



B2E Webinar

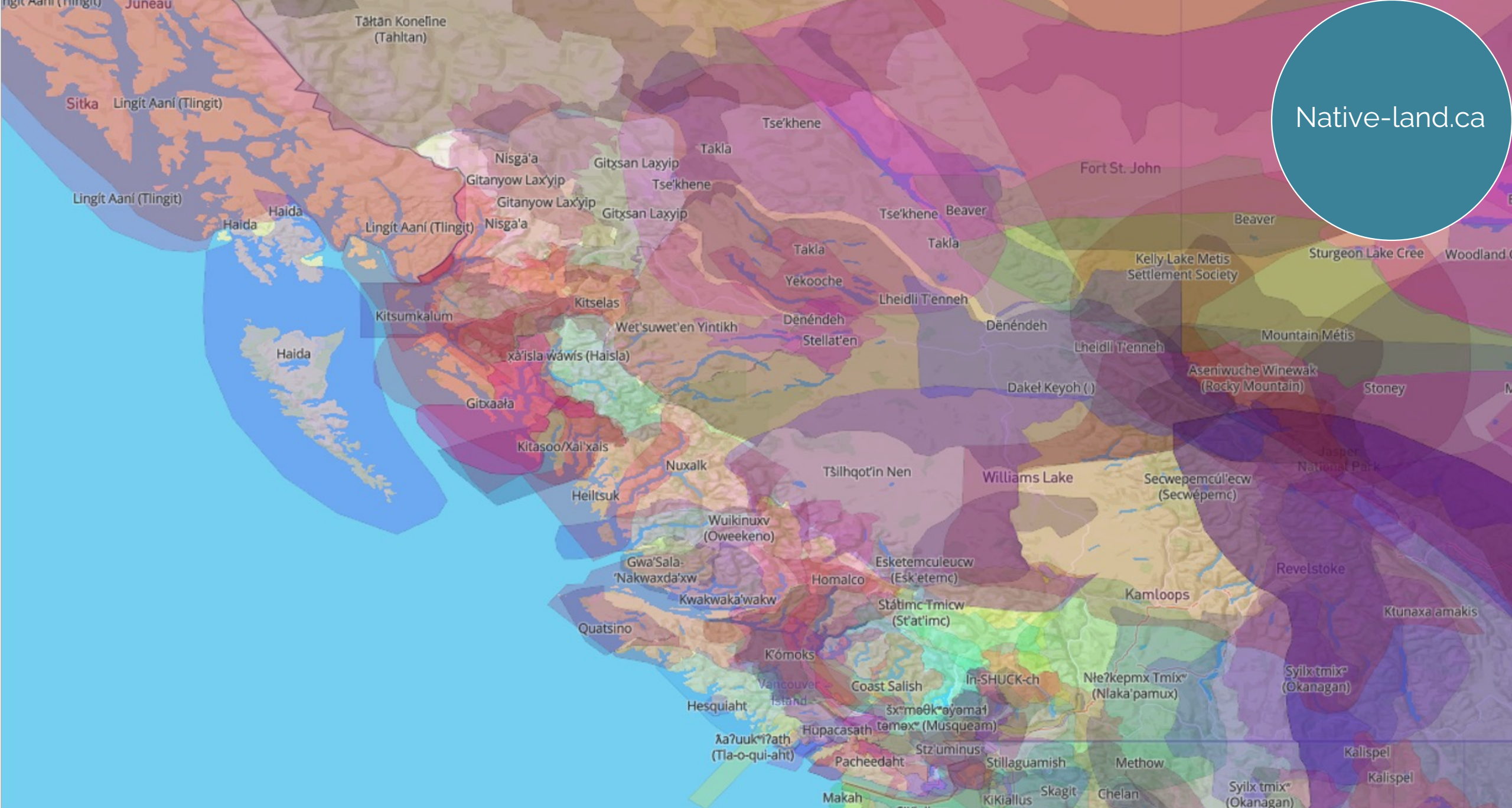
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BC Hydro
Power smart



Is BC Ready for Electrification?

9:30 to 11am, Fri, Sep 29, 2023 PDT



Today's Speakers



- 1** **“Setting the Stage”** Jacqueline Spray, Director, Customer Engagement and Sales
- 2** **“What is Market Transformation”** Robyn Wark, Manager, Market Transformation
- 3** **“Ensuring Adequate Supply”** Alex Tu, Senior Strategic Technology Specialist
- 4** **“Ensuring Grid Reliability”** Aaron Ellis, Manager, Distribution Planning, Lower Mainland



zeic

ZERO EMISSIONS INNOVATION CENTRE

MORE SOLUTIONS, LESS CARBON.

zeb_x



B2E



Carbon
Leadership
Forum
**British
Columbia**



NearZero

We are a broad coalition working together to electrify buildings in British Columbia in order to reduce their climate impacts and reliance on fossil fuels.



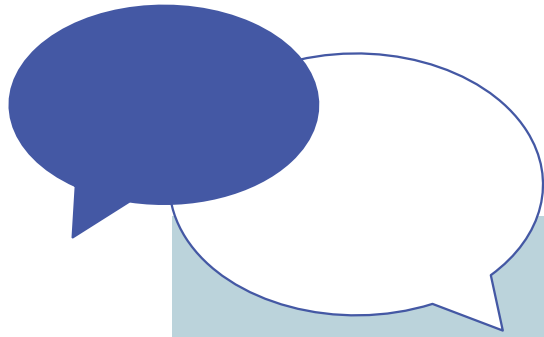
B2E
Building to
Electrification
Coalition

B2E Projects

2022-2023



Recipient	Project
City of Vancouver	Domestic Hot Water Pilot – Near Zero Stream 3
Community Energy Association	Climate-Friendly Homes Tour
City Green	Heat Pump Installer Training Pathways
SES + First Light + Olympic International	Commercial Electrification Best Practices Guide
Fresco	MURB In-Suite Electrification Without Panel Upgrades
Fresco	MURB Electrification Planning Building + EVSE
Bright Future Studio	The State of Electrification in BC



Tell us about yourself!
Three-part anonymous poll



B2E
Building to
Electrification

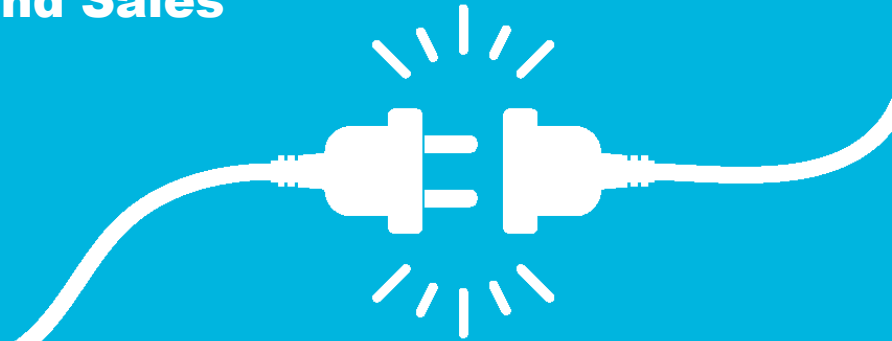
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Part One

