Exhibit 3:

CUSTOMER AND LOAD FORECAST

Exhibit 3: Customer And Load Forecast

Tab 1 (of 2): Load Forecast

LOAD FORECAST OVERVIEW

Included as Exhibit 3, Tab 1, Schedule 1, Attachment 1, GSHi's Load Forecast report provides a weather-normalized load forecast for 2025, using regression models to account for variables such as heating/cooling degree days, customer growth, and the impacts of COVID-19. Separate forecasts were created for rate classes, including Residential, General Service < 50 kW, and General Service > 50 kW. Economic factors and the potential increase in electric vehicle and electric heating loads are also factored into the 2025 forecasts. The report outlines the anticipated Conservation and Demand Management (CDM) adjustments, yielding the CDM-adjusted forecasts for kWh and kW by class. OEB Appendix 2-IB Customer, Connections, Load Forecast and Revenues Data and Analysis has been included as Exhibit 3, Tab 1, Schedule 1, Attachment 2.

Attachment 1 (of 2):

Load Forecast Report

52 Church St., Suite 222
Toronto, Ontario, M5C 3C8
Elenchus.ca

Weather Normalized Distribution System Load Forecast: 2025 Cost of Service

Report prepared by
Andrew Blair
Elenchus Research Associates Inc.

Prepared for:
Greater Sudbury Hydro Inc.

30 September 2024

Page Intentionally Blank

Table of Contents

1 Introduction 1

1.1 Summarized Results 4

1.2 Load Factor Influences 5

2 Class Specific kWh Regression 6

2.1 Residential 7

2.2 GS < 50 10

2.3 GS > 50 12

3 Weather Normalization and Economic Forecast 15

3.1 10-Year Average 15

3.2 Economic Forecast 16

4 Class Specific Normalized Forecasts 17

4.1 Residential 17

4.2 GS < 50 19

4.3 GS > 50 21

5 Street Light, Sentinel Light, and USL Forecast 23

5.1 Street Light 23

5.2 Sentinel Lighting 25

5.3 USL 28

6 Additional Loads 29

6.1 Electric Vehicles 29

6.2 Electric Heating 33

6.3 Additional Loads Summary 36

7 CDM Adjustment to Load Forecast 37

List of Tables

Table 1 kWh Forecast by Class 4
Table 2 CDM Adjusted kWh Forecast 4
Table 3 kW Forecast by Class 4
Table 4 CDM Adjusted kW Forecast 5
Table 5 Customer / Connections Forecast for 2018-2025 5
Table 6 Billing Determinant Summary 5
Table 7 Load Influence Summary 6
Table 8 Residential and Commercial/Industrial Loads 6
Table 9 Residential Regression Model 8
Table 10 Residential Model Error 9
Table 11 GS < 50 Regression Model 11
Table 12 GS < 50 Model Error 12
Table 13 GS>50 Regression Model 14
Table 14 GS>50 Model Error 15
Table 15 - 10 Year Average HDD and CDD 16
Table 16 Economic Forecasts 16
Table 17 Actual vs Normalized Residential kWh 17
Table 18 Additional Residential kWh Consumption 17
Table 19 Forecasted Residential Customer Count 18
Table 20 Actual vs Normalized GS < 50 kWh 19
Table 21 Additional GS<50 kWh Consumption 19
Table 22 Forecasted GS<50 Customer Count 20
Table 23 Actual vs Normalized GS>50 kWh 21
Table 24 Additional GS>50 kWh Consumption 21
Table 25 Forecasted GS>50 Customer Count 22
Table 26 Forecasted GS>50 kW 23
Table 27 Street Light Consumption Forecast 24
Table 28 Forecasted Street Light Connection Count 25
Table 29 Forecasted Street Light kW 25

Table 30 Sentinel Lighting Consumption Forecast 26
Table 31 Forecasted Sentinel Lighting Connection Count 27
Table 32 Forecasted Sentinel Lighting kW 27
Table 33 USL Consumption Forecast 28
Table 34 Forecasted USL Connections 29
Table 35 Ontario and GSH EV Statistics 30
Table 36 Estimate of GSH EVs by Type 30
Table 37 Forecast of EVs GSH EVs by Type 2023-2026 31
Table 38 Basis of Forecast Elements 31
Table 39 Consumption by EV Type 32
Table 40 Forecast EVs and kWh Consumption by EV Type 32
Table 41 Allocations to Rate Classes 33
Table 42 EV Forecast Summary 33
Table 43 Heating Consumption per Customer 34
Table 44 Residential Heating Summary 34
Table 45 GS<50 Heating Summary 35
Table 46 Seasonal Heating Calculation 35
Table 47 Seasonally Adjusted kWh 36
Table 48 Residential and GS<50 Heating Summary 36
Table 49 Additional Load Summary 36
Table 50 2021-2024 CDM Framework and GSH Allocation 37
Table 51 GSH kWh 38
Table 52 GSH CDM 38
Table 53 2021-2024 CDM Framework Adjustments 39

List of Figures

Figure 1 Residential kWh and Average Temperature 7
Figure 2 Residential Predicted vs Actual observations 9
Figure 3 GS<50 kWh and Average Temperature 10
Figure 4 GS<50 Predicted vs Actual Observations 11
Figure 5 GS>50 kWh and Average Temperature 13
Figure 6 GS>50 Predicted vs Actual observations 14
Figure 7 Actual vs Normalized Residential kWh 18
Figure 8 Actual vs Normalized GS<50 kWh 20
Figure 9 Actual vs Normalized GS>50 kWh 22
Figure 10 Street Light kWh per Connection 24
Figure 11 Sentinel Lighting kWh per Connection 26
Figure 12 USL kWh per Connection 28

1 INTRODUCTION

This report outlines the results of, and methodology used to derive, the weather normal load forecast prepared for Greater Sudbury Hydro Inc. ("GSH") for its Cost of Service application for 2025 rates.

The regression equations used to normalize and forecast GSH's weather sensitive load use monthly heating degree days and cooling degree days as measured at Environment Canada's Sudbury Airport[1] weather station to take into account temperature sensitivity. GSH typically experiences relatively large heating load in the winter and smaller cooling loads in the summer so its peak load is generally in the winter. Environment Canada defines heating degree days and cooling degree days as the difference between the average daily temperature and 18°C for each day (below for heating, above for cooling). Heating and cooling degree days with base temperatures other than 18°C have also been considered.

To isolate the impact of CDM, persisting CDM as measured by the IESO is added back to rate class consumption to simulate the rate class consumption had there been no CDM program delivery. This is labelled as "Actual No CDM" throughout the model. The effect is to remove the impact of CDM from any explanatory variables, which may capture a trend, and focus on the external factors. A weather normalized forecast is produced first based on no CDM delivery, and then persisting CDM savings of historic programs are subtracted off to reflect the actual normal forecast.

CDM data beyond 2018 is based on limited data in the IESO Participant and Cost Report. As per the updated CDM Guidelines, forecast CDM is based on a forecast of GSH's share of provincial energy savings.

While statistical regression is appropriate for estimating a relationship between explanatory variables and energy use, in the case of CDM, an independent measurement is available providing a greater level of accuracy than could be obtained through regression.

Overall economic activity also impacts energy consumption. There is no known agency that publishes monthly economic accounts on a regional basis for Ontario. However, regional employment levels are available. Specifically, the monthly full-time equivalent (FTE) employment levels for Sudbury and Ontario, as reported in Statistics Canada's Monthly Labour Force Survey[2] are considered. Ontario GDP is available from Ontario

[1] "Sudbury A" operated by NAVCAN, Latitude:46°37'32" N, Longitude:80°47'52" W, Elevation:348.40 m

[2] Statistics Canada Table 14-10-0380-01

Economic Accounts[3] on a quarterly basis and Overall GDP is available from Statistics Canada on an annual basis.[4] Overall provincial GDP and Mining GDP from each of the Statistics Canada and Ontario Economic Accounts sources were tested.

In order to isolate demand determinants at the class specific level, equations to weather normalize and forecast kWh consumption for the Residential, GS < 50 kW, and GS > 50 kW classes have been estimated.

In addition to the weather and economic variables, a time trend variable, number of days and number of working days in each month, number of customers, and month of year variables have been examined for all weather-sensitive rate classes. More details on the individual class specifications are provided in the next section.

A range of COVID variables were considered to account for the impacts triggered by the COVID-19 pandemic. These variables have been included in load forecasts used to set electricity distribution rates in Ontario.[5] COVID flag variables were tested and found to be statistically significant for some classes. The following COVID flag variables were considered:

- A “COVID” variable equal to 0 in all months prior to March 2020, 1 in all months from March 2020 to December 2021, and 0.5 from January 2022 to December 2022, and 0 thereafter.
- A “COVID_AM” variable equal to 0 in all months prior to March 2020, equal to 0.5 in March 2020, equal to 1 in April and May 2020, 0.5 in each month from June 2020 to December 2021, 0.25 each month from January 2022 to December 2022, and 0 thereafter. This variable accounts for the relatively larger impact of COVID in the first two and a half months following the first lockdowns in March 2020.
- A “COVID_WFH” variable equal to 0 in all months prior to March 2020, equal to 0.5 in March 2020, equal to 1 each month from April 2020 to December 2020, 0.75 from January 2021 to December 2021, 0.5 from January 2022 to December 2022, and 0.25 from January 2023 to December 2023. This variable is intended to reflect the shift to “Work from Home”, which had larger impacts through the summer of 2020 and continues to reflect ongoing impacts.
- A “COVID2020” variable equal to 0 in all months prior to March 2020, equal to 0.5 in March 2020, equal to 1 in April and May 2020, equal to 0.5 in June 2020, and

[3] Ontario Economic Accounts (https://data.ontario.ca/dataset/ontario-economic-accounts)

[4] Statistics Canada Table 36-10-0402-01

[5] Grimsby Power Inc. (EB-2021-0027), Bluewater Power Distribution Corporation (EB-2022-0016), EPCOR Electricity Distribution Ontario Inc. (EB-2022-0028), Kingston Hydro (EB-2022-0044), Milton Hydro Distribution Inc. (EB-2022-0049), and Synergy North Corporation (EB-2023-0052).

equal to 0 in July 2020 and each month thereafter. This variable reflects the temporary impacts experienced by some customers, particularly larger customers.

The extent to which consumption from March 2020 onward differed from typical consumption was tested with a set of COVID/weather interaction variables. The “HDD COVID” and “CDD COVID” variables are equal to the relevant HDD and CDD variables since March 2020, and 0 in all earlier months. The coefficients reflect incremental heating and cooling load consumed as people stayed home during the pandemic. These variables continue to December 2021 but are reduced to 50% of HDD and CDD in all months in 2022 and to 0 in 2023.

The “CWFH HDD” and “CWFH CDD” variables are COVID/weather interaction variables that are equal to the relevant HDD and CDD variables applied to the COVID_WFH (“work from home”). The variables are 0 in all months prior to March 2020, 50% of weather variables in March 2020, 100% of weather variables in April 2020 to December 2020, 75% of weather variables in 2021, and 25% of weather variables in 2022 and thereafter.

Each of the COVID variables were tested for each of the Residential, General Service < 50 kW, and General Service > 50 kW rate classes. The COVID_WFH variable was used for the Residential rate class. The COVID_AM variable was used for the General Service < 50 kW and General Service > 50 kW rate classes.

For classes with demand charges, an annual kW to kWh ratio is calculated using actual observations for each historical year and applied to the normalized kWh to derive a weather normal kW observation.

1.1 SUMMARIZED RESULTS

The following table summarizes the historic and forecast kWh for 2019 to 2025:

Normal Forecast

kWh	2019 Actual	2020 Actual	2021 Actual	2022 Actual	2023 Actual	2023 Normal	2024 Forecast	2025 Forecast
Residential	375,135,885	381,987,925	374,588,273	380,676,140	372,340,612	381,830,915	368,718,656	373,376,791
GS < 50	135,948,289	128,684,916	128,128,422	132,582,255	136,911,222	138,789,486	138,964,463	141,216,806
GS > 50	347,530,976	319,951,982	317,045,881	331,557,997	323,871,928	328,071,956	327,571,862	326,115,338
Street Light	7,481,252	6,391,576	3,586,468	3,599,100	3,626,511	3,626,511	3,640,259	3,659,039
Sentinel Light	372,542	363,324	360,262	348,724	324,715	324,715	318,680	312,757
USL	1,133,887	1,032,903	987,840	947,504	921,828	921,828	887,789	851,487
Total	867,602,831	838,412,626	824,697,146	849,711,720	837,996,816	853,565,412	840,101,708	845,532,218

Table 1 kWh Forecast by Class

The following table summarizes the 2025 CDM Adjusted kWh Load Forecast. Details for this calculation can be found in Schedule 7 of this report.

CDM Adjusted

kWh	2025 Weather Normal Forecast	CDM Adjustment	2025 CDM Adjusted Forecast
Residential	373,376,791	1,672,934	371,703,857
GS < 50	141,216,806	2,377,283	138,839,523
GS > 50	326,115,338	6,424,979	319,690,359
Street Light	3,659,039		3,659,039
Sentinel Light	312,757		312,757
USL	851,487		851,487
Total	845,532,218	10,475,196	835,057,022

Table 2 CDM Adjusted kWh Forecast

The following table summarizes the historic and forecast kW for 2019 to 2025:

Normal Forecast

kW	2019 Actual	2020 Actual	2021 Actual	2022 Actual	2023 Actual	2023 Normal	2024 Forecast	2025 Forecast
GS > 50	846,327	757,331	769,679	790,889	798,157	806,549	807,380	808,875
Street Light	20,902	18,315	10,079	10,059	10,143	10,164	10,202	10,255
Sentinel Light	1,028	999	992	954	893	893	877	860
Total	868,257	776,645	780,750	801,902	809,193	817,606	818,458	819,990

Table 3 kW Forecast by Class

The following table summarizes the 2025 CDM Adjusted kW Load Forecast. Details for this calculation can be found at the end of in Schedule 7 of this report.

CDM Adjusted

kW	2025 Weather Normal Forecast	CDM Adjustment	2025 CDM Adjusted Forecast
GS > 50	808,875	15,795	793,079
Street Light	10,255		10,255
Sentinel Light	860		860
Total	819,990	15,795	804,194

Table 4 CDM Adjusted kW Forecast

The following table summarizes the historic and forecast customer/connection counts for 2019 to 2025:

Customers / Connections

Customers	2019 Actual	2020 Actual	2021 Actual	2022 Actual	2023 Actual	2024 Forecast	2025 Forecast
Residential	43,011	43,073	43,113	43,131	43,278	43,350	43,422
GS < 50	4,167	4,214	4,259	4,273	4,326	4,365	4,404
GS > 50	501	481	477	486	447	441	435
Street Light	9,917	10,030	10,092	10,155	10,198	10,250	10,303
Sentinel Light	366	354	352	351	349	342	336
USL	294	279	268	261	260	253	246
Total	58,256	58,431	58,560	58,656	58,857	59,001	59,146

Table 5 Customer / Connections Forecast for 2018-2025

Finally, a summary of billing determinants is provided in Table 6.

