City of Kingston

2025 Energy Benchmarking Report

for the 2024 Calendar Year

Mayor Steven T. Noble

This Energy Benchmarking Report covers the City of Kingston's energy use for the period January 1st, 2024 to December 31st, 2024.

This report includes:

- An introduction and overview of the benchmarking process
- Building information including: property name, address, benchmarked metrics, use, and square feet
- Nineteen monthly energy use graphs for individual municipal buildings over 1000 square feet
- Four cumulative energy use graphs for municipal buildings over 1000 square feet
- Conclusions drawn from the benchmarking data

Introduction:

Benchmarking energy performance is the first step in determining where and how to implement energy improvements in the City of Kingston's municipal properties. Through benchmarking, the City has established baselines for building energy use that help identify inefficiencies, direct actions to maximize performance, and support budgeting efforts. Benchmarking provides the City with the energy use data needed to increase operational efficiency and effectively use taxpayer resources. Additionally, this data is needed to inform energy conservation policy and program development, a crucial aspect of climate action planning.

Overview of the benchmarking process:

The City of Kingston benchmarks energy use through Portfolio Manager, a free online program by Energy Star and the U.S. Environmental Protection Agency (EPA). As required by the City of Kingston's 2017 Benchmarking Initiative, the City's Environmental Specialist inputs monthly energy use information into Portfolio Manager. The software then catalogues the data for easy access. All energy use information in this report was obtained through Portfolio Manager or directly from Central Hudson bills and then graphed in Microsoft Excel workbooks.

The City of Kingston benchmarks energy use through two metrics: electricity and natural gas. Energy use is recorded in Kilo British Thermal Units (kBtu). Electricity use information is available in this report for 19 municipal buildings, and natural gas for 17 buildings.

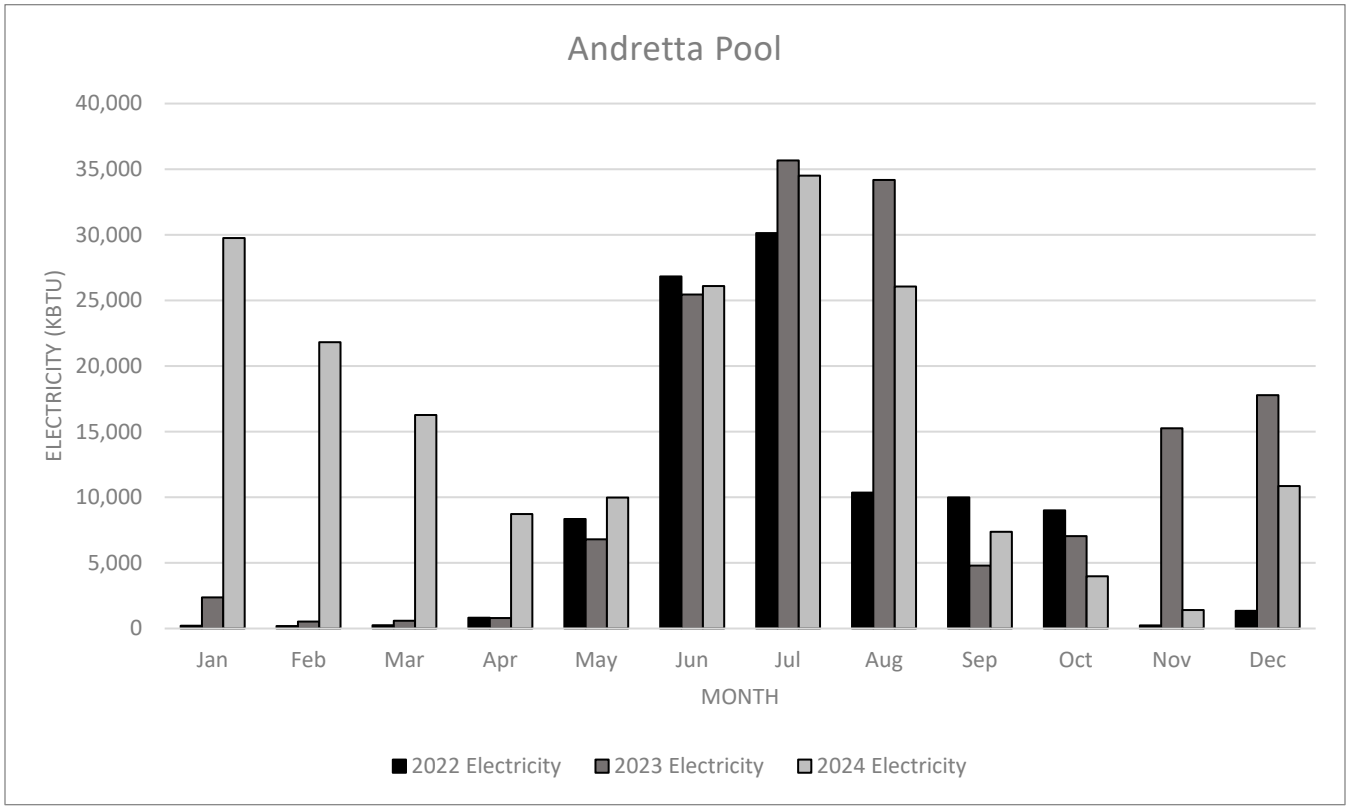
Municipal buildings included in this report:

Property Name	Address	Benchmarked Metrics	Account #	Use	Square Feet
Andretta Pool	76 North Front St.	Electricity	2100-0988-98-6	Recreation	3,100
Andy Murphy Neighborhood Center (AMNC)	467 Broadway	Electricity and Gas	2100-0944-34-4 2100-0944-19-5	Fitness Center	30,832
Central Firehouse	19 East O'Reilly St.	Electricity and Gas	2100-1060-98-3 2100-1061-14-8	Fire Station	10,140
City Hall	420 Broadway	Electricity and Gas	2100-1098-80-1 2100-1098-92-6	Office	24,906
DPW Administrative Building	25 East O'Reilly St.	Electricity and Gas	2100-1060-64-5 2100-1060-87-6	Office	13,593
DPW Building – Wilbur Avenue	454 Wilbur Ave.	Electricity and Gas	2100-0838-16-5 2100-0986-39-4	Repair Services	2,240
DPW Bus Garage	464 Hasbrouck Ave.	Electricity and Gas	2100-1028-40-2 2100-1028-20-4	Garage	7,000
DPW Bus Wash	478 Hasbrouck Ave.	Electricity and Gas	2100-1028-07-1 2100-1060-28-0	Bus Wash	6,200
DPW Maintenance Garage	478 Hasbrouck Ave.	Electricity and Gas	2100-1060-03-3 2100-1060-17-3	Garage	12,420
Everette Hodge Community Center	15-21 Franklin St.	Electricity and Gas	2100-1046-83-4 2100-1046-67-7	Community Center	3,600
Fireman's Museum	267 Fair St.	Electricity and Gas	2100-0677-30-8 2100-0710-09-1	Museum	14,896
Police Station and Courthouse	1 Garraghan Dr.	Electricity and Gas	2100-0874-35-0 2100-0874-90-5	Police Station	25,907
Rondout Offices	20 Broadway	Electricity and Gas	2100-0876-93-4 2100-0876-79-3	Museum	1,600
Rondout Fire Station	5 Garraghan Dr.	Electricity and Gas	2100-0874-60-8 2100-0874-75-6	Fire Station	7,340
Rondout Neighborhood Center	103 Broadway	Electricity and Gas	2100-0919-27-0 2100-0919-07-2	Childcare	11,070
Salt Shed	394-458 Wilbur Ave.	Electricity	2100-0837-11-8	Utility	1,120
Uptown Firehouse	30 Frog Alley	Electricity and Gas	2100-0838-55-3 2100-0838-70-2	Fire Station	6,603
Wastewater Treatment Plant	91 East Strand St.	Electricity and Gas	2100-0348-27-2 2100-0896-36-1 2100-0988-78-8	Utility	26,405
Water Department Administrative Building	111 Jansen Ave.	Electricity and Gas	2100-1098-25-6 2100-1098-25-6	Office	1,225

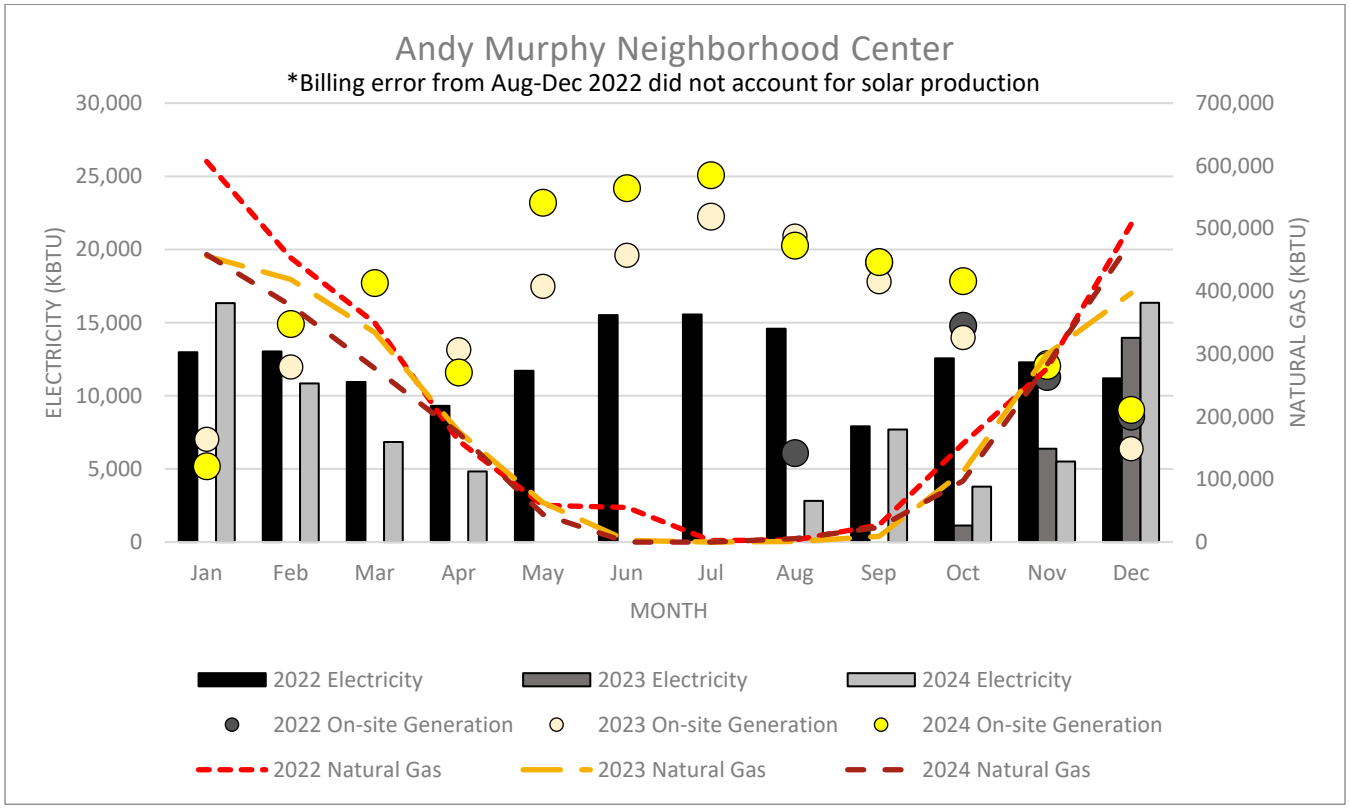
The following graphs represent the energy consumption and, when applicable, production of each municipal facility in alphabetical order. Please see the appendix for a summary data table.

Please note: All dual-metric graphs contain two scales. The left axis is scaled to electricity data, and the right axis is scaled to natural gas data, both in kBtu.

