FortisBC Community Engagement Workshop

Natural gas & electric long term resource planning

October 8-10, 2019

Energy at work FORTIS BC™

Safety message

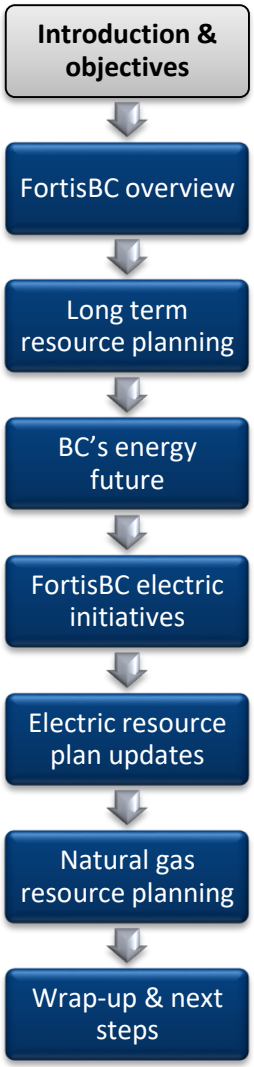
- Identify the location of emergency exits
- Determine the muster location in case we have to evacuate the building
- Dial 911 for emergencies

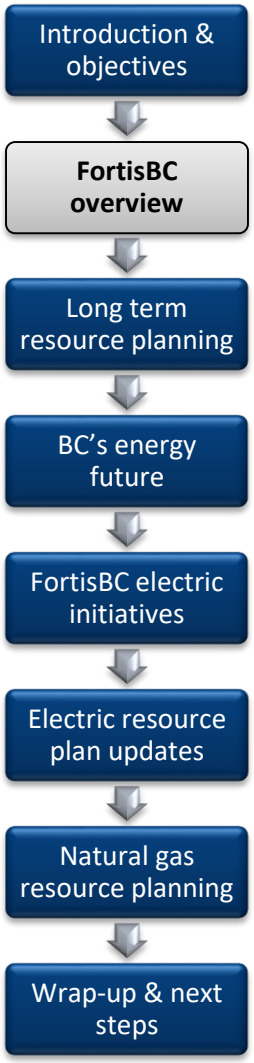
Legal disclaimer for an open dialogue

- Your input provided during this workshop may become public during our regulatory proceedings
- We will not attribute input to individual entities (Chatham House Rule)
- We encourage you to provide further input during the formal regulatory proceedings – even if your opinions have changed (no prejudice)

What we hope to achieve today

1. Obtain your feedback on long term resource planning issues
2. Provide a better understanding of the energy planning environment
3. Raise awareness of local community initiatives and natural gas for transportation, renewable natural gas
4. Determine your energy priorities
5. Identify community opportunities and concerns





Energy at work FORTIS BC™

FortisBC: delivering natural gas, electricity and piped propane

- Serving 1.2 million customers across 135 communities

Today's focus: FortisBC's combined service territory

Community engagement

FORTIS BC™

We're dedicated to giving back where we live and work.

Community Investment Program

Youth Energy Efficiency and Safety Education Programs

Residential Energy Efficiency Works (REnEW) Program

Climate Action Partners Program

To assist in
developing, promoting and delivering
renewable & low carbon energy solutions
throughout B.C.

- Conservation & energy management
- Natural gas for transportation
- Electric vehicle infrastructure
- Renewable natural gas
- Hydrogen injection study

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Questions?

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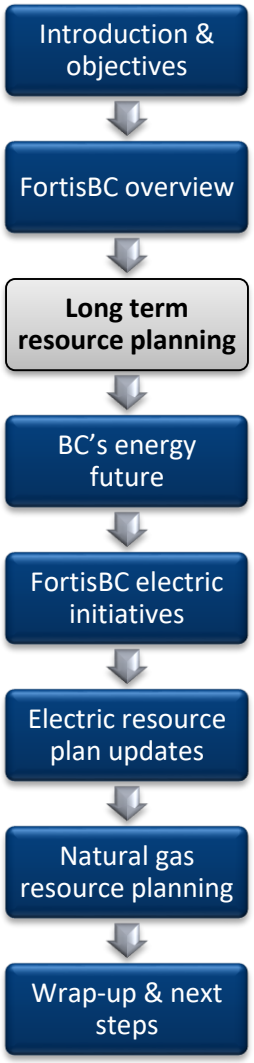


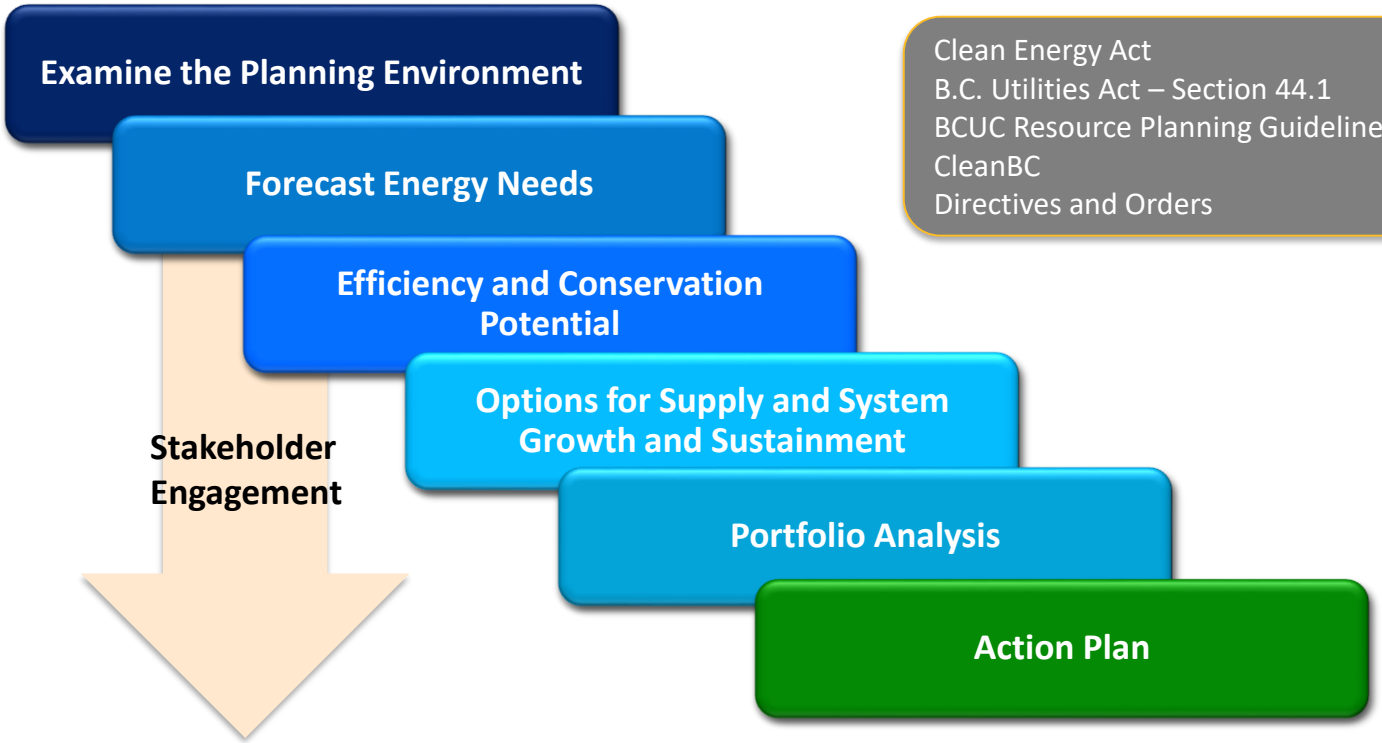
Energy at work FORTIS BC™

Thank you for providing feedback on our last resource plans:

- Priority on continuing to receive reliable energy supply
- Programs and initiatives to help customers and communities manage energy costs and emissions
- Finding solutions to reduce GHG emissions
- Street light conversion to LEDs
- Emerging technologies such as electric vehicles, rooftop solar and cellulosic biogas
- Coordinating activities between utilities and municipalities
- More educational resources for customers and communities regarding energy savings and new technologies.

The resource planning process

What resources must FortisBC have in place to supply customers' energy needs safely, reliably and cost-effectively over the next 20 years?



Clean Energy Act
B.C. Utilities Act – Section 44.1
BCUC Resource Planning Guidelines
CleanBC
Directives and Orders

Natural gas vs. electric resource planning

Electricity

Generation | Market Purchases | Transmission & Distribution | Delivered to Customers | Energy Efficiency & Conservation





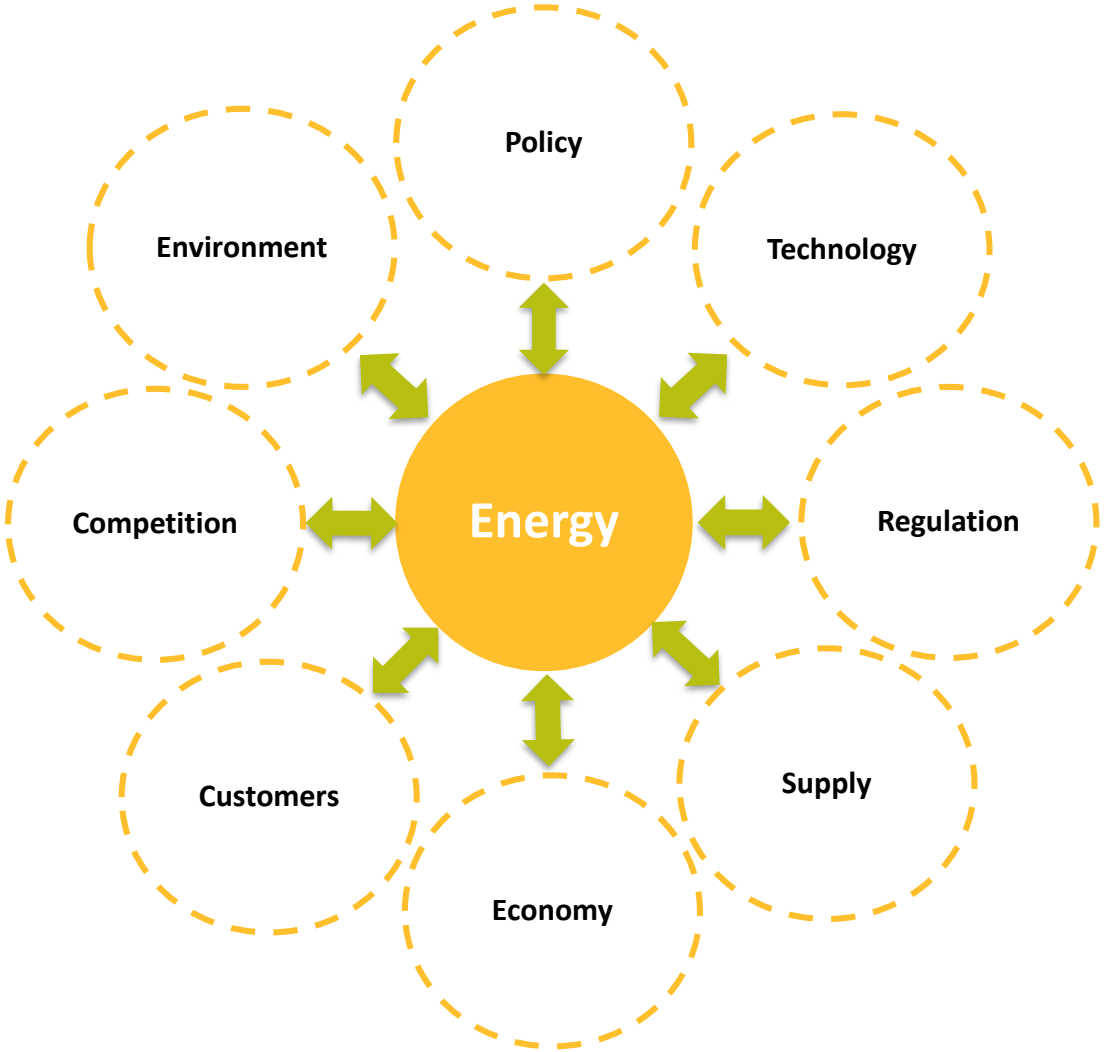
Natural Gas

Generation | Market Purchases | Distribution | Delivered to Customers | Energy Efficiency & Conservation






Planning environment: the factors that influence the analysis



Our preliminary resource planning objectives

- Ensure cost effective, secure and reliable energy for customers
- Provide cost-effective demand-side management and cleaner customer solutions
- Ensure consistency with provincial energy objectives (e.g. applicable *Clean Energy Act* objectives, CleanBC plan)

Questions?

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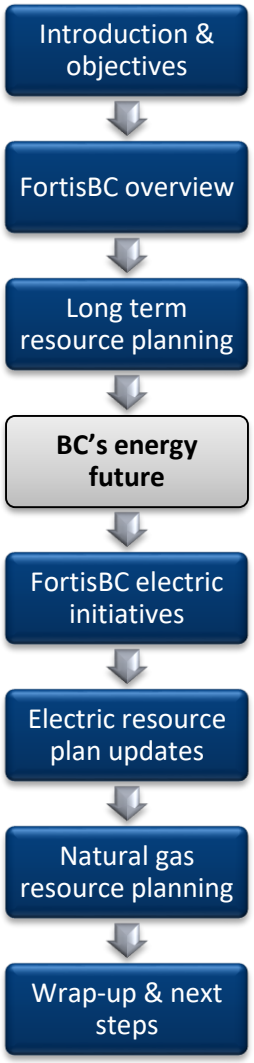
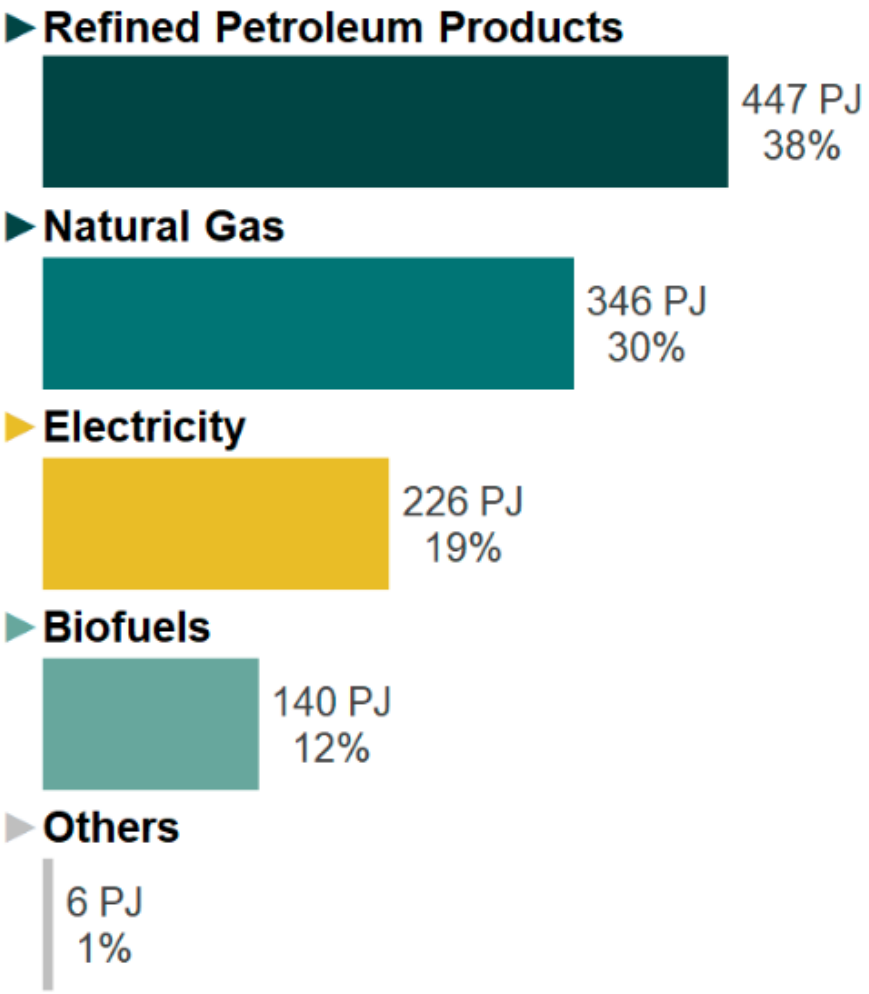


