

FortisBC Resource Planning Engagement Session – Southern Interior

November 23, 2021

The energy to think differently



Focus of today's session

- To better understand your energy priorities and plans for the future
- To hear from you on our upcoming Long Term Gas Resource Plan (LTGRP)



What energy planning opportunities or issues are top of mind for you?

- Renewable energy supply
- Hydrogen & renewable natural gas
- Community energy planning
- Expansion of natural gas service
- FortisBC system & project planning
- Long term energy capacity
- Increasing energy efficiency
- Energy step code & rebates
- Conservation & energy management
- Reducing use of fossil fuels
- Fuel switching
- Affordability & energy costs
- Electric system resilience, dependability & wholesale costs
- EV Charging
- Alternative energy solutions (such as solar)
- District energy system
- Rural energy requirements

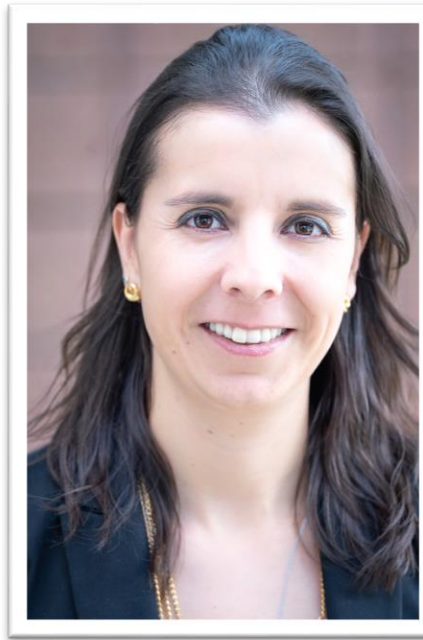
Agenda for the session

1. Welcome, introductions and session overview **(10 min.)**
2. Brief overview of the resource planning process **(20 min)**
3. Energy planning landscape in BC **(45 min)**
 - **Discussion: How does the energy landscape in BC impact you?**
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6. Ongoing resource planning work **(35 min)**
 - **Discussion: How does what we've discussed today influence your thinking on energy needs and priorities?**
7. Wrap-up and next steps **(10 min)**

Speakers introductions



Ken Ross
Manager, Resource
Planning & DSM
Reporting



Diana Aguilar
Integrated Resource
Planning Manager



Randy Sharpe
Manager, Community
& Indigenous Initiatives

Partners and communities



- We **serve the communities** in which we live and work.
- We are committed to building **strong relationships** to support our community partners & business operations.
- Understanding, respect, open communication and trust are key values embedded in our **Statement of Indigenous Principles**.

Why strong Indigenous relationships are important to FortisBC

- **Statement of Indigenous Principles** created in 2001.
- We are continually working to build **strong relationships** with Indigenous communities, their leadership and their members.
 - Commitment to early and transparent engagement
 - Awareness training for FortisBC staff
 - Opportunities for economic partnerships and employment for Indigenous peoples
- We support the **United Nations Declaration on the Rights of Indigenous Peoples** and the **Truth & Reconciliation Commission's Calls to Action**.
- Progressive Aboriginal Relations Certification (PAR).



Progressive
Aboriginal
RELATIONS

COMMITTED

Canadian Council for
Aboriginal Business



Energy at work  FORTIS BC™

FortisBC overview



- Largest energy provider in the province
- Our infrastructure serves **135 communities**, including **57 Indigenous Communities**
- We serve **1.2 million** customers providing:
 - electricity
 - natural gas
 - renewable gas
 - propane
 - alternative energy solutions
- We employ **2,400** people

Sustainability in all we do

Our sustainability framework:

- supporting our customers
- working with our partners and communities
- protecting the environment
- investing in our employees



Sustainability is not something we do. It's how we do everything.

Local Project Partnerships: REN Energy

- Renewable natural gas (RNG) produced from wood waste
- 20 year project life
- Expected production of **over one million GJ/year**
- Local partnerships are key to meeting **climate action targets and energy resiliency.**

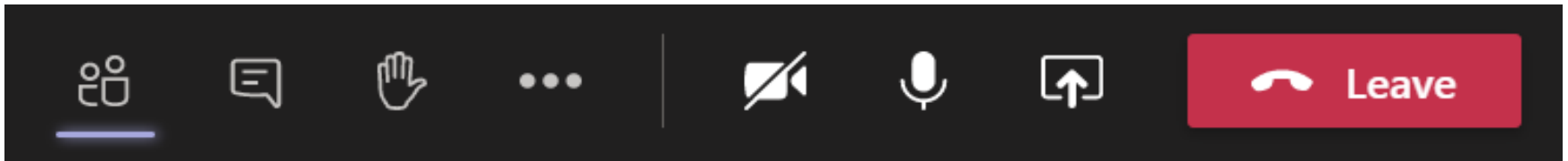


Communities & organizations registered

- City of Fernie
- City of Nelson
- City of Rossland
- City of West Kelowna
- District of Coldstream
- District of Sicamous
- DMG Blockchain
- Elkford Chamber of Commerce
- Lower Columbia Community Development Team Society
- MLA, Kootenay East
- MLA, Kootenay West
- Regional District of Central Kootenay
- Regional District of North Okanagan
- School District 5
- School District 23
- School District 51
- Teck Resources
- Village of Chase
- Village of Lumby
- Village of Warfield

Housekeeping

- We encourage you to participate through video
- When you're not speaking, mute yourself to reduce background noise
- We will have plenty of 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 yourself and speak clearly
 - You may also use the chat functionality if you'd prefer
- The session audio/video will not be recorded, however, the chat history will be saved for note-taking purposes



Safety reminders – Emergency Planning

- Prepare an emergency kit for your home and vehicle
- Pack enough supplies for 72 hours
- Store your emergency kit(s) in easily accessible locations
- For a full list of emergency kit items, please visit the Public Safety Canada website at: <https://www.getprepared.gc.ca/cnt/kts/bsc-kt-en.aspx>



Disclaimer for an open dialogue

- The input provided during this workshop may become public during our regulatory proceedings
- However, we will not attribute input to any specific individual or organization
- We encourage you to provide further input during the formal regulatory proceedings – even if your opinions have changed
- We intend to provide the presentation and meeting notes from today's session on our website
- You will have an opportunity to review these notes prior to us publishing them online

Questions for clarification



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Brief overview of the resource planning process



Purpose of resource planning

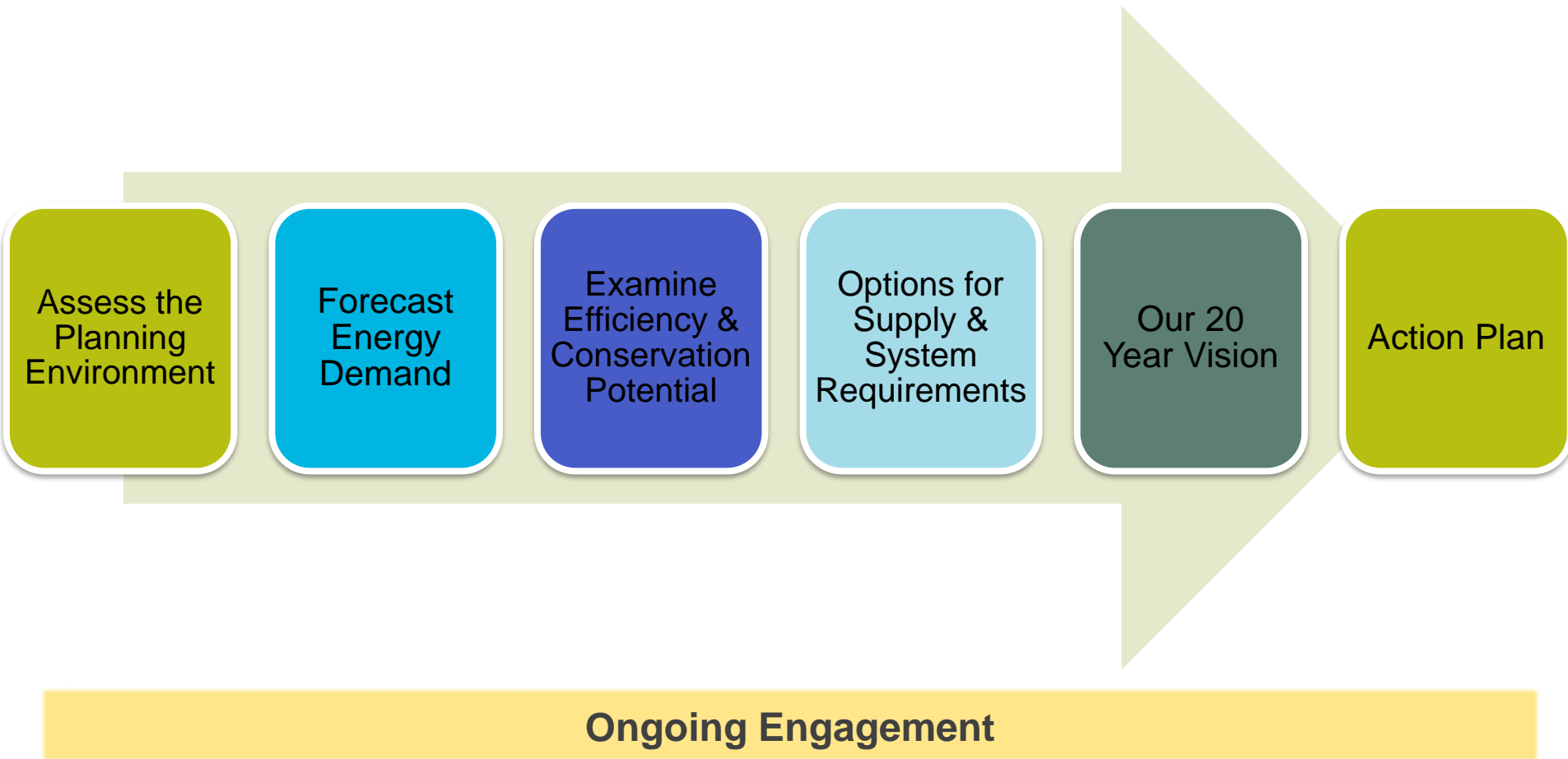
- The LTGRP **looks ahead 20 years** and provides a road map for securing safe, reliable and cost-effective energy resources.
- Represents an important component in our **overall utility planning**.
- Requirement of the Utilities Commission Act (UCA). Seeking **acceptance** from the British Columbia Utilities Commission (BCUC).
- The last plan was submitted in December 2017 and accepted in February 2019.
- The next plan will be submitted in March 2022.

