

FortisBC Community Engagement Workshop

Natural gas long term resource planning

Safety Message

- Identify the location of emergency exits
- Determine the muster location in case we have to evacuate the building
- Dial 911 for emergencies
- Safety Initiatives
- Earthquake Awareness



Please note

- Your contributions may be used for formulating our regulatory submission
- As such, your feedback may become public during the regulatory process
- We will not attribute statements to individual workshop attendees

What we hope to achieve today

1. Obtain your feedback on long term resource planning and conservation & energy management issues
2. Provide a better understanding of the energy planning environment
3. Raise awareness of local community initiatives and natural gas for transportation, renewable natural gas, and conservation & energy management programs
4. Identify community opportunities and concerns



Energy at work



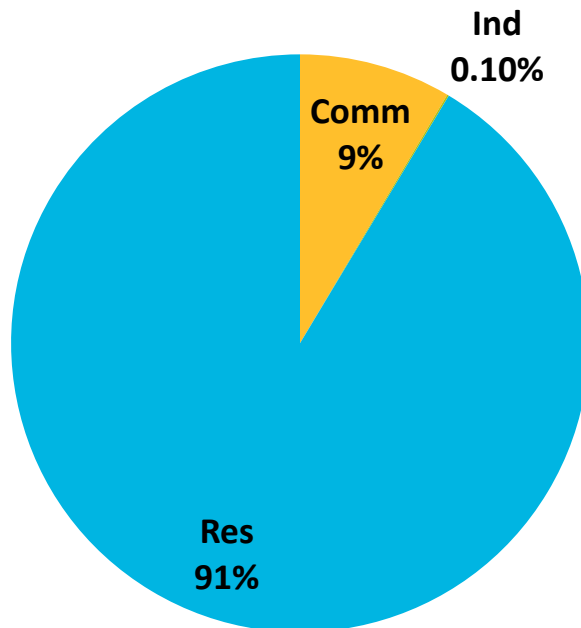
FortisBC delivers natural gas, electricity and piped propane



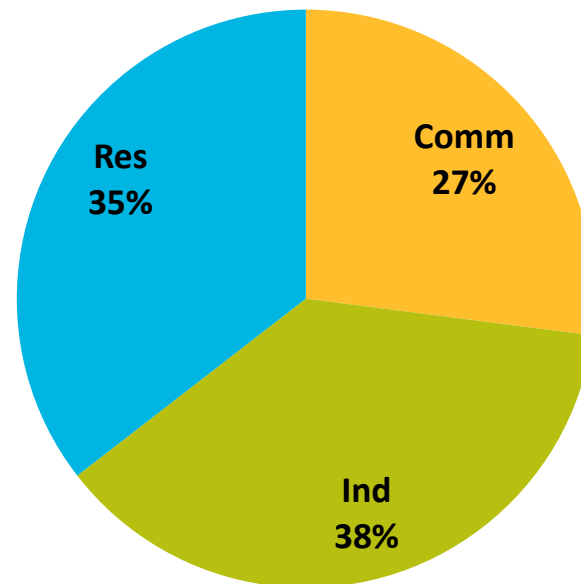
- >1.1 million customers
- Serving 135 communities

Most FortisBC accounts are residential but total annual demand breaks down evenly across customer sectors

2015 Customers



2015 Annual Demand



Community engagement



We're dedicated
to giving back
where we live
and work.



**Community
Investment Program**

**Youth Energy Efficiency and
Safety Education Programs**

**Residential Energy Efficiency
Works (REnEW) Program**

**Aboriginal
Skills 3G: BC**

FortisBC Overview



**Introduction to
Long-Term
Resource Planning**



Planning
Environment
Considerations



Annual Demand
Forecast Discussion



Wrap-Up &
Networking

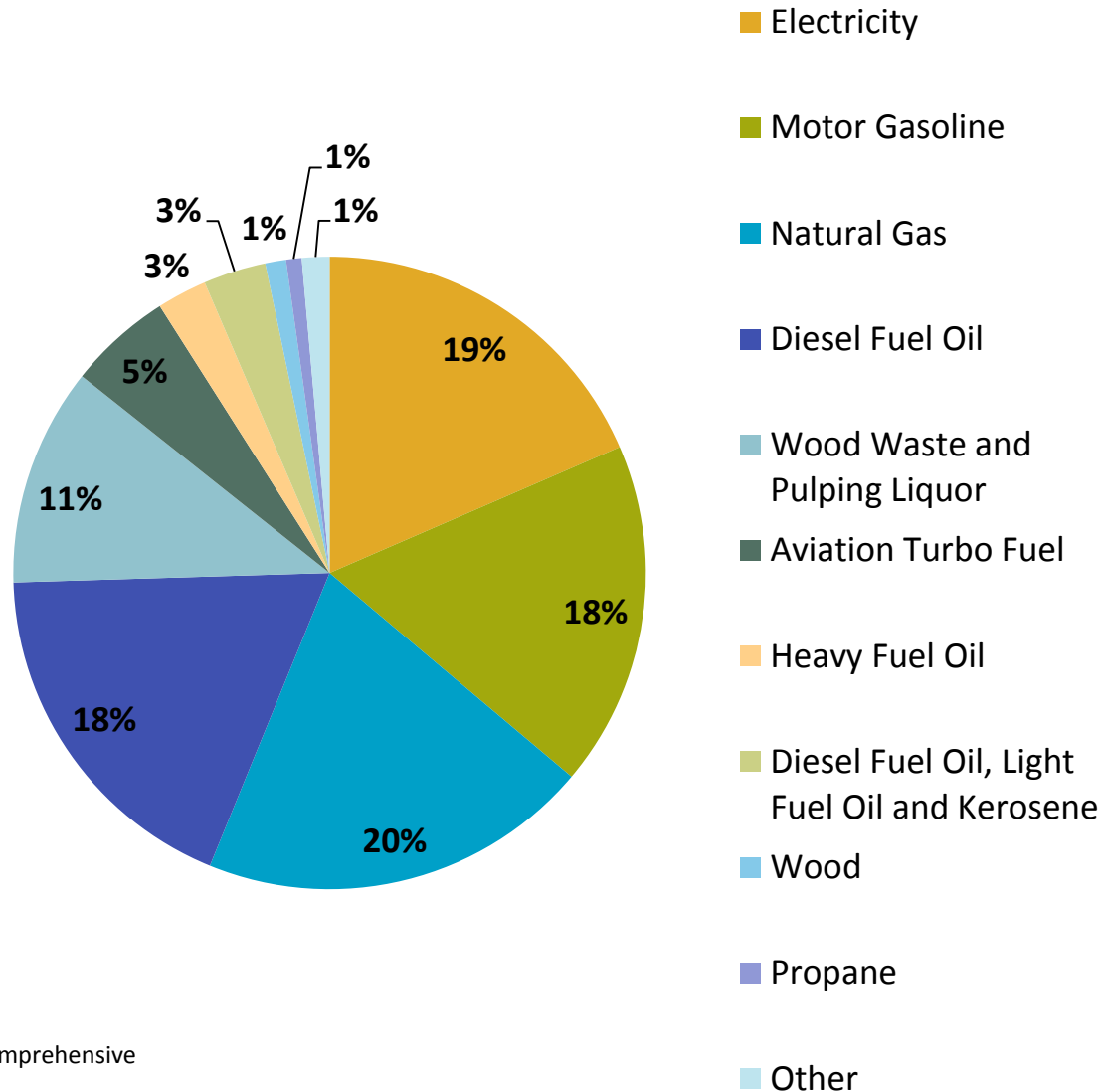
Energy at work



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British Columbia has a diversified energy mix

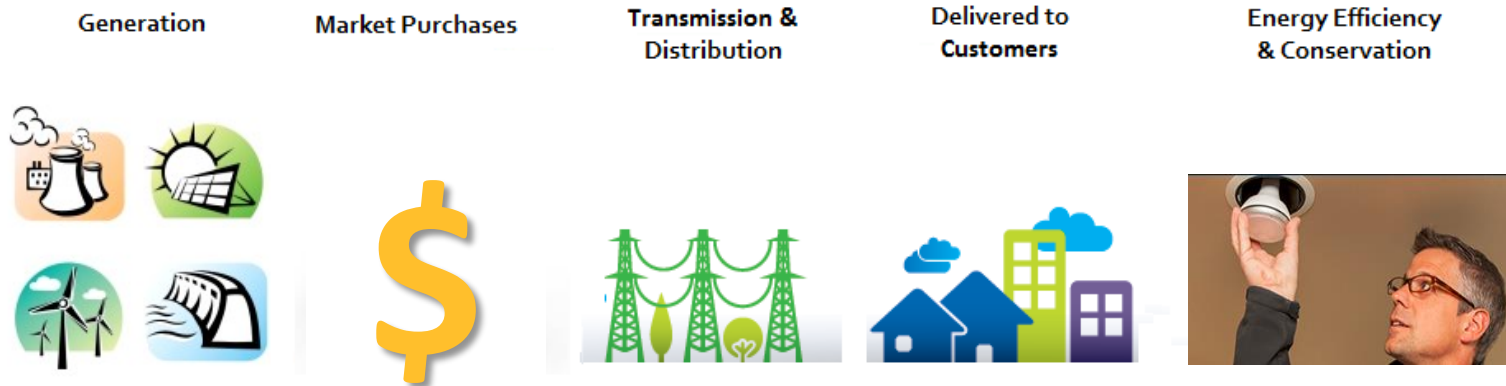
2014 Energy Use, BC and Territories



Source: Natural Resources Canada Comprehensive Energy Use Database

Natural gas vs. electric resource planning

Electricity



Natural Gas



Resource Planning Objectives

- Ensure cost effective, secure and reliable energy for customers
- Provide cost-effective energy efficiency and conservation initiatives
- Ensure consistency with provincial energy objectives (e.g. applicable *Clean Energy Act* objectives, Climate Leadership Plan)

The 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?