Setting the Stage

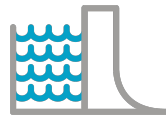
Jacqueline Spray

**Director, Customer Engagement and Sales
BC Hydro**



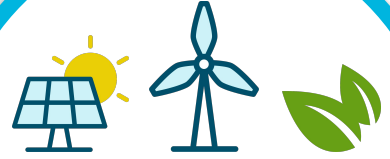
A robust power system

**5 million
customers**



30

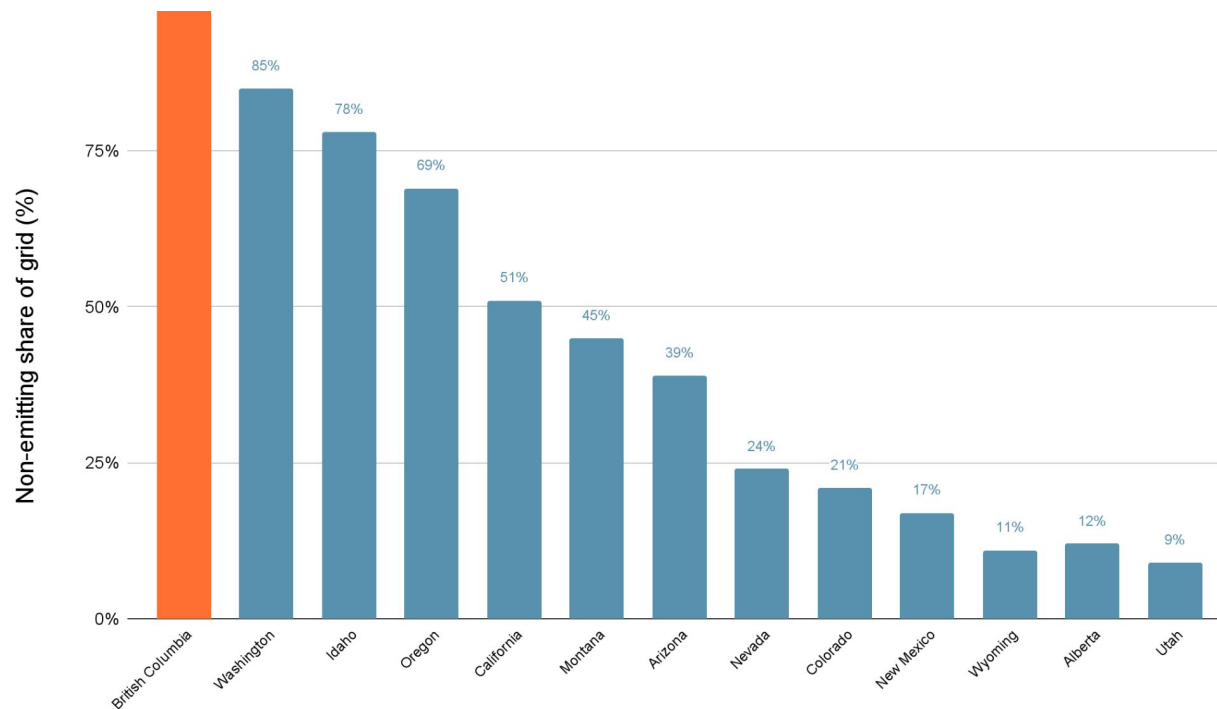
Hydro plants

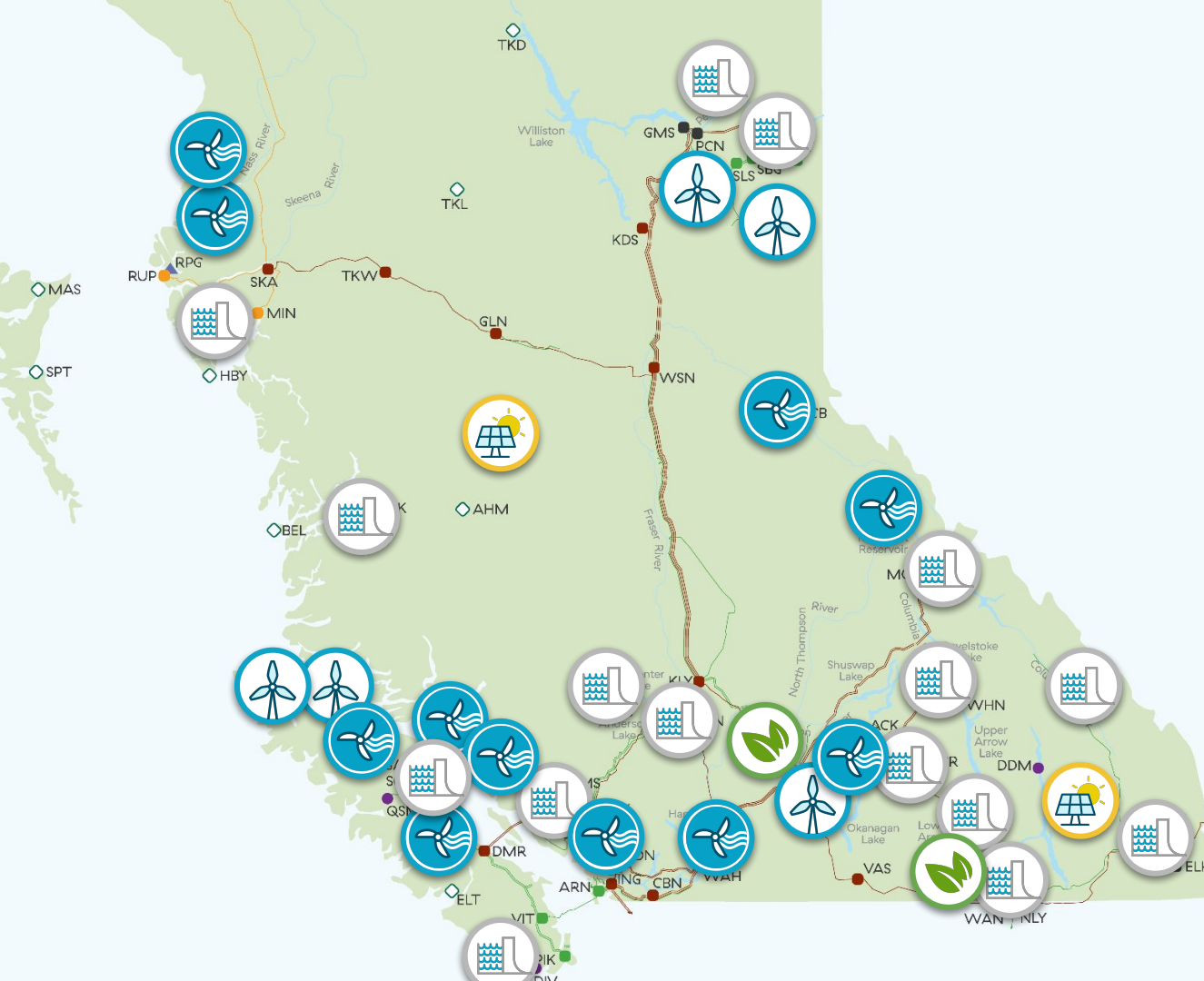


125

Private power
producers

A clean power leader





Where does our electricity originate?



69%
Large hydro



19%
IPP hydro



5%
Biomass



3%
Wind



<1%
Solar

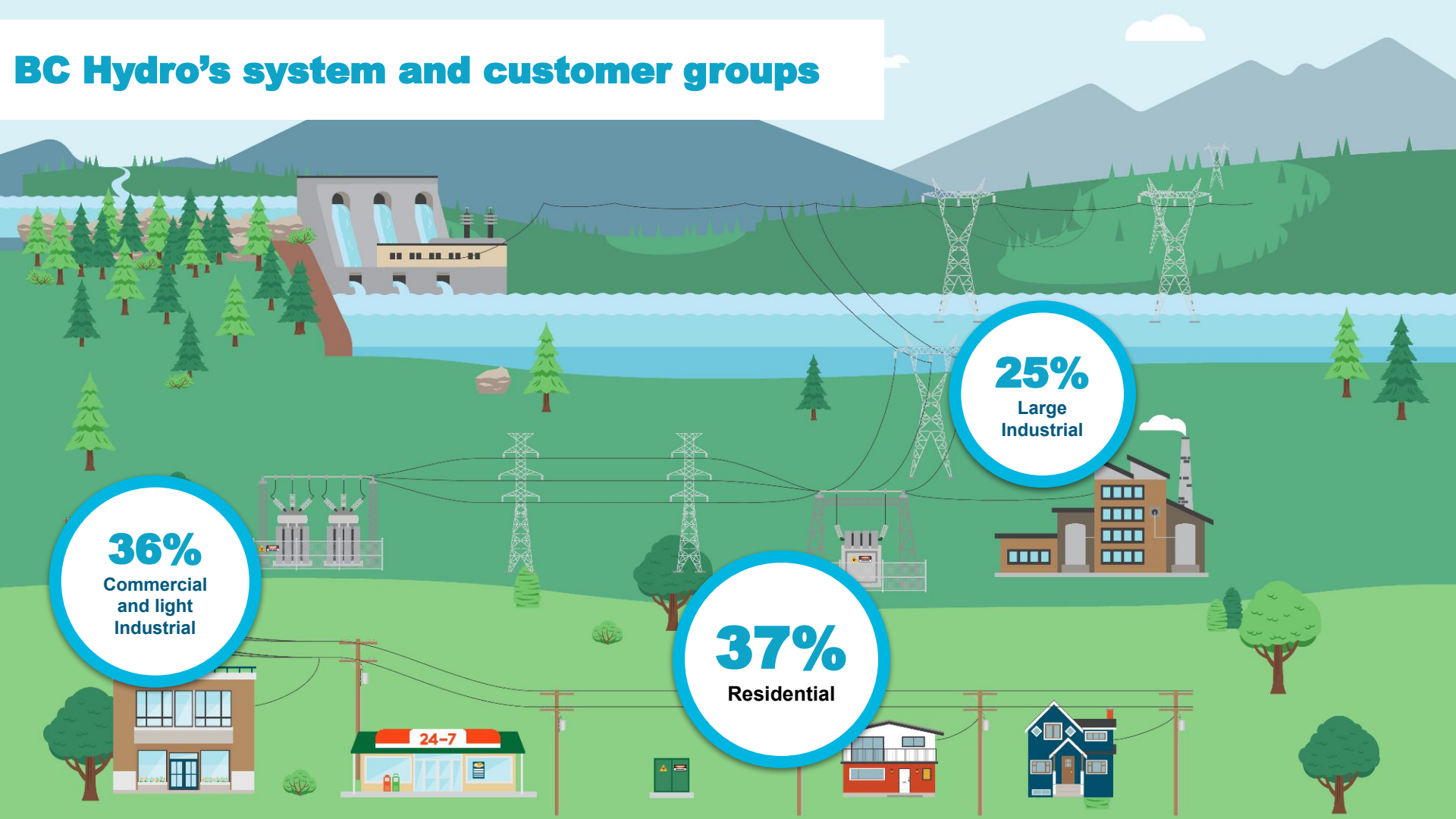
2023/24 - 2025/26 Service Plan (Feb 2023).
Gas is approximately 1.4%

