

FortisBC Resource Planning Engagement Session – South Coast & Lower Mainland

The energy to think differently



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?**
4. Break **(10 min)**
5. Demand forecasting methodology and critical uncertainties **(45 min)**
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7. Ongoing resource planning work **(5 min)**
8. Wrap-up and next steps **(5 min)**

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



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.***



Our 30BY30 commitment

What is 30BY30?

It is our target to reduce our customers' GHG emissions by **30%** overall by the year **2030**



Focus of today's session

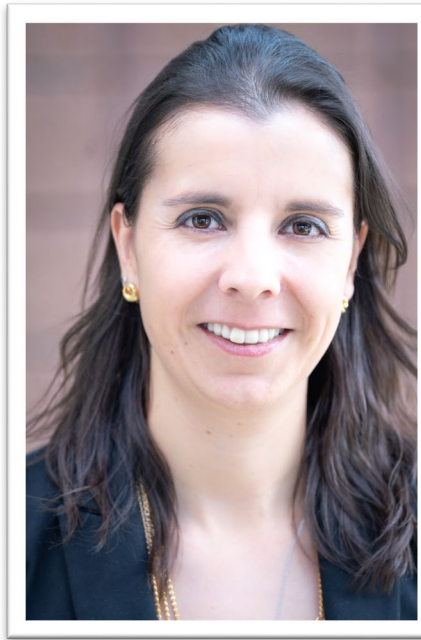
- To better understand your energy priorities and plans for the future
- To hear from you on our upcoming Long Term Gas Resource Plan (LTGRP)



Speakers introductions



Ken Ross
Manager, Resource
Planning & DSM
Reporting



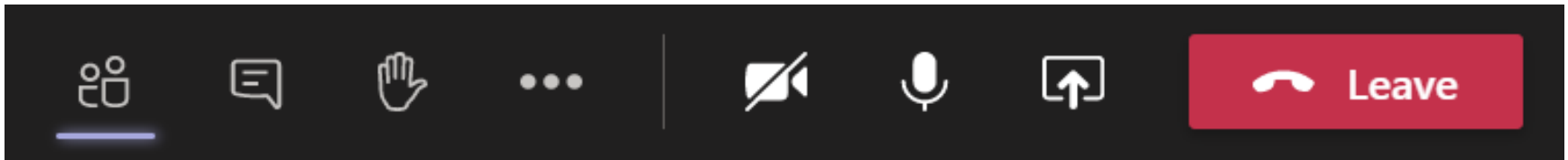
Diana Aguilar
Integrated Resource
Planning Manager



Randy Sharpe
Manager, Community
& Indigenous Initiatives

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

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



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 community
- 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

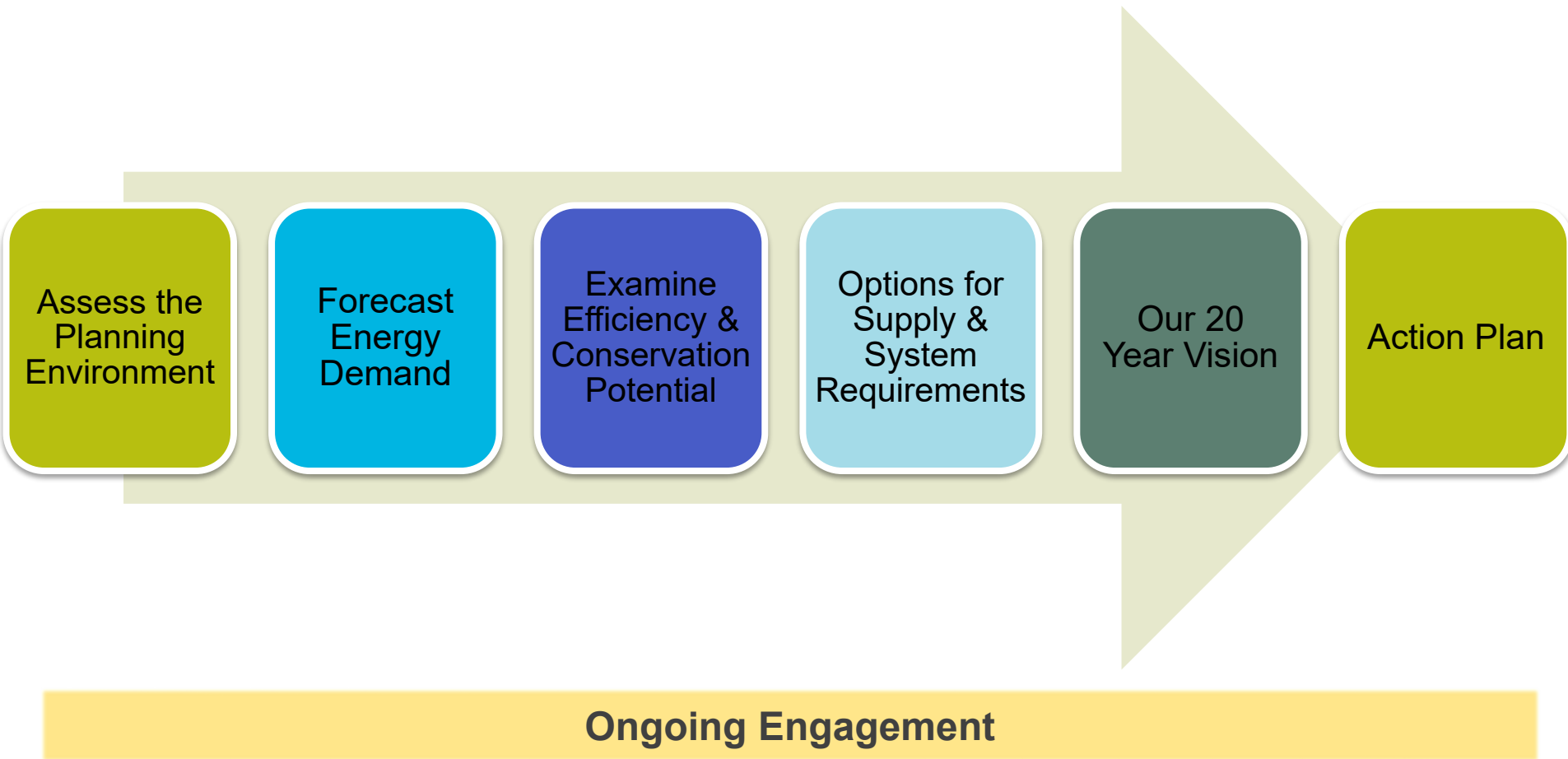
- The LTGRP **looks ahead 20 years** and provides a road map for securing safe, reliable and cost-effective energy resources.
- Represents an important component in our **overall utility planning**.
- Requirement of the Utilities Commission Act (UCA). Seeking **acceptance** from the British Columbia 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