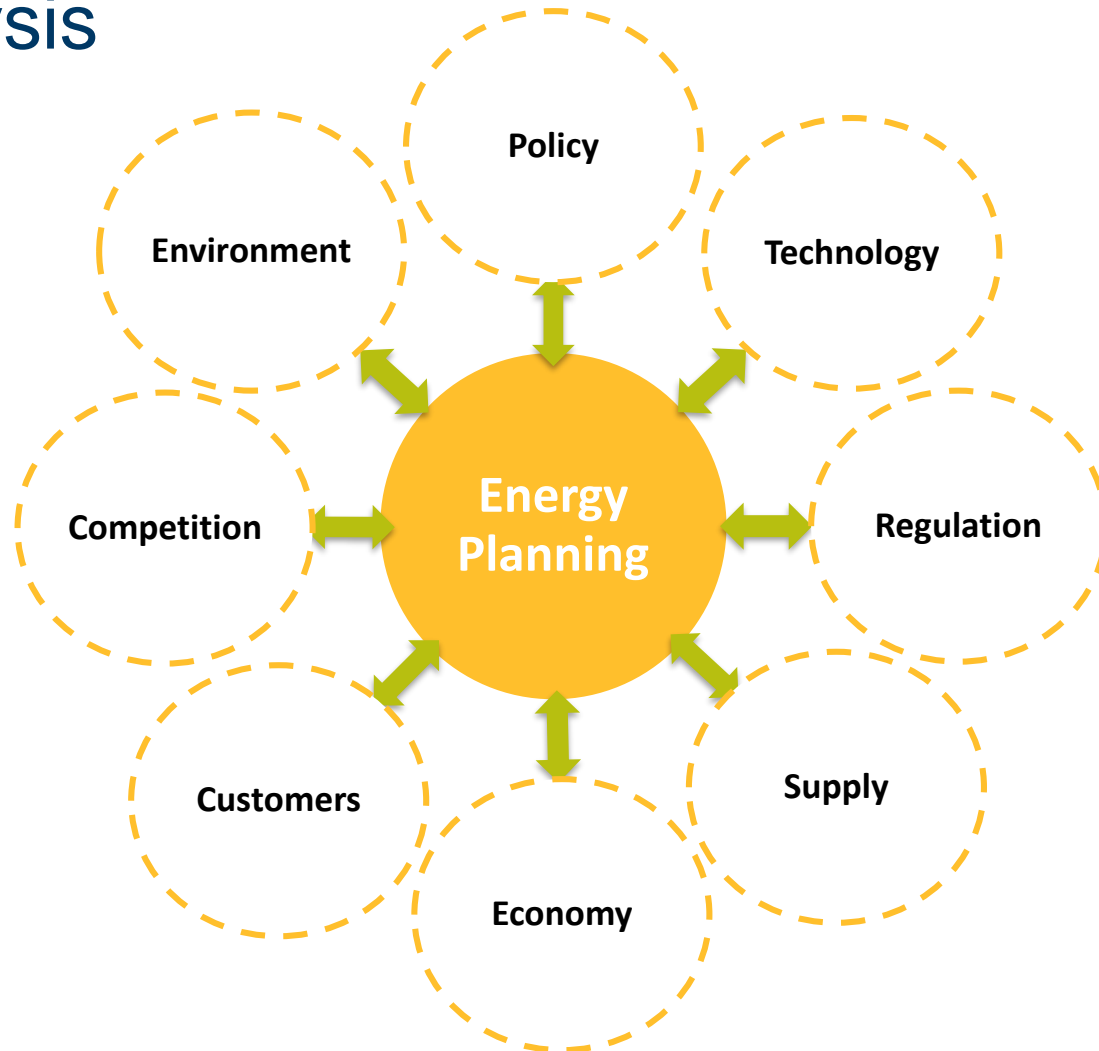


Key Infrastructure Projects – Tilbury LNG expansion project

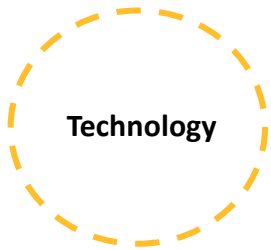


Looking Ahead...

Planning environment: factors that influence the analysis



Examples of uncertainty across the planning horizon



New end-use technologies



Shifting policy environment



Customers interacting differently with the energy grid

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Natural gas resources are distributed across North America

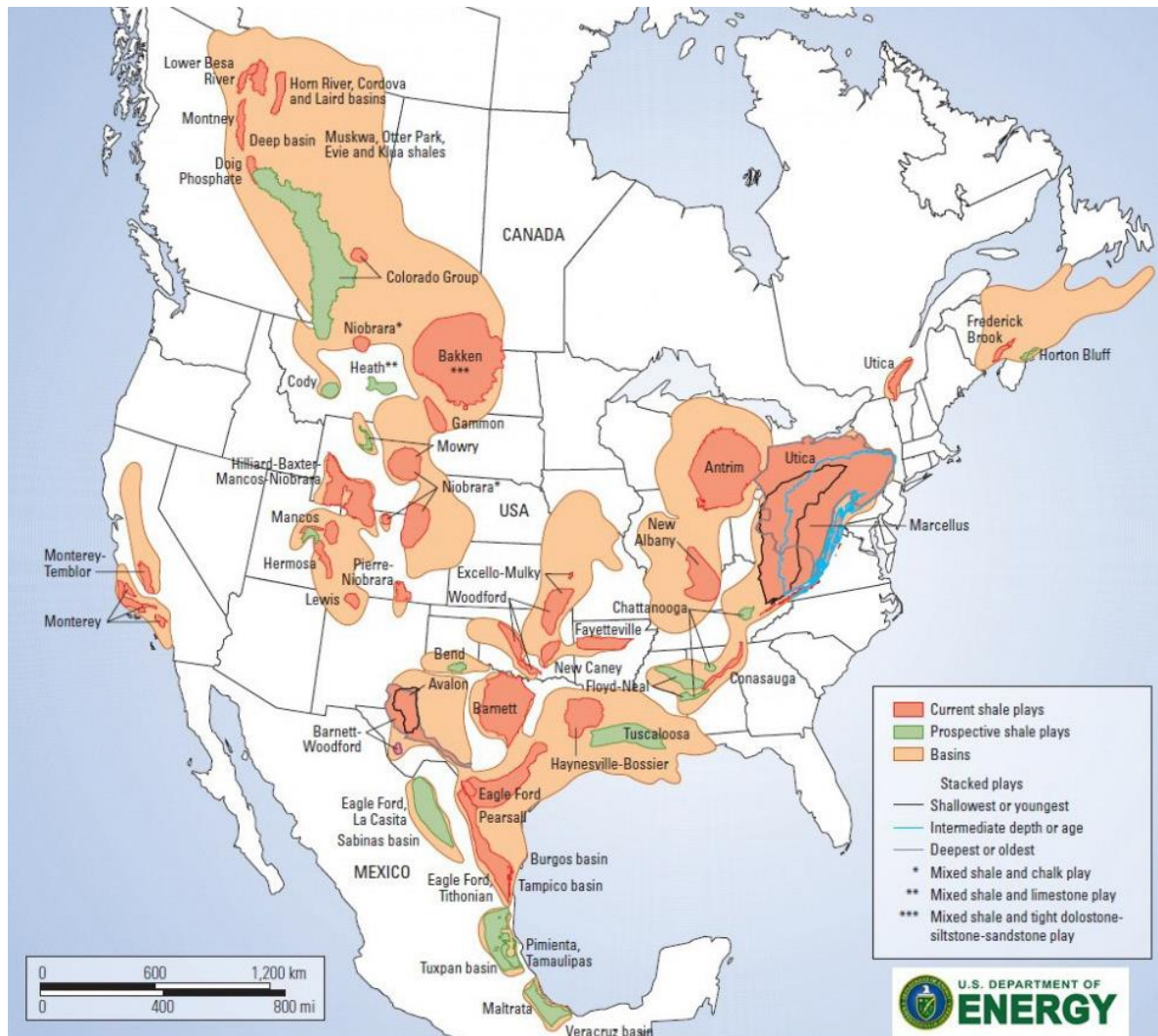


Illustration: transmission infrastructure helps determine continental natural gas flow

