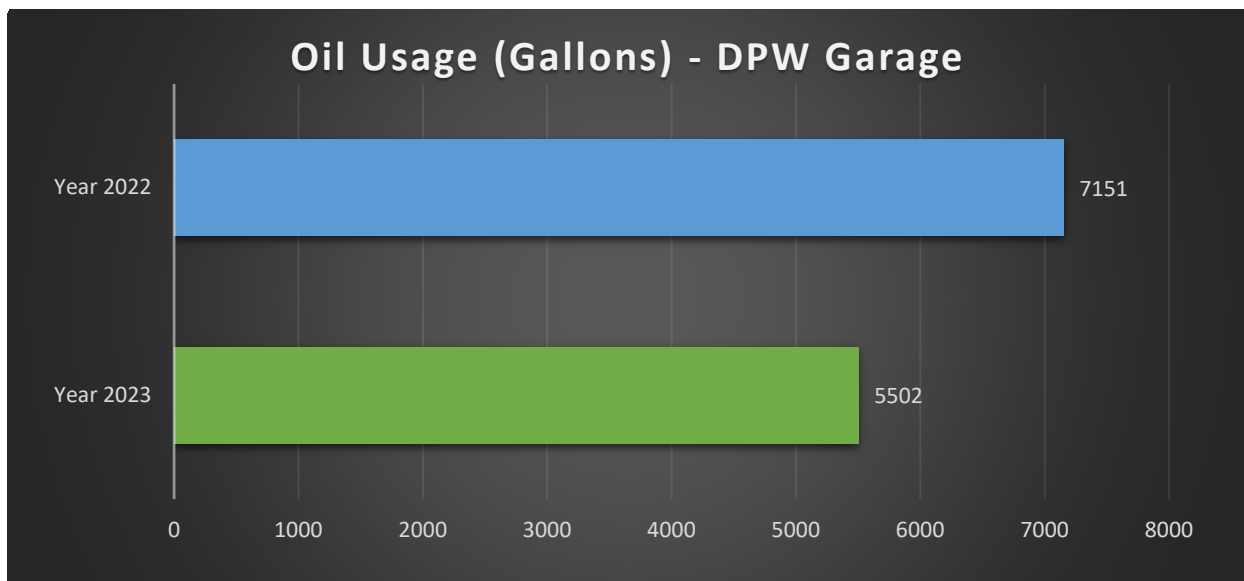
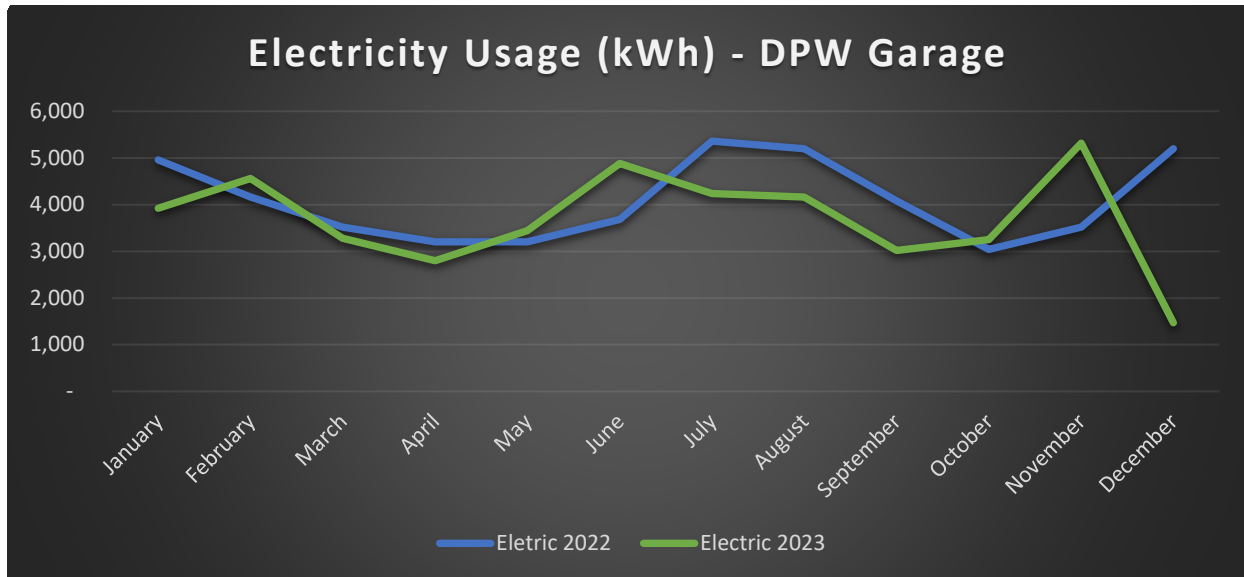


The solar roof provides the power needed to run the firehouse – additionally, the system utilizes the firehouse's existing heat pumps to heat as well as cool the facility. Doing so has slightly raised electricity usage, but is in the process of replacing most of the fuel oil presently used, as evidenced by the 49% reduction in oil usage between 2022 and 2023.