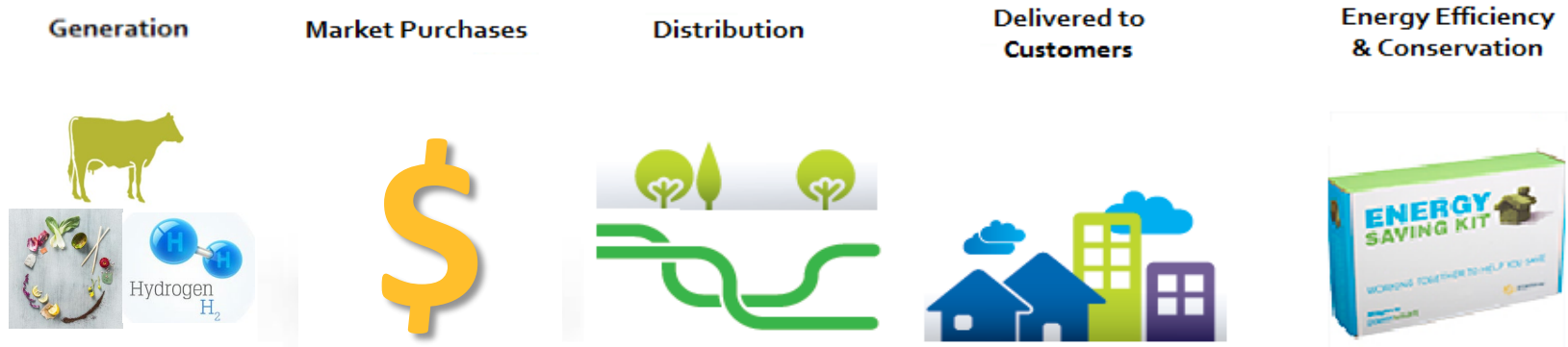


Gas and electricity resource planning

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

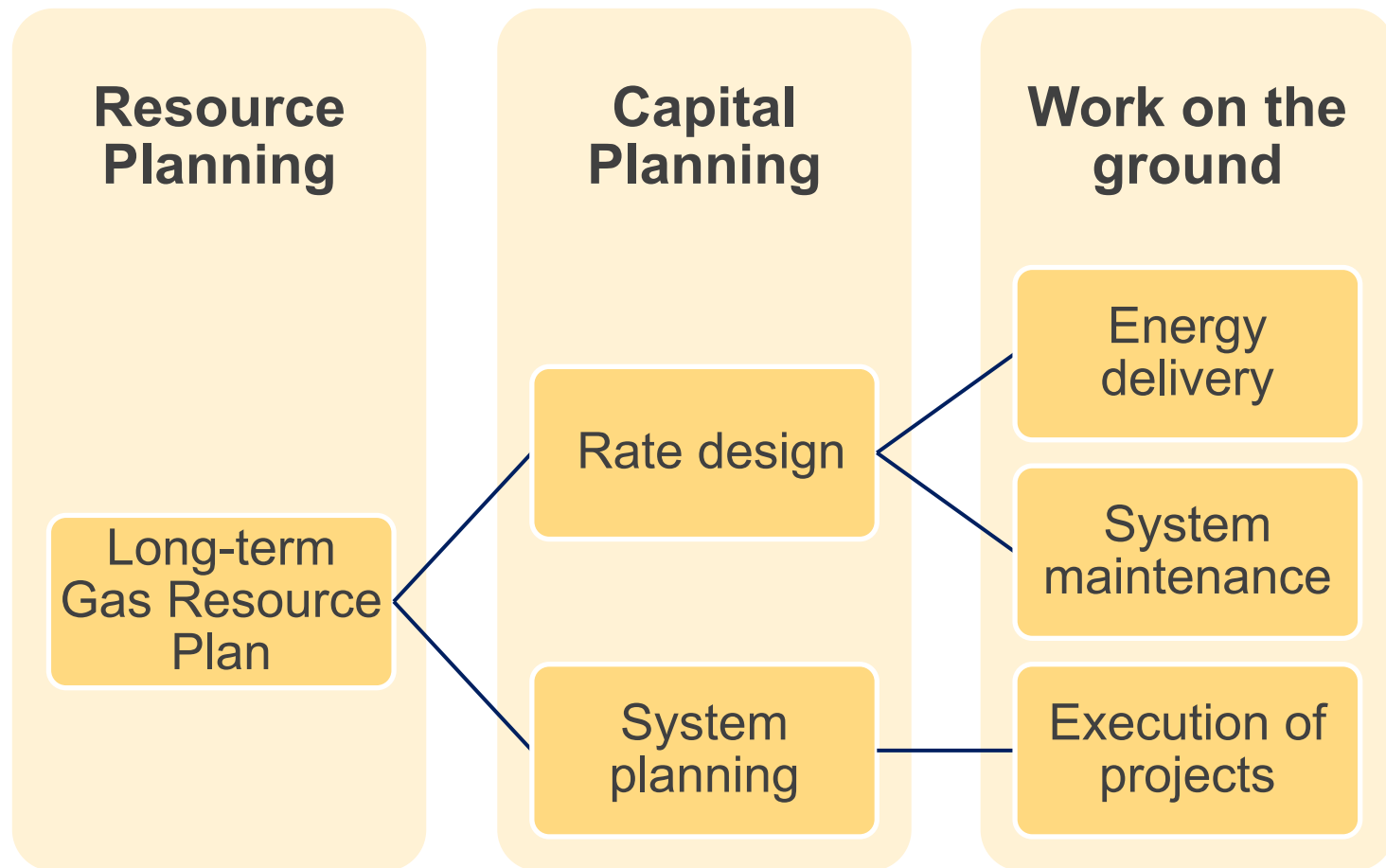
3

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



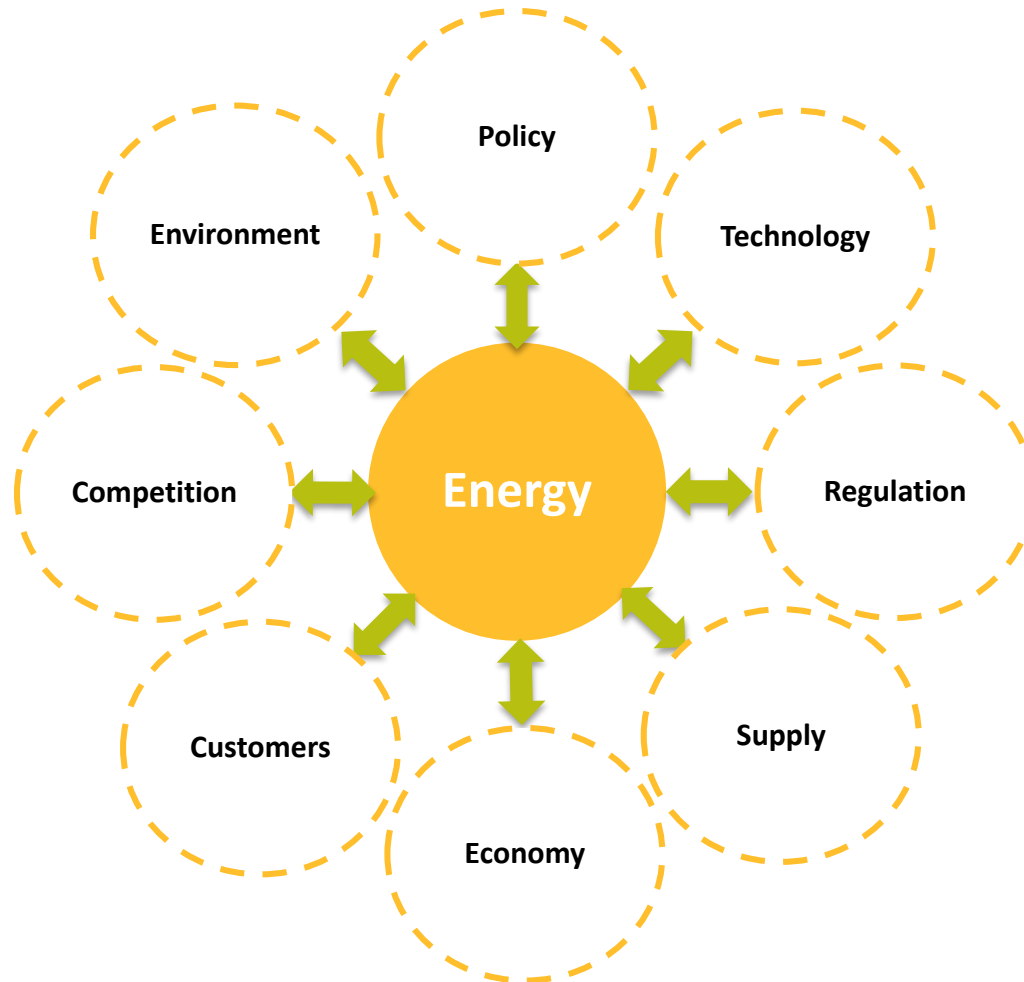
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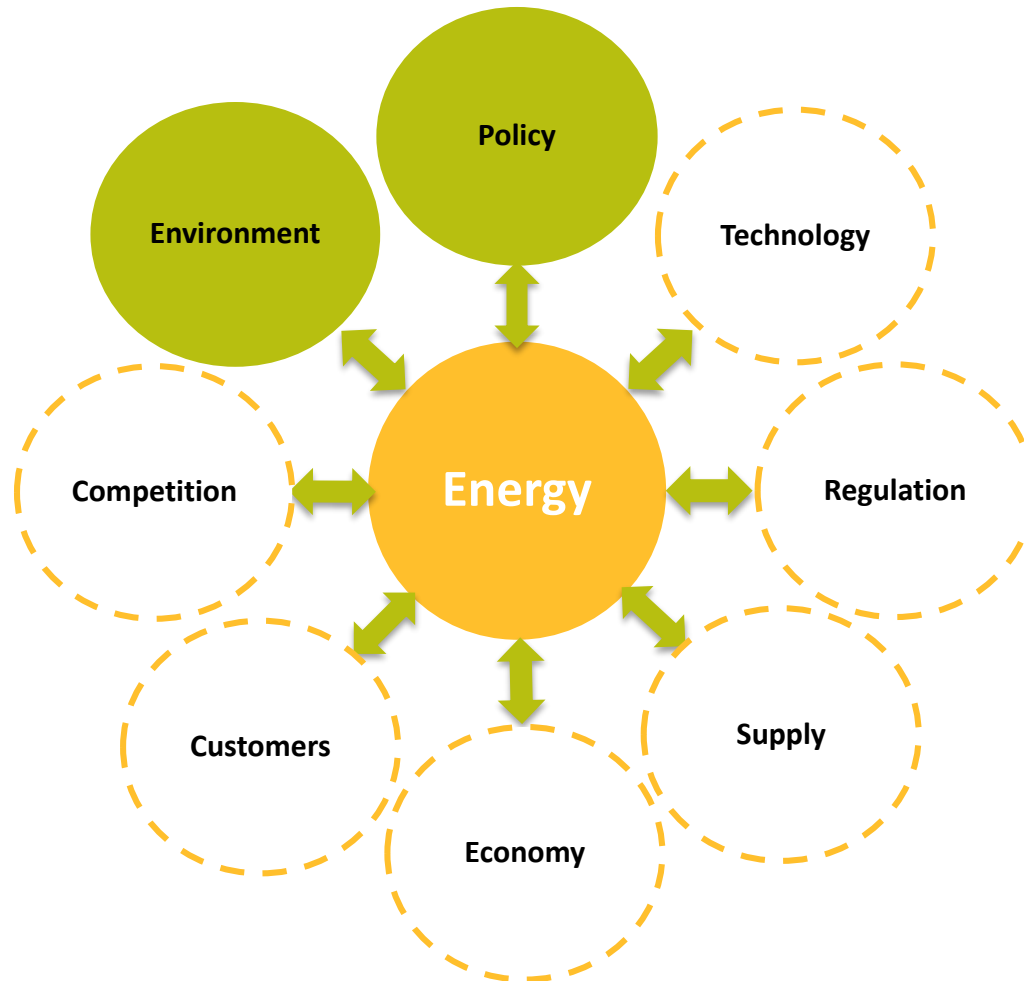
Energy planning landscape in BC



Energy planning framework

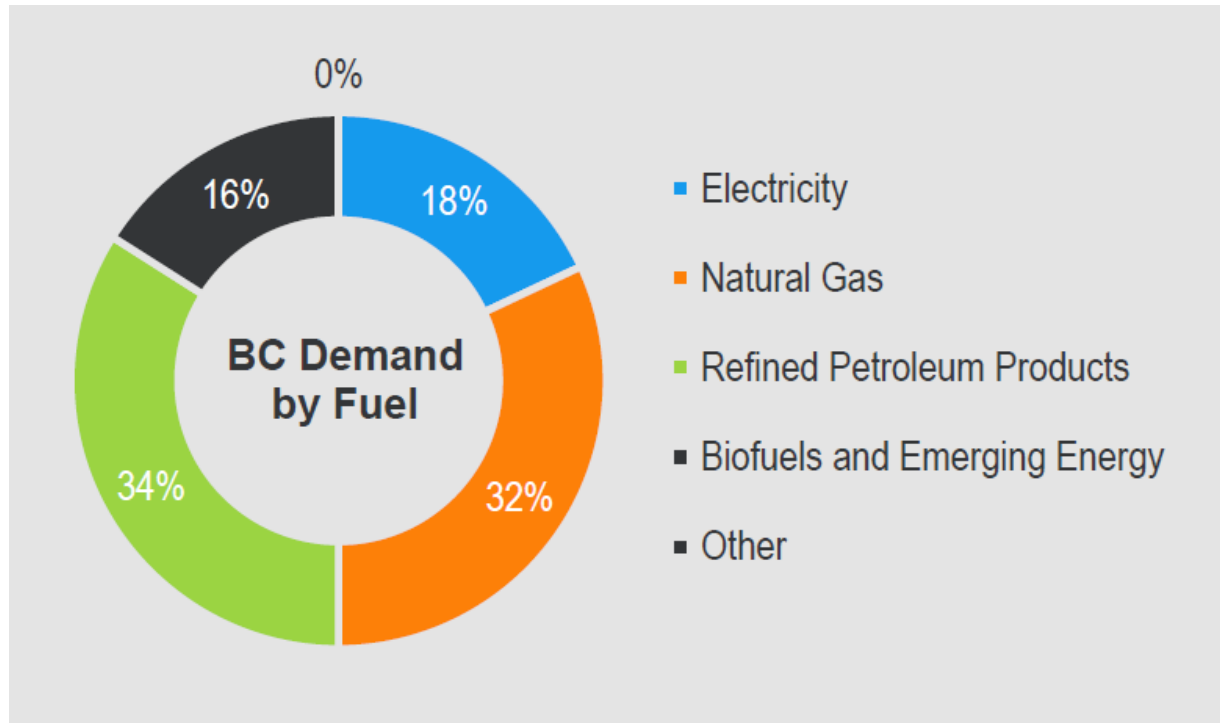


Energy planning framework



Energy demand in BC by fuel

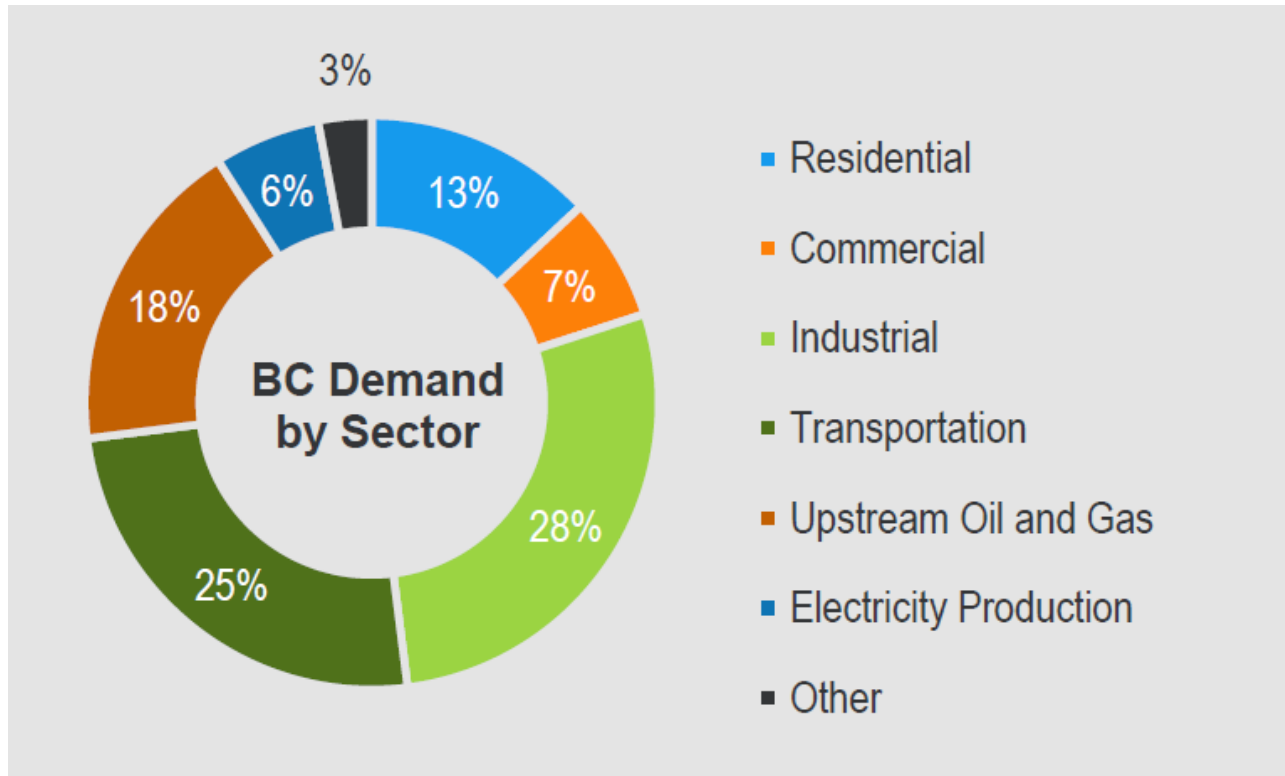
Refined petroleum products account for largest share



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

Energy demand in BC by sector

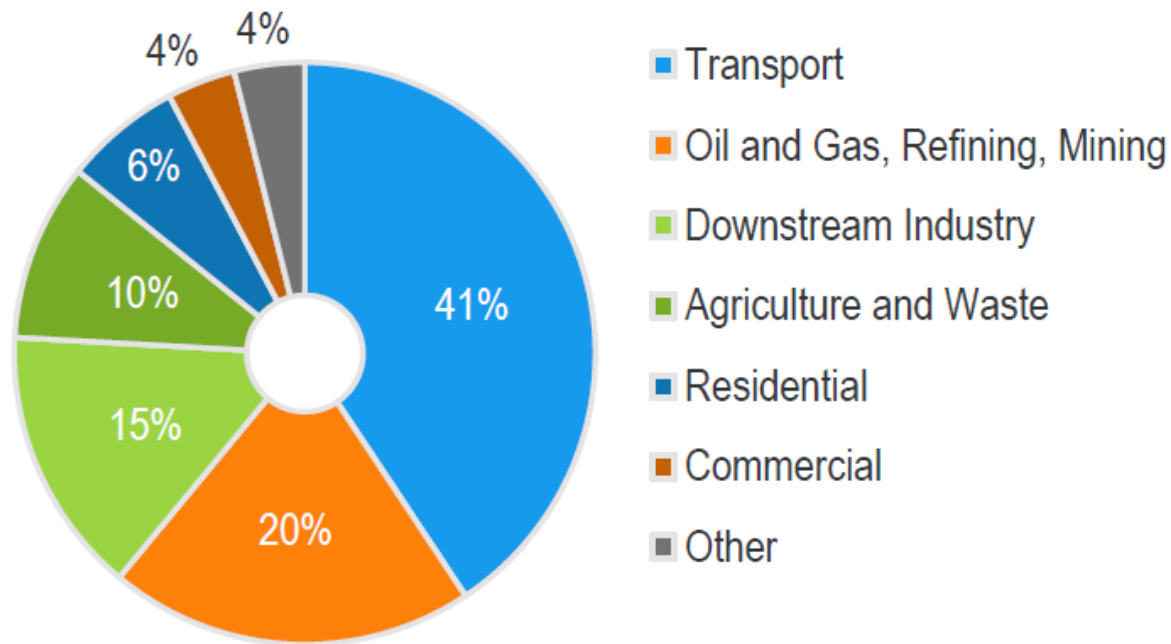
Industry consumes a significant amount of energy



