EXHIBIT 3

CUSTOMER AND LOAD FORECAST

ESSEX POWERLINES CORPORATION

Table of Contents

List of Tables

List of Attachments

Attachment 3-A: Weather Normalized Distribution System Load Forecast: 2025 Cost of Service

3.1. Load Forecast Overview

3.1.1 Introduction

This exhibit presents supporting evidence detailing EPLC's forecast of customers, energy and load, and variance analyses related to these items. EPLC engaged Elenchus Research Associates ("Elenchus") to support its 2025 Test Year load forecast. EPLC has prepared a Load Forecast Model (the "Model") consistent with its understanding of the Chapter 2 Filing Requirements for Electricity Distribution Rate Applications – 2023 Edition for 2024 Rate Applications issued on December 15, 2022. A copy of the load forecast model has been filed in live Excel format and a summary of the forecast is provided in Figure 1.

Table 3-1: EPLC 2025 Test Year Load Forecast Summary

Rate Class	kWh	kW	Customers / Connections
Residential	284,634,106	-	29,454
General Service < 50 kW	70,835,308	-	2,098
General Service > 50 kW to 4999 kW	197,879,033	698,414	235
Unmetered Scattered Load	1,383,562	-	123
Sentinel Lighting	262,328	716	216
Street Lighting	2,433,601	7,372	2,828
Embedded Distributor	34,244,754	90,871	4
Total	591,672,692	797,373	34,958

3.1.2 Weather Normalized Load and Customer/Connection Forecast

The purpose of this evidence is to present the process used by EPLC to prepare the weather normalized load and customer/connection forecast used to design the proposed 2025 electricity distribution rates.

EPLC used the same regression analysis methodology approved by the Ontario Energy Board (the "Board") in its 2017 Cost of Service ("COS") application (EB-2017-0039) to normalize and forecast EPLC's weather sensitive load using monthly heating degree days and cooling degree days as measured at Environment Canada's Windsor Airport weather station. EPLC has conducted the regression analysis on an individual rate class basis. EPLC submits the load forecasting methodology is reasonable for the purpose of this Application.

Factors that were included in the development of the load forecast include, but are not limited to, customer composition, energy conservation, economic activity, COVID-19 impacts, and additional loads (electric vehicles, electric heating, customer expansion, etc.). More details on these factors can be found in Attachment 3-A.

The following provides the consumption data used to support the weather normalized load forecast used by EPLC in this Application.

Table 3-2: Historical Billed Consumption & Forecast by Rate Class

Rate Class Year	Residential	GS<50	GS>50	Street Light	Sentinel Light	USL	(HONI) ED	Total
2014	245,551,953	65,242,009	167,236,927	6,286,758	350,518	1,555,546	38,058,829	524,282,540
2015	244,757,238	65,329,578	171,977,957	6,227,064	341,134	1,558,152	38,655,618	528,846,741
2016	255,390,423	66,808,994	187,031,606	4,268,689	335,758	1,554,368	32,586,842	547,976,680
2017	240,232,071	65,115,315	166,511,229	2,875,901	304,470	1,549,260	33,420,007	510,008,253
2018	259,974,120	66,321,666	171,089,785	2,887,551	293,755	1,547,236	31,923,241	534,037,354
2019	252,809,094	65,058,987	180,918,659	2,576,355	285,985	1,541,978	34,526,385	537,717,443
2020	271,898,869	60,802,781	171,481,742	2,455,697	281,018	1,442,699	29,188,687	537,551,493
2021	277,378,582	62,043,606	178,461,520	2,444,025	278,297	1,408,704	28,075,683	550,090,417
2022	272,607,146	67,628,825	183,800,048	2,406,027	271,670	1,408,704	28,792,570	556,914,990
2023	259,000,634	63,293,408	183,420,703	2,415,233	269,986	1,408,699	34,284,228	544,092,891
2024 Forecast	276,979,656	69,484,720	190,310,413	2,424,399	266,130	1,396,074	33,920,392	574,781,784
2025 Forecast	285,939,528	73,307,166	209,209,941	2,433,601	262,328	1,383,562	34,244,754	606,780,880

The information in the figure above provides actuals from 2014 to 2023, as well as 2024 and 2025 forecasted consumption. Figure 3 below summarizes the 2025 CDM Adjusted kWh Load Forecast.

Table 3-3: 2025 CDM Adjustment- kWh

Rate Class	2025 Weather Normal Forecast (kWh)	CDM Adjustment (kWh)	2025 CDM Adjusted Forecast (kWh)
Residential	285,939,528	1,305,422	284,634,106
General Service < 50 kW	73,307,166	2,471,857	70,835,308
General Service > 50 kW to 4999 kW	209,209,941	11,330,908	197,879,033
Unmetered Scattered Load	1,383,562	-	1,383,562
Sentinel Lighting	262,328	-	262,328
Street Lighting	2,433,601	-	2,433,601
Embedded Distributor	34,244,754	-	34,244,754
Total	606,780,880	15,108,187	591,672,692

Total customers and connections are calculated based on the growth of annual average counts in Figure 4. Residential, General Service <50 kW, General Service >50 kW to 4999 kW, and Embedded Distributors are measured as customer counts, while Street Lighting, Sentinel Lighting, and Unmetered Scattered Loads are measured as connections.

Table 3-4: Customer/Connection Counts by Rate Class

Rate Class Year	Residential	GS<50	GS>50	Street Light	Sentinel Light	USL	(HONI) ED	Total
2014	26,590	1,910	212	2,713	172	140	6	31,743
2015	26,815	1,936	212	2,701	174	141	6	31,985
2016	26,920	1,934	255	2,720	181	139	3	32,152
2017	27,321	1,966	250	2,753	253	132	4	32,679
2018	27,640	1,979	249	2,761	243	131	5	33,008
2019	27,932	1,996	262	2,770	235	130	4	33,329
2020	28,265	2,018	256	2,777	228	126	4	33,675
2021	28,512	2,040	234	2,785	228	125	4	33,927
2022	28,745	2,065	210	2,793	227	125	4	34,170
2023	28,912	2,062	230	2,807	222	125	4	34,362
2024 Forecast	29,182	2,080	232	2,818	219	124	4	34,658
2025 Forecast	29,454	2,098	235	2,828	216	123	4	34,958

3.1.3 Load Forecast Methodology

The regression model used to normalize and forecast Essex Powerlines' weather sensitive load use monthly heating degree days and cooling degree days as measured at Environment Canada's Windsor Airport weather station to take into account temperature sensitivity. This location is central to the communities in EPLC's service territory and has strong historical weather data. Essex Powerlines experiences large cooling loads in the summer and smaller heating loads in the winter seasons, with the peak generally being in the summer. 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. Further details about Elenchus' methodology can be found in Attachment 3-A of this Exhibit.

Independent variables are considered in the regression model for each rate class, as these variables influence the consumption in each class. Residential kWh consumption, GS<50 kW consumption, and GS>50kW consumption equations were estimated using 120 observation days from January 2014 to December 2023. Different variables were tested for each rate class, and if found statistically significant, were used in the regression analysis.

3.1.4 COVID-19 in Regression Analysis

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. The extent to which consumption from March 2020 onward differed from typical consumption has been found to be related to the weather variables in those months for certain classes, particularly for the Residential class. A set of COVID/weather interaction variables were considered to capture the incremental consumption caused by people staying at home due to lockdowns and from the increase in people working from home, which has persisted after the prevalence of direct COVID impacts have subsided.

COVID variables were tested for each of the Residential, General Service <50kW, General Service >50kW, and Embedded Distributor rate classes. As such, some 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 thereafter. 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 equal to 0 in July 2020 and each month thereafter. This variable reflects the temporary impacts experienced by some customers, particularly larger customers.

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.

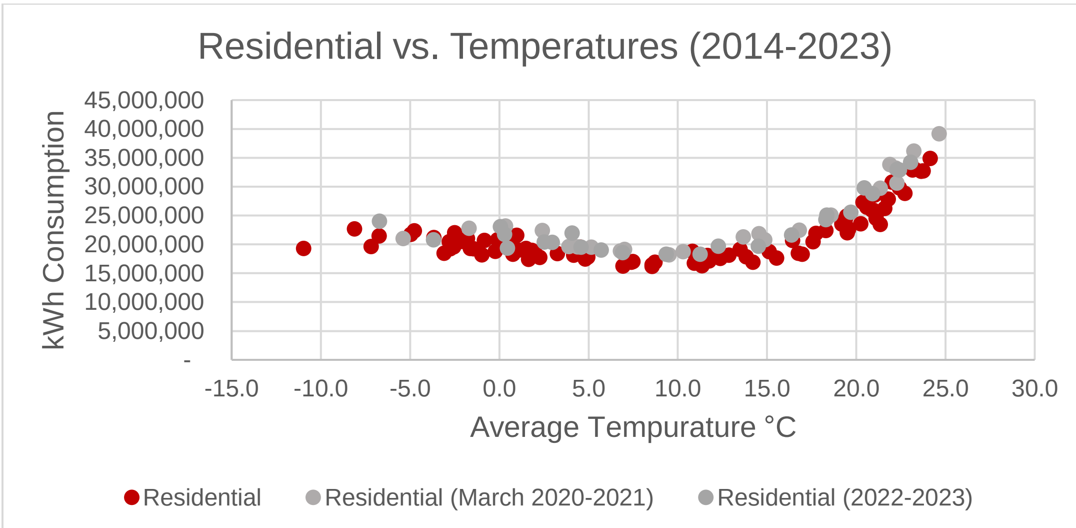
The "CWFH HDD" and "CWFH CDD" variables are COVID/weather interaction variables that are equal to the relevant HDD and CDD variables applied to the COVID_WFH. The variables are 0 in all months prior to March 2020, 50% of weather variables in March 2020, 100% of weather variables in April 2020 to December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

The COVID/weather interaction variables related to the "work from home" variable was found to be statistically significant and is used for the Residential rate class. The COVID variables were not found to be statistically significant for the General Service <50 kW, General Service > 50kW, or Embedded Distributor rate classes.

3.2 Residential Regression Models

For Residential kWh consumption, the equation was estimated using 120 observations from January 2014 to December 2023. Consumption is relatively stable when the average monthly temperature is between 16°C and 18°C and increases as average temperatures deviate from that range. HDD relative to 18°C and

CDD relative to 16°C were found to provide the strongest results. HDD and CDD measures near 18°C and 16°C, respectively, were also considered but found to be less predictive of monthly consumption.



In addition to the HDD18 and CDD16 variables, the corresponding CWFH_HDD18 and CWFH_CDD16 variables were used and found to be statistically significant. Economic variables, such as Windsor employment and various GDP measures, were tested but not found to be statistically significant.

A time trend variable, equal to 1 in January 2014 and increasing by one in each month, was found to be statistically significant. A count of the number of calendar days in the month was also used.

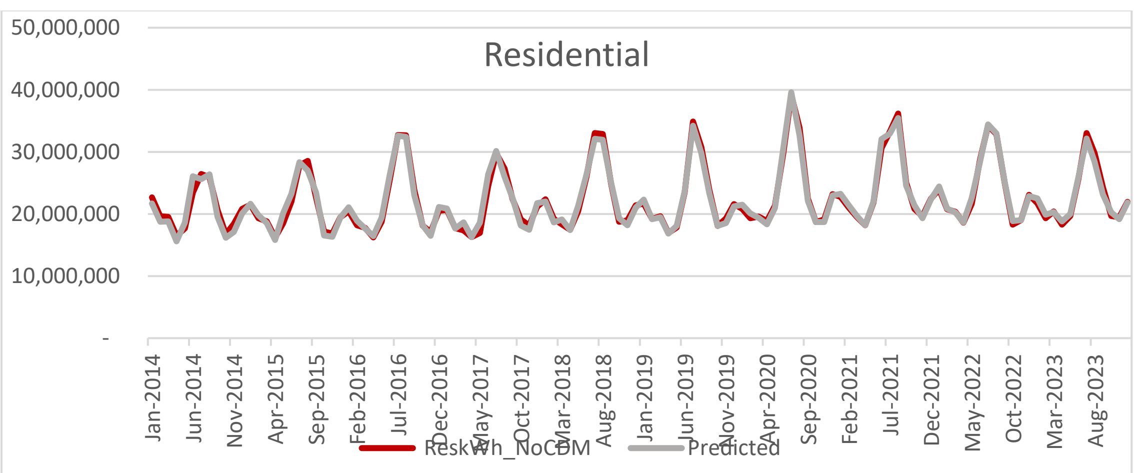
Several other variables were examined and found to not show a statistically significant relationship to energy usage, or a weaker relationship than similar variables that are included. Those included customer counts, employment, GDP, and other calendar variables. In addition, economic variables, such as Windsor employment and various GDP measures, were tested but not found to be statistically significant.

A time-series autoregressive model using the Prais-Winsten estimation was used for the Residential class to account for autocorrection. The following table outlines the resulting regression model:

Table 3-5: Residential Regression Model

Model 1: Prais-Winsten, using observations 2014:01-2023:12 (T=120) Dependent variable: ResKWh_NoCDM Rho= 0.164919				
	co-efficient	std. error	t-ratio	p-value
const	(7,179,192)	2,421,349	(2.9650)	0.00370
HDD18	7,099	563	12.6164	-
CDD16	66,615	2,172	30.6747	-
CWFH_HDD18	2,408	825	2.9189	0.00425
CWFH_CDD16	15,378	2,295.8	6.6981	-
MonthDays	745,717	81,926	9.1024	-
Shoulder	(1,713,931)	195,555	(8.7644)	-
Trend	21,643	2,864.2	7.5560	-
Statistical based on the rho-differenced data				
Mean dependent var	22,403,541	S.D. dependent var	5,143,284	
Sum squared resid	6E+13	S.E of regression	7.32E+05	
R-squared	9.81E-01	Adjusted R-Squared	9.80E-01	
F (7, 112)	667.490	P-Value (F)	-	
rho	0.019	Durbin-Watson	1.9472	

Using the above model coefficients, we derive the following:



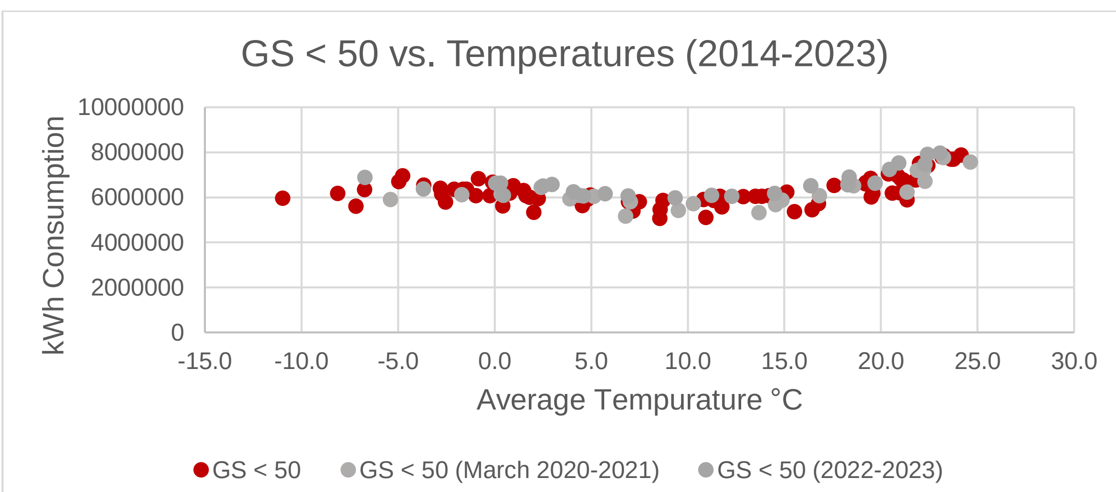
Annual estimates using actual weather are compared to actual values in the table below. Mean absolute percentage error (MAPE) for annual estimates for the period is 0.7%. The MAPE calculated monthly over the period is 2.5%.

Table 3-6: EPLC's Residential kWh Prediction Model Results

Year	Residential kWh		
	CDM Added Back	Predicted	Absolute Error (%)
2014	248,343,883	244,442,951	1.60%
2015	248,777,775	250,266,821	0.60%
2016	261,730,029	263,627,579	0.70%
2017	251,415,524	254,522,756	1.20%
2018	273,656,127	272,455,324	0.40%
2019	267,245,404	264,790,988	0.90%
2020	286,105,618	285,357,653	0.30%
2021	291,353,714	292,469,170	0.40%
2022	286,634,491	288,424,224	0.60%
2023	273,162,305	272,274,576	0.30%
Total	**2,688,424,869**	**2,688,632,043**	**0.00%**
Mean Absolute Percentage Error (Annual)			**0.70%**
Mean Absolute Percentage Error (Monthly)			**2.50%**

3.3 General Service <50kW Regression Models

For the GS<50kW 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 18°C and 14°C and increases as average temperatures deviate from that range. HDD relative to 18°C and CDD relative to 14°C were found to provide the strongest results. HDD and CDD measures near 18°C and 14°C, respectively, were also considered but found to be less predictive of monthly consumption.



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.

The number of days in each month and the Shoulder variable were found to be statically significant and were used in the GS<50kW model.

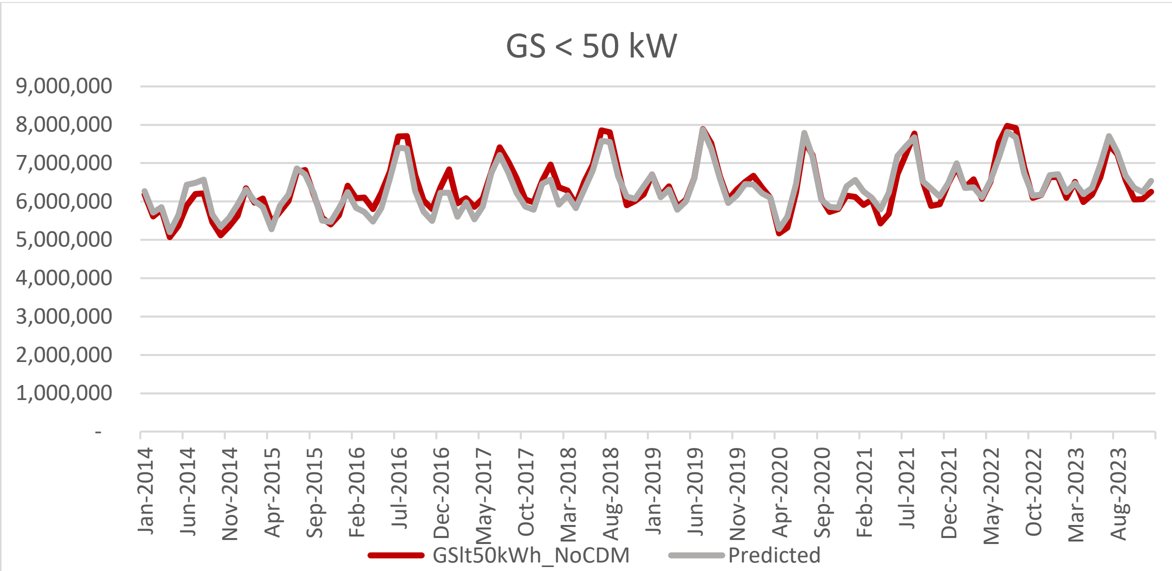
The COVID variables were tested and found to have low statistical significance when the GDP variable was included. As such, these variables are not used in the GS<50kW model. Similarly, the customer count, time trend, and other calendar variables were tested but found to not have statistically significant relationships to energy usage.

The following table outlines the resulting regression model:

Table 3-7: GS<50kW Regression Model

Model 1: Prais-Winsten, using observations 2014:01-2023:12 (T=120) Dependent variable: GSlt50kWh_NoCDM Rho= 0.71701				
	co-efficient	std. error	t-ratio	p-value
const	(3,155,056)	795,991	(3.9637)	0.00010
HDD18	1,711	141	12.1424	-
CDD14	7,408	361	20.5150	-
Total_OEA	6	1	6.6597	-
MonthDays	124,568	14,353	8.6787	-
Shoulder	115,215	40,249	(2.8625)	0.00500
Statistical based on the rho-differenced data				
Mean dependent var	6,353,996	S.D. dependent var	650,494	
Sum squared resid	3.14E+12	S.E of regression	1.66E+05	
R-squared	0.9397	Adjusted R-Squared	0.937	
F (5, 115))	239.993	P-Value (F)	-	
rho	(0.071)	Durbin-Watson	2.1327	

Using the above model coefficients, we derive the following:



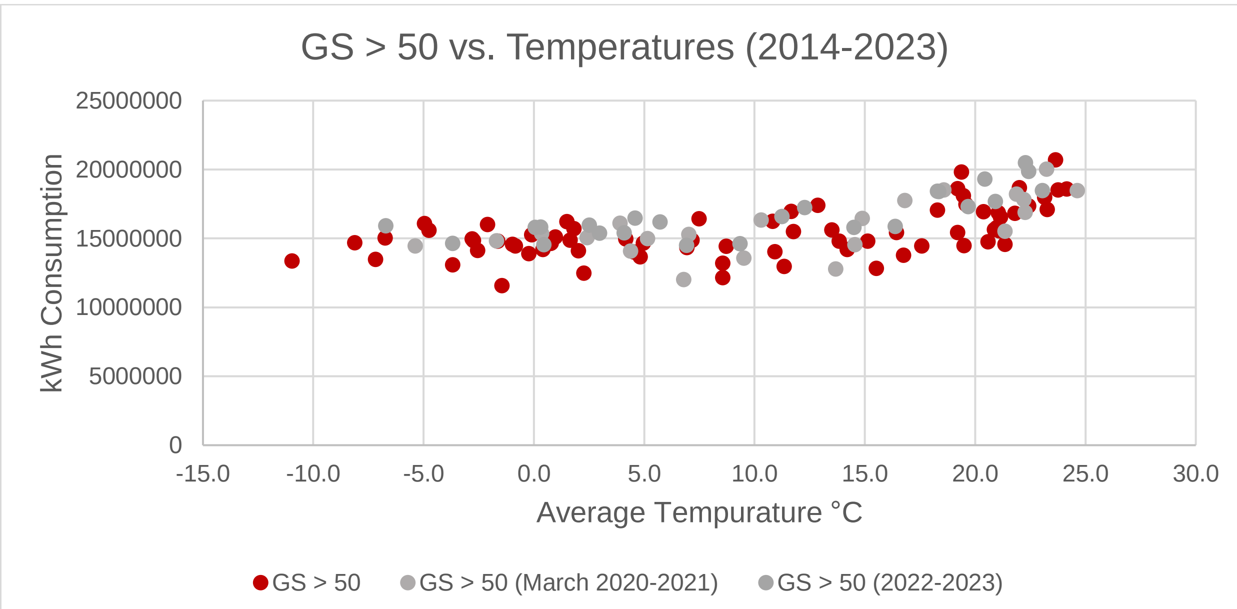
Annual estimates using actual weather are compared to actual values in the table below. Mean absolute percentage error (MAPE) for annual estimates for the period is 2.4%. The MAPE calculated monthly over the period is 3.0%.

