EXHIBIT 3 – LOAD AND CUSTOMER FORECAST

2025 Cost of Service

Hydro Hawkesbury Inc.
EB-2024-0031

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3.1 LOAD AND CUSTOMER FORECAST

3.1.1 Introduction

HHIs exhibit describes the proposed load forecast methodology and assumptions used to determine the rates and rate riders for HHI's customer classes.

Table 1 – Proposed Customer Count vs Previously Approved

	Year	2018BA	2025	Var
Residential	Cust/Conn	4,836	4,938	102
General Service < 50 kW	Cust/Conn	618	607	-10
General Service 50 to 4999 kW	Cust/Conn	45	85	40
Unmetered Scattered Load	Cust/Conn	13	17	4
Sentinel Lighting	Cust/Conn	29	41	12
Street Lighting	Cust/Conn	1,716	1,269	-447
Total	**Cust/Conn**	**7,256**	**6,956**	**-300**

Table 2 – Proposed Consumption Count vs Previously Approved

	Year	2018BA	2025	Var
Residential	kWh	50,454,856	46,859,680	2,014,784
General Service < 50 kW	kWh	20,920,091	23,066,635	2,146,544
General Service 50 to 4999 kW	kWh	61,343,551	68,250,201	6,906,650
	kW	158,301	189,552	31,251
Unmetered Scattered Load	kWh	559,426	566,996	7,570
Sentinel Lighting	kWh	39,009	33,332	-5,677
	kW	101	92	-9
Street Lighting	kWh	569,977	544,453	-25,524
	kW	1,520	1,501	-19
Total	**kWh**	**133,886,910**	**139,321,298**	**11,044,348**
	kW	**159,922**	**191,145**	**31,223**

HHI notes that it is not proposing any changes to the below customer class composition.

Table 3 – Customer Class Composition and billing determinants

Customer Class Name	Existing/ Proposed	MSC Metric	Usage Metric
Residential	Existing	Customer	kWh
GS<50	Existing	Customer	kWh
GS 500-4999kW	Existing	Connection	kW
USL	Existing	Customer	kWh
Sentinel Lighting	Existing	Connection	kW
Street Lighting	Existing	Connection	kW

To facilitate the understanding of the load forecast, HHI has completed the table below summarizing characteristics unique to the service area of Cooperative Hydro Embrun.

Table 4 – Identifiers Unique to the LDC

	Factor	Unique to LDC
1	Customer growth or decline (historical or future)– residential	No
2	Customer growth or decline (historical or future)– business	No
3	Increased / Reduced kW Demand (historic or future)	No
4	Weather abnormality	No
5	Infrastructure growth / decline	No
6	Change in Demographics	No
7	Customer composite (e.g., 85% residential accounts making up 50% of annual kWh consumption)	No
8	Growth in net-metered accounts, electric vehicles, battery-storage	No
9	Growth in energy conservation	No
10	Etc.	No

The utility doesn't believe there are any specific factors that would be unique to them or would have caused a significant change in how it determines its load forecast compared to the last board-approved cost of service. The economic landscape of Hawkesbury can be described as such in the publication entitled "Strategic Plan 2030". The demographics are summarized in the next section. Follow the link below for the full document.

chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.hawkesbury.ca/images/hotel_de_ville/publications/Plan_Stratgique_HAWKESBURY_Final_LR_VF.pdf.

Demographics and Socioeconomic Profile

Hawkesbury is a town in the Eastern portion of Southern Ontario, located on the south shore of the Ottawa River near the Quebec-Ontario border, halfway between downtown Ottawa and downtown Montreal in Prescott and Russell Counties. The Long-Sault Bridge links Hawkesbury to Grenville, Quebec to the north. Hawkesbury is touted as the third most bilingual town in Ontario, with about 70% of its inhabitants being fluent in English and French, the two official languages of Canada. (Sturgeon Falls is first with 73.4% followed by Hearst at 71%.) 89% of the population is made up of French speaking Franco-Ontarians.

With an area of 8.00 km^2 and a population of 10,263 inhabitants, the Town of Hawkesbury compares to other regional centres in Eastern Ontario such as Brockville, Cornwall and Pembroke. The Town is recognized as a regional centre in the United Counties of Prescott and Russell (UCPR) due to its more urban character and its population density that reaches 1282 per km2, in comparison to that of the United Counties at 42.6 per km^2. Hawkesbury also registers a higher population density when compared to equivalent regional centres. Although Hawkesbury has a substantial population density, in-depth study of land use reveals that over 20% of the territory is unoccupied. This section contains amongst others unoccupied buildings and brownfields and offers the potential for development and densification of the Town's territory without necessitating the expansion of its settlement area, thus limiting urban sprawl. Despite a decline in activity since the 1980s, industry still occupies 16% of the Town's territory. The public spaces and buildings, interwoven communicating areas and parks account for a quarter of the Town's area, which again offers interesting avenues for the Town.

