

An aerial photograph of a city skyline, likely Vancouver, taken from a high vantage point. The foreground is filled with numerous high-rise apartment buildings and commercial structures. In the background, a large body of water (the harbor) is visible, with a few ships and distant mountains under a dramatic, cloudy sky at sunset. A large white rectangular box with a thin black border is centered over the image, containing the title and date of the presentation.


2022 LONG TERM GAS RESOURCE PLAN (LTGRP) DIVERSIFIED ENERGY FUTURE

February 10, 2022

Energy at work  FORTIS BC™

Welcome, Acknowledgment, Introduction





FortisBC acknowledges and respects Indigenous People in this place we call Canada, on whose traditional territories we all live, work and play.

FortisBC is committed to Reconciliation with Indigenous Peoples, using our Statement of Indigenous Principles to guide our words and actions.

Safety moment: Mental wellness

With COVID-19 affecting every aspect of our lives, Canadians are feeling the impact of the pandemic on their mental health. Now more than ever, mental health matters and every action counts.

Helpful information and tips developed by the [Canadian Psychological Association](#) can help you, your friends, and your family cope with stress as we look after our collective mental wellness.



**1. Recognize
signs of stress**



**2. Take care of
yourself**



**3. Take care
of others**



**4. Connect to
help**



**5. End stigma
with these 5
simple ways**



**6. Listen with
empathy**

Guiding Principles for FortisBC

Contribute to
Province's
Decarbonization Goals

Integrated Optimized,
and Low-cost GHG
Abatement

Support Affordability

Understand and
Mitigate Long-Term
Impacts to Energy
System

Diversified and
Collaborative Energy
Approach

Strengthen, Reliability
and Resiliency

Agenda



Welcome, Acknowledgment, Introduction & Sessions Overview
(10 min.)



Status update on the resource planning process and overview of RPAG feedback
(20 min.)



Overview of the Diversified Energy Scenario - FEI's planning scenario
(60 min.)



Break
(15 min.)



Further Discussion on the Regional Gas Supply Diversity Project and its role in a diversified energy future
(45 min.)



Developing the LTGRP Action Plan
(25 min.)



Wrap-up & Next Steps
(5 min.)

Session Objectives

1

Overview of RPAG feedback and how we used your feedback

2

Discuss the Diversified Energy Scenario - FEI's planning scenario

3

Discuss the Regional Gas Supply Diversity Project

4

Collect any remaining feedback before the 2022 LTGRP filing

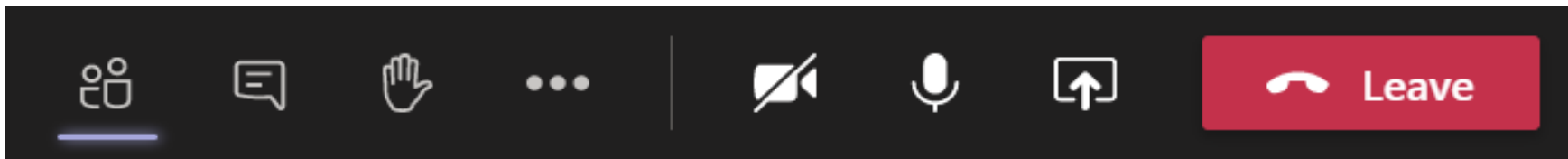
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2022 LTGRP status and next steps



Housekeeping

- Video participation is not required – presenters will use video
- When not speaking, please mute yourself to reduce background noise
- We will have scheduled breaks for questions and discussion
- We encourage you to use the hand-up function to indicate you'd like to speak
 - When we call upon you, feel free to un-mute, introduce yourself and speak clearly
 - You may also use the chat functionality to enter comments and questions if you'd prefer
- The session audio/video will not be recorded, however, the chat history will be saved for note-taking purposes
- Session participants should be visible by clicking on the participants icon





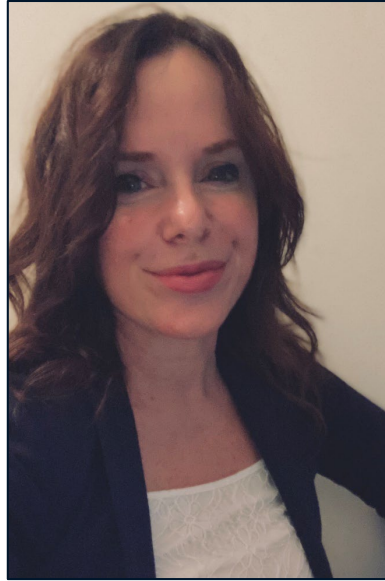
Paul Chernikhowsky

Director, Regulatory
Projects & Resource
Planning



Ken Ross

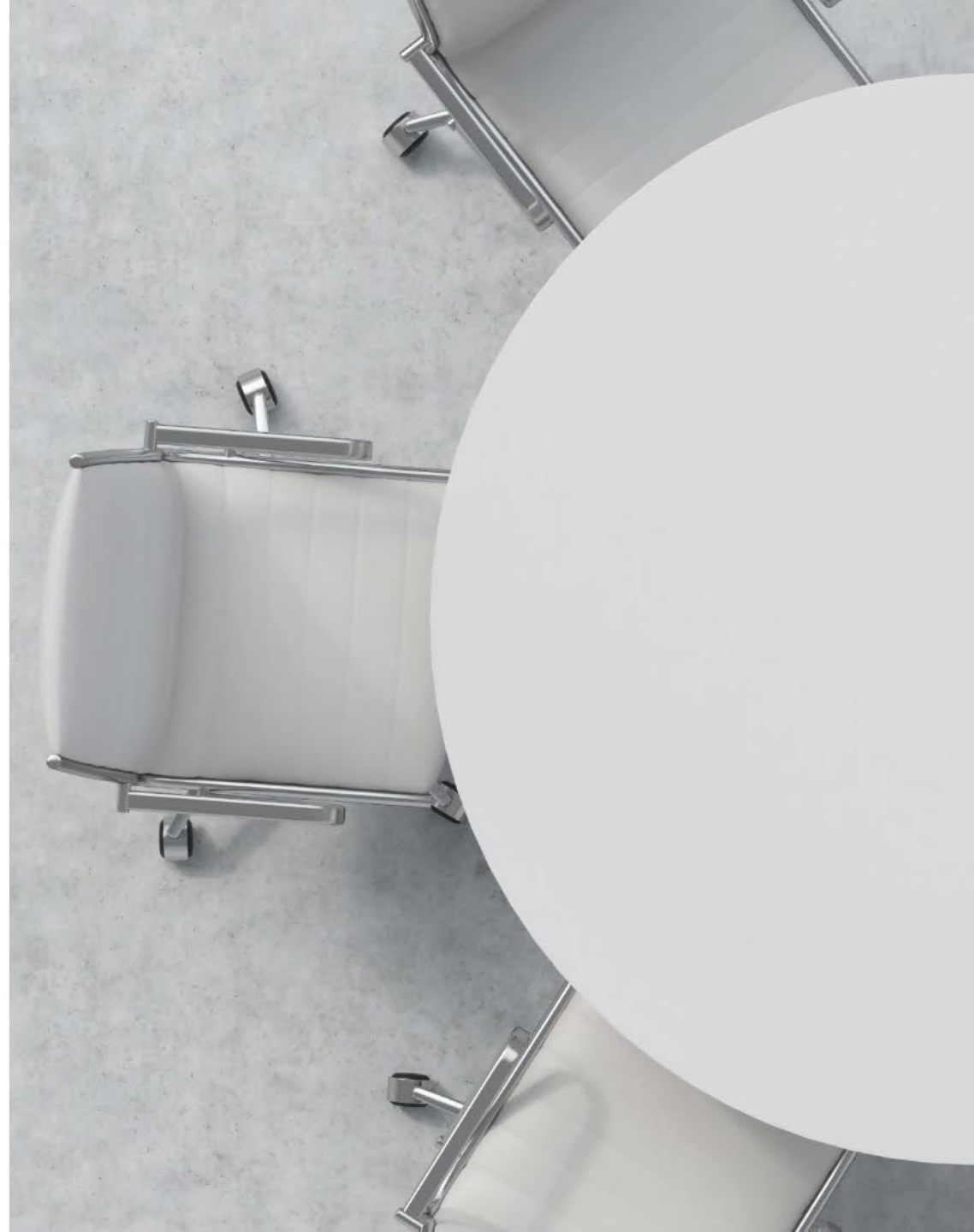
Manager, Resource
Planning & DSM
Reporting



Tania Specogna

Director, Resource
Development

FortisBC Speakers



Resource Planning Advisory Group (RPAG)

