Welcome to BC Hydro's

2024 Rate Design Applications (RDA) Workshop

We'll be getting started shortly

How to participate

- Let us know you're here. Please enter your first name, last name, and organization in the chat.
- Video and microphone have been turned off to save bandwidth and eliminate background noise
- The chat function is available for questions and comments
- A copy of this presentation will made available following this session

Technical issues?

Send an email to <u>bchydroregulatoryfeedback@bchydro.com</u>





BC Hydro 2024

Rate Design Applications

Workshop 1 – Session 1





November 27th and 29th, 2023





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Welcome

Background & Context Jurisdiction Review & Whitepaper Residential Overview Non-Integrated Areas Wrap Up & Next Steps



We are grateful to be meeting today on the unceded traditional territory of the Musqueam, Squamish and Tsleil-Waututh First Nations





Time	Торіс	Presenter
9:00 – 9:30 am	Welcome, Background and Context	Chris Sandve, Chief Regulatory Officer
9:30 – 10:30 am	Rate Choices Whitepaper	Sanem Sergici, The Brattle Group
10:30 – 10:45 am	Break	
10:45 – 11:15 am	Residential OverviewBackgroundEngagement Results	Cynthia Curll, Senior Regulatory Specialist
11:15 - 11:45 am	Non-Integrated Areas Rates	Shiau-Ching Chou, Senior Regulatory Manager
11:45 am - 12:00 pm	Next Steps	Chris Sandve, Chief Regulatory Officer



Background and Context

Chris Sandve

Chief Regulatory Officer



BC Hydro's rate design objectives



Affordability

Measured by bill impacts associated with a rate design



Economic efficiency

Measured by how closely the energy charge reflects our marginal cost



Decarbonization

Measured by how much the rate design encourages switching from fossil fuels to clean electricity



Flexibility

Measured by the ability to respond to changes in the economic and policy environments and anticipate the need for greater product and service differentiation in rate design



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Ongoing Rate Design Proceedings

	Transmission Service Rate	Optional Residential TOU Rate	Public Electric Vehicle Charging Rates
Status	Update the current two-step default Transmission rate to a flat rate. Awaiting BCUC Decision	Offer Residential customers bill savings opportunities by shifting their consumption. Awaiting BCUC Decision	Update our public electric vehicle charging rates to recover our costs. Streamlined Review Process in December
Target Launch	April 1, 2024	June 1, 2024	Early 2024

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Jurisdiction Review & Whitepaper Residential Overview





Upcoming – 2024 Applications

Residential Rates	Net Metering Rate	Non- Integrated Area Rates	Tariffs Terms & Conditions	Distribution Extension Policy
 Update RIB Rate Introduce 1-2 more optional rates Other updates 	 Update Net Metering rate Optional Net Metering TOU Rate Other updates 	 Residential rates Commercial rates Distribution extension charges 	 Tariffs terms and conditions Standard charges Meter Choices Program charges 	 Update distribution extension charges Standard connection charges

Target Filing Date: June 28, 2024

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Jurisdiction Review & Whitepaper Residential Overview Non-Integrated Areas





Stakeholder Workshop 1 – Session 1

	Day 1 November 27	Day 2 November 29
	Residential Service Rates	Electric Tariff Terms & Conditions
AM	Non-Integrated Areas Rates	Distribution Extension Policy
РМ	Net Metering Service Rate	

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Objectives for this morning's session

- Provide context for our upcoming rate design activities
- Review other jurisdictions and relevant rate design trends
- Provide a summary of engagement activities to date
- Review considerations for Non-Integrated Areas (NIA) rates
- Review next steps

Residential Inclining Block (RIB) Rate

- Introduced in 2008 to encourage energy conservation
- Applies to 98.7% residential customers



Customers' energy needs are evolving

 Changes in customer energy needs and expectations

Changes in BC Hydro's costs





Customers should have choices

- We can provide rate choices that support electrification and GHG reduction
- Most other service providers provide choice
- Customers are more likely to respond to signals from a rate they've chosen
- Choice may allow bill impacts to be diversified





