Coopérative Hydro Embrun Inc.

May 5, 2022
Ontario Energy Board P.O.
Box 2319 27th Floor
2300 Yonge Street Toronto,
Ontario M4P 1E4

Regarding: EB-2022-0022 2023 Cost of Service Application

Dear Registrar,

Please find attached Cooperative Hydro Embrun Inc's responses additional responses to VECC and Board Staff' s interrogatories. This application is being filed pursuant to the Board's e-Filing Services.
We would be pleased to provide any further information or details that you may require relative to this application.

Yours truly,

Benoit Lamarche, General Manager
Cooperative Hydro Embrun
703 Notre Dame Rue Russell, ON
(613) 443-5110

EXHIBIT 3 – CUSTOMER AND LOAD FORECAST

3-STAFF-45

Ref: Load Forecast model, Bridge&Test Year Class Forecast sheet

The 2021 Residential ratio of class kWh to wholesale purchases is calculated as a historic average of 2012 to 2020, rather than as a ratio of rate class kWh to wholesale purchases for the year. For GS < 50 kW and GS 50 – 4,999 kW, the 2021 ratio is calculated as a ratio of rate class energy to wholesale purchases.

(a) Please explain the reason for the apparent inconsistency.

CHEI Response: There appears to have been an error in the formula.

(b) As a scenario, please provide the forecasted residential energy if the 2021 ratio of rate class energy to wholesale purchases were calculated consistently with the general service rate classes.

CHEI Response: Please see below. Please note that CHEI did not correctly update the model filed with the responses on May 2, 2022. However, the model has since been corrected and will be in the next version.

Before error

Residential						
Year	Residential Actual kWh	Total Actual Wholesale	Ratio%	Predicted Wholesale	Residential Weather Normal	Per customer
2012	19,634,780	30,091,478	65.25%	29,767,387	19,423,310	10,863
2013	19,650,696	30,301,350	64.85%	29,649,532	19,227,986	10,742
2014	19,479,913	30,157,452	64.59%	29,734,255	19,206,553	10,617
2015	19,377,540	29,896,472	64.82%	29,779,666	19,301,832	10,412
2016	19,268,403	29,672,839	64.94%	31,174,357	20,243,431	10,525
2017	19,163,638	29,169,681	65.70%	29,733,375	19,533,969	9,796
2018	20,597,137	30,569,635	67.38%	30,629,727	20,637,626	9,858
2019	20,253,193	30,054,521	67.39%	30,233,400	20,373,736	9,315
2020	21,302,214	30,411,238	70.05%	30,393,912	21,290,078	9,538
2021	21,654,999	30,838,620	66.11%	30,067,675	19,876,640	8,688
2022			66.11%	30,405,112	20,099,708	8,785
2023		*Avg*	66.11%	30,482,264	20,150,710	8,593

After error

Residential						
Year	Residential Actual kWh	Total Actual Wholesale	Ratio%	Predicted Wholesale	Residential Weather Normal	Per customer
2012	19,634,780	30,091,478	65.25%	29,767,387	19,423,310	10,863
2013	19,650,696	30,301,350	64.85%	29,649,532	19,227,986	10,742
2014	19,479,913	30,157,452	64.59%	29,734,255	19,206,553	10,617
2015	19,377,540	29,896,472	64.82%	29,779,666	19,301,832	10,412
2016	19,268,403	29,672,839	64.94%	31,174,357	20,243,431	10,525
2017	19,163,638	29,169,681	65.70%	29,733,375	19,533,969	9,796
2018	20,597,137	30,569,635	67.38%	30,629,727	20,637,626	9,858
2019	20,253,193	30,054,521	67.39%	30,233,400	20,373,736	9,315
2020	21,302,214	30,411,238	70.05%	30,393,912	21,290,078	9,538
2021	21,654,999	30,838,620	70.22%	30,067,675	21,113,639	9,228
2022			66.52%	30,405,112	20,224,796	8,840
2023		*Avg*	66.52%	30,482,264	20,276,116	8,647

3-STAFF-47

Load Forecast
Ref 1: Load Forecast model – Bridge&Test Year Class Forecast

The GS > 50 kW to 4,999 kW appears to OEB staff to using a shrinking share of wholesale purchases. The average ratio of wholesale to wholesale used is 13.01%. This is less than the historic actual ratio for every year from 2012 to 2017, and more than the ratio for every year from 2018 to 2021. Similar trends may be present in other rate classes.