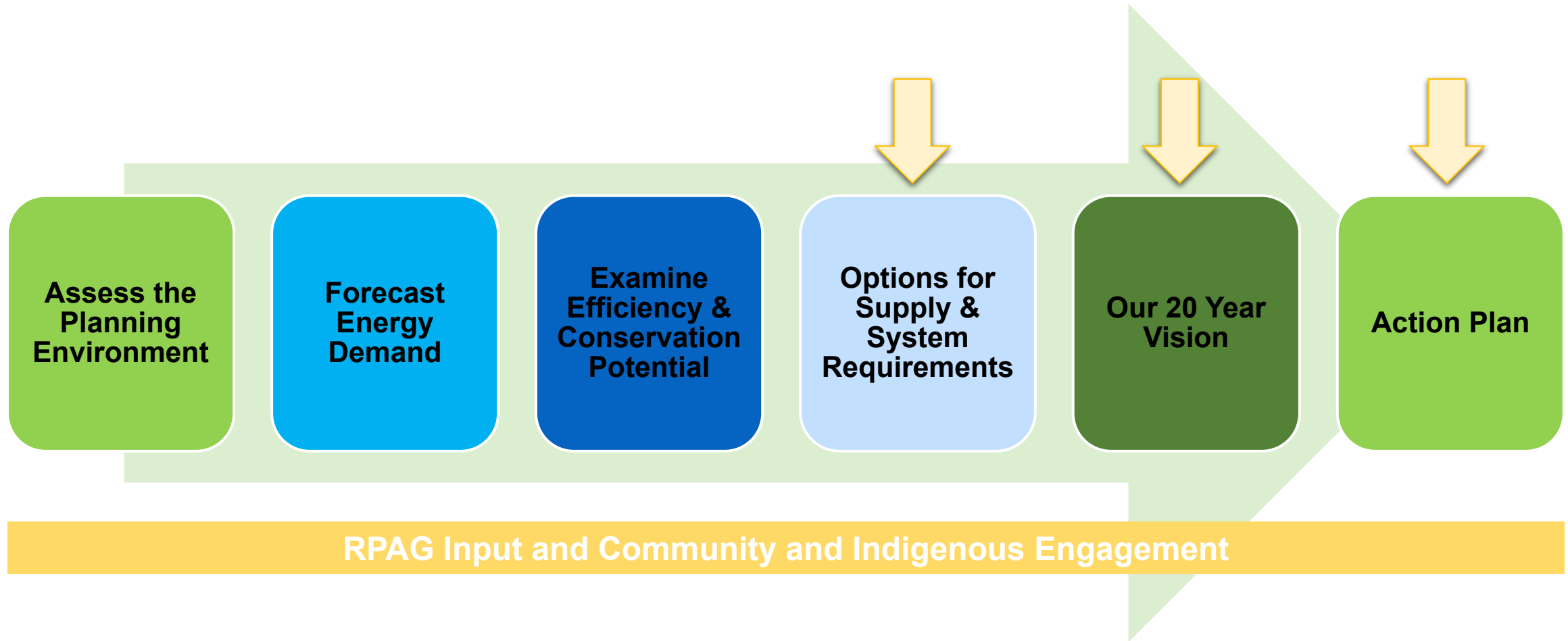
Members & Guests that participated

- Avista Utilities
- BC Business Council
- BC Hydro
- BC Ministry of Energy, Mines & Low Carbon Innovation
- BC Public Interest Advocacy Centre
- BC Sustainable Energy Association
- BC Utilities Commission
- Building Owners & Managers Association
- Canadian Biogas Association
- Canadian Institute of Plumbing and Heating
- City of Abbotsford
- City of Burnaby
- City of Campbell River
- City of Kamloops
- City of Kelowna
- City of New Westminster
- City of Prince George
- City of Surrey
- Clean Energy Association of BC
- Climate Action Secretariat
- Commercial Energy Consumers Association of BC
- Community Energy Association
- District of Saanich
- Enbridge
- Enbala
- Metro Vancouver
- Midgard Consulting (Representing Residential Consumer Intervener Association)
- MoveUP
- North West Gas Association
- NW Natural
- Northern Alberta Institute of Technology
- Pacific Northern Gas
- Pembina Institute
- Puget Sound Energy
- Roger Bryenton & Associates
- Selkirk College
- SFU Renewable Cities
- Union of BC Municipalities
- University of Victoria
- Village of Keremeos

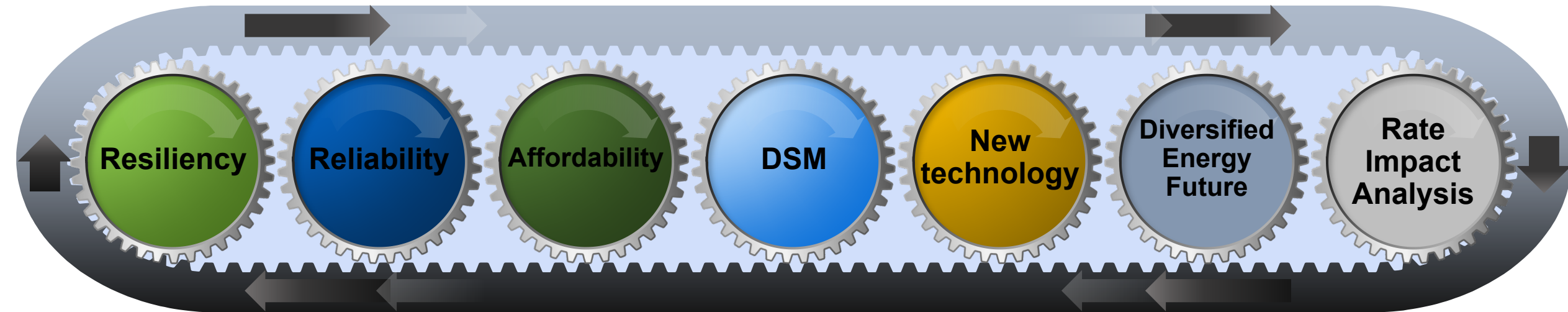
Update on the resource planning process and overview of RPAG feedback



Recall the LTGRP Process



Overview of RPAG feedback



Overview of RPAG feedback

The need for urgent climate action in BC as facilitated through FEI's transition to clean energy.

How can FEI bring on sufficient renewable and low carbon gas to meet increased demand to 2042, including:

- Impact of renewable and low carbon gases on the gas system;
- Cost and timing of renewable supply;
- Competition for renewable energy resources;
- Recognition that both renewable natural gas and clean electricity are finite resources in BC;
- Hydrogen offers a vast opportunity to supply low carbon energy needs but more research is needed to bring it to market; and
- Feedback on the Renewable Gas Comprehensive Review filing on December 17, 2021.

Overview of RPAG feedback

General support for ensuring a long life for gas infrastructure, security for employees, while providing affordable energy and resilient energy system for all customer segments; residential (including low-income), commercial and industrial.

Requested more understanding of how FEI will meet the GHG emission reduction targets outlined in CleanBC's Roadmap to 2030. Discussions included:

- An understanding that Roadmap details are still being finalized;
- Many aspects of the Roadmap are already captured in the LTGRP scenarios; and
- Acknowledgment of the critical role of the gas infrastructure in decarbonization.

Overview of RPAG feedback

General agreement for the Diversified Energy Pathway as the planning scenario and comparisons to the Deep Electrification scenario are of interest. Discussions included:

- Clarification of aspects of the demand and supply critical uncertainties;
- Location of emission reductions and carbon accounting approach;
- Approaches to decarbonizing various sectors;
- Breakout of transportation sector demand;
- Illustrated demand and carbon reductions by end-use;
- Costs of decarbonization approaches; and
- Slider tool for exploring and discussing demand/supply critical uncertainties.

Overview of RPAG feedback

Support for high DSM setting in the short and longer term as the proportion of renewables increases. Discussions included:

- Clarification on the DSM settings used in the scenarios and the alternative spending levels;
- Clarification on highest performing DSM measures and other DSM measure details;
- Clarification on the avoided costs used to conduct the DSM cost tests;
- Modified Total Resource Cost Test (MTRC) implications;
- Avoided cost of renewable/low carbon gas; and
- Support for DSM savings to be applied across all fuel types, emphasizing the benefits of saving an additional unit of energy (renewable or conventional).

Overview of RPAG feedback

Provided overview of FEI supply and system capacity planning in the diversified energy future, including:

- Annual demand and daily peak demand by sector;
- The role of LNG storage as part of resiliency planning;
- How to account for flow-through projects such as Woodfibre and LNG in GHG emission calculations;
- In terms of current RNG projects, 13 are in BC and 14 are outside of BC;
- The work under way to transition toward hydrogen; and
- Update on the Regional Gas Supply Diversity Project – the importance of resiliency, hydrogen potential and working with Indigenous communities on this project.

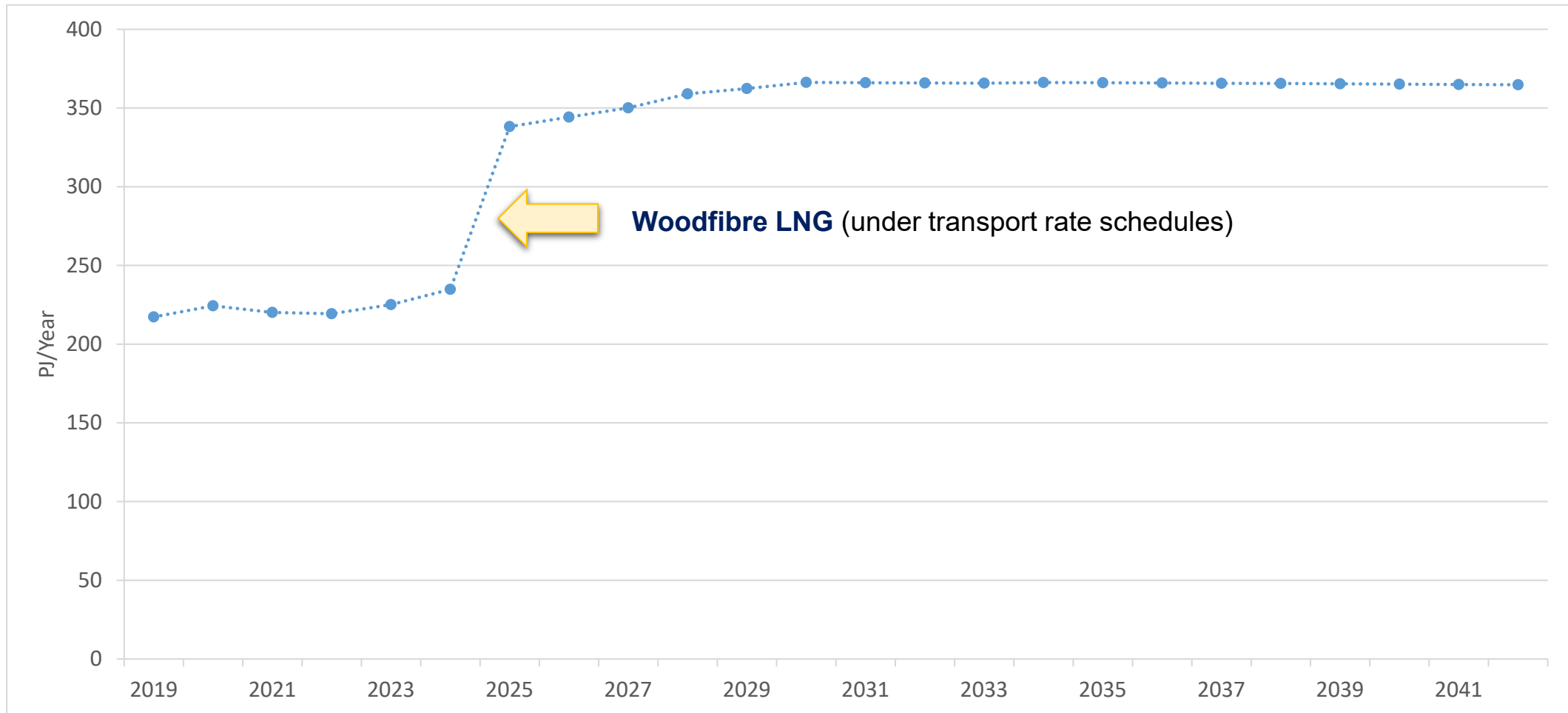
Support for FEI and BC Hydro to work together in resource planning to ensure the alignment of demand, supply and cost scenarios in meeting BC's energy needs into the future.

