



CANADIAN NIAGARA POWER INC.

A **FORTIS** ONTARIO
Company

EXHIBIT 3: OPERATING REVENUE

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3.1 LOAD AND REVENUE FORECAST

3.1.1 INTRODUCTION

The evidence presented in this Exhibit provides information supporting Canadian Niagara Power Inc.'s (CNPI) distribution revenue and other revenue for the 2017-2020 historical period, the 2021 Bridge Year and the 2022 Test Year. CNPI's Operating revenue is derived mainly from fixed and variable tariff charges as well as pass through charges and specific service charges. Revenue from commodity sales are excluded from this Exhibit, and are addressed in Exhibits 4 and 9.

CNPI is proposing a Service Revenue Requirement of \$23,458,959 for the 2022 Test Year, comprised of \$22,117,708 in Base Revenue Requirement (i.e. distribution revenue), and Other Revenue offsets of \$1,341,251.

This Exhibit describes CNPI's load and customer forecasts, with the load forecast methodology and assumptions, including treatment of Conservation and Demand Management (CDM) and COVID-19 impacts, described in detail in Section 3.2. Customer counts used throughout this Exhibit represent annual averages of the twelve month-end customer counts in each year, and the methodology for forecasting customer counts is described in Section 3.2.2.6. Variance analysis of load, customer counts and distribution rate revenue by rate class is provided in Section 3.3.

Details of CNPI's Other Revenues (including variance analysis) are presented at the end of this Exhibit, in Section 3.4

3.1.2 SUMMARY OF OPERATING REVENUE

Table 3 - 1 below provides a summary of CNPI's operating revenue for the 2017 to 2022 period.

1 **Table 3 - 1: Summary of Operating Revenue (\$)**

	2017 Approved	2017 Actual	2018 Actual	2019 Actual	2020 Actual	2021 Bridge	2022 Test
Total Distribution Revenue	18,836,020	19,011,345	19,080,876	18,992,337	19,464,509	19,540,040	22,120,728
Other Revenue							
Specific Service Charges	158,264	142,911	131,952	129,839	129,161	134,183	130,700
Late Payment Charges	354,100	213,487	170,638	161,061	76,808	129,500	129,500
Other Operating Revenues	449,635	464,489	791,768	434,040	430,341	426,992	741,651
Other Income or Deductions	1,586,194	1,730,361	1,550,211	866,197	-75,840	-72,600	339,400
Total Other Revenue	2,548,193	2,551,248	2,644,570	1,591,137	560,470	618,075	1,341,251
Total Operating Revenue	21,384,213	21,562,593	21,725,446	20,583,474	20,024,979	20,158,115	23,461,979

- 2
- 3 Historical values are consistent with CNPI's draft rate order in EB-2016-0061 and CNPI's 2017-2020
- 4 Reporting and Record Keeping Requirements (RRR) filings. CNPI's total distribution revenue forecast for
- 5 the 2021 Bridge Year is based on applying CNPI's 2021 approved distribution rates to the customer and
- 6 load forecasts presented in this Exhibit 3. CNPI's 2022 Test Year distribution revenue forecast is
- 7 consistent with the Test Year rate design presented in Exhibit 8. Section 3.3.2 provides further detail on
- 8 annual distribution revenue by rate class.
- 9 CNPI's 2021 and 2022 forecasts for Other Revenue are based on consideration of historical year
- 10 expenses, adjusted for known changes, as detailed in Section 3.4.
- 11 CNPI's 2022 Test Year distribution revenue and total operating revenue forecast are \$3,020 (0.014%)
- 12 more than its corresponding Base Revenue Requirement and Service Revenue Requirement, due to
- 13 rounding during the rate design process, as detailed in Exhibit 8.

3.2 LOAD AND CUSTOMER FORECAST

3.2.1 OVERVIEW OF LOAD AND CUSTOMER FORECAST

This section describes the approach taken to determine CNPI's load and customer forecast for the 2022 Test Year, including economic assumptions and sources of data. It explains wholesale purchases and subsequent adjustments to the wholesale purchases. Rationale is provided for each variable used in the regression analysis to predict future wholesale purchases. Regression results and wholesale purchase forecasts are also provided, along with forecasted customer counts. Finally, this section concludes with a description of all assumptions and adjustments required to determine load and customer count forecasts for the 2021 Bridge Year and the 2022 Test Year.

Table 3 - 2 below summarizes the actual and forecasted trends for customer/connection counts, kWh consumption and billed kW demand. The 2022 forecasted values from this table are used as inputs to the Cost Allocation and Rate Design processes in Exhibits 7 and 8 of this Application.

1

Table 3 - 2: Customer and Load Trends 2017-2022

	2017 Approved	2017 Actual	2018 Actual	2019 Actual	2020 Actual	2021 Bridge	2022 Test
Customers / Connections							
Residential	26,074	26,228	26,465	26,647	26,916	27,071	27,227
GS < 50	2,489	2,507	2,491	2,496	2,514	2,514	2,515
GS 50 to 4,999 kW	217	198	198	190	193	190	187
Embedded Distributor	1	1	1	1	1	1	1
Street Light (Connections)	5,713	5,743	5,774	5,879	5,997	6,030	6,064
Sentinel Light (Connections)	695	706	698	669	645	627	610
USL	35	49	48	47	46	47	48
TOTAL Customers (Excl SL, Sentinel, USL)	28,781	28,934	29,154	29,334	29,623	29,776	29,930
kWh							
Residential	201,294,289	192,333,397	213,384,792	208,333,695	220,200,220	206,258,605	207,937,091
GS < 50	69,390,323	66,385,178	68,552,191	68,296,620	63,219,122	66,411,371	66,588,571
GS 50 to 4,999 kW	190,144,345	185,980,426	186,317,854	183,204,908	169,630,767	178,767,212	176,291,005
Embedded Distributor	5,205,754	4,768,120	5,218,945	5,234,524	5,321,960	5,173,258	5,185,553
Street Light	2,991,556	1,392,668	1,390,047	1,401,778	1,425,844	1,441,120	1,449,102
Sentinel Light	629,014	631,150	606,042	565,913	525,915	528,557	514,043
USL	1,462,761	1,308,270	1,307,306	1,299,487	1,307,650	1,307,291	1,340,169
TOTAL	471,118,042	452,799,209	476,777,177	468,336,925	461,631,477	459,887,414	459,305,534
kW							
Residential							
GS < 50							
GS 50 to 4,999 kW	610,067	588,372	580,251	553,966	527,484	529,536	522,202
Embedded Distributor	13,921	12,501	13,532	13,276	14,340	13,830	13,863
Street Light	9,240	4,209	4,252	4,286	4,348	4,356	4,403
Sentinel Light	1,916	2,038	1,951	1,856	1,723	1,607	1,615
USL							
TOTAL	635,144	607,120	599,986	573,383	547,895	549,330	542,083

2

3.2.2 LOAD FORECAST METHODOLOGY AND DETAIL

CNPI's load forecast is prepared in two phases. The first phase, a billed energy forecast by customer class for 2022, is developed using a total purchase "Wholesale" basis regression analysis. CNPI's Wholesale kWh purchases, including adjustments required to determine "Adjusted Wholesale" values for the regression analysis are described in Section 3.2.2.3. In the second phase, a final billed energy forecast by customer class is developed, that includes the following further adjustments:

- a) A consumption forecasted is added to the General Service 50 to 4,999 kW rate class, to account for expected 2021 and 2022 consumption for large customer accounts whose consumption was removed during the Wholesale normalization process in the first phase.
- b) The forecasted weather-normalized consumption per customer is multiplied by the expected change in customer count for each rate class. Since CNPI's customer counts are expected to change in 2021 and 2022 (see Sections 3.2.2.6 and 3.2.3.1), but customer count was not a statistically significant variable in the regression forecast (see Section 3.2.2.4), this accounts for changes in expected consumption by rate class resulting from forecasted changes in customer count.

The methodology proposed in this application predicts wholesale consumption using a multiple regression analysis that relates historical monthly Adjusted Wholesale kWh purchases to a number of carefully selected variables. The one-way analysis of variance (ANOVA) is used to determine whether there are 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 of those means are statistically significantly different from each other. CNPI did not test the Normalized Average Consumption (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 a base temperature. The most readily available heating degree days (HDD) come with a base temperature of 18°C. Cooling degree-day (CDD) values, also using a base temperature of 18°C, provide a measure of how much, and for how long, the outside temperature was above that base temperature.

For degree days, daily observations as reported by the Welland-Pelham weather station in the Niagara area are used. The regression model also uses other variables which are tested to observe their relationship and contribution to the fluctuating Adjusted Wholesale purchases. Each variable is discussed in detail in Section 3.2.2.4.

3.2.2.1 EXPLANATION OF MULTIVARIATE REGRESSION ANALYSIS

Multiple variable regression analysis can be utilized for forecasting purposes by analyzing how several variables have affected a dependent variable historically. From this, the relationship between these variables and the dependent variable can be expressed as:

$$Y = A + B_1X_1 + B_2X_2 + \dots + B_nX_n + E$$

Where:

Y = Predicted dependent variable value

A = the value of Y when all X variables are zero

X = the independent variable

B = the coefficients corresponding to the independent variables

n = the number of independent variables

E = an error term

By forecasting the independent variables, the dependent variable can be predicted. However, to ascertain that the relationship is not coincidental, the utility must first assess the correlation between the dependent and individual independent variables. This can be accomplished by the Pearson Correlation Coefficient (otherwise known as "R") to each independent variable. This depicts how much of the change in dependent variable can be explained by the change in independent variables. Those variables with a high R-squared should then be used for multiple regression. The same correlation coefficient can be applied to multiple independent variables to ascertain how much of the change in a dependent variable can be explained by changes in all independent variables.

$$R \text{ Squared} = (B'X'Y - n\text{AVG}(Y)^2) / Y'Y - n\text{AVG}(Y)^2$$

Where:

B', X', Y' = Matrixes of all combinations of B, X & Y respectively

The adjusted R-squared is calculated by "correcting" for the number of independent variables in a multiple regression analysis. It is often used to compare models involving a different number of coefficients.

$$\text{Adj RSq} = (1 - (1 - \text{RSq}) * ((n - 1) / (n - k)))$$

The statistical significance of the multiple regression can be tested with the F-test which is derived from a normal probability distribution. A critical point along the distribution can be found given a degree of confidence required, the number of variables and the number of observations. If the F-statistic is at this point, then the analysis can be deemed statistically significant at the level of confidence.

$$F\text{-statistic} = (R^2/k-1)/(1-R^2)/(n-k)$$

Where:

k = number of independent variables

n = number of observations

Independent variables that are highly correlated themselves can lead to high variances in slope estimation (B). This is known as “Multicollinearity.” For this reason, independent variables with a high level of multicollinearity to the other independent variables should consider being omitted from the analysis.

Based on the result of CNPI’s regression analysis, the formula used to predict the monthly weather normalized Adjusted Wholesale kWh values is as follows:

$$6,952,526 (\text{intercept}) + (\text{HDD} * 14,479) + (\text{CDD} * 100,979) + (\text{Days per Month} * 1,012,236) - (\text{Spring/Fall Binary Flag (1 or 0)} * 1,797,624) - (\text{CDM Activity Variable} * 1.2)$$

When the regression line is linear ($y = ax + b$), the regression coefficient is the constant (a) that represents the rate of change of one variable (y) as a function of changes in the other (x); it is the slope of the regression line. The intercept is the predicted value of the dependent variable when all predictor variables are set to 0.

3.2.2.2 ECONOMIC AND CLIMATE OVERVIEW

CNPI’s service areas primarily include the Town of Fort Erie, the City of Port Colborne, and the Town of Gananoque.¹

The climate in CNPI’s service area is humid continental, which is characterized by large variations in seasonal temperatures including cold winters and warm, humid summers. The location of CNPI’s service areas along the shores of Lake Erie and Lake Ontario often results in lake-effect winds and precipitation more severe than areas further inland. As discussed in Section 3.2.2.4 below, weather data from the

¹ Certain specific addresses near municipal boundaries are served by other distributors and therefore excluded from CNPI’s licensed service area. Similarly CNPI serves a small number of addresses outside of these municipal boundaries.

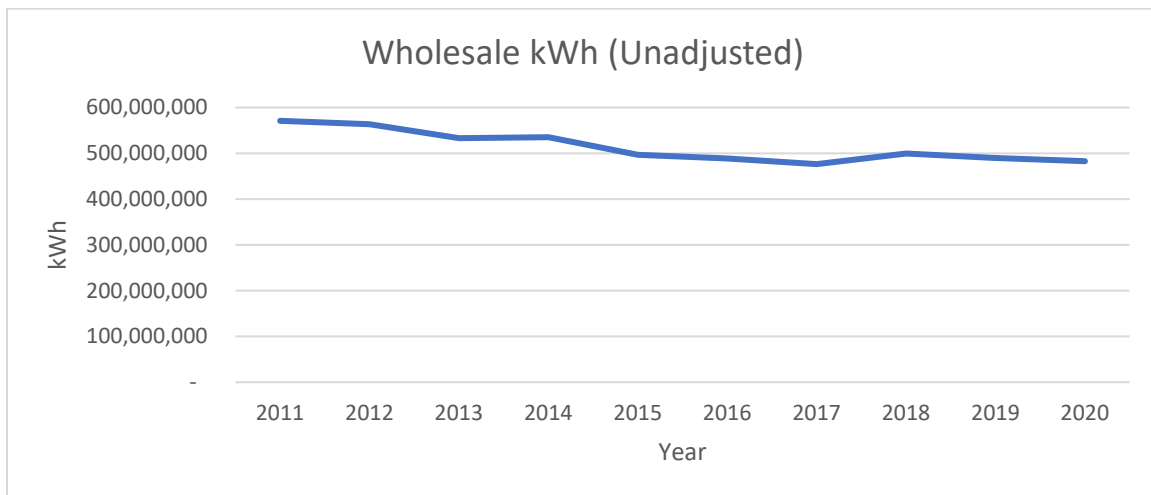
Welland-Pelham weather station was used for CNPI's load forecast regression model due to a combination of completeness and proximity.

Major industries in CNPI's service area include refining/manufacturing/fabricating (industrial, metals, chemical and food products, among others), tourism/service/hospitality, agriculture, as well as other supporting industries. Over the past 10 years, CNPI's service area has seen a gradual decline in commercial and industrial load (particularly for larger customers), partially offset by a gradual increase in residential customers and associated load. CNPI tested a number of economic and employment variables in its regression analysis, however these variables are generally available at a more aggregated level (e.g. Ontario-wide, nearby large cities, regional) and none of the variables tested produced statistically relevant results.

3.2.2.3 OVERVIEW OF WHOLESALE PURCHASES

CNPI purchases electricity from the Independent Electricity System Operator (IESO) as a market participant, from Hydro One Networks Inc, as an embedded local distribution company (LDC), and from embedded retail generators in its Gananoque service area. Figure 3 - 1 illustrates the trend of CNPI's annual wholesale electricity purchases:

Figure 3 - 1: Wholesale Purchases 2011-2020 (Unadjusted)

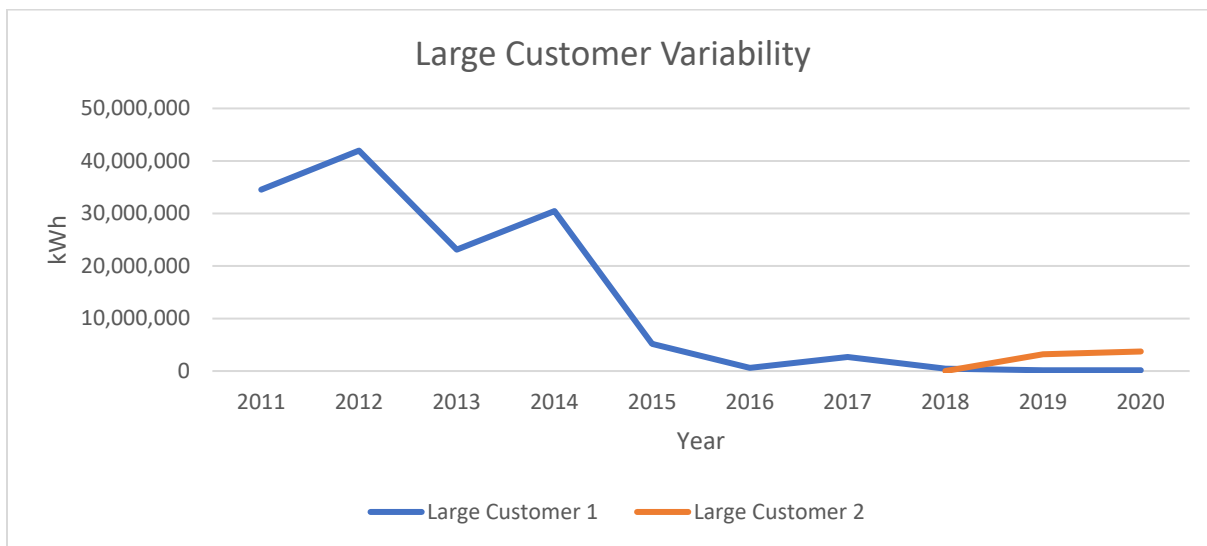


While investigating the annual variability in its wholesale kWh purchases, CNPI determined that two customers in its General Service 50 to 4,999 kW rate class had significant variation in load profiles over the 2011 to 2020 period used for the load forecasting regression analysis. One customer significantly reduced load through the use of embedded generation and transferring load to the transmission system. This customer currently uses CNPI's distribution system for backup supply purposes in limited

circumstances only.² The second customer is a new facility connected in late 2018. The 10-year annual kWh trend for these two customers is shown in Figure 3 - 2 below.

For the purpose of performing the 2011-2020 wholesale regression analysis, CNPI compiled historical monthly loss-adjusted consumption information related to these customers and subtracted the amounts from its monthly wholesale purchases.³ Adjustments to CNPI's predicted retail kWh for its General Service 50 to 4,999 kW rate class to add back the 2021 and 2022 forecasted consumption associated with these customers are describe in Section 3.2.3.1.