Energy at work  FORTIS BC™

FortisBC 2017 Long Term Gas Resource Plan



Resource planning process

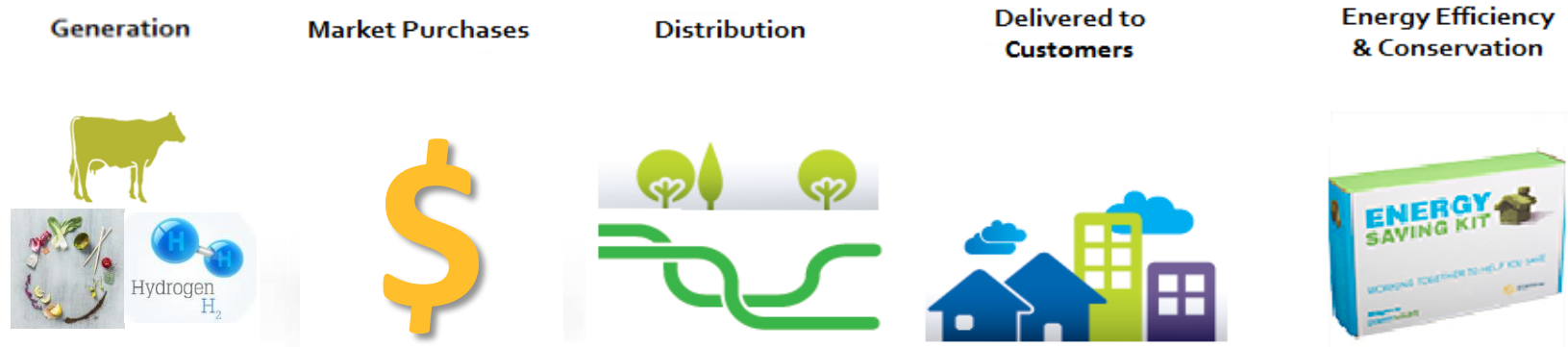


Gas and electricity resource planning

Electricity



Gas



Resource planning objectives

1

Ensure cost effective, secure and reliable energy for customers

2

Provide cost-effective demand-side management and cleaner customer solutions

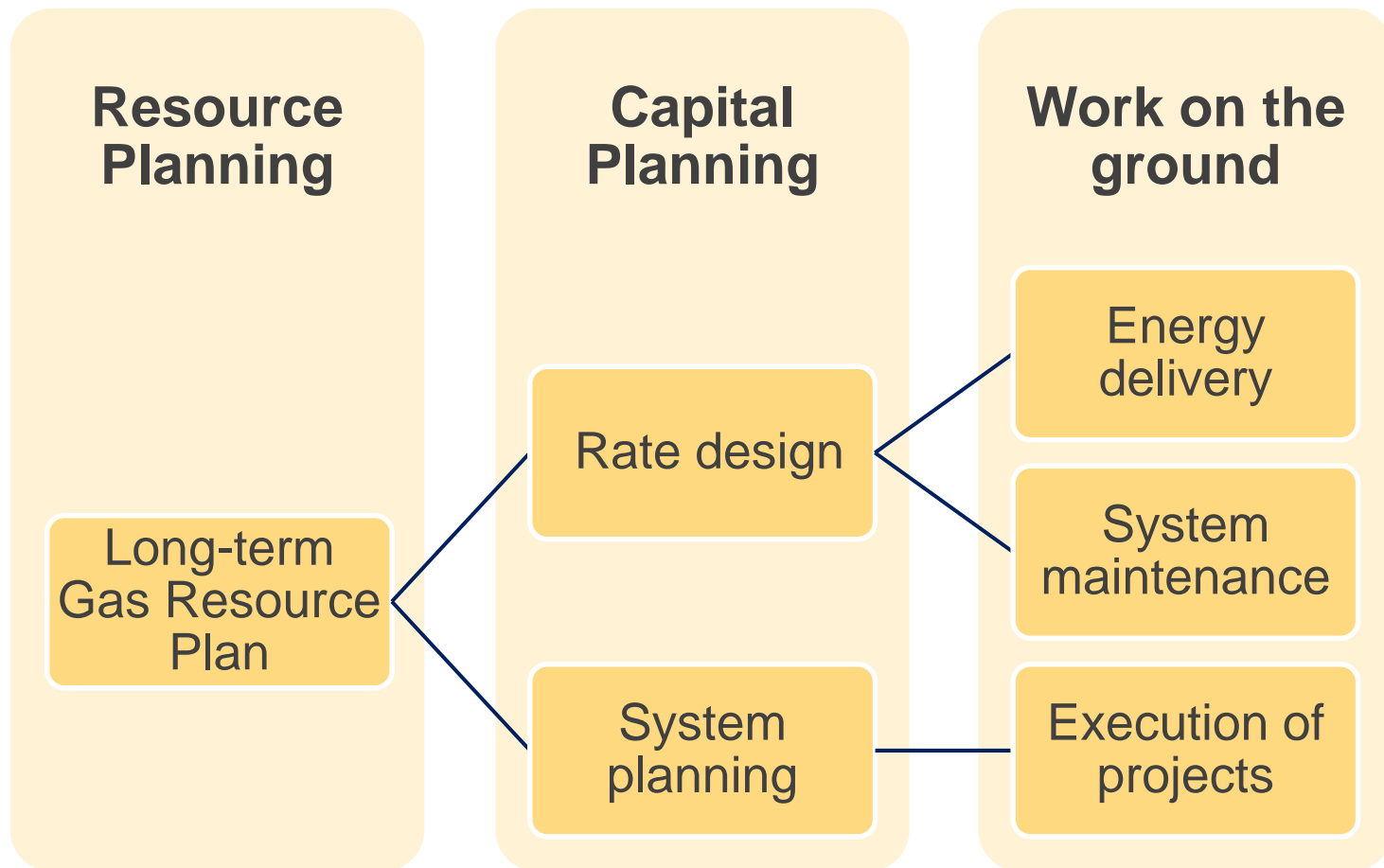
3

Ensure consistency with provincial energy objectives

4

Address prior British Columbia Utilities Commission (BCUC) directives

Resource planning and day-to-day operations



How input provided today will be actioned through our resource planning process

- | | | |
|-------------------------------|---|-------------------------------------|
| ■ Community energy planning | ➔ | ■ Energy demand forecasts |
| ■ Community energy priorities | ➔ | ■ Actions to meet customer needs |
| ■ Partnership opportunities | ➔ | ■ Exploratory follow-up discussions |



Questions for clarification



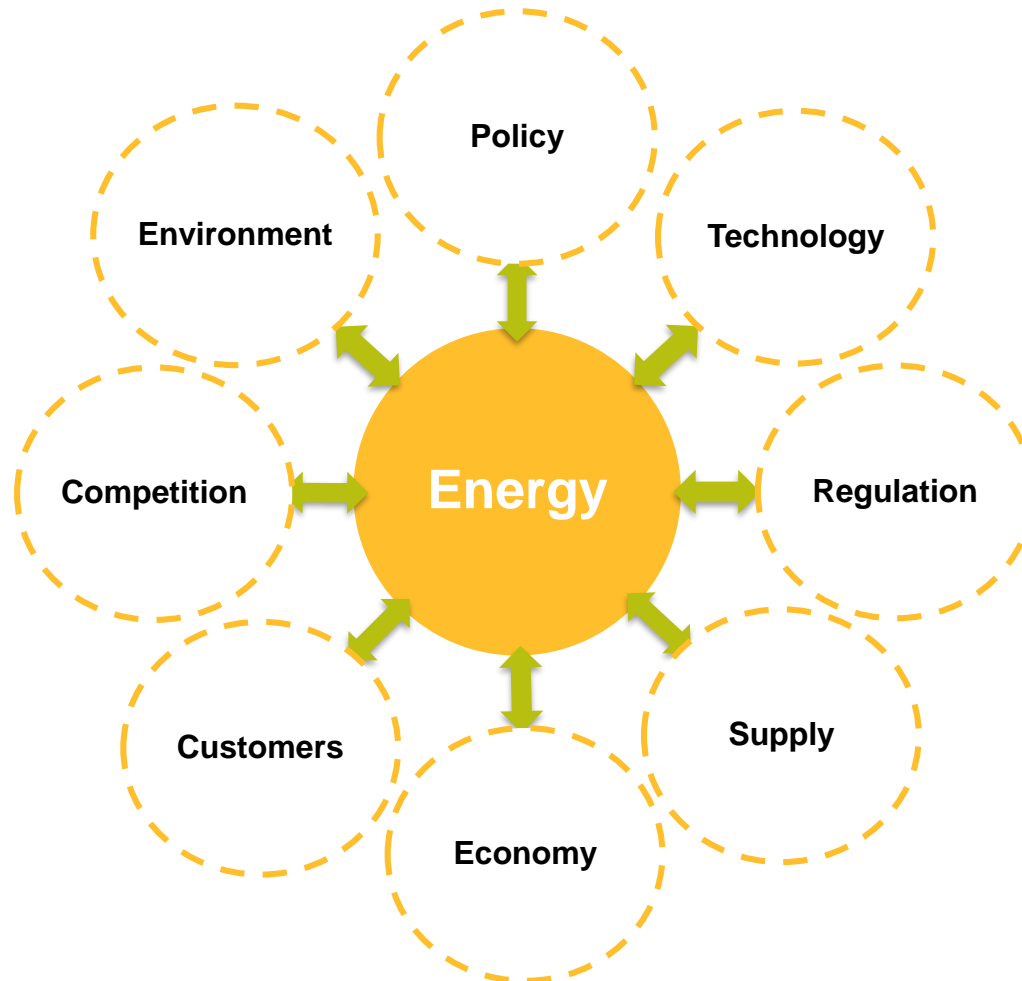
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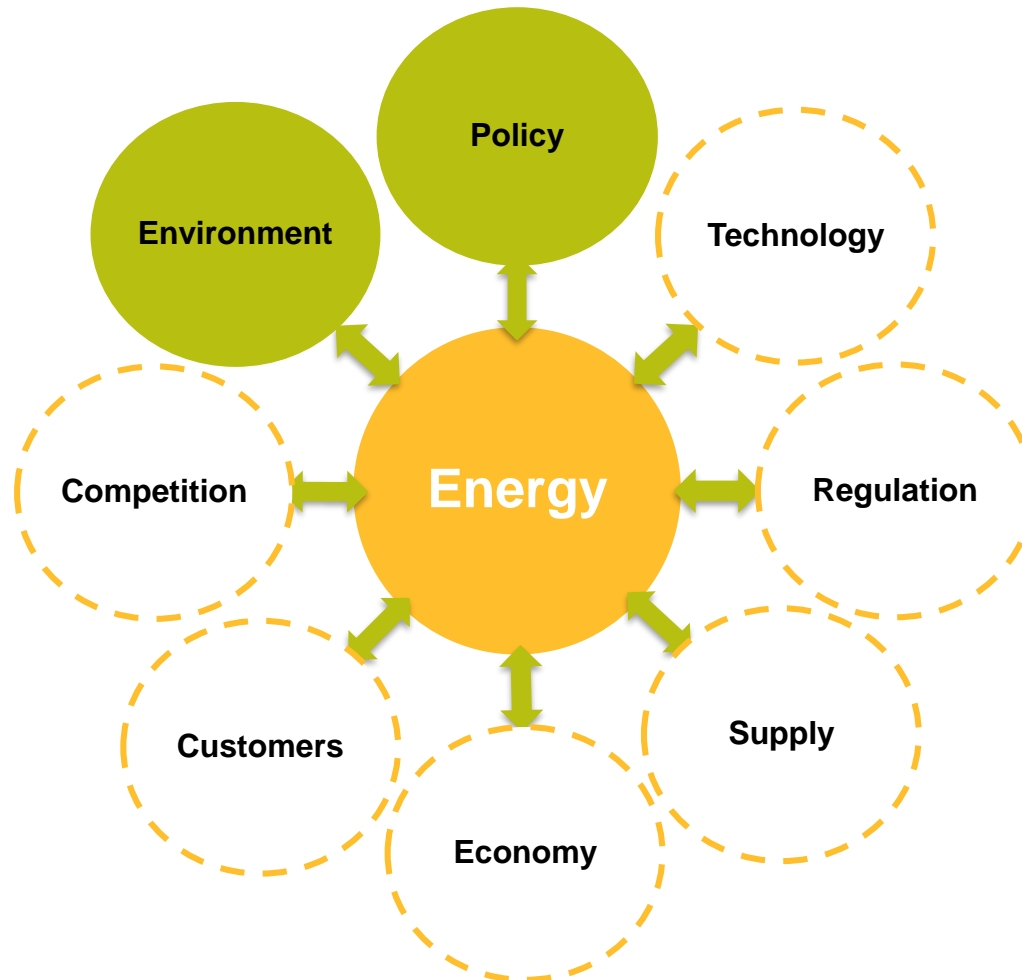
Energy planning landscape in BC