- Collaboration will be critical in identifying the right fuel for the right use at the right time.

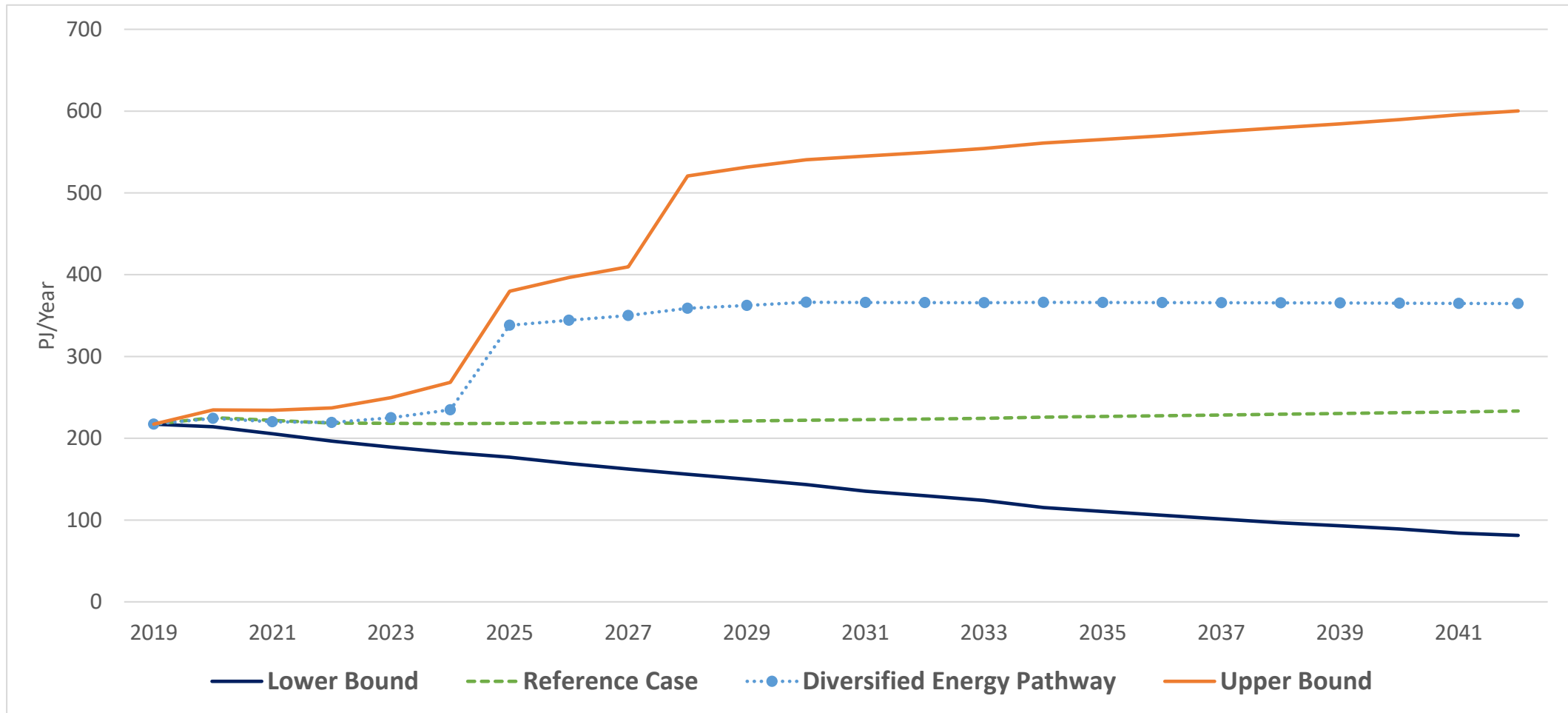
Overview of the Diversified Energy Scenario - FEI's planning scenario



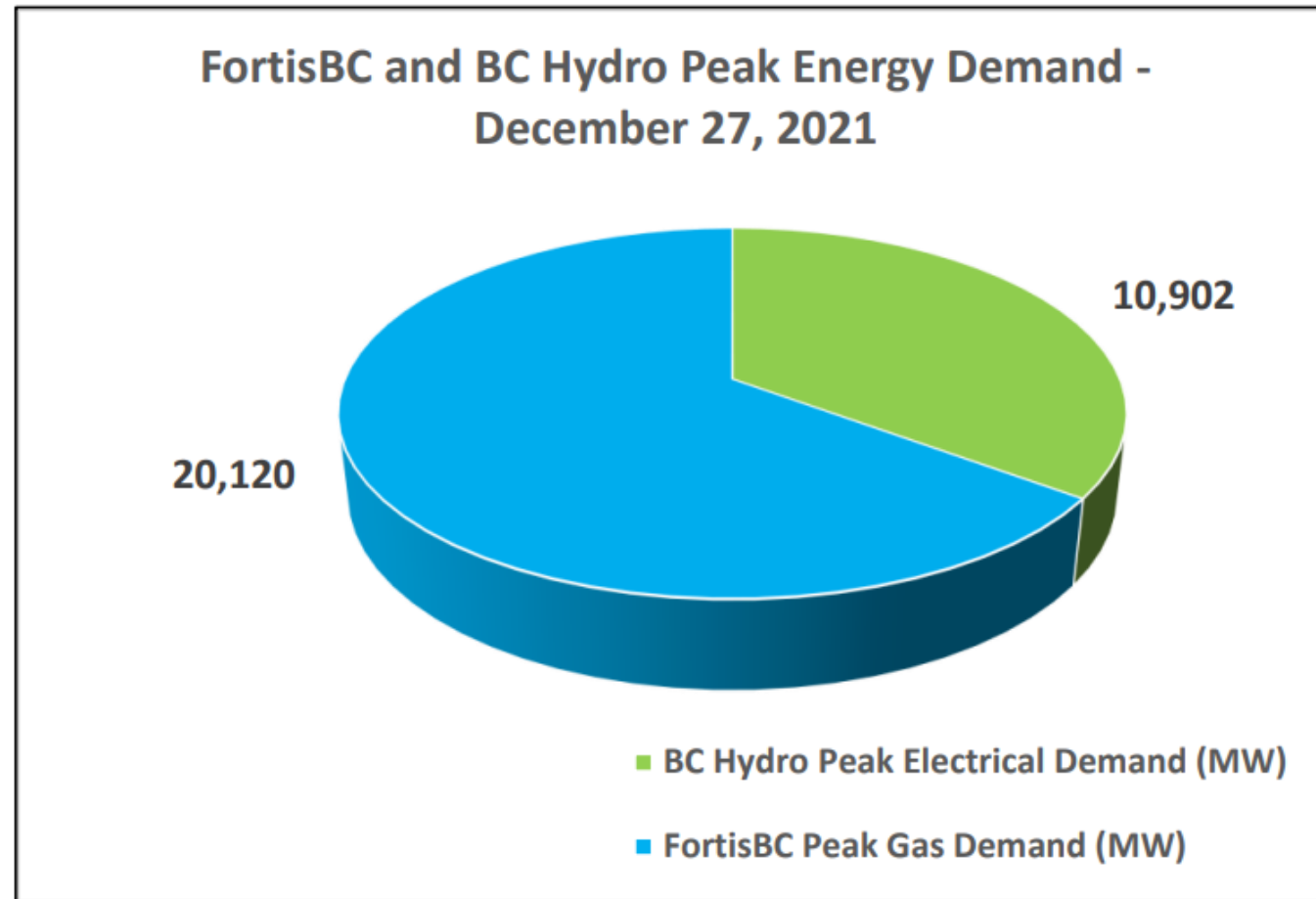
Annual Demand – Diversified Energy Pathway



