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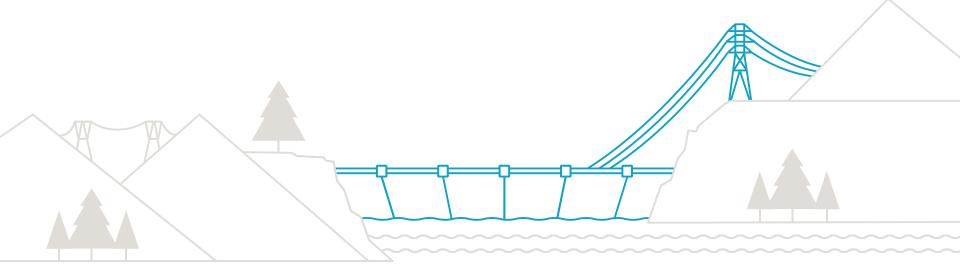
We will endeavor to answer questions in the session as time permits, additional or follow-up questions can be also be sent to <u>bchydroregulatorygroup@bchydro.com</u>. Thank you.

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Rate Schedule 1823 Rate Restructuring

Transmission Service Rate (TSR) Workshop





February 9, 2021

Workshop Agenda

Approximate Time	Item	Presenter
9:30 - 9:40	Welcome / Virtual Workshop Procedures	David Keir, Sr. Manager, Transmission Rates and Large Customer Rate Operations
9:40 - 9:50	Opening remarks	Keith Anderson, Vice President, Customer Service
	Part 1: Default Transmission Service Rates	
9:50 - 10:00	Requision/ Context / RS 1873 Pricing Principles Application	Anthea Jubb, Snr Regulatory Manager, Tariffs
10:00 - 10:45	RS 1823: Rate Restructuring	Anthea Jubb and Allan Chung, Sr. Regulatory Specialist
10:45 - 11:00	Webex Chat (participant questions and feedback)	
	Part 2: Other Transmission Service Rates	
11:00 - 11:40	Restructuring considerations for other transmission rates	David Keir
11:40 – 11:55	Webex Chat (participant questions and feedback)	All
11:55 - noon		Fred James, Chief Regulatory Officer
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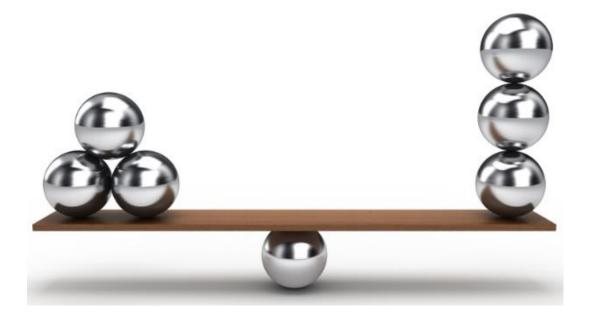
Keith Anderson

Vice President, Customer Service



Policy context

- 1. Support electrification
- 2. Support CleanBC goals
- 3. Affordable, fair and stable rates that improve economic efficiency

