Generation, Transmission & Distribution Basics

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Generation, Transmission and Distribution

In this section we will go over:

- BC's electrical system
- Generation resources
- Transmission – operational requirements and interconnections
- Distribution
- Microgrids

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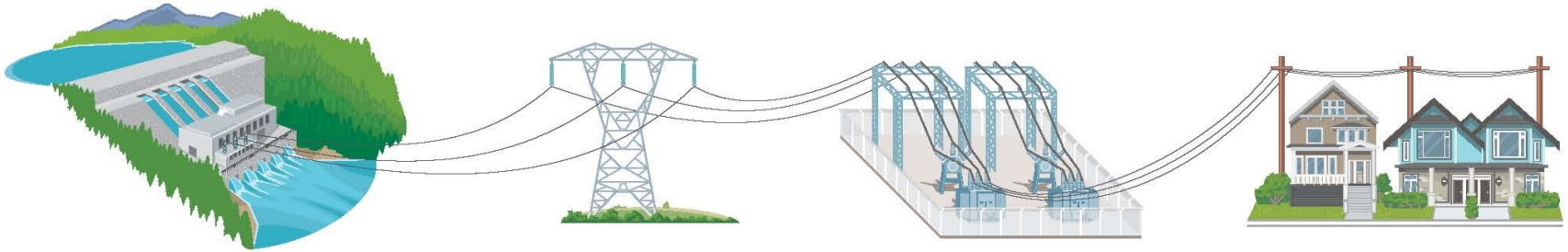
BC Hydro power system



Generation:
Electricity is generated by BC Hydro and independent power producers.

Transmission:
Electricity is moved from where it is produced to where it is used.

Substations:
Voltage is reduced at substations to provide power suitable for use in homes and businesses.

Distribution:
Low-voltage electricity is provided safely to neighbourhoods and businesses.

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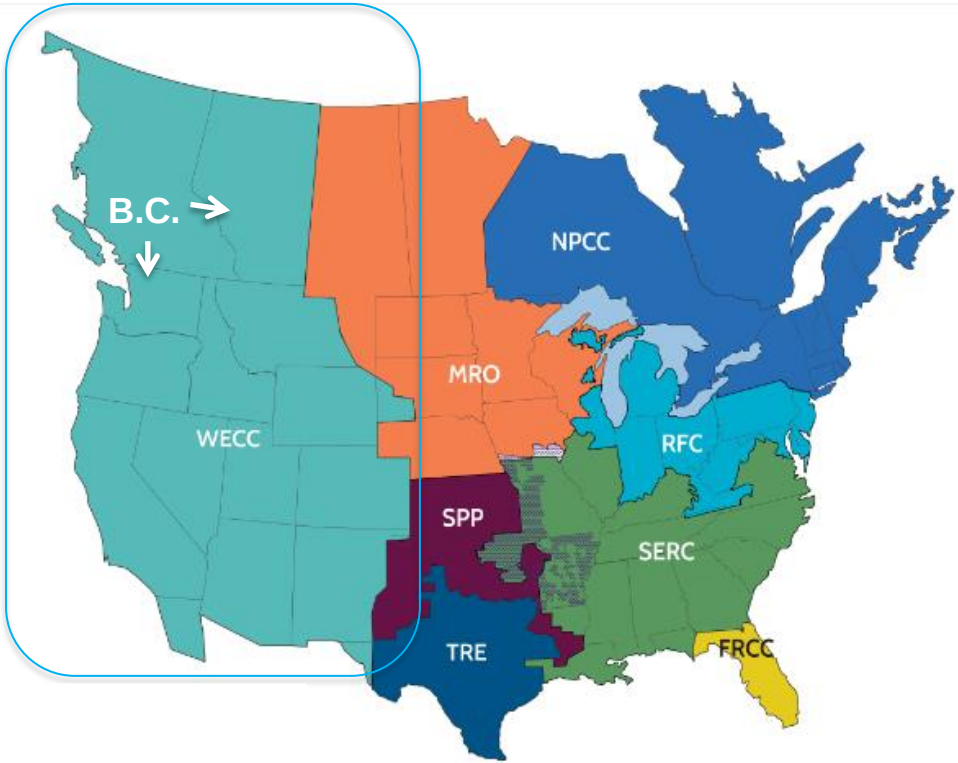
Interconnected electric systems

The Western Interconnection: integrated power grid that connects BC, Alberta and 14 western states



- Utilities can trade power to manage supply and demand more efficiently and economically
- Large interconnected power systems are more reliable and resilient to contingencies such as unexpected generation loss
- All utilities are required to comply with Mandatory Reliability Standards

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Generation: BC Hydro's assets

- BC Hydro operates three of the six largest hydroelectric power stations in Canada
- Majority of generating capacity is on the Peace (northeast B.C.) and Columbia River (southeast B.C.) systems
- BC Hydro operates thermal generation facilities in Fort Nelson, Prince Rupert, and in many Non-Integrated Areas (not grid connected)
- Site C on track to be in-service by November 2025 (adds +8% generation energy overall)

