Village of New Paltz, New York Greenhouse Gas Inventory Report for 2023



Prepared for:
Village of New Paltz

Presentation Date:
June 25, 2023

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Credits and Acknowledgements

Village of New Paltz officials

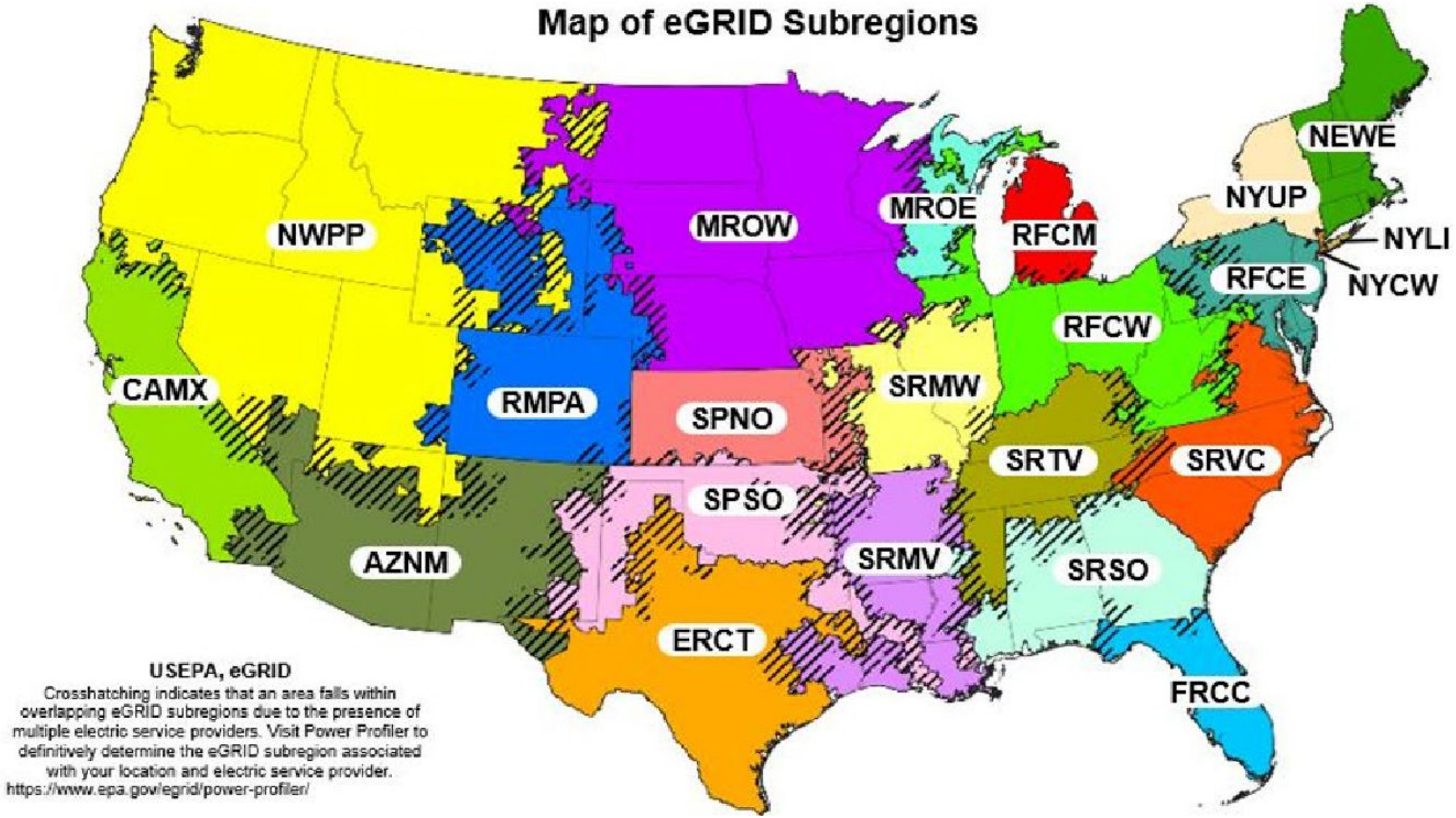
- Tim Rogers (Mayor)
- Heather Nielson (Department of Public Works)

Additionally,

- Melanie Patapis (former Hudson Valley Regional Council representative)
- Madison Hodges (local ICLEI representative)

New Paltz Climate Smart Taskforce

EPA eGRID


Map of eGRID Subregions
NWPP
MROW
MROE
RFCM
NEWE
NYUP
NYLI
NYCW
RFCE
RFCW
CAMX
RMPA
SPNO
SRMW
SRTV
SRVC
SPSO
AZNM
SRMV
SRSO
ERCT
FRCC
USEPA, eGRID
Crosshatching indicates that an area falls within overlapping eGRID subregions due to the presence of multiple electric service providers. Visit Power Profiler to definitively determine the eGRID subregion associated with your location and electric service provider.
https://www.epa.gov/egrid/power-profiler/

