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Suite 101, 310 Ward Street, Nelson, British Columbia, V1L 5S4

March 30, 2021

British Columbia Utilities Commission  
Suite 410, 900 Howe Street  
Vancouver, BC V6Z 2N3

Attention: Patrick Wruck, Commission Secretary

**RE: Nelson Hydro – Cost of Service Analysis and Rate Design Application – Project No. 1599166 –  
Response to the Residential Consumer Intervener Group Information Request (IR) No. 1**

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Dear Mr. Wruck,

On November 27, 2020 Nelson Hydro filed its Cost of Service Analysis and Rate Design Application. In accordance with BCUC Order G-346-20 (as amended by Order G-57-21) setting out the Regulatory Timetable for the review of the Application, Nelson Hydro respectfully submits the attached responses to the Residential Consumer Intervener Group (via its agent Midgard Consulting Incorporated) IR No. 1.

If further information is required, please contact the undersigned.

Sincerely,

A handwritten signature in black ink, appearing to read "Gabriel Bouvet-Boisclair".

Gabriel Bouvet-Boisclair  
Deputy Corporate Officer  
City of Nelson  
Email: [dco@nelson.ca](mailto:dco@nelson.ca) | Phone: 250-352-8254

cc: Scott Spencer, Nelson Hydro General Manager  
Kevin Cormack, City Manager

Enclosure

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Nelson Hydro  
 Cost of Service Analysis and Rate Design Application  
**RESPONSE TO RESIDENTIAL CONSUMER INTEVENER GROUP INFORMATION  
 REQUEST NO. 1**

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## A. Project Need and Justification

### 1. Reference: Exhibit B-1 Section 1.4 p.3

“The Report prepared by InterGroup addresses the Commission’s directive and also provides information relevant to the approvals sought in this Application. The Report concluded that an after-tax rate of return on equity for the Rural portion of the utility is appropriately set at 9.25%.”

#### 1.1 What equity thickness, if any, was assumed in the InterGroup Report that suggested the 9.25% after-tax ROE?

#### **RESPONSE:**

The actual capital structure was assumed in the 2019 COSA which was roughly 87% equity. Please see page 10 of Appendix 6-1, Nelson Hydro Appropriate Level of ROE, of the Application (“COSA & RDA”) where the reference was provided to the BCUC Order G-119-17, Appendix A, page 9 which states the following:

“As stated by Nelson Hydro, an important difference between private and public entities relates to legislative requirements on a municipality incurring debt. As outlined in the Municipal Liabilities Regulation, there are limits to the amount of liabilities or borrowing that a municipality is able to incur. Put simply, a municipality is unable to incur a new liability if the cost of servicing the aggregate liabilities of the municipality for the year exceeds 25 percent of the annual revenue calculation of the municipality for the previous year. Thus, due to legislative requirements Nelson Hydro would have limited ability to meet a deemed debt level similar to other utilities. In the Panel’s view, imposing a deemed debt to equity ratio on Nelson Hydro which is similar to other regulated utilities when such a capital structure cannot be achieved would have the potential to unfairly restrict the utility from earning a fair return on its assets. Therefore, the Panel concludes that the application of a debt to equity ratio in accordance with what actually exists is a more fair and reasonable approach than that of reliance on a deemed capital structure.”

#### 1.2 What tax rate, if any, was assumed in the InterGroup Report that suggested the 9.25% after-tax ROE?

#### **RESPONSE:**

Nelson Hydro does not pay income tax, therefore, no tax was assumed.

Please see page 8 of Appendix 6-1, Nelson Hydro Appropriate Level of ROE, of the COSA & RDA where the reference was provided to Fortis BC Energy Inc. application for Annual Review for 2019 Delivery rates that shows 8.75% benchmark ROE is after-tax ROE that translates to 11.99% before-tax ROE. In the electricity market in the region, customers pay rates that include income tax. Therefore, the low-risk benchmark ROE for Nelson

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Hydro could be 11.99% if Nelson Hydro is treated in the same way as Fortis BC.

1.3 What pre-tax ROE, if any, was assumed in the InterGroup Report that suggested the 9.25% after-tax ROE?

**RESPONSE:** Please see response to IR 1-1.2.

1.4 Is NH a taxable entity?

**RESPONSE:** Please see response to IR 1-1.2.

1.4.1. If not, please confirm that NH's after-tax ROE and pre-tax ROE are identical.

**RESPONSE:** Please see response to IR 1-1.2.

1.5 What debt rate, if any, was assumed in the InterGroup Report that suggested the 9.25% after-tax ROE?

**RESPONSE:** The interest rates for the existing long-term debts that City of Nelson carries for Nelson Hydro capital assets [4.90% and 3.05%]. However, the 9.25% ROE is not tied to any particular debt rate assumption.

1.6 Please enumerate the risks facing NH that resulted in the InterGroup Report concluding that NH's after-tax ROE should be higher than the BC benchmark after-tax ROE.

**RESPONSE:** The issue of risks is addressed in detail in the report appended to the COSA & RDA at Appendix 6-1. Specifically, the main risks highlighted, in concluding that a 0.5% to 0.75% risk premium was merited, were focused on the size and scope of Nelson Hydro's operation (and further the rural-specific portion of Nelson Hydro's operation) in relation to much larger and more diverse entities such as FortisBC, which merited a 0.4% ROE premium. In scale and diversity, Nelson Hydro is much more similar to PNG N.E. – FSJ/DC (0.5%) and FortisBC Energy (Whistler) Inc. (0.75%). Note in particular Table 1 of the cited report.

Beyond size, Nelson Hydro faces all of the usual risks faced by Canadian electrical utilities (the country and industry risk), as well as regulatory risk (which is exacerbated by having two different regulators), scale, scope and diversity risk (Nelson Hydro sells no material other products), operating efficiency risk, reliability, environmental, safety, and infrastructure risk, as well as financial risks related to access to financing (which is particularly limited for Nelson Hydro), exposure to price increases from its one supplier, and potential capital spending instability. Nelson Hydro does not have

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material currency risk (other than for international purchases), little interest rate risk, and has strong financial policies and strong oversight, management and governance. However, in the case of each risk noted, the exposure of Nelson Hydro is somewhat more than the typical “benchmark” utility due to its limited size.

1.7 What is NH's weighted average cost of debt (WACD) that is used in the filing?

**RESPONSE:** The COSA is based on 2019 actuals and uses the actual interest cost at \$0.225 million (about 4.1% of mid-year balance of long-term debt).

1.8 What is NH's weighted average cost of capital (WACC) that is used in the filing?

**RESPONSE:** Please see response to RCIG IR No. 1-11.3 that notes the effective WACC is approximately 6.2%.

1.9 Please compare the components of the NH WACC used in the filing with those used by FortisBC in a recent filing.

**RESPONSE:** Please see the table below that compares components of the WACC. Nelson Hydro does not carry short-term debt, so it was not provided. The information for Fortis BC is from Fortis BC’s application for Annual Review for 2020 and 2021 Rates [Table 8-2, available at [https://www.bcuc.com/Documents/Proceedings/2020/DOC\\_58993\\_B-2-FBC-Annual-Review-for-2020-and-2021-Rates-Materials.pdf](https://www.bcuc.com/Documents/Proceedings/2020/DOC_58993_B-2-FBC-Annual-Review-for-2020-and-2021-Rates-Materials.pdf)]

Although the table shows a proposed theoretical target ROE at 9.25% for Nelson Hydro, the effective ROE in this application, at full proposed rates, would only be about 6.5% due to the assumed 95% RCC ratio for Rural residential. Please see response to RCIG IR No. 1-11.3.

WAAC Component	Fortis BC [pre-tax]	Nelson Hydro 2019 COSA (100% RCC)
Long-term debt	5.05%	4.11%
Equity	12.53%	9.25%

2. Reference: Exhibit B-1 Section 3.3 p.15

“When evaluating this disproportionate increase in power purchases, it was the City’s conclusion that the Rural customers were responsible for a significant portion of the increased consumption and should therefore be responsible for the related increased cost.”

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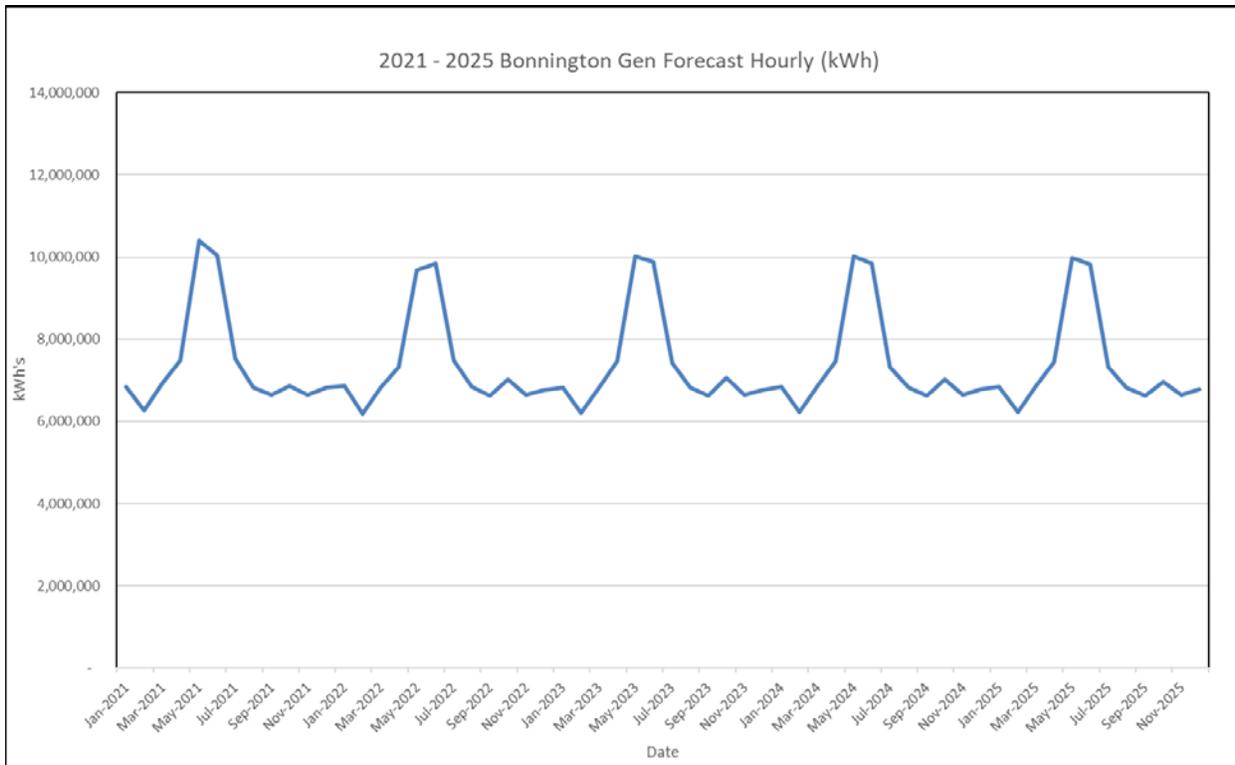
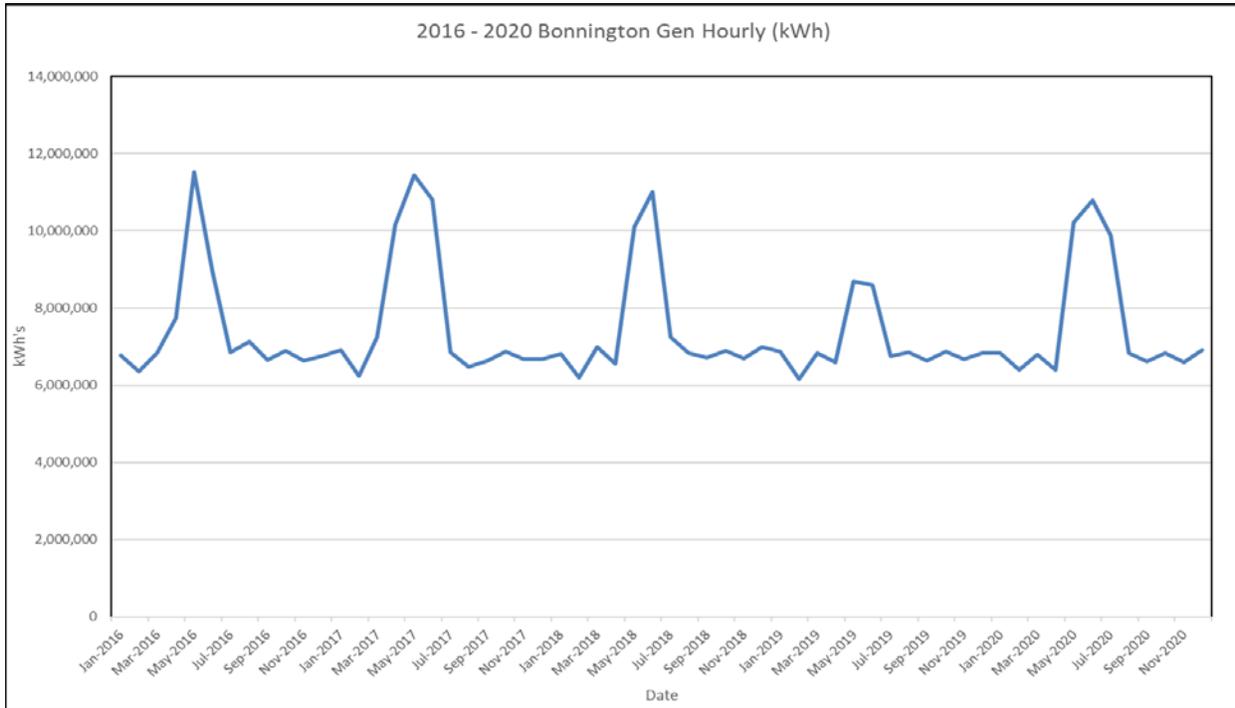
2.1 What is the electricity consumption (total energy and peak demand) by NH's rural and urban customers, respectively, in each calendar month for the past 5 years and forecast for the next 5 years? Include system losses in the above response.

