

Welcome to the Net Metering Rate Design Workshop

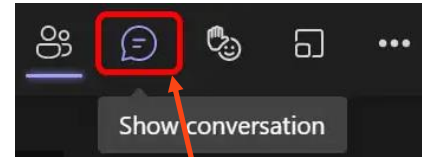
We'll be getting started shortly

How to participate

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- Video and microphone have been turned off to save bandwidth and eliminate background noise
- The chat function is available for questions and comments
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Technical issues?

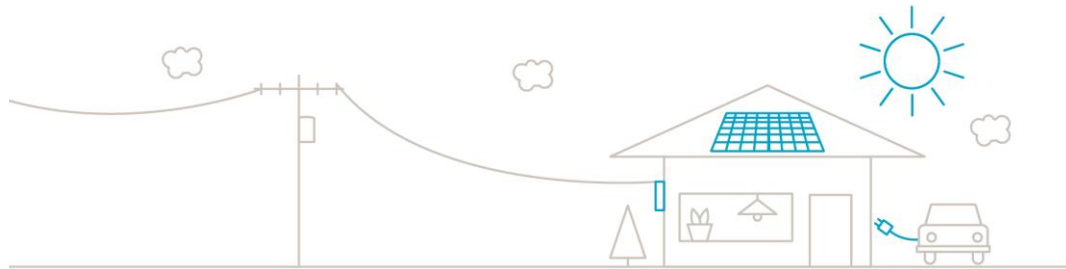
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Net Metering Rate Design Workshop

March 29, 2023



Workshop Agenda

Time	Agenda item	Presenter
9:00 – 9:05	Welcome	Taver Bahrami, Senior Regulatory Advisor
9:05 – 9:35	Background and context	Daren Sanders, Director, Customer Operations
9:35 – 10:00	Net metering service update	Jenn Shum, Program Manager
10:00 – 10:30	Summary of jurisdictional review	Sanem Sergici, Principal, The Brattle Group
10:30 – 10:45	Break	
10:45 – 11:45	Areas of focus and your feedback	Chris Sandve, Chief Regulatory Officer
11:45 – 12:00	Wrap up and next steps	Chris Sandve, Chief Regulatory Officer

Objectives for Today's Session

- Provide an overview of BC Hydro's net metering service
- Provide a summary of how other North American utilities are evolving their net metering services
- Explore potential changes to our net metering service and seek your feedback
- Provide an update on next steps

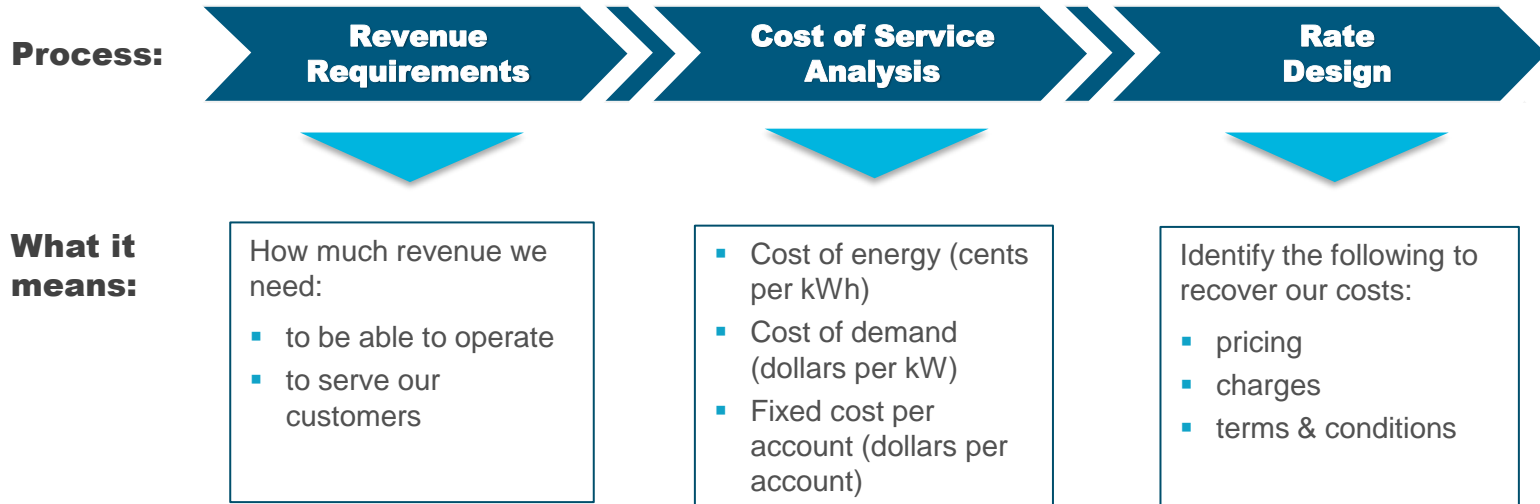
Background and Context

Daren Sanders

Director, Customer Operations

What is Rate Design?

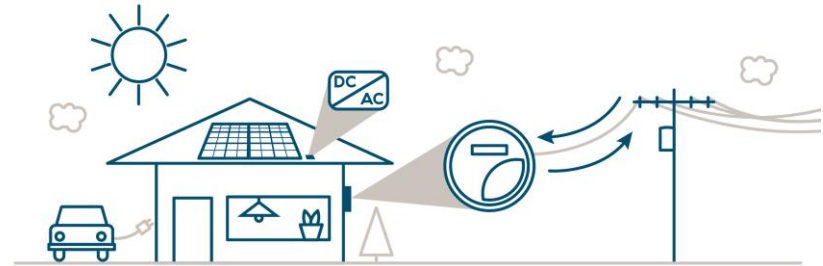
Rate design refers to pricing, charges, and terms & conditions of service



Net Metering Service

BC Hydro's net metering service is available to residential and general service customers under Rate Schedule (RS) 1289. Customers can connect a renewable electricity generating unit to:

- Power their home or business;
 - Save on their electricity bills by offsetting their electricity consumption; and,
 - Rely on power supply from BC Hydro's grid, when needed.
- Customers that don't generate enough to full offset their consumption are billed for energy and demand (as appropriate) under the applicable rate schedule.
 - Customers' excess generation is sent to BC Hydro's system and is recorded as generation credits on their account to offset future bills.
 - Any unused generation credit is paid out to customers annually according to the energy price set out in RS 1289.