Energy planning framework

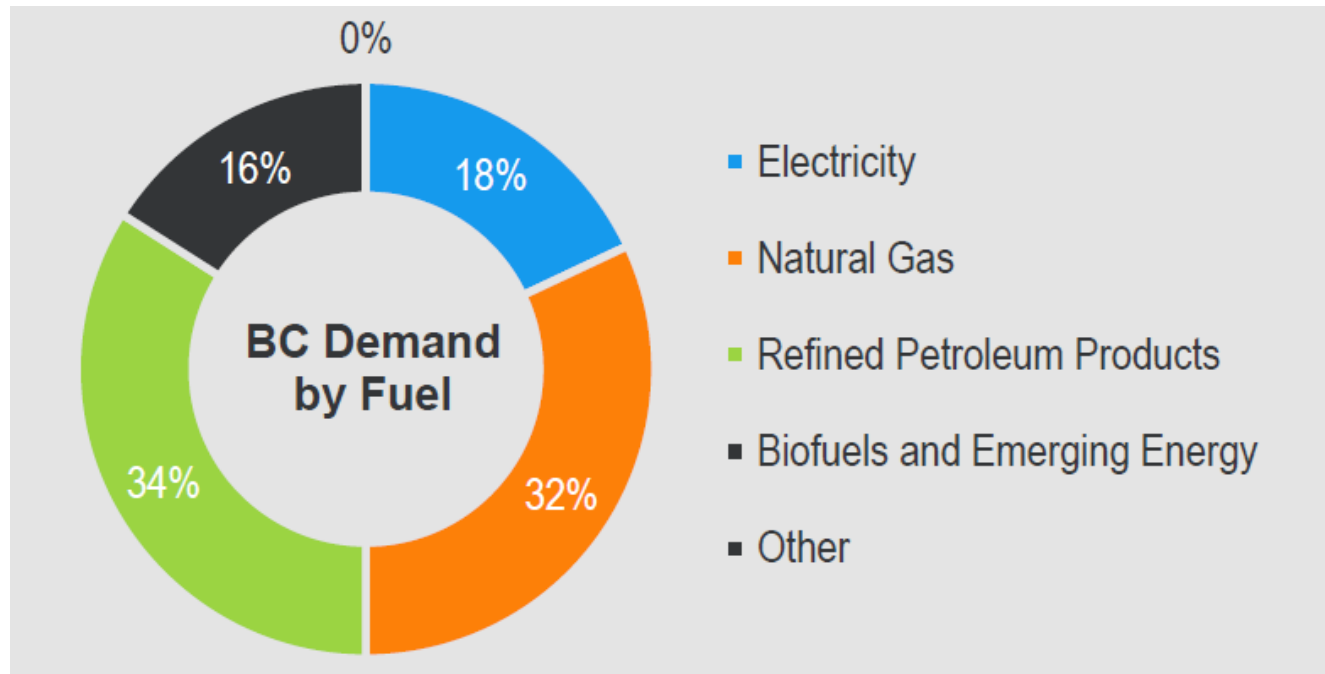


Energy planning framework



Energy demand in BC by fuel

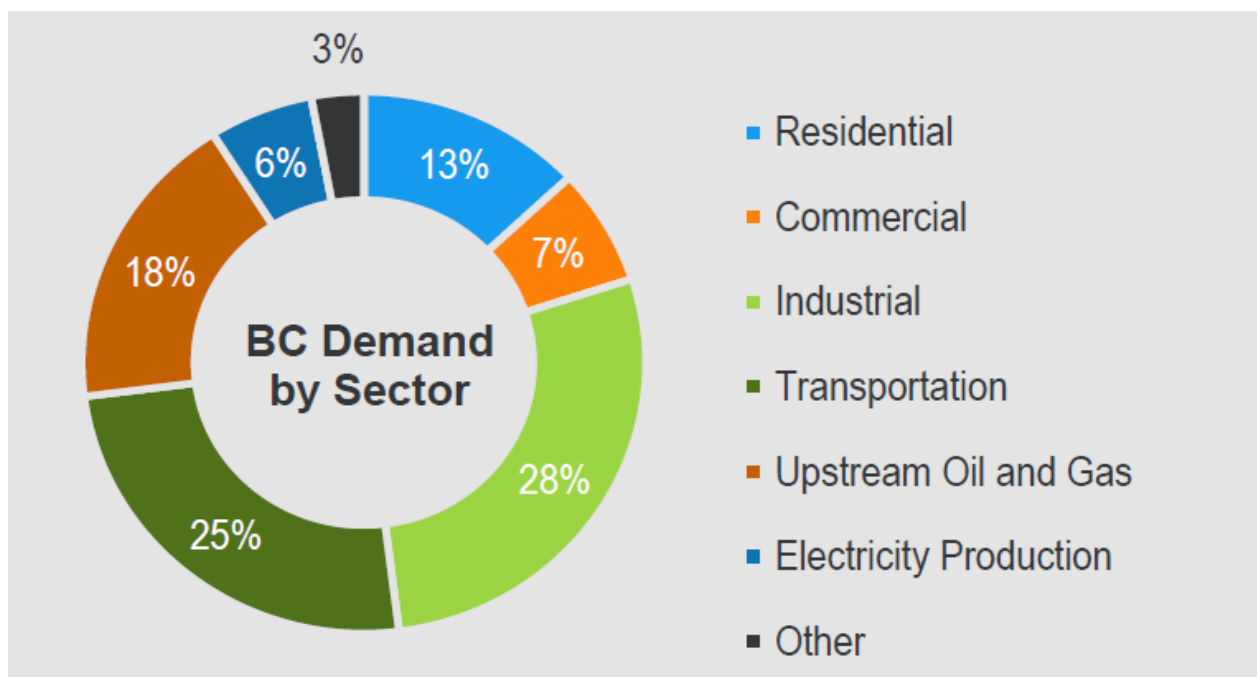
Refined petroleum products account for largest share



Source: Canada Energy Regulator – Canada's Energy Future 2019 and CanESS (CANSIM)

Energy demand in BC by sector

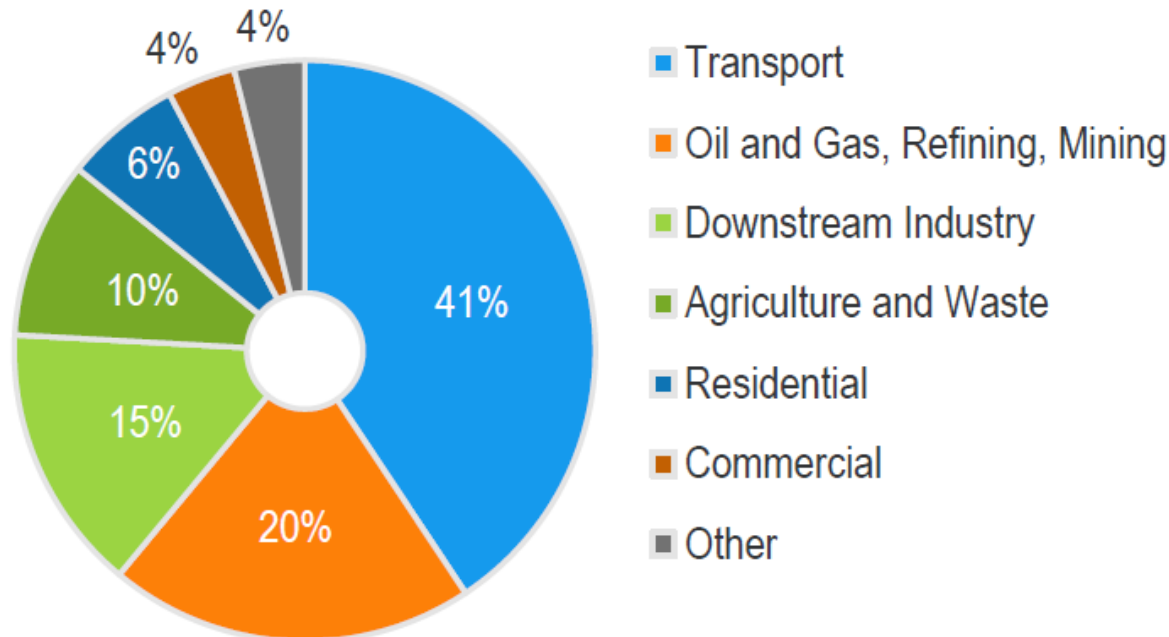
Industry consumes a significant amount of energy



Source: Canada Energy Regulator – Canada's Energy Future 2019 and CanESS (CANSIM)

GHG emissions in BC by sector

Industry & transportation are the biggest contributors



Source: BC GHG Inventory

Clean Growth Pathway to 2050

Sharing goals to lower GHGs and drive economic growth

FortisBC has always been:

- offering solutions to help customers reduce GHGs
- collaborating with industry, public, government and regulators
- helping inform the CleanBC consultation process



Pillars of our Clean Growth Pathway to 2050



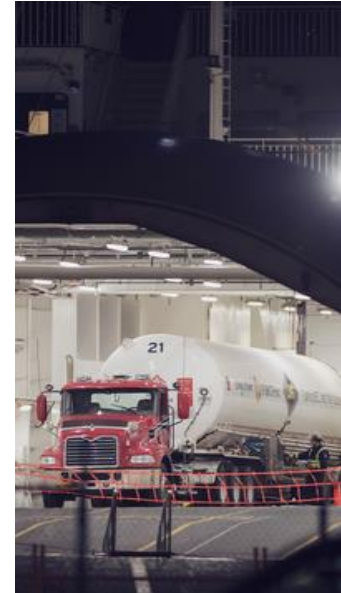
**Energy
efficiency**



**Renewable
gas**



**Zero and
low carbon
transportation**



Global LNG

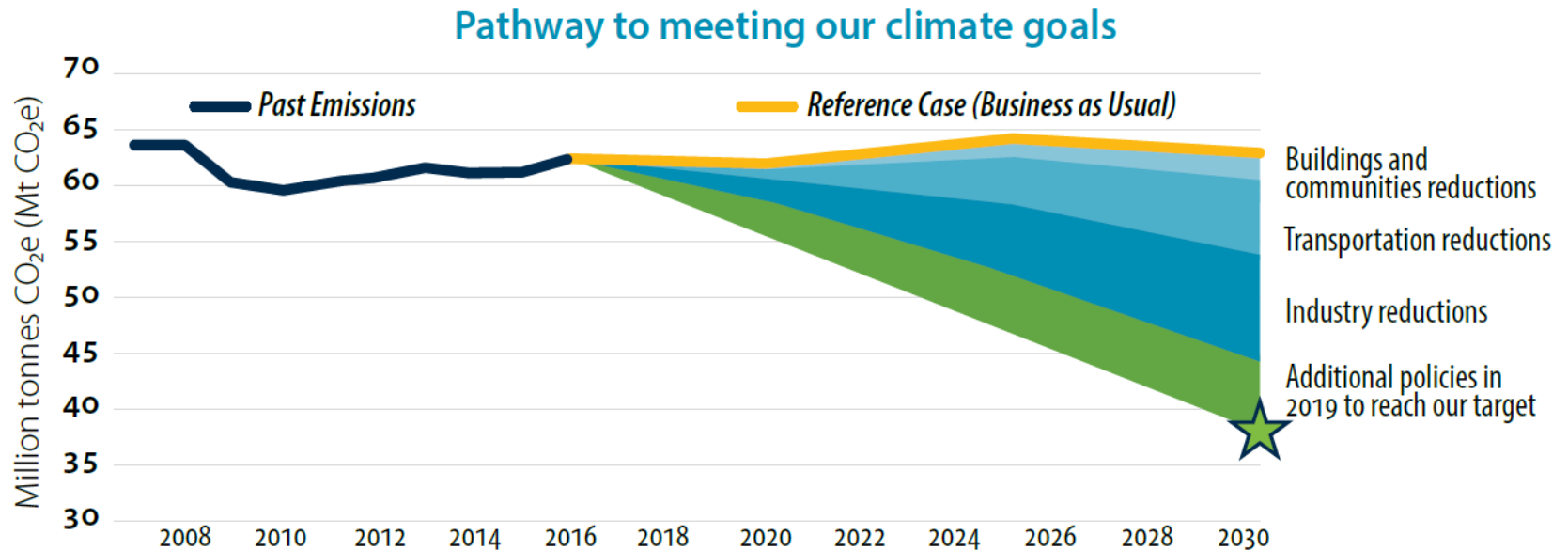
CleanBC and CleanBC Roadmap to 2030

- CleanBC is the provincial climate and economic plan to achieve greenhouse gas emissions by 2030.
- Plan outlines specific actions in the following categories:
 - Better buildings
 - Reducing pollution from industry
 - Cleaner transportation
 - Reducing emissions from waste
 - Clean energy jobs
- FortisBC is a critical partner to achieve the BC Government's goals.



CleanBC GHG emissions reduction target

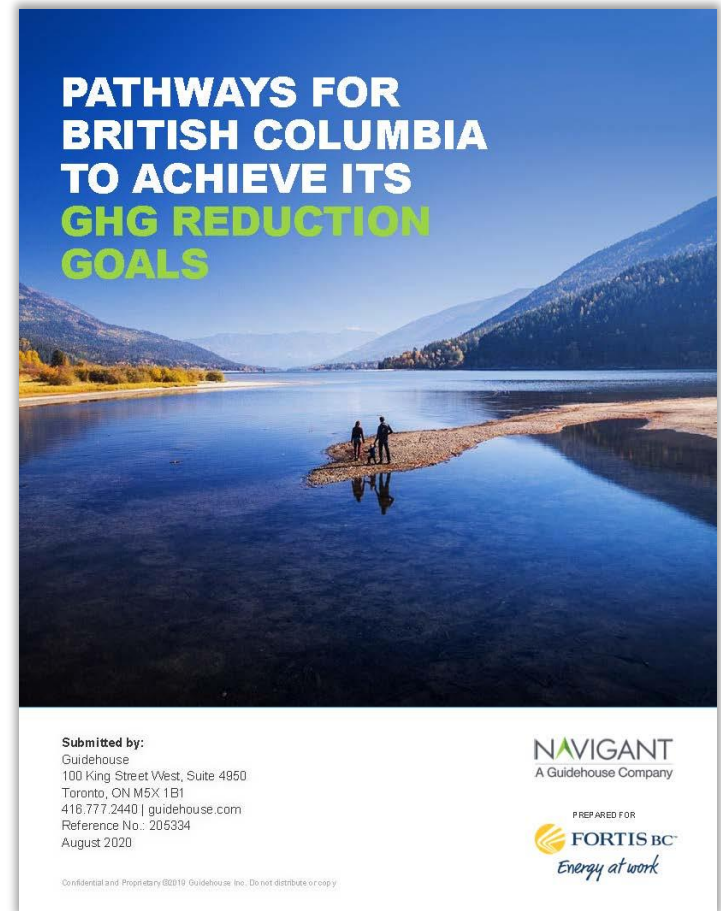
40% reduction in GHG emissions by 2030



Alternative pathways

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



Electrification & Diversified Pathways

Electric Pathway



Energy efficiency

- Both pathways have similar energy efficiency assumptions



Fuel switching

- 100% of buildings heat & water to electric. Electric heat pumps key.