(a) As a scenario, for the Residential, GS < 50 kW, and GS 50 to 4,999 kW rate classes, please calculate ratios for 2022 and 2023 based on a trend of ratios from 2012 to 2019.
(b) Please use the ratios in part a) to forecast energy use by rate class under this scenario.

CHEI Response: See below

Residential: (2012-2021)

Residential						
Year	Residential Actual kWh	Total Actual Wholesale	Ratio%	Predicted Wholesale	Residential Weather Normal	Per customer
2012	19,634,780	30,091,478	65.25%	29,767,387	19,423,310	10,863
2013	19,650,696	30,301,350	64.85%	29,649,532	19,227,986	10,742
2014	19,479,913	30,157,452	64.59%	29,734,255	19,206,553	10,617
2015	19,377,540	29,896,472	64.82%	29,779,666	19,301,832	10,412
2016	19,268,403	29,672,839	64.94%	31,174,357	20,243,431	10,525
2017	19,163,638	29,169,681	65.70%	29,733,375	19,533,969	9,796
2018	20,597,137	30,569,635	67.38%	30,629,727	20,637,626	9,858
2019	20,253,193	30,054,521	67.39%	30,233,400	20,373,736	9,315
2020	21,302,214	30,411,238	70.05%	30,393,912	21,290,078	9,538
2021	21,654,999	30,838,620	70.22%	30,067,675	21,113,639	9,228
2022			66.52%	30,405,112	20,224,796	8,840
2023		*Avg*	66.52%	30,482,264	20,276,116	8,647

Residential: Using 2012-2019 (2012-2019)

Residential						
Year	Residential Actual kWh	Total Actual Wholesale	Ratio%	Predicted Wholesale	Residential Weather Normal	Per customer
2012	19,634,780	30,091,478	65.25%	29,767,387	19,423,310	10,863
2013	19,650,696	30,301,350	64.85%	29,649,532	19,227,986	10,742
2014	19,479,913	30,157,452	64.59%	29,734,255	19,206,553	10,617
2015	19,377,540	29,896,472	64.82%	29,779,666	19,301,832	10,412
2016	19,268,403	29,672,839	64.94%	31,174,357	20,243,431	10,525
2017	19,163,638	29,169,681	65.70%	29,733,375	19,533,969	9,796
2018	20,597,137	30,569,635	67.38%	30,629,727	20,637,626	9,858
2019	20,253,193	30,054,521	67.39%	30,233,400	20,373,736	9,315
2020	21,302,214	30,411,238	70.05%	30,393,912	21,290,078	9,538
2021	21,654,999	30,838,620	70.22%	30,067,675	21,113,639	9,228
2022			65.61%	30,405,112	19,949,931	8,720
2023		*Avg*	65.61%	30,482,264	20,000,553	8,529

GS<50 (2012-2021)

General Service < 50 kW						
Year	Actual kWh	Total Wholesale	Ratio%	Predicted Wholesale	Weather Normal	Per customer
2012	4,742,923	30,091,478	15.76%	29,767,387	4,691,841	29,884
2013	4,699,450	30,301,350	15.51%	29,649,532	4,598,359	28,920
2014	4,701,954	30,157,452	15.59%	29,734,255	4,635,972	29,157
2015	4,594,197	29,896,472	15.37%	29,779,666	4,576,247	27,735
2016	4,547,781	29,672,839	15.33%	31,174,357	4,777,910	29,060
2017	4,556,065	29,169,681	15.62%	29,733,375	4,644,109	28,347
2018	4,549,793	30,569,635	14.88%	30,629,727	4,558,737	27,559
2019	4,605,655	30,054,521	15.32%	30,233,400	4,633,067	28,236
2020	4,285,367	30,411,238	14.09%	30,393,912	4,282,926	26,397
2021	4,350,730	30,838,620	14.11%	30,067,675	4,241,965	25,984
2022			15.16%	30,405,112	4,608,863	28,110
2023		*Avg*	15.16%	30,482,264	4,620,558	28,059

GS<50 Using 2012-2019 (2012-2019)

