

FortisBC Resource Planning Community Consultation

December 2-3, 2020

Speaker introductions



Ken Ross, Manager,
Integrated Resource Planning
& DSM Reporting



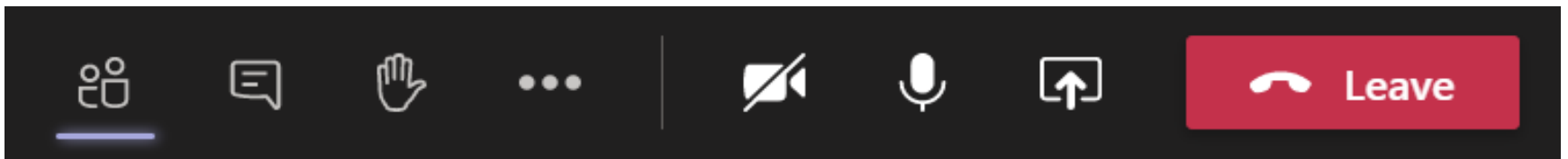
Mike Hopkins, Senior
Manager, Price Risk
& Resource Planning



Anda Telman, Manager,
Integrated Resource
Planning

Housekeeping

- We encourage you to participate through video, but not required
- When you're not speaking, mute yourself to reduce background noise
- For **questions, feedback and input**:
 - We encourage you to try and save them until the allocated section breaks
 - If possible, please use the hand-up functionality
 - When called upon, we encourage you to un-mute and speak to us directly
- For **general comments and observations**:
 - We encourage you use the chat functionality, this will be reviewed by our team and recorded as part of the meeting notes
- We ask that you do not use the chat functionality for private conversations



Safety reminders

- Ensure you're comfortable at your workstation
- If you need to, stand-up and stretch
- Take breaks as needed

Organizations registered – December 2

- Central Okanagan Economic Development Commission
- City of Grand Forks
- City of Kelowna
- City of Penticton
- City of Rossland
- District of Summerland
- Regional District of Central Kootenay
- Regional District of Kootenay Boundary
- School District #23
- School District #51 Boundary
- Survival Energy Partners
- Town of Osoyoos
- Village of Keremeos
- Village of Warfield

Organizations registered – December 3

- City of Grand Forks
- City of Nelson
- Community Energy Association
- DMG Blockchain Solutions
- Jones Boys Boats
- Kaslo & Area Chamber of Commerce
- Kaslo Curling Club
- MLA Kelowna West
- Okanagan College
- Regional District of Central Kootenay
- Regional District of Central Okanagan
- Regional District of Kootenay Boundary
- School District #20
- Selkirk College
- Sentinel Energy Management Inc.
- Vedalia Biological Inc.
- Village of Fruitvale

Disclaimer for an open dialogue

- The input provided during this workshop may become public during our regulatory proceedings
- 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

Agenda for the session

1. Brief overview of pre-read materials **(15 min)**
2. Energy planning landscape in BC **(40 min)**
 - **Discussion: How does the energy landscape in BC impact you?**
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7. Wrap-up and next steps **(5 min)**

Brief overview of pre-read materials



FortisBC overview



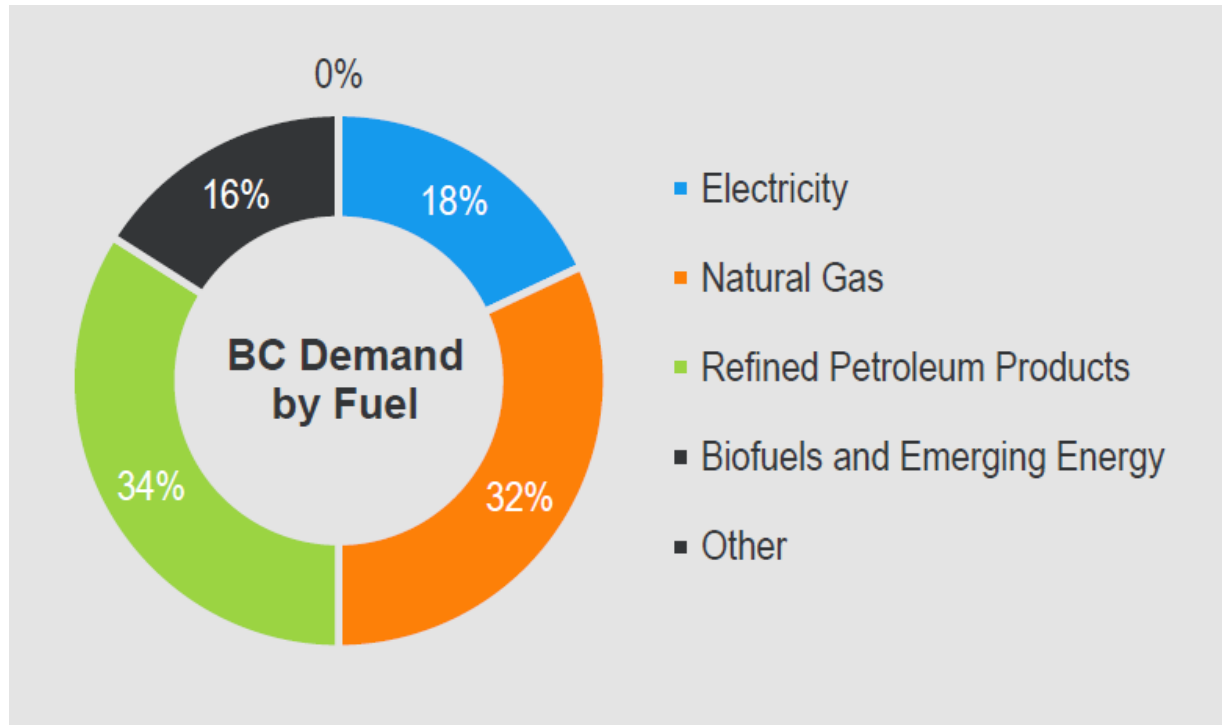
- Largest energy provider in the province
- We serve **1.2 million** customers providing:
 - electricity
 - natural gas
 - renewable gas
 - propane
 - alternative energy solutions
- We employ **2,400** people

FortisBC shared service territory



Energy demand in BC by fuel

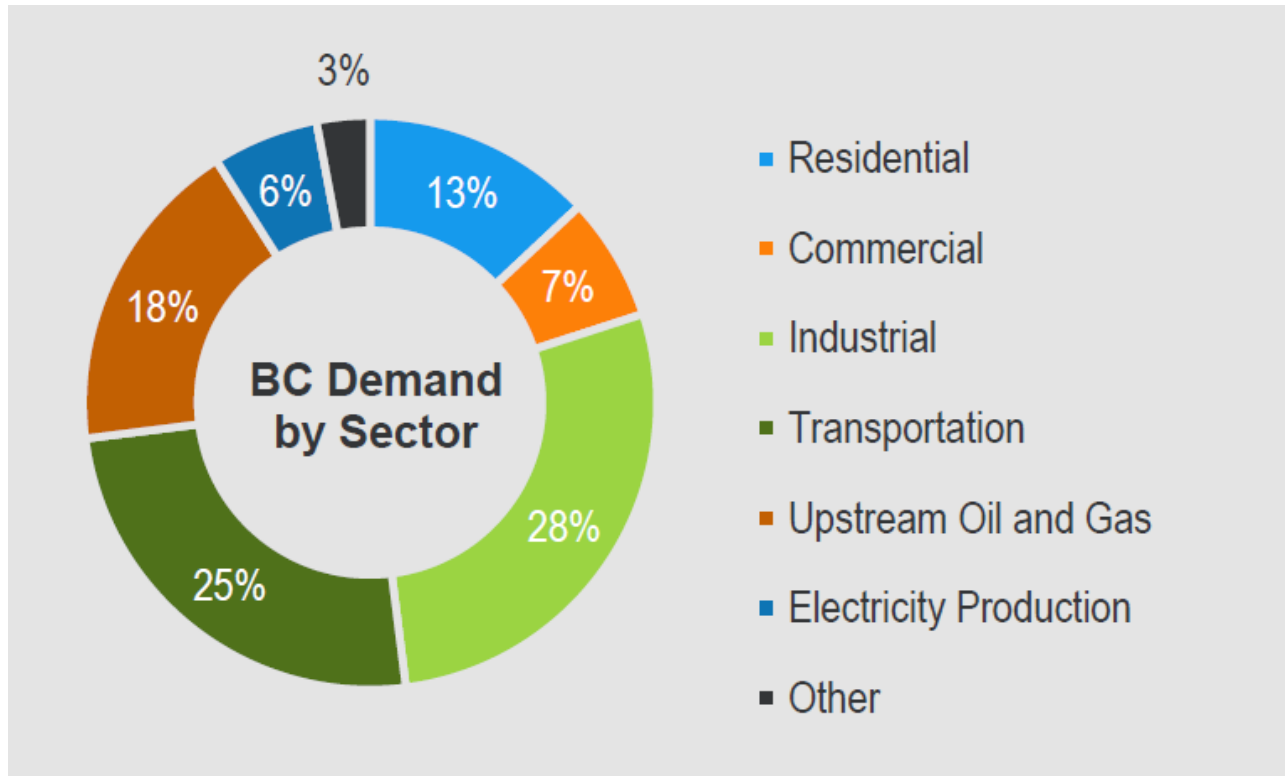
Refined petroleum products account for largest share



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

Energy demand in BC by sector

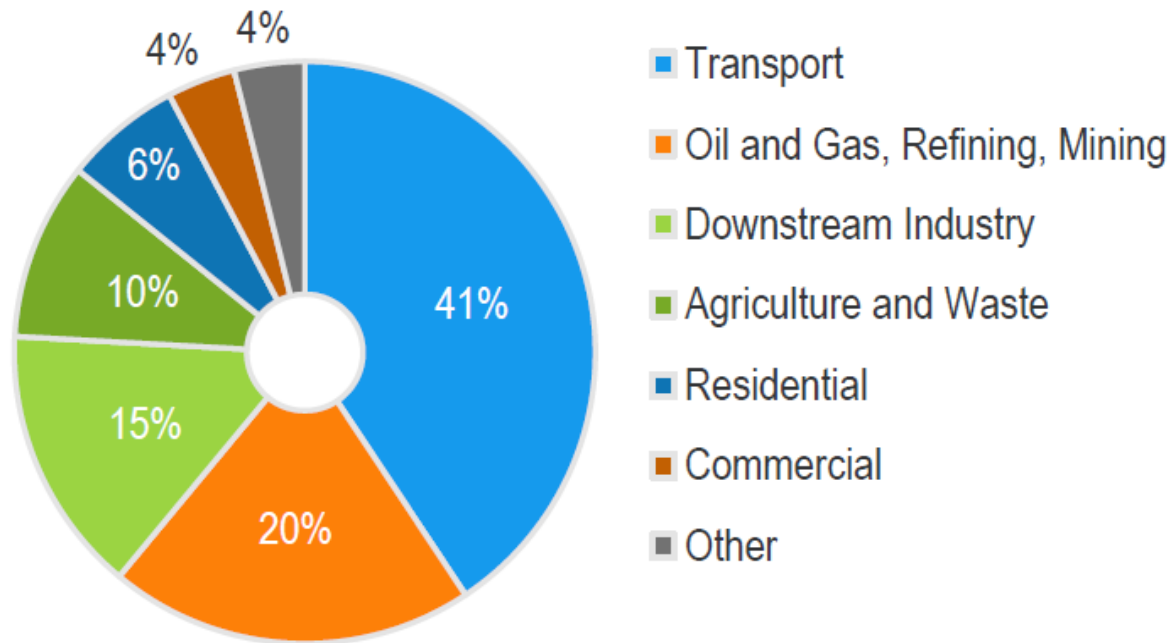
Industry consumes a significant amount of energy



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

GHG emissions in BC by sector

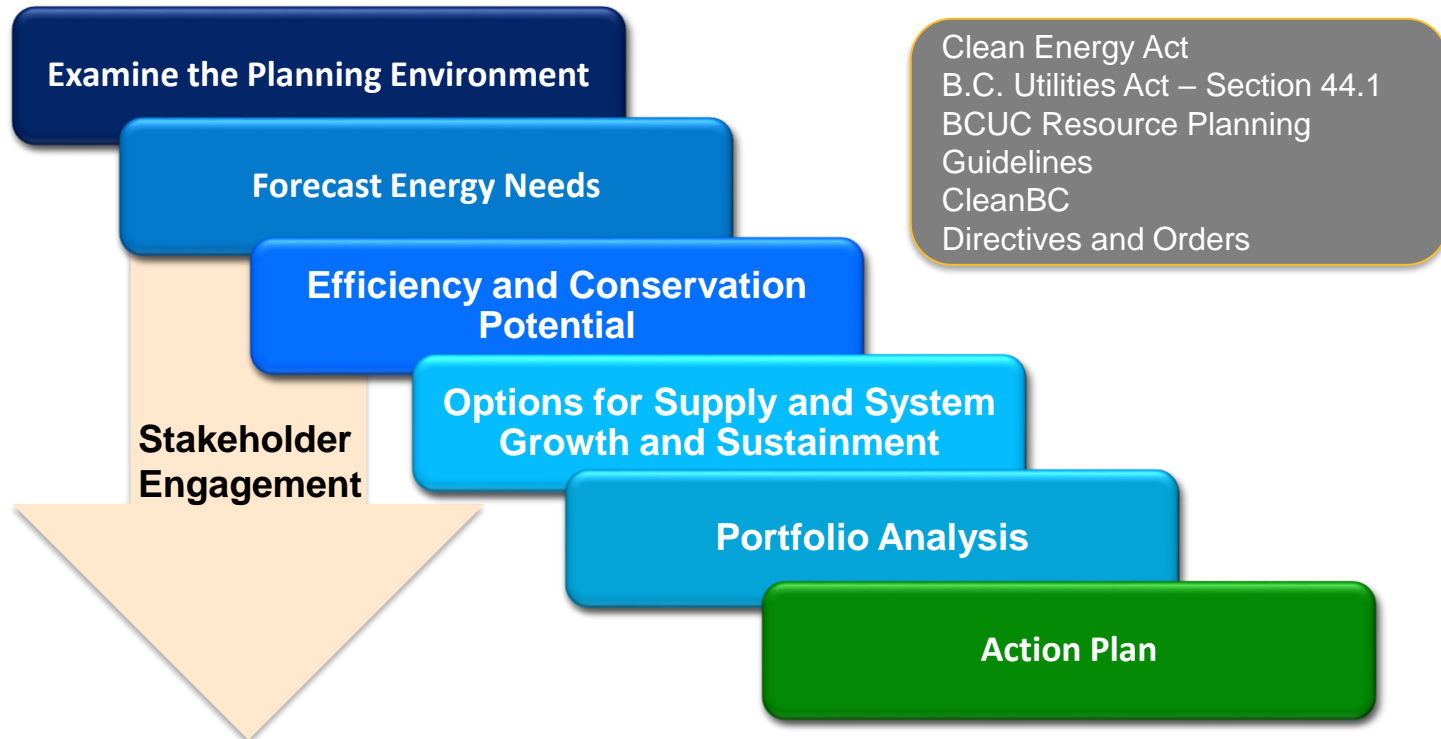
Industry & transportation are the biggest contributors