The average household income in Hawkesbury is among the lowest in Ontario. It is lower than that of other comparable urban centres and well below the average of the United Counties of Prescott and Russell. Despite this fact, Hawkesbury's unemployment rate of 8.6 % is comparable to other regional centres and that of the provincial average at 8.3%, although the United Counties boasts a rate of only 5.3%. These indicators reflect the transition Hawkesbury now lives: a transformation from an economic and social centre to that of a centre for services and large retailers, with lower-paying positions that require less expertise or training.

The homeownership rate is among the lowest in Ontario, almost half the population (48.9%) are tenants in a region where the vast majority (79%) own property. In addition to the low rate of home ownership, the Hawkesbury region has a high concentration of social housing in its core (75% of social housing units in the United Counties of Prescott and Russell are located in Hawkesbury). The polarization of low-income population to its downtown core has been a deterrent to attract average-income earners to this area.

3.1.2 Proposed Methodology

HHI's load forecast methodology has not changed since its last Cost of Service in 2018. The forecast is prepared in two phases. The first phase, a billed energy forecast by customer class for 2025, is developed using a total purchase (Wholesale) basis regression analysis. The methodology proposed in HHI's application predicts wholesale consumption (Predicted) using a multiple regression analysis that relates historical monthly wholesale kWh usage to carefully selected variables. The one-way analysis of variance (ANOVA) is used to determine any statistically significant differences between the means of three or more independent (unrelated) groups. The ANOVA compares the means between the groups you are interested in and determines whether any means are statistically significantly different. The utility did not test the NAC method because NAC is generally seen as an alternative when sound historical data is not available.

The most significant variables used in weather-related regressions are monthly historical heating degree days and cooling degree days. Heating degree-days provide a measure of how much (in degrees), and for how long (in days), the outside temperature was below that base temperature. The most readily available heating degree days come with a base temperature of 18°C. Cooling degree-day figures also come with a base temperature and measure how much, and for how long, the outside temperature was above that base temperature.

For degree days, daily observations as reported in Ottawa are used. The regression model also uses other variables which are tested to see their relationship and contribution to the fluctuating wholesale purchases. Each variable is discussed in detail later in HHIs section.

3.1.3 Historical Forecast vs. Actual

HHI purchases electricity from Hydro One, the IESO and embedded generation (MicroFit). In preparing for the Cost-of-Service application, the utility proposes to use a 10-year historical regression.

The following table summarizes the annual wholesale purchases for the ten years 2014 to 2023 as reported to OEB in RRR annual filing "2.1.5 Supply & Delivery Information".

3.1.3.1 Overview of Wholesale Purchases

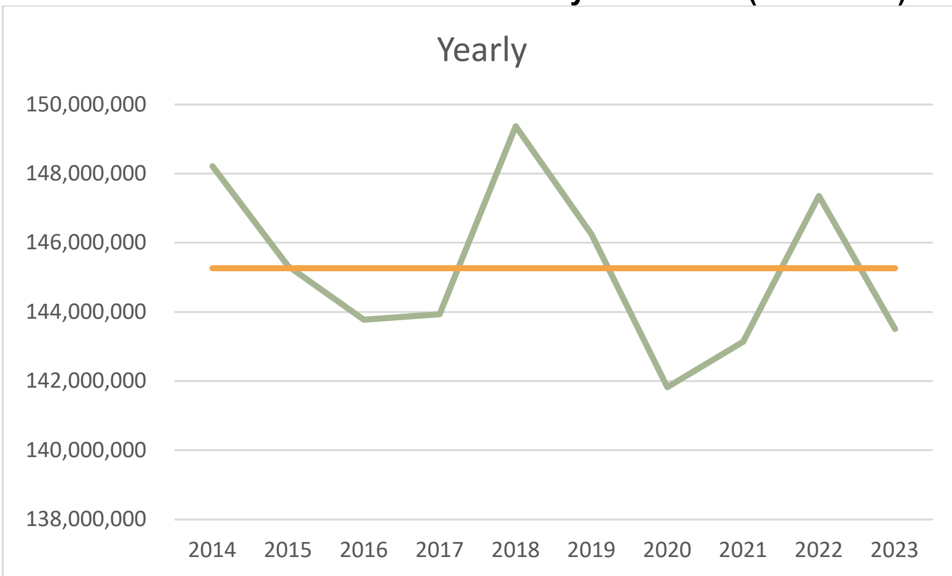
HHI purchases electricity from Hydro One and embedded generation (MicroFit).