Transportation

- Both assume 100% LD vehicles to EV
- Significant role for EVs in medium and heavy duty (MD/HD) vehicles



Energy supply

- 3% renewable gas
- 45% electricity

Diversified Pathway



Energy efficiency

- Gas heat pumps key



Fuel switching

- NG to renewable gas
- Small percentage NG to electric



Transportation

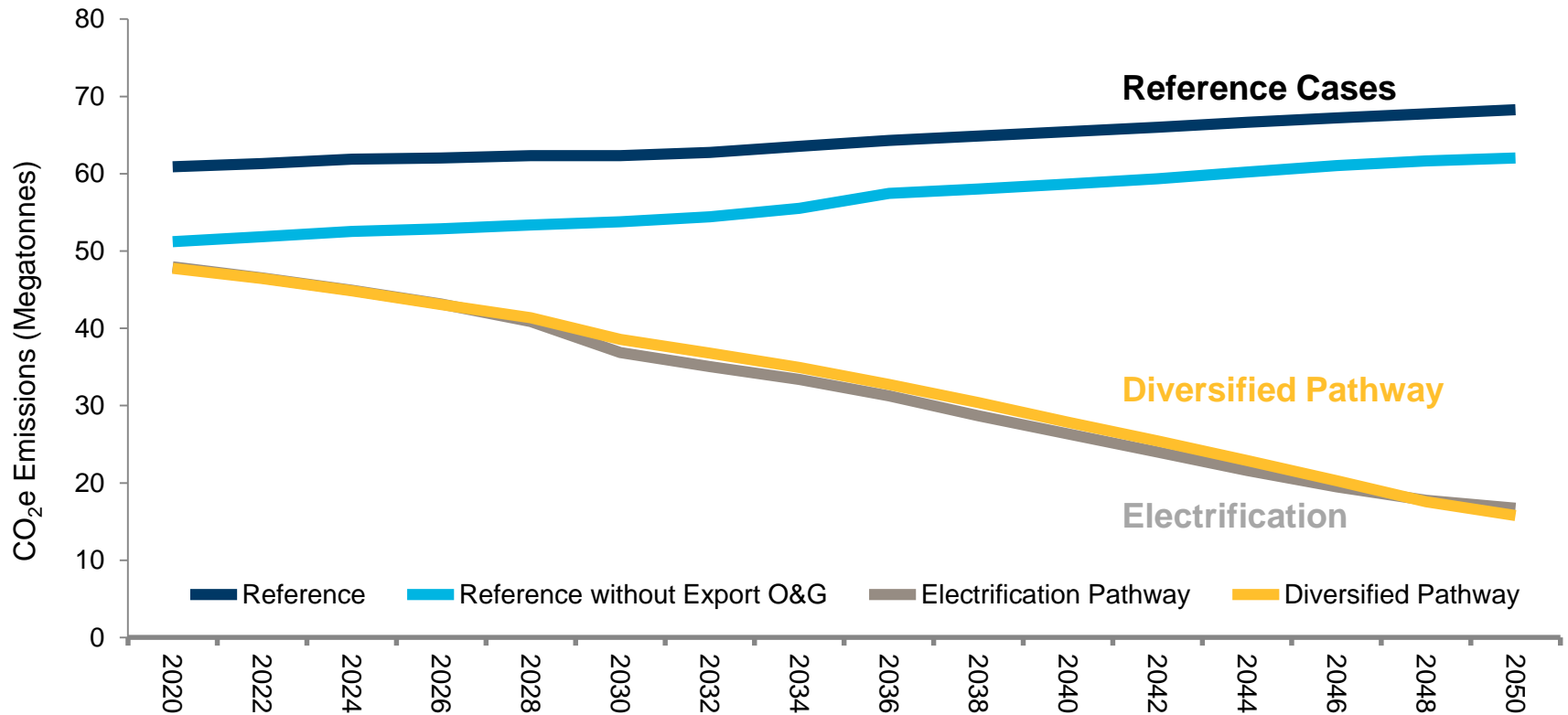
- Significant role for NG in MD & HD vehicles



Energy supply

- 14% renewable gas
- 37% electricity

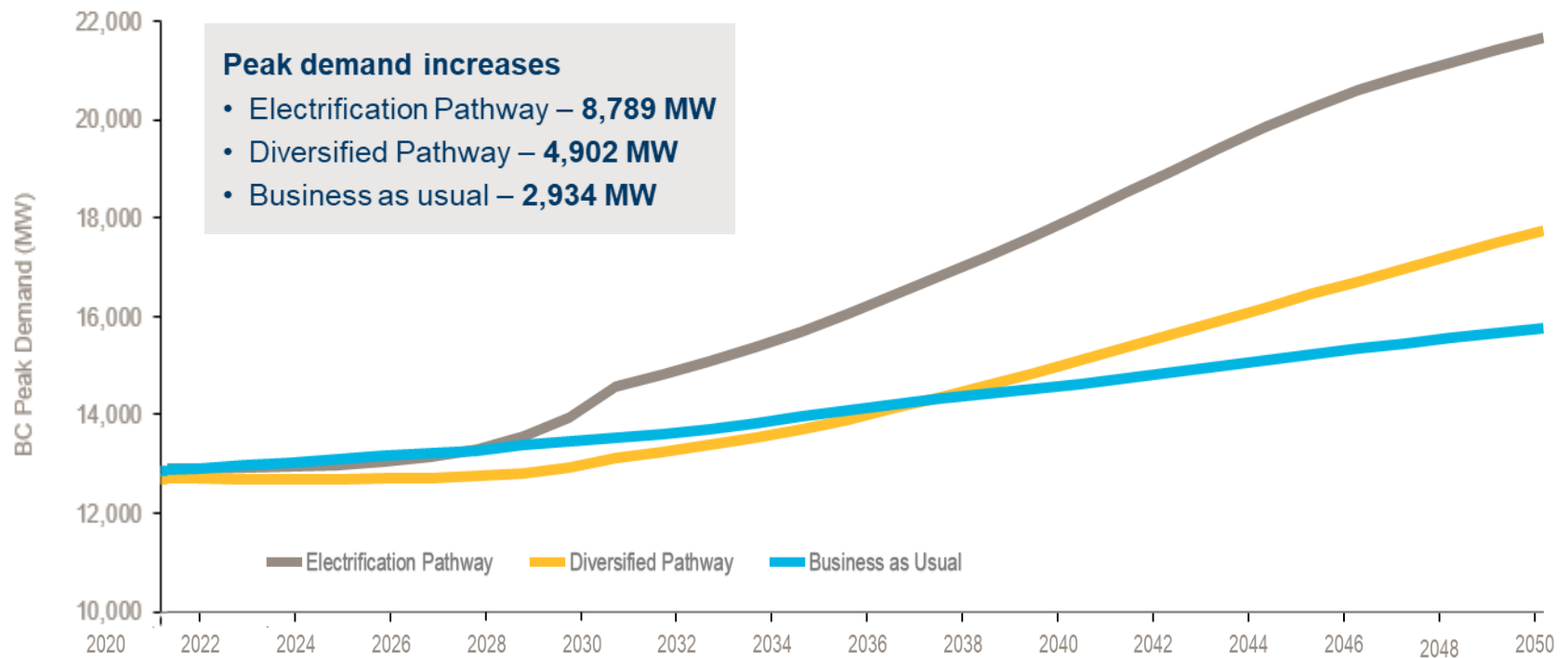
Both pathways achieve the same level of GHG reductions



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

Key Challenge: Expanding Clean Peak Electricity Capacity

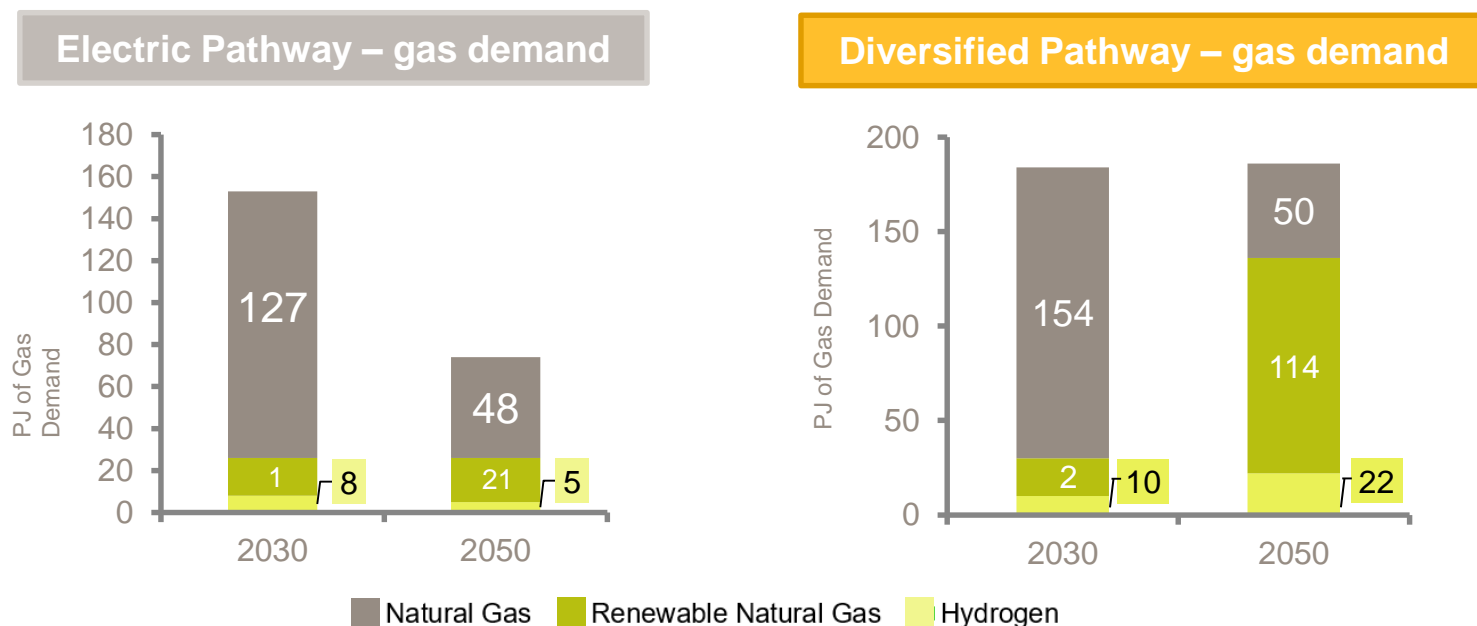
Due to the addition of electric vehicles and electric heating, peak demand is expected to increase by approximately **38%** (Diversified Pathway) and **68%** (Electrification Pathway).



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

Key opportunity: Expanding renewable gas supply

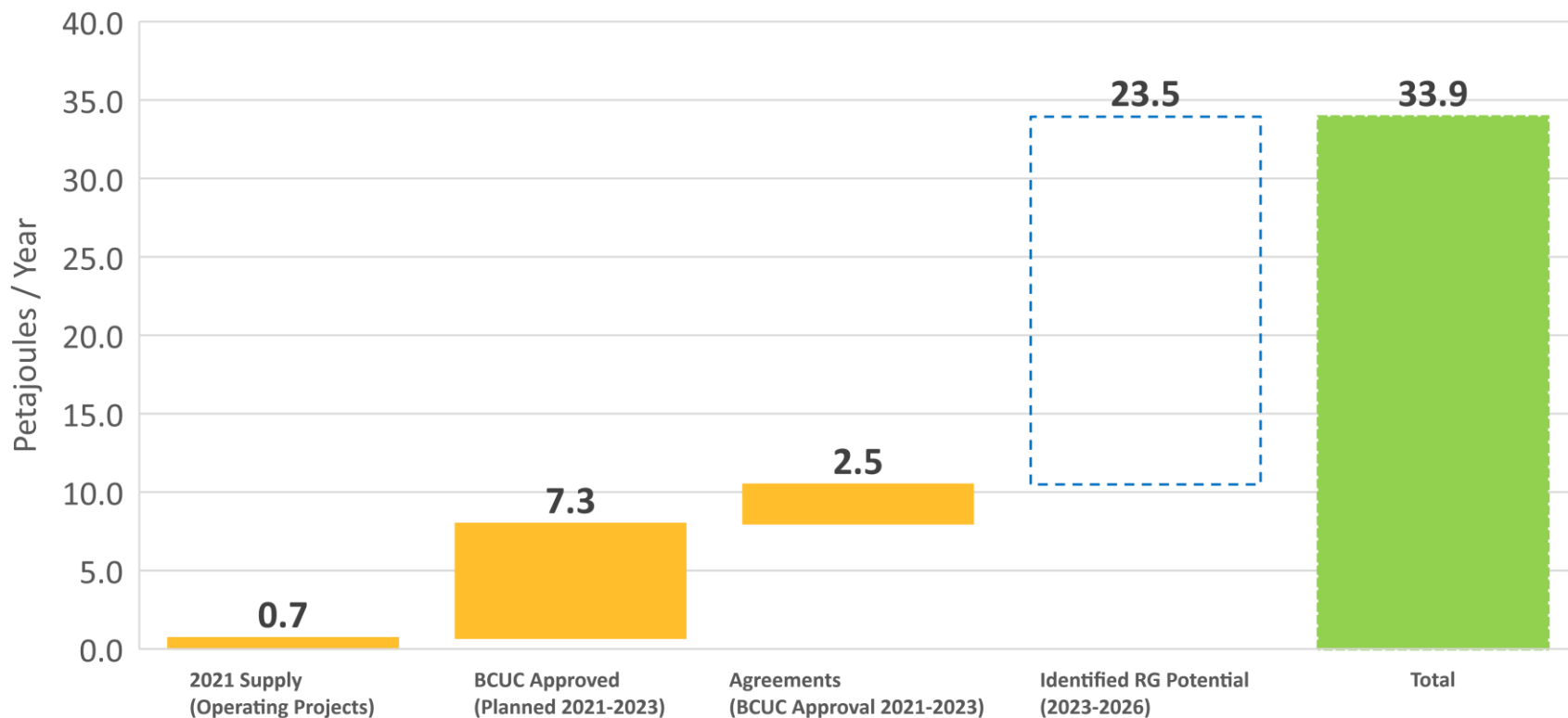
Large potential for renewable gas over the coming decades. Partnerships between governments, industry, Indigenous communities and stakeholders will be key.



