

# **BC Hydro's Distribution Extension Policy Workshop**

**May 26, 2023**

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# Introduction

This document provides background information about BC Hydro's Distribution Extension Policy (extension policy) and connection fees.

At the meeting we'll discuss the following:

- Current policy and feedback
- Proposed extension and connection fee options
- Examples of project impacts
- Potential safety valve provisions
- Your feedback and suggestions

An important component in meeting the Province's climate action goals and BC Hydro's Electrification Plan is to connect customers to our electrical system quickly and efficiently. We also want to provide our customers with greater cost certainty and a connection fee model that supports planning and delivery of projects. Gathering your feedback will help us identify potential updates to the extension policy that consider customer needs and support electrification.

Our current Distribution Extension Policy has been in effect since 2008 and outlines the responsibilities of both the customer and BC Hydro when it comes to connecting new or increased load on our distribution system.

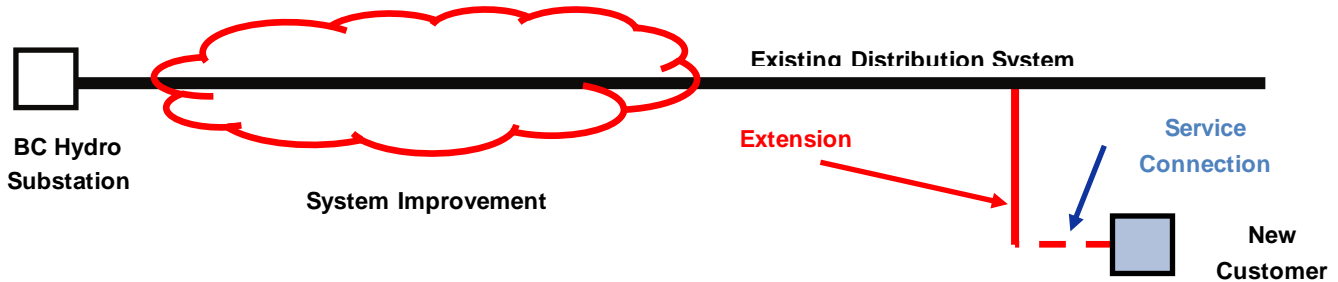
We're currently reviewing the policy and assessing options for updating it to ensure it best meets the needs of BC Hydro and our customers. We're engaging customers to gather feedback on potential updates to the policy.

The sections below provide background information on our existing extension policy, some of the challenges with the policy, the options we've been considering to update it and BC Hydro's proposal for an updated extension policy.

# Extension Policy 101

Our current Extension Policy is outlined in Section 8 of our Electric Tariff. The Tariff describes the responsibilities of BC Hydro and our customers when a distribution extension is required to serve new or increased customer load. Our current policy is based on the principle of cost causation, i.e., allocating the costs of new or upgraded infrastructure to those who first initiate them.

An example of a distribution extension is illustrated below:



Per Section 8 of the Electric Tariff, infrastructure requirements to facilitate new connections are defined in three main categories:

- **Service connection:** This is typically the last section of wire or cable that connects a customer to the distribution system.
- **Extension:** An “extension” is an addition to, or the increased capacity of, BC Hydro’s electric distribution system that’s required to serve a new or increased customer load. The extension is generally the infrastructure required to connect a customer with the closest point of the distribution system that will serve the load. Loads far away from the existing system will have higher extension costs as more infrastructure needs to be constructed to connect our customers.
- **System improvement costs:** These system upgrades are typically upstream from the extension and address local capacity constraints on the distribution system. System improvement needs are assessed when service is requested by the customer and are dependent on the state of the existing system at the time of the request. While any load can trigger the need for system improvement, applicable costs are only allocated to loads that are larger than 500 kVA.

As discussed above, a customer who requests a new service or an increase in capacity for their existing service, will be allocated the cost of their service connection, extension, and any applicable system improvement costs that are needed to service this request. To recognize incremental future revenue of the new or increased load and offset customer connection costs, we contribute \$1,475 per single-family dwelling added, and \$200 per kW of the estimated billed demand from a commercial customer that will be served via a General Service rate schedule. This contribution is the present value of the distribution capital revenue recovered in rates (based on \$347.5M of costs determined by the F2008 Cost of Service study) during the first 20 years of service and discounted at 8% per year.