Table 3-8: EPLC General Service <50kW Prediction Model Results

GS<50 kWh			
Year	CDM Added Back	Predicted	Absolute Error (%)
2014	67,861,598	70,659,909	4.10%
2015	71,979,957	72,093,836	0.20%
2016	77,699,069	74,230,751	4.50%
2017	77,216,323	74,250,660	3.80%
2018	79,628,911	78,009,546	2.00%
2019	78,712,719	77,956,503	1.00%
2020	74,404,472	75,159,637	1.00%
2021	75,675,869	78,685,517	4.00%
2022	81,641,733	80,770,802	1.10%
2023	77,658,916	79,736,139	2.70%
Total	**762,479,569**	**761,553,299**	**0.10%**
Mean Absolute Percentage Error (Annual)			**2.40%**
Mean Absolute Percentage Error (Monthly)			**3.00%**

3.4 General Service >50kW Regression Models

For EPLC's GS>50kW consumption, the regression equation was estimated using 120 observations from January 2014 to December 2023. GS>50kW consumption is relatively flat when the average monthly temperature is between 12°C and 16°C and increases as average temperatures deviate from that range. Consumption was found to not vary significantly at lower temperatures but there is a stronger relationship between consumption and high temperatures. HDD relative to 16°C and CDD relative to 12°C were found to provide the strongest results. HDD and CDD measures near 16°C and 12°C, respectively, were also considered but found to be less predictive of monthly consumption.



Total Ontario GDP from 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.

The number of "peak days" in each month, which are non-holiday weekdays, is used and found to be more statistically significant than the total number of days in each month.

The COVID variables were tested and found to have low statistical significance when the GDP variable was included. As such, these variables were not used in the GS>50kW model.

Two calendar variables, the September variable, equal to 1 in September and 0 in all other months, and the Fall variable, equal to 1 in October and November and equal to 0 in all other months, are also used and found to be statistically significant. These variables account for higher consumption in the September, October, and November months than can be explained by weather or other variables. The September variable is separate from the Fall variable as consumption is particularly high in September months, likely due to agricultural and greenhouse loads in the region in those months.

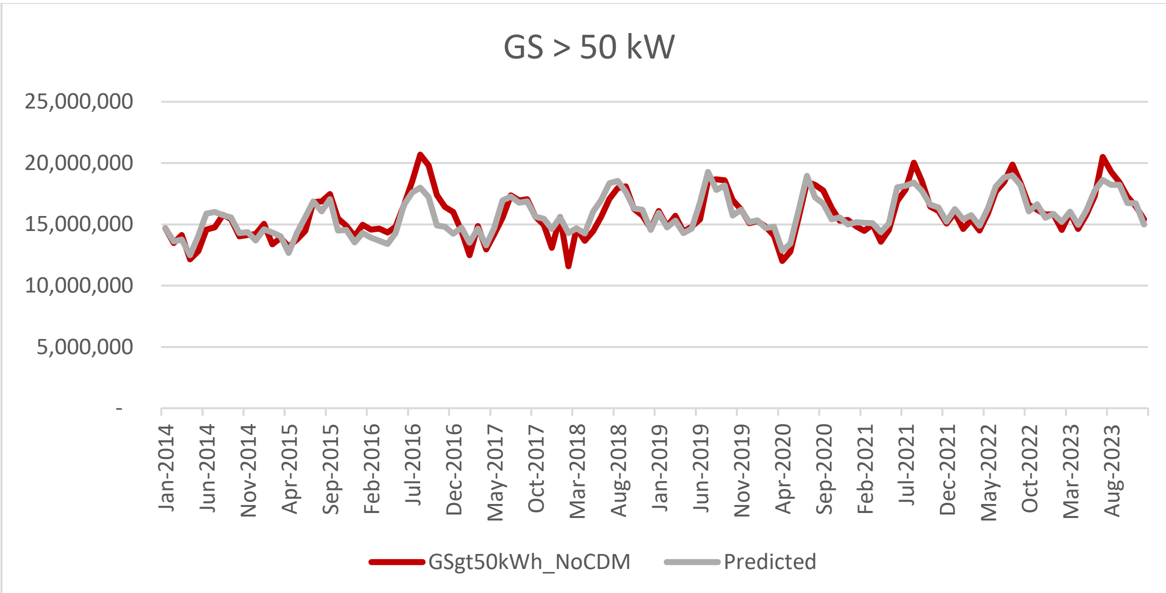
The time trend and other binary calendar variables representing other seasons and months were tested but found to not have a statistically significant relationship to energy use.

The following table outlines the resulting regression model:

Table 3-9: EPLC's GS>50kW Regression Statistics

Model 1: Prais-Winsten, using observations 2014:01-2023:12 (T=120) Dependent variable: GSgt50kWh_NoCDM Rho= 0.527279				
	co-efficient	std. error	t-ratio	p-value
const	(4,689,965)	2,465,916	(1.9019)	0.05970
HDD16	3,947	680	5.8022	-
CDD12	15,259	1,219	12.5210	-
Total_OEA	16.3	2.8	5.7330	-
PeakDays	228,823	47,455	4.8219	-
Sept	1,564,225	244,561	6.3960	-
Fall	1,139,331	247,781.4	4.5980	-
Statistical based on the rho-differenced data				
Mean dependent var	6,353,996	S.D. dependent var	1,861,094	
Sum squared resid	3.14E+12	S.E of regression	7.44E+05	
R-squared	0.9397	Adjusted R-Squared	8.46E-01	
F (5, 114)	239.993	P-Value (F)	-	
rho	(0.071)	Durbin-Watson	2.0645	

Using the above model coefficients we derive the following:



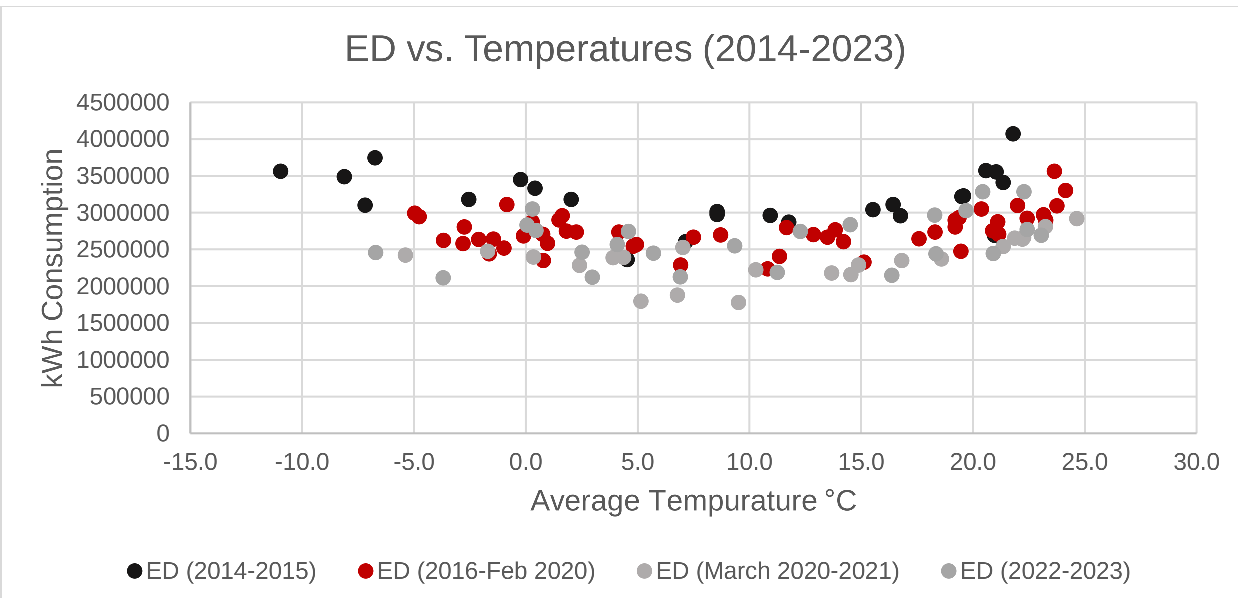
Annual estimates using actual weather are compared to actual values in the table below. Mean absolute percentage error (MAPE) for annual estimates for the period 2.2%. The MAPE calculated monthly over the period is 4.0%.

Table 3-10: EPLC's General Service >50 kW Prediction Model Results

GS>50kWh			
Year	CDM Added Back	Predicted	Absolute Error (%)
2014	170,113,999	174,094,926	2.30%
2015	179,246,256	178,069,776	0.70%
2016	198,702,962	182,896,495	8.00%
2017	179,503,467	184,420,679	2.70%
2018	185,305,131	193,322,277	4.30%
2019	195,400,371	194,040,109	0.70%
2020	185,908,363	186,071,196	0.10%
2021	193,242,984	195,302,133	1.10%
2022	199,280,395	200,920,753	0.80%
2023	201,412,228	199,440,276	1.00%
Total	**1,888,116,155**	**1,888,578,619**	**0.00%**
Mean Absolute Percentage Error (Annual)			**2.20%**
Mean Absolute Percentage Error (Monthly)			**4.00%**

3.5 Embedded Distributor Regression Models

For EPLC's Embedded Distributor class, the regression equation was estimated using 98 observations from November 2015 to December 2023. This class comprises of 4 metered connection points with Hydro One Networks Inc. ("HONI"). The class had 6 connection points until October 2015 and the class's loads declined by approximately 15-20% following that month. When the data was tested with various models including ten years (2014-2023) of class data, there was found to be a mismatch of the 33% decline in counts and 15-20% decline in loads which skewed the results. As such, the forecast of this class is based on eight years and two months of data, as models tested for this time period produced stronger statistical results. HDD relative to 14°C and CDD relative to 16°C were found to provide the strongest results. HDD and CDD measures near 14 and 16°C, respectively, were also considered but found to be less predictive of monthly consumption.



Economic variables were tested and multiple were found to have a statistically significant relationship with class consumption. The variable with the strongest statistical results is seasonally adjusted Windsor Employment (AdjWindsor_FTE) from Statistics Canada.

The COVID variables were tested and found to have low statistical significance when the GDP variable was included. As such, these variables are not used in the Embedded Distributor model.

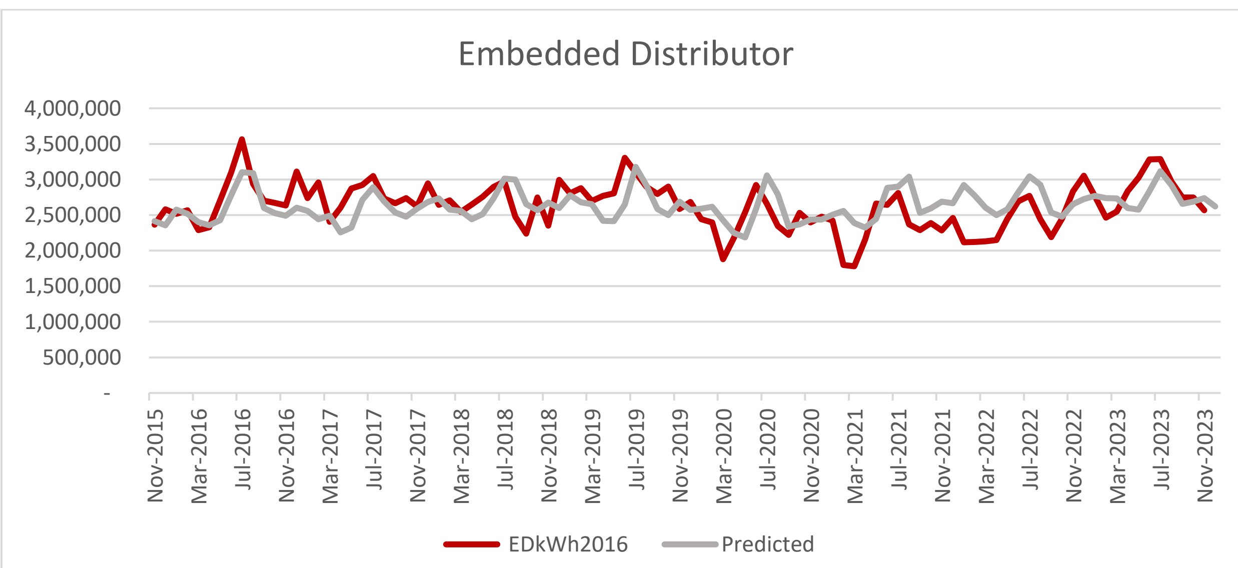
The Fall variable, equal to 1 in October and November and equal to 0 in all other months, is used and found to be statistically significant. This variable accounts for higher consumption in the October and November months that can be explained by weather or other variables. The other binary calendar variables representing seasons and months were tested but not found to show a high degree of statistical significance.

The following table outlines the resulting regression model:

Table 3-11: EPLC's Embedded Distributor Regression Statistics

Model 1: Prais-Winsten, using observations 2015:11-2023:12 (T=98) Dependent variable: EDkWh2016 Rho= 0.714295				
	co-efficient	std. error	t-ratio	p-value
const	788,661	686,069.2	1.150	0.25328
HDD14	899	169.3	5.309	-
CDD16	3,716	385.6	9.635	-
Fall	135,311	50,967.0	2.655	0.00933
AdjWindsor_FTE	8,461	4,069.5	2.079	0.04037
Statistical based on the rho-differenced data				
Mean dependent var	2,630,298	S.D. dependent var	323,420	
Sum squared resid	2.95E+12	S.E of regression	1.78E+05	
R-squared	0.71005	Adjusted R-Squared	6.98E-01	
F (4, 93)	33.875	P-Value (F)	-	
rho	(0.168)	Durbin-Watson	2.3280	

Using the above model coefficients we derive the following:



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 6.4%. The MAPE calculated monthly over the period is 7.9%.

Table 3-12: EPLC's Embedded Distributor Prediction Model Results

Embedded Distributor			
Year	**Consumption**	**Predicted**	**Absolute Error (%)**
2014	38,058,829		
2015	38,655,618		
2016	32,586,842	31,460,057	3.50%
2017	33,420,007	30,654,663	8.30%
2018	31,923,241	32,062,078	0.40%
2019	34,526,385	32,025,427	7.20%
2020	29,188,687	30,074,723	3.00%
2021	28,075,683	31,518,034	12.30%
2022	28,792,570	32,560,969	13.10%
2023	34,284,228	32,990,285	3.80%
Total	**329,512,090**	**253,346,236**	**23.10%**
Mean Absolute Percentage Error (Annual)			**6.40%**
Mean Absolute Percentage Error (Monthly)			**7.90%**

3.6 Conservation and Demand Management Adjustments

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, a manual adjustment to the load forecast was derived. 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 <50kW and General Service >50kW.

As such, the 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 EPL's share of consumption within the province and the IESO's 2021-2024 Conservation and Demadn Management Framework. The table below provides a summary of the 2021-2024 Framework and EPL's allocation of savings. CDM savings in 2025 are not available so the savings are assumed to be the same as 2024 savings.

Table 3-13: CDM Programs and Savings

Program	In year energy savings (GWh)				Est. 2025	EPL Share %	Basis for EPL%
	2021	2022	2023	2024			
Retrofit	322	570	359	560	560	0.41%	% of provincial kWh
Small Business	10	4	20	65	65	0.41%	% of provincial kWh
Energy Performance	16	20	50	54	54	0.41%	% of provincial kWh
Energy Management	1	15	29	96	96	0.41%	% of provincial kWh
Industrial Energy Efficiency	-	-	165	165	165	0.41%	% of provincial kWh
Targeted Greenhouse	-	-	333	333	333	1.00%	Judgement
Local Initiatives	-	61	161	161	181	0.41%	% of provincial kWh
Residential Demand Response	-	-	3	7	7		
Energy Affordability Program	7	14	49	97	97	0.77%	% of prov. LIM
First Nations Program	1	-	15	16	16		

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

Table 3-14: EPL kWh

Year	Province kWh	EPL kWh	EPL %Share
2018	132,430,891,804	518,925,520	0.39%
2019	129,776,205,940	538,071,920	0.41%
2020	128,180,478,159	536,185,894	0.42%
2021	129,125,642,652	549,391,694	0.43%
2022	130,831,607,587	555,804,644	0.42%
5-Year Avg.	130,068,965,228	539,675,935	0.41%

EPL's Affordability Program allocation is based on the number of households in Amherstburg, LaSalle, Leamington, and Tecumseh within the census Family Low-Income Measure as a share of all Ontario households, as per the 2016 and 2021 Censuses. In both years, the combined population of Amherstburg, LaSalle, Leamington and Tecumseh is 0.77% of Ontario's population.

Total GWh savings figures have been adjusted by the share attributable to EPL, yearly weighting factors, and converted to kWh savings. Total CDM savings attributable to EPLC is provided in the following table.

Table 3-15: EPL Energy Savings in kWh

Program	In year energy savings (kWh)			Total CDM
	2023	2024	2025	
Weighting Factor	0.5	1	0.5	
Retrofit	744,773	2,232,525	1,161,763	4,230,061
Small Business	41,492	269,695	134,847	446,034
Energy Performance	103,729	224,054	112,027	439,810
Energy Management	60,163	398,319	199,159	657,641
Industrial Energy Efficiency	342,305	684,610	342,305	1,369,220
Targeted Greenhouse	1,665,000	3,330,000	1,665,000	6,660,000
Local Initiatives	-	-	-	-
Residential Demand Response	-	-	-	-
Energy Affordability Program	188,134	744,859	372,429	1,305,422
First Nations Program	3,145,595	7,975,062	3,987,531	15,108,188

The following table summarizes the 2025 CDM Adjusted kWh Load Forecast:

Table 3-16: Test Year CDM Adjustment- kWh

Rate Class	2025 Weather Normal Forecast (kWh)	CDM Adjustment (kWh)	2025 CDM Adjusted Forecast (kWh)
Residential	285,939,528	1,305,422	284,634,106
General Service < 50 kW	73,307,166	2,471,857	70,835,308
General Service > 50 kW to 4999 kW	209,209,941	11,330,908	197,879,033
Unmetered Scattered Load	1,383,562	-	1,383,562
Sentinel Lighting	262,328	-	262,328
Street Lighting	2,433,601	-	2,433,601
Embedded Distributor	34,244,754	-	34,244,754
Total	606,780,880	15,108,187	591,672,692

The following table summarizes the 2025 CDM Adjusted kW Load Forecast:

Table 3-17: Test Year CDM Adjustment- kW

Rate Class	2025 Weather Normal Forecast (kW)	CDM Adjustment (kW)	2025 CDM Adjusted Forecast (kW)
General Service > 50 kW to 4999 kW	736,070	37,655	698,414
Sentinel Lighting	716	-	716
Street Lighting	7,372	-	7,372
Embedded Distributor	90,871	-	90,871
Total	835,029	37,655	797,373

3.7 Rate Class Results

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 for each of EPLC's rate classes.

3.7.1 Residential

Table 3-18: EPLC Residential Consumption

Year	Actual A	Cumulative Persisting CDM B	Actual No CDM C= A+B	Normalized No CDM D	Cumulative Persisting CDM E=B	Normalized F= D-E
2014	245,551,953	2,791,930	248,343,883	254,117,717	2,791,930	251,325,787
2015	244,757,238	4,020,537	248,777,775	251,844,275	4,020,537	247,823,738
2016	255,390,423	6,339,606	261,730,029	255,298,027	6,339,606	248,958,421
2017	240,232,071	11,183,453	251,415,524	256,459,163	11,183,453	245,275,710
2018	259,974,120	13,682,007	273,656,127	263,883,736	13,682,007	250,201,729
2019	252,809,094	14,436,310	267,245,404	268,253,886	14,436,310	253,817,576
2020	271,898,869	14,206,749	286,105,618	285,753,248	14,206,749	271,546,499
2021	277,378,582	13,975,132	291,353,714	285,160,668	13,975,132	271,185,536
2022	272,607,146	14,027,345	286,634,491	282,855,068	14,027,345	268,827,723
2023	259,000,634	14,161,672	273,162,305	283,901,209	14,161,672	269,739,537
2024 Forecast				286,875,733	14,080,909	272,794,824
2025 Forecast				289,246,553	13,876,356	275,370,197

Electric vehicles and heat pumps are forecast to increase loads and are therefore 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.