All Customers should have the same choices



Pricing To Protect Vulnerable Customers

- Types of Bill Discount Programs
 - Flat percentage discount
 - Flat dollar amount discount
 - Rate discount
 - Tiered discount
 - Percentage of income payment plans
- Types of Bill Payment Plans
 - Bill forgiveness and management plans

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• Budget billing

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Rate Choice Whitepaper: An Overview of the Issues

PREPARED BY Sanem Sergici Ryan Hledik PREPARED FOR BC Hydro

BC HYDRO STAKEHOLDER MEETING NOVEMBER 27, 2023



Agenda

- 1. A quick primer on ratemaking concepts
- 2. Issues to be addressed in the whitepaper
- 3. Conclusions
- 4. Q&A



The utility cost structure has three primary components

Energy-Related

- Vary with kWh of energy generated
- What are the costs to provide an additional kWh of energy?
- Fuel, wholesale purchase power

Demand-Related

- Vary with the kW of instantaneous demand, peak capacity
- What are the costs to add capacity?
- Generation, transmission and distribution capacity

Customer-Related

- Vary with the number of customers
- What are the costs to add an additional customer?
- Meters, service drops, poles, billing and customer care

Variable Costs

Fixed Costs

Misalignment between how utility costs are incurred and how they are recovered from customers

The typical residential customer's bill does not match the utility's underlying costs

In the example, the variable kWh charge recovers not only the \$60 of variable costs, but also \$55 of the fixed costs...

...but a utility does not avoid embedded/fixed costs when a consumer reduces its usage

This is problematic and is at the heart of many discussions in rate design and electricity policy



First and foremost function of retail rates is to recover utility's revenue requirement in the most economically efficient and equitable fashion

At the same time, rates should reflect the structure of the costs incurred to serve them and lead to **efficient price signals** to:

- Encourage optimal consumption decisions;
- Lead to bill stability for customers and revenue stability for utilities; and
- Be easily understandable by customers

50,000 Foot View of Rate Setting Process





How large is the pie?

Cost Of Service Study



How do we slice the pie among customer groups?

Rate Design





How should the slices be served? \$/mo, \$/kWh, \$/mcf

Rate designs are evaluated with respect to well known rate design principles



The 8 issues addressed in our paper

- 1. Current trends in residential rate design
- 2. How/why other jurisdictions have provided rate choice
- 3. Considerations when providing increased rate choice
- 4. Whether end-use rates should be considered
- 5. How other utilities have aligned average and marginal costs in rate design
- 6. The various rate choices that BC Hydro may wish to prioritize in evaluating
- 7. How other jurisdictions have mitigated bill increases when changing rate designs
- 8. How other jurisdictions have addressed customer ability to pay for electricity



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Current trends in residential rate design

Growing focus on deploying time-varying rates

- Drivers: Produce benefits from AMI deployment, integrate renewables
- Several US states moving to default TOU (BC Hydro proposal is opt-in)

Reforms to improve equity in rate design for customers with distributed generation

- Drivers: Growing adoption of DG, concerns about cost shift
- Gradual reform of net metering policies
- DG rate reform is outside the scope of this paper

Rates to facilitate positive economics for customers with electric vehicles/heating

- Drivers: Consistency with decarb goals, mitigating grid capacity constraints
- Key issue: Whether or not to provide end-use specific discounts through rates

Move toward rate choice

• See next slide



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Other jurisdictions with rate choice

- Residential customers are heterogeneous, with varying preferences
- Several utilities moving toward increased rate choice (see Georgia Power example at right)
- Drivers: Customer base more engaged in and flexible with energy use
- Key to success: Meaningfully differentiated choices, sufficient number of options without overwhelming customers

Example: Rate Choice at Georgia Power



Source: Georgia Power website.

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Considerations when providing rate choice

Potential advantages

- Improved customer satisfaction
- Economically efficient electricity consumption
- Achievement of policy goals
- Improved energy affordability

Potential challenges

- Revenue loss
- Customer confusion
- Bill increases for some customers

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Whether end-use rates should be considered



As a general matter, it is preferable to offer technology-neutral rates

- Cost-based rates still can be designed with a technology's operating characteristics in mind
- Policy goal of subsidizing technology more efficiently achieved through other means

However, there could be some conditions that support end-use rates

- If demonstrated that customers with certain technology have different cost to serve
- If there is a legacy end-use rate, then a gradual transition to cost-based rates may be needed
- When there is a critical, urgent policy goal, temporary rate discounts have been used by some utilities. But it's a slippery slope.