General Service < 50 kW						
Year	Actual kWh	Total Wholesale	Ratio%	Predicted Wholesale	Weather Normal	Per customer
2012	4,742,923	30,091,478	15.76%	29,767,387	4,691,841	29,884
2013	4,699,450	30,301,350	15.51%	29,649,532	4,598,359	28,920
2014	4,701,954	30,157,452	15.59%	29,734,255	4,635,972	29,157
2015	4,594,197	29,896,472	15.37%	29,779,666	4,576,247	27,735
2016	4,547,781	29,672,839	15.33%	31,174,357	4,777,910	29,060
2017	4,556,065	29,169,681	15.62%	29,733,375	4,644,109	28,347
2018	4,549,793	30,569,635	14.88%	30,629,727	4,558,737	27,559
2019	4,605,655	30,054,521	15.32%	30,233,400	4,633,067	28,236
2020	4,285,367	30,411,238	14.09%	30,393,912	4,282,926	26,397
2021	4,350,730	30,838,620	14.11%	30,067,675	4,241,965	25,984
2022			15.42%	30,405,112	4,689,319	28,600
2023		*Avg*	15.42%	30,482,264	4,701,218	28,549

GS 50-4999: (2012-2021)

General Service > 50 to 4999 kW						
Year	Actual kWh	Total Wholesale	Ratio%	Predicted Wholesale	Weather Normal	Per customer
2012	4,292,894	30,091,478	14.27%	29,767,387	4,246,659	386,060
2013	4,289,465	30,301,350	14.16%	29,649,532	4,197,193	381,563
2014	4,346,251	30,157,452	14.41%	29,734,255	4,285,260	389,569
2015	4,316,369	29,896,472	14.44%	29,779,666	4,299,505	390,864
2016	4,242,389	29,672,839	14.30%	31,174,357	4,457,064	405,188
2017	3,809,003	29,169,681	13.06%	29,733,375	3,882,611	415,994
2018	3,896,559	30,569,635	12.75%	30,629,727	3,904,219	433,802
2019	3,459,712	30,054,521	11.51%	30,233,400	3,480,304	386,700
2020	3,022,445	30,411,238	9.94%	30,393,912	3,020,723	335,636
2021	3,422,373	30,838,620	11.10%	30,067,675	3,336,816	370,757
2022			12.99%	30,405,112	3,950,271	448,815
2023		*Avg*	12.99%	30,482,264	3,960,295	460,099

GS 50-4999: Using 2012-2019 (2012-2019)

General Service > 50 to 4999 kW						
Year	Actual kWh	Total Wholesale	Ratio%	Predicted Wholesale	Weather Normal	Per customer
2012	4,292,894	30,091,478	14.27%	29,767,387	4,246,659	386,060
2013	4,289,465	30,301,350	14.16%	29,649,532	4,197,193	381,563
2014	4,346,251	30,157,452	14.41%	29,734,255	4,285,260	389,569
2015	4,316,369	29,896,472	14.44%	29,779,666	4,299,505	390,864
2016	4,242,389	29,672,839	14.30%	31,174,357	4,457,064	405,188
2017	3,809,003	29,169,681	13.06%	29,733,375	3,882,611	415,994
2018	3,896,559	30,569,635	12.75%	30,629,727	3,904,219	433,802
2019	3,459,712	30,054,521	11.51%	30,233,400	3,480,304	386,700
2020	3,022,445	30,411,238	9.94%	30,393,912	3,020,723	335,636
2021	3,422,373	30,838,620	11.10%	30,067,675	3,336,816	370,757
2022			13.61%	30,405,112	4,138,326	470,182
2023		*Avg*	13.61%	30,482,264	4,148,827	482,003

3-STAFF-48 CDM DATA

CDM
Ref 1: Exhibit 3, page 18

Cooperative Hydro Embrun states that the "persisting effects of CDM projects are embedded in the utility wholesale; therefore no adjustment was made." It states that it is "not planning or aware of any new CDM programs in the test year (2023)."

(a) Please provide the historic CDM program delivery for each historic year, using estimates as required to complete any missing data

CHEI Response: Please see tab CDM Allocation in model title CHEI 2021 Load Forecasting 3-Staff-48.

(b) Please estimate the CDM program delivery in 2022.

CHEI Response: CHEI's estimate is 1.7M kWh for 2021 which would also be for 2022 given that the utility has not pursued any CDM programs since the end of 2018. The estimate includes programs and persistence from 2012 on. Please see tab CDM Allocation in model title CHEI 2021 Load Forecasting 3-Staff-48.

(c) If Cooperative Hydro Embrun is now aware of CDM programs impacting 2023, please provide an estimate of these.

