

BC Hydro's Clean Electricity Advantage

**Pembina Clean Futures Forum
February 28, 2019**



The Electrification Opportunity

98% of our generation is clean and renewable



Low cost

Our competitive, regulated rates are among the lowest in North America.



Reliable

Reliable power when you need it.



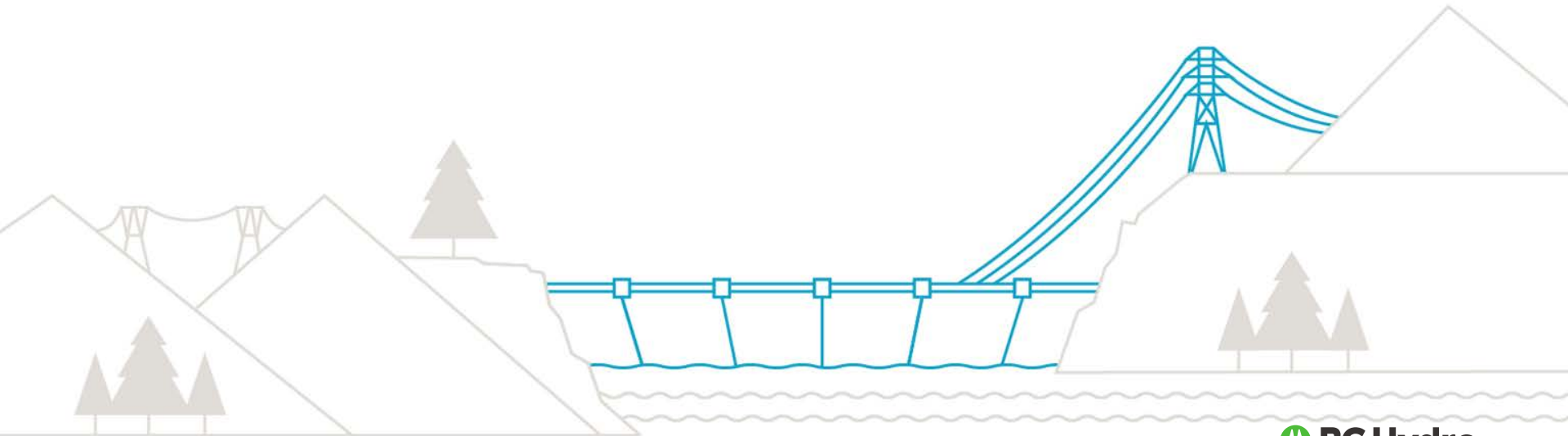
Abundant

Abundant power to grow and expand your business.



Clean

Low GHG electricity generation – 98% clean and renewable.



The Opportunity – Energy Management Approach

Still focused on Power Smart

We provide a value advantage to our customers so they can:

- Conserve and use electricity as efficiently as possible;
- Manage how and when they use their energy; and,
- Reduce their carbon footprint and lower their emissions by switching to hydroelectricity

The Opportunity – Energy Management Approach

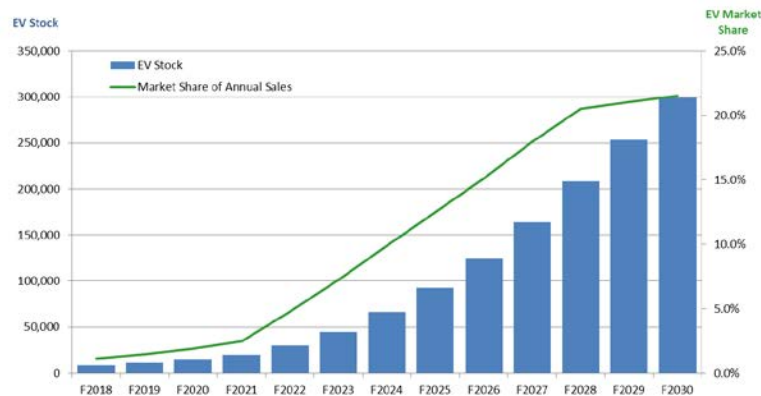
Still focused on Power Smart

- Electrification of Passenger Vehicles
- Electrification of the Transportation Sector
- Electrification of Buildings
- Electrification of Industry

The Opportunity – Electrification of Passenger Vehicles

Accelerating Growth

- Transformation of the market from ICE to clean vehicles
- BC Hydro Load Forecast projected a growing market share of EV (20% by 2030)
- CleanBC accelerates projected EV growth – ZEV requirement for new car sales: 10% by 2025, 30% by 2030, 100% ZEV by 2040