1. Subregion Output Emission Rates (eGRID2023)

eGRID subregion acronym	eGRID subregion name	Total output emission rates lb/MWh							Non-baseload output emission rates lb/MWh							Grid Gross Loss (%)
		CO_2	CH_4	N_2O	CO_2e	Annual NO_x	Ozone Season NO_x	SO_2	CO_2	CH_4	N_2O	CO_2	Annual NO_x	Ozone Season NO_x	SO_2	
AKGD	ASCC Alaska Grid	899.0	0.086	0.012	904.5	5.6	6.2	0.310	1,077.1	0.116	0.016	1,084.5	6.3	7.0	0.463	4.1%
AKMS	ASCC Miscellaneous	519.4	0.026	0.004	521.4	8.1	7.9	0.707	1,548.6	0.067	0.012	1,553.6	24.4	23.6	2.110	4.1%
AZNM	WECC Southwest	740.8	0.041	0.006	743.4	0.4	0.4	0.108	1,260.4	0.067	0.009	1,264.7	0.7	0.6	0.184	4.1%
CAMX	WECC California	436.7	0.025	0.003	438.2	0.3	0.3	0.020	1,034.0	0.051	0.007	1,037.1	0.7	0.6	0.045	4.1%
ERCT	ERCOT All	738.0	0.043	0.006	740.8	0.4	0.5	0.321	1,264.9	0.076	0.010	1,269.8	0.9	0.9	0.667	4.2%
FRCC	FRCC All	801.9	0.042	0.005	804.5	0.2	0.2	0.131	1,034.0	0.045	0.006	1,036.8	0.3	0.3	0.159	4.2%
HIMS	HICC Miscellaneous	1,122.1	0.146	0.022	1,132.0	7.6	7.2	4.484	1,596.4	0.170	0.027	1,608.2	11.7	11.6	6.169	4.4%
HIOA	HICC Oahu	1,489.4	0.134	0.021	1,498.8	3.9	3.7	4.279	1,753.4	0.159	0.025	1,764.6	4.5	4.3	5.041	4.4%
MROE	MRO East	1,402.0	0.116	0.017	1,409.7	1.0	1.0	0.278	1,713.8	0.161	0.023	1,724.4	1.1	1.2	0.367	4.2%
MROW	MRO West	920.0	0.097	0.014	926.4	0.7	0.8	0.896	1,776.6	0.180	0.026	1,788.5	1.4	1.4	1.575	4.2%
NEWE	NPCC New England	537.2	0.063	0.008	541.1	0.3	0.3	0.115	885.2	0.067	0.009	889.3	0.4	0.3	0.137	4.2%
NWPP	WECC Northwest	631.7	0.054	0.008	635.2	0.6	0.5	0.268	1,613.4	0.146	0.021	1,623.0	1.6	1.6	0.752	4.1%
NYCW	NPCC NYC/Westchester	974.7	0.025	0.003	976.1	0.3	0.3	0.027	1,008.9	0.020	0.002	1,010.0	0.4	0.4	0.011	4.2%
NYLI	NPCC Long Island	1,180.7	0.140	0.018	1,189.3	0.8	0.8	0.331	1,316.6	0.050	0.006	1,319.6	0.8	0.7	0.126	4.2%
NYUP	NPCC Upstate NY	241.0	0.011	0.001	241.7	0.1	0.1	0.027	909.1	0.041	0.005	911.6	0.4	0.4	0.103	4.2%
PRMS	Puerto Rico Miscellaneous	1,543.0	0.077	0.012	1,548.4	3.9	4.1	3.695	1,636.7	0.072	0.012	1,642.0	4.4	4.7	4.735	
RFCE	RFC East	594.7	0.036	0.005	597.0	0.2	0.2	0.211	1,175.5	0.077	0.010	1,180.4	0.6	0.6	0.618	4.2%
RFCM	RFC Michigan	962.1	0.082	0.011	967.4	0.5	0.5	0.559	1,508.1	0.144	0.020	1,517.6	0.9	0.8	1.020	4.2%
RFCW	RFC West	911.3	0.071	0.010	916.0	0.4	0.4	0.412	1,757.3	0.161	0.023	1,767.9	1.0	0.8	0.877	4.2%
RMPA	WECC Rockies	1,036.0	0.090	0.013	1,042.0	0.5	0.5	0.329	1,620.6	0.124	0.018	1,628.8	0.9	0.9	0.469	4.1%
SPNO	SPP North	861.9	0.087	0.012	867.7	0.5	0.6	0.137	1,892.1	0.188	0.027	1,904.5	1.1	1.0	0.296	4.2%
SPSO	SPP South	891.1	0.055	0.008	894.7	0.7	0.8	0.673	1,508.4	0.095	0.013	1,514.6	1.4	1.3	1.208	4.2%
SRMV	SERC Mississippi Valley	739.4	0.032	0.004	741.4	0.5	0.5	0.350	1,145.5	0.061	0.008	1,149.4	0.9	1.0	0.857	4.2%
SRMW	SERC Midwest	1,238.3	0.132	0.019	1,247.0	0.8	0.6	1.634	1,818.6	0.190	0.027	1,831.1	1.7	1.1	2.157	4.2%
SRSO	SERC South	840.9	0.055	0.008	844.6	0.3	0.3	0.162	1,386.0	0.096	0.014	1,392.3	0.7	0.6	0.298	4.2%
SRTV	SERC Tennessee Valley	895.7	0.079	0.011	900.9	0.4	0.4	0.426	1,665.8	0.154	0.022	1,675.9	0.7	0.6	0.828	4.2%
SRVC	SERC Virginia/Carolina	590.2	0.045	0.006	593.1	0.3	0.3	0.151	1,286.8	0.100	0.014	1,293.3	0.7	0.7	0.376	4.2%
U.S.		**771.5**	**0.057**	**0.008**	**775.2**	**0.5**	**0.5**	**0.361**	**1,393.7**	**0.104**	**0.015**	**1,400.5**	**0.9**	**0.9**	**0.694**	**4.2%**