Annual payout example

- From March 1, 2021 to February 28, 2022, BC Hydro's meter recorded:
 - 11,000 kWh of electricity deliveries to BC Hydro's system
 - 10,000 kWh of electricity consumption by the home
 - On March 1, 2022, the customer had 1,000 kWh of excess generation credits
- The customer is paid \$61.90 on their anniversary bill:
 - The daily average wholesale price in 2021 was 6.19 cents/kWh
 - $1,000 \text{ kWh} * 6.19 \text{ cents/kWh} = \61.90
- For a non-net metering customer with 10,000 kWh annual consumption:
 - Total annual energy charge = \$1,056.25
 - Step 1 energy charge
 - $7,500 \text{ kWh} * 9.39 \text{ cents/kWh} = \704.25
 - Step 2 energy charge
 - $2,500 \text{ kWh} * 14.08 \text{ cents/kWh} = \352.00

Previous Net Metering Rate Applications

2004

Net metering program established (in response to the *2002 Energy Plan*)

- Generation nameplate capacity limit of 50 kW
- 12 month period between surplus energy payments
- Energy price of 5.40 cents per kWh

2008

Updated energy price from **5.40 cents** per kWh to **8.16 cents** per kWh to align with Standing Offer Program

2011

Updated energy price from **8.16 cents** per kWh to **9.99 cents** per kWh to align with Standing Offer Program

2014

Increased generation capacity limit from **50 kW** to **100 kW**

2015

Updated eligibility to allowed customers to own or lease clean or renewable generating facilities



Previous Net Metering Rate Applications

2019

Updated energy price

- Customers accepted as of April 28, 2019
Transitional energy price of 9.99 cents per kWh for five years (until April 30, 2024).
- Customers accepted after April 28, 2019
The previous calendar year's daily average Mid-Columbia price

All customers assigned a March 1 default Anniversary Date with one opportunity to change the date

Average Mid-C Price

2019	4.87 ¢ / kWh
2020	2.85 ¢ / kWh
2021	6.19 ¢ / kWh
2022	10.60 ¢ / kWh

2020 Net Metering Evaluation Report

- The average value of generation credits to net metering customers was higher than the market value of that energy.
 - The difference was greater for customers with hydropower generation than for customers with solar generation.
- When customers use excess generation to offset future bills, they reduce their energy charges.
- This creates a mismatch because the excess generation primarily represents reduced energy-related costs but the avoided energy charges also include demand-related costs and some customer-related costs.

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

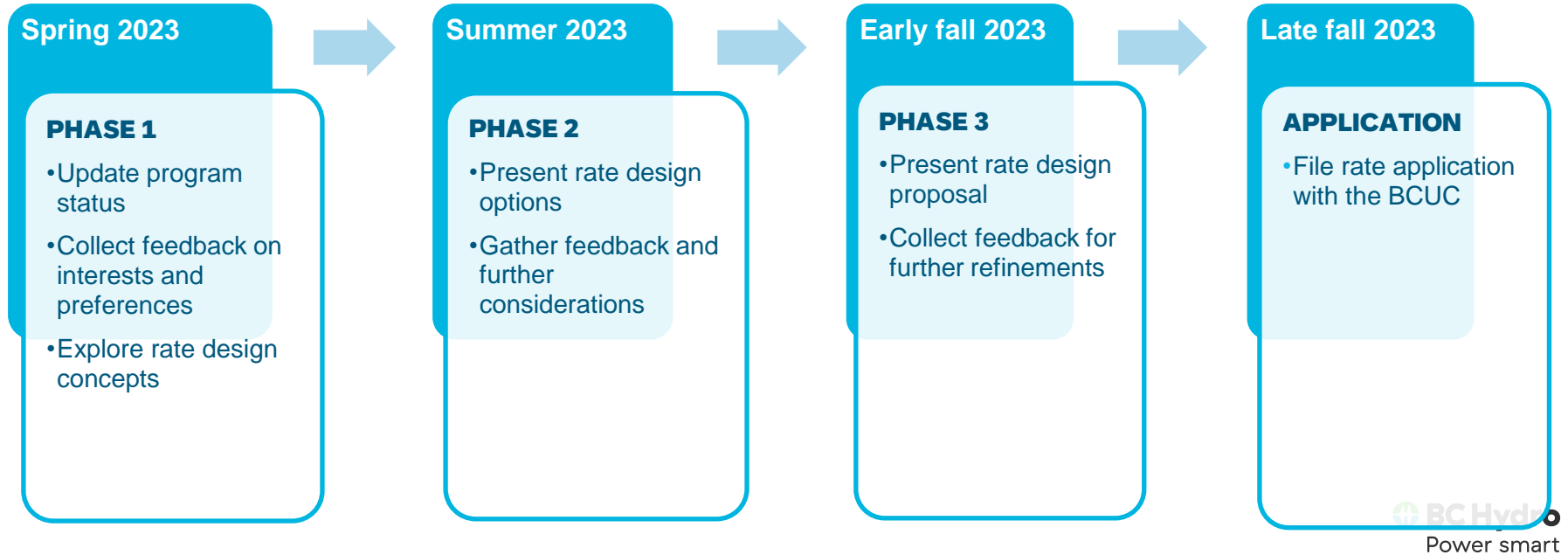
Measured by how much the rate design encourages switching from fossil fuels to clean electricity