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



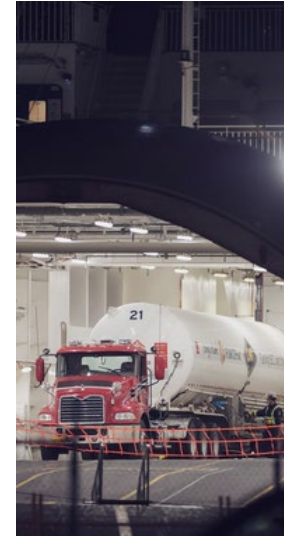
**Energy
efficiency**



**Renewable
gas**



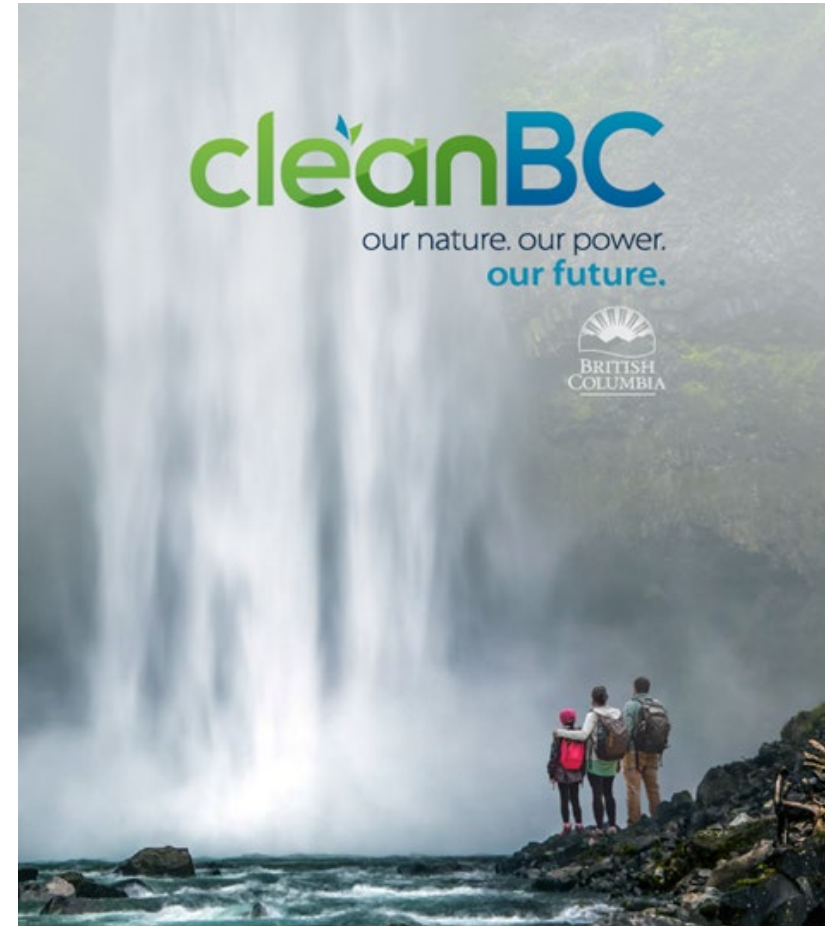
**Zero and
low carbon
transportation**



Global LNG

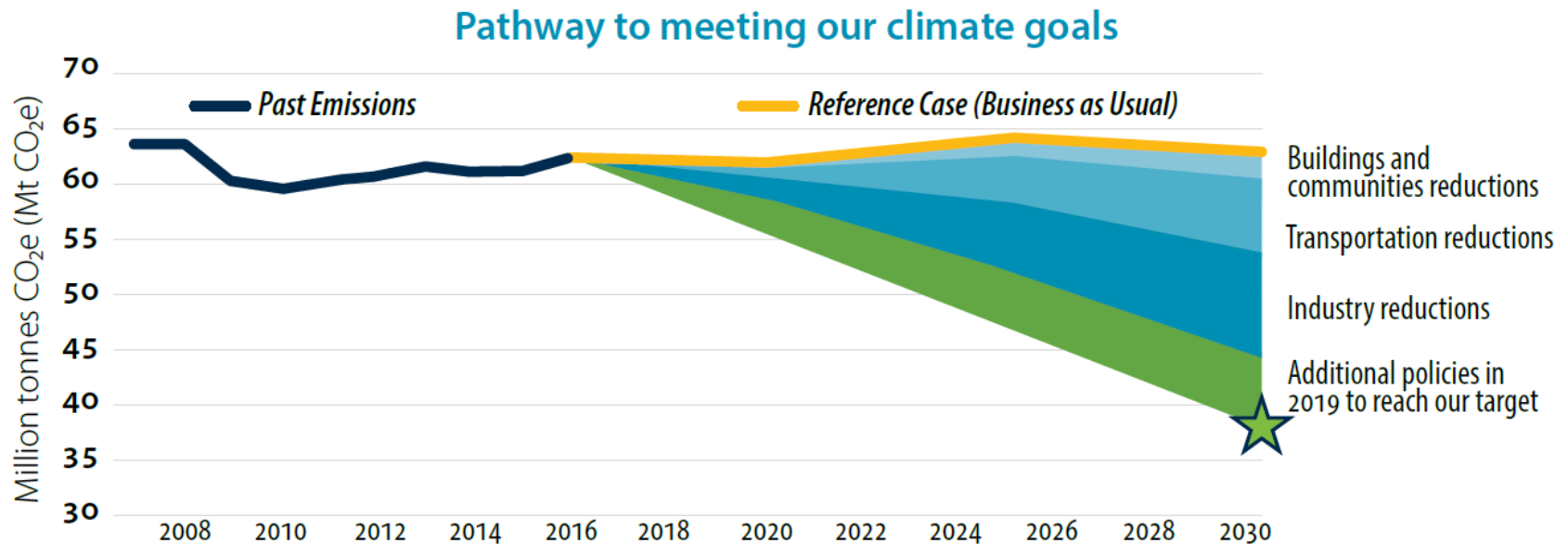
CleanBC

- 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

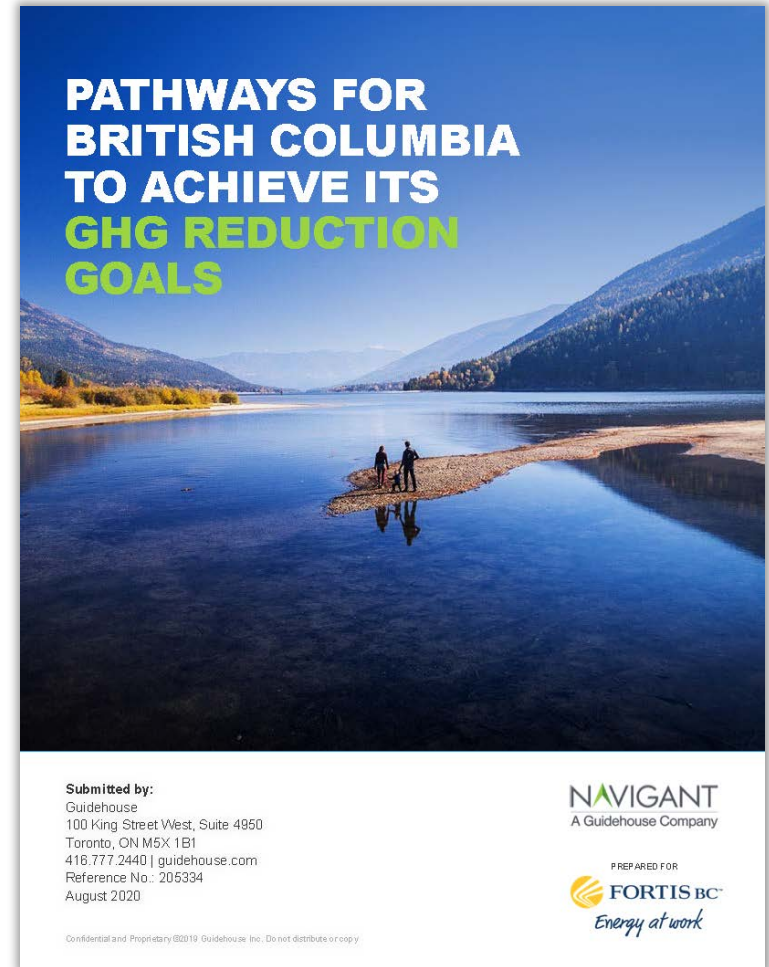
40% reduction in GHG emissions by 2030



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

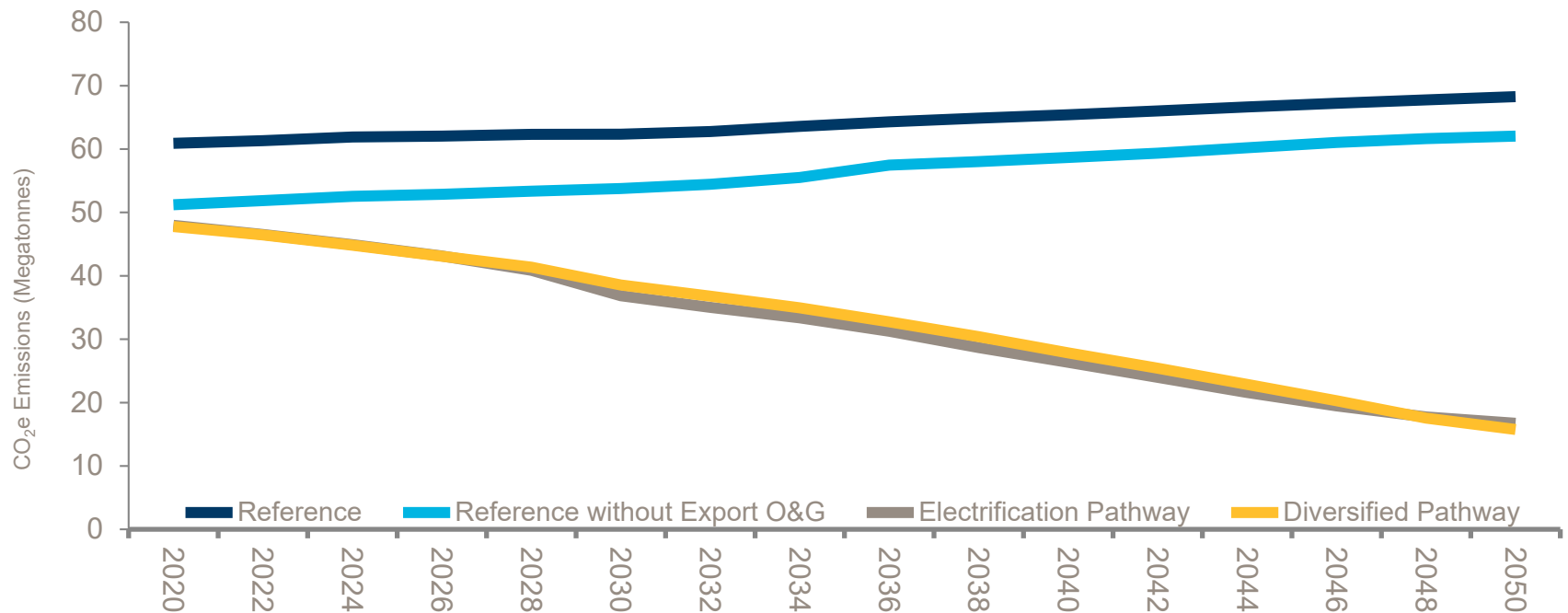
- Significant role for NG in MD & HD vehicles



Energy supply

- 14% renewable gas
- 37% electricity

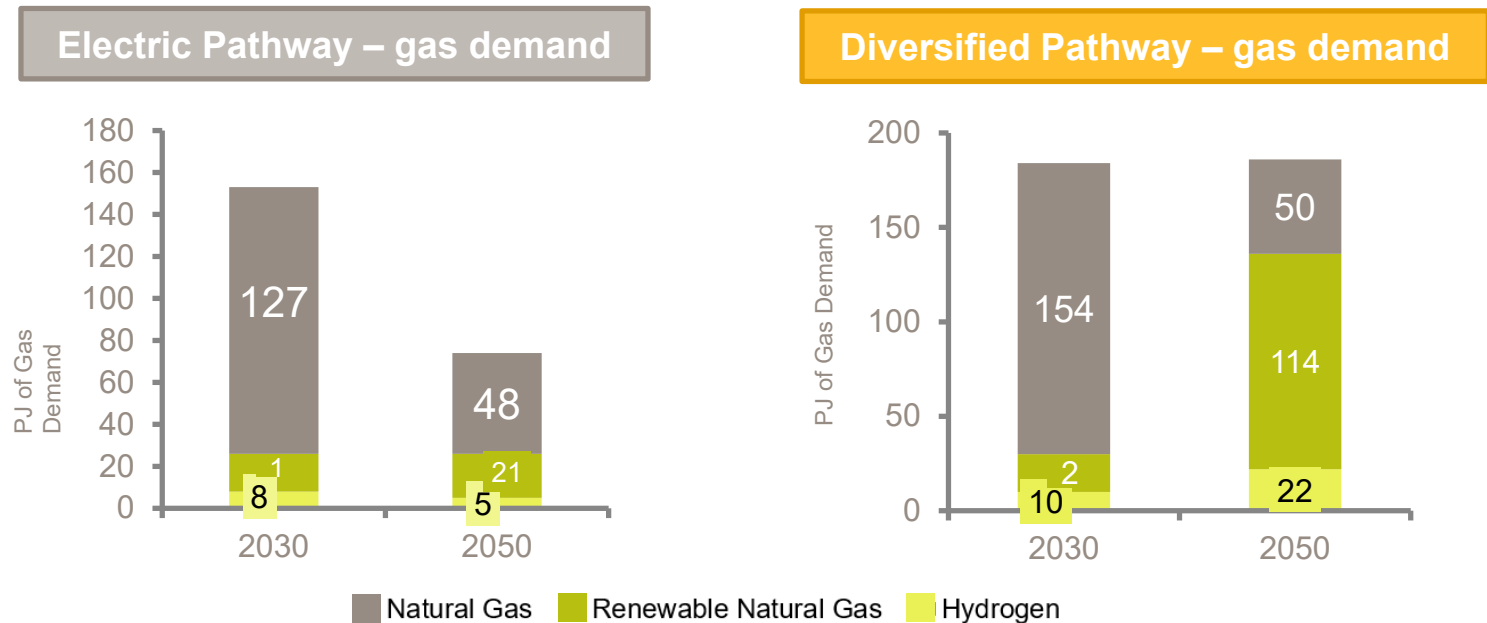
Both pathways achieve the same level of GHG reductions