CHEI Response: See b) above, CHEI estimates that there is approximately 1.7M kWh of energy savings embedded in its load.

(d) Please comment on the suitability of a forecasting model which exhibits a trend of CDM delivery in the historic years which may not match the trend of CDM delivery in the forecast period.

CHEI Response: CHEI's load is fairly stable and somewhat predictable. CHEI ran the regression analysis including CDM savings which have trended upwards steadily in the years where the government had allowed/encouraged CDM programs.

CHEI is of the mind that a portion of the savings from programs implemented between 2012-2018 should continue to achieve efficiencies going forward. CHEI would also hope that the general idea of CDM will continue to impact its customer's behaviour even in the absence of government incentives and its marketing.
To remove any effects of energy savings would assume a return to post 2012 which in CHEI's view would be inaccurate.

3.0-VECC -11 SCENARIO

Reference: Exhibit 3, page 4

Preamble: The. Application states:
"*CHEI's load has been relatively consistent over the past ten years, with a drop in 2017 due to the weather, amplified by a seasonably warm 2018. As shown in the table below, the movement in peaks between 2017 to 2019 support the reasoning that the abnormal shift in load were related to unseasonal weather patterns*".

a) .Please provide a schedule that sets out for each of the years 2017-2021:

a. The actual total purchases (from Hydro One and embedded generation). (i)

b. The sum of the monthly actual HDD values. (ii)

c. The sum of the monthly weather normal HDD values.(iii)

d. The HDD coefficient per CHEI's load forecast model, (iv)

e. The sum of the monthly actual CDD values.(v)

f. The sum of the monthly weather normal CDD values.

g. The CDD coefficient per CHEI's load forecast model

h. The results of the following calculation:

i. Item (i), plus

ii. (Item (iii) – Item (ii)) x (Item iv) plus

iii. (Item (vi) – Item (v)) x (Item (vii)

i. Variance (%) = Item (i) versus Item (viii)

CHEI Response: See tab 3-VECC-11 of the model of the same name
i.

Actual	2017	2018	2019	2020	2021
January	2,836,432	3,165,726	3,145,868	2,876,194	2,929,720
February	2,473,666	2,566,576	2,705,301	2,648,713	2,689,098
March	2,673,973	2,548,260	2,648,806	2,518,406	2,651,698
April	2,084,834	2,252,422	2,202,910	2,179,090	2,116,456
May	2,042,459	2,036,801	2,012,803	2,246,165	2,261,742
June	2,235,138	2,270,844	2,219,087	2,502,070	2,654,052
July	2,360,675	2,904,904	2,969,546	3,144,590	2,643,274
August	2,512,536	2,795,184	2,547,383	2,656,474	3,055,729
September	2,295,953	2,337,172	2,074,050	2,129,182	2,221,586
October	2,032,906	2,218,376	2,072,932	2,228,772	2,189,898
November	2,550,683	2,554,038	2,540,264	2,386,318	2,450,425
December	3,070,425	2,919,333	2,915,569	2,895,264	2,974,941
Total	29,169,681	30,569,635	30,054,521	30,411,238	30,838,620

h) ii. iii.

Scenario	2017	2018	2019	2020	2021
January	2,924,218	3,112,745	3,042,438	2,942,155	2,996,060
February	2,537,984	2,647,427	2,675,050	2,652,756	2,733,199
March	2,566,716	2,573,929	2,603,525	2,571,756	2,690,310
April	2,120,942	2,162,123	2,165,140	2,148,594	2,176,466
May	2,010,064	2,073,750	1,944,413	2,172,296	2,207,429
June	2,261,118	2,317,514	2,171,945	2,426,207	2,589,054
July	2,361,526	2,822,334	2,848,525	2,973,781	2,571,851
August	2,578,867	2,822,685	2,501,100	2,577,315	2,934,528
September	2,273,581	2,291,654	2,055,458	2,087,066	2,239,744
October	2,099,265	2,127,341	2,050,202	2,167,685	2,252,194
November	2,532,771	2,465,270	2,459,904	2,457,778	2,446,873
December	2,914,080	2,861,902	2,904,808	2,950,824	2,987,326
Total	29,181,131	30,278,674	29,422,509	30,128,213	30,825,034