Summary

2025	kWh	kW	Customers / Connections
Residential	371,703,857		43,422
GS < 50	138,839,523		4,404
GS > 50	319,690,359	793,079	435
Street Light	3,659,039	10,255	10,303
Sentinel Light	312,757	860	336
USL	851,487		246
Total	835,057,022	804,194	59,146

Table 6 Billing Determinant Summary

1.2 LOAD FACTOR INFLUENCES

Table 7 below provides a summary of GSH's total system consumption and the key factors that influence its load. HDD and CDD figures represent the differences between actual weather-related loads and 10-year normalized weather-related loads.

Year	Total kWh	kWh Growth	HDD	CDD	Metered Cust.	Metered Customer Growth
2019	867,602,831				47,680	
2020	838,412,626	-3.4%	-9.2%	72.5%	47,768	0.2%
2021	824,697,146	-1.6%	-6.9%	-23.4%	47,848	0.2%
2022	849,711,720	3.0%	9.3%	-14.4%	47,890	0.1%
2023	837,996,816	-1.4%	-8.3%	7.2%	48,051	0.3%
Avg. Growth 2019-2023		***-0.86%***			***0.19%***	
2024	835,443,880	-0.3%	8.9%	0.7%	48,155	0.2%
2025	835,057,022	0.0%	0.0%	0.0%	48,261	0.2%
Avg. Growth 2019-2025		***-0.64%***			***0.20%***	

Table 7 Load Influence Summary

GSH's consumption decreased by 3.41% since 2019, or 0.86% per year. The decline in consumption in 2023 was primarily due to mild winter temperatures. On a weather-normalized basis, consumption decreased by 0.24% from 2019 to 2023. The consumption growth rate is forecast to decrease by 0.18% per year in 2024 and 2025 due to a forecast return to average weather from 2023 mild weather and increased electrification (EVs and heat pumps).

Year	Residential				GS < 50 & GS > 50			
	Cust.	Cust. Growth %	kWh	kWh Growth %	Cust.	Cust. Growth %	kWh	kWh Growth %
2019	43,011		365,079,162		4,668		483,466,644	
2020	43,073	0.1%	386,521,285	5.9%	4,695	0.6%	449,965,891	-6.9%
2021	43,113	0.1%	384,549,533	-0.5%	4,735	0.8%	451,191,078	0.3%
2022	43,131	0.0%	378,222,953	-1.6%	4,759	0.5%	460,558,826	2.1%
2023	43,278	0.3%	371,725,298	-1.7%	4,773	0.3%	466,152,049	1.2%
Avg. 2019-23		***0.15%***		***0.45%***		***0.56%***		***-0.91%***
2024	43,350	0.2%	368,000,278	-1.0%	4,806	0.7%	462,596,874	-0.8%
2025	43,422	0.2%	371,703,857	1.0%	4,839	0.7%	458,529,882	-0.9%
Avg. 2019-25		***0.16%***		***0.30%***		***0.60%***		***-0.88%***

Table 8 Residential and Commercial/Industrial Loads

2 CLASS SPECIFIC KWH REGRESSION

Consumption for the Residential, GS < 50, and GS > 50 rate classes were forecast with multivariate regressions. Regressions were not used for the Street Light, Sentinel Light, and USL rate classes as these classes do not exhibit sensitivity to the explanatory variables available for a statistical regression approach.

2.1 RESIDENTIAL

For Residential kWh consumption the equation was estimated using 120 observations from January 2014 to December 2023. Multiple heating degree day and cooling degree day thresholds were considered in the Residential regression. Consumption is relatively stable when the average monthly temperature is between 12°C and 18°C and increases as average temperatures deviate from that range. HDD relative to 12°C and CDD relative to 18°C were found to provide the strongest results. HDD and CDD measures near 12°C and 18°C, respectively, were also considered but found to be less predictive of monthly consumption.

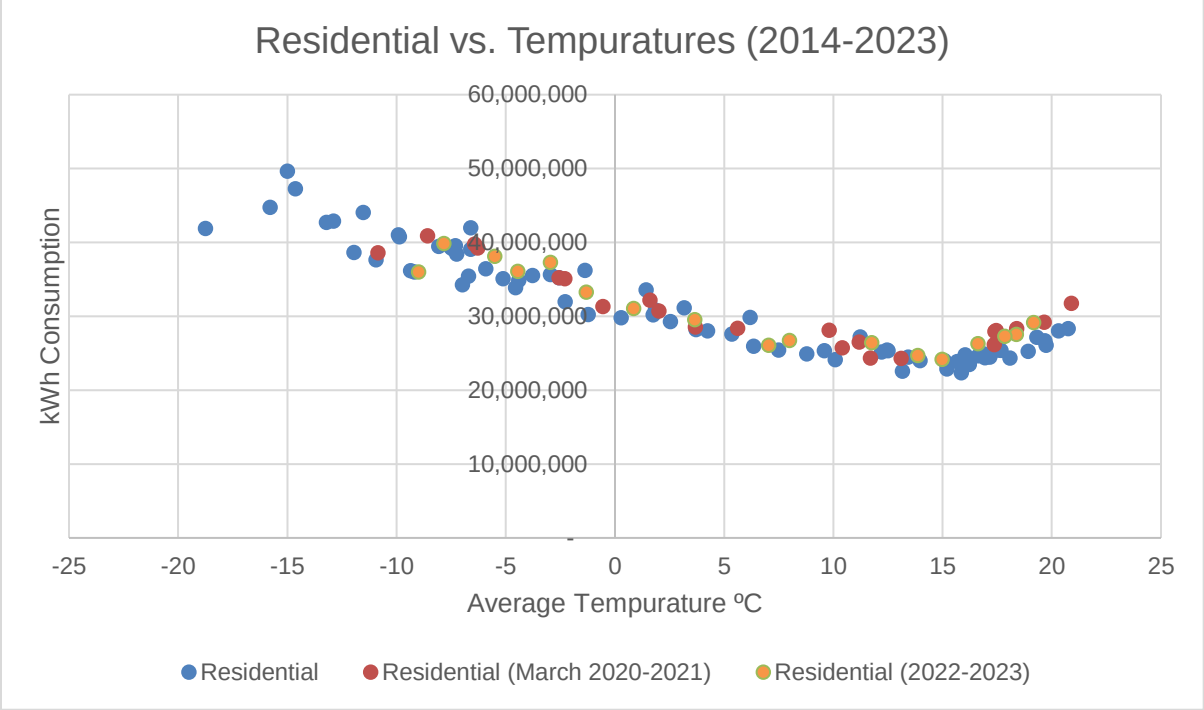


Figure 1 Residential kWh and Average Temperature

Economic variables, such as Greater Sudbury employment and various GDP measures, were tested but not found to be statistically significant variables.

The COVID Work From Home (COVID_WFH) variable was found to be statistically significant and more significant than other COVID variables.

A shoulder variable, equal to 1 in March, April, May, September, October, and November and 0 in all other months, is used and found to be statistically significant.

The number of days in each month is used and found to be statistically significant.

Several other variables were examined and found to not show a statistically significant relationship to energy usage, or a weaker relationship than similar variables that are

included. Those included customer counts, employment, GDP, and other calendar variables.

A time-series autoregressive model using the Prais-Winsten estimation was used for the Residential class to account for autocorrelation.

The following table outlines the resulting regression model:

Model 1: Prais-Winsten, using observations 2014:01-2023:12 (T = 120) Dependent variable: Res_NoCDM rho = 0.281555				
	coefficient	std. error	t-ratio	p-value
const	- 2,052,269	3,198,900	(0.64)	0.522
HDD12	25,113	559	44.94	0.000
CDD18	49,803	7,148	6.97	0.000
MonthDays	885,115	105,996	8.35	0.000
COVID_WFH	2,128,578	405,394	5.25	0.000
Shoulder	- 1,231,147	243,934	(5.05)	0.000
Statistics based on the rho-differenced data				
Mean dependent var	1.316E+14	S.E. of regression	1,074,272	
Sum squared resid	0.9742	Adjusted R-squared	0.9730	
R-squared	608.23	P-value(F)	0.0000	
F(7, 112)	-0.0138	Durbin-Watson	1.9408	

Table 9 Residential Regression Model

Using the above model coefficients, we derive the following:

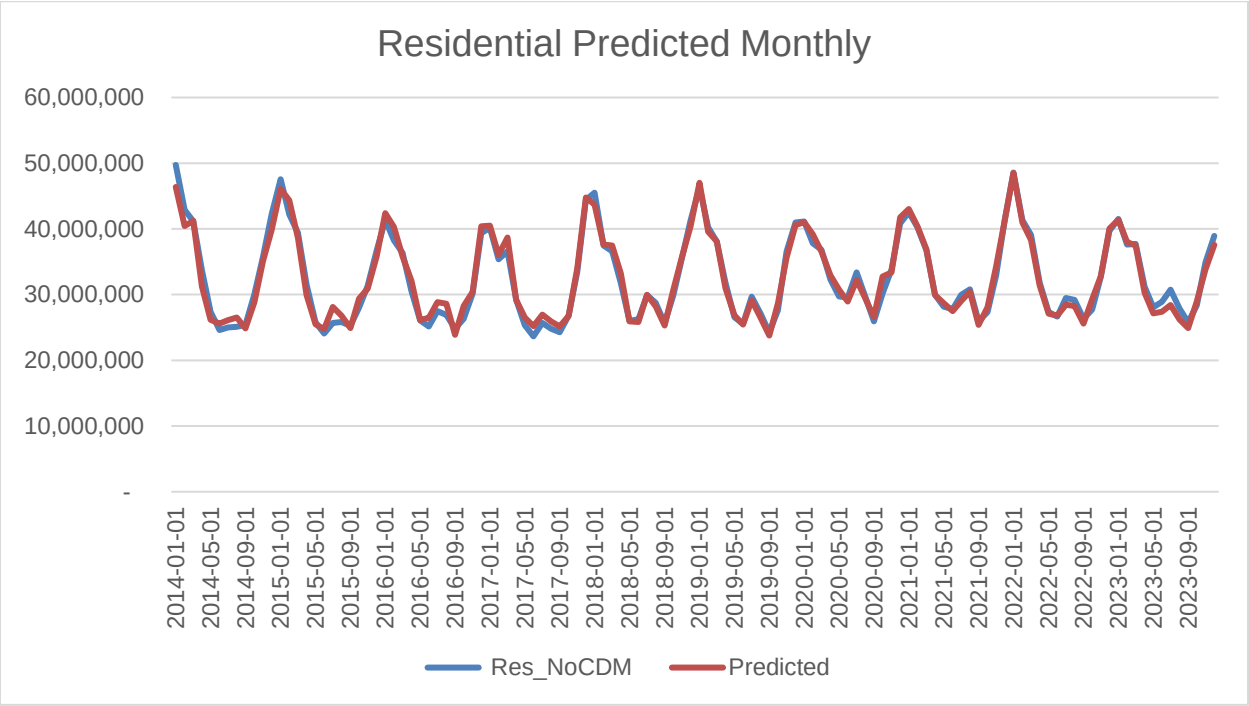


Figure 2 Residential Predicted vs Actual observations

Annual estimates using actual weather are compared to actual values in the table below. Mean absolute percentage error (MAPE) for annual estimates for the period is 1.4%. The MAPE calculated monthly over the period is 2.7%.

	Residential kWh		Absolute
Year	CDM Added Back	Predicted	Error (%)
2014	403,132,038	392,436,823	2.7%
2015	383,395,605	385,208,468	0.5%
2016	372,680,961	383,575,046	2.9%
2017	369,829,800	379,796,002	2.7%
2018	394,628,713	394,103,130	0.1%
2019	394,708,090	392,249,320	0.6%
2020	401,224,608	405,407,324	1.0%
2021	393,847,304	394,913,656	0.3%
2022	399,876,020	397,583,213	0.6%
2023	391,652,413	381,546,796	2.6%
Total	**3,904,975,551**	**3,906,819,778**	**0.0%**
Mean Absolute Percentage Error (Annual)			1.4%
Mean Absolute Percentage Error (Monthly)			2.7%

Table 10 Residential Model Error

2.2 GS < 50

For the GS < 50 class, the regression equation was estimated using 120 observations from January 2014 to December 2023. Consumption for this class is relatively stable when the average monthly temperature is between 10°C and 18°C and increases as average temperatures deviate from that range. HDD relative to 10°C and CDD relative to 18°C were found to provide the strongest results. HDD and CDD measures near 10°C and 18°C, respectively, were also considered but found to be less predictive of monthly consumption.

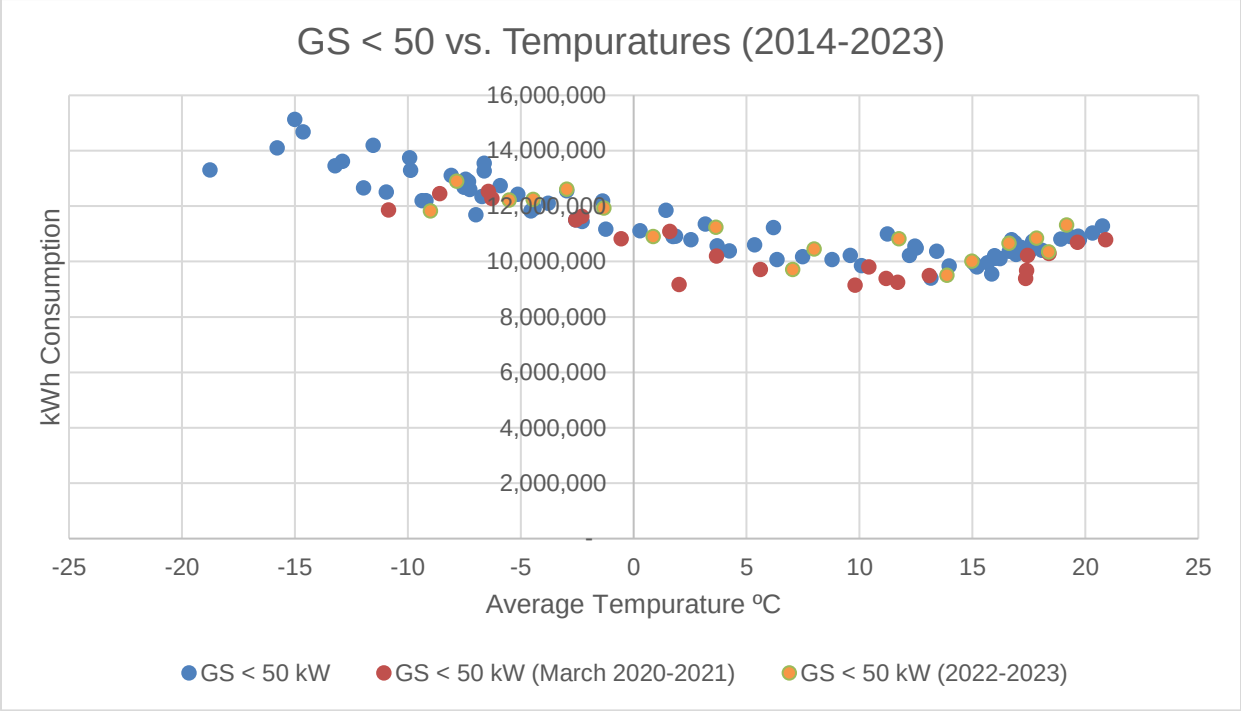


Figure 3 GS<50 kWh and Average Temperature

Ontario FTEs from Statistics Canada has been included as an indicator of economic activity. Measures for Ontario GDP and other measures of employment were also tested but found to be statistically less significant than Ontario FTEs.