Source: BC GHG Inventory

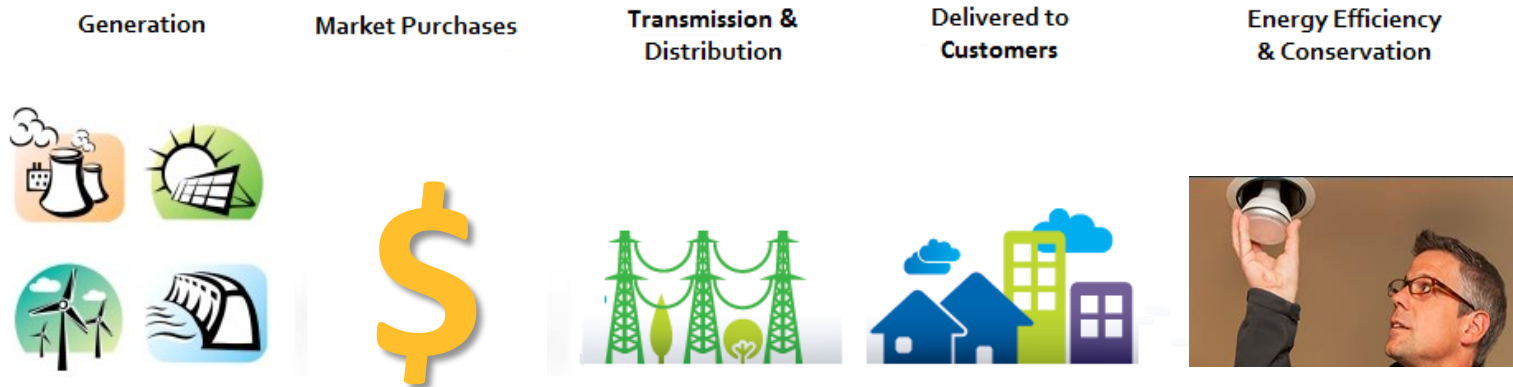
Resource planning process

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



Natural gas vs. electricity resource planning

Electricity



Natural Gas



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 for clarification



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Energy planning landscape in BC



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



4 pillars of our Clean Growth Pathway to 2050



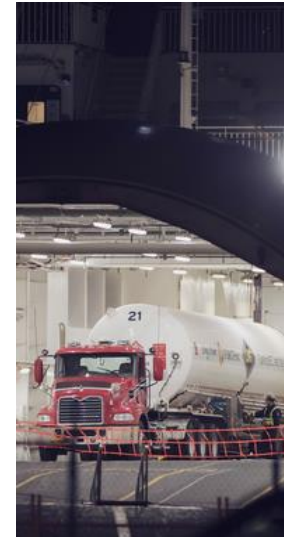
**Energy
efficiency**



**Renewable
gas**



**Zero and
low carbon
transportation**



Global LNG

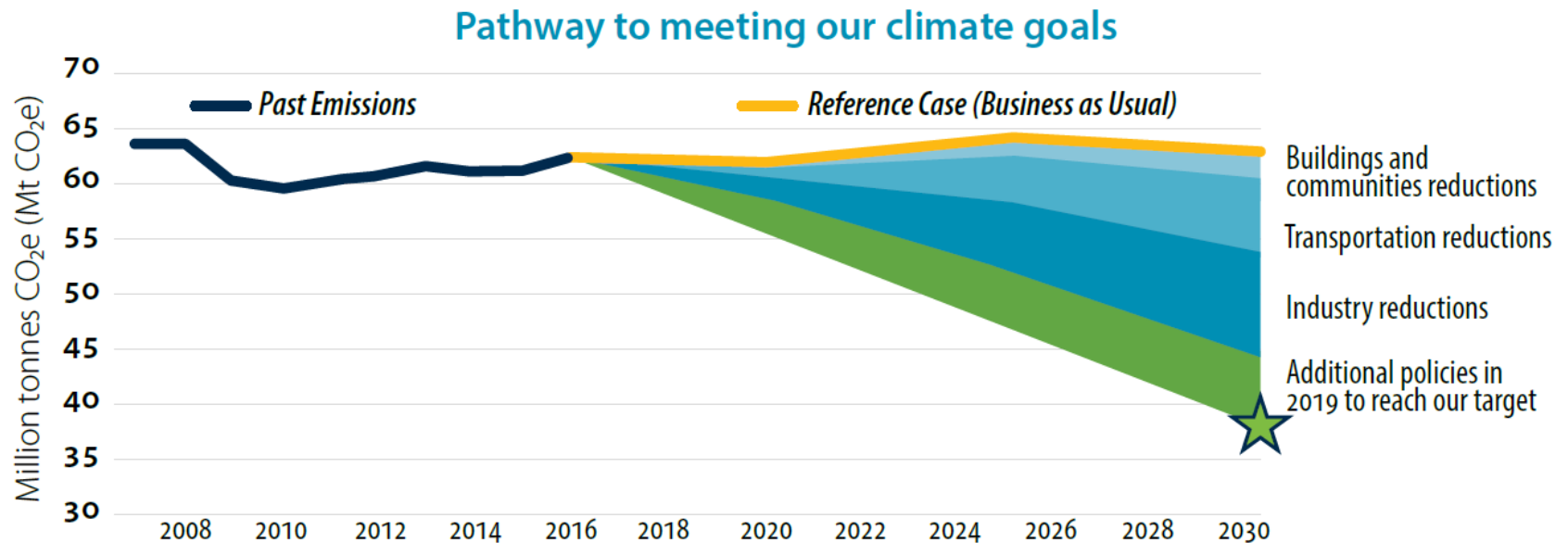
CleanBC

- 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

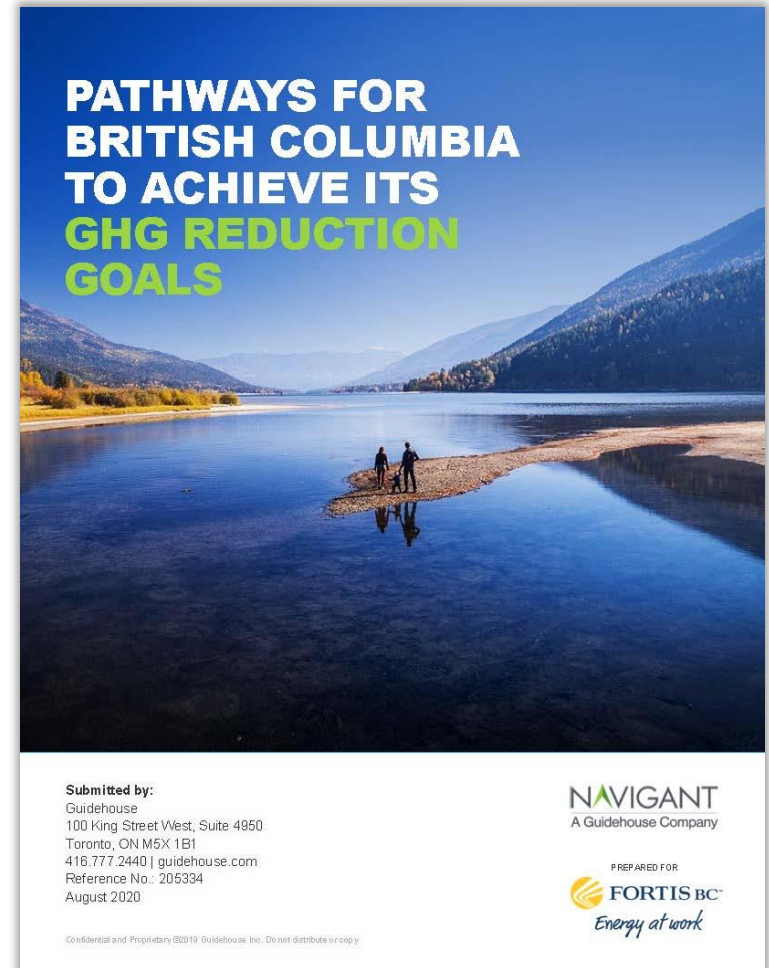
40% reduction in GHG emissions by 2030



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

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

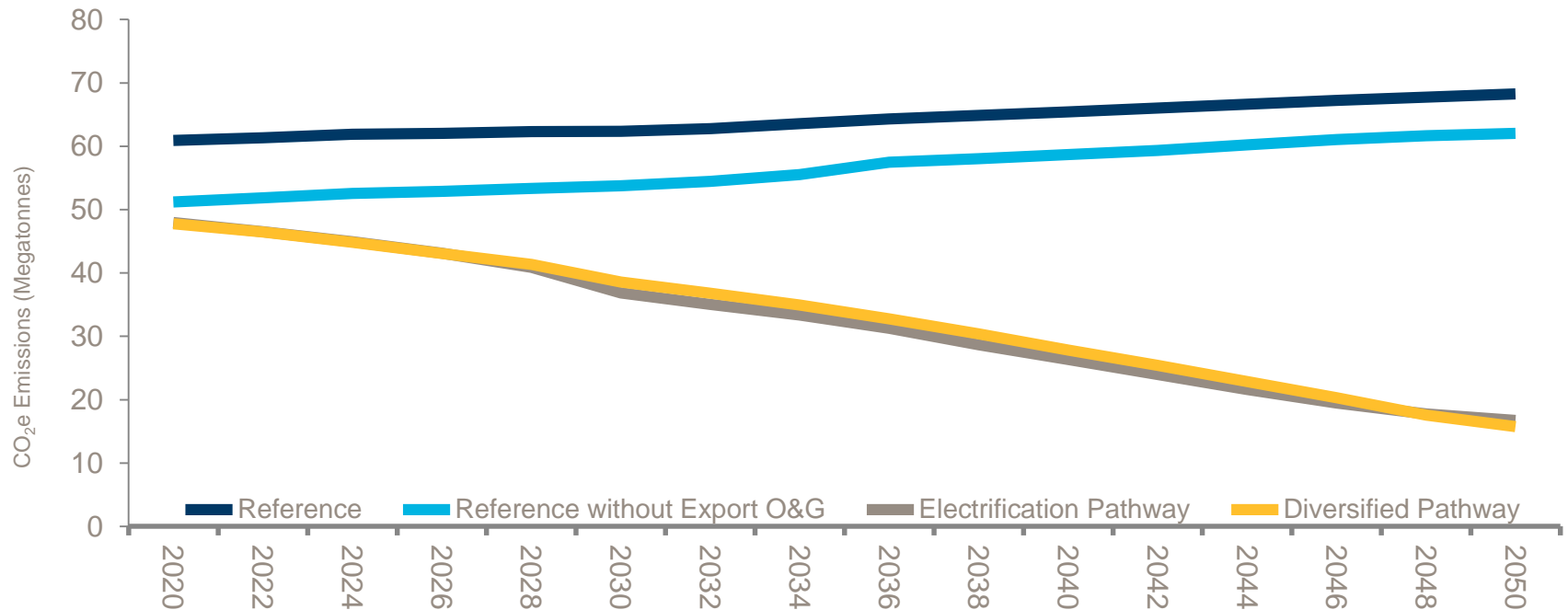
- Significant role for NG in MD & HD vehicles