Energy at work FORTIS BC™

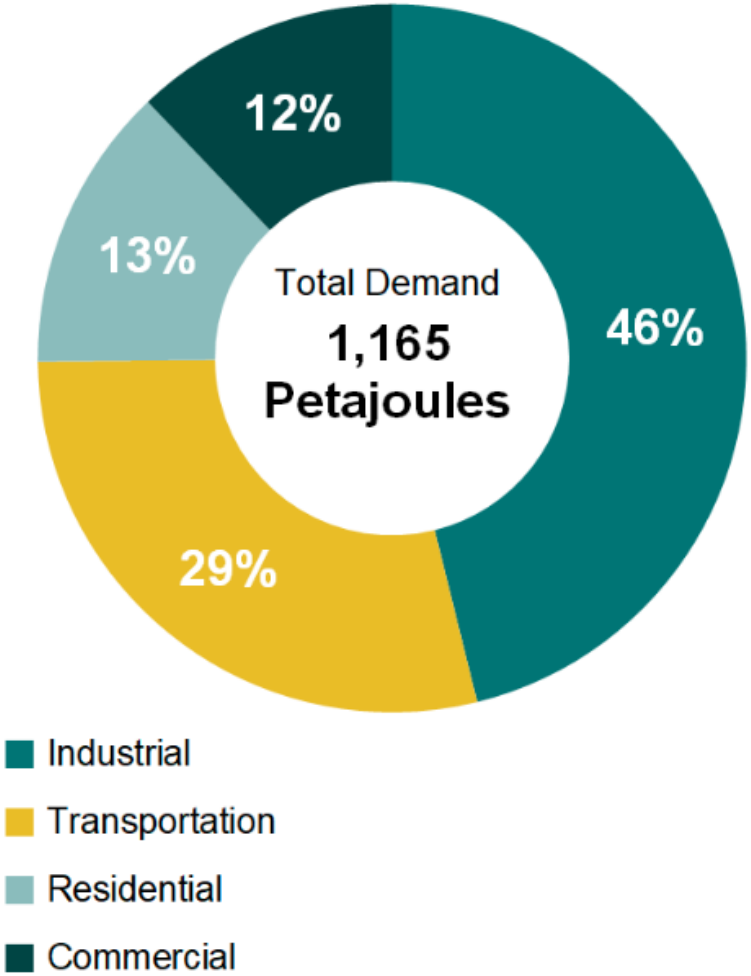
Refined petroleum products account for the largest share of total energy use

NEB (2016): End-Use Demand by Fuel in BC



Industry consumes a significant amount of energy across BC

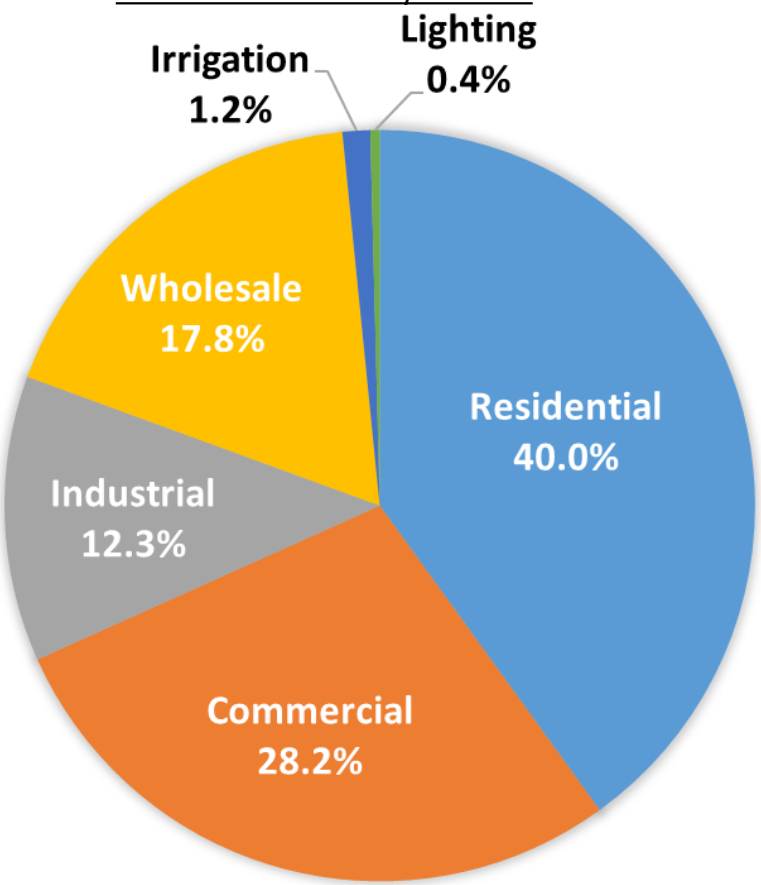
NEB (2016): Total All-Fuel Energy Demand



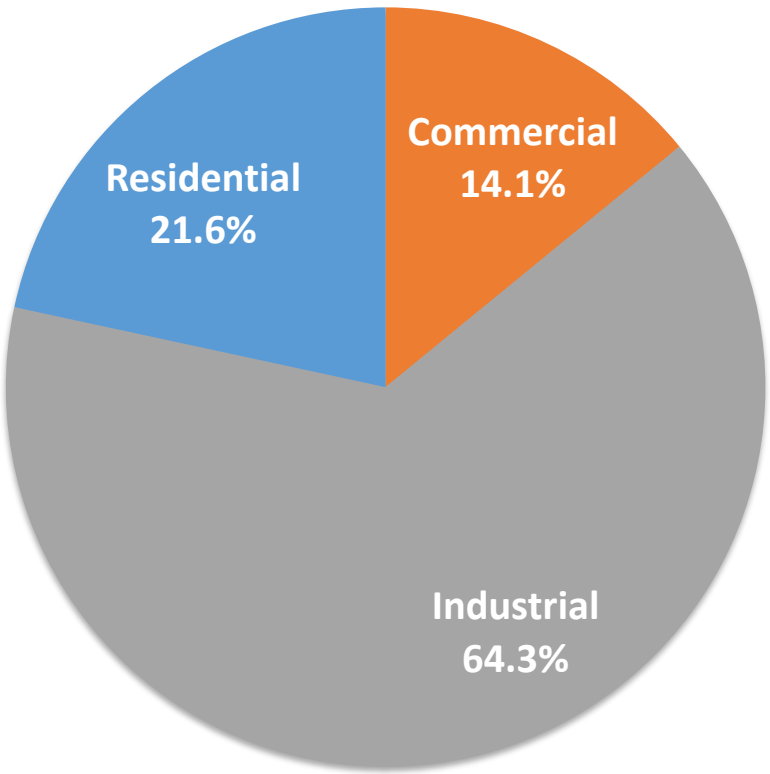
In the FortisBC Shared Service Area

In 2018, the Shared Service Area represented 40 PJ of natural gas and 13 PJ of electricity annual demand:

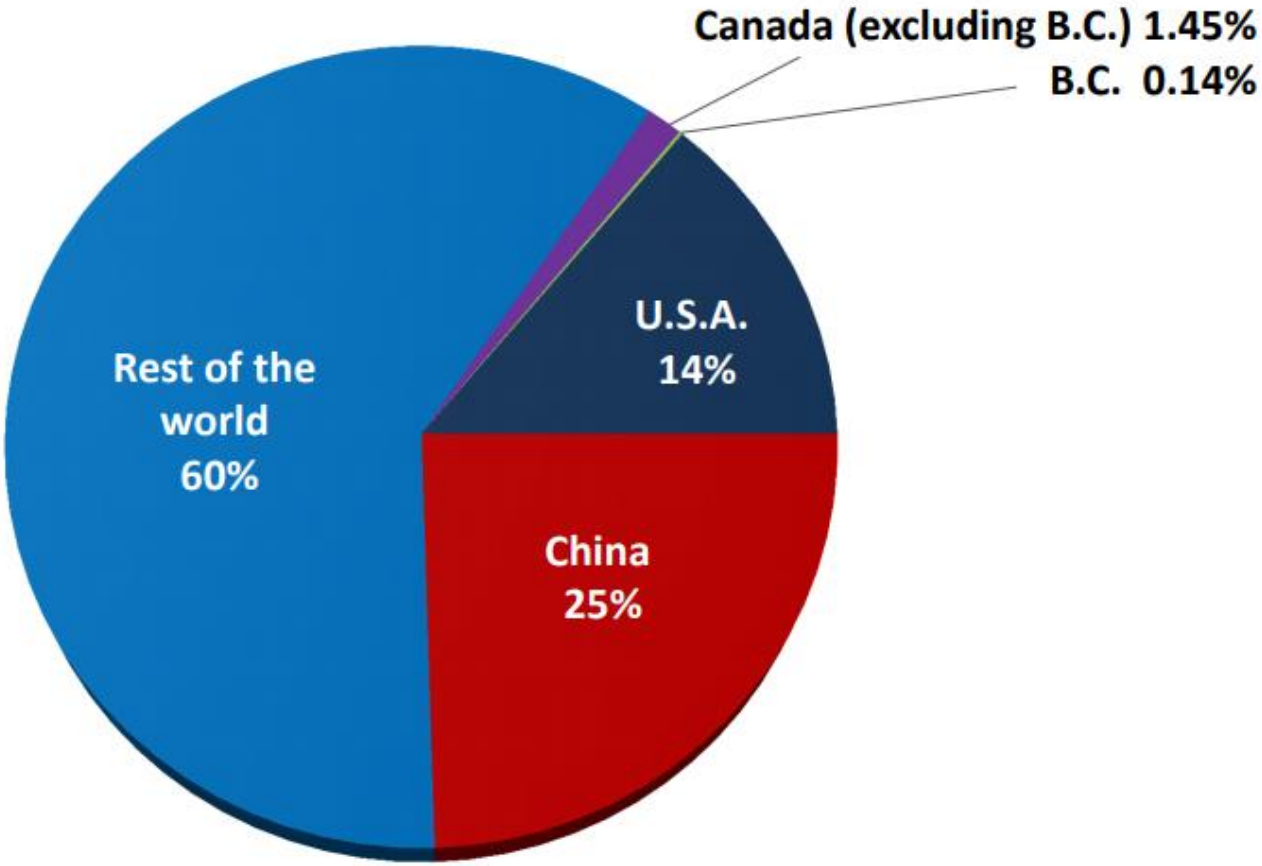
2018 Annual Electricity Demand



2018 Annual Gas Demand



BC by itself is responsible for a small share of global GHG emissions



Source: Environment & Climate Change Canada (2014) and City of Vancouver Greenest City 2020 Action Plan (2014)

BC's energy systems face multiple challenges and opportunities

Economic & Social Development

- Affordability
- Access
- Employment

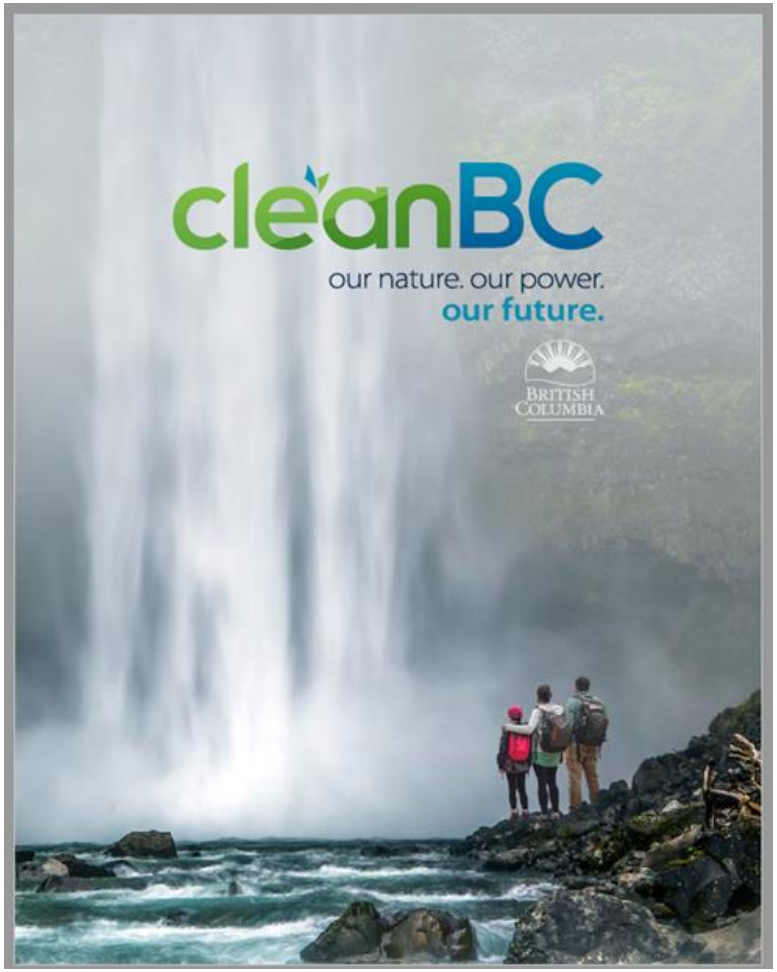
Environmental Stewardship

- GHG Emissions
- Air Quality
- Ecosystem Impacts

Reliability

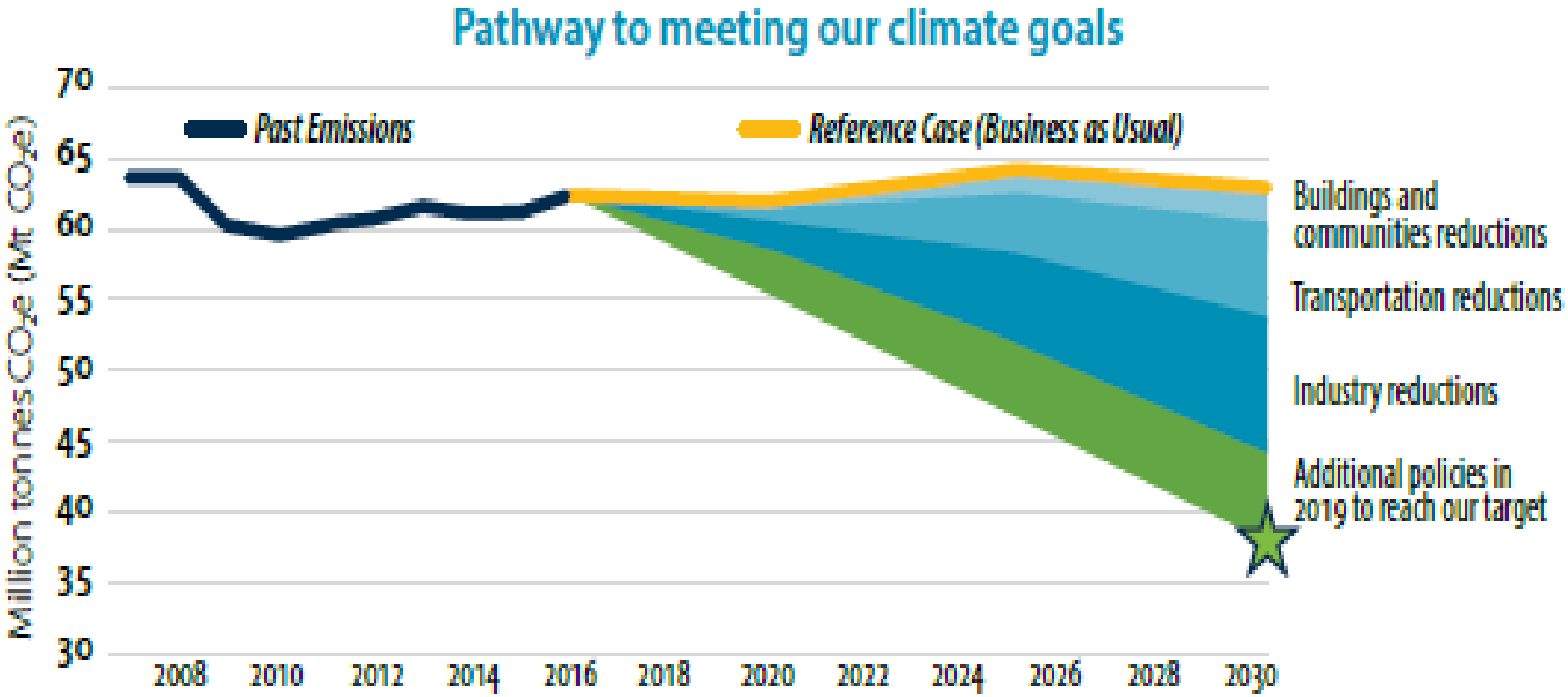
- Supply
- Resilience

The Province has published CleanBC to help address this complexity



- Better buildings
- Reducing pollution from industry
- Cleaner transportation
- Reducing emissions from waste
- Clean energy jobs
- www.cleanbc.gov.bc.ca