The Opportunity – Electrification of Passenger Vehicles

Addressing Barriers to Adoption of EV

Vehicle price - CEVforBC program – up to \$6,000 in vehicle purchase incentives

EV charging infrastructure

- BC Hydro ~75 DCFC by Jan 2020
 - New reliability standards, field and call centre resources.
- BC government – target of 151 public DCFC stations (CleanBC target)
- Increasing participation by commercial operators
- Charging Solutions – home, workplace, charging infrastructure
- Multi-unit housing – Charging

Market factors

- Dealer inventory and wait times (manufacturers making transformative moves)
- Variety of models available (continuously increasing)

The Opportunity – Electrification of Passenger Vehicles

Financial, Air Quality Emissions, GHG Emissions Benefits

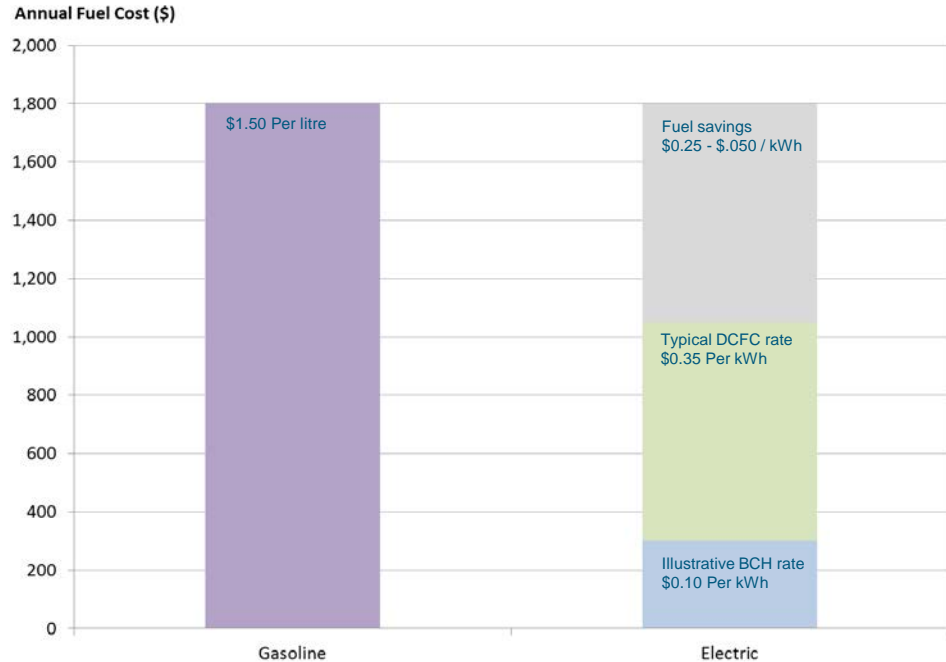
Financial benefits

- Annual maintenance
- Battery life (increasing)
- Cost gasoline vs electricity
(\$1.50 / l = \$0.60 / kWh)

