

BC'S GHG REDUCTION PATHWAYS STUDY - IMPLICATIONS FOR FORTISBC'S LONG TERM RESOURCE PLANS

February 12, 2021

Housekeeping

- We encourage you to participate through video, at your option
- When you're not speaking, please mute yourself to reduce background noise
- We ask that you save your questions until the allocated section breaks
 - If you would like to ask a question or make a comment, please so indicate in the chat
- Please note, the session audio/video will not be recorded, however, the chat history will be saved solely for note-taking purposes by Fraser Basin Council
- If possible, please include your name and affiliation in your Zoom display name

Safety Reminders

- Ensure you're comfortable at your workstation
- If you need to, stand-up and stretch
- Take breaks as needed, we also have a break built into the agenda

Agenda

1. **Welcome, Introductions & Session Overview (15 min)**
2. Opening Remarks **(10 min)**
3. Background on Long Term Resource Planning & Demand Side Management Planning **(10 min)**
4. Pathways for British Columbia to Achieve its GHG Reduction Goals & Question Period **(45 min)**
5. Break **(10 min)**
6. Breakout Group Discussions & Report Back **(1 hour)**
7. Implications for FortisBC's Long Term Resource Plans **(25 min)**
8. Wrap-up, Evaluation Forms & Next Steps **(5 min)**

Welcome, Introductions & Session Overview



FortisBC Speaker Introductions



Doug Slater,
External & Indigenous
Relations Vice President,
FortisBC



Ken Ross,
Resource Planning &
DSM Reporting Manager,
FortisBC



Tyler Bryant,
Low-Carbon Policy
Manager,
FortisBC



Mike Hopkins,
Resource Planning Senior
Manager,
FortisBC



Anda Telman,
Resource Planning
Manager,
FortisBC

Attendee Introductions

- We ask that you take a few minutes to introduce yourself to other attendees in the chat
- If you're able and comfortable, please provide:
 - Your name
 - Affiliation
 - Reason for attending today's session

Disclaimer for an Open Dialogue

- The input provided during this meeting may become public during our regulatory proceedings as part of the session notes
- We will not attribute input to any individual or entity
- We encourage you to provide further input during the formal regulatory proceedings – even if your opinions have changed
- We will provide the presentation and meeting notes online and welcome feedback if you think we missed anything or misrepresented any comments or questions

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Opening Remarks



4 Pillars Of Our Clean Growth Pathway To 2050



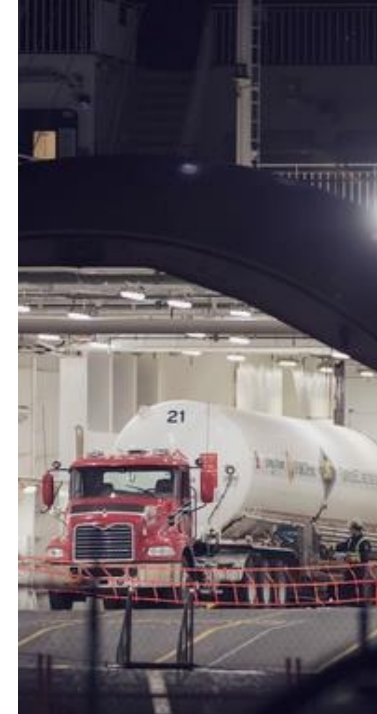
**Energy
efficiency**



**Renewable
gas**



**Zero and
low carbon
transportation**



Global LNG

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Background on Long Term Resource Planning & Demand Side Management Planning

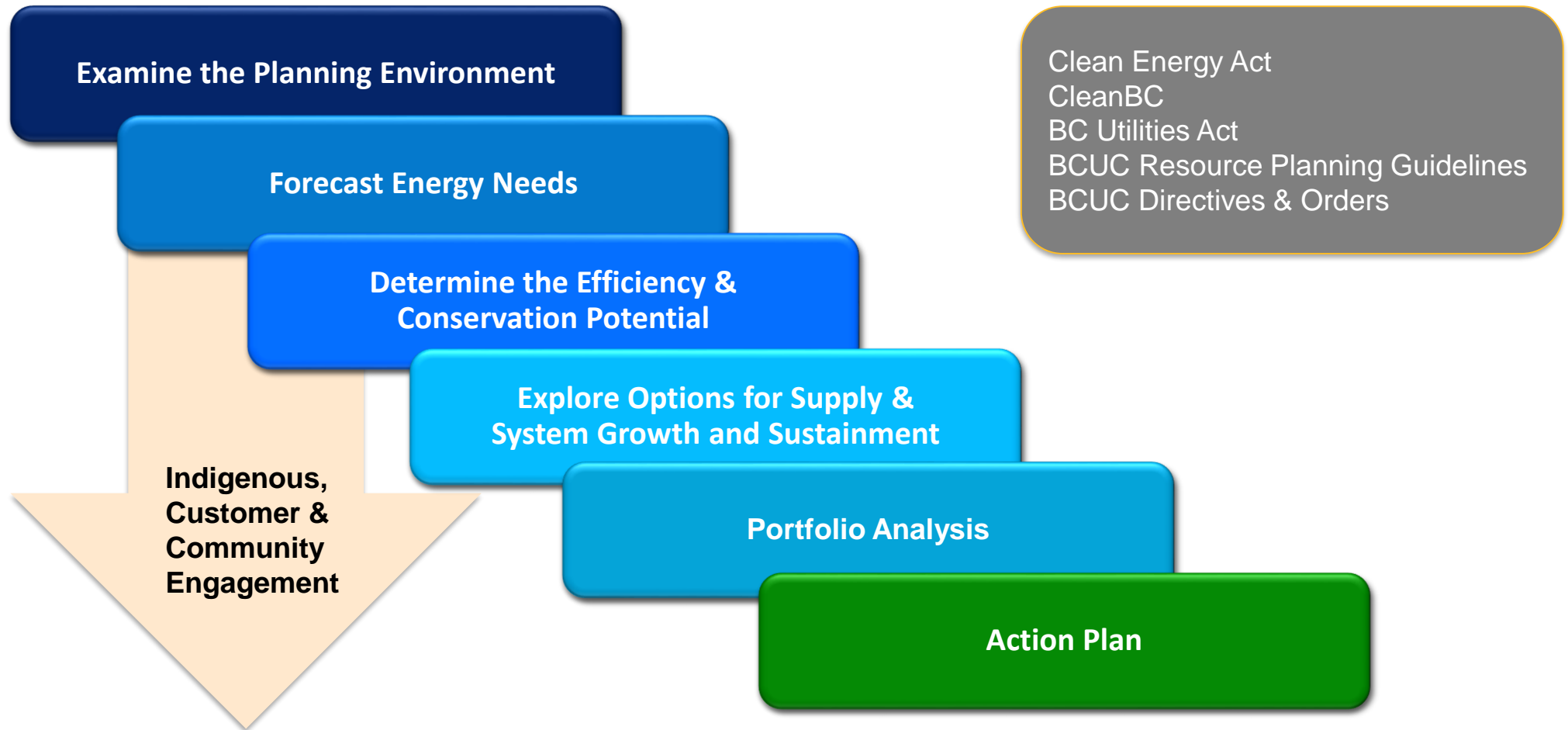


Resource Planning Scope & Objectives

The LTGRP **looks ahead 20 years** and provides a road map for securing safe, reliable and cost-effective energy resources.

- 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
 - Example: Clean Energy Act and CleanBC
- Address prior BCUC directives

Resource Planning Process



Upcoming Resource Plans

Long Term Electric Resource Plan (LTERP)

- The last plan was submitted to the BCUC in November 2016. The BCUC accepted the plan up to 2024 in June 2018.
- We expect to submit the next plan to the BCUC in June 2021.

Long Term Gas Resource Plan (LTGRP)

- The last plan was submitted to the BCUC in December 2017. The BCUC accepted the plan in February 2019.
- The next plan will be submitted to the BCUC in March 2022.



FortisBC Inc.
2016 Long Term Electric Resource Plan and
2016 Long Term Demand Side Management Plan



Energy at work FORTIS BC

FortisBC 2017 Long Term Gas Resource Plan



FORTIS BC



Questions for Clarification



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Pathways for British Columbia to Achieve its GHG Reduction Goals – Presentation and Discussion