**RESPONSE:** Please see Appendix 1-2.1 (Attachment 1).

As explained in the COSA & RDA (page 15), the utility’s load experienced significant growth during the years of 1968 to 1990 – largely due to an expanding Rural area. Attached as Appendix 1-2.1 (Attachment 2) is a 1991 report from a City consultant further detailing this growth.

2.2 What is the average production capability of the NH generating plant (energy and peak production) in each calendar month for the past 5 years and forecast for the next 5 years? Account for physical constraints (such as tailwater elevation) and regulatory constraints (such as licensed water diversion limitations) in the above response.

**RESPONSE:** Physical constraints are infrequent due to high tailwater elevation with the exception of extreme freshet events that occur on a 30-50 year return period. There are periods when woody debris may restrict generation due to the differential in elevation across the intake trash racks which would require the generators to be stopped and the debris removed to prevent the trash rack from collapsing into the water passage. Generation production is dictated by the water license and fuel (water) abundance and generator availability. The NH water license allows for the generation of 9.1 MW while generators are available and in service. The spring/summer Kootenay freshet allows NH to generate “full load around the clock (FLATC)” with four generators ≈15.7MW for the period from late April to early July, typically. Past energy production and a five (5) year forecast are provided below.



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## B. Stakeholder Engagement

### 3. Reference: Exhibit B-1 Section 5.3 p.45 Table 5-1

“76% of Urban customers indicated that they are very satisfied or satisfied with Nelson Hydro’s customer service.”

“64% of Rural customers indicated that they are very satisfied or satisfied with Nelson Hydro’s customer service.”

#### 3.1 Does NH consider these customer service satisfaction results to be acceptable?

**RESPONSE:**

Yes, the results were acceptable at the time the survey was completed. They also indicate there is room for improvement, especially in the Rural area which is information the utility highly values and is making efforts to address.

These results show that of the 743 total respondents (357 Urban and 354 Rural customers) 228 of the 354 Rural respondents were satisfied or very satisfied with the level of customer service received with 84 being neutral - neither satisfied or dissatisfied.

Of the 357 Urban respondents, 270 were satisfied or very satisfied with the level of customer service received with 66 being neutral - neither satisfied or dissatisfied.

This was the first time Nelson Hydro has conducted a customer survey. Now that the utility has a quantitative benchmark, it will be able to inform decision making and resource allocation at the utility to improve customer satisfaction.

#### 3.1.1. Please explain why or why not.

**RESPONSE:**

See response to IR 1-3.1.

#### 3.2 Has NH benchmarked its customer satisfaction results against those of any other utilities?

**RESPONSE:**

No, Nelson Hydro has not benchmarked its customer satisfaction results against other utilities.

#### 3.2.1. If yes, please provide documentation.

**RESPONSE:**

Not applicable.

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### 3.3 Has NH benchmarked its customer satisfaction results against its own historic measures?

**RESPONSE:** No, NH has not benchmarked the customer satisfaction results against historic measures. This was the first customer survey completed based on historic record.

#### 3.3.1. If yes, please provide documentation.

**RESPONSE:** Not applicable.

## 4. Reference: Exhibit B-1 Section 5.3 p.46 Table 5-1

“68% of Urban customers indicated that they are very satisfied or satisfied with the frequency of outages;

72% of Urban customers indicated that they are very satisfied or satisfied with the length of outages;

82% of Urban customers indicated that they are very satisfied or satisfied with the length of response time to outages; and

82% of Urban customers indicated that they are very satisfied or satisfied with the utility’s reliability overall.”

“32% of Rural customers indicated that they are very satisfied or satisfied with the frequency of outages, while 47% indicated they are not satisfied;

36% of Rural customers indicated that they are very satisfied or satisfied with the length of outages while 35% indicated they are not satisfied;

53% of Rural customers indicated that they are very satisfied or satisfied with the length of response time to outages; and

50% of Rural customers indicated that they are very satisfied or satisfied with the utility’s reliability overall, while 27% indicated they are not satisfied.”

#### 4.1 Does NH consider these reliability satisfaction results to be acceptable?

**RESPONSE:** No. Nelson Hydro acknowledges there is an opportunity to improve upon past performance. The utility strives to consistently improve with the goal of reaching top quartile performance. The Rural portion of the service area has more challenging vegetation issues and is vaster in geographic area.

#### 4.1.1. Please explain why or why not.

**RESPONSE:** Nelson Hydro recognizes that anything short of 100% customer satisfaction leaves opportunity for the utility to improve. Nelson Hydro has focused on performing more vegetation management in the Rural area to improve

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reliability during storms and is working to provide improved distribution protection to allow better sectionalizing after a fault to reduce the number, frequency and duration of customer interruptions.

4.2 Please provide annual reliability performance measures (i.e., SAIDI and SAIFI) for (i) rural and (ii) urban customers for the past 5 years, with and without major events or loss of supply.

**RESPONSE:** Historical annual reliability performance measures do not contain major events. This aligns with industry reporting standards as per the CEA (Canadian Electricity Association). Nelson Hydro is currently investigating industry standard metrics and measurements for reliability reporting during storm events going forward. Loss of Supply is a classification of an outage and has been historically reported. SAIDI and SAIFI are collected for the entire service area and are not available by specific service regions.

	2016	2017	2018	2019	2020
<b>SAIDI</b> (with loss of supply)	5.7913	17.8252	22.9956	18.1229	25.8015
<b>SAIDI</b> (without loss of supply)	4.3916	13.7153	14.8958	12.2597	13.5142
<b>SAIFI</b> (with loss of supply)	3.1728	9.5053	9.3459	9.7645	14.8105

<sup>1</sup>SAIDI depicts the average outage duration for each customer served, indicated in hours per customer.

<sup>2</sup>SAIFI depicts the average number of interruptions that a customer would experience, indicated in units of interruptions per customer.

<sup>3</sup> Due to the way the data has been historically collected, it is not possible to determine the SAIFI without loss of supply.

Notably, the utility’s reliability challenges are impacted by the utility’s power supplier (FortisBC) as a significant portion of the utility’s “loss of supply” classification is impacted by loss of supply from FortisBC. See FEI-FBC 2020-2024 MRP Application, page C-90, available at: [https://www.bcuc.com/Documents/Proceedings/2019/DOC\\_53564\\_B-1-FortisBC-2020-2024-Multi-YearRatePlan-Application.pdf](https://www.bcuc.com/Documents/Proceedings/2019/DOC_53564_B-1-FortisBC-2020-2024-Multi-YearRatePlan-Application.pdf).

4.3 Has NH benchmarked its reliability satisfaction results against those of any other utilities?

**RESPONSE:** No.

4.3.1. If yes, please provide documentation.

**RESPONSE:** Not applicable.

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4.3.2. If no, please explain why not.

**RESPONSE:** Nelson Hydro has not benchmarked its Customer Survey reliability satisfaction results with other utilities. As a small utility, resources for the design, implementation and detailed analysis of surveys are limited. Efforts are instead focused on improving the results of the survey now that this information is available.

4.4 Has NH benchmarked its reliability satisfaction results against its own historic measures?

**RESPONSE:** No.

4.4.1. If yes, please provide documentation.

**RESPONSE:** Not applicable.

4.4.2. If no, please explain why not.

**RESPONSE:** 2019 was the first year that the Customer Survey was completed so there are no historical reliability satisfaction measures from which to benchmark.

**C. Rate Design**

**5. Reference: Exhibit B-1 Section 9.3 p.63**

“The proposed Residential Rural rate increase is consistent with Bonbright Principles 1 and 2 regarding the recovery of costs and the fair apportionment of costs among customers. The COSA evidences that the RCC ratio for the Rural residential class is currently at 80.4%, indicating that this customer class is not contributing equally in recovering the cost of service provided by the utility. The proposed rate design results in a fairer and more equitable rate structure and will make Nelson Hydro’s rates more consistent with Bonbright Principles 1 and 2.”

5.1 Has NH compared the typical cost of service ratio between rural and urban residential customers in other jurisdictions?

**RESPONSE:** Not in detail. Nelson Hydro is unique as it is the only municipally- owned utility in British Columbia that serves customers outside of its municipal boundaries and subject to review by two different regulatory bodies [City Council and BCUC]. Further distinguishing Nelson Hydro is the fact that it is the only municipally-owned utility that possesses generation capacity along with its transmission and distribution systems. For this reason, it is difficult to develop the “typical” comparator.

Not all cost of service studies calculate RCC ratios for urban and rural

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customers. For example, in many jurisdictions, such as Manitoba, such a practice is prohibited.

In the case of Newfoundland Hydro, separate cost of service ratios are calculated for multiple zones including rural (interconnected) and isolated (not interconnected). These smaller areas have cost of service ratios that are typically in the range of 75% and 20% respectively (i.e., rural customers pay 75% of their measured costs and isolated customers pay 20% of their measured costs). However, like Manitoba, the reason for this is that the primarily urban areas served by Newfoundland Power are explicitly, by provincial government policy, expected to subsidize these rural areas (through a policy known as the “rural deficit”). These primarily urban Newfoundland Power served areas typically pay 108% of costs in order to subsidize the rural areas. This only occurs because the provincial legislature has directed this subsidization.

Similar policy directives exist in jurisdictions such as Yukon and Saskatchewan, which mandate a degree of cross-subsidization by provincial policy. In each of these cases, however, it must be noted that the Crown utility which implements the explicit cross-subsidization is a Provincial or Territorial company and all of the parties who participate in the cross-subsidization schemes are taxpayers in the jurisdiction.

Such a mandate does not exist in British Columbia for Nelson Hydro.

Nelson is unique as a publicly owned utility in that all of its customers are not both ratepayers and taxpayers, only those in the municipal boundaries are both ratepayers and taxpayers. FortisBC only serves ratepayers as they do not have taxpayers, therefore there is no transfer of wealth from taxpayers or investors to non-taxpayers or non-investor through FortisBC rates as there would be for Nelson Hydro.