i) variance

Variance	2017	2018	2019	2020	2021
January	3.09%	-1.67%	-3.29%	2.29%	2.26%
February	2.60%	3.15%	-1.12%	0.15%	1.64%
March	-4.01%	1.01%	-1.71%	2.12%	1.46%
April	1.73%	-4.01%	-1.71%	-1.40%	2.84%
May	-1.59%	1.81%	-3.40%	-3.29%	-2.40%
June	1.16%	2.06%	-2.12%	-3.03%	-2.45%
July	0.04%	-2.84%	-4.08%	-5.43%	-2.70%
August	2.64%	0.98%	-1.82%	-2.98%	-3.97%
September	-0.97%	-1.95%	-0.90%	-1.98%	0.82%
October	3.26%	-4.10%	-1.10%	-2.74%	2.84%
November	-0.70%	-3.48%	-3.16%	2.99%	-0.14%
December	-5.09%	-1.97%	-0.37%	1.92%	0.42%
Total	2.16%	-11.01%	-24.77%	-11.37%	0.61%

3.0-VECC -12

Reference: Exhibit 3, pages 5 – 6

Preamble: The Application states (page 5):"*CHEI analyzed its wholesale purchases to see the effects of Covid on its monthly load. Although the utility tested various scenarios, it didn't feel confident enough in the relationship between the variance to attribute it to Covid*".

a) What "Covid" scenarios did CHEI test and what were the results?

CHEI Response: Many scenarios were tested from replacing lockdown months by averages of previous year or the pre-Covid 2019. Unfortunately, CHEI did not document scenarios related to Covid. Utilities generally run through dozens of scenarios looking at the coefficient, P-Value and Adjusted R-Squared to see for any improvements.

b) If not already "tested", please provide the results of a regression model that includes the variables used by CHEI plus a Covid flag for the months of March 2020 through December 2021 and provide the resulting forecast power purchases for 2023 (assuming no Covid flag for 2023).

CHEI Response: Please see model by the name of Load Forecasting 20220502 3-VECC-12

c) With respect to Table 7, what years were used to calculate the 10 year average?

CHEI Response: 2012 to 2021

d) If either 2020 or 2021 were included in the calculation, please re-do Table 7 using an “average” values that exclude these two years.

2019	2020	2021	8Yr AVG	AVG vs COVID 2020	Avg vs COVID 2021
3145868	2876194	2929720	3143707	-267514	-213987
2705301	2648713	2689098	2743854	-95141	-54755
2648806	2518406	2651698	2647241	-128834	4458
2202910	2179090	2116456	2190062	-10971	-73606
2012803	2246165	2261742	2076949	169216	184794
2219087	2502070	2654052	2268667	233402	385385
2969546	3144590	2643274	2657654	486936	-14381
2547383	2656474	3055729	2577914	78561	477815
2074050	2129182	2221586	2207599	-78416	13988
2072932	2228772	2189898	2094312	134460	95586
2540264	2386318	2450425	2442038	-55721	8386
2915569	2895264	2974941	2939182	-43918	35759
30054521	30411238	30838620	29989179	422060	849441

EXHIBIT 7 – COST ALLOCATION

7-STAFF-75 MODEL

Load Profiles
Ref 1: Exhibit 7, page 11

Cooperative Hydro Embrun indicates that one methodology for updating load profiles is proprietary to a group that it is not a member of, and therefore is unavailable to the utility. It states that the required data is hosted by another utility which has confirmed that the data cannot be provided.

A new methodology is proposed for determining load profiles and demand allocators. The methodology appears to OEB staff to assume that within each historic month, all rate classes exhibited the same load profile. The process is repeated for 60 months (5 years). The final proposed load profile for each hour in each rate class the average load for that hour across the five historic years.

OEB staff notes that in addition to the above noted assumption, this approach has the potential to average across weekends and weekdays, warm days, and cold days.

(a) As a scenario, please modify the demand allocator calculations as follows.

i. Use deemed load profiles for USL and Street Light based on the best information available to Cooperative Hydro Embrun. For example, the Hydro One methodology has load profiles for street light which assumes lights to be on at night, and off during daylight hours.
ii. Determine each rate class's share of the residual utility load as initially proposed.
iii. Scale each year's load profiles to be consistent with the 2023 load forecast.
iv. Determine demand allocators that would result for each year.
v. Calculate a five-year average of the demand allocators.

CHEI Response: Please see model entitle CHEI 2023 Update of Demand Data 7-Staff-75. (Orange tabs)