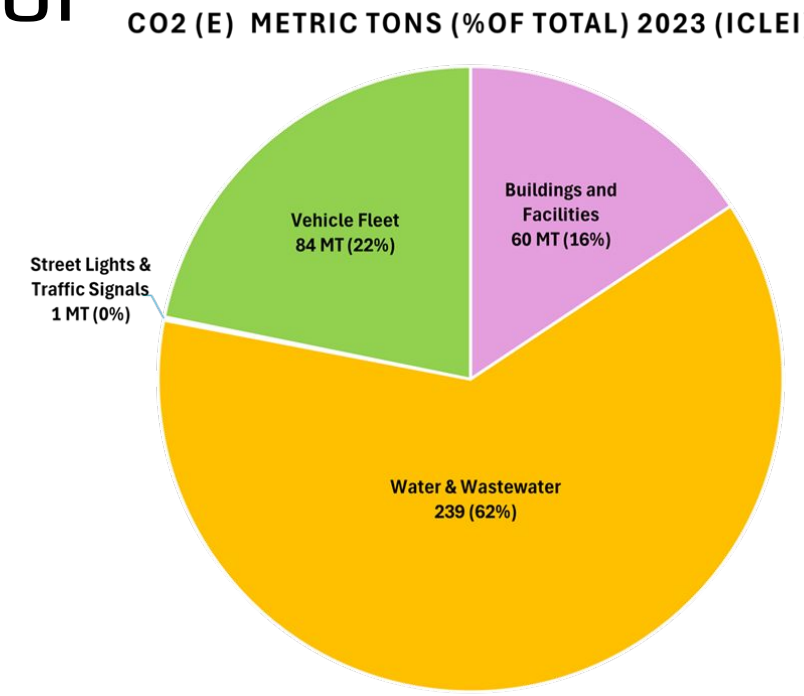
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Village Local Government Operations

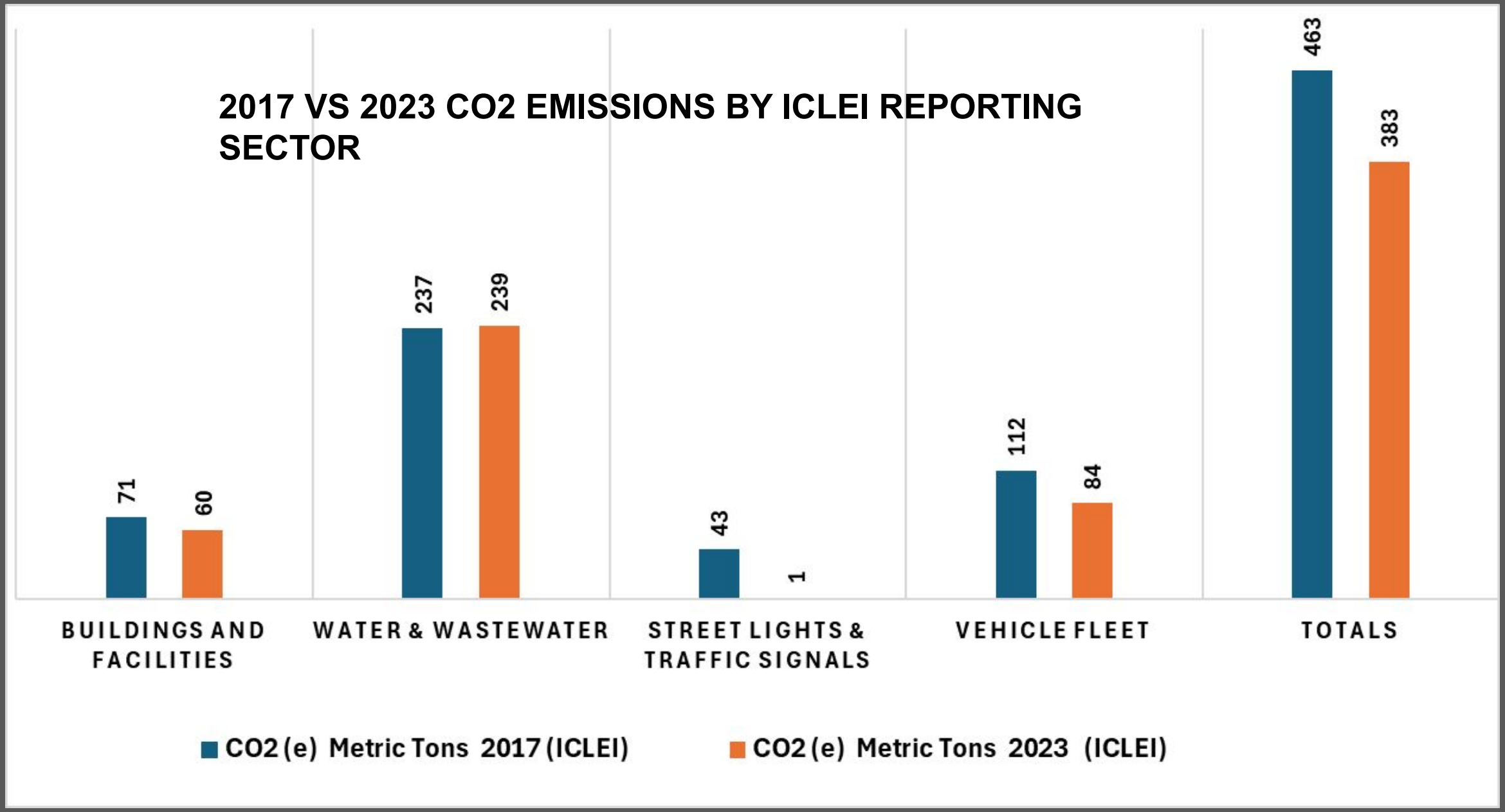
- Inventory Results
- Key Findings/Conclusion