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Economic theory predicates that pricing goods at the marginal cost maximizes economic efficiency as it mimics the pricing structure and resulting resource allocation of a competitive market

- Ideally we want to send price signals that reflect marginal costs while recovering revenue requirement; however marginal costs rarely match embedded costs
- One approach is to integrate marginal cost price elements to the rate design as much as feasible, still ensuring the recovery of the embedded costs
- Various degrees of marginal pricing can be integrated into alternative rate designs choices

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Group 1: Rates already offered/proposed

Inclining block rate

- They provide an efficiency incentive (maybe)
- But difficult to establish a cost basis (cost do not increase over billing cycle)
- One possible approach: Lower priced energy for "essential usage"

Time-of-use (TOU rate)

- Recently proposed by BC Hydro
- Further changes not recommended until gaining experience with rate offering

Peak Time Rebates (PTR)

- BC Hydro offers it as a demand response program
- Can be effective in producing demand reductions when offered on an opt-out basis

Group 2: Rates to consider now



Flat volumetric rate

- Most common residential rate design
- Could establish foundation for eventually transitioning away from IBR

Demand-based rate

- Useful for recovering demand-based grid costs
- Can be combined with other rate features and measured/billed in a variety of ways

Critical peak pricing (CPP)

- Provides stronger/more dynamic signal than simple TOU (and can be combined with TOU)
- Price signal reflects driver of capacity costs
- Could appeal to customers with high degree of flexibility, orientation toward bill savings



Group 2: Rates to consider now

Subscription pricing "plus"

- An entirely fixed monthly charge for electricity
- Based on the customer's historical weather normalized usage plus a risk premium
- The "plus": Offer is coupled with energy efficiency or demand flexibility measures as a prerequisite for enrollment, to otherwise address lack of incentive for efficient consumption
- For example: Bundle with smart thermostat that is pre-enrolled in DR, or provide quarterly rebate if weather normalized usage doesn't increase
- Provides simplicity and predictability to participants while encouraging EE/DR from a customer segment that may otherwise be unwilling to adopt those measures
- See next slide for examples



Current SP+ bundles include smart thermostat-based DR, EV charging, and clean energy





Group 3: Lower-priority rate options

Real-time pricing: Granular price signal, but it is unnecessarily complex for the vast majority of customers at this time

Straight fixed-variable (SFV) pricing: Demand-based grid costs are more appropriately recovered through demand charge or time-varying energy charge

Fixed bill: Needs "plus" element to encourage efficient consumption

Green pricing: BC Hydro supply mix already is largely carbon-free

Locationally differentiated prices: Challenging to introduce, may be better addressed through locationally-varying demand response incentives

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Mitigating bill increases when changing rate design

First, conduct bill impact analysis using historical load data

- Ideally conducted for specific sub-segments of customers
- Should capture multiple years of weather conditions
- Consider not just annual bill change, but also monthly variation

Then, identify options for mitigating large bill changes. Examples:

- Initial departure from purely cost-based rate, with gradual ongoing move in that direction
- Temporary bill protection
 - Can be limited to extreme cases (i.e., bill won't increase more than 10%)
 - Can be accompanied with shadow bills
- Introduce rate design change separately from overall rate increase
 - Avoid perception that bill increase is attributable to rate design



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8. How other jurisdictions have addressed customer ability to pay for electricity

How other jurisdictions have addressed customer ability to pay for electricity

Affordability has become the centerpiece of regulatory and energy policy decisions in many jurisdictions

These jurisdictions offer various energy bill assistance programs, each with their own pros and cons:

Bill discount programs

- 1. Flat percentage discount programs
- 2. Flat dollar amount discount programs
- 3. Rate discount programs
- 4. Tiered discount programs
- 5. Percentage of income payment plans (PIPP)

• Bill payment plans

- 1. Bill forgiveness and arrears management plans
- 2. Budget billing





BC Hydro has identified these eight issues as important to informing its rate design efforts going forward

We will develop a whitepaper which will present the experiences of other jurisdictions in these areas, and make recommendations for BC Hydro considering its unique circumstances

We are looking for your feedback on:

- Are these the right issues to be exploring?
- Are there other issues that should be added?
- Your feedback on our initial thinking on each of these issues
 - What do you agree with and why?
 - What do you disagree with and why?
 - What's missing?