Table 5 – Historical Monthly Wholesale (2014-2023)

	2014	2015	2016	2017	2018
January	16,265,085	16,200,735	14,718,343	14,337,400	15,481,381
February	14,503,585	15,131,999	13,897,729	12,819,030	13,378,518
March	15,153,300	14,042,688	13,447,833	14,132,130	13,217,250
April	11,874,217	11,324,367	11,838,705	10,950,248	11,916,836
May	10,672,438	10,317,186	10,969,881	10,643,469	10,734,409
June	11,106,951	10,383,339	11,150,901	10,688,722	10,930,288
July	10,952,793	11,052,222	11,383,386	11,264,330	12,618,637
August	10,644,640	11,200,611	10,410,530	11,356,948	12,287,179
September	10,340,743	10,713,804	9,932,443	10,738,091	10,712,308
October	10,827,826	10,912,279	10,634,537	10,479,182	11,329,032
November	12,184,736	11,545,011	11,702,648	12,274,130	12,912,994
December	**13,681,915**	**12,504,379**	**13,690,301**	**14,250,193**	13,858,215
Total	**148,208,229**	**145,328,620**	**143,777,238**	**143,933,873**	**149,377,048**

	2019	2020	2021	2022	2023
January	15,785,603	14,227,459	13,707,273	15,999,466	14,346,068
February	13,844,478	13,260,218	12,992,815	14,058,192	13,344,419
March	13,728,894	12,772,671	13,070,870	14,192,316	13,413,093
April	11,668,280	10,569,298	10,587,923	12,048,838	10,770,790
May	10,586,491	10,324,081	10,565,427	10,638,696	10,515,073
June	10,339,781	11,025,958	11,379,052	10,780,877	11,123,048
July	12,162,509	12,489,002	11,522,301	11,803,028	11,875,930
August	11,314,609	11,455,354	12,574,895	12,199,005	11,488,090
September	9,839,807	9,939,859	10,422,187	10,617,784	10,745,143
October	10,653,531	10,864,871	10,552,582	10,146,388	10,446,164
November	12,665,601	11,693,328	12,133,836	11,651,663	12,349,248
December	13,657,410	13,200,016	13,626,534	13,216,829	13,089,173
Total	**146,246,996**	**141,822,116**	**143,135,693**	**147,353,082**	**143,506,238**

Table 6 – Trend in Historical Monthly Wholesale (2014-2023)



HHI's load decreased from 2014 to 2017. 2018 saw a spike due to unpredictable weather patterns. 2019 and 2020 were in line with the trend in 2014 to 2017. The customer count in every class is going slightly increasing and HHI was lucky in that the commercial businesses did not shut down during Covid and if they did, they were replaced by new businesses as can be seen in section 3.1.5.

Table 7 – Trend in Historical Yearly Wholesale Purchases

Year	Wholesale	year over year
2014	148,208,229	
2015	145,328,620	-1.94%
2016	143,777,238	-1.07%
2017	143,933,873	0.11%
2018	149,377,048	3.78%
2019	146,246,996	-2.10%
2020	141,822,116	-3.03%
2021	143,135,693	0.93%
2022	147,353,082	2.95%
2023	143,506,238	-2.61%

3.1.3.2 Overview of Variable Used

Covid Flag

HHI analyzed its historical wholesale purchases to see the effects of Covid on its monthly load. Although the utility evaluated various scenarios and the reduction in load related to Covid in 2020 and 2021, it did not feel confident enough in the relationship between the variance to attribute it to Covid, especially given that the load has seen fluctuations in years 2014 to 2019. HHI notes that the regression analysis results were statistically reasonable enough to exclude any Covid related adjustments. HHI used a dummy flag for the initial 3 months of Covid which is consistent with previous load forecasts as part of Cost-of-Service Application. HHI notes that the first 3 months of shutdown were the most disruptive to everyday lives.

Table 8 – Covid Analysis

	2019	2020	2021	2022	Pre Covid AVG (2014-2019)	AVG vs COVID 2020	Avg vs COVID 2021
January	15,785,603	14,227,459	13,707,273	15,999,466	15,643,478	-1,416,019	-1,936,205
February	13,844,478	13,260,218	12,992,815	14,058,192	14,087,332	-827,114	-1,094,518
March	13,728,894	12,772,671	13,070,870	14,192,316	14,033,287	-1,260,616	-962,417
April	11,668,280	10,569,298	10,587,923	12,048,838	11,635,267	-1,065,969	-1,047,344
May	10,586,491	10,324,081	10,565,427	10,638,696	10,773,927	-449,846	-208,500
June	10,339,781	11,025,958	11,379,052	10,780,877	10,795,581	230,377	583,471
July	12,162,509	12,489,002	11,522,301	11,803,028	11,582,618	906,384	-60,317
August	11,314,609	11,455,354	12,574,895	12,199,005	11,239,796	215,558	1,335,099
September	9,839,807	9,939,859	10,422,187	10,617,784	10,390,534	-450,675	31,653
October	10,653,531	10,864,871	10,552,582	10,146,388	10,891,007	-26,136	-338,425
November	12,665,601	11,693,328	12,133,836	11,651,663	12,360,251	-666,923	-226,416
December	13,657,410	13,200,016	13,626,534	13,216,829	13,832,720	-632,704	-206,186
Total	146,246,996	141,822,116	143,135,693	147,353,082	147,265,799	-5,443,683	-4,130,105

- Cells in dark blue represent province-wide shut down.