BC Hydro's system and customer groups

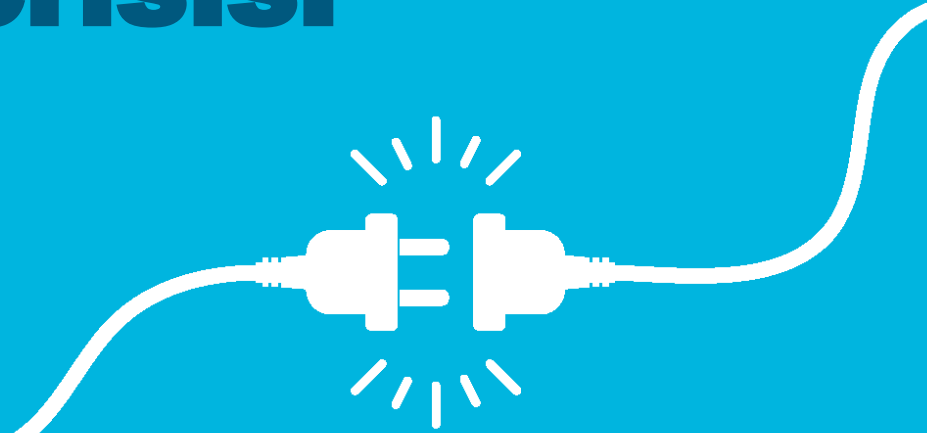
36%
Commercial
and light
Industrial

37%
Residential

25%
Large
Industrial

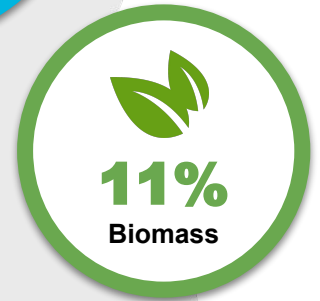
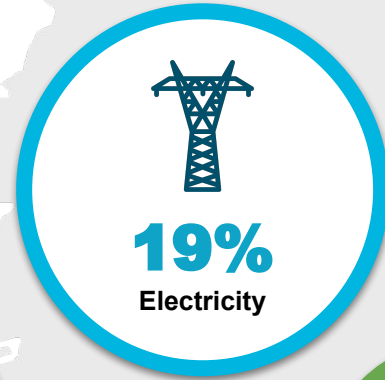
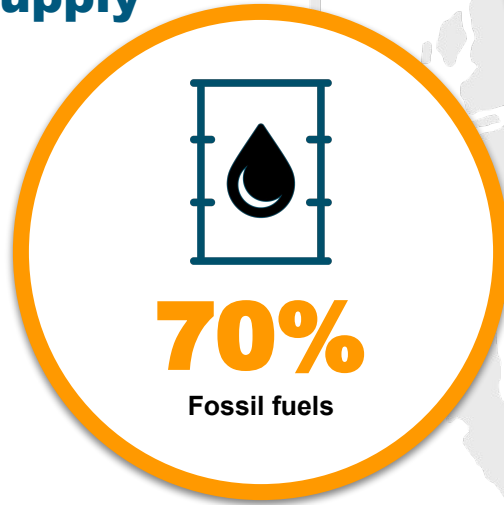


**Electrification is
a lead solution to
the climate crisis.**

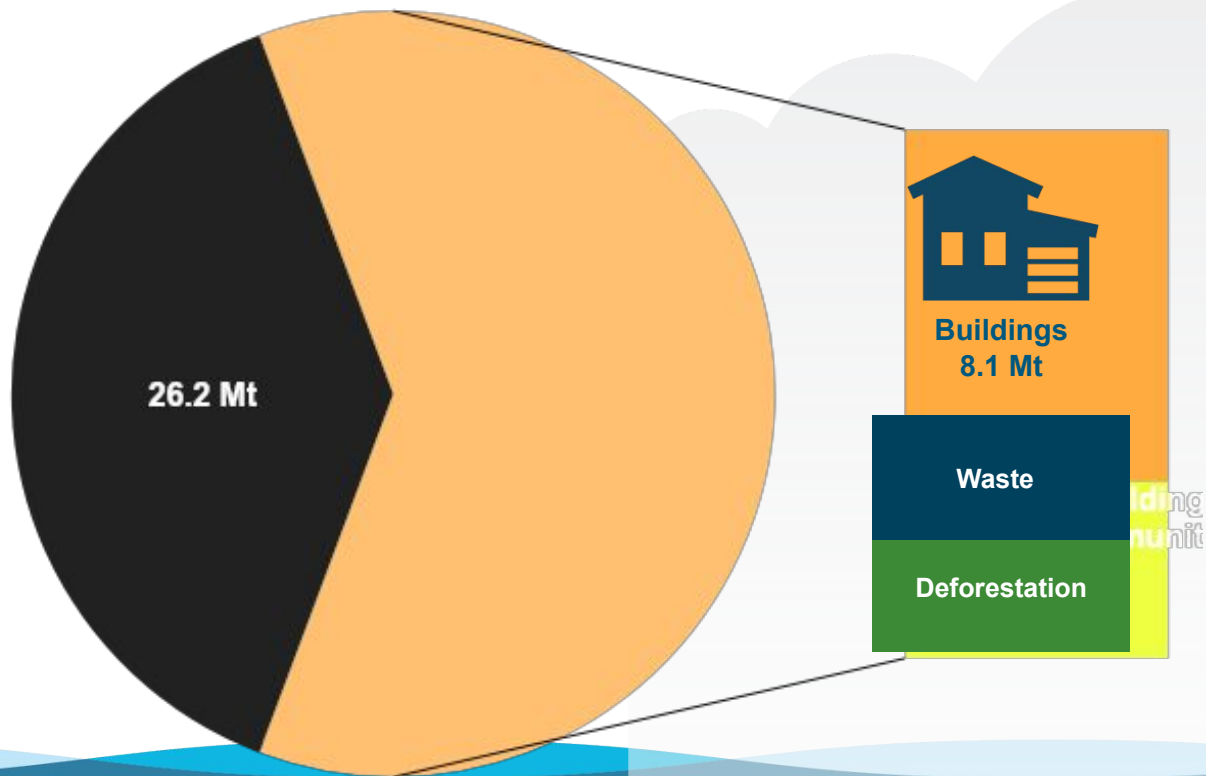


BC's starting point

Fossil fuels currently supply most of our province's energy needs



B.C.'s gross emissions by sector



The role of buildings

Relative share of overall carbon pollution produced by natural gas, fuel oil, and propane burned in buildings.

57%

City of Vancouver



12%
British
Columbia



29%

City of Kamloops



38%

City of
Prince George

The Electrification Plan

BC Hydro's Electrification Plan

A clean future powered by water

SEPTEMBER 2021

 **BC Hydro**
Power smart

\$26M

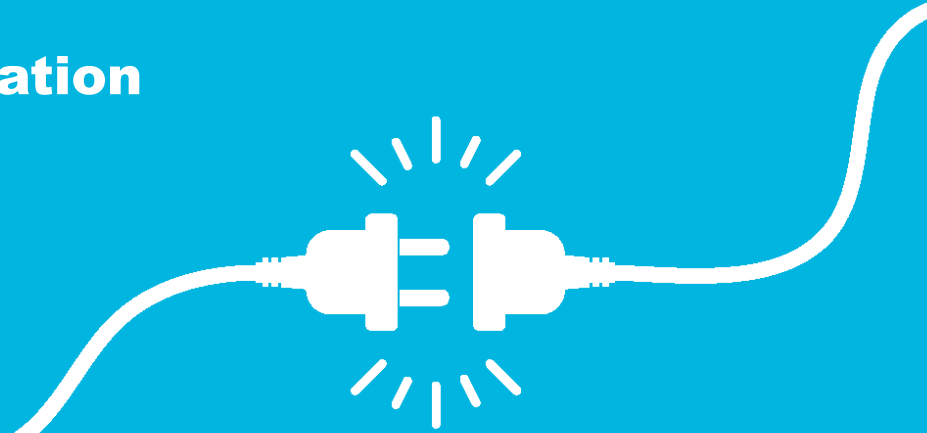
To electrify
buildings

Part Two

Building Electrification: Transitioning to Zero Carbon Buildings

Robyn Wark

Manager, Market Transformation



All-electric buildings are not a new concept ...