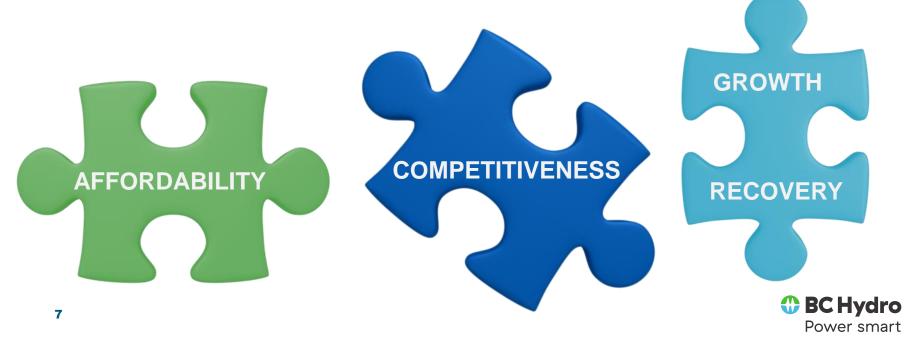




Current state assessment

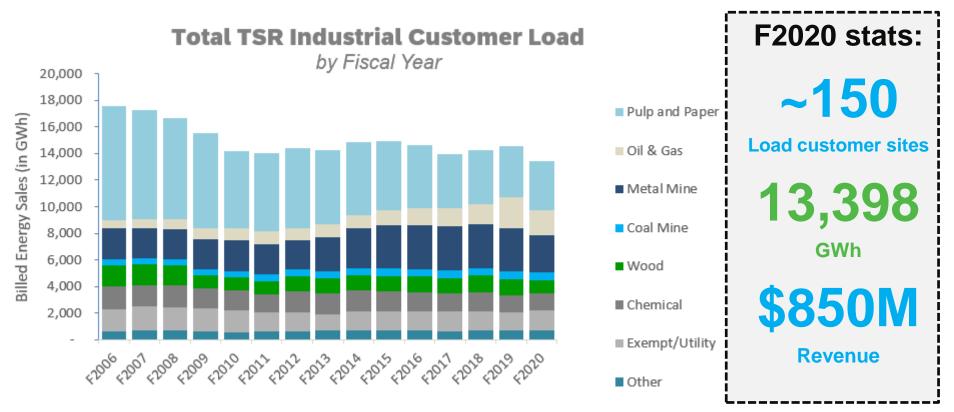
Customer Pressures:

- Rate affordability
- Industrial competitiveness
- Economic recovery and growth



Current state assessment

Utility Pressures:



- Declining industrial load and revenue
- Compounded by price signal to use less
- Increased load will help to keep rates low



Rate Restructuring objectives

Align RS 1823 rate structure with Government's CleanBC initiatives and BC Hydro's electrification and rate design objectives:

- 1. Economic Efficiency
- 2. Decarbonization
- 3. Flexibility



Workshop Objectives

(1)

Review and seek feedback on restructuring BC Hydro's default rate for transmission service (Rate Schedule 1823)



Consider the scope and implications of preliminary rate designs from both the customer and utility perspective



Obtain preliminary feedback on impacts to other transmission service rates that may arise from RS 1823 restructuring



Part 1: Default Transmission Service Rates





- 1. Background RS 1823
- 2. RS 1823 Pricing Principles Application
- 3. RS 1823 Rate Restructuring



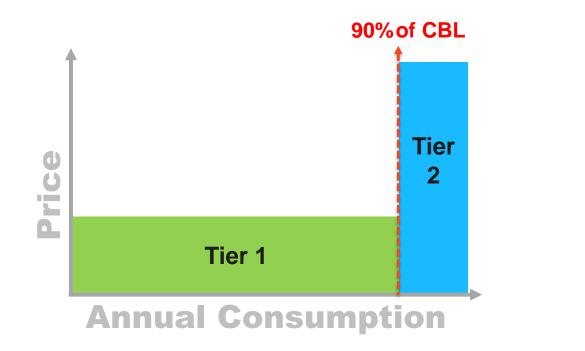
Background

- RS 1823 applies to most transmission service customers including large industrial and other customers who are served under transmission voltage (60,000 volts or higher)
- In F2019, 13,896 GWh annual domestic consumption (25% of total) and \$873M annual revenue (16% of total), approximately 150 accounts on RS 1823
- Typical industries include pulp and paper, mining, oil and gas and electrochemical products



RS 1823 Stepped Rate

- Introduced April 2006 to encourage energy conservation
- Inclining block energy charge with higher tier 2 price historically set to reflect BC Hydro's long run marginal cost of energy
- Flat rate for peak kVA demand
- Customer specific energy baseline (CBL)





Regulatory and Policy Context

- On February 14, 2019, the B.C. Government repealed Direction No.
 7, which restored BCUC jurisdiction over RS 1823 rate design
- Phase 2 Comprehensive Review Interim Report, May 2020 suggested that flattening the two-tier industrial rate would support CleanBC by making increased consumption of clean electricity more competitive, thereby removing a barrier for electrification.

https://www2.gov.bc.ca/assets/gov/farming-natural-resources-andindustry/electricity-alternative-energy/electricity/bc-hydroreview/bc_hydro_cr_ph2_ir_mar06_2020_f.pdf

 Directive 66 of F2020-F2021 RRA Decision and Order G-246-20 directed BC Hydro to report on progress on its next rate design application for commercial and industrial customers by March 31, 2021



Work Underway

- Throughout 2021, conduct analysis and engagement on potential rate restructuring options for RS 1823
- Consider new default rate options for firm electricity service to transmission service customer class
 - Replace existing Transmission Service Stepped Rate (RS 1823) and Transmission Service - Rate for Exempt Customers (RS 1827)
- Consider other related rate schedules and tariff supplements, e.g.
 - Transmission Service Time of Use (RS 1825), Transmission Service Modified Demand (RS 1852), Transmission Service - Standby and Maintenance (RS 1880), Transmission Service Shore Power Service (RS 1891), and Tariff Supplement 74 – CBL Determination Guidelines
- By the end of February 2021, apply to the BCUC to maintain existing RS 1823 pricing principles while the above work is undertaken
- By the end of March 2021 Report to the BCUC on our progress and plans for rate design
- Work towards a RS 1823 Rate Restructuring Application in the 2021 Power smart