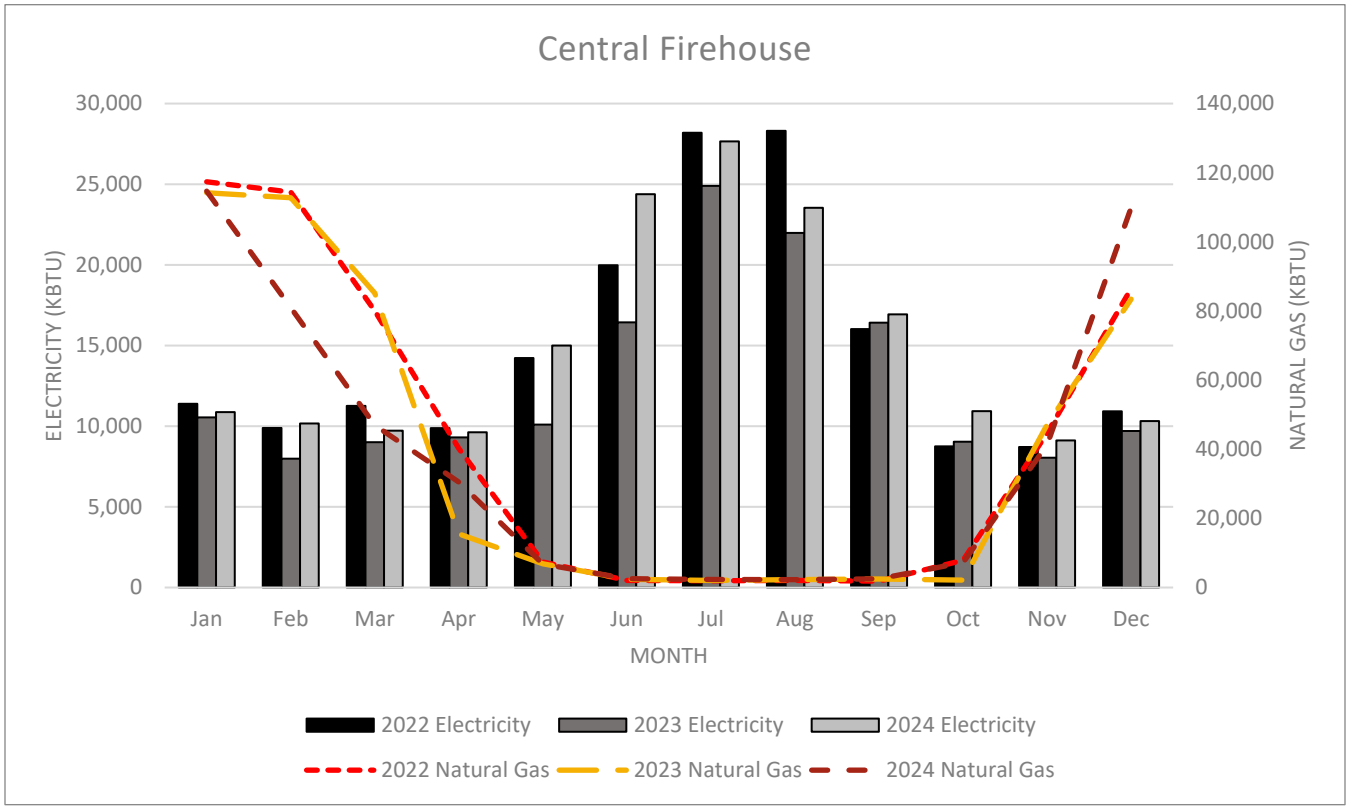
Andretta Pool



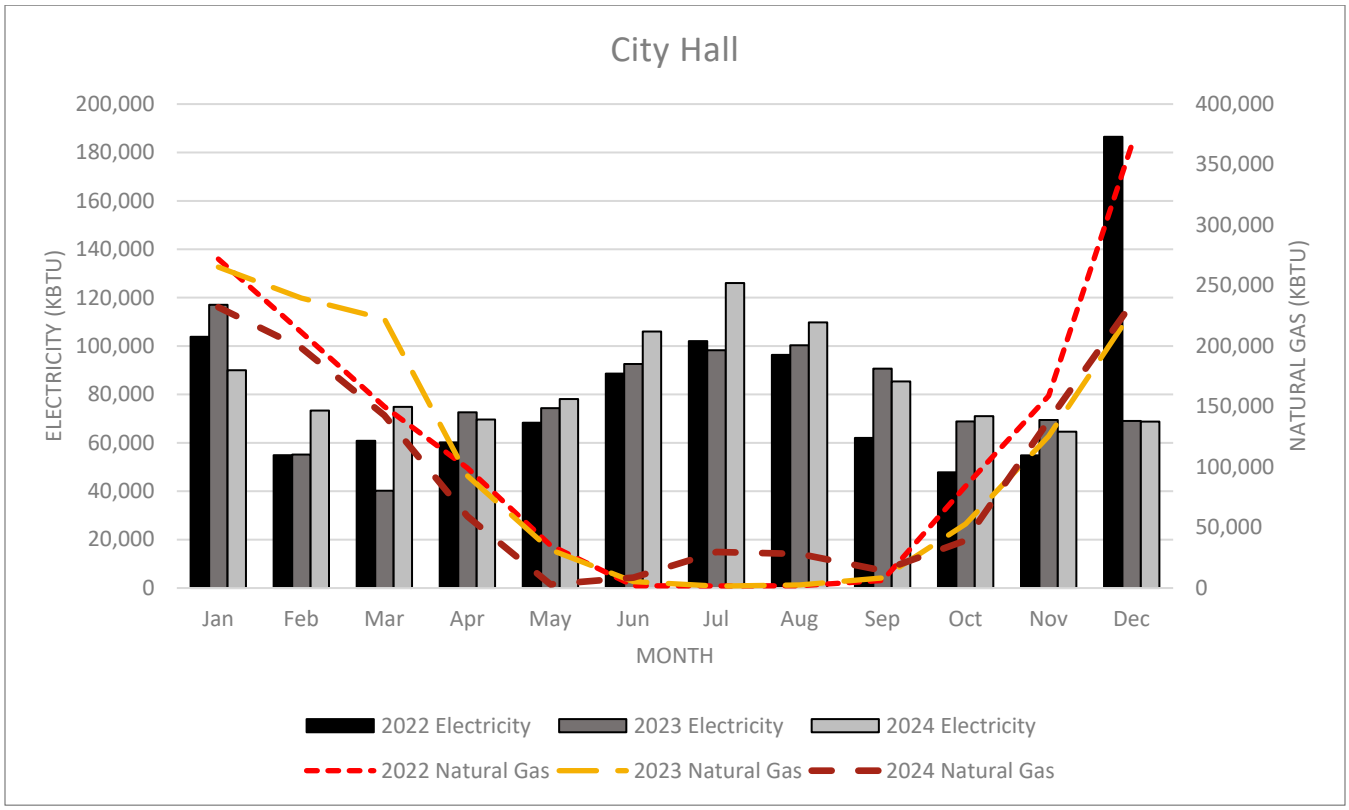
Andy Murphy Neighborhood Center (AMNC)