Local air quality benefits

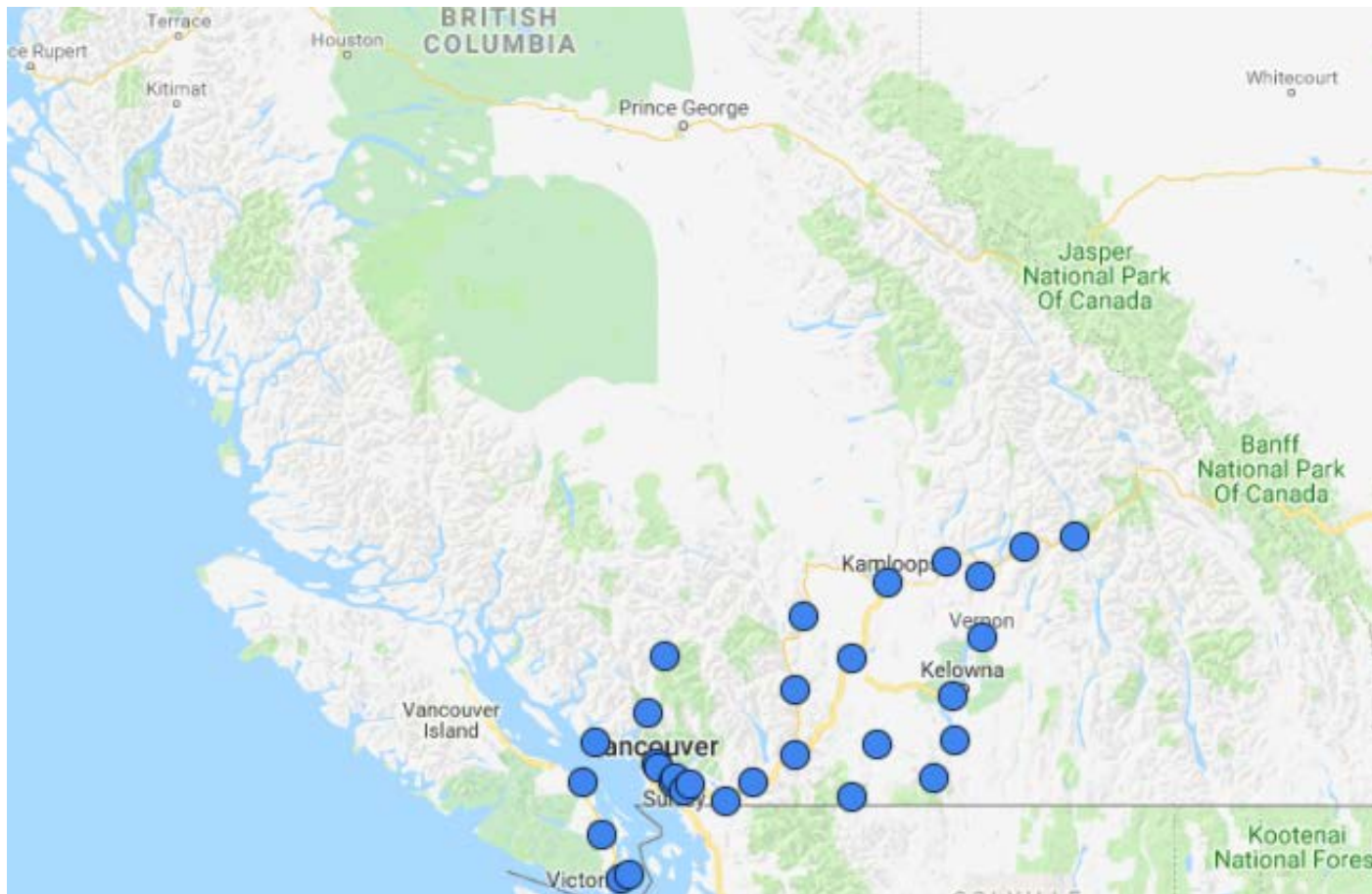
GHG emission reduction

Annual fuel costs for a gasoline internal combustion engine vehicle (8 litres per 100 km at \$1.50 per litre) vs. an electric vehicle (20 kWh per 100km) assuming 15,000 km travelled each year



The Opportunity – Electrification of Passenger Vehicles

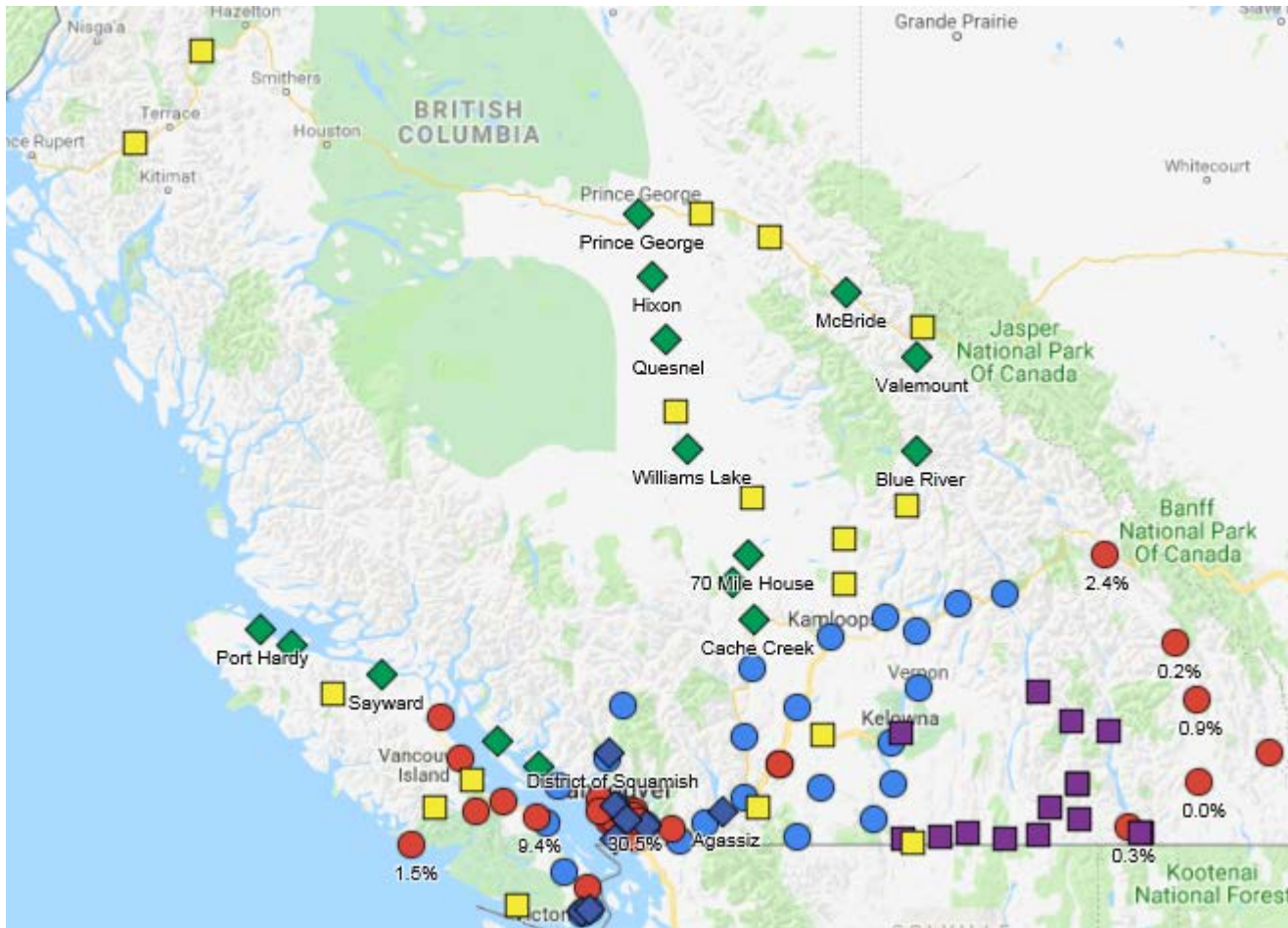
BC Hydro: Expanding Access to Fast Charging