Annual Demand – Diversified Energy Pathway compared to other scenarios

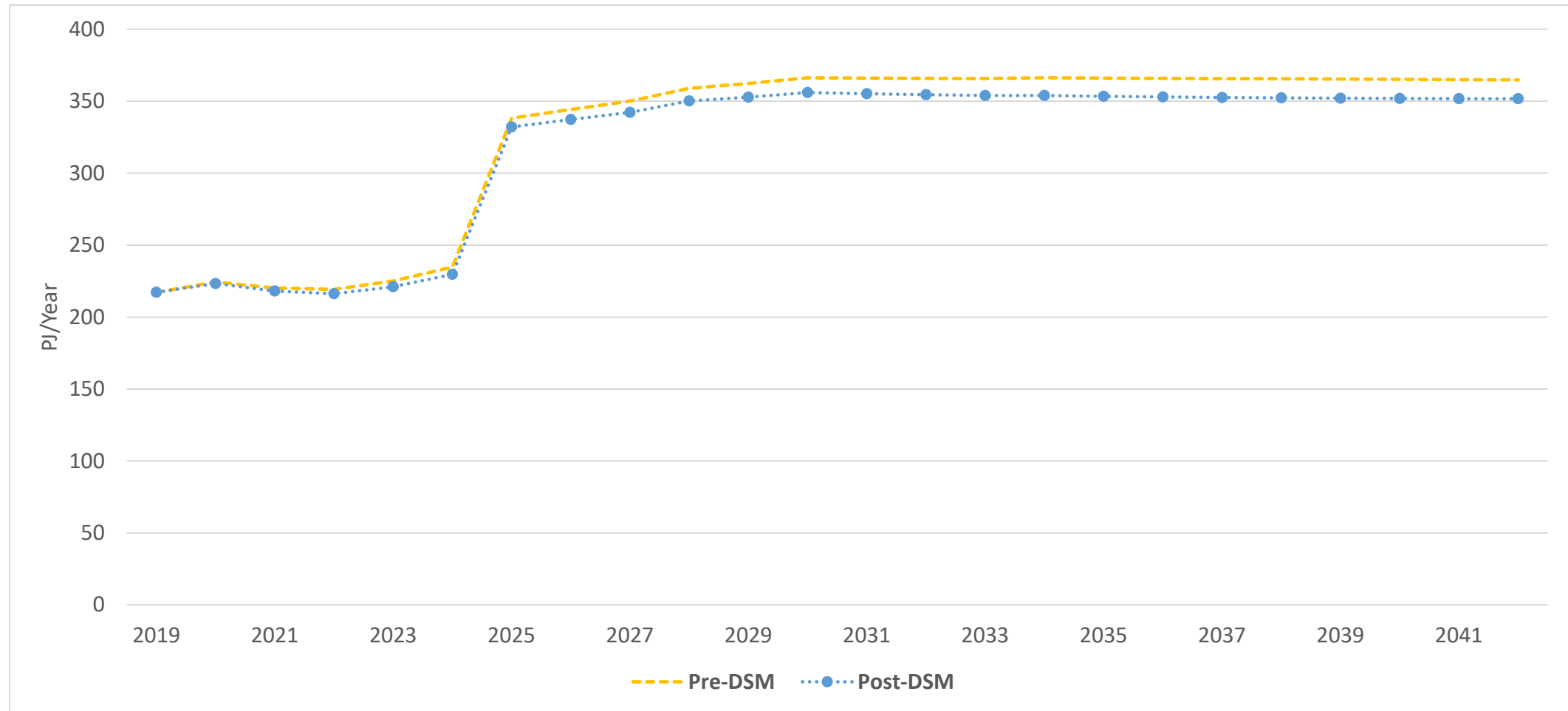


Peak Hour Energy Demand in Cold Snap – December 27, 2021

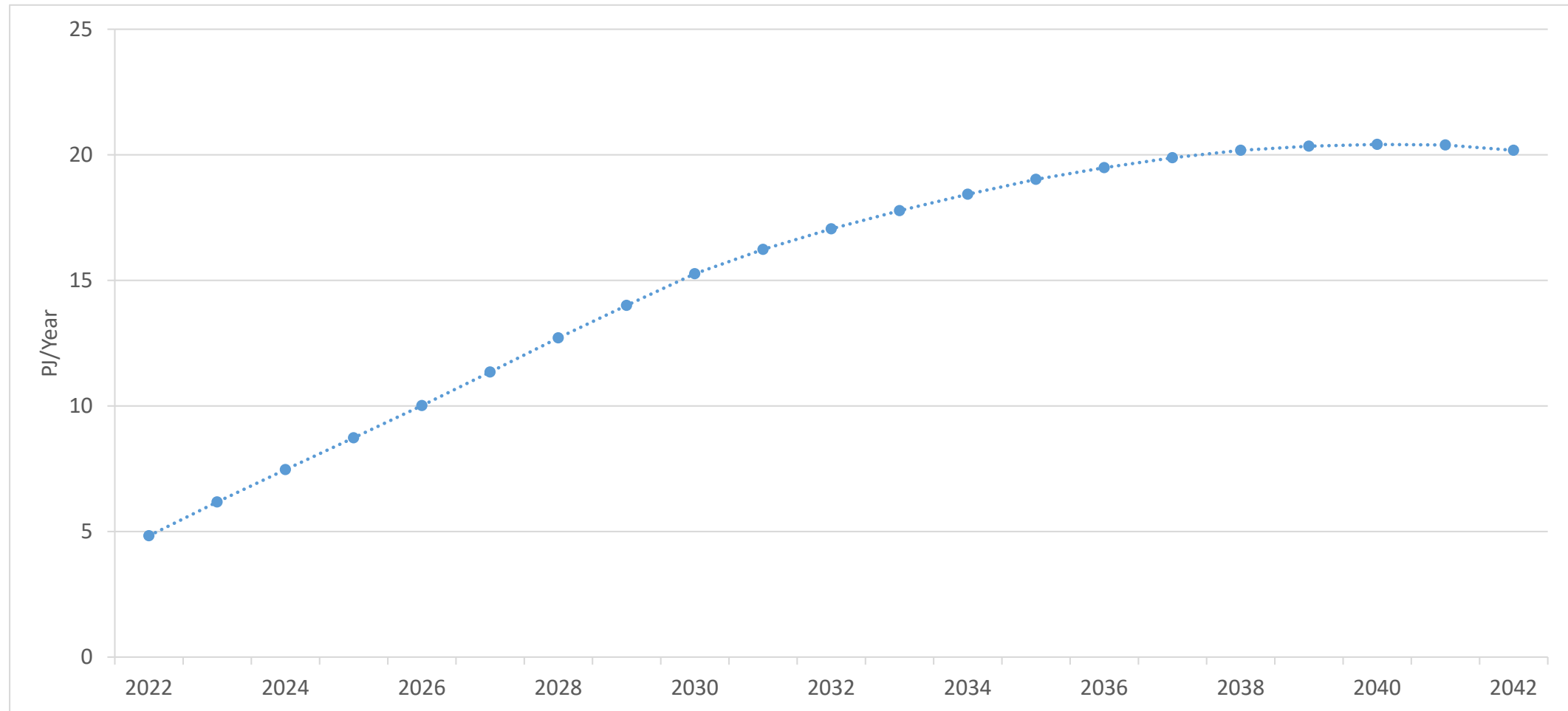


Peak gas demand in equivalent MW using standard unit conversion of 1 MW = 3.6 GJ/hr