CleanBC targets a 40% GHG emissions reduction from 2007 until 2030



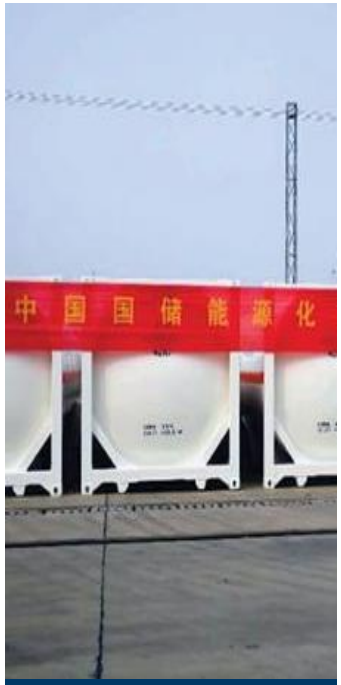
Source: CleanBC, p. 10

FortisBC Emissions Reduction Target

Four pillars of our Clean Growth Pathway

Energy efficiency

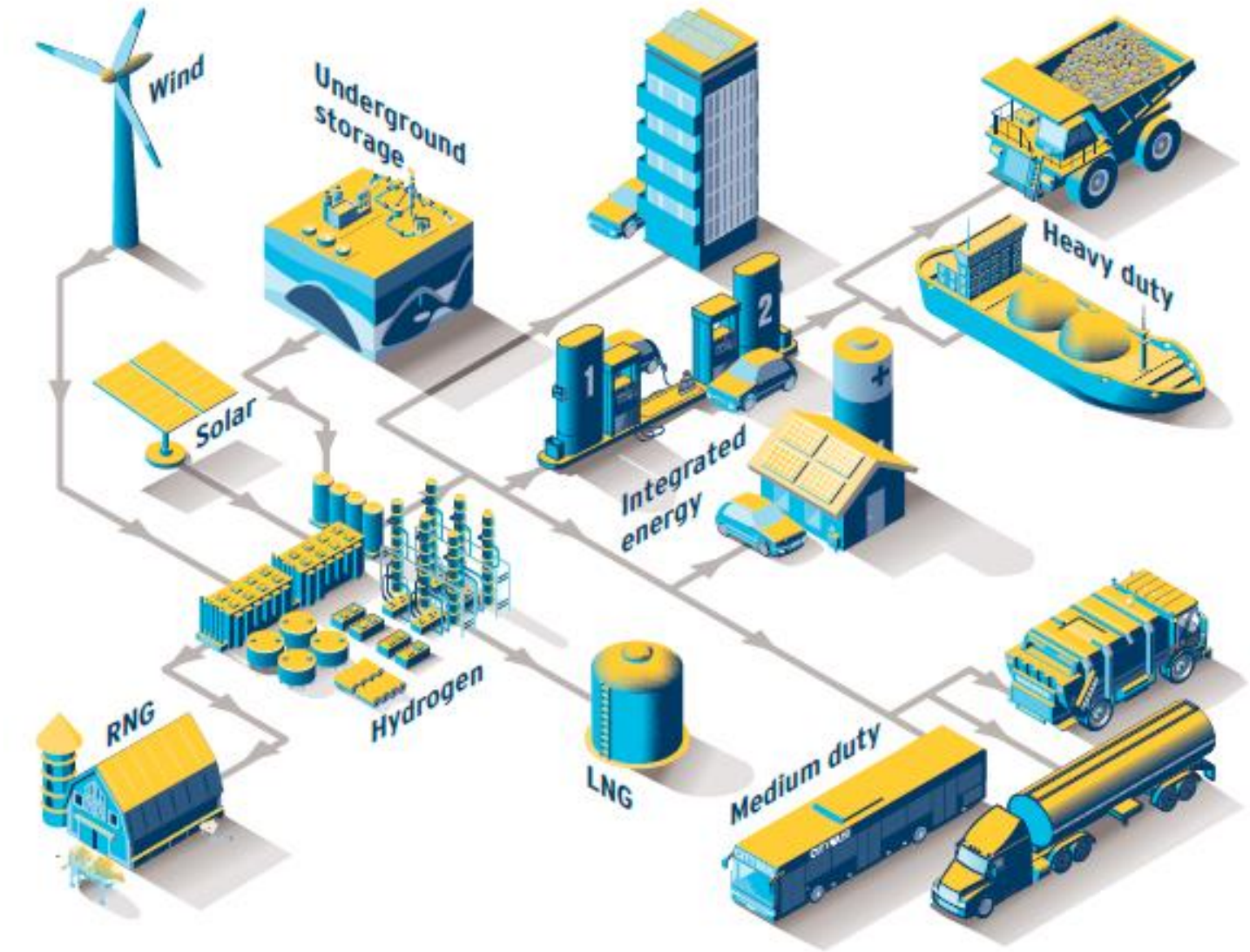
Renewable Natural Gas



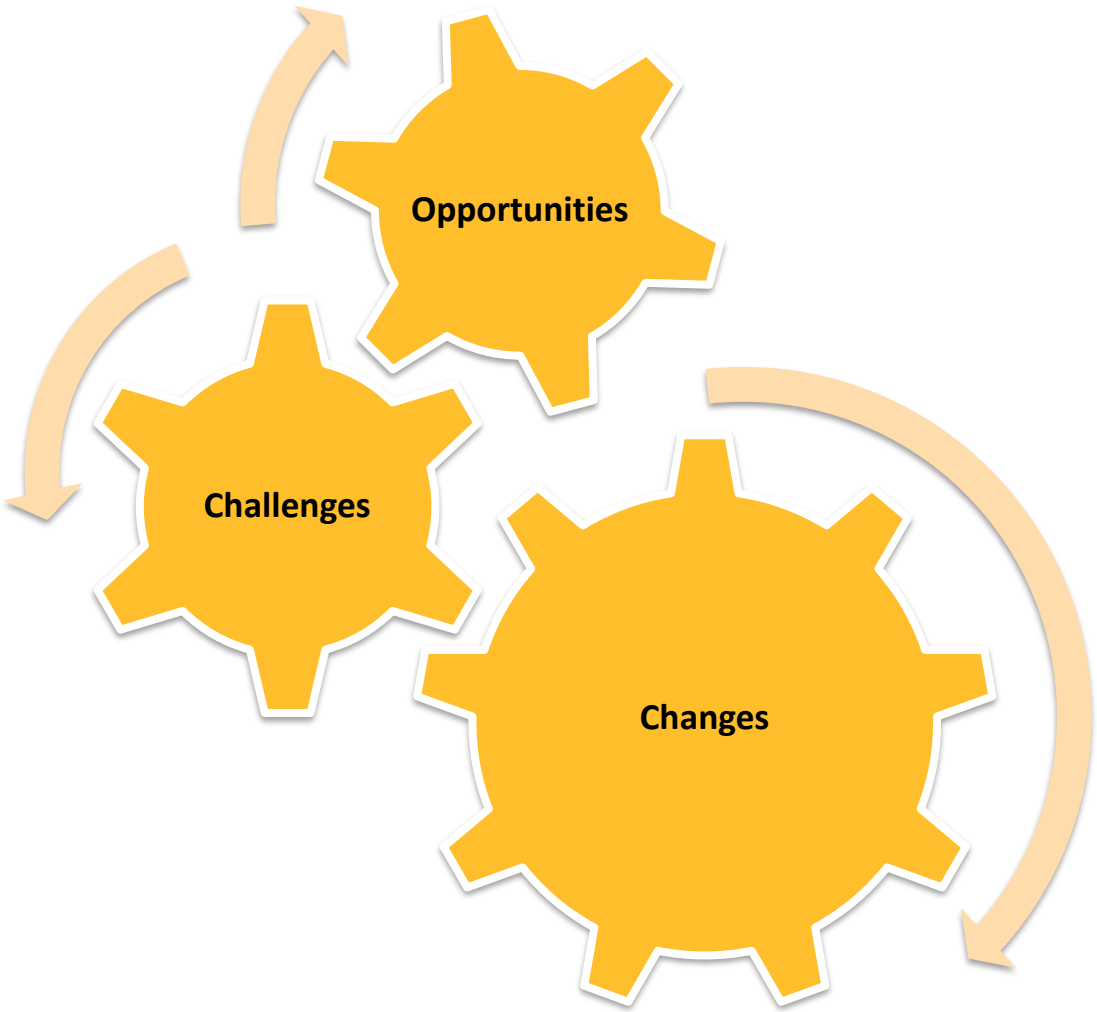
Global LNG

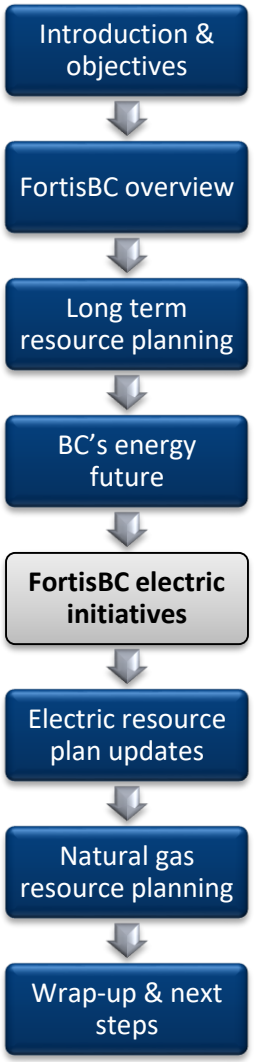
Zero and low carbon transportation

FortisBC seeks to be an active partner in the energy system of the future



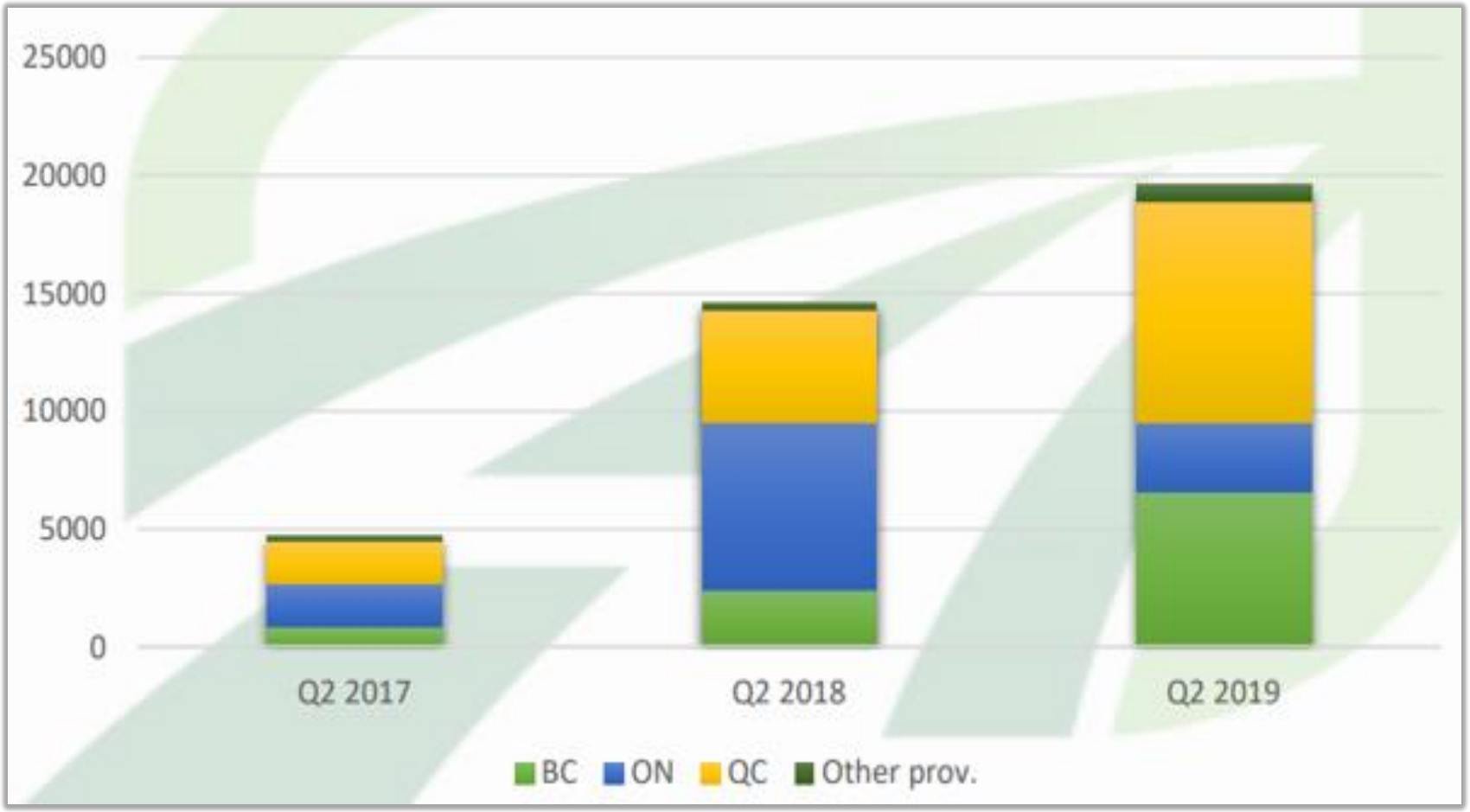
How have CleanBC and other factors impacted your planning for the future?





Energy at work FORTIS BC™

EV Sales Growth by Province



BC ZEV target: 500,000 by 2030

35,000 in FBC service area?

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EV Rebates and Incentives

Vehicle Incentives - Government

- Clean Energy Vehicle Program - $3,000
- Federal EV Incentive Program - $5,000
- BC SCRAP-IT - $6,000

EV Infrastructure Incentives – CleanBC

- Single-family homes – 50% of costs up to $350 per Level 2 station
- Multi-unit buildings – 50% of costs up to $2,000 per Level 2 station
- Workplace – 50% of costs up to $2,000 per Level 2 station