2017 BC Hydro
DCFC Network

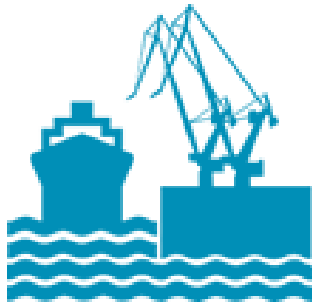
The Opportunity – Electrification of Passenger Vehicles

BC Hydro: Expanding Access to Fast Charging



2020 BC Hydro,
FortisBC, MOTI
DCFC Network

The Opportunity – Electrification of Transportation Sector Beyond Passenger Vehicles



The Opportunity – Electrification of Transportation Sector

- Ports and terminals – shore and ground vehicles and equipment
- Short haul trucking – e.g. port clean trucking pilot
- Bus fleets – charging pilots underway with TransLink and BC Transit
- Vehicle Fleets – charging infrastructure
- Vessel electrification

Customer Challenges:

Vehicle / vessel availability

Charging Infrastructure – how, where, cost to install / maintain (change to their core business)

Interest in rate options – time of use rates, options re demand charges, end use rates (BCUC application required)

The Opportunity – Electrification of Transportation Sector

- Ports and terminals – shore and ground vehicles and equipment
- Short haul trucking – e.g. port clean trucking pilot
- Bus fleets – charging pilots underway with TransLink and BC Transit
- Vehicle Fleets – charging infrastructure
- Vessel electrification

Customer Benefits:

Displace diesel with clean electricity (GHG benefit)

Cost certainty – electricity rates are predictable over time (e.g. 5 year rate plan)

Maintenance – often seeing reduced maintenance costs with electric vs combustion engines

Employee and Public Health benefits – air quality, noise improvements

The Opportunity – Electrification of the Built Environment

Efficiency BC launched in 2018 – partnering for customers

Efficiency BC Programs	END USE
Heat Recovery Chiller	HVAC and DHW
Air-to-Water Heat Pump	HVAC and DHW
Air-to-Water Heat Pump Water Heater	DHW
Ground Source Heat Pump	HVAC and DHW
Air-to-Air Rooftop Heat Pump	HVAC
Water-to-Water Heat Pump	HVAC and DHW
Exhaust Air Heat Recovery Heat Pump	HVAC
Sewage Heat Recovery Heat Pump	DHW
Electric Boiler	HVAC and DHW
Electric Water Heater	DHW
High-efficiency (>75%) HRV (heat recovery ventilator)	HVAC
Air Source VRF (variable refrigerant flow)	HVAC
Water Source VRF	HVAC and DHW

The Opportunity – Electrification of Industry

CleanBC Goal – making BC industries the cleanest in the world.

- BC Hydro electricity is a clean energy advantage
- Oil, Gas and LNG sector growth
 - Upstream gas electrification
 - LNG Canada – electricity use
- Interconnection challenges – location of customers to existing transmission, extension costs, timelines
- Both system and site specific work solutions required