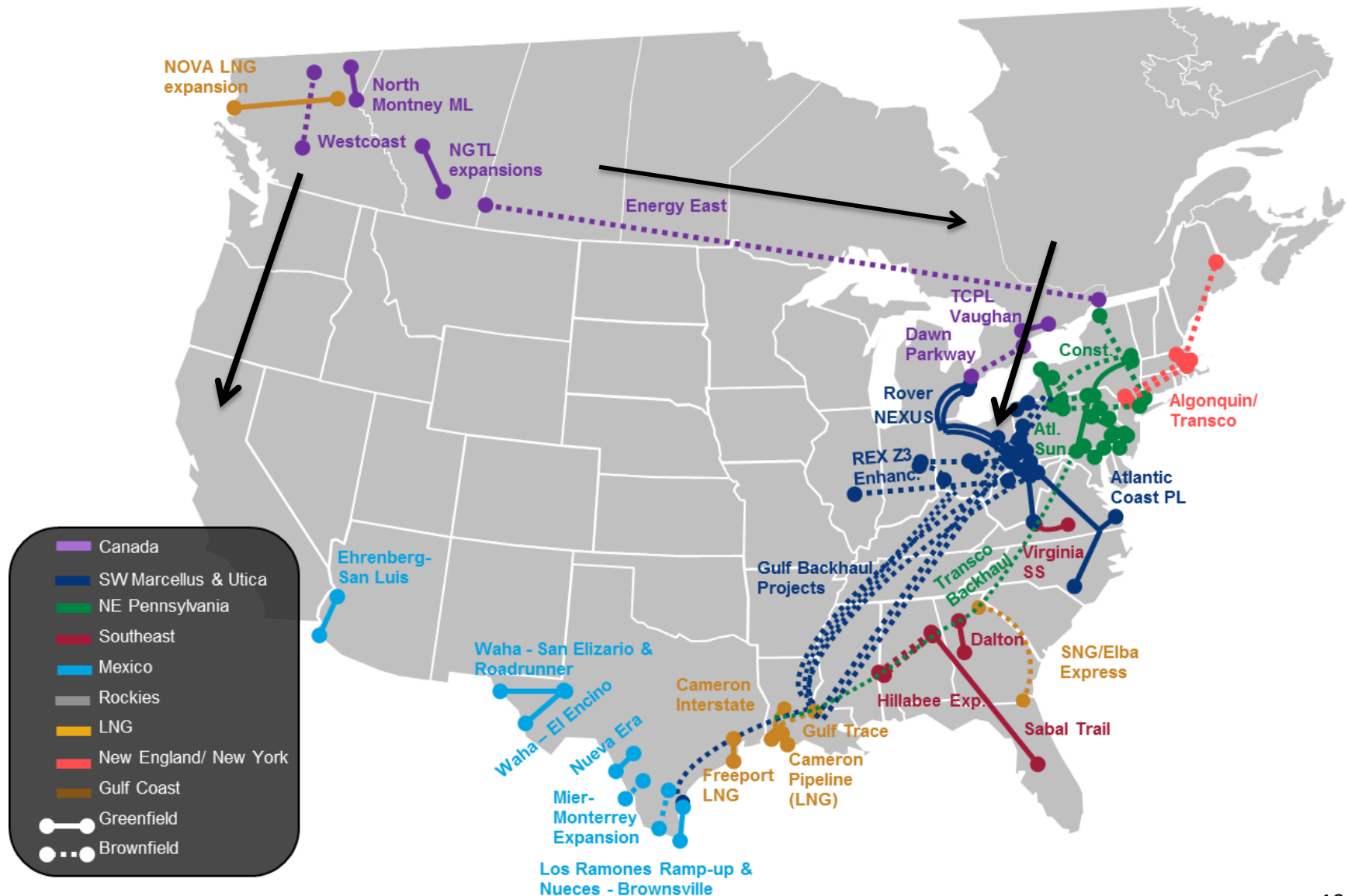
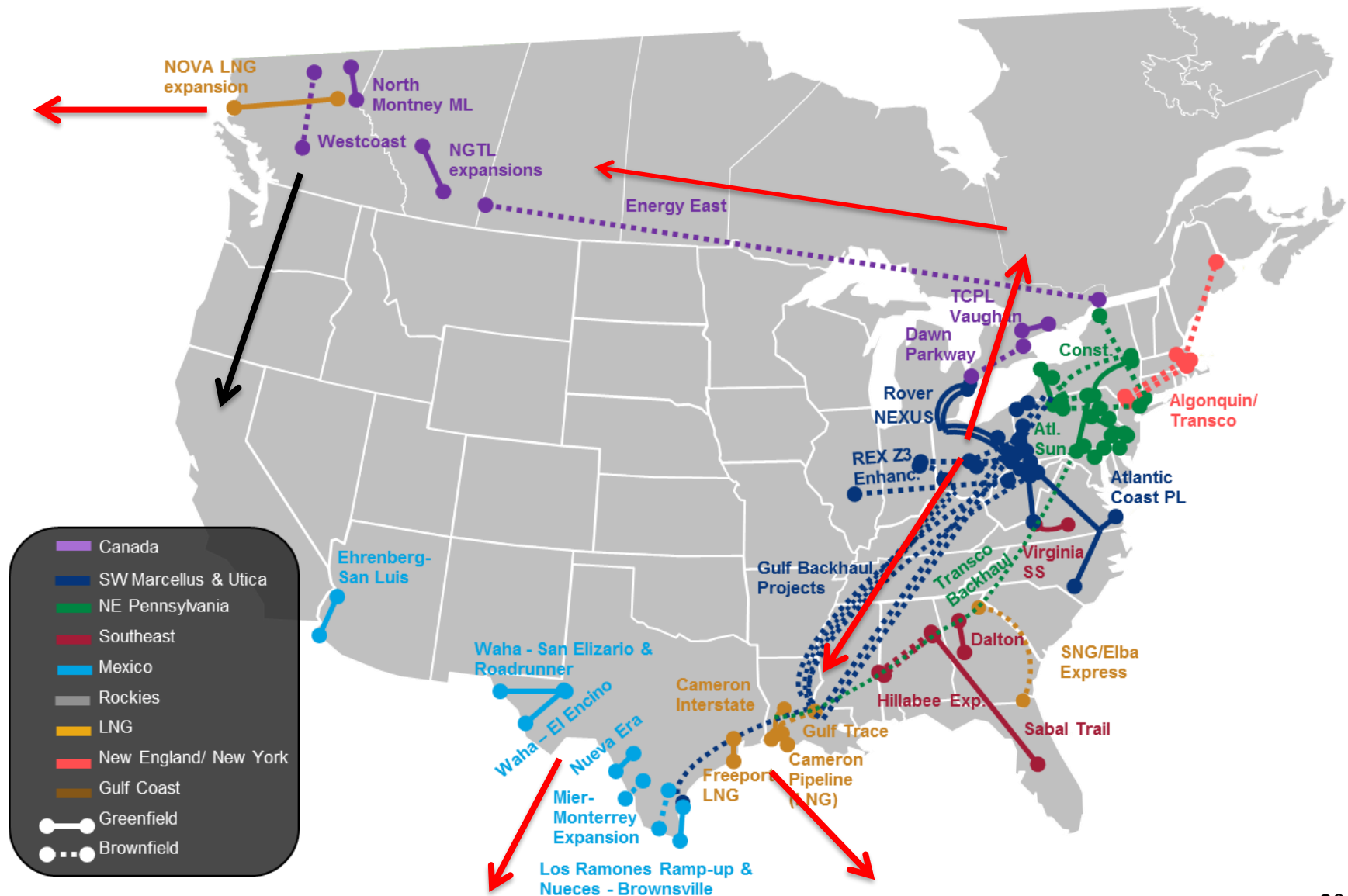
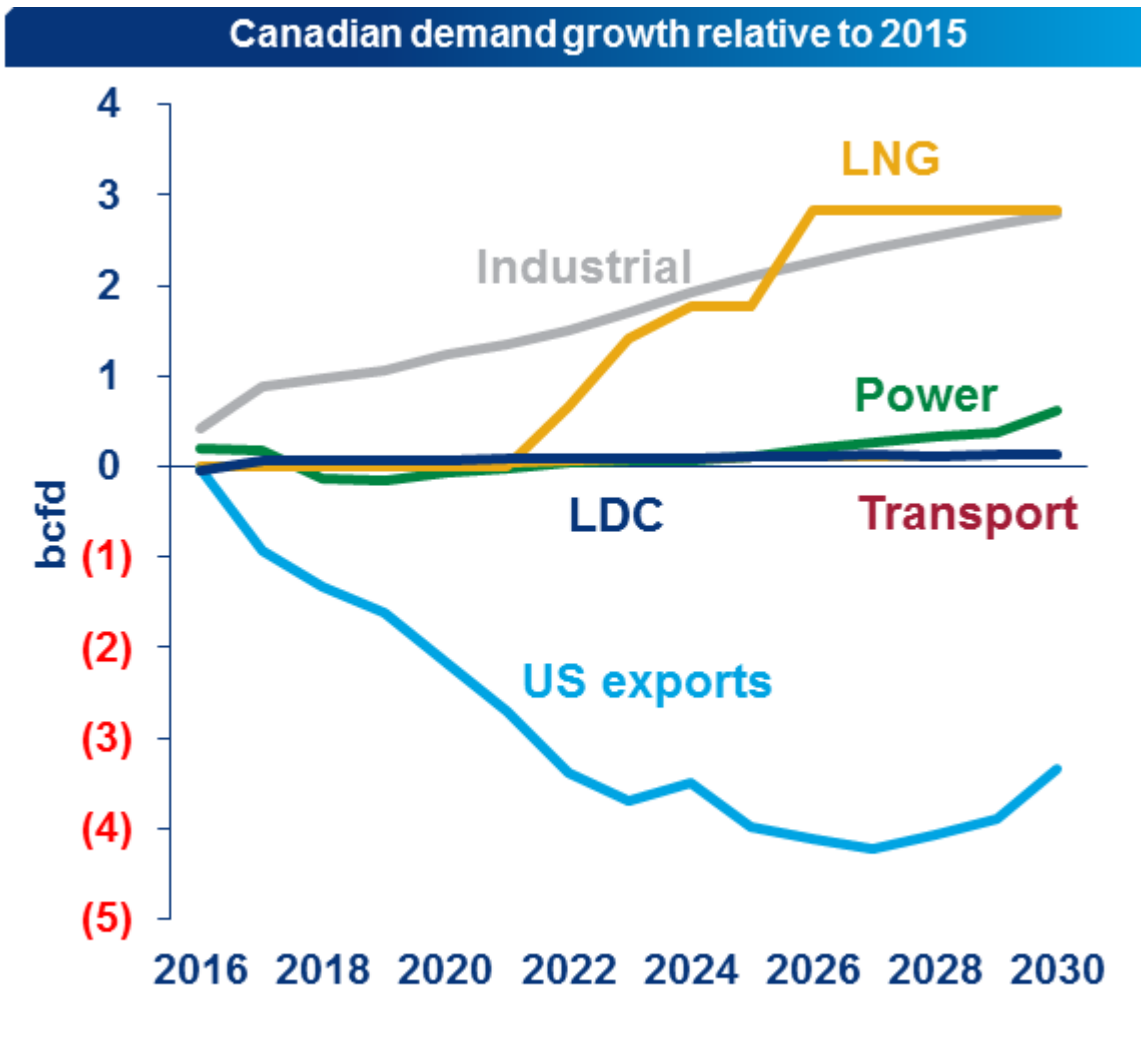


Illustration: market dynamics are changing



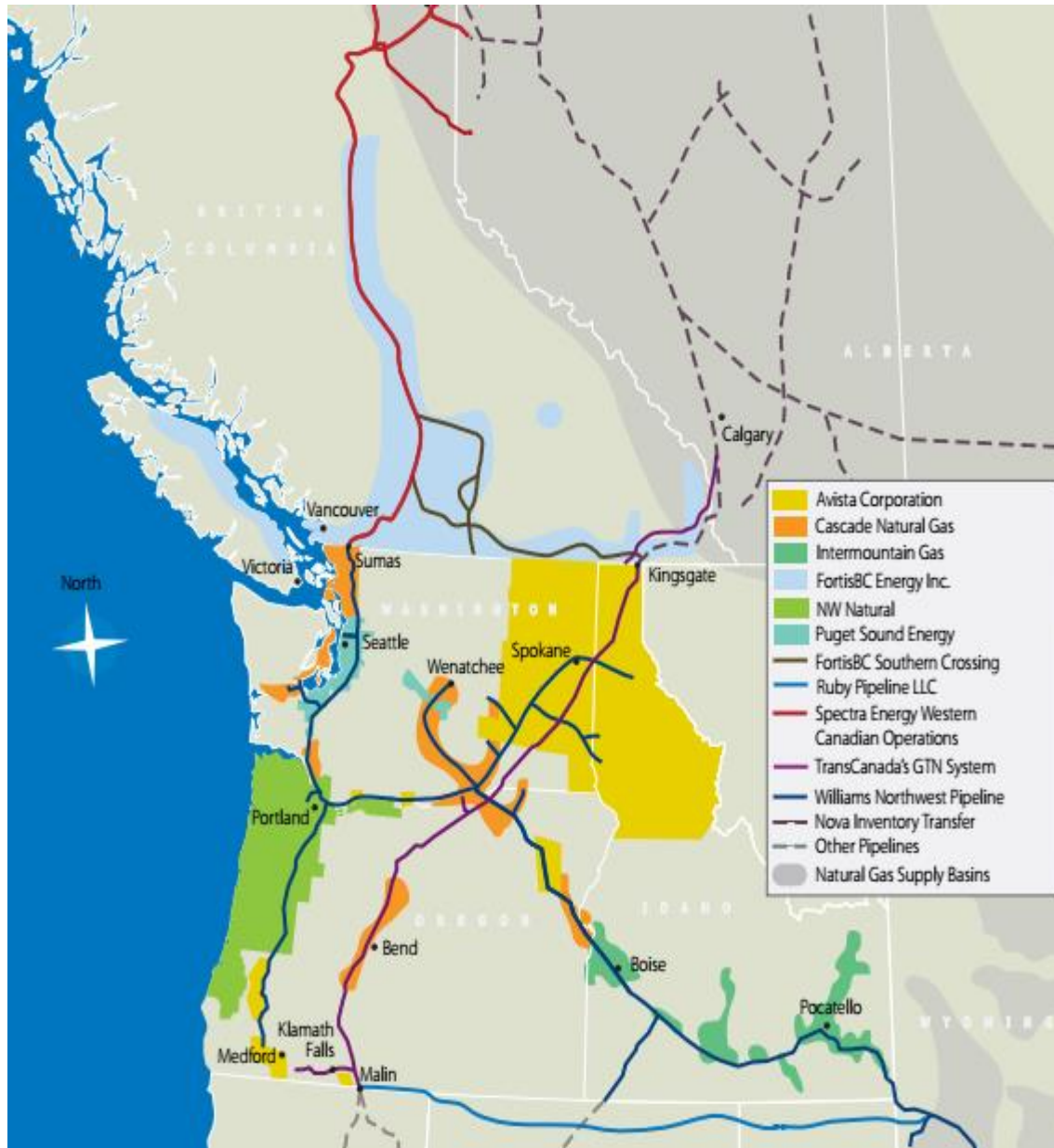
Regional supply-demand balance influences the commodity price



- US exports (east) expected to decrease as Marcellus production pushes Canadian Gas out of the Market
- LNG exports are expected to make up difference
- Oil sands production still drives gas demand
- Power plays a less significant role compared to U.S.