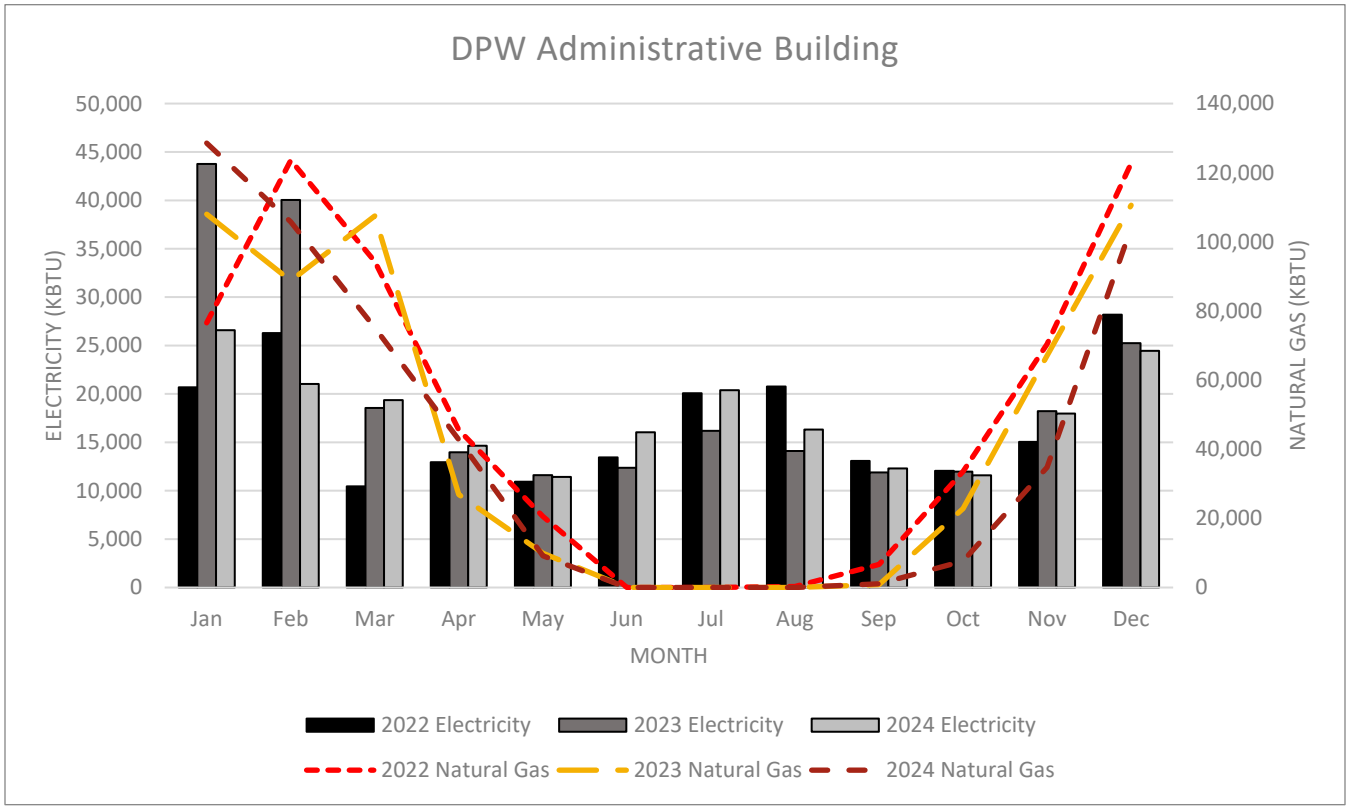
Central Firehouse



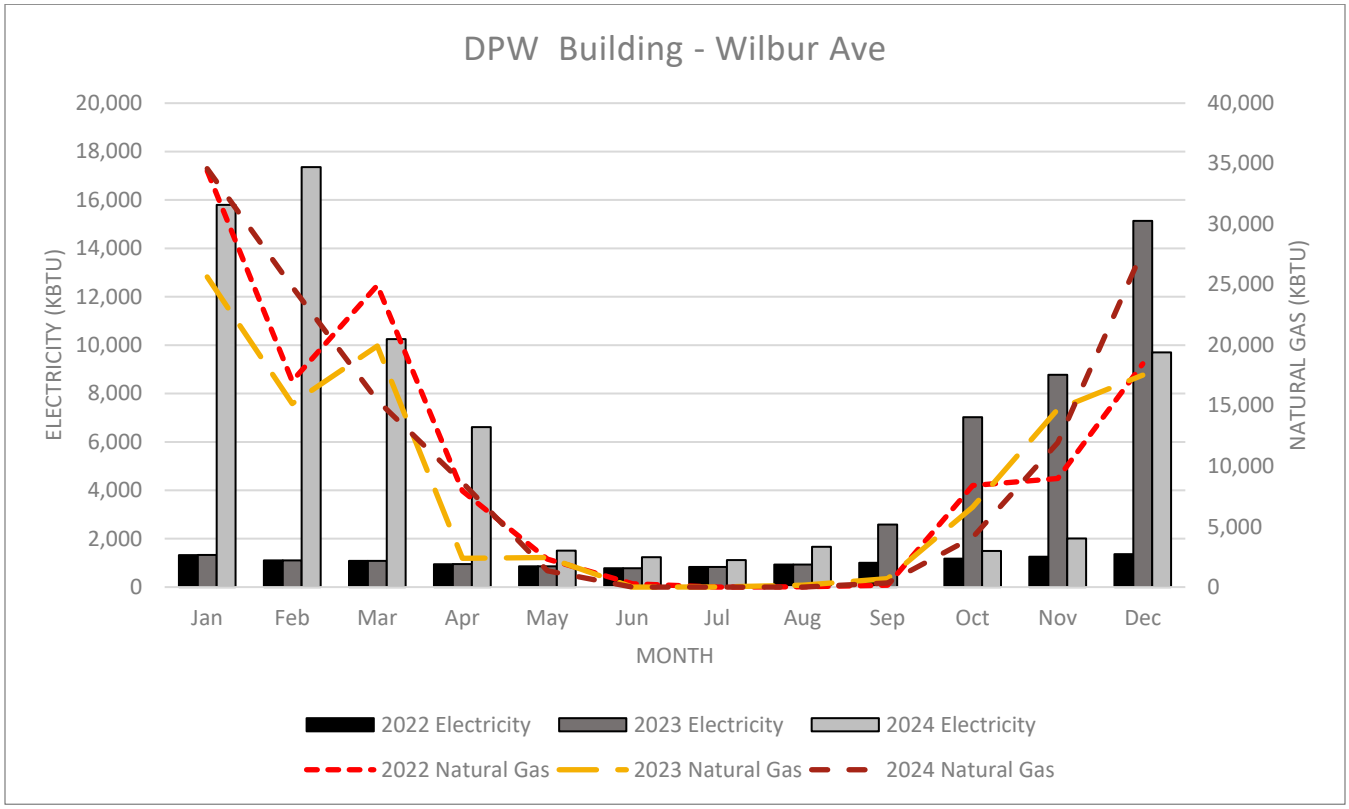
City Hall



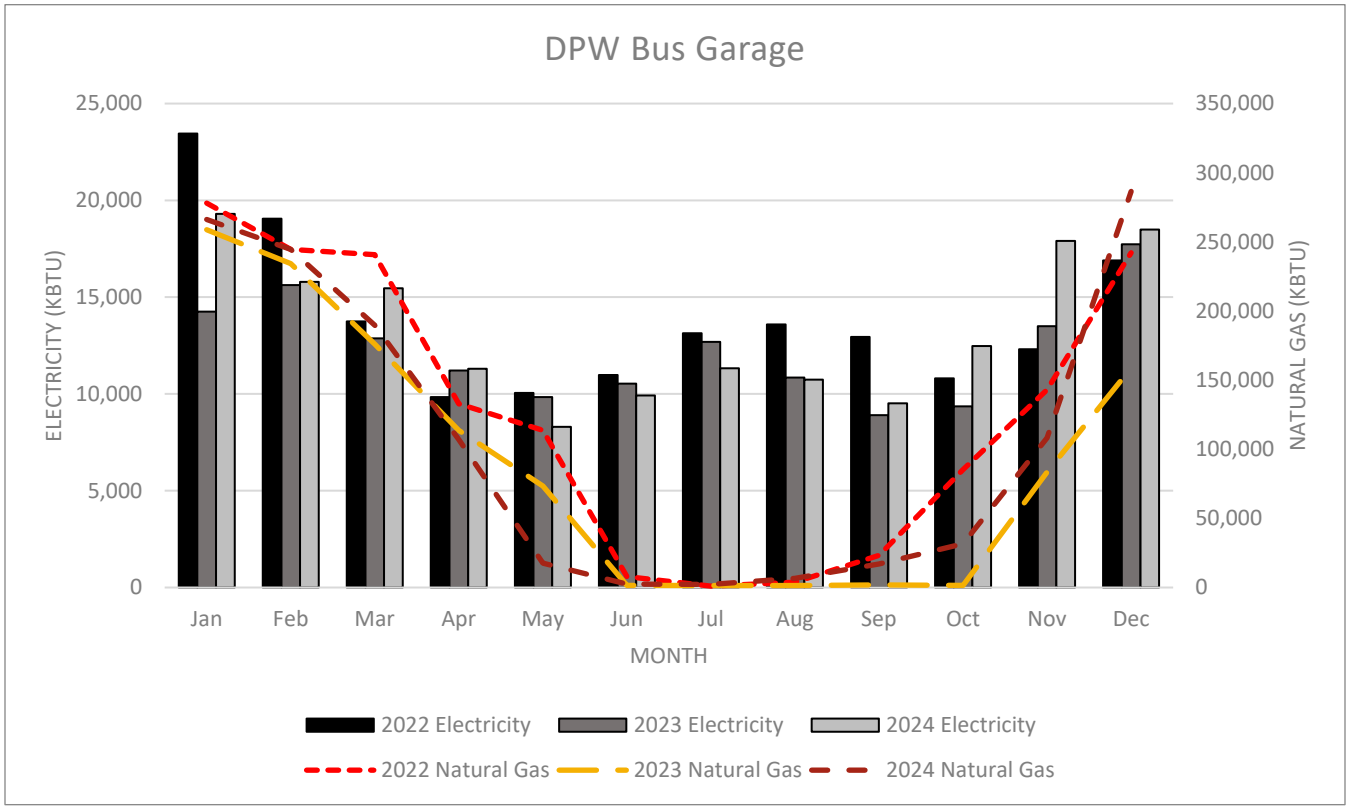
DPW Administrative Building



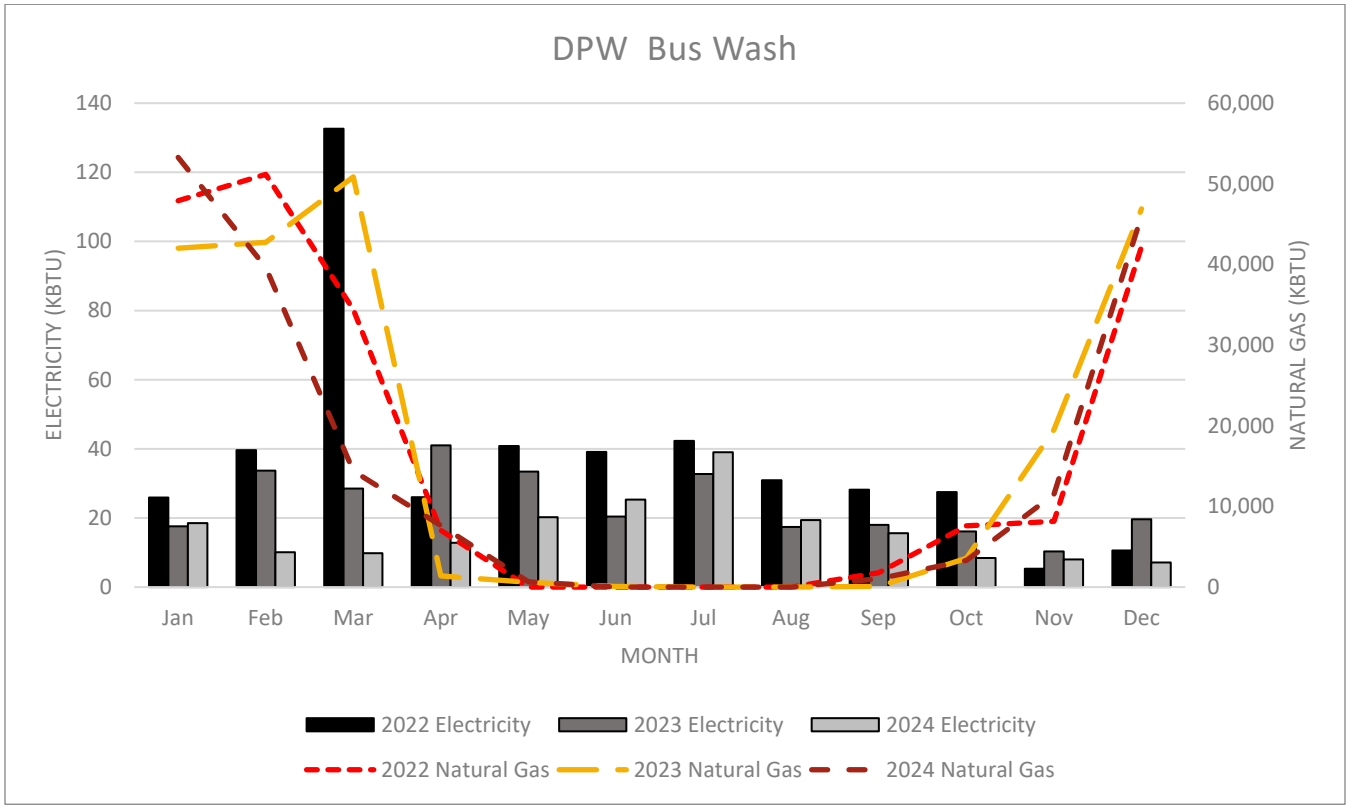
DPW Building – Wilbur Avenue



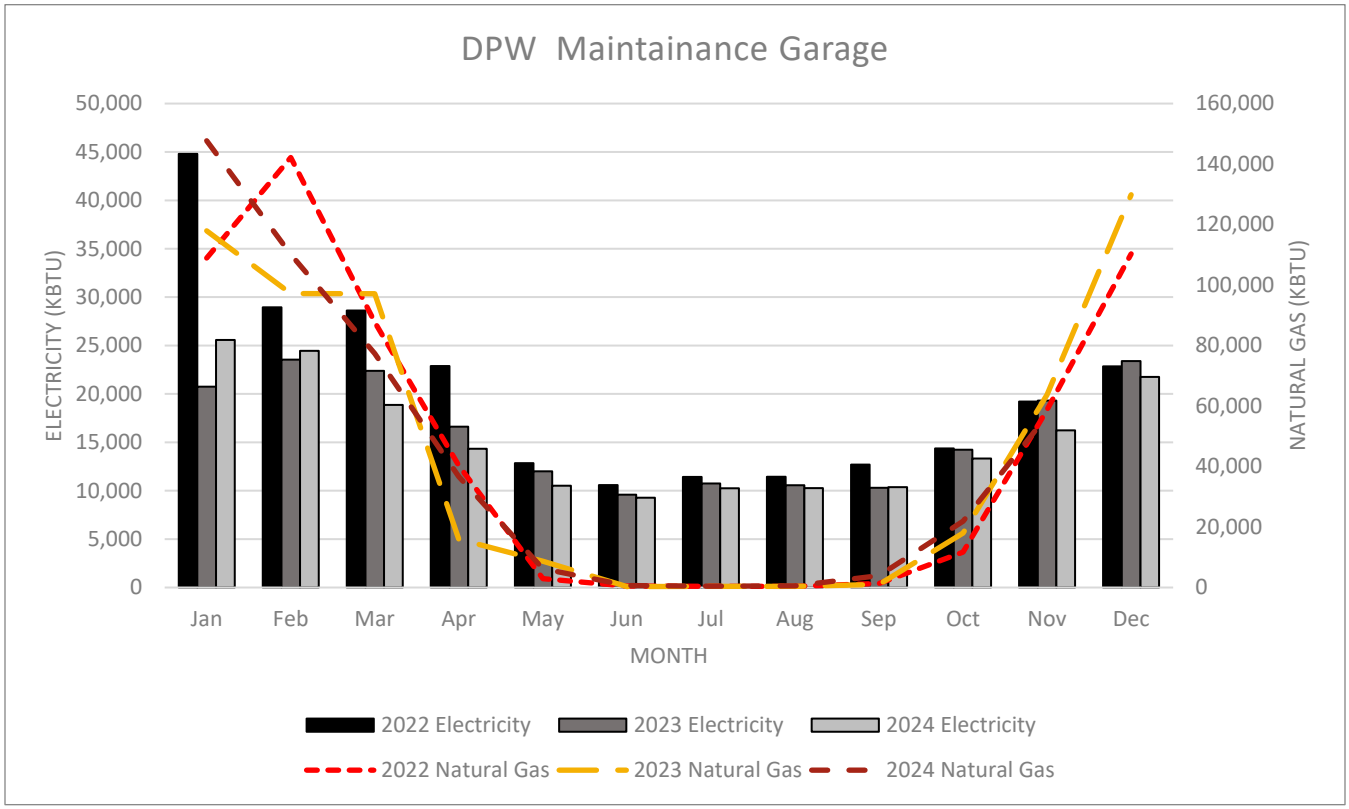
DPW Bus Garage



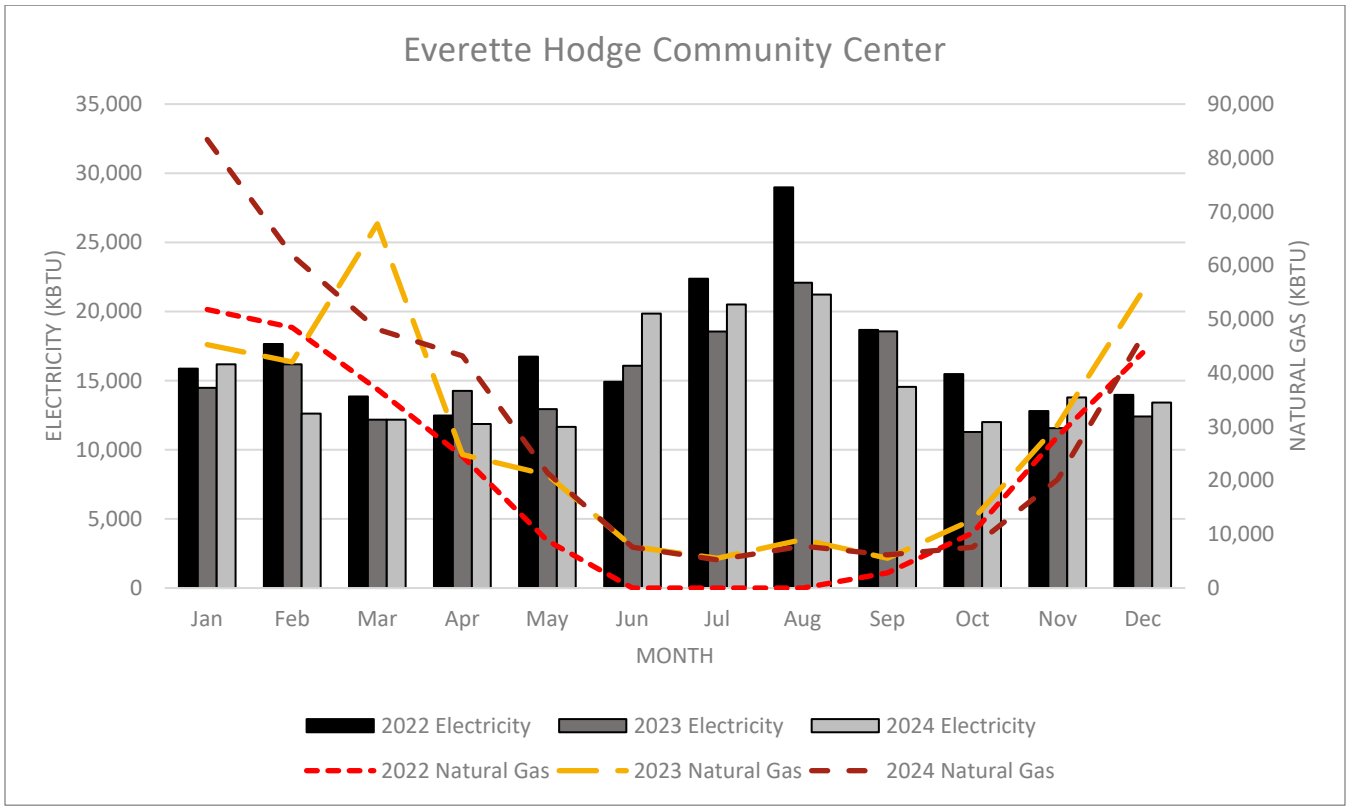
DPW Bus Wash



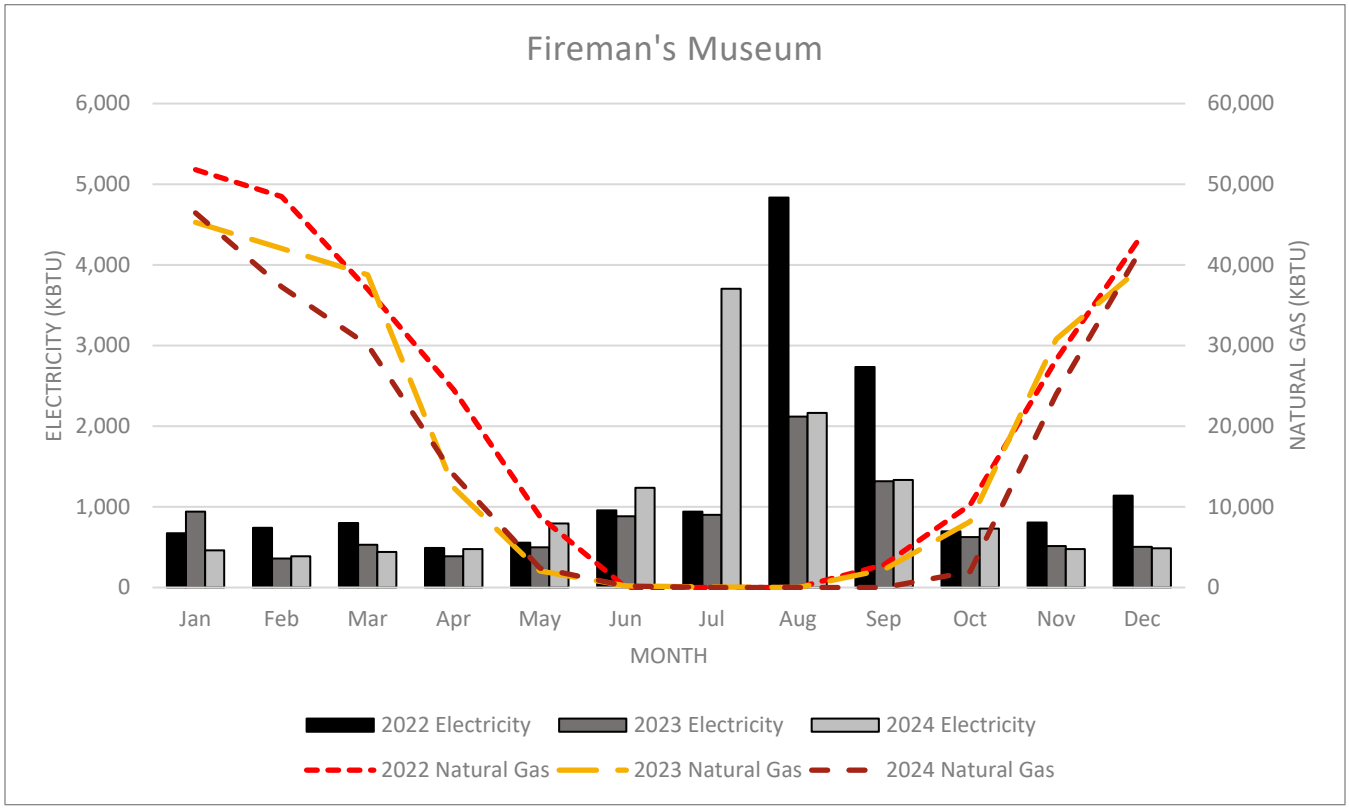
DPW Maintenance Garage



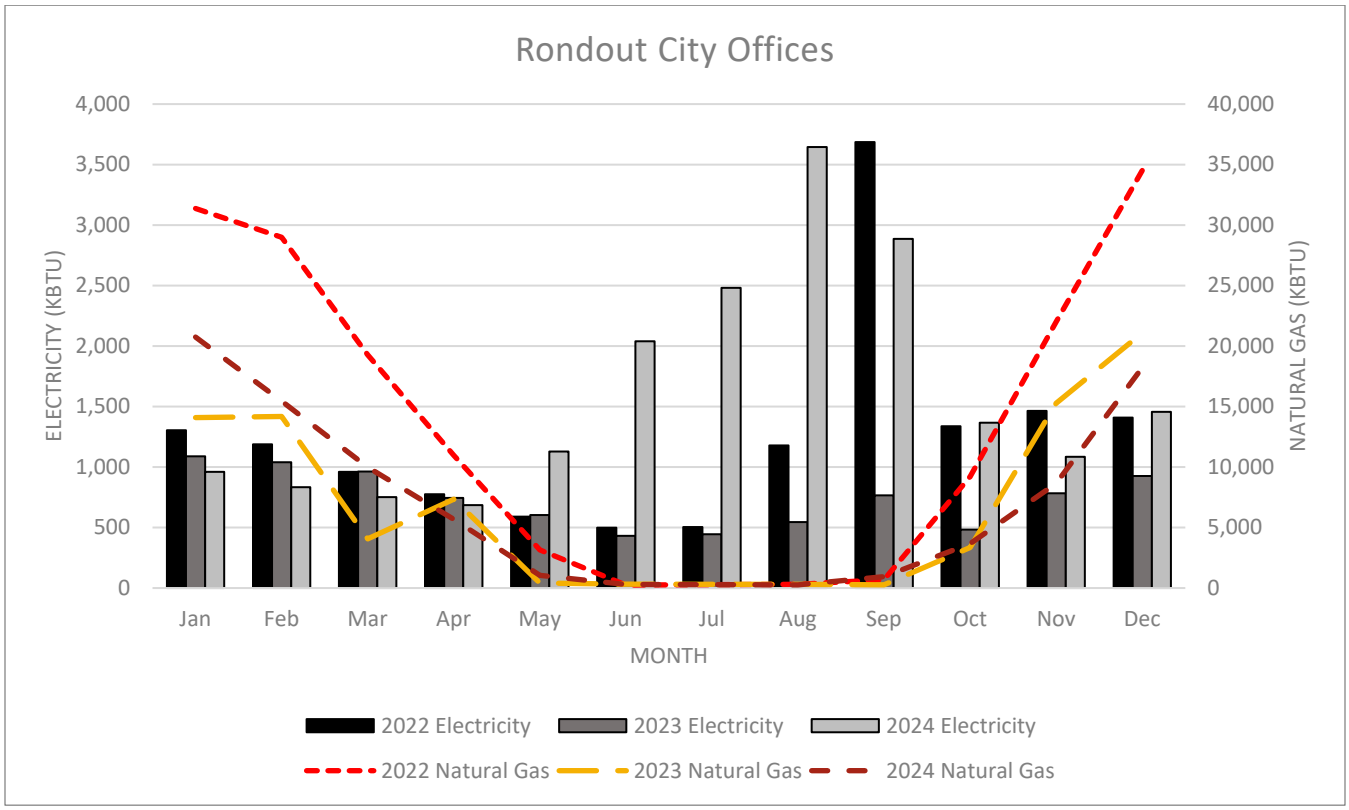
Everette Hodge Community Center