Table 3-19: Additional Residential kWh Consumption

Year	Normalized Forecast	Additional Loads	Total kWh Forecast
2024	272,794,824	4,184,832	276,979,656
2025	275,370,197	10,569,331	285,939,528

3.7.2 General Service <50 kWh

Table 3-20: EPLC General Service <50kW

Year	Actual A	Cumulative Persisting CDM B	Actual No CDM C= A+B	Normalized No CDM D	Cumulative Persisting CDM E=B	Normalized F= D-E
2014	65,242,009	2,619,589	67,861,598	68,141,080	2,619,589	65,521,491
2015	65,329,578	6,650,379	71,979,957	72,174,254	6,650,379	65,523,875
2016	66,808,994	10,890,075	77,699,069	77,053,838	10,890,075	66,163,763
2017	65,115,315	12,101,008	77,216,323	77,894,793	12,101,008	65,793,785
2018	66,321,666	13,307,245	79,628,911	78,344,761	13,307,245	65,037,516
2019	65,058,987	13,653,732	78,712,719	78,753,034	13,653,732	65,099,302
2020	60,802,781	13,601,691	74,404,472	74,691,042	13,601,691	61,089,351
2021	62,043,606	13,632,263	75,675,869	75,158,022	13,632,263	61,525,759
2022	67,628,825	14,012,908	81,641,733	81,176,805	14,012,908	67,163,897
2023	63,293,408	14,365,508	77,658,916	79,091,938	14,365,508	64,726,430
2024 Forecast	-	-	-	81,659,851	13,227,924	68,431,927
2025 Forecast	-	-	-	82,793,710	12,219,319	70,574,391

Electric vehicles and heat pumps are forecast to increase loads and are therefore 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 historical loads.

Table 3-21: Additional GS<50kW Consumption

Year	Normalized Forecast	Additional Loads	Total kWh Forecast
2024	68,431,927	1,052,792	69,484,720
2025	70,574,391	2,732,775	73,307,166

3.7.3 General Service >50 kWh

Table 3-22: EPLC General Service >50kW

Year	Actual A	Cumulative Persisting CDM B	Actual No CDM C= A+B	Normalized No CDM D	Cumulativ e Persisting CDM E=B	Normalized F= D-E
2014	167,236,927	2,877,072	170,113,999	170,843,649	2,877,072	167,966,577
2015	171,977,957	7,268,299	179,246,256	179,448,112	7,268,299	172,179,813
2016	187,031,606	11,671,356	198,702,962	197,274,518	11,671,356	185,603,162
2017	166,511,229	12,992,238	179,503,467	180,781,056	12,992,238	167,788,818
2018	171,089,785	14,215,346	185,305,131	182,576,695	14,215,346	168,361,349
2019	180,918,659	14,481,712	195,400,371	195,648,077	14,481,712	181,166,365
2020	171,481,742	14,426,621	185,908,363	186,834,010	14,426,621	172,407,389
2021	178,461,520	14,781,464	193,242,984	192,007,840	14,781,464	177,226,376
2022	183,800,048	15,480,347	199,280,395	198,254,125	15,480,347	182,773,778
2023	183,420,703	17,991,525	201,412,228	204,448,073	17,991,525	186,456,548
2024 Forecast	-	-	-	203,702,781	-	203,702,781
2025 Forecast	-	-	-	207,132,515	-	207,132,515

Known customer expansions, electric vehicles, and heat pumps are forecast to increase loads and are therefore 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 historical loads.

Table 3-23: Additional GS>50kW Consumption

Year	Normalized Forecast	Additional Loads	Total kWh Forecast
2024	186,768,072	3,542,341	190,310,413
2025	191,652,135	17,557,806	209,209,941

3.7.4 Embedded Distributor

Table 3-24: EPLC Embedded Distributor

Year	Actual A	Normalized B
2014	38,058,829	38,157,206
2015	38,655,618	38,755,215
2016	32,586,842	32,297,160
2017	33,420,007	33,791,890
2018	31,923,241	31,265,051
2019	34,526,385	34,523,313
2020	29,188,687	29,289,377
2021	28,075,683	27,854,088
2022	28,792,570	28,546,691
2023	34,284,228	35,032,100
2024 Forecast	-	33,920,392
2025 Forecast	-	34,244,754

It is important to note that this class had six customer accounts in 2014 and most of 2015, followed by some fluctuations in 2018 to 2018 until it reached 4 customers in 2019. There have been 4 customers in this class from 2019 to 2023, so EPLC expects the count to remain at 4 through 2025.

3.7.5 Street Light, Sentinel Light and USL

Table 3-25: Street Light Consumption Forecast

Year	Actual A	Devices B	Average/Device C= A/B	Normalized D= C*B
2014	6,286,758	2,713	2,317	6,286,758
2015	6,227,064	2,701	2,305	6,227,064
2016	4,268,689	2,720	1,569	4,268,689
2017	2,875,901	2,753	1,045	2,875,901
2018	2,887,551	2,761	1,046	2,887,551
2019	2,576,355	2,770	930	2,576,355
2020	2,455,697	2,777	884	2,455,697
2021	2,444,025	2,785	878	2,444,025
2022	2,406,027	2,793	861	2,406,027
2023	2,415,233	2,807	860	2,415,233
2024 Forecast	-	2,818	860	2,424,399
2025 Forecast	-	2,828	860	2,433,601

It is important to note that EPLC underwent a gradual LED conversion from 2015 to 2021, which saw a 62% reduction in consumption per device. The 2023 average consumption per device is used as the average consumption per device in 2024 and 2025.

Table 3-26: Sentinel Lighting Consumption Forecast

Year	Actual A	Devices B	Average/Device C= A/B	Normalized D= C*B
2014	350,518	172	2,038	350,518
2015	341,134	174	1,961	341,134
2016	335,758	181	1,855	335,758
2017	304,470	253	1,203	304,470
2018	293,755	243	1,209	293,755
2019	285,985	235	1,217	285,985
2020	281,018	228	1,233	281,018
2021	278,297	228	1,221	278,297
2022	271,670	227	1,197	271,670
2023	269,986	222	1,216	269,986
2024 Forecast	-	219	1,216	266,130
2025 Forecast	-	216	1,216	262,328

Consumption per Sentinel Lighting device declined in the 2014 to 2017 period, though not to the same extent as Street Lights. The 2023 average consumption per device was used as the average consumption per device in 2024 and 2025.

Table 3-27: USL Consumption Forecast

Year	Actual A	Conn. B	Average/ Connection C= A/B	Normal Forecast D= C*B
2014	1,555,546	140	11,111	1,555,546
2015	1,558,152	141	11,051	1,558,152
2016	1,554,368	139	11,183	1,554,368
2017	1,549,260	132	11,737	1,549,260
2018	1,547,236	131	11,811	1,547,236
2019	1,541,978	130	11,861	1,541,978
2020	1,442,699	126	11,450	1,442,699
2021	1,408,704	125	11,270	1,408,704
2022	1,408,704	125	11,270	1,408,704
2023	1,408,699	125	11,270	1,408,699
2024 Forecast	-	124	11,270	1,396,074
2025 Forecast	-	123	11,270	1,383,562

The number of USL devices has decreased slightly over the past 10 years and this trend is forecast to continue to 2025.

3.8 Customer/ Connection Forecast by Rate Class

The customer/connection forecast is based on reviewing historical customer/connection data that is available as shown in the following table.

Table 3-28: Historical Customer/ Connection Data

Rate Class Year	Residential	GS<50	GS>50	Street Light	Sentinel Light	USL	(HONI) ED	Total
2014	26,590	1,910	212	2,713	172	140	6	31,743
2015	26,815	1,936	212	2,701	174	141	6	31,985
2016	26,920	1,934	255	2,720	181	139	3	32,152
2017	27,321	1,966	250	2,753	253	132	4	32,679
2018	27,640	1,979	249	2,761	243	131	5	33,008
2019	27,932	1,996	262	2,770	235	130	4	33,329
2020	28,265	2,018	256	2,777	228	126	4	33,675
2021	28,512	2,040	234	2,785	228	125	4	33,927
2022	28,745	2,065	210	2,793	227	125	4	34,170
2023	28,912	2,062	230	2,807	222	125	4	34,362

From the historical data, the percent of prior year was calculated and evaluated. The table can be found below:

Table 3-29: Growth of Customer/ Connections

	Residential		GS<50		GS>50		Street Light		Sentinel Light		USL		(HONI) ED		
Rate Class Year	Customers	Percent of Prior Year	Customers	Percent of Prior Year	Customers	Percent of Prior Year	Customers	Percent of Prior Year	Customers	Percent of Prior Year	Customers	Percent of Prior Year	Customers	Percent of Prior Year	Total
2014	26,590		1,910		212		2,713		172		140		6		31,743
2015	26,815	100.85%	1,936	101.36%	212	99.84%	2,701	99.55%	174	100.97%	141	100.83%	6	94.44%	31,991
2016	26,920	100.39%	1,934	99.89%	255	120.00%	2,720	100.71%	181	104.02%	139	98.64%	3	52.94%	32,158
2017	27,321	101.49%	1,966	101.66%	250	98.23%	2,753	101.23%	253	140.01%	132	94.91%	4	136.11%	32,685
2018	27,640	101.17%	1,979	100.67%	249	99.70%	2,761	100.27%	243	95.73%	131	99.31%	5	116.33%	33,014
2019	27,932	101.05%	1,996	100.88%	262	104.91%	2,770	100.33%	235	97.05%	130	98.86%	4	84.21%	33,335
2020	28,265	101.19%	2,018	101.08%	256	98.02%	2,777	100.26%	228	96.88%	126	97.11%	4	100.00%	33,675
2021	28,512	100.87%	2,040	101.08%	234	91.38%	2,785	100.26%	228	99.96%	125	99.34%	4	100.00%	33,927
2022	28,745	100.82%	2,065	101.25%	210	89.68%	2,793	100.31%	227	99.42%	125	100.00%	4	100.00%	34,170
2023	28,912	100.58%	2,062	99.86%	230	109.64%	2,807	100.49%	222	98.05%	125	100.00%	4	100.00%	34,362

The customer count forecast uses the geometric mean for the annual growth from 2014 to 2023 to forecast the growth rate from 2023 to 2025. The forecast of each rate class is provided in the table below.

Table 3-30: Customer/Connection Forecast

Rate Class Year	Residential	GS<50	GS>50	Street Light	Sentinel Light	USL	(HONI) ED	Total
2024 Forecast	29,182	2,080	232	2,818	219	124	4	34,658
2025 Forecast	29,454	2,098	235	2,828	216	123	4	34,958

It is important to note that the Embedded Distributor rate class had six customer accounts in 2014 and most of 2015, followed by some fluctuations in 2016 to 2018 until it reached 4 customers in 2019. There have been 4 customers in the class from 2019 to 2023 so EPLC expects the count to remain at 4 through to 2025. In addition, the number of USL devices had decreased slightly over the past 10 years and this trend is forecast to continue to 2025.

3.9 Billed kW Load Forecast

A summary of the billing determinants for the 2025 forecast year is provided in the table below.

Table 3-31: Billing Determinant Summary

Rate Class	kWh	kW	Customers / Connections
Residential	284,634,106	-	29,454
General Service < 50 kW	70,835,308	-	2,098
General Service > 50 kW to 4999 kW	197,879,033	698,414	235
Unmetered Scattered Load	1,383,562	-	123
Sentinel Lighting	262,328	716	216
Street Lighting	2,433,601	7,372	2,828
Embedded Distributor	34,244,754	90,871	4
Total	591,672,692	797,374	34,958

As per the above summary, there are four classes that charge volumetric distribution on per kW basis. As a result, the energy forecast for these classes were converted to a kW basis for rate setting purposes. The forecast of kW for these classes is based on a review of the historical ratio of kW to kWh and applying the average ratio to the forecasted kWh to produce the required kW. The table below outlines the annual demand units by applicable rate class on actual and weather normal basis.

Table 3-32: Historical Annual kW per Applicable Rate Class

Rate Class Year	GS>50	Streetlight	Sentinel Light	(HONI) ED	Total
2014	400,144	15,873	876	84,453	501,346
2015	463,529	18,022	878	106,797	589,226
2016	476,120	13,492	868	87,829	578,309
2017	499,500	8,732	852	87,518	596,602
2018	536,823	8,746	815	96,861	643,245
2019	592,797	7,846	781	94,142	695,566
2020	580,474	7,413	767	92,507	681,161
2021	574,683	7,398	759	89,242	672,082
2022	592,472	7,289	744	83,614	684,119
2023	566,315	7,310	736	90,976	665,337
2024 Forecast	629,123	7,345	727	90,011	727,206
2025 Forecast	736,070	7,372	716	90,871	835,029

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 following table illustrates the historical ratio of kW/kWh for the four rate classes:

Table 3-33: Historical kW/kWh Ratio

Rate Class Year	GS>50	Streetlight	Sentinel Light	(HONI) ED
2014	0.002393	0.002525	0.002499	0.002219
2015	0.002695	0.002894	0.002574	0.002763
2016	0.002546	0.003161	0.002585	0.002695
2017	0.003000	0.003036	0.002798	0.002619
2018	0.003138	0.003029	0.002774	0.003034
2019	0.003277	0.003045	0.002731	0.002727
2020	0.003385	0.003019	0.002729	0.003169
2021	0.003220	0.003027	0.002727	0.003179
2022	0.003223	0.003029	0.002739	0.002393
2023	0.003088	0.003027	0.002727	0.002393

The ratio for GS>50kW rate class was calculated as the 5-year average kW/kWh ratio from 2019 to 2023. A 10-year average was considered, however, the kW/kWh ratio changed materially from 2014 to 2016 period to the 2019 to 2023 period. From 2014 to 2023, class consumption increased by 10% and billed demands increased by 42%. Over the shorter 5-year time period, consumption increased by 1% and billed demands declined by 4%. This narrower divergence in the 5-year time frame is used because it better reflects recent ratios. Additionally, the 10-year average would produce a ratio that is lower than any year since 2016.

For the Sentinel Light rate class, the 5-year average kW/kWh ratio from 2019 to 2023 was used because the ratio has changed over 10 years, so a shorter time frame was used. The ratio increased from 0.002499 in 2014 to 0.002727 in 2023 and the 5-year average is more aligned with recent ratios. The ratio for Embedded Distributor class has fluctuated significantly over the last ten years.

The following table illustrates the forecasted ratio of kW/kWh for the four rate classes:

Table 3-34: Forecasted kW/kWh Ratio

Rate Class Year	GS>50	Streetlight	Sentinel Light	(HONI) ED
2024	0.003239	0.003029	0.002731	0.002654
2025	0.003239	0.003029	0.002731	0.002654

3.10 Accuracy of Load Forecast and Variance Analysis

This section provides a year-over-year variance analysis for consumption and demand. Customer counts are annual averages of monthly counts, and kW figures are forecast by applying a historic kW/kWh ratio to forecast kWh figures. EPLC's last rebasing application was for a 2018 test year (EB-2017-0039).

The below tables summarize the total billed kWh and customer/connection count including the percent change from year to year:

Table 3-35: Summary of Load and Customer/Connection Forecast

Year	kWh	kW	Customers/Connections
2014 Actual	524,282,540	501,346	31,743
2015 Actual	528,846,741	589,226	31,985
2016 Actual	547,976,680	578,309	32,152
2017 Actual	510,008,253	596,602	32,679
2018 Actual	534,037,354	643,245	33,008
2019 Actual	537,717,443	695,566	33,329
2020 Actual	537,551,493	681,161	33,675
2021 Actual	550,090,417	672,082	33,927
2022 Actual	556,914,990	684,119	34,170
2023 Actual	544,092,891	665,337	34,362
2024 Forecast	574,781,784	727,205	34,658
2025 Forecast	606,780,879	835,030	34,958

Table 3-36: Summary and Year Over Year Change of Load and Customer/Connection Forecast

Year	Billed kWh	kWh Change	% Change	Customer/ Connection Count	Change	% Change
2014 Actual	524,282,540	-	0.00%	31743	0	0.00%
2015 Actual	528,846,741	4,564,201	0.87%	31985	242	0.76%
2016 Actual	547,976,680	19,129,939	3.62%	32152	167	0.52%
2017 Actual	510,008,253	(37,968,427)	-6.93%	32679	527	1.64%
2018 Actual	534,037,354	24,029,101	4.71%	33008	329	1.01%
2019 Actual	537,717,443	3,680,089	0.69%	33329	321	0.97%
2020 Actual	537,551,493	(165,950)	-0.03%	33675	346	1.04%
2021 Actual	550,090,417	12,538,924	2.33%	33927	252	0.75%
2022 Actual	556,914,990	6,824,573	1.24%	34170	243	0.72%
2023 Actual	544,092,891	(12,822,099)	-2.30%	34362	192	0.56%

2024 Forecast	574,781,784	30,688,893	5.64%	34658	296	0.86%
2025 Forecast	606,780,880	31,999,096	5.57%	34958	300	0.87%

EPLC's consumption increased by 1.9% since 2018, or 0.37% per year. The decline in consumption in 2023 was primarily due to mild winter temperatures. On a weather-normalized basis, consumption increased by 7.8% from 2018 to 2023. The consumption growth rate is forecast to increase to 3.6% per year in 2024 and 2025 due to forecast return to average weather from 2023 mild weather, increased electrification (EVs and heat pumps), and increased greenhouse loads.

Table 3-37: EPLC's 2018 Board Approved vs. 2018 Actual

	Customers/Connections			Volumes			
Rate Class	2018 Approved	2018 Actual	Diff.	2018 Approved	2018 Actual	kWh/kW	Volumetric Difference
Residential	27,784	27,640	(144)	234,935,416	259,974,120	kWh	25,038,704
General Service < 50 kW	1,997	1,979	(18)	64,810,159	66,321,666	kWh	1,511,507
General Service > 50 kW to 4999 kW	217	249	32	448,468	536,823	kW	88,355
Unmetered Scattered Load	141	131	(10)	1,554,368	1,547,236	kWh	(7,132)
Sentinel Lighting	173	243	70	2,080	815	kW	(1,265)
Street Lighting	2,758	2,761	3	7,877	8,746	kW	869
Embedded Distributor	3	5	2	80,869	96,861	kW	15,992
Total	33,073	33,008	(65)	301,839,237	328,486,267		

Table 3-38: EPLC's 2018 Board Approved vs. 2018 Normalized

	Customers/Connections			Volumes			
Rate Class	2018 Approved	2018 Normal	Diff.	2018 Approved	2018 Normal	kW/kWh	Variance
Residential	27,784	27,640	(144)	234,935,416	253,817,576	kWh	18,882,160
General Service < 50 kW	1,997	1,979	(18)	64,810,159	65,099,302	kWh	289,143
General Service > 50 kW to 4999 kW	217	249	32	448,468	571,213	kW	122,745
Unmetered Scattered Load	141	131	(10)	1,554,368	1,541,978	kWh	(12,390)
Sentinel Lighting	173	243	70	2,080	815	kW	(1,265)
Street Lighting	2,758	2,761	3	7,877	8,746	kW	869
Embedded Distributor	3	5	2	80,869	83,333	kW	2,464

Total	33,073	33,008	(65)	301,839,237	321,122,963		

Variances between the 2018 Approved and 2018 Actuals are a result of EPLC's 2018 load forecast model. Intermediate customers were reclassified to General Service >50kW, and new Embedded Distributors had fluctuation in 2016 to 2018, reaching 5 customers in 2018, and then finally 4 in 2019. Variances are primarily due to weather differences, reflected in the small variances in weather normalized volumes. Heating degree days were 3.3% higher than anticipated (3,554 in 2018 Actual vs. 3,442 in 2018 Approved), and cooling degree days were 6.4% lower than anticipated (407 in 2018 Actual vs. 435 in 208 Approved).

Table 3-39: EPLC's 2018 Actual vs. 2019 Actual

	Customers/Connections			Volumes			Volumetric Difference
Rate Class	2018 Actual	2019 Actual	Diff.	2018 Actual	2019 Actual	kWh/kW	
Residential	27,640	27,932	292	259,974,120	252,809,094	kWh	(7,165,026)
General Service < 50 kW	1,979	1,996	17	66,321,666	65,058,987	kWh	(1,262,679)
General Service > 50 kW to 4999 kW	249	262	13	536,823	592,797	kW	55,974
Unmetered Scattered Load	131	130	(1)	1,547,236	1,541,978	kWh	(5,258)
Sentinel Lighting	243	235	(8)	815	781	kW	(34)
Street Lighting	2,761	2,770	9	8,746	7,846	kW	(900)
Embedded Distributor	5	4	(1)	96,861	94,142	kW	(2,719)
Total	33,008	33,329	321	328,486,267	320,105,625		

Table 3-40: EPLC's 2018 Normalized vs. 2019 Normalized

	Customers/Connections			Volumes			Variance
Rate Class	2018 Normal	2019 Normal	Variance	2018 Normal	2019 Normal	kW/kWh	
Residential	27,640	27,932	292	250,201,729	253,817,576	kWh	3,615,847
General Service < 50 kW	1,979	1,996	17	65,037,516	65,099,302	kWh	61,786
General Service > 50 kW to 4999 kW	249	262	13	571,213	582,314	kW	11,101
Unmetered Scattered Load	131	130	(1)	1,547,236	1,541,978	kWh	(5,258)
Sentinel Lighting	243	235	(8)	815	781	kW	(34)

Street Lighting	2,761	2,770	9	8,746	7,846	kW	(900)
Embedded Distributor	5	4	(1)	83,333	84,974	kW	1,641
Total	33,008	33,329	321	321,122,963	321,134,771		

Variances between 2018 Actual and 2019 Actual are primarily due to weather differences between weather normal volumes. There was a small variance in heating degree days, with a variance of -0.8% in 2019 compared to 2018 (3,526 HDD in 2019 vs. 3,554 HDD in 2018). In 2019, higher cooling loads were experienced in comparison to 2018, with a variance of 40.4% (572 CDD in 2019 vs. 407 CDD in 2018).