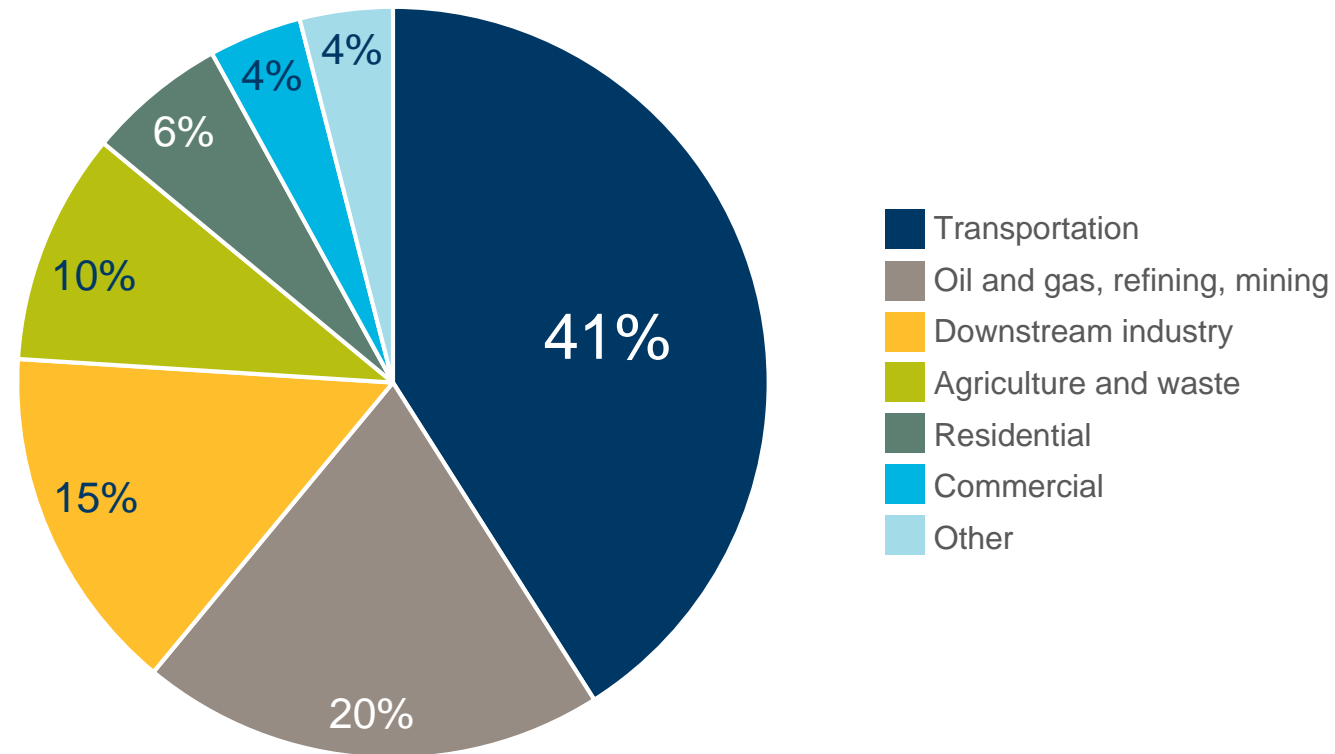
The Need For Made-in-BC, Low-carbon Pathways

- FortisBC has a proven history in BC's energy industry.
- While BC already has:
 - significant existing energy infrastructure
 - a clean electricity system
 - large renewable, natural gas and biomass resources
 - a relatively large winter heating load



BC's GHG Inventory

Industry & transportation biggest contributors



Source: <https://www2.gov.bc.ca/gov/content/environment/climate-change/data/provincial-inventory>

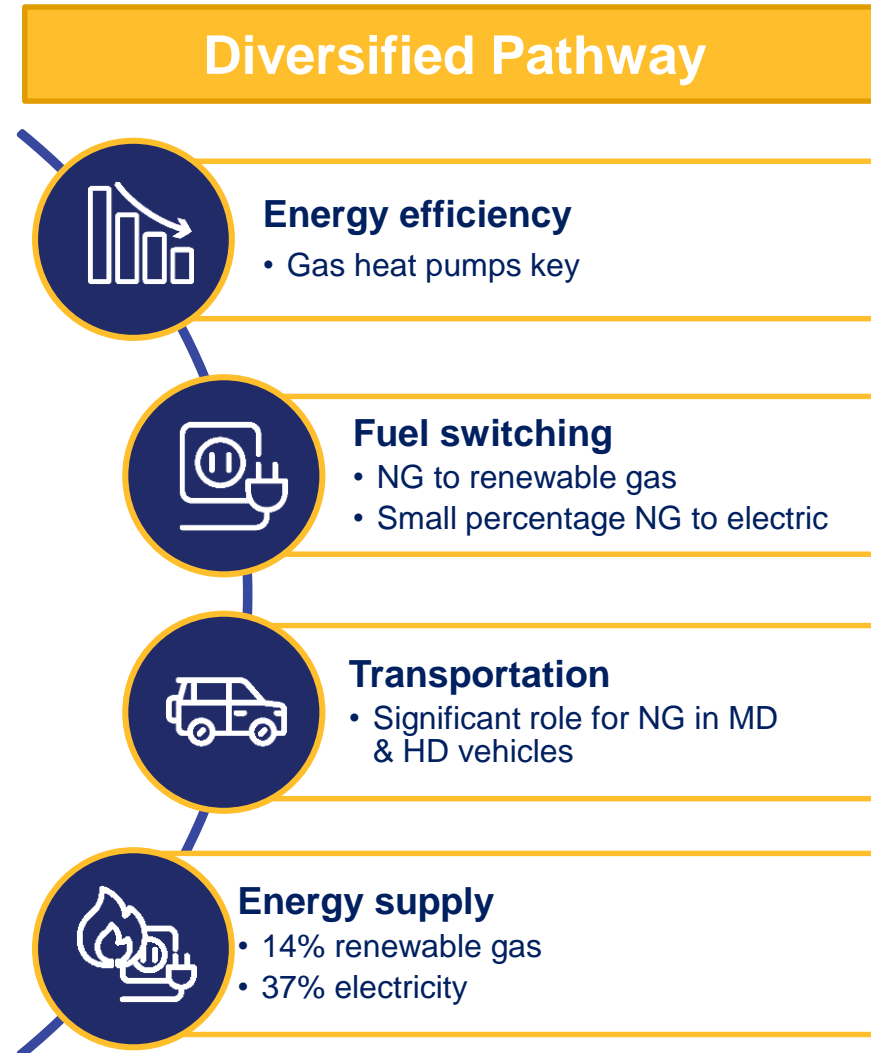
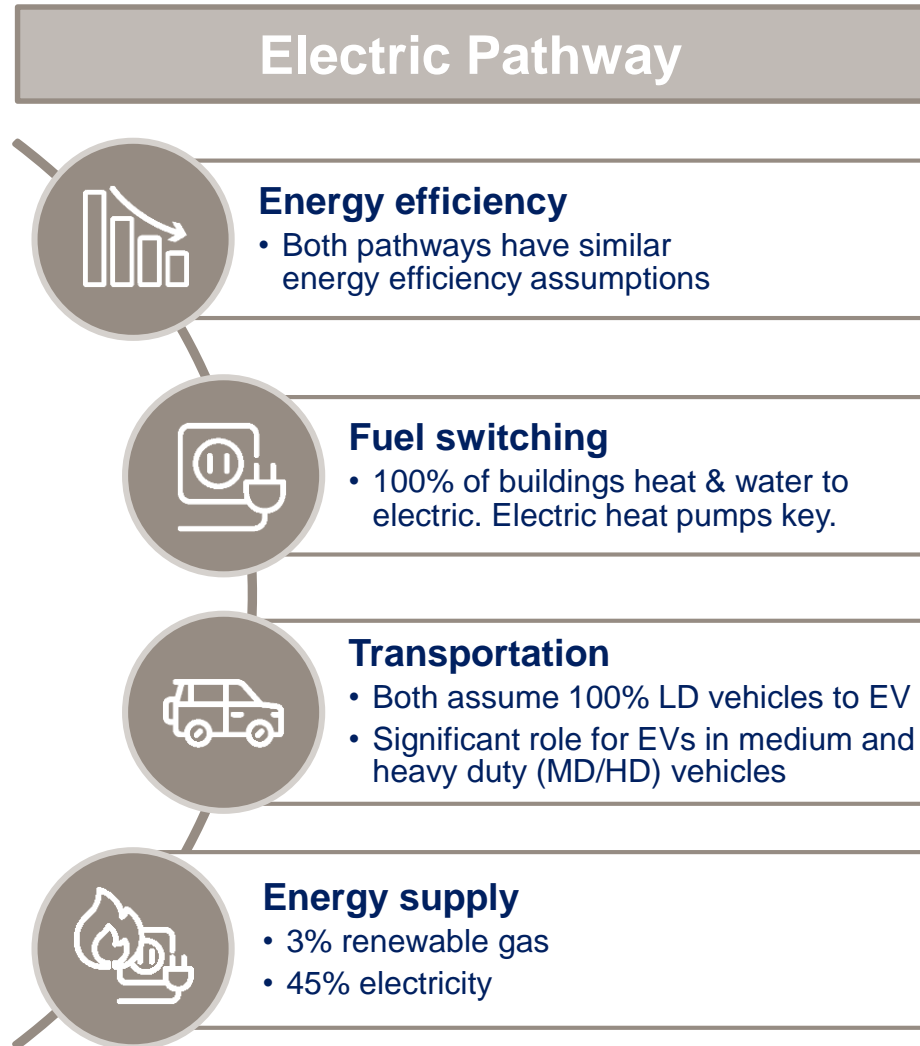
We've Done The Research

FortisBC commissioned Guidehouse to:

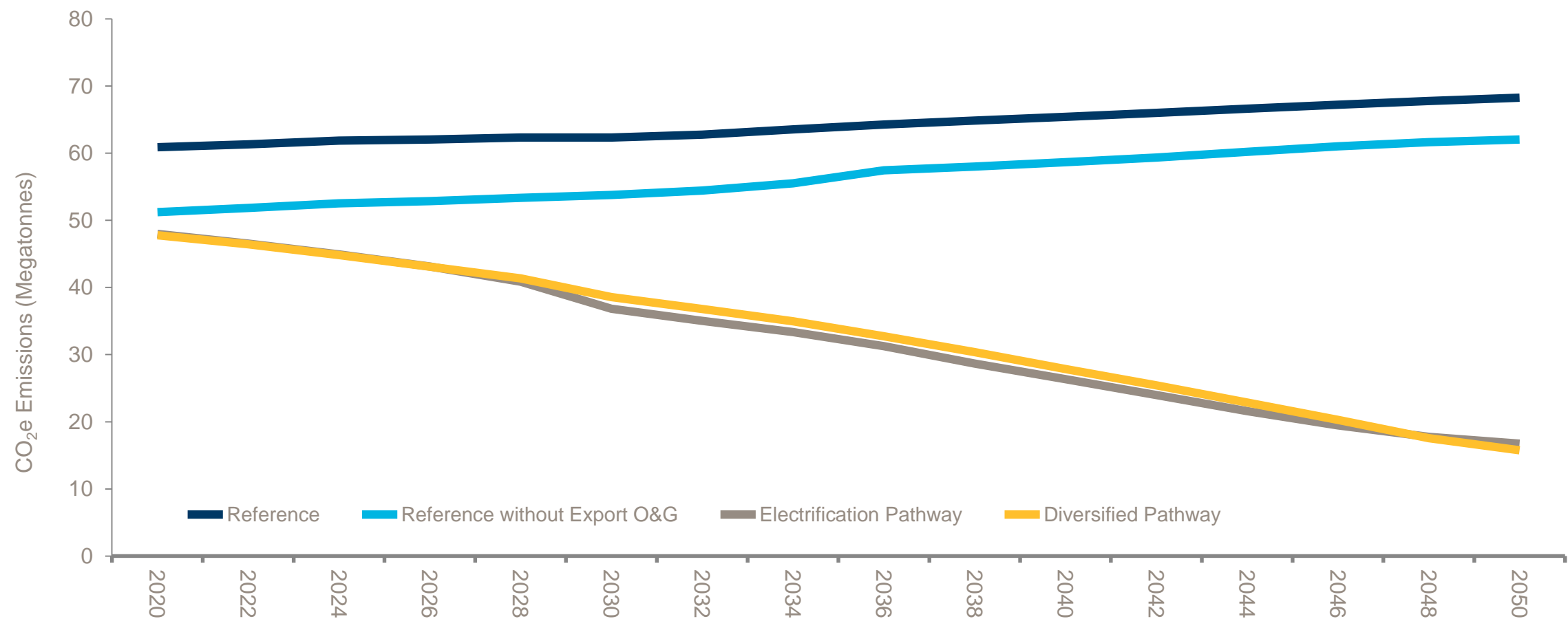
- develop pathways for BC to achieve an 80% GHG reduction
- compare two options to get there including Electrification and Diversified Pathways
- analyze GHG reductions, costs, reliability and risks to British Columbians



Electric & Diversified Pathways



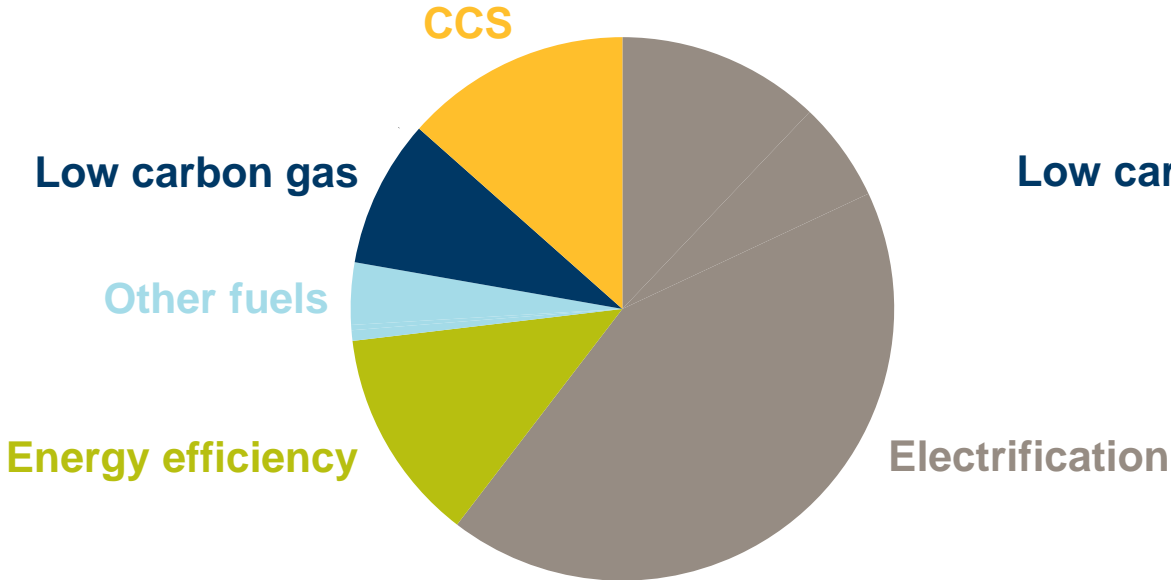
Both Pathways Achieve The Same Level Of GHG Reductions



Oil and Gas sector emissions attributable to exports are excluded from both the Reference Case emissions and Pathway emissions

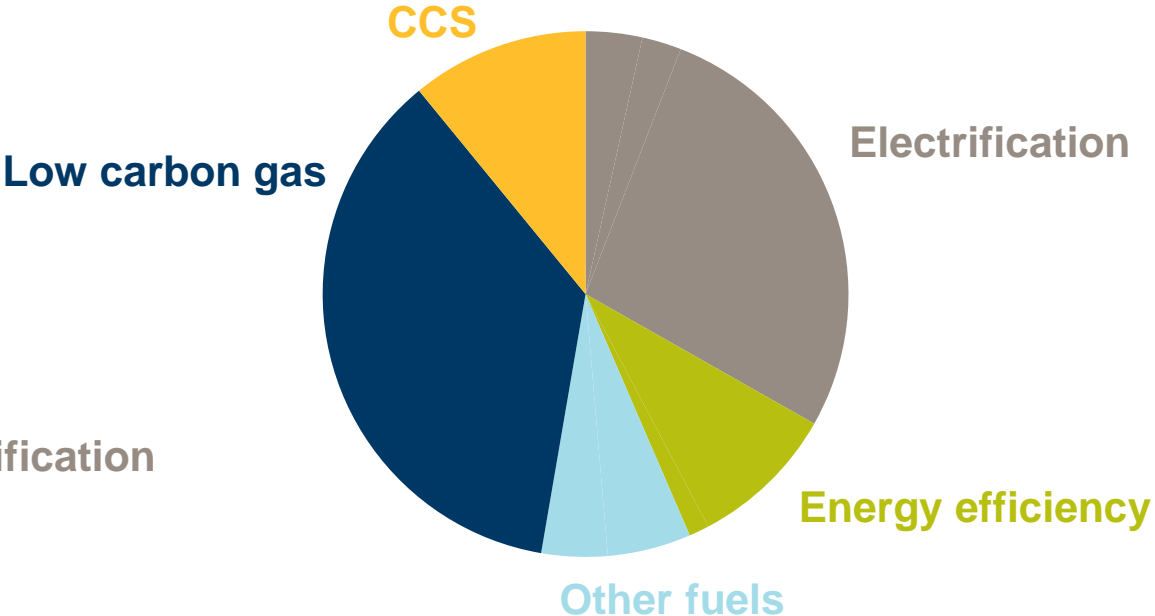
A Diversified Pathway Is A More Resilient Approach

Electric Pathway - 2050



Two-thirds of GHG reductions in the Electrification Pathway requires direct electrification.

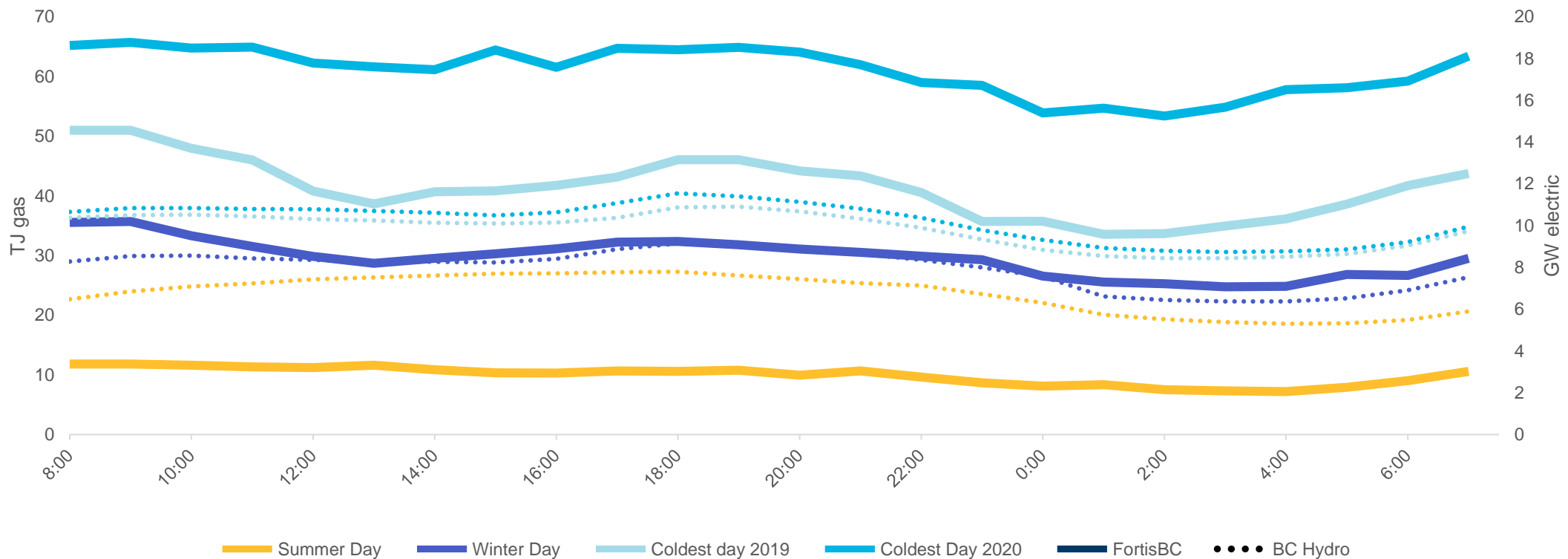
Diversified Pathway - 2050



The Diversified Pathway spreads reduction across more options.

