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Laura A Wright
James H McBeath+
Scott H Stephens+
David W P Moriarty
Katharina R Spotzl
Patrick J Weafer
Robin C Macfarlane+
Alan A Frydenlund, QC+ *
Harvey S Delaney+
Paul J Brown+
Gary M Yaffe+
Harley J Harris+
Kari F Richardson+
James W Zaitsoff+
Daniel H Coles+ *
Sameer Kamboj
Georgia Barnard
Josephine M Nadel, QC+
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James L Carpick+
Patrick J Haberl+
Heather E Maconachie
Jonathan L Williams+
Paul A Brackstone+ *
Pamela E Sheppard+
Jocelyn M Bellerud+
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October 7

VIA ELECTRONIC MAIL

British Columbia Utilities Commission
6th Floor, 900 Howe Street
Vancouver, B.C. V6Z 2N3

Attention: Patrick Wruck, Commission Secretary and Manager, Regulatory Support

Dear Sirs/Mesdames:

Re: British Columbia Hydro and Power Authority Fleet Electrification Rate Application ~ Project No. 1599032

We are counsel to the Commercial Energy Consumers Association of British Columbia (the "**CEC**"). Attached please find the CEC's first set of Information Requests with respect to the above-noted matter.

If you have any questions regarding the foregoing, please do not hesitate to contact the undersigned.

Yours truly,

OWEN BIRD LAW CORPORATION

Christopher P. Weafer

CPW/jj
cc: CEC
cc: BC Hydro
cc: Registered Interveners

COMMERCIAL ENERGY CONSUMERS ASSOCIATION OF BRITISH COLUMBIA ("CEC")

INTERVENER INFORMATION REQUEST NO. 1

British Columbia Hydro and Power Authority Fleet Electrification Rate Application Project No. 1599032

October 7, 2019

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1. Reference: Exhibit B-1, page 2

> In 2016, road transportation accounted for approximately 17 Mt CO_2e which represents 27 per cent of the total greenhouse gas emissions in B.C.[1] BC Hydro has been engaging with public transportation providers to understand how BC Hydro can support the reduction of greenhouse gases in British Columbia through the conversion of their fleets from fossil fuels to clean electricity.

1.1 Does BC Hydro have evidence as to the levels of greenhouse gas emissions that are accounted for by fleets or other sectors of road transportation?

1.1.1 If yes, please provide a breakdown of the greenhouse gas emissions caused by fleets versus other sectors such as individual non-commercial transportation, commercial transportation non-fleet etc.

1.1.2 Please identify and place on the record any evidence that BC Hydro has regarding the breakdown in segments for greenhouse gas emissions within road transportation.

1.1.3 Please provide an estimate, by year, of the expected GHG savings from each proposed rate. Please provide all assumptions including how BC Hydro identified the 'incremental' GHG saving vs electrification that would have occurred regardless.

2. Reference: Exhibit B-1, pages 2 and 3

> Absent a new rate design, the load associated with charging fleet vehicles or vessels would be charged under BC Hydro's LGS Rate. This rate includes demand charges based on the customer's maximum demand during the billing period. Potential fleet charging customers, such as public transit providers, have indicated that the LGS Rate demand charge is a barrier to converting their fleets to electric operation. In the early stages of battery electric fleet conversion from fossil fuel to electricity, the characteristics of the charging load can result in demand charges that make up a higher proportion of a customer's bill than is typical for LGS Rate customers. This is due to the fact until the entire fleet is converted to electricity, charger utilization may be low. The impact of demand charges on the economics of transportation charging

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> BC Hydro has modelled both the proposed Overnight Rate and Demand Transition Rate based on illustrative transit bus fleets with load projections informed by discussions with Translink and BC Transit. BC Hydro has identified two distinct charging scenarios that buses may use to meet their operational needs. The first scenario is referred to as depot charging which involves vehicles charging at a central depot. Each charger is expected to have a rated capacity of between 50 kW and 150 kW, with multiple chargers installed at each depot. Charging is expected to take place primarily in the overnight hours so the buses are ready for the next day's routes. In some instances the buses will need to charge at the depot during the day to meet operational needs.

2.1 Please confirm that BC Hydro is not proposing to limit the fleet electrification rate(s) to TransLink and BC Transit.