Woodburn and Sons
Present the Nation's First

Gold Medallion

all-electric home

Freestone Terrace
N. HORNE and E. 6th ST.
MESA

As a hallmark of excellence in electrical living, this small disk is permanently mounted in each home.

Premiere Showing

Woodburn and Sons proudly present the Gold Medallion home—featuring new standards and advancements in electrical living that will highlight the building industry from coast to coast in 1958. Five different models reveal five distinct moods of contemporary design: Scandinavian, Far East, Aztec, Transitional and Conservative.

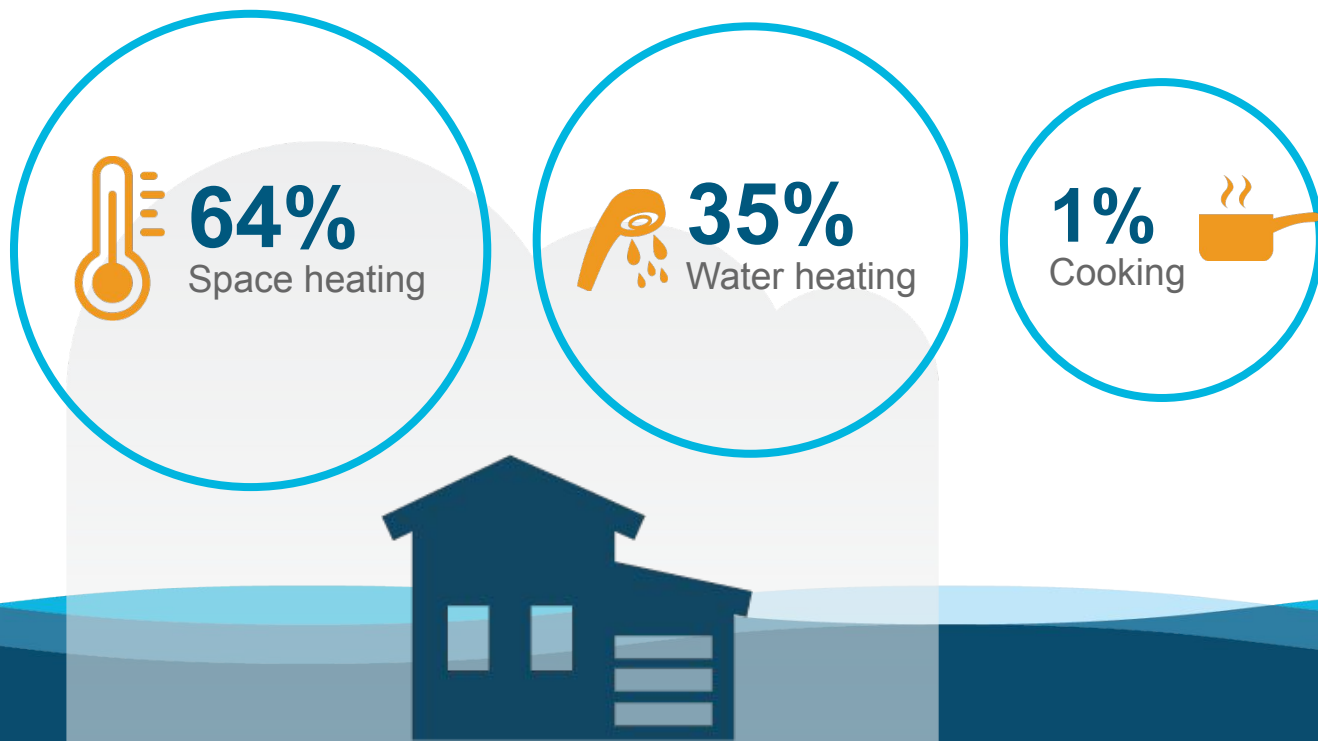
PHOENIX
TEMPE
ARIZONA STATE

PRESTONE TERRACE
W. 4TH ST. E. 4TH ST. E. 6TH ST.
SCHOOL TRANSMISSION BEL.

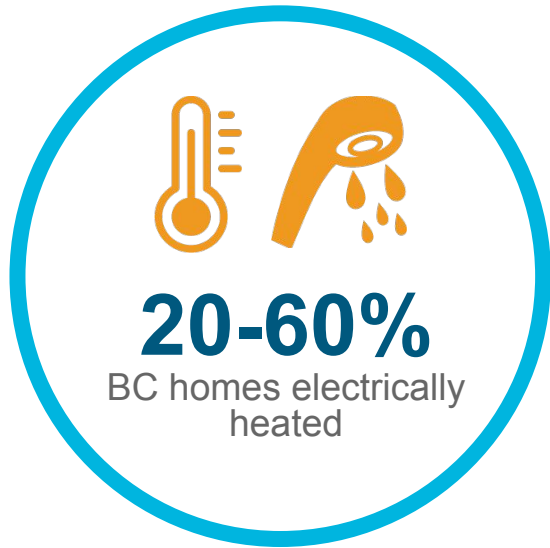
MESA TEMPE SUPERIOR

Fuel switching from natural gas

Space and water heating - the majority of carbon pollution.



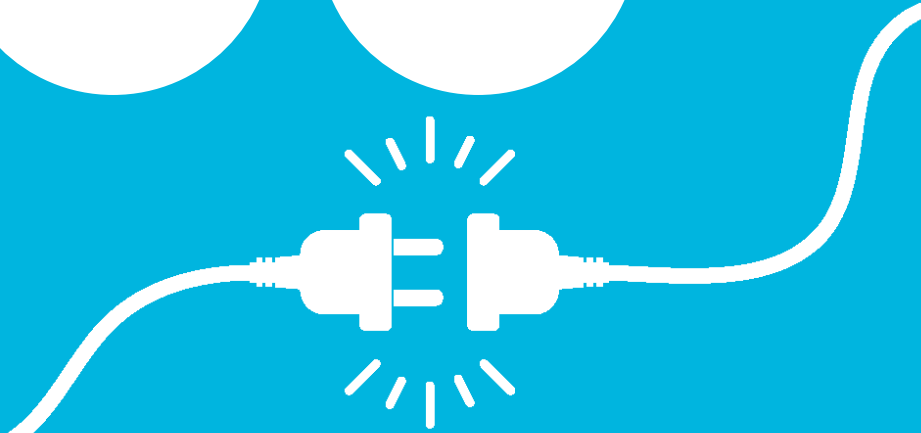
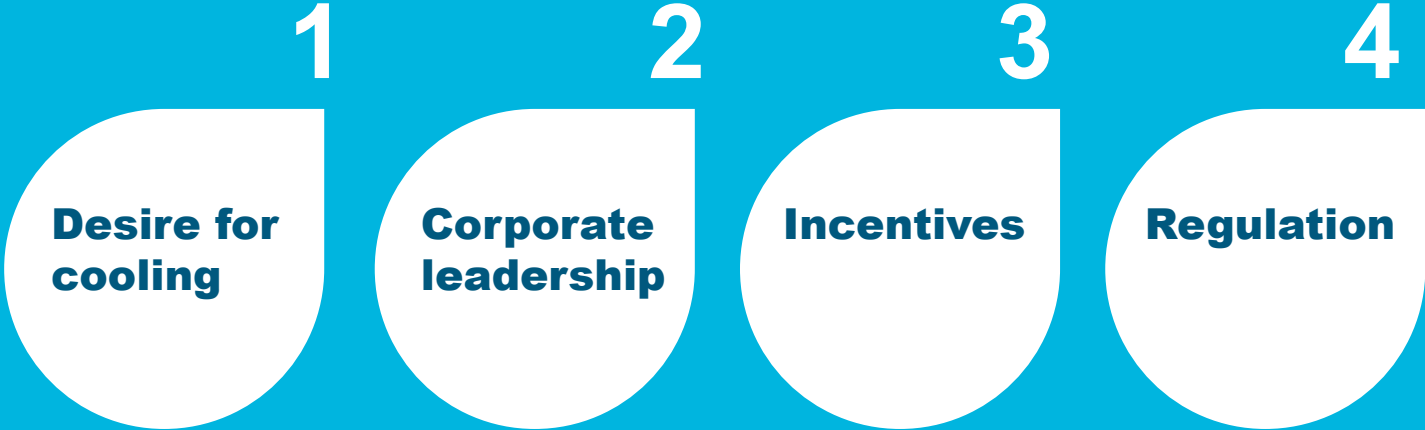
Electrically heated homes