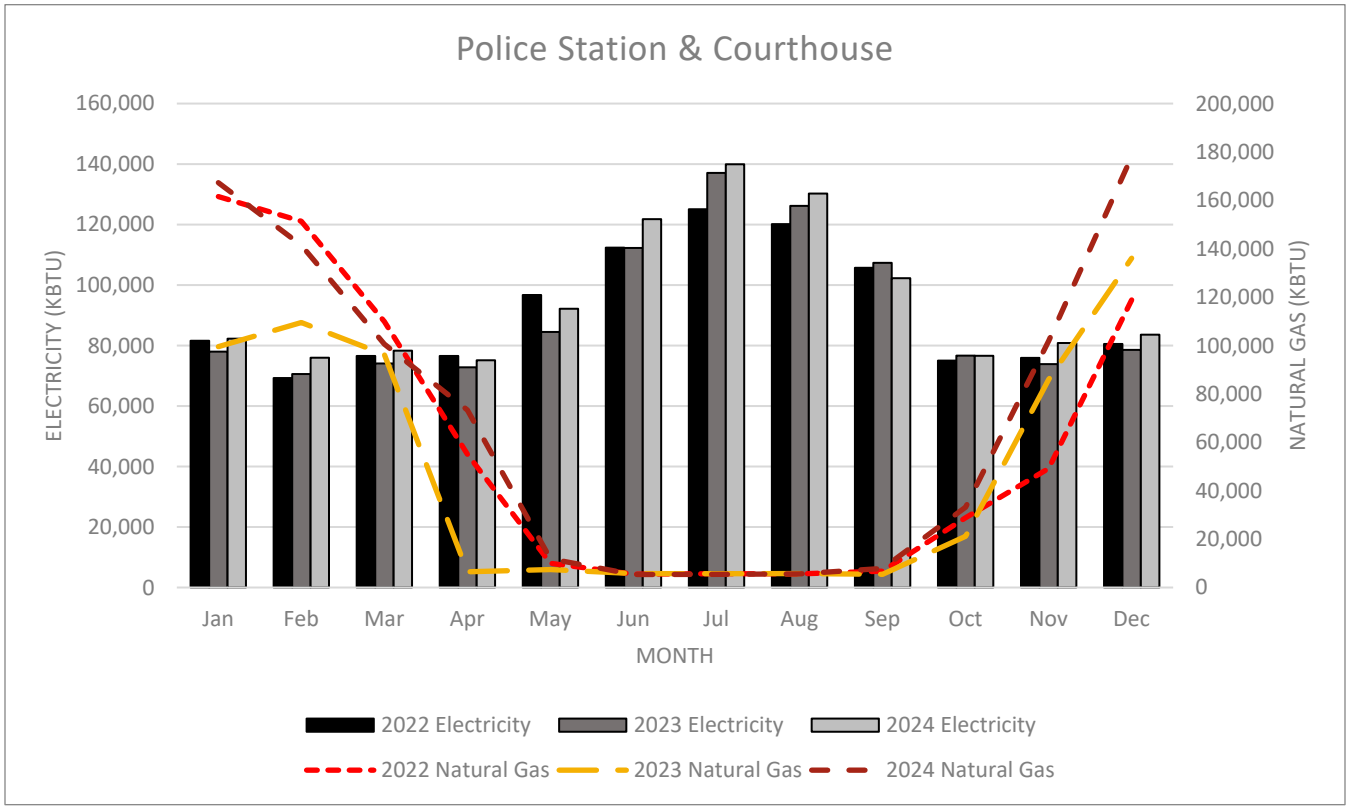
Fireman's Museum



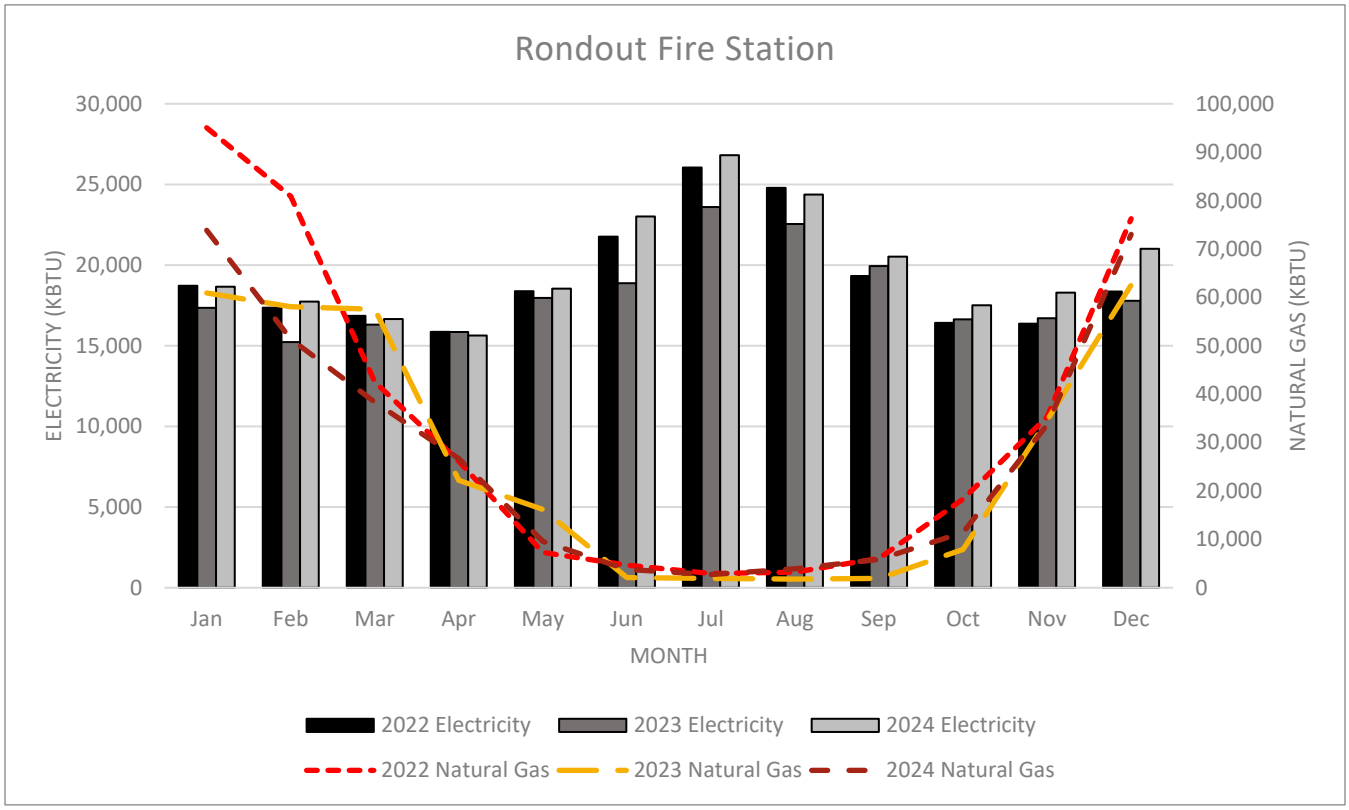
Rondout City Offices



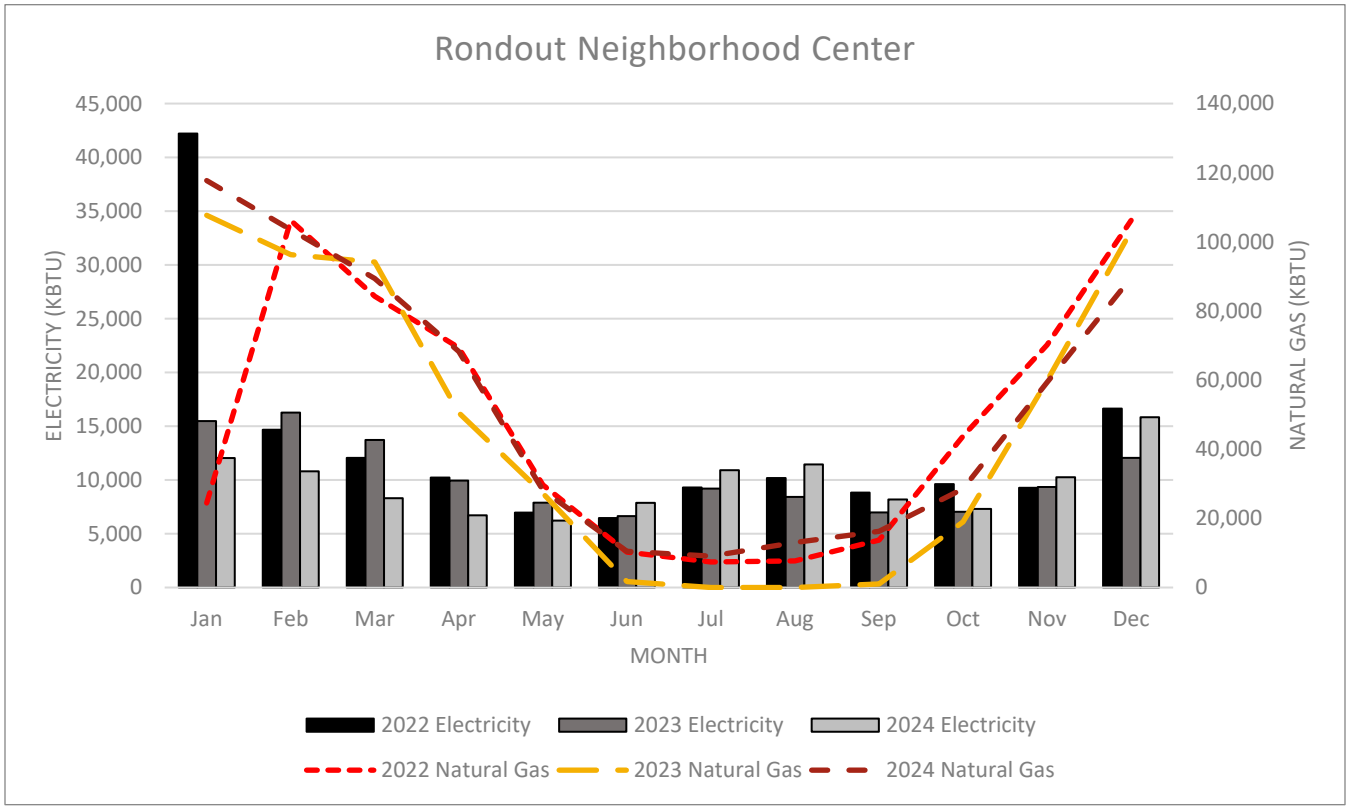
Police Station and Courthouse



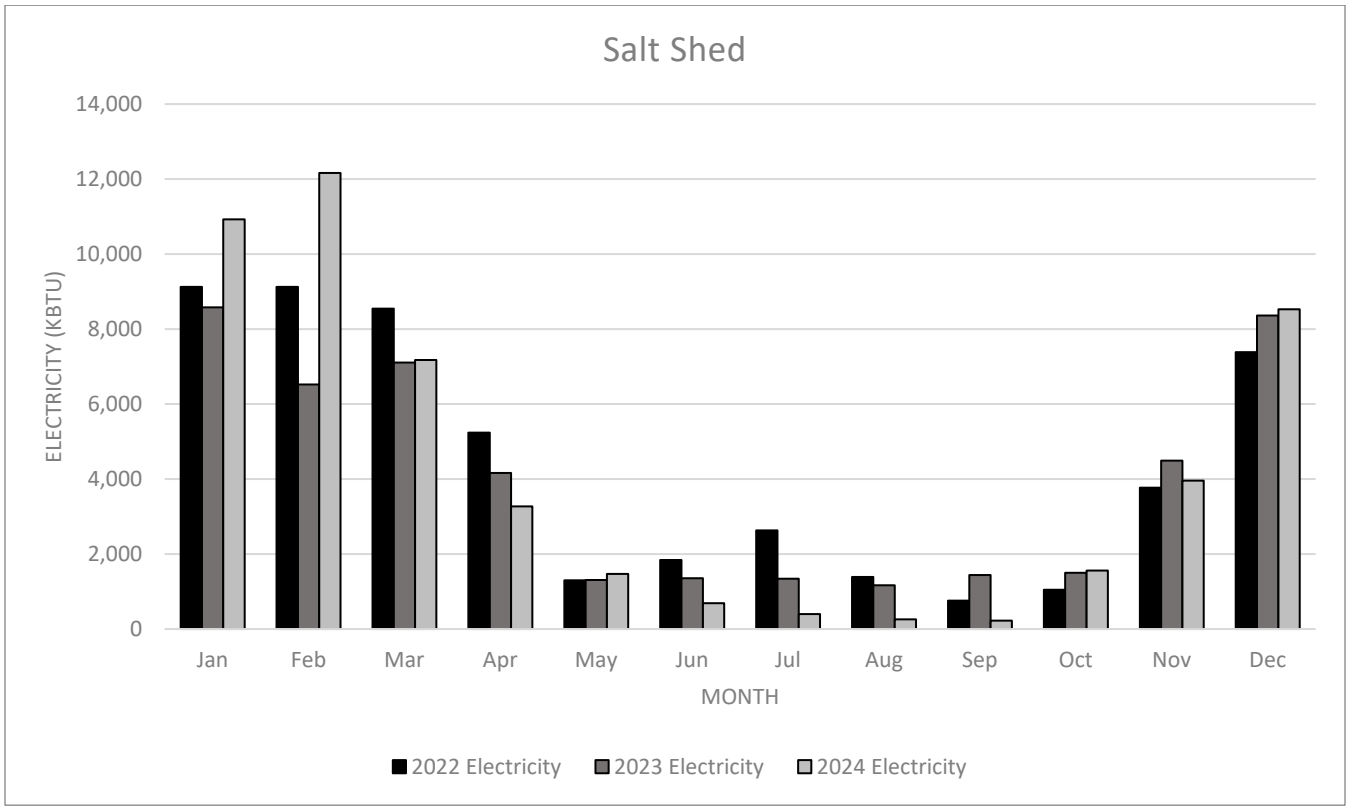
Rondout Fire Station



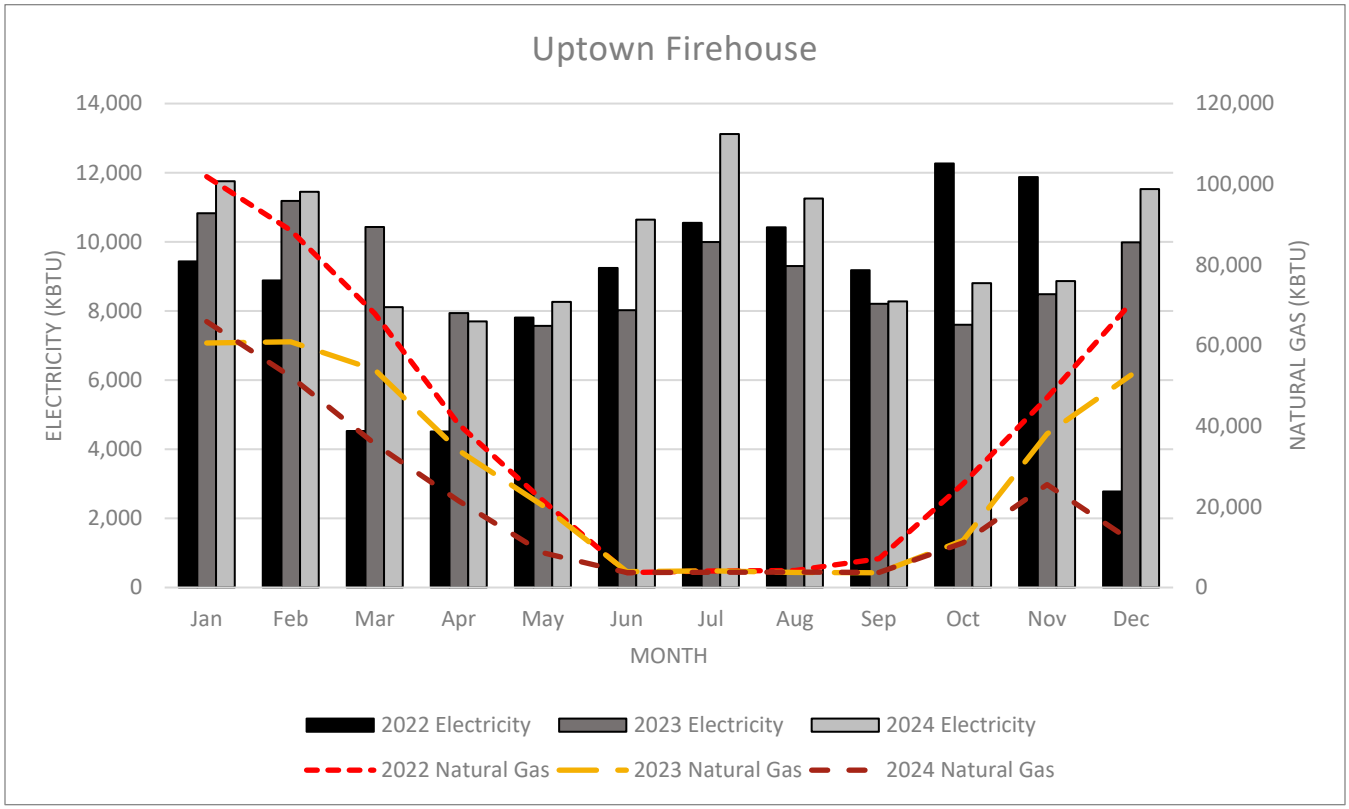
Rondout Neighborhood Center



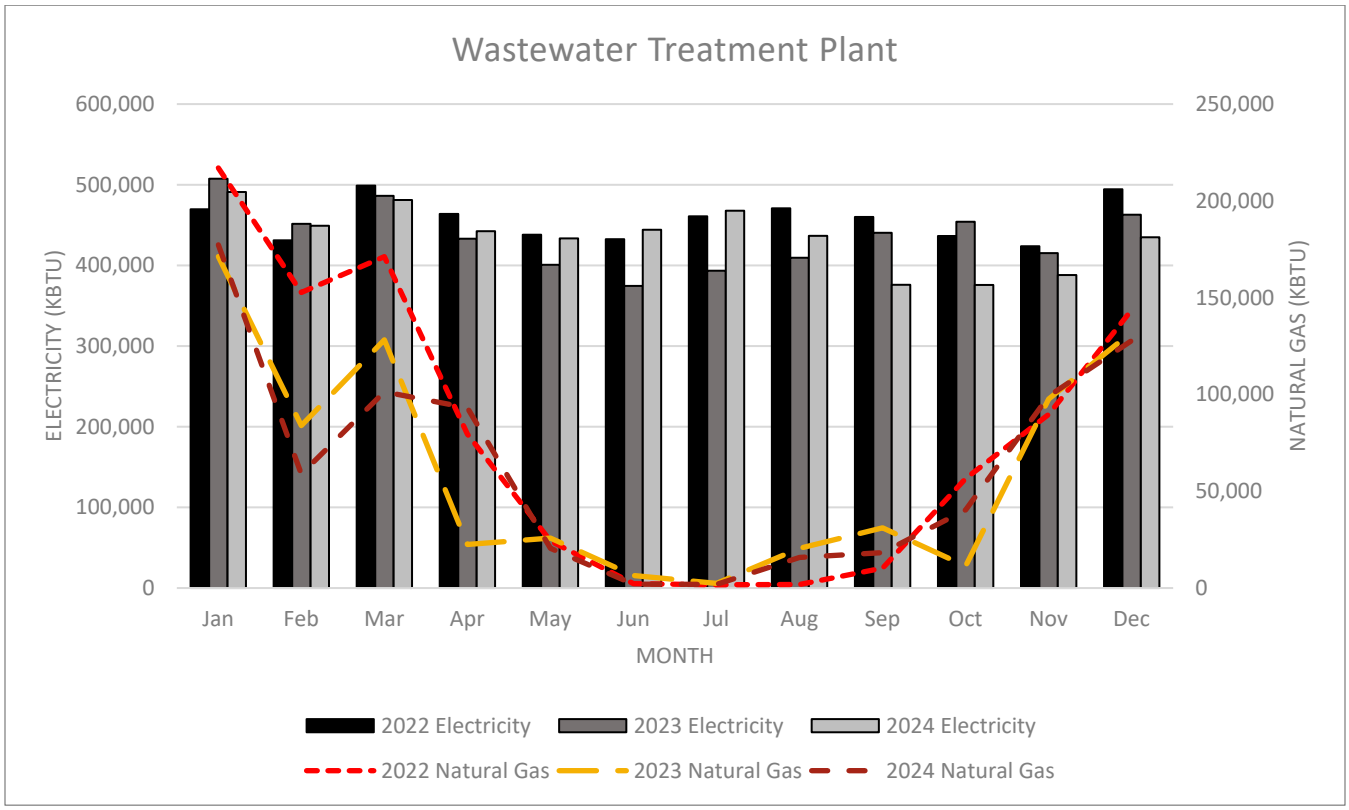
Salt Shed



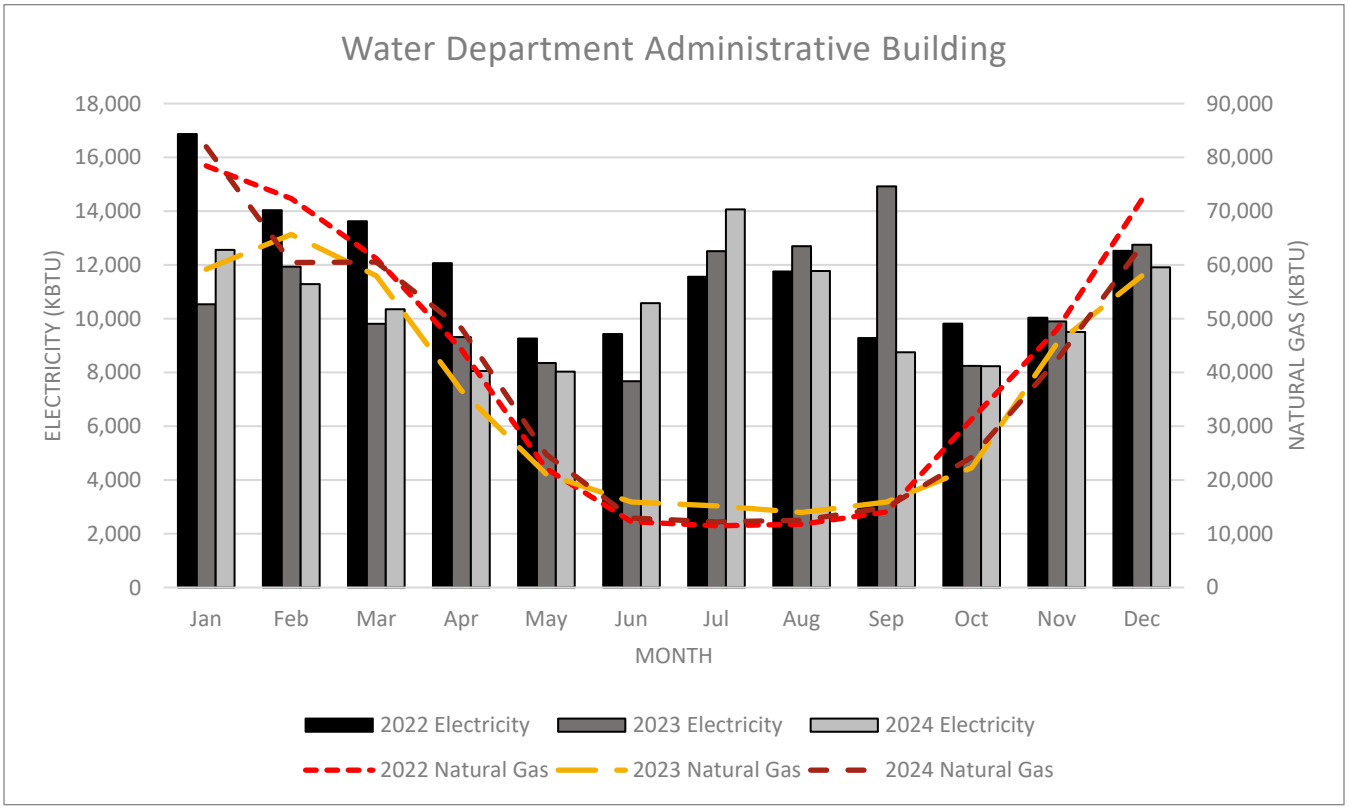
Uptown Firehouse



Wastewater Treatment Plant



Water Department Administrative Building