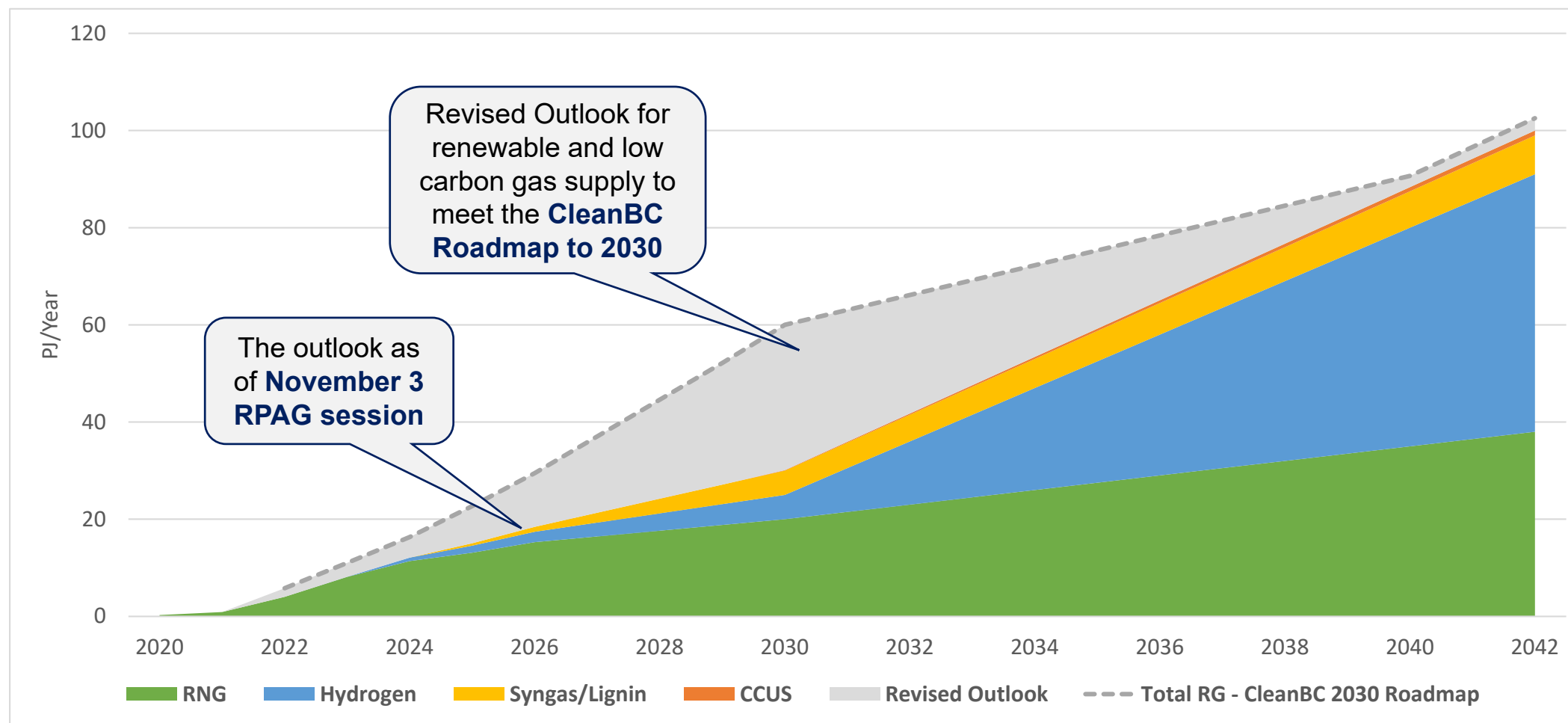
Demand Side Management Impact



Demand Side Management Annual Savings – Built Environment

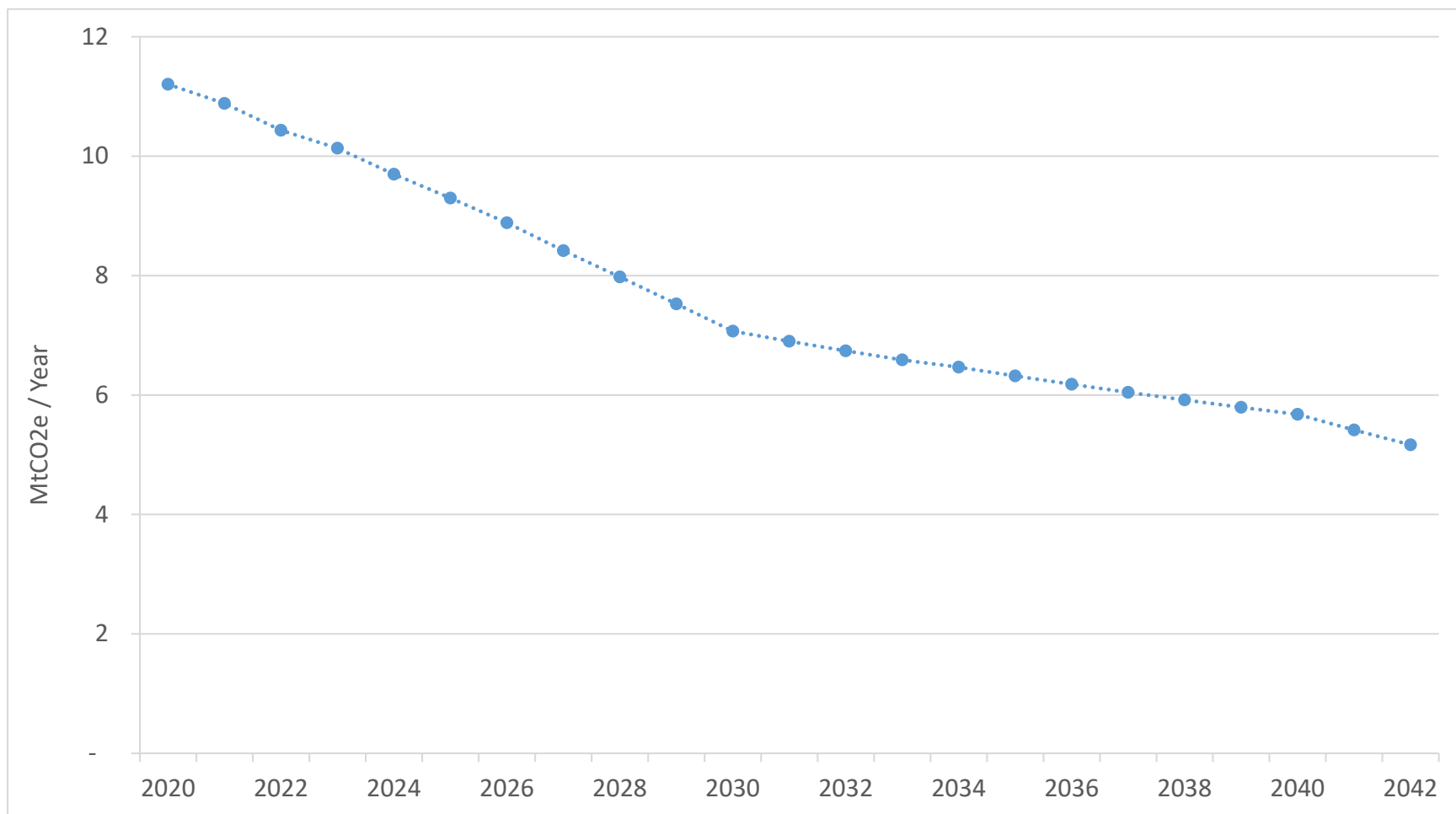


Renewable and Low Carbon Gas Supply Outlook



GHG Emissions – Built Environment

Draft



FEI's GHG Emissions reduction from 2007 levels	46%
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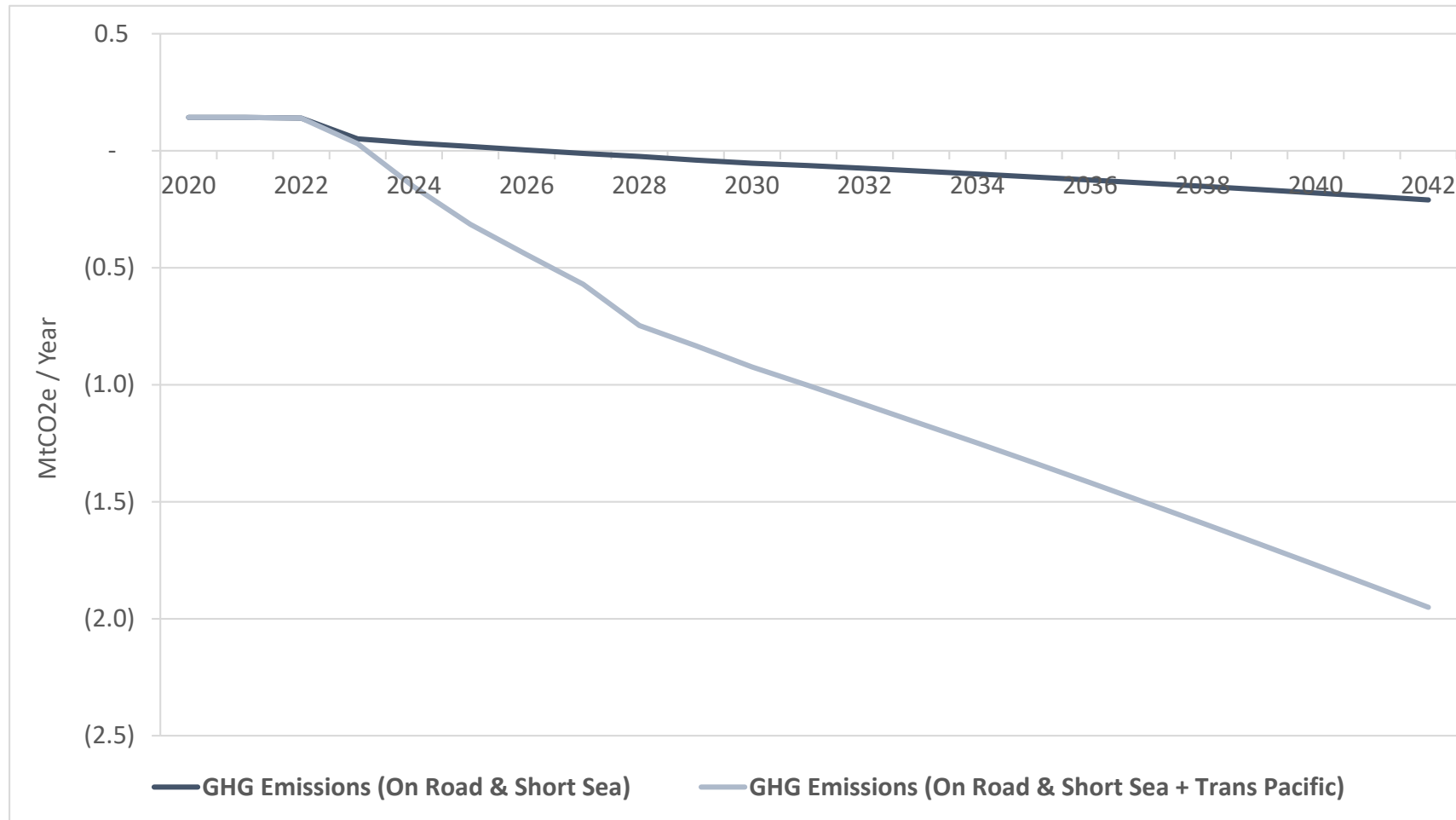
CleanBC Roadmap to 2030	47%
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BC GHG Inventory, 2019

Transport	41%
Oil and Gas, Refining, Mining	20%
Downstream Industry	15%
Agriculture and Waste	10%
Residential	6%
Commercial	4%
Other	4%

GHG Emission Reductions in the Transportation Sector Through the Displacement of Higher Carbon Fuels

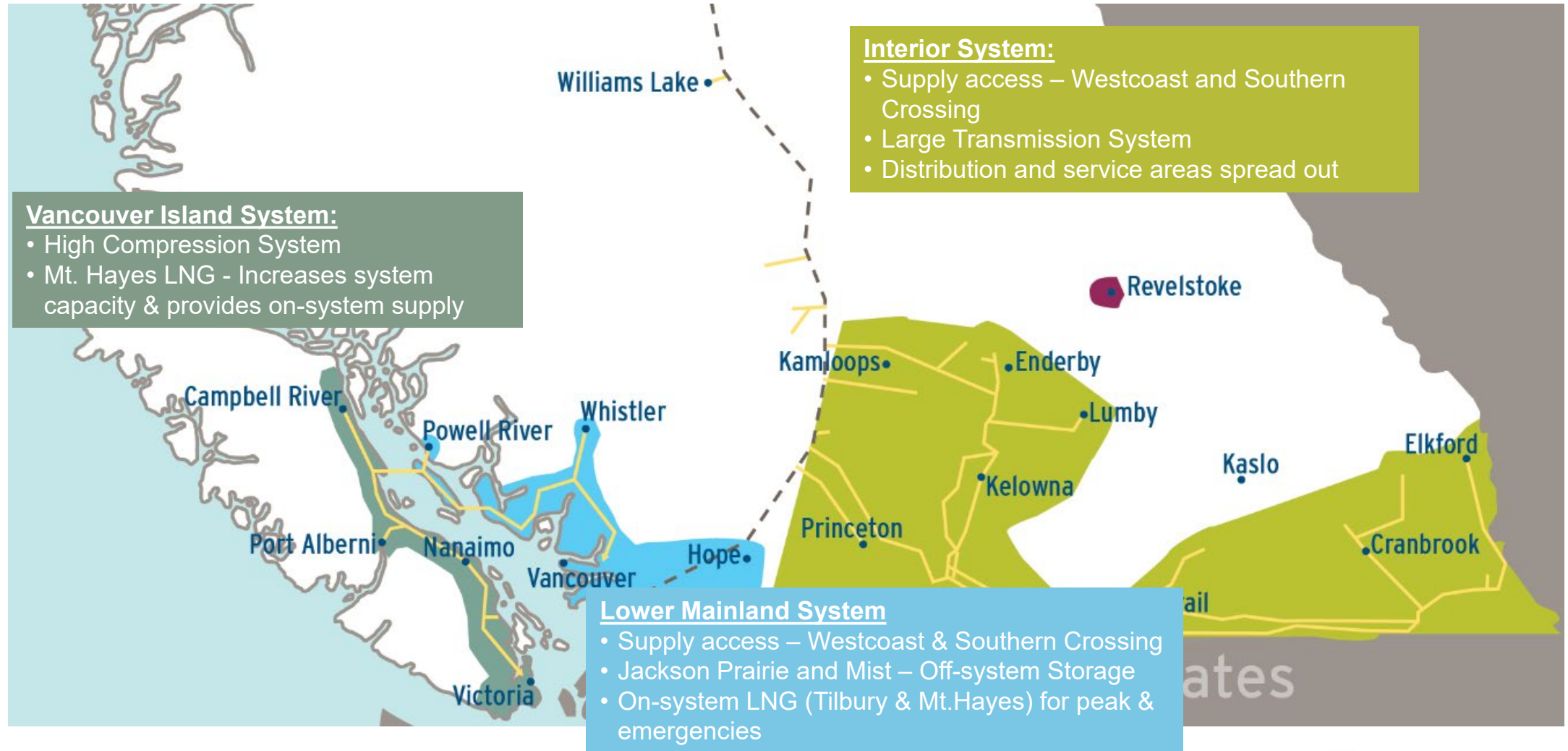
Draft



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Transport	41%
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Other	4%

System Infrastructure



Regional Gas Market Resources



Supply Hubs:

- Station 2
- AECO/NIT

Market Hubs:

- Kingsgate
- Sumas

Seasonal Storage:

- Aitken Creek
- Rockpoint

Market Area Storage:

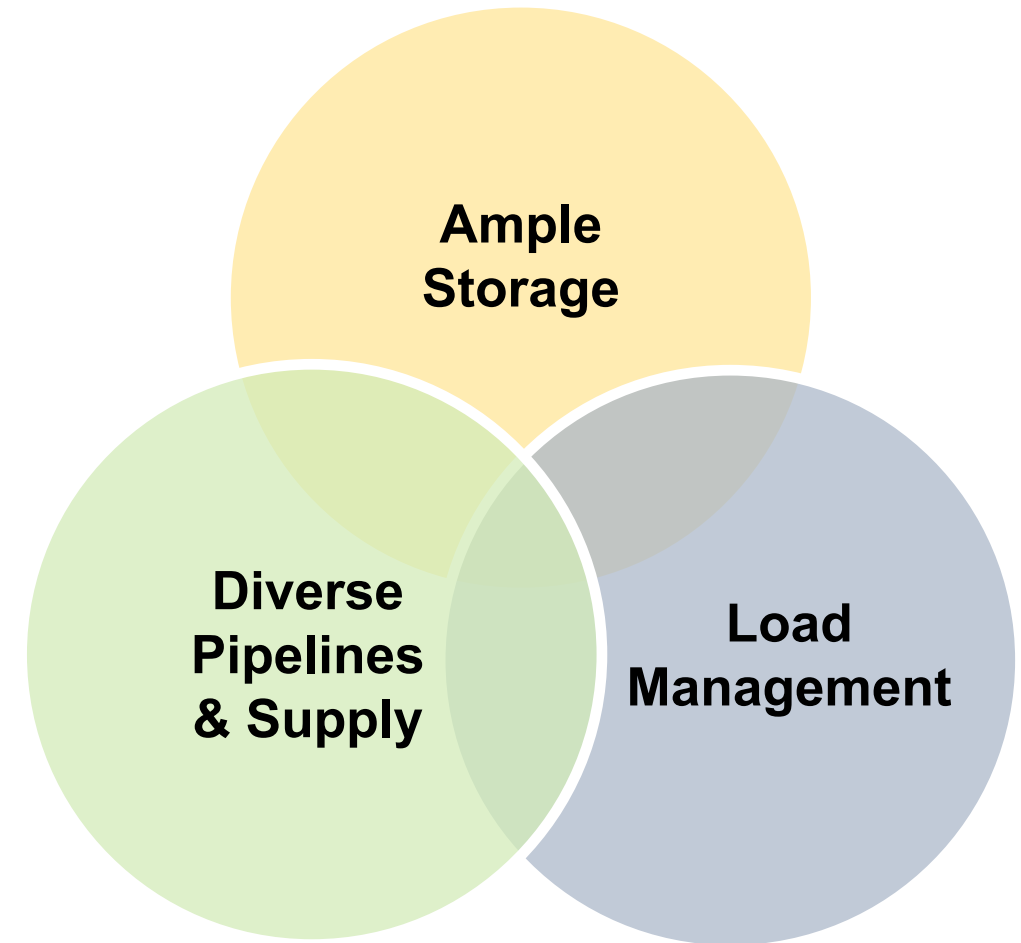
- Jackson Prairie
- Mist

LNG – Peaking Supply:

- Tilbury
- Mt. Hayes

Resiliency

- **Over-reliance on Westcoast T-South** system that serves Lower Mainland, and rest of province to some extent
- 2018 **Enbridge pipeline rupture** highlighted the need for resiliency to serve BC customers
- 2021 **extreme weather** events further underscores the need
- Six to eight years of planning, approvals, and implementation highlights the need to **start the process**
- Opportunity for regional supply risks being served by **future community energy systems** in long term planning



Key Factors Impacting FEI's Supply Portfolio

Renewable Supply

- Incorporating Renewable Supply into the Portfolio
- Characteristics of On-System vs Off-System Supply

Regional Market Conditions

- Limited Resources in Region (constrained in winter)
- New demand ahead of additional pipeline infrastructure

Supply System Failure

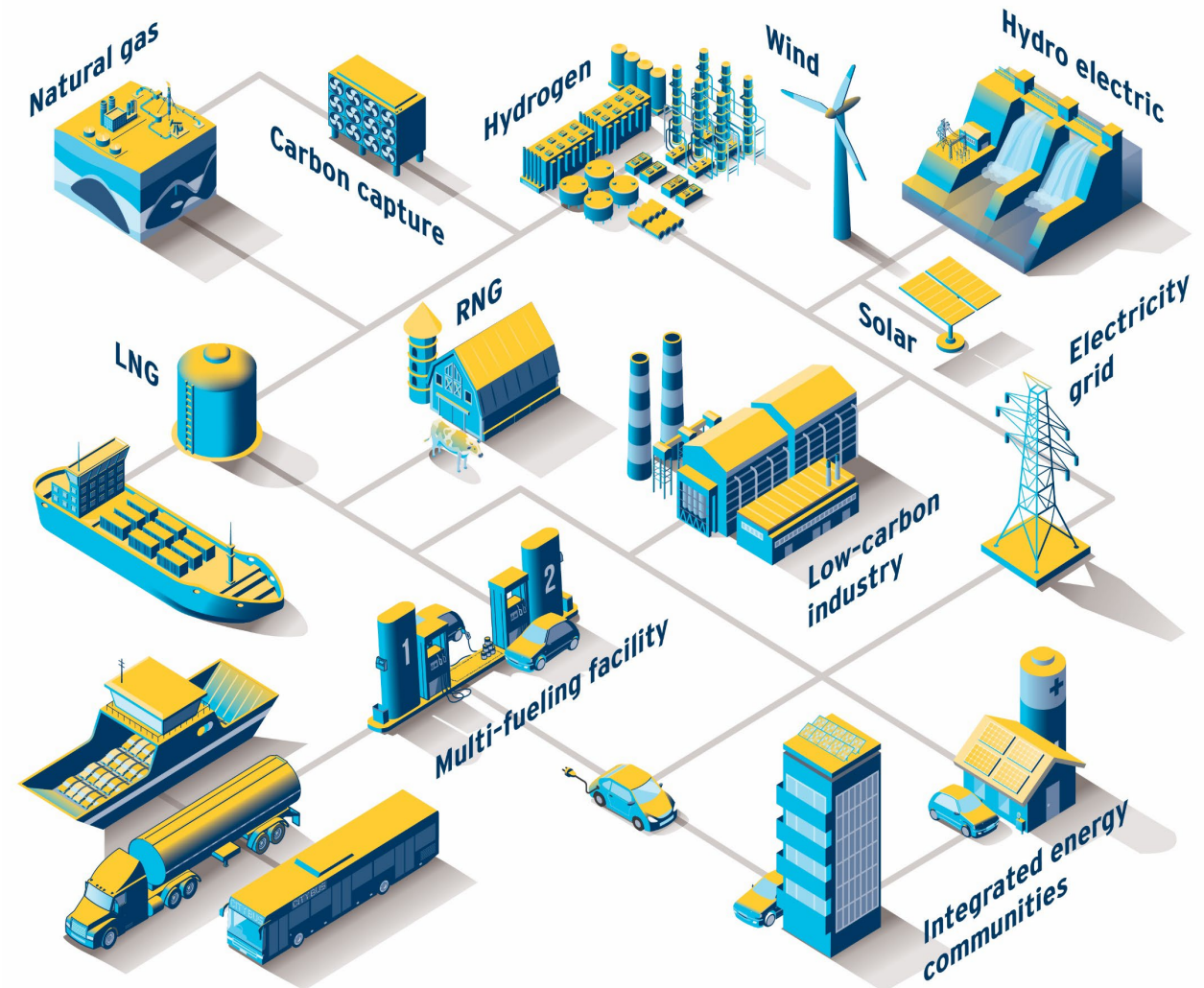
- Hold contingency resources
- Portfolio Approach to Resiliency

New/Potential Regional Infrastructure

- Evaluate pipeline and storage alternatives

20-Year Vision

- Customer energy needs and services
- Energy efficiency
- Renewable / Low Carbon Gas Supply
- Infrastructure
- Rate impacts and affordability
- Carbon emission reductions
- Sustainability
- Partnerships



Questions and Discussion



Break



Further Discussion on the Regional Gas Supply Diversity Project and its role in a diversified energy future



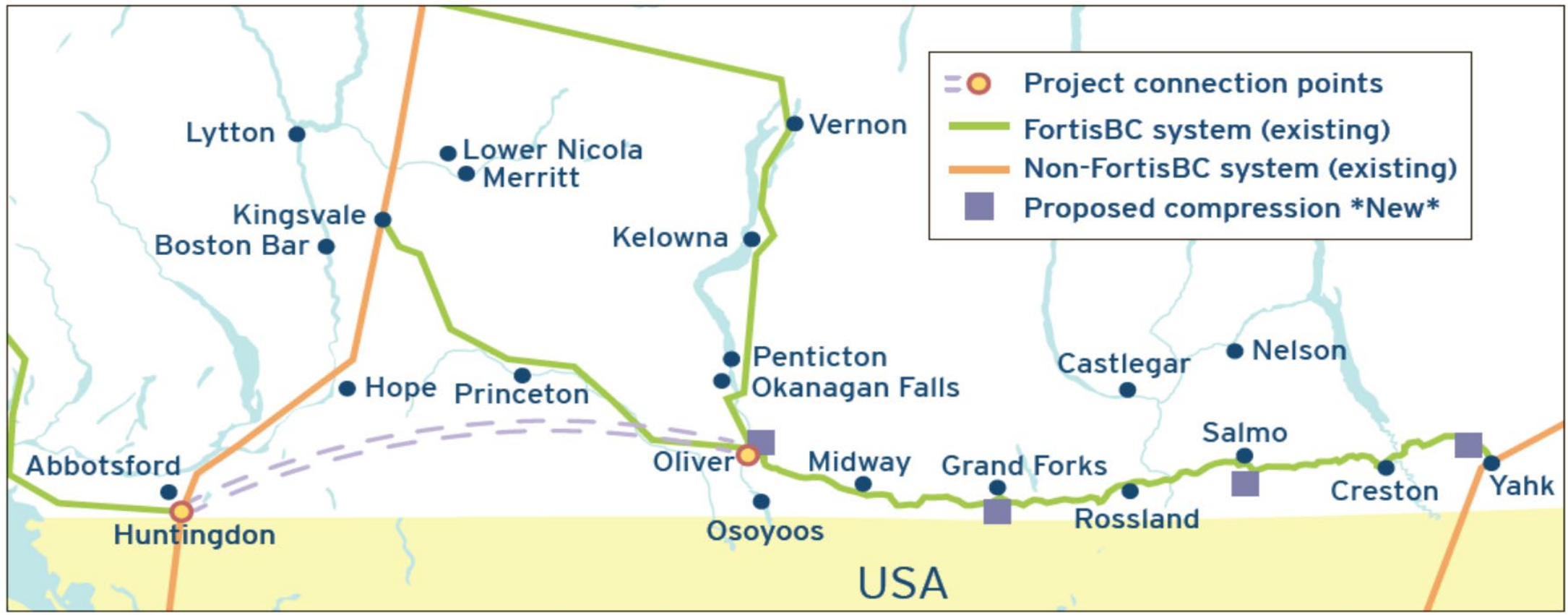


Regional Gas Supply Diversity (RGSD)