By Region	Space heating	Water heating
Vancouver Island	61%	62%
Lower Mainland	40%	21%
Southern Interior	26%	37%
North	20%	43%

Source: BC Hydro Residential End Use Survey 2020

Drivers for electrification



All-electric single family residential



Courtesy Carbon Wise

All-electric multi-family residential



Courtesy Innovation Building Group

All-electric commercial and institutional buildings



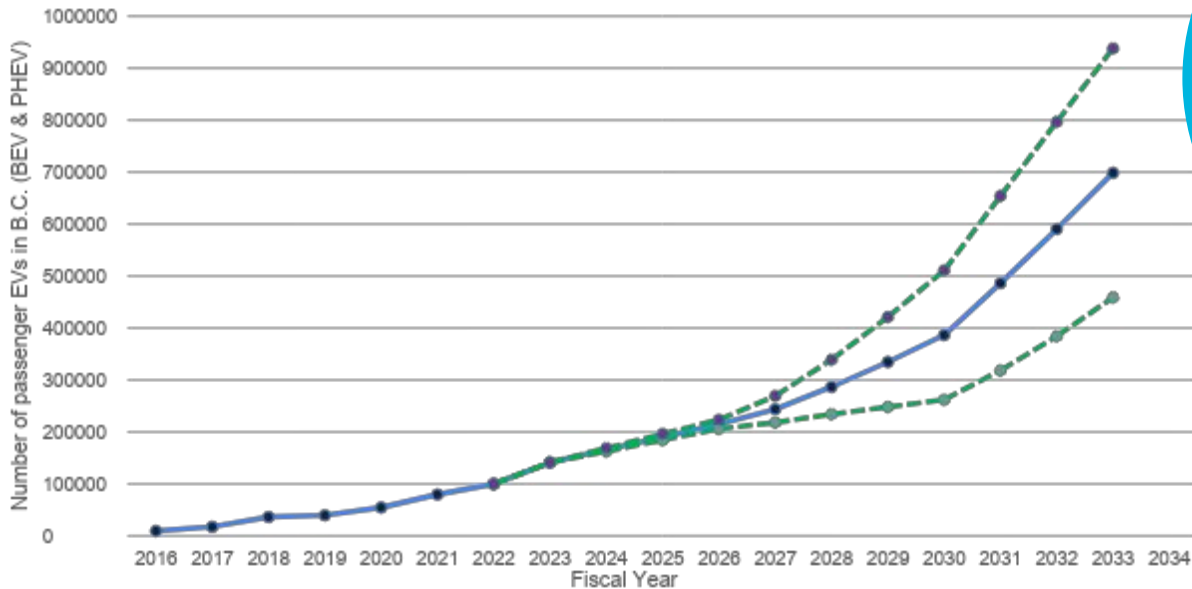
Cowichan District Hospital



Surrey Hospital and BC Cancer Centre

Home electric vehicle charging

Historical and forecast EV stock in B.C.



UP TO
10x
current ZEV
population by
2033

Forecast

Mid

Low

High

Fleet charging: significant community load

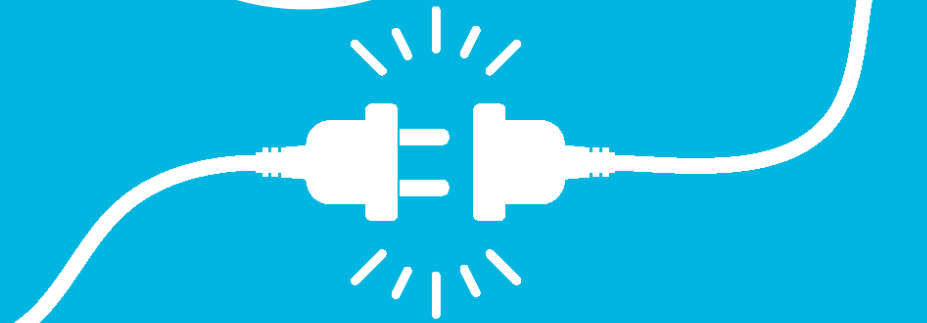


Financial regulations

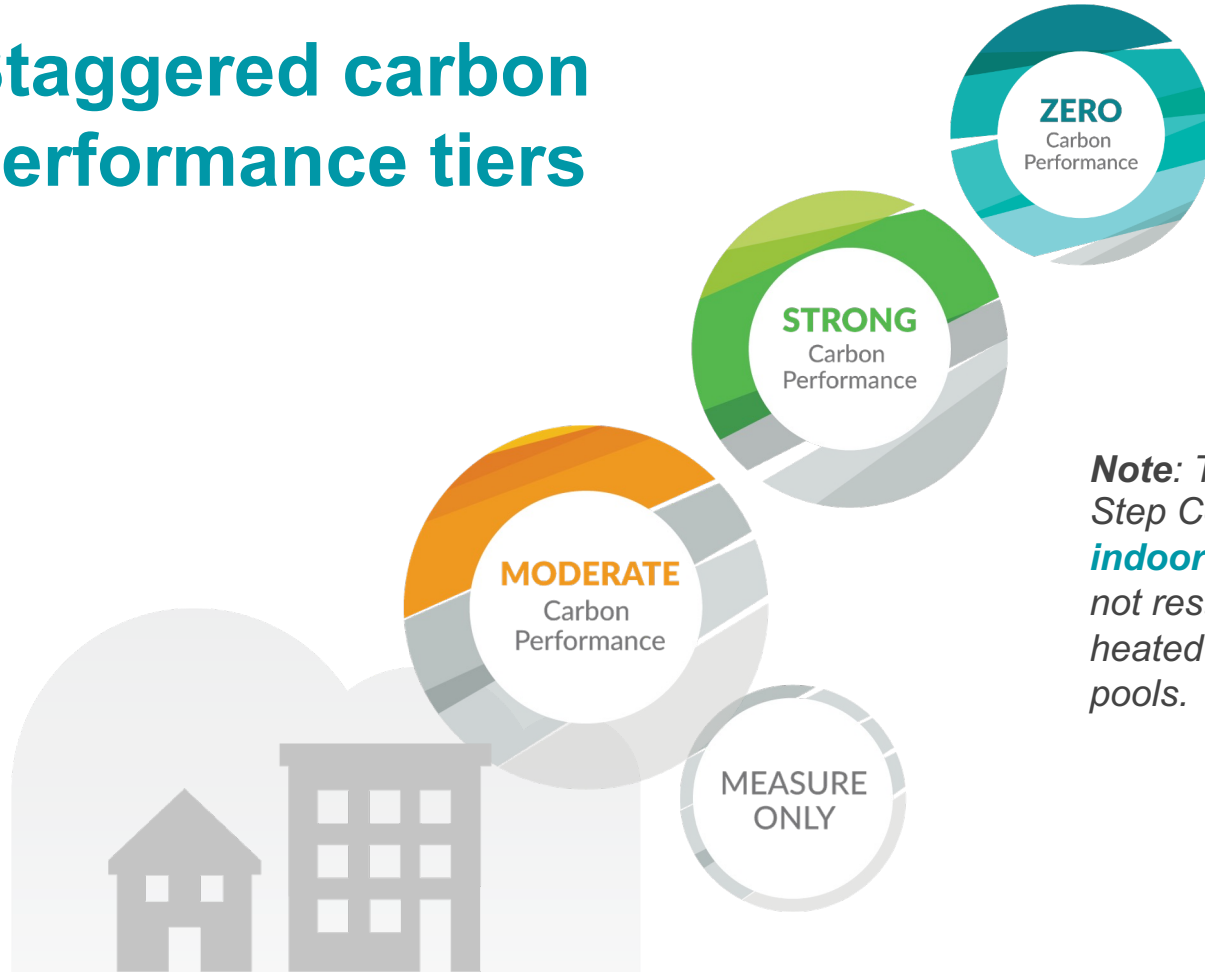
**Carbon
tax**

**Greenhouse
gas reduction
standard for
gas utilities**

**Phase out
allowable
incentives on
natural gas
equipment**



Staggered carbon performance tiers



Note: The Zero Carbon Step Code only regulates **indoor equipment**. It does not restrict outdoor grills, heated driveways, nor pools.