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

Net Metering Rate Design Consultation



Net Metering Service Update

Jenn Shum

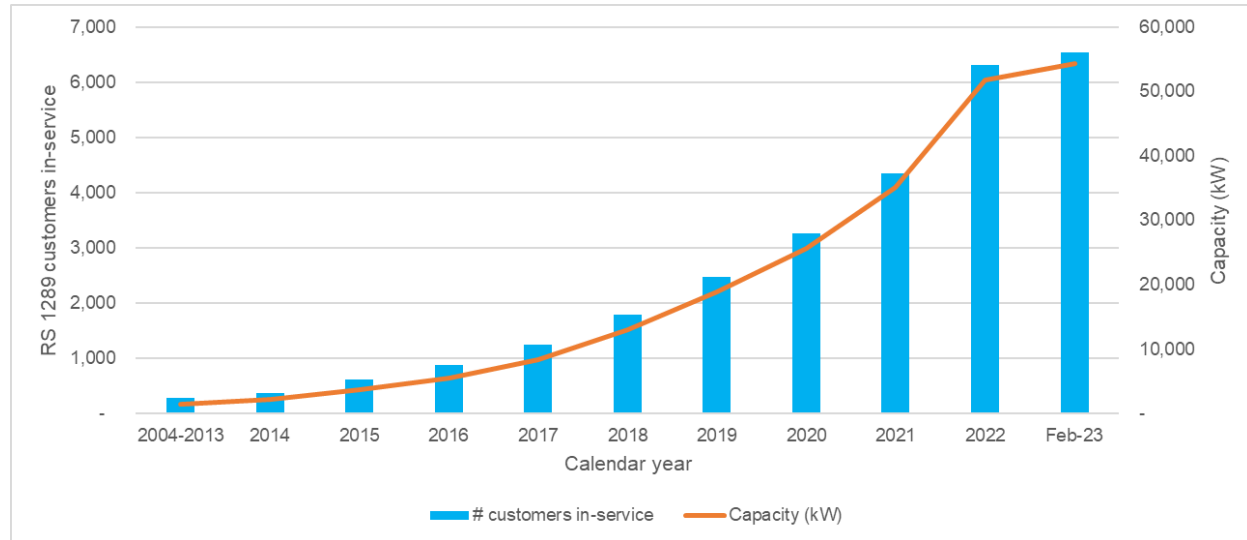
Program Manager

Net Metering Service Update

The number of net metering customers has grown significantly over the past four years

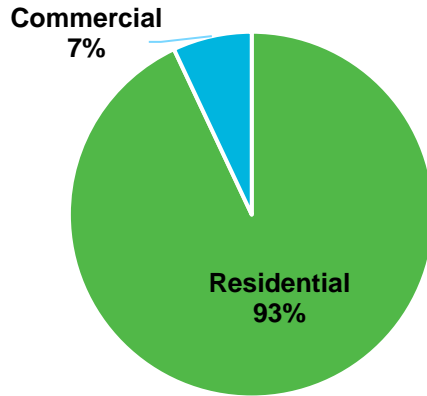
- As of February 2023, there are approximately **6,500** net metering customers.
- Total connected generation capacity is approximately **55 MW**.

Equivalent to powering ~40,000 electric vehicles using Level 1 charging



Net Metering Customers

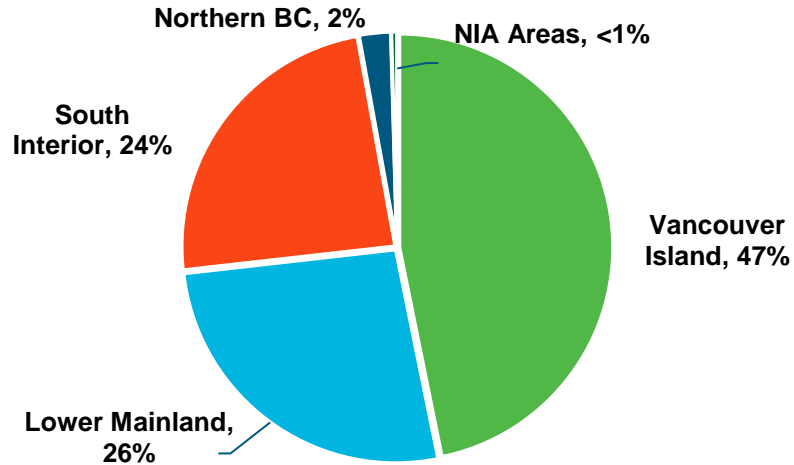
Participation by sector



- Residential customers enrolled in net metering consume about 40% more electricity than the average residential customer
- Average bill of a residential solar net metering customer is \$138 per month
- Average bill of a residential non-net metering customer is \$94 per month.

Net Metering Customers

Participation by region



Net Metering Projects

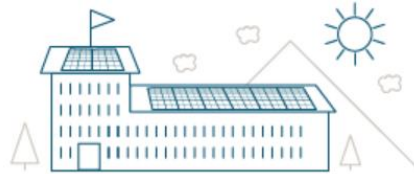
Types of projects



Simple Net Metering

For inverter-based projects up to 27 kW in size with a self-contained revenue meter for service 200A or less

91% of applications

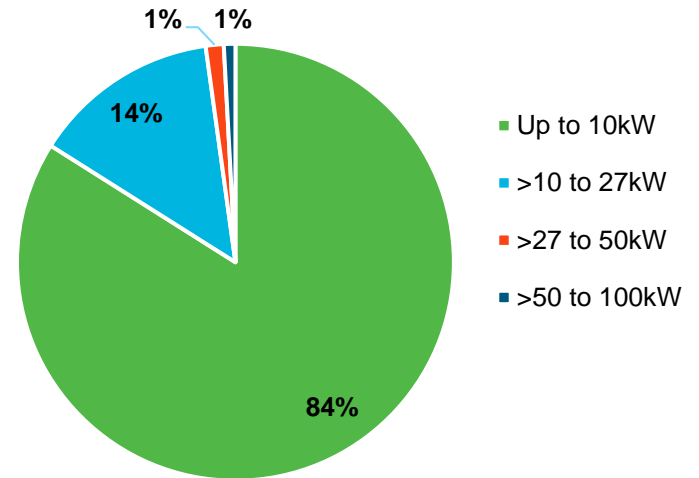


Complex Net Metering

All other projects up to 100 kW

9% of applications

Project size



Net Metering Generation Technology

Generation technology	# of customers
Solar	6,513
Hydro	17
Wind	9
Wind / Solar	5
Hydro / Solar	2
Biogas	1
Total	6,547