Renewable gas short-term supply outlook

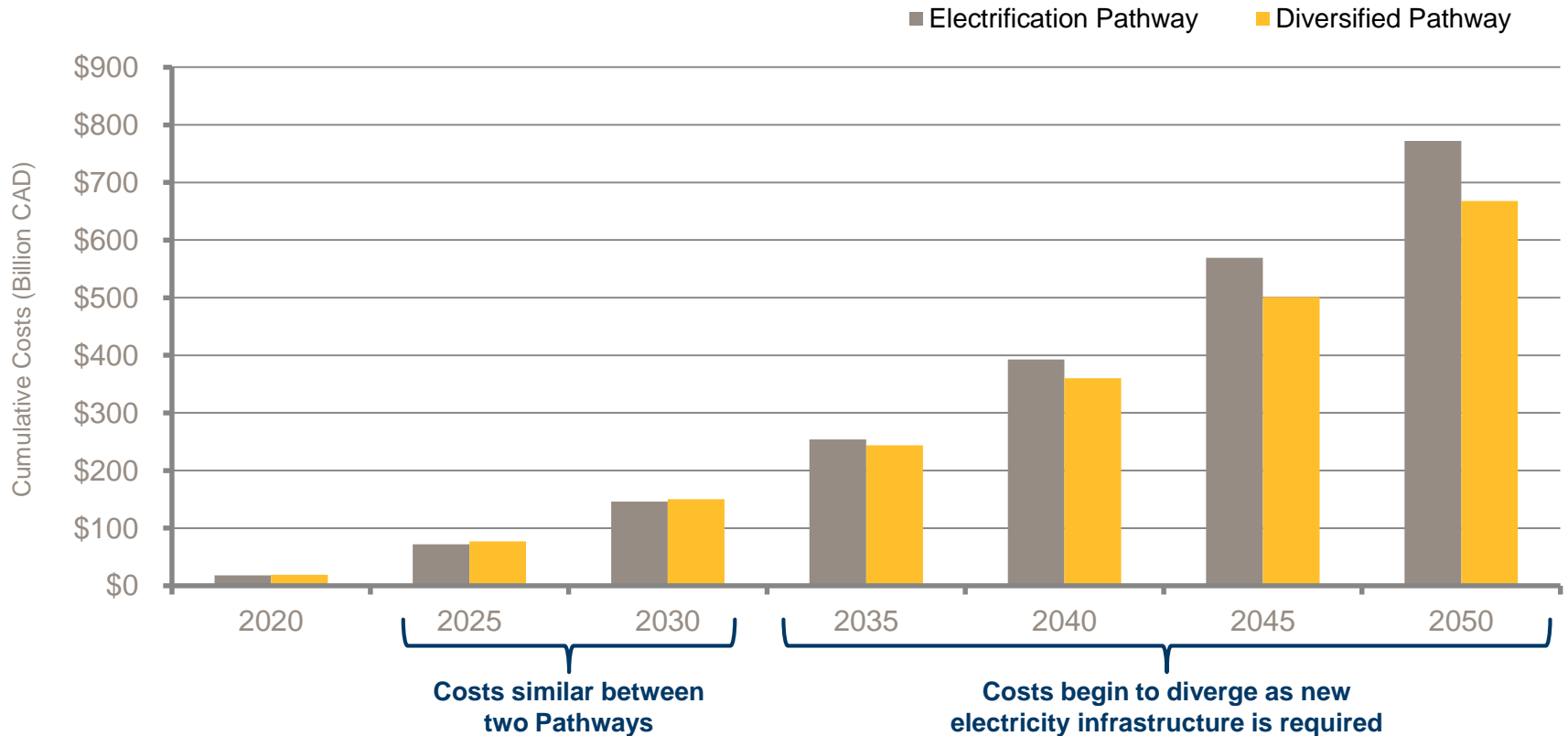
Forecast updated as of October, 2021

Renewable Gas 5 Year Supply Outlook Q4 2021



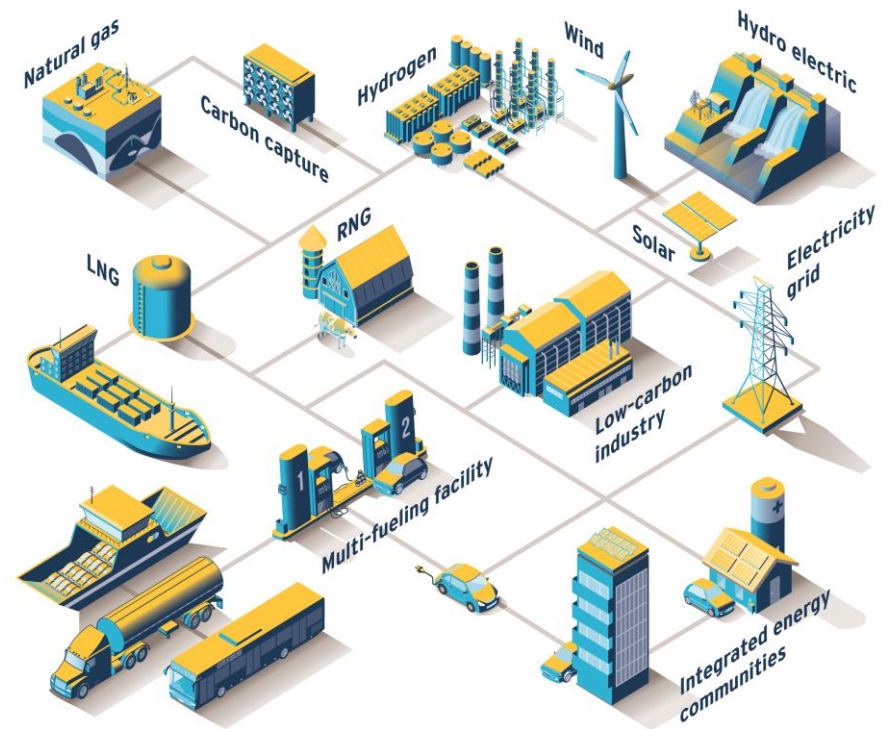
Adding up all the costs

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



A diversified approach to climate action

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

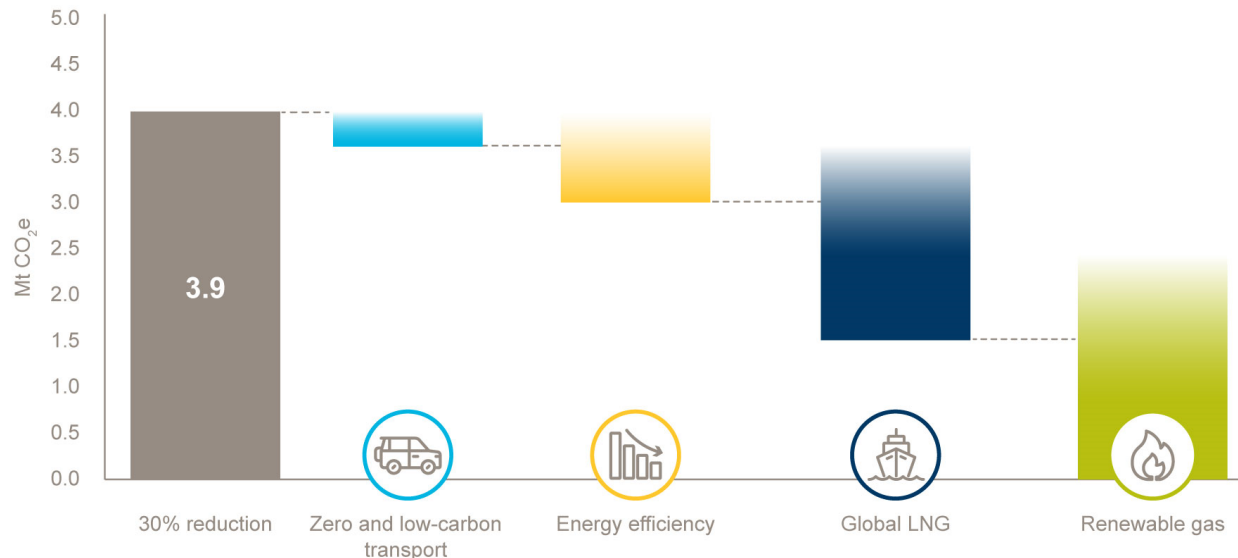


Our commitment to reducing emissions

We set an ambitious emissions reduction target

Our **30BY30 target** will:

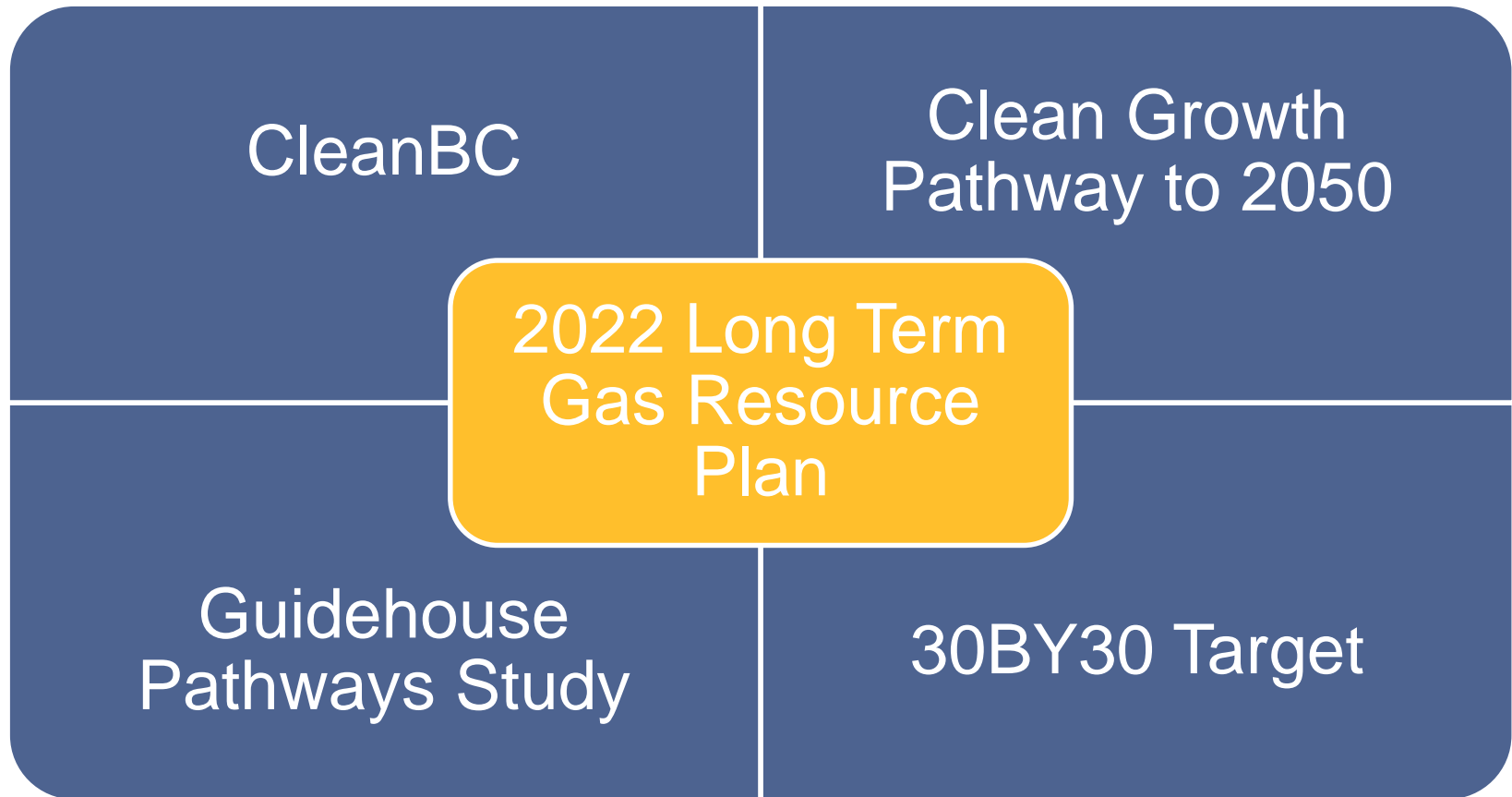
- reduce our customers' GHG emissions by **30%** by **2030**
- be a milestone that we measure our progress by:



Clean Growth Innovation Fund

- Investing **\$4.9 million per year**, over the next four years (until 2024), in innovative emissions-reducing projects
 - Renewable natural gas
 - Carbon and methane capture technologies
 - Energy efficiency
- Organizations can **apply for project funding**, with applications being reviewed based on:
 - the amount of co-funding secured from the applicant and/or third parties
 - estimated emissions that will be reduced in BC
 - estimated cost benefit for our customers
 - relevant experience of the project team

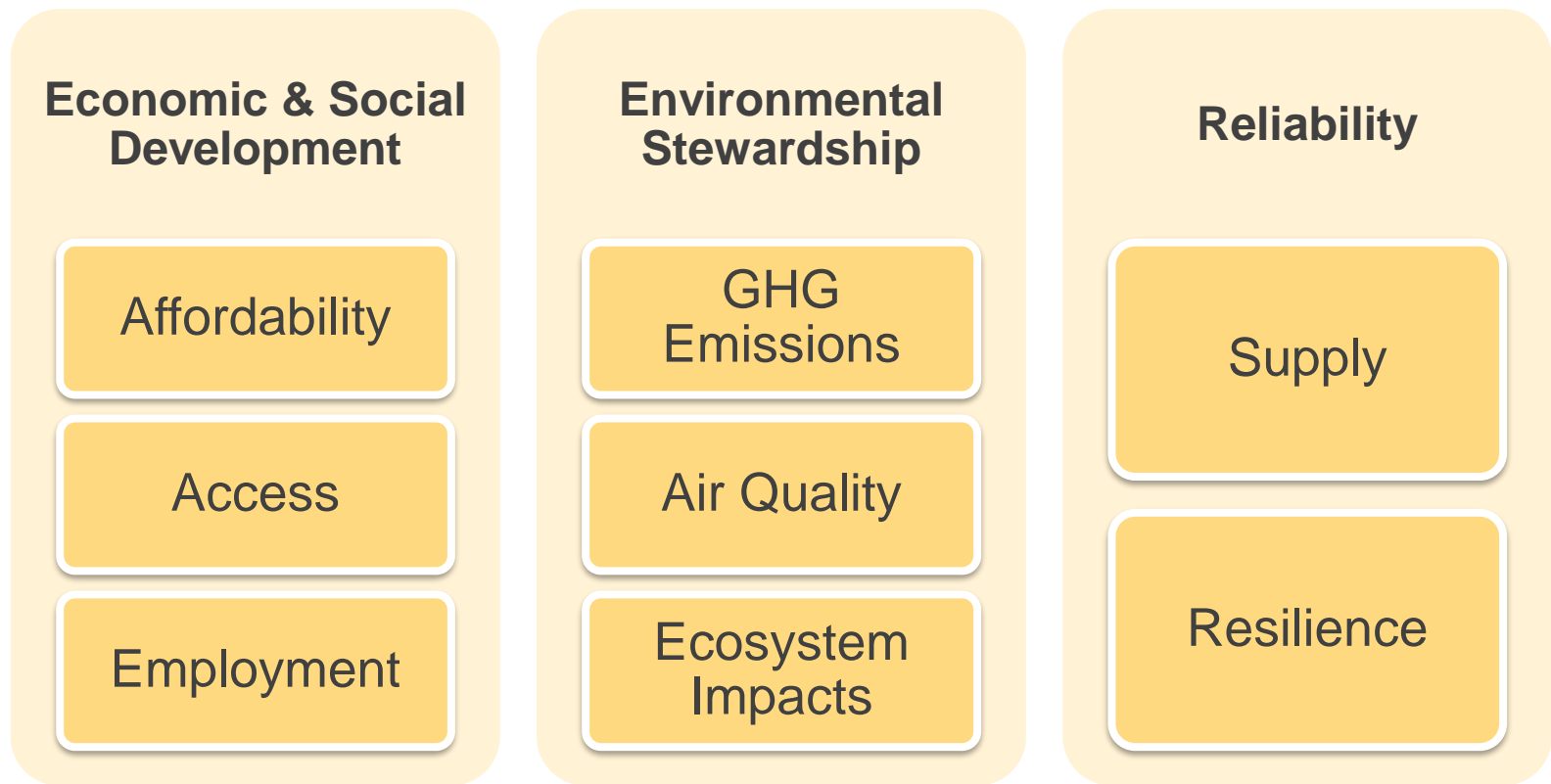
Resource planning considerations



Questions for clarification



Discussion: How does the energy landscape in BC impact you? What are the challenges and opportunities you face?