Energy supply

- 14% renewable gas
- 37% electricity

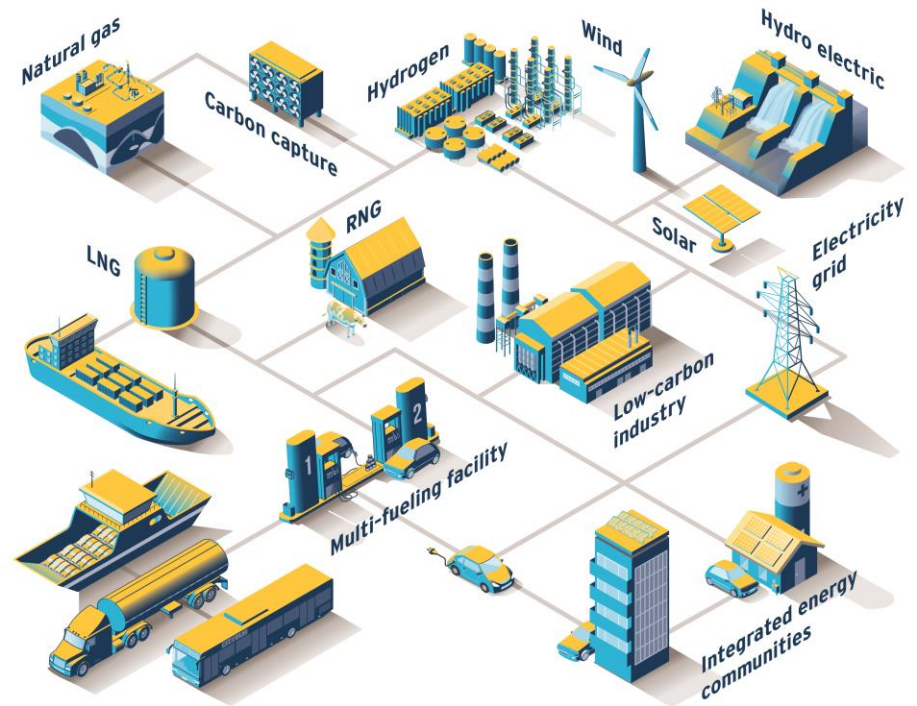
Both pathways achieve the same level of GHG reductions



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

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**



How we'll measure our progress to 2050

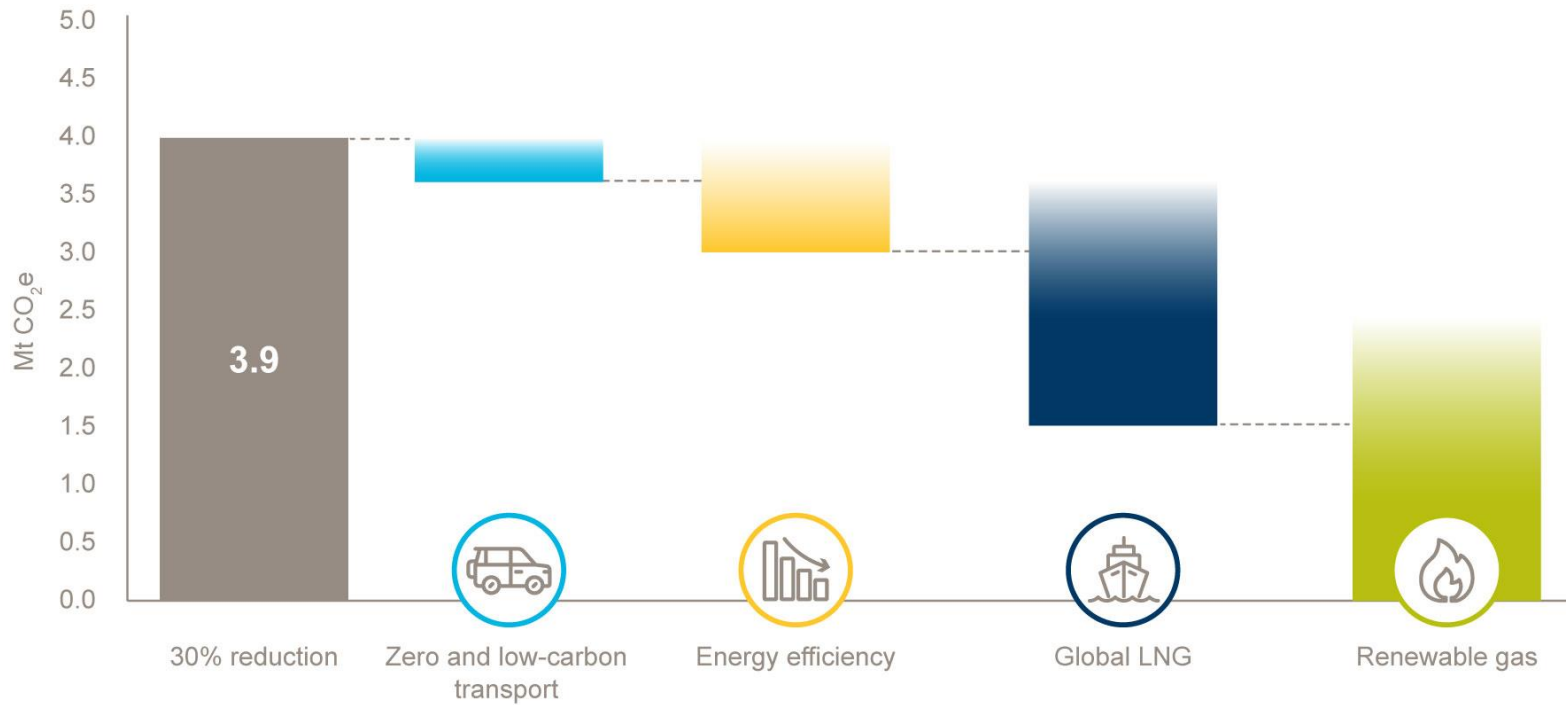
We set an ambitious emissions reduction target

Our **30BY30 target** will:

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



30BY30 targets



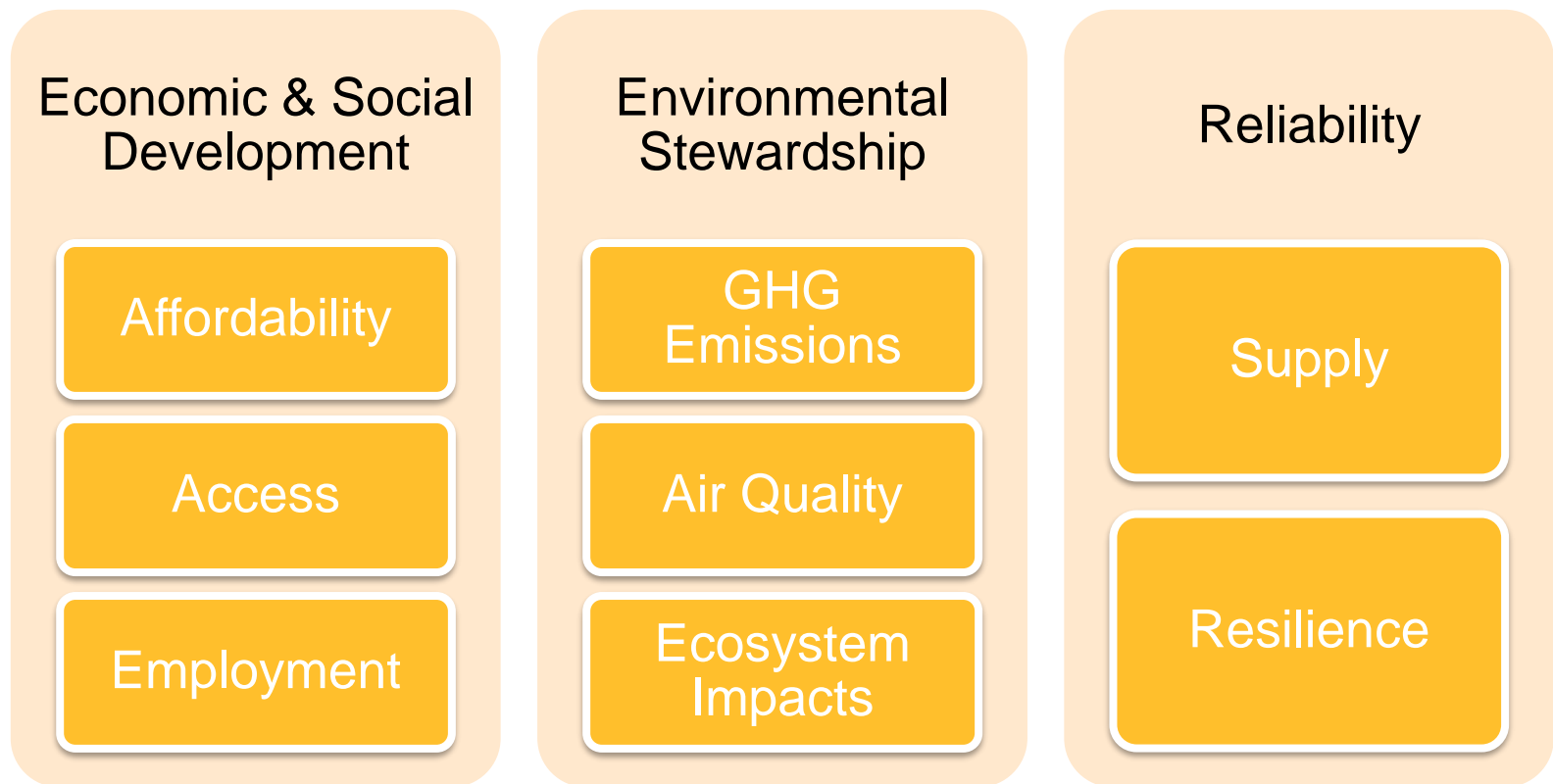
Resource planning considerations



Questions for clarification



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



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Electricity future demand scenarios



Energy vs. Capacity

Energy



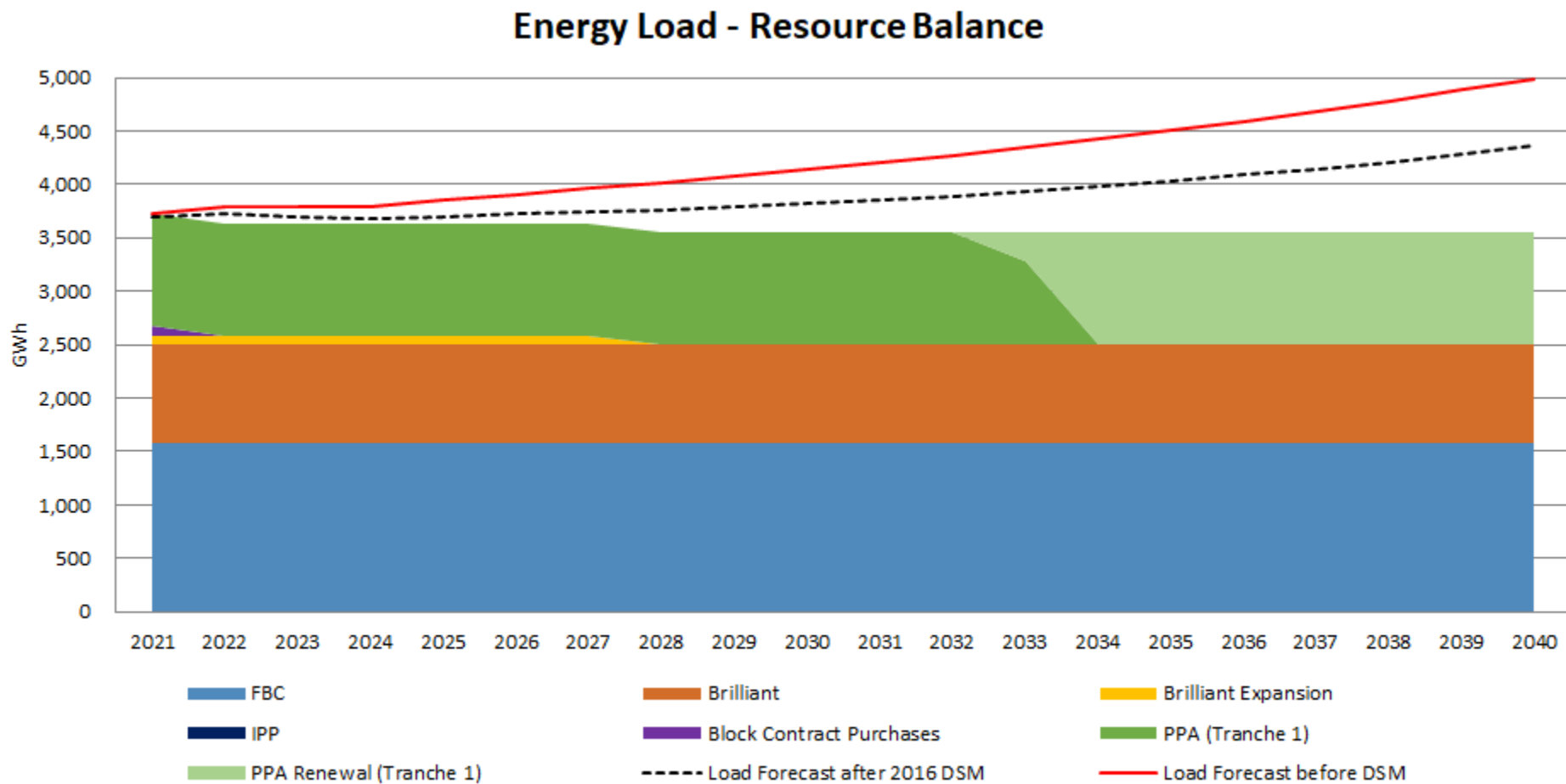
- the electricity produced or used **over a period of time** (e.g. a year)
- is analogous to an **Odometer** reading
- usually measured in **GWh**