RS 1823 Pricing Principles Application



RS 1823 Pricing Principles Application

- Current RS 1823 pricing principles expire March 31, 2021.
- Current pricing principles apply the F20 and F21 RRA increase/decrease uniformly to Tier 1 and Tier 2 energy rate
- This is a "status quo" application and <u>maintains existing RS 1823 rate</u>
 <u>structure</u>
- Re-price RS 1823 to reflect F22 interim rate increase of 1.16%, energy and demand rates will be escalated uniformly
- Apply to maintain existing pricing principles effective April 1, 2021 and ending March 31, 2022
 - Allows sufficient time to develop RS 1823 Rate Restructuring Application
 - Update BCUC on RS 1823 rate restructuring progress and plan



Current F21 and Proposed F22 TSR Energy Charges

Transmission Service Energy Charges	Final F2021 Rates	Interim F2022 Rates
rate change as approved by the BCUC	-1.62%	1.16%
RS 1823 Tier 1 Energy Charge (\$/MWh)	44.62	45.14
RS 1823 Tier 2 Energy Charge (\$/MWh)	99.95	101.11
Customer site-specific RS 1828 Energy Charge (\$/MWh)	-	-
RS 1880 Energy Charge (\$/MWh)	99.95	101.11
RS 1891 Energy Charge (\$/MWh)	99.95	101.11



RS 1823 Rate Restructuring



BC Hydro's Rate Design Objectives

- 1. Economic Efficiency
 - Rate designs should reflect our costs and send price signals that encourage efficient use of electricity and efficient investment decisions by customers.
 - Better align energy and demand rates with cost of service.
- 2. Decarbonization
 - Rate design should support GHG reductions through electrification where economically efficient.
- 3. Flexibility
 - Rate designs should respond to changes in the economic and policy environment and anticipate the need for greater product and service differentiation in rate design.
 - Flat energy and demand rates are easier to adjust under changing circumstances
 - Rate options will be more straightforward to develop
 - Easier for BC Hydro to manage and customers to understand and plan their operations



Fully Allocated Cost of Service Study (FACOS) and Rate design

- 1. Helps us understand drivers of our costs
- 2. This study calculates how much of our costs are associated with energy, demand and customer care related costs and is a guidepost for pricing
 - One of the Bonbright rate design criteria is fair allocation of costs
- 3. Historically, there has not been a close linkage between the transmission service default energy and demand rates and energy and demand fully allocated cost of service



Review of Energy and Demand Cost Recovery Levels



The F2019 FACOS Study can be found at the	Cost of Service Study	TSR Revenue (\$M)	TSR Energy Revenue (\$M)	TSR Demand Revenue (\$M)	Energy and Customer Related Cost (\$M)	TSR Demand Related Cost (\$M)	Energy and Customer Related Cost Recovery	Demand Related Cost Recovery
following link: https://www.bchydro.com/content/dam/BCHyd ro/customer-	2015 RDA FACOS F2016 Plan	890	695	195	570	305	122%	64%
portal/documents/corporate/regulatory- planning-documents/regulatory- filings/reports/00-2019-03-29-bchydro-f2019- cost-of-service-study-ff.pdf	2019 FACOS F2019 Actual	890.3	669	221.3	581	357.4	115%	62%

RS 1823 Pricing Scenario Methodology

- 1. Estimate target revenue (use F22 RRA load and revenue for illustration)
- 2. Calculate new energy charge or demand charge depending on pricing scenario to achieve F22 target revenue and forecast revenue neutrality
- Estimate cost-based energy charge and demand charge from F19
 FACOS study
 - F19 FACOS TSR demand and energy and customer related costs are divided by F19 TSR kVA and kWh to obtain unit F19 demand and energy unit costs
 - F19 demand and energy unit costs are escalated to F22 using annual RRA increases



RS 1823 Pricing Scenarios

SCENARIO 1: Set Demand Charge at RS 1823 Demand Charge

Set the Demand Charge at RS 1823 Demand Charge and, calculate new Flat Energy Charge to achieve target revenue.

SCENARIO 2: Set Energy Charge at RS 1823 Tier 1 Energy Charge

Set the Flat Energy Charge at RS 1823 Tier 1 Energy Charge and, calculate new Demand Charge to achieve target revenue.

SCENARIO 3: Set Demand Charge at 100% Cost-based Demand Charge

Set Demand Charge to recover 100% of allocated demand costs and, calculate new Flat Energy Charge to achieve target revenue.

Forecast Revenue Neutrality is maintained in all pricing scenarios.

This refers to calculating the energy and demand rates so that the target revenue from the rate class is achieved, and results in no impact to other rate classes.

Target revenue is calculated by the forecast load multiplied by the previous year's rates and the RRA increase.