## Department of Public Works Garage

The Department of Public Works saw a 9.7% decrease in electricity usage and a 23% reduction in heating oil usage for the DPW Garage. These achievements not only result in cost savings for the DPW but also align with broader sustainability goals and climate action initiatives.



## Conclusion

Across various Village-owned buildings, notable achievements in energy conservation have been observed. The Stanley H. Kellerhouse Municipal Building achieved a commendable 6.2% reduction in annual natural gas usage, demonstrating a commitment to optimizing energy efficiency. Similarly, the Harmon Engine Firehouse and Grand Street Firehouse realized significant decreases in natural gas usage, indicative of improved operational practices and energy efficiency measures.

Furthermore, the Washington Engine Firehouse stands out for its remarkable 35.7% decrease in electricity usage following the installation of a solar power system. This initiative not only showcases the Village's commitment to sustainability but also highlights the potential of renewable energy solutions in reducing reliance on fossil fuels and mitigating climate change.

Additionally, the Department of Public Works Garage achieved noteworthy reductions in both electricity and heating oil usage, contributing to cost savings and aligning with broader sustainability goals and climate action initiatives.

Overall, the Village of Croton-on-Hudson's efforts to monitor, analyze, and improve energy performance across its municipal buildings demonstrate a proactive approach to environmental stewardship and resource management. By embracing energy efficiency measures and renewable energy technologies, the Village sets a positive example for communities striving to build a more sustainable and resilient future.



## Benchmarking Program - 2022

	Jan-22	Feb-22	Mar-22	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22
<b>Natural Gas (therms)</b>												
Municipal Building	2,715	2,723	1,623	1,078	392	27	-	-	-	608	1,062	2,407
Grand St. Firehouse	1,539	1,535	942	724	394	291	252	258	260	293	251	1,175
Harmon Firehouse	1,476	1,454	814	508	183	49	47	45	63	251	409	1,066
Washington Engine Firehouse	9	21	21	18	18	19	19	-	-	1	1	18
<b>Electric (kWH)</b>												
Municipal Building	15,280	15,600	15,600	15,120	16,080	20,800	26,480	24,560	20,400	15,280	14,240	16,560
Grand St. Firehouse	7,680	8,000	6,880	5,600	7,280	9,760	13,520	14,640	11,600	7,040	7,760	8,080
Harmon Firehouse	7,040	7,600	7,600	6,400	7,520	10,400	15,040	15,520	13,360	9,760	6,320	7,840
Washington Engine Firehouse	2,790	2,970	2,466	2,016	1,998	2,718	3,132	3,060	2,394	1,926	2,340	2,826
DPW Garage	4,960	4,160	3,520	3,200	3,200	3,680	5,360	5,200	4,080	3,040	3,520	5,200
<b>Oil (units)</b>												
DPW Garage	1814	1354	881	431	-	-	-	-		680	769	1222
Washington Engine Firehouse	515	506	499	-	-	-	-	-	-	-	234	540

## Benchmarking Program - 2023

	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Oct-23	Nov-23	Dec-23
<b>Natural Gas (therms)</b>												
Municipal Building	1,973	2,150	1,686	809	607	281	189	166	196	481	1,391	1,920
Grand St. Firehouse	1,018	1,299	943	490	351	274	259	188	63	60	644	1,017
Harmon Firehouse	876	1,012	719	300	218	75	44	38	55	139	412	862
Washington Engine Firehouse	21	22	21	18	18	15	15	18	20	20	18	20
<b>Electric (kWH)</b>												
Municipal Building	16,320	15,120	15,680	15,200	18,480	24,880	22,000	20,800	18,370	15,639	16,504	15,715
Grand St. Firehouse	7,040	7,600	6,880	5,680	5,280	7,280	11,120	9,520	8,880	7,040	7,760	8,160
Harmon Firehouse	7,360	7,360	6,560	6,720	7,440	11,920	13,600	11,120	12,080	7,992	6,266	6,487
Washington Engine Firehouse	2,282	1,461	1,341	1,155	979	1,083	1,967	2,002	1,575	1,267	1,766	2,210
DPW Garage	3,920	4,560	3,280	2,800	3,440	4,880	4,240	4,160	3,021	3,249	5,316	1,470
<b>Oil (units)</b>												
DPW Garage	1,272	1,121	749	548	714	-	-	-	-	-	1,098	-
Washington Engine Firehouse	-	584	-	548	-	-	-	-	-	-	38	-