Figure 3 - 2: Large Customer Variability (2011-2020)



CNPI also purchases a relatively small amount of electricity from embedded solar generators with microFIT and FIT contracts, which are not reflected in its unadjusted wholesale purchases. Monthly purchases associated with these embedded generation accounts were added to CNPI's wholesale purchases to more accurately reflect total electricity purchases.⁴

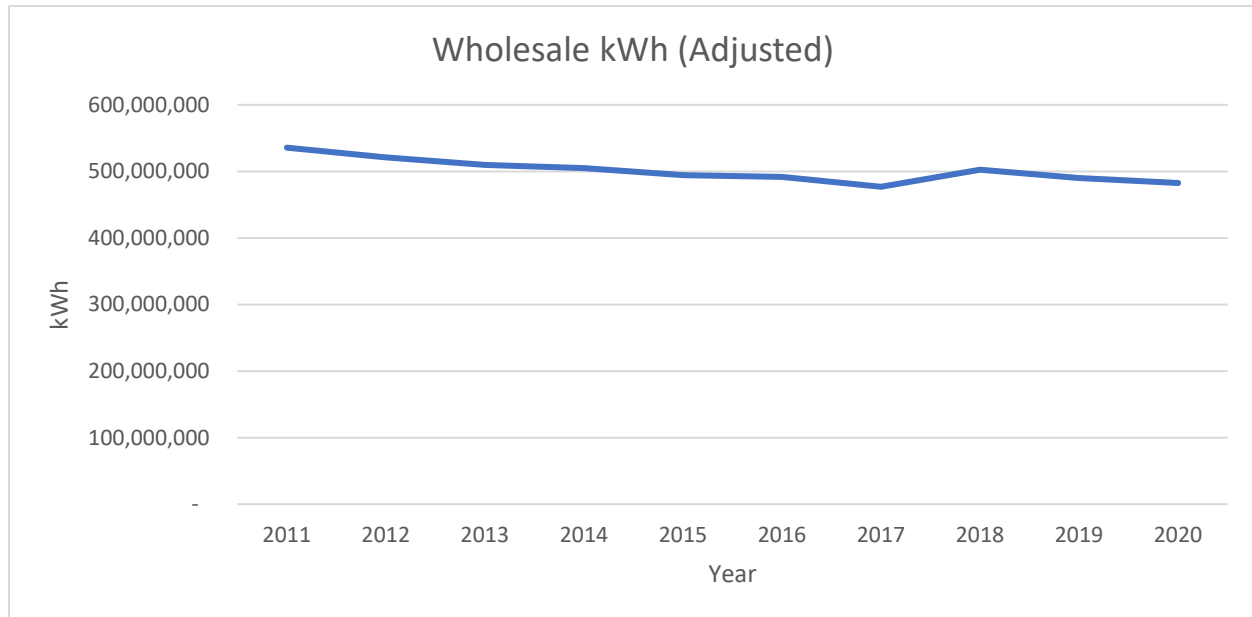
Figure 3 - 3 outlines CNPI's monthly "Adjusted Wholesale" kWh purchases, which reflects the adjustments described above. These Adjusted Wholesale values are the dependent variable in the regression analysis in CNPI's load forecasting model.

² Standby rates are applicable the difference between contracted demand and actual demand for this customer. See discussions in Exhibits 7 and 8 related to CNPI's standby rates and its proposal to make standby rates final.

³ See columns F and G in the "Input – Adjustments and Variables" sheet of CNPI's load forecast model.

⁴ See column C in the "Input – Adjustments and Variables" sheet of CNPI's load forecast model.

Figure 3 - 3: Adjusted Wholesale Purchases for Regression Analysis (2011-2020)



3.2.2.4 OVERVIEW OF VARIABLES USED

CNPI's variation in monthly electricity consumption is influenced by 5 main factors: weather (e.g. (1) **HDD-heating** and (2) **CDD-cooling**); (3) **the number of days in the month**, (4) **the spring/fall flag**, and (5) **CDM Activity**. The following sections describe the rationale for including each variable and the origin of each variable.

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 result, while ensuring that the coefficients for any included are both statistically significant (e.g. fluctuations in Adjusted Wholesale purchases can be explained by changes in the independent variables with a high degree of confidence), and intuitive (e.g. the coefficients are either positive or negative as expected).

The list of variables tested include Customer Numbers, Number of Days in Month, Spring/Fall Flag, Employment, Employment Rate, Full-Time Employment, Labour Force, Participation Rate, Part-time Employment, Population, Unemployment and Unemployment Rate. CNPI ultimately selected the following five variables to end up with an Adjusted R-Square of 87.07%.

1 HEATING AND COOLING:

2 To determine the relationship between observed weather and energy consumption, monthly weather
3 observations describing the extent of heating or cooling required within the month are necessary.
4 Environment Canada publishes monthly observations on HDD and CDD for selected weather stations
5 across Canada. Heating degree-days for a given day are the number of degrees Celsius that the mean
6 temperature is below 18°C. Cooling degree-days for a given day are the number of degrees Celsius that
7 the mean temperature is above 18°C. For CNPI, the monthly HDD and CDD as reported by Environment
8 Canada for the Welland-Pelham weather station were used as they offered a complete 10 years of
9 history.

10 CNPI has adopted the 10-year average from 2011 to 2020 as the definition of “weather normal.” The
11 following table outlines the monthly weather data used in the regression analysis.

12 **Table 3 - 3: HDD and CDD for Regression Analysis**

HDD	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Avg
Jan	794.6	600.8	617.3	783.2	771.7	657.2	593.9	731.0	726.3	566.4	684.2
Feb	645.3	533.2	640.1	743.7	871.9	587.1	487.8	540.3	587.8	586.9	622.4
Mar	568.6	333.8	555.4	692.3	637.0	448.8	555.3	577.7	598.0	433.8	540.1
Apr	324.9	340.5	339.9	338.4	330.0	384.1	261.8	438.3	334.1	372.9	346.5
May	136.0	82.3	116.5	147.7	102.7	153.1	168.3	83.6	173.7	207.9	137.2
Jun	22.7	31.6	42.8	21.3	35.9	29.2	32.6	21.2	33.6	27.5	29.8
Jul	0.2	0.0	5.5	13.7	7.6	0.0	2.2	0.0	0.0	0.0	2.9
Aug	4.1	6.0	19.1	12.0	12.0	0.1	19.2	1.6	4.6	1.6	8.0
Sep	55.5	86.1	110.4	85.3	37.0	34.3	66.5	57.9	32.0	75.0	64.0
Oct	238.8	227.4	211.5	225.1	252.3	198.7	152.0	258.2	220.9	252.5	223.7
Nov	320.0	432.4	460.7	465.7	341.4	356.7	426.4	479.8	502.7	329.2	411.5
Dec	512.0	505.1	656.4	540.8	418.0	581.2	711.3	550.4	564.6	540.4	558.0
Total	3622.6	3179.1	3775.5	4069.2	3817.3	3430.5	3477.3	3740.0	3778.2	3394.1	3628.4
CDD	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Avg
Jan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Feb	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Apr	0.4	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.1
May	12.5	28.9	24.2	7.3	34.2	24.4	6.5	30.0	1.8	22.8	19.3
Jun	40.2	64.6	48.5	69.0	28.6	51.7	62.2	47.8	31.8	73.7	51.8
Jul	158.6	152.9	117.0	51.0	79.1	140.7	88.1	137.5	143.8	168.5	123.7
Aug	88.8	76.6	113.0	59.0	59.0	159.3	50.8	124.0	76.0	95.6	90.2
Sep	29.5	28.9	22.9	27.5	54.4	48.1	49.3	69.3	11.6	23.4	36.5
Oct	0.0	0.8	4.2	5.9	0.9	5.1	6.4	11.1	3.9	0.0	3.8
Nov	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	330.0	352.7	329.8	219.6	256.2	429.3	263.8	419.7	268.9	384.0	325.4

1 **SPRING FALL FLAG AND DAYS PER MONTH:**

2 CNPI included a “Spring/Fall Flag” variable, which accounts for less electricity usage during the
3 transitions between heating and cooling loads in the spring and fall months. Including this variable
4 increased the overall R-Square results as compared to using HDD and CDD only to account for heating
5 and cooling load. The variable was set to a value of ‘1’ for March, April, May, September, October and
6 November, and was set to ‘0’ for all other months, based on observations of Adjusted Wholesale load by
7 month.

8 Similarly, a “Days per Month” variable, was included because the number of days in a month will
9 intuitively affect total monthly consumption and its inclusion increased the overall R-Square results.

10 **CDM ACTIVITY:**

11 CNPI also tested and ultimately used a CDM activity variable. The CDM activity variable tested the extent
12 to which the downward trend in CNPI’s wholesale (which is apparent in Figure 3 - 3 above) could be
13 explained by the results of CDM programs undertaken by CNPI over that period. The variable yielded
14 strong results, is intuitive (i.e. CDM persisting savings result in lower wholesale purchases) and served to
15 improve the R-Squared results. CNPI therefore opted to include this variable.

16 Calculation of the CDM activity variable begins with determining the extent to which CDM programs in
17 any given year will result in persisting energy savings in that year and all subsequent years. Rows 1-19 of
18 the “Input – CDM” sheet in CNPI’s load forecast model summarize the annual persisting kWh savings
19 resulting from each year in which CDM programs were delivered. This data was obtained from the
20 following IESO (formerly OPA) reports and other sources:

- 21 • 2006-2010 Final OPA CDM Results
- 22 • OPA 2011-2014 Persistent Savings Reports
- 23 • IESO 2017 Final Verified Results (contains 2017 results as well as updated 2015/2016 results)
- 24 • IESO April 2019 Participation and Cost Report (contains 2018 results partial 2019 results)
- 25 • Net kWh savings from 2019 projects not included in the IESO’s April 2019 P&C report, as
26 approved in CNPI’s LRAMVA model in EB-2020-0008

27 After determining the total annual persisting kWh savings, CNPI applied a half-year adjustment to
28 recognize the difference between CDM program implementation throughout each year and IESO’s
29 reporting of results on an annualized basis. Half of each year’s incremental persisting savings were
30 subtracted from the annual total persisting savings each year to complete this adjustment. From the

annual half-year adjusted persisting savings, CNPI calculated a monthly incremental savings for each year, and the CDM activity variable was increased monthly by that value.⁵

The final impact of the CDM activity variable on CNPI's load forecast is an estimated reduction of 1.2 kWh in Adjusted Wholesale purchases for each kWh in persisting CDM savings estimated by the IESO.

SUMMARY

Using a combination of wholesale purchases and the variables listed above, a multiple regression analysis was used to develop an equation describing the relationship between monthly actual wholesale kWh and the explanatory variables. CNPI also used a correlation function to examine the relationship between the variables included in the analysis.

To predict the adjusted wholesale purchases for the bridge and test year, the model uses a simple average of the last ten years to forecast HDD and CDD variables for each of 2021 and 2022. The Days per Month variable is based on the known number of days in each month for 2021 and 2022 and the Spring/Fall binary variable is set to 1 for each of March, April, May, September, October and November. The forecast for the CDM Activity variable is based on the methodology described in detail above.

⁵ See rows 23-40 of the "Input – CDM" sheet of CNPI's load forecast model for derivation of the half-year adjusted values and monthly incremental persisting savings. The calculation of the monthly CDM activity variable begins at row 44 in the same sheet.

3.2.2.5 REGRESSION RESULTS

Table 3 - 4 presents the results of the regression analysis used to determine CNPI's load forecast:

Table 3 - 4: Correlation/Regression Results

Equation Parameters		87.07% of the change in Wholesale can be explained by the change in the 5 independent variables	95% Confidence/Autocorrelation							
R Squared	0.8761		1.237	Durbin-Watson Statistic						
Adjusted R Squared	0.8707		1.63 - 1.77	Positive autocorrelation detected						
Standard Error	1571343.3750	to +/- on result of Regression Equation	2.290	Critical F-Statistic - 95% Confidence						
F - Statistic	161.1983	Therefore analysis IS Significant	89.62%	Confidence to which analysis holds						
Multiple Regression Equation					Independent Analysis		Auto Correlation	Multicollinearity		
	Coefficients	Standard Error	t Stat	p Value	R Squared	Coefficient	Intercept	DI=1.69 Du=1.72	Adjusted R-Squared against other Indep	Variables With RSQ at > 90%
Intercept	6,952,526.219	5,286,018.699	1.315	19.11%				DW-Stat		
HDD	14,478.867	921.888	15.706	0.00%	1.57%	2152.18	41094380.00	0.35	60.87%	
CDD	100,979.291	6,046.568	16.700	0.00%	27.60%	53340.95	40298664.00	0.74	68.29%	
Days per month	1,012,235.529	174,893.910	5.788	0.00%	4.37%	1055157.51	9650761.00	2.93	6.32%	
SpringFall	-1,797,623.506	372,130.733	-4.831	0.00%	40.86%	-5562451.07	44526360.00	1.34	38.50%	
CDM Activity	-1.198	0.141	-8.474	0.00%	7.02%	-1.14	43842220.00	0.01	-3.20%	

The resulting regression equation yields an adjusted R-squared of 87.07%. When annual Adjusted Wholesale values are compared to annual values predicted by the regression equation, the mean absolute percentage error (MAPE) is 1.62%.

Once CNPI calculated its preferred Regression Results, the Load Forecast model then uses the coefficients from the regression results to predict historical wholesale purchases. Table 3 - 5 compares the actual and predicted wholesale purchases for the 2011-2020 period.

Table 3 - 5: Adjusted Wholesale vs. Predicted

Year	Adjusted Wholesale	Change from Prior Year	Predicted	Change from Prior Year	Wholesale vs Predicted	
					Actual	Absolute Value
2011	535,686,878		519,265,786		3.07%	3.07%
2012	521,011,392	-2.74%	514,361,287	-0.94%	1.28%	1.28%
2013	509,774,031	-2.16%	518,669,018	0.84%	-1.74%	1.74%
2014	504,927,926	-0.95%	508,838,292	-1.90%	-0.77%	0.77%
2015	494,324,942	-2.10%	502,378,988	-1.27%	-1.63%	1.63%
2016	491,633,276	-0.54%	504,999,217	0.52%	-2.72%	2.72%
2017	476,909,007	-2.99%	480,971,996	-4.76%	-0.85%	0.85%
2018	502,625,268	5.39%	495,575,208	3.04%	1.40%	1.40%
2019	490,029,501	-2.51%	479,155,761	-3.31%	2.22%	2.22%
2020	482,494,035	-1.54%	485,200,688	1.26%	-0.56%	0.56%
					<i>Mean</i>	1.62%
					<i>Median</i>	1.52%

Table 3 - 6 shows the results of the mean absolute deviation (MAD), the mean square error (MSE), the root mean square (RMSE) and the mean absolute Percentage error (MAPE).

1

Table 3 - 6: MAD, MSE, RMSE, MAPE

Period	Adjusted Actual	Forecast	Error	Absolute Value of Error	Square of Error	Absolute Values of Errors Divided by Actual Values.
t	A _t	F _t	A _t -F _t	A _t -F _t	(A _t -F _t)^2	(A _t -F _t)/A _t
1	535,686,878	519,265,786	16,421,092	16,421,092	269,652,268,881,875	0.0307
2	521,011,392	514,361,287	6,650,105	6,650,105	44,223,899,673,868	0.0128
3	509,774,031	518,669,018	-8,894,988	8,894,988	79,120,804,437,829	0.0174
4	504,927,926	508,838,292	-3,910,366	3,910,366	15,290,961,676,518	0.0077
5	494,324,942	502,378,988	-8,054,046	8,054,046	64,867,653,509,805	0.0163
6	491,633,276	504,999,217	-13,365,941	13,365,941	178,648,380,002,857	0.0272
7	476,909,007	480,971,996	-4,062,989	4,062,989	16,507,882,894,100	0.0085
8	502,625,268	495,575,208	7,050,060	7,050,060	49,703,348,013,986	0.0140
9	490,029,501	479,155,761	10,873,740	10,873,740	118,238,213,341,055	0.0222
10	482,494,035	485,200,688	-2,706,654	2,706,654	7,325,973,549,580	0.0056
Totals:			13.865	81,989,981	843,579,385,981,473	0.162
MAD; MSE; MAPE:				8,198,998	84,357,938,598,147	0.016
RMSE:					9,184,658	

2

3 The mean absolute deviation (MAD) is the sum of absolute differences between the actual value and the
4 forecast divided by the number of observations.

5 Mean square error (MSE) is a commonly used error metric. It penalizes larger errors because squaring
6 larger numbers has a greater impact than squaring smaller numbers. The MSE is the sum of the squared
7 errors divided by the number of observations.

8 Mean Absolute Percentage Error (MAPE) is the sum of absolute errors divided by actual observation
9 values. MAPE is a statistical measure of how accurate a forecast system is. It measures this accuracy as a
10 percentage, and can be calculated as the average of the absolute value of the error divided by actual
11 values for each time period.

12 In accordance with the Filing Requirements, CNPI has also provided a 2022 forecast assuming 20-year
13 normal weather conditions. Table 3 - 7 displays 20 years of historical HDD and CDD. The impact of using
14 both a 10-year average as well as a 20-year average to weather normalize wholesale purchases is
15 presented in Table 3 - 8.