2.1.1 If yes, please explain why.

2.2 Please provide a breakdown of BC Hydro's other potential customers for each proposed rate.

3. Reference: Exhibit B-1, page 5

Figure 2 Illustrative Load Profile of an In Route Charging Station

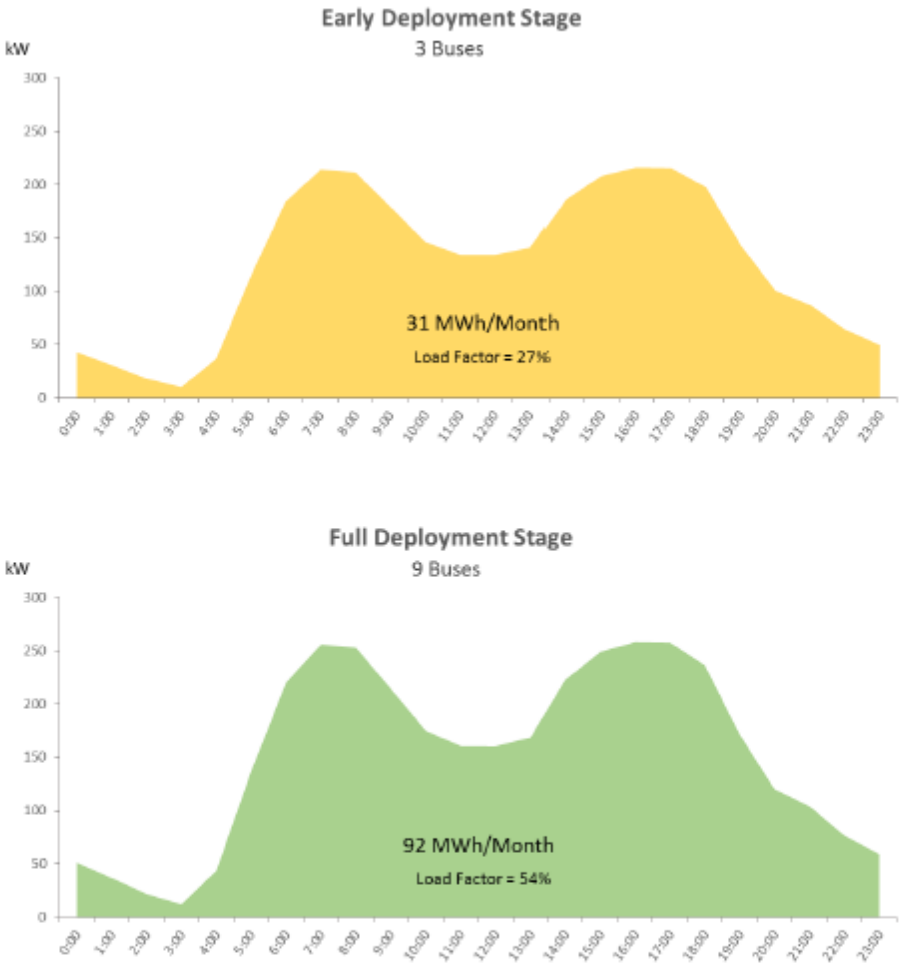


Figure 2 shows illustrative load profiles of an in route charging station that assumes load factor is lower in the early stages of the deployment of electric fleet vehicles compared to full deployment. As more vehicles are electrified and taking advantage of the installed infrastructure the load factor increases.

(h) to encourage the switching from one kind of energy source or use to another that decreases greenhouse gas emissions in British Columbia; and

(k) to encourage economic development and the creation and retention of jobs.

3.1 Please explain why BC Hydro utilized 9 buses for its Full Deployment illustrative load profile, and provide evidence to support the use of this figure.