The number of days in each month and a Fall variable were found to be statistically significant and were used in the GS < 50 model.

The COVID_AM variable was found to be statistically significant and more significant than other COVID variables.

The customer count, time trend, and other calendar variables were tested but found to not have statistically significant relationships to energy usage.

The following table outlines the resulting regression model:

Model 3: Prais-Winsten, using observations 2014:01-2023:12 (T = 120) Dependent variable: GS_lt_50_NoCDM rho = 0.471746				
	coefficient	std. error	t-ratio	p-value
const	-1,679,639	1,101,012	(1.53)	0.130
HDD10	5,165	163	31.63	0.000
CDD18	12,392	1,577	7.86	0.000
MonthDays	294,590	22,955	12.83	0.000
COVID_AM	-1,109,742	186,060	(5.96)	0.000
OntFTEs	434	119	3.65	0.000
FallA	-297,234	77,629	(3.83)	0.000
Statistics based on the rho-differenced data				
Mean dependent var	7.93E+12	S.E. of regression	264,910	
Sum squared resid	0.9610	Adjusted R-squared	0.9589	
R-squared	353.19	P-value(F)	0.0000	
F(5, 115)	-0.0434	Durbin-Watson	2.0238	

Table 11 GS < 50 Regression Model

Using the above model coefficients we derive the following:

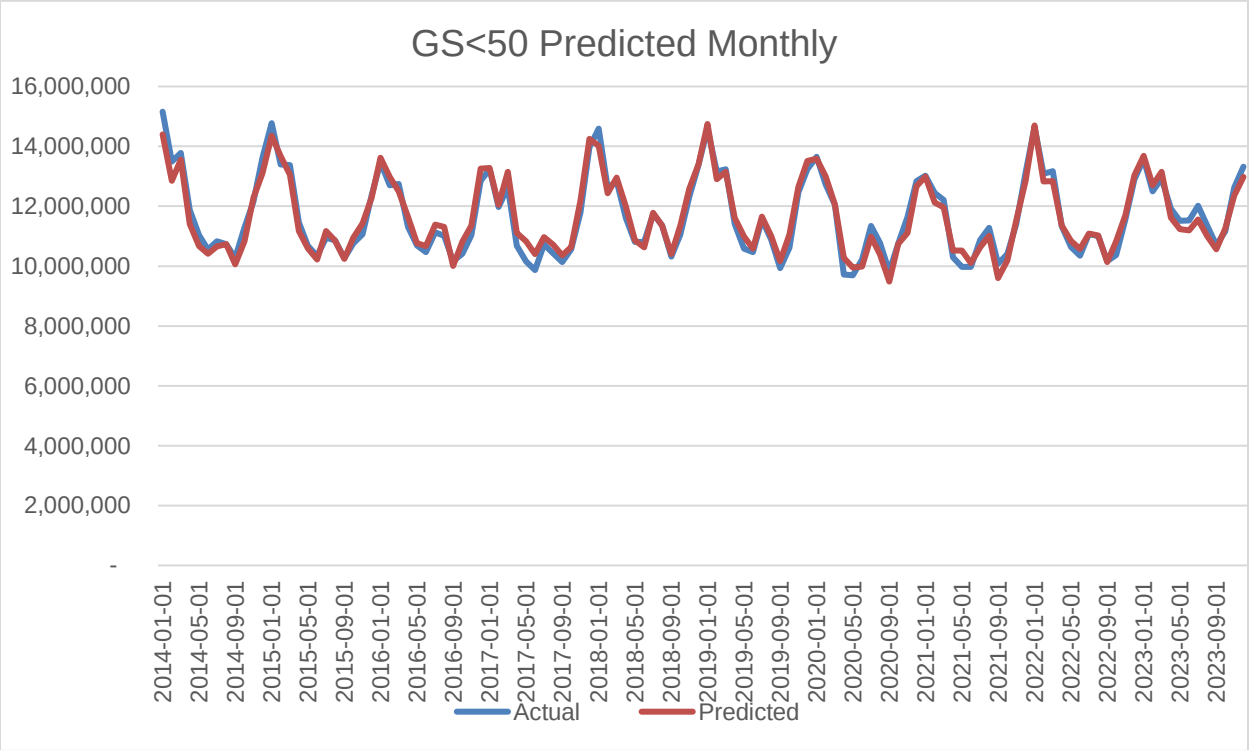


Figure 4 GS<50 Predicted vs Actual Observations

Annual estimates using actual weather are compared to actual values in the table below. Mean absolute percentage error (MAPE) for annual estimates for the period is 1.2%. The MAPE calculated monthly over the period is 2.1%.

	GS<50 kWh		Absolute
	CDM Added Back	Predicted	Error (%)
2014	144,775,516	140,943,900	2.6%
2015	140,222,267	139,969,337	0.2%
2016	137,960,967	140,278,957	1.7%
2017	136,162,782	139,907,530	2.8%
2018	143,403,195	143,735,530	0.2%
2019	142,124,037	144,004,631	1.3%
2020	135,222,368	134,223,403	0.7%
2021	135,085,579	134,008,581	0.8%
2022	140,265,238	140,956,547	0.5%
2023	145,115,275	143,293,991	1.3%
Total	**1,400,337,224**	**1,401,322,407**	**0.1%**
Mean Absolute Percentage Error (Annual)			1.2%
Mean Absolute Percentage Error (Monthly)			2.1%

Table 12 GS < 50 Model Error

2.3 GS > 50

For the GS > 50 class, the regression equation was estimated using 120 observations from January 2014 to December 2023. GS > 50 consumption is relatively flat when the average monthly temperature is between 10°C and 16°C and increases as average temperatures deviate from that range. Consumption does not vary significantly at lower temperatures but there is a stronger relationship between consumption and high temperatures. HDD relative to 10°C and CDD relative to 16°C were found to provide the strongest results. HDD and CDD measures near 10°C and 16°C, respectively, were also considered but found to be less predictive of monthly consumption.

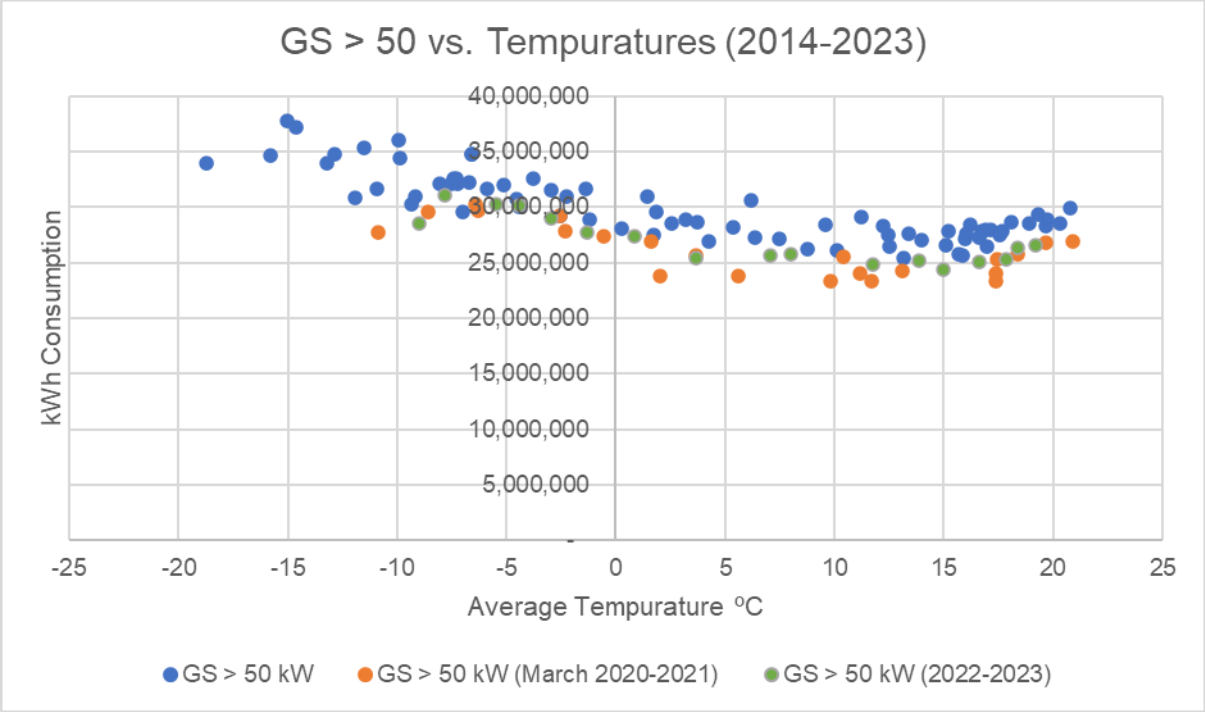


Figure 5 GS>50 kWh and Average Temperature

Total Ontario GDP from Ontario Economic Accounts has been included as an indicator of economic activity. Measures for Ontario employment and other measures of GDP were also tested but found to be statistically less significant than Ontario GDP. A time trend variable equal to 1 in January 2014 and increasing by 1 in each subsequent month was used and found to be statistically significant.

The number of days in each month and a Fall variable were found to be statistically significant and were used in the GS < 50 model.

The COVID_AM variable was found to be statistically significant and more significant than other COVID variables.

Other binary calendar variables representing other seasons and months were tested but found to not have a statistically significant relationship to energy use.

The following table outlines the resulting regression model:

Model 6: Prais-Winsten, using observations 2014:01-2023:12 (T = 120) Dependent variable: GS_gt_50_NoCDM rho = 0.525436				
	coefficient	std. error	t-ratio	p-value
const	- 9,840,155	3,957,026	(2.49)	0.014
HDD10	11,701	368	31.82	0.000
CDD16	21,430	2,084	10.28	0.000
Trend	- 35,450	8,557	(4.14)	0.000
MonthDays	826,826	49,363	16.75	0.000
COVID_AM	- 1,892,901	587,187	(3.22)	0.002
OEAGDP	18	6	3.15	0.002
Fall	390,734	164,860	2.37	0.019
Statistics based on the rho-differenced data				
Mean dependent var	3.58E+13	S.E. of regression	565,740	
Sum squared resid	0.9641	Adjusted R-squared	0.9619	
R-squared	354.66	P-value(F)	0.0000	
F(5, 114)	-0.0389	Durbin-Watson	2.0634	

Table 13 GS>50 Regression Model

Using the above model coefficients we derive the following:

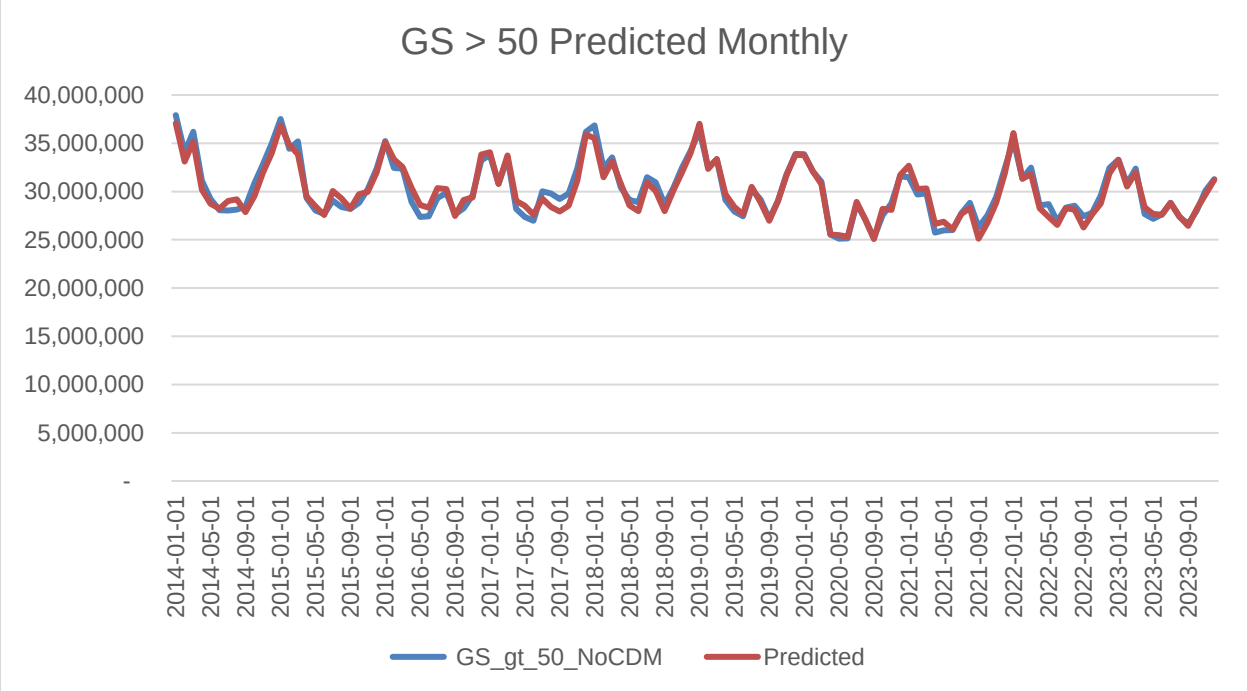


Figure 6 GS>50 Predicted vs Actual observations

Annual estimates using actual weather are compared to actual values in the table below. Mean absolute percentage error (MAPE) for annual estimates for the period is 0.9%. The MAPE calculated monthly over the period is 1.8%.

	GS>50 kWh		Absolute
	CDM Added Back	Predicted	Error (%)
2014	379,845,704	374,052,656	1.5%
2015	369,248,178	370,329,512	0.3%
2016	361,739,627	368,782,494	1.9%
2017	368,020,788	364,888,693	0.9%
2018	379,354,288	372,424,701	1.8%
2019	367,927,573	369,288,952	0.4%
2020	341,715,179	342,088,545	0.1%
2021	340,925,950	341,428,719	0.1%
2022	357,416,724	352,262,134	1.4%
2023	351,245,171	351,184,857	0.0%
Total	**3,617,439,181**	**3,606,731,263**	**0.3%**
Mean Absolute Percentage Error (Annual)			0.9%
Mean Absolute Percentage Error (Monthly)			1.8%

Table 14 GS>50 Model Error

3 WEATHER NORMALIZATION AND ECONOMIC FORECAST

It is not possible to accurately forecast weather for months or years in advance. Therefore, future weather expectations can be based only on what has happened in the past. Individual years may experience unusual spells of weather (unusually cold winter, unusually warm summer, etc.). However, over time, these unusual spells “average” out. While there may be trends over several years (e.g., warmer winters for example), using several years of data rather than one particular year filters out the extremes of any particular year. While there are several different approaches to determining an appropriate weather normal, GSH has adopted the most recent 10-year monthly degree day average as the definition of weather normal.