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Table 3 - 7: Twenty-Year HDD and CDD

HDD	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	10-year Avg	20-year Avg
Jan	645.2	558.8	781.5	805.4	716.7	530.2	625.7	604.2	829.4	711.1	794.6	600.8	617.3	783.2	771.7	657.2	593.9	731.0	726.3	566.4	684.2	682.5
Feb	558.3	518.9	681.2	616.8	594.7	578.7	739.3	653.5	605.5	632.5	645.3	533.2	640.1	743.7	871.9	587.1	487.8	540.3	587.8	586.9	622.4	620.2
Mar	561.6	512.3	529.8	478.6	591.4	530.4	538.8	602.0	528.7	468.0	568.6	333.8	555.4	692.3	637.0	448.8	555.3	577.7	598.0	433.8	540.1	537.1
Apr	278.1	306.8	360.4	302.9	303.5	296.7	376.1	272.8	316.5	253.8	324.9	340.5	339.9	338.4	330.0	384.1	261.8	438.3	334.1	372.9	346.5	326.6
May	119.5	220.4	149.2	117.3	178.6	146.8	144.2	216.7	160.7	125.4	136.0	82.3	116.5	147.7	102.7	153.1	168.3	83.6	173.7	207.9	137.2	147.5
Jun	35.6	27.0	33.2	47.0	5.7	24.1	19.6	27.2	44.4	23.6	22.7	31.6	42.8	21.3	35.9	29.2	32.6	21.2	33.6	27.5	29.8	29.3
Jul	11.4	0.7	0.7	0.9	0.0	2.1	7.4	5.2	19.6	4.6	0.2	0.0	5.5	13.7	7.6	0.0	2.2	0.0	0.0	0.0	2.9	4.1
Aug	0.0	0.5	4.2	11.7	0.7	11.4	6.0	19.0	14.2	7.7	4.1	6.0	19.1	12.0	12.0	0.1	19.2	1.6	4.6	1.6	8.0	7.8
Sep	71.4	21.3	51.1	27.7	20.4	91.8	51.8	70.1	70.8	88.8	55.5	86.1	110.4	85.3	37.0	34.3	66.5	57.9	32.0	75.0	64.0	60.3
Oct	209.5	259.9	263.6	209.0	212.2	288.7	131.0	293.3	290.0	256.7	238.8	227.4	211.5	225.1	252.3	198.7	152.0	258.2	220.9	252.5	223.7	232.6
Nov	304.0	412.9	352.1	364.8	361.1	375.0	438.2	447.4	362.3	410.4	320.0	432.4	460.7	465.7	341.4	356.7	426.4	479.8	502.7	329.2	411.5	397.2
Dec	502.9	610.9	531.2	590.8	651.5	477.9	612.8	614.8	612.3	671.3	512.0	505.1	656.4	540.8	418.0	581.2	711.3	550.4	564.6	540.4	558.0	572.8
CDD	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	10-year Avg	20-year Avg
Jan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Feb	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Apr	1.8	5.1	0.0	0.8	0.0	0.0	0.0	0.0	2.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.1	0.5
May	0.8	8.8	0.0	17.1	0.0	17.9	15.4	0.0	1.8	27.5	12.5	28.9	24.2	7.3	34.2	24.4	6.5	30.0	1.8	22.8	19.3	14.1
Jun	71.1	74.7	35.6	42.0	141.2	51.5	84.3	61.5	30.0	53.9	40.2	64.6	48.5	69.0	28.6	51.7	62.2	47.8	31.8	73.7	51.8	58.2
Jul	90.0	169.2	105.3	93.1	190.7	128.5	77.5	90.3	33.1	124.0	158.6	152.9	117.0	51.0	79.1	140.7	88.1	137.5	143.8	168.5	123.7	116.9
Aug	137.5	141.6	127.8	61.6	144.1	64.4	106.5	42.4	74.2	103.4	88.8	76.6	113.0	59.0	59.0	159.3	50.8	124.0	76.0	95.6	90.2	95.3
Sep	32.7	77.3	29.0	46.7	49.8	5.6	41.8	25.5	12.0	25.5	29.5	28.9	22.9	27.5	54.4	48.1	49.3	69.3	11.6	23.4	36.5	35.5
Oct	3.7	11.6	1.0	0.3	8.7	0.0	20.2	0.0	0.0	0.1	0.0	0.8	4.2	5.9	0.9	5.1	6.4	11.1	3.9	0.0	3.8	4.2
Nov	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

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Table 3 - 8: Load Forecast – 10-Year vs. 20-Year Weather Normalization

HDD	10-year Avg	20-year Avg	Difference (HDD)	Difference (kWh)
Jan	684.2	682.5	-1.7	-24,723
Feb	622.4	620.2	-2.2	-32,360
Mar	540.1	537.1	-3.0	-42,749
Apr	346.5	326.6	-19.9	-287,550
May	137.2	147.5	10.4	149,929
Jun	29.8	29.3	-0.5	-7,963
Jul	2.9	4.1	1.2	16,940
Aug	8.0	7.8	-0.2	-3,547
Sep	64.0	60.3	-3.7	-54,095
Oct	223.7	232.6	8.8	127,885
Nov	411.5	397.2	-14.3	-207,509
Dec	558.0	572.8	14.8	214,504
Total	3628.4	3617.9	-10.4	-151,239
CDD	10-year Avg	20-year Avg	Difference (CDD)	Difference (kWh)
Jan	0.0	0.0	0.0	0
Feb	0.0	0.0	0.0	0
Mar	0.0	0.0	0.0	0
Apr	0.1	0.5	0.4	44,431
May	19.3	14.1	-5.2	-521,558
Jun	51.8	58.2	6.4	644,753
Jul	123.7	116.9	-6.8	-684,135
Aug	90.2	95.3	5.1	512,470
Sep	36.5	35.5	-0.9	-95,471
Oct	3.8	4.2	0.4	36,857
Nov	0.0	0.0	0.0	0
Dec	0.0	0.0	0.0	0
Total	325.4	324.8	-0.6	-62,653

20-yr vs 10-yr kWh Difference: **-213,892**
20-yr vs 10-yr % Difference: **-0.05%**

2

3.2.2.6 DETERMINATION OF CUSTOMER FORECAST

CNPI has used a simple geometric mean function, applied to historical 2011-2020 customer counts, to determine the forecasted number of customers for 2021 and 2022. The geometric mean is appropriate to use when dealing with percentages and rates of change. Although the formula is somewhat simplistic, it is reasonably representative of CNPI's natural customer growth. Historical customer counts and projected customer counts for 2021 and 2022 are presented in Table 3 - 9 below. A variance analysis of customer counts and projections is presented in Section 3.3.1.

1

Table 3 - 9: Customer Forecast

	Residential		General Service < 50 kW		General Service 50 to 4999 kW		Embedded Distributor		Street Lighting		Sentinel		USL	
Year	Customers	Growth Rate	Customers	Growth Rate	Customers	Growth Rate	Customers	Growth Rate	Connections	Growth Rate	Connections	Growth Rate	Customers	Growth Rate
2011	25560		2507		224		1		5706		828		39	
2012	25711	1.0059	2531	1.0095	225	1.0004	1	1.0000	5711	1.0008	782	0.9441	38	0.9849
2013	25798	1.0034	2525	0.9975	225	1.0026	1	1.0000	5699	0.9979	773	0.9885	40	1.0525
2014	25863	1.0025	2512	0.9952	225	1.0000	1	1.0000	5708	1.0016	773	1.0005	40	0.9917
2015	25920	1.0022	2492	0.9919	220	0.9759	1	1.0000	5700	0.9985	761	0.9837	36	0.9119
2016	26029	1.0042	2503	1.0042	206	0.9359	1	1.0000	5736	1.0063	733	0.9629	36	0.9908
2017	26228	1.0076	2507	1.0016	198	0.9631	1	1.0000	5743	1.0012	706	0.9634	49	1.3712
2018	26465	1.0090	2491	0.9937	198	0.9983	1	1.0000	5774	1.0055	698	0.9895	48	0.9763
2019	26647	1.0069	2496	1.0020	190	0.9629	1	1.0000	5879	1.0181	669	0.9587	47	0.9809
2020	26916	1.0101	2514	1.0072	193	1.0149	1	1.0000	5997	1.0202	645	0.9630	46	
<i>Geomean</i>		<i>1.0058</i>		<i>1.0003</i>		<i>0.9835</i>		<i>1.0000</i>		<i>1.0055</i>		<i>0.9725</i>		<i>1.0251</i>
2021	27071		2514		190		1		6030		627		47	
2022	27227		2515		187		1		6064		610		48	

2

3.2.3 DETERMINATION OF WEATHER NORMALIZED FORECAST BY RATE CLASS

After developing a weather-normalized Adjusted Wholesale regression forecasting model, the next step in developing CNPI's test year load forecast by rate class is to allocate a portion the predicted kWh to each of CNPI's various rate classes. Detailed calculations are provided in the "Bridge&Test Year Class Forecast" sheet of CNPI's Load Forecast Model, and the overall process is summarized below.

Wholesale and retail kWh totals discussed in this section reflect the removal of consumption associated with two General Service 50 to 4,999 customers with large variability in consumption over the 2011 to 2020 period. The removal of these amounts from wholesale purchases for the regression analysis was discussed in Section 3.2.2.3, and the add-back of forecasted consumption and demand related to these accounts is addressed in Section 3.2.3.1.

Allocation of predicted wholesale kWh to the Residential, General Service <50, General Service 50 to 4999, and Embedded Distributor rate classes is based on an analysis of historical ratios of annual actual retail kWh (exclusive of distribution losses) to CNPI's total actual Adjusted Wholesale kWh. Forecast retail kWh values for 2021 and 2022 are determined by calculating the average 2016-2020 retail/wholesale ratio for each weather sensitive rate class, and multiplying this ratio by the predicted wholesale kWh.

Bridge Year and Test Year forecasts for the unmetered scattered load (USL), Sentinel Lighting and Street Lighting rate classes are based on 2018-2020 average consumption per connection, or per account for USL. The 2018-2020 period was used to determine the average consumption per connection, based on observed reductions compared to prior years due to the use of more energy-efficient technology (primarily LED lighting).

Following the initial allocation of predicted wholesale kWh by rate class, certain adjustments were made to account for forecasted changes in customer count, and to add consumption related to accounts in the General Service 50 to 4,999 kW rate class with highly variable 2011-2020 consumption that was removed from the regression model. Additionally, for those rate classes that use peak demand (kW) as a billing determinant, final kWh forecasts are converted to kW billing determinant forecasts, based on the historical relationship between billed kWh and billed kW for each rate class. Explanations of these adjustments are provided in Section 3.2.3.1, along with the final load forecast for each rate class.

Explanations for material changes over time, as well as variance analysis between the last OEB-approved and the actual and weather-normalized historical results are presented in Section 3.3.1.

3.2.3.1 LOAD FORECAST BY RATE CLASS

The tables in this section present class-specific historical and forecast loads and customer/connection counts, consistent with the methodology described above, including discussion of any additional adjustments for each rate class.

For weather-sensitive rate classes, the annual ratio of class-specific load to wholesale purchases, and weather-normalized values are also provided.

For classes billed on kW demand, historical values for billed kW, and kW/kWh ratios are also provided.

RESIDENTIAL

CNPI's actual Residential rate class kWh purchases have comprised 42.41% of its annual total Adjusted Wholesale kWh on average between 2016 and 2020. This ratio is multiplied by the 2021 and 2022 predicted wholesale values to arrive at preliminary weather-normalized load forecasts for the Residential rate class.

Since the load forecast model does not include a customer growth variable or any other trend variable, the per customer weather-normal consumption values for 2021 and 2022 are initially calculated using 2020 customer numbers. These per customer weather-normal consumption values are then multiplied by the expected increase in Residential customer count each year to arrive at the final class load forecast shown in Table 3 - 10 below.⁶

⁶ Note: the 2021 and 2022 adjustments are not cumulative (i.e. 1,181,432 kWh is added for 2021, which carries forward to 2022, and an additional 1,191,062 kWh is added for 2022).

1

Table 3 - 10: Residential Load Forecast

Year	Residential Actual kWh	Total Adjusted Wholesale kWh	Ratio%	Predicted Wholesale kWh	Residential Weather Normal kWh	Per Customer kWh
2011	206,782,921	535,686,878	38.60%	519,265,786	200,444,141	7,842
2012	202,637,719	521,011,392	38.89%	514,361,287	200,051,283	7,781
2013	206,257,082	509,774,031	40.46%	518,669,018	209,856,038	8,135
2014	202,495,777	504,927,926	40.10%	508,838,292	204,063,987	7,890
2015	199,739,669	494,324,942	40.41%	502,378,988	202,994,031	7,831
2016	202,182,964	491,633,276	41.12%	504,999,217	207,679,674	7,979
2017	192,333,397	476,909,007	40.33%	480,971,996	193,971,966	7,395
2018	213,384,792	502,625,268	42.45%	495,575,208	210,391,756	7,950
2019	208,333,695	490,029,501	42.51%	479,155,761	203,710,777	7,645
2020	220,200,220	482,494,035	45.64%	485,200,688	221,435,480	8,227
2021BY			42.41%	483,534,817	205,077,173	7,619
2022T			42.41%	484,684,072	205,564,597	7,637
<i>Adjustment Based on Customer Growth</i>						
Year	New Customer	Per Customer Weather Normalized	Load Change due to Cust Count Change			Total kWh
2021BY	155	7,619	1,181,432			206,258,605
2022T	156	7,637	1,191,062			207,937,091

2

3 GENERAL SERVICE < 50 KW

4 CNPI's actual General Service < 50 kW rate class kWh purchases have comprised 13.73% of its annual
5 total Adjusted Wholesale kWh on average between 2016 and 2020. This ratio is multiplied by the 2021
6 and 2022 predicted wholesale values to arrive at preliminary weather-normalized load forecasts for the
7 General Service < 50 kW rate class.

8 Since the load forecast model does not include a customer growth variable or any other trend variable,
9 the per customer weather-normal consumption values for 2021 and 2022 are initially calculated using
10 2020 customer numbers. These per customer weather-normal consumption values are then multiplied
11 by the minimal expected increase in General Service < 50 kW customer count each year to arrive at the
12 final class load forecast shown in Table 3 - 11 below. ⁷

⁷ Note: the 2021 and 2022 adjustments are not cumulative (i.e. 19,349 kWh is added for 2021, which carries forward to 2022, and an additional 19,401 kWh is added for 2022).

1 **Table 3 - 11: General Service < 50 kW Load Forecast**

Year	Actual kWh	Total Adjusted Wholesale kWh	Ratio%	Predicted Wholesale kWh	Weather Normal kWh	Per Customer kWh
2011	71,478,285	535,686,878	13.34%	519,265,786	69,287,170	27,637
2012	70,359,940	521,011,392	13.50%	514,361,287	69,461,877	27,445
2013	68,674,577	509,774,031	13.47%	518,669,018	69,872,871	27,677
2014	69,135,015	504,927,926	13.69%	508,838,292	69,670,425	27,730
2015	68,487,699	494,324,942	13.85%	502,378,988	69,603,570	27,929
2016	69,095,397	491,633,276	14.05%	504,999,217	70,973,881	28,359
2017	66,385,178	476,909,007	13.92%	480,971,996	66,950,741	26,709
2018	68,552,191	502,625,268	13.64%	495,575,208	67,590,646	27,137
2019	68,296,620	490,029,501	13.94%	479,155,761	66,781,120	26,759
2020	63,219,122	482,494,035	13.10%	485,200,688	63,573,763	25,292
2021BY			13.73%	483,534,817	66,392,022	26,413
2022F			13.73%	484,684,072	66,549,821	26,476
<i>Adjustment Based on Customer Growth</i>						
Year	New Customer	Per Customer Weather Normalized	Load Change due to Cust Count Change			Total kWh
2021BY	0.7	26,413	19,349			66,411,371
2022T	0.7	26,476	19,401			66,588,571

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4 GENERAL SERVICE 50 TO 4,999 KW

5 CNPI's actual General Service 50 to 4,999 kW rate class kWh purchases (after the normalizing
6 adjustments described in Section 3.2.2.3) have comprised 36.81% of its annual total Adjusted Wholesale
7 kWh on average between 2016 and 2020. This ratio is multiplied by the 2021 and 2022 predicted
8 wholesale values to arrive at preliminary weather-normalized load forecasts for the General Service 50
9 to 4,999 kW rate class.

10 Since the load forecast model does not include a customer growth variable or any other trend variable,
11 the per customer weather-normal consumption values for 2021 and 2022 are initially calculated using
12 2020 customer numbers. These per customer weather-normal consumption values are then multiplied
13 by the expected decrease in General Service 50 to 4,999 kW customer count each year to arrive at the
14 next step of the class load forecast shown in Table 3 - 12 below.⁸

⁸ Note: the 2021 and 2022 adjustments are not cumulative (i.e. 2,940,971 kWh is subtracted from 2021, which carries forward to 2022, and an additional 2,899,251 kWh is subtracted from 2022).

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Table 3 - 12: General Service 50 to 4,999 kW Load Forecast

Year	Actual kWh (After Normalizing Adjustments)	Total Adjusted Wholesale kWh	Ratio%	Predicted Wholesale kWh	Weather Normal Adjust kWh (Excludes 2 Large Cust)	Per Customer kWh
2011	214,876,814	535,686,878	40.11%	519,265,786	208,289,921	928,139
2012	209,735,051	521,011,392	40.26%	514,361,287	207,058,027	922,307
2013	194,627,742	509,774,031	38.18%	518,669,018	198,023,779	879,780
2014	195,767,695	504,927,926	38.77%	508,838,292	197,283,799	876,492
2015	189,310,138	494,324,942	38.30%	502,378,988	192,394,572	875,848
2016	185,209,884	491,633,276	37.67%	504,999,217	190,245,150	925,392
2017	183,196,052	476,909,007	38.41%	480,971,996	184,756,777	933,115
2018	185,835,410	502,625,268	36.97%	495,575,208	183,228,794	926,958
2019	179,705,786	490,029,501	36.67%	479,155,761	175,718,120	923,213
2020	165,593,468	482,494,035	34.32%	485,200,688	166,522,400	862,066
2021BY			36.81%	483,534,817	177,990,408	921,434
2022F			36.81%	484,684,072	178,413,452	923,624
<i>Load corrected based on utility input</i>						
Year	New Customer	Per Customer Weather Normalized	Load Change due to Cust Count Change	Add Back Normalizing Adjustments		Total
2021BY	-3.2	921,434	-2,940,971	3,717,775		178,767,212
2022T	-3.1	923,624	-2,899,251			176,291,005

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3 Because adjustments were made to CNPI's historical wholesale kWh purchases to remove variable load
4 for certain General Service 50 to 4,999 kW customers, additional steps are required to add back the
5 expected 2021 and 2022 load for these same customers. A total of 3,717,775 kWh is added back to the
6 2021 and 2022 load forecast for General Service 50 to 4,999 kW rate class based on analysis of these
7 customer loads, with the final kWh forecast shown in the last two rows of Table 3 - 12 above.⁹ Table 3 -
8 13 below summarizes the normalizing adjustments to remove the load associated with these two
9 customers from the 2011 to 2020 historical wholesale kWh values, and the load added back to the 2021
10 and 2022 load forecast. The 2021 and 2022 add-back is based on the average 2018-2020 consumption
11 for Large Customer 1 (which represents the approximate expected level going forward) and the average
12 2019-2020 consumption for Customer 2 (which represents the only two years of actual data due to
13 connection in late 2018).

⁹ The adjustment rows in CNPI's load forecast model are based on non-cumulative adjustments. By entering 3,717,775 kWh in the adjustment row for 2021, this amount is added to both the 2021 and 2022 load forecasts.

Table 3 - 13: Large Customer – Historical Normalizing Adjustments and 2021/2022 Add-Back

Year	Large Customer 1 kWh	Large Customer 2 kWh	Total Add-Back kWh
2010	25,023,556		
2011	34,528,313		
2012	41,968,722		
2013	23,128,039		
2014	30,450,943		
2015	5,171,845		
2016	603,442		
2017	2,669,779		
2018	461,558	1,231	
2019	155,187	3,201,381	
2020	149,447	3,723,374	
2021BY	255,397	3,462,377	3,717,775
2022T	255,397	3,462,377	3,717,775

The final step for the General Service 50 to 4,999 kW rate class is to convert the volumetric load forecast from an energy basis (billed kWh) to a demand basis (billed kW) to align with billing determinants for this class. 2011 to 2020 values in Table 3 - 14 below calculate the kW/kWh ratio, based on historical actual load adjusted to remove the 2 large customers described above. The 2016-2020 average kW/kWh ratio of 0.00296 is multiplied by the 2021 and 2022 kWh forecasts (which include the add-back of the 2 large customer loads) to determine the forecasted 2021 and 2022 kW demand billing determinants for this rate class.