Our electricity generation is over 97% clean

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Transmission - BC Hydro's operational needs

We have a legal obligation to serve customers and comply with applicable utility standards

- BC Hydro is required to serve its customers under the *Electric Tariff*, the *Open Access Transmission Tariff* and the *BC Utilities Act*
- BC Hydro must comply with applicable utility standards including Mandatory Reliability Standards (MRS) (e.g. vegetation management, cyber security)
- BC Hydro is required to provide non-discriminatory service to existing and prospective customers in accordance with tariffs

Transmission - Connecting new industrial or generator customers

- Customer connections are managed with a prescribed process. BC Hydro load customers follow the Electric Tariff, while generation customers follow the Open Access Transmission Tariff.
  - New connection requests are considered on a first-come, first-served basis through BC Hydro's "interconnections queue"

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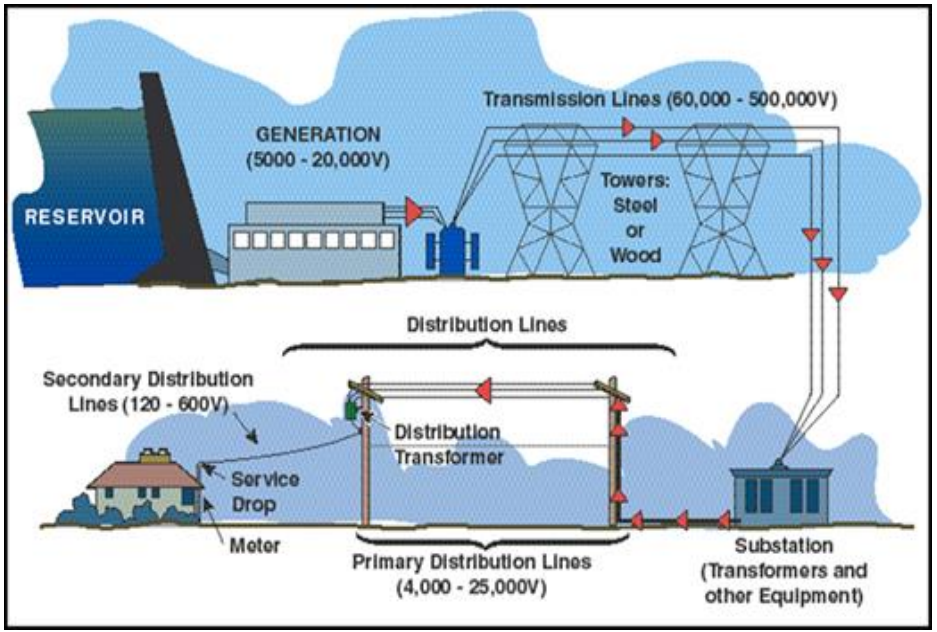
Distribution

Delivers electricity to the end-use customers



Single Phase Distribution:

used by most residential and small business customers.

Three Phase Distribution:

typically provided to larger commercial and industrial customers.

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What is Net Metering?

- Net metering enables residential and commercial customers to connect a renewable electricity generating unit of up to 100 kW of capacity to:
  - Power their home or business;
  - Save on their electricity bills;
  - Rely on BC Hydro's grid, when needed.

- Electricity generated by the customer is first used to power their home or business
- If a customer generates more electricity than they need at any given time, the excess generation is stored as generation credits on their account to be used to offset their future bills.
- Any unused generation credits are paid out to customers annually