Source: Wood Mackenzie

The BC region sits within this wider context



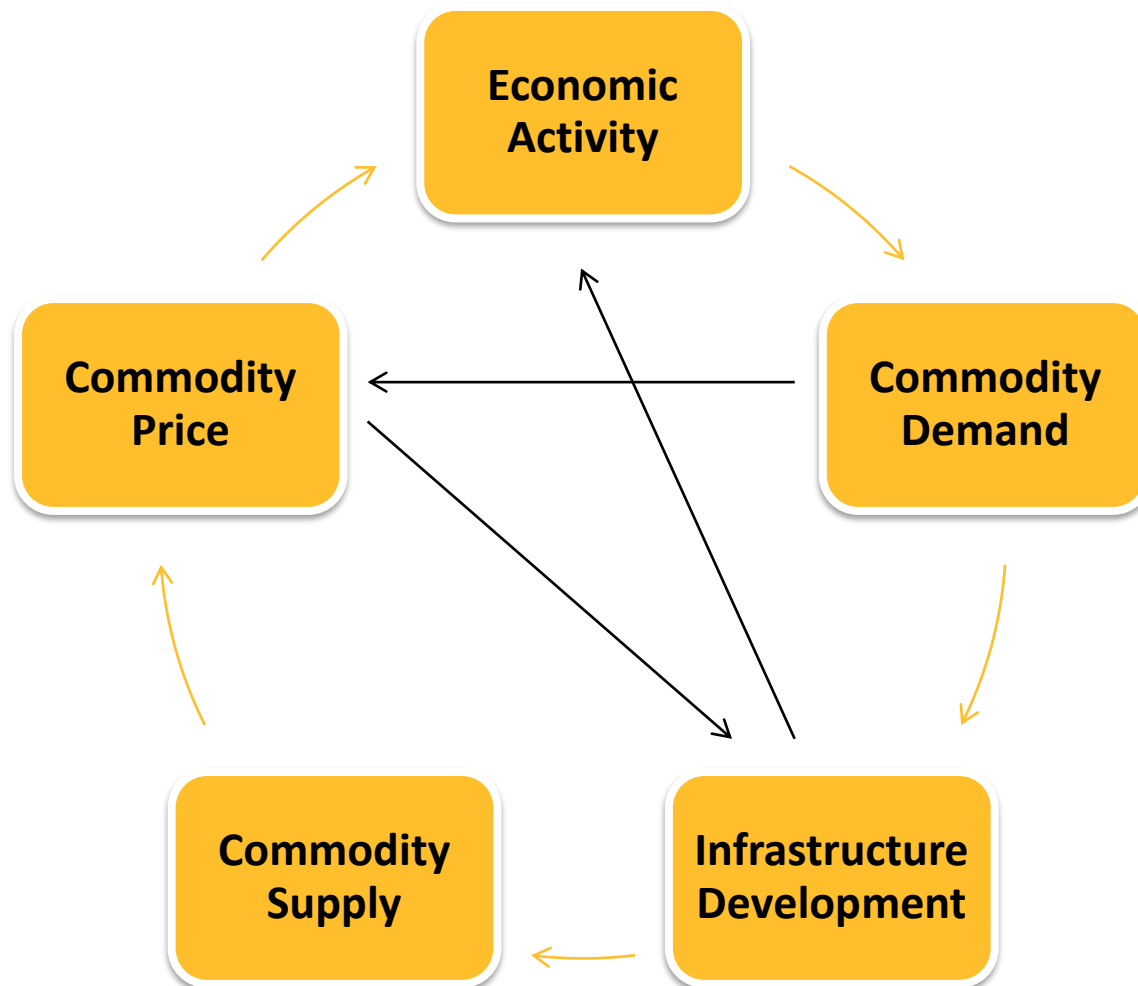
Pipeline transportation capacity expansions are required

4-5 year lead time to bring new pipeline infrastructure into service

Firm long-term contracts are required to initiate an expansion

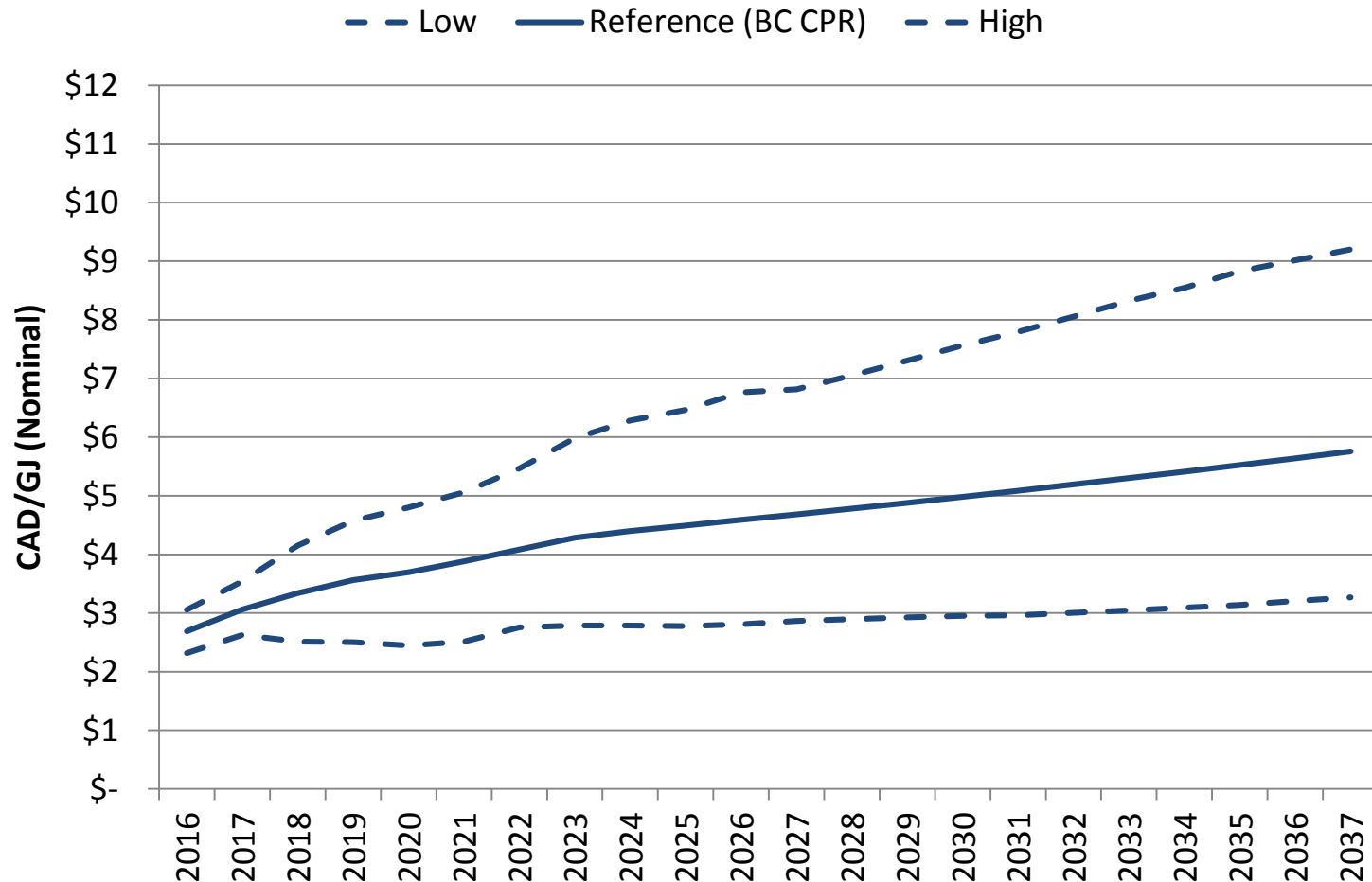
BC production moving to Alberta

Economic activity and commodity market dynamics interact cyclically

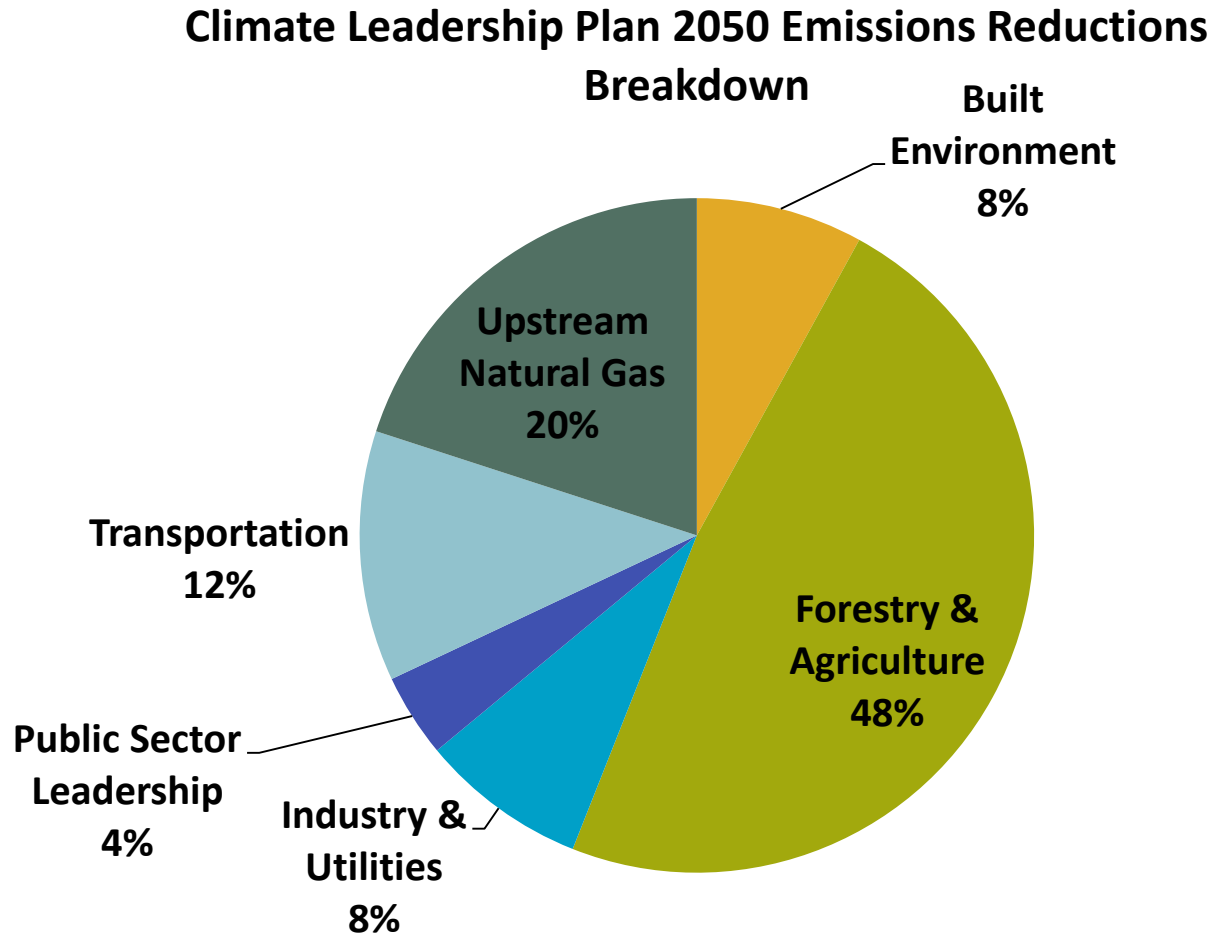


2017 LTGRP – Natural gas commodity price assumptions

Sumas Natural Gas Price Forecast (Annual Prices)

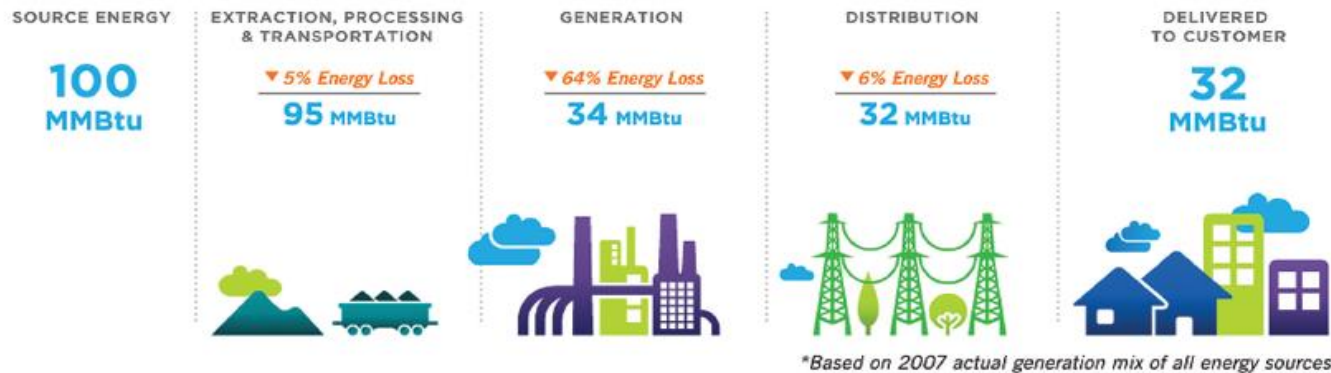


Planning impacts focus on upstream resources, transportation and built environment