FEI's Southern Crossing Pipeline Extension to the Lower Mainland

Regional Gas Supply Diversity (RGSD) Project Concept

- Extension of **FEI's Southern Crossing Pipeline** at Oliver to the Lower Mainland



FEI 2030 Customer Bill Impact - RGSD vs T-South Expansion

	RGSD (approx. 243 KM Extension) <i>Preliminary Results</i>	T-South Expansion (900 Km with required looping) (FEI do nothing) - not Hydrogen ready (\$0.85/GJ Toll - \$1.00/GJ) Impact to FEI 700 TJ/d of capacity						
CAPEX	\$4B (includes AFUDC)							
Cost of Service (COS) 5 year avg	\$0.3B/year							
Gas Supply Benefits (revenues)	\$0.1B/year							
Net COS 5 year avg	\$0.2B/year	\$0.15B/year						
Approx. 2030 FEI Customer Bill Impact	Approx. 5.0%	Approx. 4%						
Evaluation Criteria (non-quantified)	Resiliency	Clean Growth Pathway	Energy Supply	Indigenous Opportunities	Resiliency	Clean Growth Pathway	Energy Supply	Indigenous Opportunities
	▲	▲	▲	▲	▼	▼	▲	▼

Superior Alternative	▲	Acceptable Alternative	▬	Inferior Alternative	▼
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Regional Energy Infrastructure Need and Vision

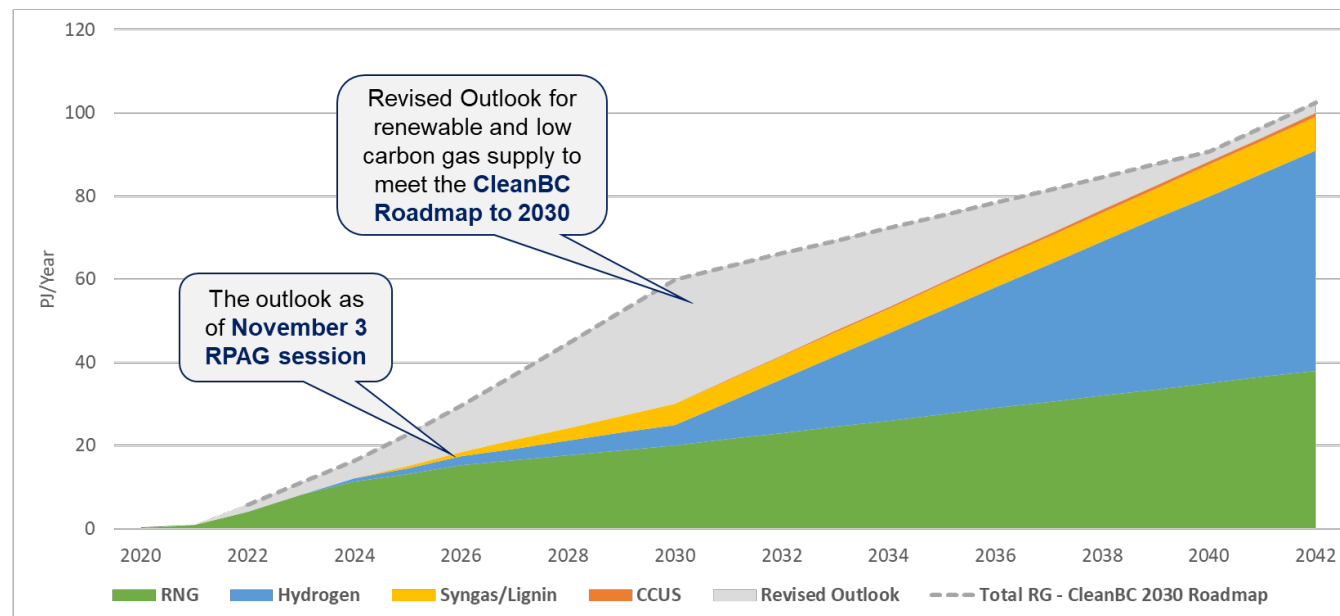
Need:

- **Resilient Communities** – provides a second energy source and benefits to on-route communities
- **Clean Energy Transformation** – accelerate the delivery of renewable and low-carbon energy to customers
- **Energy Supply** – supply source to alleviate capacity constraints in the region

Vision:

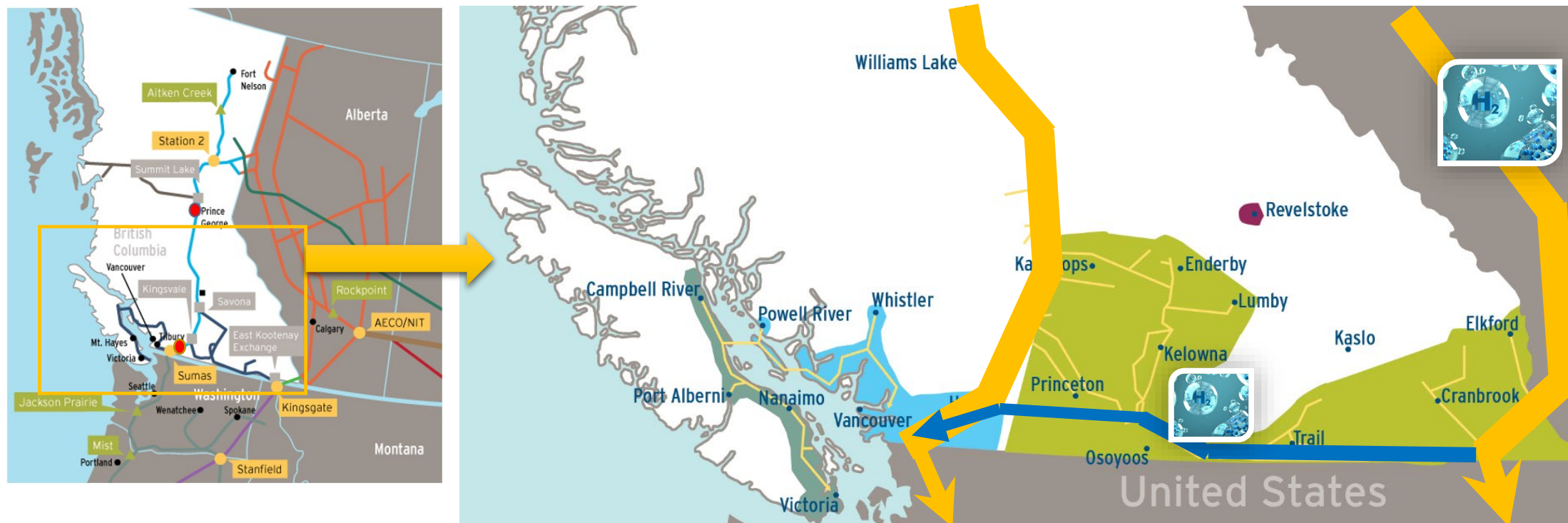
- **Regional Clean Energy Solution** – capacity to deliver clean energy to meet expected demand
- **Indigenous Opportunities** – create inclusion and long-lasting partnerships with Indigenous communities

Net Zero by 2050 Challenge



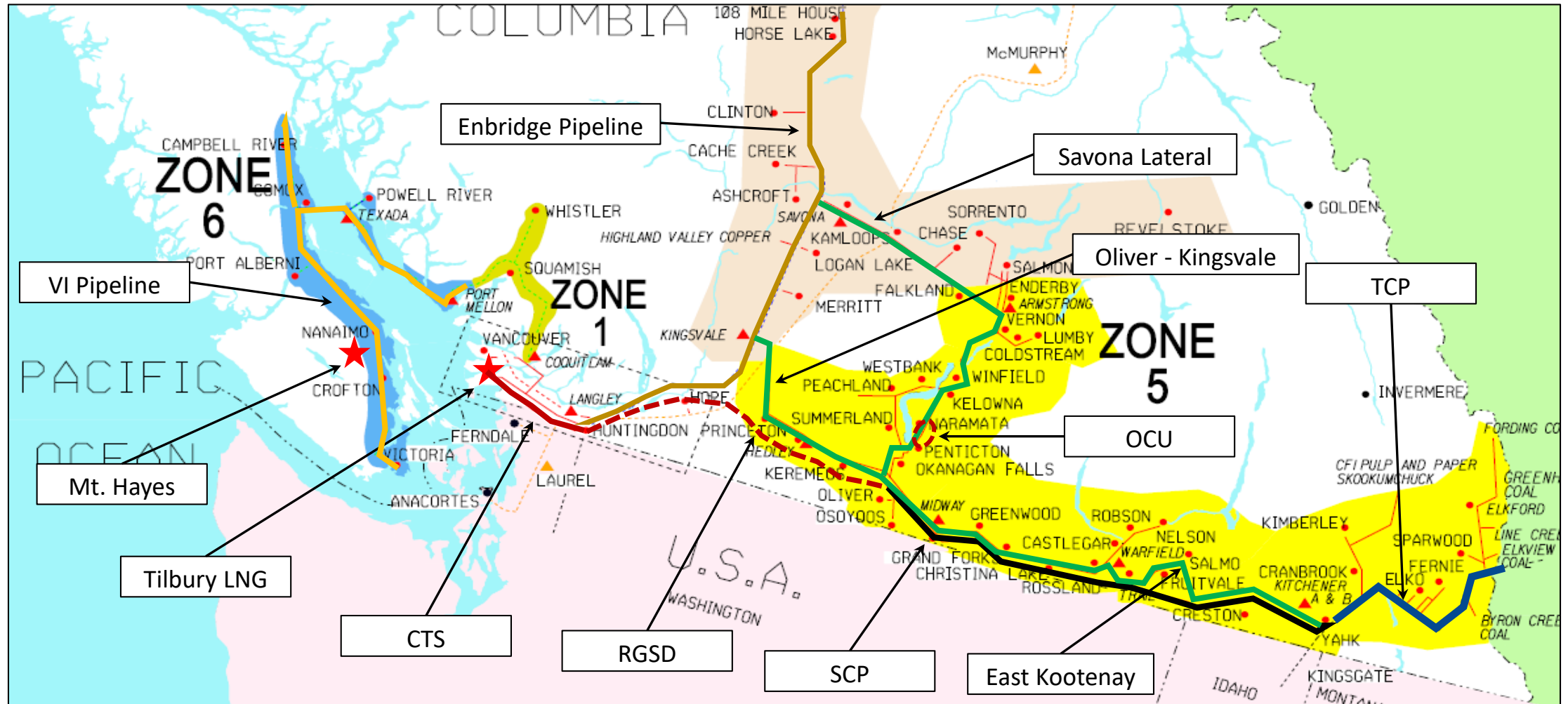
- Transformational change to meet BC's Climate Objectives will require significant increase in hydrogen & renewable natural gas supply
 - **See FortisBC Clean Growth Pathway & BC Hydrogen Strategy**
- New hydrogen-ready pipe system
 - Strategically located to increase access to hydrogen & renewable natural gas
 - Functions as an accelerator for feed-in projects including solar & wind