Capacity



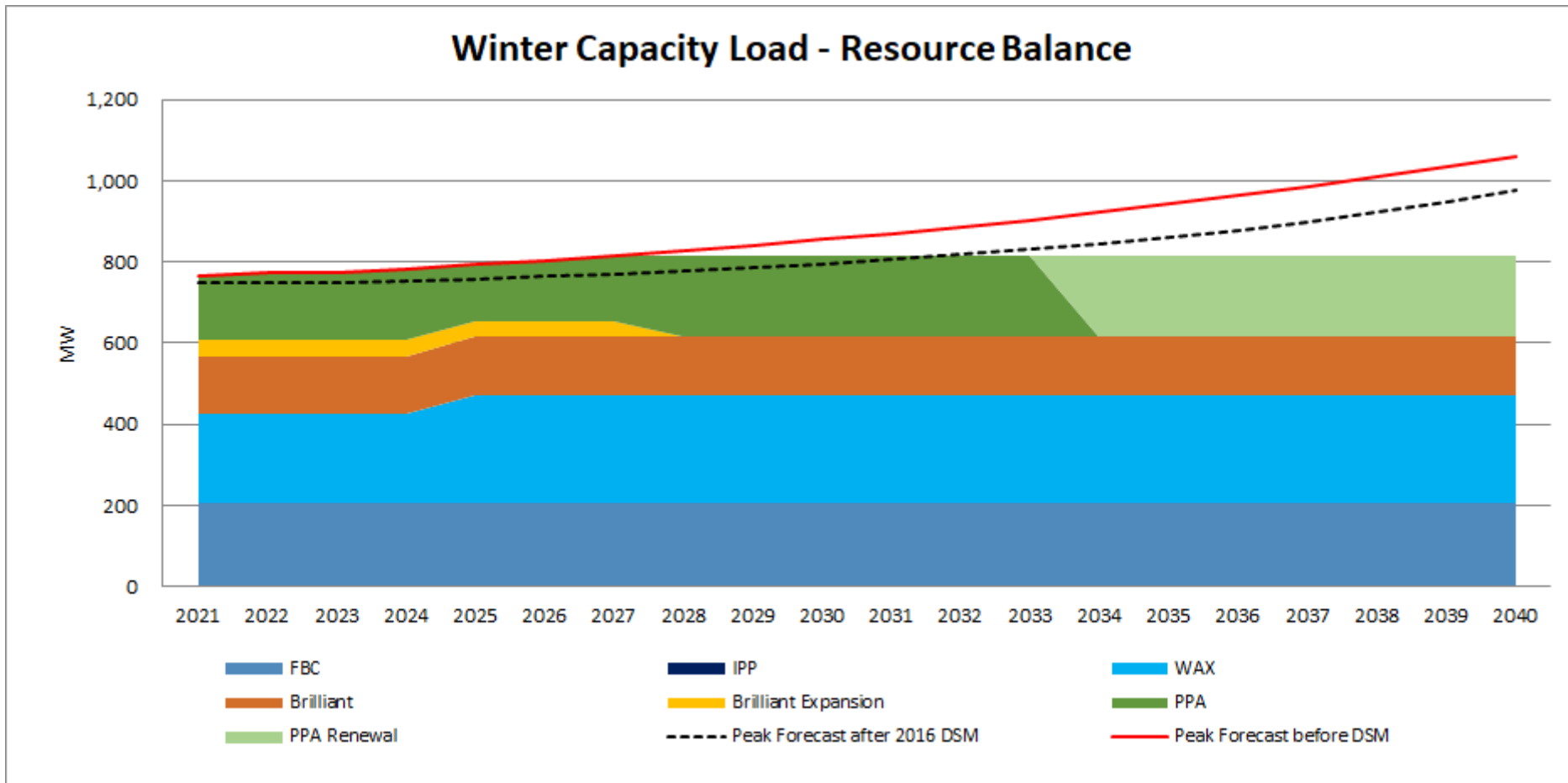
- the **instantaneous** system electricity demand at any given time
- is analogous to a snapshot **Speedometer** reading
- usually measured in **MW**

Energy: Supply vs. Demand













- 2021 LT DSM Plan to be determined

Capacity: Supply vs. Demand

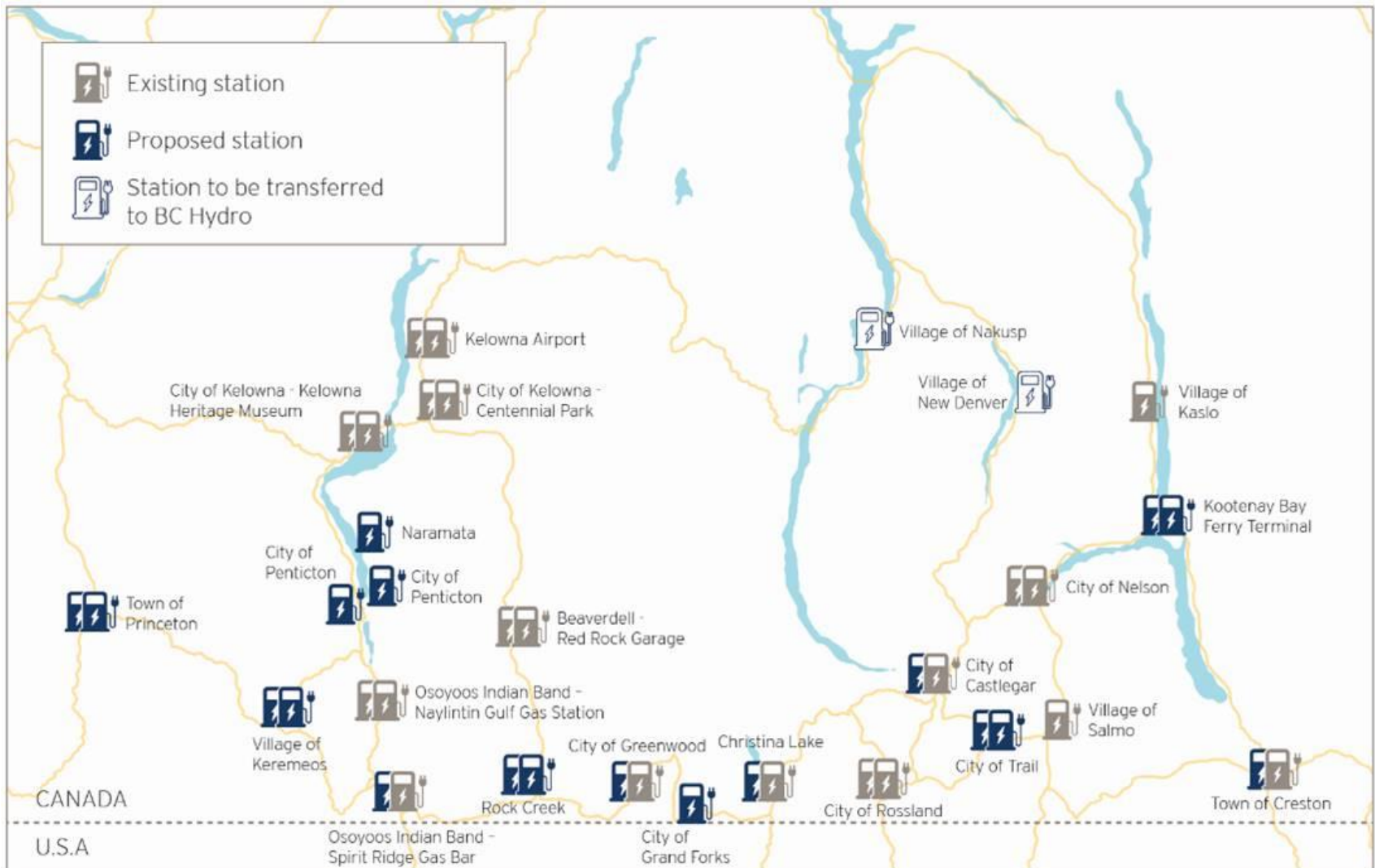


- 2021 LT DSM Plan to be determined

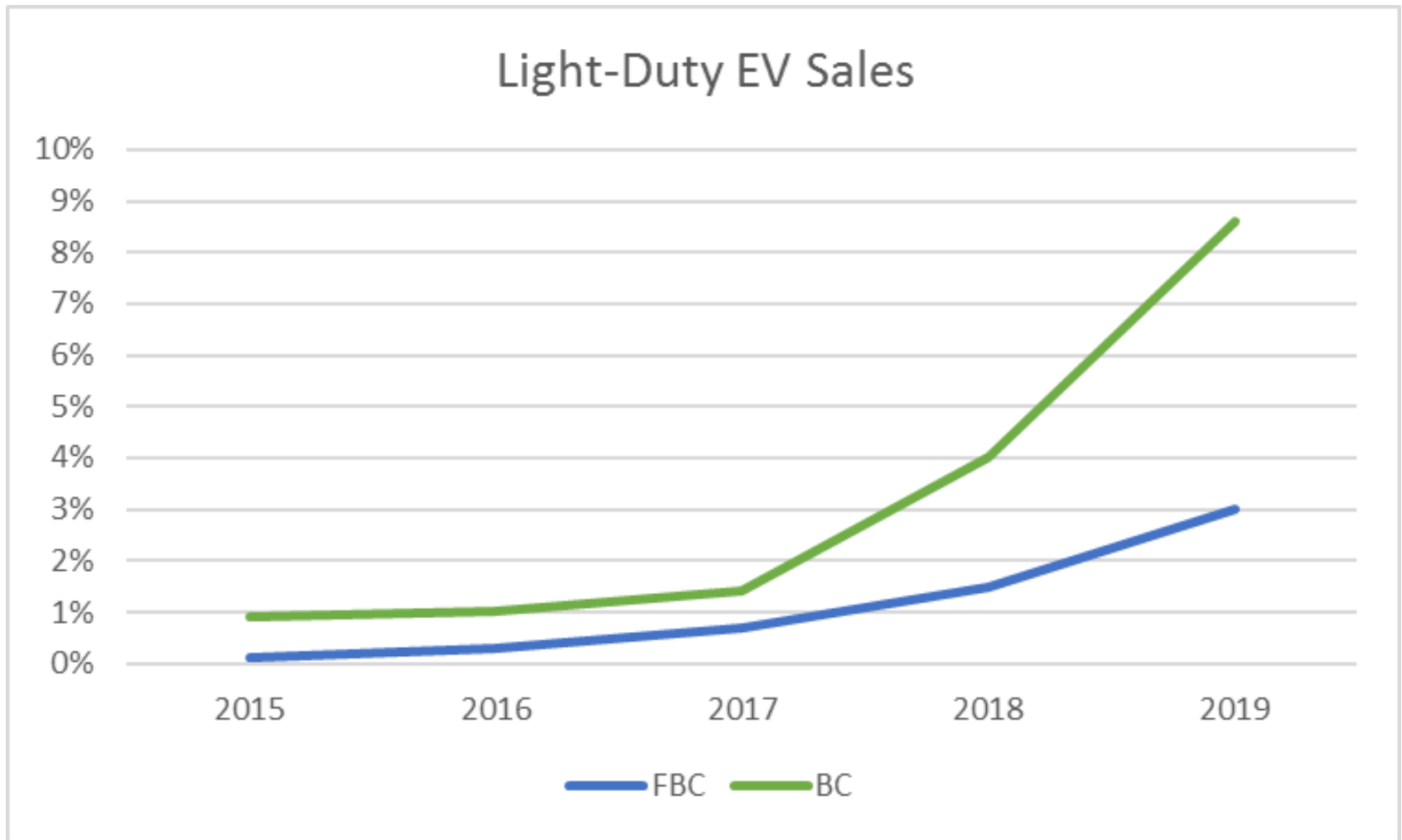
Scenario load drivers

Load Driver	Short Form	Effect on System Load (+/-)
Residential Integrated Photovoltaic Solar and Storage	IPSS-RES	
Commercial Integrated Photovoltaic Solar and Storage	IPSS-COM	
Electric Vehicles, Light Duty and Medium/Heavy Duty	LD EVs MHD EVs	
Fuel Switching – Gas to Electricity	FS – G2E	
Fuel Switching – Electricity to Gas	FS – E2G	
Climate Change	CC	 
Large Load Sector Transformation	LLST – Data Centres LLST - Cannabis	
Hydrogen Production	HP	
Carbon Capture and Storage	CCS	