RS 1823 Pricing Scenarios

F22 Rates	Status Quo	Pricing Scenario 1	Pricing Scenario 2	Pricing Scenario 3
Energy and Customer Cost Recovery	115%	119%	108%	96%
Demand Cost Recovery	62%	62%	80.3%	100%
Demand Charge \$/kVA	8.655	8.655	11.246	14.004
Tier 1 Rate (c/kWh)	4.514			
Tier 2 Rate (c/kWh)	10.111			
Flat Rate RS 1823 (c/kWh)				
Flat Rate RS 1823A and RS 1827 (c/kWh)	5.073	4.989	4.514	4.009

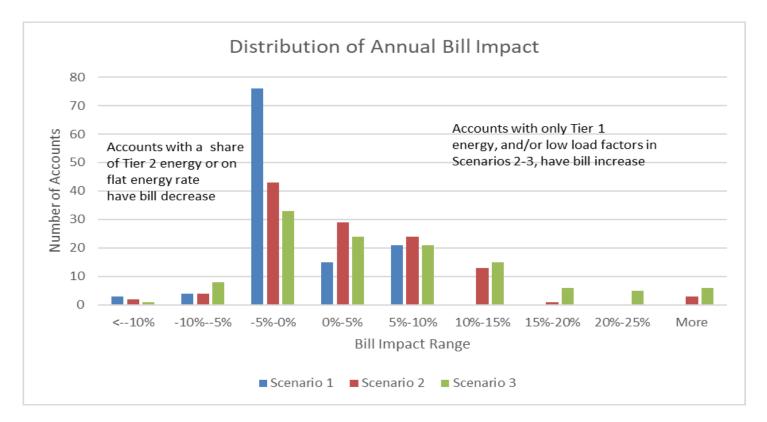


Assessment of the Three Scenarios Against Bonbright rate design Criteria

Bonbright Criteria	Grouping	Remarks
 Price signals to encourage efficient use and discourage inefficient use 	Economic efficiency	 All three scenarios improve alignment with our marginal costs. The flat energy charge in scenario 3 is approximately equivalent to our marginal cost of energy. Across the three scenarios, Scenario 1 is Fair; Scenario 2 Good; Scenario 3 Very Good.
2. Fair apportionment of costs among customers	Fairness	 All three scenarios provide non-discriminatory pricing. Scenario 3 is approximately equivalent to cost based rate designs for
3. Avoid undue discrimination		 energy and demand. Across the three scenarios, Scenario 1 is Fair; Scenario 2 Good; Scenario 3 Very Good.
4. Customer understanding and acceptance; practical and cost-effective to implement	Practicality	 All three scenarios improve ease of understanding and practicality of administration. Bill impacts may lessen customer acceptance. Customers with only Tier 1 energy may have bill increase and customers with Tier 2 energy or on
5. Freedom from controversies as to proper interpretation		flat rate (RS 1823A, RS 1827) may have bill decrease, depending on load factor and pricing scenario.
6. Recovery of the revenue requirement	Stability	 All three scenarios are revenue neutral and collect the revenue requirement.
7. Revenue stability		All three scenarios improve rate stability.Revenue is stable and only varies each year by changes in load and
8. Rate stability		 change in general rate increase. The rate is stable and only changes with general rate increases.