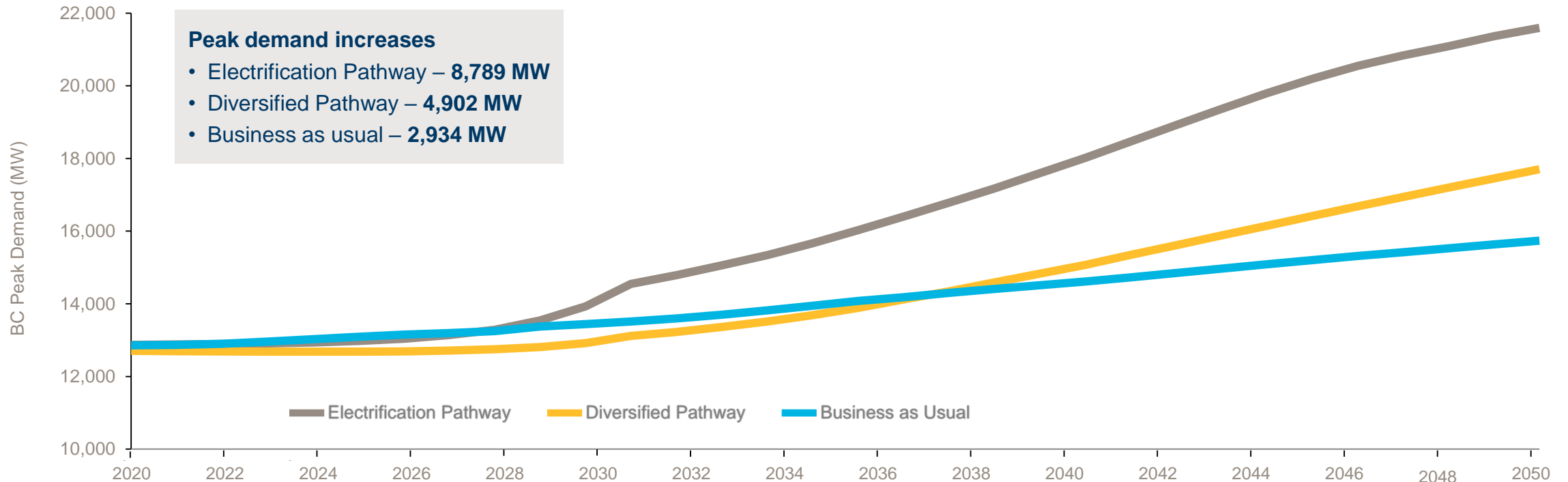
Key Challenge: Peak Heat Demand

On a very cold day, the energy demand on the natural gas system is **60%** higher than the electric system.



Key Challenge: Expanding Clean Peak Capacity

Due to the addition of electric vehicles and electric heating, peak demand is expected to increase by approximately **38%** (Diversified Pathway) and **68%** (Electrification Pathway).

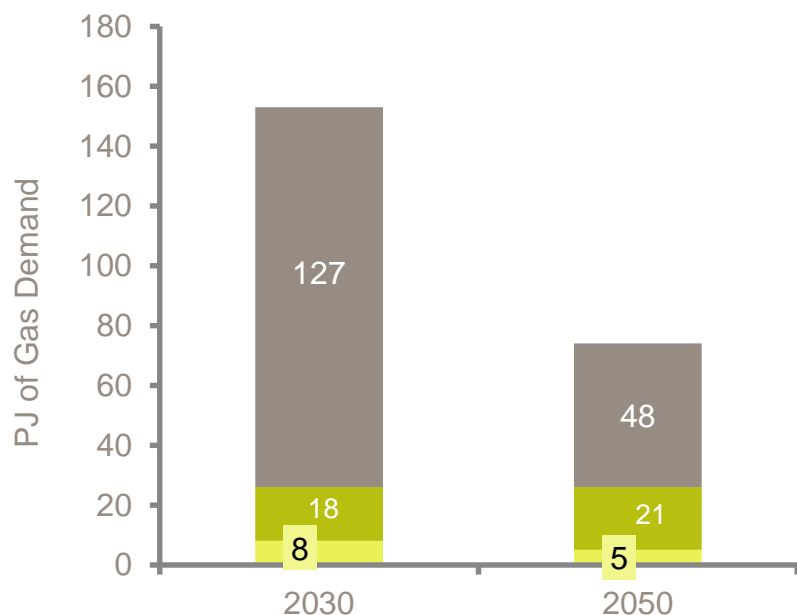


*Peak demand impacts are based on conservative assumptions in both pathways (e.g. majority of MHD vehicle charging occurs in non-peak times)

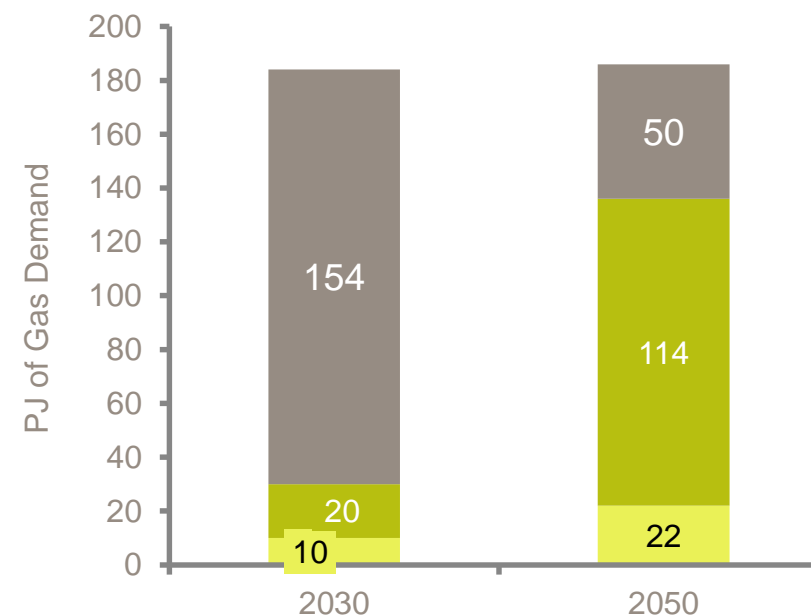
Key Challenge: Expanding Renewable Gas Supply

Large potential for renewable gas over the coming decades. Partnerships between governments, industry, Indigenous communities and stakeholders will be key.

