

REQUESTOR NAME: **Edlira Gjoshe**
INFORMATION REQUEST ROUND NO: **2**
TO: BRITISH COLUMBIA HYDRO & POWER AUTHORITY
DATE: **August 1, 2019**
PROJECT NO: 1598990
APPLICATION NAME: **British Columbia Hydro and Power Authority - F2020-F2021 Revenue Requirements Application**

IR 2.1

(Reference: Gjoshe IR 1.1.1)

Please provide the map requested in Gjoshe IR 1.1.1. If GIS-based mapping is unsuitable due to the amount of detail, please provide an illustrative map (while preserving geographical accuracy) that includes a visual representation of all of the requested data. For the distribution system, only include systemically important elements (example: regionally important radial lines serving those regions not served at transmission voltage, or the distribution system of regional or non-integrated areas if deemed systemically important, etc.). Please include transmission and distribution system (where included) voltage. For purposes of this map, please ignore boundary delineations with the New Westminster service area.

IR 2.2

(Reference: Gjoshe IR 1.1.2)

As per Gjoshe IR 1.1.2, please provide a map of the four service regions (Lower Mainland, Vancouver Island, South Interior and the North Region) used in the SAE modelling, overlaying the boundaries of the four service regions to the base BC Hydro system map.

IR 2.3

(Reference: Gjoshe IR 1.1.3)

As per Gjoshe IR 1.1.3, please provide a map of the 15 sub-regions used in the SAE modelling, overlaying the boundaries of the 15 sub-regions to the base BC Hydro system map (for each sub-region, please use the outer boundary delineations of the collective District Boundaries as provided in the maps in response to Gjoshe IR 1.1.4).

IR 2.4

(References: Gjoshe IR 1.1.4 and Gjoshe IR 1.1.5)

In response to Gjoshe IR 1.1.4 BC Hydro states: ‘To clarify, the regional breakdown of BC Hydro’s SAE models is to each of the four regions, and not for each of the 15 sub-regions. BC Hydro develops an account forecast for each of the 15 sub-regions, which is aggregated for use in the four SAE regional models.’

In response to Gjoshe IR 1.1.5 BC Hydro states: ‘To clarify, the residential and commercial SAE sales forecasts are not developed at the sub-region level. The 15 sub-regions are used to determine the forecast number of residential accounts and use per account which are then aggregated into the four regional SAE models.’

IR 2.4.1

Please clarify whether the account forecast that BC Hydro develops for each of the 15 sub-regions, is for residential accounts only, or whether it includes the commercial and light industrial and/or industrial accounts as well.

IR 2.4.2

Please discuss potential benefits to the load forecasting process and/or the accuracy of load forecasts, from full delineation of the load forecasting process in each of the 15 sub-regions. What is meant by full delineation, is building load forecasts from the bottom up (in consideration of a synchronized view of all of residential, commercial and industrial drivers in each of the regions) for each of the 15 sub-regions, to derive a provincial forecast.

IR 2.4.3

Please discuss the trade-offs to the load forecasting process, as it concerns developing or “slicing” of the provincial forecast largely by customer segment (residential, commercial, industrial) versus developing of the provincial forecast from the 15 sub-regional forecasts, then slicing by customer segment at the provincial level for revenue forecasting purposes.

IR 2.4.4

Please discuss the importance of potential interactions between industrial load developments on one hand, and commercial and/or residential impacts, on the other hand, especially for those regions of the province that depend heavily on single industries (such as forestry, oil & gas, mining, etc.). Please depict or provide examples of such potential interactions, and the possibility of monitoring industrial trends or developments not only for purposes of deriving the industrial load forecast, but as well for potential interactions with or spill-over effects to the

commercial and residential loads, especially for those regions that are heavily impacted by changes in the fortunes of industries that singularly or primarily drive them.

IR 2.4.5

As DSM and Rate Impacts are typically accounted for in the latter stages of the load forecasting process, please discuss potential implications to the load forecasting process from consideration of building the provincial load forecast up from 15 sub-regional forecasts.

IR 2.4.6

Please discuss the possibility of learning (i.e. regional learning) and feedback loops to DSM and Rate Impacts (if any), from a load forecasting process that would see the provincial load forecast be built up from 15 sub-regional forecasts.

IR 2.5

(Reference: Gjoshe IR 1.3.3)

As requested in Gjoshe IR 1.3.3, please provide a line graph of the F2002-F2021 'Load' and 'Revenue from Billing'.

IR 2.6

(Reference: Gjoshe IR 1.3.4)

As per Gjoshe IR 1.3.4, please provide a line graph of the F2002-F2021 'Number of Accounts as at Fiscal Year End' by sector.

IR 2.7

(Reference: Gjoshe IR 1.3.5)

Please provide line graphs (three) of the F2002-F2021 'Average Annual Consumption per Account' and 'Average Annual Revenue per Account' for each sector (Residential, Commercial and Industrial).

IR 2.8

(Reference: Gjoshe IR 1.4.1)

Please provide the requested map. In the event of insufficient time to provide the map by the prescribed deadline, please indicate the required extra time (beyond the prescribed deadline) by which BC Hydro can provide the requested map.

IR 2.9

(Reference: Gjoshe IR 1.4.2)

Thank you for the two versions (respectively reduced and unreduced) of the answer to Gjoshe IR 1.4.2. Further to the information provided:

IR 2.9.1

Please amend Table 1 to include columns indicating a) the type of clean energy project (wind, solar, run-of-river, biomass, etc.); b) an indication of whether the project supplies baseload (steady power throughout the year), winter-peaking or freshet/summer peaking energy supply, c) where applicable other significant potential power system benefits associated with the operation of IPP projects, including but not limited to: synergies with other industries (i.e. such as forestry, waste management, etc.), servicing of local load, voltage support to local systems, and other potential system benefits.