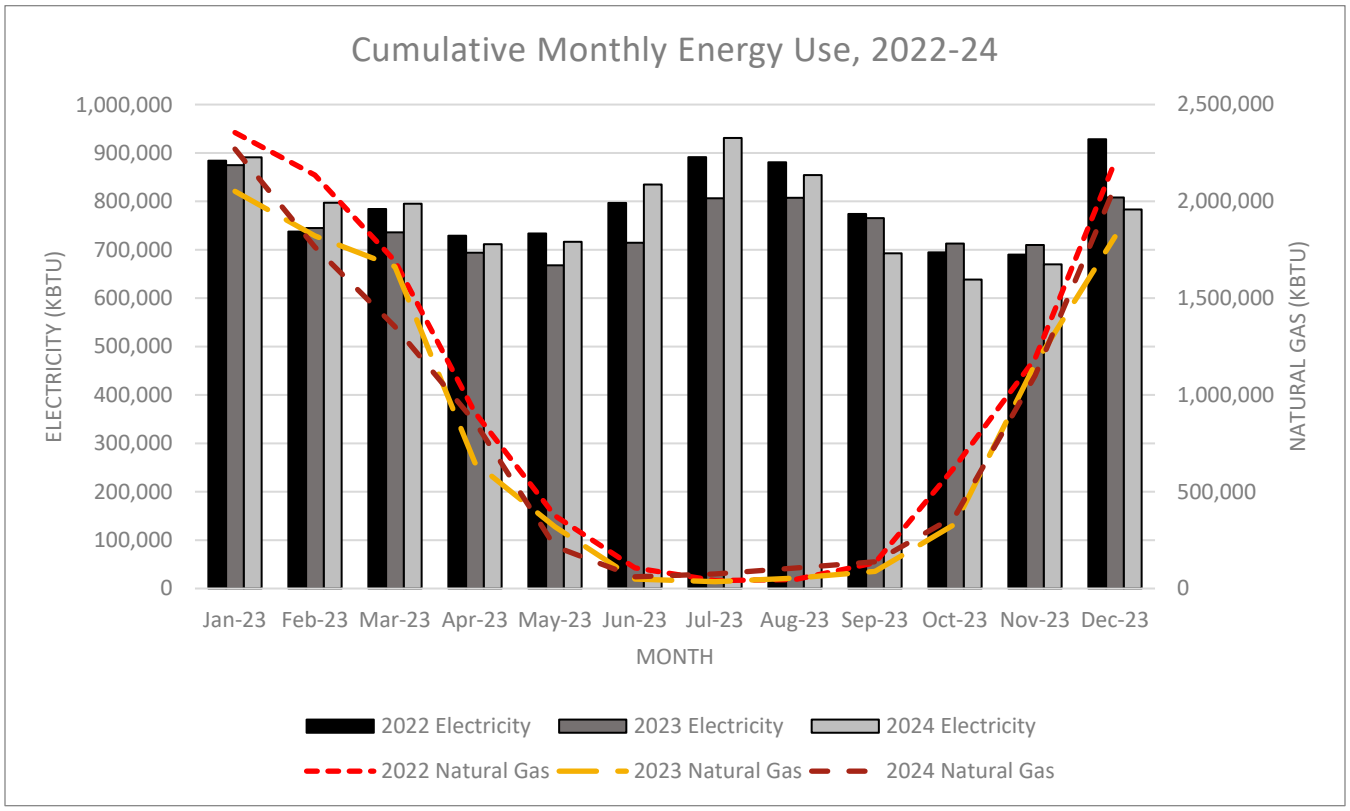
Individual Property Trends

Below, we note a few trends observed in individual properties' energy consumption:

- The DPW Bus Wash consumes a very small amount of electricity. The 2024 total electric use for this property was 55 kWh, approximately a tenth the average monthly electricity use for a home in New York State.
- The Rondout City Offices building consumed significantly more electricity in the summer of 2024 compared to previous years because the Parks and Recreation department and Live Well Kingston were temporarily moved there during renovation of the Andy Murphy Neighborhood Center.
- The Andretta Pool consumed more electricity in the winter of 2023-24 because contractors working on the nearby Dietz Stadium had their trailers hooked up to this property.
- The DPW Building on Wilbur Ave consumed more electricity over winter 2023-24 than previously because the brine system was back up and running and diesel trucks were plugged in after electrical cords were repaired.