Electric Pathway – gas demand

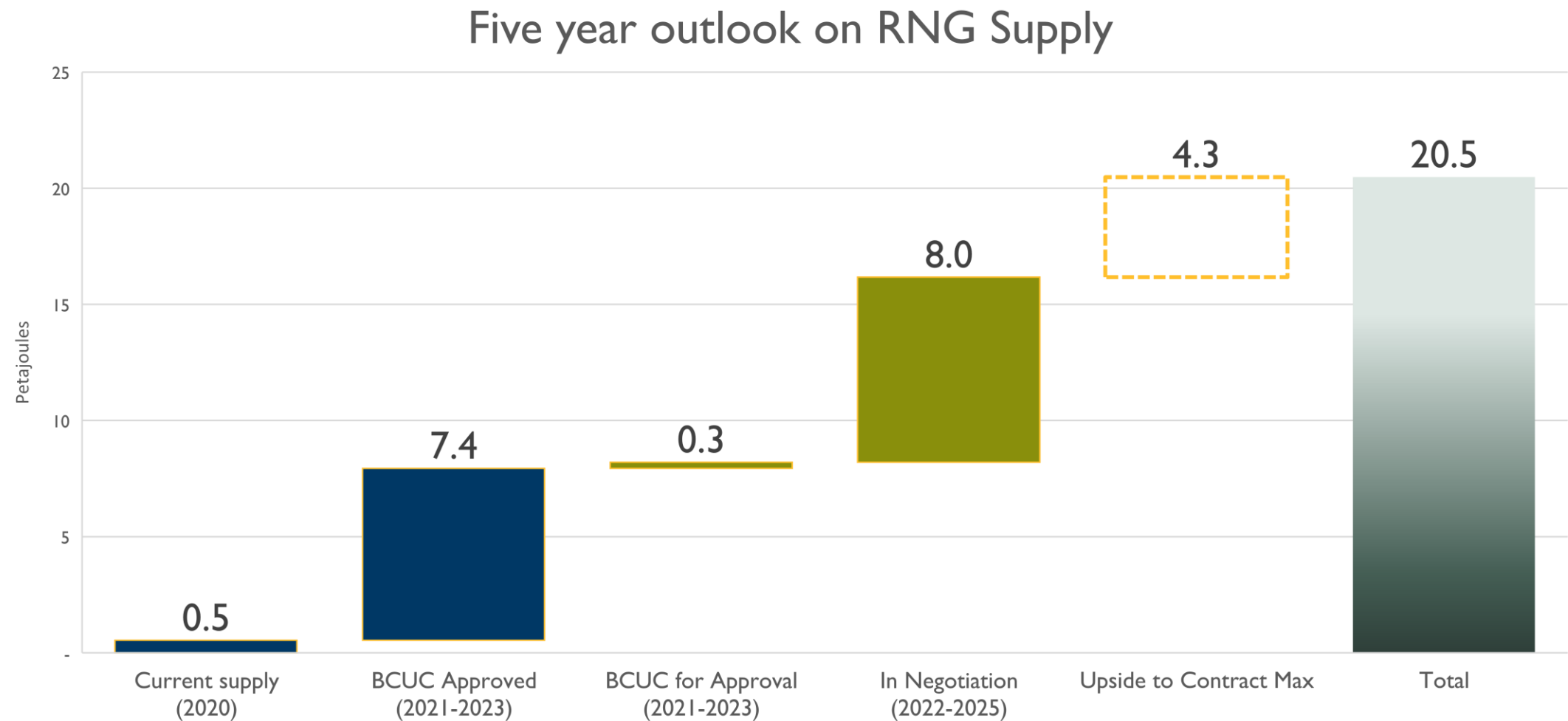


Diversified Pathway – gas demand



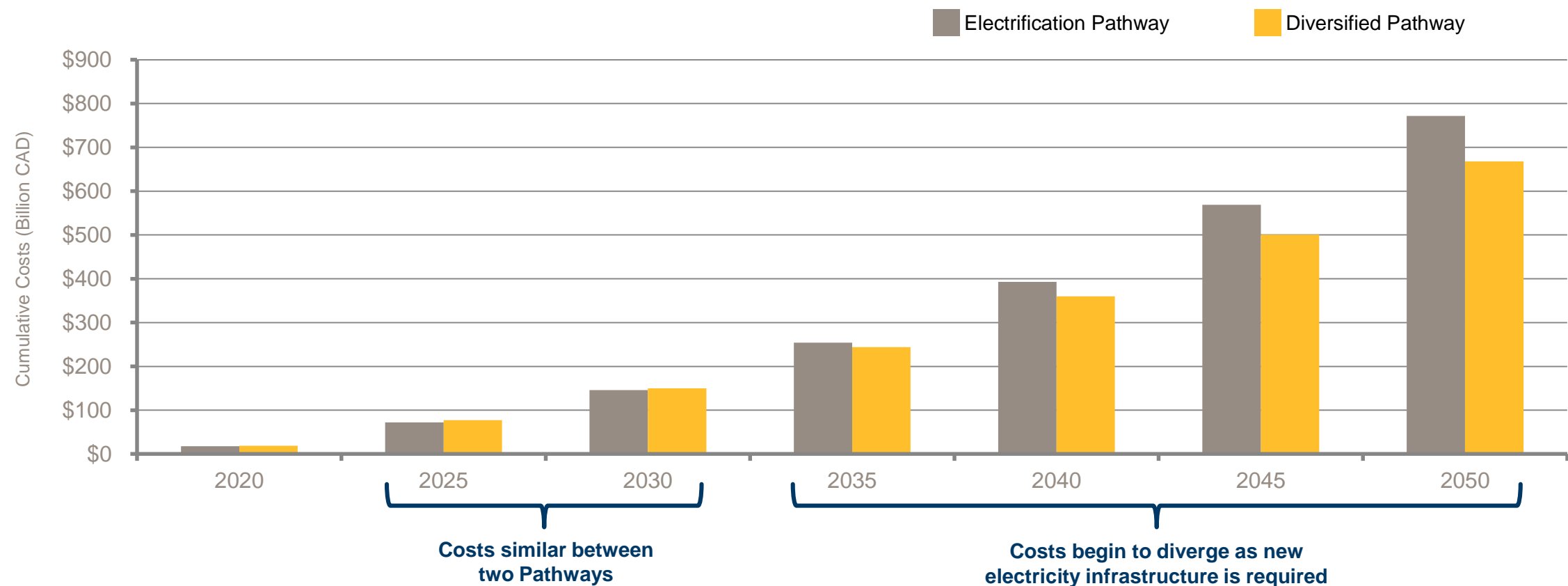
■ Natural Gas ■ Renewable Natural Gas ■ Hydrogen

Renewable Gas Short-term Supply Outlook

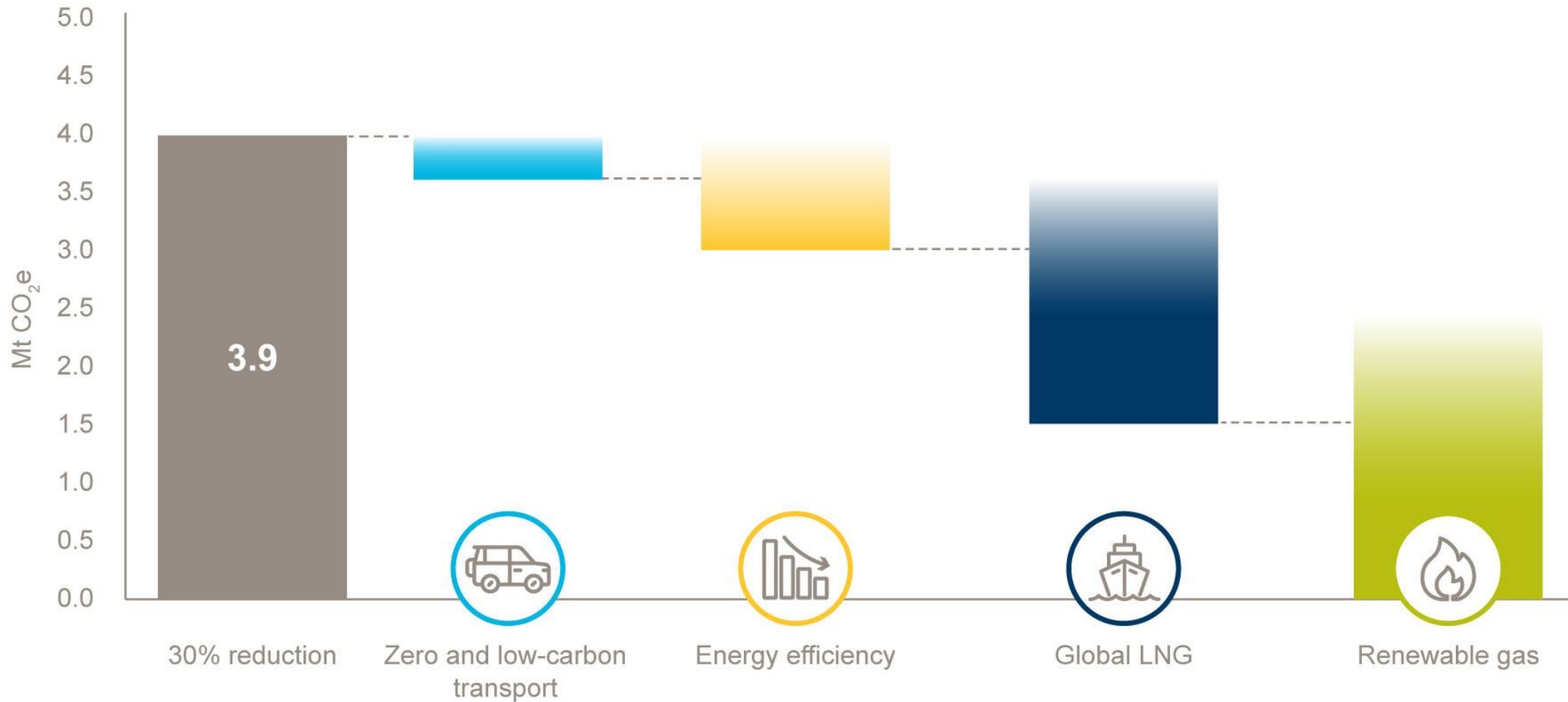


Adding Up All The Costs

By 2050, the cost to achieve the Electrification Pathway is expected to be at least **\$100B** higher than the Diversified Pathway.