Transportation electrification

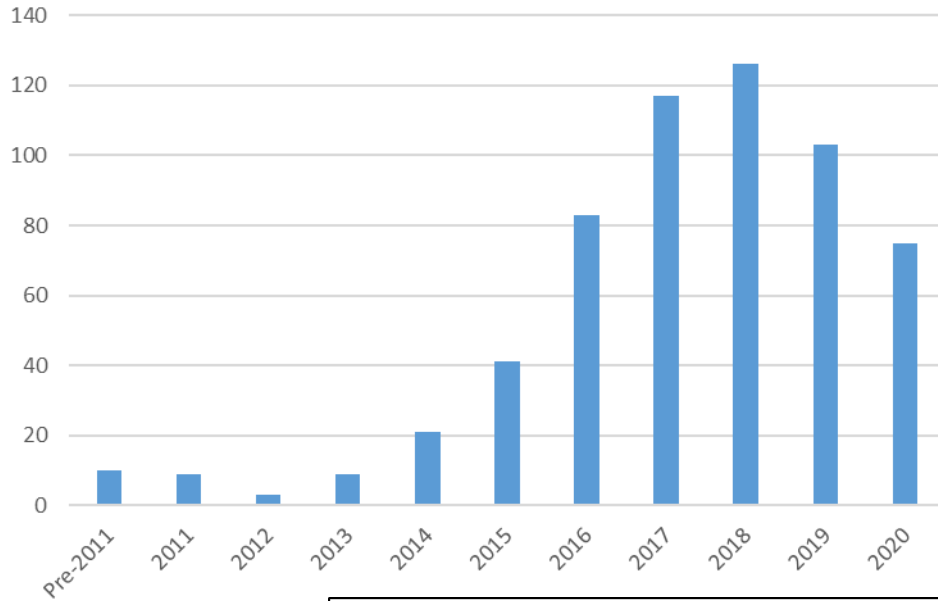


EV growth

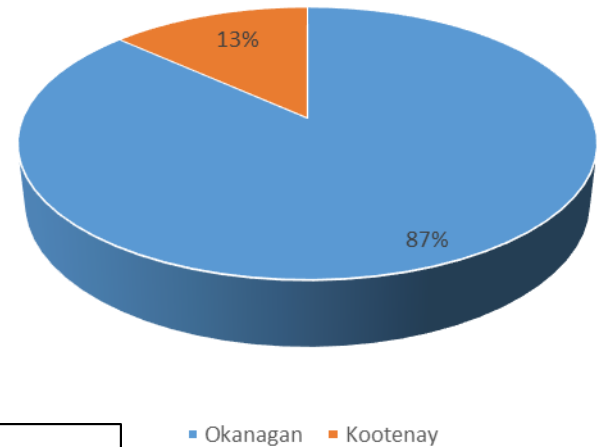


Distributed generation growth

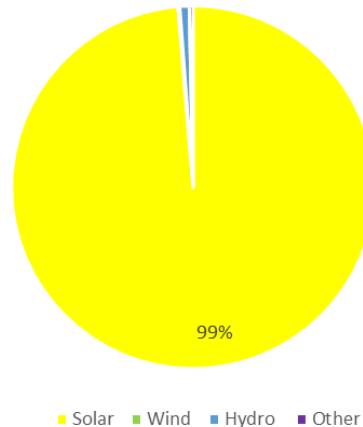
FBC Annual Net Metering Facilities



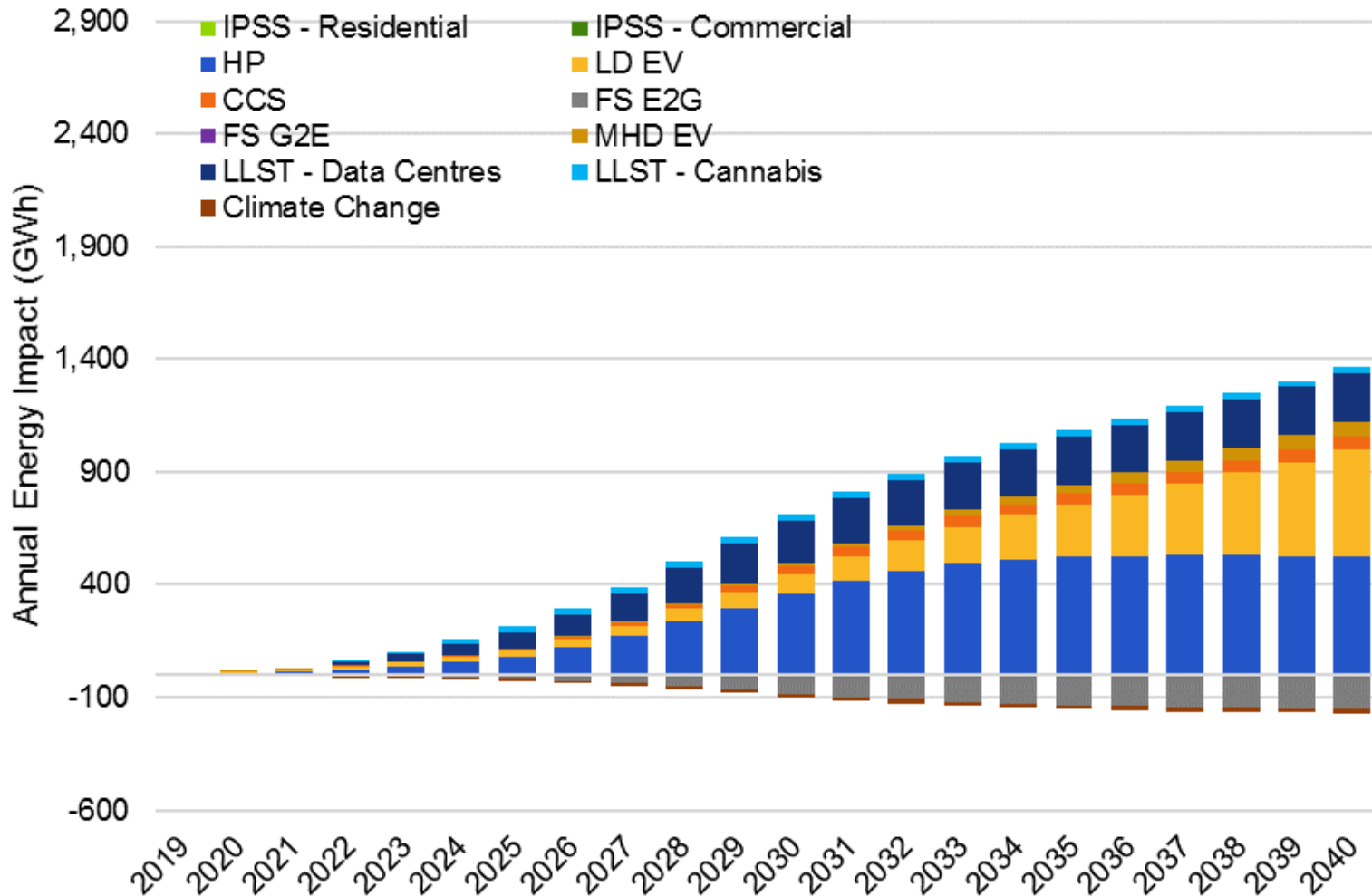
FBC Net Metering Facilities by Capacity



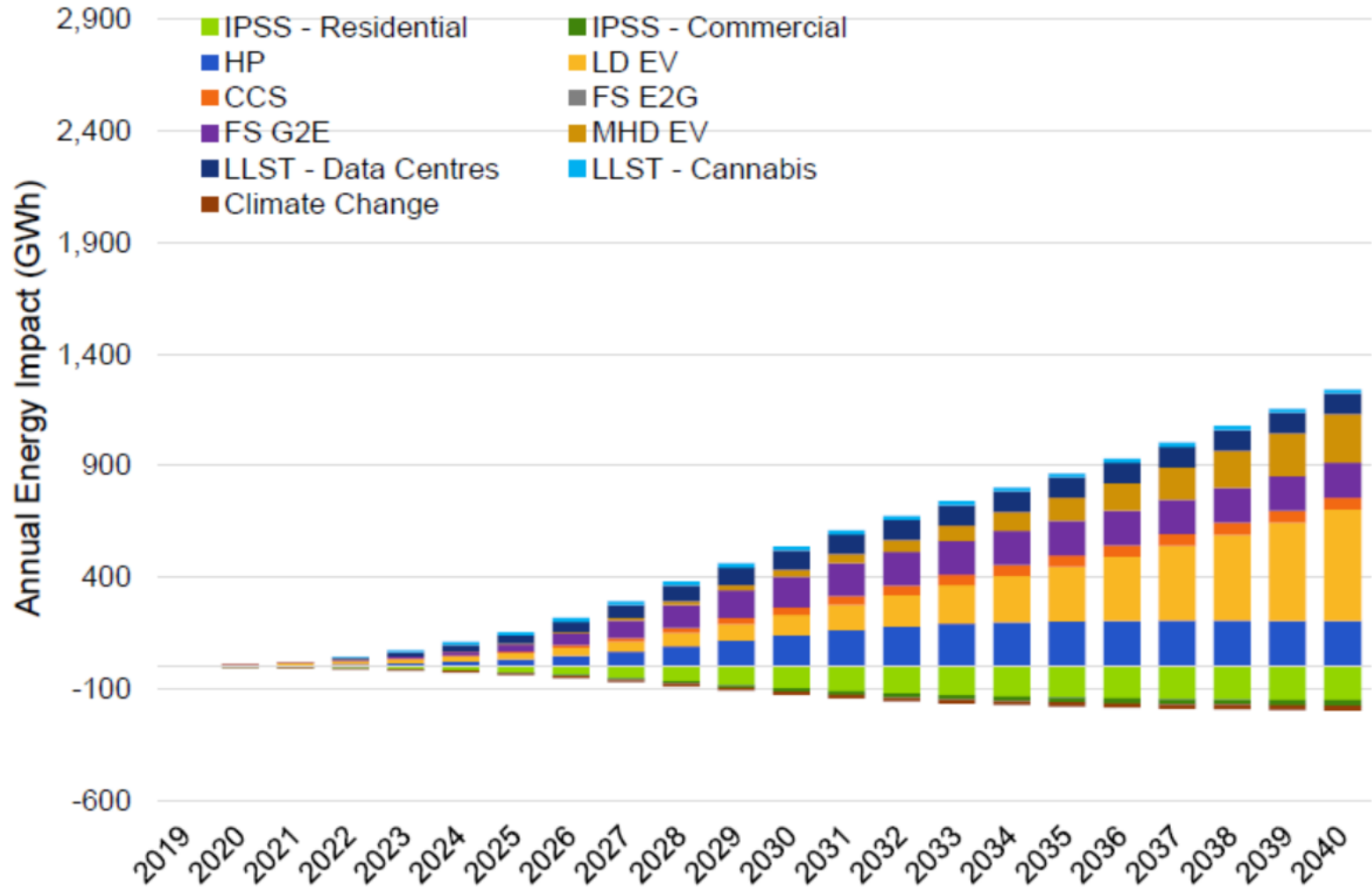
FBC Net Metering Facilities by Type



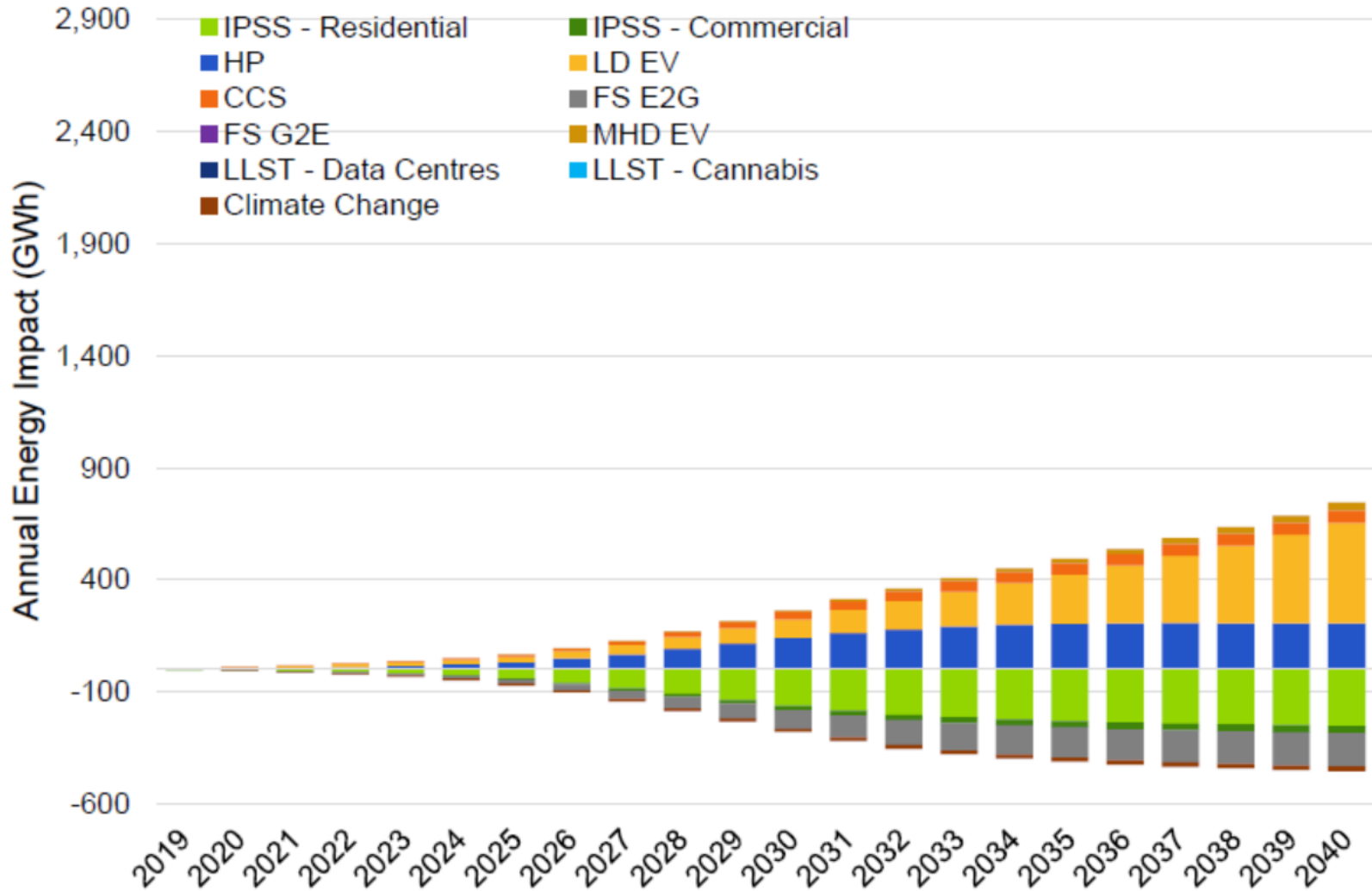
Diversified Energy Scenario



Deep Electrification Scenario



Distributed Energy Scenario



Questions for clarification



Discussion: What is driving your future electricity needs?

EVs

**Fuel
Switching**

**Large
Load
Sector**

**Climate
Change**

**Rooftop
Solar**

Other?