3.1 10-YEAR AVERAGE

The table below displays the most recent 10-year average of heating degree days and cooling degree days for a number of temperature thresholds based on temperatures reported by Environment Canada for Sudbury A, which is used as the weather station for GSH.

In a few instances in the 2014 to 2023 period, daily Sudbury A data was not available. If data was not available from the Sudbury A weather station, data from the Sudbury Climate weather station was used.

	8°C		10°C		12°C		14°C		16°C		18°C		20°C	
	HDD	CDD	**HDD**	CDD	**HDD**	CDD	HDD	CDD	HDD	**CDD**	HDD	**CDD**	HDD	CDD
January	605	0	**667**	0	**729**	0	791	0	853	**0**	915	**0**	977	0
February	543	0	**599**	0	**656**	0	712	0	769	**0**	825	**0**	881	0
March	407	0	**469**	0	**531**	0	593	0	655	**0**	717	**0**	779	0
April	179	10	**234**	5	**291**	2	350	1	409	**0**	469	**0**	529	0
May	25	133	**46**	92	**76**	60	114	36	160	**20**	212	**10**	267	3
June	0	261	**1**	203	**4**	146	13	94	32	**53**	64	**25**	108	9
July	0	346	**0**	284	**0**	222	1	161	6	**104**	20	**56**	49	23
August	0	308	**0**	247	**1**	185	4	126	14	**75**	37	**35**	75	12
September	4	182	**12**	130	**27**	85	52	50	88	**26**	133	**11**	186	4
October	85	47	**129**	29	**178**	16	230	7	288	**2**	348	**0**	410	0
November	275	5	**332**	2	**391**	1	450	0	510	**0**	570	**0**	630	0
December	447	0	**509**	0	**571**	0	633	0	695	**0**	757	**0**	819	0

Table 15 - 10 Year Average HDD and CDD

HDD and CDD values used in this forecast are bolded in the table above.

3.2 ECONOMIC FORECAST

GDP and employment forecasts are based on the mean forecasts of four major Canadian banks TD, BMO, Scotiabank, RBC as of September 2024. Average forecast rates are applied to the most recent GDP and Labour Force Survey monthly data available.

Report Date	TD **19-Sep-24**	BMO **27-Sep-24**	Scotia **10-Sep-24**	RBC **12-Jun-24**	Average
FTE (Employment growth % YoY)					
2023		1.4%	1.4%	1.6%	1.47%
2024	1.1%	1.4%	1.1%	0.5%	1.03%
2025	1.6%	2.1%	1.9%	1.9%	1.88%
GDP (Real GDP % YoY)					
2021		2.4%	2.4%	2.4%	2.40%
2022	1.6%	1.3%	1.5%	0.9%	1.33%
2023	1.4%	1.5%	1.1%	1.8%	1.45%

Table 16 Economic Forecasts

For example, the 2024 forecast FTE growth rate, 1.03%, is applied to the number of January 2023 FTEs to forecast the number of FTEs in January 2024. The January 2025

FTE forecast is then determined by applying 1.88%, the 2025 FTE forecast growth rate, to the January 2024 forecast.

4 CLASS SPECIFIC NORMALIZED FORECASTS

4.1 RESIDENTIAL

Incorporating the forecast economic variables, 10-year weather normal heating and cooling degree days, and calendar variables, the following weather corrected consumption and forecast values are calculated:

	Residential kWh					
Year	Actual	Cumulative Persisting CDM	Actual No CDM	Normalized No CDM	Cumulative Persisting CDM	Normalized
	A	B	C = A + B	D	E = B	F = D - E
2014	401,059,652	2,072,387	403,132,038	384,651,367	2,072,387	382,578,980
2015	378,767,131	4,628,474	383,395,605	384,651,367	4,628,474	380,022,892
2016	363,718,803	8,962,158	372,680,961	385,536,482	8,962,158	376,574,323
2017	354,425,141	15,404,659	369,829,800	384,651,367	15,404,659	369,246,708
2018	375,861,349	18,767,363	394,628,713	384,651,367	18,767,363	365,884,004
2019	375,135,885	19,572,205	394,708,090	384,651,367	19,572,205	365,079,162
2020	381,987,925	19,236,683	401,224,608	405,757,968	19,236,683	386,521,285
2021	374,588,273	19,259,031	393,847,304	403,808,564	19,259,031	384,549,533
2022	380,676,140	19,199,879	399,876,020	397,422,832	19,199,879	378,222,953
2023	372,340,612	19,311,801	391,652,413	391,037,099	19,311,801	371,725,298
2024				385,536,482	19,157,435	366,379,046
2025				384,651,367	18,735,149	365,916,218

Table 17 Actual vs Normalized Residential kWh

Additional loads, as described further in Section 6 below, to account for increased loads from electric vehicles and heat pumps are forecast and added to the weather normalized forecasts for 2024 and 2025. These loads are from emerging technologies so they wouldn't be reflected in a forecast based only on historic loads.

	Normalized Forecast	Additional Loads	Total kWh Forecast
2024	366,379,046	2,339,610	368,718,656
2025	365,916,218	7,460,573	373,376,791

Table 18 Additional Residential kWh Consumption

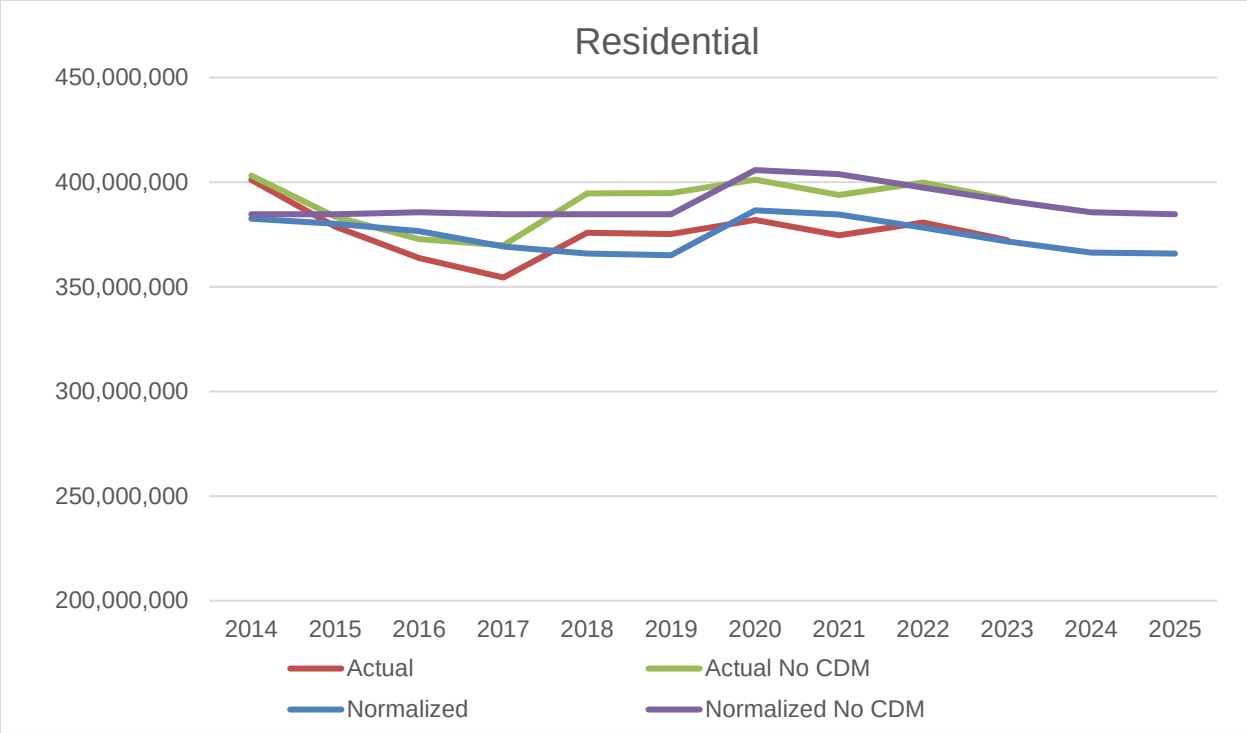


Figure 7 Actual vs Normalized Residential kWh

Note that the vertical intercept does not begin at 0 in any figure in this section. While Residential customer counts are not a component of the regression model, they are forecasted for the purpose of rate setting. The Geometric mean of the annual growth from 2014 to 2023 was used to forecast the growth rate from 2023 to 2025.

Residential		Percent of
Year	Customers	Prior Year
2014	42,636	
2015	42,712	100.18%
2016	42,797	100.20%
2017	42,818	100.05%
2018	42,890	100.17%
2019	43,011	100.28%
2020	43,073	100.14%
2021	43,113	100.09%
2022	43,131	100.04%
2023	43,278	100.34%
2024	43,350	100.17%
2025	43,422	100.17%

Table 19 Forecasted Residential Customer Count

4.2 GS < 50

Incorporating the forecast economic variables, 10-year weather normal heating and cooling degree days, and calendar variables, the following weather corrected consumption and forecast values are calculated:

	GS < 50 kWh					
Year	Actual	Cumulative Persisting CDM	Actual No CDM	Normalized No CDM	Cumulative Persisting CDM	Normalized
	A	B	C = A + B	D	E = B	F = D - E
2014	144,307,855	467,660	144,775,516	139,608,379	467,660	139,140,718
2015	138,792,580	1,429,686	140,222,267	139,850,362	1,429,686	138,420,675
2016	135,472,797	2,488,171	137,960,967	140,484,423	2,488,171	137,996,253
2017	132,427,313	3,735,469	136,162,782	140,981,210	3,735,469	137,245,741
2018	138,106,022	5,297,173	143,403,195	141,697,211	5,297,173	136,400,038
2019	135,948,289	6,175,748	142,124,037	142,620,310	6,175,748	136,444,562
2020	128,684,916	6,537,451	135,222,368	134,333,268	6,537,451	127,795,817
2021	128,128,422	6,957,156	135,085,579	135,675,432	6,957,156	128,718,276
2022	132,582,255	7,682,984	140,265,238	140,899,556	7,682,984	133,216,573
2023	136,911,222	8,204,053	145,115,275	145,172,256	8,204,053	136,968,203
2024				146,033,976	7,775,697	138,258,280
2025				146,345,057	7,231,883	139,113,174

Table 20 Actual vs Normalized GS < 50 kWh

Additional loads, as described further in Section 6 below, to account for increased loads from electric vehicles and heat pumps are forecast and added to the weather normalized forecasts for 2024 and 2025. These loads are from emerging technologies so they wouldn't be reflected in a forecast based only on historic loads.

	Normalized Forecast	Additional Loads	Total kWh Forecast
2024	138,258,280	706,183	138,964,463
2025	139,113,174	2,103,632	141,216,806

Table 21 Additional GS<50 kWh Consumption

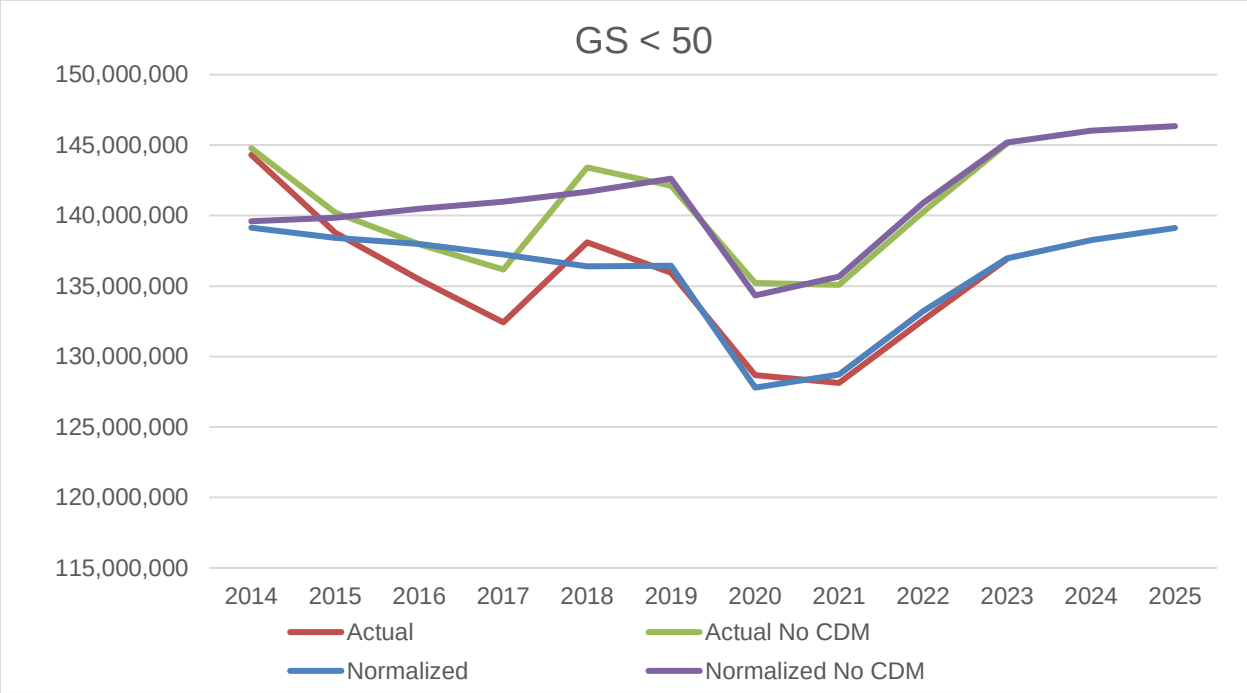


Figure 8 Actual vs Normalized GS<50 kWh

While GS < 50 customer counts are not a component of the regression model, they are forecasted for the purpose of rate setting. The Geometric mean of the annual growth from 2014 to 2023 was used to forecast the growth rate from 2023 to 2025.

The following table includes the customer Actual / Forecast customer count on this basis:

GS < 50		Percent of Prior Year
Year	Customers	
2014	3,989	
2015	4,015	100.66%
2016	4,051	100.89%
2017	4,071	100.50%
2018	4,132	101.49%
2019	4,167	100.85%
2020	4,214	101.14%
2021	4,259	101.05%
2022	4,273	100.34%
2023	4,326	101.23%
2024	4,365	100.91%
2025	4,404	100.91%

Table 22 Forecasted GS<50 Customer Count

4.3 GS > 50

Incorporating the 10-year weather normal heating and cooling degree days, and calendar variables, the following weather corrected consumption and forecast values are calculated:

	GS < 50 kWh					
Year	Actual	Cumulative Persisting CDM	Actual No CDM	Normalized No CDM	Cumulative Persisting CDM	Normalized
	A	B	C = A + B	D	E = B	F = D - E
2014	378,009,413	1,836,291	379,845,704	372,233,959	1,836,291	370,397,668
2015	362,799,633	6,448,544	369,248,178	371,086,788	6,448,544	364,638,244
2016	350,224,516	11,515,111	361,739,627	370,250,224	11,515,111	358,735,113
2017	352,367,387	15,653,401	368,020,788	368,626,700	15,653,401	352,973,299
2018	360,554,580	18,799,708	379,354,288	368,792,735	18,799,708	349,993,026
2019	347,530,976	20,396,597	367,927,573	367,418,680	20,396,597	347,022,083
2020	319,951,982	21,763,197	341,715,179	343,933,272	21,763,197	322,170,075
2021	317,045,881	23,880,069	340,925,950	346,352,872	23,880,069	322,472,803
2022	331,557,997	25,858,727	357,416,724	353,200,980	25,858,727	327,342,253
2023	323,871,928	27,373,243	351,245,171	356,557,089	27,373,243	329,183,846
2024				352,898,770	25,796,169	327,102,601
2025				346,967,073	22,476,983	324,490,089

Table 23 Actual vs Normalized GS>50 kWh

Additional loads, as described further in Section 6 below, to account for loads from electric vehicles and heat pumps are forecast and added to the weather normalized forecasts for 2024 and 2025. These loads are from emerging technologies so they wouldn't be reflected in a forecast based only on historic loads.