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

Key opportunity: Expanding renewable gas supply

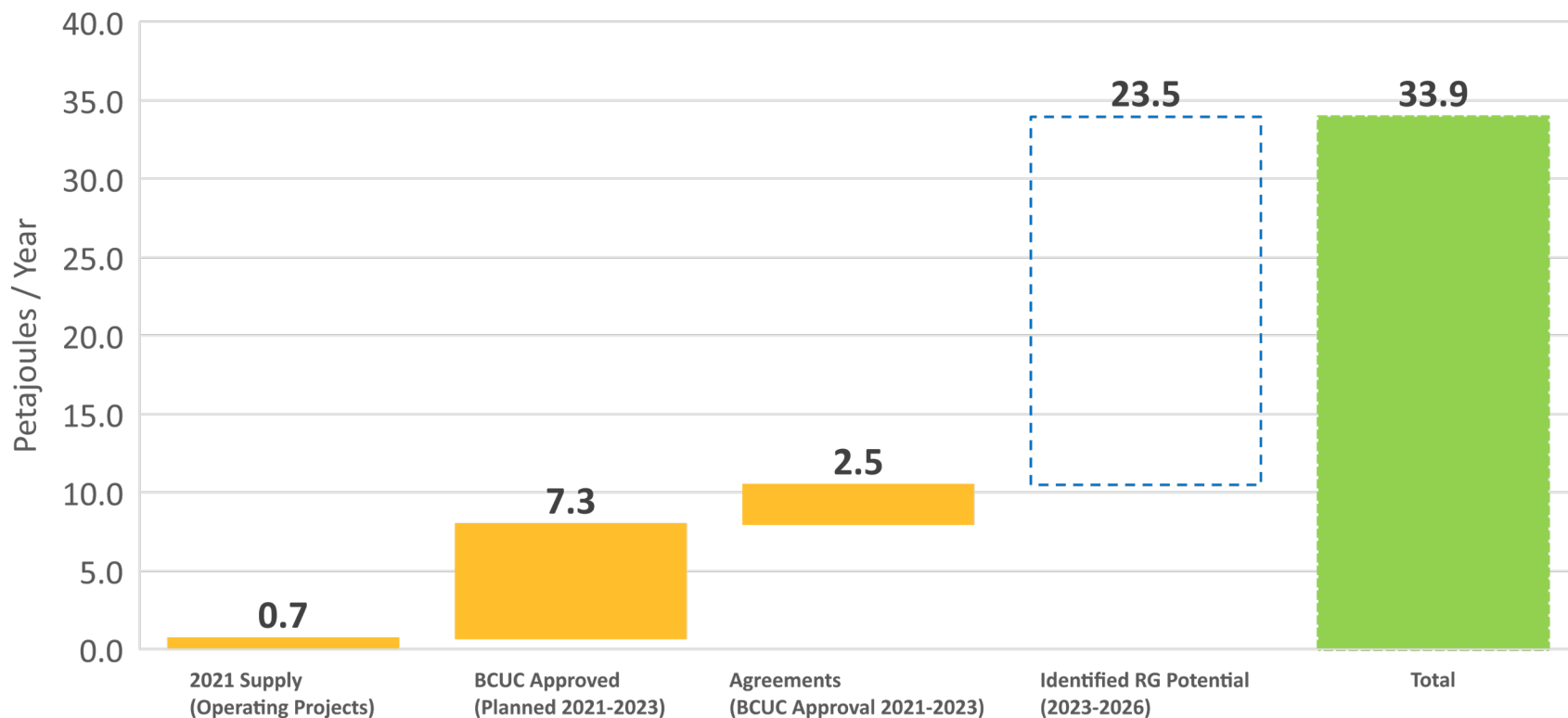
Large potential for renewable gas over the coming decades. Partnerships between governments, industry, Indigenous communities and stakeholders will be key.



Renewable gas short-term supply outlook

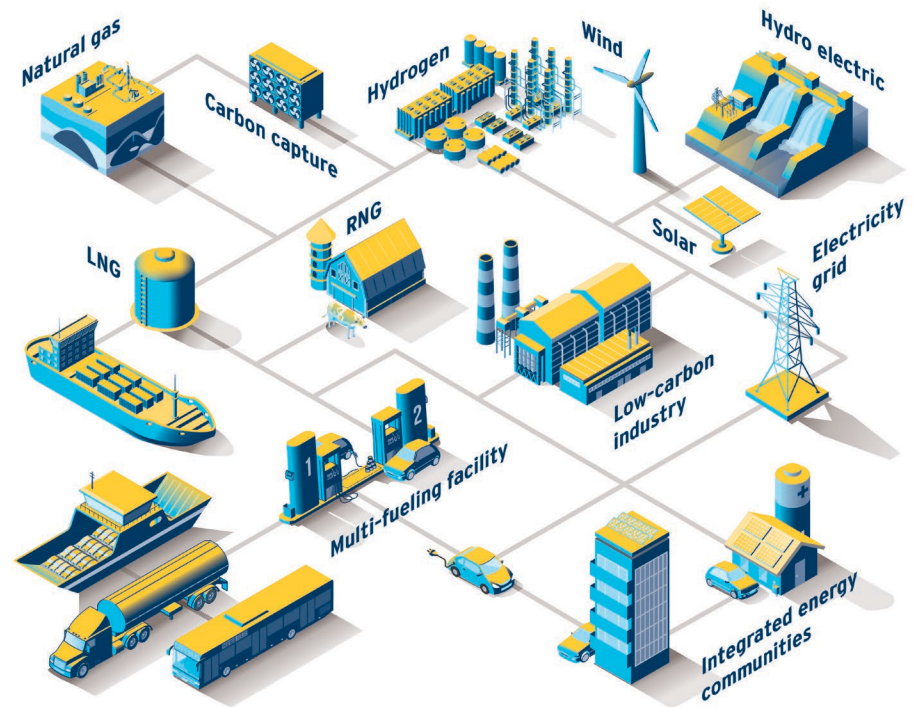
Forecast updated as of October, 2021

Renewable Gas 5 Year Supply Outlook Q4 2021



A diversified approach to climate action

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

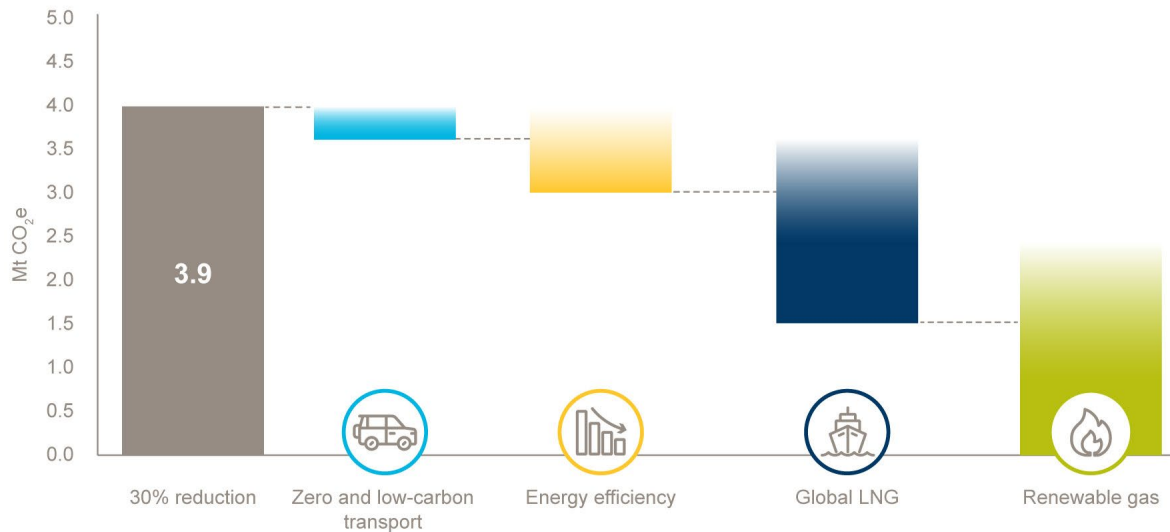


Our commitment to reducing emissions

We set an ambitious emissions reduction target

Our **30BY30 target** will:

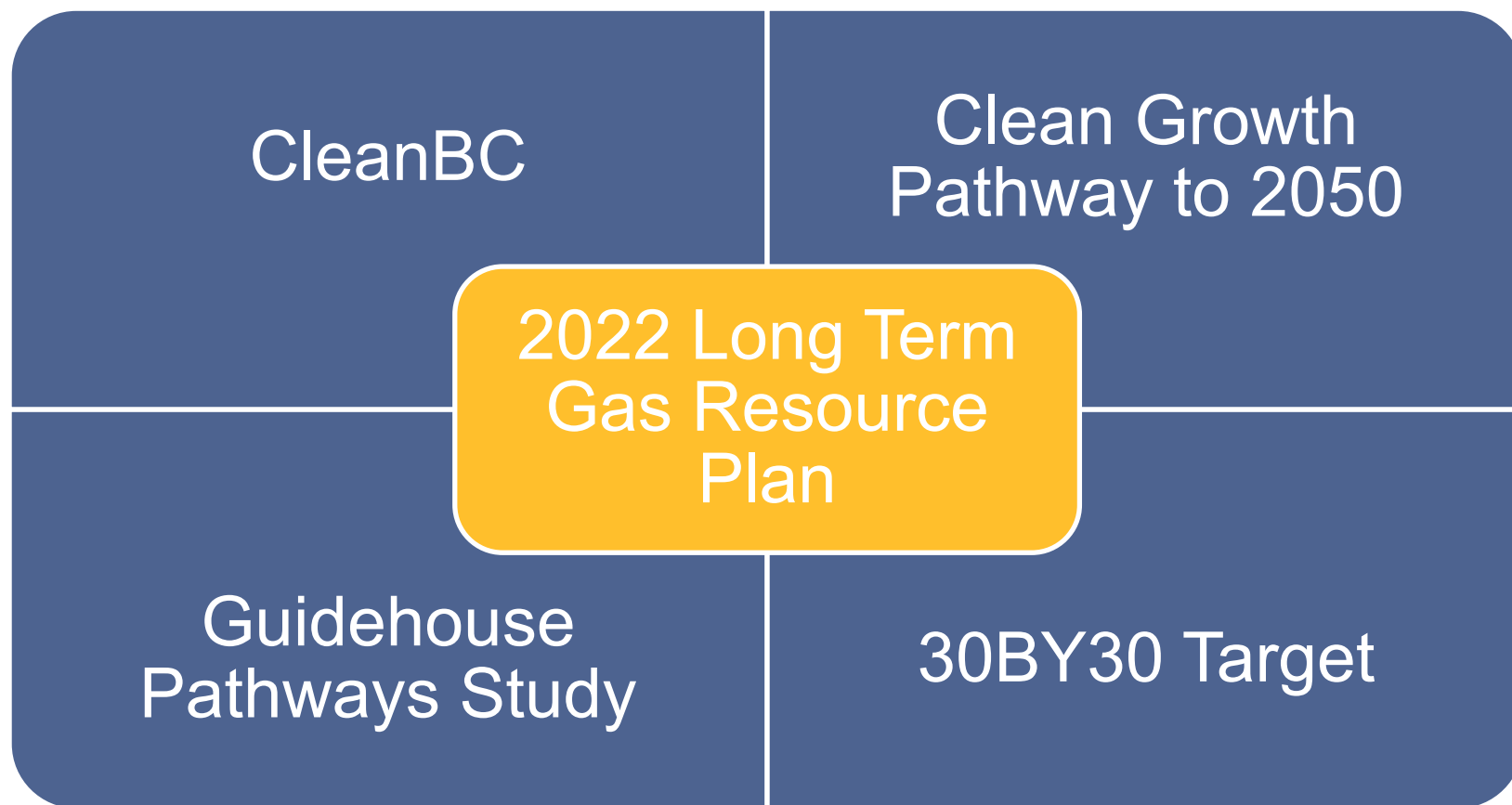
- reduce our customers' GHG emissions by **30%** by **2030**
- be a milestone that we measure our progress by