HHI's monthly power consumption is primarily influenced by five primary elements. The first factor is weather, which includes both heating and cooling effects. This component has the most significant impact on most systems. The second factor is the number of days per month. The third factor is a spring and fall flag. The fourth factor is customer count. The section that follows provides detailed information regarding each variable used in the regression analysis.

Heating and Cooling:

Monthly weather observations detailing the amount of heating or cooling required during the month are required to establish the correlation between observed weather and energy use.

The number of degrees Celsius that the mean temperature falls below 18°C on a given day is known as the heating degree-days. The number of Celsius degrees on a given day with a mean temperature above 18°C is known as the cooling degree-day. The HDD and CDD reported monthly at Ottawa International Airport were used for HHI. Environment Canada publishes monthly observations on heating degree days (HDD) and cooling degree days (CDD) for selected weather stations across Canada.

HHI has adopted the ten-year average from 2014 to 2023 as the definition of weather normal. The following table outlines the monthly weather data used in the regression analysis.

Days per month:

HHI evaluated and included a "Days per month" variable. Although the variables did not yield particularly significant results, they did slightly improve the R-Square, (85.18% to 85.82%) and therefore HHI opted to keep it as a variable.

Spring and Fall Flag:

HHI tested and included a spring and fall flag to identify the spring and fall months. In HHIs case, April, May, September, October, and November are set at "1". Summer and winter months are set at "0". The results without HHIs variable drop considerably to 88.83%; therefore, the utility opted to include the variable in its regression analysis.

Customer Count:

HHI tested and included a "Customer Count" variable. The rationale for testing HHIs particular variable is that hypothetically, the load is expected to grow due to more customers being added to the distribution system. In HHI's case, significantly improved the regression analysis results (89.08% to 89.22%); therefore, the utility opted to keep it.

Origin of variables

- HDD: Stats Canada
- CDD : Stats Canada
- Days per month Computed by the utility
- Customer Count Computed by the utility
- Spring Fall Flag Computed by the utility

The rationale for including and excluding variables.

During the process of testing the regression analysis, many different variables and times periods are tested to arrive at the best R-Squared. The utility's rationale behind selecting or dropping certain variables involves a "no-worst" rationale. In other words, if a variable is justified and does not worsen the results, it is generally kept as one of the regression variables. In HHI's case, the Days per Month only slightly improved the R-Square. However, the utility still opted to keep them as part of the regression analysis.

Table 9 – Results without individual variables

Customer Class Name	Proposed Adjusted R-Square
HDD	**85.18**
CDD	**85.18**
+	
Days per Month	**85.82**
+	
Spring Fall	**88.83**
+	
Covid	**89.08**
+	
Customer Count	**89.22**

3.1.3.3 Regression Results

The table below displays the R-squared for the multiple regression equation. The table also shows the equation's standard error margin and tests the analysis for statistical significance at a 95% confidence interval. In simple terms, 89.22% of the change in wholesale can be explained by the difference in 5 independent variables. The adjusted R-square of 89.22% is relatively the same as than the 88% adjusted R-Square approved in its 2018 load forecast.

Table 10 – Equation Parameters

R Squared	**0.8977**
Adjusted R Squared	**0.8922**
Standard Error	**515653.2813**
F - Statistic	**165.2221**

The table below summarizes the individual equation coefficient components with corresponding error margins. The sum of these error margins will differ from the overall standard error of the equation due to the offsetting effect between the components. The t Stat represents a ratio of the estimated coefficient to its standard error. The t Stat can be interpreted as a measure of predictability of the variable, with the higher being better. The p-Value represents the probability that the t Stat can be outside of the extremities of the standard error. The p-Value can be interpreted as the probability that the error margin is due to chance rather than a real difference with lower being better.

Table 11 – Multiple Regression Equation

	Coefficients	Standard Error	t Stat	p-Value
Intercept	-6,568,046.552	6,526,388.013	-1.006	31.64%
HDD	5,472.100	230.781	23.711	0.00%
CDD	10,393.695	1,679.545	6.188	0.00%
Days in month	222,157.911	59,305.039	3.746	0.03%
Spring/Fall	-612,600.270	117,571.856	-5.210	0.00%
Covid	-584,668.716	305,841.978	-1.912	5.85%
Customer Number	1,797.648	1,126.952	1.595	11.35%

The table below displays a simple linear regression analysis of each independent variable against the dependent variable. The independent R-squared results help determine which independent variables should be included in the analysis.