	Normalized Forecast	Additional Loads	Total kWh Forecast
2024	327,102,601	469,262	327,571,862
2025	324,490,089	1,625,249	326,115,338

Table 24 Additional GS>50 kWh Consumption

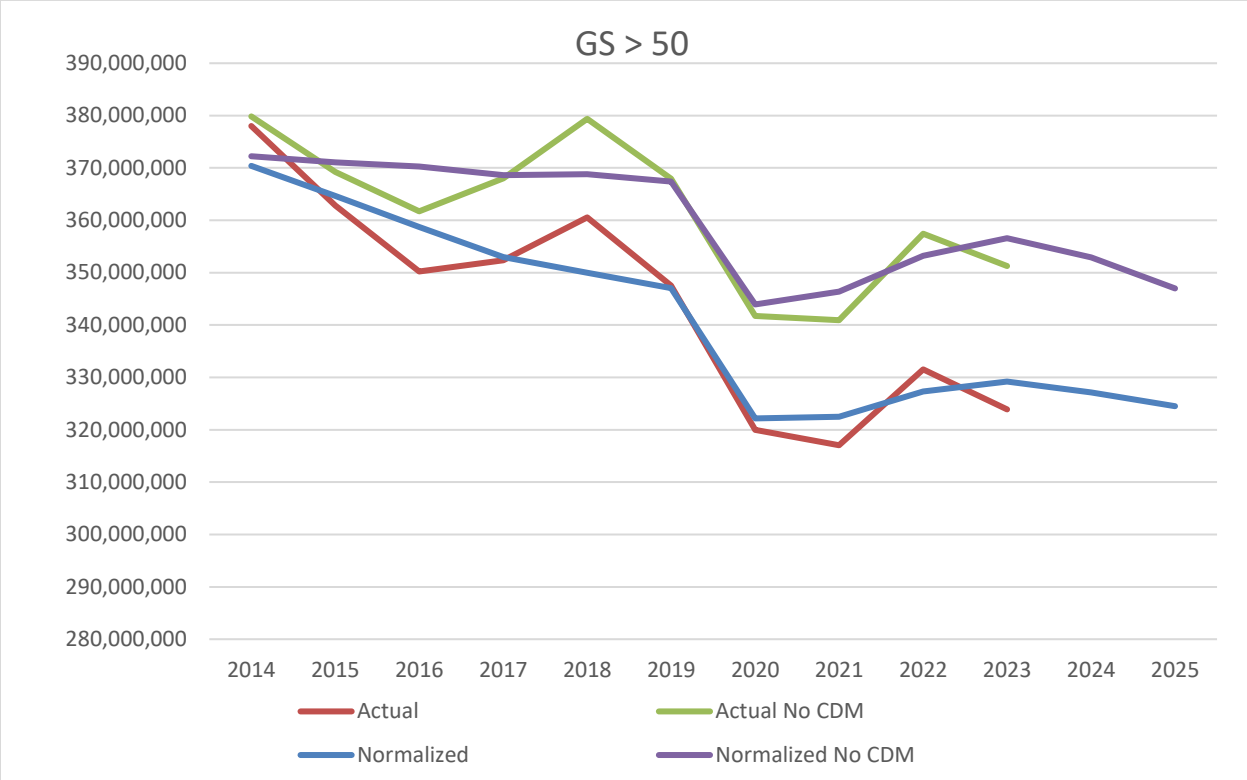


Figure 9 Actual vs Normalized GS>50 kWh

The Geometric mean of the annual growth from 2014 to 2023 was used to forecast the customer count growth rate from 2023 to 2025.

The following table includes the customer Actual / Forecast customer count on this basis:

	GS > 50	Percent of
Year	Customers	Prior Year
2014	508	
2015	517	101.67%
2016	508	98.26%
2017	508	100.15%
2018	496	97.49%
2019	501	101.16%
2020	481	95.96%
2021	477	99.06%
2022	486	101.91%
2023	447	92.11%
2024	441	98.59%
2025	435	98.59%

Table 25 Forecasted GS>50 Customer Count

In order to normalize and forecast class kW for those classes that bill based on kW (demand) billing determinants, the relationship between billed kW and kWh is used. The ratio is calculated as the 10-year average kW/kWh ratio from 2014-2023.

		GS > 50	
	kWh	kW	Ratio
	A	B	C = B / A
2014	378,009,413	936,619	0.002478
2015	362,799,633	910,216	0.002509
2016	350,224,516	894,192	0.002553
2017	352,367,387	882,488	0.002504
2018	360,554,580	887,145	0.002461
2019	347,530,976	846,327	0.002435
2020	319,951,982	757,331	0.002367
2021	317,045,881	769,679	0.002428
2022	331,557,997	790,889	0.002385
2023	323,871,928	798,157	0.002464

	kWh Normalized	kW Normalized	Average	Additional Load	Total
	D	E = D * G	F	G	H = E + G
2023	328,071,956	806,549	0.002458		806,549
2024	327,102,601	804,166	0.002458	3,214	807,380
2025	324,490,089	797,743	0.002458	11,132	808,875

Table 26 Forecasted GS>50 kW

Additional billed demand loads are calculated separately as described in Section 6.

5 STREET LIGHT, SENTINEL LIGHT, AND USL FORECAST

The Street Lighting, Sentinel Light, and Unmetered Scattered Load classes are non-weather sensitive classes. Connection counts for each class are forecasted on the geometric mean growth rate from 2014 to 2023. Energy volumes for these classes are forecasted on the basis of average energy per connection for the Street Light and Sentinel Light rate classes and a continuation of a declining trend for the USL rate class.

5.1 STREET LIGHT

The table below summarizes the historic and forecast annual energy consumption for the Street Light class. GSH underwent a LED conversion from 2019 to 2021, which saw a 53% reduction in consumption per connection. The 2021 to 2023 average consumption per connection is used as the average consumption per connection in 2024 and 2025.

Streetlight kWh				
Year	Actual A	Connections B	Average / Connection C = A / B	Normalized D = C * B
2014	7,654,363	9,736	786	7,654,363
2015	7,541,644	9,753	773	7,541,644
2016	7,520,842	9,748	772	7,520,842
2017	7,471,833	9,786	764	7,471,833
2018	7,471,085	9,862	758	7,471,085
2019	7,481,252	9,917	754	7,481,252
2020	6,391,576	10,030	637	6,391,576
2021	3,586,468	10,092	355	3,586,468
2022	3,599,100	10,155	354	3,599,100
2023	3,626,511	10,198	356	3,626,511
2024		10,250	355	3,640,259
2025		10,303	355	3,659,039

Table 27 Street Light Consumption Forecast

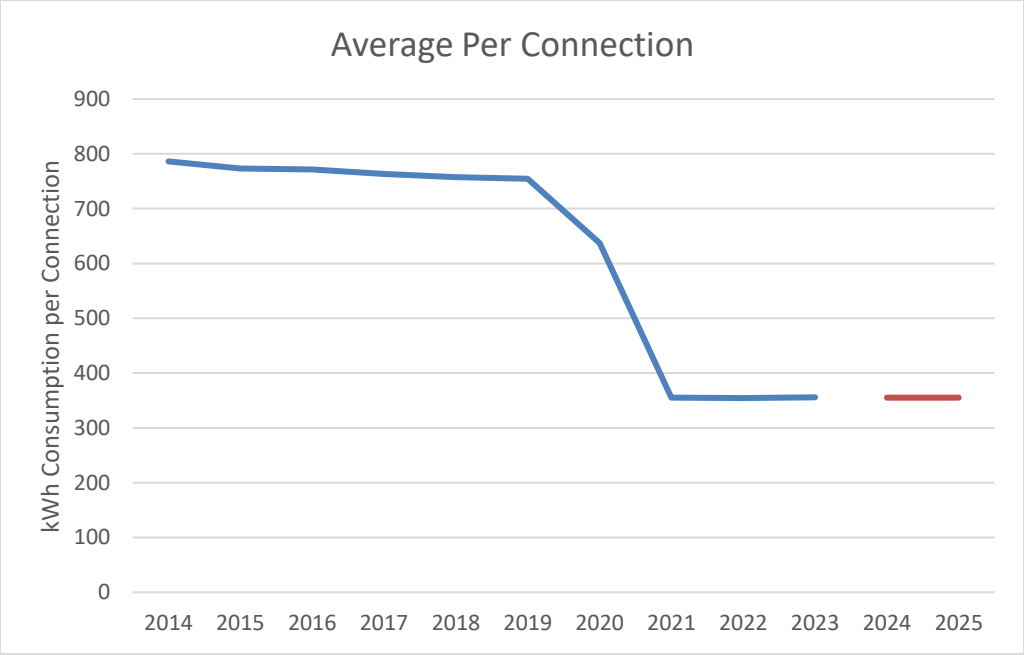


Figure 10 Street Light kWh per Connection

This declining consumption is somewhat offset by an increasing connection count, as reflected in column D of Table 27 and detailed in the following table. The Geometric mean of the annual growth from 2014 to 2023 is used to forecast the growth rate from 2023 to 2025.

Year	Street Light Connections	Percent of Prior Year
2014	9,736	
2015	9,753	100.18%
2016	9,748	99.94%
2017	9,786	100.39%
2018	9,862	100.78%
2019	9,917	100.56%
2020	10,030	101.14%
2021	10,092	100.62%
2022	10,155	100.62%
2023	10,198	100.42%
2024	10,250	100.52%
2025	10,303	100.52%

Table 28 Forecasted Street Light Connection Count

The 5-year average of the ratio from 2019 to 2023 is applied to normalized consumption to forecast kW demand.

	Street Lights		
	kWh	kW	Ratio
	A	B	C = B / A
2014	7,654,363	21,396	0.002795
2015	7,541,644	21,075	0.002794
2016	7,520,842	20,946	0.002785
2017	7,471,833	20,884	0.002795
2018	7,471,085	20,878	0.002794
2019	7,481,252	20,902	0.002794
2020	6,391,576	18,315	0.002866
2021	3,586,468	10,079	0.002810
2022	3,599,100	10,059	0.002795
2023	3,626,511	10,143	0.002797
	kWh Normalized	kW Normalized	Average
	D	E = D * G	F
2023	3,626,511	10,164	0.002803
2024	3,640,259	10,202	0.002803
2025	3,659,039	10,255	0.002803

Table 29 Forecasted Street Light kW

5.2 SENTINEL LIGHTING

The table below summarizes the historic and forecast annual energy consumption for the Sentinel Lighting class. Consumption per Sentinel Lighting connection declined in the 2014 to 2021 period, though not to the same extent as Street Lights. The 2023 average

consumption per connection is used as the average consumption per connection in 2024 and 2025.

Sentinel Lighting kWh				
Year	Actual A	Connections B	Average / Connection C = A / B	Normalized D = C * B
2014	438,854	413	1,063	438,854
2015	428,604	405	1,060	428,604
2016	426,193	398	1,070	426,193
2017	412,948	384	1,077	412,948
2018	403,671	381	1,060	403,671
2019	372,542	366	1,017	372,542
2020	363,324	354	1,026	363,324
2021	360,262	352	1,023	360,262
2022	348,724	351	995	348,724
2023	324,715	349	931	324,715
2024		342	931	318,680
2025		336	931	312,757

Table 30 Sentinel Lighting Consumption Forecast

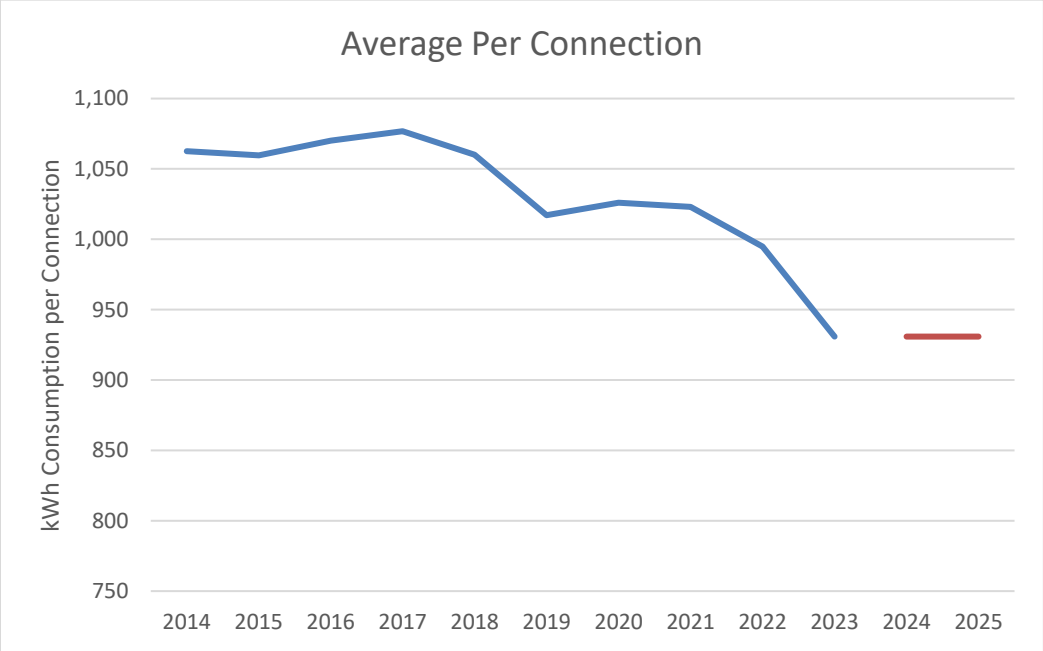


Figure 11 Sentinel Lighting kWh per Connection

The Geometric mean of the annual growth from 2014 to 2023 was used to forecast the growth rate from 2023 to 2025.

Year	Sentinel Lighting Connections	Percent of Prior Year
2014	413	
2015	405	97.94%
2016	398	98.45%
2017	384	96.30%
2018	381	99.28%
2019	366	96.19%
2020	354	96.68%
2021	352	99.46%
2022	351	99.53%
2023	349	99.52%
2024	342	98.14%
2025	336	98.14%

Table 31 Forecasted Sentinel Lighting Connection Count

In order to normalize and forecast class kW for those classes that bill based on kW (demand) billing determinants, the relationship between billed kW and kWh is used. The 10-year average kW/kWh ratio from 2014-2023 was used.