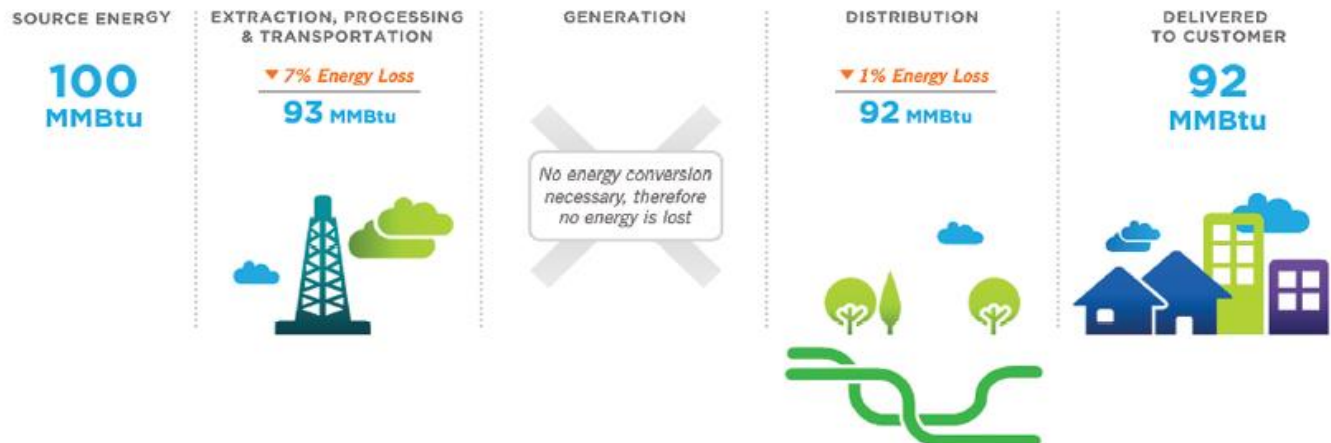


Natural gas is an efficient fuel for thermal applications and can replace coal for power generation

Electricity



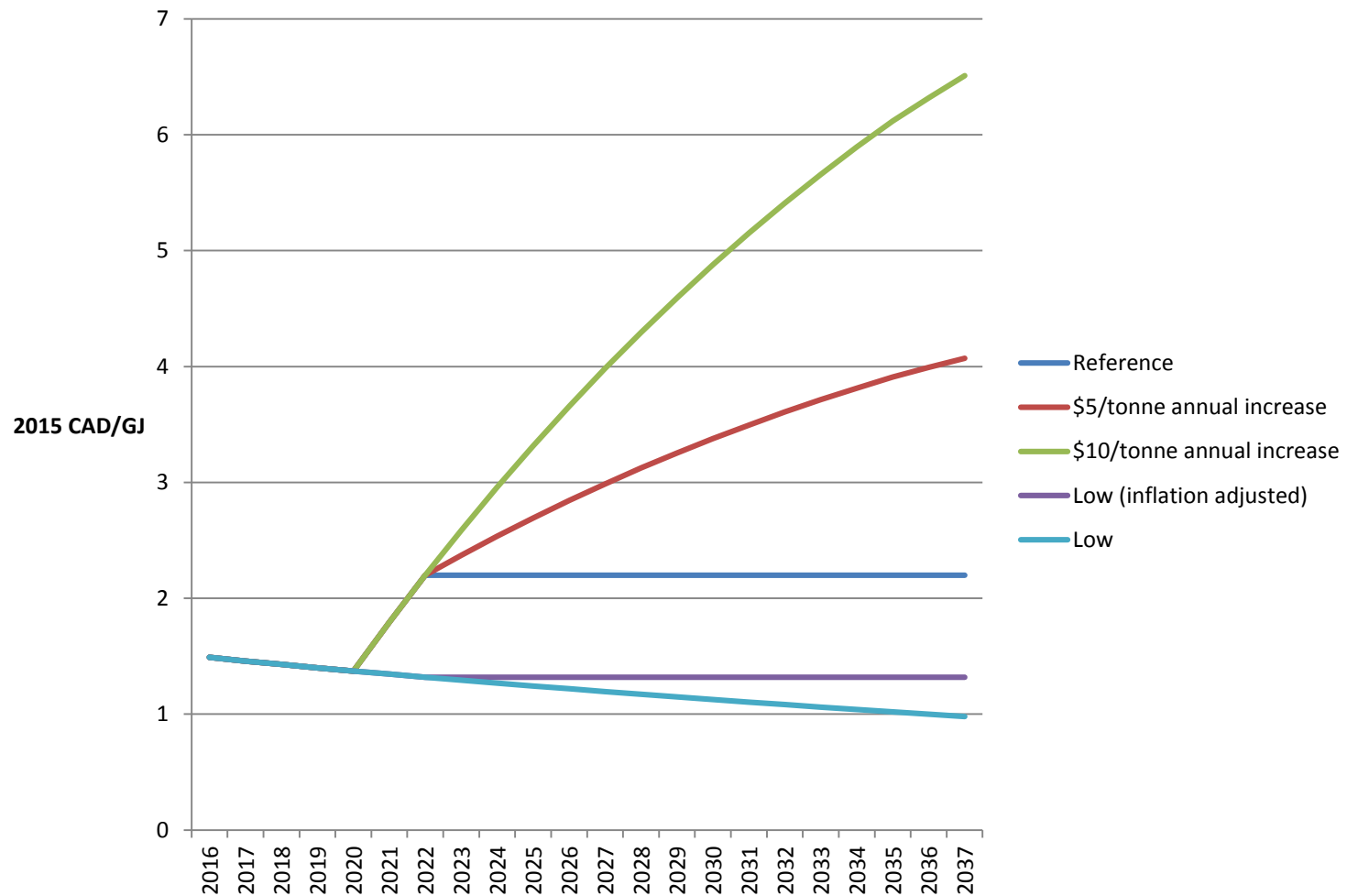
Natural Gas



Multiple layers of carbon policy overlap and interact with economic activity

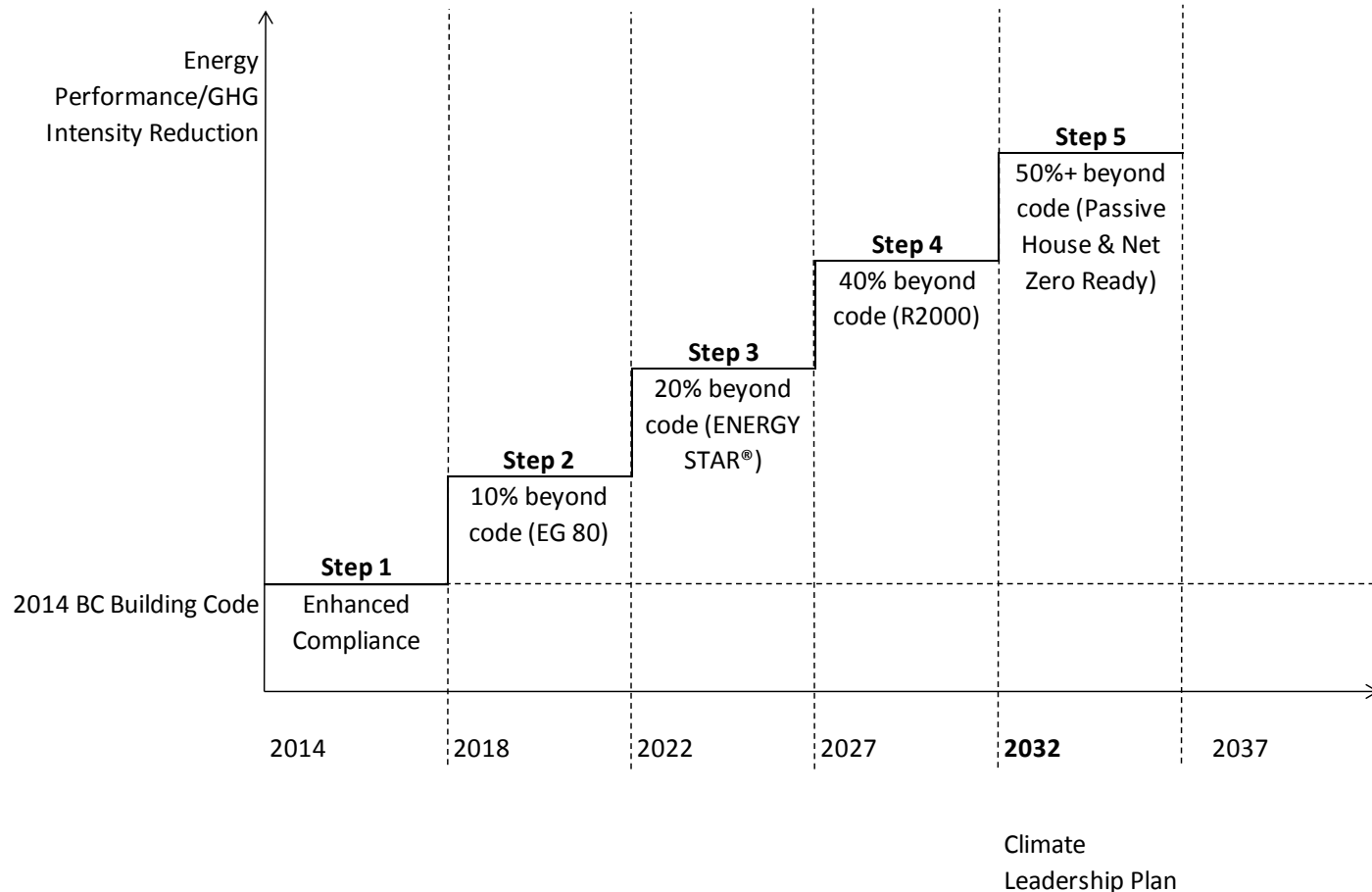
Critical Uncertainty	Level of Government
Carbon Price	<ul style="list-style-type: none">- Federal- Provincial
Building Codes	<ul style="list-style-type: none">- Provincial- Municipal
Appliance Standards	<ul style="list-style-type: none">- Federal- Provincial- Municipal
Zoning Requirements	<ul style="list-style-type: none">- Municipal