New construction cooling requirements



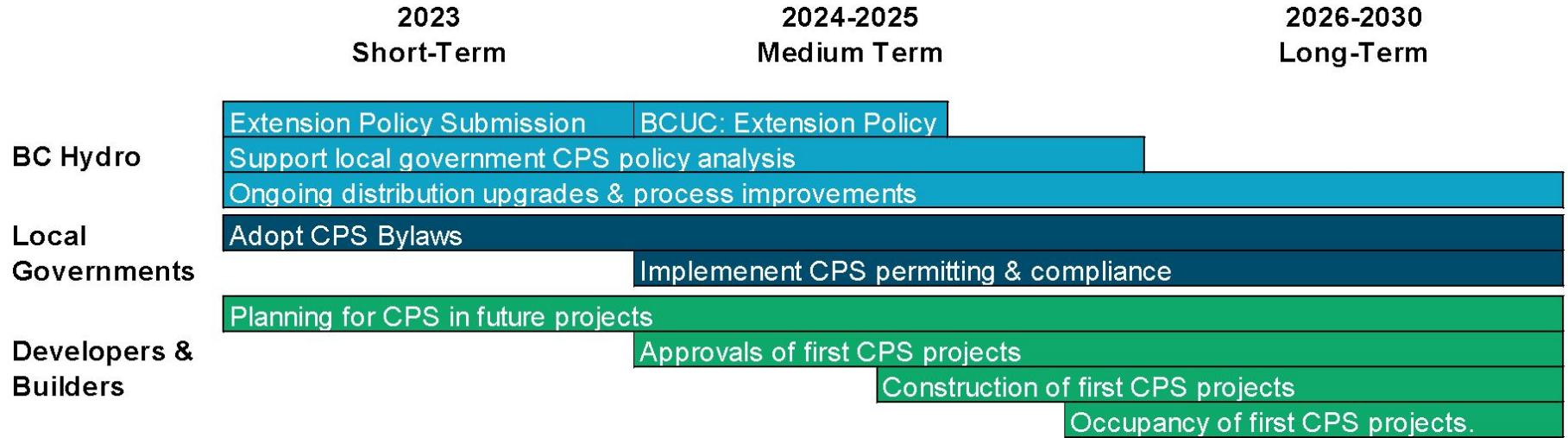
Existing building regulations



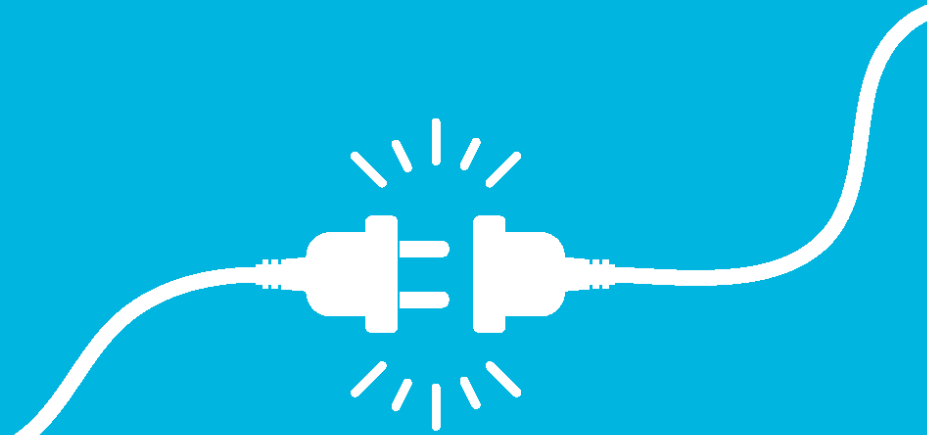
Existing buildings: Carbon Pollution Standard City of Vancouver