Power smart

Net Metering Excess Generation

	2019	2020	2021	2022
# of Net Metering Customers	2,473	3,268	4,352	6,302
# of Customers Received Payout	621	355	350	446
Excess Generation (MWh)	4,550	2,815	4,333	3,676
Transitional / Mid-C energy price (¢/ kWh)	9.99	9.99 / 4.87	9.99 / 2.85	9.99 / 6.19
Total Annual Payment (\$)	\$454,588	\$280,627	\$414,384	\$345,314

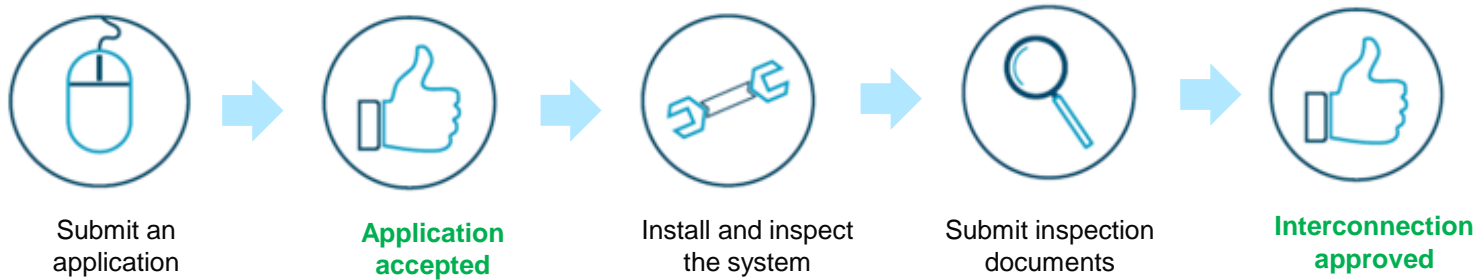
Net Metering Excess Generation

- **Excess hydro generation**
 - On average, 64% of hydro customers received annual payments, representing 71% of annual payments.
 - In 2022, payments for hydro generation averaged \$24,500 per customer, with a high of \$76,000.
- **Excess solar generation**
 - On average, 13% of solar customers received annual payments representing the majority of the remaining 29% of annual payments.
 - In 2022, payments for solar generation averaged \$238 per customer, with a high of \$6,200.



Net Metering Service Application Process

Focus on operational improvements



Application Process Improvement

PDF application form in the past

Simple Net Metering application form BC Hydro Power smart

Visit bchydro.com/netmetering to submit your application online for faster processing. Note: Customers must provide the email address that is currently used for their BC Hydro online bill (MyHydro).

Please send any questions and submit completed forms to: netmetering@bchydro.com

Net Metering site and account holder info

This Simple Net Metering application is for:

Service address (the location of this generator system)

Street address:

City:

Site name (if applicable):

Service voltage: Main switch size:

BC Hydro account number: BC Hydro meter number:

BC Hydro account holder name (as it appears on the bill):

Account holder phone number:

Account holder email:

Contact name (if the account holder name is a business entity):

GST # (if the account is on a general service business rate):

Contractor or installer information

Contractor or installer name:

Email:

Company name (if applicable):

Generator system information

Generator energy source:

If other, please specify:

Installed generator capacity (kW DC)

Inverter 1: manufacturer model

If your inverter is not on this list, please specify:

Number of inverters:

Inverter 2 (optional): manufacturer model

If your inverter is not on this list, please specify:

Number of inverters:

Total nominal output capacity of all inverters:

Does the generator system include battery?

If the answer is yes, please describe:

Complex Net Metering application form BC Hydro Power smart

Visit bchydro.com/netmetering to submit your application online for faster processing. Note: Customers must provide the email address that is currently used for their BC Hydro online bill (MyHydro).

Net Metering site information

This Complex Net Metering application is for:

Service address (the location of this generator system)

Street address:

City:

Site name (if applicable):

Service voltage: Main switch size:

BC Hydro account number: BC Hydro meter number:

BC Hydro account holder name (as it appears on the bill):

Account holder phone number:

Account holder email:

Contact name (if the account holder name is a business entity):

GST # (if the account is on a general service business rate):

BC Hydro account holder acknowledgement and privacy statement

By applying for Net Metering Service (Rate Schedule 1289 of the BC Hydro Electric Tariff) you acknowledge that you have read and understand the Net Metering Service requirements and the Distributed Generation Technical Interconnection Requirements—100kW and Below, and that you agree to comply with these requirements and design, install, operate and maintain your generator in accordance with applicable governmental and BC Hydro standards and requirements.

The personal information you provide to BC Hydro in support of this application is collected in furtherance of BC Hydro's mandate under the Hydro Power and Authority Act and the Utilities Commission Act and for the purposes of:

- communicating with you regarding processing and managing of your application, the interconnection of your generator, and the net-metering relationship;
- providing you with news and information about the net metering program; and
- inviting you to participate in surveys, questionnaires or other engagement activities on the net metering program.

If you have any questions about the collection of your personal information or its use in connection with this program, please contact the net-metering team at net_metering@bchydro.com.