Phase I Residential Customer Engagement

Cynthia Curll

Senior Regulatory Specialist



Engagement Goals

- Engage customers and stakeholders
- Learn about customers' preferences and attitudes about electricity use
- Consider customers' future needs
- What does customer "choice" mean when it comes to rate options?

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• What does affordability look like for customers?

Jurisdiction Review

& Whitepaper

• Gather reactions to rate concepts

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Residential Customer Characteristics



Customer Engagement Summary



Phase 1

Quantitative: Survey

- Oct 26 Nov 3
- Customers and recruited renters and home-based businesses
- 1,123 responses (1,020 customer accounts, 103 non-customer accounts)

Representative Customer Sample

- · Specific recruitment for landlords and renters
- Dwelling type, primary space and water heating source
- Future electricity needs (e.g. EV, solar generation, battery storage)
- Bill management and awareness
- Perception on electricity and current rate
- Rate options exploration



Customer Engagement Summary



Qualitative: Digital Dialogue

- Nov 7 & 8
- Customers and recruited landlords, renters and home-based businesses
- 32 participants (28 customer accounts, 4 non-customer accounts)

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Diverse Representation

- Specific recruitment for landlords and renters
- Region, dwelling, income, EV, age range
- What they value in plans (i.e. cell phone)
- · Understanding of electricity rates and bills
- Learn about their electricity needs today, and in the future
- Perception on choice, energy affordability and energy consumption
- Rate options exploration

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Rate Design Options



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Concepts we sought feedback on

Design	Description	Design	Description
Two-tier inclining block	Lower price per kilowatt-hour for an initial amount of usage	End-use	Lower rate to charge electric vehicles or operate a heat pump
Two-tier declining block	Lower price per kilowatt-hour for incremental usage	Pre-pay	Prepay for electricity and top-up as needed (like prepaid cell phones)
Flat Rate	Same charge per kilowatt-hour	Subscription	Bundle additional BC Hydro services (e.g. public EV charging, program offers)
Fixed Bill	Same price each month based historical consumption	Fixed Monthly Plan	Fixed minimum monthly fee for a block of energy
Time of Year	Plan based on time of year (i.e. lower rates in the winter given higher usage)	Smart Devices	Allows BC Hydro to manage the use of certain devices during critical peak periods for the electrical system
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Preference for Electricity Billing Options: "Choice"



Top Electricity Priorities



Top Electricity Priorities

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		I can choose options that work together with new technology that can help me save	6% 12% 15% 3 3%
	Total Ranked 1-3	The amount I owe on my bills is similar throughout the year	10% 11% 9% 31%
	Ranked 3rd	I can choose options that help me save based on my lifestyle and needs	15% 18% 20% 52% 2
	Ranked 2nd	I pay the same price per kilowatt-hour no matter how much electricity I use	17% 11% 9% 37%
	Ranked 1st	The electricity I use is clean and helps reduce B.C.'s reliance on fossil fuels	21% 15% 13% 49% 3
		I believe every customer should have access to reliable service	30% 22% 13% 65% 1

How Should BC Hydro Support Customers Experiencing Challenges Affording Their Electricity Bills?



Periodic discounts (e.g. winter discounts during periods of high consumption) Provide a minimum level of electricity free of charge Introduce an additional amount of electricity usage at a cheaper price Waive basic charge Subsidy program with percentage discount per period Capped electricity charge (maximum bill up to a certain dollar amount) Subsidy program with fixed discount per period

No, I don't think BC Hydro needs to provide support to those experiencing challenges with affording their electricity

Qualitative Dialogue Highlights

Jurisdiction Review

& Whitepaper



Participants were asked what they value in an electricity rate plan. It differed between three key "wants", but affordability was important to all.