Aligning regulations with distribution system upgrades



Thank you

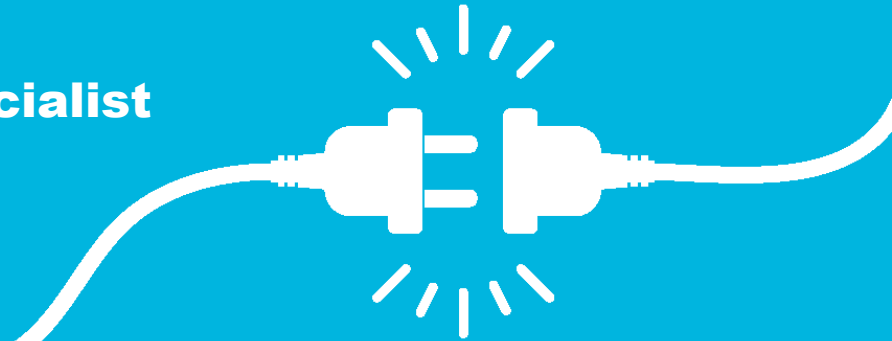


Part Three

Ensuring adequate electricity supply

Alex Tu

Senior Strategic Technology Specialist



Our guidebook

Clean Power 2040
Powering the future

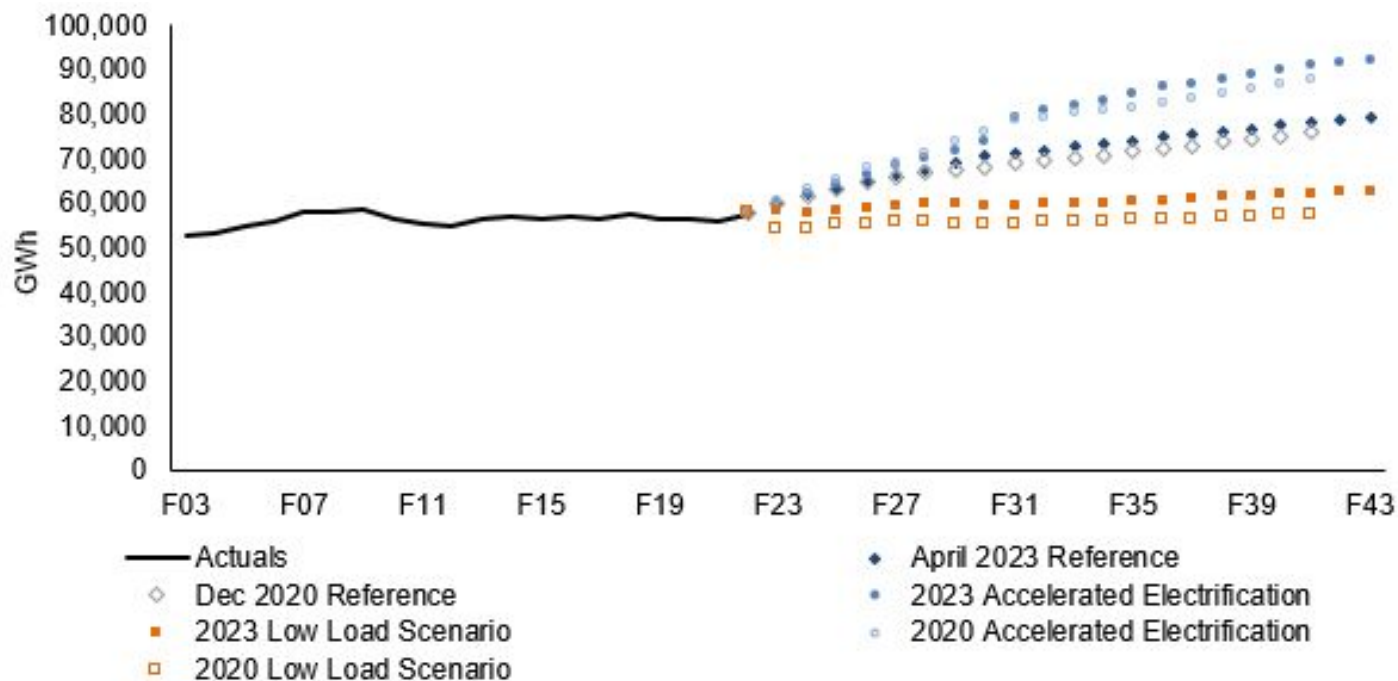
 **BC Hydro**
Power smart

BC Hydro and Power Authority 2021 Integrated Resource Plan

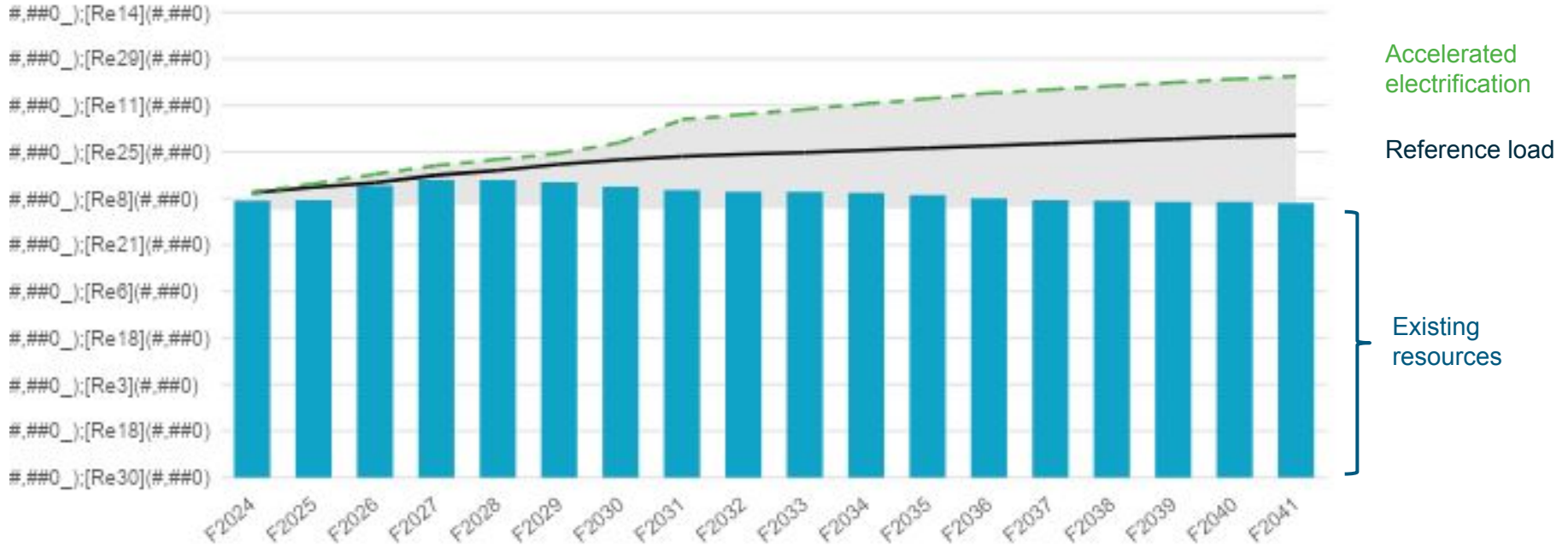
2023 UPDATE

**UPDATE
FILED**
June 2023

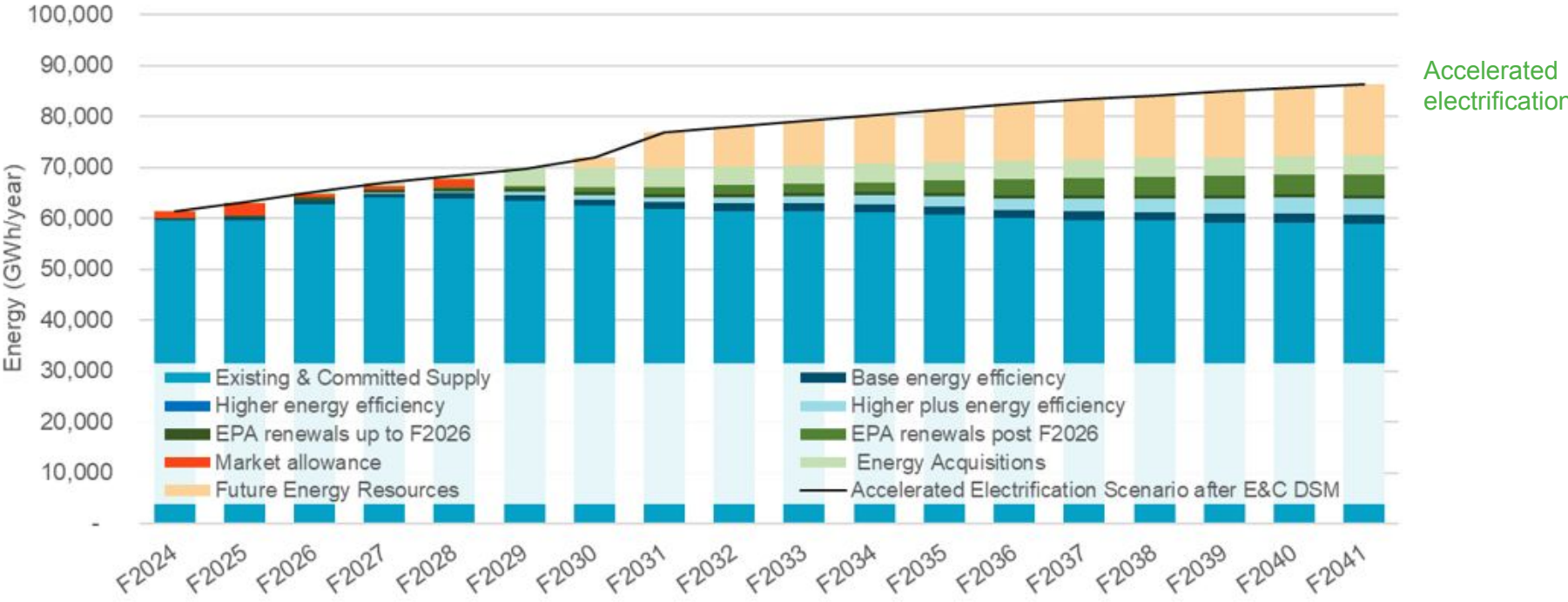
A Range of Possible Futures



Identifying the Demand - Supply Gap



Closing the Demand - Supply Gap



Accelerated electrification



**A call for new
renewable electricity**



Meikle Wind Farm, Tumbler Ridge, B.C.

**Can we add 3,000 GWh of
wind and solar to the grid by 2029?**





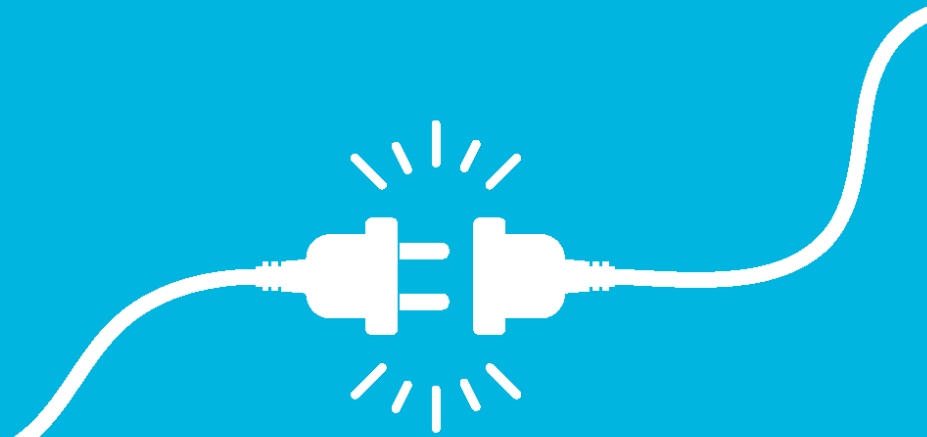
**Alberta added 5,400
GWh of renewables**

B.C.'s solar resource

A large-scale solar farm under construction in a grassy field under a clear blue sky. Two workers in high-visibility vests are visible on the solar panels in the distance.

Haida TLL, Kahda Energy Solar North Project, June 2023

Thank you

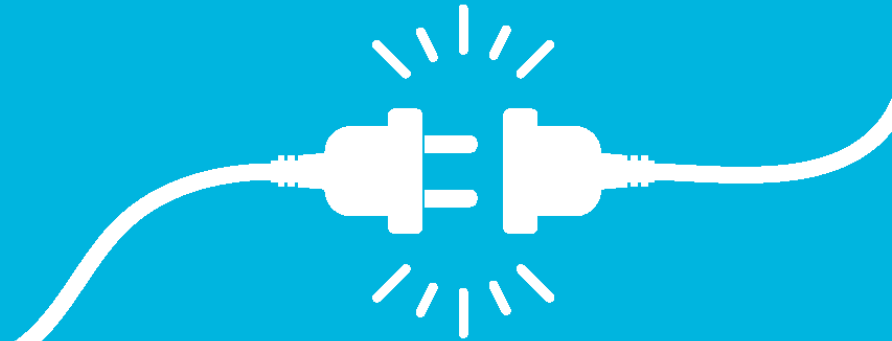


Part Four

Ensuring grid reliability

Aaron Ellis

**Manager, Distribution Planning
Lower Mainland**



Transmission versus distribution



What is driving the capacity question?