3.2 Please provide the total range that could count as 'Full Deployment' for the number of buses and load factors.

4. Reference: Exhibit B-1, pages 6 and 7

> **1.2.2 Customer Requests for Fleet Charging Rates**
>
> BC Hydro has had requests from Translink and BC Transit for alternative rates to the LGS Rate that would help mitigate the impact of demand charges to support the electrification of bus fleets:
>
> - Translink is looking to introduce electric buses into their fleet in support of achieving a target of an 80 per cent or greater reduction in greenhouse gas emissions and 100 per cent renewable energy by 2050. Translink will need to replace approximately 860 buses by 2030, of which two-thirds would require in route charging and one-third would require depot charging. By 2040, Translink will be replacing a total of approximately 1,500 buses. A copy of Translink's letter setting out Translink plans, support, and preference for rates that mitigate the impacts of the demand charge while fleets ramp up as well as rates that encourage overnight charging is attached in Appendix C to this Application; and
>
> - BC Transit has committed to meet or exceed the Province's greenhouse gas reduction targets. The importance of meeting these greenhouse gas reduction targets was highlighted in Minister Trevena's Mandate Letter to the BC Transit Board date January 29, 2019.[4] To meet these targets BC Transit has a 10-year fleet replacement strategy to replace approximately 1,200 existing buses and expand the fleet by about 350 buses by 2030 with battery electric buses. BC Transit plans on solely using depot charging to meet the charging needs of their fleet. BC Transit has enquired as to rate options that would encourage shifting their depot charging to the overnight hours. A copy of BC Transit's letter setting out BC Transit plans, support, and preference for rates that encourage overnight charging is attached in Appendix C to this Application. Recently, BC Transit has publicly announced its plans to implement a low carbon fleet program.[5]

4.1 Please provide a quantified summary of the capacity and energy impacts to BC Hydro from each rate over 10 years.

5. Reference: Exhibit B-1, pages 9 and 10

> **1.3 Overview of Overnight Rate**
>
> The proposed Overnight Rate would be available to BC Hydro customers that are businesses, government agencies or other organizations that own, or lease, and operate electric fleet vehicles or vessels, for separately metered charging with maximum demand equal to or greater than 150 kW. Figure 3 provides a schematic of the proposed Overnight Rate fiscal 2022. The rate is proposed to be effective April 1, 2021. The rate is estimated to have the following pricing in fiscal 2022:
>
> The rate is not proposed for Medium General Service Customers (**MGS**) with new fleet charging load as there have been no Customer requests for such a rate option. Further, from a practical perspective it is unlikely a customer looking to charge their fleet would qualify for MGS as the expectation is most fleet chargers would require charging capacity in excess of the maximum demand of the MGS rate which is 150 kW.

5.1 Please confirm the CEC's understanding, or otherwise explain, that the overnight rate will only be available to existing LGS customers, or new customers who would otherwise be LGS customers.

5.2 Has BC Hydro conducted research to determine if MGS customers would be interested, or if there are MGS customers that might benefit?

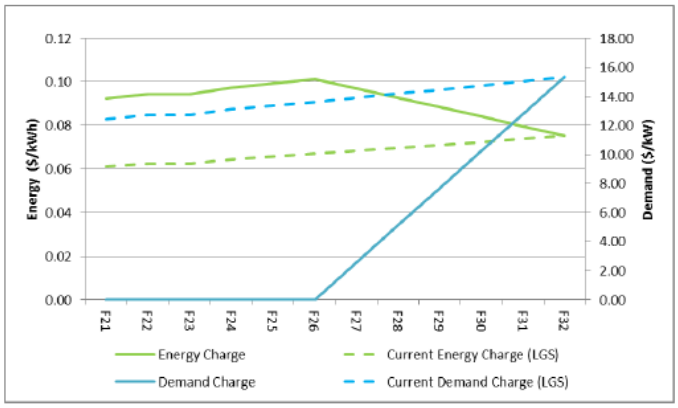
5.2.1 If yes, please provide the evidence supporting BC Hydro's assumptions regarding MGS customers.

5.2.2 If no, please explain why not.

5.3 Has BC Hydro identified MGS customers that may move to LGS if the overnight rate makes it possible for them to increase the quantity of electric vehicles they use?

6. Reference: Exhibit B-1, page 11 and 45

Figure 4 Proposed Demand Transition Rate Design Schematic



The Demand Transition Rate would support in route and daytime charging. The Demand Transition Rate provides demand charge relief over the early years of fleet conversion from fossil fuels to electricity.

The Demand Transition Rate, as proposed, is justified on an economic basis. Because the incremental revenues from this new type of load exceed BC Hydro's marginal costs of service, it will provide benefits to ratepayers over time. The Demand Transition Rate does not recover its full embedded cost of service, and for this reason the Demand Transition Rate would transition to the LGS Rate over six years. Bill savings for customers that take service under this rate are sensitive to the timing and load factor of the new load.

Table 6 Demand Transition Rate Recovery of Embedded Cost of Service

Year	F2024 (%)	F2029 (%)	F2032 (%)
Load Factor	15	30	50
Estimated Revenue to Cost Ratio	43	84	105

As shown in Table 6, BC Hydro estimates that the Demand Transition Rate recovers BC Hydro's embedded cost occurs when the load factor reaches 50 per cent.