Table 3-41: EPLC's 2019 Actual vs. 2020 Actual

	Customers/Connections			Volumes			
Rate Class	**2019 Actual**	**2020 Actual**	**Diff.**	**2019 Actual**	**2020 Actual**	**kWh/kW**	**Volumetric Difference**
Residential	27,932	28,265	333	252,809,094	271,898,869	kWh	19,089,775
General Service < 50 kW	1,996	2,018	22	65,058,987	60,802,781	kWh	(4,256,206)
General Service > 50 kW to 4999 kW	262	256	(6)	592,797	580,474	kW	(12,323)
Unmetered Scattered Load	130	126	(4)	1,541,978	1,442,699	kWh	(99,279)
Sentinel Lighting	235	228	(7)	781	767	kW	(14)
Street Lighting	2,770	2,777	7	7,846	7,413	kW	(433)
Embedded Distributor	4	4	-	94,142	92,507	kW	(1,635)
Total	33,329	33,674	345	320,105,625	334,825,510		

Table 3-42: EPLC's 2019 Normalized vs. 2020 Normalized

	Customers/Connections			Volumes			
Rate Class	**2019 Normal**	**2020 Normal**	**Variance**	**2019 Normal**	**2020 Normal**	**kW/kWh**	**Variance**
Residential	27,932	28,265	333	253,817,576	271,546,499	kWh	17,728,923
General Service < 50 kW	1,996	2,018	22	65,099,302	61,089,351	kWh	(4,009,951)
General Service > 50 kW to 4999 kW	262	256	(6)	582,314	558,880	kW	(23,434)

Unmetered Scattered Load	130	126	(4)	1,541,978	1,442,699	kWh	(99,279)
Sentinel Lighting	235	228	(7)	781	767	kW	(14)
Street Lighting	2,770	2,777	7	7,846	7,413	kW	(433)
Embedded Distributor	4	4	-	84,974	80,073	kW	(4,901)
Total	33,329	33,674	345	321,134,771	334,725,682		

Variances between 2019 and 2020 actual volumes are primarily due to weather differences between weather normal volumes. Overall, volumes decreased due to weather variations. Heating degree days were 8.1% lower in 2020 than in 2019 (3,240 HDD in 2020 vs. 3526HDD in 2019). Additionally, lower cooling loads were experienced in 2020 with a -22.4% variance compared to 2019 (443.7 CDD in 2020 vs. 571.8 CDD in 2019). Volumetric differences were also affected by the COVID-19 pandemic, as residential consumption increased by 7.6%, while GS<50kW consumption declined by 6.5% and GS>50kW declined by 2.1%.

Table 3-43: EPLC's 2020 Actual vs. 2021 Actual

	Customers/Connections			Volumes			
Rate Class	2020 Actual	2021 Actual	Diff.	2020 Actual	2021 Actual	kWh/ kW	Volumetric Difference
Residential	28,265	28,512	247	271,898,869	277,378,582	kWh	5,479,713
General Service < 50 kW	2,018	2,040	22	60,802,781	62,043,606	kWh	1,240,825
General Service > 50 kW to 4999 kW	256	234	(22)	580,474	574,683	kW	(5,791)
Unmetered Scattered Load	126	125	(1)	1,442,699	1,408,704	kWh	(33,995)
Sentinel Lighting	228	228	-	767	759	kW	(8)
Street Lighting	2,777	2,785	8	7,413	7,398	kW	(15)
Embedded Distributor	4	4	-	92,507	89,242	kW	(3,265)
Total	33,674	33,928	254	334,825,510	341,502,974		

Table 3-44: EPLC's 2020 Normalized vs. 2021 Normalized

	Customers/Connections			Volumes			
Rate Class	2020 Normal	2021 Normal	Variance	2020 Normal	2021 Normal	kW/kWh	Variance

Residential	28,265	28,512	247	271,546,499	271,185,536	kWh	(360,963)
General Service < 50 kW	2,018	2,040	22	61,089,351	61,525,759	kWh	436,408
General Service > 50 kW to 4999 kW	256	234	(22)	558,880	580,628	kW	21,748
Unmetered Scattered Load	126	125	(1)	1,442,699	1,408,704	kWh	(33,995)
Sentinel Lighting	228	228	-	767	759	kW	(8)
Street Lighting	2,777	2,785	8	7,413	7,398	kW	(15)
Embedded Distributor	4	4	-	80,073	83,048	kW	2,975
Total	33,674	33,928	254	334,725,682	334,791,832		

Variances between 2021 actual and 2020 actual volumes are primarily due to weather differences between weather normal volumes. Heating degree days were slightly below in 2021 at -3.2% compared to 2020 (3,135HDD in 2021 vs. 3240HDD in 2020), and cooling degree days were 10.9% higher in 2021 than in 2020 (492CDD in 2021 vs. 443CDD in 2020). The COVID-19 pandemic contributed to variances between 2021 and 2020, however, variances were modest in comparison to previous years.

Table 3-45: EPLC's 2021 Actual vs. 2022 Actual

	Customers/Connections			Volumes			Volumetric Difference
Rate Class	2021 Actual	2022 Actual	Diff.	2021 Actual	2022 Actual	kWh/kW	
Residential	28,512	28,745	233	277,378,582	272,607,146	kWh	(4,771,436)
General Service < 50 kW	2,040	2,065	25	62,043,606	67,628,825	kWh	5,585,219
General Service > 50 kW to 4999 kW	234	210	(24)	574,683	592,472	kW	17,789
Unmetered Scattered Load	125	125	-	1,408,704	1,408,704	kWh	-
Sentinel Lighting	228	227	(1)	759	744	kW	(15)
Street Lighting	2,785	2,793	8	7,398	7,289	kW	(109)
Embedded Distributor	4	4	-	89,242	83,614	kW	(5,628)
Total	33,928	34,169	241	341,502,974	342,328,794		

Table 3-46: EPLC's 2021 Normalized vs. 2022 Normalized

	Customers/Connections			Volumes			Variance
Rate Class	2021 Normal	2022 Normal	Variance	2021 Normal	2022 Normal	kW/kWh	
Residential	28,512	28,745	233	271,185,536	268,827,723	kWh	(2,357,813)
General Service < 50 kW	2,040	2,065	25	61,525,759	67,163,897	kWh	5,638,138
General Service > 50 kW to 4999 kW	234	210	(24)	580,628	597,237	kW	16,609
Unmetered Scattered Load	125	125	-	1,408,704	1,408,704	kWh	-
Sentinel Lighting	228	227	(1)	759	744	kW	(15)
Street Lighting	2,785	2,793	8	7,398	7,289	kW	(109)
Embedded Distributor	4	4	-	83,048	85,751	kW	2,703
Total	33,928	34,169	241	334,791,832	338,091,345		

Variances in 2022 compared to 2021 reflect the easing of COVID-19 impacts on General Service rate classes. GS<50kW increased by 9%, while GS>50kW increased by 3.1%. Additionally, heating degree days were 10.2% higher in 2022 compared to 2021 (3454HDD in 2022 vs. 3135HDD in 2021) and cooling degree days were 10.7% higher in 2022 compared to 2021 (544.7CDD in 2022 vs. 492.1CDD in 2021).

Table 3-47: EPLC's 2022 Actual vs. 2023 Actual

	Customers/Connections			Volumes			Volumetric Difference
Rate Class	2022 Actual	2023 Actual	Diff.	2022 Actual	2023 Actual	kWh/kW	
Residential	28,745	28,912	167	272,607,146	259,000,634	kWh	(13,606,512)
General Service < 50 kW	2,065	2,062	(3)	67,628,825	63,293,408	kWh	(4,335,417)
General Service > 50 kW to 4999 kW	210	230	20	592,472	566,315	kW	(26,157)
Unmetered Scattered Load	125	125	-	1,408,704	1,408,699	kWh	(5)
Sentinel Lighting	227	222	(5)	744	736	kW	(8)
Street Lighting	2,793	2,807	14	7,289	7,310	kW	21
Embedded Distributor	4	4	-	83,614	90,976	kW	7,362

Total	34,169	34,362	193	342,328,794	324,368,078		

Table 3-48: EPLC's 2022 Normalized vs. 2023 Normalized

	Customers/Connections			Volumes			Variance
Rate Class	**2022 Normal**	**2023 Normal**	**Variance**	**2022 Normal**	**2023 Normal**	**kW/kWh**	
Residential	28,745	28,912	167	268,827,723	269,739,537	kWh	911,814
General Service < 50 kW	2,065	2,062	(3)	67,163,897	64,726,430	kWh	(2,437,467)
General Service > 50 kW to 4999 kW	210	230	20	597,237	597,465	kW	228
Unmetered Scattered Load	125	125	-	1,408,704	1,408,699	kWh	(5)
Sentinel Lighting	227	222	(5)	744	736	kW	(8)
Street Lighting	2,793	2,807	14	7,289	7,310	kW	21
Embedded Distributor	4	4	-	85,751	89,527	kW	3,776
Total	34,169	34,362	193	338,091,345	336,569,704		

Variances between 2022 actual and 2023 actual volumes are primarily due to weather differences in weather normalized volumes. Volumes were lower due to decreases in heating and cooling loads. Heating degree days were 13.7% lower in 2023 than in 2022 (2980HDD in 2023 vs. 3454HDD in 2022). Cooling degree days have a variance of -10.2% when comparing 2023 to 2022 (489CDD in 2023 vs. 544CDD in 2022).

Table 3-49: EPLC's 2023 Actual vs. 2024 Forecast

	Customers/Connections			Volumes			Volumetric Difference
Rate Class	**2023 Actual**	**2024 Forecast**	**Diff.**	**2023 Actual**	**2024 Forecast**	**kWh/kW**	
Residential	28,912	29,182	270	259,000,634	276,419,092	kWh	17,418,458
General Service < 50 kW	2,062	2,080	18	63,293,408	68,390,381	kWh	5,096,973
General Service > 50	230	232	2	566,315	598,591	kW	32,276

kW to 4999 kW							
Unmetered Scattered Load	125	124	(1)	1,408,699	1,396,074	kWh	(12,625)
Sentinel Lighting	222	219	(3)	736	727	kW	(9)
Street Lighting	2,807	2,818	11	7,310	7,345	kW	35
Embedded Distributor	4	4	-	90,976	90,011	kW	(965)
Total	34,362	34,659	297	324,368,078	346,902,221		

Table 3-50: EPLC's 2023 Normalized vs. 2024 Forecast

	Customers/Connections			Volumes			
Rate Class	2023 Normal	2024 Forecast	Variance	2023 Normal	2024 Forecast	kW/kWh	Variance
Residential	28,912	29,182	270	269,739,537	272,794,824	kWh	3,055,287
General Service < 50 kW	2,062	2,080	18	64,726,430	68,431,927	kWh	3,705,497
General Service > 50 kW to 4999 kW	230	232	2	597,465	598,591	kW	1,126
Unmetered Scattered Load	125	124	(1)	1,408,699	1,396,074	kWh	(12,625)
Sentinel Lighting	222	219	(3)	736	727	kW	(9)
Street Lighting	2,807	2,818	11	7,310	7,345	kW	35
Embedded Distributor	4	4	-	89,527	90,011	kW	484
Total	34,362	34,659	297	336,569,704	343,319,499		

Variances between 2023 and the 2024 Bridge year forecast reflect the anticipated increase in electrification (EVs, heat pumps, etc.). Residential consumption is forecast to increase by 6.7%, while GS<50kW is forecast to increase by 8.1% and GS>50kW is forecast to increase by 5.7%. The increase in GS<50kW and GS>50kW is partly due to known expansions within EPLC's service territory that are planned for 2024 and 2025. The expansions are in Leamington and Amherstburg and are related to greenhouse expansions. Normalized heating degree days used as 2024 weather are 12.8% higher than in 2023 (3362.6HDD in 2024 Bridge Year vs. 2980.6HDD in 2023). Cooling degree days have a variance of -5.8%

when comparing 2024 Bridge Year to 2023 (460.6CDD in 2024 Bridge Year vs. 489CDD in 2023). Customer count growth reflects geometric mean growth rates as described in section 3.8.

Table 3-51: EPLC's 2024 Forecast vs. 2025 Forecast

	Customers/Connections			Volumes			
Rate Class	2024 Forecast	2025 Forecast	Diff.	2024 Forecast	2025 Forecast	kWh/kW	Volumetric Difference
Residential	29,182	29,454	272	276,419,092	284,634,106	kWh	8,215,014
General Service < 50 kW	2,080	2,098	18	68,390,381	70,835,308	kWh	2,444,927
General Service > 50 kW to 4999 kW	232	235	3	598,591	698,414	kW	99,823
Unmetered Scattered Load	124	123	(1)	1,396,074	1,383,562	kWh	(12,512)
Sentinel Lighting	219	216	(3)	727	716	kW	(11)
Street Lighting	2,818	2,828	10	7,345	7,372	kW	27
Embedded Distributor	4	4	-	90,011	90,871	kW	860
Total	34,659	34,958	299	346,902,221	357,650,349		

Table 3-52: EPLC's 2024 Normalized Forecast vs. 2025 Normalized Forecast

	Customers/Connections			Volumes			
Rate Class	2024 Forecast	2025 Forecast	Variance	2024 Forecast	2025 Forecast	kW/kWh	Variance
Residential	29,182	29,454	272	272,794,824	275,370,197	kWh	2,575,373
General Service < 50 kW	2,080	2,098	18	68,431,927	70,574,391	kWh	2,142,464
General Service > 50 kW to 4999 kW	232	235	3	598,591	698,414	kW	99,823
Unmetered Scattered Load	124	123	(1)	1,396,074	1,383,562	kWh	(12,512)
Sentinel Lighting	219	216	(3)	727	716	kW	(11)
Street Lighting	2,818	2,828	10	7,345	7,372	kW	27
Embedded Distributor	4	4	-	90,011	90,871	kW	860
Total	34,659	34,958	299	343,319,499	348,125,523		

Variances between the 2024 Bridge Year forecast and 2025 Test Year forecast reflect the results of the load forecast with normalized weather. Residential consumption is forecast to increase by 3% due to increased electrification (EVs, electric heat pumps, etc.), while GS<50kW is forecast to increase by 3.6% and GS>50kW is forecast to increase by 16.7%. The large increase in GS>50kW is due to known customer expansions within EPLC’s service territory. The expansions are in Leamington and Amherstburg and are related to greenhouse expansions. Normalized heating and cooling degree days are the same in the 2024 and 2025 forecasts, so no variances are weather-related. Customer count growth reflects geometric mean growth rates, as described in section 3.8.

ATTACHMENTS

Attachment 3-A

Weather Normalized Distribution System Load Forecast: 2025 Cost of Service

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:
Essex Powerlines Corp.

25 March 2024

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Table of Contents

List of Tables

List of Figures

1 INTRODUCTION

This report outlines the results of, and methodology used to derive, the weather normal load forecast prepared for Essex Powerlines Corporation ("EPL") for its Cost of Service application for 2025 rates.

The regression equations used to normalize and forecast EPL's weather sensitive load use monthly heating degree days and cooling degree days as measured at Environment Canada's Windsor Airport[1] weather station to take into account temperature sensitivity. EPL typically experiences relatively large cooling load in the summer and smaller heating loads in the winter so its peak load is generally in the summer. 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 EPL'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 Windsor and Ontario, as reported in Statistics Canada's Monthly Labour Force Survey[2] are considered. Economic data for the four communities in EPL's service territory (Amherstburg, LaSalle, Leamington, and Tecumseh) is

[1] "Windsor A" operated by NAVCAN, Latitude:42°16'34" N, Longitude:82°57'19" W, Elevation:189.60 m

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

unavailable from Statistics Canada so Windsor is used as a proxy as it is the closest economic region with data available. Ontario GDP is available from Ontario Economic Accounts[3] on a quarterly basis and Overall GDP is available from Statistics Canada on an annual basis.[4] The GDP of specific industries relevant to Windsor's service territories are also considered.

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, GS > 50 kW, and Embedded Distributor 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 thereafter. 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.

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[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).

- 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 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 has been found to be related to the weather variables in those months for certain classes, particularly the Residential class. A set of COVID/weather interaction variables were considered to capture the incremental consumption caused by people staying at home due to lockdowns and from the increase in people working from home, which has persisted after the prevalence of direct COVID impacts have subsided.

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.

COVID variables were tested for each of the Residential, General Service < 50 kW, General Service > 50 kW, and Embedded Distributor rate classes. The COVID/weather interaction variables related to the “work from home” variable (CWFH HDD and CWFH CDD) was found to be statistically significant and is used for the Residential class. The COVID variables were not found to be statistically significant for the General Service < 50 kW, General Service > 50 kW, or Embedded Distributor rate classes.[6]

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.

[6] The COVID variables were statistically significant in some models that were tested that did not include economic variables.

1.1 SUMMARIZED RESULTS

The following table summarizes the historic and forecast kWh for 2018 to 2025:

Normal Forecast

kWh	2018 Actual	2019 Actual	2020 Actual	2021 Actual	2022 Actual	2023 Actual	*2023 Normal*	2024 Forecast	2025 Forecast
Residential	259,974,120	252,809,094	271,898,869	277,378,582	272,607,146	259,000,634	*268,851,807*	276,979,656	285,939,528
GS < 50	66,321,666	65,058,987	60,802,781	62,043,606	67,628,825	63,293,408	*66,803,652*	69,484,720	73,307,166
GS > 50	171,089,785	180,918,659	171,481,742	178,461,520	183,800,048	183,420,703	*184,484,595*	190,310,413	209,209,941
Embedded Distributor	31,923,241	34,526,385	29,188,687	28,075,683	28,792,570	34,284,228	*33,738,157*	33,920,392	34,244,754
Street Light	2,887,551	2,576,355	2,455,697	2,444,025	2,406,027	2,415,233	*2,415,233*	2,424,399	2,433,601
Sentinel Light	293,755	285,985	281,018	278,297	271,670	269,986	*269,986*	266,130	262,328
USL	1,547,236	1,541,978	1,442,699	1,408,704	1,408,704	1,408,699	*1,408,699*	1,396,074	1,383,562
Total	534,037,354	537,717,443	537,551,493	550,090,417	556,914,990	544,092,891	*557,972,130*	574,781,784	606,780,879

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	285,939,528	1,305,422	284,634,106
GS < 50	73,307,166	2,471,857	70,835,308
GS > 50	209,209,941	11,330,908	197,879,033
Embedded Distributor	34,244,754	0	34,244,754
Street Light	2,433,601	0	2,433,601
Sentinel Light	262,328	0	262,328
USL	1,383,562	0	1,383,562
Total	606,780,879	15,108,188	591,672,692

Table 2 CDM Adjusted kWh Forecast

The following table summarizes the historic and forecast kW for 2018 to 2025:

Normal Forecast

kW	2018 Actual	2019 Actual	2020 Actual	2021 Actual	2022 Actual	2023 Actual	*2023 Normal*	2024 Forecast	2025 Forecast
GS > 50	536,823	592,797	580,474	574,683	592,472	566,315	*597,465*	629,123	736,070
Embedded Distributor	96,861	94,142	92,507	89,242	83,614	90,976	*89,527*	90,011	90,871
Street Light	8,746	7,846	7,413	7,398	7,289	7,310	*7,317*	7,345	7,372
Sentinel Light	815	781	767	759	744	736	*737*	727	716
Total	643,245	695,566	681,161	672,082	684,119	665,337	*695,046*	727,205	835,030

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	736,070	37,655	698,414
Embedded Distributor	90,871	0	90,871
Street Light	7,372	0	7,372
Sentinel Light	716	0	716
Total	835,030	37,655	797,374

Table 4 CDM Adjusted kW Forecast

The following table summarizes the historic and forecast customer/connection counts for 2018 to 2025:

Customers / Connections

Count	2018 Actual	2019 Actual	2020 Actual	2021 Actual	2022 Actual	2023 Actual	2024 Forecast	2025 Forecast
Residential	27,640	27,932	28,265	28,512	28,745	28,912	29,182	29,454
GS < 50	1,979	1,996	2,018	2,040	2,065	2,062	2,080	2,098
GS > 50	249	262	256	234	210	230	232	235
Embedded Distributor	5	4	4	4	4	4	4	4
Street Light	2,761	2,770	2,777	2,785	2,793	2,807	2,818	2,828
Sentinel Light	243	235	228	228	227	222	219	216
USL	131	130	126	125	125	125	124	123
Total	33,008	33,329	33,675	33,927	34,170	34,362	34,658	34,958

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	284,634,106		29,454
GS < 50	70,835,308		2,098
GS > 50	197,879,033	698,414	235
Embedded Distributor	34,244,754	90,871	4
Street Light	2,433,601	7,372	2,828
Sentinel Light	262,328	716	216
USL	1,383,562		123
Total	**591,672,692**	**797,374**	**34,958**

Table 6 Billing Determinant Summary

1.2 LOAD FACTOR INFLUENCES

Table 7 below provides a summary of EPL Power'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
2018	534,037,354		5.7%	-11.6%	29,873	
2019	537,717,443	0.7%	4.9%	24.1%	30,194	1.1%
2020	537,551,493	0.0%	-3.6%	-3.7%	30,543	1.2%
2021	550,090,417	2.3%	-6.8%	6.8%	30,790	0.8%
2022	556,914,990	1.2%	2.7%	18.2%	31,025	0.8%
2023	544,092,891	-2.3%	-11.4%	6.2%	31,208	0.6%
Avg. Growth 2018-2023		***0.37%***			***0.88%***	
2024	567,648,658	4.3%	*0.0%*	*0.0%*	31,498	0.9%
2025	591,672,692	4.2%	*0.0%*	*0.0%*	31,791	0.9%
Avg. Growth 2018-2025		***1.47%***			***0.89%***	

Table 7 Load Influence Summary

EPL Power's consumption increased by 1.9% since 2018, or 0.37% per year. The decline in consumption in 2023 was primarily due to mild winter temperatures. On a weather-normalized basis, consumption increased by 7.8% from 2018 to 2023. The consumption growth rate is forecast to increase to 3.6% per year in 2024 and 2025 due to a forecast return to average weather from 2023 mild weather, increased electrification (EVs and heat pumps), and increased greenhouse loads.