Table 3 - 14: General Service 50 to 4,999 kW – kWh to kW Conversion

Year	kWh (Adjusted)	kW (Before Adjustment)	kW (Remove 2 Large Customers)	kW (Adjusted)	KW/kWh Ratio
2011	214,876,814	753,238	-120,566	632,672	0.00294
2012	209,735,051	760,471	-116,609	643,862	0.00307
2013	194,627,742	689,936	-136,769	553,167	0.00284
2014	195,767,695	664,362	-91,952	572,410	0.00292
2015	189,310,138	615,145	-90,933	524,213	0.00277
2016	185,209,884	580,036	-64,242	515,795	0.00278
2017	183,196,052	588,372	-33,215	555,157	0.00303
2018	185,835,410	580,251	-38,286	541,965	0.00292
2019	179,705,786	553,966	-21,240	532,726	0.00296
2020	165,593,468	527,484	-11,716	515,767	0.00311
2021BY	178,767,212			529,536	0.00296
2022T	176,291,005			522,202	0.00296

EMBEDDED DISTRIBUTOR

CNPI's actual Embedded Distributor kWh purchases have comprised 1.07% of its annual total Adjusted Wholesale kWh on average between 2016 and 2020. This ratio is multiplied by the 2021 and 2022 predicted wholesale values to arrive at a weather-normalized load forecast for the Embedded Distributor rate class. No further adjustments to the kWh rate forecast are required for this rate class.

Table 3 - 15: Embedded Distributor Load Forecast

Year	Actual kWh	Total Adjusted Wholesale kWh	Ratio%	Predicted Wholesale kWh	Weather Normal kWh
2011	5,010,547	535,686,878	0.94%	519,265,786	4,856,952
2012	5,264,499	521,011,392	1.01%	514,361,287	5,197,303
2013	4,854,404	509,774,031	0.95%	518,669,018	4,939,107
2014	4,975,331	504,927,926	0.99%	508,838,292	5,013,862
2015	5,138,938	494,324,942	1.04%	502,378,988	5,222,667
2016	5,604,942	491,633,276	1.14%	504,999,217	5,757,323
2017	4,768,120	476,909,007	1.00%	480,971,996	4,808,742
2018	5,218,945	502,625,268	1.04%	495,575,208	5,145,742
2019	5,234,524	490,029,501	1.07%	479,155,761	5,118,370
2020	5,321,960	482,494,035	1.10%	485,200,688	5,351,815
2021BY			1.07%	483,534,817	5,173,258
2022T			1.07%	484,684,072	5,185,553

The 2016-2020 kWh/kW ratio of 0.00267 for the Embedded Distributor rate class is multiplied by the 2021 and 2022 kWh load forecasts to determine the forecasted 2021 and 2022 kW demand billing determinants for this rate class.

Table 3 - 16: Embedded Distributor – kWh to kW Conversion

Year	kWh	kW	KW/kWh Ratio
2011	5,010,547	12,009	0.00240
2012	5,264,499	12,683	0.00241
2013	4,854,404	12,042	0.00248
2014	4,975,331	12,958	0.00260
2015	5,138,938	13,742	0.00267
2016	5,604,942	16,376	0.00292
2017	4,768,120	12,501	0.00262
2018	5,218,945	13,532	0.00259
2019	5,234,524	13,276	0.00254
2020	5,321,960	14,340	0.00269
2021BY	5,173,258	13,830	0.00267
2022T	5,185,553	13,863	0.00267

UNMETERED SCATTERED LOAD (USL), SENTINEL LIGHTING AND STREET LIGHTING

Loads in the USL, Sentinel Lighting and Street Lighting Rate Classes are not weather sensitive. Table 3 - 17 through Table 3 - 19 show that the average kWh and kW per connection (kWh per customer for the USL rate class) have been relatively consistent over the most recent 3-year period (2018-2020). CNPI therefore multiplied the average 2018-2020 kWh and kW per connection values (kWh per customer for USL) by the forecasted number of connections/customers in each rate class to determine the 2021 and 2022 kWh and kW billing determinant forecasts. The resulting forecasts are provided in Table 3 - 17 through Table 3 - 19 below.

Table 3 - 17: USL Load Forecast

Year	kWh	Customers	kWh per Customer	KW/kWh Ratio
2011	1,527,928	39	39,515	0.00000
2012	1,530,262	38	40,182	0.00000
2013	1,532,802	40	38,240	0.00000
2014	1,503,003	40	37,811	0.00000
2015	1,500,542	36	41,394	0.00000
2016	1,416,419	36	39,436	0.00000
2017	1,308,270	49	26,564	0.00000
2018	1,307,306	48	27,188	0.00000
2019	1,299,487	47	27,551	0.00000
2020	1,307,650	46	28,427	0.00000
2021BY	1,307,291	47	27,722	0.00000
2022T	1,340,169	48	27,722	0.00000

Table 3 - 18: Sentinel Lighting Load Forecast

Year	kWh	kW	Connection	kWh per Connection	kW per Connection	kW/kWh Ratio
2011	761,037	2,333	828	919	2.8170	0.00307
2012	713,313	2,174	782	912	2.7809	0.00305
2013	636,305	3,215	773	823	4.1598	0.00505
2014	697,286	2,126	773	902	2.7487	0.00305
2015	690,657	2,268	761	908	2.9813	0.00328
2016	667,142	2,173	733	911	2.9667	0.00326
2017	631,150	2,038	706	894	2.8880	0.00323
2018	606,042	1,951	698	868	2.7945	0.00322
2019	565,913	1,856	669	845	2.7727	0.00328
2020	525,915	1,723	645	816	2.6726	0.00328
2021BY	528,557	1,607	627	843	2.5628	0.00304
2022T	514,043	1,615	610	843	2.6484	0.00314

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Table 3 - 19: Street Lighting Load Forecast

Year	kWh	kW	Connection	kWh per Connection	kW per Connection	kW/kWh Ratio
2011	4,475,401	11,788	5,706	784	2.0657	0.00263
2012	4,830,576	12,882	5,711	846	2.2557	0.00267
2013	4,446,653	13,844	5,699	780	2.4292	0.00311
2014	4,336,774	13,285	5,708	760	2.3274	0.00306
2015	3,697,575	11,209	5,700	649	1.9666	0.00303
2016	2,159,286	6,413	5,736	376	1.1181	0.00297
2017	1,392,668	4,209	5,743	243	0.7329	0.00302
2018	1,390,047	4,252	5,774	241	0.7363	0.00306
2019	1,401,778	4,286	5,879	238	0.7290	0.00306
2020	1,425,844	4,348	5,997	238	0.7251	0.00305
2021BY	1,441,120	4,356	6,030	239	0.7224	0.00302
2022T	1,449,102	4,403	6,064	239	0.7261	0.00304

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3.2.3.2 LOAD FORECAST SUMMARY

Table 3 - 20 below summarizes CNPI's historical load and customer counts and its final load forecast.

Table 3 - 20: Final Load Forecast

	2017BA	2017	2018	2019	2020	2021BY	2022T
Residential							
kWh	201,294,289	192,333,397	213,384,792	208,333,695	220,200,220	206,258,605	207,937,091
Cust Count	26,074	26,228	26,465	26,647	26,916	27,071	27,227
General Service < 50 kW							
kWh	69,390,323	66,385,178	68,552,191	68,296,620	63,219,122	66,411,371	66,588,571
Cust Count	2,489	2,507	2,491	2,496	2,514	2,514	2,515
General Service 50 to 4999 kW							
kWh	190,144,345	185,980,426	186,317,854	183,204,908	169,630,767	178,767,212	176,291,005
kW	610,067	588,372	580,251	553,966	527,484	529,536	522,202
Cust Count	217	198	198	190	193	190	187
Embedded Distributor							
kWh	5,205,754	4,768,120	5,218,945	5,234,524	5,321,960	5,173,258	5,185,553
kW	13,921	12,501	13,532	13,276	14,340	13,830	13,863
Cust Count	1	1	1	1	1	1	1
Street Lighting							
kWh	2,991,556	1,392,668	1,390,047	1,401,778	1,425,844	1,441,120	1,449,102
kW	9,240	4,209	4,252	4,286	4,348	4,356	4,403
Connections	5713	5,743	5,774	5,879	5,997	6,030	6,064
Sentinel							
kWh	629,014	631,150	606,042	565,913	525,915	528,557	514,043
kW	1,916	2,038	1,951	1,856	1,723	1,607	1,615
Connections	695	706	698	669	645	627	610
USL							
kWh	1,462,761	1,308,270	1,307,306	1,299,487	1,307,650	1,307,291	1,340,169
Cust Count	35	49	48	47	46	47	48
Total							
kWh	471,118,042	452,799,209	476,777,177	468,336,925	461,631,477	459,887,414	459,305,534
kW	635,144	607,120	599,986	573,383	547,895	549,330	542,083
Cust Count (Excl Street Lighting, Sentinel, USL)	28,781	28,934	29,154	29,334	29,623	29,776	29,930
Connection Count	6,443	6,498	6,521	6,595	6,688	6,705	6,722

3.2.4 CDM ADJUSTMENTS TO LOAD FORECAST

The effects of persisting energy savings resulting from CNPI's historical conservation efforts are embedded in its load forecast by inclusion of the CDM Activity variable. There are no CDM programs currently in place or anticipated for 2021 that would result in material additional energy savings for CNPI's customers. As a result, no further CDM-related adjustments to CNPI's 2022 Test Year load forecast are required.

3.2.5 CONSIDERATION OF COVID-19 IMPACTS TO LOAD FORECAST

CNPI observed moderate fluctuations in its wholesale purchases during 2020 as a result of the COVID-19 pandemic. The largest reductions between predicted and actual wholesale purchases in 2020 were observed between April and June, when many businesses, schools and community centres were forced to remain closed during the early phase of Ontario's response to the pandemic. Despite these reductions, year-over-year variations and differences between actual and predicted wholesale kWh for 2020 were comparable to other years used in the wholesale regression analysis, as illustrated in Section 3.2.2.5 above.

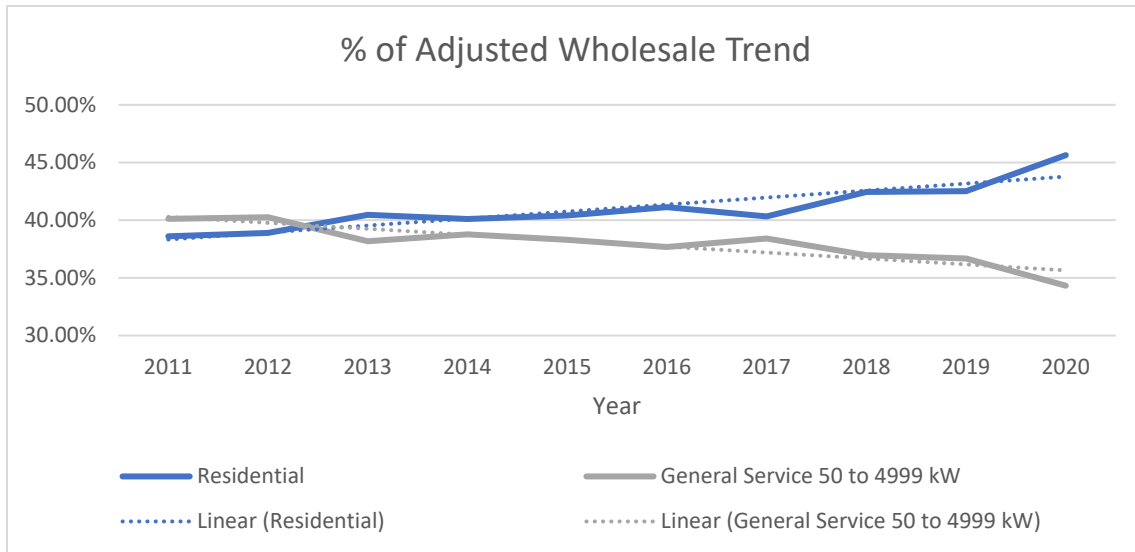
CNPI observed that any attempts to remove 2020 wholesale kWh from the regression analysis (i.e. using 2010-2019 or 2011-2019 wholesale purchases instead of 2011-2020), or attempts to normalize 2020 values, did not improve statistical results. While fluctuations in wholesale kWh were minimal, CNPI observed noticeable shifts in consumption between rate classes as a percentage of wholesale purchases. The shifts were most pronounced between the Residential rate class (increase) and the General Service 50 to 4,999 kW rate class (decrease), as shown in Figure 3 - 4 below.

As detailed in Section 3.2.3.1, CNPI used the average of 2016-2020 retail/wholesale ratios to allocate 2021 and 2022 predicted wholesale purchases to each of its Residential, General Service and Embedded Distributor rate classes. In the absence of COVID impacts, CNPI would likely have used either the most recent year ratios (i.e. 2020), or an average of a small number of years to reflect the apparent trends in certain rate classes that would be skewed by using a 10-year average. In consideration of COVID impacts, the use of a 5-year average balances the following considerations:

1. The use of recent years instead of the entire 10-year average continues to recognize the gradual increasing trend for the Residential rate class and the gradual decreasing trend for the General Service 50 to 4,999 rate class.
2. Including 5 years instead of a smaller number of more recent years places less weight on the 2020 ratios that are influenced by changes in response to COVID. While the shifts resulting from the pandemic are unlikely to persist long-term to the same extent as in 2020, the ratios are also unlikely to revert to pre-pandemic levels in 2022, especially considering the trending that is evident for certain rate classes in the pre-pandemic years.

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Figure 3 - 4: Retail to Wholesale Trend (Select Rate Classes, 2011-2020)



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3.3 ACCURACY OF LOAD FORECAST AND VARIANCE ANALYSIS

3.3.1 VARIANCE ANALYSIS OF LOAD FORECAST

3.3.1.1 VARIANCE ANALYSIS BY RATE CLASS

This section contains variance analysis of historical and forecasted load and customer counts.

Analysis of annual load is provided on an actual basis for all rate classes, as well a weather-normalized basis for weather-sensitive rate classes (Residential, General Service <50, General Service 50 to 4,999 and Embedded Distributor).

Since the regression analysis supporting CNPI's load forecast is at a wholesale level rather than a class-specific level, the following process was applied to estimate the weather-normal load for each rate class:¹⁰

1. The difference between total actual annual HDD and CDD and the 10-year average values was calculated for each year 2011-2020.
2. The difference calculated in Step 1 were multiplied by the HDD and CDD coefficients from the regression analysis to estimate the extent to which above or below average HDD and CDD totals contributed to wholesale purchases for each year.
3. The total amount calculated in Step 2 for each year was multiplied by the retail to wholesale ratio for the weather-sensitive rate classes.
4. The annual retail kWh for each rate class was adjusted to remove the effect of above or below average HDD/CDD, based on the results of Step 3 (see "Weather Adj") columns in the tables below.

Applying the above process provides estimated weather-normal historical retail kWh purchases for the weather-sensitive rate classes that allow expected variations due to weather to be isolated from the variance analysis presented in this section. For the General Service 50 to 4,999 kW rate class, the large customer load adjustments detailed in Table 3 - 13 (see Section 3.2.3.1) are also incorporated into the variance analysis below.

All customer and connection counts included in the variance analysis below are the average of the 12 month-end customer counts in each year, consistent with the approach used in the regression analysis.

¹⁰ See the last two sheets in CNPI's Load Forecast Model for detailed calculations.

RESIDENTIAL

Table 3 - 21 below shows the annual change in weather-normalized consumption for the Residential rate class.

Table 3 - 21: Residential Variance Analysis

Year	Cust	% Change	Actual kWh	% Change	Weather Adj	Weather Normal kWh	% Change
2011	25,560		206,782,921		-145,748	206,637,173	
2012	25,711	0.6%	202,637,719	-2%	1,457,142	204,094,861	-1%
2013	25,798	0.3%	206,257,082	2%	-1,040,318	205,216,764	1%
2014	25,863	0.3%	202,495,777	-2%	1,724,449	204,220,227	0%
2015	25,920	0.2%	199,739,669	-1%	1,717,527	201,457,196	-1%
2016	26,029	0.4%	202,182,964	1%	-3,134,817	199,048,147	-1%
2017	26,228	0.8%	192,333,397	-5%	3,390,356	195,723,753	-2%
2018	26,465	0.9%	213,384,792	11%	-4,729,194	208,655,598	7%
2019	26,647	0.7%	208,333,695	-2%	1,502,591	209,836,287	1%
2020	26,916	1.0%	220,200,220	6%	-1,153,307	219,046,912	4%
2021BY	27,071	0.6%				206,258,605	-6%
2022T	27,227	0.6%				207,937,091	1%

CNPI has experienced a gradual but consistent increase in Residential customer count over the 2011 to 2020 period, averaging approximately 0.6% per year, with larger increases over the 2017-2020 period, consistent with the increased amount of System Access activity during those years discussed in the DSP.

Comparing the annual change in actual kWh to the annual change in weather normalized kWh reveals that the majority of the annual variance is weather-related, with three exceptions:

- For 2017, both HDD and CDD are below average, with CDD significantly below average. As such, the weather-normalization based on 10-year average HDD and CDD coefficients may not fully capture the weather-related impact on load in 2018. Further, increasing commodity prices in the lead-up to the Fair Hydro Plan likely contributed to lower consumption.
- For 2018, both HDD and CDD are above average, with CDD significantly above average. As such, the weather-normalization based on 10-year average HDD and CDD coefficients may not fully capture the weather-related impact on load in 2018.
- Residential load increased in 2020 due to an increase in amount of time spent at home in response to the COVID-19 pandemic.

GENERAL SERVICE < 50 KW

Table 3 - 22 below shows the annual change in weather-normalized consumption for the General Service < 50 kW rate class.

Table 3 - 22: General Service < 50 kW Variance Analysis

Year	Cust	% Change	Actual kWh	% Change	Weather Adj	Weather Normal kWh	% Change
2011	2,507		71,478,285		-50,381	71,427,905	
2012	2,531	1.0%	70,359,940	-2%	505,949	70,865,889	-1%
2013	2,525	-0.3%	68,674,577	-2%	-346,380	68,328,196	-4%
2014	2,512	-0.5%	69,135,015	1%	588,752	69,723,767	2%
2015	2,492	-0.8%	68,487,699	-1%	588,914	69,076,613	-1%
2016	2,503	0.4%	69,095,397	1%	-1,071,314	68,024,083	-2%
2017	2,507	0.2%	66,385,178	-4%	1,170,204	67,555,382	-1%
2018	2,491	-0.6%	68,552,191	3%	-1,519,305	67,032,886	-1%
2019	2,496	0.2%	68,296,620	0%	492,584	68,789,204	3%
2020	2,514	0.7%	63,219,122	-7%	-331,113	62,888,009	-9%
2021BY	2,514	0.0%				66,411,371	6%
2022T	2,515	0.0%				66,588,571	0%

CNPI's General Service <50 kW customer count is relatively flat over the 2011 to 2020 period, with marginal increases in some years generally being offset by marginal reductions in other years.