Carbon prices are significant in relation to natural gas commodity costs



Building codes reduce energy demand and may increase capital costs

Illustration – Residential, Single Family Dwellings, LM



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Planning
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**Annual Demand
Forecast
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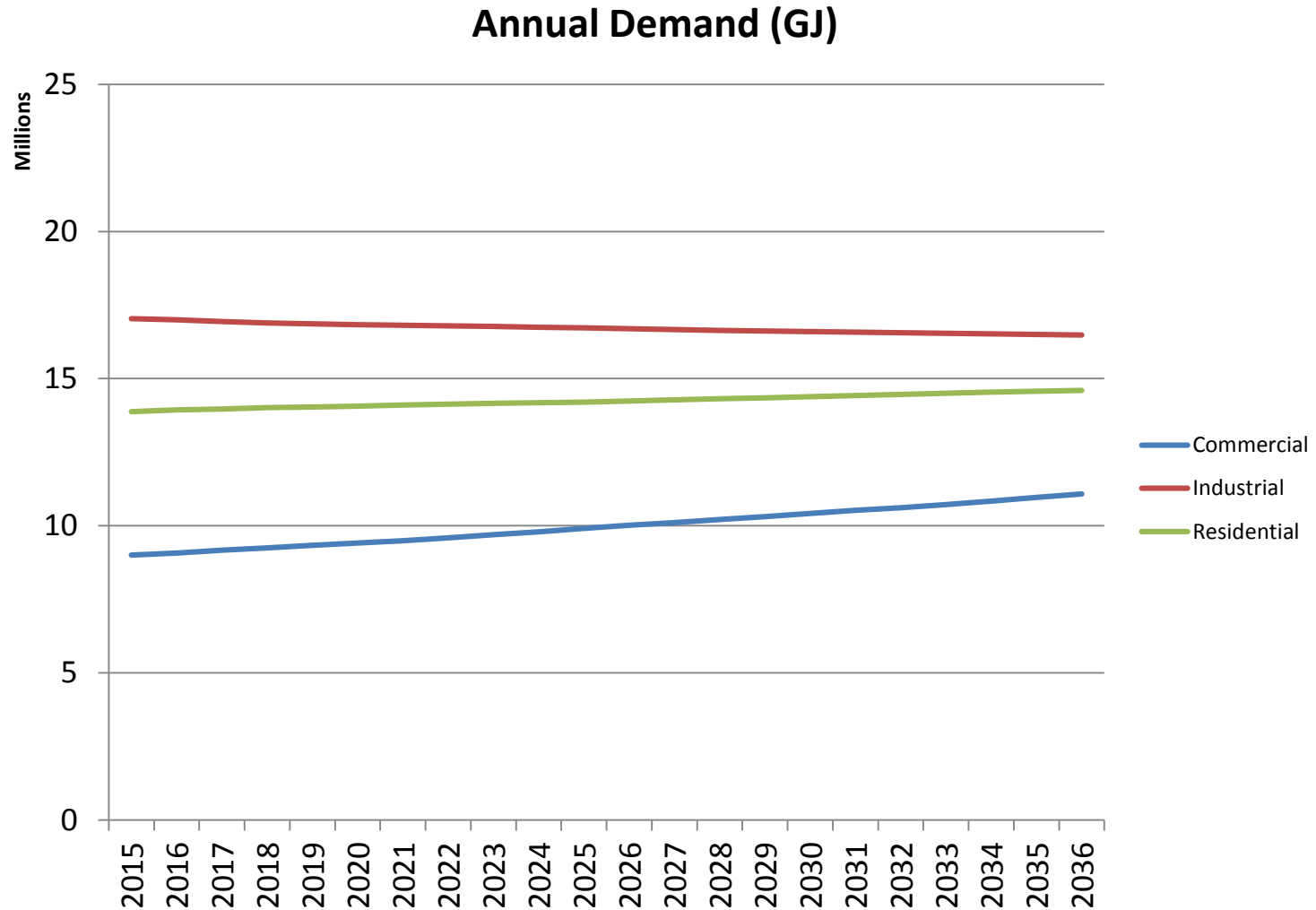
Wrap-Up &
Networking

Energy at work

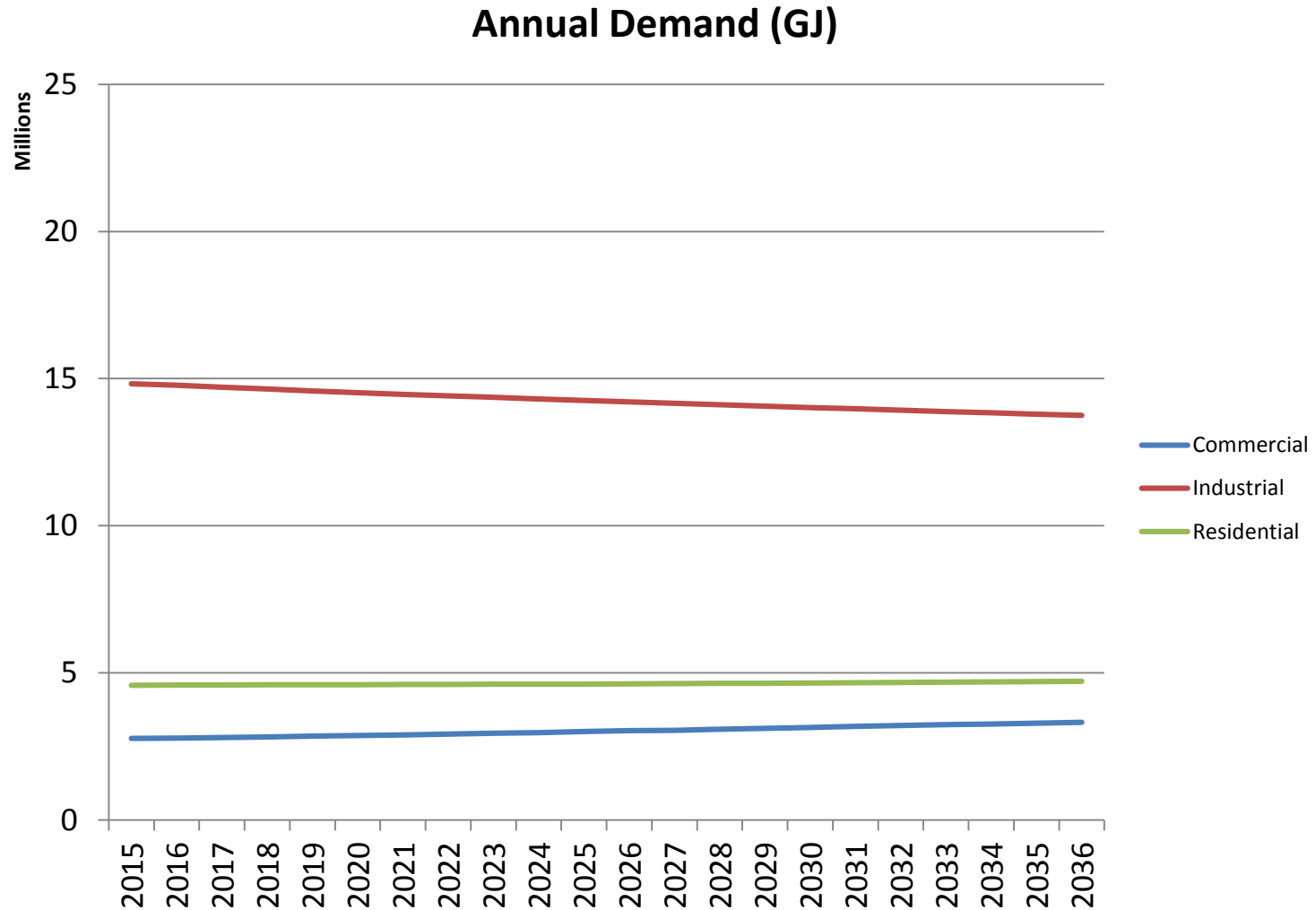


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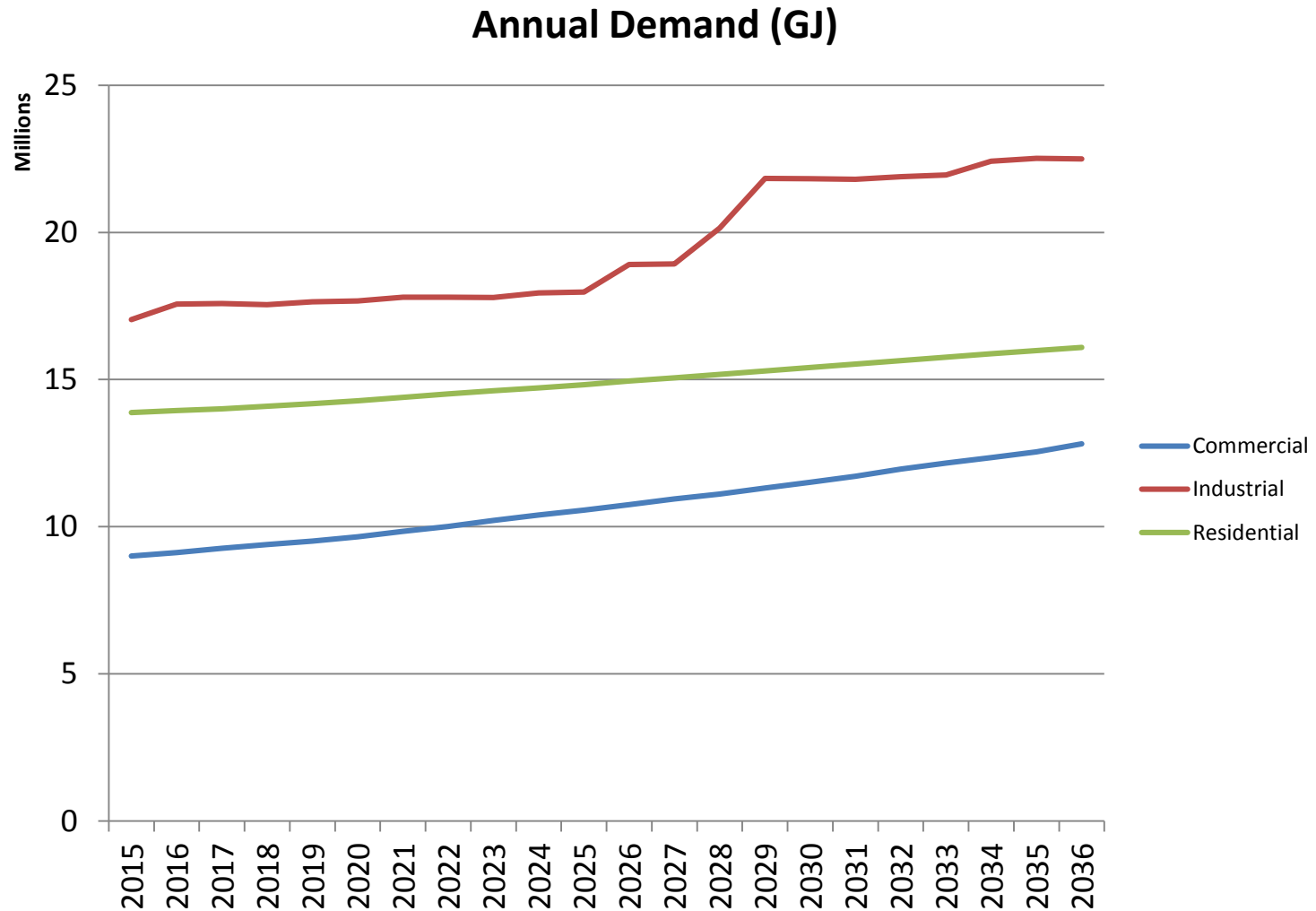
2017 LTGRP – Southern Interior: Reference Case