	Sentinel Lightings		
	kWh	kW	Ratio
	A	B	C = B / A
2014	438,854	1,212	0.002762
2015	428,604	1,182	0.002758
2016	426,193	1,176	0.002759
2017	412,948	1,137	0.002754
2018	403,671	1,111	0.002752
2019	372,542	1,028	0.002759
2020	363,324	999	0.002750
2021	360,262	992	0.002753
2022	348,724	954	0.002737
2023	324,715	893	0.002751
	kWh Normalized	kW Normalized	Average
	D	E = D * G	F
2023	324,715	893	0.002751
2024	318,680	877	0.002751
2025	312,757	860	0.002751

Table 32 Forecasted Sentinel Lighting kW

5.3 USL

The following table summarizes historic and forecast annual energy consumption for GSH's USL class. Consumption in 2024 and 2025 has been forecasted based on the trend in consumption per connection from 2014 to 2023 and forecast connection counts. A trend is used as consumption per connection has decreased in each year from 2014 to 2023 so this trend is expected to continue to the 2025 test year.

	USL			
Year	Actual	Conn.	Average / Connection	Normal Forecast
	A	B	C = A / B	D = C * B
2014	1,346,883	332	4,054	1,346,883
2015	1,276,038	322	3,966	1,276,038
2016	1,219,818	311	3,922	1,219,818
2017	1,179,515	303	3,899	1,179,515
2018	1,134,622	292	3,886	1,134,622
2019	1,133,887	294	3,863	1,133,887
2020	1,032,903	279	3,698	1,032,903
2021	987,840	268	3,686	987,840
2022	947,504	261	3,626	947,504
2023	921,828	260	3,551	921,828
2024		253	3,515	887,789
2025		246	3,465	851,487

Table 33 USL Consumption Forecast

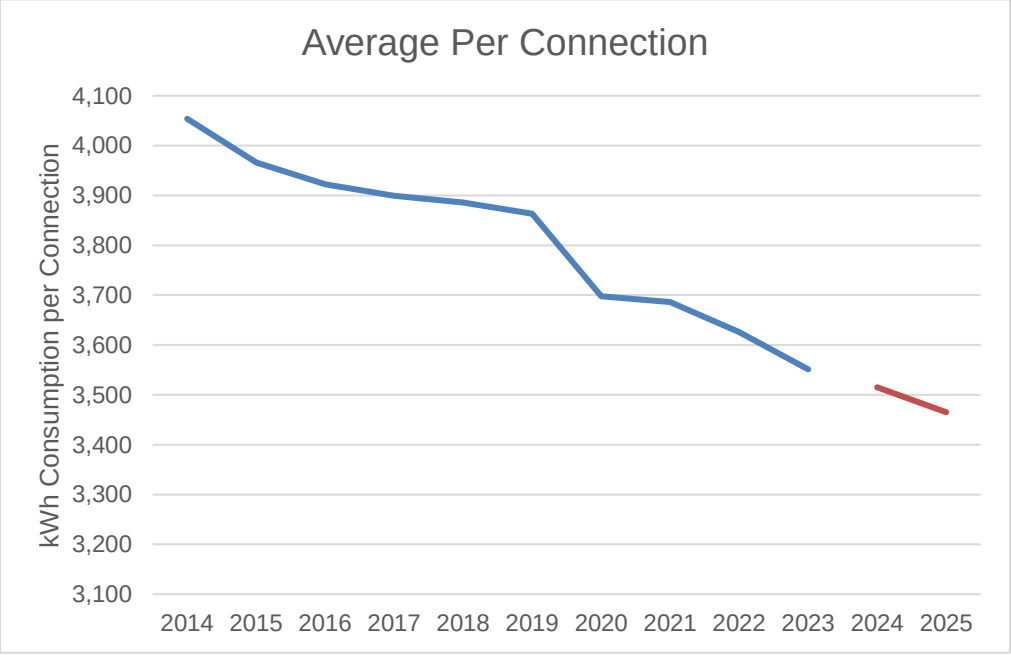


Figure 12 USL kWh per Connection

The number of USL connections had decreased over that past 10 years and this trend is forecast to continue to 2025

USL Year	Connections	Percent of Prior Year
2014	332	
2015	322	96.84%
2016	311	96.66%
2017	303	97.27%
2018	292	96.53%
2019	294	100.51%
2020	279	95.17%
2021	268	95.94%
2022	261	97.51%
2023	260	99.33%
2024	253	97.29%
2025	246	97.29%

Table 34 Forecasted USL Connections

6 ADDITIONAL LOADS

GSH's loads are expected to increase above what would be forecast using only weather-normalized historic averages and trends from increased electrification. These loads are estimated using a bottom-up approach in which the specific sources of incremental loads are forecast separately and layered onto the top-down forecast that is based on historic loads.

6.1 ELECTRIC VEHICLES

Electric vehicle consumption is forecast based on Canada's zero-emission vehicle sales target to reach 20% by 2026, estimated consumption per type of EV, EV statistics from Statistics Canada, and population data from the 2016 and 2021 Canadian Census. The data from Statistics Canada includes the total number of EVs sold in Greater Sudbury, "Sudbury Unorganized, North Part", and West Nipissing, and the number of EVs sold in Ontario by type of vehicle.

Statistics Canada provides data for the total number of zero-emission vehicles by municipality, but this data does not provide a breakdown between type of vehicle at the municipal level. This data by type of vehicle is available at the provincial level so it is assumed that the number of the number of each type of EV as a share of total EVs in Ontario is the same as the share in GSH's service area.

The total number of EVs in GSH and the number of EVs in Ontario by type are provided in the table below.

	2017	2018	2019	2020	2021	2022	2023	
GSH New EVs	28	107	64	66	120	288	460	A
ON New EVs	8,180	16,758	9,762	10,515	19,726	38,655	49,810	B
GSH % of ON EVs	0.34%	0.64%	0.66%	0.63%	0.61%	0.75%	0.92%	C = A / B
EVs by Type in Ontario								
Passenger EVs	6,191	12,828	7,124	5,699	8,035	13,160	10,992	D
Multi-Purp. EVs	1,467	3,055	2,546	4,681	11,410	23,927	35,877	E
Vans EVs	522	875	92	135	281	695	1,126	F
Pickup Truck EVs	-	-	-	-	-	873	1,808	G
EV Types as % of Total EVs								
Passenger EVs	75.7%	76.5%	73.0%	54.2%	40.7%	34.0%	22.1%	H = D / B
Multi-Purp. EVs	17.9%	18.2%	26.1%	44.5%	57.8%	61.9%	72.0%	I = E / B
Vans EVs	6.4%	5.2%	0.9%	1.3%	1.4%	1.8%	2.3%	J = F / B
Pickup Truck EVs	0.0%	0.0%	0.0%	0.0%	0.0%	2.3%	3.6%	K = G / B

Table 35 Ontario and GSH EV Statistics

These values are used to estimate the number of EVs by type in GSH's service territory based on the actual total number of EVs. Are Passenger EVs and Multi-Purpose Vehicle EVs, which are SUVs and crossovers, are combined. Those vehicle types are assumed to have the same annual consumption. The share of Passenger and Multi-Purpose Vehicles have each changed significantly over the past seven years, but jointly the share has been reasonably consistent over time.

	2017	2018	2019	2020	2021	2022	2023	
New Vehicles in Greater Sudbury								
Total (Actual)	**28**	**107**	**64**	**66**	**120**	**288**	**460**	L = A
Passenger & Multi-Purpose EVs	26	101	63	65	118	276	433	M = L * (H + I)
Van EVs	2	6	1	1	2	5.2	10.4	N = L * J
Pickup Truck EVs	-	-	-	-	-	6.5	16.7	O = L * K

Table 36 Estimate of GSH EVs by Type

The total number of EVs in GSH in the bridge and test years is forecast based on the number of vehicles sold in Ontario, the share of Ontario EVs sold in "Sudbury Unorganized, North Part", and West Nipissing, and the target number of EVs sold in Canada. The most recent actual year is included as a reference and 2026 is included to show the trajectory to 2026, which is the next year with a specific EV sales target.

	2023	2024	2025	*2026*	
All Vehicles in Ontario	*677,031*	*699,326*	*699,326*	*699,326*	P
New EV Target	*7.4%*	11.6%	15.8%	*20.0%*	Q
GSH % of ON EVs	*0.92%*	0.92%	0.92%	*0.92%*	R
Total New GSH EVs	460	747	1,019	1,292	S = P * Q * R
Passenger & Multi-Purp.	432.8	703.2	959.3	1,215.4	T = S * (H + I)
Van	10.4	16.9	23.0	29.2	U = S * J
Pickup Truck	16.7	27.1	37.0	46.9	V = S * K

Table 37 Forecast of EVs GSH EVs by Type 2023-2026

Table 38 provides a summary of the assumptions used to forecast EV sales in GSH.

Metric	Basis of 2024/2025 Forecast
All Vehicles in Ontario	Average 2017-2023
New EV Target	Trajectory to 2026 Target
GSH % of ON EVs	Equal 2023 share
Total New GSH EVs	Total vehicles times share of EVs times GSH share of EVs
Passenger & Multi-Purp.	Total GSH EVs times 2023 share of vehicle type
Van	Total GSH EVs times 2023 share of vehicle type
Pickup Truck	Total GSH EVs times 2023 share of vehicle type

Table 38 Basis of Forecast Elements

The total number of total Ontario vehicle sales as fluctuated in recent years, primarily due to COVID-19 and associated supply chain issues. The number of vehicles sold in 2024 and 2025 is assumed to be the average of the number of vehicles sold from 2017 to 2023. There are no specific targets for 2024 and 2025 so EV sales as a share of total vehicle sales targets are equal annual increases (4.2%/year) from the actual 7.4% to the 20% 2026 target. The share of total Ontario EVs sold in GSH is first based on the actual share of 0.92% 2023 persisting to 2025. The total number of EVs sold in GSH in each year is calculated as the total number of vehicles sold in Ontario multiplied by the target share of EVs sold multiplied by GSH's share of total EVs. The number of EVs in GSH by type is based on the Ontario proportion of EVs by type from Table 35.

Calculations for the average consumption per type of vehicle is provided in Table 39. The average distance is based on the average vehicle kilometers traveled per day as provided by the AES Engineering report on EV Charging Performance.[6] The average efficiency per type of vehicle is based on a review of efficiency ratings from NRCan's Fuel Consumption Guides[7] and Plug n' Drive's summary of EVs available in Canada. This figure as adjusted

[6] https://council.cleanairpartnership.org/wp-content/uploads/2021/11/2-21-050-EV-Charging-Performance-Requirements-in-GTHA.pdf

[7] https://natural-resources.canada.ca/sites/nrcan/files/files/pdf/2024_Fuel_Consumption_Guide.pdf Please note that Statistics Canada no longer tracks these figures.

to account for the difference between battery electric vehicles and plug-in hybrid electric vehicles.

	Avg. Distance	Avg. Efficiency	Total Consumption per Vehicle
	km	kWh/100 km	kWh
Passenger & Multi-purpose vehicles	25,550	18.17	4,643
Van	25,550	16.90	4,318
Pickup Truck	25,550	30.00	7,665

Table 39 Consumption by EV Type

Cumulative and incremental kWh from EVs are calculated based on the number of EVs multiplied by the average consumption per vehicle. A half-year adjustment is included for new vehicles.

	2023	2024	2025	2026	
Pass. & MP EVs	433	703	959	1,215	A
Cumulative EVs	1,084	1,787	2,746	3,962	B
Cumulative kWh	4,026,460	6,663,789	10,523,305	15,571,918	$C = (B^{t-1} + A/2) * 4,643$
Incremental kWh		2,637,329	3,859,516	5,048,613	$D = C - C^{t-1}$
Van EVs	10	17	23	29	E
Cumulative EVs	26.1	43.0	66.1	95.3	F
Cumulative kWh	90,297	149,223	235,457	348,259	$G = (F^{t-1} + E/2) * 4,318$
Incremental kWh		58,926	86,234	112,802	$H = G - G^{t-1}$
Pickup Truck EVs	17	27	37	47	I
Cumulative EVs	23	50	87	134	J
Cumulative kWh	113,847	281,800	527,585	849,095	$K = (J^{t-1} + I/2) * 7,665$
Incremental kWh		167,953	245,785	321,510	$L = K - K^{t-1}$

Table 40 Forecast EVs and kWh Consumption by EV Type

The allocation of incremental consumption is estimated based on judgement as GSH does not have these details by rate class. The allocations and allocated incremental consumption by EV type to each class is provided in Table 41.

	Allocations			2024 kWh			2025 kWh		
	Pass/ Multi	Van	Pick-up Truck	Pass/ Multi	Van	Pick-up Truck	Pass/ Multi	Van	Pick-up Truck
Res.	70%	20%	33%	1,846,130	11,785	55,984	2,701,661	17,247	81,928
GS<50	15%	50%	33%	395,599	29,463	55,984	578,927	43,117	81,928
GS>50	15%	30%	33%	395,599	17,678	55,984	578,927	25,870	81,928
Total	**100%**	**100%**	**100%**	**2,637,329**	**58,926**	**167,953**	**3,859,516**	**86,234**	**245,785**

Table 41 Allocations to Rate Classes

Finally, Table 42 provides a summary of EV consumption and demand by rate class. Incremental 2024 consumption is added to class loads in the 2024 bridge year and 2025 incremental loads, plus twice the 2024 incremental load (to account for the half-year rule) is added to class loads in the 2025 test year. Incremental billed demands are forecast using an estimated 20% load factor.

Rate Class	2024 Incremental kWh	2025 Incremental kWh	2025 Incremental + 2024 Full kWh
Residential	1,913,900	2,800,836	6,628,636
GS<50	481,047	703,973	1,666,066
GS>50	469,262	686,726	1,625,249
Total	**2,864,208**	**4,191,535**	**9,919,952**
	2024 Incremental kW	**2025 Incremental kW**	**2025 Incremental + 2024 Full kW**
GS>50[8]	3,214	4,704	11,132

Table 42 EV Forecast Summary

6.2 ELECTRIC HEATING

The forecast of additional loads from electric heating are based on assumptions of heating loads of new customers and customer conversions for the Residential and GS<50 kW classes.

6.2.1 RESIDENTIAL AND GENERAL SERVICE < 50 KW

Average kWh per Residential and General Service customer are calculated using the consumption of average Enbridge customers multiplied by m^3/kWh conversion factors as per Natural Resources Canada.

[8] kW demand = [(kWh consumption / 20% load factor) / 8,760 hours] times 12 months

	Residential	GS<50		
Consumption per Year	1,788	6,955	m^3/year	Typical Enbridge Customer
Convert m^3 to GJ	0.0343	0.0343	GJ/m^3	From NRCan
Convert GJ to kWh	277	277	kWh/GJ	From NRCan
Convert m^3 to kWh	9.5011	9.5011	kWh/m^3	GJ/m^3 times kWh/m^3
kWh per Customer	**16,988**	**66,080**	kWh/Customer	Avg. consumption per year times kWh/m^3
Heat Pump Efficiency	2.582	2.582	Heat Pump Efficiency	Delivered heat kWh-equivalent/kWh[9]
Adj. Consumption	**6,579**	**25,593**	Adj. Consumption	

Table 43 Heating Consumption per Customer

Residential and GS<50 kW heating loads are forecast for both existing connections and new customers. It is assumed that 0.1% of existing customers will convert from natural gas to electricity heating each year and that 5% of new customers will have electric heating. Annual forecast heating loads for the Residential and GS<50 kW class are provided in Table 44 and Table 45, respectively.