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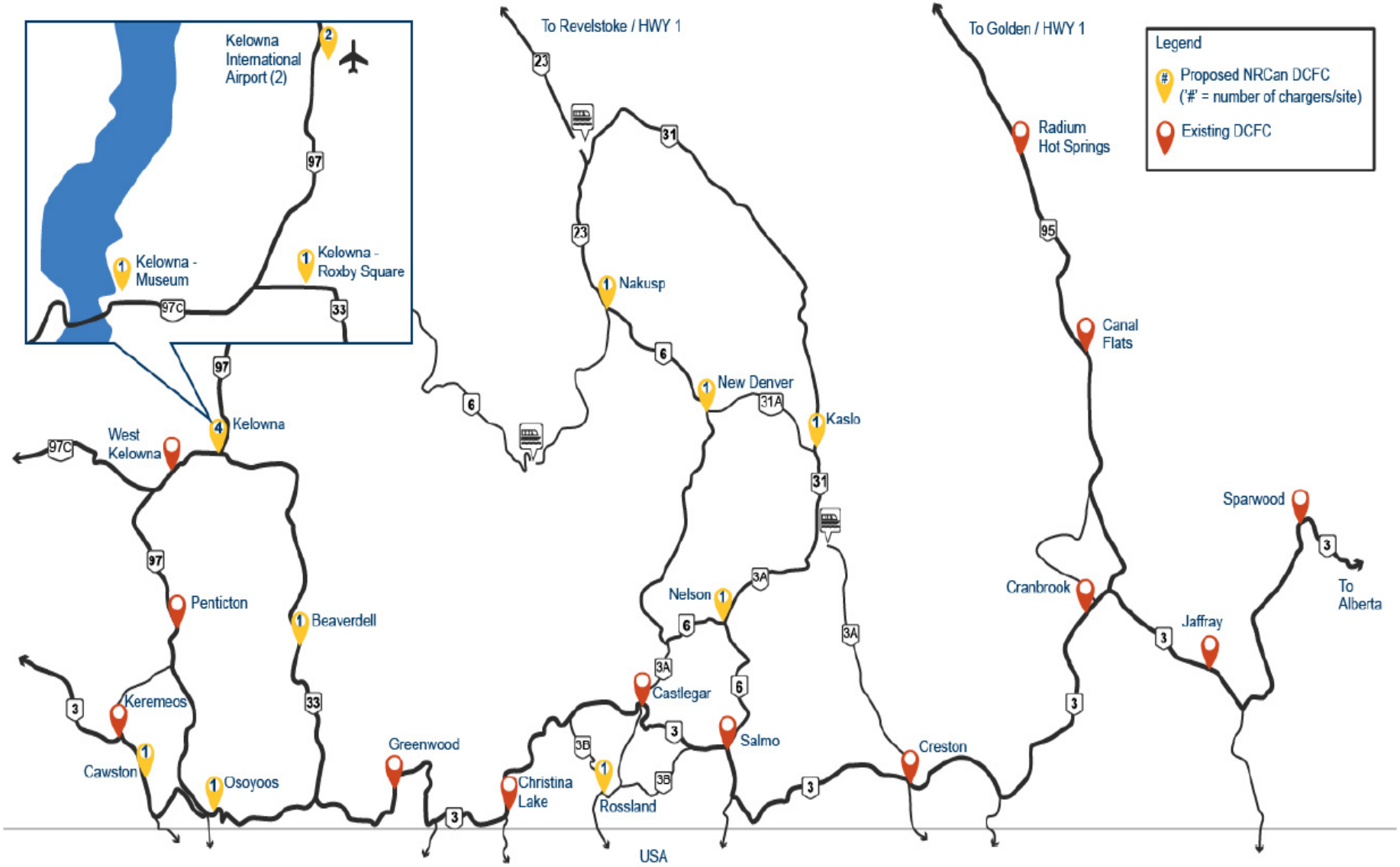
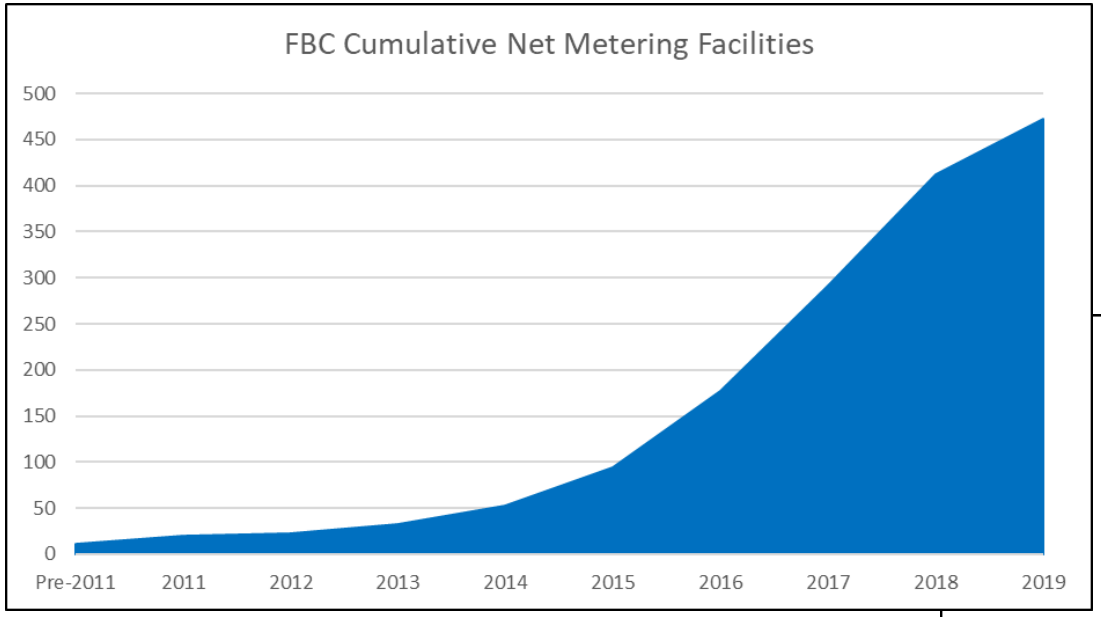
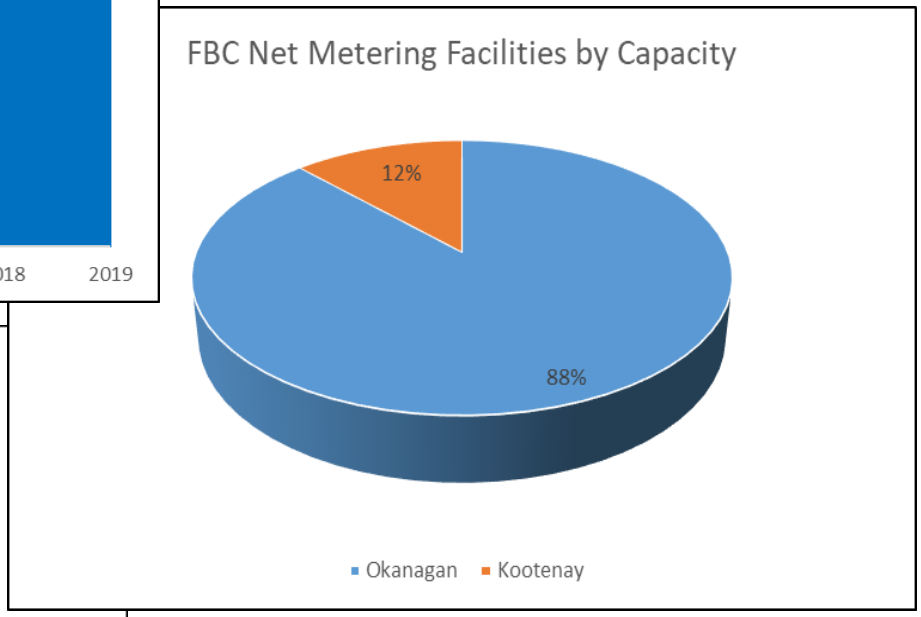
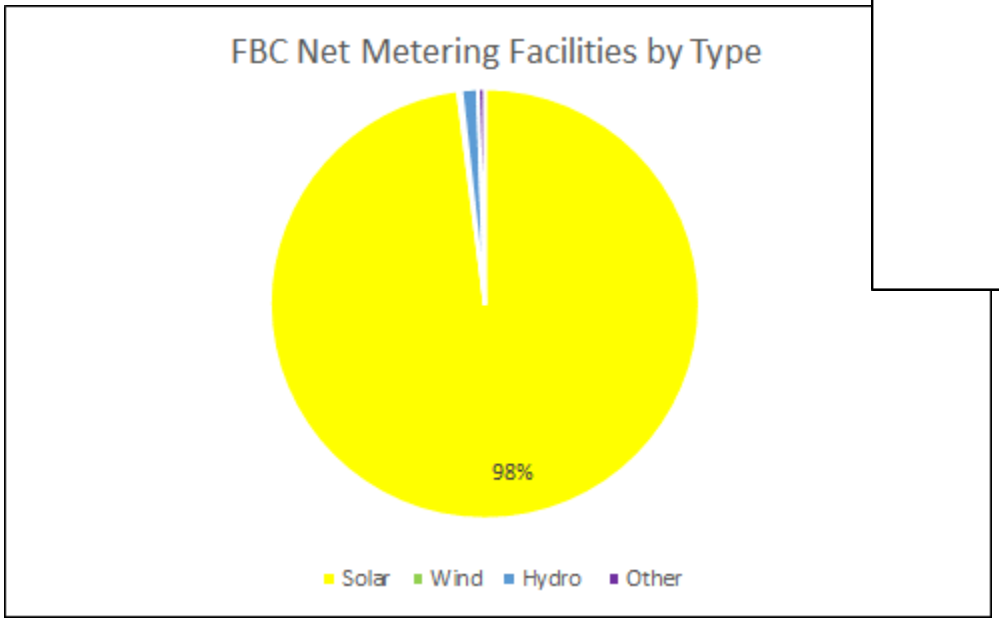
Accelerating the Electrification of Transportation



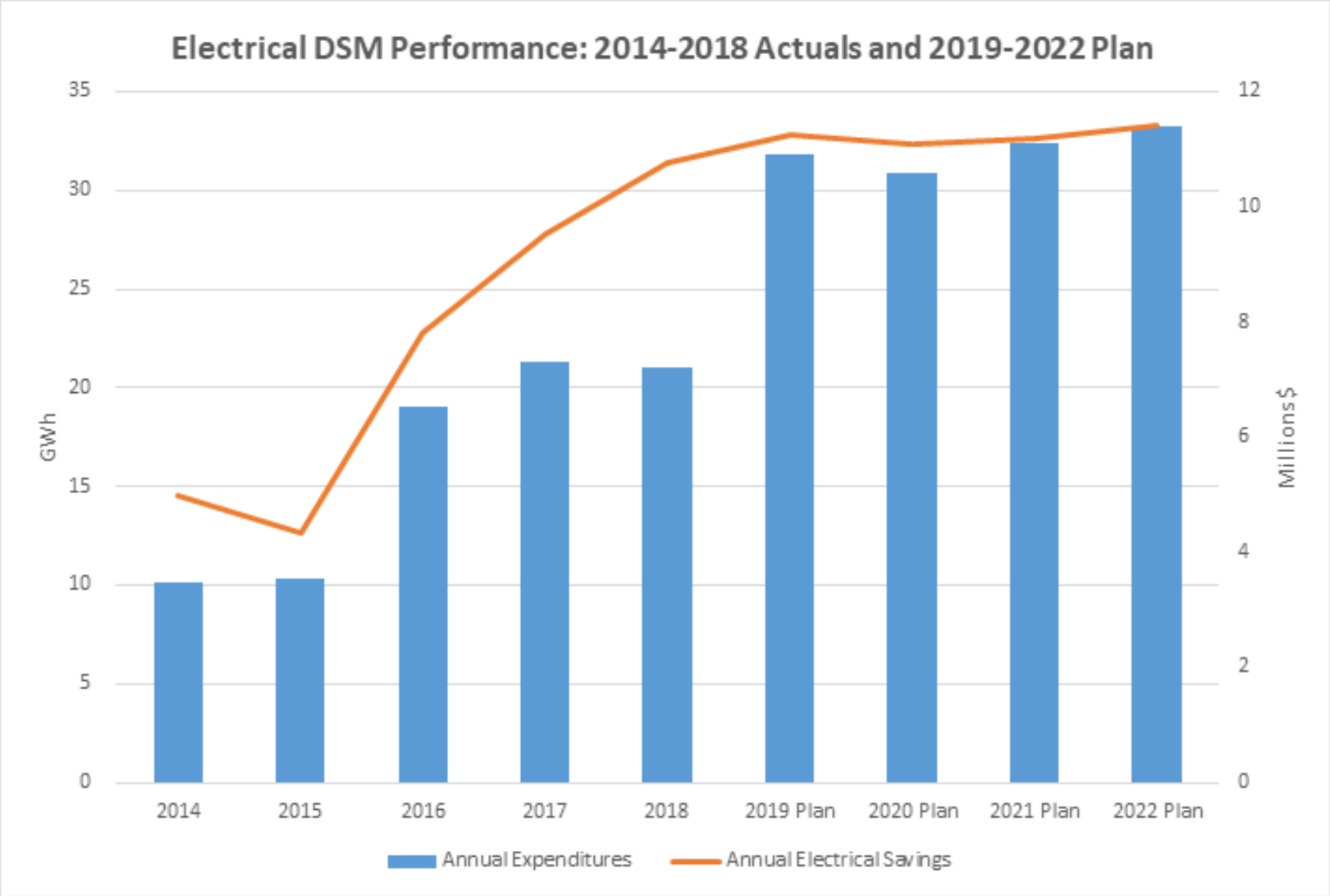
Distributed Generation Growth







FBC Energy Efficiency Growth



Energy Efficiency Updates

- Residential
  - Rebates for new homes that meet BC Energy Step Code
  - New rebates including drain water heat recovery and communicating thermostats
- Low income
  - New rebates for studies, implementation support, and measures to assist social housing providers
- Commercial
  - BC Energy Step Code adoption rebates
  - Small business energy evaluations program
- Industrial
  - supporting efficient cannabis industry growth

www.fortisbc.com/rebates-and-energy-savings/

Kelowna Area Demand Response Pilot

- Piloting the use of Demand Response (DR) to mitigate system peaks and local congestion

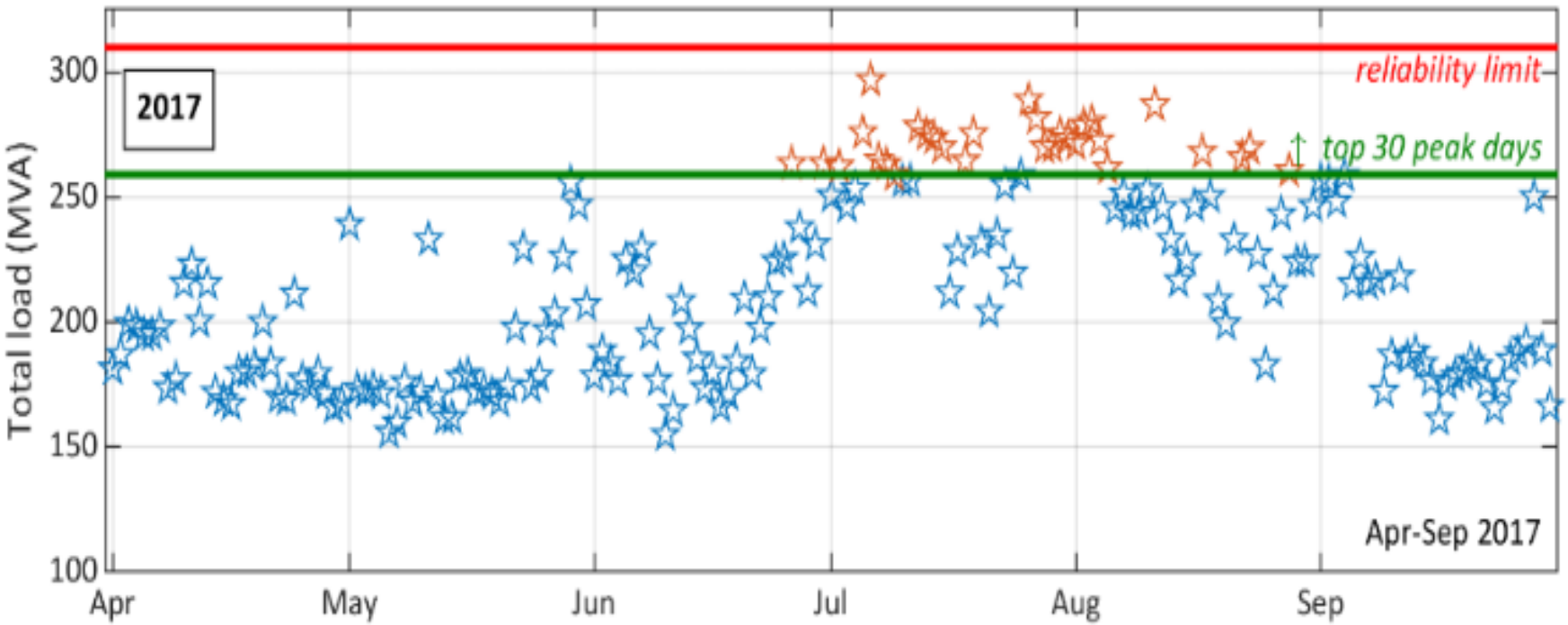
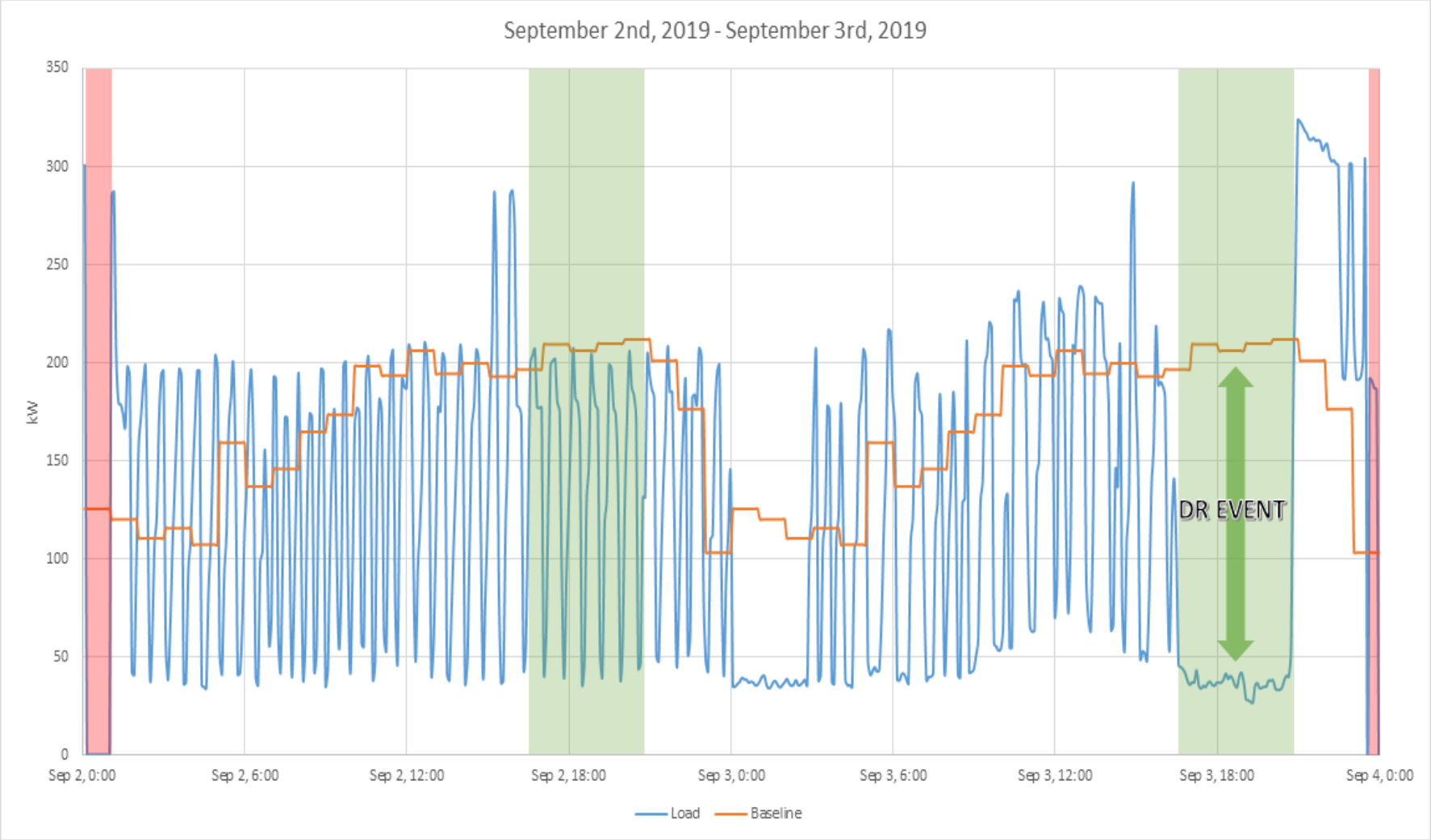