Finally, it should be noted, FortisBC rates remain generally above the level proposed for Nelson Hydro Rural areas, so even subsidized FortisBC customers pay more than Nelson Hydro proposes to charge its Rural customers.

5.1.1. [If yes, please provide this information.](#)

**RESPONSE:** Please see response to IR 1-5.1.

5.1.2. [If no, please explain why not.](#)

**RESPONSE:** Please see response to IR 1-5.1.

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5.2 How does the COSA evidence treat the marginal cost of purchasing power? Are these costs allocated to rural customers?

**RESPONSE:** The COSA is based on 2019 actual costs, including actual power purchase costs. No marginal cost allocation was conducted.

The power purchase costs are allocated between Urban and Rural service areas based on percentages shown in Table 6 of the COSA (Appendix 8-1 of the COSA & RDA). The detailed breakdown is shown in the table provided in response to BCOAPO IR No. 1-18.2.2 and shows Urban customers share more demand purchase costs compared to energy cost. This results in a higher power purchase unit cost per kW.h for Urban customers compared to Rural customers. For example, the Urban customers' share of energy purchase is \$1.126 million or 25,021 MW.h based on 4.5 cents/kW.h energy rate. Total power purchase cost assigned to Urban customers is \$2.226 million which results in 8.89 cents/kW.h average power purchase cost. This is higher than the average power purchase cost for Rural area at 7.27 cents/kW.h.

5.2.1. If yes, what is the RCC ratio if all power costs are treated as at a single blended rate?

**RESPONSE:** The Nelson Hydro Generation Rates Policy adopted by City of Nelson [Appendix 7-2 of the COSA & RDA] notes that Nelson Hydro generation is first available to customers within the City of Nelson's municipal boundaries and surplus energy is provided to Rural customers at energy rate only. Based on this policy, Table 6 of the 2019 COSA Report also calculates the share of power purchase costs between Urban and Rural service areas as discussed in response to IR 1-5.2 above. No COSA was prepared with a single blended rate.

Please see Tables E-2 and E-3 provided in 2019 COSA Report [Appendix 8-1] that show the average cost per kW.h energy used and related discussions on pages ii through iv. The variances in the cost for Nelson Hydro generation and the power purchases are just part of the differences in the cost to serve.

5.3 Has NH incorporated any rural versus urban customer reliability adjustments into the COSA evidence?

**RESPONSE:** No, except to the extent that reliability "adjustments" drive investment in added facilities to address differences in the reliability being achieved, and these facilities are tracked by Rural versus Urban. Nelson Hydro does not

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manage the system to different reliability standards or reduce investments in the Rural areas due to accepting lower reliability standards for Rural customers.

The maintenance costs of the investments are higher in the Rural area. For example, please see Section 4.1 of Nelson Hydro's 2021 General Rate Increase Application ([https://www.bcuc.com/Documents/Proceedings/2020/DOC\\_60273\\_B-1-NelsonHydro-2021-General-Rate-Increase-Application.pdf](https://www.bcuc.com/Documents/Proceedings/2020/DOC_60273_B-1-NelsonHydro-2021-General-Rate-Increase-Application.pdf)) that notes that the weather events impacting reliability are disproportionately experienced on the North Shore – a part of the Rural service area that is particularly challenging in this regard due to its larger geographic footprint and high density of vegetation that can disrupt service provision.

That section also references the Coffee Creek Substation as the primary point of failure when supply from FortisBC is lost. The Coffee Creek Substation is particularly challenging because the substation is fed by long, exposed FortisBC transmission lines that are more vulnerable to wind, storms and snow events.

5.3.1. If yes, please provide this information.

**RESPONSE:** Please see response to IR 1-5.3.

5.3.2. If no, please explain why not.

**RESPONSE:** Please see response to IR 1-5.3.

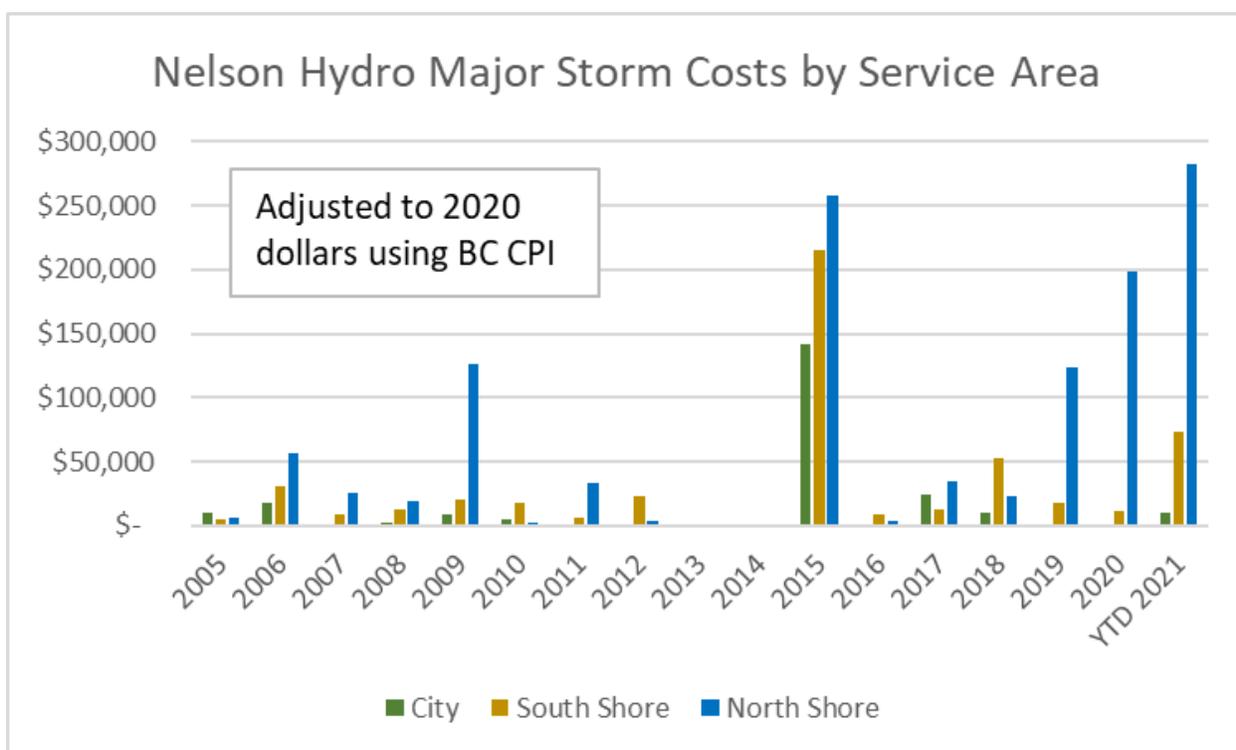
## 6. Reference: Exhibit B-1 Section 9.3 p.64

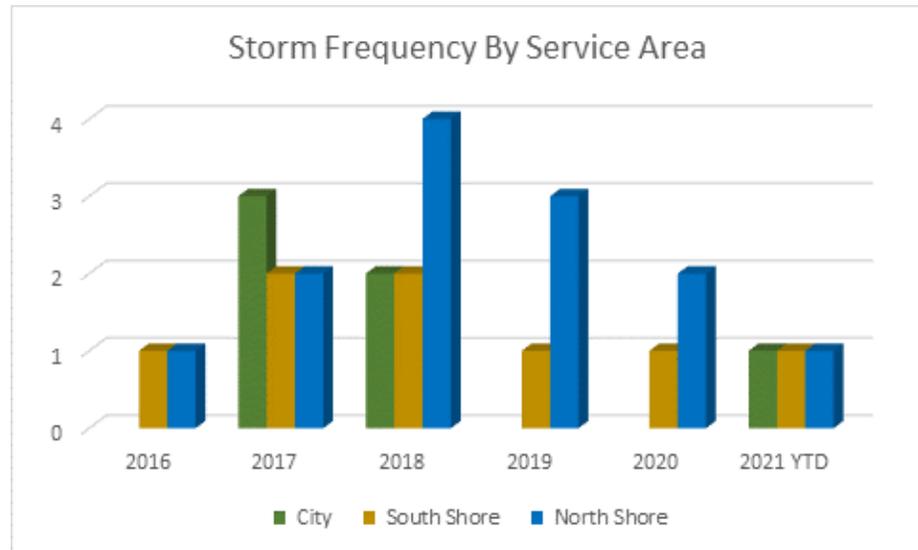
“The Rural service area is dispersed in a challenging geographical location that faces many vegetation management issues (i.e. dead or dying trees that pose a hazard to power lines). Additionally, this area appears to be facing an increasing amount of severe storm and wind events as a result of changes in climate.”

6.1 Is the frequency of severe storms and wind events in the rural service area increasing faster than it is in the urban service area? Please provide documentation.

**RESPONSE:** Available meteorological data does not have the resolution necessary to compare the frequency of storms in the Urban versus Rural service areas. Nelson Hydro financial data shows that costs to restore service have been increasing in the Rural areas, especially in the North Shore while the Urban service area impacts have been relatively flat over the past 15 years as shown in the graph below.

Storm Frequency was estimated from financial data based on the dates costs were charged to the Major Storm Repair cost codes. From the trends shown on the two graphs below it appears that storm frequency is declining, while storm severity is increasing. This is consistent with the climate change modelling for the region. More storms impact the Rural service areas than the Urban service area. This is likely due to the lower density of trees in the Urban service area. The North Shore is more frequently impacted due to its proximity to the lake where winds are higher and more unpredictable.

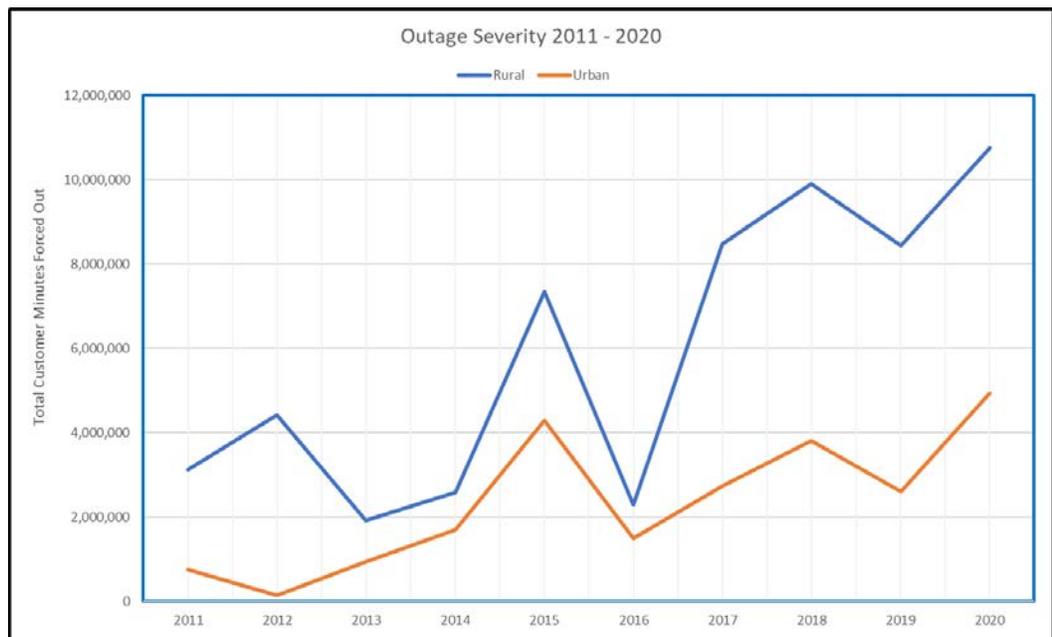




6.2 Is the frequency or duration of outages caused by severe storms and wind events in the rural service area increasing faster than it is in the urban service area? Please provide documentation.

**RESPONSE:**

The graph below demonstrates that the severity of outages (Customer Minutes Forced Out) is increasing at a greater pace in the Rural area as compared to the Urban area.