Contractor or installer information

Company name (if applicable):

First name: Last name:

Phone number: Email:

Complex Net Metering Distributed Generator system information

Energy source:

If other, please specify:

Installed generator capacity (kW)

Single phase Three phase Output voltage:

Synchronous, induction or inverter-based systems

The system is: synchronous of induction (Complete section A) inverter-based (Complete section B)



Online application launched in June 2022

Home > Accounts > MyHydro > Connection requests > Net metering application

Net metering application

If you're interested in installing a new or expanded generating system as part of our net metering program, begin your application below. If your contractor has already created a draft application on your behalf, refer to the bottom of the page to continue a draft application.

Application type Contractor Info Generating system Submit

Start a new net metering application

Before you begin:

- Make sure you've read about the net metering installation process
- Have the following information ready:
 - BC Hydro account number
 - Meter number
 - Generating system specifications
- The application takes approximately 10-15 minutes to complete.
- Note that unsubmitted applications won't be saved

Application type

What is your role?

- I'm the contractor
- I'm the customer

Project type

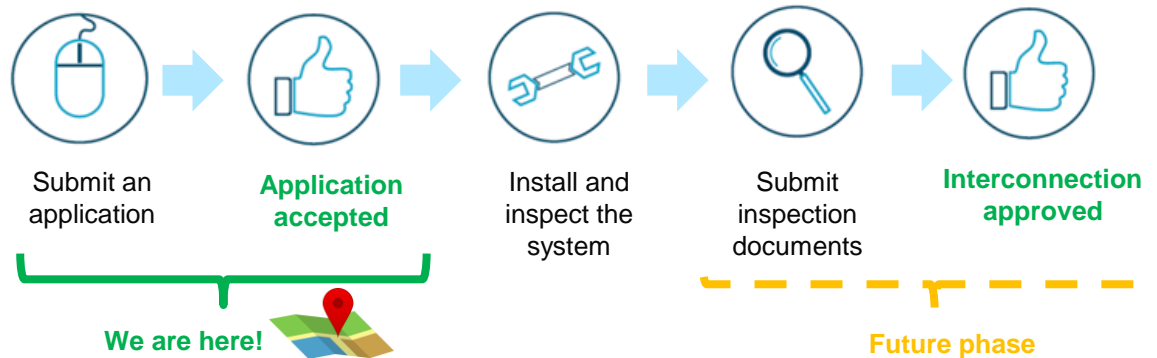
- New generator
- Addition to an existing generator
- Replacement of an existing generator

Cancel

Next

Future Process Improvements

- We are continuing to pursue iterative systems and operational improvements
- Further functionality is expected to be added to the online application later this year



Net Energy Metering Reform

JURISDICTIONAL REVIEW AND RECENT TRENDS

PRESENTED BY
SANEM SERGICI, PH.D.

PRESENTED FOR
BC HYDRO

MARCH 29, 2023



Reforms to NEM are underway in many jurisdictions

Traditional net metering policies are generally associated with two challenges:

- Determining the fair compensation for the value NEM customer provides to the system
- Shifting of cost recovery to other customers when NEM customers reduce their volumetric consumption

Several provinces and US states are replacing net energy metering (NEM) with new iterations

- Motivated by a desire to make compensation for solar injections more cost-reflective and minimize cost-shifting to other customers

Some jurisdictions also pursue rate design reforms in parallel to NEM reforms

As part of the process, existing NEM customers are often grandfathered for a period of time

NEM Design – Compensation Mechanism

Compensation Mechanisms	Description	Metering Requirements
Traditional NEM (NEM 1.0)	<ul style="list-style-type: none"> Customer generation offsets consumption; excess generation is credited to account at the retail volumetric rate Excess credits are typically carried over for some prescribed period (often 1 year) before being forfeited or cashed out at a pre-determined rate 	Can be implemented with legacy utility meters as excess generation simply “rolls back” the meter
Net Billing	<ul style="list-style-type: none"> Exports are compensated at a different rate than the volumetric charge Some jurisdictions also impose “non-bypassable” charges (components of the rate that cannot be avoided) 	Requires a smart meter for netting intervals shorter than a billing cycle
Buy All – Sell All	<ul style="list-style-type: none"> Customers pay for their gross consumption (i.e. their load before netting out any solar generation even if it is consumed on-site) at the retail rate Customers are compensated for all generation at a predetermined sell rate 	Requires the solar array to be separately metered
Parallel Redesign of Retail Rate Structures	<ul style="list-style-type: none"> Many jurisdictions are making rate design modifications in parallel to NEM reform as part of the overall change to compensation for NEM customers Common changes include TOU rates or increased fixed charges; demand charges are another less commonly used option 	TOU and demand charges require more advanced meters

NEM Design – Eligibility Criteria

Eligibility Criteria	Notes
Eligible Technologies	<ul style="list-style-type: none"> Technologies eligible for net metering programs vary by jurisdiction (e.g. New Mexico allows net-metering of electricity generated from landfill gas, Florida does not) Some states or utilities limit qualifying technology to renewables, while others allow all customer-owned generators
Applicable Customer Classes	<ul style="list-style-type: none"> Most jurisdictions allow both residential and commercial customer classes to be eligible for net metering
Individual Customer Capacity Limit	<ul style="list-style-type: none"> Some jurisdictions set system capacity limits to regulate the size of individual net-metered installations Capacity limits can be defined either in terms of load (e.g. 2 MW in Florida) or as a percentage of annual demand (e.g. 100% of customer’s demand in California)
Program Size Cap	<ul style="list-style-type: none"> Many states have aggregate net metering caps limiting the total amount of installed net metered generating capacity Caps are typically defined as a percent of the state’s load/peak demand in a reference year (e.g. 3% of previous year’s peak demand in West Virginia)
Virtual Net Metering	<ul style="list-style-type: none"> Virtual net metering allows subscribers across more than one meter to receive net metering credits according to their share of the solar array (e.g. community solar)