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Break



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Electricity Supply Options



Resource considerations

Technical

Energy and capacity

Financial

Unit Cost

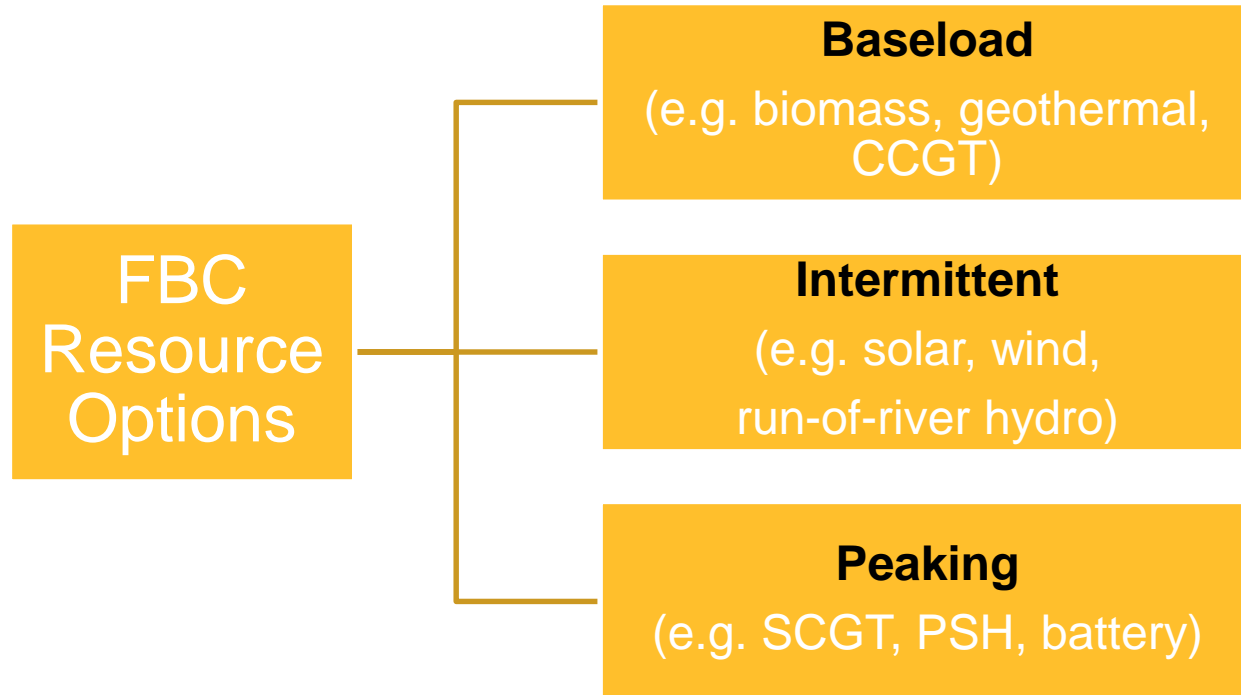
Environmental

Footprint & GHG Emissions

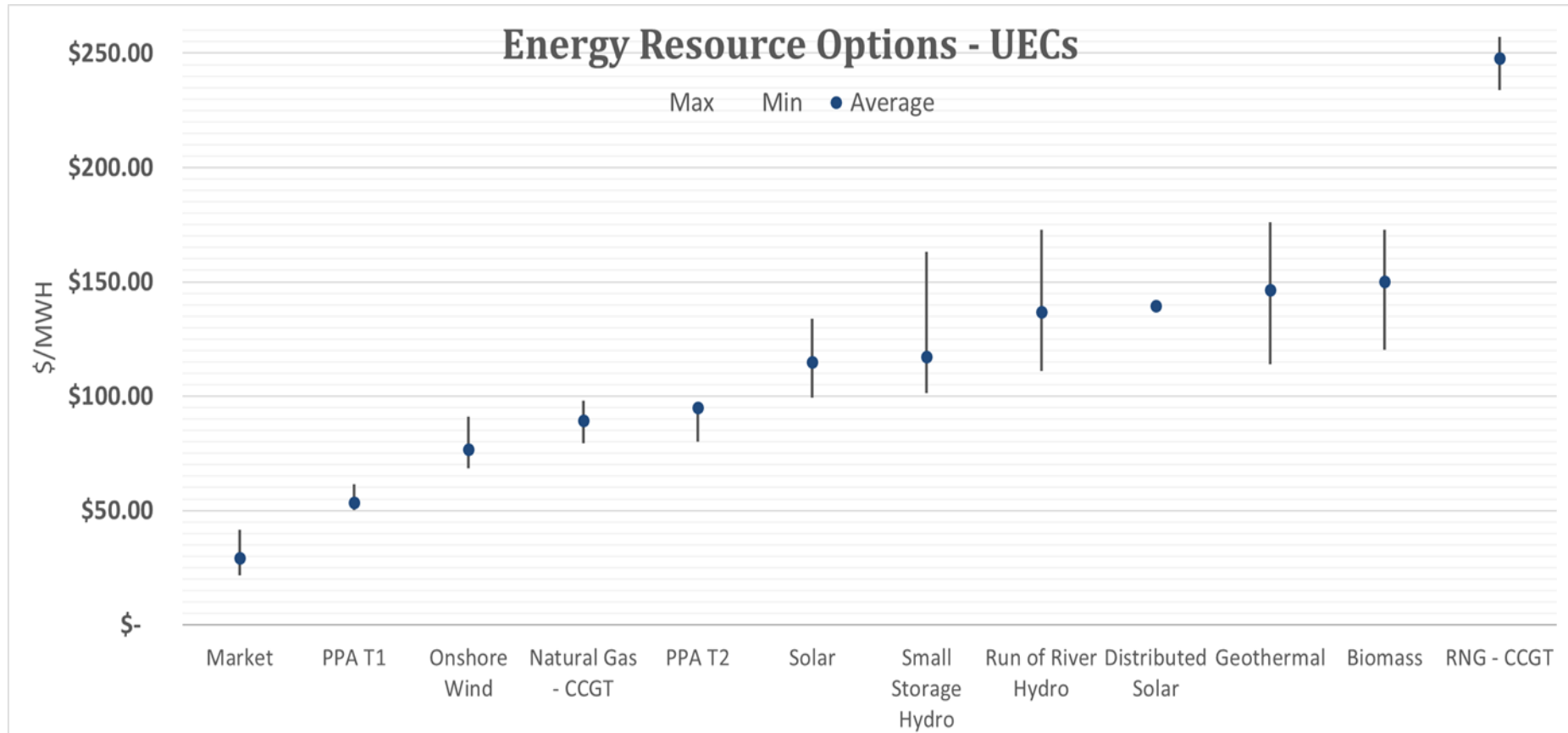
Social/Economic

Jobs & Revenue

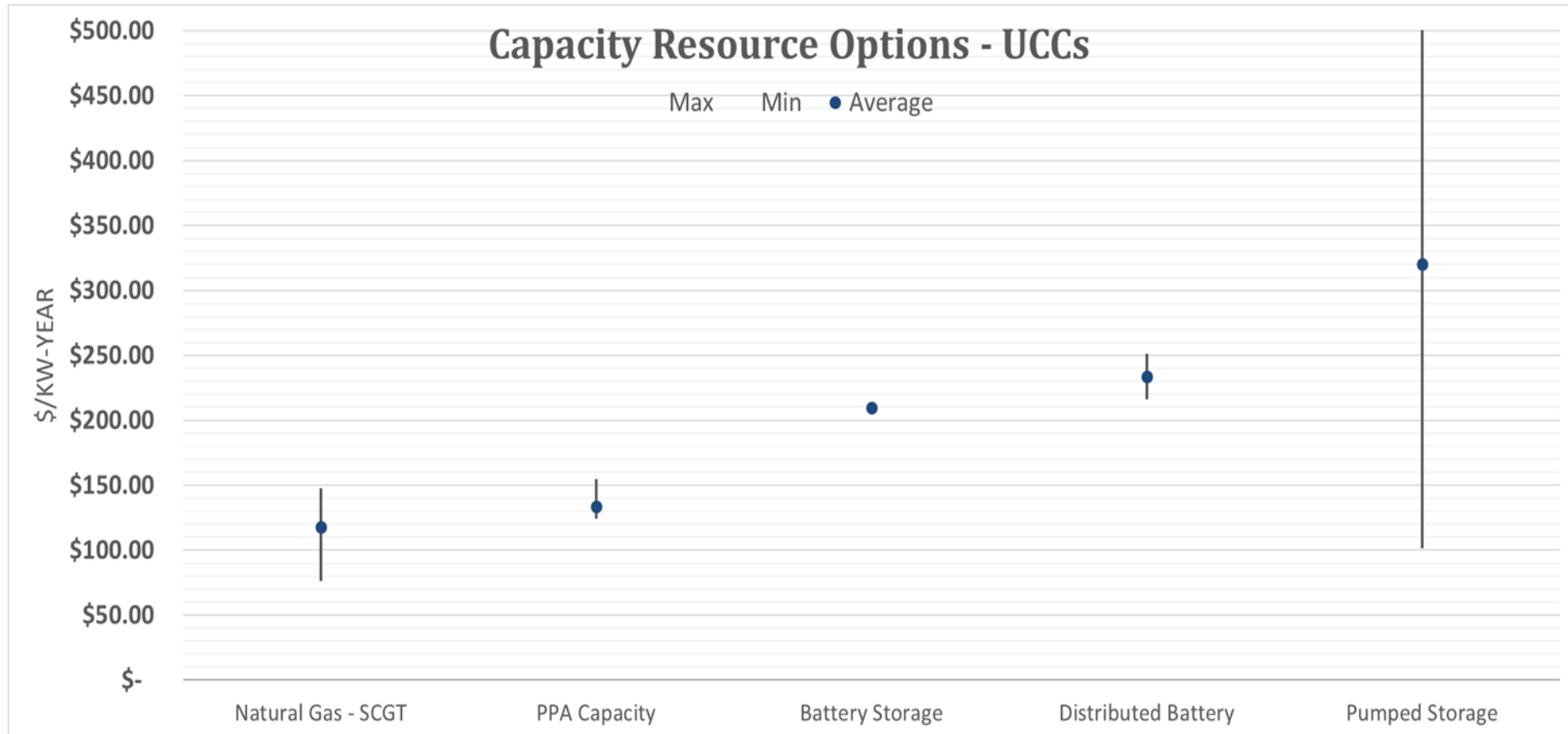
Supply-Side Resource Types



Supply-Side Resource Options



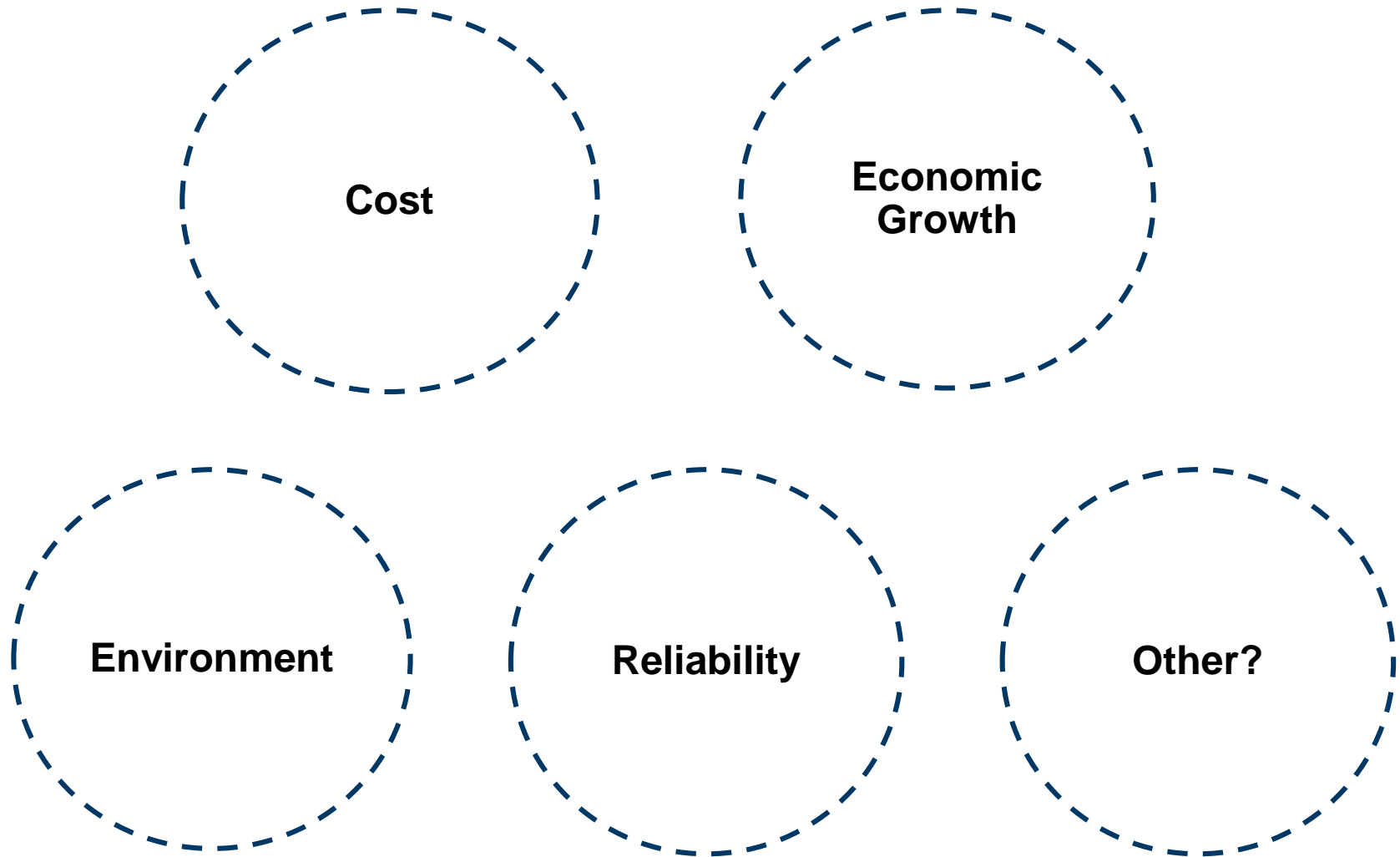
Supply-Side Resource Options



Questions for clarification



Discussion: What are your electricity priorities?