Results: by ICLEI Reporting Sector

- Water and wastewater was the largest source of GHG emissions for both 2017 and 2023.
- There was a negligible overall increase in Water and Wastewater emissions (1%).
- All other sectors had an overall decrease in emissions.
- Streetlights and Traffic Signals showed the most significant decrease in GHG emissions (98%). It was also the only sector that had a decrease in cost (99%).
- The Vehicle Fleet sector had a 25% decrease in emissions but a 26% increase in cost.
- Overall GHG emissions decreased between 2017 (baseline year) and 2023.

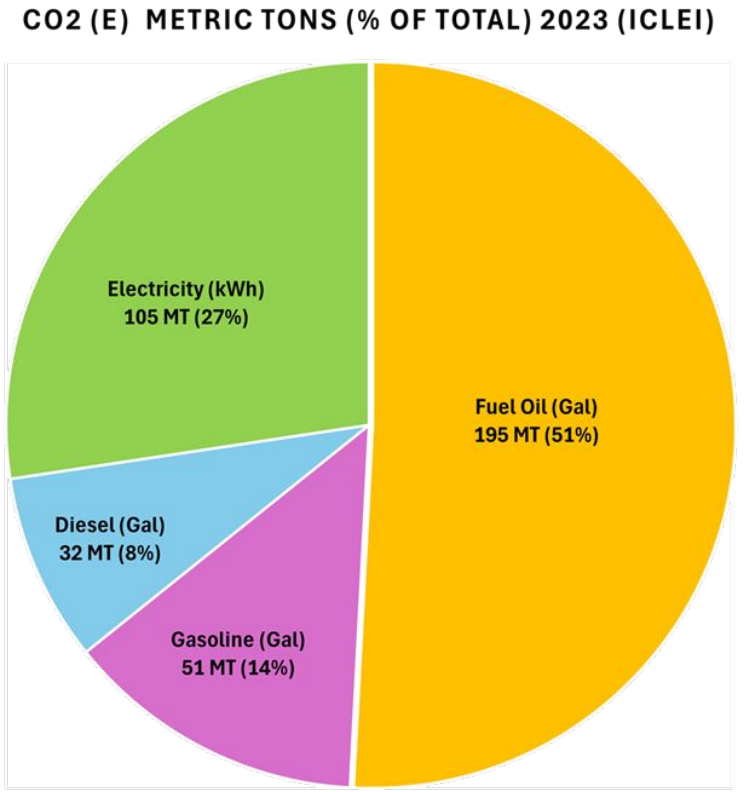


ICLEI Reporting Sector	2017 Cost	2023 Cost (Electric calculated from NYPA rate)	% Change	CO_2 (e) Metric Tons 2017 (Village Report)	CO_2 (e) Metric Tons 2017 (ICLEI)	CO_2 (e) Metric Tons 2023 (ICLEI)	% Change
Buildings and Facilities	$19,263.16	$30,702.22	59%	66	71	60	-16%
Water & Wastewater	$75,442.27	$132,801.37	76%	154	237	239	1%
Street Lights & Traffic Signals	$62,101.78	$673.08	-99%	47	43	1	-98%
Vehicle Fleet	$21,940.63	$27,732.54	26%	124	112	84	-25%
Totals	$178,747.84	$191,909.21	7%	392	463	383	-17%


2017 VS 2023 CO2 EMISSIONS BY ICLEI REPORTING SECTOR
71
60
237
239
43
1
112
84
463
383
BUILDINGS AND FACILITIES
WATER & WASTEWATER
STREET LIGHTS & TRAFFIC SIGNALS
VEHICLE FLEET
TOTALS
CO2 (e) Metric Tons 2017 (ICLEI)
CO2 (e) Metric Tons 2023 (ICLEI)