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

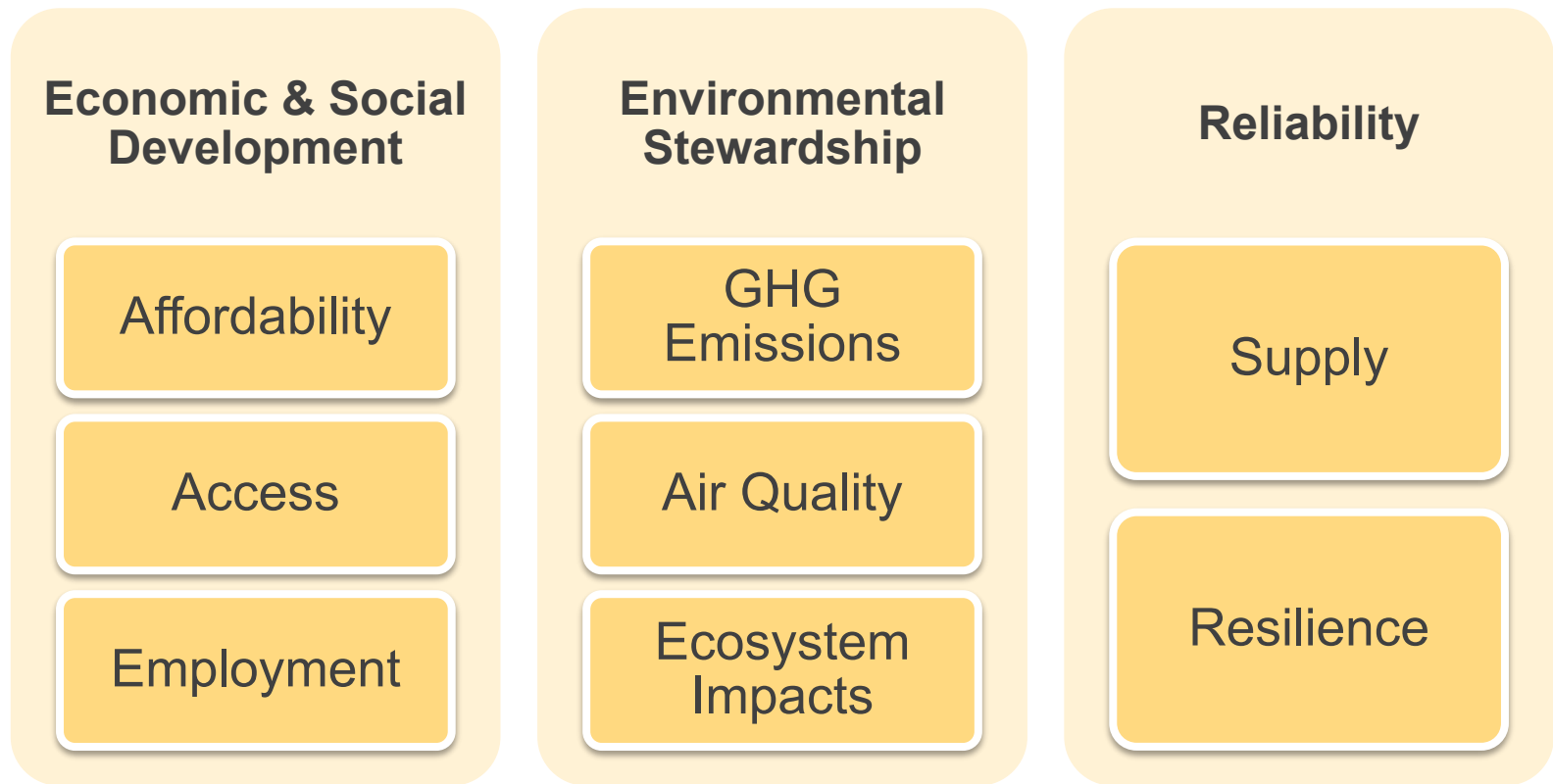
Resource planning considerations



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



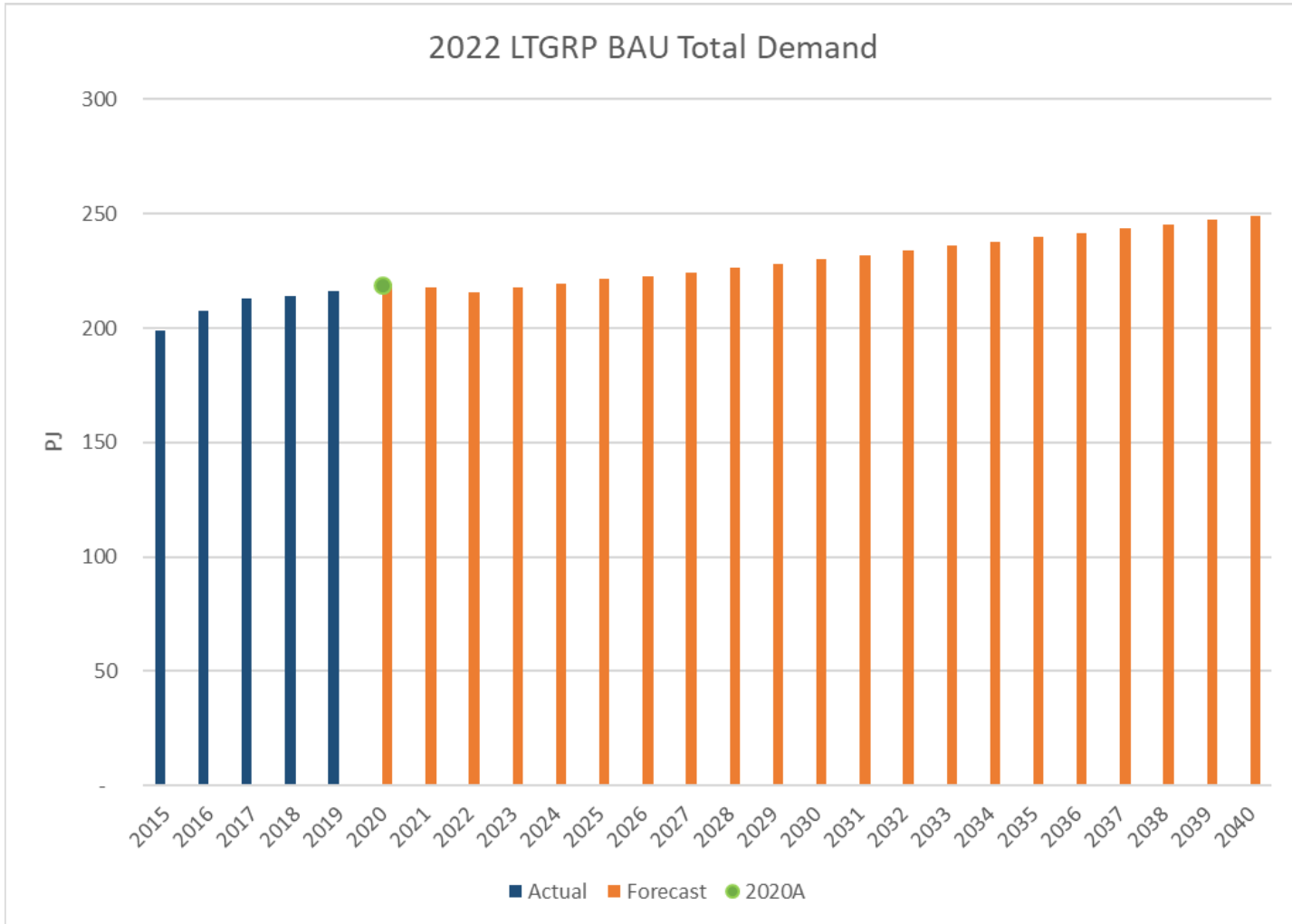
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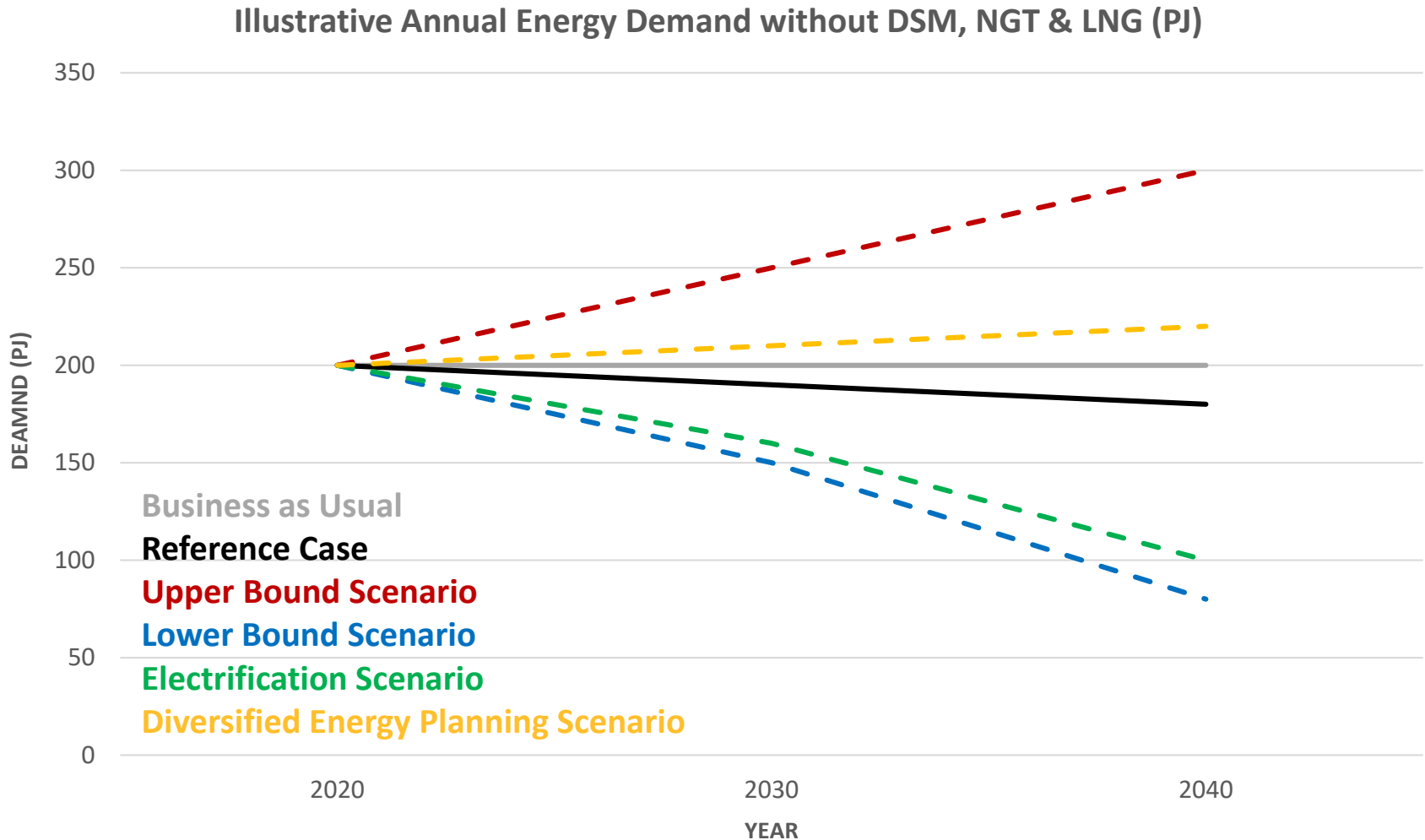
Demand forecasting methodology and critical uncertainties