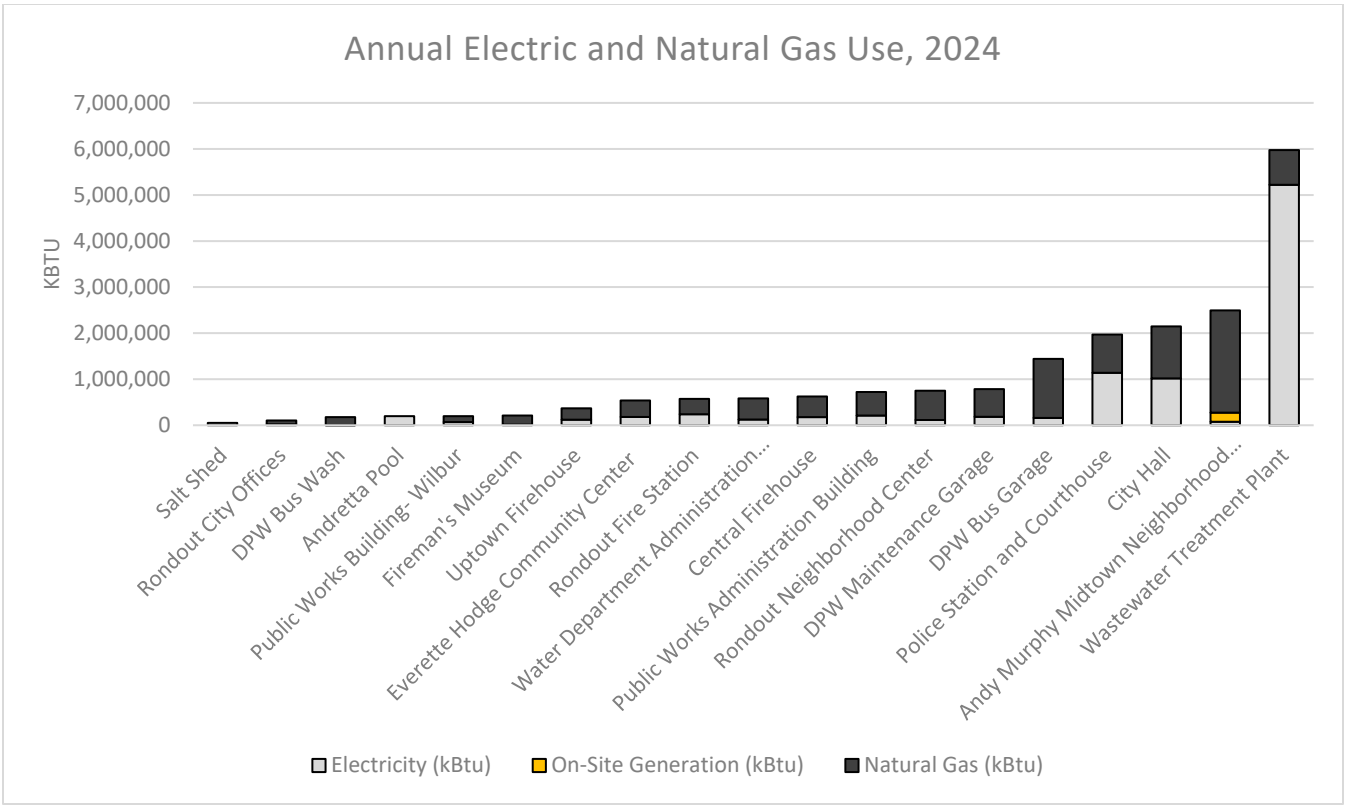
Cumulative Data:

The graph below is a representation of the cumulative monthly energy use information for the entire municipal building portfolio in this report. As with the individual graphs, the left axis is scaled to electricity kBtu usage, while the right axis is scaled to natural gas kBtu usage.



Municipal electricity use exhibits minor fluctuations with slightly decreased use during spring and fall months. Natural gas use exhibits major fluctuations, with little used during summer months, and a lot during winter months.

The graph below details total energy use per building, represented from lowest energy user to highest energy user for 2024.

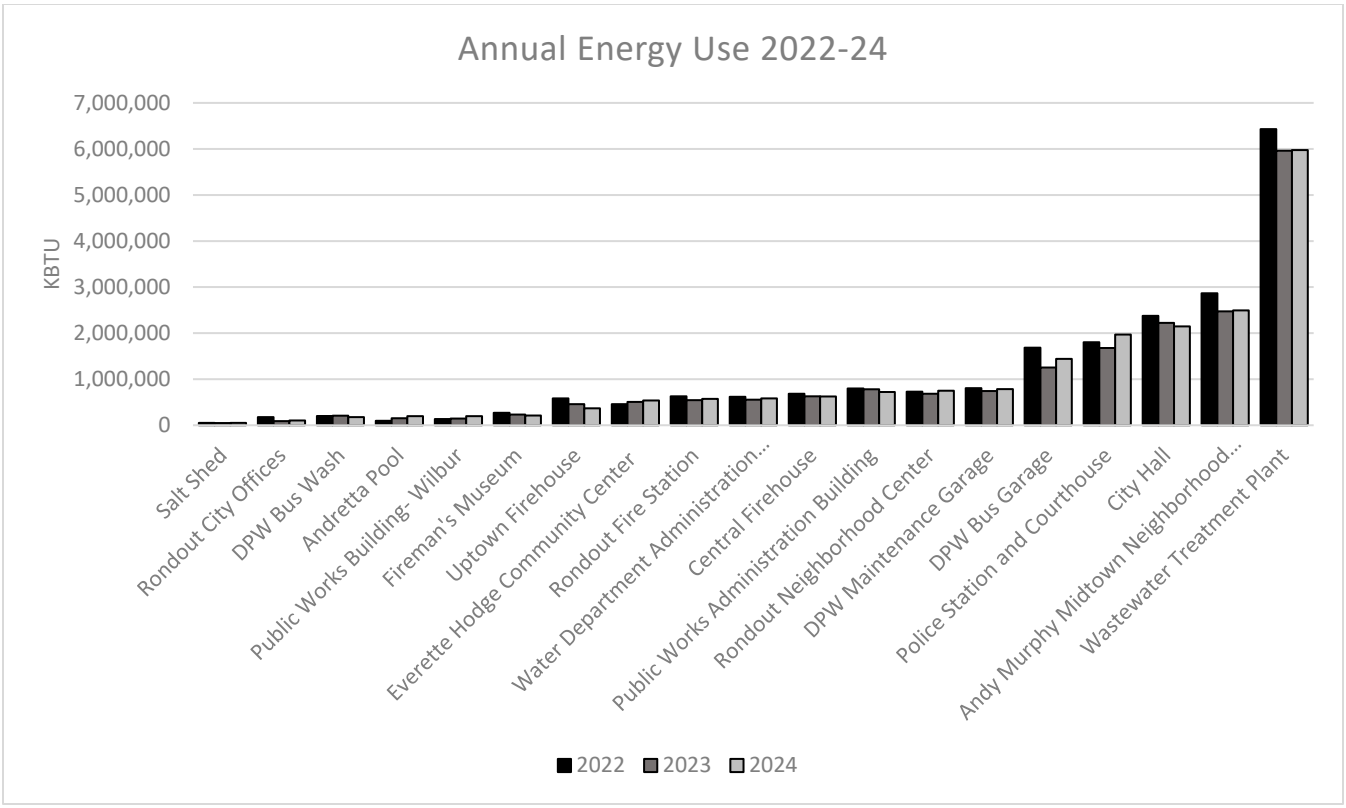


The highest energy use for a benchmarked property in 2024 was the Wastewater Treatment Plant at **5,977,137 kBtu**, followed by the AMNC and City Hall, with totals amounting to **2,494,937 kBtu** and **2,146,891 kBtu** respectively.

The AMNC, DPW Bus Garage, and City Hall consume the most natural gas, while the Wastewater Treatment Plant, Police Station and Courthouse, and City Hall consume the most electricity.

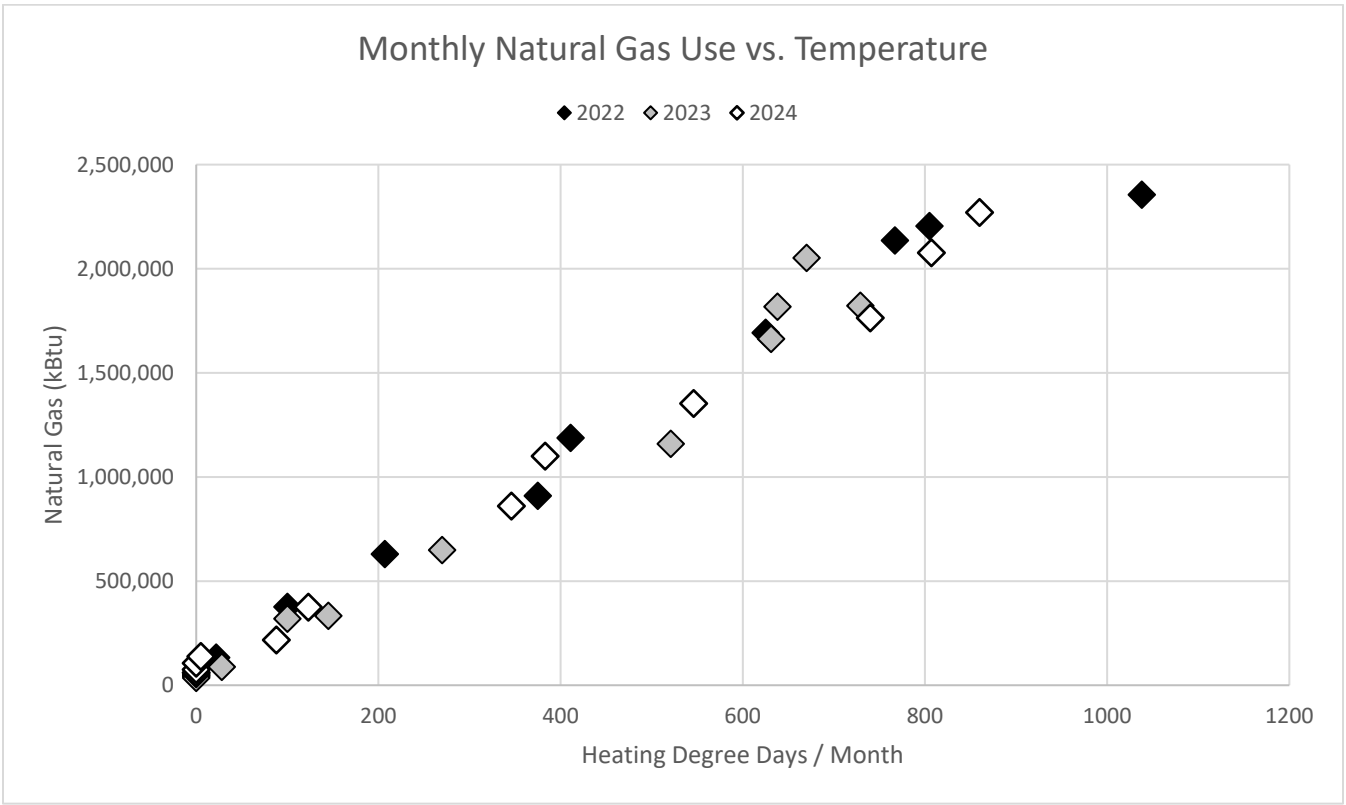
For 15 of the 19 buildings tracked in this report, more than half their energy consumption is from natural gas. Six, including the Fireman's Museum, Rondout City Offices, DPW Bus Wash, DPW Bus Garage, Rondout Neighborhood Center, and AMNC source more than 80% of their energy from on-site burning of natural gas.

The graph below shows cumulative annual energy use (combined grid electricity, natural gas, and solar) for benchmarked buildings from 2022-2024.