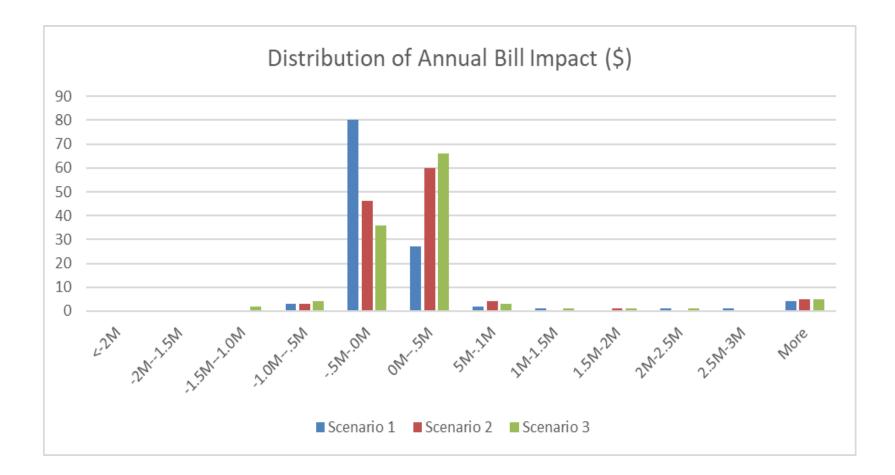


Bill Impact Results by site and CBL aggregated sites



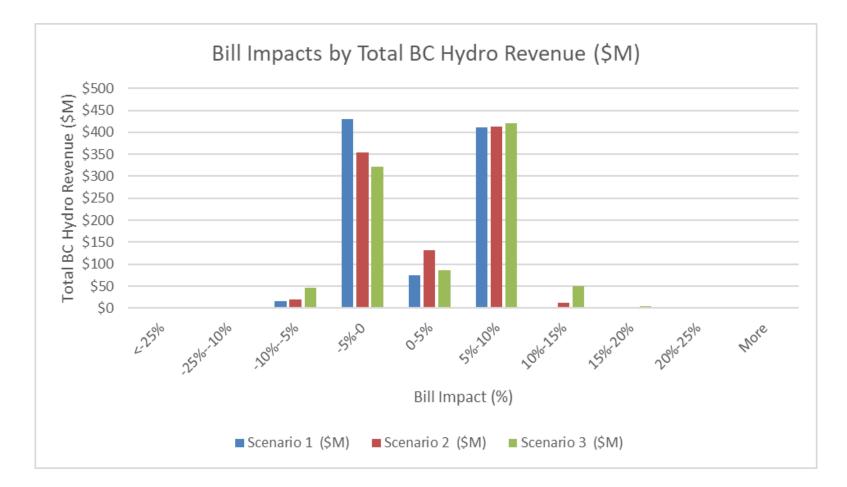
Note: CBL aggregated sites are those that have their site Energy CBLs aggregated under the CBL Determination Guidelines (TS 74) for the RS 1823 Stepped Rate.

Bill Impact Results by site and CBL aggregated sites





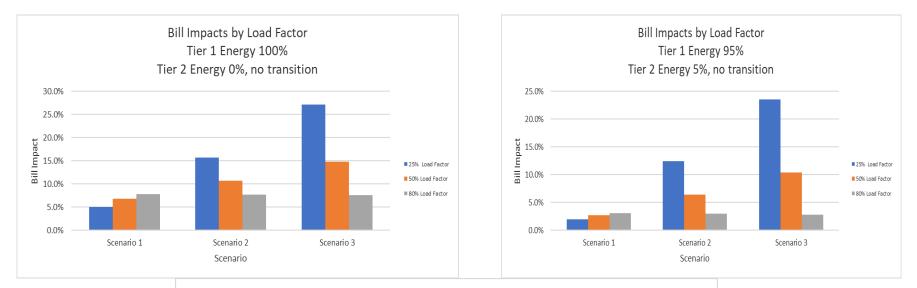
Bill Impact Results by site and CBL aggregated sites

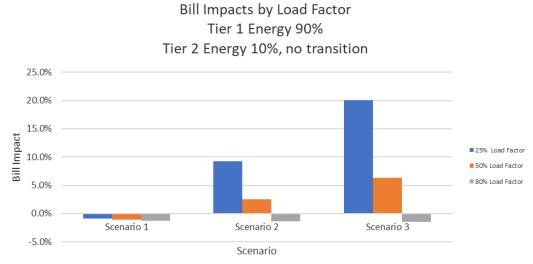




Illustrative Bill Impacts

By Load Factor and Share of Tier 1 Energy – No Transition Period, Assumes 95% Power Factor







Illustrative Bill Impacts

Bill impacts by rate scenario assuming 80% Load Factor and 95% Power Factor

	No CBL or 100% CBL	95% CBL	90% CBL
SCENARIO 1: CURRENT RS 1823 DEMAND			
CHARGE			
Bill Impact %	-1.3%	3.1%	7.8%
SCENARIO 2: CURRENT RS 1823 TIER 1			
CHARGE			
Bill Impact %	-1.4%	2.9%	7.7%
SCENARIO 3: 100% COST-BASED			
DEMAND CHARGE			
Bill Impact %	-1.5%	2.8%	7.6%



Potential Approaches to mitigate bill impacts

- BC Hydro recognizes bill impacts will be a concern to customers and will be covering possible bill mitigation approaches in a future workshop
- We are also seeking customer feedback on alternative pricing and bill mitigation approaches
- Standard regulatory approach would be to transition to restructured rates over a period of time if bill impacts are a concern
- Transition could be delayed by maintaining individual average flat rate for existing customers for a period of time
- Please consider any other ideas and provide feedback