The average year-over-year variability from 2011 to 2019 is similar for both actual and weather normalized kWh. The overall variances represent a combination of an overall declining trend in load for this rate class, with annual fluctuations from the overall trend caused by both changes in weather and changes in customer count.

A larger than typical decrease in load from 2019 to 2020 is due to a large number of businesses and other customers in this rate class being required to temporarily close and/or operate at reduced capacity in response to the COVID-19 pandemic.

GENERAL SERVICE 50 TO 4,999 KW

Table 3 - 23 below shows the annual change in consumption for the General Service 50 to 4,999 kW rate class, including adjustments to remove highly variable load for 2 large customer, as outlined previously in this Exhibit.

Table 3 - 23: General Service 50 to 4,999 kW Variance Analysis (Load-Adjusted)

Year	Cust	% Change	Actual kWh	% Change	Cust Adj	Load Adjusted kWh	% Change
2011	224		250,365,636		-35,488,822	214,876,814	
2012	225	0.0%	252,871,259	1%	-43,136,207	209,735,051	-2%
2013	225	0.3%	218,765,505	-13%	-24,137,763	194,627,742	-7%
2014	225	0.0%	227,548,065	4%	-31,780,370	195,767,695	1%
2015	220	-2.4%	194,707,776	-14%	-5,397,638	189,310,138	-3%
2016	206	-6.4%	185,839,671	-5%	-629,787	185,209,884	-2%
2017	198	-3.7%	185,980,426	0%	-2,784,374	183,196,052	-1%
2018	198	-0.2%	186,317,854	0%	-482,444	185,835,410	1%
2019	190	-3.7%	183,204,908	-2%	-3,499,122	179,705,786	-3%
2020	193	1.5%	169,630,767	-7%	-4,037,299	165,593,468	-8%
2021BY	190	-1.7%					
2022T	187	-1.7%					

Customer counts in this rate class show a moderate decreasing trend since 2015. After normalizing for highly variable loads, the annual variation in total kWh shows less variability. Further adjustments for weather normalization are addressed in Table 3 - 24.

Table 3 - 24: General Service 50 to 4,999 kW Variance Analysis (Weather-Normalized)

Year	Load Adjusted kWh	% Change	Weather Adj	Normalized kWh	% Change	kW (Not Normalized)	% Change
2011	214,876,814		-151,453	214,725,361		753,238	
2012	209,735,051	-2%	1,508,178	211,243,229	-2%	760,471	1%
2013	194,627,742	-7%	-981,662	193,646,080	-8%	689,936	-9%
2014	195,767,695	1%	1,667,153	197,434,848	2%	664,362	-4%
2015	189,310,138	-3%	1,627,845	190,937,983	-3%	615,145	-7%
2016	185,209,884	-2%	-2,871,652	182,338,232	-5%	580,036	-6%
2017	183,196,052	-1%	3,229,288	186,425,340	2%	588,372	1%
2018	185,835,410	1%	-4,118,624	181,716,786	-3%	580,251	-1%
2019	179,705,786	-3%	1,296,115	181,001,901	0%	553,966	-5%
2020	165,593,468	-8%	-867,302	164,726,165	-9%	527,484	-5%
2021BY				175,049,437	6%	529,536	0%
2022T				172,573,230	-1%	522,202	-1%

1 For the General Service 50 to 4,999 rate class, the average year-over-year variability from 2011 to 2019
2 is similar for both load adjusted kWh and weather normalized kWh. The overall variances represent a
3 combination of an overall declining trend in load for this rate class, with annual fluctuations from the
4 overall trend caused by changes in weather and changes in customer count. Each individual customer in
5 this rate class comprises a larger share of the total load as compared to other rate classes. Individual
6 customer actions such as maintenance shutdowns, facility expansions, CDM projects, etc. will therefore
7 generally contribute to larger annual variability in load for this rate class.

8 A larger than typical decrease in load from 2019 to 2020 is due to a large number of businesses and
9 other customers in this rate class being required to temporarily close and/or operate at reduced
10 capacity in response to the COVID-19 pandemic.

11 The 2021 and 2022 normalized kWh provided in Table 3 - 24 are less than the 2021 and 2022 load
12 forecast referenced in other parts of this Exhibit 3 because they exclude the add-back of load for large
13 customer discussed in Table 3 - 13.

14 The kW billing determinants provided in Table 3 - 24 represent total actual/forecast kW billing
15 determinants and are not normalized for weather or large customers. The declining trend in kW billing
16 determinants is consistent with overall reductions in customer counts and kWh.

1 EMBEDDED DISTRIBUTOR

2 Table 3 - 25 below shows the annual change in weather-normalized consumption for the Embedded
3 Distributor rate class.

4 **Table 3 - 25: Embedded Distributor Variance Analysis**

Year	Cust	% Change	Actual kWh	% Change	Weather Adj	Weather Normal kWh	% Change	kW	% Change
2011	1		5,010,547		-3,532	5,007,015		12,009	
2012	1	0%	5,264,499	5%	37,856	5,302,355	6%	12,683	6%
2013	1	0%	4,854,404	-8%	-24,485	4,829,919	-9%	12,042	-5%
2014	1	0%	4,975,331	2%	42,370	5,017,701	4%	12,958	8%
2015	1	0%	5,138,938	3%	44,189	5,183,127	3%	13,742	6%
2016	1	0%	5,604,942	9%	-86,904	5,518,039	6%	16,376	19%
2017	1	0%	4,768,120	-15%	84,050	4,852,170	-12%	12,501	-24%
2018	1	0%	5,218,945	9%	-115,666	5,103,279	5%	13,532	8%
2019	1	0%	5,234,524	0%	37,754	5,272,278	3%	13,276	-2%
2020	1	0%	5,321,960	2%	-27,874	5,294,086	0%	14,340	8%
2021BY	1	0%				5,173,258	-2%	13,830	-4%
2022T	1	0%				5,185,553	0%	13,863	0%

5

6 CNPI serves a single embedded distributor (Hydro One), whose load in the Port Colborne area makes up
7 approximately 1% of CNPI's overall system load. CNPI does not have visibility into the individual
8 accounts that would be required to determine the source of annual fluctuations in load for this account.
9 Since these load fluctuations are immaterial in the context of CNPI's total system load, CNPI has not
10 requested further detail from Hydro One.

1 UNMETERED SCATTERED LOAD

2 Table 3 - 26 below shows the annual change in actual consumption for the USL rate class.

3 **Table 3 - 26: USL Variance Analysis**

Year	Cust	% Change	Actual/Forecast kWh	% Change
2011	39		1,527,928	
2012	38	-1.5%	1,530,262	0%
2013	40	5.3%	1,532,802	0%
2014	40	-0.8%	1,503,003	-2%
2015	36	-8.8%	1,500,542	0%
2016	36	-0.9%	1,416,419	-6%
2017	49	37.1%	1,308,270	-8%
2018	48	-2.4%	1,307,306	0%
2019	47	-1.9%	1,299,487	-1%
2020	46	-2.5%	1,307,650	1%
2021BY	47	2.5%	1,307,291	0%
2022T	48	2.5%	1,340,169	3%

4

5 CNPI has experience a general increase in the number of USL accounts in the past 10 years. The largest
6 variability occurred in 2016-2017 as a result of efforts to update device information and more accurately
7 reclassify certain devices from Street Lighting to USL accounts.

SENTINEL LIGHTING

Table 3 - 27 below shows the annual change in actual consumption for the Sentinel Lighting rate class.

Table 3 - 27: Sentinel Lighting Variance Analysis

Year	Lights	% Change	Actual/Forecast kWh	% Change	kW	% Change
2011	828		761,037		2,333	
2012	782	-5.6%	713,313	-6%	2,174	-7%
2013	773	-1.2%	636,305	-11%	2,091	-4%
2014	773	0.1%	697,286	10%	2,126	2%
2015	761	-1.6%	690,657	-1%	2,268	7%
2016	733	-3.7%	667,142	-3%	2,173	-4%
2017	706	-3.7%	631,150	-5%	2,038	-6%
2018	698	-1.1%	606,042	-4%	1,951	-4%
2019	669	-4.1%	565,913	-7%	1,856	-5%
2020	645	-3.7%	525,915	-7%	1,723	-7%
2021BY	627	-2.7%	528,557	1%	1,607	-7%
2022T	610	-2.7%	514,043	-3%	1,615	1%

CNPI has experienced a gradual decline in sentinel lighting connections over the past 10 years, averaging approximately 3% per year. Reductions in load are generally consistent with reductions in the number of lights, with a marginal decline in kWh and kW per light in more recent years as older fixtures are replaced with LED fixtures.

1 STREET LIGHTING

2 Table 3 - 28 below shows the annual change in actual consumption for the Street Lighting rate class.

3 **Table 3 - 28: Street Lighting Variance Analysis**

Year	Lights	% Change	Actual/Forecast kWh	% Change	kW	% Change
2011	5,706		4,475,401		11,788	
2012	5,711	0.1%	4,830,576	8%	12,882	9%
2013	5,699	-0.2%	4,446,653	-8%	13,844	7%
2014	5,708	0.2%	4,336,774	-2%	13,285	-4%
2015	5,700	-0.2%	3,697,575	-15%	11,209	-16%
2016	5,736	0.6%	2,159,286	-42%	6,413	-43%
2017	5,743	0.1%	1,392,668	-36%	4,209	-34%
2018	5,774	0.5%	1,390,047	0%	4,252	1%
2019	5,879	1.8%	1,401,778	1%	4,286	1%
2020	5,997	2.0%	1,425,844	2%	4,348	1%
2021BY	6,030	0.6%	1,441,120	1%	4,356	0%
2022T	6,064	0.6%	1,449,102	1%	4,403	1%

4

5 CNPI has experienced a moderate increase in the number of street lights connected to its distribution
6 system over the past 10 years, with an average increase of approximately 0.6% per year. Reductions in
7 load between 2014 and 2017 reflect completion of LED conversion projects in most of CNPI's service
8 areas, with the average energy and demand per connection stabilizing in recent years.

3.3.1.2 2017 BOARD APPROVED VS. 2022 LOAD FORECAST

Table 3 - 29 below shows the difference between the 2017 Board Approved Load Forecast and the 2022 Test Year Load Forecast. In general, load is decreasing in all customer classes, except Residential, where moderate customer growth is driving a small increase in load.

Table 3 - 29: 2017 Board Approved vs. 2022 Load Forecast

	2017 Board Appr	2022 Test Year	Variance
Customers / Connections			
Residential	26,074	27,227	1,153
GS < 50	2,489	2,515	26
GS 50 to 4,999 kW	217	187	-30
Embedded Distributor	1	1	0
Street Light	5,713	6,064	351
Sentinel Light	695	610	-85
USL	35	48	13
TOTAL Customer (Excl SL, Sent, USL)	28,781	29,930	1,149
TOTAL SL, Sent Connections	6,408	6,674	266
kWh			
Residential	201,294,289	207,937,091	6,642,802
GS < 50	69,390,323	66,588,571	-2,801,752
GS 50 to 4,999 kW	190,144,345	176,291,005	-13,853,340
Embedded Distributor	5,205,754	5,185,553	-20,201
Street Light	2,991,556	1,449,102	-1,542,454
Sentinel Light	629,014	514,043	-114,971
USL	1,462,761	1,340,169	-122,592
TOTAL	471,118,042	459,305,534	-11,812,508
kW			
Residential			
GS < 50			
GS 50 to 4,999 kW	610,067	522,202	-87,865
Embedded Distributor	13,921	13,863	-58
Street Light	9,240	4,403	-4,837
Sentinel Light	1,916	1,615	-301
USL			
TOTAL	635,144	542,083	-93,061

- 1 Table 3 - 30 below, presents annual variances from CNPI's 2017 Board Approved to 2022 load forecast.
- 2 Due to its length when printed, CNPI has filed the complete OEB Appendix 2-IB as Appendix 3-A.

3 **Table 3 - 30: Annual Variances from 2017 Board Approved Load Forecast**

	2017 Board Appr	2017 Actual vs. 2017 Appr	2018 Actual vs. 2017 Actual	2019 Actual vs. 2018 Actual	2020 Actual vs. 2019 Actual	2021 Forecast vs. 2020 Actual	2022 Forecast vs. 2021 Forecast
Customers / Connections							
Residential	26,074	154	236	182	269	155	156
GS < 50	2,489	18	-16	5	18	1	1
GS 50 to 4,999 kW	217	-19	0	-7	3	-3	-3
Embedded Distributor	1	0	0	0	0	0	0
Street Light	5,713	30	32	104	119	33	33
Sentinel Light	695	11	-7	-29	-25	-18	-17
USL	35	14	-1	-1	-1	1	1
TOTAL Customer (Excl SL, Sent, USL)	28,781	153	220	180	289	153	154
TOTAL SL, Sent Connections	6,408	41	24	75	94	16	16
kWh							
Residential	201,294,289	-8,960,892	21,051,395	-5,051,097	11,866,524	-13,941,614	1,678,486
GS < 50	69,390,323	-3,005,145	2,167,013	-255,571	-5,077,498	3,192,249	177,200
GS 50 to 4,999 kW	190,144,345	-4,163,919	337,428	-3,112,946	-13,574,141	9,136,445	-2,476,207
Embedded Distributor	5,205,754	-437,634	450,825	15,579	87,436	-148,702	12,296
Street Light	2,991,556	-1,598,888	-2,621	11,731	24,067	15,276	7,982
Sentinel Light	629,014	2,136	-25,108	-40,129	-39,998	2,642	-14,513
USL	1,462,761	-154,491	-965	-7,818	8,162	-359	32,878
TOTAL	471,118,042	-18,318,833	23,977,967	-8,440,251	-6,705,448	-1,744,063	-581,880
kW							
Residential							
GS < 50							
GS 50 to 4,999 kW	610,067	-21,695	-8,121	-26,285	-26,482	2,053	-7,335
Embedded Distributor	13,921	-1,420	1,031	-257	1,064	-509	33
Street Light	9,240	-5,031	43	34	63	8	47
Sentinel Light	1,916	122	-87	-95	-133	-116	8
USL							
TOTAL	635,144	-28,024	-7,134	-26,603	-25,489	1,435	-7,247

3.3.2 VARIANCE ANALYSIS OF DISTRIBUTION REVENUES

Table 3 - 31 below shows annual calculations of CNPI's revenue based on approved and proposed distribution rates (2017-2021 OEB approved rates and 2022 rates as calculated in Exhibit 8), applied to the actual and forecasted customer counts and loads identified in this Exhibit. The resulting values are referred to as either "calculated distribution revenue" or "forecasted distribution revenue" in the variance analysis that follows.

CNPI confirms that when the annual 2017 to 2020 distribution revenues calculated using this approach are adjusted for LRAMVA claims and Transformer Ownership Allowance, the results differ by less than 0.8% from its annual 2.1.5.4 RRR filings.

1

Table 3 - 31: Variance Analysis of Distribution Revenue

Year	2017 Board Approved	2017	Variance	2018	Variance	2019	Variance	2020	Variance	2021BY	Variance	2022T	Variance
Residential													
Fixed	\$27.72	\$27.72	\$0.00	\$30.57	\$2.85	\$33.56	\$2.99	\$36.76	\$3.20	\$37.40	\$0.64	\$42.42	\$5.02
Variable	\$0.0122	\$0.0122	\$0.00	\$0.0082	-\$0.0040	\$0.0041	-\$0.0041	\$0.0000	-\$0.0041	\$0.0000	\$0.0000	\$0.0000	\$0.0000
Cust/Conn	26,074	26,228	154	26,465	236	26,647	182	26,916	269	27,071	155	27,227	156
kWh	201,294,289	192,333,397	-8,960,892	213,384,792	21,051,395	208,333,695	-5,051,097	220,200,220	11,866,524	206,258,605	-13,941,614	207,937,091	1,678,486
Revenues	\$11,129,046	\$11,071,088	-\$57,958	\$11,458,115	\$387,027	\$11,585,448	\$127,333	\$11,873,039	\$287,591	\$12,149,342	\$276,303	\$13,859,468	\$1,710,126
General Service < 50 kW													
Fixed	\$30.02	\$30.02	\$0.00	\$30.25	\$0.23	\$30.57	\$0.32	\$31.04	\$0.47	\$31.58	\$0.54	\$35.71	\$4.13
Variable	\$0.0244	\$0.0244	\$0.0000	\$0.0246	\$0.0002	\$0.0249	\$0.0003	\$0.0253	\$0.0004	\$0.0257	\$0.0004	\$0.0291	\$0.0034
Cust/Conn	2,489	2,507	18	2,491	-16	2,496	5	2,514	18	2,514	1	2,515	1
kWh	69,390,323	66,385,178	-3,005,145	68,552,191	2,167,013	68,296,620	-255,571	63,219,122	-5,077,498	66,411,371	3,192,249	66,588,571	177,200
Revenues	\$2,589,761	\$2,522,800	-\$66,961	\$2,590,526	\$67,726	\$2,616,096	\$25,570	\$2,535,703	-\$80,393	\$2,659,597	\$123,894	\$3,015,476	\$355,879
General Service 50 to 4,999 kW													
Fixed	\$161.31	\$161.31	\$0.00	\$162.52	\$1.21	\$164.23	\$1.71	\$166.78	\$2.55	\$169.70	\$2.92	\$169.70	\$0.00
Variable	\$7.0854	\$7.0854	\$0.0000	\$7.1385	\$0.0531	\$7.2135	\$0.0750	\$7.3253	\$0.1118	\$7.4535	\$0.1282	\$8.4793	\$1.0258
Cust/Conn	217	198	-19	198	-0	190	-7	193	3	190	-3	187	-3
kWh	190,144,345	185,980,426	-4,163,919	186,317,854	337,428	183,204,908	-3,112,946	169,630,767	-13,574,141	178,767,212	9,136,445	176,291,005	-2,476,207
kW	610,067	588,372	-21,695	580,251	-8,121	553,966	-26,285	527,484	-26,482	529,536	2,053	522,202	-7,335
Revenues	\$4,742,620	\$4,552,122	-\$190,498	\$4,527,619	-\$24,503	\$4,371,135	-\$156,484	\$4,250,573	-\$120,562	\$4,333,765	\$83,191	\$4,808,376	\$474,611