Table 12 – Independent Analysis

R Squared	Coefficient	Intercept
73.15%	4447.51	10517935.00
7.96%	-9659.77	12366090.00
0.33%	-109471.49	15437325.00
16.13%	-1256503.72	12733995.00
0.82%	-906385.74	12128402.00
1.54%	4533.37	-13112513.00
73.15%	4447.51	10517935.00

The Durbin-Watson statistic determines if sequential (adjacent) residuals are correlated. One of the regression analysis assumptions is that the residuals (errors) are independent of each other. Sometimes, however, the data set may unknowingly contain an 'order effect,' meaning that a previous measurement could influence the outcome of the successive observations. If the residuals are not correlated, the Durbin-Watson statistic should be close to 2. Critical values displayed to the right of the statistic are based on the sample and the number of independent variables. Based on the position of the Durbin-Watson statistic relative to these values, the following assumptions can be made:

Table 13 – Confidence (95%)

1.315	**Durbin-Watson Statistic**
1.62 - 1.79	**Positive autocorrelation detected**
2.176	**Critical F-Statistic - 95% Confidence**
91.87%	**Confidence to which analysis holds**

Once HHI calculated its preferred Regression Results, the Load Forecast model then uses the coefficients from the regression results to adjust the wholesale purchases. Table 14, as seen below, demonstrates the results of HHIs adjustment. The table shows a comparison of the actual and predicted wholesale purchases.

Table 14 – Trend in Historical Yearly Wholesale Purchases

kWh Purchased VS Weather Adjusted						
Year	**Wholesale**	**year over year**	**Predicted**	**year over year**	**Wholesale vs Predicted**	
2014	148,208,229		147,403,670		0.54%	
2015	145,328,620	-1.94%	144,362,608	-2.06%	0.66%	
2016	143,777,238	-1.07%	145,381,045	0.71%	1.12%	
2017	143,933,873	0.11%	144,063,248	-0.91%	0.09%	
2018	149,377,048	3.78%	146,792,557	1.89%	1.73%	
2019	146,246,996	-2.10%	146,586,592	-0.14%	0.23%	
2020	141,822,116	-3.03%	143,853,456	-1.86%	1.43%	
2021	143,135,693	0.93%	143,994,005	0.10%	0.60%	
2022	147,353,082	2.95%	145,515,401	1.06%	1.25%	
2023	143,506,238	-2.61%	144,736,549	-0.54%	0.86%	
				Mean	**0.85%**	
				Median	**0.76%**	

3.1.3.4 Determination of Weather Normalized Forecast

Similar to the load forecasting approved by the Board in 2018, the allocation to certain rate classes that are susceptible to weather conditions (Residential, GS<50, GS>50-4999) is determined by the percentage share of each class's actual retail kilowatt-hours (excluding distribution losses) and a portion of actual wholesale kilowatt-hours.

The weather-normalized wholesale kilowatt-hours (kWh) for previous years are distributed across these categories according to their respective historical proportions. Projected values for 2023 and 2024 are determined by averaging data from the past 10 years. The historical volumetric relationship between kWh and kW is then used to convert sales for these customer classes to kW for those rate classes that use kW consumption as a billing criterion.

The average demand per customer is then calculated by the utility using a relevant historical average.

The following tables illustrate the methodology as described above for each of HHI's classes.

Table 15 – Residential Forecast

Residential						
Year	**Residential Actual kWh**	**Total Actual Wholesale**	**Ratio%**	**Predicted Wholesale**	**Residential Weather Normal**	**Per customer**
2014	51,395,624	148,208,229	34.68%	147,403,670	51,116,619	10,439
2015	49,584,777	145,328,620	34.12%	144,362,608	49,255,183	10,203
2016	48,033,529	143,777,238	33.41%	145,381,045	48,569,334	10,086
2017	46,872,504	143,933,873	32.57%	144,063,248	46,914,636	9,712
2018	49,832,959	149,377,048	33.36%	146,792,557	48,970,760	10,114
2019	50,127,667	146,246,996	34.28%	146,586,592	50,244,067	10,348
2020	50,133,388	141,822,116	35.35%	143,853,456	50,851,457	10,444
2021	49,486,096	143,135,693	34.57%	143,994,005	49,782,839	10,203
2022	52,621,509	147,353,082	35.71%	145,515,401	51,965,251	10,613
2023	51,165,175	143,506,238	35.65%	144,736,549	51,603,825	10,467
2024			34.37%	146,834,692	50,466,253	10,228
2025			34.37%	146,780,360	50,447,580	10,217

Table 16 – GS < 50kW Forecast.