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Break



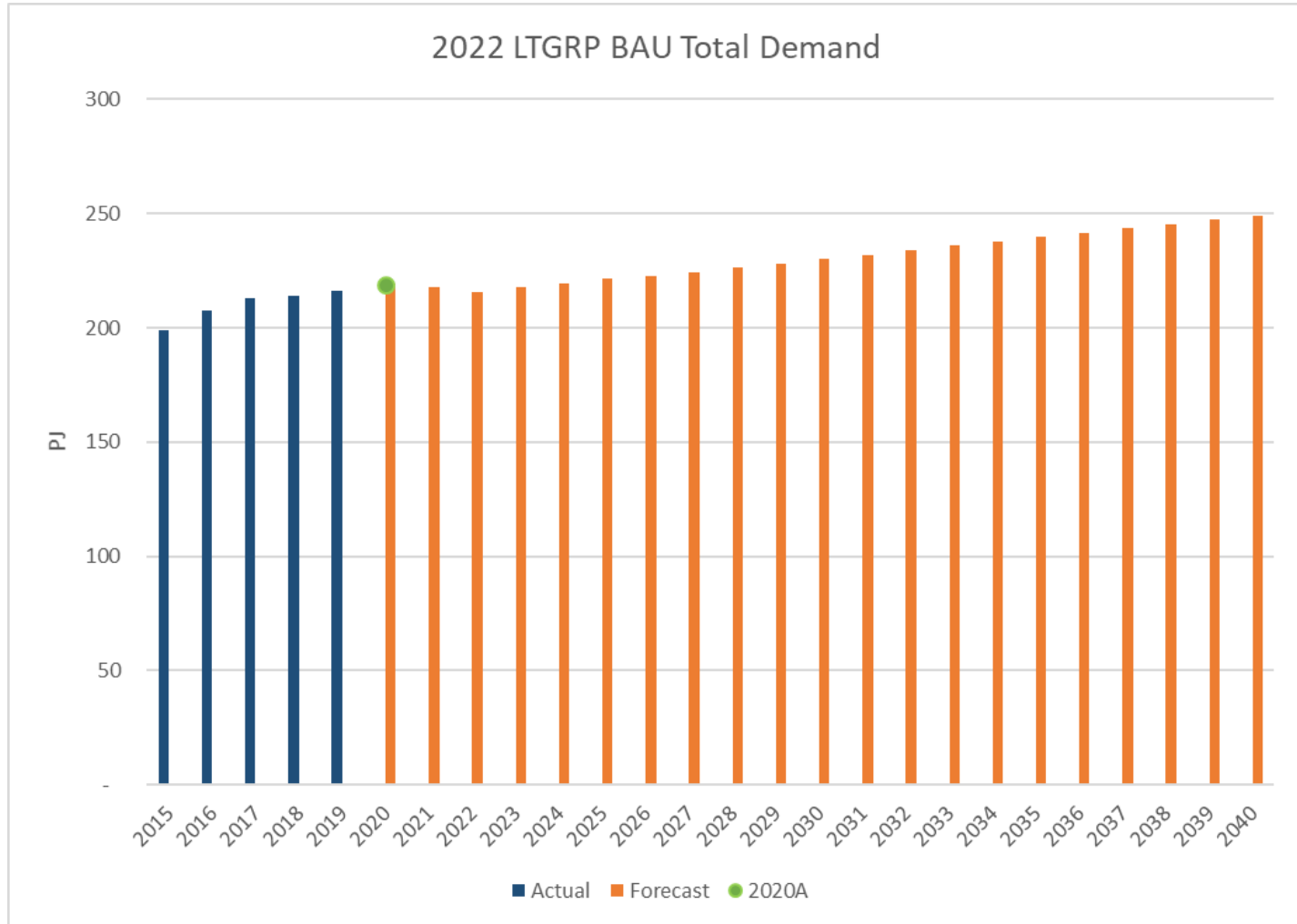
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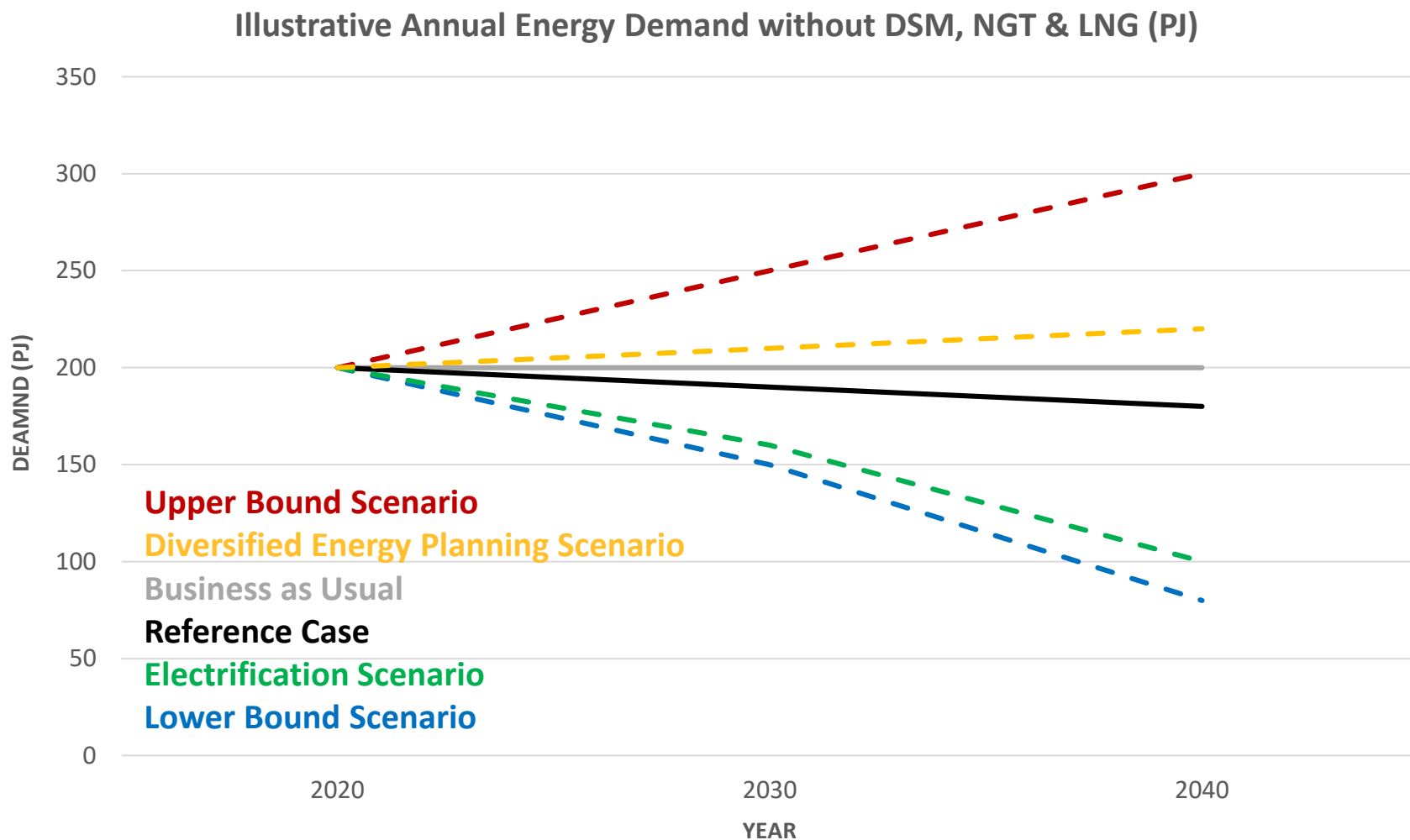
Demand forecasting methodology and critical uncertainties