Year	Residential				GS < 50, GS > 50, Embedded Distributor			
	Cust.	Cust. Growth %	kWh	kWh Growth %	Cust.	Cust. Growth %	kWh	kWh Growth %
2018	32,002		259,974,120		2,233		269,334,692	
2019	32,139	1.1%	252,809,094	-2.8%	2,262	1.3%	280,504,031	4.1%
2020	32,277	1.2%	271,898,869	7.6%	2,278	0.7%	261,473,210	-6.8%
2021	32,434	0.9%	277,378,582	2.0%	2,278	0.0%	268,580,809	2.7%
2022	32,605	0.8%	272,607,146	-1.7%	2,279	0.1%	280,221,443	4.3%
2023	32,755	0.6%	259,000,634	-5.0%	2,297	0.8%	280,998,339	0.3%
Avg. 2018-23		***0.90%***		***-0.08%***		***0.56%***		***0.85%***
2024	29,182	0.9%	276,419,092	6.7%	2,316	0.9%	287,142,963	2.2%
2025	29,454	0.9%	284,634,106	3.0%	2,336	0.9%	302,959,095	5.5%
Avg. 2018-25		***0.91%***		***1.30%***		***0.65%***		***1.69%***

Table 8 Residential and Commercial/Industrial Loads

2 CLASS SPECIFIC KWH REGRESSION

Consumption for the Residential, GS < 50, GS > 50, and Embedded Distributor 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 2014:01-2023:12. 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 16°C and 18°C and increases as average temperatures deviate from that range. HDD relative to 18°C and CDD relative to 16°C were found to provide the strongest results. HDD and CDD measures near 18°C and 16°C, respectively, were also considered but found to be less predictive of monthly consumption.

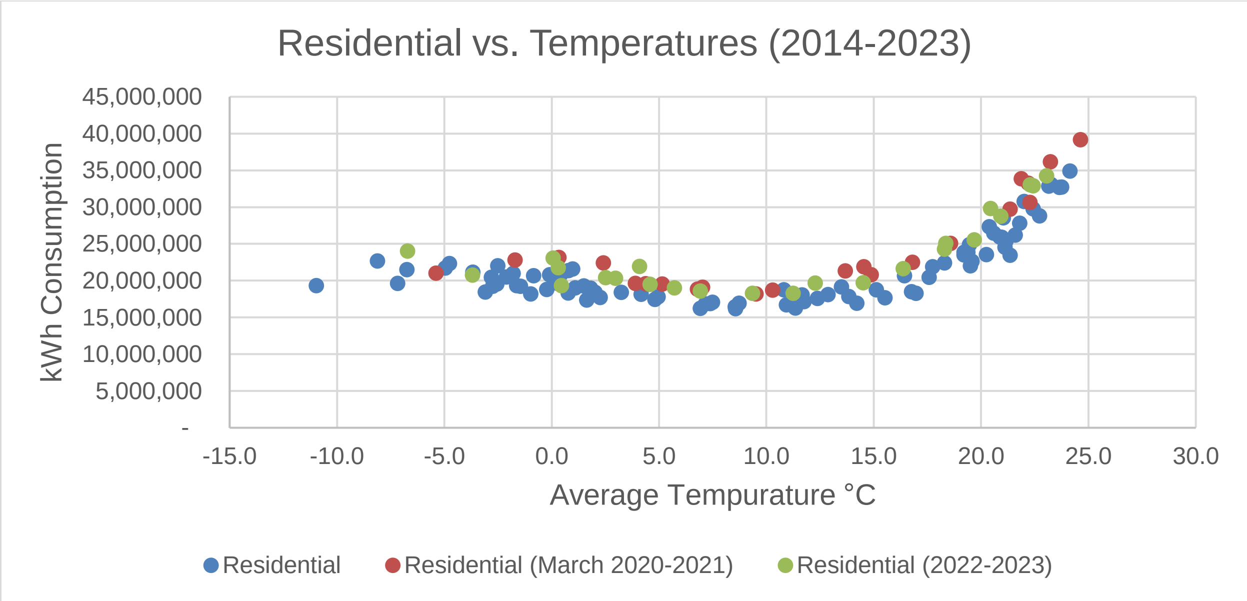

Figure 1 Residential kWh and Average Temperature

In addition to the HDD18 and CDD16 variables, the corresponding CWFH_HDD18 and CWFH_CDD16 variables were used and found to be statistically significant.

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

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

A time trend variable, equal to 1 in January 2014 and increasing by one in each month, was found to be statistically significant. A count of the number of calendar days in the month was also used.

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: ResKWh_NoCDM rho = 0.164919				
	coefficient	std. error	t-ratio	p-value
const	(7,179,192)	2,421,349	(2.9650)	0.00370
HDD18	7,099	563	12.6164	0.00000
CDD16	66,615	2,172	30.6747	0.00000
CWFH_HDD18	2,408	825	2.9189	0.00425
CWFH_CDD16	15,377.5	2,295.8	6.6981	0.00000
MonthDays	745,717	81,926	9.1024	0.00000
Shoulder	(1,713,931)	195,555	(8.7644)	0.00000
Trend	21,643	2,864.2	7.556	0.00000
Statistics based on the rho-differenced data				
Mean dependent var	22,403,541	S.D. dependent var	5,143,284	
Sum squared resid	6.00E+13	S.E. of regression	7.32E+05	
R-squared	9.81E-01	Adjusted R-squared	9.80E-01	
F(7, 112)	667.490	P-value(F)	0.0000	
rho	0.019	Durbin-Watson	1.9472	

Table 9 Residential Regression Model

Using the above model coefficients, we derive the following:

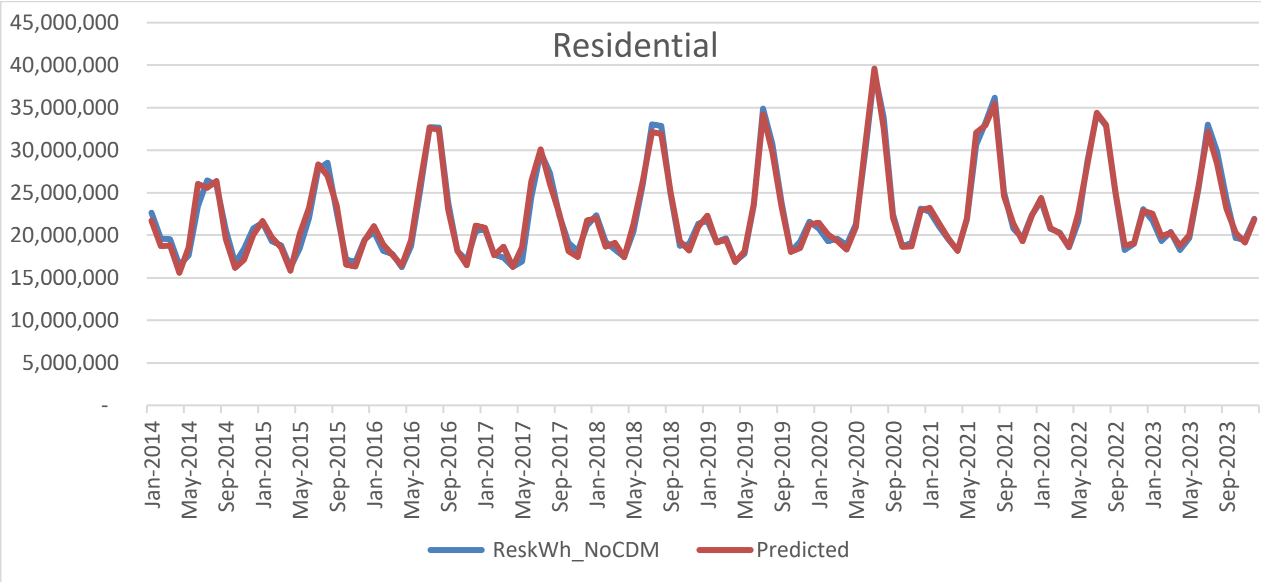

Figure 2 Residential Predicted vs Actual observations

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 0.7%. The MAPE calculated monthly over the period is 2.5%.

	Residential kWh		Absolute
Year	CDM Added Back	Predicted	Error (%)
2014	248,343,883	244,442,951	1.6%
2015	248,777,775	250,266,821	0.6%
2016	261,730,029	263,627,579	0.7%
2017	251,415,524	254,522,756	1.2%
2018	273,656,127	272,455,324	0.4%
2019	267,245,404	264,790,988	0.9%
2020	286,105,618	285,357,653	0.3%
2021	291,353,714	292,469,170	0.4%
2022	286,634,491	288,424,224	0.6%
2023	273,162,305	272,274,576	0.3%
Total	**2,688,424,869**	**2,688,632,043**	**0.0%**

Mean Absolute Percentage Error (Annual)	0.7%
Mean Absolute Percentage Error (Monthly)	2.5%

Table 10 Residential model error

2.2 GS < 50

For the GS < 50 class, the regression equation was estimated using 120 observations from 2014:01-2023:12. Consumption for this class is relatively stable when the average monthly temperature is between 18°C and 14°C and increases as average temperatures deviate from that range. HDD relative to 18°C and CDD relative to 14°C were found to provide the strongest results. HDD and CDD measures near 18°C and 14°C, respectively, were also considered but found to be less predictive of monthly consumption.

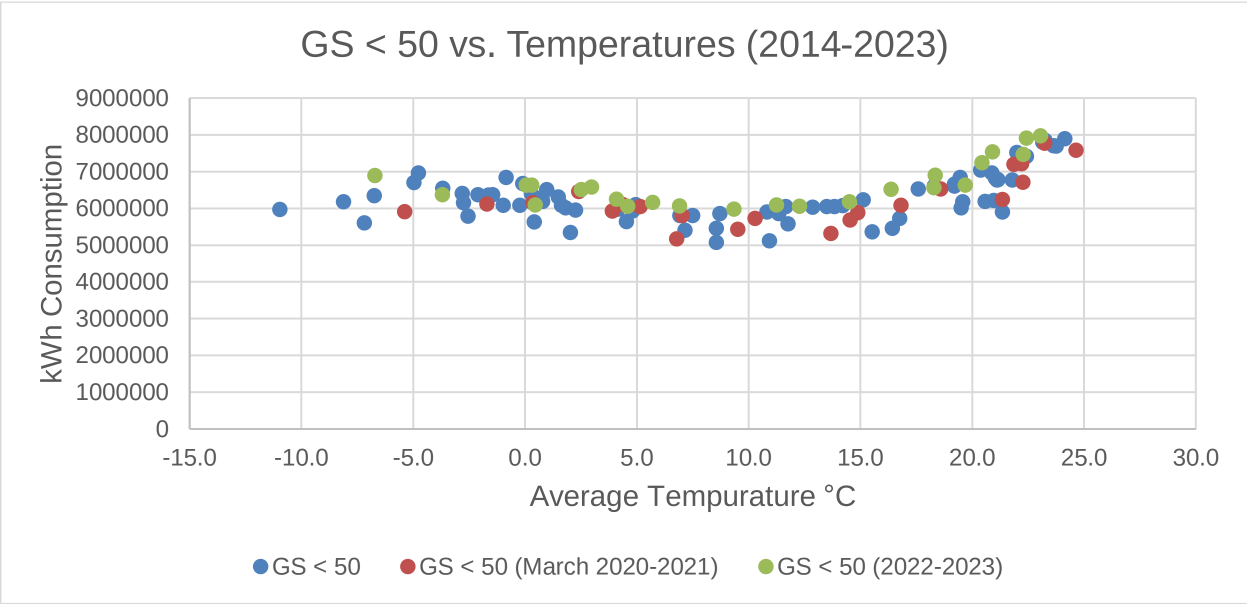

Figure 3 GS<50 kWh and Average Temperature

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.

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

The COVID variables were tested and found to have low statistical significance when the GDP variable was included. These variables are not used in the GS < 50 model.

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 1: Prais-Winsten, using observations 2014:01-2023:12 (T = 120) Dependent variable: GSlt50kWh_NoCDM rho = 0.71701				
	coefficient	std. error	t-ratio	p-value
const	(3,155,056)	795,991	(3.9637)	0.0001
HDD18	1,711	141	12.1424	0.0000
CDD14	7,408	361	20.5150	0.0000
Total_OEA	6	1	6.6597	0.0000
MonthDays	124,567.6	14,353.3	8.6787	0.0000
Shoulder	(115,215)	40,249	(2.8625)	0.0050
Statistics based on the rho-differenced data				
Mean dependent var	6,353,996	S.D. dependent var	650,494	
Sum squared resid	3.14E+12	S.E. of regression	1.66E+05	
R-squared	0.9397	Adjusted R-squared	0.9370	
F(5, 115)	239.993	P-value(F)	0.0000	
rho	(0.071)	Durbin-Watson	2.1327	

Table 11 GS < 50 Regression Model

Using the above model coefficients we derive the following:

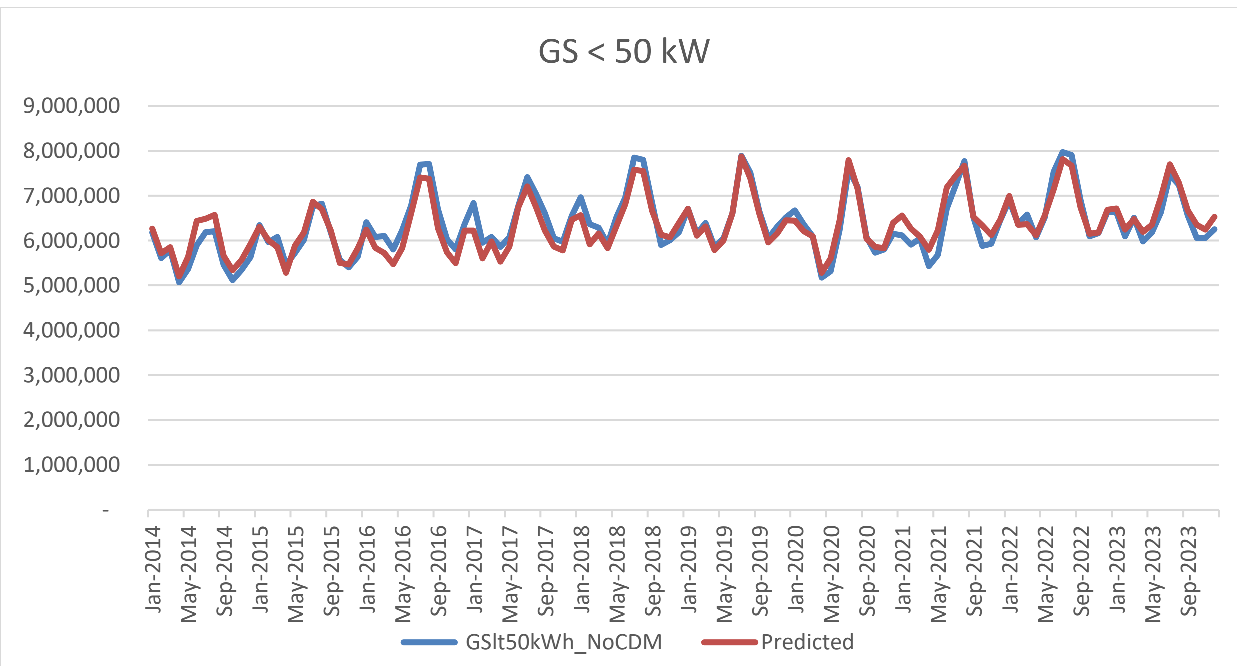

Figure 4 GS<50 Predicted vs Actual Observations

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 2.4%. The MAPE calculated monthly over the period is 3.0%.

	GS<50 kWh CDM Added Back	Predicted	Absolute Error (%)
2014	67,861,598	70,659,909	4.1%
2015	71,979,957	72,093,836	0.2%
2016	77,699,069	74,230,751	4.5%
2017	77,216,323	74,250,660	3.8%
2018	79,628,911	78,009,546	2.0%
2019	78,712,719	77,956,503	1.0%
2020	74,404,472	75,159,637	1.0%
2021	75,675,869	78,685,517	4.0%
2022	81,641,733	80,770,802	1.1%
2023	77,658,916	79,736,139	2.7%
Total	**762,479,569**	**761,553,299**	**0.1%**

Mean Absolute Percentage Error (Annual)	2.4%
Mean Absolute Percentage Error (Monthly)	3.0%

Table 12 GS < 50 model error

2.3 GS > 50

For the GS > 50 class, the regression equation was estimated using 120 observations from 2014:01-2023:12. GS > 50 consumption is relatively flat when the average monthly temperature is between 12°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 16°C and CDD relative to 12°C were found to provide the strongest results. HDD and CDD measures near 16°C and 12°C, respectively, were also considered but found to be less predictive of monthly consumption.

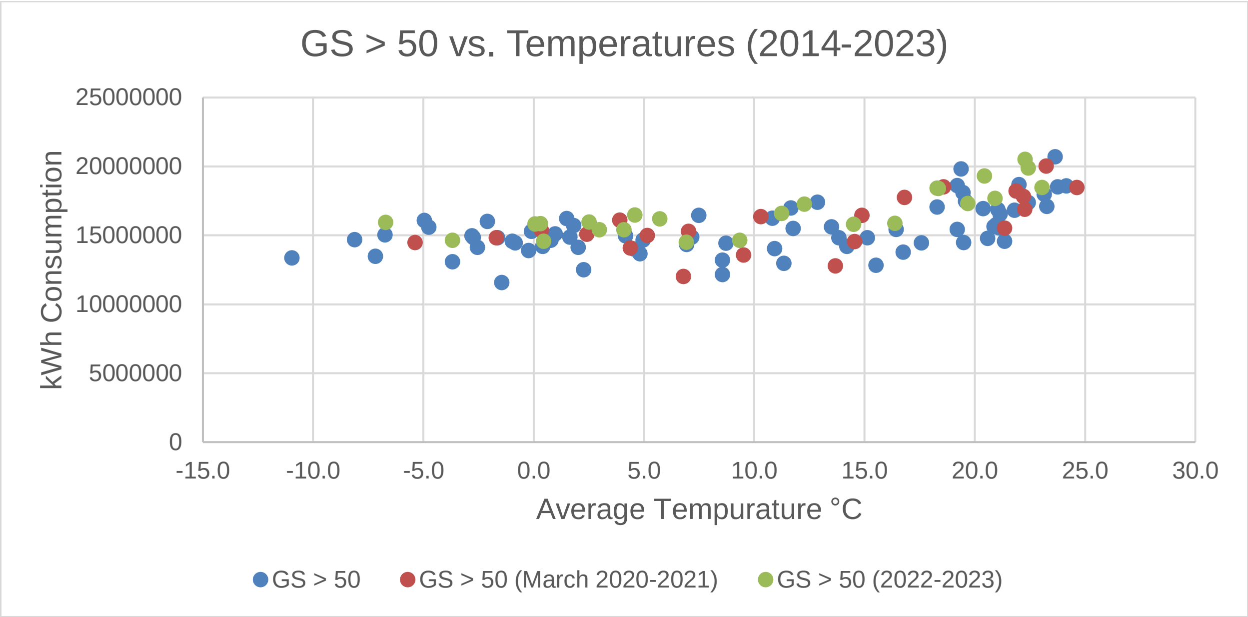

Figure 5 GS>50 kWh and Average Temperature

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.

The number of "peak days" in each month, which are non-holiday weekdays, is used and found to be more statistically significant than the total number of days in each month.

The COVID variables were tested and found to have low statistical significance when the GDP variable was included. These variables are not used in the GS > 50 model.

Two calendar variables, the September variable, equal to 1 in September and 0 in all other months, and the Fall variable, equal to 1 in October and November and equal to 0 in all other months, are also used and found to be statistically significant. These variables account for higher consumption in the September, October, and November months than can be explained by weather or other variables. The September variable is separate from the Fall variable as consumption is particularly high in September months. Elenchus assumes this is due to agricultural and greenhouse loads in the region in those months.