Business As Usual (BAU) forecast

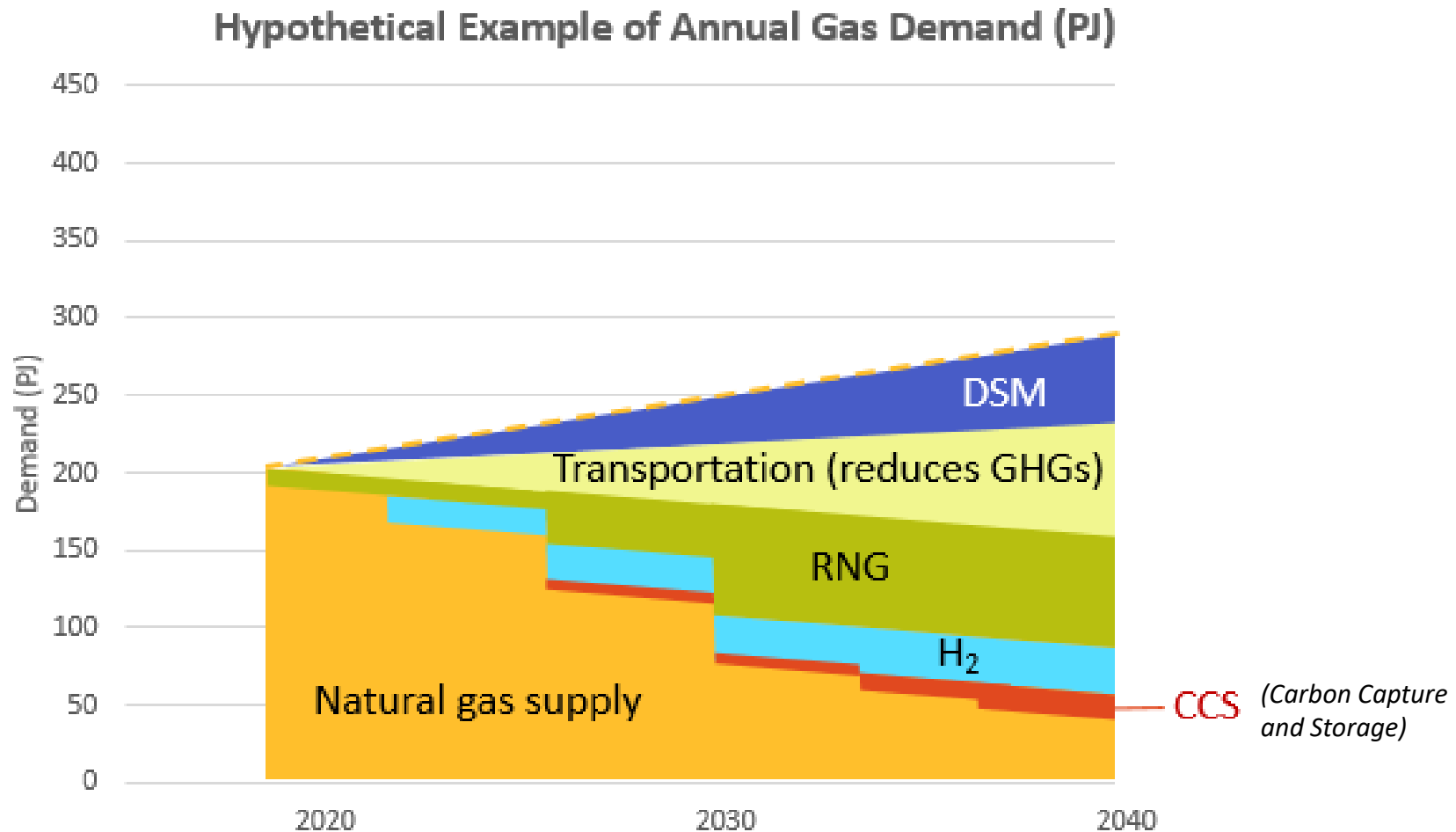


Demand forecast taxonomy

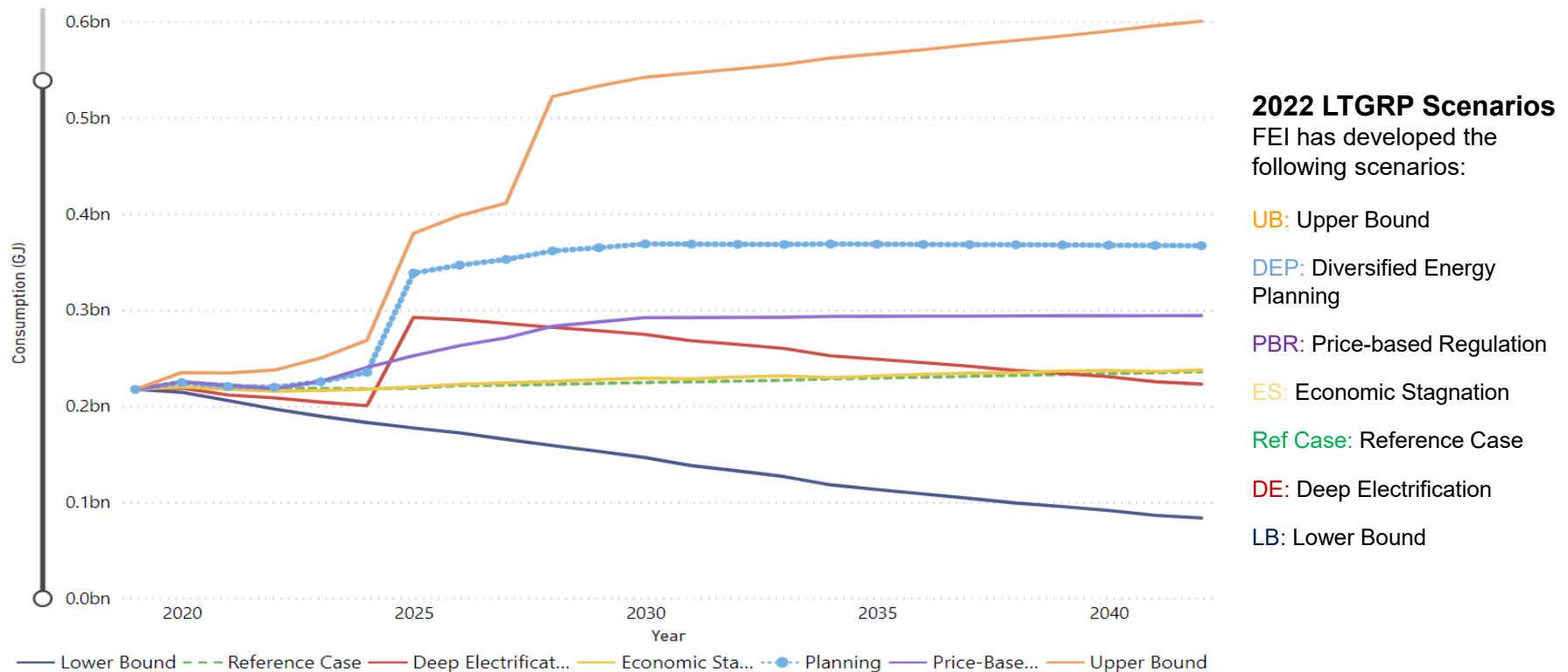


Demand and supply balance

Key to meeting GHG targets

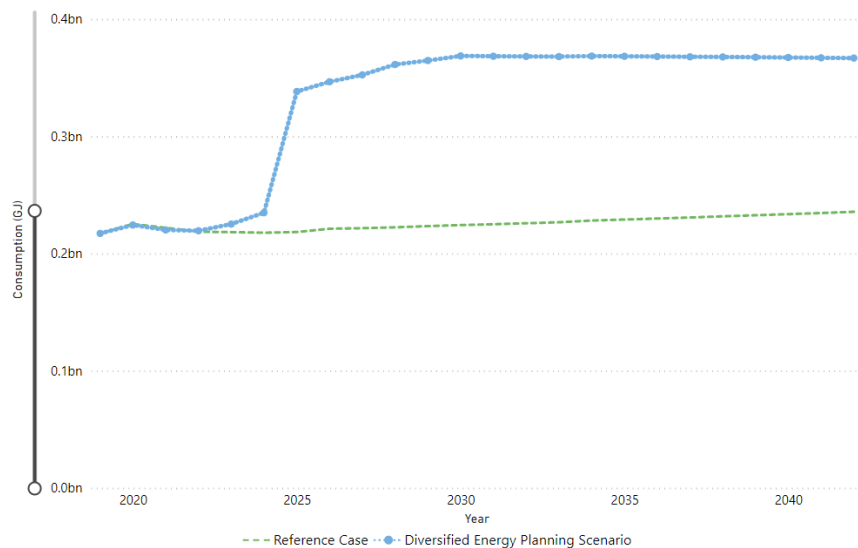


Scenario comparison of forecasted demand (PJ)

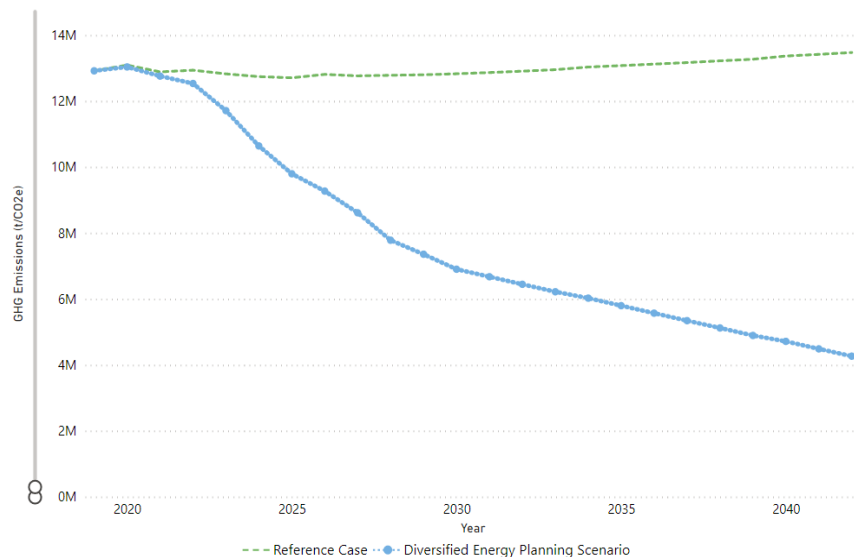


Diversified Energy Planning Scenario

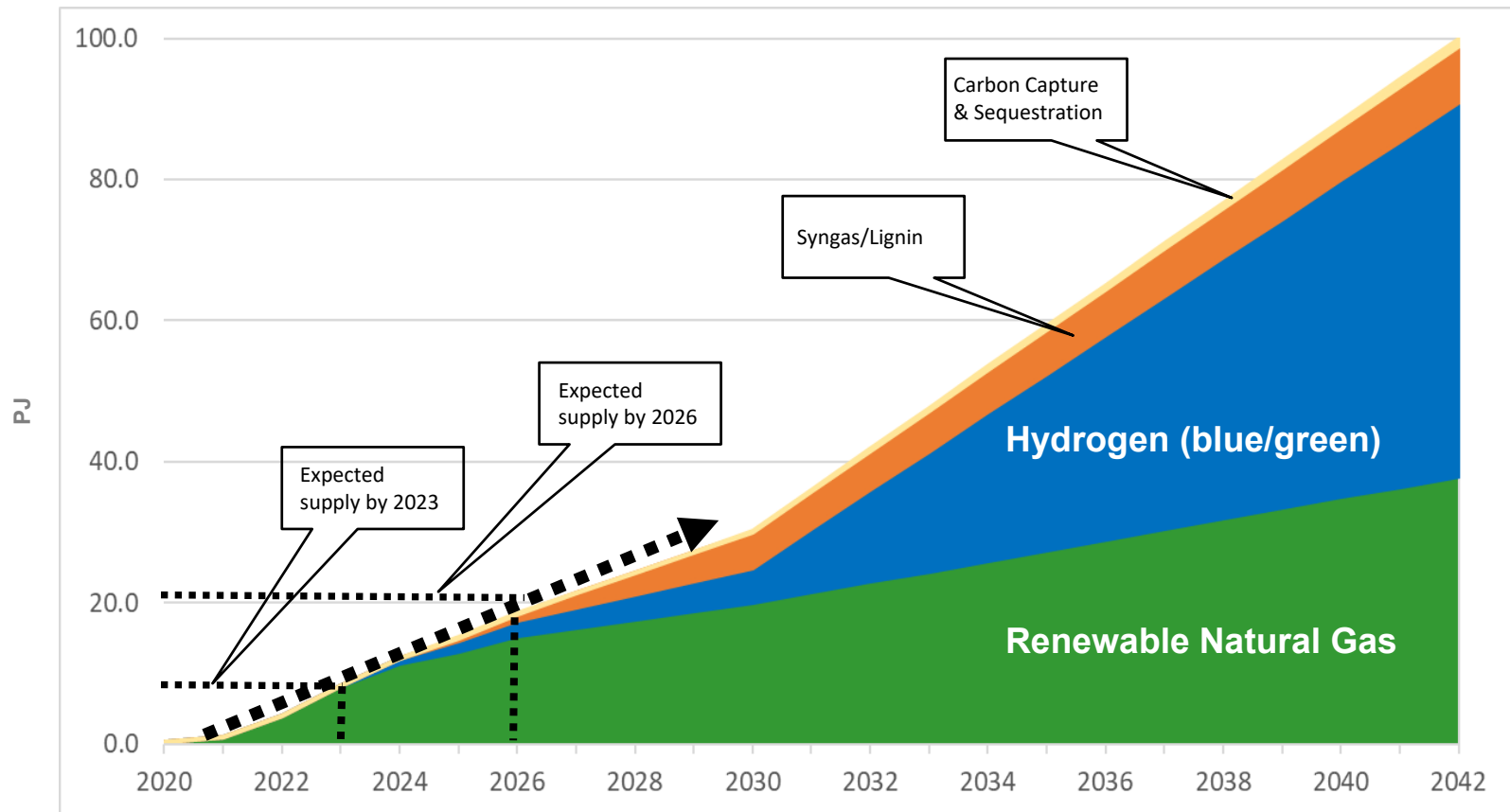
Demand (GJ)



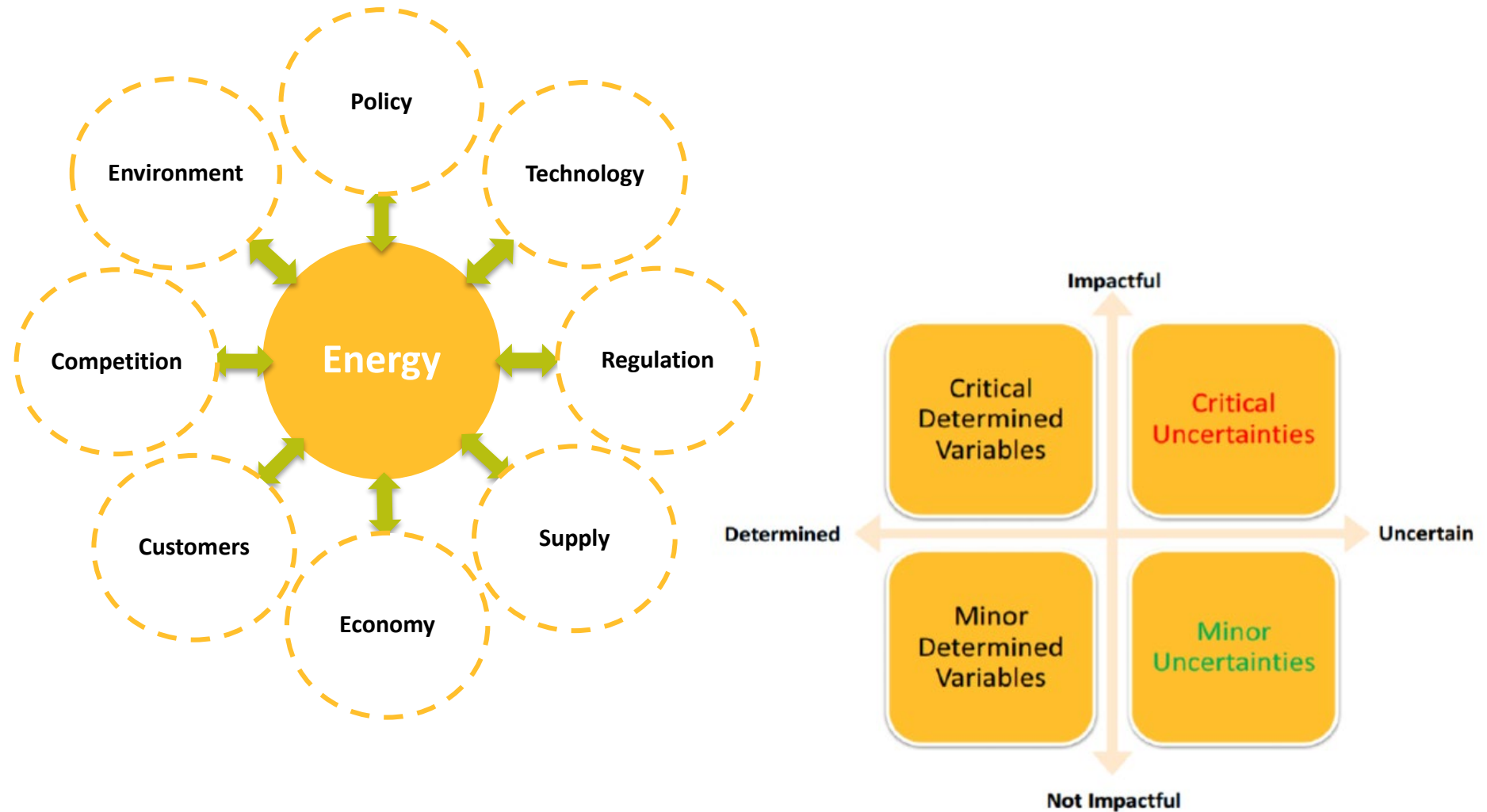
GHG Emissions (t/CO₂e)