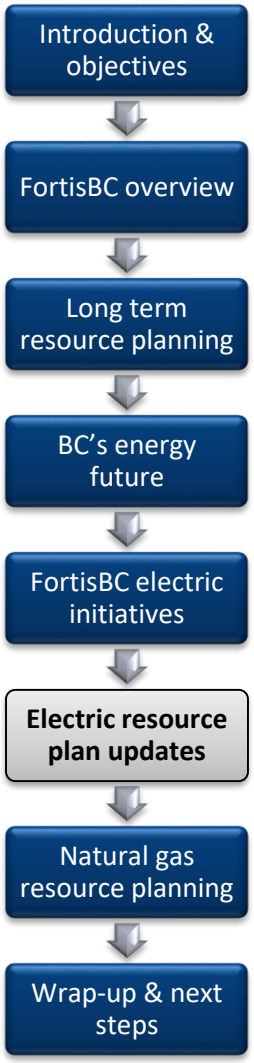
Figure 4: Daily peak load in summer 2015-2017.

Kelowna Area Demand Response Pilot



Questions?

Energy at work FORTIS BC™



Energy at work FORTIS BC™

Resource Planning: Energy vs. Capacity

Energy

- the electricity produced or used over a period of time (e.g. a year)
- is analogous to an ***Odometer*** reading
- usually measured in **GWh**

Capacity

- the instantaneous system electricity demand at any given time
- is analogous to a snapshot ***Speedometer*** reading
- usually measured in **MW**

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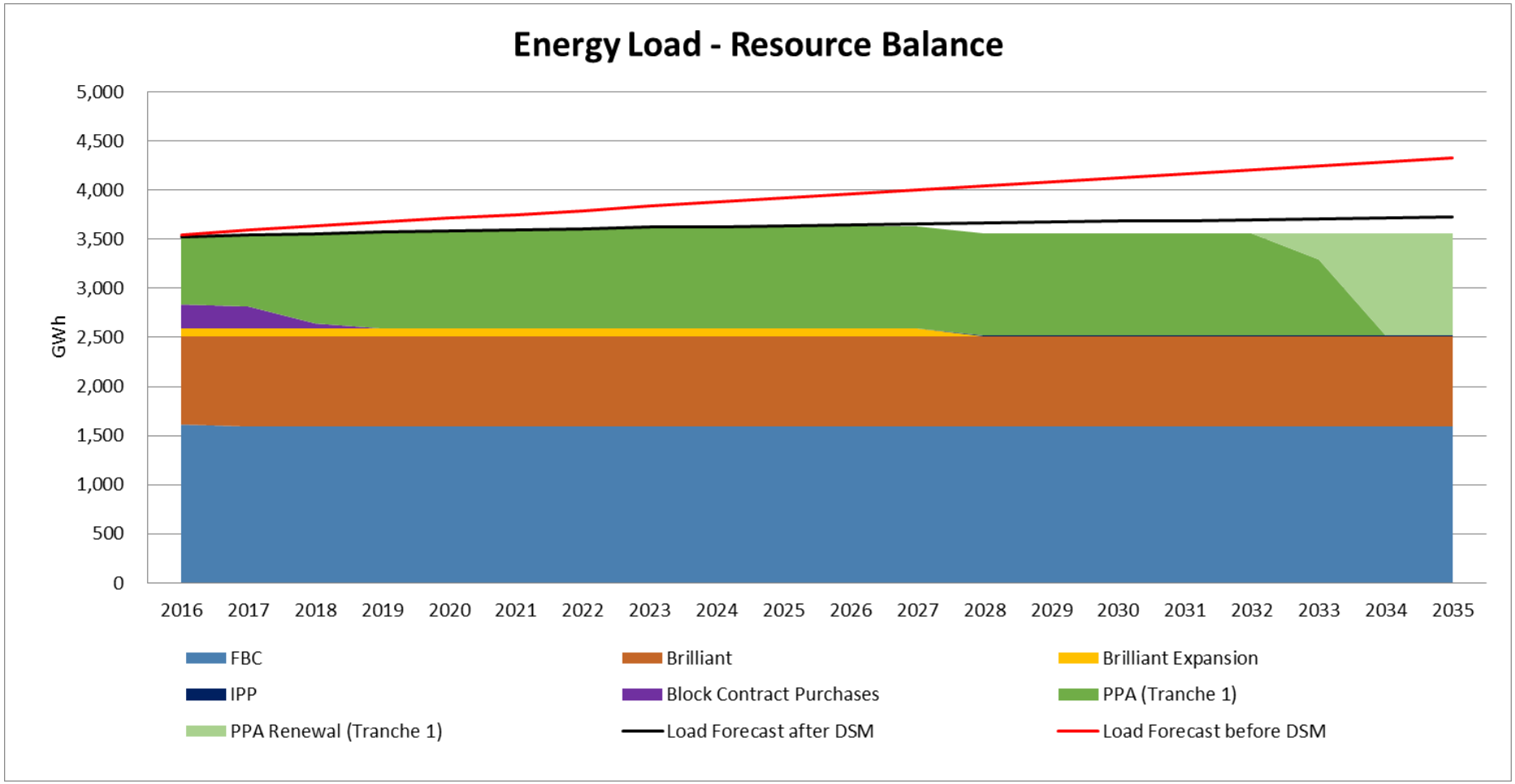
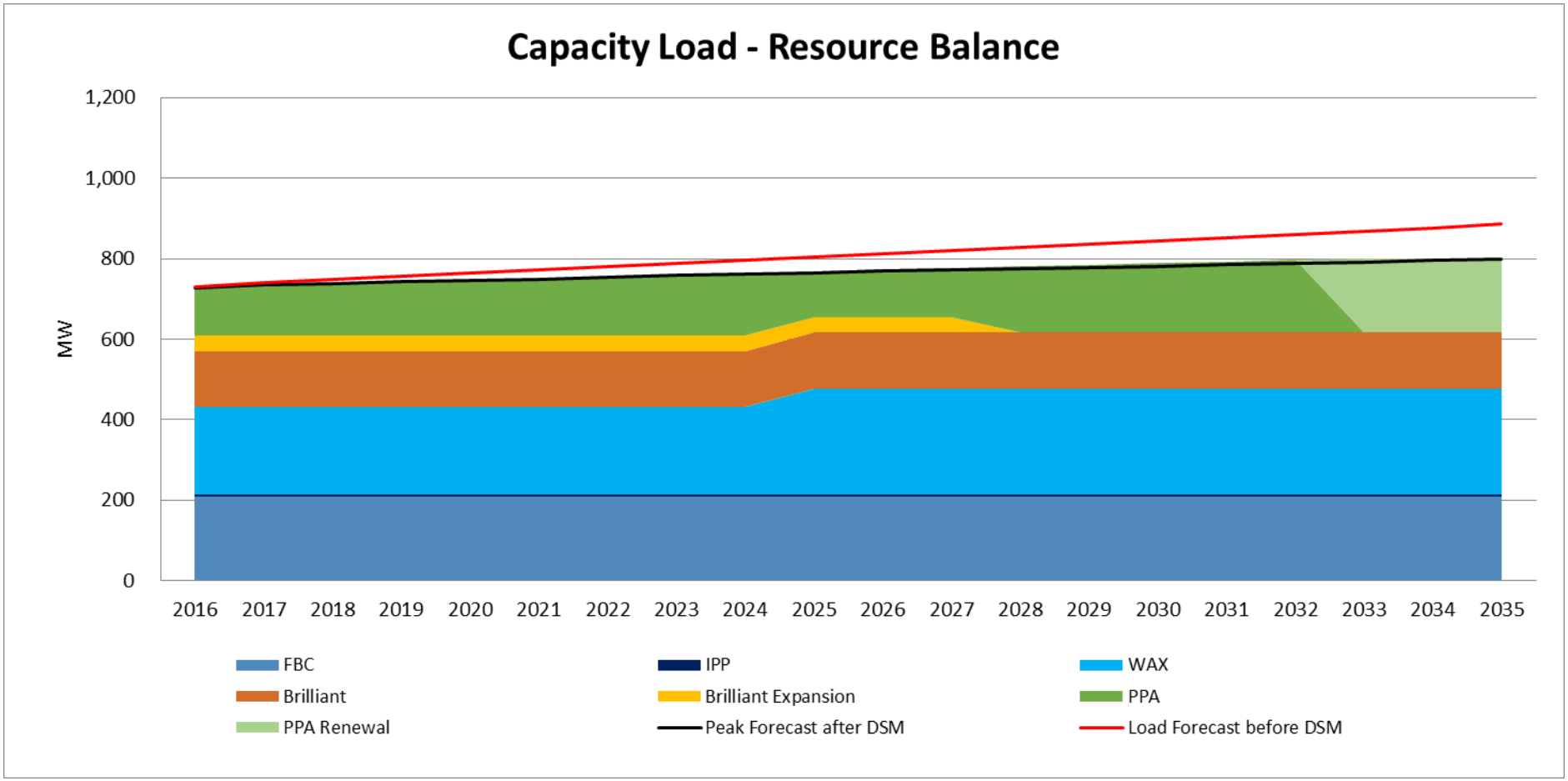
Energy: Supply vs. Demand



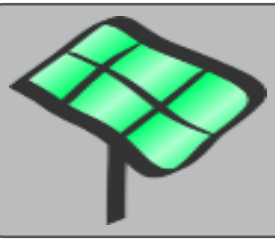
Winter Capacity: Supply vs. Demand



- Winter capacity = peak evening hourly load in December/January

2016 LTERP LOAD SCENARIOS - LOAD DRIVERS

1



Rooftop Solar.
Residential rooftop solar photovoltaic (PV) generation and integrated photovoltaic storage systems (IPSS)

2

Electric Vehicles
Plug-in and battery (fully electric) electric vehicles (PHEV & BEV) supported by level 1 (120V), level 2 (240V) and “fast DC” charging

3

Fuel Switching – Gas to Electric
Residential customers converting from natural gas to electric space (mostly heat pumps) and water heating.

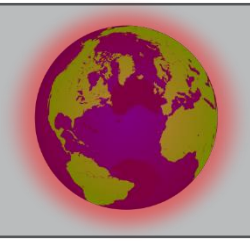
4

Fuel Switching – Electric to Gas
Residential customers converting from electric to natural gas space and water heating.

NAVIGANT

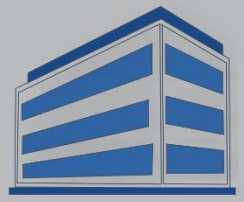
2016 LTERP LOAD SCENARIOS - LOAD DRIVERS CONT/D

5



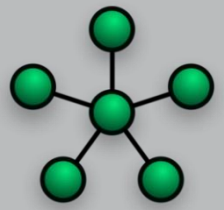
Consistent & Persistent Weather Changes
Gradual increases in average monthly temperatures as predicted by models of climate change.

6



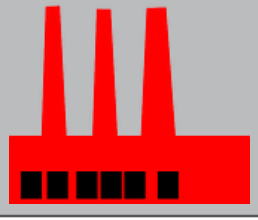
Large Load Sector Transformation
Unanticipated growth of large load customers not associated with traditional energy intensive industries (forestry/manufacturing).

7



Internet of Things
Connected devices, information feedback and residential control systems working together to reduce consumption.

8



Combined Heat and Power
Very large C&I customers investing in cogeneration facilities.