General Service < 50 kW						
Year	**Actual kWh**	**Total Wholesale**	**Ratio%**	**Predicted Wholesale**	**Weather Normal**	**Per customer**
2014	18,998,367	148,208,229	12.82%	147,403,670	18,895,233	29,953
2015	19,208,911	145,328,620	13.22%	144,362,608	19,081,227	31,187
2016	18,569,272	143,777,238	12.92%	145,381,045	18,776,409	30,908
2017	17,794,586	143,933,873	12.36%	144,063,248	17,810,581	29,198
2018	18,737,391	149,377,048	12.54%	146,792,557	18,413,200	30,128
2019	18,160,453	146,246,996	12.42%	146,586,592	18,202,623	29,800
2020	16,501,837	141,822,116	11.64%	143,853,456	16,738,195	27,606
2021	16,178,997	143,135,693	11.30%	143,994,005	16,276,014	26,519
2022	17,526,042	147,353,082	11.89%	145,515,401	17,307,470	28,138
2023	16,872,029	143,506,238	11.76%	144,736,549	17,016,677	27,828
2024			12.29%	146,834,692	18,040,948	29,605
2025		*Avg*	12.29%	146,780,360	18,034,273	29,697

Table 17 – GS 50-4999kW Forecast (kWh)

General Service > 50 to 499 kW						
Year	**Actual kWh**	**Total Wholesale**	**Ratio%**	**Predicted Wholesale**	**Weather Normal**	**Per customer**
2014	71,472,278	148,208,229	48.22%	147,403,670	71,084,286	738,538
2015	70,137,954	145,328,620	48.26%	144,362,608	69,671,741	800,058
2016	73,896,610	143,777,238	51.40%	145,381,045	74,720,912	851,520
2017	73,422,068	143,933,873	51.01%	144,063,248	73,488,064	863,719
2018	74,695,983	149,377,048	50.00%	146,792,557	73,403,608	881,725
2019	72,109,765	146,246,996	49.31%	146,586,592	72,277,209	870,810
2020	69,557,731	141,822,116	49.05%	143,853,456	70,554,018	860,415
2021	71,727,053	143,135,693	50.11%	143,994,005	72,157,164	882,656
2022	77,280,797	147,353,082	52.45%	145,515,401	76,317,007	913,065
2023	75,620,336	143,506,238	52.69%	144,736,549	76,268,646	877,492
2024			50.25%	146,834,692	73,784,880	858,591
2025		*Avg*	50.25%	146,780,360	73,757,579	868,056

Table 18 – GS 50-499kW Forecast (kW)

General Service > 50 to 499 kW			
Year	**kWh**	**kW**	**KW/kWh Ratio**
2014	71,472,278	189,092	0.00265
2015	70,137,954	186,098	0.00265
2016	73,896,610	188,567	0.00255
2017	73,422,068	187,212	0.00255
2018	74,695,983	191,488	0.00256
2019	72,109,765	176,403	0.00245
2020	69,557,731	176,703	0.00254
2021	71,727,053	176,764	0.00246
2022	77,280,797	188,973	0.00245
2023	76,268,646	187,486	0.00246
2024	73,784,880	186,814	0.00253
2025	73,757,579	186,745	0.00253
Avg			*0.00253*

Table 19 – USL Forecast

Year	kWh	Customer	kWh per customer
2014	281,727	5	56,345
2015	281,352	6	49,650
2016	293,553	9	32,617
2017	302,268	10	31,269
2018	308,696	11	27,039
2019	321,114	16	20,070
2020	332,004	16	21,420
2021	331,698	15	22,113
2022	348,260	15	23,217
2023	348,260	15	23,217
2024	372,970	17	22,007
2025	421,393	19	22,007
Avg		*15*	*22,007*

Table 20 – Sentinel Forecast

Street Lighting						
Year	**kWh**	**kW**	**Connection**	**kWh per connection**	**KW per connection**	**KW/kWh Ratio**
2014	102,060	1,787	72	1,418	25	0.01751
2015	102,060	1,793	72	1,418	25	0.01757
2016	88,560	1,509	62	1,438	24	0.01703
2017	68,050	1,191	47	1,463	26	0.01750
2018	66,381	1,164	47	1,425	25	0.01753
2019	54,153	923	48	1,128	19	0.01704
2020	46,592	813	46	1,015	18	0.01745
2021	44,262	769	45	984	17	0.01738
2022	40,206	701	45	893	16	0.01744
2023	36,516	636	45	811	14	0.01742
2024	51,569	897	43	1,199	21	0.01739
2025	49,171	855	41	1,199	21	0.01739
Avg			*53*	*1,199*	*21*	*0.01739*

Table 21 – Streetlighting Forecast

Street Lighting						
Year	**kWh**	**kW**	**Connection**	**kWh per connection**	**KW per connection**	**KW/kWh Ratio**
2014	1,356,160	3,764	1204	1,126	3.1265	0.00278
2015	1,040,149	2,865	1204	864	2.3800	0.00275
2016	643,599	1,849	1199	537	1.5421	0.00287
2017	497,608	1,381	1197	416	1.1538	0.00278
2018	497,725	1,381	1199	415	1.1523	0.00278
2019	498,209	1,381	1208	413	1.1437	0.00277
2020	503,195	1,391	1224	411	1.1366	0.00276
2021	510,011	1,415	1253	407	1.1295	0.00277
2022	510,655	1,417	1256	407	1.1281	0.00277
2023	536,652	1,417	1,256	427	1.1281	0.00264
2024	515,405	1,428	1,262	408	1.1314	0.00277
2025	517,985	1,435	1,269	408	1.1314	0.00277
3 Yr. Avg			*1,227*	*414*	*1*	*0*

3.1.3.5 Final Load Forecast

The table 22 below shows the final forecast.