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

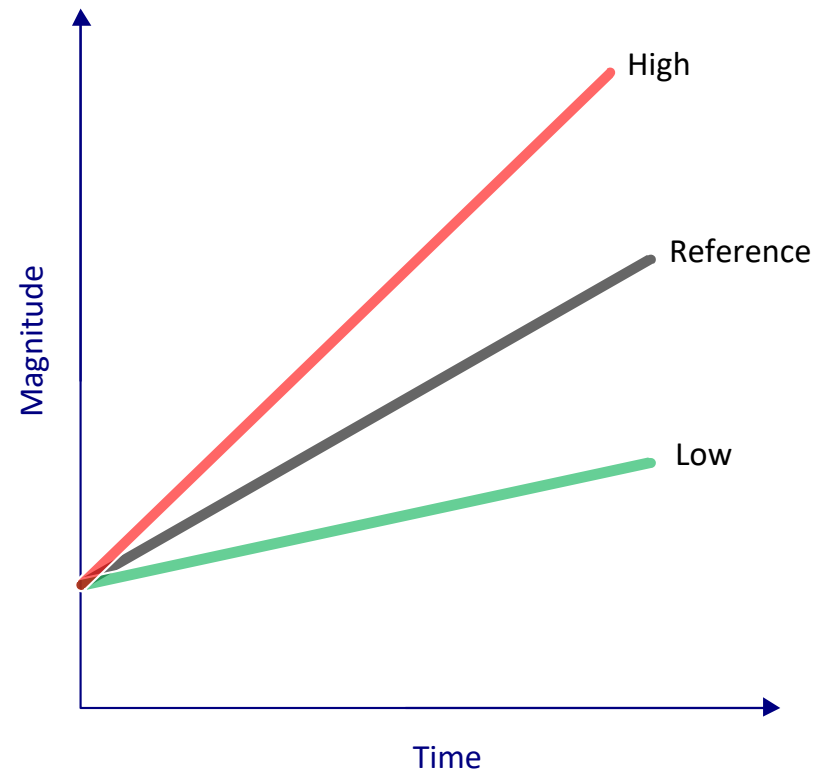


Identifying critical uncertainties



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

Agenda for the session

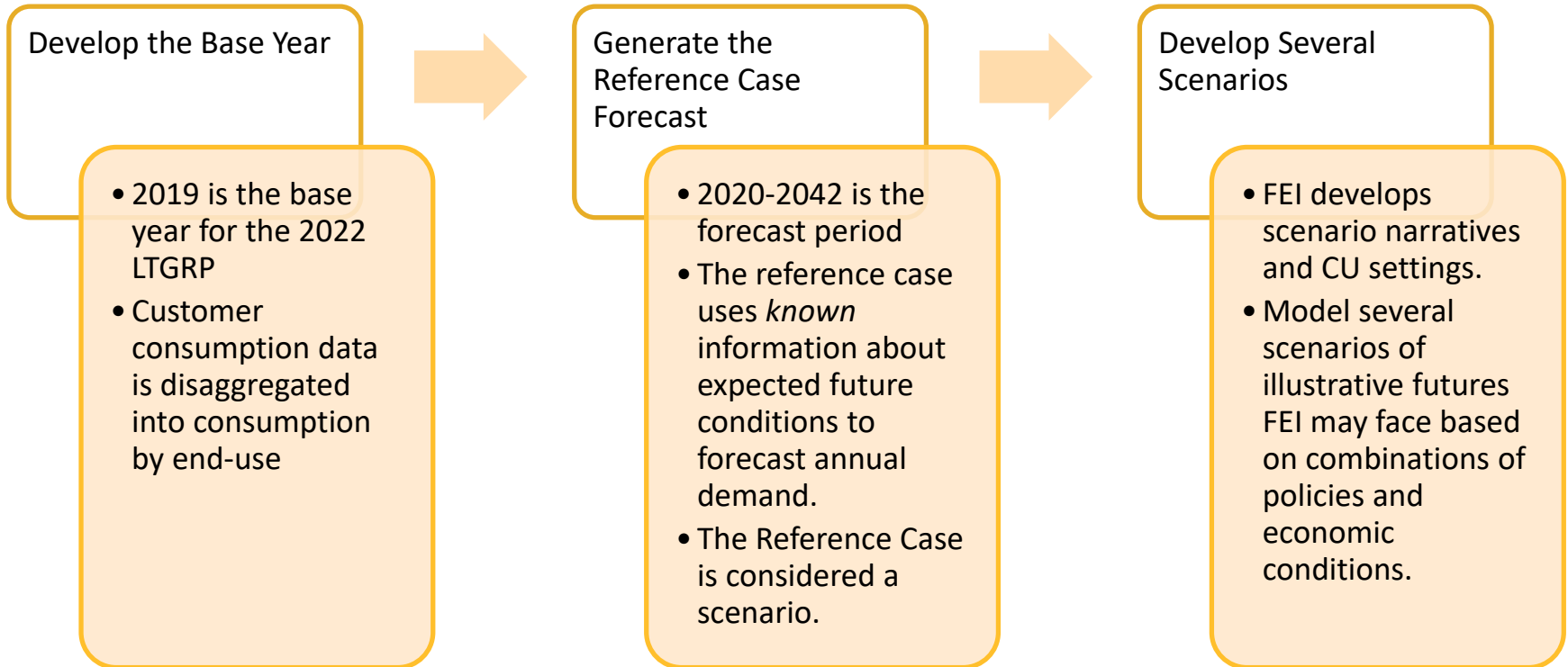
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Exploring future demand scenarios

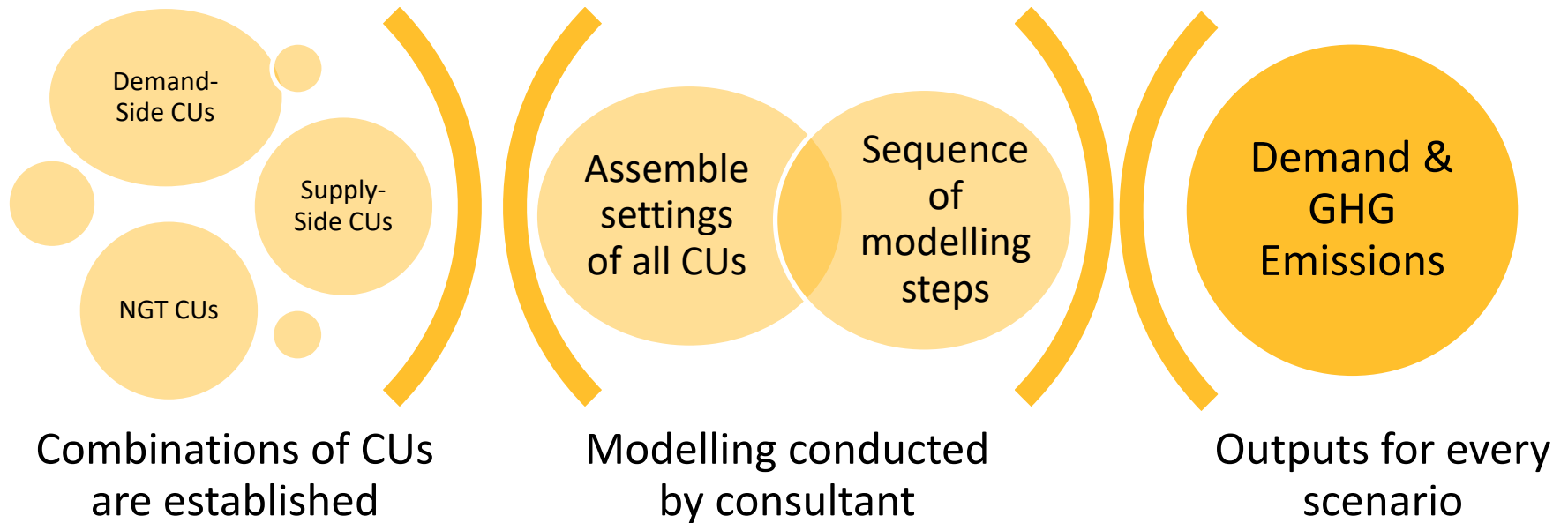


Purpose of scenario analysis

- Scenarios are not designed to predict the future, but rather to consider possible futures. The result is not an accurate picture of tomorrow, but better decisions about the future.
- The purpose of developing several, distinct scenarios is to provide a range of futures to support planning. Probabilities are not assigned to the scenarios.



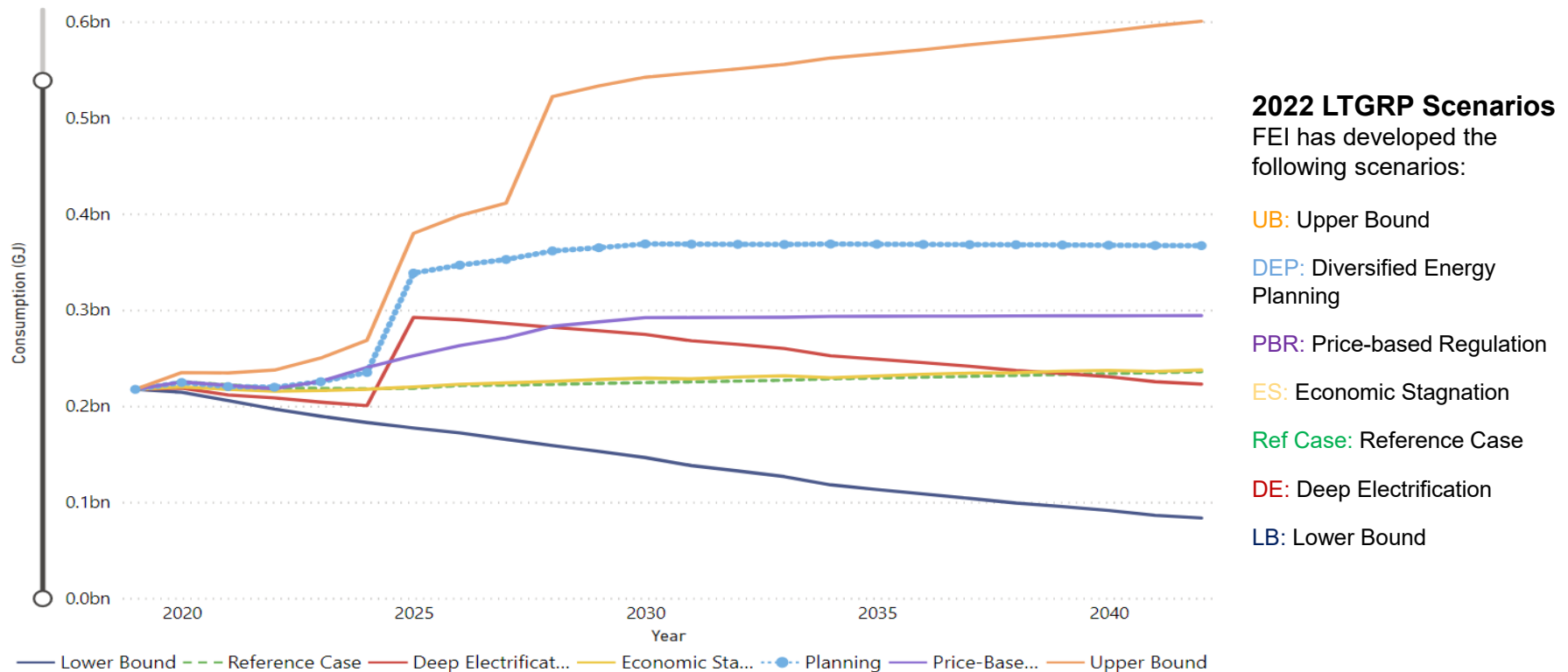
Building scenarios from Critical Uncertainties



Demand scenario analysis

- Lower Bound Scenario
- Upper Bound Scenario
- Reference Case
- Diversified Energy Planning Scenario
- Deep Electrification Scenario
- Economic Stagnation Scenario
- Price-based Regulation Scenario

Scenario comparison of forecasted demand (PJ)



Reference Case Scenario

- The Reference Case incorporates expected continuation of current policies and market conditions, including known expected changes in codes, standards, carbon price, etc. and trends in changes in building stock.
- This scenario is the starting point for the various other scenarios that we create
- In the past, we planned to the Reference Case but for this plan this is no longer the case

Critical Uncertainty	Setting
Appliance Standards	Reference
CCS	Reference
Carbon Price	Reference
Customer Growth	Reference
Fuel Switching	Reference
Hydrogen Supply	Reference
LNG Export Demand	Reference
NGT Demand	Reference
Natural Gas Price	Reference
New Construction Code	Reference
Retrofit Code	Reference
RNG Supply	Reference
Syngas & Lignin Supply	Reference

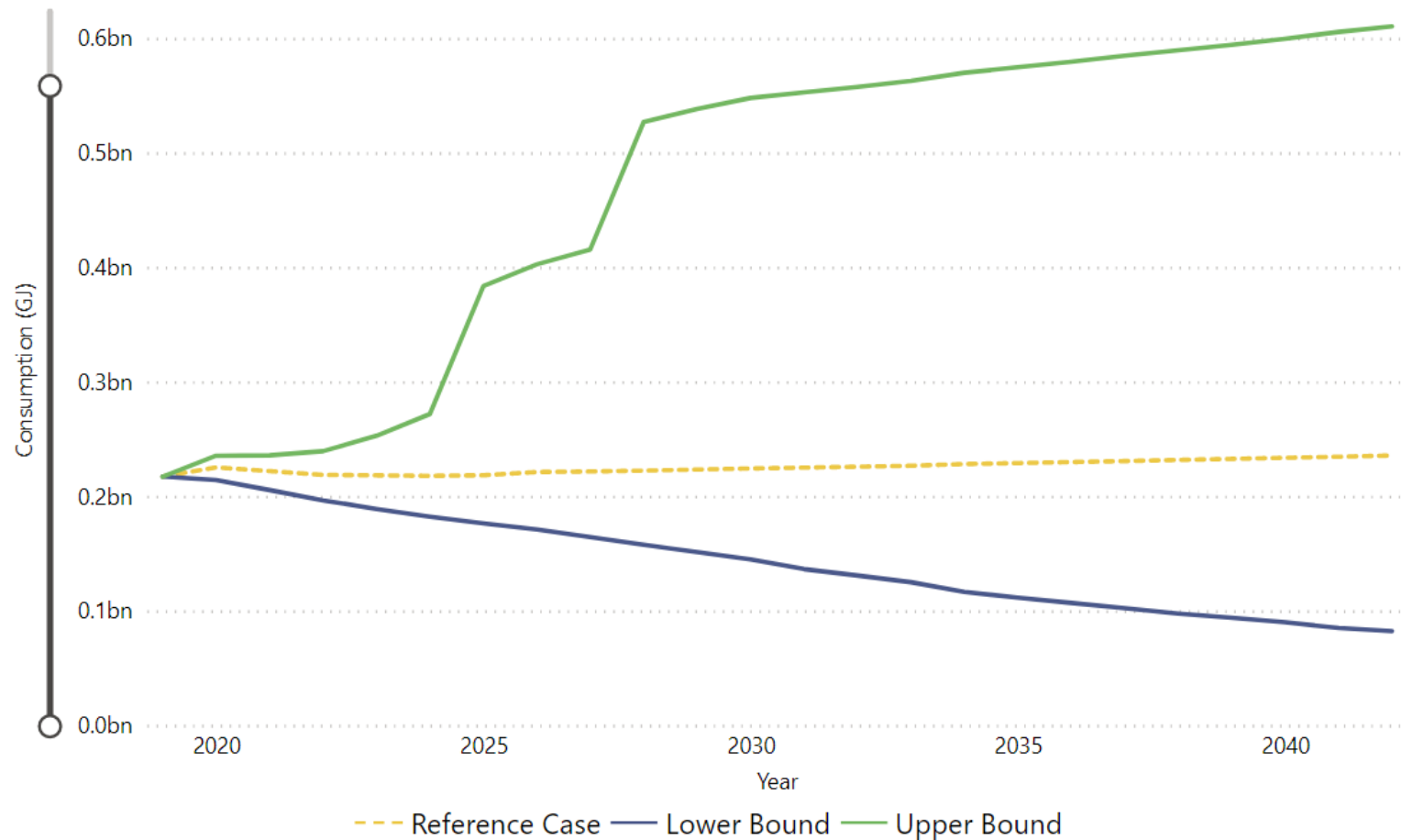
Upper & Lower Bound Scenarios

- The Upper and Lower Bound scenarios are not designed to reflect a single coherent narrative of a future possible world, but rather to understand the notional upper and lower bound for total volume.
- These scenarios provide the “jaws” under which the other scenarios fall.