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6.3 Has NH estimated the cost-benefit ratio of increasing vegetation management activities to lessen the frequency or duration of rural service area outages? Please provide documentation.

**RESPONSE:** The utility has not yet collected enough data to perform a cost/benefit analysis as to the success of the vegetation management program in the Rural areas. Anecdotally, there is indication that the recent wind storms of September 7, 2020 and January 13, 2021, would have been more severe and affected a larger customer base had the recent vegetation management work completed on the North and South shore service areas not been completed.

**7. Reference: Exhibit B-1 Section 9.3 p.64**

“Of particular relevance are the rates of FortisBC, as FortisBC would otherwise be the service provider for Nelson Hydro’s Rural service area. Nelson Hydro’s current rates are significantly lower than FortisBC residential rates. The proposed rate changes, over the course of the proposed phase-in period, would bring Nelson Hydro’s Rural residential within range of the FortisBC rates.”

7.1 What are FortisBC SAIFI and SAIDI statistics compared to NH rural customer SAIFI and SAIDI statistics over the past 5 years?

**RESPONSE:** Nelson Hydro has not historically collected data to calculate the SAIDI and SAIFI for specific service areas. Please see the table below for the comparison of results between Fortis BC (FBC) and Nelson Hydro (NH).

	2016	2017	2018	2019	2020
<sup>1</sup> SAIDI FBC/NH	2.1 / 5.79	4.05 / 17.83	3.15 / 23.00	2.45 / 18.12	3.17 / 25.80
<sup>2</sup> SAIFI FBC/NH	1.34 / 3.17	1.78 / 9.51	1.73 / 9.35	1.21 / 9.76	1.64 / 14.81

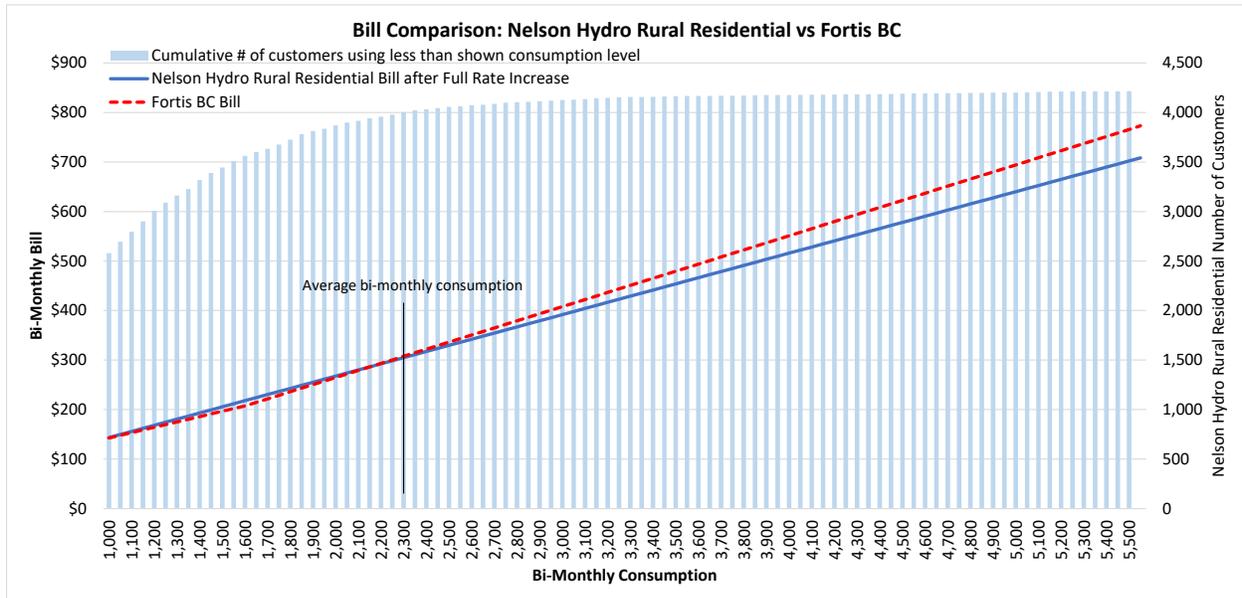
<sup>1</sup>SAIDI depicts the average outage duration for each customer served, indicated in hours per customer.  
<sup>2</sup>SAIFI depicts the average number of interruptions that a customer would experience, indicated in units of interruptions per customer.  
 \*NH cannot currently breakout SAIFI & SAIDI between Urban vs. Rural.

**8. Exhibit B-1 Section 9.3 p.66 Figure 9-2**

“Figure 9-2 compares Nelson Hydro Rural residential and FortisBC bills after the proposed phase-in with full rate increase for the bi-monthly consumption levels ranging from 1,000 kWh to 5,500 kWh. The figure shows that the customers with average or below consumption would pay bills similar to FortisBC current bills, while customers with higher consumption levels would still pay less than FortisBC customers.”

8.1 Please overlay a bar graph showing the number of NH rural customers in each of the bi-monthly consumption ranges shown in Figure 9-2.

**RESPONSE:** Please see the figure below that includes number of customers.



8.2 After the full rate increase has been implemented, what percentage of NH’s rural customers will be paying more than they would in the FBC service area, ceteris paribus, and what percentage will be paying less?

**RESPONSE:**

Please see the table below that shows the range of monthly bill variances. The table shows that about 40% of Rural residential customers pay \$5/month or less compared to Fortis BC customers and only about 2% pay \$5/month or more. 20% of Rural residential customers pay \$10/month or less compared to Fortis BC customers. Note that this comparison uses Fortis BC’s 2020 bills, not what they are projected to be in 2023.

Monthly Variance compared to Fortis BC, \$/month	Cumulative % of customers
--	------------------------------

-\$10	20%
-\$9	21%
-\$8	22%
-\$7	30%
-\$6	35%
-\$5	39%
-\$4	44%
-\$3	49%
-\$2	54%
-\$1	60%
\$1	28%
\$2	21%
\$3	15%
\$4	8%
\$5	2%

**9. Exhibit B-1 Section 9.5 p.69**

“The COSA evidences that currently Nelson Hydro is not adequately recovering the cost of service for the Rural residential service area. The circumstances that existed nearly 100 years ago when the City of Nelson began servicing the Rural service area justified the service expansion. Namely, the City was generating surplus power and there were no other service providers that could serve the Rural service area. However, those conditions changed dramatically as the load required to serve the Rural service area grew and the cost to purchase power in order to meet this growing load increased to the point where it was significantly more expensive than the utility’s own generated power. Furthermore, servicing the Rural area requires that Nelson Hydro be regulated under two frameworks, each with their own unique requirements and standards. This form of dual regulation results in significant regulatory expenses.”

9.1 Confirm that when NH originally began to serve the rural customers, both NH and its urban customers gained net economic benefits from the arrangement by establishing a reliable long-term market for generating capacity that would have otherwise been unused. If not confirmed, please explain.

**RESPONSE:** This cannot be confirmed. The generating plant was built well before the decision was made by the City of Nelson to serve Rural customers.

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Absent Rural loads Nelson Hydro would maximize the energy generation value from own generation by matching generation with Urban customer loads, sell surplus energy to other utilities to maximize the revenues or perhaps more interconnections would have been developed sooner, or more energy intensive industry would have been attracted to the City of Nelson.

Please also see response to RCIG IR No. 1-9.2 and RCIG IR No. 1-9.4

9.2 Over the full existence of NH, what portion of NH revenues have been recovered from the rural customer base?

**RESPONSE:**

The requested information is not available. Compiling the requested information would have been onerous even if it was available and would not help the Commission’s review process.

Besides, Rural customers are ratepayers of Nelson Hydro in the same way as other BC ratepayers are customers of Fortis BC and BC Hydro. Paying the approved rates does not make the customers owners of the utility. Rural customers have no ownership right in the assets, have no ongoing entitlement to risks and rewards achieved by Nelson Hydro, and have a simple framework transaction that consists of paying the approved rates and receiving the commensurate service.

9.3 Confirm that the above-mentioned benefits to NH from serving rural customers continued to accrue for decades, and that the additional revenues collected from rural ratepayers helped offset the costs associated with operating and maintaining NH's generating facilities that would otherwise have been solely borne by NH's urban customers. If not confirmed, please quantify and explain.

**RESPONSE:**

Please see responses to RCIG IR No. 1-9.1 and RCIG IR No. 1-9.2.

9.4 Confirm that despite having obtained these benefits from rural customers for many decades, NH now intends to notionally prioritize delivery of the low cost energy produced by its generating facilities to its urban customers, and to require the rural customers to bear the bulk of the cost of the higher priced energy imported from FBC to serve NH load during most months. If not confirmed, please quantify and explain.

**RESPONSE:**

Nelson Hydro seeks to have confirmed the same policy considerations that have long existed – that City of Nelson owns generation for the benefits of residents. When there is surplus available it will be provided to Rural areas. Nelson Hydro does not accept that serving the Rural areas has been a material benefit to Nelson Hydro above and beyond the benefit received to the Rural areas for receiving electrical service. However, regardless as to the sharing of benefits, the overriding principle that power customers do

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not take ownership in assets simply by virtue of paying rates is well enshrined in both rate design principles and in jurisprudence (Please see response to RCIG IR No. 1-17.1). The fact is that Nelson Hydro Rural customers exist in an area that is to all extents comparable to that served by FortisBC, that they pay rates lower than Fortis BC, and they will continue to pay rates that are expected to be comparable to or lower than Fortis BC. The fact that Nelson Hydro aided such customers in receipt of power in years prior does not change their legal status as consumers of power and not owners of Nelson Hydro facilities.

9.5 Confirm that it is not presently possible for NH to physically direct delivery of the energy produced by its generators preferentially to its urban customers and energy imported from FBC to its rural customers. If not confirmed, please explain.

**RESPONSE:**

Confirmed, Nelson Hydro (NH) operates an integrated/interconnected system. The NH Bonnington Falls Generating Station (BFGS) is connected, in parallel, with the Fortis BC (FBC) system. Put another way, the NH service area is supplied by four (4) sources [three FBC sources (60L27, 60L28 & 60L30) and one NH source (BFGS)]. Therefore, it is not presently possible for NH to physically direct deliver energy produced by its generators preferentially to its urban customers and energy imported from FBC to its rural customers. This is the reality for any electrical system. However, as explained in Response to BCUC IR 1-12.2, conventions have been developed to determine which parties are consuming what power.

9.6 Is the cost of serving a rural customer located immediately outside of the municipal boundary materially different than the cost of serving an urban customer located immediately inside the municipal boundary?

**RESPONSE:**

Yes.

First, at the generation level, a customer within City limits (regardless as to where in the City limits) receives the benefits of the investment City of Nelson made on behalf of City residents in the hydro generation. Rural residents, who are not City of Nelson residents, do not receive these benefits. Please see Appendix 7-2 of the COSA & RDA. Table E-2 of the COSA (Appendix 8-1 of the COSA & RDA) clarifies that Urban residential customers' average cost for blended generation/power purchases at 4.6 cents/kW.h while Rural residential cost at 7.4 cents/kW.h. This is the largest, but by no means only, difference in cost profile, and it is clearly distinguishable based on which customers are residents of City of Nelson and which are not.

Second, the Rural residents are part of a zone that has higher transmission and distribution requirements than City residents. The concept of zoning

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similar customers is inherent to Cost of Service analysis, where costs are not calculated for each customer. Consider the case of a distribution line in a single neighbourhood – typical Cost of Service practice does not calculate the costs to serve each customer based on how far they are from the transformer, for example. As shown in the Cost of Service study Table E-2, there is a distinct and marked difference in costs to provide transmission and distribution services to the group of Rural customers (approximately a 50-100% premium on a cents/kW.h basis compared to Urban customers) that has nothing to do with Nelson policies.