Residential	**2022**	**2023**	**2024**	**2025**
Customer Count	43,131	43,278	43,350	43,422
Increase in customers/year	19	147	72	72
Conversions of Existing Connections %	0.1%	0.1%	0.1%	0.1%
New Connections with Electric Heating %	5%	5%	5%	5%
Existing Connections #	43	43	43	43
New Connections #	1	7	4	4
Total Connections	44	50	47	47
kWh/Customer	8,661	8,661	8,661	8,661
Total kWh	381,521	437,007	405,981	406,656

Table 44 Residential Heating Summary

[9]https://oee.nrcan.gc.ca/pml-lmp/index.cfm?language_langue=en&action=app.search-recherche&appliance=ASHP1_GH&_gl=1*22c7uc*_ga*MTkyNTkxMzczNi4xNjg5MDg1ODA2*_ga_C2N57Y7DX5*MTcxNTM1MDU3Ni40My4xLjE3MTUzNTA1ODAuMC4wLjA.

GS < 50 kW	2022	2023	2024	2025
Customer Count	4,273	4,326	4,365	4,404
Increase in customers/year	14	53	39	40
Conversions of Existing Connections %	0.10%	0.10%	0.10%	0.10%
New Connections with Electric Heating %	5%	5%	5%	5%
Existing Connections #	4	4	4	4
New Connections #	1	3	2	2
Total Connections	5	7	6	6
kWh/Customer	33,690	33,690	33,690	33,690
Total kWh	**238,221**	**682,305**	**856,604**	**863,947**

Table 45 GS<50 Heating Summary

Rather than apply a half-year adjustment, incremental annual loads are adjusted by relative HDD in each season. This seasonal calculation is detailed below.

Heating Profile			
Month	**HDD**	**HDD %**	**Seasonal %**
January	914.7	18.1%	63.59%
February	825.0	16.3%	
March	717.1	14.2%	
April	469.2	9.3%	
May	211.5	4.2%	
June	63.8	1.3%	
July	20.2	0.4%	
August	36.8	0.7%	36.41%
September	133.1	2.6%	
October	348.2	6.9%	
November	570.0	11.3%	
December	756.6	14.9%	
Total	**5,066.2**	**100.0%**	**100%**

Table 46 Seasonal Heating Calculation

Consumption from August to December is added in the first year and consumption from January to July is added in the following year. The total Residential heating consumption in 2024, for example, is 63.6% of 2023 consumption plus 34.4% of 2024 consumption.

	2023	2024	2025	2026
Residential kWh	381,521	437,007	405,981	406,656
January to July	-	242,600	277,881	258,153
August to December	138,922	159,125	147,828	148,074
Seasonally Adj. kWh	**138,922**	**401,725**	**425,710**	**406,227**
GS < 50 kWh	167,754	232,813	211,731	213,649
January to July	-	106,671	148,040	134,634
August to December	61,084	84,773	77,097	77,795
Seasonally Adj. kWh	**61,084**	**191,444**	**225,136**	**212,429**

Table 47 Seasonally Adjusted kWh

Table 48 summarizes the additional heating loads added to the forecast for the Residential and GS<50 kW classes. The total amount added to the 2025 forecast is a sum of the 2024 and 2025 incremental loads.

Rate Class	2024 Incremental kWh	2025 Incremental kWh	2025 + 2024 kWh
Residential	425,710	406,227	831,937
GS<50	225,136	212,429	437,566
Total	**650,846**	**618,657**	**1,920,349**

Table 48 Residential and GS<50 Heating Summary

6.3 ADDITIONAL LOADS SUMMARY

Incremental loads from EVs and heating is summarized in Table 49. For each type of new loads, a half-year rule or seasonal adjustment is made to new loads in 2024 and 2025. The 2025 additional loads include the full year of 2024 savings so the figures for 2025 do not reflect only incremental loads in that year.

		kWh		kW	
		2024	2025	2024	2025
EVs	Residential	1,913,900	6,628,636		
	GS<50	481,047	1,666,066		
	GS>50	469,262	1,625,249	3,214	11,132
	Total	**2,864,208**	**9,919,952**	**3,214**	**11,132**
Heating	Residential	425,710	831,937		
	GS<50	225,136	437,566		
	GS>50				
	Total	**650,846**	**1,269,503**	**-**	**-**
Total	Residential	2,339,610	7,460,573		
	GS<50	706,183	2,103,632		
	GS>50	469,262	1,625,249	3,214	11,132
	Total	**3,515,054**	**11,189,454**	**3,214**	**11,132**

Table 49 Additional Load Summary

7 CDM ADJUSTMENT TO LOAD FORECAST

On December 20, 2021, the OEB issued a report Conservation and Demand Management Guidelines for Electricity Distributors which provided updated guidance on the role of CDM for rate-regulated LDCs. Based on these guidelines, Elenchus has derived a manual adjustment to the load forecast. CDM programs undertaken as part of the 2021-2024 Conservation and Demand Management framework will put downward pressure on its billing determinants for the General Service < 50 kW, and General Service > 50 kW.

This CDM adjustment has been made to reflect the impact of CDM activities that are expected to be implemented through from 2023 to 2025.

CDM activities have been forecast based on GSH's share of consumption within the province and the IESO's 2021-2024 Conservation and Demand Management Framework. The table below provides a summary of the 2021-2024 Framework and GSH's allocation of savings. CDM savings in 2025 are not available so the savings are assumed to be the same as 2024 savings.

	In year energy savings (GWh)				Est.	GSH	
Program	**2021**	**2022**	**2023**	**2024**	***2025***	**Share %**	**Basis for GSH%**
Retrofit	322	570	359	560	560	0.66%	% of provincial kWh
Small Business	10	4	20	65	65	0.66%	% of provincial kWh
Energy Performance	16	20	50	54	54	0.33%	% of provincial kWh (Adj.)
Energy Management	1	15	29	96	96	0.33%	% of provincial kWh (Adj.)
Industrial Energy Efficiency	0	0	165	165	165	0.16%	% of provincial kWh (Adj.)
Targeted Greenhouse	0	0	333	333	333	0.00%	
Local Initiatives	0	61	161	181	181	0.00%	% of provincial kWh
Residential Demand Response	0	0	3	7	7	0.00%	
Energy Affordability Program	7	14	49	97	97	0.98%	% of prov. LIM
First Nations Program	1	0	15	16	16	0.00%	

Table 50 2021-2024 CDM Framework and GSH Allocation

GSH's share of kWh is calculated with OEB Yearbook data as a 5-year average of GSH's Total kWh Supplied divided by the sum of Total kWh Supplied of all Ontario LDCs.

Year	Province kWh	GSH kWh	GSH% Share
2018	132,430,891,804	882,648,175	0.67%
2019	129,776,205,940	870,983,035	0.67%
2020	128,180,478,159	837,984,725	0.65%
2021	129,125,642,652	824,501,209	0.64%
2022	130,831,607,587	850,330,265	0.65%
5-Year Avg.	**130,068,965,228**	**853,289,482**	**0.66%**

Table 51 GSH kWh

Additionally, adjustments have been made to revise down the share of CDM from the Energy Performance, Energy Management, and Industrial Energy Efficiency programs. These programs are targeted to larger customers and these adjustments are made to recognize the share of savings attributable to Large Use class customers, which GSH has none, and transmission-connected customers. GSH's Energy Affordability Program allocation is based on the number of households in Greater Sudbury, as per the 2016 and 2021 Censuses.

GSH is not aware of any Local Initiatives programs so no share of that program is attributed to GSH.

Total GWh savings figures are then adjusted by the share attributable to GSH, yearly weighting factors, and converted to kWh savings. Total CDM savings attributable to GSH is provided in the following table.

	In year energy savings (kWh)			
	2023	**2024**	**2025**	**Total CDM**
Weighting Factor	*0.5*	*1.0*	*0.5*	
Retrofit	1,177,571	3,673,760	1,836,880	6,688,211
Small Business	65,603	426,419	213,209	705,231
Energy Performance	82,004	177,128	88,564	347,695
Energy Management	47,562	314,894	157,447	519,903
Industrial Energy Efficiency	135,306	270,612	135,306	541,224
Targeted Greenhouse	-	-	-	-
Local Initiatives	-	-	-	-
Residential Demand Response	-	-	-	-
Energy Affordability Program	241,099	954,556	477,278	1,672,934
First Nations Program	-	-	-	-
Total CDM	**1,749,145**	**5,817,368**	**2,908,684**	**10,475,196**

Table 52 GSH CDM

Total CDM savings by program are then allocated to GSH's rate classes in proportion to historic allocations for those programs. The percentages below reflect the typical share by class used in LRAMVA workforms. The kW share is used for demand-billed classes to better represent the impact of CDM activities on the class's billing determinants.

Program	Residential	GS < 50 kW	GS > 50 kW
	Allocation %		
Retrofit		25.0%	75.0%
Small Business		100.0%	0.0%
Energy Performance		0.0%	100.0%
Energy Management		0.0%	100.0%
Industrial Energy Efficiency		0.0%	100.0%
Targeted Greenhouse			
Local Initiatives			
Residential Demand Response			
Energy Affordability Program	100%		
First Nations Program			
	CDM By Class		
Retrofit	-	1,672,053	5,016,158
Small Business	-	705,231	-
Energy Performance	-	-	347,695
Energy Management	-	-	519,903
Industrial Energy Efficiency	-	-	541,224
Targeted Greenhouse	-	-	-
Local Initiatives	-	-	-
Residential Demand Response	-	-	-
Energy Affordability Program	1,672,934	-	-
First Nations Program	-	-	-
2023-2025 Savings	**1,672,934**	**2,377,283**	**6,424,979**

Table 53 2021-2024 CDM Framework Adjustments

Attachment 2 (of 2):

OEB Appendix 2-IB Customer, Connections, Load Forecast and Revenues Data and Analysis

File Number: EB-2024-0026
Exhibit: 3
Tab: 1
Schedule: 1
Page: 2
Date: 30-Oct-24
Customer Numbers: Average

Appendix 2-IB
Customer, Connections, Load Forecast and Revenues Data and Analysis

This sheet is to be filled in accordance with the instructions documented in section 2.3.2 of Chapter 2 of the Filing Requirements for Distribution Rate Applications, in terms of one set of tables per customer class.

Customers/Connections

Rate Class	Historical 2019	Historical 2020	Historical 2021	Historical 2022	Historical 2023	Bridge Year 2024	Test Year 2025
Residential	43,049	43,142	43,103	43,196	43,278	43,350	43,422
General Service < 50 kW	4,173	4,252	4,278	4,280	4,326	4,365	4,404
General Service >= 50 kW	503	471	484	486	447	441	435
Large User	-	-	-	-			
Unmetered Scattered Load Connections	293	274	258	261	260	253	246
Sentinel Lighting Connections	356	353	352	349	349	342	336
Street Lighting Connections	9,962	10,053	10,099	10,167	10,198	10,250	10,303
Wholesale Market Participants	-	-	-	-			
Embedded Distributor(s)	-	-	-	-			
Sub Transmission Customers	-	-	-	-			

Customers/Connections Variance Analysis

Rate Class	Historical 2019	Historical 2020	Historical 2021	Historical 2022	Historical 2023	Bridge Year 2024	Test Year 2025
Residential		0%	0%	0%	0%	0%	0%
General Service < 50 kW		2%	1%	0%	1%	1%	1%
General Service >= 50 kW		-6%	3%	0%	-8%	-1%	-1%
Large User		0%	0%	0%	0%	0%	0%
Unmetered Scattered Load Connections		-6%	-6%	1%	0%	-3%	-3%
Sentinel Lighting Connections		-1%	0%	-1%	0%	-2%	-2%
Street Lighting Connections		1%	0%	1%	0%	1%	1%
Wholesale Market Participants		0%	0%	0%	0%	0%	0%
Embedded Distributor(s)		0%	0%	0%	0%	0%	0%
Sub Transmission Customers		0%	0%	0%	0%	0%	0%

Consumption (Actual)

Rate Class	Historical 2019	Historical 2020	Historical 2021	Historical 2022	Historical 2023	Bridge Year 2024	Test Year 2025
Residential	375,118,358	381,949,546	374,569,367	380,769,008	372,340,612	368,000,278	371,703,857
General Service < 50 kW	135,968,289	128,297,209	127,942,204	133,108,084	136,911,222	137,932,038	138,839,523
General Service >= 50 kW	350,908,707	319,950,237	317,054,998	331,557,844	323,871,928	324,664,836	319,690,359
Large User	-	-	-	-			
Unmetered Scattered Load Connections	1,133,887	1,032,903	987,840	947,504	921,828	887,789	851,487
Sentinel Lighting Connections	372,542	363,255	360,332	348,724	324,715	318,680	312,757
Street Lighting Connections	7,481,252	6,391,576	3,586,468	3,599,100	3,626,511	3,640,259	3,659,039
Wholesale Market Participants	-	-	-	-			
Embedded Distributor(s)	-	-	-	-			
Sub Transmission Customers	-	-	-	-			

Consumption (Actual) Variance Analysis

Rate Class	Historical 2019	Historical 2020	Historical 2021	Historical 2022	Historical 2023	Bridge Year 2024	Test Year 2025
Residential		2%	-2%	2%	-2%	-1%	1%
General Service < 50 kW		-6%	0%	4%	3%	1%	1%
General Service >= 50 kW		-9%	-1%	5%	-2%	0%	-2%
Large User							
Unmetered Scattered Load Connections		-9%	-4%	-4%	-3%	-4%	-4%
Sentinel Lighting Connections		-2%	-1%	-3%	-7%	-2%	-2%
Street Lighting Connections		-15%	-44%	0%	1%	0%	1%
Wholesale Market Participants							
Embedded Distributor(s)							
Sub Transmission Customers							

Demand (Actual)

Rate Class	Historical 2019	Historical 2020	Historical 2021	Historical 2022	Historical 2023	Bridge Year 2024	Test Year 2025
Residential	-	-	-	-			
General Service < 50 kW	-	-	-	-			
General Service >= 50 kW	845,615	774,313	776,218	789,668	798,157	800,233	793,079
Large User	-	-	-	-			
Unmetered Scattered Load Connections	-	-	-	-			
Sentinel Lighting Connections	1,025	998	967	961	893	877	860
Street Lighting Connections	20,902	18,315	10,103	10,057	10,164	10,202	10,255
Wholesale Market Participants	-	-	-	-			
Embedded Distributor(s)	-	-	-	-			
Sub Transmission Customers	-	-	-	-			