The time trend and 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: GSgt50kWh_NoCDM rho = 0.527279				
	coefficient	std. error	t-ratio	p-value
const	(4,689,965)	2,465,916	(1.9019)	0.0597
HDD16	3,947	680	5.8022	0.0000
CDD12	15,259	1,219	12.5210	0.0000
Total_OEA	16.3	2.8	5.7330	0.0000
PeakDays	228,823	47,455	4.8219	0.0000
Sept	1,564,225	244,561	6.3960	0.0000
Fall	1,139,331	247,781.4	4.598	0.0000
Statistics based on the rho-differenced data				
Mean dependent var	15,734,301	S.D. dependent var	1,861,094	
Sum squared resid	6.25E+13	S.E. of regression	7.44E+05	
R-squared	8.54E-01	Adjusted R-squared	8.46E-01	
F(5, 114)	52.903	P-value(F)	0.0000	
rho	(0.035)	Durbin-Watson	2.0645	

Table 13 GS>50 Regression Model

Using the above model coefficients we derive the following:

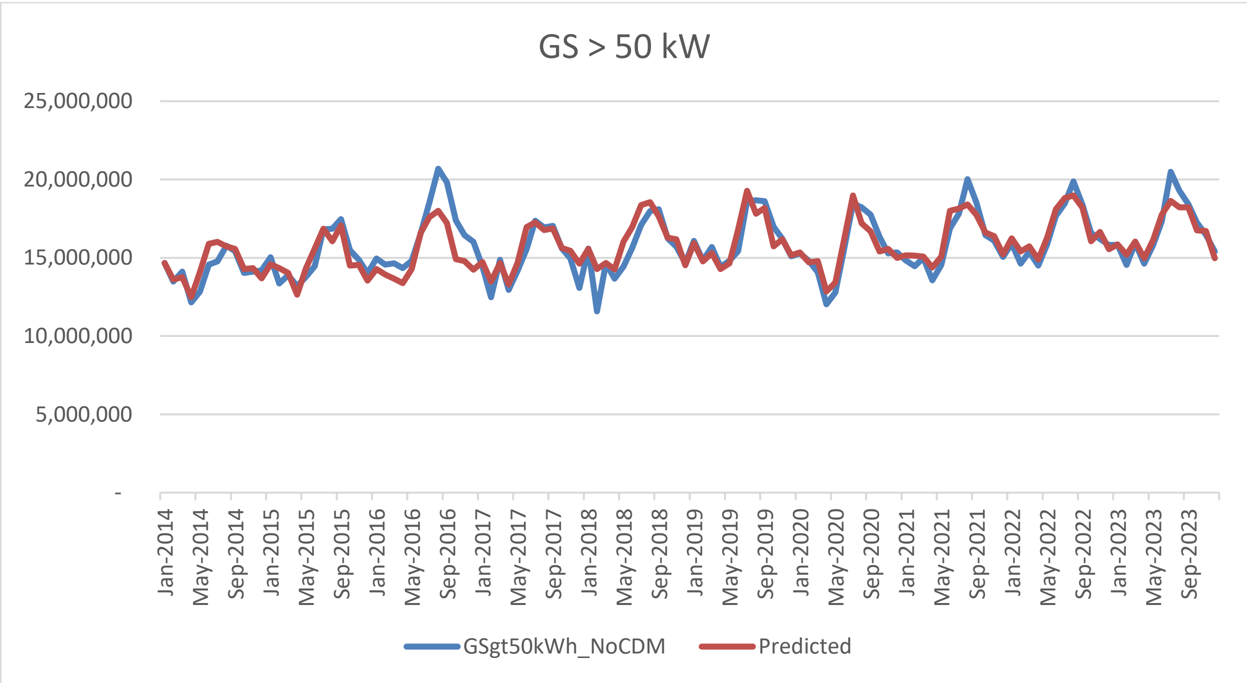

Figure 6 GS>50 Predicted vs Actual observations

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 2.2%. The MAPE calculated monthly over the period is 4.0%.

	GS>50 kWh		Absolute
	CDM Added Back	Predicted	Error (%)
2014	170,113,999	174,094,926	2.3%
2015	179,246,256	178,069,776	0.7%
2016	198,702,962	182,896,495	8.0%
2017	179,503,467	184,420,679	2.7%
2018	185,305,131	193,322,277	4.3%
2019	195,400,371	194,040,109	0.7%
2020	185,908,363	186,071,196	0.1%
2021	193,242,984	195,302,133	1.1%
2022	199,280,395	200,920,753	0.8%
2023	201,412,228	199,440,276	1.0%
Total	**1,888,116,155**	**1,888,578,619**	**0.0%**

Mean Absolute Percentage Error (Annual)	2.2%
Mean Absolute Percentage Error (Monthly)	4.0%

Table 14 GS>50 model error

2.4 EMBEDDED DISTRIBUTOR

For the Embedded Distributor class, the regression equation was estimated using 98 observations from 2015:11-2023:12. This class comprises 4 metered connection points with Hydro One Networks Inc. ("HONI"). The class had 6 connection points until October 2015 and the class's loads declined by approximately 15-20% following that month. Elenchus tested various models that included ten years (2014-2023) of class data, but the mismatch of the 33% decline in counts and 15-20% decline in loads skewed the results. The forecast of this class is based on eight years and two months of data (Nov. 2015-2023) as models tested for this time period produced stronger statistical results. HDD relative to 14°C and CDD relative to 16°C were found to provide the strongest results. HDD and CDD measures near 14°C and 16°C, respectively, were also considered but found to be less predictive of monthly consumption.

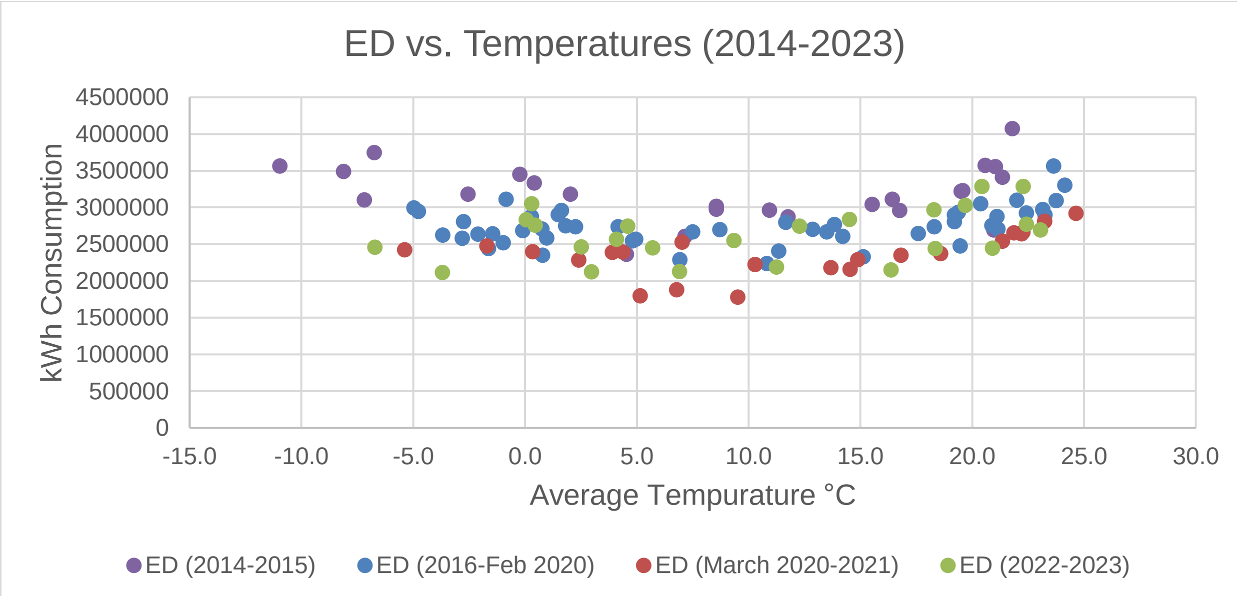

Figure 7 Embedded Distributor and Average Temperature

Economic variables were tested and multiple were found to have a statistically significant relationship with class consumption. The variable with the strongest statistical results is seasonally adjusted Windsor employment (AdjWindsor_FTE) from Statistics Canada.

The COVID variables were tested and found to have low statistical significance when the GDP variable was included. These variables are not used in the Embedded Distributor model.

The Fall variable, equal to 1 in October and November and equal to 0 in all other months, is used and found to be statistically significant. This variable accounts for higher consumption in the October and November months than can be explained by weather or other variables.

The other binary calendar variables representing seasons and months were tested but note found to show a high degree of statistical significance.

The following table outlines the resulting regression model:

Model 8: Prais-Winsten, using observations 2015:11-2023:12 (T = 98) Dependent variable: EDkWh2016 rho = 0.714295				
	coefficient	std. error	t-ratio	p-value
	coefficient	std. error	t-ratio	p-value
const	788,661	686,069.2	1.150	0.25328
HDD14	899	169.3	5.309	0.00000
CDD16	3,716	385.6	9.635	0.00000
Fall	135,311	50,967.0	2.655	0.00933
AdjWindsor_FTE	8,461	4,069.5	2.079	0.04037
Statistics based on the rho-differenced data				
Mean dependent var	2,630,298	S.D. dependent var	323,420	
Sum squared resid	2.95E+12	S.E. of regression	1.78E+05	
R-squared	0.71005	Adjusted R-squared	0.69758	
F(4, 93)	33.875	P-value(F)	0.00000	
rho	(0.168)	Durbin-Watson	2.3280	

Table 15 Embedded Distributor Regression Model

Using the above model coefficients we derive the following:

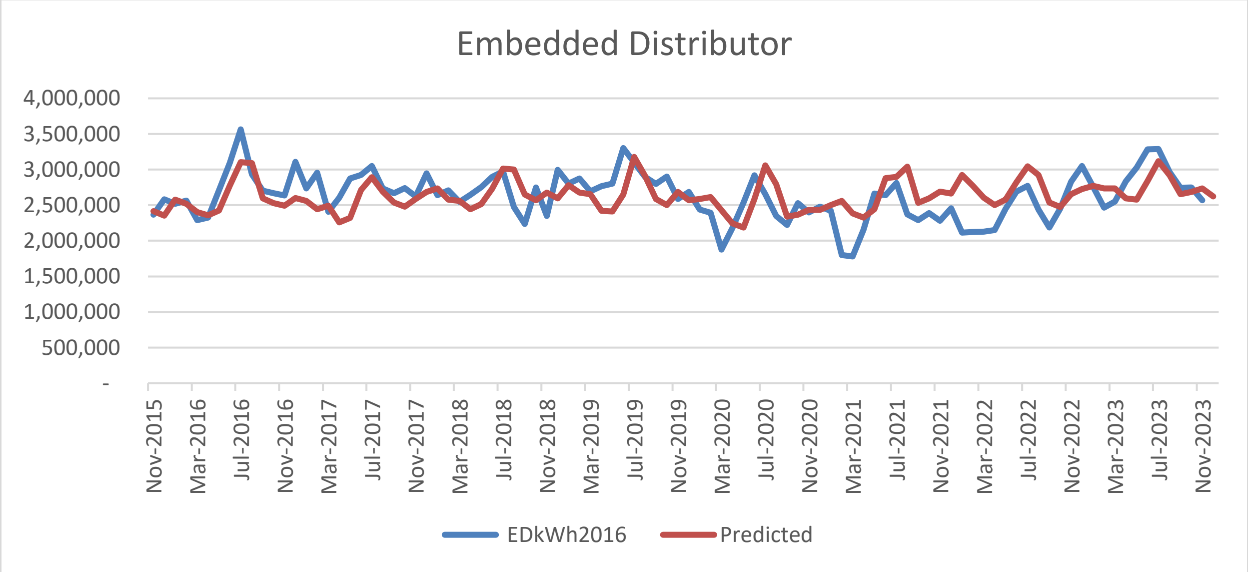

Figure 8 Embedded Distributor Predicted vs Actual observations

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 6.4%. The MAPE calculated monthly over the period is 7.9%.

	Embedded Distributor Consumption	Predicted	Absolute Error (%)
2014	38,058,829		
2015	38,655,618		
2016	32,586,842	31,460,057	3.5%
2017	33,420,007	30,654,663	8.3%
2018	31,923,241	32,062,078	0.4%
2019	34,526,385	32,025,427	7.2%
2020	29,188,687	30,074,723	3.0%
2021	28,075,683	31,518,034	12.3%
2022	28,792,570	32,560,969	13.1%
2023	34,284,228	32,990,285	3.8%
Total	**329,512,090**	**253,346,236**	**23.1%**

Mean Absolute Percentage Error (Annual)	6.4%
Mean Absolute Percentage Error (Monthly)	7.9%

Table 16 Embedded Distributor 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, EPL 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 Windsor A Climate, which is used as the weather station for EPL.

In a few instances in the 2014 to 2023 period, daily Windsor A Climate data was not available. If data was not available from the Windsor Climate weather station, data from the Windsor CS 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	361	0	423	0	485	**0**	**547**	**0**	**609**	**0**	**671**	0	733	0
February	316	2	371	1	426	**0**	**483**	**0**	**539**	**0**	**596**	0	652	0
March	195	9	252	4	312	**1**	**373**	**0**	**434**	**0**	**496**	0	558	0
April	54	59	90	34	134	**18**	**184**	**9**	**239**	**3**	**296**	1	356	0
May	3	227	11	173	25	**125**	**47**	**85**	**78**	**53**	**117**	30	164	16
June	0	382	0	322	0	**262**	**0**	**203**	**3**	**145**	**11**	93	30	53
July	0	459	0	397	0	**335**	**0**	**273**	**0**	**211**	**1**	150	6	93
August	0	431	0	369	0	**307**	**0**	**245**	**1**	**184**	**3**	124	11	71
September	0	313	0	253	1	**194**	**6**	**139**	**18**	**91**	**39**	52	73	26
October	14	139	33	96	62	**63**	**100**	**38**	**144**	**20**	**195**	10	251	3
November	129	25	177	13	230	**6**	**286**	**2**	**345**	**1**	**404**	0	464	0
December	226	3	286	1	348	**0**	**410**	**0**	**472**	**0**	**534**	0	596	0

Table 17 - 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 March 2024. Average forecast rates are applied to the most recent GDP and Labour Force Survey monthly data available.

Report Date	TD **19-Dec-23**	BMO **08-Mar-24**	Scotia **06-Feb-24**	RBC **12-Dec-23**	Average
FTE (Employment growth % YoY)					
2023	2.5%	2.4%	2.4%	2.4%	2.43%
2024	0.3%	1.2%	1.5%	0.8%	0.95%
2025	1.1%	2.1%	1.7%	1.8%	1.68%
GDP (Real GDP % YoY)					
2021	1.1%	1.3%	1.3%	1.1%	1.20%
2022	0.3%	1.0%	0.9%	0.2%	0.60%
2023	1.5%	2.3%	2.1%	2.3%	2.05%

Table 18 Economic Forecasts

For example, the 2024 forecast FTE growth rate, 0.95%, 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 1.68%, 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	245,551,953	2,791,930	248,343,883	254,117,717	2,791,930	251,325,787
2015	244,757,238	4,020,537	248,777,775	251,844,275	4,020,537	247,823,738
2016	255,390,423	6,339,606	261,730,029	255,298,027	6,339,606	248,958,420
2017	240,232,071	11,183,453	251,415,524	256,459,163	11,183,453	245,275,711
2018	259,974,120	13,682,007	273,656,127	263,883,736	13,682,007	250,201,729
2019	252,809,094	14,436,310	267,245,404	268,253,886	14,436,310	253,817,576
2020	271,898,869	14,206,749	286,105,618	285,753,248	14,206,749	271,546,499
2021	277,378,582	13,975,132	291,353,714	285,160,668	13,975,132	271,185,537
2022	272,607,146	14,027,345	286,634,491	282,855,068	14,027,345	268,827,723
2023	259,000,634	14,161,672	273,162,305	283,901,209	14,161,672	269,739,537
2024				286,875,733	14,080,909	272,794,824
2025				289,246,553	13,876,356	275,370,197

Table 19 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	272,794,824	4,184,832	276,979,656
2025	275,370,197	10,569,331	285,939,528

Table 20 Additional Residential kWh Consumption

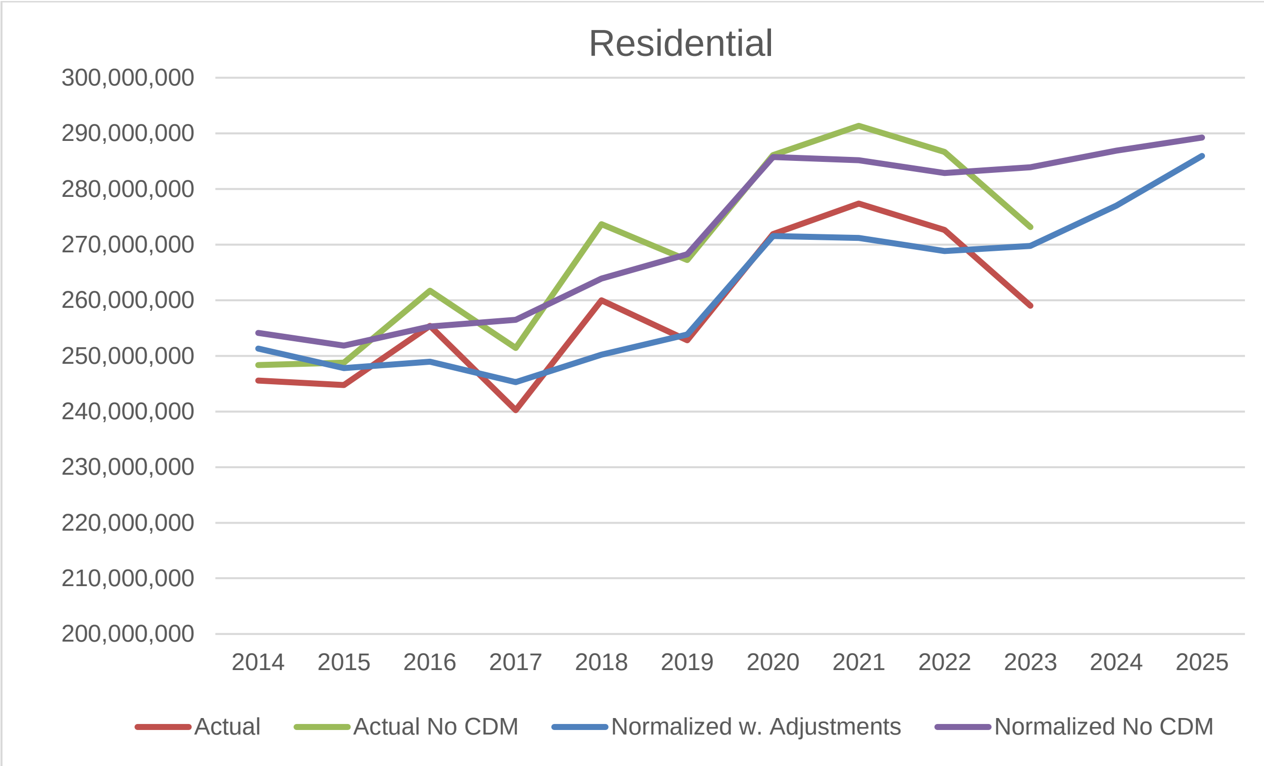

Figure 9 Actual vs Normalized Residential kWh

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.

Year	Residential Customers	Percent of Prior Year
2014	26,590	
2015	26,815	100.85%
2016	26,920	100.39%
2017	27,321	101.49%
2018	27,640	101.17%
2019	27,932	101.05%
2020	28,265	101.19%
2021	28,512	100.87%
2022	28,745	100.82%
2023	28,912	100.58%
2024	29,181.6	100.93%
2025	29,454.3	100.93%

Table 21 Forecasted Residential Customer Count

4.2 GS < 50

Incorporating the forecast economic variables, 10-yr 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	65,242,009	2,619,589	67,861,598	68,141,080	2,619,589	65,521,492
2015	65,329,578	6,650,379	71,979,957	72,174,254	6,650,379	65,523,875
2016	66,808,994	10,890,075	77,699,069	77,053,838	10,890,075	66,163,763
2017	65,115,315	12,101,008	77,216,323	77,894,793	12,101,008	65,793,785
2018	66,321,666	13,307,245	79,628,911	78,344,761	13,307,245	65,037,517
2019	65,058,987	13,653,732	78,712,719	78,753,034	13,653,732	65,099,302
2020	60,802,781	13,601,691	74,404,472	74,691,042	13,601,691	61,089,352
2021	62,043,606	13,632,263	75,675,869	75,158,022	13,632,263	61,525,759
2022	67,628,825	14,012,908	81,641,733	81,176,805	14,012,908	67,163,897
2023	63,293,408	14,365,508	77,658,916	79,091,938	14,365,508	64,726,429
2024				81,659,851	13,227,924	68,431,927
2025				82,793,710	12,219,319	70,574,391

Table 22 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	68,431,927	1,052,792	69,484,720
2025	70,574,391	2,732,775	73,307,166

Table 23 Additional GS<50 kWh Consumption

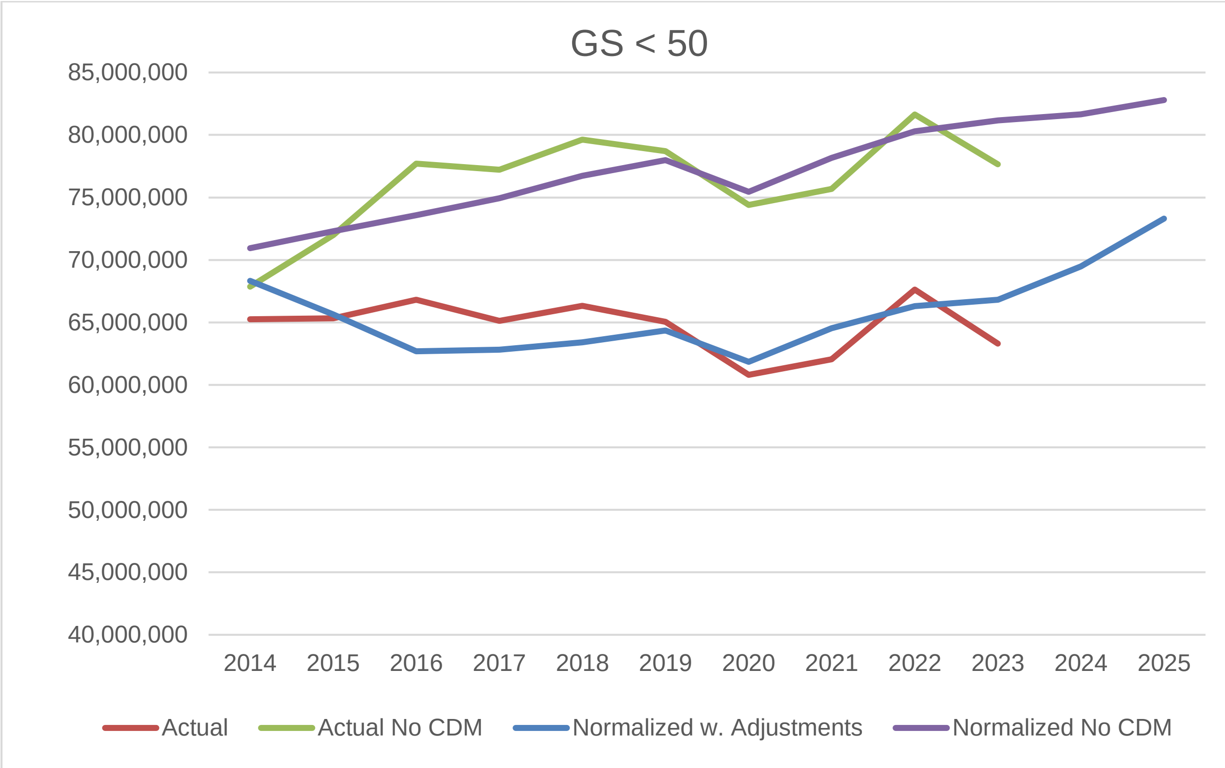

Figure 10 Actual vs Normalized GS<50 kWh

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:

Year	GS < 50 Customers	Percent of Prior Year
2014	1,910	
2015	1,936	101.36%
2016	1,934	99.89%
2017	1,966	101.66%
2018	1,979	100.67%
2019	1,996	100.88%
2020	2,018	101.08%
2021	2,040	101.08%
2022	2,065	101.25%
2023	2,062	99.86%
2024	2,079.9	100.86%
2025	2,097.8	100.86%

Table 24 Forecasted GS<50 Customer Count

4.3 GS > 50

Incorporating the 10-yr 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	167,236,927	2,877,072	170,113,999	170,843,649	2,877,072	167,966,577
2015	171,977,957	7,268,299	179,246,256	179,448,112	7,268,299	172,179,813
2016	187,031,606	11,671,356	198,702,962	197,274,518	11,671,356	185,603,162
2017	166,511,229	12,992,238	179,503,467	180,781,056	12,992,238	167,788,818
2018	171,089,785	14,215,346	185,305,131	182,576,695	14,215,346	168,361,349
2019	180,918,659	14,481,712	195,400,371	195,648,077	14,481,712	181,166,364
2020	171,481,742	14,426,621	185,908,363	186,834,010	14,426,621	172,407,390
2021	178,461,520	14,781,464	193,242,984	192,007,840	14,781,464	177,226,377
2022	183,800,048	15,480,347	199,280,395	198,254,125	15,480,347	182,773,778
2023	183,420,703	17,991,525	201,412,228	204,448,073	17,991,525	186,456,547
2024				203,702,781	16,934,709	186,768,072
2025				207,132,515	15,480,380	191,652,135

Table 25 Actual vs Normalized GS>50 kWh

Additional loads, as described further in Section 6 below, to account for known customer expansions, 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	186,768,072	3,542,341	190,310,413
2025	191,652,135	17,557,806	209,209,941

Table 26 Additional GS>50 kWh Consumption

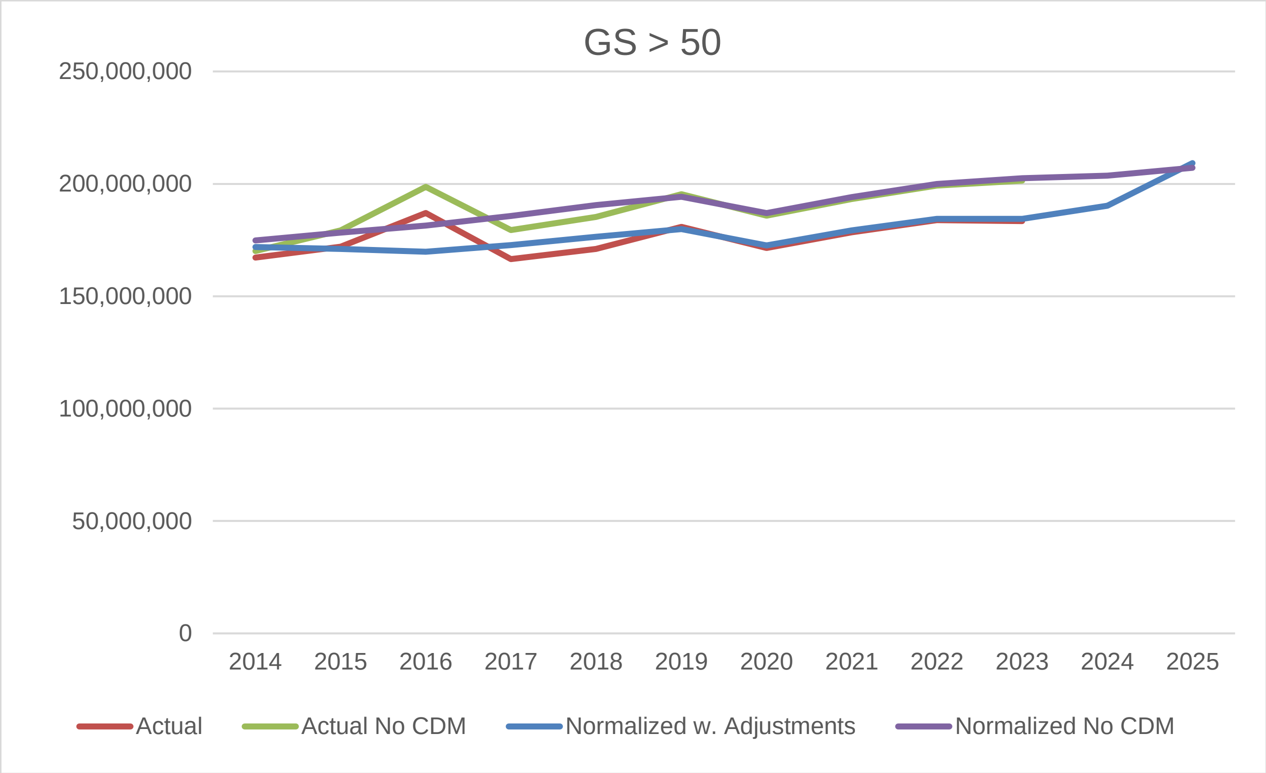

Figure 11 Actual vs Normalized GS>50 kWh

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:

Year	GS > 50 Customers	Percent of Prior Year
2014	212	
2015	212	99.84%
2016	255	120.00%
2017	250	98.23%
2018	249	99.70%
2019	262	104.91%
2020	256	98.02%
2021	234	91.38%
2022	210	89.68%
2023	230	109.64%
2024	232.4	100.90%
2025	234.5	100.90%

Table 27 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 5-year average kW/kWh ratio from 2019-2023. A 10-year average was considered, however, the kW/kWh ratio changed materially from the 2014-2016 period to the 2019-2023 period. From 2014 to 2023, class consumption increased by 10% and billed demands increased by 42%. Over the shorter 5-year time period, consumption increased by 1% and billed demands declined by 4%. This narrower divergence in the 5-year time frame is used because it better reflects recent ratios. Additionally, the 10-year average would produce a ratio that is lower than any year since 2016.

		GS > 50	
	kWh	kW	Ratio
	A	B	C = B / A
2014	167,236,927	400,144	0.002393
2015	171,977,957	463,529	0.002695
2016	187,031,606	476,120	0.002546
2017	166,511,229	499,500	0.003000
2018	171,089,785	536,823	0.003138
2019	180,918,659	592,797	0.003277
2020	171,481,742	580,474	0.003385
2021	178,461,520	574,683	0.003220
2022	183,800,048	592,472	0.003223
2023	183,420,703	566,315	0.003088

	kWh Normalized	kW Normalized	Average	Additional Load	Total
	E	F = E * G	G	H	I = E + H
2022	186,768,072	604,861	**0.003239**	24,263	629,123
2023	191,652,135	620,678	**0.003239**	115,392	736,070

Table 28 Forecasted GS>50 kW

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

4.4 EMBEDDED DISTRIBUTOR

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

Embedded Distributor kWh

Year	Actual A	Normalized B
2014	38,058,829	38,157,206
2015	38,655,618	38,755,215
2016	32,586,842	32,297,160
2017	33,420,007	33,791,890
2018	31,923,241	31,265,051
2019	34,526,385	34,523,313
2020	29,188,687	29,289,377
2021	28,075,683	27,854,088
2022	28,792,570	28,546,691
2023	34,284,228	35,032,100
2024		33,920,392
2025		34,244,754

Table 29 Actual vs Normalized Embedded Distributor

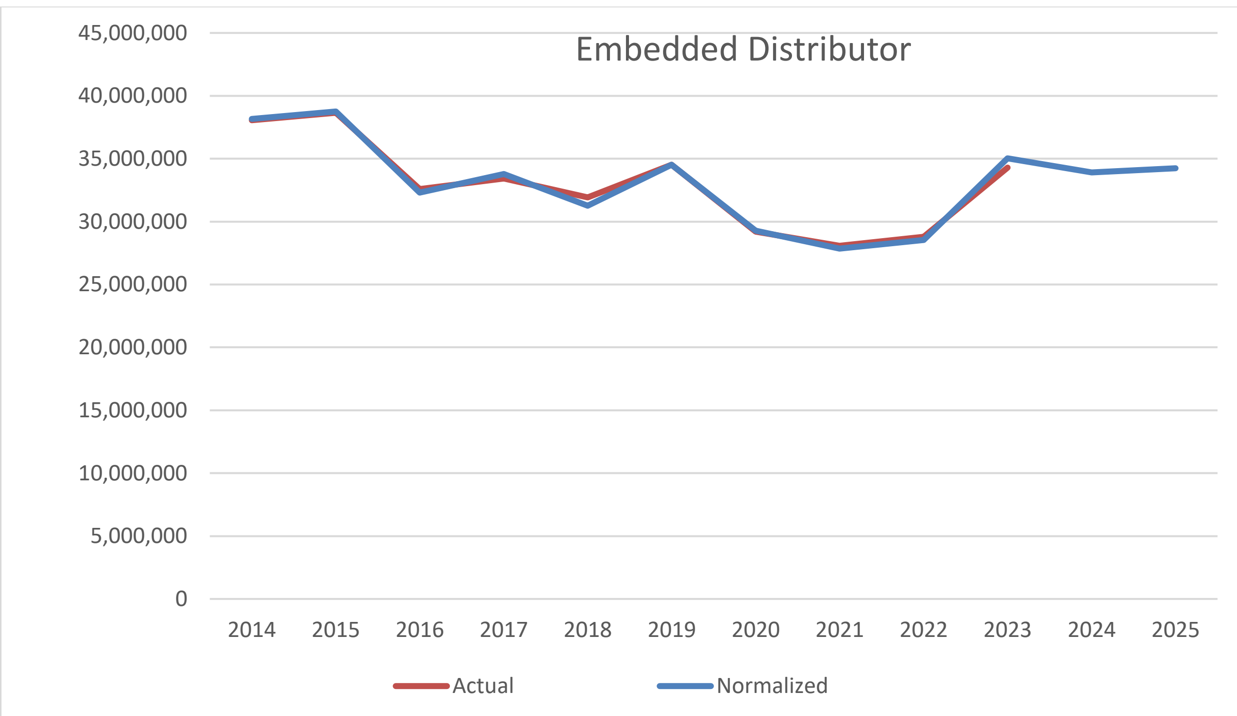

Figure 12 Actual vs Normalized Embedded Distributor

The class had six customer accounts in 2014 and most of 2015, followed by some fluctuations in 2016 to 2018 until it reached 4 customers in 2019. There have been 4 customers in the class from 2019 to 2023 so EPL expects the count to remain at 4 through to 2025..

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

Year	Embedded Distributor Customers	Percent of Prior Year
2014	6.0	
2015	5.7	94.44%
2016	3.0	52.94%
2017	4.1	136.11%
2018	4.8	116.33%
2019	4.0	84.21%
2020	4.0	100.00%
2021	4.0	100.00%
2022	4.0	100.00%
2023	4.0	100.00%
2024	4.0	95.59%
2025	4.0	95.59%

Table 30 Forecasted Embedded Distributor 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 kW to kWh ratio has fluctuated significantly over the last ten years. The ratios over the 2014-2023 period are provided below.

	Embedded Distributor		
	kWh	kW	Ratio
	A	B	C = B / A
2014	38,058,829	84,453	0.002219
2015	38,655,618	106,797	0.002763
2016	32,586,842	87,829	0.002695
2017	33,420,007	87,518	0.002619
2018	31,923,241	96,861	0.003034
2019	34,526,385	94,142	0.002727
2020	29,188,687	92,507	0.003169
2021	28,075,683	89,242	0.003179
2022	28,792,570	83,614	0.002904
2023	34,284,228	90,976	0.002654
	kWh Normalized	kW Normalized	Average
	E	F = E * G	G
2024	33,920,392	90,011	**0.002654**
2025	34,244,754	90,871	**0.002654**

Table 31 Forecasted Embedded Distributor

The ratio in 2023 has been used as the forecast ratio for 2024 and 2025.

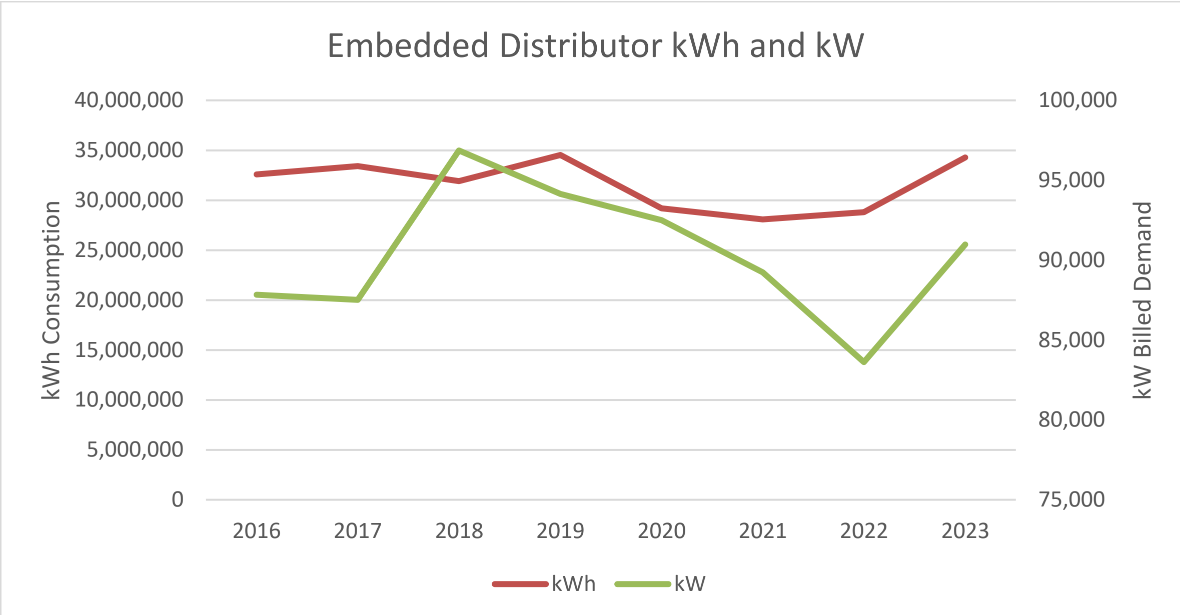

Figure 13 Embedded Distributor kWh and kW

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 are forecasted on the geometric mean growth rate from 2014 to 2023 for the Street Lighting class and the growth rate from 2019 to 2023 for the Sentinel Lighting and USL classes. Energy volumes for these classes are forecasted on the basis of average energy per device.

5.1 Street Light

The table below summarizes the historic and forecast annual energy consumption for the Street Light class. EPL underwent a gradual LED conversion from 2015 to 2021, which saw a 62% reduction in consumption per device. The 2023 average consumption per device is used as the average consumption per device in 2024 and 202.

Streetlight kWh

Year	Actual A	Devices B	Average / Device C = A / B	Normalized D = C * B
2014	6,286,758	2,713	2,317	6,286,758
2015	6,227,064	2,701	2,306	6,227,064
2016	4,268,689	2,720	1,569	4,268,689
2017	2,875,901	2,753	1,045	2,875,901
2018	2,887,551	2,761	1,046	2,887,551
2019	2,576,355	2,770	930	2,576,355

2020	2,455,697	2,777	884	2,455,697
2021	2,444,025	2,785	878	2,444,025
2022	2,406,027	2,793	861	2,406,027
2023	2,415,233	2,807	860	2,415,233
2024		2,818	860	2,424,399
2025		2,828	860	2,433,601

Table 32 Street Light Consumption Forecast

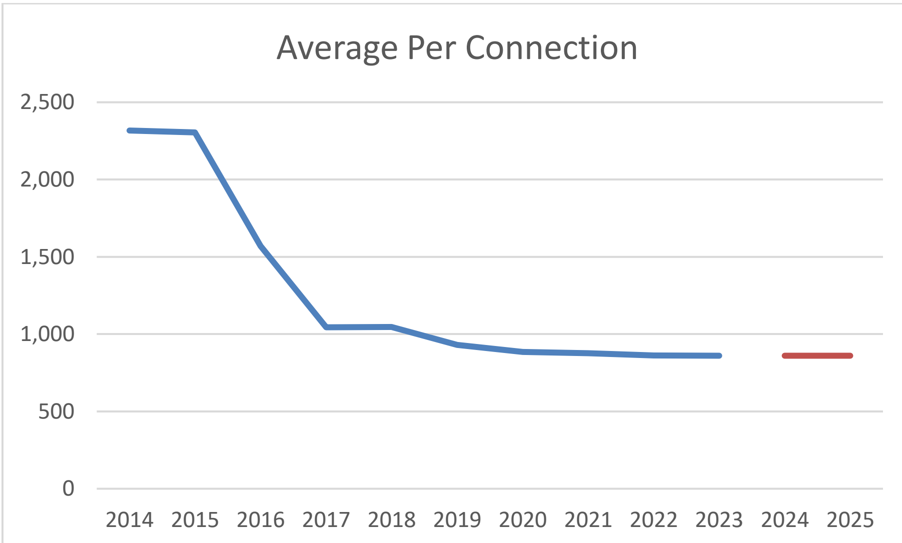

Figure 14 Street Light kWh per Luminaire Device

This declining consumption is somewhat offset by an increasing device count, as reflected in column D of Table 32 and detailed in the following table. The Geometric mean of the annual growth from 2014 to 2023 was used to forecast the growth rate from 2023 to 2025.

Street Light Year	Devices	Percent of Prior Year
2014	2,713	
2015	2,701	99.55%
2016	2,720	100.71%
2017	2,753	101.23%
2018	2,761	100.27%
2019	2,770	100.33%
2020	2,777	100.26%
2021	2,785	100.26%
2022	2,793	100.31%
2023	2,807	100.49%
2024	2,817.6	100.38%
2025	2,828.3	100.38%

Table 33 Forecasted Street Light Device 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	6,286,758	15,873	0.002525
2015	6,227,064	18,022	0.002894
2016	4,268,689	13,492	0.003161
2017	2,875,901	8,732	0.003036
2018	2,887,551	8,746	0.003029
2019	2,576,355	7,846	0.003045
2020	2,455,697	7,413	0.003019
2021	2,444,025	7,398	0.003027
2022	2,406,027	7,289	0.003029
2023	2,415,233	7,310	0.003027
	kWh Normalized	kW Normalized	Average
	E	F = E * G	G
2024	2,424,399	7,345	**0.003029**
2025	2,433,601	7,372	**0.003029**

Table 34 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 device declined in the 2014 to 2017 period, though not to the same extent as Street Lights. The 2023 average consumption per device is used as the average consumption per device in 2024 and 2025.

	Sentinel Lighting kWh			
Year	Actual	Devices	Average / Device	Normalized
	A	B	C = A / B	D = C * B
2014	350,518	172	2,034	350,518
2015	341,134	174	1,961	341,134
2016	335,758	181	1,855	335,758
2017	304,470	253	1,201	304,470
2018	293,755	243	1,211	293,755
2019	285,985	235	1,215	285,985
2020	281,018	228	1,232	281,018
2021	278,297	228	1,221	278,297
2022	271,670	227	1,199	271,670
2023	269,986	222	1,215	269,986
2024		219	1,215	266,130
2025		216	1,215	262,328

Table 35 Sentinel Lighting Consumption Forecast

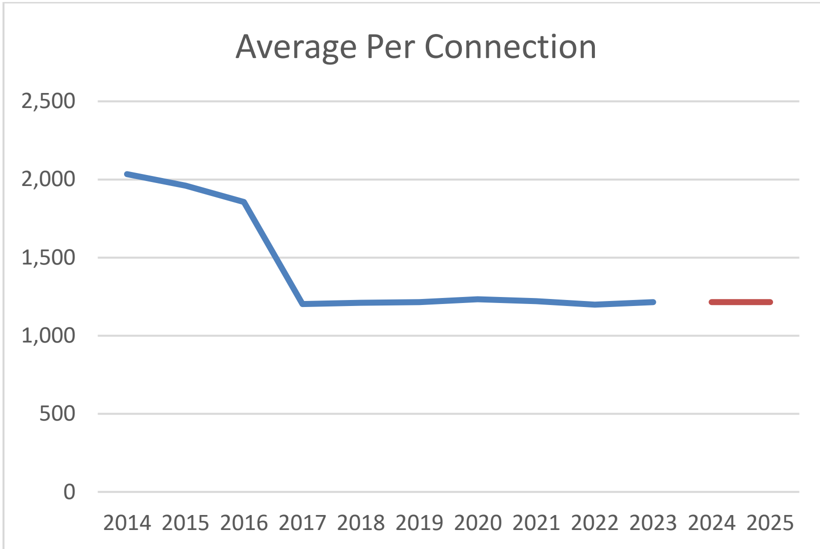

Figure 15 Sentinel Lighting kWh per Device

The Geometric mean of the annual growth from 2019 to 2023 was used to forecast the growth rate from 2023 to 2025.