NEM Design – Other Key Factors Affecting Compensation

NEM Design Element	Notes
Netting Interval	<ul style="list-style-type: none"> • In the net billing mechanism, netting can be done at different time intervals • Shorter netting intervals (hourly, daily) result in higher calculated imports over a billing cycle, meaning solar customers face higher bills • Monthly netting is simpler but does not capture that customers are net consumers and net exporters at different times within the month
Credit Retention	<ul style="list-style-type: none"> • Excess NEM credits (over the customer's minimum allowed bill) may be carried over to offset future monthly bills • Many jurisdictions allow credits to be carried for 12 months at which time they are either forfeited; compensated at a pre-determined rate, or transferred to a low-income customer program
Grid Access Fee	<ul style="list-style-type: none"> • Some jurisdictions assess a fee from NEM customers to reflect the costs they impose on the T&D system • Fee may be a fixed monthly fee or a per-kW installed solar fee
Grid Services Payment	<ul style="list-style-type: none"> • Some jurisdictions pay NEM customers additional compensation to reflect grid services they provide or to reflect avoided T&D costs • Payment is typically per-kW of installed solar

Summary of NEM Reforms in Surveyed Jurisdictions

No.	Jurisdiction	Summary
1	Alberta	Implemented net billing but export rate is set at retail rate for small generators meaning this is very similar to traditional NEM
2	Arizona	Net billing with exports compensated at avoided cost of utility scale solar (assumes rooftop solar reduces need for utility scale solar)
3	California	Transitioning from full retail NEM to net billing with export rate based on avoided costs, with instantaneous netting; 5-year market transition credit
4	Florida	Reform bill with higher fixed charges and decreasing credit amount vetoed by governor
5	Hawaii	Net billing with concurrent rate design that institutes demand charges; additional DR program to incentivize dispatchable resources (storage)
6	Illinois	Buy all /sell all starting in 2025; i.e., solar generation not compensated for distribution charges
7	Minnesota	Customers can select a NEM option based on their system size; NEM 1.0 available to residential; only net billing available to larger customers (over 40 kW)
8	New York	Net billing; export rate remains at retail rate for residential and small commercial; VDER used to compensate solar for larger customers; small grid access fee
9	North Carolina	Moved to a bridge structure for NEM; once DR programs for solar customers are approved, new NEM structure with GAC and TOU will take effect
10	Nova Scotia	Governor vetoed implementation of grid access charge
11	Ontario	Permitting third party generators and community net metering pilot projects, capacity restriction lifted, storage in combination with renewable generation eligible
12	Oregon	Remains on traditional NEM; no reforms under consideration
13	Saskatchewan	Reduced credit amounts below retail price

Trends in Compensation Mechanisms

- Most jurisdictions are moving to **net billing**; however, there are broad variations in the design elements
- The **export compensation rate** determines how much customers are paid for their excess energy
 - Many jurisdictions maintain the retail rate as the export rate for small customers, meaning overall compensation for solar customers is almost unchanged relative to NEM
 - Other jurisdictions compensate exports at avoided cost, with many different methodologies to calculate avoided cost
- The **netting interval** determines how imports and exports are measured
 - Several jurisdictions use instantaneous netting, which is the most accurate and cost-reflective method
 - Some jurisdictions use hourly or monthly netting, which are seen as simpler to understand and lead to higher compensation relative to instantaneous
 - Longer netting intervals are more beneficial for DG customers as there is more scope for exports to offset imports (e.g., daily netting would allow generation during the day to offset imports at night, but hourly netting would not allow this)

Trends in Compensation Mechanisms (cont'd)

- Several jurisdictions are **introducing mandatory rates for DG customers**
 - This allows implementation of more cost-reflective rates for NEM customers but may lead to the appearance of discriminatory/preferential pricing for DG customers
- Several jurisdictions are **redesigning rates for ALL customers** in parallel with NEM reform
 - This allows implementation of more cost-reflective rates for NEM customers without the appearance of discriminatory/preferential pricing
 - The new rates typically contain higher fixed charges and a highly differentiated TOU component; Hawaii's new rate contains a demand charge
- Utilities in many jurisdictions have attempted to impose **Grid Access Charges (GACs)** on solar customers
 - Some of these have succeeded, but they are highly contentious and many have been vetoed or struck down
 - GACs are seen as discriminatory as they are targeted only at solar customers
 - A similar impact can be achieved by creating rates with higher fixed charges for all customers

Trends in Other Factors Affecting Compensation

- Several jurisdictions are implementing a suite of programs in parallel to NEM reform to allow solar customers to **provide grid services**
 - These programs are similar to DR programs and reward dispatchability and peak reduction
 - They incentivize the addition of storage
 - They provide a new potential revenue stream to offset some of the reduction in compensation resulting from NEM reforms
- Several jurisdictions provide a “**market transition mechanism**” to avoid shocks to the solar market
 - California will provide an additional credit so payback periods do not rise above 9 years
 - Arizona does not allow the export rate to fall by more than 10% per year
 - Illinois will offer a \$250/kW upfront rebate once new NEM rules go into effect

Summary of NEM Evolution

	NEM 1.0	NEM 2.0 (in effect till NEM 3.0 implementation)	NEM 3.0 (Decided)
Timeline	Established in 1995 by SB 656	CPUC Decision 16-01-044, 2016	Decided Dec. 2022, goes into effect April 2023
Eligibility	Renewable resources ¹	No change	No change
Compensation Mechanism Type	Traditional NEM - Full retail monthly bill credit for excess generation	Full retail bill credit for excess generation; mandatory time of use rate for DER customers	Net billing - imports at TOU rate with high price differentiation; exports at hourly avoided cost from avoided cost calculator Glide path Credit - Customers to receive a credit based on a target payback period of 9 years. The credit is to follow a glidepath down to zero in 5 years. The credit will be an adder or multiplier to the export rate.
Netting Interval	Monthly	15-minute for commercial, 60 minute for residential; applied only to non-bypassable charges	Instantaneous netting for all classes applicable to all charges
Credit Retention	1 year; excess at end of year compensated at energy-only rate	No change	No change
Minimum Bill	Minimum charge on rate schedule	Relies on minimum bill which had recently been increased in another proceeding Added non-bypassable charges (Public Purpose Program Charge, Nuclear Decommissioning Charge, Competition Transition Charge, Department of Water Resources bond charges) to be levied on metered imports	Commission declined to make any modifications to the list of non-bypassable charges but acknowledged that this issue should be considered in another proceeding on reformation of fixed charges .
Grid Access Fee (or any fixed fee)	NA	Added one-time interconnection fee	Commission declined to institute a "Grid Benefits Charge" but acknowledged that solar customers cause grid costs even when not importing energy. Commission says a different ongoing proceeding to reform fixed charges will address this issue .
Virtual NEM	Established in 2008; compensation with the same structure as NEM 1.0	Compensation changed to mirror NEM 2.0	Compensation changed to mirror NEM 3.0