Critical Uncertainty	Lower Bound Setting	Upper Bound Setting
Appliance Standards	Accelerated	Reference
CCS	Reference	High
Carbon Price	High	Low
Customer Growth	Low	High
Fuel Switching	Extensive	Reference
Hydrogen Supply	Low	High
LNG Export Demand	Reference	High
NGT Demand	Low	High
Natural Gas Price	High	Low
New Construction Code	Accelerated	Delayed
Retrofit Code	Accelerated	Reference
RNG Supply	Low	High
Syngas & Lignin Supply	Reference	High

Upper and Lower Bounds: All Piped Fuels

Demand



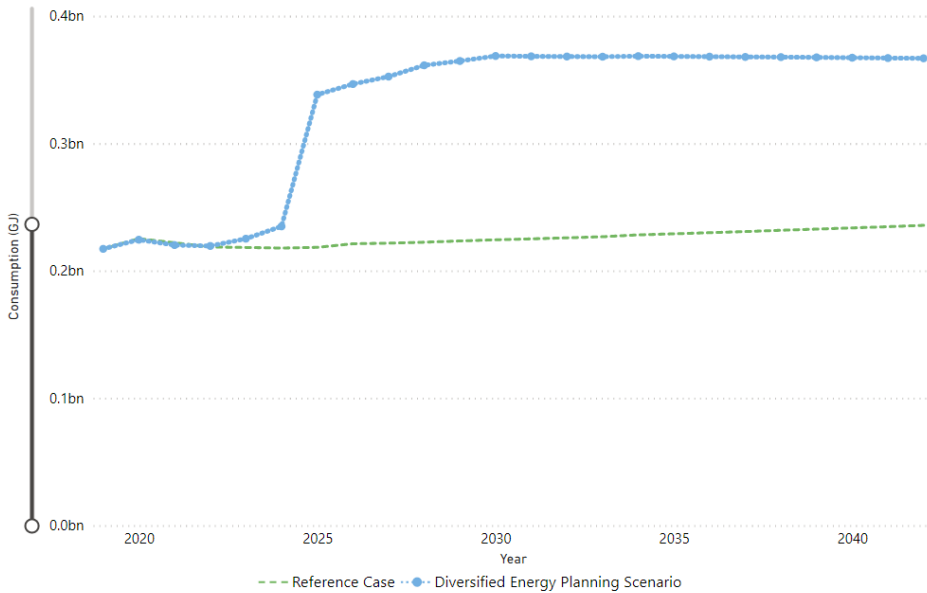
Diversified Energy Planning Scenario

- Incorporates expanding electricity use while maintaining the use of the gas distribution system. Emissions reductions are characterized more by de-carbonizing the gas distribution system rather than electrification.
- The scenario includes expansion of natural gas for transportation while increasingly relying on renewable gas supply.
- This is the scenario FEI will plan to and incorporates the 30BY30 targets.

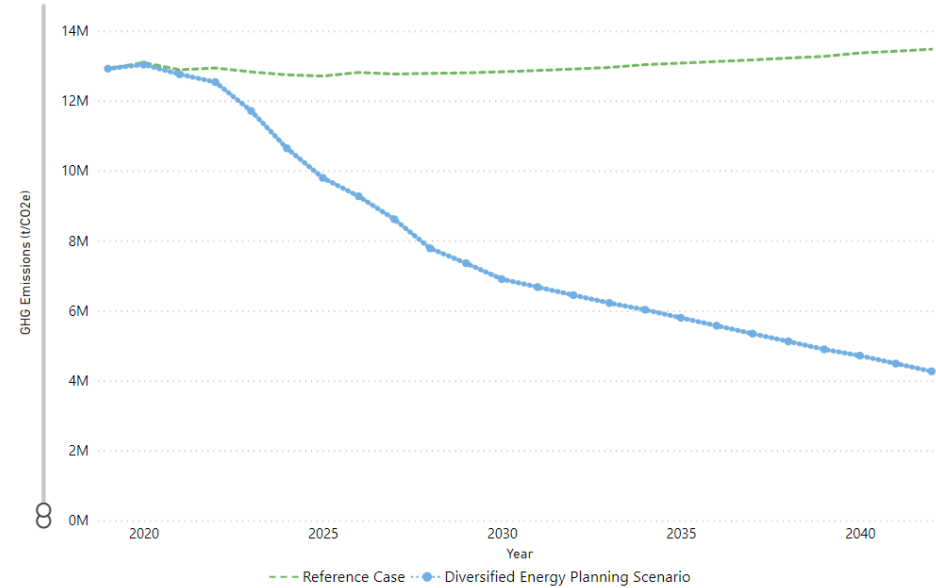
Critical Uncertainty	Setting
Appliance Standards	Reference
CCS	Planning
Carbon Price	Planning
Customer Growth	Reference
Fuel Switching	Moderate
Hydrogen Supply	Planning
LNG Export Demand	Planning
NGT Demand	Planning
Natural Gas Price	Reference
New Construction Code	Reference
Retrofit Code	Reference
RNG Supply	Planning
Syngas and Lignin Supply	Planning

Diversified Energy Planning Scenario

Demand(GJ)



GHG Emissions (t/CO2e)



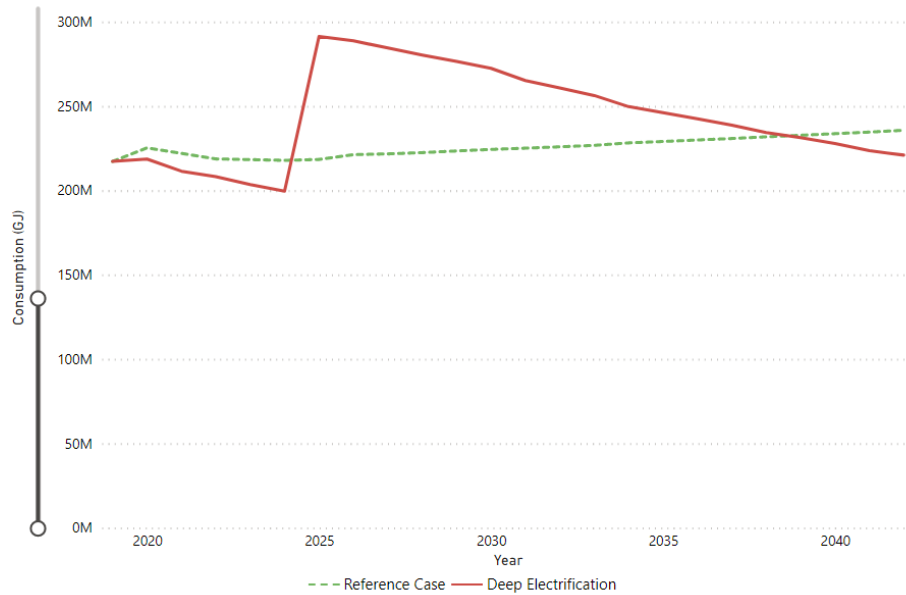
Deep Electrification Scenario

- The BC government does not increase carbon taxes to avoid electoral backlash but uses all other policy levers to electrify the economy in order to achieve domestic carbon abatement.
- Government also promotes CCS for non-electrified sectors. Such policies create constraints for the BC economy and reduce the uptake of NGT solutions and renewable gases.
- To support economic growth, the BC government supports LNG exports to other jurisdictions. Despite these exports, the domestic shift towards electricity causes a regional natural gas supply glut, leading to low regional gas prices.

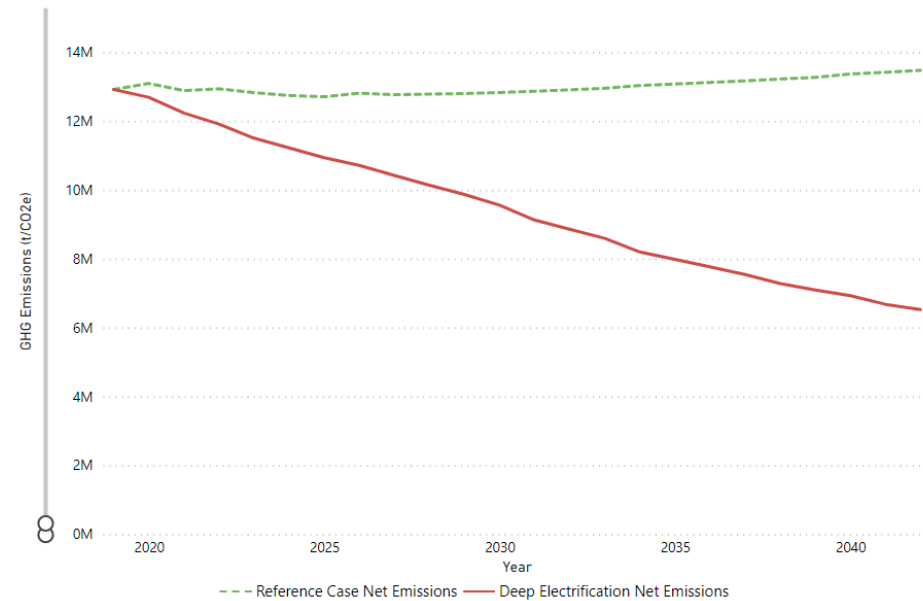
Critical Uncertainty	Setting
Appliance Standards	Accelerated
CCS	High
Carbon Price	Planning
Customer Growth	Low
Fuel Switching	Accelerated
Hydrogen Supply	Low
LNG Export Demand	Planning
NGT Demand	Low
Natural Gas Price	Low
New Construction Code	Accelerated
Retrofit Code	Accelerated
RNG Supply	Low
Syngas and Lignin Supply	Reference

Deep Electrification Scenario

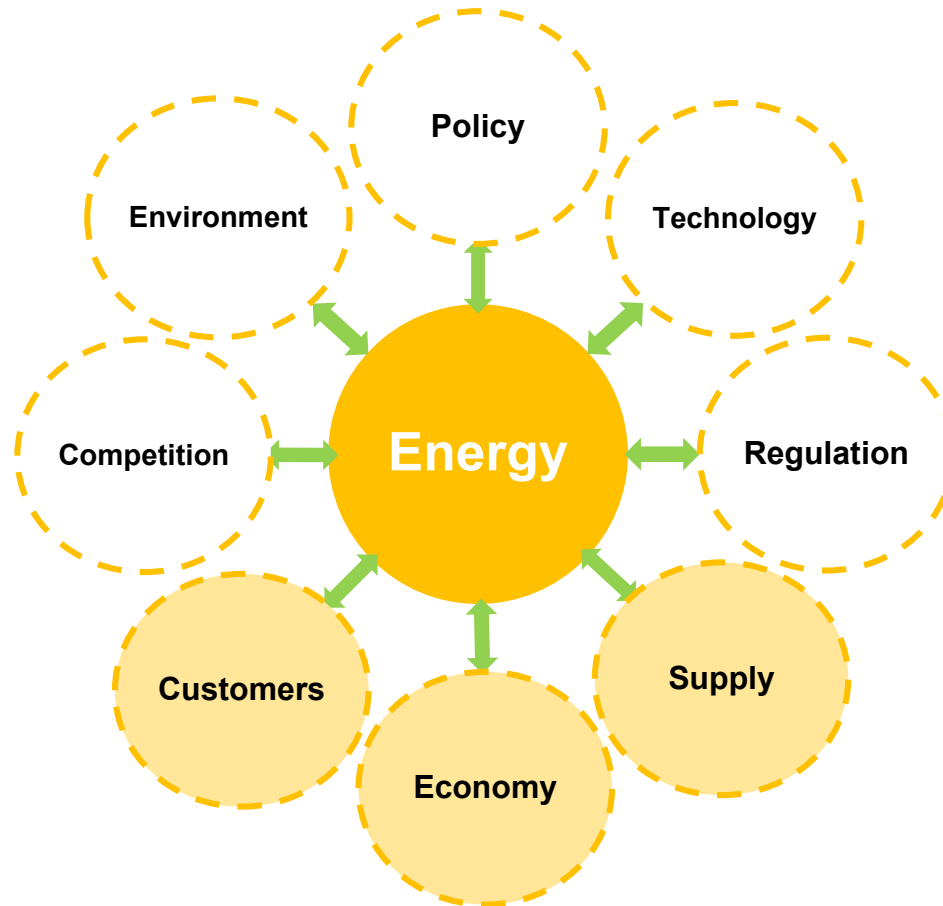
Demand (GJ)



GHG Emissions (t/CO2e)



Cost Uncertainty, Implications for Peak Demand, Risk



Questions for clarification



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**

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?**
4. Break **(10 min)**
5. Demand forecasting methodology and critical uncertainties **(45 min)**
 - **Discussion: Which critical uncertainties are of most interest to you and why?**
6. Exploring future demand scenarios **(35 min)**
 - **Discussion: How does what we've discussed today influence your thinking on energy needs and priorities?**
7. Ongoing resource planning work **(5 min)**
8. Wrap-up and next steps **(5 min)**

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



Questions for clarification



Agenda for the session

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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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