Sentinel Lighting Year	Devices	Percent of Prior Year
2014	172	
2015	174	100.97%
2016	181	104.02%
2017	253	140.01%
2018	243	95.73%
2019	235	97.05%
2020	228	96.88%
2021	228	99.96%
2022	227	99.42%
2023	222	98.05%
2024	219.1	98.57%
2025	215.9	98.57%

Table 36 Forecasted Sentinel Lighting Device 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 5-year average kW/kWh ratio from 2019-2023 was used because the ratio has changed over 10 years, so a shorter time frame was used. The ratio increased from 0.002499 in 2014 to 0.002727 in 2023 and the 5-year average is more aligned with recent ratios.

Sentinel Lightings			
	kWh	kW	Ratio
	A	B	C = B / A
2014	350,518	876	0.002499
2015	341,134	878	0.002574
2016	335,758	868	0.002585
2017	304,470	852	0.002798
2018	293,755	815	0.002774
2019	285,985	781	0.002731
2020	281,018	767	0.002729
2021	278,297	759	0.002727
2022	271,670	744	0.002739
2023	269,986	736	0.002727
	kWh Normalized	kW Normalized	Average
	E	F = E * G	G
2024	266,130	727	**0.002731**
2025	262,328	716	**0.002731**

Table 37 Forecasted Sentinel Lighting kW

5.3 USL

The following table summarizes historic and forecast annual energy consumption for EPL's USL class. Consumption in 2024 and 2025 has been forecasted based on 2023 consumption per connection and 2023 connection counts.

USL				
Year	Actual	Conn.	Average / Connection	Normal Forecast
	A	B	C = A / B	D = C * B
2014	1,555,546	140	11,124	1,555,546
2015	1,558,152	141	11,051	1,558,152
2016	1,554,368	139	11,176	1,554,368
2017	1,549,260	132	11,737	1,549,260
2018	1,547,236	131	11,803	1,547,236
2019	1,541,978	130	11,900	1,541,978
2020	1,442,699	126	11,465	1,442,699
2021	1,408,704	125	11,270	1,408,704
2022	1,408,704	125	11,270	1,408,704
2023	1,408,699	125	11,270	1,408,699
2024		124	11,270	1,396,074
2025		123	11,270	1,383,562

Table 38 USL Consumption Forecast

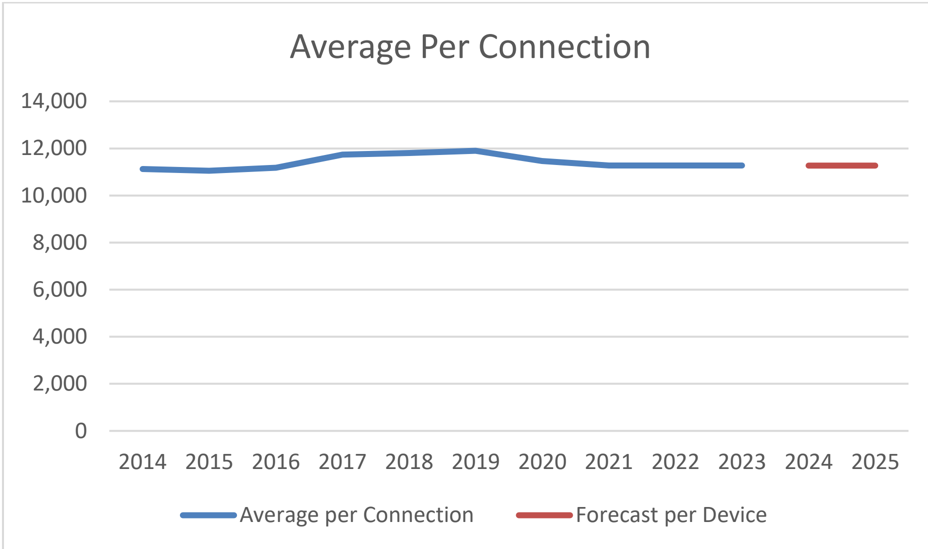

Figure 16 USL kWh per Device

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

USL Year	Devices	Percent of Prior Year
2014	140	
2015	141	100.83%
2016	139	98.64%
2017	132	94.91%
2018	131	99.31%
2019	130	98.86%
2020	126	97.11%
2021	125	99.34%
2022	125	100.00%
2023	125	100.00%
2024	123.9	99.10%
2025	122.8	99.10%

Table 39 Forecasted USL Devices

6 ADDITIONAL LOADS

EPL’s loads are expected to increase above what would be forecast using only weather-normalized historic averages and trends from increased electrification and known customer expansions. 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 Amherstburg, LaSalle, Leamington, and Tecumseh, 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 Essex's service area.

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

	2017	2018	2019	2020	2021	2022	2023	
Essex New EVs	52	69	36	52	110	211	276	A
ON New EVs	8,180	16,758	9,762	10,515	19,726	38,655	49,803	B
Essex % of ON EVs	0.64%	0.41%	0.37%	0.49%	0.56%	0.55%	0.55%	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 40 Ontario and Essex EV Statistics

These values are used to estimate the number of EVs by type in Essex'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 Essex								
Total (Actual)	52	69	36	52	110	211	276	L = A
Passenger & Multi-Purpose EVs	49	65	36	51	108	202	260	M = L * (H + I)
Van EVs	3	4	0	1	2	4	6	N = L * J
Pickup Truck EVs	-	-	-	-	-	5	10	O = L * K

Table 41 Estimate of Essex EVs by Type

The total number of EVs in Essex in the bridge and test years is forecast based on the number of vehicles sold in Ontario, the share of Ontario EVs sold in Essex, 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
Essex % of ON EVs	*0.55%*	0.55%	0.66%	*0.77%*	R
Total New Essex EVs	***276***	**621**	**848**	***1,074***	S = P * Q * R
Passenger & Multi-Purp.	*260*	585	798	*1,011*	T = S * (H + I)
Van	*6*	*14*	*19*	*24*	U = S * J
Pickup Truck	*10*	*23*	*31*	*39*	V = S * K

Table 42 Forecast of EVs Essex EVs by Type 2023-2026

Table 43 provides a summary of the assumptions used to forecast EV sales in Essex.

Metric	Basis of 2024/2025 Forecast
All Vehicles in Ontario	Average 2017-2023
New EV Target	Trajectory to 2026 Target
Essex % of ON EVs	2024 equal to 2022/2023 share 2025 midpoint between 2024 and 2025 2026 Essex share of Ontario population
Total New Essex EVs	Total vehicles times share of EVs times Essex share of EVs
Passenger & Multi-Purp.	Total Essex EVs times 2023 share of vehicle type
Van	Total Essex EVs times 2023 share of vehicle type
Pickup Truck	Total Essex EVs times 2023 share of vehicle type

Table 43 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 Essex is first based on the actual share of 0.55% in 2022 and 2023 persisting to 2024. The forecast share of EVs in Essex beginning in 2026 is assumed to be its share of the total Ontario population, as per 2016 and 2021 censuses (0.77%). The share in 2025 is forecast to be the midpoint the 2024 and 2025 forecast (0.66%). The total number of EVs sold in Essex in each year is calculated as the total number of vehicles sold in Ontario multiplied by the target share of EVs sold multiplied by Essex's share of total EVs. The number of EVs in Essex by type is based on the Ontario proportion of EVs by type from Table 40.

Calculations for the average consumption per type of vehicle is provided in Table 44. The average distance is based on the 20,000km figure used by NRCan in its Fuel Consumption Guides.[7] The average efficiency per type of vehicle is based on a review of efficiency ratings from NRCan's Fuel Consumption Guides and Plug n' Drive's summary of EVs available in Canada.

	Avg. Distance	**Avg. Efficiency**	**Total Consumption per Vehicle**
	km	**kWh/100 km**	**kWh**
Passenger	20,000	20	4,000
Multi-purpose vehicles	20,000	20	4,000
Van	20,000	25	5,000
Pickup Truck	20,000	30	6,000

Table 44 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.

[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.

	2023	2024	2025	2026	
Pass. & MP EVs	260	585	798	1,011	A
Cumulative EVs	772	1,356	2,154	3,165	B
Cumulative kWh	2,567,265	4,256,252	7,021,257	10,638,249	C = $(B^{t-1} + A/2) * 4{,}000$
Incremental kWh		1,688,987	2,765,006	3,616,991	D = $C - C^{t-1}$
Van EVs	6	14	19	24	E
Cumulative EVs	19.5	33.6	52.7	77.0	F
Cumulative kWh	82,043	132,765	215,799	324,419	G = $(F^{t-1} + E/2) * 5{,}000$
Incremental kWh		50,721	83,035	108,620	H = $G - G^{t-1}$
Pickup Truck EVs	10	23	31	39	I
Cumulative EVs	15	37	68	107	J
Cumulative kWh	58,651	156,381	316,374	525,665	K = $(J^{t-1} + I/2) * 6{,}000$
Incremental kWh		97,731	159,993	209,291	L = $K - K^{t-1}$

Table 45 Forecast EVs and kWh Consumption by EV Type

The allocation of incremental consumption is estimated based on judgement as Essex does not have these details by rate class. The allocations and allocated incremental consumption by EV type to each class is provided in Table 46.

	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%	1,182,291	10,144	32,577	2,531,894	21,724	69,764
GS<50	15%	50%	33%	253,348	25,361	32,577	542,549	54,310	69,764
GS>50	15%	30%	33%	253,348	15,216	32,577	542,549	32,586	69,764
Total	**100%**	**100%**	**100%**	**1,688,987**	**50,721**	**97,731**	**3,616,991**	**108,620**	**209,291**

Table 46 Allocations to Rate Classes

Finally, Table 47 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	1,225,012	2,005,442	4,455,466
GS<50	311,285	509,599	1,132,170
GS>50	301,141	492,992	1,095,275
Total	**1,837,439**	**3,008,033**	**6,682,910**
	2024 Incremental kW	**2025 Incremental kW**	**2025 Incremental + 2024 Full kW**
GS>50[8]	2,063	3,377	7,502

Table 47 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 class and known conversions for the GS>50 kW class.

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.

	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

Table 48 Heating Consumption per Customer

Residential and GS<50 kW heating loads are forecast for both existing connections and new customers. It is assumed that 0.5% of existing customers will convert from natural gas to electricity heating each year and that 15% of new customers will have electric heating. Annual forecast heating loads for the Residential and GS<50 kW class are provided in Table 49 and Table 50, respectively.

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

Residential	2022	2023	2024	2025
Customer Count	28,745	28,912	29,182	29,454
Increase in customers/year	233	166	270	273
Conversions of Existing Connections %	0.5%	0.5%	0.5%	0.5%
New Connections with Electric Heating %	15%	15%	15%	15%
Existing Connections #	143	144	145	146
New Connections #	35	25	41	41
Total Connections	178	169	185	187
kWh/Customer	16,988	16,988	16,988	16,988
Total kWh	**3,016,589**	**2,865,049**	**3,144,068**	**3,173,443**

Table 49 Residential Heating Summary

GS < 50 kW	2022	2023	2024	2025
Customer Count	2,065	2,062	2,080	2,098
Increase in customers/year	26	(3)	18	18
Conversions of Existing Connections %	0.50%	0.50%	0.50%	0.50%
New Connections with Electric Heating %	15%	15%	15%	15%
Existing Connections #	10	10	10	10
New Connections #	4	-	3	3
Total Connections	14	10	13	13
kWh/Customer	16,988	66,080	66,080	66,080
Total kWh	**238,221**	**682,305**	**856,604**	**863,947**

Table 50 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	609.0	21.1%	66.03%
February	539.1	18.7%	
March	434.5	15.1%	
April	238.6	8.3%	
May	77.7	2.7%	
June	2.9	0.1%	
July	0.0	0.0%	
August	0.5	0.0%	33.97%
September	17.6	0.6%	
October	143.8	5.0%	
November	344.6	12.0%	
December	471.8	16.4%	
Total	**2,880.0**	**100.0%**	**100%**

Table 51 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 66% of 2023 consumption plus 34% of 2024 consumption.

	2023	2024	2025	2026
Residential kWh	2,879,163	3,167,012	3,196,602	
January to July		1,901,233	2,091,312	2,110,851
August to December	977,930	1,075,700	1,085,751	
Seasonally Adj. kWh		**2,976,933**	**3,177,063**	
GS < 50 kWh	681,369	804,033	810,926	
January to July		449,937	530,937	535,489
August to December	231,432	273,096	275,437	
Seasonally Adj. kWh		**723,033**	**806,374**	

Table 52 Seasonally Adjusted kWh

Table 53 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	2,976,933	3,177,063	6,153,996
GS<50	723,033	806,374	1,529,407
Total	**3,699,966**	**3,983,437**	**11,383,369**

Table 53 Residential and GS<50 Heating Summary

6.2.2 General Service > 50 kW

There is one known heating conversion from natural gas to electricity among Essex's GS>50 kW customers. The incremental peak heating load of the customer is forecast to be 2,000 kW. As this is the maximum demand that is required in any year an adjustment of 90% is made to reflect the typical maximum billed load in a weather-normal year.

GS > 50 kW	Incremental Load (kW)	Maximum billed load in normal weather year	Load Factor	Annualized kWh	2025 kWh
Amherstburg Customer	2,000	1,800	21.1%	3,334,330	1,132,531

Table 54 GS>50 kW Forecast Consumption

For the purposes of forecasting consumption, the forecast maximum billed load in a normal weather year is multiplied by a load factor of 21.1%, which is equal to the share of HDD in January, and multiplied by the number of hours in a year. The customer is forecast to complete the conversion in fall 2025 so annual consumption is multiplied by the average share of HDD in September to December.

Table 55 calculates the forecast billed kW for this customer. The customer is forecast to have a peak demand of 1,800 kW in a typical January with 609 HDD and peak demands are prorated in each other month based on the month's share of total HDD. Forecast billed kW in the test year is the sum of these demands.

	HDD	HDD %	kW	
January	609.0	21.1%	*1,800.0*	
February	539.1	18.7%	*1,593.4*	
March	434.5	15.1%	*1,284.1*	
April	238.6	8.3%	*705.3*	
May	77.7	2.7%	*229.6*	
June	2.9	0.1%	*8.4*	
July	0.0	0.0%	*0.1*	
August	0.5	0.0%	*1.5*	
September	17.6	0.6%	**51.9**	Fall 2025
October	143.8	5.0%	**425.1**	
November	344.6	12.0%	**1,018.4**	
December	471.8	16.4%	**1,394.4**	
Total	**2,880.0**	**100.0%**	**2,889.7**	

Table 55 GS>50 kW Forecast Billed kW

6.3 CUSTOMER EXPANSIONS

There are three known large customer expansions in Essex's service territory. The expansions are in Leamington and Amherstburg and are related to greenhouse expansions. The current and expanded loads of these customers are detailed in Table 56.

	Peak Loads (kW)		Billed Loads		Year
	Current Loads	Expanded Loads	Peak/Billed Ratio	Avg. Monthly Billed Loads	
Leamington					
Greenhouse	300	4,000	75%	3,000	2024
Greenhouse	500	2,000	75%	1,500	2024
Amherstburg					
Greenhouse	400	14,000	75%	10,500	2025

Table 56 Customer Expansions Loads

The forecast of increased billed kW is calculated as the difference between average monthly billed loads and current loads, multiplied by 12 months. The precise timing of the customer expansions is not known so a half-year adjustment is made to incremental loads.

	Billed Loads (kW)				Half-Year Adj.	
	Current Loads	Expanded Loads	Incremental Monthly Billed Loads	Incremental Annual Billed Loads	2024	2025
2024	800	4,500	3,700	44,400	22,200	44,400
2025	400	10,500	10,100	121,200		60,600
Total	**1,200**	**15,000**	**13,800**	**165,600**	**22,200**	**105,000**

Table 57 Billed kW Customer Expansion Loads

For the purposes of forecasting consumption, incremental kW is applied to a load factor of 20%. Essex does not know the specific load profiles of these customers so the 20% figure is based on judgement and a review of typical greenhouse load factors.

	Consumption (kWh)			Half-Year Adj.	
	Incremental Annual Billed Loads	Load Factor	Incremental kWh	2024	2025
2024	44,400	20%	6,482,400	3,241,200	6,482,400
2025	121,200	20%	17,695,200		8,847,600
Total	**165,600**		**24,177,600**	**3,241,200**	**15,330,000**

Table 58 kWh Customer Expansion Loads

6.4 Additional Loads Summary

Incremental loads from EVs, heating, and known expansions is summarized in Table 59. 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 2024	kWh 2025	kW 2024	kW 2025
EVs	Residential	1,225,012	4,455,466		
	GS<50	311,285	1,132,170		
	GS>50	301,141	1,095,275	2,063	7,502
	Total	**1,837,439**	**6,682,910**	**2,063**	**7,502**
Heating	Residential	2,976,933	6,153,996		
	GS<50	723,033	1,529,407		
	GS>50		1,132,531		2,890
	Total	**3,699,966**	**8,815,934**	**-**	**2,890**
Customer Expansions	Residential				
	GS<50				
	GS>50	3,241,200	15,330,000	22,200	105,000
	Total	**3,241,200**	**15,330,000**	**22,200**	**105,000**
Total	Residential	4,201,945	10,609,462		
	GS<50	1,034,318	2,661,577		
	GS>50	3,542,341	17,557,806	24,263	115,392
	Total	**8,778,605**	**30,828,845**	**24,263**	**115,392**

Table 59 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 EPL'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 EPL's allocation of savings. CDM savings in 2025 are not available so the savings are assumed to be the same as 2024 savings.

Program	**In year energy savings (GWh) 2021**	**2022**	**2023**	**2024**	**Est. *2025***	**EPL Share %**	**Basis for EPL %**
Retrofit	322	570	359	560	*560*	0.41%	% of provincial kWh
Small Business	10	4	20	65	*65*	0.41%	% of provincial kWh

Energy Performance	16	20	50	54	*54*	0.41%	% of provincial kWh
Energy Management	1	15	29	96	*96*	0.41%	% of provincial kWh
Industrial Energy Efficiency	0	0	165	165	*165*	0.41%	% of provincial kWh
Targeted Greenhouse	0	0	333	333	*333*	1.00%	Judgement
Local Initiatives	0	61	161	181	*181*		% of provincial kWh
Residential Demand Response	0	0	3	7	*7*		
Energy Affordability Program	7	14	49	97	*97*	0.77%	% of prov. LIM
First Nations Program	1	0	15	16	*16*		

Table 60 2021-2024 CDM Framework and EPL Allocation

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

Year	Province kWh	EPL kWh	EPL % Share
2018	132,430,891,804	518,925,520	0.39%
2019	129,776,205,940	538,071,920	0.41%
2020	128,180,478,159	536,185,894	0.42%
2021	129,125,642,652	549,391,694	0.43%
2022	130,831,607,587	555,804,644	0.42%
5-Year Avg.	**130,068,965,228**	**539,675,935**	**0.41%**

Table 61 EPL kWh

EPL's Energy Affordability Program allocation is based on the number of households in Amherstburg, LaSalle, Leamington, and Tecumseh within the Census Family Low-Income Measure as a share of all Ontario households, as per the 2016 and 2021 Censuses. In both years the combined population of Amherstburg, LaSalle, Leamington, and Tecumseh is 0.77% of Ontario's population.

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

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

	In year energy savings (kWh)			Total CDM
	2023	**2024**	**2025**	
Weighting Factor	*0.5*	*1.0*	*0.5*	
Retrofit	744,773	2,323,525	1,161,763	4,230,061
Small Business	41,492	269,695	134,847	446,034
Energy Performance	103,729	224,054	112,027	439,810
Energy Management	60,163	398,319	199,159	657,641
Industrial Energy Efficiency	342,305	684,610	342,305	1,369,220
Targeted Greenhouse	1,665,000	3,330,000	1,665,000	6,660,000
Local Initiatives	-	-	-	-
Residential Demand Response	-	-	-	-
Energy Affordability Program	188,134	744,859	372,429	1,305,422
First Nations Program	-	-	-	-
Total CDM	**3,145,595**	**7,975,062**	**3,987,531**	**15,108,188**

Table 62 EPL CDM

Total CDM savings by program are then allocated to EPL'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		50.0%	50.0%
Small Business		80.0%	20.0%
Energy Performance		0.0%	100.0%
Energy Management		0.0%	100.0%
Industrial Energy Efficiency		0.0%	100.0%
Targeted Greenhouse		0.0%	100.0%
Local Initiatives			
Residential Demand Response			
Energy Affordability Program	100%		
First Nations Program			
	CDM By Class		
Retrofit	-	2,115,030	2,115,030
Small Business	-	356,827	89,207
Energy Performance	-	-	439,810
Energy Management	-	-	657,641
Industrial Energy Efficiency	-	-	1,369,220
Targeted Greenhouse	-	-	6,660,000
Local Initiatives	-	-	-
Residential Demand Response	-	-	-
Energy Affordability Program	1,305,422	-	-
First Nations Program	-	-	-
2021-2024 Savings	**1,305,422**	**2,471,857**	**11,330,908**

Table 63 2021-2024 CDM Framework Adjustments