¹ Does not include stand alone storage; resources listed are solar photovoltaic, wind, fuel cell, biogas, biomass, digester gas, geothermal, hydroelectric (up to 30MW), landfill gas, municipal solid waste conversion, ocean thermal, ocean wave, solar thermal, tidal current
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Key Policy Issues in Updated NEM 3.0

- **Retail import rate structure**

- Most parties agreed on moving to highly differentiated time of use rate but disagreed on design
- **Joint Utilities:** Proposed new, cost-based rates for NEM customers with a 3-period TOU and high fixed charges
- **Solar Group:** Opposed utility proposal due to high fixed charges; proposed NEM customers move to an existing “electrification rate” which contains TOU elements and is available to all customers
- **Proposed Decision:** Rate should be a highly differentiated TOU rate available to all customers

- **Grid Benefits Charges and Non-Bypassable Charges**

- **Joint Utilities/NRDC/Customer Advocates:** Proposed charges, arguing that NEM customers impose costs on the system even when self-generating; contended that solar without storage does not reduce T&D needs
- **Solar Group:** Stated that additional charges for NEM customers would not be legal or fair
- **Proposed Decision:** Agreed that NEM customers cause costs even when self-generating; declined to institute any additional charges in NEM 3.0 order; determined that another proceeding to reform fixed charges would address this issue

- **Virtual Net Metering (VNEM)**

- **Joint Utilities:** Recommended that VNEM be aligned with NEM 3.0 such that exports are compensated at avoided cost
- **Solar Group:** Proposed maintaining NEM 2.0 structure for VNEM until 10,000 MW of capacity installed
- **Proposed Decision:** Adopted the same NEM 3.0 structure for VNEM, stating that the decision has already determined that NEM 2.0 (with similar export and import rates) did not meet the objective of aligning costs and benefits of DERs
 - ▶ VNEM customers are exempt from the requirement to enroll in the new, highly differentiated TOU rates but must enroll in existing TOU rates;

Source: Decision 22-12-056, Rulemaking 20-08-020, December 15, 2022

Privileged and confidential. Prepared at the request of counsel.

Summary of NEM Evolution (1)

	NEM 1.0	NEM 2.0 – “Interim Programs”
Timeline	2001-2015 (Order 31901)	2015-Present (Order 33258)
Eligibility	Solar, wind, biomass, hydro	CGS, CGS+: No change Smart export: Combined solar & storage
Compensation Mechanism Type	Traditional NEM - Full retail monthly bill credit for excess generation	2015-2017 Customer grid supply (CGS) - Customers are credited for monthly kWh exports (up to but not exceeding the total delivered kWh) at a predetermined island credit rate which is less than the retail rate Customer self supply (CSS) - No exports to the grid are allowed 2018-Present Customer Grid Supply+ (CGS+) - Same as original CGS but utility requires control over dispatchability Smart export - Same as CGS+ however credit rates are different and exports are only compensated between 4pm-9am
Netting Interval	Monthly	No change
Credit Retention	1 year; excess credits at end of year are forfeited	Customer Grid Supply – No credit retention Customer Grid Supply Plus & Smart Export - 1 year; excess credits at end of year are forfeited
Minimum Bill	Minimum charge on rate schedule	Increased minimum bill to ensure that DER customers were not avoiding fixed costs \$25 minimum for residential \$50 minimum for commercial

Summary of NEM Evolution (2)

	NEM 3.0	
	Smart DER (Basic Program)	BYOD (Advanced Program)
Timeline	Decided October 2022 (Orders 38680, 38681, & 38196); effective July 2023	
Eligibility	Same as CGS (solar, wind, hydro, biomass)	Any customer able to provide the required grid services, non-renewables are excluded
Max Eligible Array Size	Allows for systems larger than 100 kW (subject to interconnection rules)	NA
Program Cap	360 MW with option for capacity additions	107 MW
Virtual Net Metering	A virtual net metering pilot will be created and discussed in a future docket	
Netting Interval	Instantaneous netting	NA
Compensation (described further in next slides)	TOU export rate aligned with import TOU rate time windows; methodology for calculating export rate is TBD	The program is for customers with dispatchable generation, with different possible levels of utility control. Incentives provided in upfront and monthly payments.
Credit Retention	Export credits to be classified as grid service or non-grid service Grid service credits – For exports during utility grid service program events (important export periods); no expiration Non-grid service credits – All other exports; forfeited every 12 months	NA

NEM 3.0 Programs

Smart DER (“Basic Program”)

- Net billing – export rates will utilize the newly designed 3-Period TOU rate structure; rate levels are yet to be calculated
- All customers participating in the new NEM program must have AMI and be enrolled in TOU rates
 - The Smart DER tariff will consist of two riders, the “export rider” and the “non-export rider”
- The non-export rider will be a streamlined option for customers who do not want to export DG to the grid

Bring your own device (BYOD – “Advanced Program”)