Business As Usual (BAU) forecast

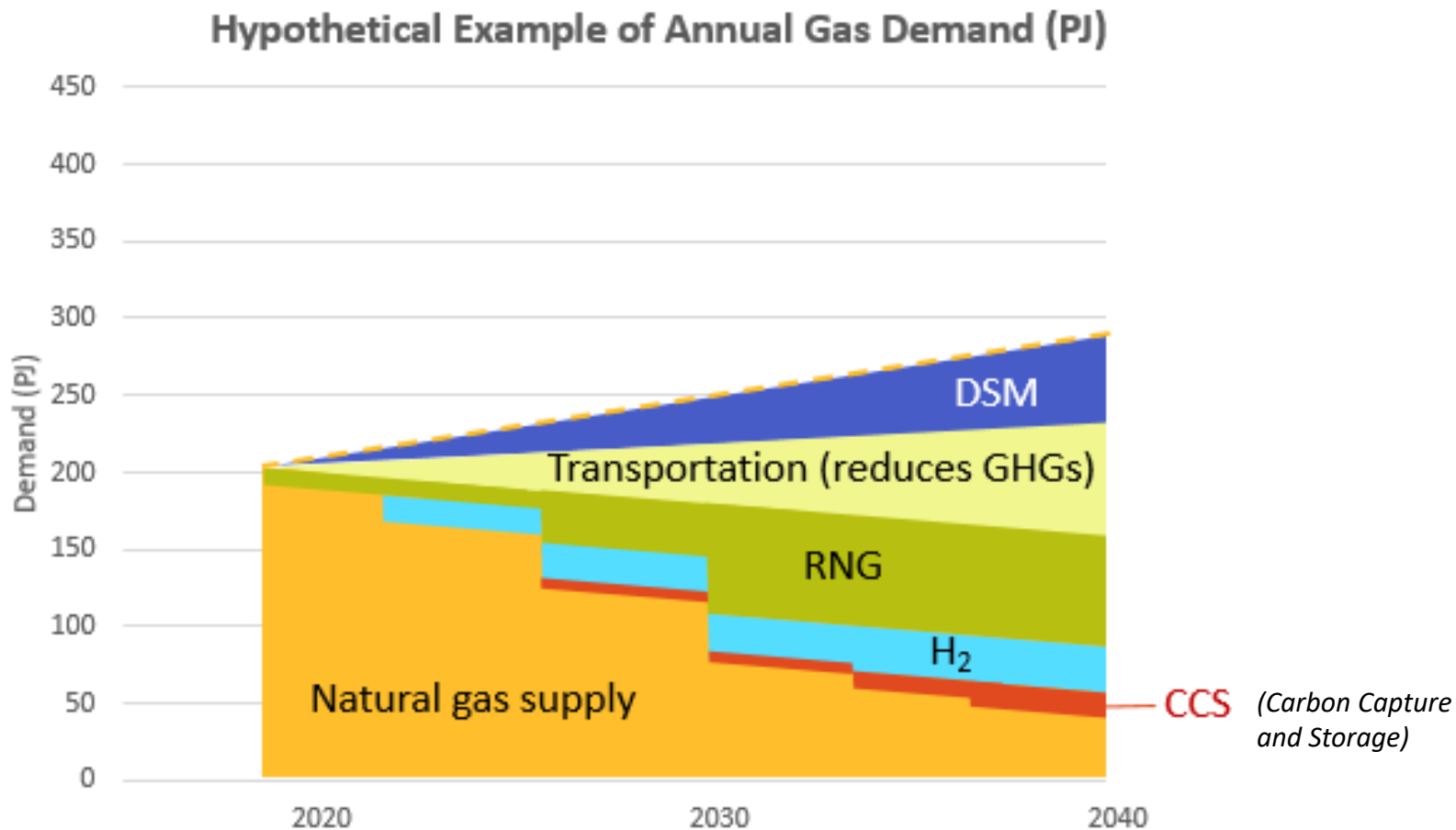


Demand forecast taxonomy

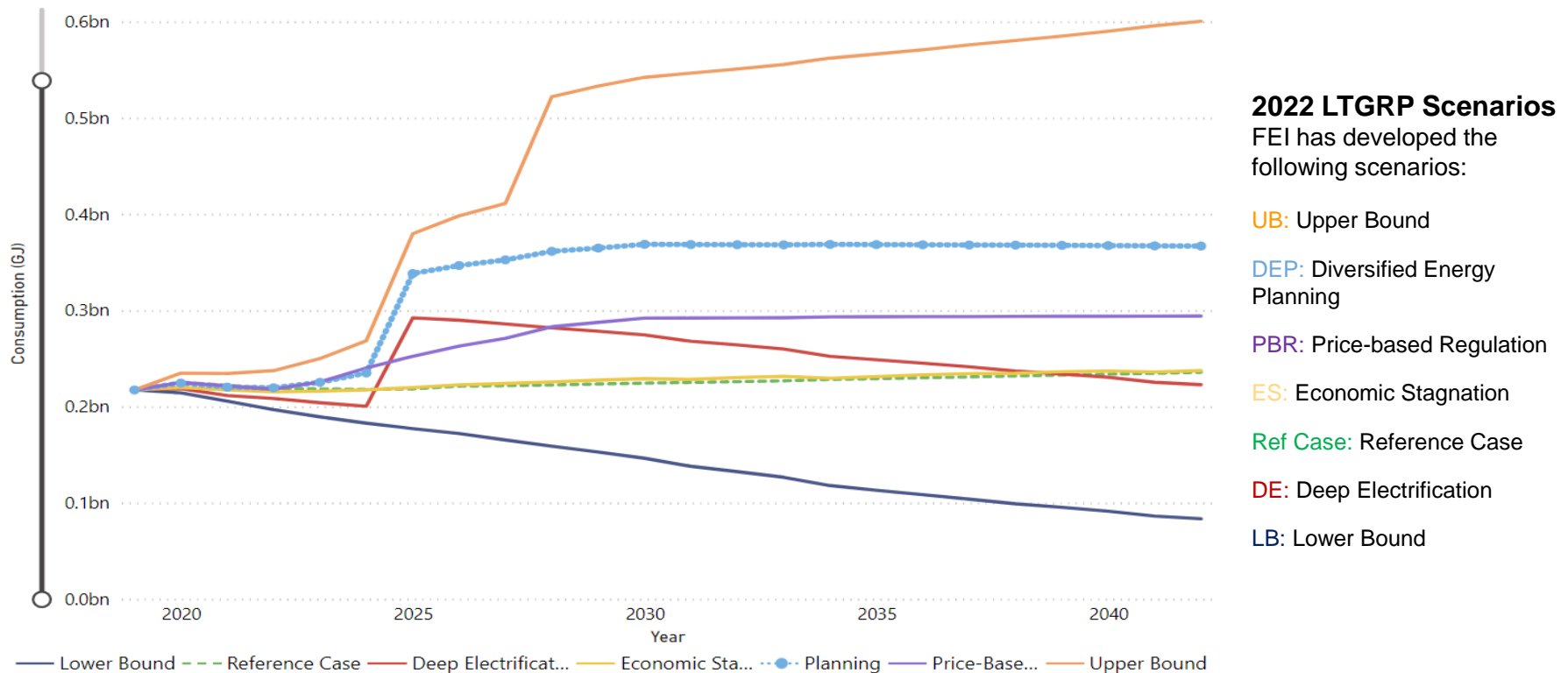


Demand and supply balance

Key to meeting GHG targets

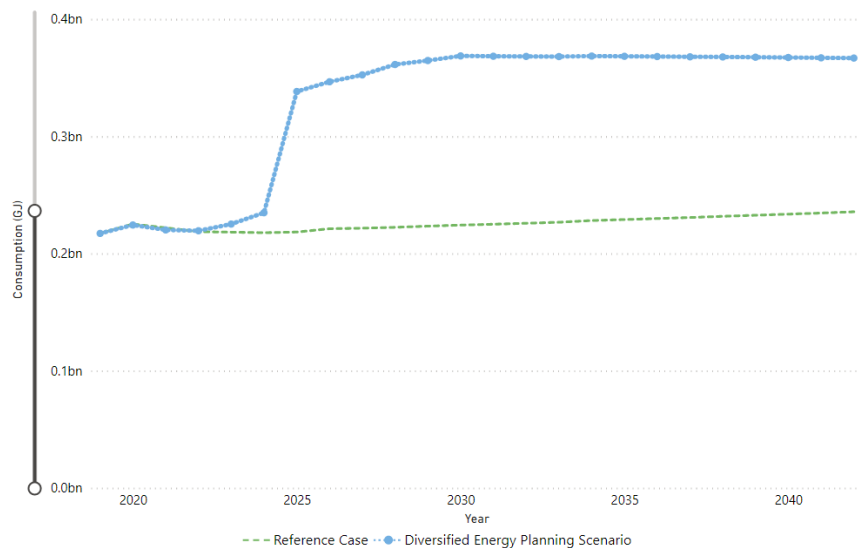


Scenario comparison of forecasted demand (PJ)

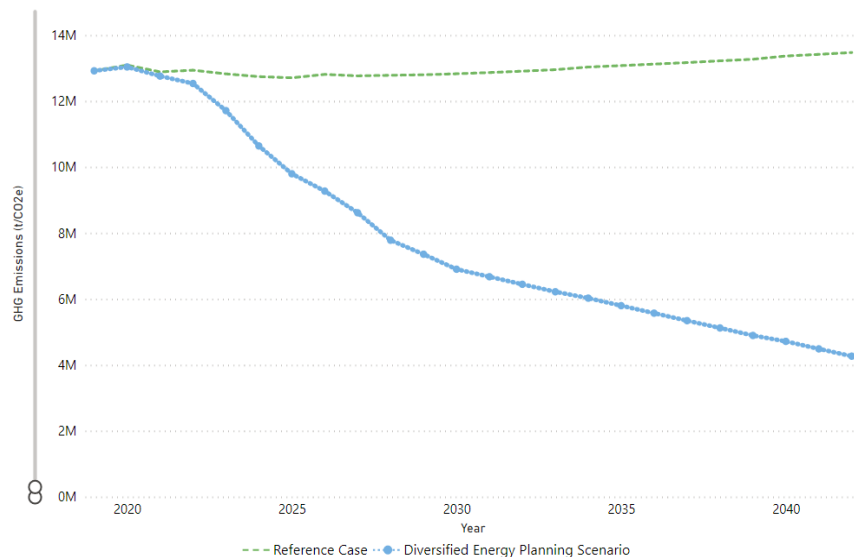


Diversified Energy Planning Scenario

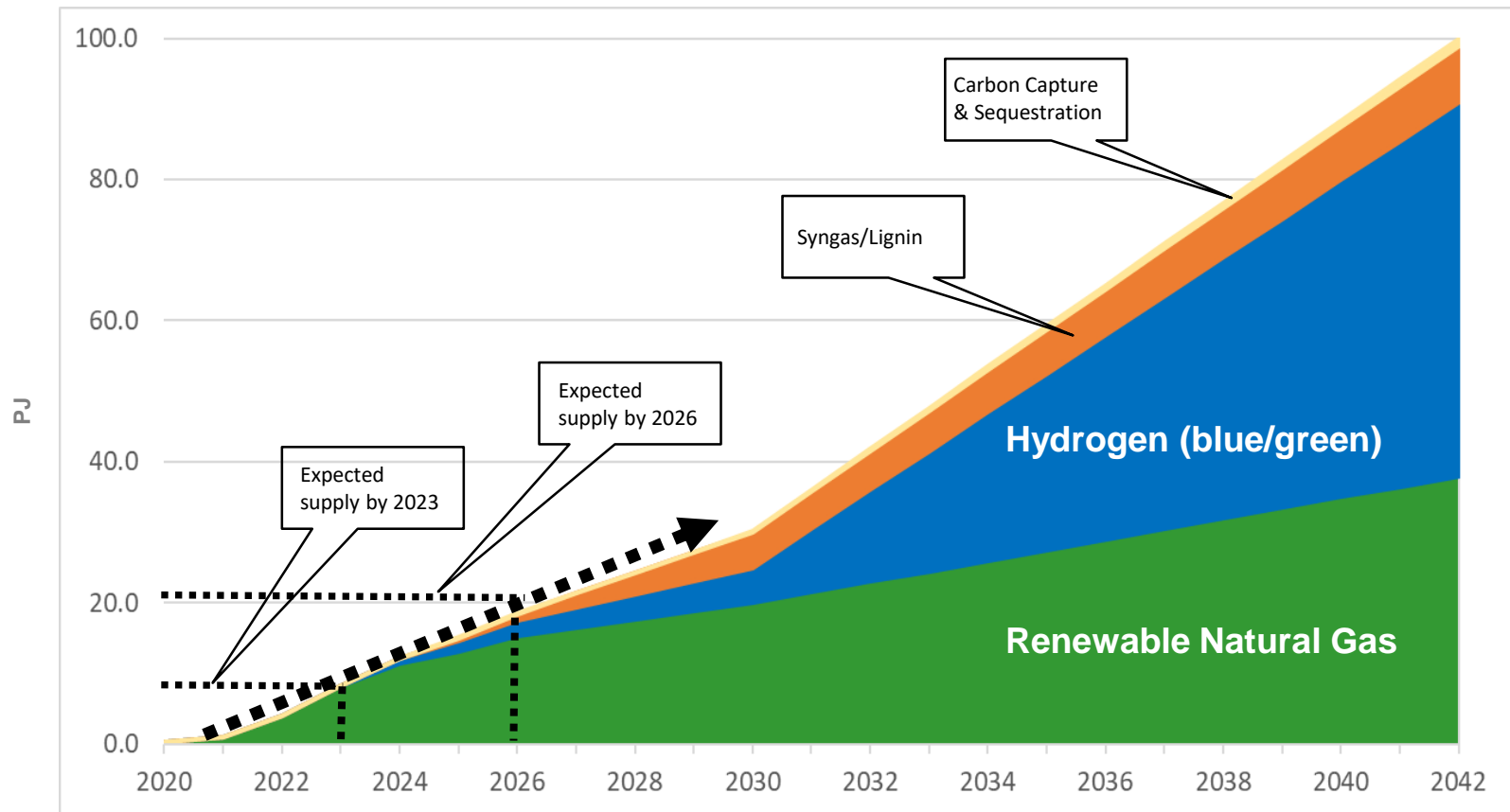
Demand (GJ)



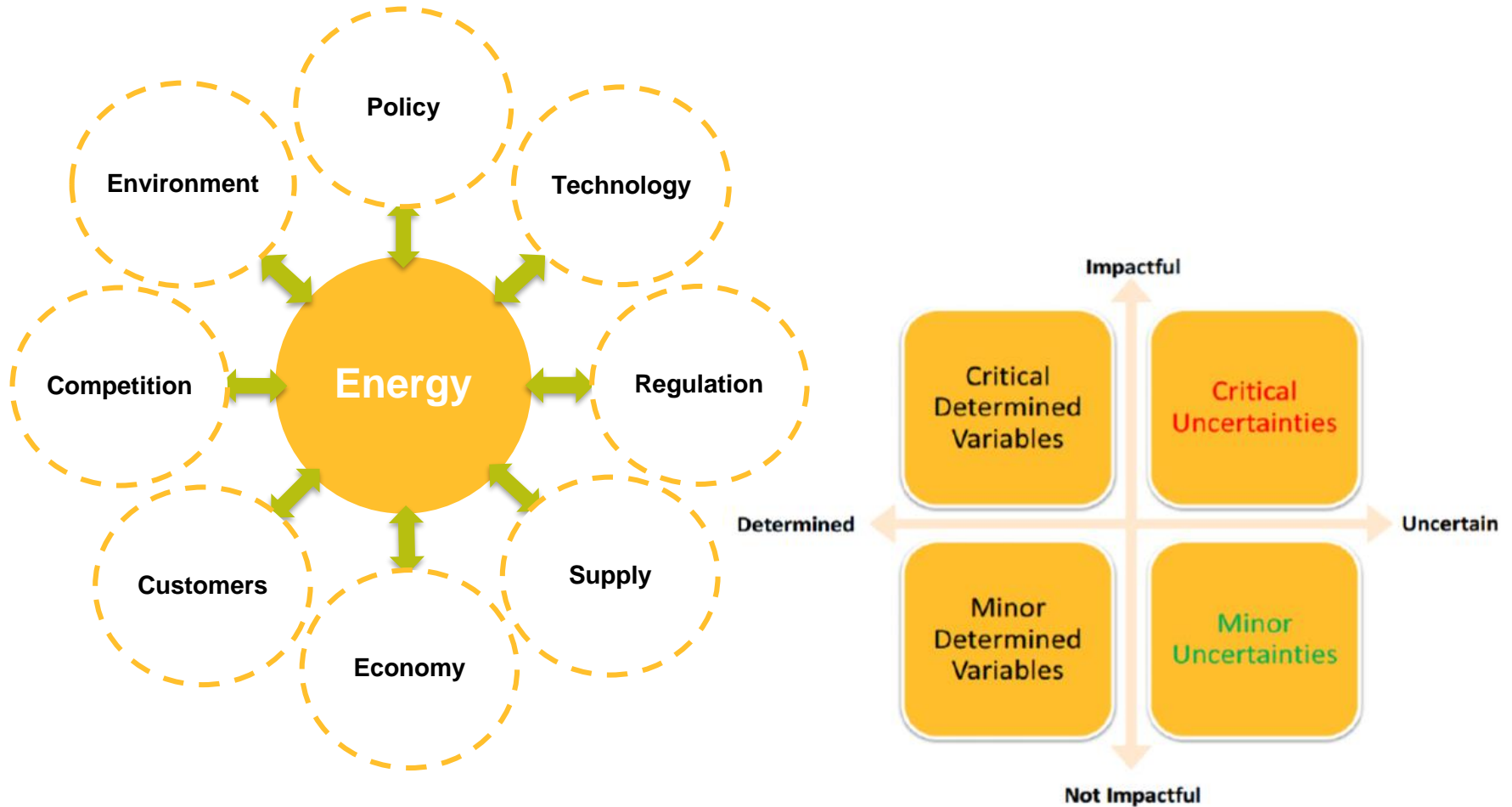
GHG Emissions (t/CO₂e)