BC Hydro notes that even during the period where BC Hydro does not fully recovery its embedded cost of service, all ratepayers are still better off if the incremental revenue from this proposed new Service exceeds BC Hydro marginal costs to serve the new load. This economic justification for the Demand Transition Rate is provided below in section 5.3.

6.1 Please explain which customer groups will be subsidizing the 'Demand Transition Rate' which does not recover its full embedded cost of service until the load factor increases.

6.2 Please provide the Revenue to Cost (R:C) ratios for each rate group.

6.3 How will the inclusion of the two rates likely affect the Commercial R:C ratio? Please provide quantification for each rate, and the two rates together.

6.4 Over what period of time will the Demand Transition rate 'break even' such that it recovers all the costs that were not originally recovered in the beginning years? Please explain and provide a table demonstrating costs and total recovery.

7. Reference: Exhibit B-1, pages 13 and 23

> As noted, stakeholder feedback with regard to this Application indicated a desire to expand the availability of the proposed services, and rates, to customers that provide charging services to third-parties. In BC Hydro's view expanding the availability of the proposed services to that customer segment would materially reduce the likelihood that ratepayers would benefit from them and thus undermine their lawfulness.
>
> **2.3 Customer and Stakeholder Engagement**
>
> BC Hydro held meetings with customers who could potentially be eligible for the rate design options being explored. Additionally BC Hydro held a workshop on the morning of May 28, 2019 with customers and stakeholder groups to review rate design options for fleet electrification in order to gather feedback to inform its proposals.

7.1 Please identify BC Hydro's 'stakeholder' groups and whether all of the groups consulted were potential beneficiaries of the rates?

7.2 If BC Hydro included customers who were not potential beneficiaries of the rates, please provide the number of non-potential beneficiaries who were consulted.

7.3 Please provide a detailed summary of the feedback that BC Hydro received from stakeholders who could be responsible to recovering the cost of service from the Demand Transition rate but who have no capability to make use of the rate, or are ineligible for some other reason.

8. Reference: Exhibit B-1, page 18

> ***2.2.2.2 California***
>
> *Liberty Utilities*
>
> Table 2 shows Rate Schedule A-3 which is a seasonal TOU rate that is mandatory for customers with loads greater than 200 kW. The rate includes applicability to buses and stations for the purposes of fleet charging. TOU energy prices are higher in the peak period (6.907 cents/kWh during 5:00 p.m. to 10:00 p.m. in the winter, 7.306 cents/kWh during 10 a.m. to 10:00 p.m. in the summer) and lower in the off-peak period (5.445 cents/kWh during 10:00 p.m.to7 a.m. in the winter, 5.523 cents/kWh during 10:00 p.m. to 10:00 a.m. in the summer). There is a mid-peak period in the winter (7:00 a.m. to 5:00 p.m.) with TOU energy price of 6.813 cents/kWh. In the winter, a demand charge is applicable in the peak period ($7.95 /kW/month during 5:00 p.m. to 10:00 p.m.) and in the mid-peak period ($2.99 /kW/month during 7:00 a.m. to 5:00 p.m.). There are no demand charges during the overnight off-peak period in the winter. In the summer, the demand charge of $13.12 per kW/month only applies during the peak period (10:00 a.m. to 10:00 p.m.).

8.1 Did BC Hydro consider mandatory participation? Please discuss.

8.2 Do the other jurisdictions recover their cost of service? Please provide any information that BC Hydro has regarding other jurisdictions' cost recovery.

8.3 Did BC Hydro consider a seasonal time of use rate?

8.3.1 If yes, please explain why BC Hydro did not employ a seasonal rate.

8.3.2 Are there seasonal variations in the cost of market power that would impact seasonal overnight rates? Please explain.

9. Reference: Exhibit B-1, page 25

Three stakeholders (Tesla, ChargePoint, and BCSEA) suggested BC Hydro expand the availability of the rate proposals to other charging applications such as passenger vehicle charging. For the reasons described in section 1.1 and 1.5.1 BC Hydro is not proposing to include passenger vehicle charging in the scope of this Application.