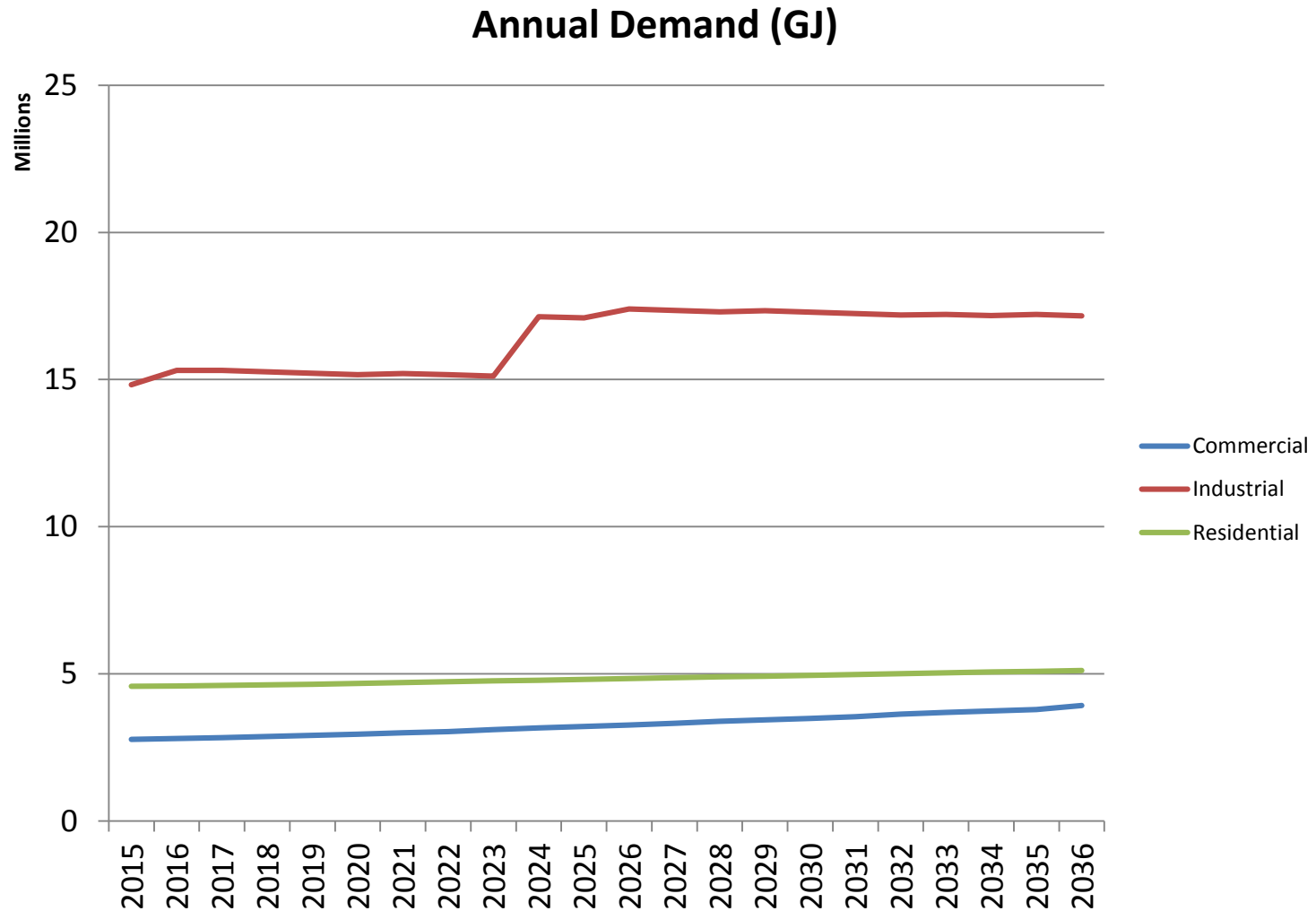
2017 LTGRP – Northern Interior: Reference Case



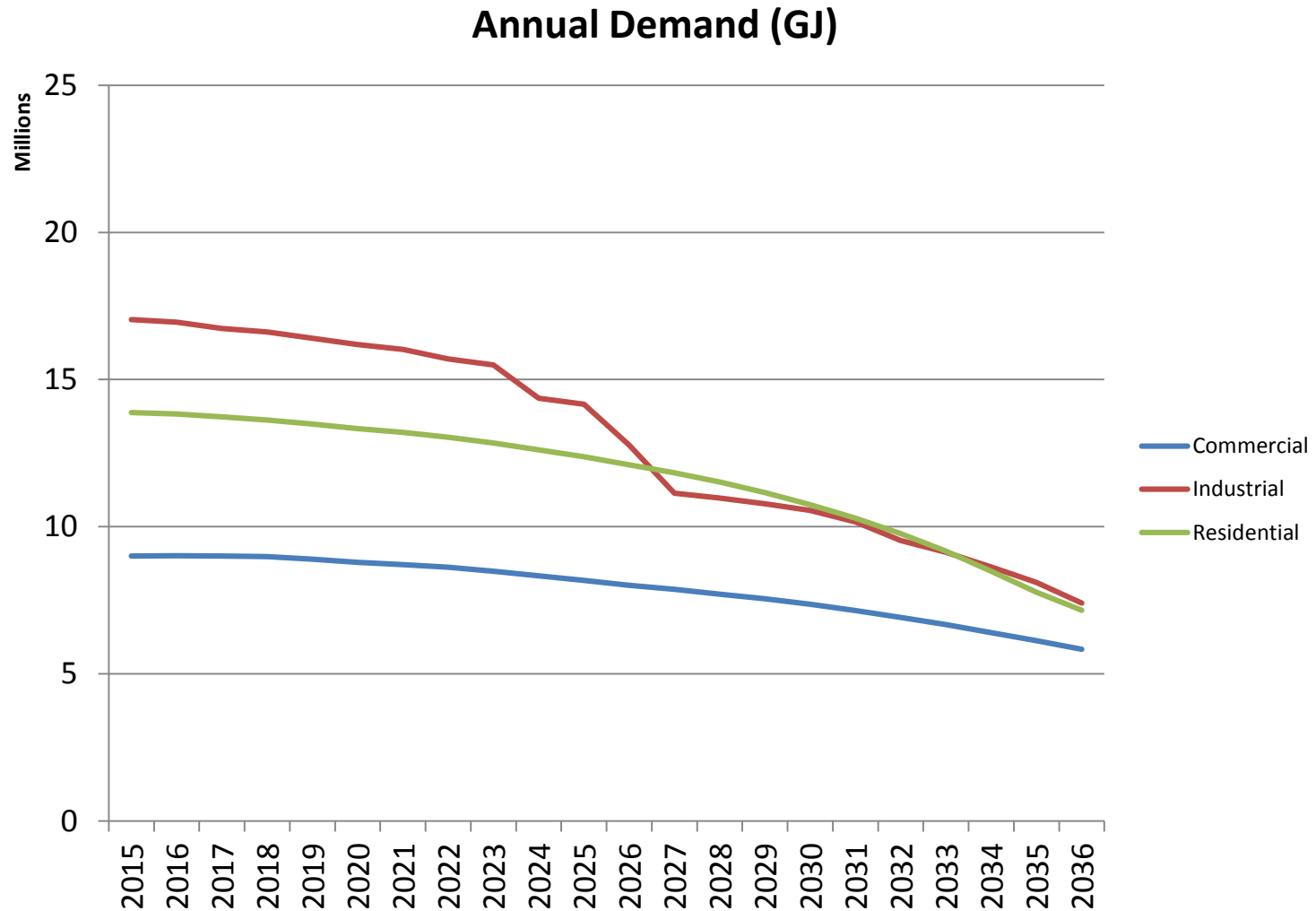
2017 LTGRP – Southern Interior: Upper Bound



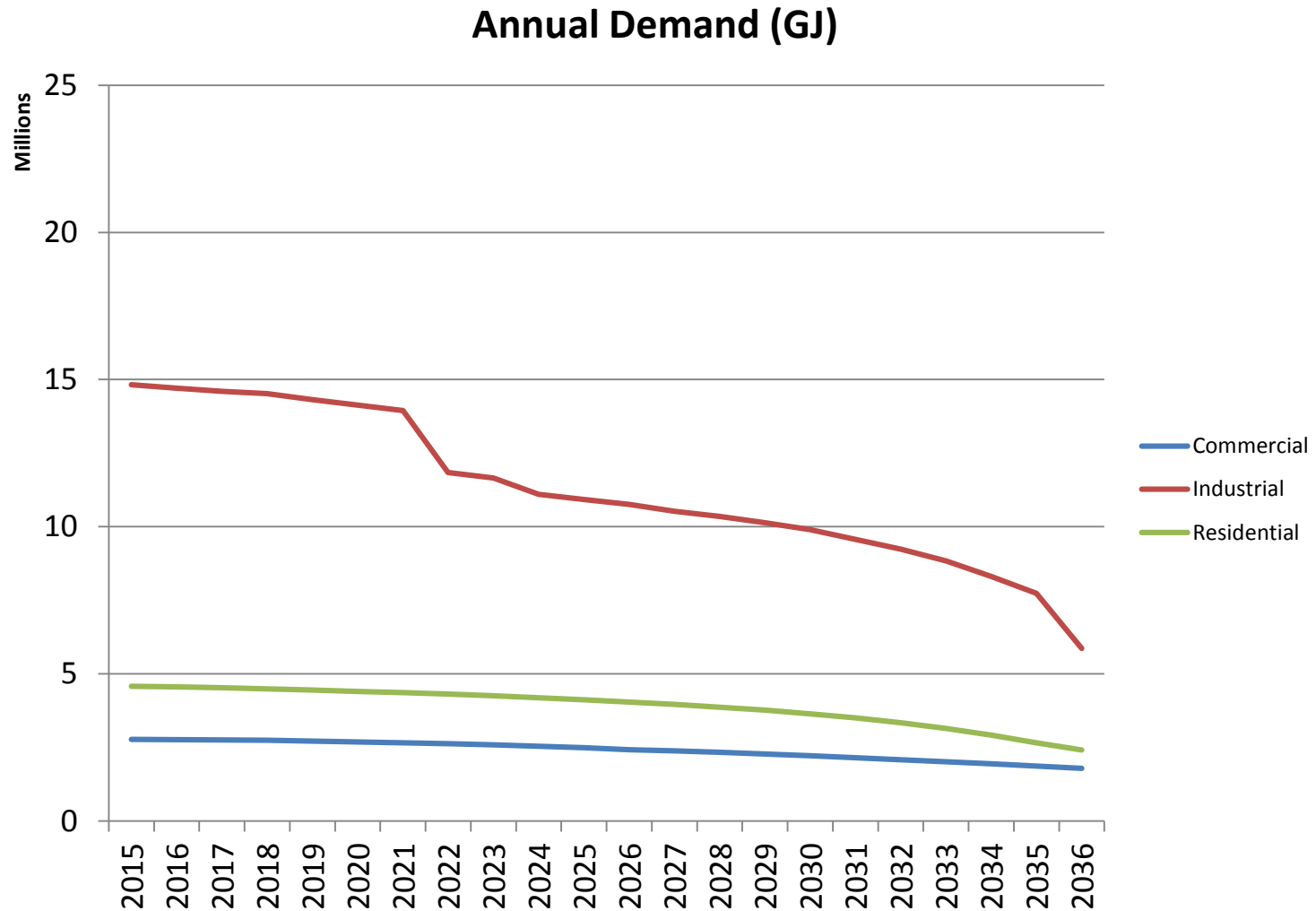
2017 LTGRP – Northern Interior: Upper Bound