Renewable and Low Carbon Gas Supply Outlook (Long-Term, Preliminary)

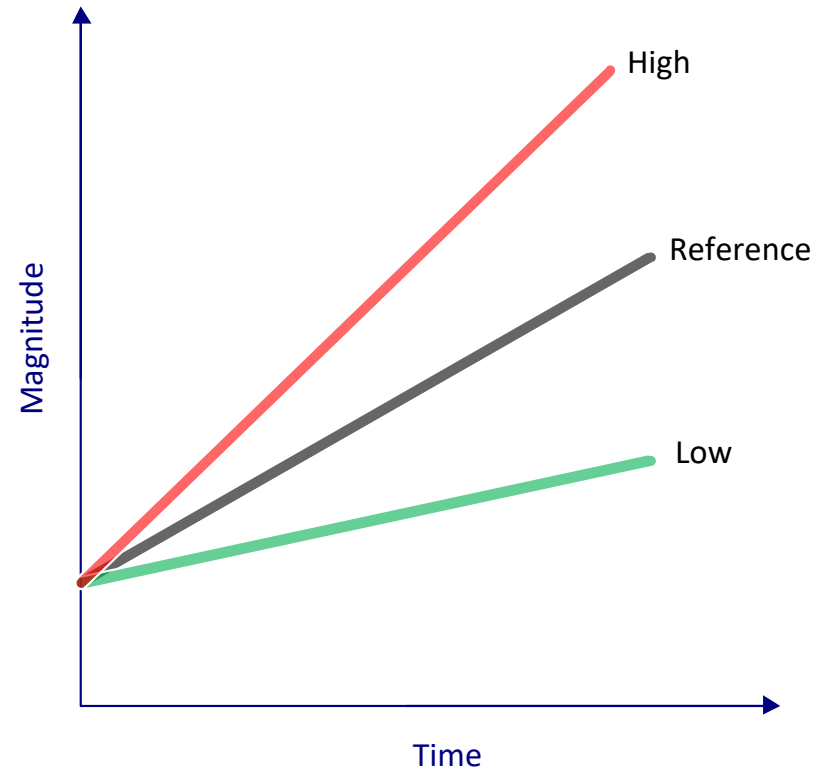


Identifying critical uncertainties



Critical Uncertainty input assumptions

- Several trajectories, or “settings”, for each Critical Uncertainty are developed.
- The various settings capture the uncertainty over what the value of these variables may be in the future under different conditions.
- Scenarios are developed by combining different settings for all the Critical Uncertainties.



Critical Uncertainties for the 2022 LTGRP



Demand: variables that impact the annual load that FEI needs to meet.



Supply & GHG Mitigation: variables that impact the supply mix that FEI may use to meet demand while reducing GHG emissions relative to if the demand was met with traditional natural gas only.



Transportation: demand for compressed natural gas (CNG) and liquefied natural gas (LNG) in the natural gas for transportation sector. Demand for these fuels impact FEI's system and GHG emissions as CNG and LNG displace fuels with higher carbon intensities.

Demand-Side Critical Uncertainties

Critical Uncertainty	Description	Impact
Appliance Standards	Minimum energy performance standards for energy-using appliances.	More stringent standards, demand for natural decreases.
Carbon Price	Provincial carbon tax applied to natural gas.	Carbon price increases, demand for natural gas decreases (and vice versa).
Customer Growth	Number of customer accounts by rate class forecasted by FortisBC. Based on confidence intervals of historical data.	Number of customer accounts increase, demand increases (and vice versa).
Natural Gas Price	Commodity price for traditional natural gas.	Gas price increases, demand for natural gas decreases (and vice versa).
New Construction Code	Energy Step Code is the relevant building code for new construction. The energy-requirements are applied to relevant building types and end-uses.	Code increases in stringency, demand for natural gas decreases.
Non-price Driven Fuel Switching	Fuel switching caused by signals other than prices, such as incentives and policies to encourage customers to switch from natural gas to electricity.	As the target for fuel switching increases, demand for natural gas decreases.
Retrofit Code	Estimated impact and timing of a retrofit code based on publicly available information.	Code increases in stringency, demand for natural gas decreases.

Natural Gas for Transportation Critical Uncertainties

Critical Uncertainty	Description	Impact
Natural Gas for Transportation (NGT) Demand	FortisBC's forecasted demand for compressed natural gas (CNG) and liquefied natural gas (LNG) by the transportation sector.	Increase demand for CNG and LNG increases FortisBC's load while providing GHG reduction opportunities as CNG replaces diesel and LNG replaces marine bunker fuel.
Liquefied Natural Gas (LNG) Export Demand	Export of LNG to other jurisdictions.	Increase demand for LNG Export increases FortisBC's load while also providing GHG reduction opportunity as LNG replaces fuels that burn more GHGs.

Supply-Side & GHG Mitigation Critical Uncertainties

Critical Uncertainty	Description	Impact
Carbon Capture & Storage (CCS)	A carbon is captured from either the combustion of traditional natural gas or from the atmosphere. The captured carbon is then sequestered, or stored, underground so it is not emitted.	CCS lowers overall GHG emissions, no impact on natural gas demand.
Hydrogen (H2) Supply	Hydrogen used as a fuel source.	H2 displaces traditional natural gas thereby helping to meet demand while lowering GHG emissions.
Renewable Natural Gas (RNG) Supply	Renewable natural gas used as a fuel source.	RNG displaces traditional natural gas thereby helping to meet demand while lowering GHG emissions.
Syngas & Lignin Supply	Syngas and lignin used as fuel sources.	Syngas & lignin displace traditional natural gas thereby helping to meet demand while lower GHG emissions.

Questions for clarification



Discussion: Which critical uncertainties are of most interest to you and why? Which ones represent new opportunities or challenges for you?

Demand-Side:

- Appliance Standards
- Carbon Price
- Customer Growth
- Gas Price
- New Construction Code
- Non-price Driven Fuel Switching
- Retrofit Code

Supply-Side & GHG Mitigation:

- Carbon Capture & Storage (CCS)
- Hydrogen (H₂)
- Renewable Natural Gas (RNG)
- Syngas & Lignin

Transportation:

- Compressed Natural Gas (CNG)
- Liquefied Natural Gas (LNG)
- Liquefied Natural Gas (LNG) Exports

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Ongoing resource planning work



Ongoing resource planning work

- Demand-side management
- Supply considerations
- System considerations and infrastructure projects
- Rate implications and ongoing analysis of alternative energy futures
- Addressing transformative change
- Action plan



Energy Efficiency (Demand-side Management)

DSM potential for each scenario

Sensitivity Analysis: High, base and low incentive spending

Interaction with renewable/low carbon supply options



Gas Supply and System Planning

Energy Supply and Regional Infrastructure

- Traditional supplies
- Integrating renewable / low carbon supply
- Supply resilience

Meeting Peak Demand

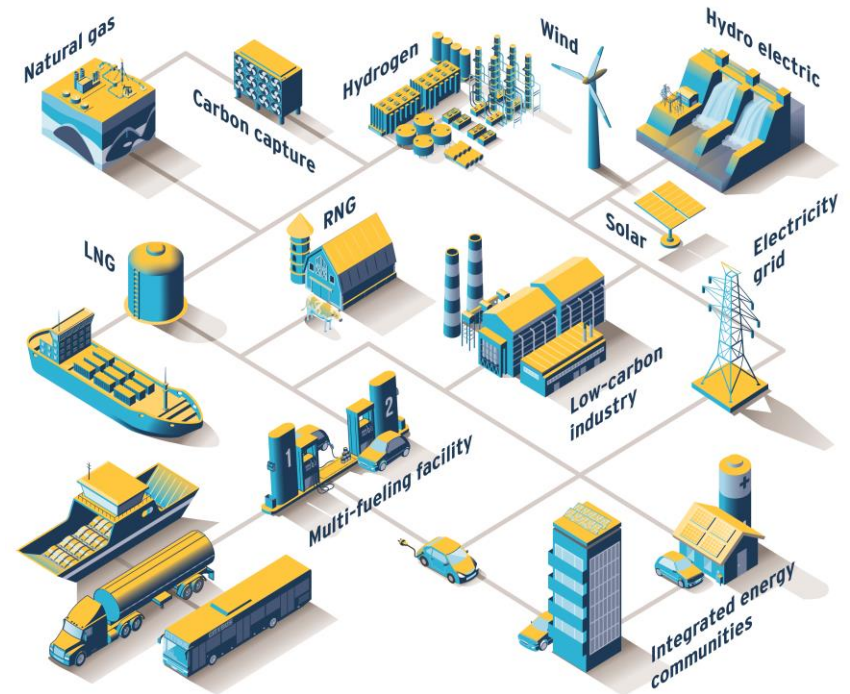
- Peak demand forecast
- System capacity and resilience
- Impact of renewable / low carbon supply

Transitioning to Renewable and Low Carbon Gas

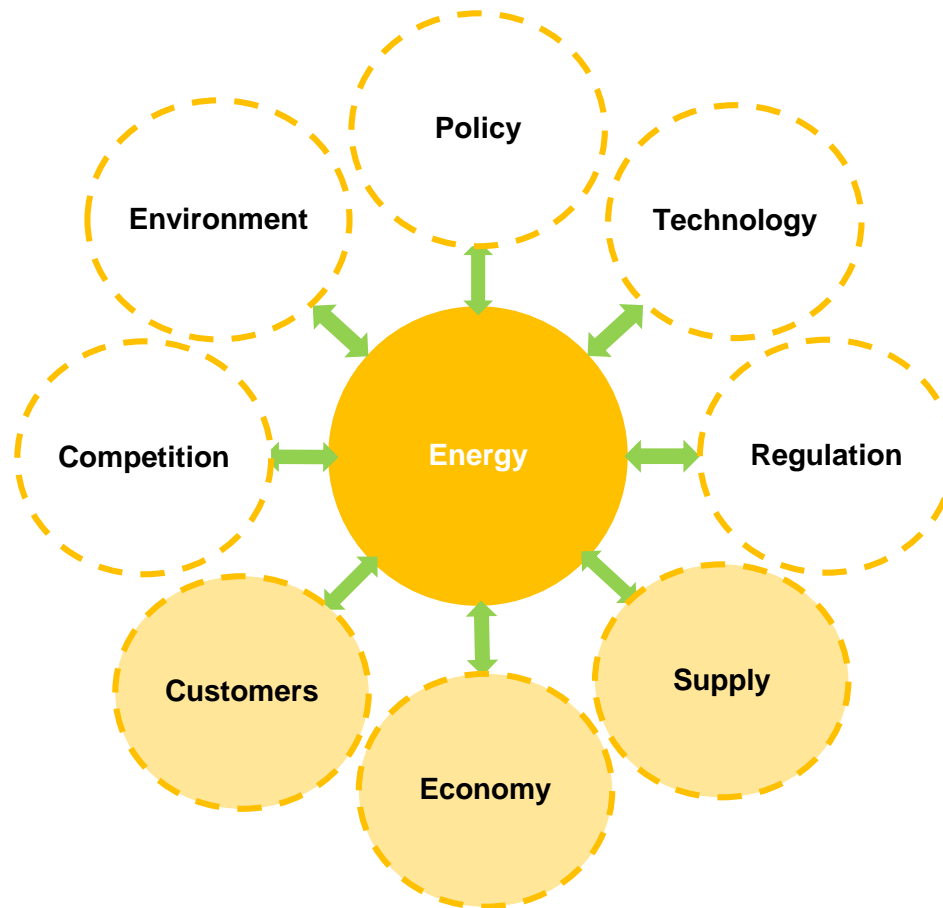
- On-system and off-system supply
- Changing mix of natural gas, renewable gas, hydrogen and other options over time

20-Year Vision

- Customer energy needs and services
- Energy efficiency
- Infrastructure
- Rate impacts and affordability
- Carbon emission reductions
- Sustainability
- Partnerships



Cost Uncertainty, Implications for Peak Demand, Risk



Discussion: How does what we've discussed today influence your thinking on energy needs and priorities?

Is there anything else you'd like us to consider as we finalize the demand scenarios and plan for meeting future energy needs?

Cost

**Economic
Growth**

**Energy
Efficiency**

Environment

Reliability

**Accessibility
& Safety**

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Wrap-up and next steps



Wrap-up and next steps

- Thank you for your input and feedback today, we appreciate it
- We will be sharing the meeting notes with you shortly
- Additional engagement session will take place throughout the year
- Feedback for the resource plans can be addressed to irp@fortisbc.com
- Any general questions or concerns can be addressed to getinvolved@fortisbc.com

Filing Date: FortisBC Long Term Gas Resource Plan (March 31, 2022)

Thank you



For further information, please contact:

Resource Planning Questions & Feedback

irp@fortisbc.com

General Questions & Feedback

getinvolved@fortisbc.com

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