Demand (Actual) Variance Analysis

Rate Class	Historical 2019	Historical 2020	Historical 2021	Historical 2022	Historical 2023	Bridge Year 2024	Test Year 2025
Residential							
General Service < 50 kW							
General Service >= 50 kW		-8%	0%	2%	1%	0%	-1%
Large User							
Unmetered Scattered Load Connections							
Sentinel Lighting Connections		-3%	-3%	-1%	-7%	-2%	-2%
Street Lighting Connections		-12%	-45%	0%	1%	0%	1%
Wholesale Market Participants							
Embedded Distributor(s)							
Sub Transmission Customers							

Consumption (Weather Normalized)

Rate Class	Historical 2019	Historical 2020	Historical 2021	Historical 2022	Historical 2023	Bridge Year 2024	Test Year 2025
Residential	367,537,932	382,338,568	383,483,181	380,515,760	381,830,915	368,000,278	371,703,857
General Service < 50 kW	134,563,969	128,794,781	129,795,274	132,525,263	138,789,486	137,932,038	138,839,523
General Service >= 50 kW	344,488,500	320,624,506	320,797,830	331,324,639	328,071,956	324,664,836	319,690,359
Large User							
Unmetered Scattered Load Connections	1,133,887	1,032,903	987,840	947,504	921,828	887,789	851,487
Sentinel Lighting Connections	372,542	363,255	360,332	348,724	324,715	318,680	312,757
Street Lighting Connections	7,481,252	6,391,576	3,586,468	3,599,100	3,626,511	3,640,259	3,659,039
Wholesale Market Participants							
Embedded Distributor(s)							
Sub Transmission Customers							

Consumption (Weather Normalized) Variance Analysis

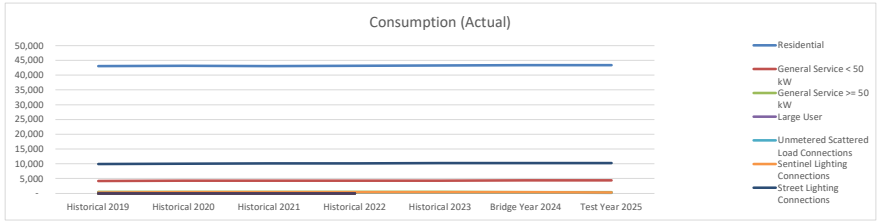
Rate Class	Historical 2019	Historical 2020	Historical 2021	Historical 2022	Historical 2023	Bridge Year 2024	Test Year 2025
Residential		4%	0%	-1%	0%	-4%	1%
General Service < 50 kW		-4%	1%	2%	5%	-1%	1%
General Service >= 50 kW		-7%	0%	3%	-1%	-1%	-2%
Large User							
Unmetered Scattered Load Connections		-9%	-4%	-4%	-3%	-4%	-4%
Sentinel Lighting Connections		-2%	-1%	-3%	-7%	-2%	-2%
Street Lighting Connections		-15%	-44%	0%	1%	0%	1%
Wholesale Market Participants							
Embedded Distributor(s)							
Sub Transmission Customers							

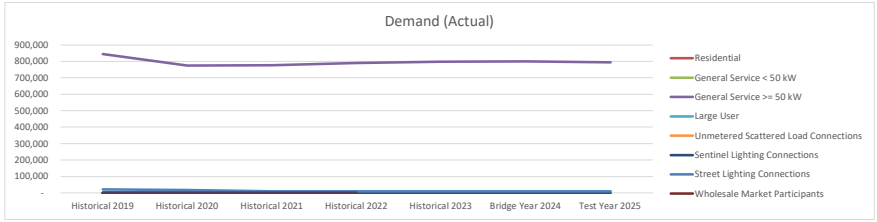
Demand (Weather Normalized)

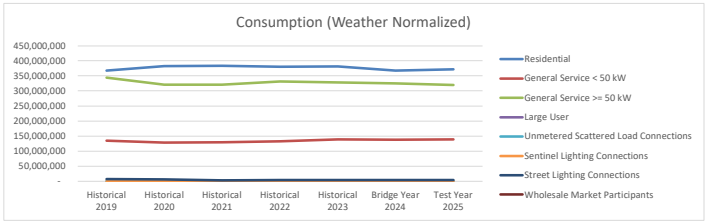
Rate Class	Historical 2019	Historical 2020	Historical 2021	Historical 2022	Historical 2023	Bridge Year 2024	Test Year 2025
Residential							
General Service < 50 kW							
General Service >= 50 kW	846,908	788,239	788,666	814,545	806,549	800,233	793,079
Large User							
Unmetered Scattered Load Connections							
Sentinel Lighting Connections	1,025	998	967	961	893	877	860
Street Lighting Connections	20,902	18,315	10,103	10,057	10,164	10,202	10,255
Wholesale Market Participants							
Embedded Distributor(s)							
Sub Transmission Customers							

Demand (Weather Normalized) Variance Analysis

Rate Class	Historical 2019	Historical 2020	Historical 2021	Historical 2022	Historical 2023	Bridge Year 2024	Test Year 2025
Residential							
General Service < 50 kW							
General Service >= 50 kW		-7%	0%	3%	-1%	-1%	-1%
Large User							
Unmetered Scattered Load Connections							
Sentinel Lighting Connections		-3%	-3%	-1%	-7%	-2%	-2%
Street Lighting Connections		-12%	-45%	0%	1%	0%	1%
Wholesale Market Participants							
Embedded Distributor(s)							
Sub Transmission Customers							


Consumption (Actual)
50,000
45,000
40,000
35,000
30,000
25,000
20,000
15,000
10,000
5,000
-
Historical 2019
Historical 2020
Historical 2021
Historical 2022
Historical 2023
Bridge Year 2024
Test Year 2025
Residential
General Service < 50 kW
General Service >= 50 kW
Large User
Unmetered Scattered Load Connections
Sentinel Lighting Connections
Street Lighting Connections


Demand (Actual)
900,000
800,000
700,000
600,000
500,000
400,000
300,000
200,000
100,000
-
Historical 2019
Historical 2020
Historical 2021
Historical 2022
Historical 2023
Bridge Year 2024
Test Year 2025
Residential
General Service < 50 kW
General Service >= 50 kW
Large User
Unmetered Scattered Load Connections
Sentinel Lighting Connections
Street Lighting Connections
Wholesale Market Participants


Consumption (Weather Normalized)
450,000,000
400,000,000
350,000,000
300,000,000
250,000,000
200,000,000
150,000,000
100,000,000
50,000,000
-
Historical 2019
Historical 2020
Historical 2021
Historical 2022
Historical 2023
Bridge Year 2024
Test Year 2025
Residential
General Service < 50 kW
General Service >= 50 kW
Large User
Unmetered Scattered Load Connections
Sentinel Lighting Connections
Street Lighting Connections
Wholesale Market Participants

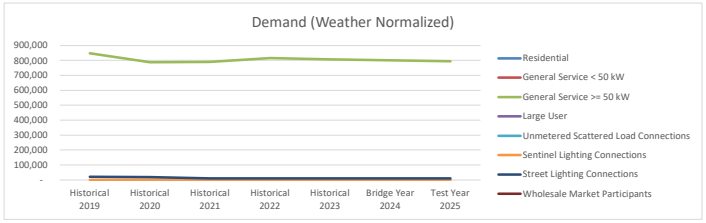

Demand (Weather Normalized)
900,000
800,000
700,000
600,000
500,000
400,000
300,000
200,000
100,000
-
Historical 2019
Historical 2020
Historical 2021
Historical 2022
Historical 2023
Bridge Year 2024
Test Year 2025
Residential
General Service < 50 kW
General Service >= 50 kW
Large User
Unmetered Scattered Load Connections
Sentinel Lighting Connections
Street Lighting Connections
Wholesale Market Participants

Exhibit 3: Customer And Load Forecast

Tab 2 (of 2): Accuracy of Load Forecast and Variance Analyses

VARIANCE ANALYSIS OF LOAD FORECAST

The most significant driver of changes in GSH's loads since its last Cost of Service application is the COVID-19 pandemic in 2020. Following the impacts of COVID-19 in 2020, loads of the Residential, General Service < 50 kW, and General Service > 50 kW have gradually returned towards pre-2020 loads, however, volumes of the General Service < 50 kW class remain lower than pre-2020 and Approved 2020 volumes. Street Light, Sentinel Light, and USL loads have declined since 2020. Street Light volumes in the 2025 test year are forecast to be approximately half of Approved 2020 test year volumes.

Table 1 - 2020 Approved vs. 2020 Actual

	Customers/Devices			Volumes			Volumetric Difference
Rate Class	**2020 Approved**	**2020 Actual**	**Diff.**	**2020 Approved**	**2020 Actual**	**kWh / kW**	
Residential	43,121	43,073	-48	367,560,506	381,987,925	kWh	14,427,419
GS < 50	4,194	4,214	20	136,403,467	128,684,916	kWh	-7,718,551
GS > 50	500	481	-19	857,773	757,331	kW	-100,442
Street Light	9,958	10,030	72	20,807	18,315	kW	-2,492
Sentinel Light	360	354	-6	1,010	999	kW	-11
USL	289	279	-10	1,109,725	1,032,903	kWh	-76,822
Total	**58,422**	**58,431**	**9**	**505,953,288**	**512,482,390**		

Actual 2020 Residential volumes were higher than 2020 Approved and General Service (<50kW and >50kW) volumes were lower than 2020 Approved as a result of the COVID-19 pandemic. Loads shifted from General Service to Residential as residents worked from home and generally spent more time at home in 2020. Street Light volumes were 12% lower than approved due to an LED conversion program which was undertaken in the latter half of 2020.

Table 2 - 2020 Actual vs. 2021 Actual

	Customers/Devices			Volumes			Volumetric Difference
Rate Class	**2020 Actual**	**2021 Actual**	**Diff.**	**2020 Actual**	**2021 Actual**	**kWh / kW**	
Residential	43,073	43,113	40	381,987,925	374,588,273	kWh	-7,399,652
GS < 50	4,214	4,259	44	128,684,916	128,128,422	kWh	-556,494
GS > 50	481	477	-5	757,331	769,679	kW	12,348
Street Light	10,030	10,092	62	18,315	10,079	kW	-8,236
Sentinel Light	354	352	-2	999	992	kW	-7
USL	279	268	-11	1,032,903	987,840	kWh	-45,063
Total	**58,431**	**58,560**	**128**	**512,482,390**	**504,485,285**		

Volume changes from 2020 to 2021 reflect a partial reversal of the 2020 COVID-19 impacts for the Residential and General Service > 50 kW rate classes, though no customer counts or loads of the Residential or General Service rate classes changed by more than 2%. Street Light volumes decreased by 45% as a result of the LED conversion program. The LED conversion program primarily took place from September 2020 to December 2020 and the material impacts in 2021 reflect the first full year of lower loads.

Table 3 - 2021 Actual vs. 2022 Actual

	Customers/Devices			Volumes			Volumetric Difference
Rate Class	**2021 Actual**	**2022 Actual**	**Diff.**	**2021 Actual**	**2022 Actual**	**kWh / kW**	
Residential	43,113	43,131	19	374,588,273	380,676,140	kWh	6,087,868
GS < 50	4,259	4,273	14	128,128,422	132,582,255	kWh	4,453,832
GS > 50	477	486	9	769,679	790,889	kW	21,210
Street Light	10,092	10,155	63	10,079	10,059	kW	-21
Sentinel Light	352	351	-2	992	954	kW	-38
USL	268	261	-7	987,840	947,504	kWh	-40,336
Total	**58,560**	**58,656**	**97**	**504,485,285**	**515,007,801**		

Residential and General Service volumes increased in 2022 due to increased heating loads (9.3% increase in HDD). A portion of the increase in General Service loads is expected to have been caused by the continued reversal of 2020 COVID-19 impacts.

Table 4 - 2022 Actual vs. 2023 Actual

	Customers/Devices			Volumes			Volumetric Difference
Rate Class	**2022 Actual**	**2023 Actual**	**Diff.**	**2022 Actual**	**2023 Actual**	**kWh / kW**	
Residential	43,131	43,278	147	380,676,140	372,340,612	kWh	-8,335,529
GS < 50	4,273	4,326	53	132,582,255	136,911,222	kWh	4,328,967
GS > 50	486	447	-38	790,889	798,157	kW	7,268
Street Light	10,155	10,198	43	10,059	10,143	kW	84
Sentinel Light	351	349	-2	954	893	kW	-61
USL	261	260	-2	947,504	921,828	kWh	-25,676
Total	**58,656**	**58,857**	**200**	**515,007,801**	**510,982,855**		

Residential volumes decreased in 2023 due to reduced heating loads (8.3% decrease in HDD). Changes between General Service < 50 kW and General Service > 50 kW are primarily the result of rate class reclassifications.

Table 5 - 2023 Actual vs. 2024 Bridge Year

	Customers/Devices			Volumes			Volumetric Difference
Rate Class	**2023 Actual**	**2024 Forecast**	**Diff.**	**2023 Actual**	**2024 Forecast**	**kWh / kW**	
Residential	43,278	43,350	72	372,340,612	368,000,278	kWh	-4,340,334
GS < 50	4,326	4,365	39	136,911,222	137,932,038	kWh	1,020,816
GS > 50	447	441	-6	798,157	800,233	kW	2,076
Street Light	10,198	10,250	53	10,143	10,202	kW	59
Sentinel Light	349	342	-6	893	877	kW	-17
USL	260	253	-7	921,828	887,789	kWh	-34,040
Total	**58,857**	**59,001**	**144**	**510,982,855**	**507,631,417**		

Residential volumes are forecast to decrease in 2024 in line with the overall decline in consumption since 2014. This decline is somewhat offset as a result of a return to

normal weather from low heating loads in 2023 (8.9% increase in HDD) and increased electric vehicle and heating loads. General Service loads are forecast to increase as a result of increased heating loads and increased electrification. Overall, forecast loads in 2024 are forecast to be similar to actual loads in 2023.

Table 6 - 2024 Bridge Year vs. 2025 Test Year

	Customers/Devices			Volumes			Volumetric Difference
Rate Class	**2024 Forecast**	**2025 Forecast**	**Diff.**	**2024 Forecast**	**2025 Forecast**	**kWh / kW**	
Residential	43,350	43,422	72	368,000,278	371,703,857	kWh	3,703,579
GS < 50	4,365	4,404	40	137,932,038	138,839,523	kWh	907,485
GS > 50	441	435	-6	800,233	793,079	kW	-7,154
Street Light	10,250	10,303	53	10,202	10,255	kW	53
Sentinel Light	342	336	-6	877	860	kW	-16
USL	253	246	-7	887,789	851,487	kWh	-36,302
Total	**59,001**	**59,146**	**145**	**507,631,417**	**512,199,061**		

All volume and customer count changes from the 2024 Bridge Year to the 2025 Test Year are less than 2%, except USL loads. Residential volumes are forecast to increase in 2025 as a result of increased electric vehicles and heating loads. General Service < 50 kW volumes are forecast to increase in 2025 due to increased electrification and declining persistence of previous CDM programs. General Service > 50 kW volumes are forecast to decline in line with the class's overall reduction in volumes over time, somewhat offset by increased electrification. USL loads are forecast to decline by 4.1% as connection counts, total class volumes, and volumes per connection have decline in each year since 2020.