4 FORECAST LOAD GROWTH AND IMPACTS ON THE REVELSTOKE DISTRIBUTION SYSTEM

Another benefit of the rate stability and rate relief offered to Revelstoke customers by the proposed amalgamation of FEI's propane supply costs into the natural gas supply costs would be accelerated load growth in Revelstoke with conversions from other fuel types (e.g., from heating oil to propane, which would provide associated GHG emissions benefits). This potential load growth could also lead to accelerated capital upgrade requirements for the Revelstoke distribution system. In this section, FEI quantifies the potential impact of conversions on customer delivery rates by using an Upper Bound scenario and calculating the associated delivery rate impact of a large number of conversions occurring in the first year after the proposed changes become effective (i.e., 2020 or Year 1). This, in turn, triggers the need for immediate capital upgrades to the existing propane distribution system in order to serve the additional load. This Upper Bound scenario represents the Upper Bound rate and bill impact on FEI and Revelstoke customers as all conversions and capital upgrades would occur in the first year after the proposed amalgamation rather than gradually over time. FEI believes the Upper Bound scenario is unlikely due to the practicalities involved with conversions (energy users making conversion decisions over time, planning their conversions, purchasing new appliances, having to rely on contractor capacity for completing their conversions, etc.), but this is still useful as it helps to illustrate the Upper Bound rate and bill impact on FEI and Revelstoke customers if conversions occur rapidly.

9.1 Could passenger vehicles include taxis or other fleets with multiple passenger vehicles? Please explain.

9.2 The CEC has reviewed section 1.1 and 1.5.1 and does not identify a clear reason for not including passenger vehicles in this scope of this application. Please summarize the reasons.

10. Reference: Exhibit B-1, pages 24-26

> Seaspan suggested that BC Hydro expand the definition of fleets to include marine fleets that may charge from shore side terminals. Seaspan also provided comment that BC Hydro should consider adding an interruptible rate option. BC Hydro agrees that it would be appropriate that the proposed Overnight and Demand Transition
>
> Rates would be available to fleet vessels as this would be consistent with intent of the Application to support fleet electrification. With respect to Seaspan's request for interruptible rates, BC Hydro notes that it has interruptible Shore Power rates available to eligible vessels under both distribution (RS 1280) and transmission (RS 1891) services. BC Hydro has not received requests from customers for an interruptible rate for fleet vehicles.
>
> BC Hydro has also had discussions with BC Ferries and SeaSpan and they have indicated an interest in potentially converting their Vessels to electric fuel.

10.1 Does BC Hydro have plans to include fleet vessels? Please discuss.
10.1.1 If yes, when does BC Hydro expect to include fleet vessels?
10.1.2 Under what conditions would BC Hydro include fleet vessels? Please explain.

10.2 Please provide the expected load from fleet vessels and when this would occur.

10.3 Does BC Hydro have plans for expansion to other fleets? Please discuss and include a discussion of timing and load quantification.

10.4 Please confirm that charging for fleet vessels could occur in off-peak hours.

11. Reference: Exhibit B-1, page 45

Table 6 Demand Transition Rate Recovery of Embedded Cost of Service

Year	F2024 (%)	F2029 (%)	F2032 (%)
Load Factor	15	30	50
Estimated Revenue to Cost Ratio	43	84	105

As shown in Table 6, BC Hydro estimates that the Demand Transition Rate recovers BC Hydro's embedded cost occurs when the load factor reaches 50 per cent.

BC Hydro notes that even during the period where BC Hydro does not fully recovery its embedded cost of service, all ratepayers are still better off if the incremental revenue from this proposed new Service exceeds BC Hydro marginal costs to serve the new load. This economic justification for the Demand Transition Rate is provided below in section 5.3.

11.1 Please provide the evidence for the assumptions behind BC Hydro's increases in load factor.

11.2 Please provide quantification of the dollar values of the Demand Transition Rate and total costs by load factor.

11.3 Please provide estimated rate impacts for other customers, by rate class, from the Demand Transition rate by year, using the load factor assumptions included in the table above.

11.3.1 Please provide the same information assuming the load factor growth is delayed by 5 years.

11.3.2 Please provide the same information assuming the load factor growth is delayed by 10 years.

11.4 How will BC Hydro report on the recovery of cost of service to the BCUC? Please explain.

11.5 Please discuss BC Hydro's options if the load factors do not increase, and the rate does not recover its cost of service.

12. Reference: Exhibit B-1, Appendix E page 1 of 8

BC Hydro's Marginal Costs

Energy Marginal Cost

BC Hydro's energy load resource balance shows we will not need to acquire new energy resources for many years to come. When our power system is in a state of energy surplus (energy supply is greater than demand), energy marginal cost is market price. Given potential policy changes that may affect BC Hydro arising from ongoing government review initiatives and other energy related policies, on top of technology cost uncertainty in the long term, BC Hydro recently adopted the use of Mid-C market price of energy as the energy marginal cost. Therefore the Mid-C market price is used in the ratepayer economic assessment throughout the evaluation period.