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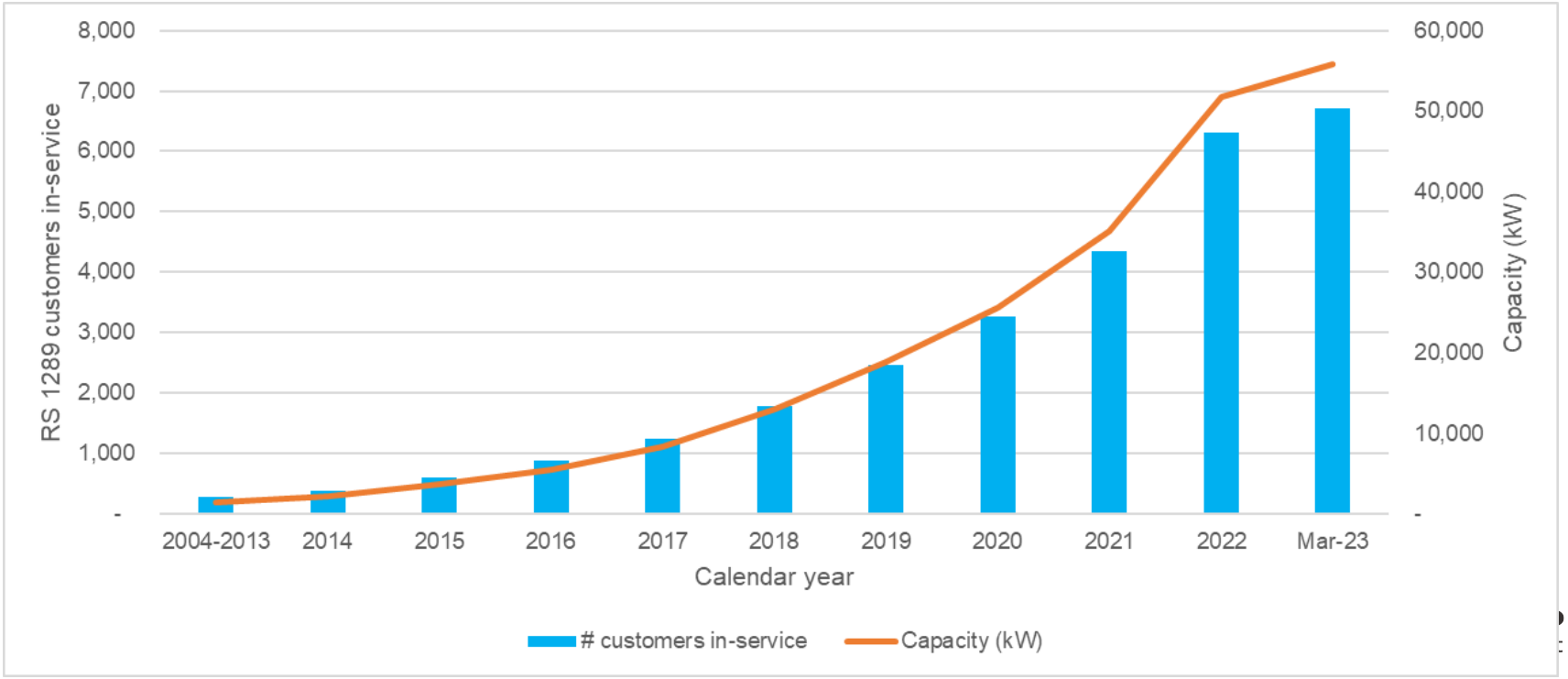
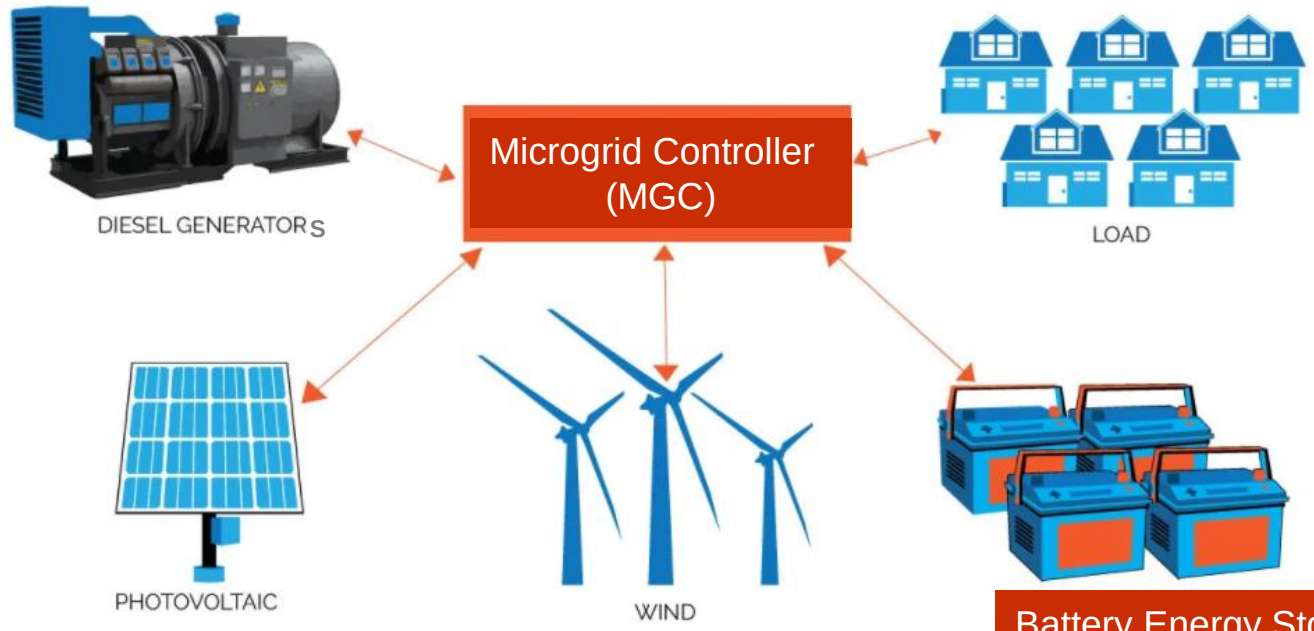
Net Metering Update

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



Microgrids



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Microgrids in BC

BC Hydro provides service to 14 Non-Integrated Areas that operate as microgrids

- 113 GWh of total generation
  - 45% renewable
  - 55% diesel
- 19 million litres of annual diesel consumption
- 44,000 tons of CO_2e emissions
- Individual community renewable generation can vary from 0% to 100%
- The NIA is comprised of primarily Indigenous communities

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