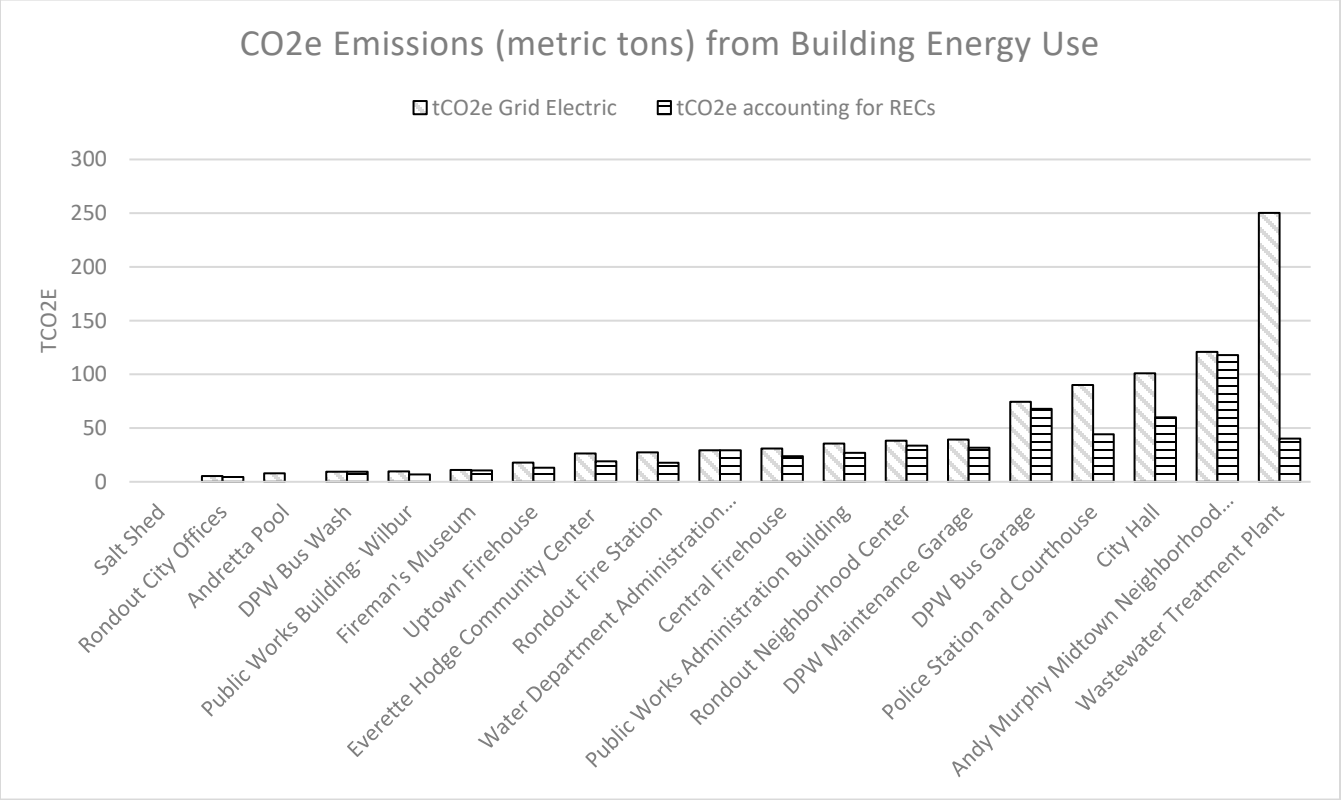
Energy use declined for almost all properties from 2022-2024 but remained relatively constant from 2023-24. The Police Station and Courthouse saw a modest increase in energy use as did the DPW Bus Garage.

The graph below shows monthly natural gas use relative to heating degree days for New York City, the nearest relevant location with this data, for 2022-24.



Every year surveyed in this report shows a strong linear trend between heating degree days and natural gas use in municipal buildings. This is not surprising considering natural gas is used almost exclusively for heating in the buildings examined.

The graph below shows estimated greenhouse gas emissions from benchmarked building's energy use in 2024.



Greenhouse gas emissions are estimated first using the emissions intensity of grid electricity[1] and second, based on the City's purchase of Renewable Energy Certificates (RECs).[2] All properties, except the Water Department Administration Building, purchase RECs to cover their electricity usage.

Using the emissions intensity of grid electricity, the cumulative annual greenhouse gas emissions from each property closely align with total energy use. The greatest emissions come from the Wastewater Treatment Plant, with ~250 tons of CO2 equivalent (CO2e) emissions in 2024. The AMNC had the second highest emissions in 2024, with ~121 tCO2e produced. The total CO2e emissions for all benchmarked buildings in 2024 was **~927 tCO2e**, equivalent to the yearly emissions of 212 passenger vehicles in the USA.[3]

Building greenhouse gas emissions differ significantly from total energy use if REC purchases are accounted for. In this case, natural gas consumption dominates building emissions, with the Andy Murphy Neighborhood Center producing the most, with 117 tCO2e produced. The total CO2 emissions for all benchmarked buildings

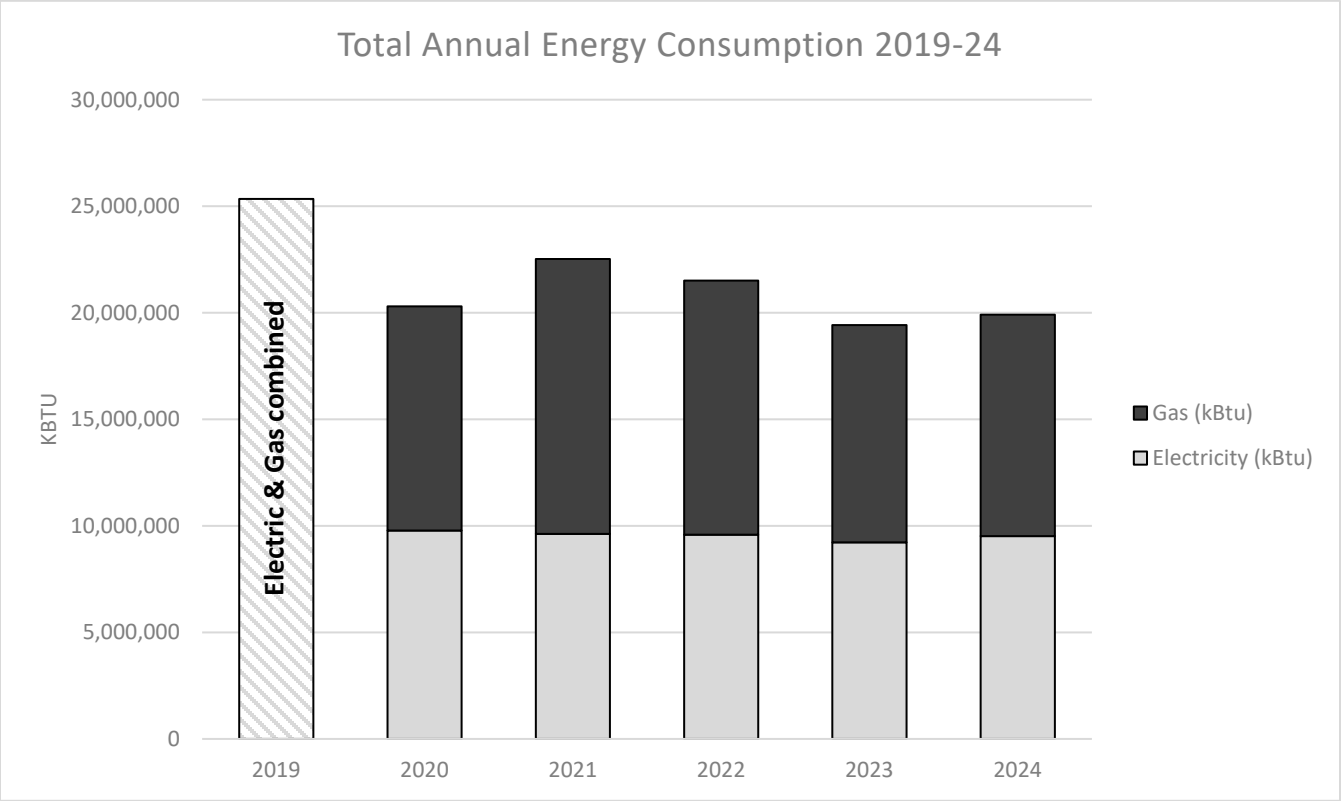
[1] Electricity and natural gas conversions to tCO2e were assumed to be the same as those used by NYC https://up.codes/s/greenhouse-gas-coefficient-of-energy-consumption-for-calendar-years-2024-through

[2] See the City of Kingston's 2024 Municipal Operations Energy Report for more info.

[3] https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator#results

in 2024, when taking REC purchases into account, was **~557 tCO2e**, equivalent to the yearly emissions of 130 passenger vehicles in the USA.[3]

The graph below shows total annual energy use for benchmarked buildings from 2019-2024.



In **2024**, benchmarked buildings consumed **9,516,470 kBtu** of electricity, a 3% increase year over year, and **10,395,652 kBtu** of natural gas, a 4% increase year over year. Total energy use in 2024 was **19,912,122 kBtu**, an increase of 4% year over year. Compared to 2019, benchmarked municipal buildings consumed 21% less energy in 2024.

Annual Energy Consumption Trends:

Energy use by benchmarked municipal buildings has declined since 2019. While there are many reasons for this reduction, we outline a few sustainability initiatives that increased energy efficiency during this time.

2021

- No documented sustainability initiatives

2022

- WWTP upgrades necessitated the use of temporary aeration blowers that may have increased electricity consumption
- 49 kW solar array installed at AMNC

2023

- New WWTP aeration blowers installed near the end of 2023
- First full year of solar production at AMNC

2024

- No documented sustainability initiatives

Conclusions

By identifying the largest consumers of energy within the City of Kingston's benchmarked facilities, the City can focus efforts to continue a downward trend in overall energy use. The Wastewater Treatment Plant, AMNC, and City Hall are the three buildings with the highest overall energy use and should be a primary focus of future efficiency efforts. At the same time, buildings with small energy budgets and a heavy reliance on natural gas are prime targets for the electrification of heating.

Energy use data from this report provides the City of Kingston with the information necessary to increase operational efficiency, effectively use taxpayer resources, and inform further energy conservation policy and program development. The City of Kingston continues to set progressive targets for energy reduction through strategic efforts focusing on energy conservation and sustainable operations.

For more information on other sustainability initiatives in the City of Kingston please visit:
https://www.kingston-ny.gov/Sustainability

Appendix.

Property Name	2022 Electricity	2022 Natural Gas	2023 Electricity	2023 Natural Gas	2024 Electricity	2024 Natural Gas
Andretta Pool	96,240	0	147,763	0	196,811	0
Andy Murphy Midtown Neighborhood Center (AMNC)	207,454	2,658,987	202,045	2,270,635	275,218	2,219,719
Central Firehouse	177,534	506,331	153,453	476,269	178,259	447,970
City Hall	986,277	1,388,817	948,672	1,276,055	1,017,555	1,129,336
DPW Bus Garage	166,801	1,516,234	147,346	1,106,131	160,525	1,279,633
DPW Bus Wash	449	200,272	289	207,757	194	177,474
DPW Maintenance Garage	240,703	565,471	193,425	550,592	185,244	598,647
Everette Hodge Community Center	203,775	359,613	180,549	377,158	179,829	359,510
Fireman's Museum	15,368	255,631	9,579	221,772	12,691	198,458
Police Station and Courthouse	1,095,440	708,468	1,091,763	585,121	1,139,110	831,971
Public Works Administration Building	203,949	594,343	237,916	542,387	212,077	508,975
Public Works Building-Wilbur	12,665	122,940	41,383	105,268	68,738	129,064
Rondout City Offices	14,897	161,015	8,821	81,001	19,320	85,211
Rondout Fire Station	230,261	398,642	218,790	327,653	238,773	334,150
Rondout Neighborhood Center	156,431	573,211	122,989	560,541	115,885	633,462
Salt Shed	52,152	0	47,330	0	50,621	0
Uptown Firehouse	101,475	482,909	109,549	347,801	119,755	247,202
Wastewater Treatment Plant	5,480,317	950,697	5,228,995	733,275	5,220,787	756,350
Water Department Administration Building and Maintenance Garage	140,250	479,159	128,634	427,021	125,081	458,519
Total	**9,583,916**	**11,922,741**	**9,222,782**	**10,196,437**	**9,516,473**	**10,395,652**

Table 1. Annual electricity and natural gas consumption data in kBTu for benchmarked buildings.