As to the question of whether this is an “unfair” “subsidy” within the group, Nelson Hydro does not believe this to be the case. It is always possible in Cost of Service analysis that a single customer in the group imposes less costs than another – for example customers who work nights have different contributions to peak demand costs than customers who work days. Also, costs are not recovered based on the specific usage patterns perfectly, so energy revenues typically over-recover while demand charges or customer charges typically under-recover, which leads to large customers potentially paying more than their cost of service compared to small customers. In general, however, these types of matching issues are covered by the standard that there should not be unfair discrimination or undue preference to any customer or group of customers – there will always be some degree of discrimination or preference embedded in the cost analysis. In Nelson Hydro’s submission, there is no unfair discrimination against Rural customers who are closer to the City of Nelson as opposed to those further away.

It should be noted that prior to 1982 the South Shore customers, that are generally closer to the City, had different rates than those in the North Shore service area. As noted on page 21 of the COSA & RDA, the Commission by its Order G-49-82 directed that South Shore rates were to be treated the same as North Shore rates and effective September 1, 1982 “both North and South Shore customers’ rates will embody the same differential over City customer rates.”

9.6.1. If yes, please why explain in detail.

**RESPONSE:** Please see response to IR 1-9.6

9.6.2. If no, given that all rural customers pay the same rate, does this mean that rural customers located near the municipal boundary are subsidizing the rural customers located further from the boundary?

**RESPONSE:** Please see response to IR 1-9.6.

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9.6.2.1. If yes, is this situation unfair according to any of the Bonbright principles cited by NH?

**RESPONSE:** Please see response to IR 1-9.6. There is no unfairness per the Bonbright Principles where there is fair apportionment of costs among customers.

**D. Appendix 5-1: NH Open House Presentation Slides (7 Feb 2019)**

**10. Exhibit B-1 Appendix 5-1 PDF pg 237**

“Set ROE = 12.45%”

10.1 Does this slide indicate that comparable Investor Owned Utilities would expect to achieve a return on equity of 12.45%?

**RESPONSE:** The referenced slide intended to show potential rate increases for different ROE targets. Please see response to IR 1-1.9 which shows Fortis BC pre-tax allowed ROE at 12.53% based on Fortis BC’s application for Annual Review for 2020 and 2021 Rates [Table 8-2].

10.1.1. If not, explain what it indicates?

**RESPONSE:** Please see response to IR 1-10.1.

10.2 Please confirm that 12.45% is a pre-tax ROE, which compensates for the tax expense that must be borne by taxable utilities.

**RESPONSE:** Confirmed.

10.3 If NH does not have a tax expense, please explain why this is an appropriate ROE supposition for the Open House Presentation materials.

**RESPONSE:** Please see page 8 of Appendix 6-1 of the COSA & RDA which notes Nelson Hydro does not pay income tax, and the benefits of this status support and enhance the ability to operate municipal services. In the electricity market in the region, customers pay rates that include income tax. Nelson Hydro rural customers should be treated no different and the low-risk benchmark ROE for Nelson Hydro could be 11.99% if Nelson Hydro is treated in the same way as Fortis BC. The BCUC also acknowledges this benefit in its Order G-119-17, Appendix A, page 12 noting that an “additional consideration is that unlike a private utility, Nelson Hydro is not taxed on its earnings. This goes to the benefit of ratepayers overall as a public utility has the right to recover the taxes it will be required to pay on its return in addition to the ROE itself which is reflected in the rates paid.”

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**E. Appendix 5-2: NH Open House Presentation Slides (6 Nov 2019)**

**11. Exhibit B-1 Appendix 5-2 PDF pg.258**

“The application of a debt to equity ratio at current NH levels is a fair and reasonable approach versus industry standard because of NH’s unique circumstances as a municipality.”

11.1 Notwithstanding NH’s debt restrictions, confirm it is still possible to apply a deemed capital structure similar to methodologies employed by other utilities regulated by the BCUC.?

**RESPONSE:** Please see response to BCUC IR No. 1-41.3 and BCUC IR No. 1-41.4.

11.1.1. If yes, explain why that would not be a reasonable approach.

**RESPONSE:** Please see response to BCUC IR No. 1-41.3 and BCUC IR No. 1-41.4.

11.1.2. If no, explain why not.

**RESPONSE:** Please see response to BCUC IR No. 1-41.3 and BCUC IR No. 1-41.4.

11.2 What are the approved debt to equity ratios of the Ontario utilities that NH cited in Exhibit B-1 Appendix 6-1 (pg.8)?

**RESPONSE:** Kenora Hydro and Thunder Bay Hydro no longer exist – they have merged under the new name SYNERGY NORTH. The company’s 2019 Scorecard notes that its debt to equity ratio is 0.76 (approx. 43% debt, 57% equity) which indicates the company’s debt portion is lower than equity [available at <https://synergynorth.ca/wp-content/uploads/2020/10/2019-Scorecard-Synergy-North-Corporation.pdf>, page 12].

11.3 Please explain, using the Bonbright principles, why it is fair for NH to employ a debt to equity ratio and subsequent cost structure that is materially different than other BCUC regulated utilities.

**RESPONSE:** The Bonbright principle of most relevance is Principle 1 – that the utility should be able to recover its bona fide costs. Nelson Hydro has bona fide costs of capital, and the cost for about 85% of the capital structure is for equity, not debt. To fail to recognize this limitation, and the total and complete inability of Nelson Hydro to replace the equity with debt, means that “deeming” that the equity should be priced like debt is simply penalizing Nelson for something it cannot avoid.

It should also be noted that under Nelson Hydro’s proposal the rates for Rural residential class target 95% RCC ratio and this 95% RCC ratio is not

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achieved until 2024 due to phase-in approach. This means that even after the phase-in is completed Nelson Hydro would not be earning 9.25% ROE from Rural customers as 95% RCC ratio results in about \$0.4 million under recovery from Rural residential customers. As such, the effective ROE from Rural service area would be less than 6.5%.

Therefore, Nelson Hydro’s target WACC under this application is approximately 6.2% ( $6.5\% \times 87\% + 4.11\% \times 13\%$ ) which is significantly under FBC of 7.9%, and this is not achieved for a number of years.

Note that a full ROE for Nelson Hydro is not presently targeted even by 2024 (the first full year of the full applied-for rates). However, even if Nelson were to achieve a full fair ROE and 100% cost recovery in future, the Nelson Hydro’s WACC would be 8.59% vs 7.90% WACC (pre-tax) for FortisBC. This clearly identifies that even though Nelson’s limits on use of debt is having an effect on costs, it is mostly offset by the City of Nelson’s preferable borrowing rates and the fact that Nelson doesn’t pay income taxes.

**F. [Appendix 5-3: NH Open House Take Home Information \(6 Nov 2019\)](#)**

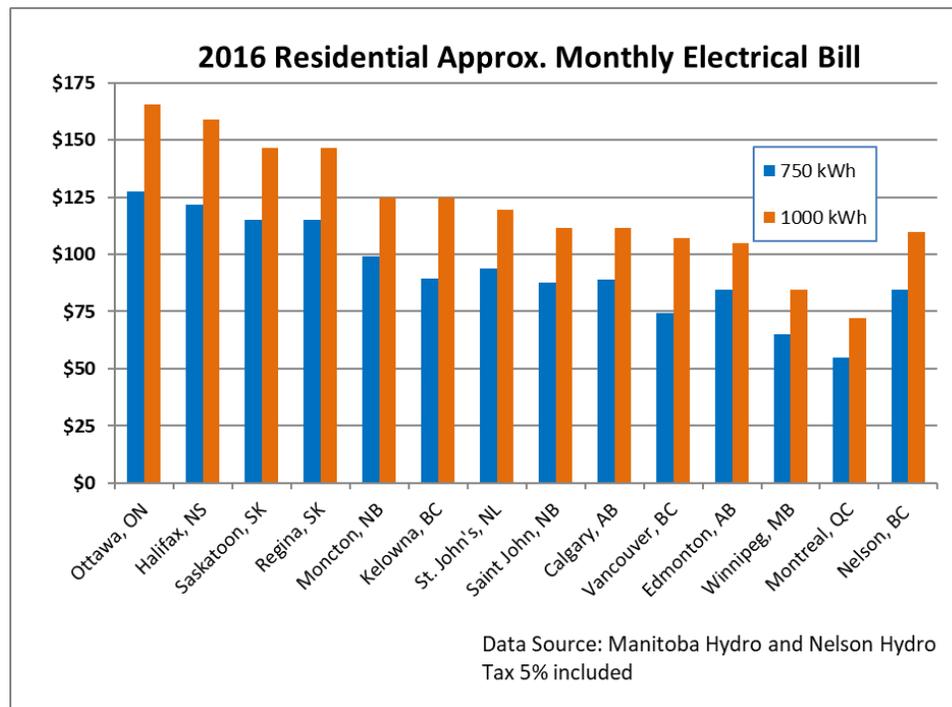
**12. Exhibit B-1 Appendix 5-3 pg.7**

“2016 Residential Approx. Monthly Energy Bill”

12.1 Please indicate what the blue and orange bars on this graph each represent.

**RESPONSE:**

The blue bars represent the monthly amount a residential customer consuming 750 kW.h would pay in each jurisdiction listed. The orange bars represent the same comparison for a customer consuming 1000 kW.h. The source graph is shown below:



**13. Exhibit B-1 Appendix 5-3 pg.8**

“Nelson Hydro General Rate Changes”

13.1 What is NH's forecast of CPI inflation in each year 2020 to 2024?

**RESPONSE:**

A rate of 1.75% is consistent with that applied to other departments within the City of Nelson when budgeting for years beyond the current budgeting year (in this case 2021). Actual budgets may be modified slightly from inflation in some instances to reflect historical trends and known increases in specific cost areas. One significant example is power purchases from Fortis, which make up over half of Nelson Hydro’s operating costs and would be a significant driver of the revenue recovery and rate increases required in future years.

13.1.1. If NH's proposed % rate increase is consistently higher than forecast CPI inflation over these years, please explain in detail why that is the case and why it is reasonable.

**RESPONSE:**

Nelson Hydro’s rate increases typically includes a general inflation factor of 1.75%. However, unionized collective agreement settlements do impact this figure as well as those rate increases approved for FortisBC. Other factors contributing to rate increases over the inflationary rate include projected regulatory costs and uncontrollable and difficult to forecast costs

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such as weather and severe storm events, which have been occurring more frequently in recent years.

### 13.2 What is NH's forecast of CPI inflation beyond 2024?

**RESPONSE:** At this time a 1.75% inflation rate has been used for the 2025 year as well. Inflationary allowance is adjusted for each year based on the actual wage rate increases, the FortisBC approved rate, and the BC CPI.

13.2.1. If NH's expected % rate increase is consistently higher than forecast CPI inflation beyond 2024, please explain in detail why that is the case and why it is reasonable.

**RESPONSE:** Please see response to IR 1-13.2.

### 14. Exhibit B-1 Appendix 5-3 pg.10

“Fcost. Monthly Residential Electric Cost”

14.1 Confirm that this chart compares the FBC residential and NH Rural residential monthly costs.

**RESPONSE:** Confirmed.

14.1.1. If not confirmed, what does it compare?

**RESPONSE:** Not applicable.

### G. Appendix 5-3: NH November 2019 Survey Results (Rural Only)

#### 15. Exhibit B-1 Appendix 5-5 pg.36

“Q36 Expenditures that would increase supply and need to rely less on power purchases from FortisBC.”

15.1 Has NH checked if customers would support expenditures to increase supply and reduce purchases from FBC if doing so would increase power rates?

**RESPONSE:** Not explicitly. With regard to customer support for green power projects, see Question #38 of the survey (Appendix 5.5 of the COSA & RDA). Although not identified as higher cost energy, Nelson Hydro is aware these are higher cost energy projects (depending on grants received and/or the energy can be sold under a power call at a higher price).

15.1.1. If yes, please provide documentation.

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**RESPONSE:** See response to IR 1-15.1.

15.2Has NH investigated the cost of power purchases from entities such as BC Hydro, Columbia Power Corporation or other power marketers?