Table 22 – Final Load and Customer Forecast

Final Load Forecast Results										
	Year	**2018BA**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**
Residential	Cust/Conn	4,836	4,842	4,856	4,869	4,879	4,897	4,930	**4,934**	4,938
	kWh	50,454,856	46,872,504	49,832,959	50,127,667	50,133,388	49,486,096	52,621,509	**50,466,253**	50,447,580
General Service < 50 kW	Cust/Conn	618	611	611	606	614	615	612	**609**	607
	kWh	17,883,115	17,794,586	18,737,391	18,160,453	16,501,837	16,178,997	17,526,042	**18,040,948**	18,034,273
General Service 50 to 4999 kW	Cust/Conn	89	83	83	82	82	84	87	**86**	85
	kWh	85,142,906	73,422,068	74,695,983	72,109,765	69,557,731	71,727,053	77,280,797	**73,784,880**	73,757,579
	kW	221,782	187,212	191,488	176,403	176,703	176,764	188,973	**186,814**	186,745
Unmetered Scattered Load	Cust/Conn	10	10	11	16	16	15	15	**19**	17
	kWh	432,358	302,268	308,696	321,114	332,004	331,698	348,260	**372,970**	421,393
Sentinel Lighting	Cust/Conn	57	47	48	46	45	45	45	**43**	41
	kWh	84,626	66,381	54,153	46,592	44,262	40,206	36,516	**51,569**	49,171
	kW	240	1,164	923	813	769	701	636	**897**	855
Street Lighting	Cust/Conn	1,211	1,199	1,208	1,224	1,253	1,256	1,256	**1,262**	1,269
	kWh	646,505	497,608	497,725	498,209	503,195	510,011	510,655	**522,180**	524,794
	kW	1,857	1,381	1,381	1,381	1,391	1,415	1,417	**1,438**	1,445
Total	**Cust/Conn**	**8,668**	**6,791**	**6,816**	**6,843**	**6,888**	**6,911**	**6,945**	**6,953**	**6,956**
	kWh	**128,276,950**	**138,955,416**	**144,126,907**	**141,263,799**	**137,072,418**	**138,274,062**	**148,323,778**	**143,238,801**	**143,234,789**
	kW	**161,330**	**189,757**	**193,791**	**178,597**	**178,863**	**178,880**	**191,026**	**189,148**	**189,044**

3.1.4 Accuracy of Load Forecast

The customer count has been consistent over the past three cost of service applications which is correlated with the proposed customer count in 2025 Cost of Service.

To come up with the best Adjusted R-Square, HHI did an in-depth analysis of its wholesale to better understand the trend in its monthly load as it relates to the variables selected for the regression analysis.

The table below summarizes the year over year variance in each category.

Table 23 – Year over Year load variance

	2018BA	2018	2019	2020	2021	2022	2023	2024	2025
Residential	44,844,896	+2,027,608	+2,960,455	+294,707	+5,721	-647,292	+3,135,413	-2,155,255	-18,673
General Service < 50 kW	20,920,091	-3,125,505	+942,805	-576,938	-1,658,616	-322,840	+1,347,044	+514,907	-6,675
General Service 50 to 4999 kW	61,343,551	+12,078,517	+12,73,915	-2,586,218	-2,552,033	+2,169,322	+5,553,744	-3,495,917	-27,302
Unmetered Scattered Load	559,426	-257,158	+6,428	+12,418	+10,890	-306	+16,562	+24,710	+48,423
Sentinel Lighting	39,009	+27,372	-12,229	-7,561	-2,329	-4,056	-3,690	+15,053	-2,399
Street Lighting	569,977	-72,369	+118	+484	+4,986	+6,816	+644	11,525	2,614

The residential load experienced significant fluctuations over the years. From 2018 to 2023, there was an overall increase in load, but a notable decrease occurred in 2023. This trend was followed by a sharp decrease in 2024, which is followed by a decrease in 2025. The final value shows a net decrease of -18,673 kWh compared to 2024. These fluctuations are attributed to weather variations, economic conditions, or shifts in customer behavior.

The General Service < 50 kW category showed significant volatility with a general trend of decline. Between 2018 and 2022 followed by some recovery in 2023. Although there was some recovery in 2023 and 2024 the final decrease of -6,675 kWh indicates a loss over the period.

The General Service 50 to 4999 kW category shows some volatility. From 2018 to 2019, there were increases which were followed by significant declines in 2020 and 2021. While there was some recovery in 2022 and 2023, the load dropped again in 2025 based on a 10-year regression. The final decrease of -27,302 kWh reflects a net reduction over the period.

The Unmetered Scattered Load category shows a general upward trend. In 2018, there was an initial decrease. From 2019 to 2025, the load consistently increased, resulting in a significant rise in 2025.