12.1 Please provide BC Hydro's most recent Load Resource Balance.

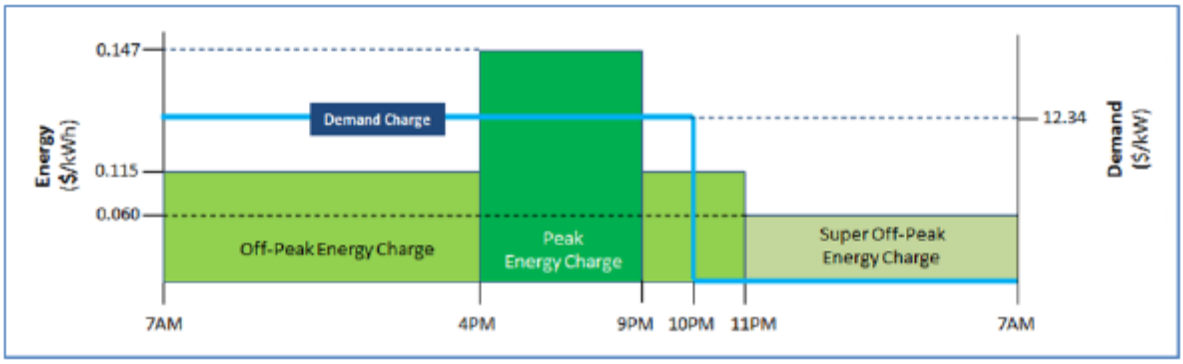
12.1.1 Has BC Hydro accounted for the proposed fleet charging in its most recent LRB? Please explain and provide quantification for how the impact affects the load resource balance, or how it would affect the Load Resource balance if it is not included.

13. Reference: Exhibit B-1, page 9, 50-51

6.1 Overnight Rate with Time-of-Use Energy

As an alternative to the proposed Overnight Rate with time varying demand charge, BC Hydro refined that rate design to incorporate a TOU energy charge. The resulting rate was presented as Option 2 in the May 28, 2019 stakeholder engagement workshop. The following figure shows the rate design:

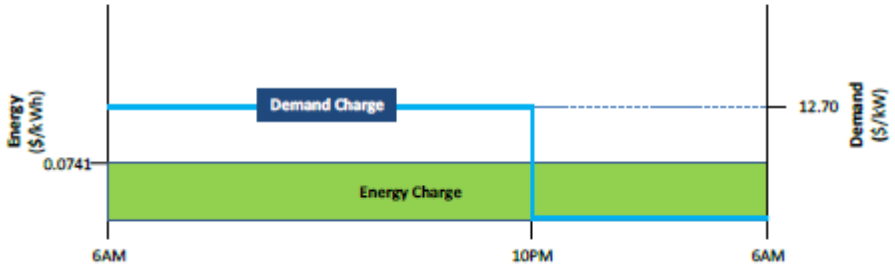
Figure 9 Overnight Rate with Energy and Demand Time of Use



Rather than a flat energy rate, BC Hydro developed a year round TOU energy rate with TOU prices applicable to peak, off-peak and super off-peak periods. A year round TOU energy rate was developed given that the charging load would be similar in each month and that a TOU energy rate with seasonal pricing would be more complicated for the customer to understand and remember. The peak period from 4:00 pm to 9:00 pm is based on when BC Hydro's system peaks which occurs during the winter months. The super off-peak period is from 11:00 p.m. to 7:00 a.m. and the off-peak period is the remaining hours of the day.

This rate is revenue neutral to the Overnight Rate with time varying demand charge and uses the depot charging load profile. The peak price is based on allocating the marginal capacity costs to the peak period in each month. The super off-peak price is based on the standard LGS energy rate. The off-peak price is determined assuming revenue neutrality.

Figure 3 Proposed Overnight Rate Design Schematic



13.1 Please explain why the proposed overnight rate design shown in figure 3 does not correspond to the super off peak period shown in figure 9.

13.2 The paragraph in the preamble refers to BC Hydro's system peaks which occur in the winter months.

13.2.1 Please explain what effect seasonality has on the rate design.

13.2.2 Please explain when system peaks occur in the summer season.