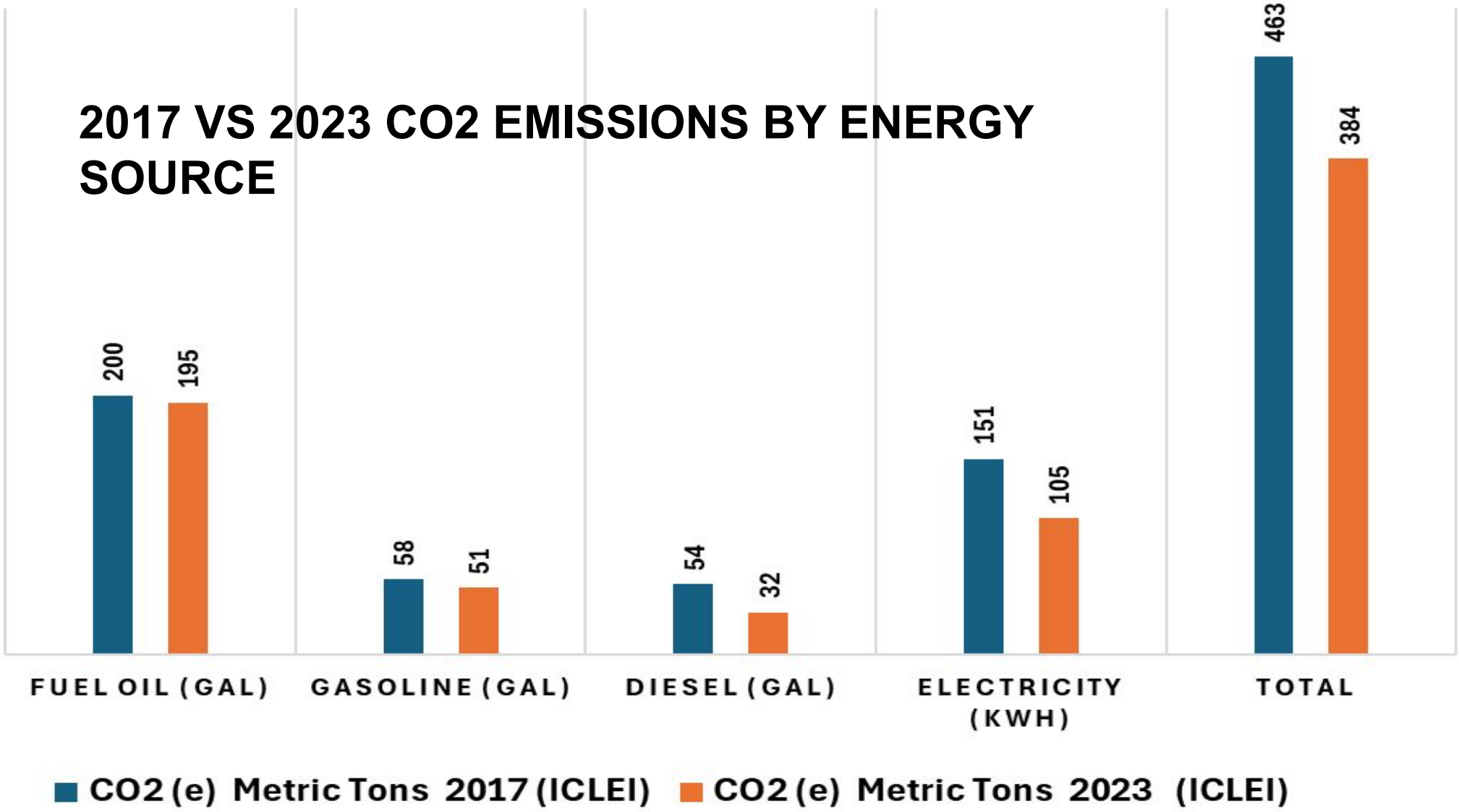
Results: by Energy Source

- Fuel Oil was the largest energy source of GHG emissions for both 2017 and 2023.
- Fuel Oil usage decreased by 3%, but costs increased by 64% between 2017 and 2023.
- Electricity was the second largest source of GHG emissions for both years.
- Emissions due to electricity decreased between 2017 and 2023 (151 MT CO2e vs 105 MT CO2e, respectively). Costs also decreased. There was essentially no difference in usage.
- Gasoline usage decreased by 9%, but costs increased by 45%.
- Diesel usage decreased by 39%, but costs increased by 3%.