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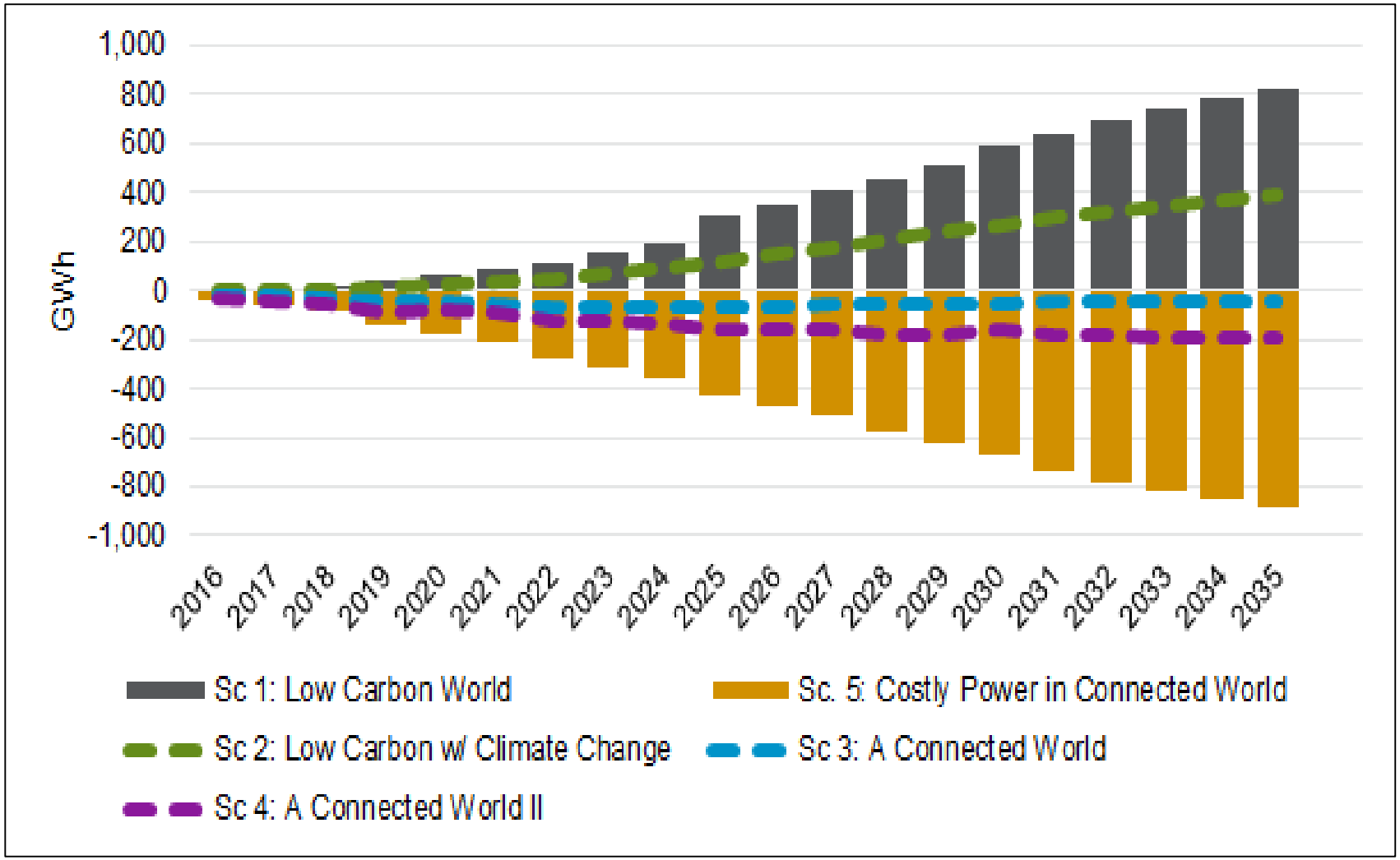
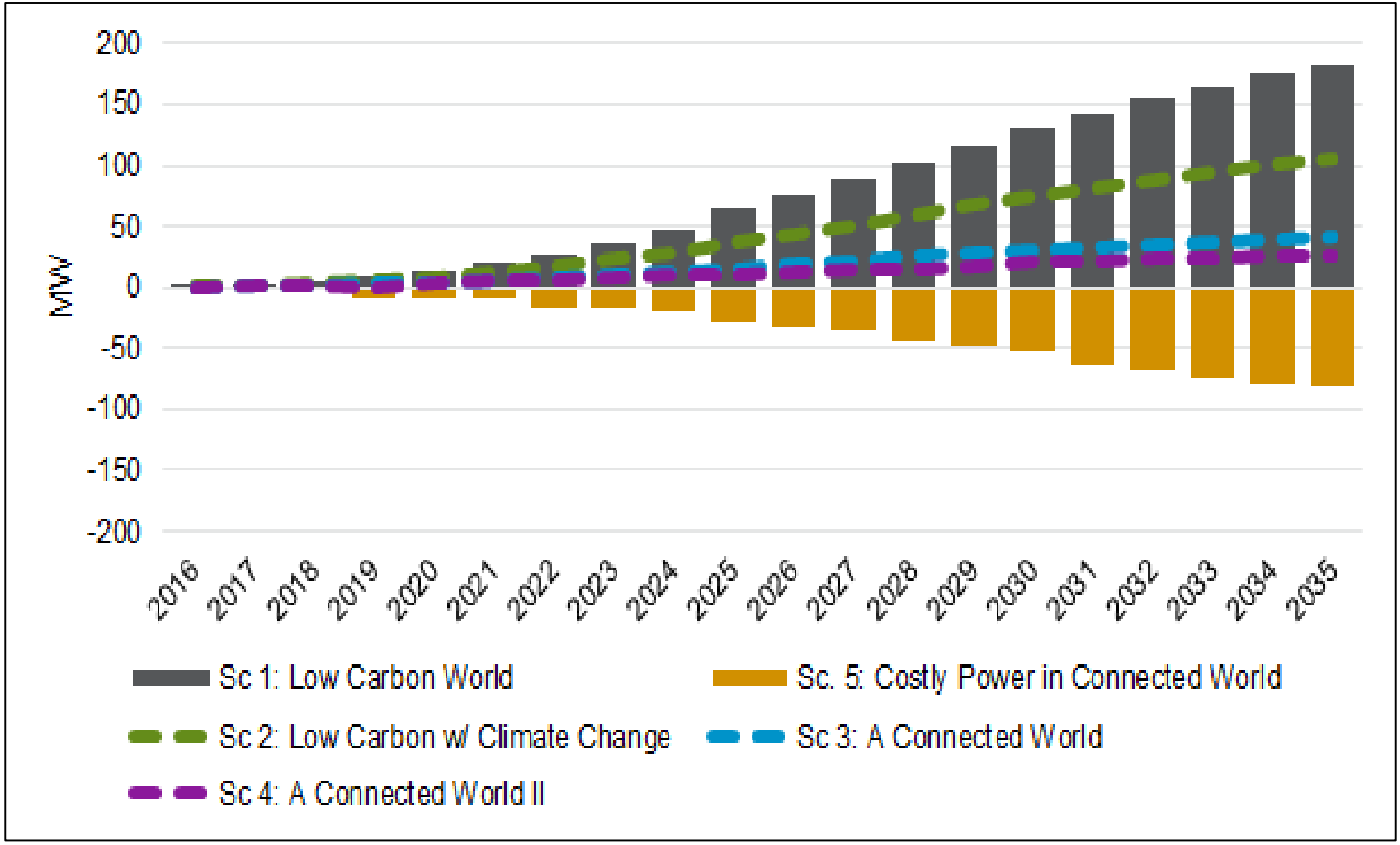
Other Potential Load Drivers

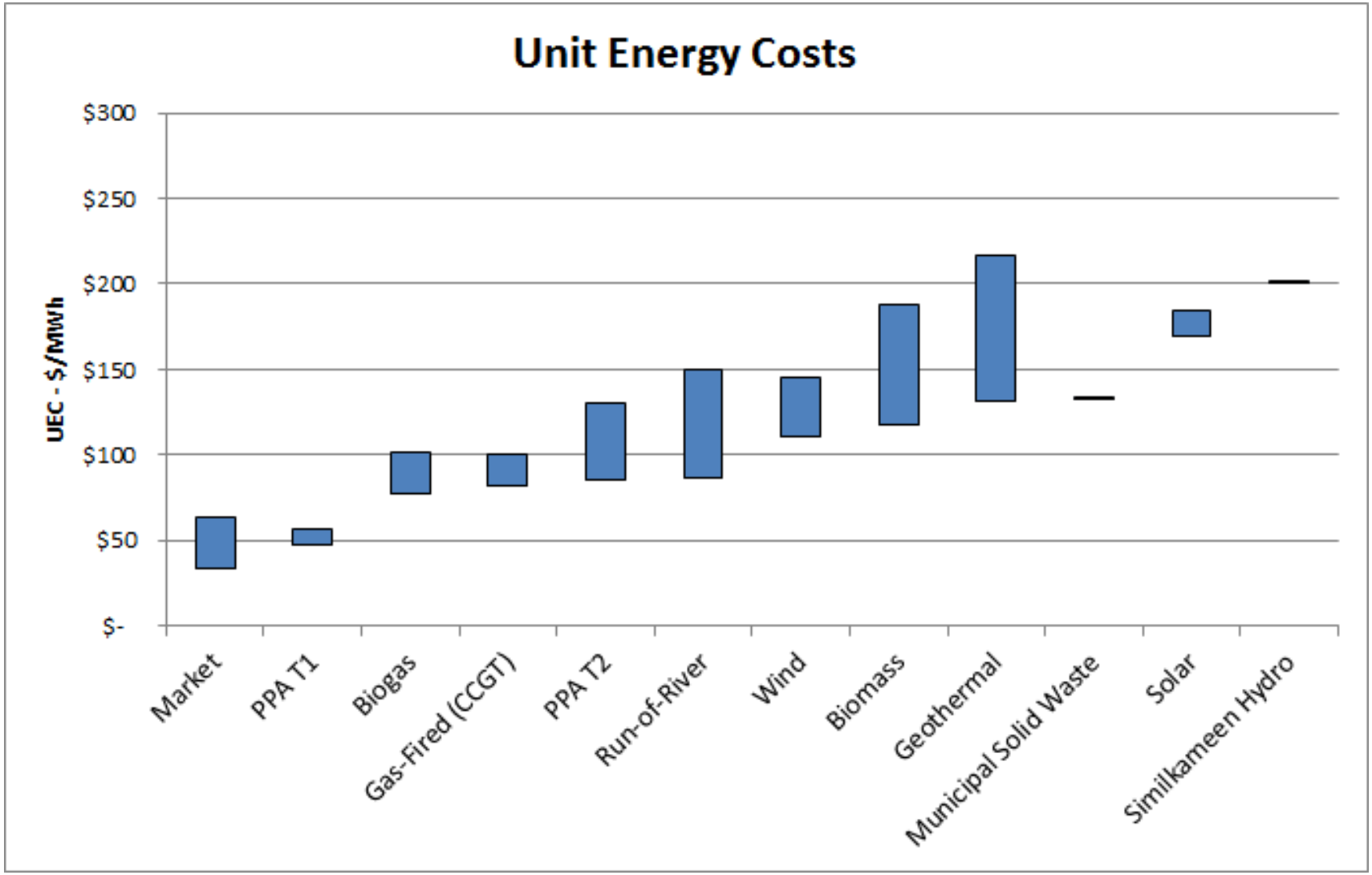
2016 Load Scenarios – Energy Impacts



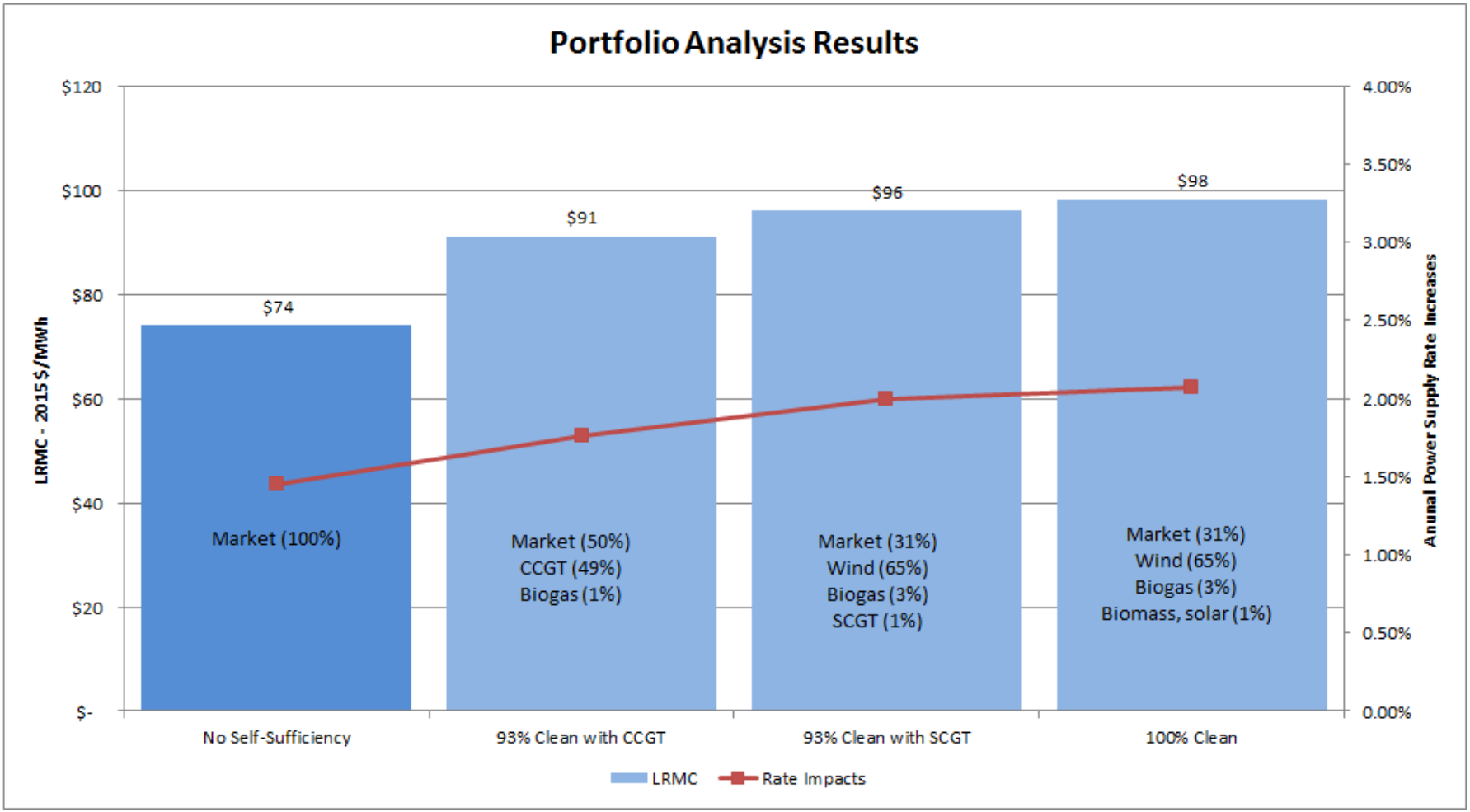
2016 Load Scenarios – Peak Capacity Impacts



2016 Supply-Side Resource Options



Portfolio Analysis Results (2016 LTERP)



- Preferred Portfolio is '93% Clean with SCGT' - balances objectives of cost, low environmental impacts, socio-economic development, self-sufficiency with added reliability and flexibility

What are your electricity energy priorities?

Cost

Economic Growth

Environment

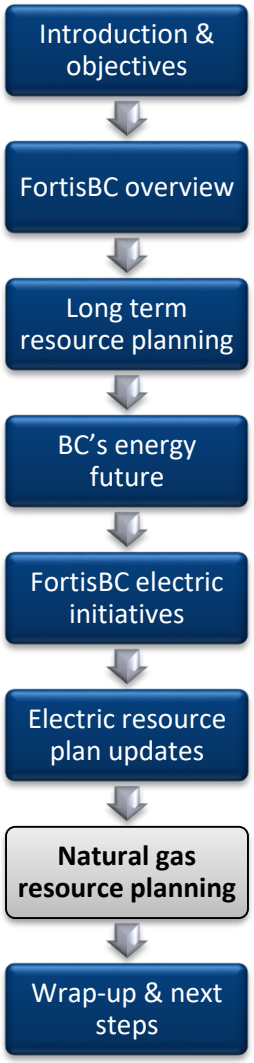
Reliability

Other?

Questions?

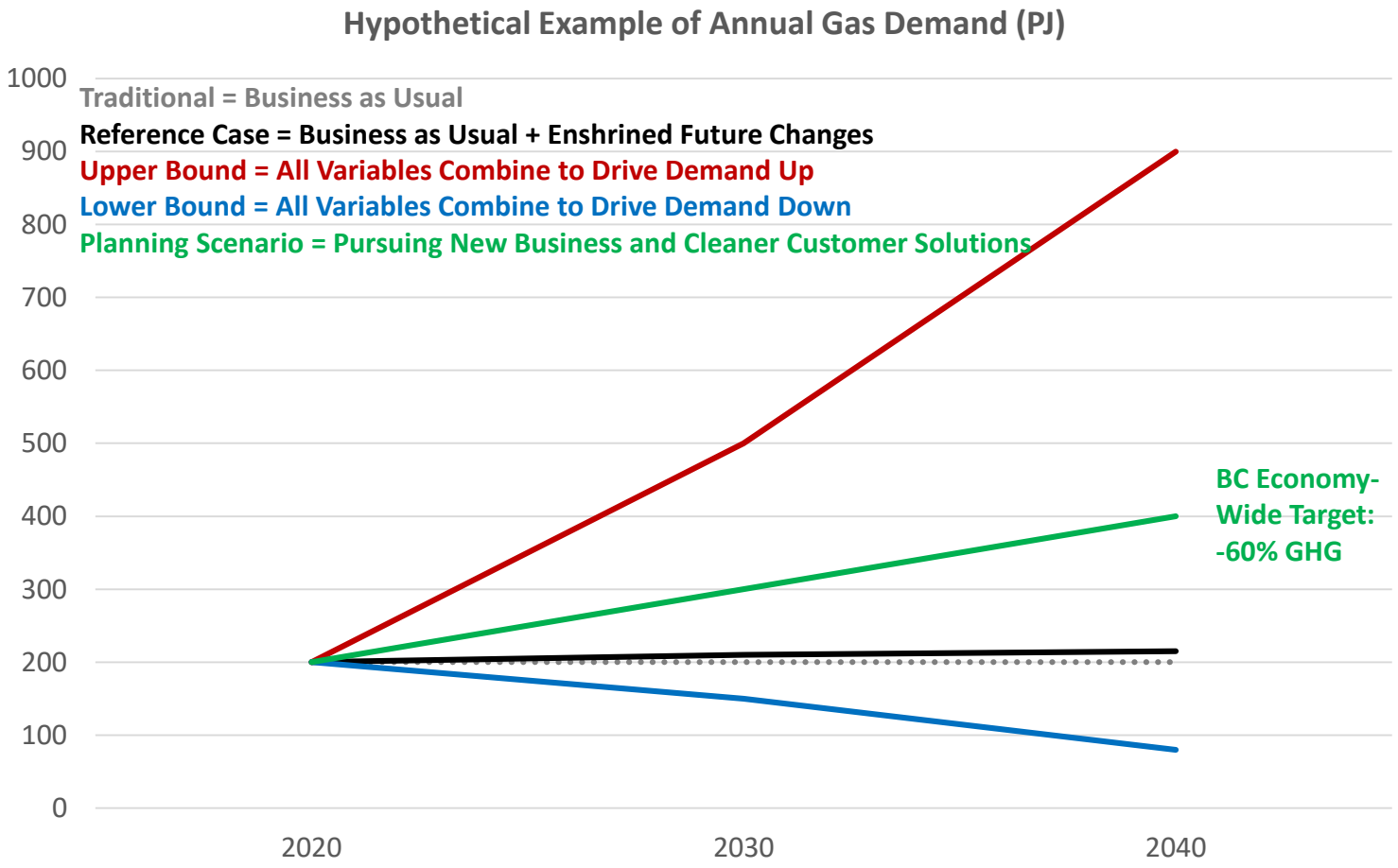
Short Break!