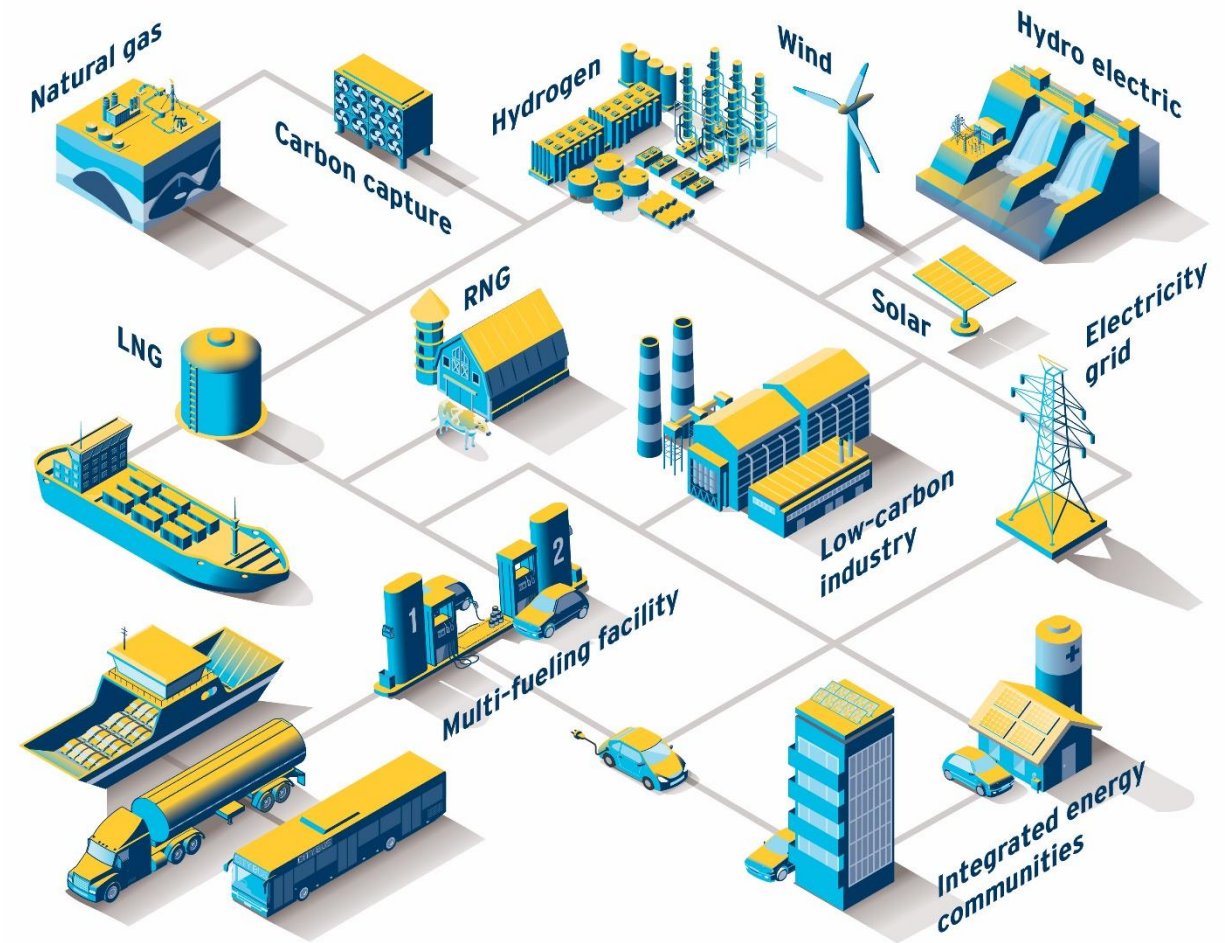


How We'll Measure Our Progress



Our Diversified Approach To Climate Action

- Achieves the Province's **80%** reduction target
- Reduces decarbonization costs by **\$100B**
- Considers peak day demand and related infrastructure
- Provides important resiliency and reliability
- It's not either/or, **it's both/and**



Questions for Clarification



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Break



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Breakout Group Discussions

1. What are your key takeaways from the Energy Pathways Report presentation?
2. What key considerations do you recommend FortisBC explore in planning for a diversified pathway?

Breakout Group Highlights

- What are some of the key highlights from your discussion group?
 - Key takeaways from the Energy Pathways Report presentation
 - Key considerations for FortisBC to explore in planning for a diversified pathway



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Implications for FortisBC's Long Term Resource Plans



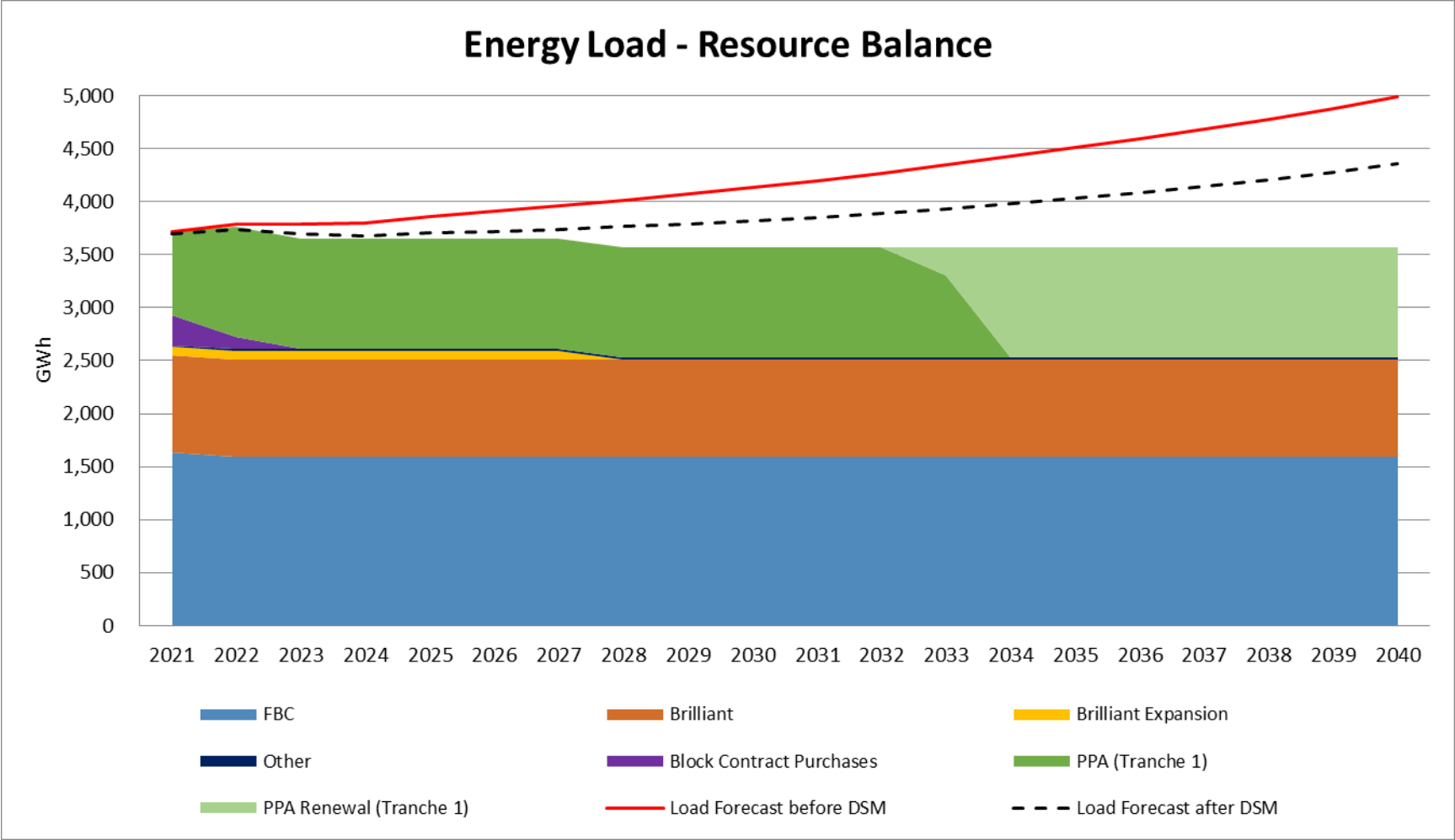
2021 Long Term Electric Resource Plan (LTERP)



LTERP Assumptions

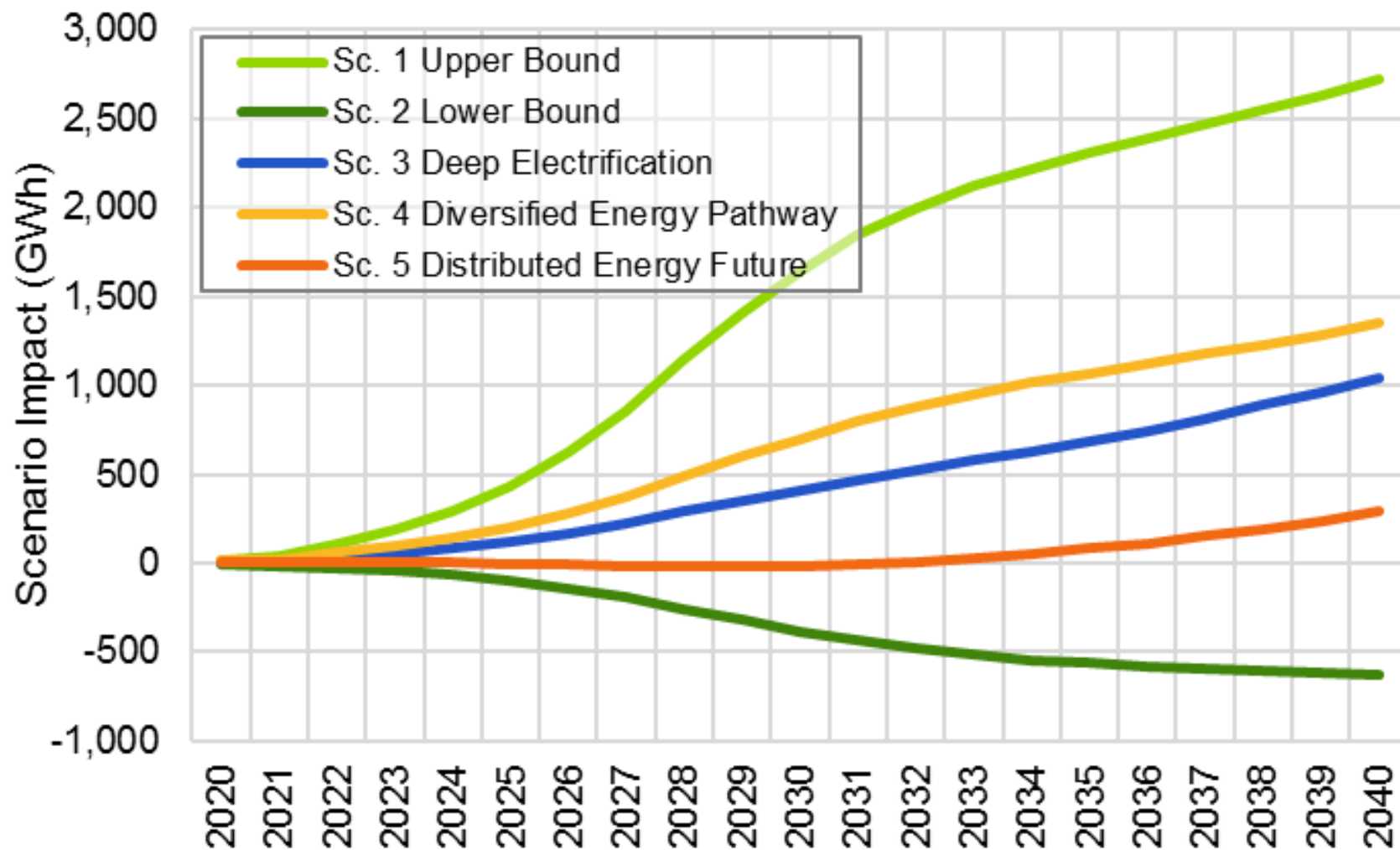
- Light-duty EV charging and renewable gas project included in Reference load forecast
- Medium and heavy-duty EV charging, hydrogen production and carbon capture and storage included in load scenarios
- Conservation Potential Review Update will inform Demand Side Management (DSM) levels
- Global LNG not applicable to LTERP