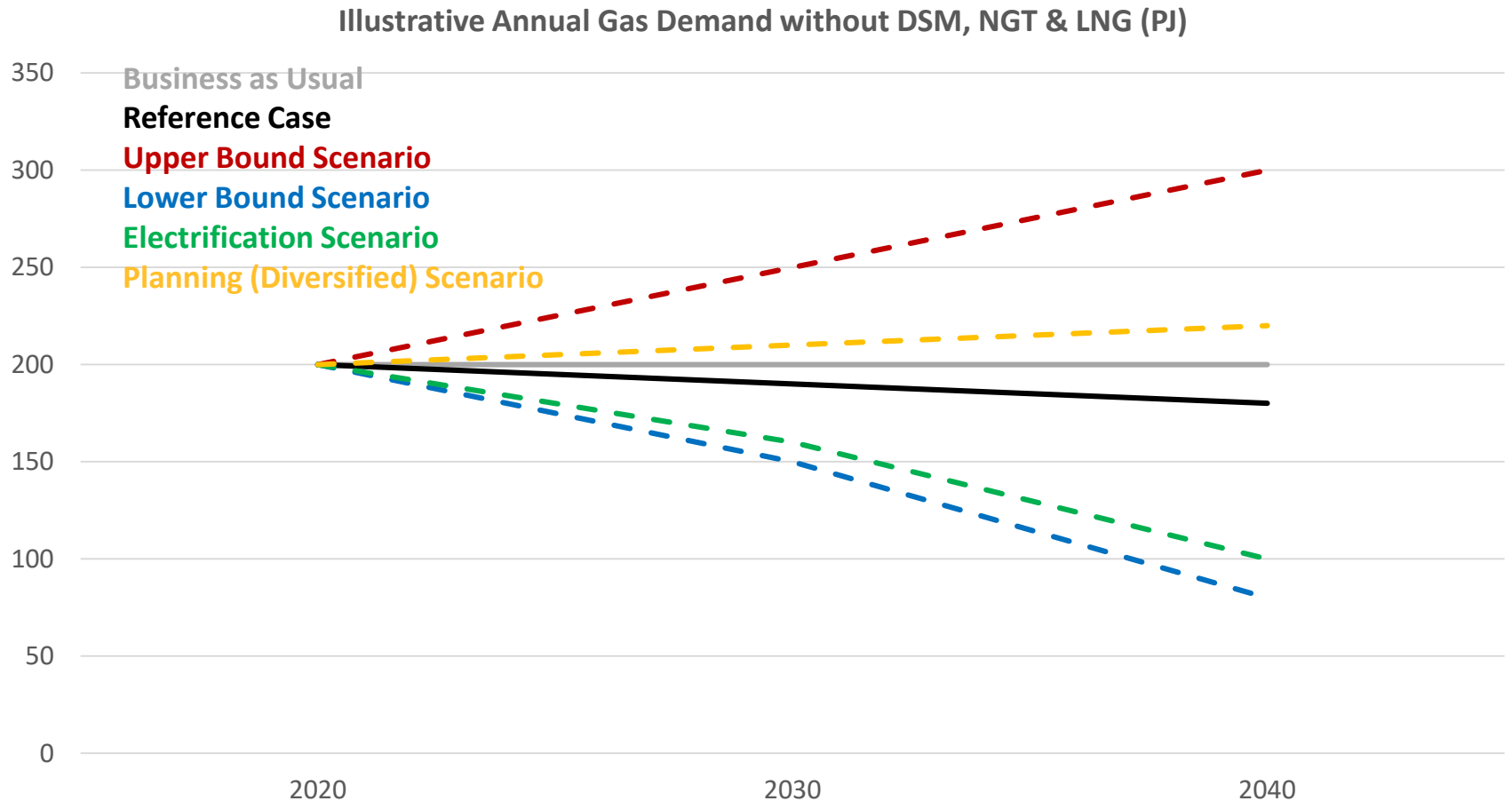
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Natural gas future demand scenarios