Questions

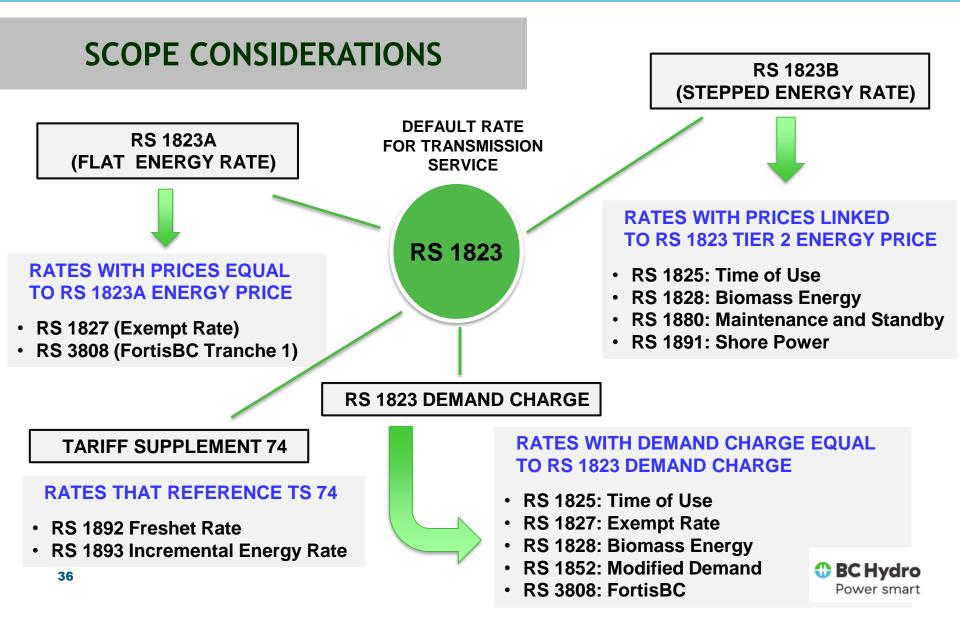




Other Transmission Service Rates: Restructuring Considerations



TRANSMISSION RATES LINKED TO RS 1823



Other Rate Considerations: Firm Transmission Service

- RS 1825 Time of Use Rate
- RS 1827 Rate for Exempt Customers
- RS 1828 Biomass Energy Program
- RS 1852 Modified Demand
- RS 3808 FortisBC Rate*

*not discussed further in this workshop



RS 1825 - TIME OF USE RATE

Demand charge is the same as under RS 1823

- Effective since April 2006
- Optional rate for customers eligible to take service under RS 1823
- No customer has taken service under RS 1825 since inception



RS 1825 - TIME OF USE RATE

Key takeaway: Move to a single flat energy charge under RS 1823 would eliminate energy pricing tiers under 1825



Should BC Hydro develop a new optional time of use rate to replace RS 1825?



RS 1827 - RATE FOR EXEMPT CUSTOMERS

- Effective since April 2006
- Applies to City of New Westminster, UBC and other Customers exempted from RS 1823 by the BCUC
- Rationale for exemption is that customers are "effectively distributors who sell the electricity they purchase onwards to end-use customers"



RS 1827 - RATE FOR EXEMPT CUSTOMERS

Key takeaway: In the absence of the RS 1823 Stepped Rate, there would be no need for exemption from it



- Premise of exemption is that customer does not have direct control over electricity end use, such that it would be unfair for natural load growth to be priced at the higher RS 1823 Tier 2 rate
- Refer also to RS 1892 and RS 1893 discussion (which follows)



RS 1828 - BIOMASS ENERGY PROGRAM

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- Effective since April 24, 2019 (Pursuant to Order in Council #158)
- Specific to customers with an EPA under the Biomass Energy Program
- Energy price based on historical T1/T2 energy mix for F14 F18 (5yrs)
- Results in site-specific flat energy rate for participants

HISTORICAL ENERGY MIX	F2014	F2015	F2016	F2017	F2018			
						5yr TOTAL	TIERED	
FOR ILLUSTRATIVE PURPOSES ONLY						ENERGY SALES	ENERGY MIX	
Energy CBL (MWh)	500,000	500,000	500,000	500,000	500,000		5yr AVE %	
Annual RS 1823 energy purchases (MWh)	480,000	470,000	460,000	450,000	450,000	2,310,000		
Total RS 1823 Tier 1 energy (MWh)	450,000	450,000	450,000	450,000	450,000	2,250,000	97.40%	
Total RS 1823 Tier 2 energy (MWh)	30,000	20,000	10,000	-	-	60,000	2.60%	
Annual Tier 2 energy (%)	6.25%	4.26%	2.17%	0.00%	0.00%			
					Demand charge is equal to			
F2021 PRICING CALCULATION RS 1823 TIERED %			RS 1828		the demand charge			
	\$/MWh	5yr AVE	\$/MWh			U		
RS 1823 Tier 1 energy charge	\$ 44.62	97.40%	\$ 43.46		specified under RS 1823			
RS 1823 Tier 2 energy charge	\$ 99.95	2.60%	\$ 2.60			•		
RS 1828 ENERGY CHARGE (\$/MWh)			\$ 46.06			BC Hydro Power smart		