Year	2017 Board Approved	2017	Variance	2018	Variance	2019	Variance	2020	Variance	2021BY	Variance	2022T	Variance
Embedded Distributor													
Fixed	\$580.48	\$580.48	\$0.00	\$584.83	\$4.35	\$590.97	\$6.14	\$600.13	\$9.16	\$610.63	\$10.50	\$610.63	\$0.00
Variable	\$8.1509	\$8.1509	\$0.0000	\$8.2120	\$0.0611	\$8.2982	\$0.0862	\$8.4268	\$0.1286	\$8.5743	\$0.1475	\$9.7651	\$1.1908
Cust/Conn	1	1	0	1	0	1	0	1	0	1	0	1	0
kWh	5,205,754	4,768,120	-437,634	5,218,945	450,825	5,234,524	15,579	5,321,960	87,436	5,173,258	-148,702	5,185,553	12,296
kW	13,921	12,501	-1,420	13,532	1,031	13,276	-257	14,340	1,064	13,830	-509	13,863	33
Revenues	\$120,434	\$108,864	-\$11,571	\$118,146	\$9,282	\$117,256	-\$890	\$128,038	\$10,783	\$125,912	-\$2,126	\$142,702	\$16,790
USL													
Fixed	\$47.33	\$47.33	\$0.00	\$47.68	\$0.35	\$48.18	\$0.50	\$48.93	\$0.75	\$49.79	\$0.86	\$49.79	\$0.00
Variable	\$0.0257	\$0.0257	\$0.0000	\$0.0259	\$0.0002	\$0.0262	\$0.0003	\$0.0266	\$0.0004	\$0.0271	\$0.0005	\$0.0335	\$0.0064
Cust/Conn	35	49	14	48	-1	47	-1	46	-1	47	1	48	1
kWh	1,462,761	1,308,270	-154,491	1,307,306	-965	1,299,487	-7,818	1,307,650	8,162	1,307,291	-359	1,340,169	32,878
Revenues	\$57,472	\$61,595	\$4,123	\$61,371	-\$224	\$61,316	-\$54	\$61,793	\$476	\$63,603	\$1,810	\$73,870	\$10,177
Sentinel Lighting													
Fixed	\$5.41	\$5.41	\$0.00	\$5.45	\$0.04	\$5.51	\$0.06	\$5.60	\$0.09	\$5.70	\$0.10	\$6.45	\$0.75
Variable	\$6.2695	\$6.2695	\$0.0000	\$6.3165	\$0.0470	\$6.3828	\$0.0663	\$6.4817	\$0.0989	\$6.5951	\$0.1134	\$7.4381	\$0.8430
Cust/Conn	695	706	11	698	-7	669	-29	645	-25	627	-18	610	-17
kWh	629,014	631,150	2,136	606,042	-25,108	565,913	-40,129	525,915	-39,998	528,557	2,642	514,043	-14,513
kW	1,916	2,038	122	1,951	-87	1,856	-95	1,723	-133	1,607	-116	1,615	8
Revenues	\$57,132	\$58,589	\$1,457	\$57,991	-\$598	\$56,109	-\$1,882	\$54,489	-\$1,620	\$53,481	-\$1,008	\$59,206	\$5,725

Year	2017 Board Approved	2017	Variance	2018	Variance	2019	Variance	2020	Variance	2021BY	Variance	2022T	Variance
Street Lighting													
Fixed	\$3.89	\$3.89	\$0.00	\$3.92	\$0.03	\$3.96	\$0.04	\$4.02	\$0.06	\$4.09	\$0.07	\$4.12	\$0.03
Variable	\$8.4588	\$8.4588	\$0.0000	\$8.5222	\$0.0634	\$8.6117	\$0.0895	\$8.7452	\$0.1335	\$8.8982	\$0.1530	\$9.0446	\$0.1464
Cust/Conn	5,713	5,743	30	5,774	32	5,879	104	5,997	119	6,030	33	6,064	33
kWh	2,991,556	1,392,668	-1,598,888	1,390,047	-2,621	1,401,778	11,731	1,425,844	24,067	1,441,120	15,276	1,449,102	7,982
kW	9,240	4,209	-5,031	4,252	43	4,286	34	4,348	63	4,356	8	4,403	47
Revenues	\$344,842	\$303,683	-\$41,160	\$307,863	\$4,181	\$316,261	\$8,398	\$327,332	\$11,071	\$334,735	\$7,403	\$339,617	\$4,882
Total													
Cust/Conn	35,223	35,431	208	35,674	243	35,928	254	36,310	382	36,480	169	36,650	171
kWh	465,912,288	448,031,089	-17,881,199	471,558,231	23,527,142	463,102,401	-8,455,831	456,309,517	-6,792,884	454,714,156	-1,595,361	454,119,981	-594,175
kW	635,144	607,120	-28,024	599,986	-7,134	573,383	-26,603	547,895	-25,489	549,330	1,435	542,083	-7,247
\$	\$19,041,307	\$18,678,740	-\$362,567	\$19,121,630	\$442,890	\$19,123,621	\$1,991	\$19,230,967	\$107,346	\$19,720,435	\$489,468	\$22,298,625	\$2,578,190
Add LRAMVA:	\$385,434			-		-		\$304,010					
Less Trans Allowance:	-\$199,987			-\$190,093		-\$188,718		-\$181,983					
Adj Total:	\$18,864,277			\$18,931,538		\$18,934,904		\$19,352,995					
RRR 2.1.5.4:	\$19,011,345			\$19,080,876		\$18,992,337		\$19,464,509					
Difference (\$):	-\$147,068			-\$149,339		-\$57,433		-\$111,514					
Difference (%):	-0.77%			-0.78%		-0.30%		-0.57%					

2017 BOARD APPROVED VS. 2017 ACTUAL

Total calculated distribution revenue of \$18,678,740 in 2017 was \$362,567 lower than the 2017 Board Approved revenue, primarily due to lower than forecasted load in the Residential, General Service and Street Lighting rate classes. Residential and General Service load was influenced by lower than average HDD and CDD, while Street Lighting load was reduced due to ongoing LED conversions beyond the adjustments embedded in CNPI's 2017 load forecast.

2017 ACTUAL VS. 2018 ACTUAL

Total calculated distribution revenue of \$19,121,630 in 2018 was \$442,890 higher than 2017 calculated distribution revenue, primarily due to increased load in the Residential rate class from a hotter than average summer. Weather impacts for the General Service rate classes were offset by overall reductions in load.

2018 ACTUAL VS. 2019 ACTUAL

Total calculated distribution revenue of \$19,123,621 in 2019 was not materially different than 2018 calculated distribution revenue since weather-related variation in Residential load were offset by continued transition to fully fixed distribution rates.

2019 ACTUAL VS. 2020 ACTUAL

Total calculated distribution revenue of \$19,230,967 in 2020 was \$107,346 higher than 2019 calculated distribution revenue. Increases in Residential revenue due to increasing customer counts and inflationary rate adjustments were partially offset by COVID-related reductions in load for General Service customers.

2020 ACTUAL VS. 2021 BRIDGE YEAR

Total forecasted distribution revenue of \$19,720,435 in 2021 is projected to be \$489,468 higher than 2020 calculated distribution revenue, primarily due to increasing Residential customer counts, inflationary adjustments, and easing of COVID-related restrictions.

2021 BRIDGE YEAR VS. 2022 TEST YEAR

Total forecasted distribution revenue of \$22,298,625 in 2022, required to recover CNPI's Base Revenue Requirement plus Transformer Allowance is \$2,578,190 higher than 2021 forecasted revenue. The majority of the variance is attributed to the rates requested in this Application to eliminate CNPI's 2022 revenue deficiency. Table 3 - 32 below shows that applying 2021 rates to the 2022 load forecast would result in distribution revenue of \$19,559,110, approximately \$2.6 million short of CNPI's 2022 base revenue requirement.

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Table 3 - 32: Test Year Revenue At Existing Rates

	2021 Bridge Year Rates			2022 Test Year Forecast		
Customer Class	Fixed Charge	Volumetric Charge	Unit	Customer /Connection Count	Forecast kWh	Forecast kW
Residential	\$37.40	\$0.0000	kWh	27,227	207,937,091	
GS < 50	\$31.58	\$0.0257	kWh	2,515	66,588,571	
GS 50 to 4,999 kW	\$169.70	\$7.4535	kW	187	176,291,005	522,202
Embedded Distributor	\$610.63	\$8.5743	kW	1	5,185,553	13,863
Street Light	\$4.09	\$8.8982	kW	6,064	1,449,102	4,403
Sentinel Light	\$5.70	\$6.5951	kW	610	514,043	1,615
USL	\$49.79	\$0.0271	kWh	48	1,340,169	
Transformer Allowance		-\$0.60	kW			296,494
Customer Class	Fixed	Variable	Total Distribution	Transformer Allowance	Net Distribution Revenue	Class % of Total
Residential	\$12,219,333	\$0	\$12,219,333		\$12,219,333	62.5%
GS < 50	\$953,103	\$1,711,326	\$2,664,429		\$2,664,429	13.6%
GS 50 to 4,999 kW	\$380,473	\$3,892,229	\$4,272,702	-\$177,896	\$4,094,805	20.9%
Embedded Distributor	\$7,328	\$118,866	\$126,194		\$126,194	0.6%
Street Light	\$297,610	\$39,179	\$336,789		\$336,789	1.7%
Sentinel Light	\$41,707	\$10,650	\$52,357		\$52,357	0.3%
USL	\$28,884	\$36,319	\$65,202		\$65,202	0.3%
Total	\$13,928,437	\$5,808,569	\$19,737,007	-\$177,896	\$19,559,110	100.0%

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3.4 OTHER REVENUES

3.4.1 OVERVIEW OF OTHER REVENUE

Other Distribution Revenues are revenues that are distribution related but are sourced from means other than distribution rates. For this reason, other revenues are deducted from CNPI's proposed Service Revenue Requirement to determine a Base Revenue Requirement for rate setting. Further details on the derivation of the Revenue Requirement is presented in Exhibit 6.

Other Distribution Revenues includes items such as:

- Specific Service Charges
- Late Payment Charges
- Other Distribution Revenues
- Other Income and Expenses

CNPI has not proposed any new specific service charges or changes to policies that would impact Other Revenue for the 2022 Test Year. Where Other Revenue impacts arising from OEB policy consultations on wireline pole attachment charges and retail service charges are currently being recorded in variance accounts, these impacts have been considered in forecasting Other Revenue for the 2022 Test Year.¹¹

Beginning in 2020, CNPI changed its accounting treatment related to IT assets that are shared between CNPI and its affiliate companies, in order to be consistent with the preference expressed by OEB staff in Algoma Power Inc.'s 2020 cost of service application. As a result of this change, CNPI's revenues and costs relating to these shared IT assets are shown in accounts 4375 and 4380 for the 2017-2019 period, and are shown in account 5675 for the 2020-2022 period.¹²

A detailed breakdown of Other Revenue by USoA is provided in Table 3 - 33. Year over year variance analysis follows in Section 3.4.2. CNPI has also completed OEB Appendix 2-H, which is included as Appendix 3-B to this Exhibit.

¹¹ See Exhibit 9 for variance account treatment of interim changes in revenue related to OEB policy consultations.

¹² See Section 1.2.8 of Exhibit 1 for a detailed explanation of the change in accounting treatment arising from Algoma Power Inc's cost of service application and CNPI's rationale for implementing a similar change in accounting treatment.

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Table 3 - 33: Summary of Other Revenue¹³

Acct	Description	2017 Board Approved	2017 Actual	2018 Actual	2019 Actual	2020 Actual	2021 Bridge	2022 Test
4235	Miscellaneous Service Revenues	-158,264	-142,911	-131,952	-129,839	-129,161	-134,183	-130,700
4225	Late Payment Charges	-354,100	-213,487	-170,638	-161,061	-76,808	-129,500	-129,500
4082	Retail Services Revenues	-24,600	-16,040	-13,671	-12,078	-10,398	-11,400	-24,156
4084	Service Transaction Requests (STR) Revenues	-800	-313	-213	-197	-173	-300	-395
4086	SSS Administration Revenue	-81,035	-84,355	-85,296	-86,452	-87,559	-86,892	-87,000
4210	Rent from Electric Property	-327,500	-320,187	-320,299	-322,568	-319,891	-321,000	-621,000
4220	Other Electric Revenues	-15,700	-43,594	-372,290	-12,745	-12,320	-7,400	-9,100
4305	Regulatory Debits	0	0	0	534,514	417,274	402,000	0
4325	Revenues from Merchandise Jobbing, Etc.	-432,852	-476,738	-449,524	-489,248	-559,751	-295,747	-311,173
4330	Costs and Expenses of Merchandising Jobbing, Etc.	109,623	63,974	133,329	191,243	292,055	41,347	41,773
4360	Loss on Disposition of Utility and Other Property	0	-42,942	30,405	169,862	694	0	0
4375	Revenues from Non-Utility Operations	-1,132,965	-1,314,416	-1,253,511	-1,193,793	0	0	0
4380	Expenses of Non-Utility Operations	0	122,633	122,214	116,587	0	0	0
4390	Miscellaneous Non-Operating Income	-100,000	0	0	-50,000	0	0	0
4398	Foreign Exchange Gains and Losses, Including Amortization	0	808	2,860	-1,337	557	0	0
4405	Interest and Dividend Income	-30,000	-83,680	-135,984	-144,026	-74,989	-75,000	-70,000
	Total	-2,548,193	-2,551,248	-2,644,570	-1,591,137	-560,470	-618,075	-1,341,251
	Specific Service Charges	-158,264	-142,911	-131,952	-129,839	-129,161	-134,183	-130,700
	Late Payment Charges	-354,100	-213,487	-170,638	-161,061	-76,808	-129,500	-129,500
	Other Operating Revenues	-449,635	-464,489	-791,768	-434,040	-430,341	-426,992	-741,651
	Other Income or Deductions	-1,586,194	-1,730,361	-1,550,211	-866,197	75,840	72,600	-339,400
	Total Revenue Offsets	-2,548,193	-2,551,248	-2,644,570	-1,591,137	-560,470	-618,075	-1,341,251

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¹³ Additional detail for accounts 4082-4405 are included in Appendix 3-B (OEB Appendix 2-H).

3.4.2 OTHER REVENUE VARIANCE ANALYSIS

2017 BOARD APPROVED VS. 2017 ACTUAL

Table 3 - 34: Other Revenue: 2017 Board Approved vs. 2017 Actual

Account	Description	2017 Board Approved	2017 Actual	Variance \$	Variance %
4235	Miscellaneous Service Revenues	-158,264	-142,911	15,353	-10%
4225	Late Payment Charges	-354,100	-213,487	140,613	-40%
4082	Retail Services Revenues	-24,600	-16,040	8,560	-35%
4084	Service Transaction Requests (STR) Revenues	-800	-313	488	-61%
4086	SSS Administration Revenue	-81,035	-84,355	-3,320	4%
4210	Rent from Electric Property	-327,500	-320,187	7,313	-2%
4220	Other Electric Revenues	-15,700	-43,594	-27,894	178%
4305	Regulatory Debits	0	0	0	0%
4325	Revenues from Merchandise Jobbing, Etc.	-432,852	-476,738	-43,886	10%
4330	Costs and Expenses of Merchandising Jobbing, Etc.	109,623	63,974	-45,649	-42%
4360	Loss on Disposition of Utility and Other Property	0	-42,942	-42,942	0%
4375	Revenues from Non-Utility Operations	-1,132,965	-1,314,416	-181,451	16%
4380	Expenses of Non-Utility Operations	0	122,633	122,633	0%
4390	Miscellaneous Non-Operating Income	-100,000	0	100,000	-100%
4398	Foreign Exchange Gains and Losses, Including Amortization	0	808	808	0%
4405	Interest and Dividend Income	-30,000	-83,680	-53,680	179%
	Total	-2,548,193	-2,551,248	-3,055	0%
	Specific Service Charges	-158,264	-142,911	15,353	-10%
	Late Payment Charges	-354,100	-213,487	140,613	-40%
	Other Operating Revenues	-449,635	-464,489	-14,854	3%
	Other Income or Deductions	-1,586,194	-1,730,361	-144,167	9%
	Total Revenue Offsets	-2,548,193	-2,551,248	-3,055	0%

Net revenue from billable work, and shared IT assets (i.e. accounts 4325, 4330, 4375 and 4380) was approximately \$148k higher than OEB approved. These gains were essentially offset by late payment charges \$141k lower than expected. Similarly, gains on dispositions and increased interest income totaling \$97k were offset by \$100k in miscellaneous revenue not being realized. As a result, the overall variance between 2017 OEB approved other revenue and 2017 actual other revenue was immaterial.

2017 ACTUAL VS. 2018 ACTUAL

Table 3 - 35: Other Revenue: 2017 Actual vs. 2018 Actual

Account	Description	2017 Actual	2018 Actual	Variance \$	Variance %
4235	Miscellaneous Service Revenues	-142,911	-131,952	10,958	-8%
4225	Late Payment Charges	-213,487	-170,638	42,849	-20%
4082	Retail Services Revenues	-16,040	-13,671	2,370	-15%
4084	Service Transaction Requests (STR) Revenues	-313	-213	99	-32%
4086	SSS Administration Revenue	-84,355	-85,296	-940	1%
4210	Rent from Electric Property	-320,187	-320,299	-112	0%
4220	Other Electric Revenues	-43,594	-372,290	-328,696	754%
4305	Regulatory Debits	0	0	0	0%
4325	Revenues from Merchandise Jobbing, Etc.	-476,738	-449,524	27,214	-6%
4330	Costs and Expenses of Merchandising Jobbing, Etc.	63,974	133,329	69,355	108%
4360	Loss on Disposition of Utility and Other Property	-42,942	30,405	73,347	-171%
4375	Revenues from Non-Utility Operations	-1,314,416	-1,253,511	60,905	-5%
4380	Expenses of Non-Utility Operations	122,633	122,214	-419	0%
4390	Miscellaneous Non-Operating Income	0	0	0	0%
4398	Foreign Exchange Gains and Losses, Including Amortization	808	2,860	2,052	254%
4405	Interest and Dividend Income	-83,680	-135,984	-52,304	63%
	Total	-2,551,248	-2,644,570	-93,322	4%
	Specific Service Charges	-142,911	-131,952	10,958	-8%
	Late Payment Charges	-213,487	-170,638	42,849	-20%
	Other Operating Revenues	-464,489	-791,768	-327,279	70%
	Other Income or Deductions	-1,730,361	-1,550,211	180,150	-10%
	Total Revenue Offsets	-2,551,248	-2,644,570	-93,322	4%

A one-time CDM mid-term incentive payment of \$360k in account 4220, and increased interest income of \$52k were the primary drivers of increases other revenue from 2017 to 2018. These increases were offset by a net reduction in revenue from billable work and shared IT assets of \$157k and further reduction in late payment charges of \$43k. The resulting overall variance between 2017 and 2018 actual other revenue is \$93k, or 4%.