Energy at work FORTIS BC™


Introduction & objectives
FortisBC overview
Long term resource planning
BC's energy future
FortisBC electric initiatives
Electric resource plan updates
Natural gas resource planning
Wrap-up & next steps

FORTIS BC™

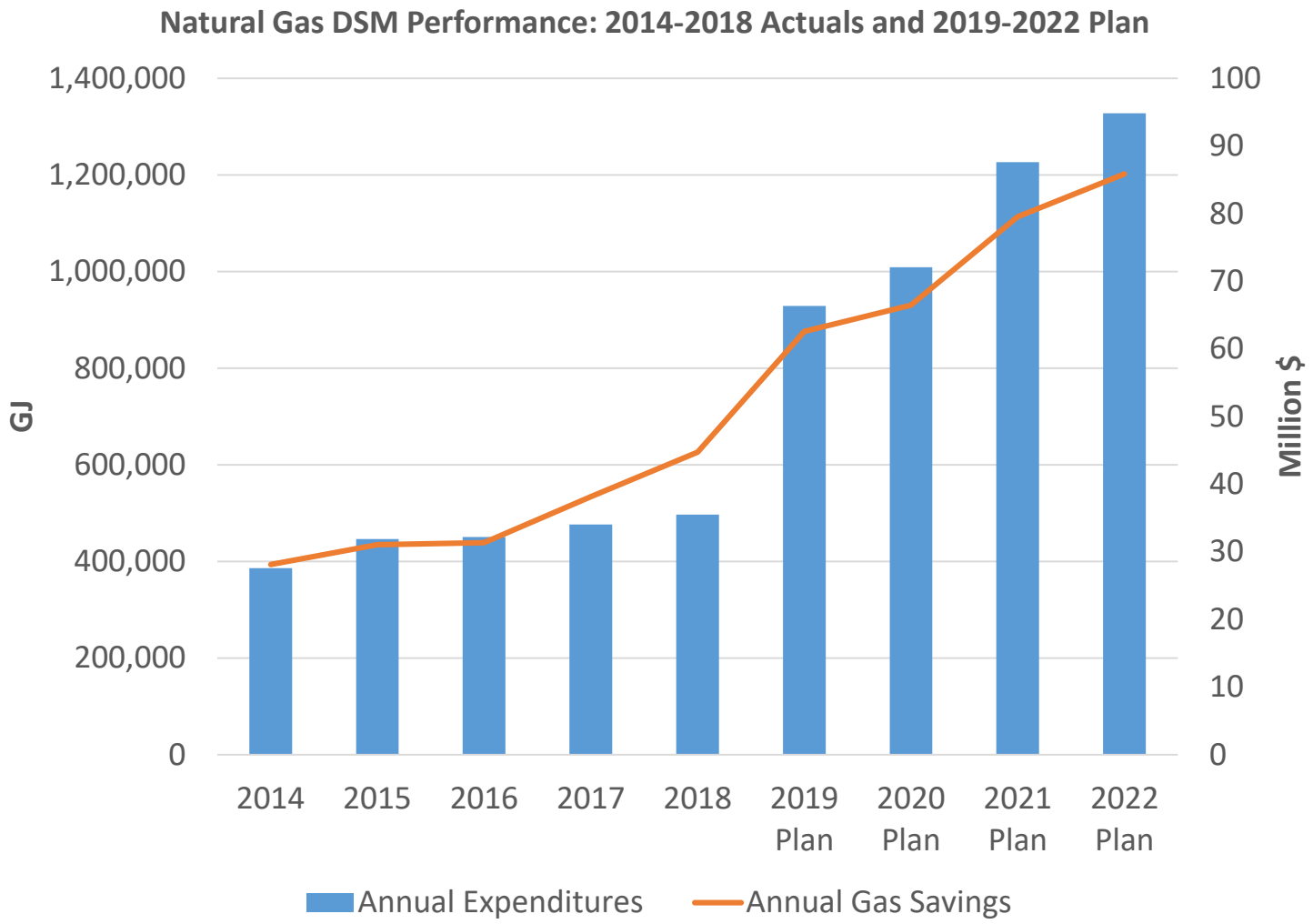
We are planning for the future in a complex and changing world



Built Environment

Uncertainty	CleanBC Initiatives
Economy	- Various potential indirect impacts
Building Codes	- Improve the building code in phases up to “net-zero energy ready” by 2032 - Adopt the Model National Energy Code for existing buildings by 2024
Appliance Standards	- Increase efficiency standards for heating equipment and windows
Other	- Incentives to make heat pumps affordable - Incentives to make homes more comfortable through building envelope upgrades

We are tripling the size of our energy efficiency programming



Energy Efficiency Updates

- Residential
  - Rebates for new homes that meet BC Energy Step Code
  - New rebates including drain water heat recovery and communicating thermostats
- Low income
  - New rebates for studies, implementation support, and measures to assist social housing providers
- Commercial
  - BC Step Code adoption rebates
  - Small business energy evaluations program
- Industrial
  - Supporting efficient cannabis industry growth

www.fortisbc.com/rebates-and-energy-savings/

Questions?

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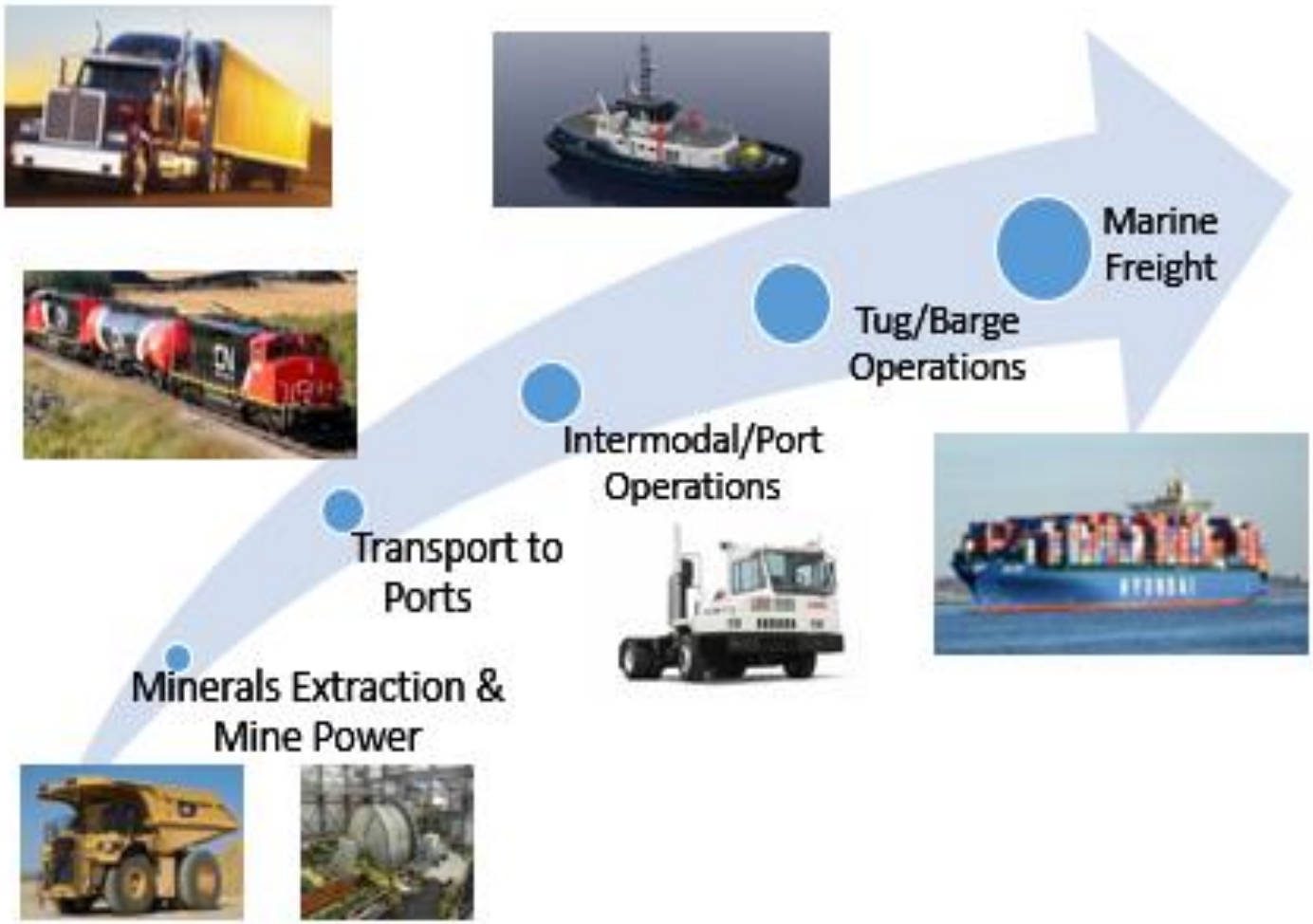
Transportation

Uncertainty	CleanBC Initiatives
Market Penetration	- Expand incentives for clean buses and heavy-duty vehicles - Expand the fueling network with charging and hydrogen fueling infrastructure - Ramp up new production in BC of 650 million litres of renewable gasoline and diesel by 2030 - Test options to switch 1,700 freight trucks to natural gas and low or zero-carbon fuel by 2030

Our natural gas for transportation and regional LNG solutions help meet provincial GHG emissions goals – while helping operators save on fuel costs



Our CNG/LNG business has grown since 2012

More than 800 medium/heavy duty vehicles in BC and growing – 20 natural gas fueling stations:

Questions?

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Energy Supply

Uncertainty	CleanBC Initiatives
Cost of Gas	- Reduce methane emissions from upstream operations by 45% - Provide clean electricity to planned natural gas production in the Peace region - Minimum 15% of natural gas to come from renewable gas - Help communities capture 75% of landfill gas
Carbon Price	- $50/tonne carbon tax - Increase the transport sector low carbon fuel standard to 20% by 2030

FortisBC's Renewable Natural Gas portfolio is growing

Seabreeze Farm

Kelowna Landfill

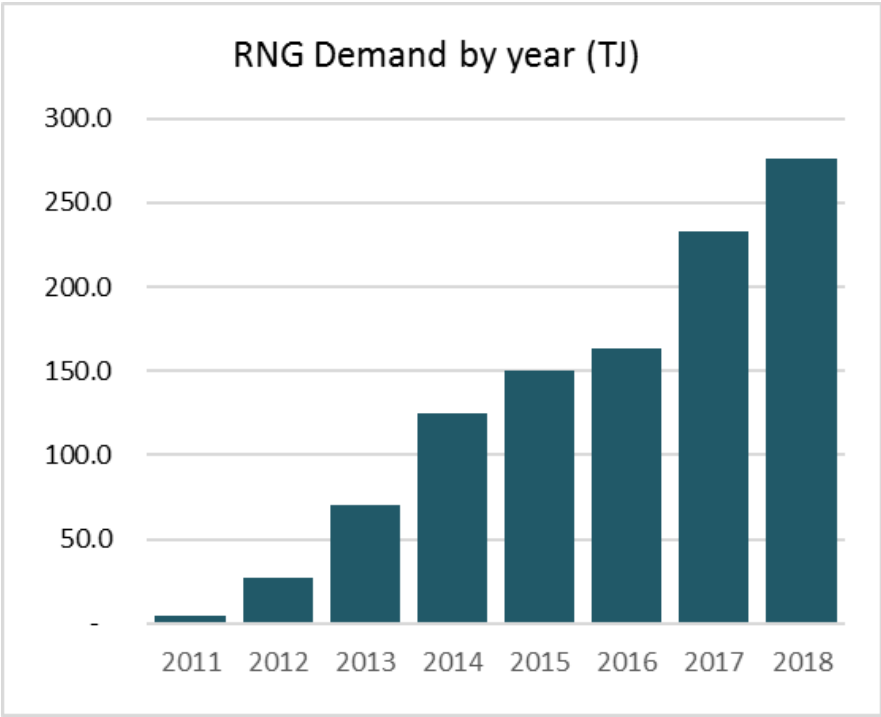
Fraser Valley Biogas

City of Surrey

Salmon Arm Landfill

Overall +15% in 2018

Demand for FortisBC Renewable Natural Gas is robust

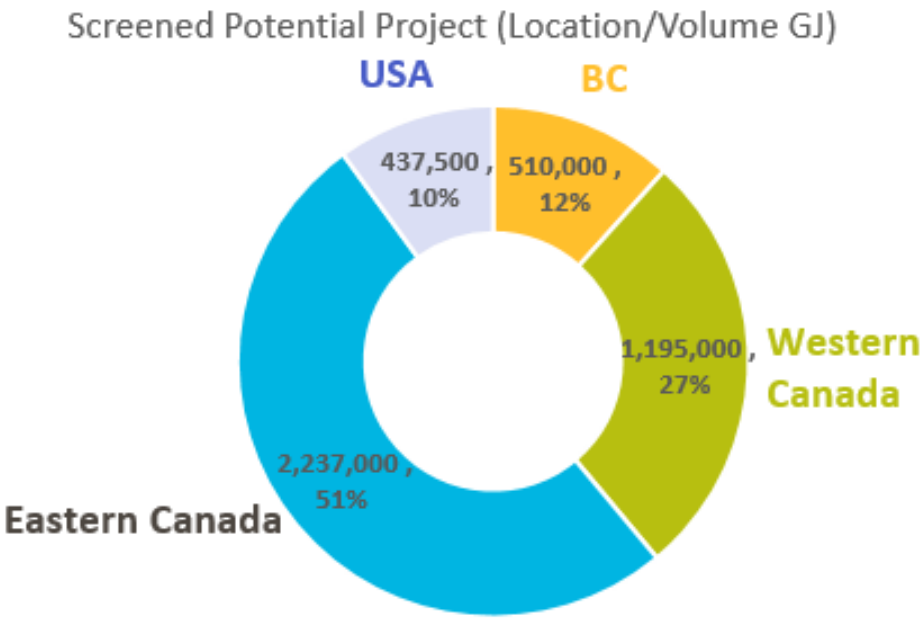


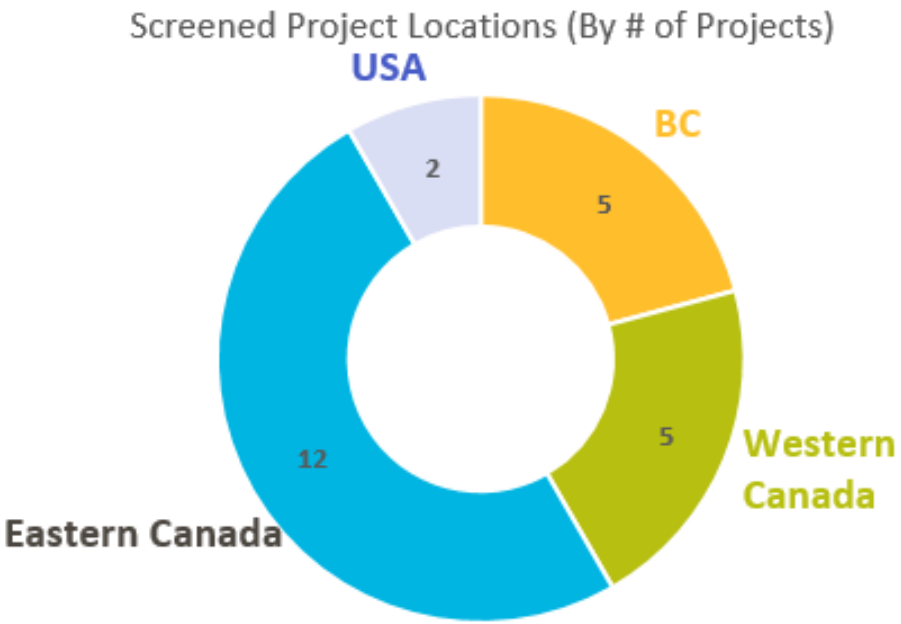
> 10,500 Voluntary Customers

We are pursuing additional RNG supply

July 2018 Call for Supply, Identified Opportunities:

Responses:	24
Total Volume:	4,380,000 GJ (4.4 PJ)