RS 1828 - BIOMASS ENERGY PROGRAM

Key takeaway: RS 1828 electricity charges are determined using prevailing RS 1823 Tier 1 and Tier 2 energy and demand prices

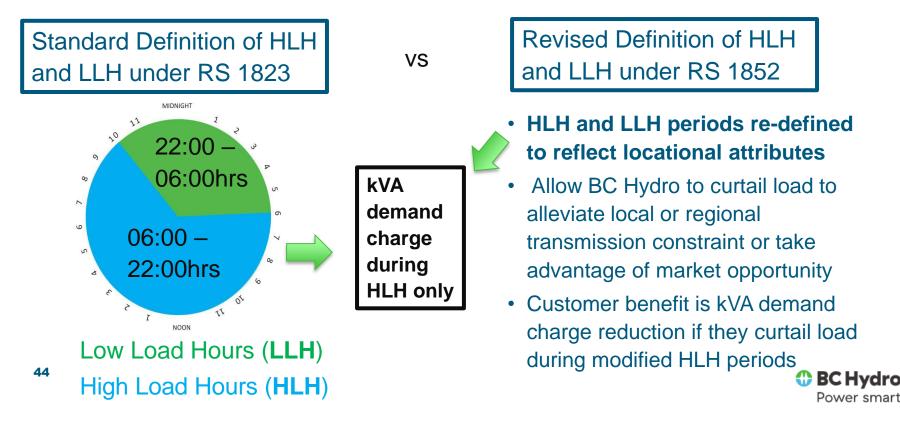


- Changing the pricing of these rates would have commercial implications to each participant customer for the standard 10yr EPA term
- If RS 1823 is restructured, RS 1828 would need to be amended (e.g., to incorporate tiered RS 1823 energy prices and demand charge directly into the rate schedule)



RS 1852 - MODIFIED DEMAND

- Effective since 2000 / Overlay for customers taking service under RS 1823
- Annual Subscription period of September 1st to October 31st
- Customer must sign a Modified Demand Agreement (TS 54) with BC Hydro



RS 1852 - MODIFIED TRANSMISSION DEMAND

Key takeaway: RS 1852 is only available to customers taking service under RS 1823 and in locations determined by BC Hydro



- No customers presently approved to take service under RS 1852
- BC Hydro will consider the need and pricing for regional capacity resources, including load curtailment, as part of its planning
- Do you agree that it is reasonable to defer review of RS 1852 (Modified Demand)?



Other Rate Considerations: Non-firm Transmission Service

- RS 1880 Standby and Maintenance
- RS 1891 Shore Power
- RS 1892 Freshet Rate
- RS 1893 Incremental Energy Rate



🚯 BC Hydro

RS 1880 energy charge

Power smart

RS 1880 - STANDBY AND MAINTENANCE

- Provides standby service on "as available" basis when some, or all, of a customer's self-generation plant is curtailed (forced or planned outages)
- RS 1880 Pricing revised in 2006: HLH energy charge only / no demand charge
- Energy charge aligned to RS 1823 Tier 2 energy charge

is same as RS 1823 Tier SELF-GEN OPERATING 2 energy charge SELF-GEN CURTAILED **60MW 80MW** MW **HLH Reference** RS 1880 energy Demand for RS 1880 PLANT LOAD PLANT LOAD 80 (100 MW) (100 MW) 60 All other energy below the line = RS 1823 energy **G1 G2 G1 G2** RS 1880 event 47 20MW 20MW OMW 20MW LLH HLH HLH IIH HIH LLH HIH

RS 1880 - STANDBY AND MAINTENANCE

Key takeaway: RS 1880 energy charge is aligned with the RS 1823 Tier 2 energy charge (which was set to reflect LRMC)



- RS 1880 service is available to TSR customers with self-generation served under RS 1823, RS 1825, RS 1827, RS 1828, and RS 1852
- Should RS 1880 for customers with selfgeneration be reviewed?



RS 1891 - SHORE POWER

- Shore Power Rate originally designed for Canada Place in 2008
- Rate concept expanded to transmission class as part of 2015 RDA
- Service provided under Shore Power Service Agreement (TS 86)
- Energy charge only (all hours) / no demand charge

Pricing concept was set to be consistent with RS 1880 (i.e., for provision of shore power service when vessel self-generation is curtailed)



RS 1891 energy charge = RS 1880 energy charge = RS 1823 Tier 2 energy charge



RS 1891 - SHORE POWER

Key takeaway: The RS 1891 energy charge is aligned to the RS 1823 Tier 2 and RS 1880 energy charge (set to reflect LRMC)