**RESPONSE:** Yes, on a preliminary basis which indicated that this is not a viable option.

The impact of purchasing from other marketers would be loss of the tariff rate from FortisBC (FBC). As Nelson Hydro understands it, BC Hydro would have to wheel through FBC and that would make this uneconomical. Columbia Power rates are per the BC Hydro power call, which are much higher rates. In 2008 Nelson Hydro initiated a program to reduce its power purchase costs as permitted under Nelson Hydro’s tariff schedule. BCH objected and ultimately the BCUC directed the tariff schedule to be changed to eliminate this opportunity (See BCUC Decision and Order G-40-19 and G-27-16). Nelson Hydro is active in FBC rate applications as part of the BC Municipal Electrical Utilities (BCMEU) which has resulted in keeping power purchase costs fair and reasonable.

15.2.1. If yes, please provide documentation.

**RESPONSE:** As the investigation explained in Response to IR 1-15.2 was done on a preliminary basis, no formal documentation has been located.

15.2.2. If no, explain why not.

**RESPONSE:** Not applicable.

## 16. Exhibit B-1 Appendix 5-5 pg.38

“Q38 Expenditures on new green energy products.”

16.1Please compare the all-in costs of energy produced by NH's existing green projects (excluding NH's Bonnington Falls plant) with (i) the cost of power produced by NH's Bonnington Falls plant, (ii) power purchases from FBC and (iii) any other power acquired by NH to serve customers.

**RESPONSE:** The average cost per kW.h changes year-by-year. This response focuses on the costs of bulk generation (i.e., not including Nelson Hydro’s costs for transmission, administration, etc.). For 2019 Nelson Hydro generation only costs are approximately 3 cents/kW.h from Bonnington Falls; while Fortis BC power purchase costs are approximately about 7.7 cents/kW.h [this includes energy, demand and basic charge]. Please see response to RCIG IR No. 1-9.6. That discusses average cost for blended generation/power purchases.

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The impact from the Solar Garden generation is insignificant and Solar Garden costs are assigned to Urban customers, so there is no impact to Rural customers.

16.2 How will the cost of new green energy projects be allocated between rural and urban customers?

**RESPONSE:**

In the 2019 COSA no costs related to the new green energy projects are allocated to the Rural service area.

Consistent with this, no green energy projects costs in the future will be allocated to Rural customers unless they choose to be part of those projects as premium rate customers. There are no green energy projects under development at this time and such projects would be grant dependent.

Council may choose to initiate these projects within its municipal boundaries and set rates to fund these higher cost projects. It has this authority to do so under its legislation. This is an example of how postage stamp rates are not consistent with the Community Charter and are inappropriate for Nelson Hydro as whole.

**H. Appendix 6-1: NH Appropriate Level of ROE Document (March 2020)**

**17. Exhibit B-1 Appendix 6-1 pg.7**

"The low cost hydraulic generation owned by the City of Nelson for the benefit of the citizens of the City of Nelson is not generally available to service the Rural service area. Where hydro surpluses occur over and above the usage by the City customers, it is only appropriate to price these at a fair market value, which could be reasonably represented by the FortisBC wholesale rate. This is the cost of alternative power that the customers would be using but for the City of Nelson making hydraulic generation available. Rural service area customers are not owners of the hydro assets in any sense. They are only part of a commercial transaction for power with Nelson Hydro."

17.1 Is this a fair apportionment of the low cost hydraulic generation, in consideration that for many decades the rates paid by rural customers helped to offset the all-in cost of building and operating these facilities?

**RESPONSE:**

The hydro generation facility was built well in advance of City Council agreeing to serve Rural customers. Please see Sections 1.2 and 3.3 of the COSA & RDA for the historical context.

The Bonbright principles are not of particular probative value in assessing the noted question. Instead, the question is more related to the

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jurisprudence and guidance provided by the case known as Stores Block (*ATCO Gas and Pipelines Ltd v Alberta (Energy and Utilities Board)*, 2006 SCC 4 [Stores Block]). Under this decision of the Supreme Court, the core principle was clarified that customers, by virtue of paying rates, take no implicit or explicit ownership or property rights in the assets of the utility. In other words, the Supreme Court established that utilities are the sole owners of utility assets.

The customer-utility relationship is just that – one party provides service at a given price, the other party receives service and pays the price. In this case, the principle would operate to the effect that Rural customers have no explicit or implicit ownership or other property right in the hydro assets, nor any right to be served by them or receive low-cost power from them. As a municipal utility, unlike an investor owned utility (where there is a clear distinction between the owner and customer), the owner/taxpayer is also a customer on the urban side of the utility. This is not the case on the Rural side of the utility. Rural customers are ratepayers of Nelson Hydro in the same way as their rural neighbours are customers of Fortis BC and BC Hydro. Paying the rates does not make Fortis BC customers the owners of the utility – the same applies to Nelson Hydro.

17.1.1. Please elaborate in consideration of the Bonbright principles.

**RESPONSE:** Please see response to IR 1-17.1

18. Exhibit B-1 Appendix 6-1 pg.7

“The actual capital structure is heavily skewed to equity, but this is a feature of the municipal ownership and challenges and limits on municipalities regarding excessive borrowing. As the utility is properly financed by a capital structure roughly 85% equity and 15% debt, there is little reason to utilize an alternative deemed structure.”

18.1 Please quantify the customer rate impact of utilizing an 85% equity thickness rather than a more typical debt/equity ratio allowed for other utilities regulated by the BCUC, such as 40% Equity/60% Debt.

**RESPONSE:** See the response to BCUC IRs 1-41.3 and 1-41.4. The utility should be able to recover its costs and Nelson Hydro’s costs are based on actual equity in the capital structure due to status of Nelson Hydro as a municipally-owned utility. To fail to recognize this, and the total and complete inability of Nelson Hydro to replace the equity with debt, means that “deeming” that the equity should be priced like debt is simply penalizing Nelson Hydro for something it cannot avoid. No customer rates are estimated for 60/40 debt to equity ratio, therefore, it cannot be provided.

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Also as noted in IR 1-1.8 and IR 1-11.3 the WACC Nelson Hydro can achieve by virtue of being a City of Nelson department allows, even at this higher equity thickness, to be able to have a comparable WACC to private utilities.

18.2 Please confirm that the justification for imposing the above rate impact is because NH is a municipal entity required to maintain a very constrained debt/equity ratio.

**RESPONSE:** Please see responses to BCUC IR No 1-4.13 and BCUC IR No. 1-41.4.

### 19. Exhibit B-1 Appendix 6-1 pg.8

“Nelson Hydro is a municipally owned utility with a combination of generation and distribution assets. This is an unusual situation, and provides for a difficulty identifying a group of utilities for direct comparison. Some municipality level utilities in Ontario include provision for return on equity based on approved amounts by Ontario Energy Board. For example, utilities with their own small generation sources, Kenora Hydro at 9.58% and Thunder Bay Hydro at 8.78%, and Kingston Hydro at 9.19%.”

19.1 Confirm that the listed utilities are also subject to performance based ratemaking, which requires these utilities to achieve specified KPIs to achieve these ROE values. Further confirm that NH does not face the same KPI risks in achieving its approved ROE.

**RESPONSE:** Kenora Hydro and Thunder Bay Hydro have merged under the new name SYNERGY NORTH.

Nelson Hydro does not face the same KPI risks or rewards as a utility under Performance Based Ratemaking. This does not negate the need to set rates based on costs at the outset of any PBR regime, and those baseline rates are based on costs inclusive of a fair Return on Equity, which might be achieved, unachieved, or exceeded. For example, Thunder Bay Hydro used the Price Cap Incentive approach which still required a cost of service application in the first of every 5-year cycle.

More importantly, the cited reference was not intended to rely on the ROE levels from Ontario as fully-analyzed direct comparators. It was merely noting that while there are almost no directly comparable utilities to Nelson Hydro (as distributors who own their own hydro generation) in the few cases where there are comparable utilities, they are not treated in a materially different manner than the other regulated utilities in that jurisdiction.

### 20. Exhibit B-1 Appendix 6-1 pg.11

“Risk Matrix included in GCOC Stage 1 Review”

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20.1 Please calculate the annual carrying cost per million dollars of undepreciated capital rate base using both the FortisBC and the NH WACC. Please provide assumptions used in the calculations.

**RESPONSE:** Please see table below. For comparison purposes the table uses Fortis BC capital structure from Annual Review for 2020 and 2021 Rates and Nelson Hydro at 15%/85% debt to equity ratio.

	Fortis BC		Nelson Hydro	
	Weight	Pre-Tax rate	Weight	Rate
Short term debt	4.55%	1.86%		
Long term debt	55.45%	5.05%	15.00%	4.11%
Common equity	40.00%	12.53%	85.00%	9.25%
Carrying cost per \$1M	\$78,969		\$84,787	

\*The table above is at the 100% RCC. When at the proposed 95% RCC the carrying cost per \$1M is: \$61,415.

**21. Exhibit B-1 Appendix 6-1 pg.11**

“Customer Base, Nelson Hydro: Established, however residential and commercial only, slow growth”

21.1 Confirm that this means NH does not face the significant revenue risk associated with losing large industrial loads.

**RESPONSE:** Nelson Hydro does not have any loads that would be considered to be large industrial users.

21.1.1. If not confirmed, please explain why not.

**RESPONSE:** Please see response to IR 1-21.1.

21.2 Confirm that NH's risk is lower in this respect than is FortisBC's.

**RESPONSE:** Not confirmed. In fact, it is Nelson Hydro’s understanding that the opposite is the case. FortisBC maintains a set of flow-through accounts where variances that are not considered to be under FortisBC’s control are directly flowed-through to customers in future periods. One of these items is electric revenues. See, for example, Exhibit B-1 of FortisBC Energy Inc. and FortisBC Inc. (collectively FortisBC) Multi-Year Rate Plan Application for 2020 to 2024, BCUC Project No. 1598996, section C4 (for example Table

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C4-1). As such, Fortis BC is not at any risk of variances for changes in costs (“revenue risk”) related to losing large industrial loads. Nelson Hydro is open to establishing a deferral account (the Nelson Hydro account would permit variances of up to 5% before rates are adjusted).

Also note that unlike FortisBC, Nelson Hydro does not propose any incentive adders or other performance bonuses which could increase the ROE above the targeted level. FortisBC has a number of such incentive adders. As such, the FortisBC benchmark 0.4% adder is in practice able to be readily exceeded with good performance – Nelson Hydro does not have such options.

21.2.1. If not confirmed, please explain why not.

**RESPONSE:** Please see response to IR 1-21.2.

**22. Exhibit B-1 Appendix 6-1 pg.12**

“Future construction cost risk, Nelson Hydro: Depends on the nature of individual project. Potentially high for hydro assets over the long term.”

22.1Is the long-term cost risk for hydro asset projects higher than the long-term cost risk for natural gas generation or other generation projects?

**RESPONSE:** Yes. Hydro generation is a capital-intensive form of generation, which means that the relative importance of the capital investment in pricing is higher than other components (such as fuel and labour). Consider the new Keeyask hydro project in Manitoba which is presently going into service at a cost of approximately \$8 billion and annual operating costs estimated at only \$16 million (excluding taxes) with no fuel cost. At a capital cost rate (returns plus depreciation) assumed at approximately 7% (2%/year average depreciation, plus 5% cost of capital) the annual fixed costs related to the capital investment would total \$560 million compared to \$16 million operating, or 97% fixed capital related and 3% variable. This is a 695 MW project, with annual energy of 4,400 GW.h.

In contrast at the other extreme, a simple cycle natural gas generator was referenced by the Alberta Electric System Operator (AESO) in 2017 at a capital cost of \$1250/kW.h with a net heat rate of 10.5 GJ/MW.h plus \$18/kW-yr fixed costs and \$4/MW.h variable costs. If installed and used comparable to Keeyask the 695 MW would cost \$870 million, at a cost rate of 9% (4% depreciation, 5% capital) would total \$78 million/year. Fuel costs for 4,400 GW.h would require 46.2 million GJ, or \$115 million at \$2.50/GJ. Operating costs would total a fixed \$12.5 million plus \$17.6 million variable. The capital related costs would total only 35% of the annual cost profile.