Embedded in this calculation, is a preservation of some future revenue for system improvement costs that are not directly allocated to customers (e.g. when a customer with a load less than 500 kVA necessitates system improvement). This is accomplished by setting the discount period to 20 years in the calculation even though distribution infrastructure typically has a life of approximately 40 years.

To recognize scenarios where the first customer (“pioneer customer”) pays to extend the distribution system and then a subsequent customer(s) connect to that extension, the Tariff outlines that the “pioneer customer” can apply for an extension fee refund. In this case, the pioneer customer can apply for any unused contributions of subsequent connecting customers. More detailed explanations and illustrations can be found in [this brochure](#) [PDF].

# Feedback on our Current Extension Policy

Over the years, we've received feedback from customers about our current extension policy. The two main concerns we've heard are around "free riders" and cost uncertainty, which we discuss in more detail in this section.

## FREE RIDERS

The current extension policy assigns the costs related to extensions and system improvements to the "pioneer customer", i.e., the customer whose connection first necessitates the installation of infrastructure (less BC Hydro's contributions). To the extent this infrastructure results in additional capacity or expands our distribution system, subsequent customers can benefit by connecting without making a direct contribution towards that infrastructure. While the extension policy contains a provision for the pioneer customer to recover excess contributions from future customers, in practice, this provision hasn't been effective in addressing this issue.

## COST UNCERTAINTY

Customers applying to connect to our system want more upfront certainty of their costs associated with their connection. The issue of cost uncertainty can be broken down into the following areas:

- **Unpredictable system improvement costs:** It's difficult for any customer to predict associated system improvement costs as they are dependent on our distribution system at the time a connection is requested. Factors such as the size of customer load and area capacity, which is not directly visible to the customer and changes over time are considered.
- **Unpredictable extension costs:** In general, greenfield developments far from existing infrastructure will cost more than brownfield developments or greenfield developments adjacent to existing loads. This is because the distribution system must be extended further to reach these development sites.
- **Non-connection-related costs:** Costs to comply with municipal requirements or the conditions of a development permit, such as undergrounding existing overhead infrastructure along development frontages, can also add to costs. If the overhead infrastructure being converted to underground also serves adjacent customers, costs can escalate quickly because additional system changes may be needed for BC Hydro to continue to serve the existing adjacent customers. As this additional infrastructure is over and above what we require to provide service to the location, the added cost isn't eligible to be offset by BC Hydro's contribution, as provided for in the Electric Tariff.

# Alternative Extension Policy Options

Given the issues identified above, we are in the process of reviewing our existing extension policy and assessing alternative approaches. Based on feedback received to-date and the results of our jurisdictional review, we have explored and modelled the following three options for addressing these issues:

- 1) Update our maximum contribution towards an extension to reflect current rates.
- 2) Update our contribution and simplify the recovery of system improvement costs.
- 3) Update our contribution and simplify the recovery of all connection costs (extension and system improvements).

## OPTION 1: INCREASE BC HYDRO'S FINANCIAL CONTRIBUTION TOWARDS AN EXTENSION

BC Hydro's contribution recognizes incremental customer revenue and is currently set at \$1,475 per single-family dwelling (SFD) and \$200 / kW of estimated billing demand for general service customers. We have updated the calculation used in 2008 with cost data from our Fiscal 2021 Fully Allocated Cost of Service study, which results in a preliminary value of \$2,700 / SFD and \$625 / kW. Based on these preliminary values, the number of customers whose extension fees are fully offset by our contribution is expected to increase from 23% to 42% and reduce extension fees for those customers who are still required to pay a fee.

Option 1 will decrease customer connection costs by providing all new customers with an increased utility contribution to the overall project cost. However, it will not address the free rider nor the cost unpredictability issues discussed above without additional considerations.

## OPTION 2: INCREASE BC HYDRO'S CONTRIBUTION AND INTRODUCE AVERAGE SYSTEM IMPROVEMENT FEE

Every new or increased load contributes towards the immediate or eventual need for upstream system improvements. However, under the current extension policy, only the customer whose total load is greater than 500 kVA and whose connection triggers the immediate need for greater upstream capacity makes a direct contribution towards the required improvements.