- The BYOD tariff offers additional compensation options for grid services independent of Smart DER participation
- The program is resource agnostic and open to any renewable resource capable to providing the required services (storage and demand response are the most likely resources to be used)
- BYOD program consists of 3 tariffs described below and provides upfront (\$/kW) and monthly (\$/kW) compensation, a 10 year commitment is required
 - BYOD level 1 – flexible dispatch where specified kW-level committed for 2 hours of dispatch during on-period
 - BYOD level 2 – emergency dispatch where customer allows utility to control dispatch of committed capacity (kW) for a predetermined number of events each year (maximum of 156 events/year)
 - BYOD level 3 – system grid services with two options, capacity load reduction (dispatch committed capacity for 2-4 hours) and capacity load build (charge committed capacity for 2-4 hours)

Key Policy Issues – Concurrent Rate Design Update

Hawaii addressed NEM reform and rate design concurrently in the same proceeding. The new “three part rate design” consists of the following components:

- **Customer charge:** Fixed monthly charge to recover only metering and billing costs
- **Grid access charge (GAC):** Monthly \$/kW charge to recover some grid costs
 - GAC charge is to recover only the cost of the customer’s connection to the grid. i.e., the service drop and transformer but not other distribution costs
 - Once AMI is fully deployed this will be *based on each customer’s own kW demand*; in the interim all customers will be charged based on the class average non-coincident peak demand
- **TOU Energy Charge:** 3 period schedule to recover energy costs and all other costs not included in the GAC or customer charges
 - 1:2:3 price ratio for day, overnight, and evening respectively
 - ▶ Daytime: 9am – 5pm
 - ▶ Evening: 5pm – 9pm
 - ▶ Overnight: 9pm – 9am
- All customers on NEM 3.0 tariffs must be enrolled in the TOU rates; the TOU structure will apply to both imports and exports, but the rate levels will be different
- Minimum charge will remain in place for the time being. GAC and customer charges will count towards the minimum charge. When AMI is fully deployed and the GAC is calculated on a customer basis, the minimum charge will be phased out.

One size does not fit all when it comes to NEM

- Traditional net metering policies generally introduce two challenges:
 - Determining the fair compensation for the value NEM customer provides to the system
 - Shifting of cost recovery to other customers when NEM customers reduce their volumetric consumption
- Any NEM reform should consider both the compensation and rate design issues to ensure economic efficiency is maximized
- Other jurisdictions' experience is informative in terms of innovative ideas and solutions for NEM successor mechanisms and tariffs
- However, each jurisdiction's own regulatory history, policy goals, and customer mix should inform their path forward when it comes to reforming their NEM policy

Break

Please return at 10:45am for a discussion on our key areas of focus



Areas of Focus for Your Feedback

Chris Sandve

Chief Regulatory Officer

Areas of Focus

Considering the background and jurisdictional review presented, we've identified the following potential areas of focus for your feedback:

- Compensation mechanism
- Rate design modifications
- Eligibility criteria
- Planning resource
- Moving away from the current “one size fits all” approach

Compensation Mechanism

Three compensation mechanisms for valuation of excess energy sold to BC Hydro:

- **Traditional Net Metering**
 - Credit Retention and Compensation
- **Net Billing**
 - Generation Compensation
 - Netting Interval
- **Buy all / Sell all**
 - Generation Compensation
 - Separate Meter for Generation

Compensation Mechanism

Feedback Questions

- Please rank each compensation mechanism in your order of preference
 - for **residential** customers
 - for **commercial** customers
- If there is a different compensation mechanism that you'd like BC Hydro to consider, please specify and rank that mechanism as well.

Rate Design Modifications

Examples of rate design modifications seen in other jurisdictions:

- Time-of-use
- Increasing fixed charges
- Demand charges

Rate Design Modifications

Feedback Questions

- Please rank each rate design modification in your order of preference
- If there is a rate design modification that we did not mention that you would like BC Hydro to consider, please specify and rank it

Eligibility Criteria

Eligibility criteria changes seen in other jurisdictions:

- Virtual net metering
- Facilitating more renting/leasing arrangements
- Increasing generation capacity limit or defining based on load / as % of annual demand

Eligibility Criteria

Feedback Questions

- Should BC Hydro consider changes to the eligibility criteria to enable virtual net metering?
- Should BC Hydro consider changes to the eligibility criteria to facilitate more renting/leasing arrangements?
- What is a reasonable capacity limit for BC Hydro to consider?
- Should BC Hydro consider a capacity limit based on load or % of annual demand?
- Please mention any other eligibility criteria changes you'd like BC Hydro to consider.

Planning Resources

Options to recognize and enhance the value of net metering as a planning resource such as:

- Providing compensation for grid services or avoided transmission and distribution system costs.
- Offering programs to reward the addition of battery storage solutions in combination with net metering generation so that customer generation profiles can better match system needs.

Planning Resources

Feedback Questions

- What options should BC Hydro consider to recognize and enhance the value of net metering?
- If there is an option that we didn't mention that you'd like us to explore, please mention it.

Moving away from the current “one size fits all” approach

- BC Hydro recognizes that some of the options discussed above may work better for certain groups of customers than others.

Moving away from the current “one size fits all” approach

Feedback Questions

- Should BC Hydro explore applying the options discussed to different customer groups?
- What different customer groups should BC Hydro consider?

Wrap Up and Next Steps

Chris Sandve

Chief Regulatory Officer

Wrap Up and Next Steps

We want to hear from you!

- Are there any other topics of interest we haven't covered?
- You will be receiving an email shortly with a link to a feedback form to continue providing feedback on the topics discussed today. Feedback is requested by April 21st.
- A copy of the presentation will be posted on our website for your reference.

Wrap Up and Next Steps

Upcoming engagement activities

- We will be putting together rate design options based on the feedback we've received
- We plan to invite you to a follow up workshop in the summer to present rate options to learn more before finalizing the proposed rate options.
- In the meantime, further questions or comments on the net metering rate design application can be emailed to bchydroregulatorygroup@bchydro.com.