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The cost risk related to hydro rebuilds is not materially different than that related to the initial Hydro installation. Consider Manitoba Hydro replaced just the spillway for the aging 78 MW Pointe Du Bois hydro plant for on the order of half-a-billion dollars.

AESO references from here: <https://www.aeso.ca/assets/Uploads/Summary-of-Integrated-Capacity-and-Energy-Revenue-Modelling.pdf>, pdf page 13.  
 Manitoba Hydro Keeyask references from: [https://www.hydro.mb.ca/docs/regulatory\\_affairs/pdf/electric/general\\_rate\\_application\\_2017/mfrs/pub\\_mfrs\\_redacted.pdf](https://www.hydro.mb.ca/docs/regulatory_affairs/pdf/electric/general_rate_application_2017/mfrs/pub_mfrs_redacted.pdf), pdf page 103.

22.1.1. If yes, please explain why and quantify.

**RESPONSE:** Please see response to IR 1-22.1.

### 23. Exhibit B-1 Appendix 6-1 pg.12

“Provincial Climate Change and Energy Policies”

23.1 Are NH's risks materially different than FortisBC's risks in this category?

**RESPONSE:** Nelson does not expect that climate change risks are materially different for Nelson Hydro than Fortis BC within the Nelson geographical area. Both utilities face water flow risk, and both face risks of material changes in power usage from expectations of EV penetration, etc. which could change infrastructure requirements. As a bigger utility with the ability to raise outside capital, Fortis BC likely faces less financial risk in facing these challenges.

23.1.1. If yes, please explain in detail.

**RESPONSE:** Please see response to IR 1-23.1.

### 24. Exhibit B-1 Appendix 6-1 pg.12

“Business Development Risk”

24.1 Is FortisBC's risk lower in this category than NH's risk?

**RESPONSE:** Both utilities are generally low with regard to Business Development Risk. Given this similarity it is difficult to draw any conclusion on which utility may have a lower risk.

24.1.1. If yes, please explain why, including an evaluation of the ratio of urban to

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rural service areas and customer counts for each utility, and the relative risk of wildfires and storm damage faced by each utility.

**RESPONSE:**

The risks for the Rural area are fairly high, and for the Urban area would be moderate. The maintenance costs of the investments are higher in the Rural area.

For example, please see Nelson Hydro’s 2021 General Rate Increase application section 4.1 (link below) that notes that the weather events impacting reliability are disproportionately experienced on the North Shore – a part of the Rural service area that is particularly challenging in this regard due to its larger geographic footprint and high density of vegetation that can disrupt service provision.

The section also references the Coffee Creek Substation as the primary point of failure when supply from FortisBC is lost. The Coffee Creek Substation is particularly challenging because the substation is fed by long, exposed FortisBC transmission lines that are more vulnerable to wind, storms and snow events.

[See Nelson Hydro 2021 General Rate Application, Section 4.1, [https://www.bcuc.com/Documents/Proceedings/2020/DOC\\_60273\\_B-1-NelsonHydro-2021-General-Rate-Increase-Application.pdf](https://www.bcuc.com/Documents/Proceedings/2020/DOC_60273_B-1-NelsonHydro-2021-General-Rate-Increase-Application.pdf)]

About 57% of Nelson Hydro’s customers are Urban customers and the remaining 43% are Rural customers. Nelson Hydro does not have detailed information on the ratio of urban to rural service area customers for Fortis BC, however, Fortis BC’s Annual Information Form – 2019 notes that “[t]he majority of FBC’s customers are located in urban centres” [page 6, [https://www.cdn.fortisbc.com/libraries/docs/default-source/about-us-documents/fbc-aif-2019-final-march-10-2020-sedar.pdf?sfvrsn=a7f47517\\_2](https://www.cdn.fortisbc.com/libraries/docs/default-source/about-us-documents/fbc-aif-2019-final-march-10-2020-sedar.pdf?sfvrsn=a7f47517_2)].

**I. Appendix 6-2: NH Appropriate Rate of Return (Non-Municipal) Policy**

**25. Exhibit B-1 Appendix 6-2 pg.4**

“During the review process Nelson Hydro also highlighted that the revenue-to-cost coverage ratio for the Rural service area customers have been consistently below 100%, while urban customers are above 100%.”

25.1 Confirm that these ratios are calculated by assigning most of the cost of the purchased power to the rural customers and providing urban customers with preferential access to NH's low cost hydro power.

**RESPONSE:**

Yes, confirmed. The Rural service area shares about 70.8% of energy

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purchase costs from Fortis BC, about 60.9% demand purchase costs and about 43% of basic charges.

25.2 What would the relative revenue-to-cost ratios be for rural and urban residential customers if all customers were deemed to have access to uniformly blended energy?

**RESPONSE:** The Nelson Hydro Generation Rates Policy adopted by City of Nelson [Appendix 7-2 of the Application] notes that Nelson Hydro generation is first available to customers within the City of Nelson’s municipal boundaries. Based on this policy, Table 6 of the 2019 COSA Report calculates the share of power purchase costs between Urban and Rural service areas. No COSA was prepared with a single blended rate.

**J. Appendix 8-1: Cost of Service Analysis (November 2020)**

**26. Exhibit B-1 Appendix 8-1 pg.6 Table 4**

“Nelson Hydro Purchases [surplus energy]”

26.1 Please provide details showing how the above-cited line was calculated, showing all inputs and assumptions used in the calculation.

**RESPONSE:** All costs related to the generation plant are assigned to Urban customers. The estimated surplus energy delivered to Rural customers is then assumed to be delivered to Rural customers at the Fortis BC wholesale energy rate [energy rate only, without any customer or demand charges – this is assumed to reflect a lower bound of the value of the energy received by the Rural customers from the asset]. As shown in Table 6 of the 2019 COSA report Nelson Hydro energy delivered to Rural service area customer at 11.1% of Nelson Hydro generation or 8,789 MW.h. Which is about \$0.396 million at Fortis BC wholesale energy rate at 4.5 cents/kW.h [8,789 MW.h \* 4.5 cents/kW.h].

**27. Exhibit B-1 Appendix 8-1 pg.8**

“The hydraulic generating plant owned by the City of Nelson primarily serves the City residents (Urban customers) and surplus energy is provided to Rural service area. Where Nelson’s own generation output is insufficient for servicing all Urban needs, a portion of the purchased power from FortisBC is allocated to serve Urban needs. Rural needs are served from Nelson Hydro surplus energy plus purchased power as reviewed in next section.”

27.1 Is it common practice for utilities to preferentially assign power derived from low cost resources to one class of its customers and power from higher cost resources to another class of its customers? If yes, please provide examples. Exclude any examples where customers voluntarily agree to purchase power with specific environmental attributes to encourage development of such resources, or cases where

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the customers receiving higher cost power are not grid-connected.

**RESPONSE:**

It is not common, as a municipality owning its own generation and serving customers outside its municipal boundaries is unique. It should also be noted that the City developed its own generation to specifically serve its own citizens at a time when it could have accessed lower cost power from West Kootenay Power & Light (now FortisBC). City Council’s policy has not changed; what has changed is the FortisBC’s power purchase rates have gone up substantially more than city’s generation costs. There are clear examples of similar policy choices by other levels of government.

To clarify, though, the situation with Nelson Hydro customers classes is not that one class of customers is being treated differently than the other, it is that one location or territory is being treated differently reflecting the entitlement of that customer group (by policy). For example, Manitoba Hydro delivers low-cost hydro generated power to its own residents, but sells this power at market prices (i.e., without the hydro price preference) to other places like Saskatchewan or the United States.

A more specific example is the situation in Newfoundland, where an Order in Council (2013-343) directs that Muskrat Falls project costs will be recovered solely from Island customers (and not Labrador customers) despite the project being located in Labrador and the assets being interconnected. Labrador customers will continue to receive power priced much lower than the island, linked to Churchill Falls and the assets in place in Labrador prior to the new development. Like Nelson Hydro, this policy was established by the government with responsibility for the assets in question, to prioritize one portion of the geographic distribution of customers compared to the others.

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## APPENDIX 1-2.1

### Attachment 1

## Nelson Hydro Urban and Rural Customer Consumption and Forecast

Row Labels	1) Sum of City (kW)	2) Max of City (kVA)	3) Sum of Rural (kW)	4) Max of Rural (kVA)
<b>2015</b>	<b>89,044,714</b>	<b>20,533</b>	<b>74,778,228</b>	<b>16,989</b>
Jan	8,797,816	16,515	9,120,035	16,989
Feb	7,267,928	14,630	7,375,088	15,100
Mar	7,219,826	13,970	7,240,281	15,509
Apr	6,185,387	13,396	6,061,973	12,498
May	6,473,981	11,752	4,788,226	9,897
Jun	6,318,931	13,288	4,233,611	8,057
Jul	6,708,799	13,384	4,556,198	8,116
Aug	6,583,433	13,382	4,568,872	8,865
Sep	6,536,816	12,140	4,759,846	9,422
Oct	7,342,544	13,915	5,517,100	10,712
Nov	9,225,604	20,533	7,633,496	15,475
Dec	10,383,649	19,035	8,923,502	16,762
<b>2016</b>	<b>94,294,184</b>	<b>21,083</b>	<b>75,301,065</b>	<b>18,372</b>
Jan	10,358,654	18,666	8,815,793	16,836
Feb	9,021,372	17,952	7,481,325	14,616
Mar	8,594,329	16,642	7,099,527	13,677
Apr	6,814,634	15,001	5,392,100	11,261
May	6,413,120	11,426	5,001,457	9,823
Jun	6,254,269	13,200	4,599,479	9,062
Jul	6,325,645	12,829	4,592,633	8,419
Aug	6,465,540	13,257	4,633,941	8,408
Sep	6,342,201	11,965	4,601,764	9,309
Oct	7,797,941	14,890	6,198,368	11,762
Nov	8,511,696	17,107	6,864,335	13,634
Dec	11,394,783	21,083	10,020,343	18,372
<b>2017</b>	<b>101,190,424</b>	<b>22,138</b>	<b>74,373,413</b>	<b>19,776</b>
Jan	11,644,230	22,138	10,268,552	19,776
Feb	9,672,245	19,851	8,427,346	18,064
Mar	9,546,869	17,174	8,150,670	14,717
Apr	7,878,918	14,694	6,677,173	13,209
May	6,935,154	12,840	5,104,354	10,530
Jun	6,312,877	12,541	4,037,901	7,806
Jul	6,878,069	13,560	4,264,467	7,485
Aug	6,711,459	13,299	4,275,051	7,507
Sep	6,568,999	13,662	4,188,939	8,262
Oct	9,281,904	17,458	1,726,944	8,800
Nov	9,064,691	17,061	7,586,251	14,172
Dec	10,695,008	19,537	9,665,765	18,519
<b>2018</b>	<b>95,337,522</b>	<b>19,451</b>	<b>65,336,153</b>	<b>17,568</b>
Jan	10,278,351	19,392	7,947,192	17,568
Feb	9,570,172	19,451	6,565,166	14,909