IR 2.9.2

Please provide annual energy supply profiles of the aggregate energy supply of the IPP portfolio (whereby supply profiles show GWh's supplied in each month as a percentage of the annual energy supply), at five-year snapshots from F2002-F2021 (snapshots for each of F2002, F2007, F2012, F2017, and F2021-forecast).

IR 2.10

(References: Gjoshe IR 1.7.1, Gjoshe IR 1.7.2, Gjoshe IR 1.12.1 and Gjoshe IR 1.12.2)

Please explain as to whether there is an opportunity to assess benefits arising from contribution to increased system diversity, as a project moves from Initiation (need) to Identification (of alternatives), to Definition (selection of the preferred alternative).

IR 2.11

(References: Gjoshe IR 1.6.1, Gjoshe IR 1.6.2, Gjoshe IR 1.13.1 and Gjoshe IR 1.14.2)

In its responses to Gjoshe IR 1.6.1, Gjoshe IR 1.6.2, Gjoshe IR 1.13.1 and Gjoshe IR 1.14.2, BC Hydro provides costs figures in the respective included tables:

IR 2.11.1

Please confirm that the costs are in nominal dollars (in corresponding Fiscal Year dollars).

IR 2.11.2

Please provide the recommended discount rate, by Fiscal Year (for each of F2002-F2021), to be used in financial calculations and/or conversion.

IR 2.12

(Reference: Gjoshe IR 1.15.1)

In its response to Gjoshe IR 1.15.1, BC Hydro explains some of the system benefits from DSM spending, in an energy surplus environment. Please provide a more in depth discussion of system benefits (or costs) arising from DSM program spend, specifically for those areas of the system (localized or broader) that have benefited or are benefiting from simultaneous (with the DSM program spend) generation and/or transmission build.

IR 2.13

(References: Gjoshe IR 1.6.3, Gjoshe IR 1.17.1 and Gjoshe IR 1.17.2)

The term 'Enterprise Value' is often used in financial performance as a measure of a publicly-listed company's total value, beyond market capitalization; and is estimated as 'Market Capitalization + Total Debt'. In the absence of an equivalent 'Market Capitalization' estimate of a crown corporation such as BC Hydro, the term 'Enterprise Value' may be used to describe the "Book Value of Assets + Debt + Regulatory Account Balances".

IR 2.13.1

Does BC Hydro monitor and/or report a metric equal to or similar to 'Enterprise Value' (as defined by the formula above) as part of its financial or corporate performance metrics? If yes, please explain. If not, please provide names and descriptions of similar metrics being used.

IR 2.13.2

Would BC Hydro derive value from monitoring and reporting 'Enterprise Value per GWh of Domestic Load Served as part of its corporate or financial performance metrics?

IR 2.13.3

Please calculate the “Book Value of Assets + Debt + Regulatory Account Balances” as at the end of each fiscal year, over the F2002-F2021 period. Please use forecasts for F2020-2021.

IR 2.13.4

Please provide a line graph of “Book Value of Assets + Debt + Regulatory Account Balances” for the F2002-F2021 period. Please use forecasts for F2020-F2021.

IR 2.13.5

Please divide the “Book Value of Assets + Debt + Regulatory Account Balances” as at the end of each fiscal year over the F2002-F2021 period, by the GWh of provincial load served during that fiscal year. Please use forecasts for F2020-2021.

IR 2.13.6

Please provide a line graph of “Book Value of Assets + Debt + Regulatory Account Balances’ divided by provincial load served (in GWh) during each fiscal year for the F2002-F2021 period. Please use forecasts for F2020-2021.

IR 2.14

(Reference: BCUC IR 250.0; PRES Project)

IR 2.14.1

Further to BCUC IR 250.0, please explain whether BC Hydro keeps an inventory of other industrial activities of significant size, whether existing customers or potential new customers, which may benefit from BC Hydro electrification initiatives pursuant to section 4(2) of the Greenhouse Gas Reduction (Clean Energy) Regulation.

IR 2.14.2

Please provide a list of other potential regional transmission upgrade or extension projects, which BC Hydro may have identified or conducted planning studies for over the F2002-F2021 period, and which may warrant capital spending in similar fashion to the PRES project, whether in northeast BC or other regions.

IR 2.14.3

Please explain whether such regional projects, would serve to relieve existing transmission system bottlenecks; may provide benefits to a region in the form of a service upgrade from distribution to transmission voltage; or would represent a transmission extension into a presently un-served area.

IR 2.14.4

Please explain whether such regional projects have been identified pursuant to customer service inquiries, customer service requests or BC Hydro's planning initiatives.

IR 2.15

(References: Gjoshe IR 1.2.3 and Gjoshe IR 1.9.1)

Please provide in a Table format, the annual spend by Fiscal Year over the period F2002-F2021 for serving the non-integrated area of Ft. Nelson, itemizing an capturing the major cost items of a) Ft. Nelson Generation; b) AESO FTS (Ft. Nelson Area Transmission Service) cost; and where applicable cost of energy imports from Alberta.

IR 2.16

(Reference: Gjoshe IR 1.14.2)

IR 2.16.1

Please provide in a table format BC Hydro's annual sustainment capital spending for the period F2002-F2021, using forecasts for fiscal years F2019-F2021.

IR 2.16.2

Please provide a comparison of DSM spend and sustainment capital spending over the period F2002-F2021, using forecasts for fiscal years F2019-F2021. Please discuss any trends or findings therein.