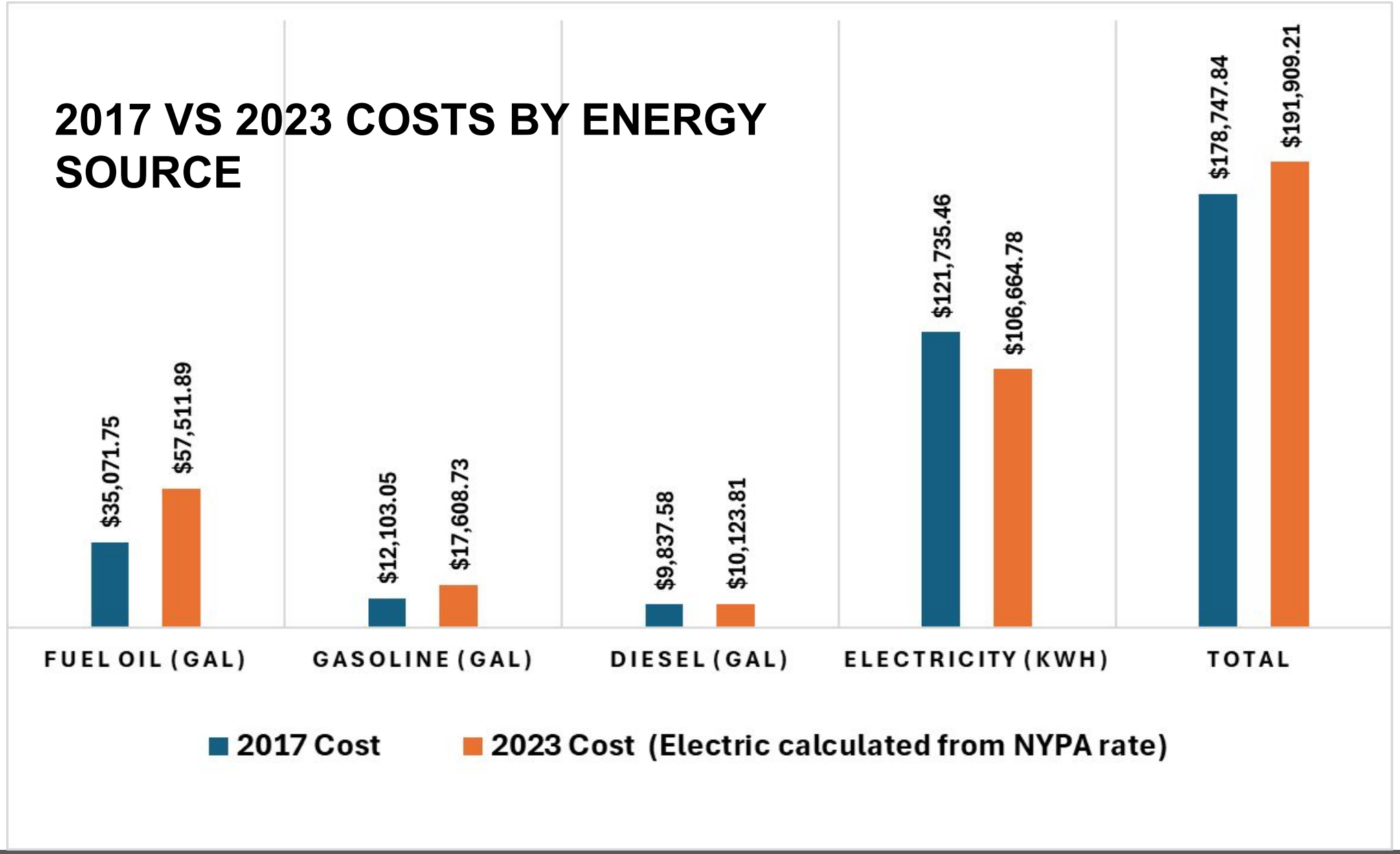


Energy Source	2017 Usage	2023 Usage	% Change	2017 Cost	2023 Cost (Electric calculated from NYPA rate)	% Change	CO_2 (e) Metric Tons 2017 (Village Report)	CO_2 (e) Metric Tons 2017 (ICLEI)	CO_2 (e) Metric Tons 2023 (ICLEI)	% Change
Fuel Oil (Gal)	19596	18970	-3%	$35,071.75	$57,511.89	64%	?	200	195	-2%
Gasoline (Gal)	6463	5855	-9%	$12,103.05	$17,608.73	45%	?	58	51	-11%
Diesel (Gal)	5134	3148	-39%	$9,837.58	$10,123.81	3%	?	54	32	-40%
Electricity (kWh)	957151	957129	0%	$121,735.46	$106,664.78	-12%	?	151	105	-31%
Total				$178,747.84	$191,909.21	7%	391.5	463	384	-17%

2017 VS 2023 CO2 EMISSIONS BY ENERGY SOURCE



2017 VS 2023 COSTS BY ENERGY SOURCE



Key Findings/Conclusion:

1. Total GHG emissions were 383 MT CO2e in 2023 vs 463 MT CO2e in 2017. This represented a 17% decrease in overall emissions.*

2. The largest energy source for GHG emissions came from fuel oil for both 2017 and 2023. This came mainly from the Water and Wastewater sector. Electricity was the second largest source of GHG emissions again mainly from the Water and Wastewater sector for both years. More specifically, these emissions came from the Water Treatment Plant on Mountain Rest Road.

3. The difference in total electricity usage was negligible between 2017 and 2023 (957,151 kWh vs 957,129 kWh), however GHG emissions decreased significantly (31%) mainly due to a change in emission factors (274.9 for 2017 vs 241.7 for 2023; EPA eGRID for Upstate New York's NYUP subregion).

4. Costs increased for every energy source except electricity and for every reporting sector except Streetlights. The greatest cost increase came from the Water and Wastewater sector and more specifically from the Mountain Rest Water Treatment Plant. The greatest decrease was due to the change to 100% LED streetlights (99%). The overall increase in cost was $13,161 (or 7%).

5. An additional 23% (or 106 MT CO2e) in emission reductions are needed to meet the most immediate target of 40% by 2030 using 2017 as the baseline year.