Sentinel Lighting displays significant fluctuations with an overall decreasing trend 2019 to 2023 with a increase in 2024. The final decrease of -2,399 kWh indicates a slight reduction compared to 2024

Street Lighting values have remained relatively stable with minor fluctuations. There was a significant drop in 2018, followed by only minor changes from 2019 to 2025, where the load has gradually increased each year. The final increase of +2,614 kWh reflects a slight overall increase from 2024

3.1.5 Determination of Customer Forecast

HHI has used a simple geometric mean function to determine the forecasted customers for 2024 and 2025. The geometric mean is more appropriate when dealing with percentages and rates of change. Although the formula is somewhat simplistic, it reasonably represents HHI's natural customer growth. HHI notes that MicroFit related consumption is included in the Wholesale Purchases. Historical customer counts and projected customer counts for 2014 and 2023 are presented in Table 24 below. A variance analysis of customer counts and projections is shown in the following table. HHI notes that a 12-month average was used to determine the yearly customer/connection count to determine the bridge and test year forecast.

Table 24 – Customer Count Forecast

	Residential		General Service < 50 kW		General Service > 50 to 4999 kW		USL		Sentinel		Streetlights	
Date	**Customers or Connections**	**Growth Rate**	**Cust or Conn**	**Growth Rate**	**Cust or Conn**	**Growth Rate**	**Cust or Conn**	**Growth Rate**	**Cust or Conn**	**Growth Rate**	**Cust or Conn**	**Growth Rate**
2014	4897		631		96		5		72		1204	
2015	4827	0.9859	612	0.9699	87	0.9048	5	1.0000	72	1.0000	1204	0.9956
2016	4816	0.9976	608	0.9929	88	1.0077	6	1.1333	62	0.8553	1199	0.9985
2017	4831	1.0031	610	1.0041	85	0.9696	9	1.5882	47	0.7551	1197	1.0014
2018	4842	1.0023	611	1.0019	83	0.9785	10	1.0741	47	1.0018	1199	1.0074
2019	4856	1.0029	611	0.9995	83	0.9970	11	1.1810	48	1.0304	1208	1.0134
2020	4869	1.0027	606	0.9926	82	0.9880	16	1.4015	46	0.9566	1224	1.0237
2021	4879	1.0021	614	1.0122	82	0.9970	16	0.9688	45	0.9800	1253	1.0027
2022	4897	1.0036	615	1.0022	84	1.0224	15	0.9677	45	1.0000	1256	1.0027
2023	4930	1.0069	612	0.9942	87	1.0399	15	1.0000	45	1.0000	1256	1.0000
Geomean		*1.0008*		*0.9965*		*0.9887*		*1.1298*		*0.9491*		*1.0050*
2024	4934	1.0008	609	0.9965	86	0.9887	17	1.1298	43	0.9491	1262	1.0050
2025	4938	1.0008	607	0.9965	85	0.9887	19	1.1298	41	0.9491	1269	1.0050

3.1.6 Accuracy and Variance Analysis of the Customer/Connection Forecast

Table 25 – Year over Year Variance Analysis

Customer Count Variance analysis										
	2018BA	2018	2019	2020	2021	2022	2023	2024	2025	2018-2025
Residential	4,836	6	14	13	10	17	34	4	4	102
General Service < 50 kW	618	-6	-0	-5	7	1	-4	-2	-2	-10
General Service 50 to 4999 kW	89	-6	-0	-1	-0	2	3	-1	-1	-4
Unmetered Scattered Load	10	-0	2	5	-1	-1	0	4	-2	7
Sentinel Lighting	57	-10	1	-2	-1	0	0	-2	-2	-16
Street Lighting	1,211	-13	9	16	29	3	0	6	6	57

As shown in the table above, the customer count for Residential has increased slowly but steadily over the years. Specifically, the Residential class is projected to see an addition of 4 customers during the bridge year and another 4 customers in the test year, which aligns well with the utility's actual projections and indicates consistent growth.

In contrast, both General Service classes over 50 KW have experienced a modest overall decrease of 10 and 4 customers respectively from 2018 to 2025. This slight drop suggests some shutdowns in this segment, although it remains relatively stable.

For other classes, such as Unmetered Scattered Load, Sentinel Lighting, and Street Lighting, there have been no significant changes since the last Cost of Service study. The Unmetered Scattered Load category has seen only minor fluctuations, indicating stable service levels. Sentinel Lighting has experienced a notable decrease in customer count, while Street Lighting shows a general increase.

3.2 CDM ADJUSTMENT TO LOAD FORECAST

3.2.1 CDM Adjustments

HHI's persisting effects of CDM projects are embedded in the utility wholesale; therefore, no adjustment was made to the load forecast to account for CDM.

HHI confirms that it was not contractually obligated to complete programs delivered by the distributor after April 2019. HHI is not planning for or aware of any new CDM programs initiated in the Test Year (2025). Consequently, no manual CDM adjustment is required for the Load Forecast.