2018 ACTUAL VS. 2019 ACTUAL

Table 3 - 36: Other Revenue: 2018 Actual vs. 2019 Actual

Account	Description	2018 Actual	2019 Actual	Variance \$	Variance %
4235	Miscellaneous Service Revenues	-131,952	-129,839	2,114	-2%
4225	Late Payment Charges	-170,638	-161,061	9,577	-6%
4082	Retail Services Revenues	-13,671	-12,078	1,593	-12%
4084	Service Transaction Requests (STR) Revenues	-213	-197	16	-8%
4086	SSS Administration Revenue	-85,296	-86,452	-1,156	1%
4210	Rent from Electric Property	-320,299	-322,568	-2,269	1%
4220	Other Electric Revenues	-372,290	-12,745	359,545	-97%
4305	Regulatory Debits	0	534,514	534,514	0%
4325	Revenues from Merchandise Jobbing, Etc.	-449,524	-489,248	-39,724	9%
4330	Costs and Expenses of Merchandising Jobbing, Etc.	133,329	191,243	57,914	43%
4360	Loss on Disposition of Utility and Other Property	30,405	169,862	139,457	459%
4375	Revenues from Non-Utility Operations	-1,253,511	-1,193,793	59,719	-5%
4380	Expenses of Non-Utility Operations	122,214	116,587	-5,627	-5%
4390	Miscellaneous Non-Operating Income	0	-50,000	-50,000	0%
4398	Foreign Exchange Gains and Losses, Including Amortization	2,860	-1,337	-4,197	-147%
4405	Interest and Dividend Income	-135,984	-144,026	-8,042	6%
	Total	-2,644,570	-1,591,137	1,053,433	-40%
	Specific Service Charges	-131,952	-129,839	2,114	-2%
	Late Payment Charges	-170,638	-161,061	9,577	-6%
	Other Operating Revenues	-791,768	-434,040	357,728	-45%
	Other Income or Deductions	-1,550,211	-866,197	684,014	-44%
	Total Revenue Offsets	-2,644,570	-1,591,137	1,053,433	-40%

A regulatory debit of \$535k related to recording the impact of the accelerated CCA initiative in accordance with OEB guidance, a reduction in other revenues related to the \$360k CDM mid-term incentive in 2018, and \$139k in losses on dispositions account for the majority (\$1.03M of \$1.05M) of the 2019 decrease in other revenue.

2019 ACTUAL VS. 2020 ACTUAL

Table 3 - 37: Other Revenue: 2019 Actual vs. 2020 Actual

Account	Description	2019 Actual	2020 Actual	Variance \$	Variance %
4235	Miscellaneous Service Revenues	-129,839	-129,161	678	-1%
4225	Late Payment Charges	-161,061	-76,808	84,252	-52%
4082	Retail Services Revenues	-12,078	-10,398	1,681	-14%
4084	Service Transaction Requests (STR) Revenues	-197	-173	24	-12%
4086	SSS Administration Revenue	-86,452	-87,559	-1,108	1%
4210	Rent from Electric Property	-322,568	-319,891	2,678	-1%
4220	Other Electric Revenues	-12,745	-12,320	425	-3%
4305	Regulatory Debits	534,514	417,274	-117,240	-22%
4325	Revenues from Merchandise Jobbing, Etc.	-489,248	-559,751	-70,503	14%
4330	Costs and Expenses of Merchandising Jobbing, Etc.	191,243	292,055	100,812	53%
4360	Loss on Disposition of Utility and Other Property	169,862	694	-169,168	-100%
4375	Revenues from Non-Utility Operations	-1,193,793	0	1,193,793	-100%
4380	Expenses of Non-Utility Operations	116,587	0	-116,587	-100%
4390	Miscellaneous Non-Operating Income	-50,000	0	50,000	-100%
4398	Foreign Exchange Gains and Losses, Including Amortization	-1,337	557	1,894	-142%
4405	Interest and Dividend Income	-144,026	-74,989	69,037	-48%
	Total	-1,591,137	-560,470	1,030,667	-65%
	Specific Service Charges	-129,839	-129,161	678	-1%
	Late Payment Charges	-161,061	-76,808	84,252	-52%
	Other Operating Revenues	-434,040	-430,341	3,700	-1%
	Other Income or Deductions	-866,197	75,840	942,037	-109%
	Total Revenue Offsets	-1,591,137	-560,470	1,030,667	-65%

As described in Section 3.4.1, CNPI changed its accounting treatment for shared IT assets beginning in 2020. As a result, the net revenue associated with accounts 4375 and 4380 for the 2017-2019 period is now treated as an offset to OM&A costs in account 5675 (see Exhibit 4), resulting in a decrease of \$1.08M in other revenue. CNPI also experienced an \$84k decrease in late payment charges in 2020, primarily due to waiving late payment charges for approximately half of the year to provide relief to customers in response to the COVID-19 pandemic.

Reductions in regulatory debits (accelerated CCA) and losses on dispositions, marginally reduced the overall variance caused by the decreases described above.

1 2020 ACTUAL VS. 2021 BRIDGE YEAR

2 **Table 3 - 38: Other Revenue: 2020 Actual vs. 2021 Bridge Year**

Account	Description	2020 Actual	2021 Bridge	Variance \$	Variance %
4235	Miscellaneous Service Revenues	-129,161	-134,183	-5,022	4%
4225	Late Payment Charges	-76,808	-129,500	-52,691	69%
4082	Retail Services Revenues	-10,398	-11,400	-1,002	10%
4084	Service Transaction Requests (STR) Revenues	-173	-300	-127	73%
4086	SSS Administration Revenue	-87,559	-86,892	667	-1%
4210	Rent from Electric Property	-319,891	-321,000	-1,109	0%
4220	Other Electric Revenues	-12,320	-7,400	4,920	-40%
4305	Regulatory Debits	417,274	402,000	-15,274	-4%
4325	Revenues from Merchandise Jobbing, Etc.	-559,751	-295,747	264,004	-47%
4330	Costs and Expenses of Merchandising Jobbing, Etc.	292,055	41,347	-250,708	-86%
4360	Loss on Disposition of Utility and Other Property	694	0	-694	-100%
4375	Revenues from Non-Utility Operations	0	0	0	0%
4380	Expenses of Non-Utility Operations	0	0	0	0%
4390	Miscellaneous Non-Operating Income	0	0	0	0%
4398	Foreign Exchange Gains and Losses, Including Amortization	557	0	-557	-100%
4405	Interest and Dividend Income	-74,989	-75,000	-11	0%
4415	Equity in Earnings of Subsidiary Companies	0	0	0	0%
	Total	-560,470	-618,075	-57,605	10%
	Specific Service Charges	-129,161	-134,183	-5,022	4%
	Late Payment Charges	-76,808	-129,500	-52,691	69%
	Other Operating Revenues	-430,341	-426,992	3,349	-1%
	Other Income or Deductions	75,840	72,600	-3,240	-4%
	Total Revenue Offsets	-560,470	-618,075	-57,605	10%

3

4 2021 Bridge Year other revenue is forecasted to be \$58k (10%) higher than 2020 actual, primarily due to
5 increased late payment charge revenue.

1 2021 BRIDGE YEAR VS. 2022 TEST YEAR

2 **Table 3 - 39: Other Revenue: 2021 Bridge Year vs. 2022 Test Year**

Account	Description	2021 Bridge	2022 Test	Variance \$	Variance %
4235	Miscellaneous Service Revenues	-134,183	-130,700	3,483	-3%
4225	Late Payment Charges	-129,500	-129,500	0	0%
4082	Retail Services Revenues	-11,400	-24,156	-12,756	112%
4084	Service Transaction Requests (STR) Revenues	-300	-395	-95	32%
4086	SSS Administration Revenue	-86,892	-87,000	-108	0%
4210	Rent from Electric Property	-321,000	-621,000	-300,000	93%
4220	Other Electric Revenues	-7,400	-9,100	-1,700	23%
4305	Regulatory Debits	402,000	0	-402,000	-100%
4325	Revenues from Merchandise Jobbing, Etc.	-295,747	-311,173	-15,426	5%
4330	Costs and Expenses of Merchandising Jobbing, Etc.	41,347	41,773	426	1%
4360	Loss on Disposition of Utility and Other Property	0	0	0	0%
4375	Revenues from Non-Utility Operations	0	0	0	0%
4380	Expenses of Non-Utility Operations	0	0	0	0%
4390	Miscellaneous Non-Operating Income	0	0	0	0%
4398	Foreign Exchange Gains and Losses, Including Amortization	0	0	0	0%
4405	Interest and Dividend Income	-75,000	-70,000	5,000	-7%
4415	Equity in Earnings of Subsidiary Companies	0	0	0	0%
	Total	-618,075	-1,341,251	-723,176	117%
	Specific Service Charges	-134,183	-130,700	3,483	-3%
	Late Payment Charges	-129,500	-129,500	0	0%
	Other Operating Revenues	-426,992	-741,651	-314,659	74%
	Other Income or Deductions	72,600	-339,400	-412,000	-567%
	Total Revenue Offsets	-618,075	-1,341,251	-723,176	117%

3

4 2022 Test Year other revenue is forecasted to be \$723k (117%) higher than in the 2021 Bridge Year,
5 primarily due to removing the regulatory debit for accelerated CCA in the rebasing year, and recognizing
6 joint-use attachment revenue at the higher OEB-approved rates. Prior to the 2022 Test Year, the
7 incremental revenue resulting from the increase in the wireline attachment charge was captured in a
8 variance account, to be refunded to customers as discussed in Exhibit 9.

3.4.3 PROPOSED SPECIFIC SERVICE CHARGES

CNPI is not proposing any new specific service charges or any changes to existing specific services charges.¹⁴ CNPI is also proposing to continue to adopt the OEB default charges for both the microFIT service charge and the wireline attachment charge. There are therefore no customer classes or discrete customer groups that will be materially impacted by changes to other rates and charges.

3.4.4 REVENUE FROM AFFILIATE TRANSACTIONS, SHARED SERVICES, CORPORATE COST ALLOCATION

Shared services are provided between CNPI and its affiliates, as described in Section 4.5 of Exhibit 4.

Amounts recorded in OEB Accounts 4375 and 4380 for the 2017-2019 period in OEB Appendix 2-H reconcile to the amounts in Appendix 2-N related to shared IT costs.¹⁵

CNPI confirms that amounts included in the OM&A portion of its revenue requirement are excluded from the balances incorporated into Other Operating Revenue and vice versa.

¹⁴ Except for those service charges that are subject to annual inflationary adjustments as described in Exhibit 8.

¹⁵ As discussed in Section 3.4.1, shared IT revenues and costs are not recorded in accounts 4375 and 4380 from 2020 onward, due to a change in accounting methodology.



CANADIAN NIAGARA POWER INC.

A **FORTIS** ONTARIO
Company

APPENDIX 3-A: OEB APPENDIX 2-IB

Appendix 2-IB

Customer, Connections, Load Forecast and Revenues Data and Analysis

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

Color coding for Cells:

Data input	Drop-down List
No data entry required	Blank or calculated value

Distribution System (Total)

	Calendar Year (for 2022 Cost of Service)		Consumption (kWh) ⁽³⁾			
				Actual (Weather actual)	Weather- normalized	Weather- normalized
Historical	2016		Actual	466,965,822	459,801,135	
Historical	2017		Actual	452,799,209	460,673,107	OEB-approved 471,118,042
Historical	2018		Actual	476,777,177	466,294,387	
Historical	2019		Actual	468,336,925	471,665,970	
Historical	2020		Actual	461,631,477	459,251,881	
Bridge Year	2021		Forecast		459,887,414	
Test Year	2022		Forecast		459,305,534	

Variance Analysis	Year	Year-over-year		Versus OEB- approved
	2016			
	2017	-3.0%	0.2%	
	2018	5.3%	1.2%	
	2019	-1.8%	1.2%	
	2020	-1.4%	-2.6%	
	2021		0.1%	
	2022		-0.1%	-2.5%
	Geometric Mean	-0.4%	0.0%	-0.6%

Customer Class Analysis (one for each Customer Class, excluding MicroFIT and Standby)

1 Customer Class:

Residential

Is the customer class billed on consumption (kWh) or demand (kW or kVA)?

kWh

	Calendar Year (for 2022 Cost of Service)	Customers				Consumption (kWh) ⁽³⁾				Consumption (kWh) per Customer			
							Actual (Weather actual)	Weather- normalized	Weather- normalized		Actual (Weather actual)	Weather- normalized	Weather- normalized
Historical	2016	Actual	26,029	OEB-approved	26,074	Actual	202,182,964	199,048,147	OEB-approved	201,294,289	Actual	7,767.48	7,647.05
Historical	2017	Actual	26,228			Actual	192,333,397	195,723,753			Actual	7,333.02	7,462.28
Historical	2018	Actual	26,465			Actual	213,384,792	208,655,598			Actual	8,062.96	7,884.26
Historical	2019	Actual	26,647			Actual	208,333,695	209,836,287			Actual	7,818.28	7,874.67
Historical	2020	Actual	26,916			Actual	220,200,220	219,046,912			Actual	8,181.12	8,138.27
Bridge Year	2021	Forecast	27,071			Forecast		206,258,605			Forecast	0.00	7,619.25
Test Year	2022	Forecast	27,227			Forecast		207,937,091			Forecast	0.00	7,637.26

Variance Analysis	Year	Year-over-year	Test Year Versus OEB- approved	Year	Year-over-year	Test Year Versus OEB- approved	Year	Year-over-year	Test Year Versus OEB- approved
	2016			2016			2016		
	2017	0.8%		2017	-4.9%		2017	-5.6%	
	2018	0.9%		2018	10.9%		2018	10.0%	
	2019	0.7%		2019	-2.4%		2019	-3.0%	
	2020	1.0%		2020	5.7%		2020	4.6%	
	2021	0.6%		2021			2021		
	2022	0.6%		2022			2022		
	Geometric Mean	0.9%	4.4%	Geometric Mean	2.9%	3.3%	Geometric Mean	1.7%	-1.1%
			1.1%		0.9%	0.8%		0.0%	-0.3%

	Calendar Year (for 2022 Cost of Service)	Revenues			
Historical	2016	Actual	\$ 10,394,735	OEB-approved	\$11,129,046
Historical	2017	Actual	\$ 11,071,088		
Historical	2018	Actual	\$ 11,458,115		
Historical	2019	Actual	\$ 11,585,448		
Historical	2020	Actual	\$ 11,873,039		
Bridge Year (Forecast)	2021	Forecast	\$ 12,149,342		
Test Year (Forecast)	2022	Forecast	\$ 13,859,468		

Variance Analysis	Year	Year-over-year	Test Year Versus OEB- approved
	2016		
	2017	6.5%	
	2018	3.5%	
	2019	1.1%	
	2020	2.5%	
	2021	2.3%	
	2022	14.1%	24.5%
	Geometric Mean	5.9%	5.6%

2 Customer Class: General Service < 50 kW

Is the customer class billed on consumption (kWh) or demand (kW or kVA)?

kWh

	Calendar Year	Customers			Consumption (kWh) ⁽³⁾					Consumption (kWh) per Customer					
	(for 2022 Cost of Service)					Actual (Weather actual)	Weather-normalized		Weather-normalized		Actual (Weather actual)	Weather-normalized	Weather-normalized		
Historical	2016	Actual	2,503	OEB-approved	2,489	Actual	69,095,397	68,024,083	OEB-approved	69,390,323	Actual	27,608.71	27,180.64	OEB-approved	27,878.80
Historical	2017	Actual	2,507			Actual	66,385,178	67,555,382			Actual	26,483.45	26,950.29		
Historical	2018	Actual	2,491			Actual	68,552,191	67,032,886			Actual	27,522.71	26,912.73		
Historical	2019	Actual	2,496			Actual	68,296,620	68,789,204			Actual	27,366.08	27,563.46		
Historical	2020	Actual	2,514			Actual	63,219,122	62,888,009			Actual	25,150.99	25,019.27		
Bridge Year	2021	Forecast	2,514			Forecast		66,411,371			Forecast	0.00	26,413.30		
Test Year	2022	Forecast	2,515			66,588,571		66,476.06							

Variance Analysis	Year	Year-over-year	Test Year Versus OEB- approved	Year	Year-over-year	Test Year Versus OEB- approved	Year	Year-over-year	Test Year Versus OEB- approved
	2016			2016			2016		
	2017	0.2%		2017	-3.9%	-0.7%	2017	-4.1%	-0.8%
	2018	-0.6%		2018	3.3%	-0.8%	2018	3.9%	-0.1%
	2019	0.2%		2019	-0.4%	2.6%	2019	-0.6%	2.4%
	2020	0.7%		2020	-7.4%	-8.6%	2020	-8.1%	-9.2%
	2021	0.0%		2021		5.6%	2021		5.6%
	2022	0.0%	1.0%	2022		0.3%	2022		0.2%
	Geometric Mean	0.1%	0.3%	Geometric Mean	-2.9%	-0.4%	Geometric Mean	-3.1%	-0.5%
						-1.0%			-1.3%

	Calendar Year (for 2022 Cost of Service)	Revenues			
Historical	2016	Actual	\$ 2,437,898	OEB-approved	\$2,589,761
Historical	2017	Actual	\$ 2,522,800		
Historical	2018	Actual	\$ 2,590,526		
Historical	2019	Actual	\$ 2,616,096		
Historical	2020	Actual	\$ 2,535,703		
Bridge Year (Forecast)	2021	Forecast	\$ 2,659,597		
Test Year (Forecast)	2022	Forecast	\$ 3,015,476		

Variance Analysis	Year	Year-over-year	Test Year Versus OEB- approved
	2016		
	2017	3.5%	
	2018	2.7%	
	2019	1.0%	
	2020	-3.1%	
	2021	4.9%	
	2022	13.4%	16.4%
	Geometric Mean	4.3%	3.9%

3 Customer Class: General Service 50 to 4,999 kW

Is the customer class billed on consumption (kWh) or demand (kW or kVA)?

kW

	Calendar Year (for 2022 Cost of Service)	Customers				Consumption (kWh) ⁽³⁾				Consumption (kWh) per Customer			
							Actual (Weather actual)	Weather- normalized	Weather- normalized		Actual (Weather actual)	Weather- normalized	Weather- normalized
Historical	2016	Actual	206	OEB-approved	217	Actual	185,839,671	182,968,019	OEB-approved	190,144,345	Actual	903,962.73	889,994.42
Historical	2017	Actual	198			Actual	185,980,426	189,068,958			Actual	939,295.08	954,893.73
Historical	2018	Actual	198			Actual	186,317,854	181,721,047			Actual	942,586.11	919,330.76
Historical	2019	Actual	190			Actual	183,204,908	187,135,785			Actual	962,547.68	983,200.27
Historical	2020	Actual	193			Actual	169,630,767	184,972,368			Actual	878,157.55	957,579.13
Bridge Year	2021	Forecast	190			Forecast		178,767,212			Forecast	0.00	941,004.20
Test Year	2022	Forecast	187			Forecast		176,291,005			Forecast	0.00	943,560.45