In addition to updating our financial contribution, Option 2 recognizes that all customers contribute towards the need for system improvements and thus all customers are allocated a portion of these costs proportional to their added load (i.e., small customers have a small impact to the distribution system and will be assessed smaller fees whereas larger customers have greater impacts to the system and will be assessed proportionally larger fees).

In order to determine the system improvement fee in this option, we would aggregate the cost of all system improvement costs incurred over a predefined period. Over that same period, we would also aggregate all new customer load in order to calculate an average customer system improvement fee. For residential loads, the fee would be on a per single-family dwelling basis. For general service loads, the fee would be on a kW basis. As the cost of system improvement and/or the amount of new customer load increases or decreases over time, the fee would periodically be recalculated.

A new customer would then be charged the cost of their extension plus a system improvement fee proportional to their requested load. The total customer connection costs would then be offset by a revenue contribution that would also be proportional to the customer load. Because the total cost of upstream system improvement would be recovered by the fee, the calculated contribution would no longer need to implicitly recover system improvement costs and therefore we would propose increasing the discount period from 20 years to 40 years. Effectively, the system improvement fee would partially reduce BC Hydro's contribution resulting in a preliminary net contribution of \$2,500 / SFD and \$765 / kW.

### Residential Illustrative Calculation:

$\$4,250 \text{ BC Hydro Contribution} - \$1750 \text{ System Improvement Fee} = \$2,500 \text{ BC Hydro Contribution / SFD}$

**Commercial Illustrative Calculation:**

\$990 BC Hydro Contribution - \$225 System Improvement Fee = **\$765 BC Hydro Contribution / kW**

We expect that these preliminary values would lead to a similar increase in the number of customers whose extension fees are fully offset as Option 1.

An added benefit to customers of this average system improvement fee recovery structure is that we'd have greater flexibility to pre-build infrastructure in regions of high growth to help speed up customer connections in those regions.

Option 2 will result in a higher financial contribution from BC Hydro and would address cost predictability issues regarding system improvements, which are difficult to predict. However, as the cost of the extension is still based on cost causality, this option, by itself, would not materially address the free rider issue as customers who require lengthy extensions would still rely on a pioneer provision.

## **OPTION 3: INCREASE BC HYDRO'S CONTRIBUTION AND SIMPLIFY THE RECOVERY OF ALL CONNECTION COSTS BY RECOVERING PROPORTIONALLY FROM ALL NEW CUSTOMERS**

Option 3 builds on the average costing approach of Option 2. Rather than charge each customer their project specific extension cost, all customers that request new or increased service are instead assessed and charged a unitized extension fee based on the requested load. A unitized extension fee would provide cost predictability and customers could better estimate costs based on our posted rates.

In order to determine the unitized extension fee that customers would be charged, we would aggregate the total customer share of connection costs over a predefined period using an updated contribution calculated from Option 1. These connection costs would be allocated to the different rate classes using the demand allocator from the Fully Allocated Cost of Service study. We would also aggregate all new customer load over that same time period to calculate the unitized extension fee. In the customer pre-engagement sessions, we proposed a single residential fee that would be charged on a per single-family dwelling basis and a general service customer fee that would be charged on a per kW basis.

A new customer would then be charged the average connection cost which is proportional to the load being requested independent of the specific infrastructure that would need to be constructed to serve their connection. In some cases, the cost charged to the customer would be less than the cost to connect that customer and in other cases, the cost charged to the customer would be more than the cost to connect that customer. Because this option does not use a contribution offset model but rather spreads costs evenly amongst all new customers, there would not be any customers who have \$0 extension fees.

This option spreads the net connection costs to all new customers and BC Hydro's contribution is factored into the calculation of the connection fee. As a result, there would not be a condition of "excess contribution" and so this option would eliminate the Extension Fee Refund, i.e., the pioneer provision of the Electric Tariff.

## SAFETY VALVE PROVISIONS

The average cost approach taken under Option 2 and 3 requires a mechanism to address situations where a request imposes extraordinary cost in relation to the benefits received. This can be achieved through the use of a “safety valve” tailored to each option.