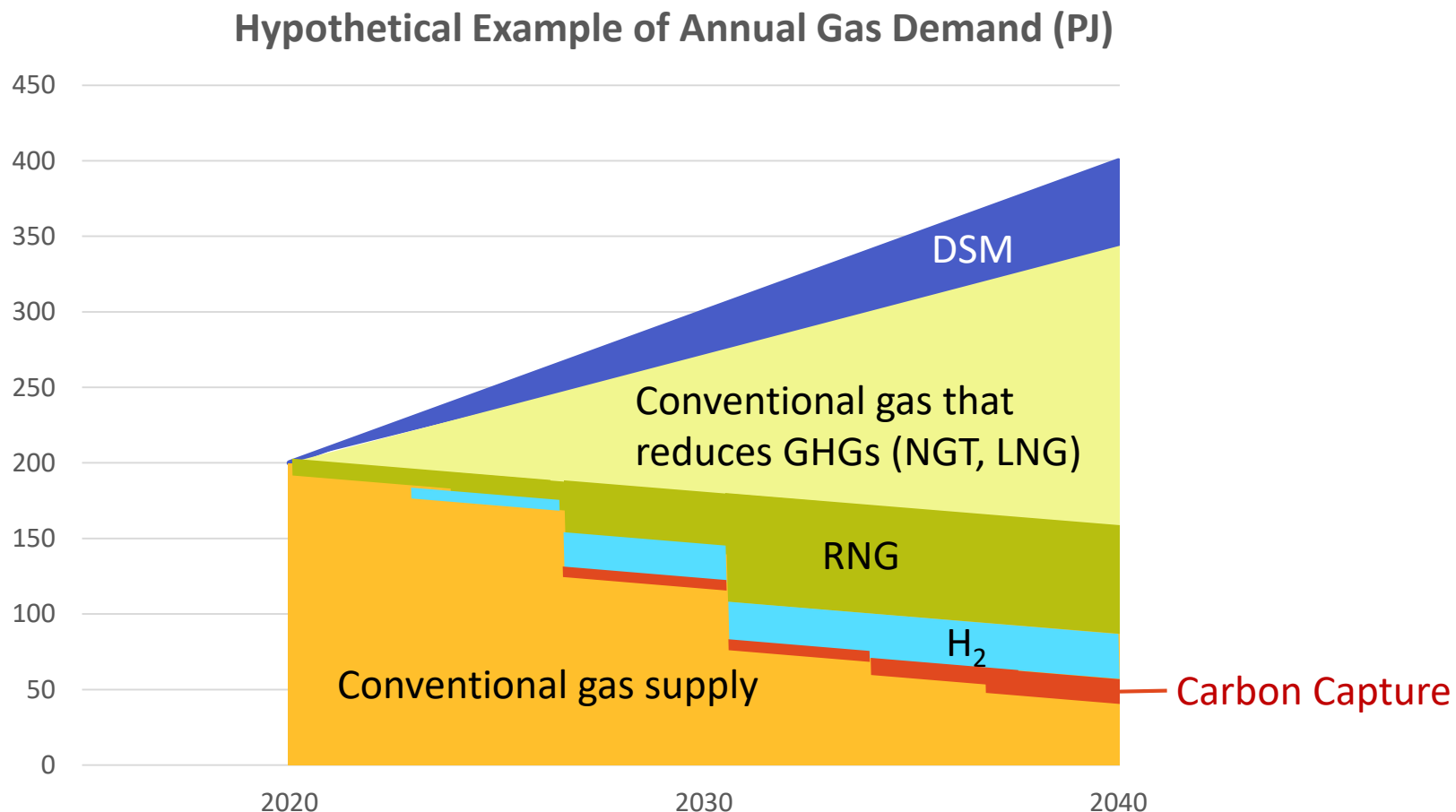


Demand forecast taxonomy

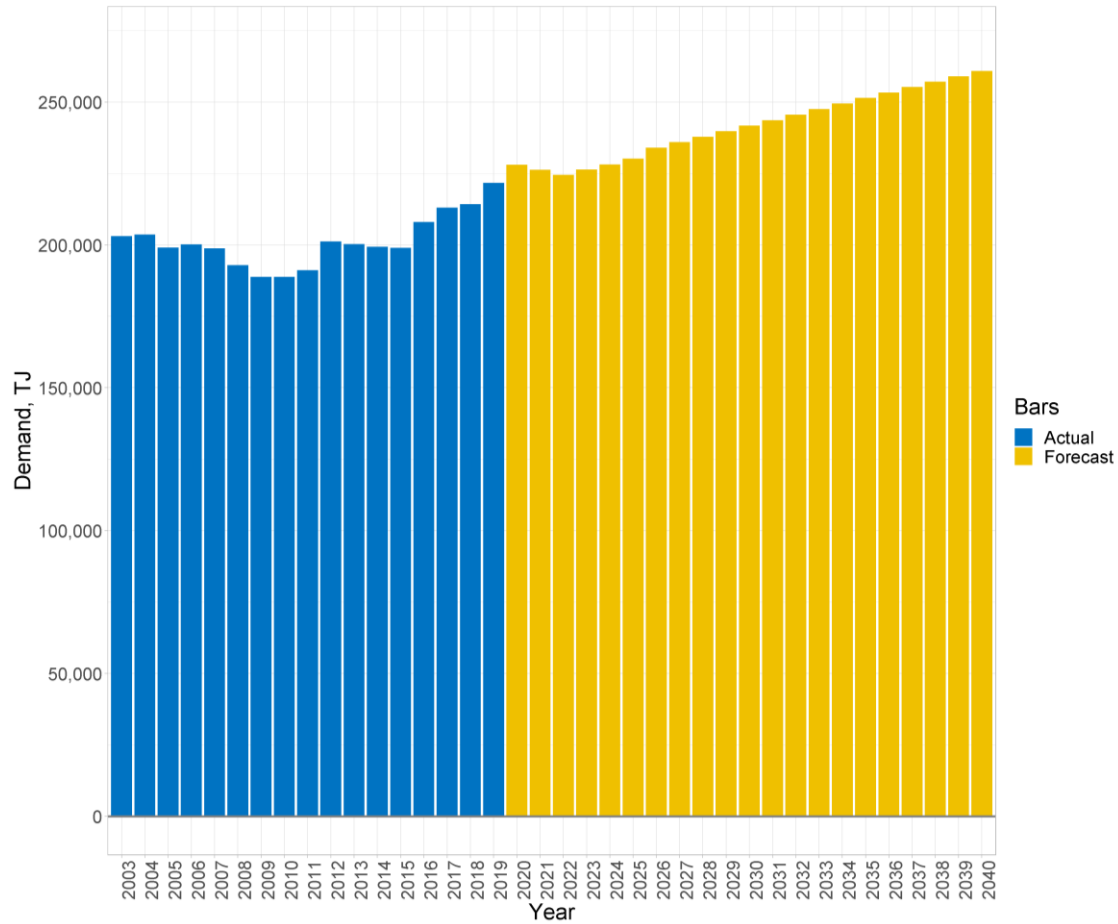


Demand and supply balance

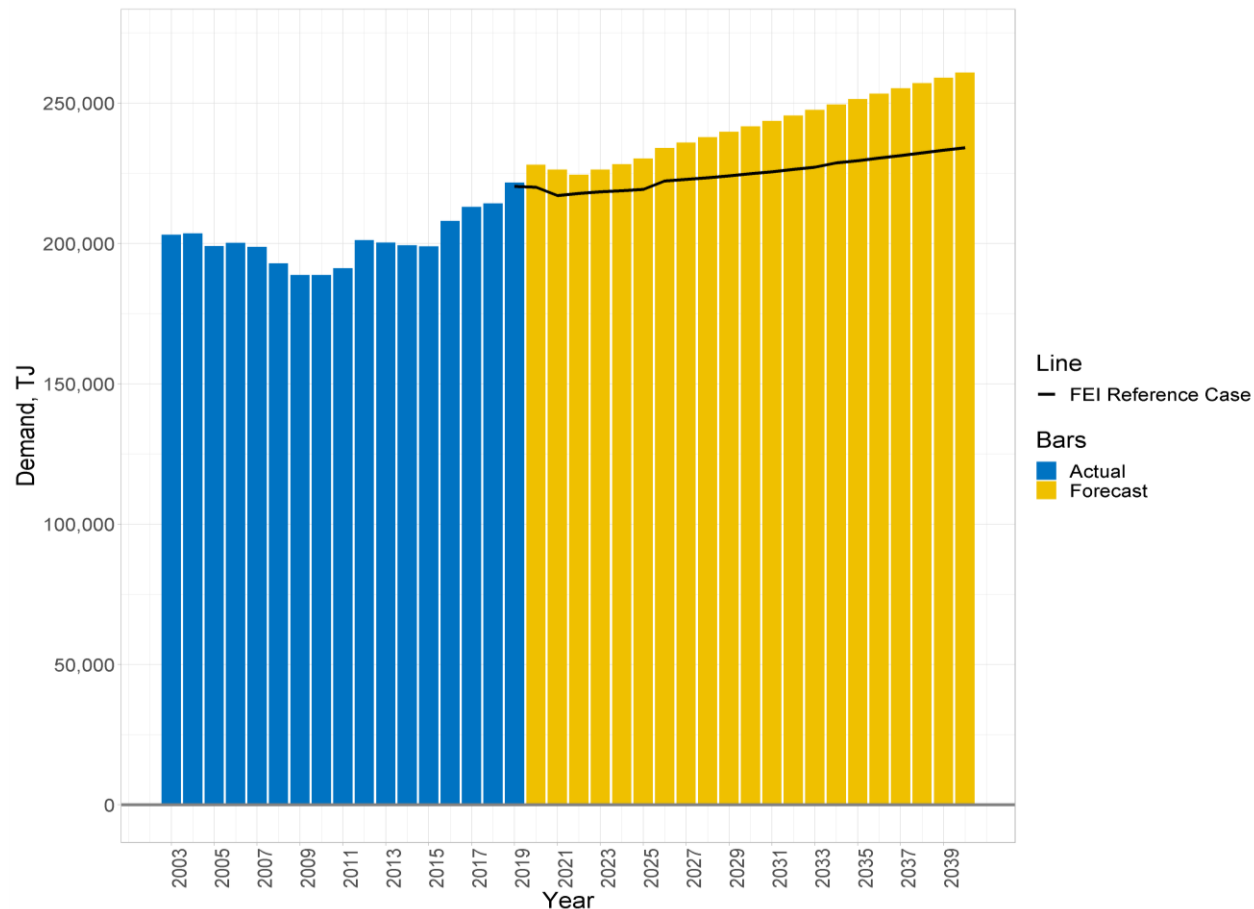
Key to meeting GHG targets



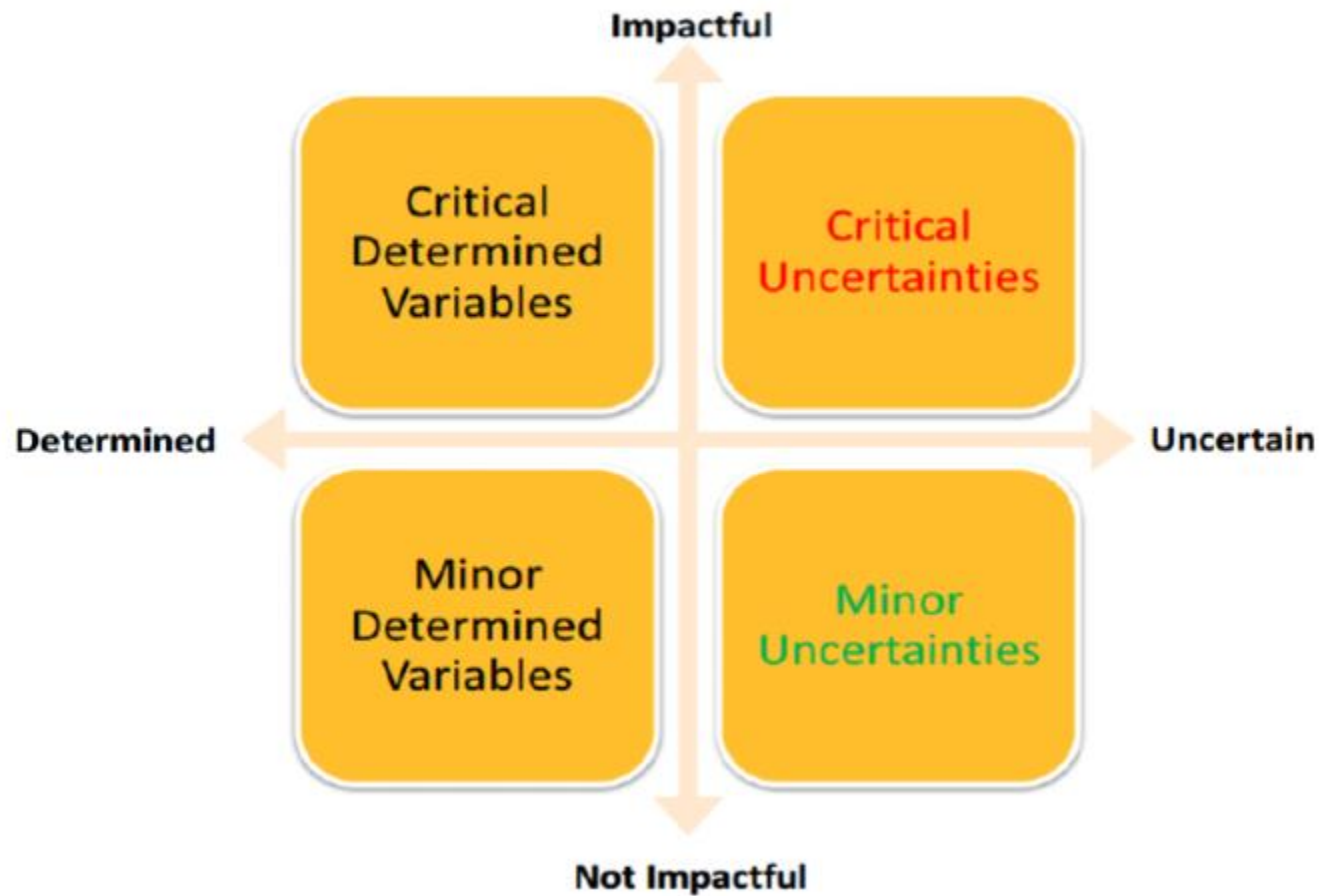
Business as Usual (draft)



Business as Usual & Reference Case (draft)



Demand scenario drivers



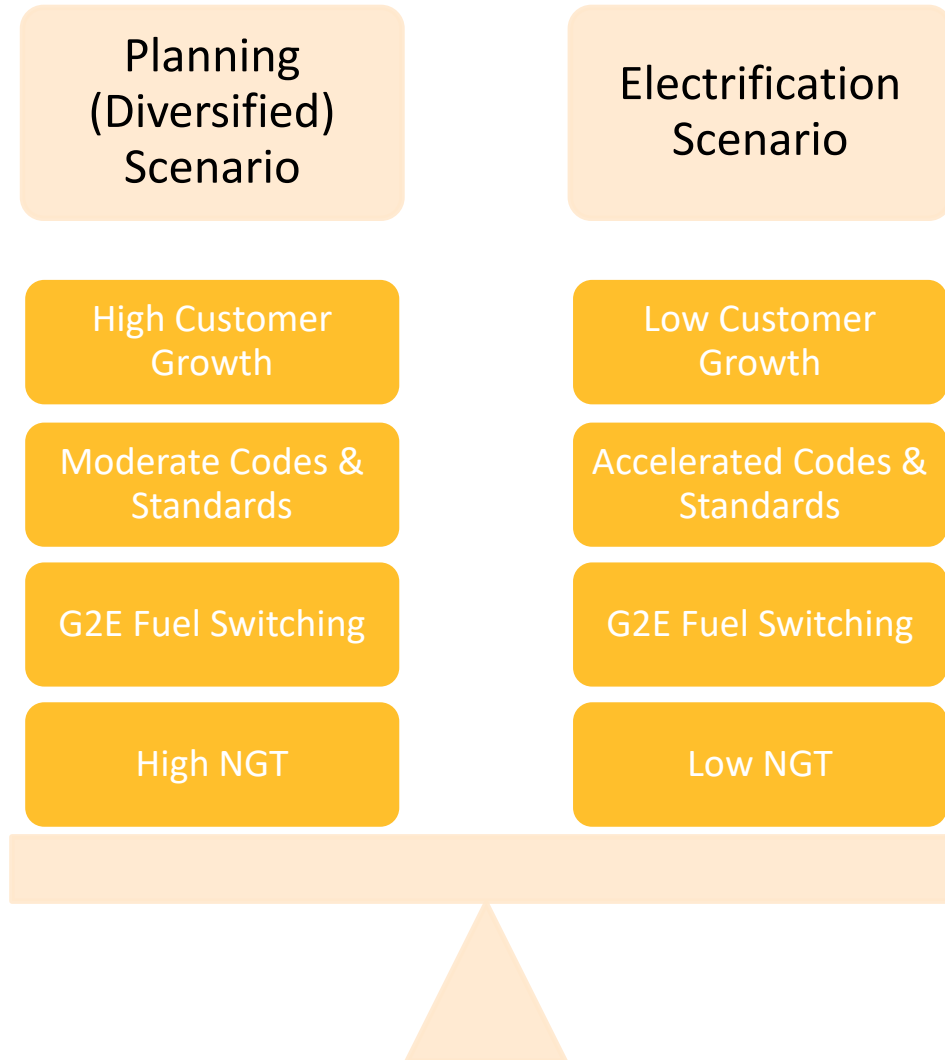
Demand scenario drivers

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

Demand scenario analysis

- Lower Bound Scenario
- Upper Bound Scenario
- Planning (Diversified) Scenario
- Electrification Scenario
- Economic Stagnation
- Price-based Regulation

Demand scenario comparison



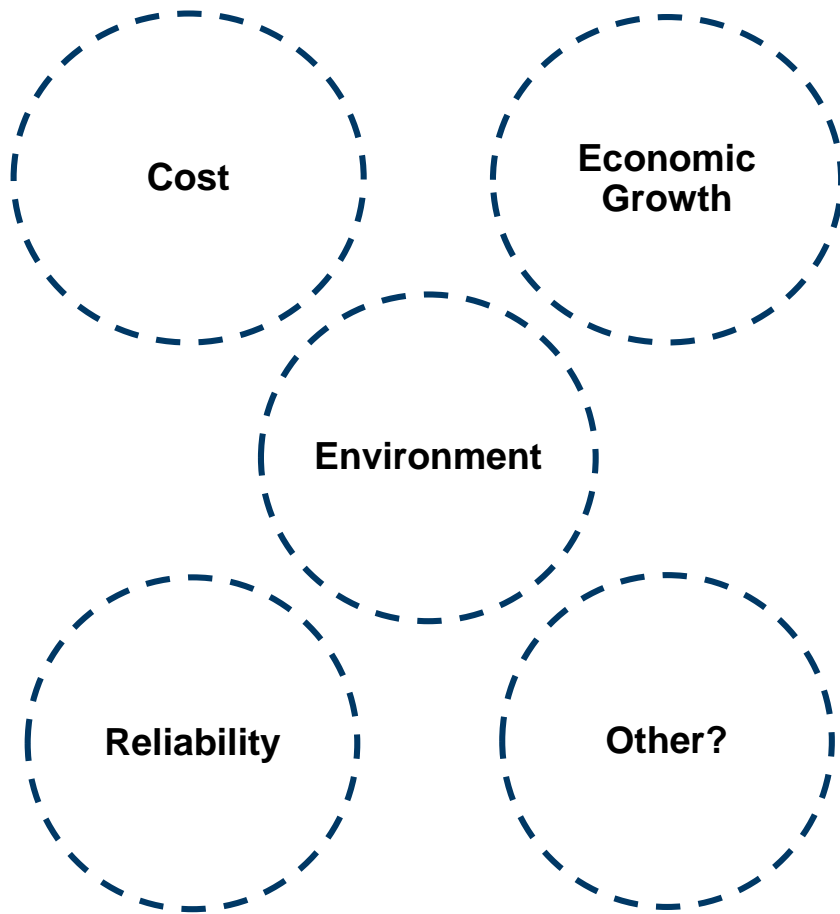
Questions for clarification



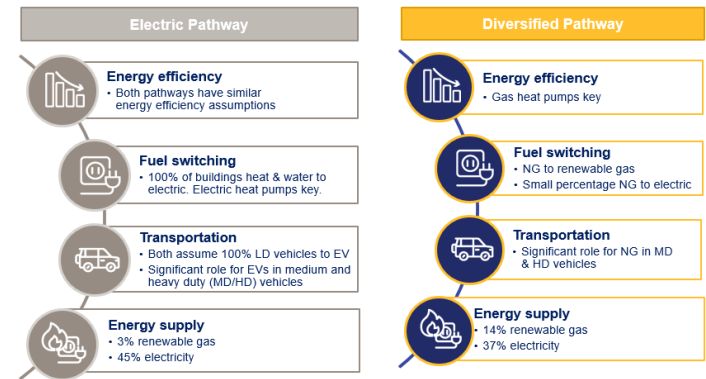
Discussion: Which drivers are of most interest to you and why? Which ones represent new opportunities or challenges for you?

- NGT Demand
- Fuel Switching
- Carbon Price
- New Construction Codes
- Appliance Standards
- Retrofit Codes
- RNG Production
- RNG Cost
- Hydrogen Production
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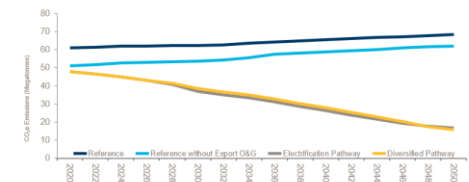
Discussion: What are your future natural gas or renewable gas needs and priorities?



Electric & Diversified pathways



Both pathways achieve the same level of GHG reductions



CO2 and CH4 sector emissions attributable to exports are excluded from both the Reference Case emissions and Pathway emissions

Projections and Confidence: 17

Energy at work FORTIS BC

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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
- Any questions or additional feedback can be addressed to irp@fortisbc.com
- We will advise you when the presentation and notes from today's session will be posted online
- Additional community consultations will take place throughout 2021
- **Electric resource plan - filing by June 30, 2021**
- **Natural gas resource plan - filing by March 31, 2022**

Thank you



For further information, please contact:

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talkingenergy.ca
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