Resilient Supply and Clean Energy Transformation Concept

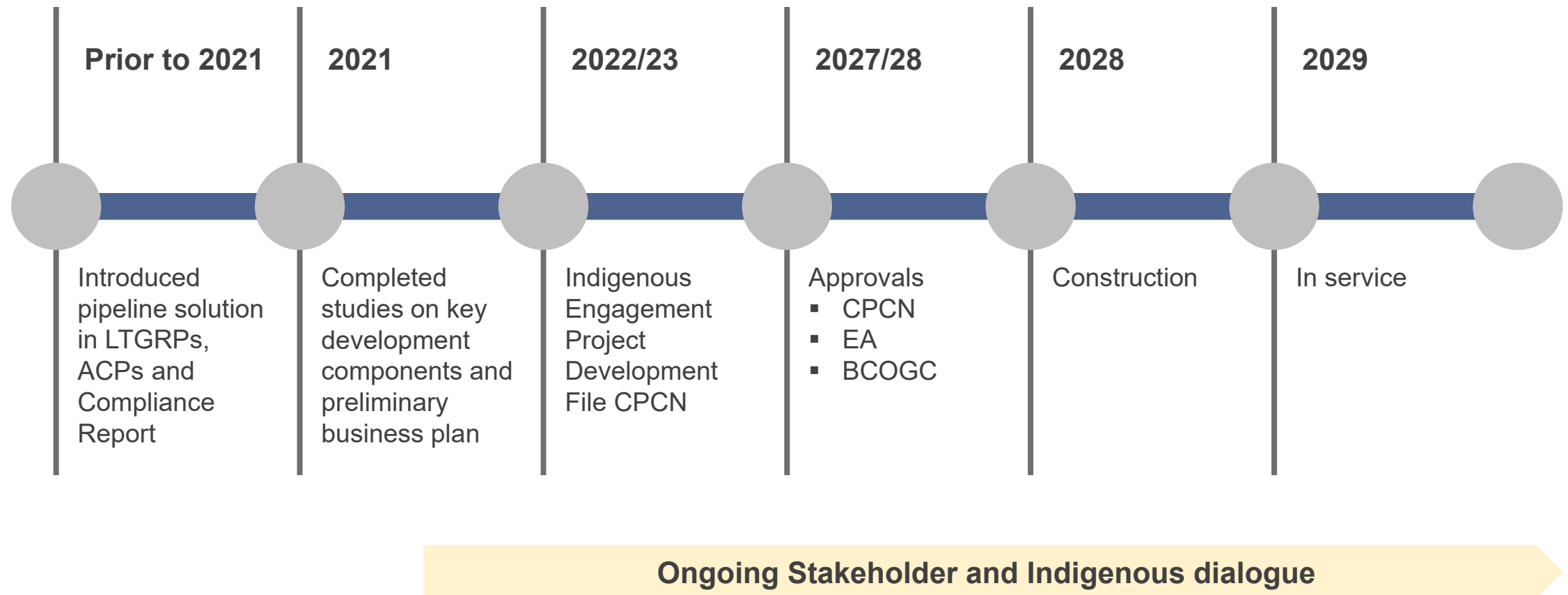


- Increase capacity of East to West supply & connect to Vancouver area; designed to carry **Hydrogen**
 - Enables supply of Hydrogen from Alberta & capture of on-route Hydrogen & bio-methane
 - Provides significant secondary supply source to Vancouver & Southern Interior to assure supply reliability

Transmission Network - RGSD Strengthens Entire System



Milestone Development Work



Questions and Discussion



Developing the LTGRP Action Plan



LTGRP Draft Action Items

Accelerate the development and acquisition of renewable and low carbon gas supplies to meet customer energy needs and contribute to Provincial Emission Reduction Targets

- RNG, H2, Syngas, Lignin, CCS – BC based and in other jurisdictions
- Implement H2 blending and H2 hubs, and plan for transitioning to H2 compatible infrastructure
- Support development of renewable and low carbon gas supply industry and market in BC and other jurisdictions
- Grow expertise and capacity within FEI

Seize market opportunities to provide gas service that decreases global GHG emissions

- Marine fueling, LNG exports, heavy duty transportation and equipment

Implement FEI system resiliency plan

- TLSE, AMI, RGSD, Distributed Energy Resources (H2 Hubs, district energy, CHP, etc., integrated solutions)

LTGRP Draft Action Items (continued)

File FEI's Next Multi-year DSM Expenditure Plan for approval (2023 and beyond)

- Transition and evolve (Deep energy retrofits, +100% efficiency equipment, behavior)

Develop regional gas infrastructure projects that improve supply optionality, reliability and resiliency for FEI while solving regional capacity constraints

- Regional Gas Supply Diversity Project

Continue to work with government on policy framework

- Support innovation and renewable / low carbon gas supply and other integrated energy solutions

Continue to explore innovative ways to provide integrated energy solutions, including extending gas service to Indigenous and other communities.

Develop clean energy partnerships with Indigenous communities and others

LTGRP Draft Action Items (continued)

Continue to improve resource planning engagement activities

- Continue to seek broader participation and input from Indigenous communities
- Explore and employ new technologies to expand and improve collaboration and discussion

Expand and advance exploration and research on innovative energy solutions

- Clean Growth Innovation Fund, innovative DSM technologies

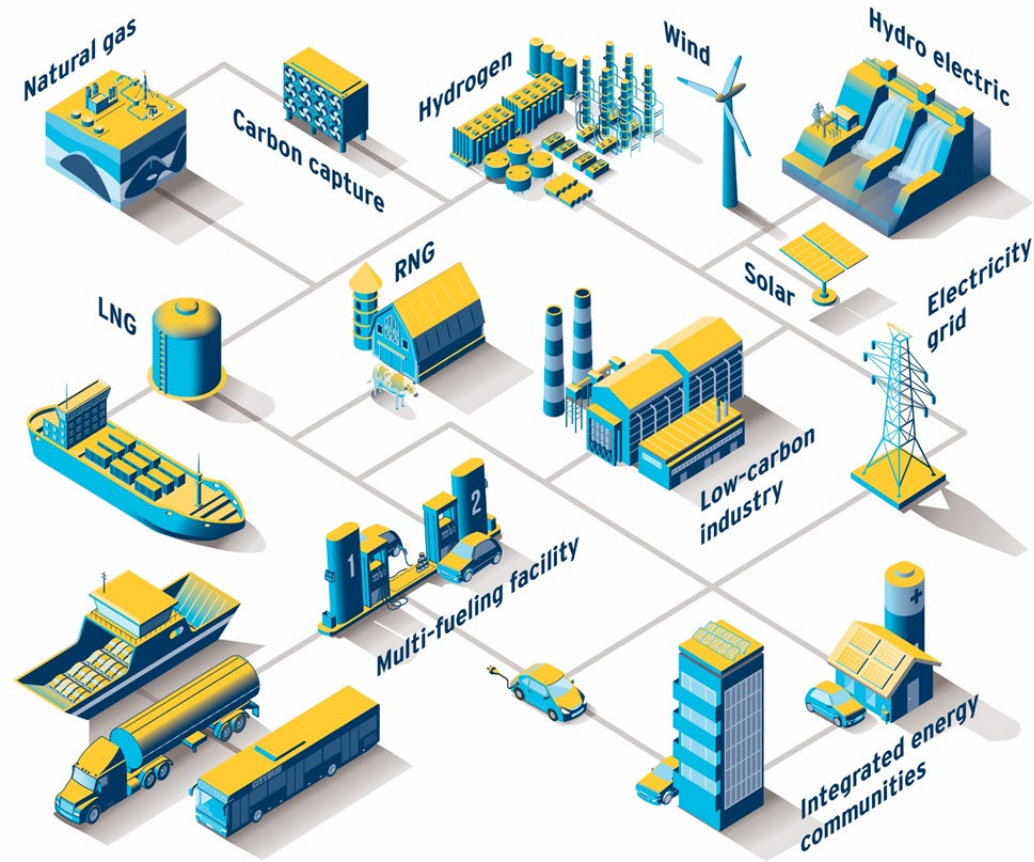
Continue FEI's efforts to collaborate with other utilities and energy solution providers on growing a diverse, reliable, resilient and affordable energy system throughout BC

- Future scenarios, demand forecasting, innovative solutions, regulatory mechanisms

Questions and Discussion



Wrap-up & Next Steps



Thank you for attending today's session, we appreciate your time and input.

The session presentation and notes will be posted online in the next few weeks.

If you have any further feedback or questions, please reach out to the Resource Planning team at irp@fortisbc.com.

Thank you



For further information, please contact:

FortisBC Integrated Resource Planning
irp@fortisbc.com

Find FortisBC at:
fortisbc.com
talkingenergy.ca
604-576-7000

Follow us **@fortisbc**