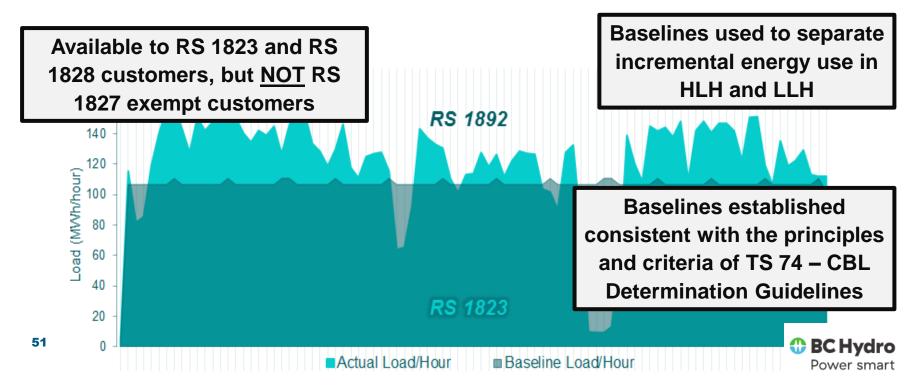


Should RS 1891 for shore power service be reviewed?



RS 1892 - FRESHET RATE

- Initially offered on a 4yr pilot basis, commencing in February, 2016
- Rate made permanent in May 2020
- Encourage incremental energy use during May July freshet period
- Market reference-priced energy charge (Mid-C) plus \$3/MWh adder / no demand



RS 1892 - FRESHET RATE

Key takeaway: RS 1892 is only available to RS 1823 and RS 1828 customers for incremental energy use above established baselines



CBL Determination Guidelines (TS 74) would likely need to be revised to consider RS 1892 baseline determination explicitly

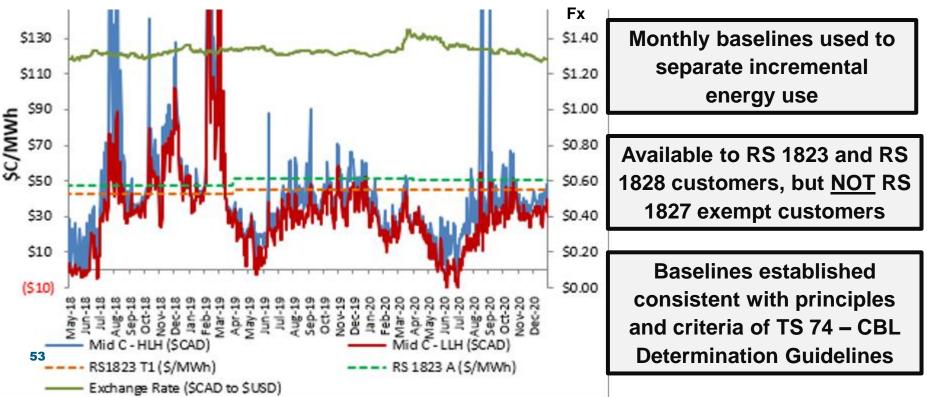
If RS 1823 is restructured, should customers presently ineligible for the freshet rate (such as RS 1827 exempt customers) be eligible for RS 1892 service?



RS 1893 - INCREMENTAL ENERGY RATE



- Offered on a 51-month pilot basis (January 2020 March 31, 2024)
- Encourage incremental energy use all year round
- Market reference-priced energy charge (Mid-C) in HLH and LLH / no demand
- \$3/MWh adder in freshet months / \$7/MWh adder in all other months



RS 1893 - INCREMENTAL ENERGY RATE

Key takeaway: RS 1893 is only available to RS 1823 and RS 1828 customers for incremental energy use above established monthly baselines



- If RS 1823 is restructured, customers may operate differently ... baselines of "normal operations" may need to be revised
- During the 51-month Pilot period, it may be difficult for BC Hydro to properly evaluate load shifting
- Should the CBL Determination Guidelines (TS 74) be revised to explicitly consider RS 1893 baseline determination and adjustment?





Fred James

Chief Regulatory Officer



Next Steps

- 1. Continue TSR stakeholder and customer consultation
- 2. RS1823 Pricing Principles Application Feb 2021
- 3. Progress report on rate design applications March 26, 2021
- Continued engagement with stakeholder and customers Q2/Q3 2021
- 5. Develop RS 1823 Rate Restructuring Application



Closing Remarks: Key Contacts and Process

- BC Hydro values your participation and feedback on our rate designs
- Please contact BC Hydro Regulatory Group with any questions about the regulatory or engagement process: bchydroregulatory@bchydro.com
- Remember to submit your feedback form by February 23, 2021
- The link to the online feedback form is:
- <u>https://bchydro.ca1.qualtrics.com/jfe/form/SV_aWwi7ft2WF37ndl</u>