Offers AFFORDABILITY



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Qualitative Dialogue Highlights



Most participants found the idea of choosing from different rate plans appealing. However, having too many options can be overwhelming: **3-4 options is ideal**.

- Increases confidence that a plan will suit their needs.
- More accepting of rate plan.

"If you give customers a choice of 3 plans then they are probably more accepting of changes instead of changing the rate structure and forcing changes on them."

-Male, 50-65, LM, Homeowner, Gas Furnace, Landlord

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Qualitative Dialogue Highlights



Unaided, participants described **time-of-use** as a rate choice they would prefer, followed by modifications to the **current two-tier rate**, **and the flat rate**.

Time-of-Use	Modifications to the current two-tiered system	Flat Rate
Discounts for off-peak hours	 More than two tiers Increase tier-two threshold Lower tier rates 	 Pay per use Simple Everyone paying the same rate seemed "fairer" to some

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Jurisdiction Review & Whitepaper



Non-Integrated Areas (NIA) Rates Overview

Shiau-Ching Chou

Senior Regulatory Manager



NIA Background and Overview



- 2 Rate Zones (Zone II and IB)
- 14 non-integrated areas
- 28 communities
- ~8,000 customer accounts

Zone II	Zone IB
 Anahim Lake Atlin Bella Coola Dease Lake Elhlateese Fort Ware Good Hope Lake Haida Gwaii Hartley Bay Jade City Telegraph Creek Toad River Tsay Keh Dene 	• Bella Bella

NIA Background and Overview

Rate Zone II

- Created in 1967.
- ~5,000 residential accounts, ~1,100 commercial accounts, ~\$13M annual revenue.
- Renewable sources such as small hydro supplies about half of the energy in NIA and the other half relies on diesel generation.
- Cost of service is approximately 3 times of Zone I (integrated area).

Rate Zone IB

- Came about as a result of BC Hydro's 2007 Rate Design Application.
- ~640 residential accounts, ~120 commercial accounts, ~\$2M annual revenue.
- The BCUC approved Bella Bella to take service under the Zone I rates.
- However, since that time, Zone I rates were updated without corresponding changes to Zone IB rates.

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Residential Rates

Consumption

F2024	Zone I	Zone IB	Zone II
Basic Charge (¢/day)	21.17	22.58	22.58
Energy Charge (¢/kWh)	Step 1: 9.75 (675 kWh) Step 2: 14.08	11.47	Step 1: 11.47 (1,500 kWh) Step 2: 19.70
19.70/kWh 14.08/kWh 11.47/kWh 9.75/kWh Zone 1		Zone II Zone IB	All NIA custome are expected to less or the same depending on the designs of Zone rates.
Rate	675 kWh per month	1,500 kWh per month	



Small General Service Rates

F2024	Zone I and IB	Zone II
Basic Charge (¢/day)	36.94	27.08
Energy Charge (¢/kWh)	12.70	Step 1: 12.89 (7,000 kWh) Step 2: 21.46



Medium / Large General Service Rates

F2024	Zone I MGS	Zone I LGS
Basic Charge (¢/day)	27.08	27.08
Energy Charge (¢/kWh)	9.81	6.14
Demand Charge (\$/kW)	5.48	12.50

F2024	Zone IB GS > 35 kW	Zone II GS > 35 kW
Basic Charge (¢/day)	27.08	27.08
Energy Charge (¢/kWh)	Tier 1: 12.89 (14,800 kWh) Tier 2: 6.19	Tier 1: 12.89 (first 200 kWh per kW of billing demand per month) Tier 2: 21.46
Demand Charge (\$/kW)	First 35 kW: 0 Next 115 kW: 6.57 Any Additional kW: 12.61	-

Customers' bill impacts will depend on their load profile.



Most customers are expected to have bill savings.



A small number of customers are expected to pay more due to their low load factors.

Encourages inefficient use of electricity.

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Wrap Up and Next Steps

Chris Sandve

Chief Regulatory Officer



Next Steps









BC Hydro Power smart