Variance Analysis	Year	Year-over-year	Test Year Versus OEB- approved	Year	Year-over-year	Test Year Versus OEB- approved	Year	Year-over-year	Test Year Versus OEB- approved
	2016			2016			2016		
	2017	-3.7%		2017	0.1%	3.3%	2017	3.9%	7.3%
	2018	-0.2%		2018	0.2%	-3.9%	2018	0.4%	-3.7%
	2019	-3.7%		2019	-1.7%	3.0%	2019	2.1%	6.9%
	2020	1.5%		2020	-7.4%	-1.2%	2020	-8.8%	-2.6%
	2021	-1.7%		2021		-3.4%	2021		-1.7%
	2022	-1.7%	-13.9%	2022		-1.4%	2022		0.3%
	Geometric Mean	-1.9%	-3.7%	Geometric Mean	-3.0%	-0.7%	Geometric Mean	-1.0%	1.2%
						-1.9%			1.9%

	Calendar Year (for 2022 Cost of Service)	Revenues			
Historical	2016	Actual	\$ 4,254,253	OEB-approved	\$4,742,620
Historical	2017	Actual	\$ 4,552,122		
Historical	2018	Actual	\$ 4,527,619		
Historical	2019	Actual	\$ 4,371,135		
Historical	2020	Actual	\$ 4,250,573		
Bridge Year (Forecast)	2021	Forecast	\$ 4,333,765		
Test Year (Forecast)	2022	Forecast	\$ 4,808,376		

Variance Analysis	Year	Year-over-year	Test Year Versus OEB- approved
	2016		
	2017	7.0%	
	2018	-0.5%	
	2019	-3.5%	
	2020	-2.8%	
	2021	2.0%	
	2022	11.0%	1.4%
	Geometric Mean	2.5%	0.3%

4 Customer Class: Embedded Distributor

Is the customer class billed on consumption (kWh) or demand (kW or kVA)?

kW

	Calendar Year (for 2022 Cost of Service)	Customers			Consumption (kWh) ⁽³⁾				Consumption (kWh) per Customer			
						Actual (Weather actual)	Weather- normalized	Weather- normalized		Actual (Weather actual)	Weather- normalized	Weather- normalized
Historical	2016	Actual	1	OEB-approved	1	Actual	5,604,942	5,518,039	OEB-approved	Actual	5,604,942.42	5,518,038.61
Historical	2017	Actual	1			Actual	4,768,120	4,852,170		Actual	4,768,119.97	4,852,169.98
Historical	2018	Actual	1			Actual	5,218,945	5,103,279		Actual	5,218,945.22	5,103,279.03
Historical	2019	Actual	1			Actual	5,234,524	5,272,278		Actual	5,234,524.41	5,272,278.03
Historical	2020	Actual	1			Actual	5,321,960	5,294,086		Actual	5,321,960.00	5,294,086.02
Bridge Year	2021	Forecast	1			Forecast		5,173,258		Forecast	0.00	5,173,257.79
Test Year	2022	Forecast	1			Forecast		5,185,553		Forecast	0.00	5,185,553.48

Variance Analysis	Year	Year-over-year	Test Year Versus OEB- approved	Year	Year-over-year	Test Year Versus OEB- approved	Year	Year-over-year	Test Year Versus OEB- approved
	2016			2016			2016		
	2017	0.0%		2017	-14.9%		2017	-14.9%	
	2018	0.0%		2018	9.5%		2018	9.5%	
	2019	0.0%		2019	0.3%		2019	0.3%	
	2020	0.0%		2020	1.7%		2020	1.7%	
	2021	0.0%		2021	-2.3%		2021	-2.3%	
	2022	0.0%		2022	0.2%	-0.4%	2022	0.2%	-0.4%
	Geometric Mean	0.0%	0.0%	Geometric Mean	-1.7%	-0.1%	Geometric Mean	-1.7%	-0.1%

	Calendar Year (for 2022 Cost of Service)	Revenues			
Historical	2016	Actual	\$ 111,354	OEB-approved	\$120,434
Historical	2017	Actual	\$ 108,864		
Historical	2018	Actual	\$ 118,146		
Historical	2019	Actual	\$ 117,256		
Historical	2020	Actual	\$ 128,038		
Bridge Year (Forecast)	2021	Forecast	\$ 125,912		
Test Year (Forecast)	2022	Forecast	\$ 142,702		

Variance Analysis	Year	Year-over-year	Test Year Versus OEB- approved
	2016		
	2017	-2.2%	
	2018	8.5%	
	2019	-0.8%	
	2020	9.2%	
	2021	-1.7%	
	2022	13.3%	18.5%
	Geometric Mean	5.1%	4.3%

5 Customer Class:

Street Lighting

Is the customer class billed on consumption (kWh) or demand (kW or kVA)?

kW

	Calendar Year (for 2022 Cost of Service)	Connections			Consumption (kWh) ⁽³⁾			Consumption (kWh) per Connection		
					Actual (Weather actual)	Weather- normalized	Weather- normalized	Actual (Weather actual)	Weather- normalized	Weather- normalized
Historical	2016	Actual	5,736	OEB-approved	Actual	2,159,286	OEB-approved	Actual	376.46	523.64
Historical	2017	Actual	5,743		Actual	1,392,668		Actual	242.50	
Historical	2018	Actual	5,774		Actual	1,390,047		Actual	240.73	
Historical	2019	Actual	5,879		Actual	1,401,778		Actual	238.45	
Historical	2020	Actual	5,997		Actual	1,425,844		Actual	237.75	
Bridge Year	2021	Forecast	6,030		Forecast	1,441,120		Forecast	0.00	
Test Year	2022	Forecast	6,064		Forecast	1,449,102		Forecast	0.00	

Variance Analysis	Year	Year-over-year	Test Year Versus OEB- approved	Year	Year-over-year	Test Year Versus OEB- approved	Year	Year-over-year	Test Year Versus OEB- approved
	2016			2016			2016		
	2017	0.1%		2017	-35.5%		2017	-35.6%	
	2018	0.5%		2018	-0.2%		2018	-0.7%	
	2019	1.8%		2019	0.8%		2019	-0.9%	
	2020	2.0%		2020	1.7%		2020	-0.3%	
	2021	0.6%		2021	1.1%		2021	0.5%	
	2022	0.6%	6.1%	2022	0.6%	-51.6%	2022	0.0%	-54.4%
	Geometric Mean	1.1%	1.5%	Geometric Mean	-12.9%	-16.6%	Geometric Mean	-14.2%	-17.8%

	Calendar Year (for 2022 Cost of Service)	Revenues		
Historical	2016	Actual	\$ 410,634	OEB-approved
Historical	2017	Actual	\$ 303,683	
Historical	2018	Actual	\$ 307,863	
Historical	2019	Actual	\$ 316,261	
Historical	2020	Actual	\$ 327,332	
Bridge Year (Forecast)	2021	Forecast	\$ 334,735	
Test Year (Forecast)	2022	Forecast	\$ 339,617	

Variance Analysis	Year	Year-over-year	Test Year Versus OEB- approved
	2016		
	2017	-26.0%	
	2018	1.4%	
	2019	2.7%	
	2020	3.5%	
	2021	2.3%	
	2022	1.5%	-1.5%
	Geometric Mean	-3.7%	-0.4%

6 Customer Class: Sentinel

Is the customer class billed on consumption (kWh) or demand (kW or kVA)?

kW

	Calendar Year (for 2022 Cost of Service)	Connections			Consumption (kWh) ⁽³⁾			Consumption (kWh) per Connection		
					Actual (Weather actual)	Weather- normalized	Weather- normalized	Actual (Weather actual)	Weather- normalized	Weather- normalized
Historical	2016	Actual	733	OEB-approved	Actual	667,142	667,142	Actual	910.77	910.77
Historical	2017	Actual	706		Actual	631,150	631,150	Actual	894.40	894.40
Historical	2018	Actual	698		Actual	606,042	606,042	Actual	867.94	867.94
Historical	2019	Actual	669		Actual	565,913	565,913	Actual	845.38	845.38
Historical	2020	Actual	645		Actual	525,915	525,915	Actual	815.79	815.79
Bridge Year	2021	Forecast	627		Forecast	528,557		Forecast	0.00	843.04
Test Year	2022	Forecast	610		Forecast	514,043		Forecast	0.00	843.04

Variance Analysis	Year	Year-over-year	Test Year Versus OEB- approved	Year	Year-over-year	Test Year Versus OEB- approved	Year	Year-over-year	Test Year Versus OEB- approved
	2016			2016			2016		
	2017	-3.7%		2017	-5.4%	-5.4%	2017	-1.8%	-1.8%
	2018	-1.1%		2018	-4.0%	-4.0%	2018	-3.0%	-3.0%
	2019	-4.1%		2019	-6.6%	-6.6%	2019	-2.6%	-2.6%
	2020	-3.7%		2020	-7.1%	-7.1%	2020	-3.5%	-3.5%
	2021	-2.7%		2021		0.5%	2021		3.3%
	2022	-2.7%	-12.3%	2022		-2.7%	2022		0.0%
	Geometric Mean	-3.6%	-3.2%	Geometric Mean	-7.6%	-5.1%	Geometric Mean	-3.6%	-1.5%

	Calendar Year (for 2022 Cost of Service)	Revenues		
Historical	2016	Actual	\$ 57,565	OEB-approved
Historical	2017	Actual	\$ 58,589	
Historical	2018	Actual	\$ 57,991	
Historical	2019	Actual	\$ 56,109	
Historical	2020	Actual	\$ 54,489	
Bridge Year (Forecast)	2021	Forecast	\$ 53,481	
Test Year (Forecast)	2022	Forecast	\$ 59,206	

Variance Analysis	Year	Year-over-year	Test Year Versus OEB- approved
	2016		
	2017	1.8%	
	2018	-1.0%	
	2019	-3.2%	
	2020	-2.9%	
	2021	-1.8%	
	2022	10.7%	3.6%
	Geometric Mean	0.6%	0.9%

7 Customer Class: USL

Is the customer class billed on consumption (kWh) or demand (kW or kVA)?

kWh

	Calendar Year (for 2022 Cost of Service)	Customers			Consumption (kWh) ⁽³⁾				Consumption (kWh) per Customer			
						Actual (Weather actual)	Weather- normalized	Weather- normalized		Actual (Weather actual)	Weather- normalized	Weather- normalized
Historical	2016	Actual	36	OEB-approved	35	Actual	1,416,419	1,416,419	Actual	39,436.27	39,436.27	
Historical	2017	Actual	49			Actual	1,308,270	1,308,270	Actual	26,563.86	26,563.86	OEB-approved 41,793.17
Historical	2018	Actual	48			Actual	1,307,306	1,307,306	Actual	27,188.33	27,188.33	
Historical	2019	Actual	47			Actual	1,299,487	1,299,487	Actual	27,550.97	27,550.97	
Historical	2020	Actual	46			Actual	1,307,650	1,307,650	Actual	28,427.16	28,427.16	
Bridge Year	2021	Forecast	47			Forecast		1,307,291	Forecast	0.00	27,722.16	
Test Year	2022	Forecast	48			Forecast		1,340,169	Forecast	0.00	27,722.16	

Variance Analysis	Year	Year-over-year	Test Year Versus OEB- approved	Year	Year-over-year	Test Year Versus OEB- approved	Year	Year-over-year	Test Year Versus OEB- approved
	2016			2016			2016		
	2017	37.1%		2017	-7.6%	-7.6%	2017	-32.6%	-32.6%
	2018	-2.4%		2018	-0.1%	-0.1%	2018	2.4%	2.4%
	2019	-1.9%		2019	-0.6%	-0.6%	2019	1.3%	1.3%
	2020	-2.5%		2020	0.6%	0.6%	2020	3.2%	3.2%
	2021	2.5%		2021	0.0%		2021	-2.5%	
	2022	2.5%	38.1%	2022	2.5%	-8.4%	2022	0.0%	-33.7%
	Geometric Mean	6.1%	8.4%	Geometric Mean	-2.6%	-1.1%	Geometric Mean	-10.3%	-6.8%
						-2.2%			-9.8%

	Calendar Year (for 2022 Cost of Service)	Revenues		
Historical	2016	Actual	\$ 39,560	OEB-approved \$57,472
Historical	2017	Actual	\$ 61,595	
Historical	2018	Actual	\$ 61,371	
Historical	2019	Actual	\$ 61,316	
Historical	2020	Actual	\$ 61,793	
Bridge Year (Forecast)	2021	Forecast	\$ 63,603	
Test Year (Forecast)	2022	Forecast	\$ 73,780	

Variance Analysis	Year	Year-over-year	Test Year Versus OEB- approved
	2016		
	2017	55.7%	
	2018	-0.4%	
	2019	-0.1%	
	2020	0.8%	
	2021	2.9%	
	2022	16.0%	28.4%
	Geometric Mean	13.3%	6.4%

8 Customer Class:

Is the customer class billed on consumption (kWh) or demand (kW or kVA)?

 kWh

	Calendar Year (for 2022 Cost of Service)	Customers			Consumption (kWh) ⁽³⁾			Consumption (kWh) per Customer		
		Actual			Actual (Weather actual)	Weather- normalized	Weather- normalized	Actual (Weather actual)	Weather- normalized	Weather- normalized
Historical	2016	Actual	OEB-approved		Actual	OEB-approved		Actual	OEB-approved	
Historical	2017	Actual			Actual			Actual		
Historical	2018	Actual			Actual			Actual		
Historical	2019	Actual			Actual			Actual		
Historical	2020	Actual			Actual			Actual		
Bridge Year	2021	Forecast			Forecast			Forecast		
Test Year	2022	Forecast			Forecast			Forecast		

Variance Analysis	Year	Year-over-year	Test Year Versus OEB- approved	Year	Year-over-year	Test Year Versus OEB- approved	Year	Year-over-year	Test Year Versus OEB- approved
	2016			2016			2016		
	2017			2017			2017		
	2018			2018			2018		
	2019			2019			2019		
	2020			2020			2020		
	2021			2021			2021		
	2022			2022			2022		
	Geometric Mean			Geometric Mean			Geometric Mean		

	Calendar Year (for 2022 Cost of Service)	Revenues		
Historical	2016	Actual	OEB-approved	
Historical	2017	Actual		
Historical	2018	Actual		
Historical	2019	Actual		
Historical	2020	Actual		
Bridge Year (Forecast)	2021	Forecast		
Test Year (Forecast)	2022	Forecast		

Variance Analysis	Year	Year-over-year	Test Year Versus OEB- approved
	2016		
	2017		
	2018		
	2019		
	2020		
	2021		
	2022		
	Geometric Mean		

9 Customer Class:

Is the customer class billed on consumption (kWh) or demand (kW or kVA)?

	Calendar Year (for 2022 Cost of Service)	Customers			Consumption (kWh) ⁽³⁾			Consumption (kWh) per Customer		
		Actual			Actual (Weather actual)	Weather- normalized	Weather- normalized	Actual (Weather actual)	Weather- normalized	Weather- normalized
Historical	2016	Actual			Actual			Actual		
Historical	2017	Actual			Actual			Actual		
Historical	2018	Actual			Actual			Actual		
Historical	2019	Actual			Actual			Actual		
Historical	2020	Actual			Actual			Actual		
Bridge Year	2021	Forecast			Forecast			Forecast		
Test Year	2022	Forecast			Forecast			Forecast		

Variance Analysis	Year	Year-over-year	Test Year Versus OEB- approved	Year	Year-over-year	Test Year Versus OEB- approved	Year	Year-over-year	Test Year Versus OEB- approved
	2016			2016			2016		
	2017			2017			2017		
	2018			2018			2018		
	2019			2019			2019		
	2020			2020			2020		
	2021			2021			2021		
	2022			2022			2022		
	Geometric Mean			Geometric Mean			Geometric Mean		

	Calendar Year (for 2022 Cost of Service)	Revenues		
Historical	2016	Actual		
Historical	2017	Actual		
Historical	2018	Actual		
Historical	2019	Actual		
Historical	2020	Actual		
Bridge Year (Forecast)	2021	Forecast		
Test Year (Forecast)	2022	Forecast		

Variance Analysis	Year	Year-over-year	Test Year Versus OEB- approved
	2016		
	2017		
	2018		
	2019		
	2020		
	2021		
	2022		
	Geometric Mean		

10 Customer Class:

Is the customer class billed on consumption (kWh) or demand (kW or kVA)?

	Calendar Year (for 2022 Cost of Service)	Customers			Consumption (kWh) ⁽³⁾			Consumption (kWh) per Customer		
		Actual			Actual (Weather actual)	Weather- normalized	Weather- normalized	Actual (Weather actual)	Weather- normalized	Weather- normalized
Historical	2016	Actual			Actual			Actual		
Historical	2017	Actual			Actual			Actual		
Historical	2018	Actual			Actual			Actual		
Historical	2019	Actual			Actual			Actual		
Historical	2020	Actual			Actual			Actual		
Bridge Year	2021	Forecast			Forecast			Forecast		
Test Year	2022	Forecast			Forecast			Forecast		

Variance Analysis	Year	Year-over-year	Test Year Versus OEB- approved	Year	Year-over-year	Test Year Versus OEB- approved	Year	Year-over-year	Test Year Versus OEB- approved
	2016			2016			2016		
	2017			2017			2017		
	2018			2018			2018		
	2019			2019			2019		
	2020			2020			2020		
	2021			2021			2021		
	2022			2022			2022		
	Geometric Mean			Geometric Mean			Geometric Mean		

	Calendar Year (for 2022 Cost of Service)	Revenues		
Historical	2016	Actual		
Historical	2017	Actual		
Historical	2018	Actual		
Historical	2019	Actual		
Historical	2020	Actual		
Bridge Year (Forecast)	2021	Forecast		
Test Year (Forecast)	2022	Forecast		

Variance Analysis	Year	Year-over-year	Test Year Versus OEB- approved
	2016		
	2017		
	2018		
	2019		
	2020		
	2021		
	2022		
	Geometric Mean		

Note: If there are more than ten (10) customer classes, please contact OEB Staff to add tables for additional customer classes.



CANADIAN NIAGARA POWER INC.

A **FORTIS** ONTARIO
Company

APPENDIX 3-B: OEB APPENDIX 2-H