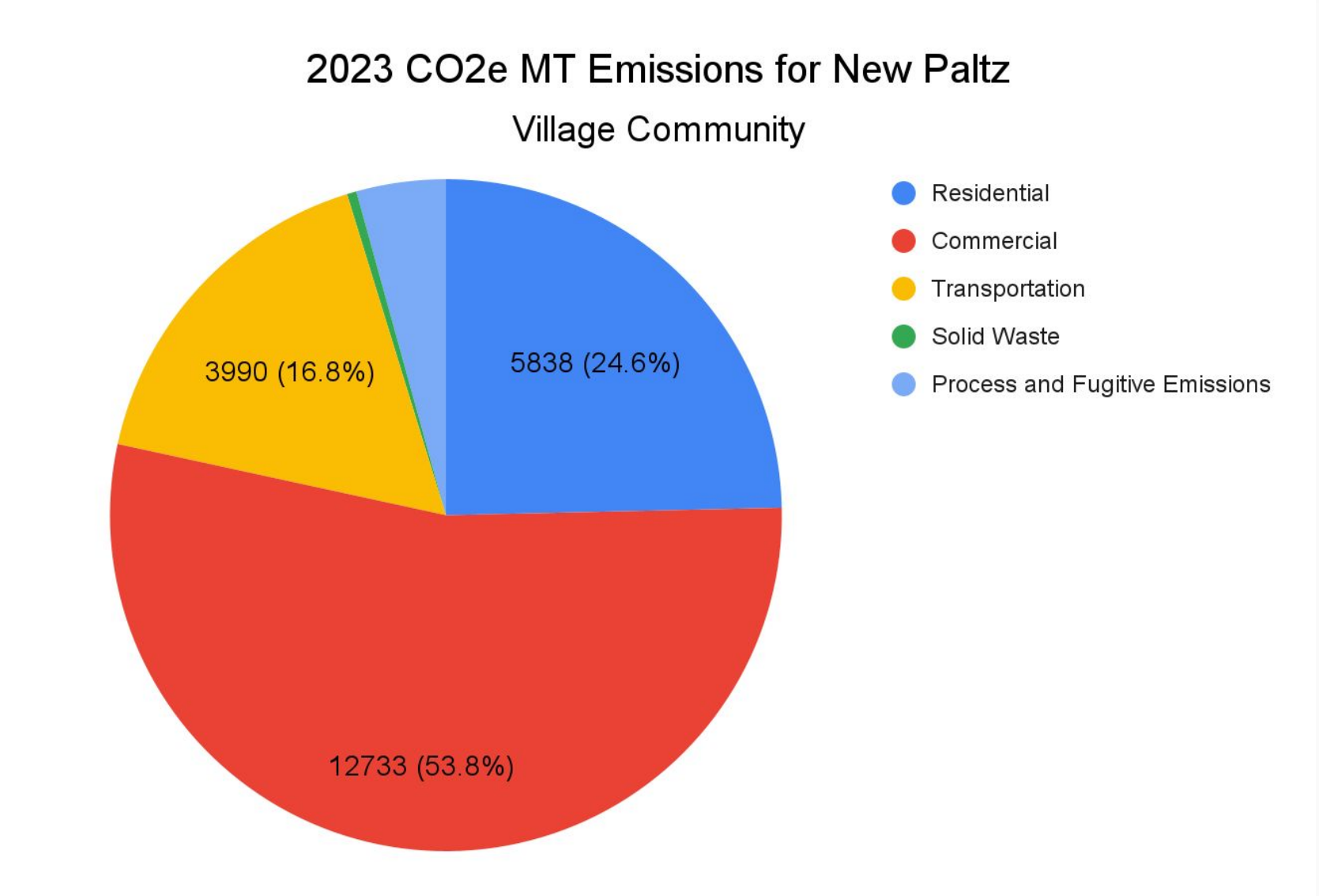
***Note:** The emission factor used for 2017 by ICLEI was a calculated factor based on an average of 2016 and 2018 eGRID emission factors. No eGRID emission factors were published for 2017. Also, emissions in the 2017 inventory were calculated as zero for electricity. 2017 usage data was used to recalculate the GHG emissions for that year causing the numbers to be revised upward from 395 to 463.