Mar	9,205,336	16,680	6,174,325	10,619
Apr	7,791,089	14,768	5,231,642	10,771
May	6,426,836	11,634	3,914,767	8,027
Jun	6,082,746	11,744	3,572,047	7,133
Jul	6,668,698	13,579	3,720,034	8,696
Aug	6,427,767	12,858	3,920,191	7,219
Sep	6,322,488	11,881	4,289,336	9,460
Oct	7,803,635	13,755	5,538,389	10,377
Nov	8,814,629	16,219	6,604,143	13,429
Dec	9,945,773	17,845	7,858,920	14,112
<b>2019</b>	<b>95,509,178</b>	<b>19,588</b>	<b>66,826,448</b>	<b>16,516</b>
Jan	10,174,490	17,963	8,022,434	14,298
Feb	10,095,711	19,588	7,958,251	16,516
Mar	9,217,900	18,524	6,824,918	15,603
Apr	7,307,654	15,057	4,529,208	11,657
May	6,370,352	12,094	4,223,180	9,484
Jun	5,975,512	11,944	3,768,993	6,971
Jul	6,162,207	11,829	3,783,549	8,101
Aug	6,330,644	12,738	3,864,340	7,220
Sep	6,367,234	13,002	3,938,170	10,437
Oct	8,348,499	16,437	5,732,502	12,681
Nov	9,070,848	17,779	6,509,877	14,552
Dec	10,088,125	17,864	7,671,028	14,748
<b>2020</b>	<b>92,078,603</b>	<b>20,188</b>	<b>76,151,683</b>	<b>18,199</b>
Jan	9,648,635	18,084	9,452,421	18,062
Feb	7,856,579	15,920	7,502,852	15,174
Mar	7,795,547	14,758	7,443,277	14,577
Apr	6,527,320	13,948	6,251,521	12,291
May	6,560,080	11,761	5,060,619	10,076
Jun	6,362,492	13,383	4,437,068	8,638
Jul	6,698,458	13,524	4,681,438	8,107
Aug	6,612,827	13,447	4,688,552	8,747
Sep	6,498,684	12,190	4,754,309	8,948
Oct	7,682,554	14,471	4,546,993	10,337
Nov	8,931,910	18,931	7,543,352	14,633
Dec	10,903,515	20,188	9,789,280	18,199
<b>2021</b>	<b>97,659,910</b>	<b>20,265</b>	<b>71,762,174</b>	<b>17,856</b>
Jan	10,993,040	20,265	9,050,960	17,856
Feb	9,649,654	19,453	7,639,542	15,852
Mar	9,266,381	17,271	7,227,366	13,219
Apr	7,482,122	15,048	5,667,902	11,690
May	6,589,943	11,946	4,789,991	9,651
Jun	6,221,447	12,599	4,180,725	8,216
Jul	6,535,258	13,127	4,258,106	8,146
Aug	6,525,657	13,156	4,329,129	7,732
Sep	6,396,703	12,552	4,341,669	8,974
Oct	8,386,892	15,708	3,867,315	10,481

Nov	8,705,682	16,568	6,956,974	13,611
Dec	10,907,129	19,952	9,452,495	17,517
<b>2022</b>	<b>98,334,562</b>	<b>20,496</b>	<b>68,700,670</b>	<b>18,042</b>
Jan	10,907,238	20,496	9,047,182	18,042
Feb	9,718,725	19,717	7,688,876	16,867
Mar	9,398,895	17,214	7,210,664	13,351
Apr	7,806,742	14,725	5,790,696	12,167
May	6,681,730	12,374	4,476,183	9,414
Jun	6,169,828	12,086	3,765,780	7,286
Jul	6,714,150	13,288	3,943,431	7,939
Aug	6,556,604	13,037	4,036,664	7,290
Sep	6,463,290	13,011	4,147,114	8,989
Oct	8,651,721	16,015	2,977,881	9,765
Nov	9,037,794	16,957	7,082,285	14,057
Dec	10,227,844	18,430	8,533,915	16,049
<b>2023</b>	<b>94,075,880</b>	<b>18,689</b>	<b>67,405,567</b>	<b>16,183</b>
Jan	9,988,709	18,342	8,047,420	16,183
Feb	9,369,824	18,689	7,055,815	15,207
Mar	8,872,184	16,867	6,467,708	12,606
Apr	7,326,948	14,722	5,014,674	11,139
May	6,380,692	11,696	4,135,600	8,698
Jun	6,076,881	12,067	3,771,279	7,313
Jul	6,458,266	12,895	3,876,046	8,488
Aug	6,399,660	12,890	4,016,222	7,488
Sep	6,347,278	12,158	4,260,103	9,830
Oct	7,828,925	14,474	6,111,265	11,372
Nov	8,895,246	17,200	6,649,626	13,979
Dec	10,131,268	18,181	7,999,810	14,728
<b>2024</b>	<b>94,701,164</b>	<b>19,112</b>	<b>71,133,332</b>	<b>16,608</b>
Jan	10,153,497	18,374	8,770,180	16,011
Feb	9,186,109	18,174	7,897,419	16,099
Mar	8,695,484	16,995	7,224,538	15,329
Apr	7,014,247	14,667	5,280,117	12,022
May	6,487,308	12,010	4,675,461	9,921
Jun	6,156,277	12,608	4,107,014	7,775
Jul	6,386,473	12,524	4,198,139	8,037
Aug	6,467,212	13,071	4,238,159	7,846
Sep	6,429,459	12,752	4,262,447	9,636
Oct	8,187,420	15,878	4,768,172	11,496
Nov	8,976,260	18,095	6,967,774	14,507
Dec	10,561,418	19,112	8,743,913	16,608
<b>2025</b>	<b>94,878,451</b>	<b>19,948</b>	<b>73,827,275</b>	<b>18,414</b>
Jan	10,312,085	19,345	9,347,697	18,414
Feb	8,626,613	17,532	7,516,892	15,586
Mar	8,484,547	15,757	7,353,322	13,636
Apr	7,042,853	14,389	6,123,191	12,076
May	6,610,937	11,905	4,907,640	9,800

Jun	6,308,468	12,953	4,258,181	8,358
Jul	6,699,401	13,523	4,451,206	8,102
Aug	6,595,905	13,323	4,497,307	8,205
Sep	6,464,480	12,383	4,559,661	8,835
Oct	8,045,164	14,979	3,878,908	10,060
Nov	8,852,810	17,716	7,326,940	14,126
Dec	10,835,189	19,948	9,606,331	17,801

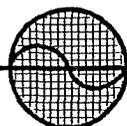
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## APPENDIX 1-2.1

### Attachment 2

YEAR	GENERATION		POWER PURCHASE			TOTAL TO UTILITY	
	ENERGY	DEMAND	IMPORT	EXPORT	DEMAND	ENERGY	DEMAND
1990	76,464,446	9,000	54,000,000	889,200	22,860	129,575,246	31,860
1989	77,635,529	9,000	52,056,000	1,476,360	23,364	129,691,529	32,364
1988	66,780,675	7,800	52,545,600	550,778	17,892	119,326,275	25,692
1987	67,610,645	7,800	46,800,000	965,520	16,236	114,410,645	24,036
1986	68,714,500	7,800	48,718,025	—	15,300	117,432,525	23,100
1985	54,229,930	7,400	67,854,000	—	20,200	122,074,930	27,600
1984	63,408,750	7,200	63,949,360	—	21,600	127,146,951	28,800
1983	62,955,900	7,200	65,407,800	—	24,900	128,263,530	32,100
1982	61,272,600	6,900	68,680,800	—	22,200	129,953,400	29,100
1981	60,021,000	6,900	77,088,000	—	22,200	137,109,000	29,100
1980	62,140,800	6,900	68,944,855	—	21,900	131,085,655	28,800
1979	59,598,000	6,900	66,171,900	—	20,400	125,769,900	27,300
1978	55,712,300	6,900	65,555,400	—	18,900	121,352,300	25,800
1977	64,073,260	6,900	63,338,800	—	17,100	117,424,939	24,000
1976	73,452,000	7,600	37,146,200	—	16,300	110,008,600	23,900
1975	74,898,400	9,000	27,807,150	—	12,400	101,979,450	21,400
1974	72,612,200	8,800	23,906,250	—	11,550	95,924,450	20,350
1973	70,523,700	8,000	23,187,450	—	11,150	93,711,150	19,150
1972	70,090,600	8,200	16,310,550	—	10,850	86,401,150	19,050
1971	70,754,500	8,500	10,859,330	—	8,900	81,569,915	17,400
1970	68,990,100	8,100	8,173,560	—	8,460	77,163,660	16,560
1969	66,095,870	7,900	6,561,810	—	8,050	72,657,680	15,950
1968	63,897,370	7,400	2,302,580	—	8,640	66,199,950	16,040



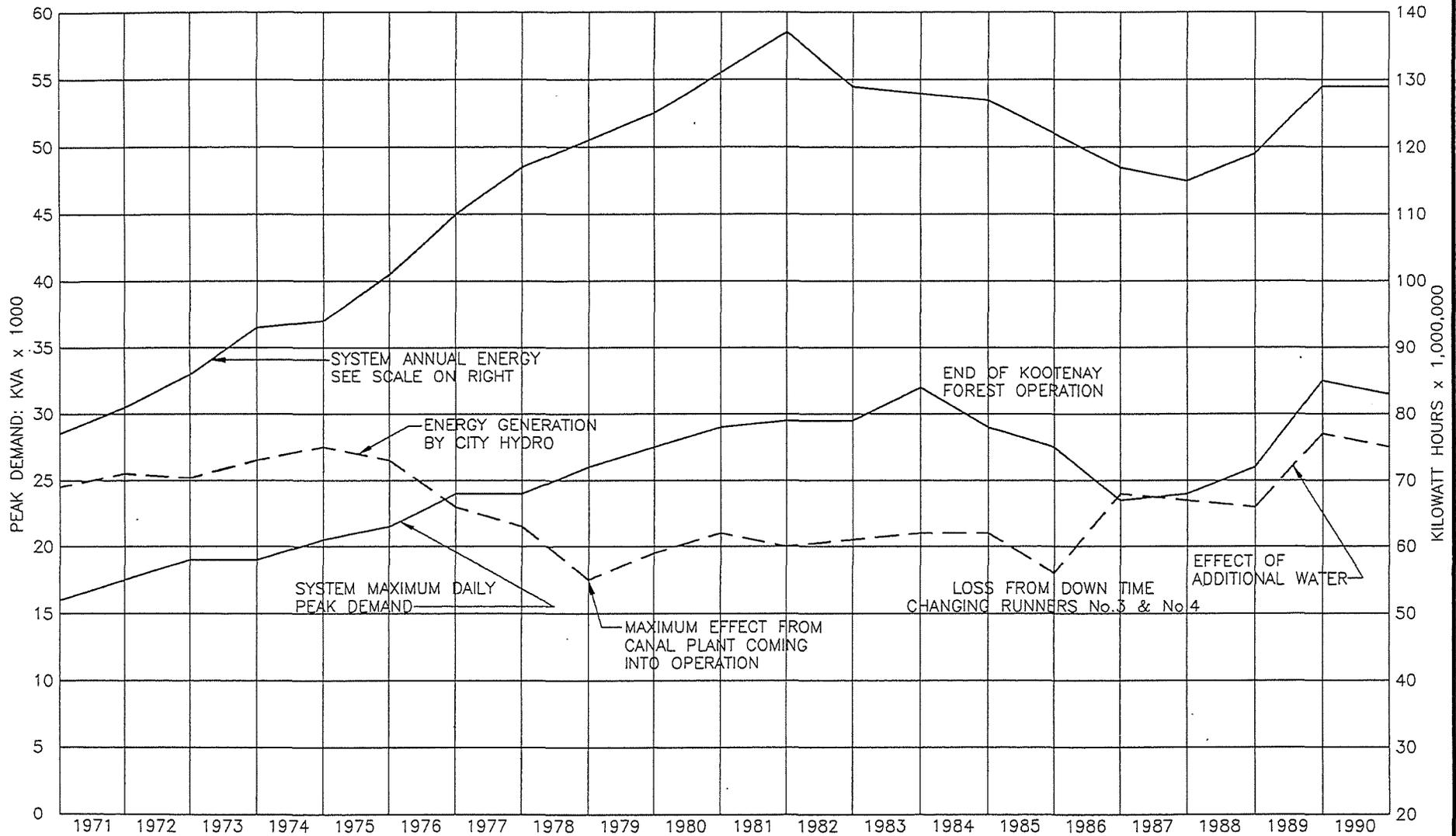
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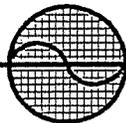
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CITY OF NELSON  
UTILITY CONSUMPTION  
REPORT

M.A.T.— JUNE 3, 1991



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