**New Construction
+ Densification**



Electrification



**Energy Efficiency /
Demand Side Management**

Boosting transmission capacity



Strengthening the distribution grid





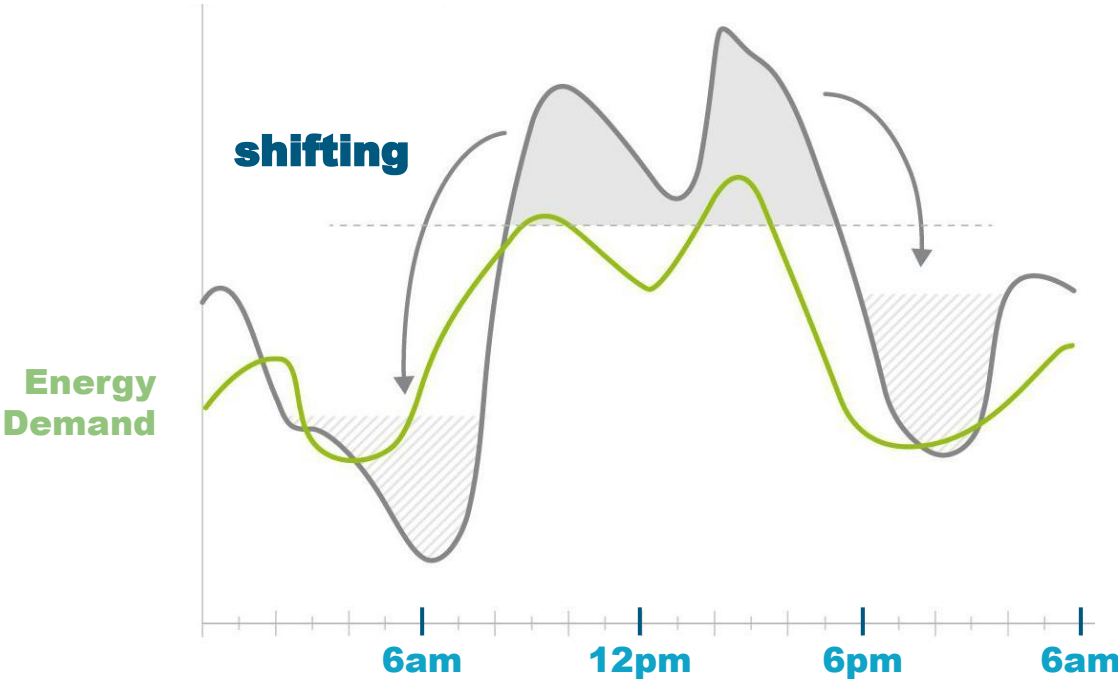
Increasing our distribution grid capacity

Courtesy Ross Morrison Electrical

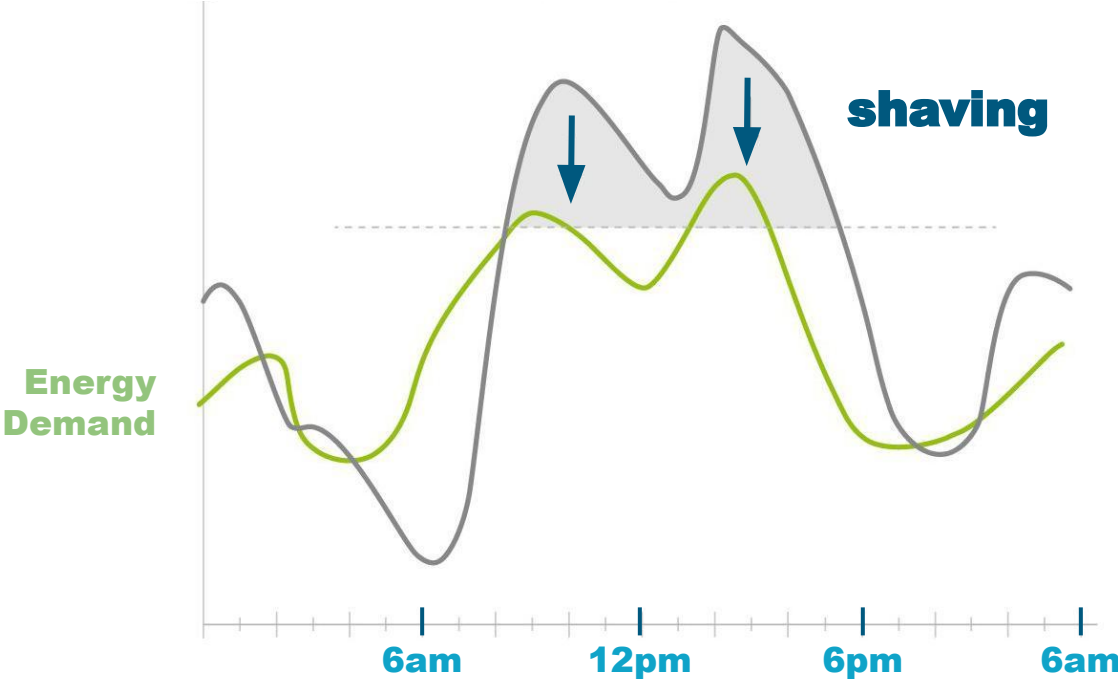
Improving customer connections



Balancing the grid: Load shifting



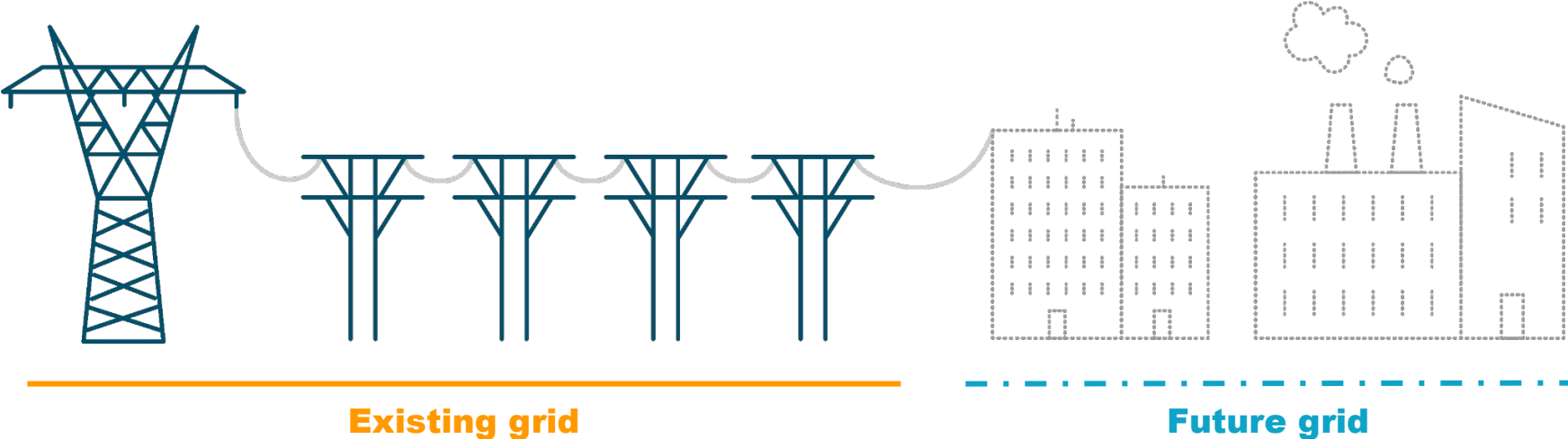
Balancing the grid: Peak shaving



Utility-scale batteries

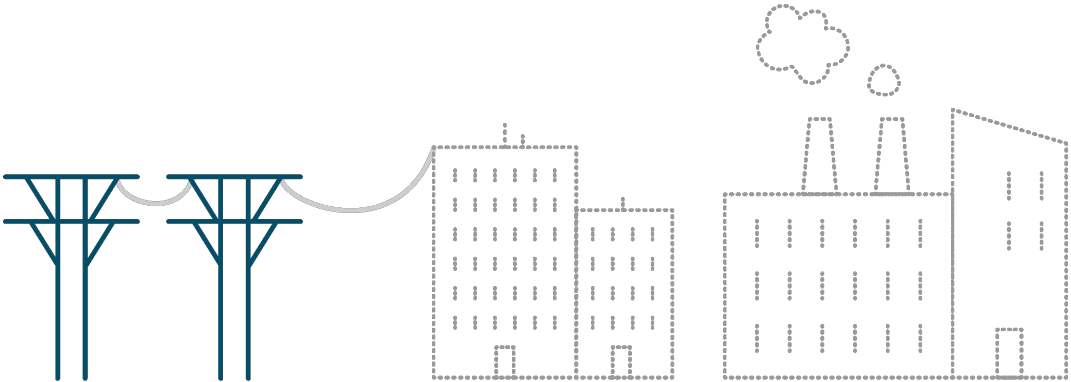


Challenges: Grid extensions



Challenges: Connection timelines

4,800
Complex
connections
each year



Thank you