Village Site	Energy Source Units	2017 Usage	2023 Usage	% Change	2017 Cost	2023 Cost (Electric calculated from NYPA rate)	% Change	CO_2(e) Metric Tons 2017 (Village Report)	CO_2(e) Metric Tons 2017 (ICLEI)	CO_2(e) Metric Tons 2023 (ICLEI)	% Change
Village Hall (Fuel Oil) tank 2	Gal	3298	2300	-30%	$6,084.33	$7,201.83	18%	?	34	24	-30%
Village Hall	kWh	67360	55520	-18%	$6,332.97	$6,160.50	-3%	?	9	6	-33%
DPW Garage (Fuel Oil) tank 1	Gal	2557	1889	-26%	$4,902.57	$5,933.95	21%	?	26	19	-25%
Village EV Charge Station	kWh	0	0	0%	$0	$0	0%	?	0	0	0%
DPW (Hugenot St). Pole Barn	kWh	14898	1552	-90%	$1,412.76	$172.21	-88%	?	2	0	-92%
Fire Station sub / New Fire Station	kWh	2083	97080	4561%	$530.53	$11,233.73	2017%	?	0	11	3700%
Total (KWh)		84341	154152	83%	$8,276.26	$17,566.44	112%	?	11	17	49%
Total (Gal)		5855	4189	-28%	$10,986.90	$13,135.78	20%	?	60	43	-28%
Total (Buildings and Facilities)		90196	158341	76%	$19,263.16	$30,702.22	59%	65.83	71	60	-16%
Waste Water Treatment Plant - Hugenot St.	kWh	299160	266840	-11%	$9,319.21	$29,608.57	218%	?	37	29	-22%
Waste Water Treatment Plant - Hugenot St. (Fuel Oil) tank 4	Gal	8760	6851	-22%	$15,170.94	$20,682.43	36%	?	89	70	-21%
Sewer Pump Station - Henry Ct. (also Hugenot St.)	kWh	1558	1622	4%	$502.31	$179.98	-64%	?	0	0	-5%
Sewer Pump Station - Hasbrouck Ave	kWh	65	183	182%	$426.96	$20.31	-95%	?	0	0	100%
Sewer Pump Station - Orchard Ln	kWh	232	686	196%	$424.85	$76.12	-82%	?	0	0	167%
Sewer Pump Station - Route 32	kWh	12768	22996	80%	$1,123.31	$2,551.64	127%	?	2	3	58%
Sewer Pump Station - HWD	kWh	40249	42037	4%	$3,660.56	$4,664.43	27%	?	5	5	-8%
Water Treatment Plant - Mtn. Rest	kWh	134000	323520	141%	$17,177.10	$35,897.78	109%	?	17	35	112%
Water Treatment Plant - Mtn. Rest (Fuel Oil) tank 3	Gal	4980	7930	59%	$8,913.91	$23,693.68	166%	?	51	81	60%
Aqueduct Water Pump Station - Mtn. Rest	kWh	231680	137160	-41%	$18,208.04	$15,219.27	-16%	?	29	15	-48%
Water Tower Telemetry - Bruce/Rita	kWh	1764	1867	6%	$515.08	$207.16	-60%	?	0	0	-9%
Total (KWh)		721476	796911	10%	$51,357.42	$88,425.26	72%	?	97	87	-10%
Total (Gal)		13741	14781	8%	$24,084.85	$44,376.11	84%	?	140	152	8%
Total (Water & Wastewater Treatment)		735217	811692	10%	$75,442.27	$132,801.37	76%	154.48	237	239	1%
Village Hall Lighting	kWh	22	2368	10664%	$425.31	$262.75	-38%	?	0	0	0%
Hasbrouck Park Lighting	kWh	151312	3698	-98%	$61,676.47	$410.33	-99%	?	43	0	-99%
Total (Street Lights & Traffic Signals)		151334	6066	-96%	$62,101.78	$673.08	-99%	47.29	43	1	-98%
Gasoline	Gal	6463	5855	-9%	$12,103.05	$17,608.73	45%	63.89	58	51	-11%
Diesel	Gal	5134	3148	-39%	$9,837.58	$10,123.81	3%	60.04	54	32	-40%
Total (Vehicle Fleet)		11597	9003	-22%	$21,940.63	$27,732.54	26%	123.93	112	84	-25%
	Fuel Oil (Gal)	19596	18970	-3%	$35,071.75	$57,511.89	64%	?	200	195	-2%
	Gasoline (Gal)	6463	5855	-9%	$12,103.05	$17,608.73	45%	?	58	51	-11%
	Diesel (Gal)	5134	3148	-39%	$9,837.58	$10,123.81	3%	?	54	32	-40%
	Electricity (kWh)	957151	957129	0%	$121,735.46	$106,664.78	-12%	?	151	105	-31%
Totals					$178,747.84	$191,909.21	7%	391.53	463	383	-17%
					Increased	$13,161.37					

Village Community

- Inventory Results
- Key Findings/Conclusion

Results of Village Community Inventory



Results: 2017 vs 2023 of Village Community by ICLEI Sector

The increases in Residential and Commercial are from the fact that the 2017 data was not fully reporting usage and thus created an artificially low emissions calculation.

	Community CO2e MT		
	2017 Village	**2023 Village**	**% Change**
Residential	2265	5838	157.75%
Commercial	1450	12733	778.14%
Transportation	4328	3990	-7.81%
Solid Waste	151.8	109	-28.19%
Water and Wastewater	34	0	0.00%
AFLOU	0	0	0.00%
Process and Fugitive Emissions	654	1018	55.63%
Total	8883	23688	**166.67%**

Village Community Key Findings and Conclusions

Key Findings

1. The 2023 GHG emissions following our methodology for the Village was 23,688 CO2 equivalent (CO2e) MT

2. Commercial is the primary source of emissions for the Village at 12,733 CO2e MT or 54% of the total, of which Natural Gas usage created 9,467 CO2e MTs.

3. Residential is the next largest sector with 5,828 CO2e MT or 25%. Fuel Oil usage was the largest source of emissions at 3,412 CO2e MT.

4. Transportation contributed 3,990 CO2e MT, a reduction from 2017, and is 17% of the total Village emissions. Can can be attributed to both walkability and low total miles of road in the Village which is the basis for allocation of the Vehicle Miles Traveled (VMT).

Conclusions

1. Ongoing education of Restaurant owners on electric appliance alternatives will be needed if we are to make progress in the Commercial sector.

2. The Residential Sector still has a significant amount of emissions from fuel oil. Steady progress is visible in the transition to heat pumps as can be observed by the increased requests for permits. Accelerating the transition to EV's should be a priority and appropriate actions developed.

Conclusion

Government operations is trending in the right direction, with further reductions needed. Community, particularly transportation, is the area of greatest need where the Town should construct a plan.

- The overall goal of New Paltz is to become a net zero community by replacing all sources of energy with renewable energy as the technology becomes available and accessible and to meet the New York state CLCPA (NY Climate Leadership & Community Protection Act or ‘Climate Act’ est. 2019) mandate to reduce GHGs by 40% by 2030 and 85% by 2050.

- The act established 1990 data as the baseline. We don’t have data that far back. We’re using 2017 as our baseline.

- Acceptance of a resolution that approves the report, publishes the report to government webpages, reaffirms commitment to emission reduction targets and frequency of inventory of no less than every 5 years.