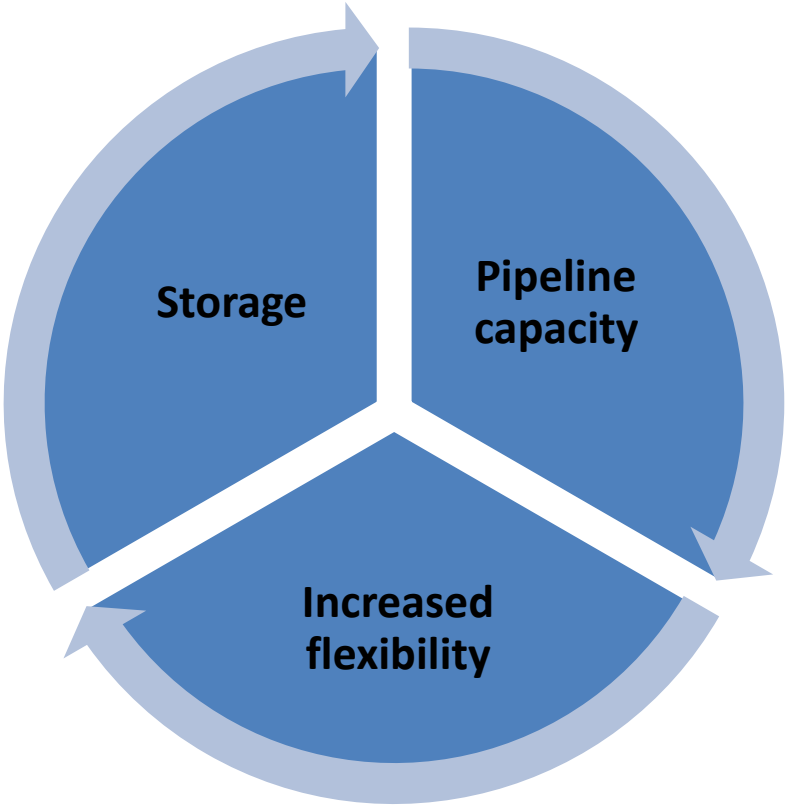




We are focusing on system resiliency now and beyond 2024

Tilbury LNG

- Expand storage capacity

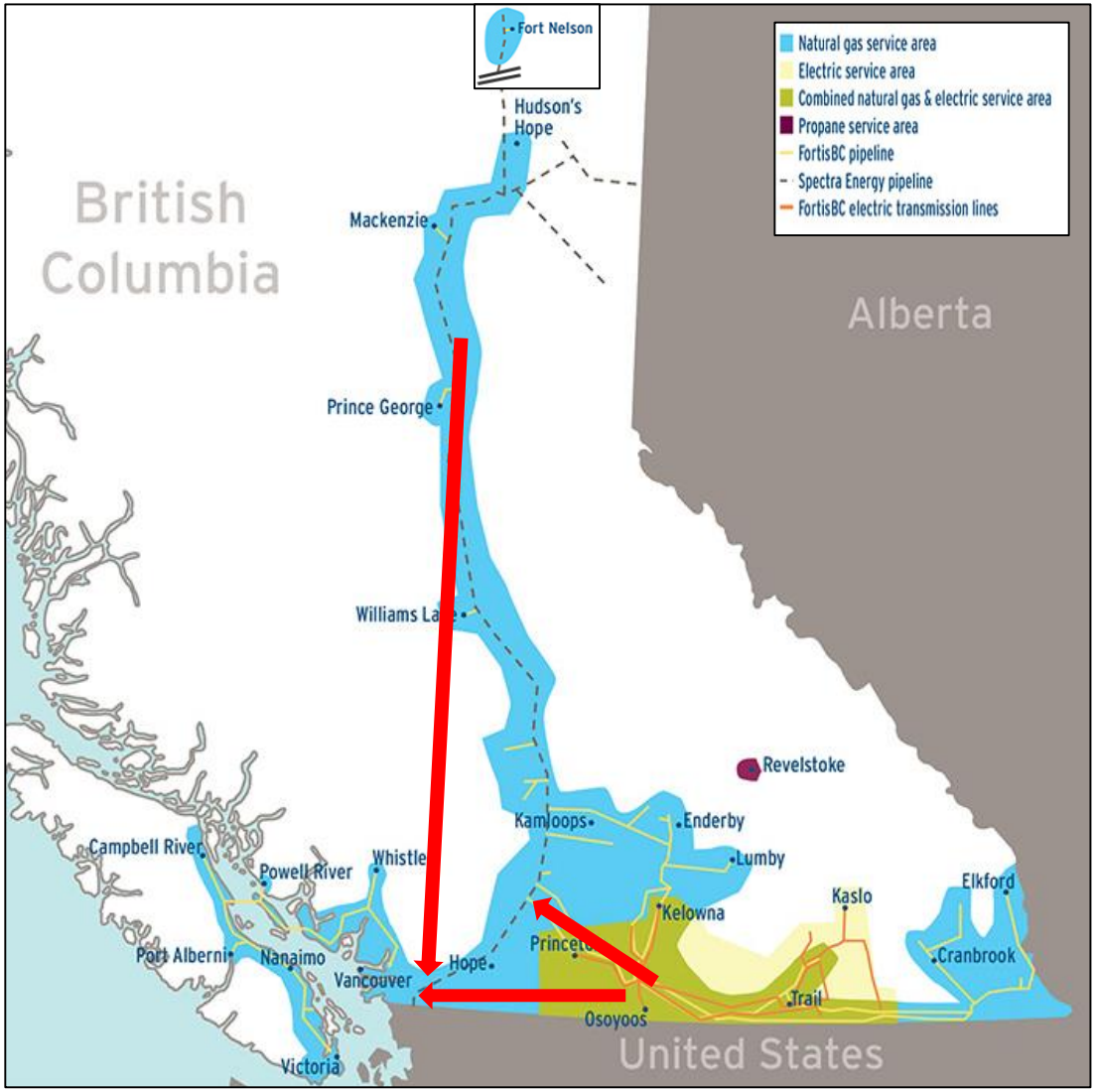


Pipeline Expansion
Increased pipeline capacity

Advanced meters

- Upgrade 1M residential, commercial customers

Three pipeline expansion options under consideration



All three options subject to NEB regulatory process, overall timelines 5-7 years to commercial operation

Questions?

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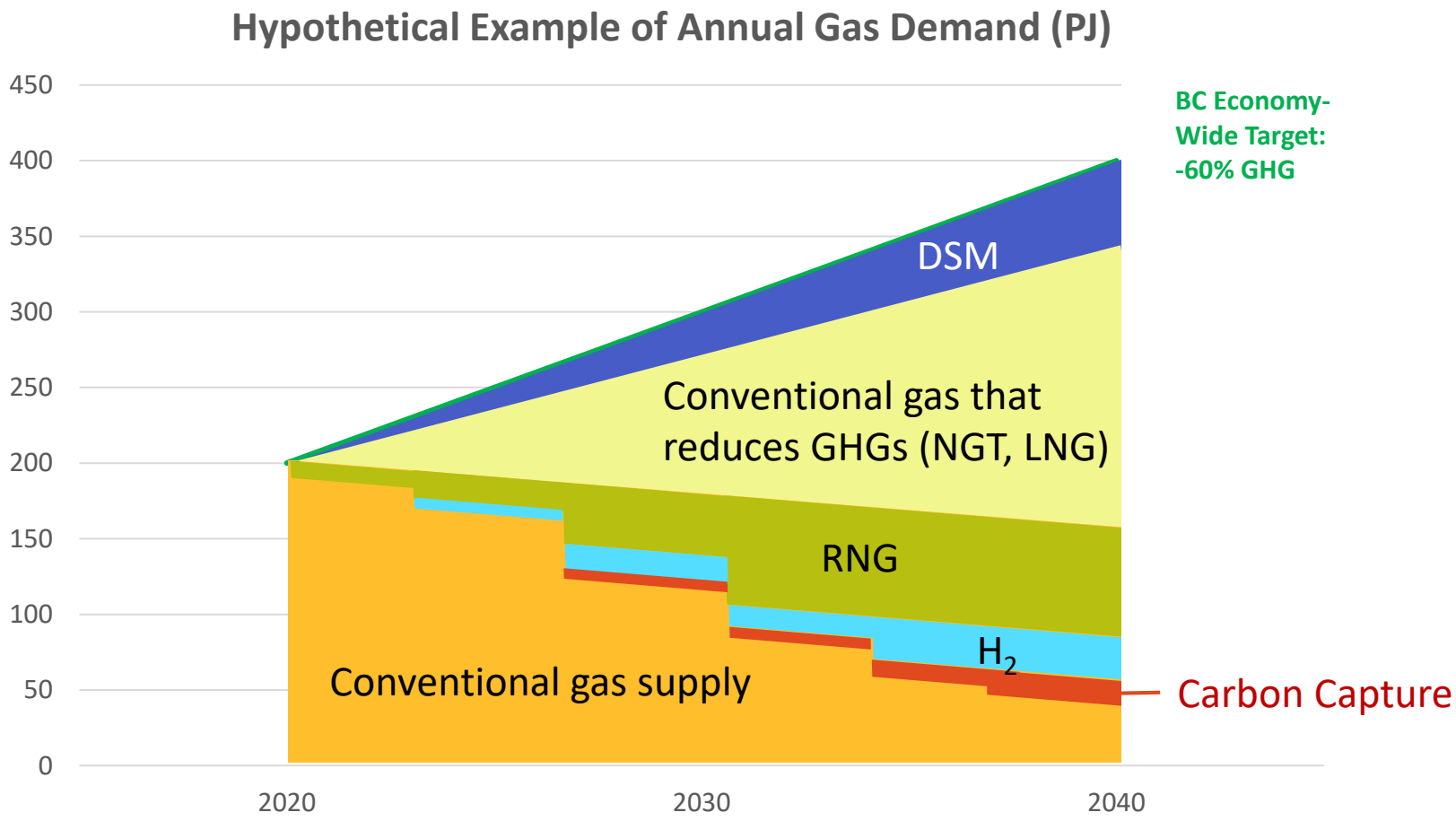
The key challenge is identifying the salient factors and integrating their effects

Concept: Demand/Supply Balance and Cleaner Customer Solutions



What are your natural gas energy priorities?

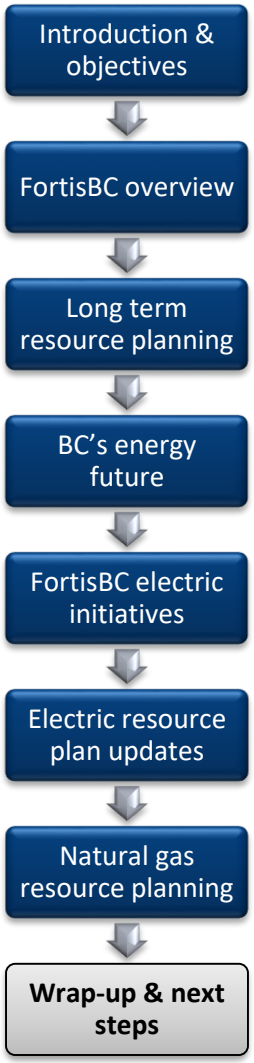
Cost

Economic Growth

Environment

Reliability

Other?



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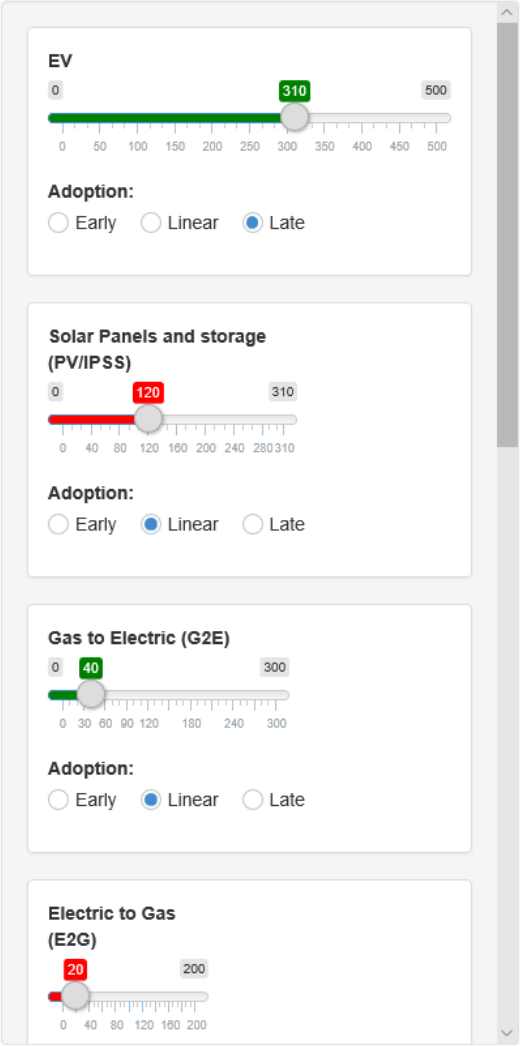
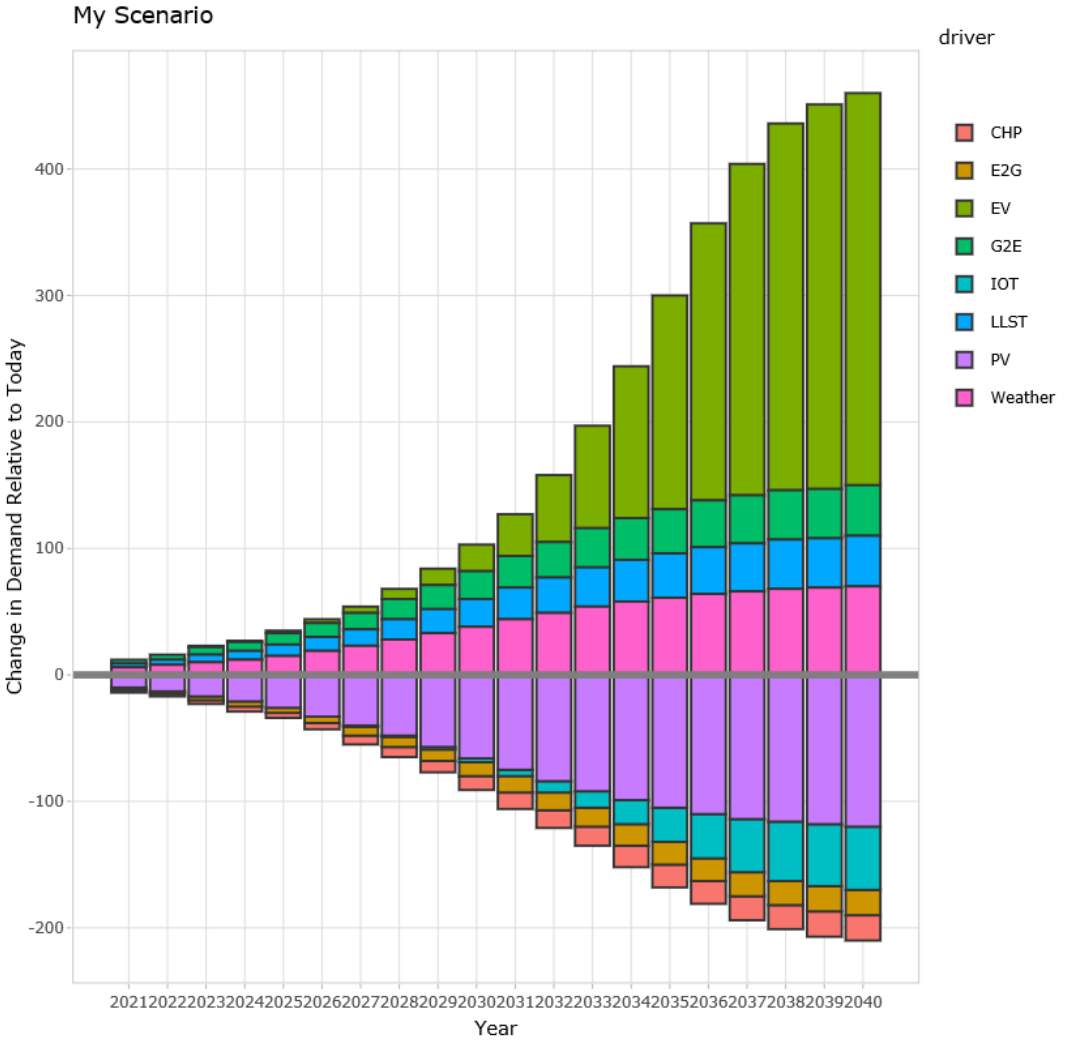
Please join our online input network

FBC LTERP Scenario Forecast





Wrap-up & next steps

- Your inputs are used in our planning processes:
  - Identifying uncertainties and priorities
  - Assessing resources to meet new energy demand
  - Developing and offering new energy services such as new Conservation & Energy Management programs
  - Informing our engagement with policymakers
- Watch for Fall 2020 community workshops
- **Electric resource plan** - filing by June 30, 2021
- **Natural gas resource plan** - filing by March 31, 2022

Thank you

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For further information, please contact:

FortisBC Integrated Resource Planning

irp@fortisbc.com

Find FortisBC at:

Fortisbc.com

604-676-7000