Reference Load-Resource Balance

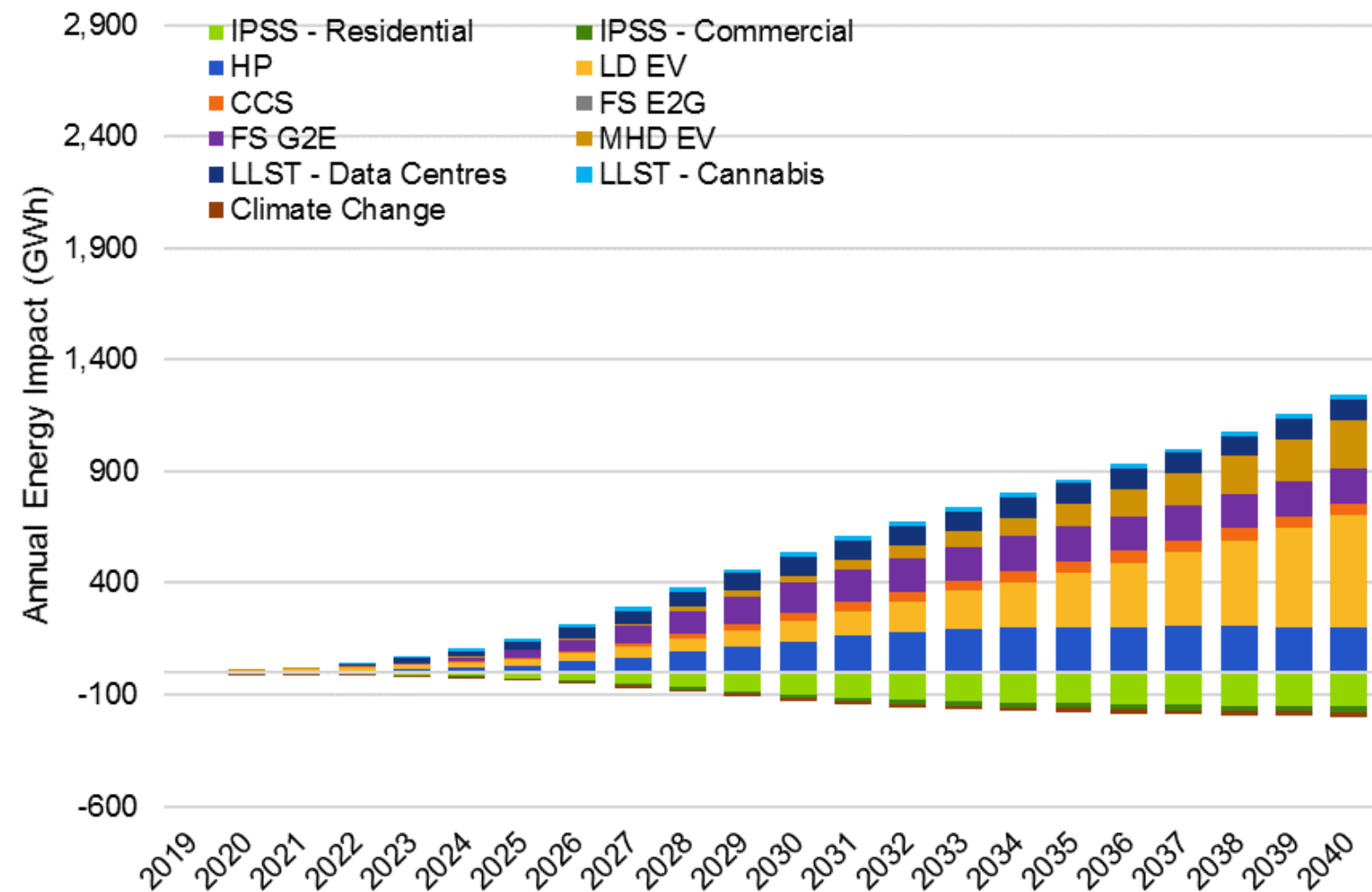


Note: DSM still to be determined

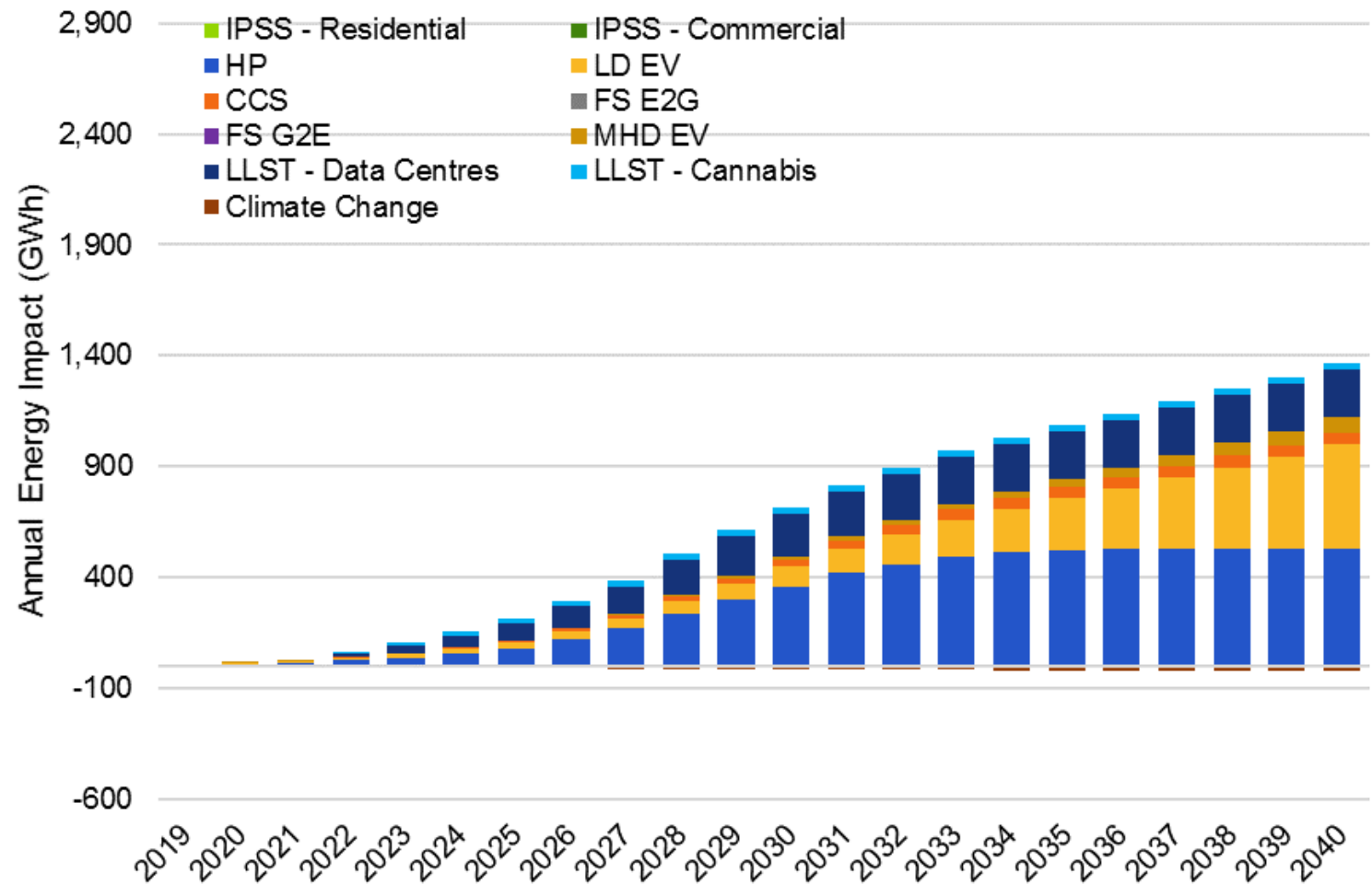
Load Scenarios



Deep Electrification Scenario



Diversified Energy Scenario



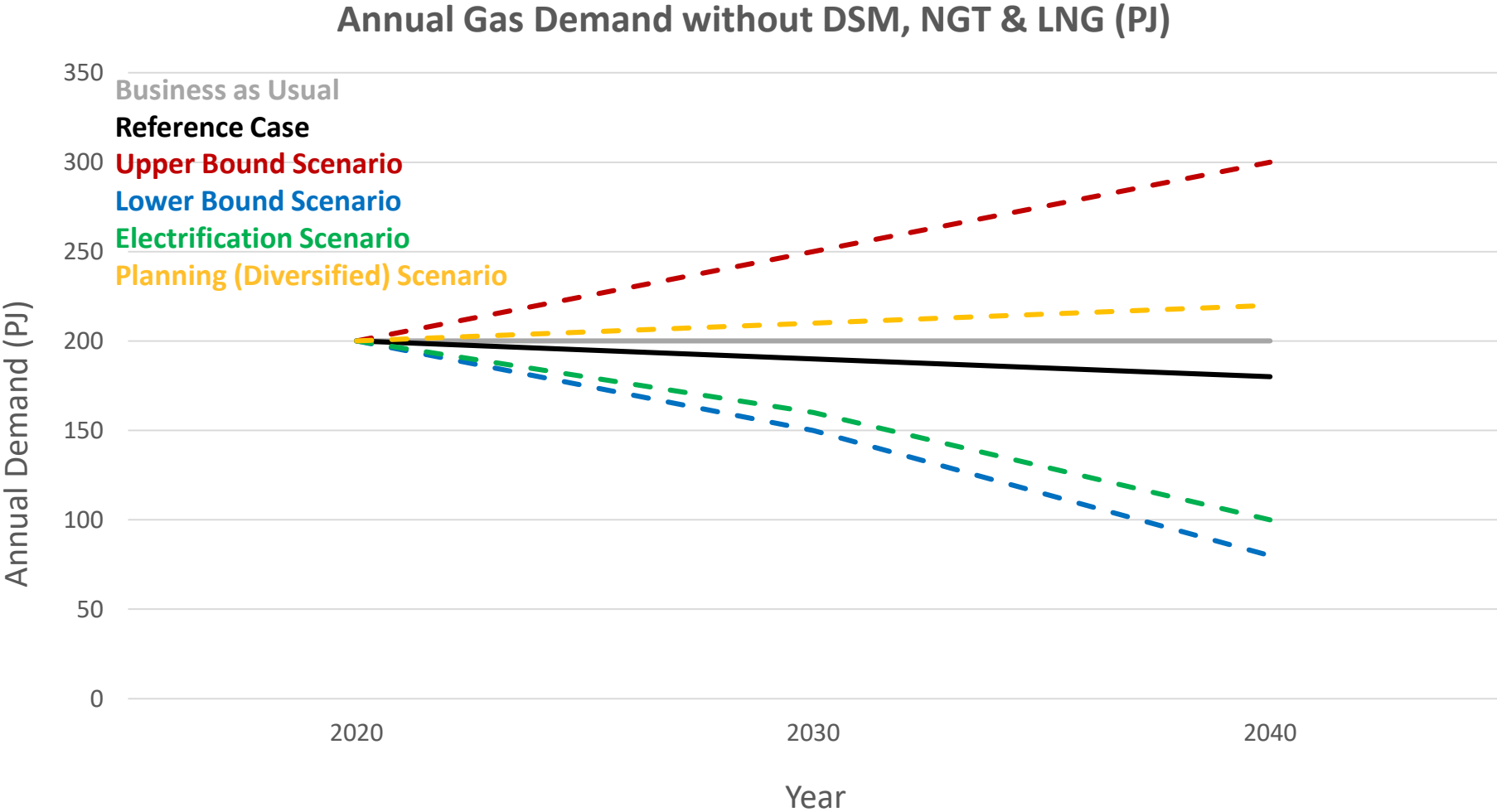
2022 Long Term Gas Resource Plan (LTGRP)



LTGRP Considerations



Illustrative Demand Forecast Scenarios

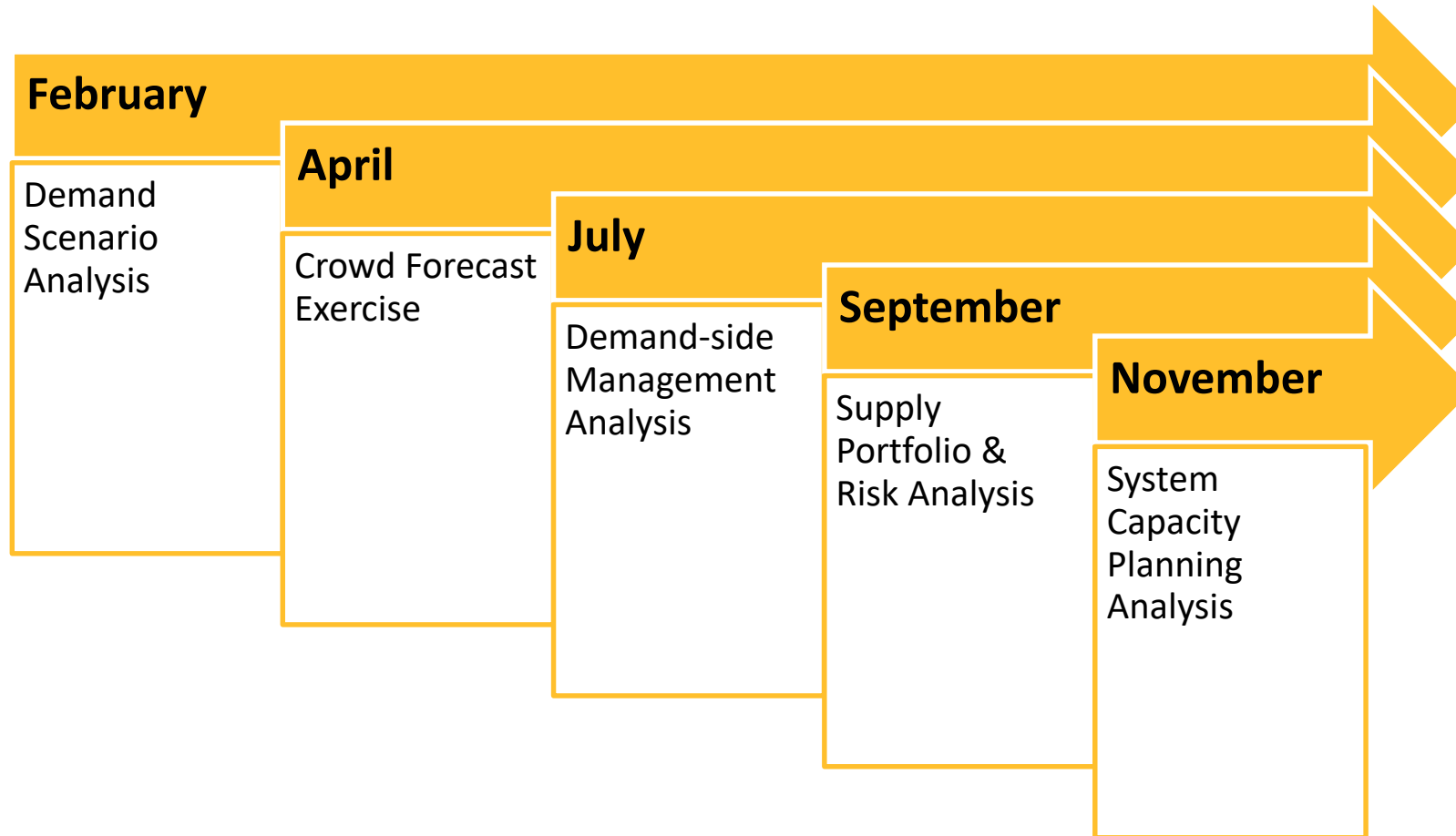


Demand Scenario Drivers

Used to model alternate scenarios

- Natural Gas for Transportation (NGT) Demand
- Fuel Switching
- Carbon Price
- New Construction Codes
- Retrofit Codes
- Appliance Standards
- RNG Production
- RNG Cost
- Hydrogen Production
- Hydrogen Cost
- Carbon Capture & Storage (CCS) Production
- Carbon Capture & Storage (CCS) Cost
- Economic (Customer) Growth
- Liquefied Natural Gas (LNG) Exports
- Natural Gas Price

LTGRP RPAG Engagement



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Wrap-up, Evaluation Forms & Next Steps



Wrap-up & Next Steps

- Thank you for attending today's session, FortisBC appreciates your interest and willingness to engage
 - FortisBC will advise when the presentation and meeting notes will be posted online
- In addition, FortisBC will reach out and coordinate on-going engagement activities with each specific advisory group
- Finally, your feedback and input is important to FortisBC, please don't hesitate to send your ideas, comments or questions to irp@fortisbc.com

Thank you



For further information, please contact:

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