For Option 2, the potential scenario to address would be in cases in which extraordinary upstream system improvement costs have little benefit beyond the customer requesting service.

One way to potentially implement a safety valve would be a system improvement fee multiplier where, if the cost of the required system improvement exceeds a multiplier of the system improvement fee charged to the customer, the customer would be charged the full system improvement costs instead of the system improvement fee.

For Option 3, the primary issue to address would be the impact of decreasing the cost barrier of connection where extraordinary costs are required to connect a single customer. In the absence of a safety valve, a small number of long connections or high costs could result in a significant increase to the average connection costs over time.

Two potential ways to implement a safety valve for Option 3 are discussed below.

## COST BASED THRESHOLD

Where BC Hydro's share of costs (Estimated Construction Costs – Customer's Connection Fee) is:

- Greater than \$2.5 million OR
- Greater than \$50,000 and greater than 10 times the connection fee

The customer would be assessed the full Estimated Construction Cost less BC Hydro's contribution towards that extension.

This safety valve option provides simplicity for high volume, low risk connections (<\$50k) which automatically proceed using the calculated average connection fee while mitigating future increases to the connection fee by having customers whose connection costs are above a cost threshold (>\$2.5M) pay the estimated cost of connecting. In between these two threshold values, this safety valve option balances the cost of connecting a customer with the revenue benefit of connecting that customer.

Feedback from customers in pre-engagement sessions centered around the complexity of this option and concerns that it would re-introduce uncertainty similar to the existing extension provisions. As a result of this feedback, BC Hydro is no longer considering this safety valve option and is instead considering the distance threshold safety valve described below.

## DISTANCE THRESHOLD

Extensions greater than a set distance would be charged a \$/m fee based on the customer's load and/or the type of extension (e.g., overhead or underground) for distances in excess of the threshold. The unitized extension fee in Option 3 would include any extension up to that set distance.

A distance threshold fee would mitigate the risk of extraordinary costs to BC Hydro for customers requesting long extensions but might not fully address the impacts of some high cost short-distance extensions that are less than the threshold distance. Also, as Option 3 eliminates the Extension Fee Refund provisions, customers who are assessed additional distance-based costs would not have the ability to recoup costs from subsequent connections. In setting a threshold distance, we are trying to strike a balance between cost certainty (and allowing most customer connections to proceed without triggering the safety valve) and mitigating potential increases to the unitized extension fee (caused by increasing the average connection costs).



# BC Hydro's Proposal

## INCREASE BC HYDRO'S CONTRIBUTION AND INTRODUCE AVERAGE SYSTEM IMPROVEMENT AND EXTENSIONS COSTS

Based on customer feedback received to-date, BC Hydro is proposing an approach that is a variation of Option 3.

We have reconsidered our unitized extension fee approach for residential customers and have differentiated between higher density multi-family dwelling units and less dense single-family dwelling units. This is largely due to the fact that, in most low-rise and high-rise multi-family residential buildings, a house or strata account is used to separately meter loads such as HVAC and electric vehicle charging. This load would otherwise form part of the normal residential load of a single detached, duplex or row home unit but under this option, the house/strata load, taking service under a general service account, would also be assessed a unitized extension fee based on the total kW demand.

We reviewed average demands by different dwelling types to determine that on average, a single detached, duplex or row-home has a demand that is 2.4 times greater than a low-rise or high-rise residential unit and calculated a separate fee for these two unit types. Based on preliminary analysis, a unitized extension fee could be \$1,825 / single-family dwelling, \$750 / multi-family dwelling and \$150 / kW of estimated general service demand.

This unitized extension fee would have an upper threshold limit (e.g., 300) metres and customer connections that exceed this distance threshold would pay the unitized extension fee in addition to a \$/m fee for the distance that exceeds the distance threshold. Based on the available data sample, we believe 300 metres would include approximately 90% of historical connections.

As this proposal is designed to provide customers with cost certainty, but be cost neutral compared to Option 1, customers who do trigger the safety valve and pay an additional \$/m fee would not be eligible for refunds (i.e. the current pioneer provisions would be eliminated) and any subsequent customers that connect would be subject to the same unitized fee and distance threshold of this proposal.