2017 LTGRP – Southern Interior: Lower Bound



2017 LTGRP – Northern Interior: Lower Bound



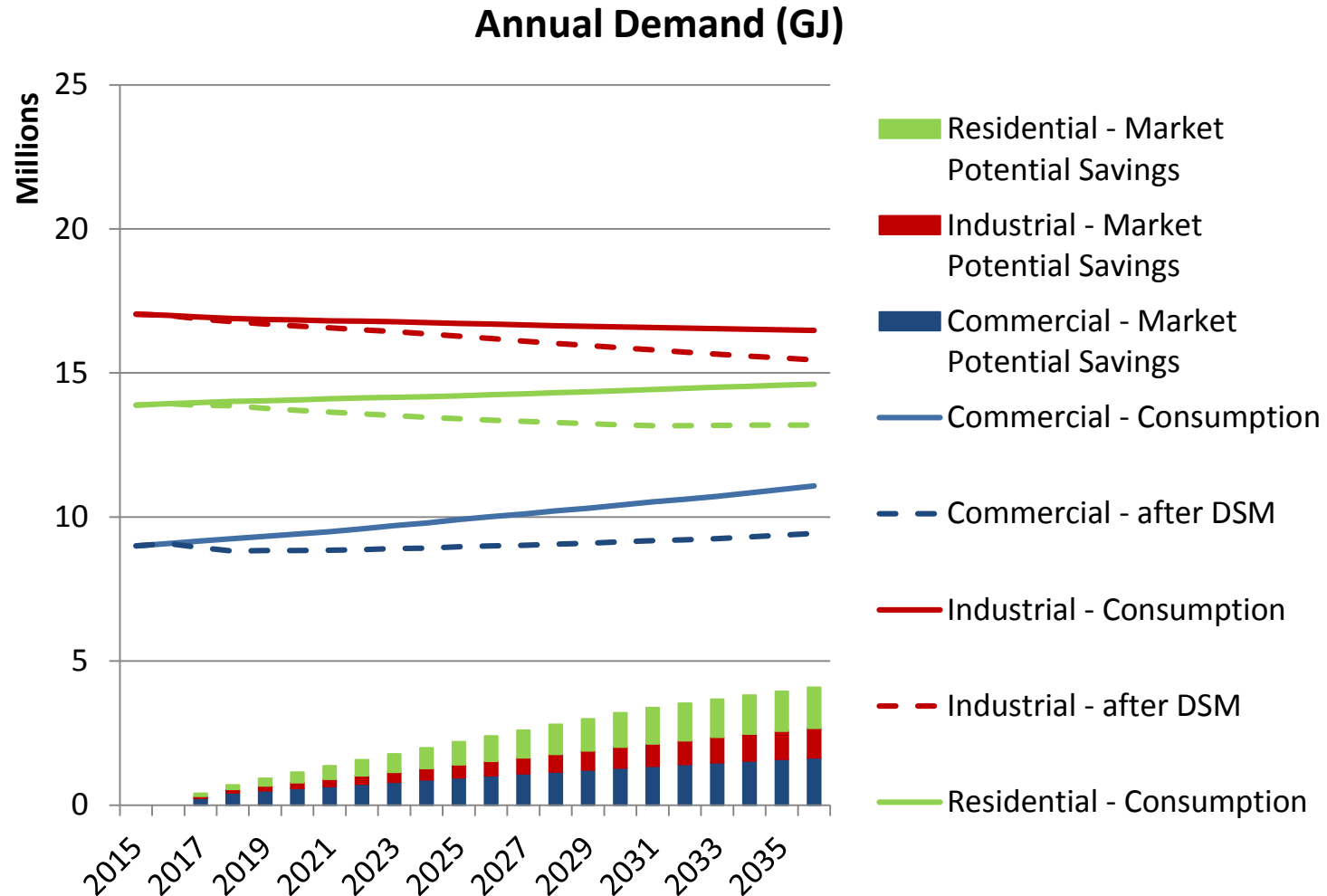
Conservation & energy management rebates for your home

Program	Fuel Type	Rebates
Home Renovation Rebate Program	Natural Gas Electricity	Various
New Home Program	Natural Gas Electricity	Up to \$2,000
Energy Conservation Assistance Program	Natural Gas Electricity	Various
Energy Saving Kit	Natural Gas Electricity	Free Kit
EnerChoice® Fireplace Program	Natural Gas	\$300
ENERGY STAR® Water Heater Program	Natural Gas	Up to \$1,000

Conservation & energy management rebates for your business

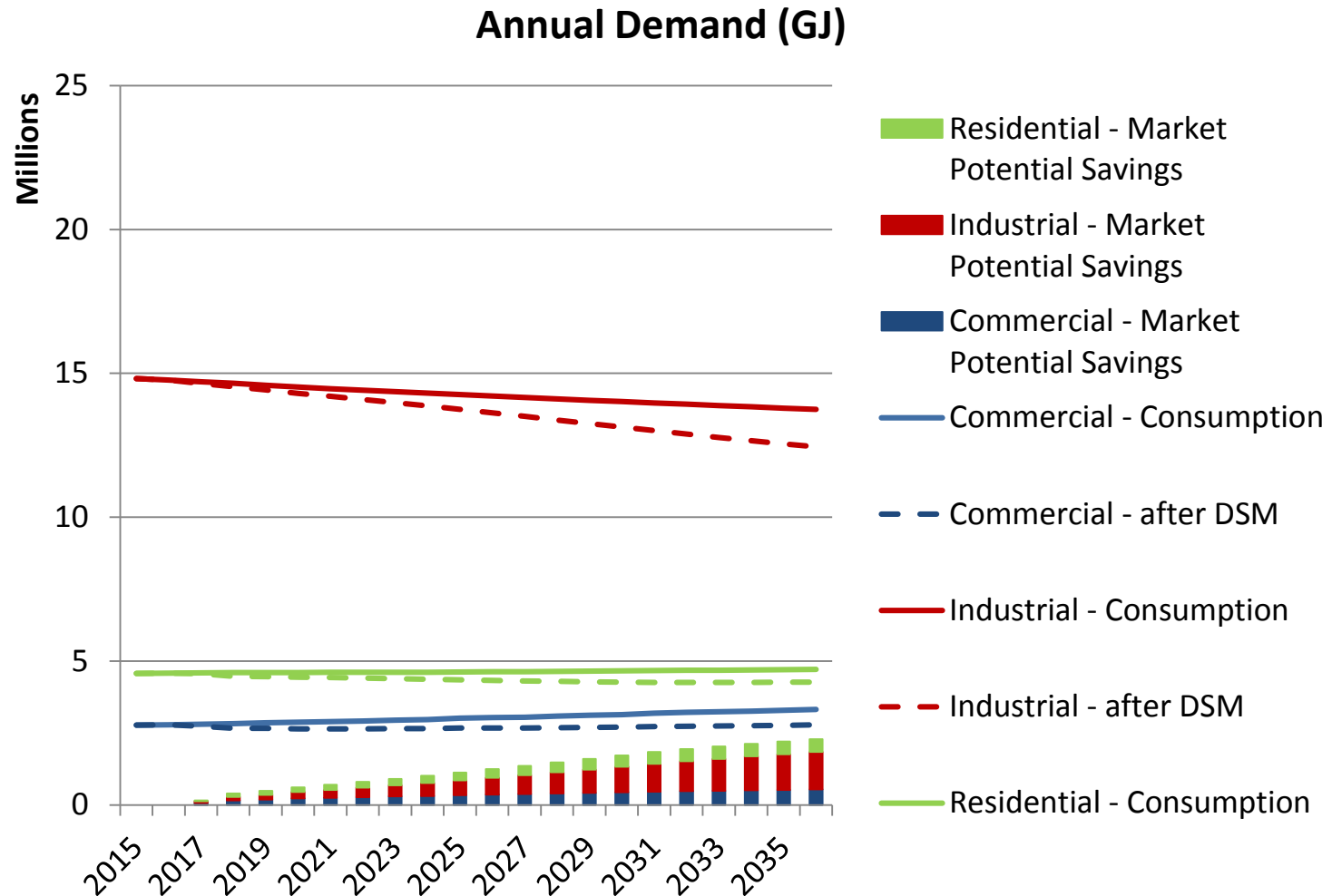
Program	Fuel Type	Rebates
Efficient Boiler Program	Natural Gas	Up to \$45,000
Efficient Commercial Water Heater Program	Natural Gas	Up to \$15,000
Non-Profit Housing Provider Rebates	Natural Gas	Various
Business Direct Install Program	Electricity	Save up to 50%
Commercial Product Rebate Program	Electricity Natural Gas	Various
Custom Business Efficiency Program	Electricity	Various

2017 LTGRP – Southern Interior: Reference Case

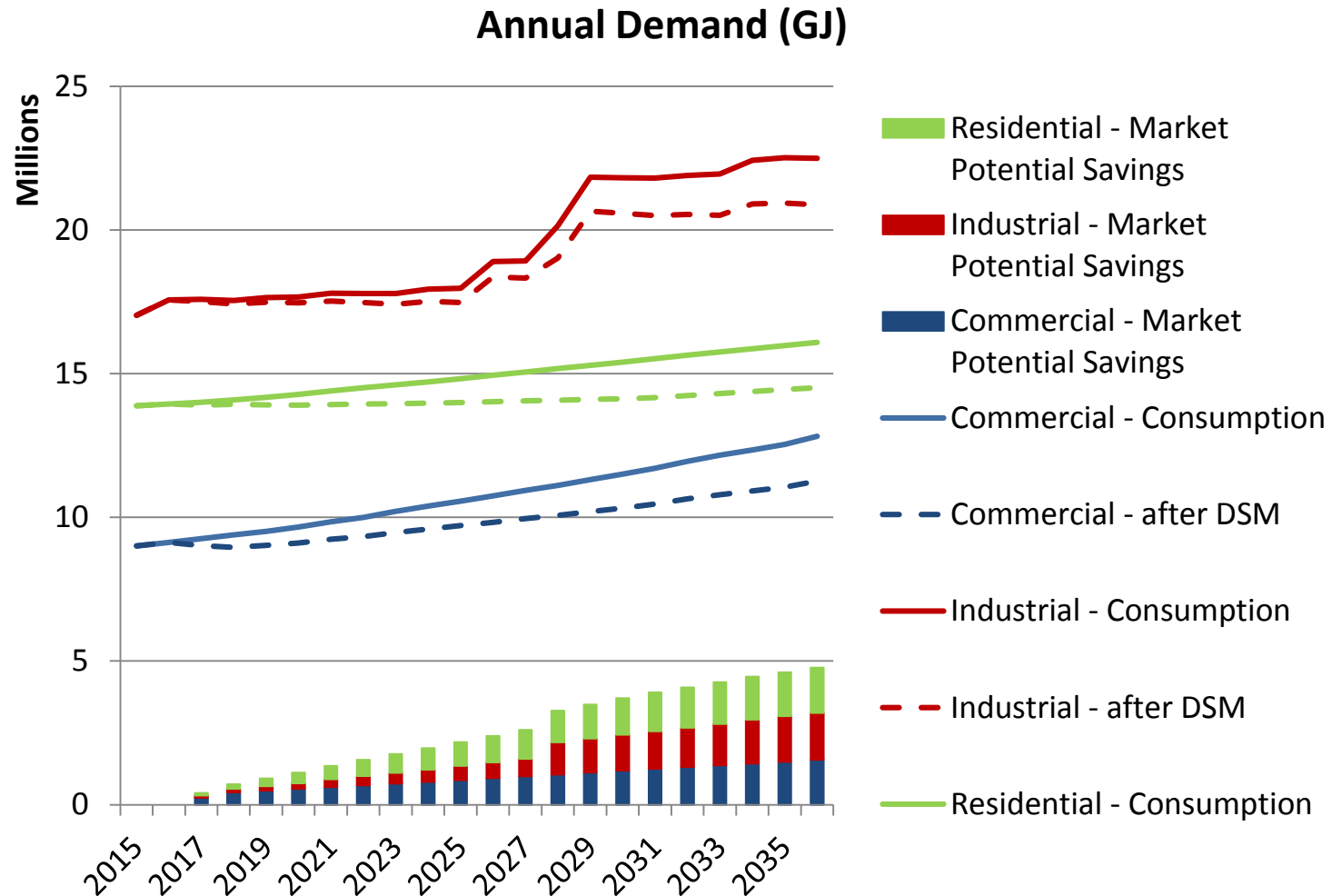


N.B.: All DSM results from the LTGRP are directional, DSM Plans are program-specific.

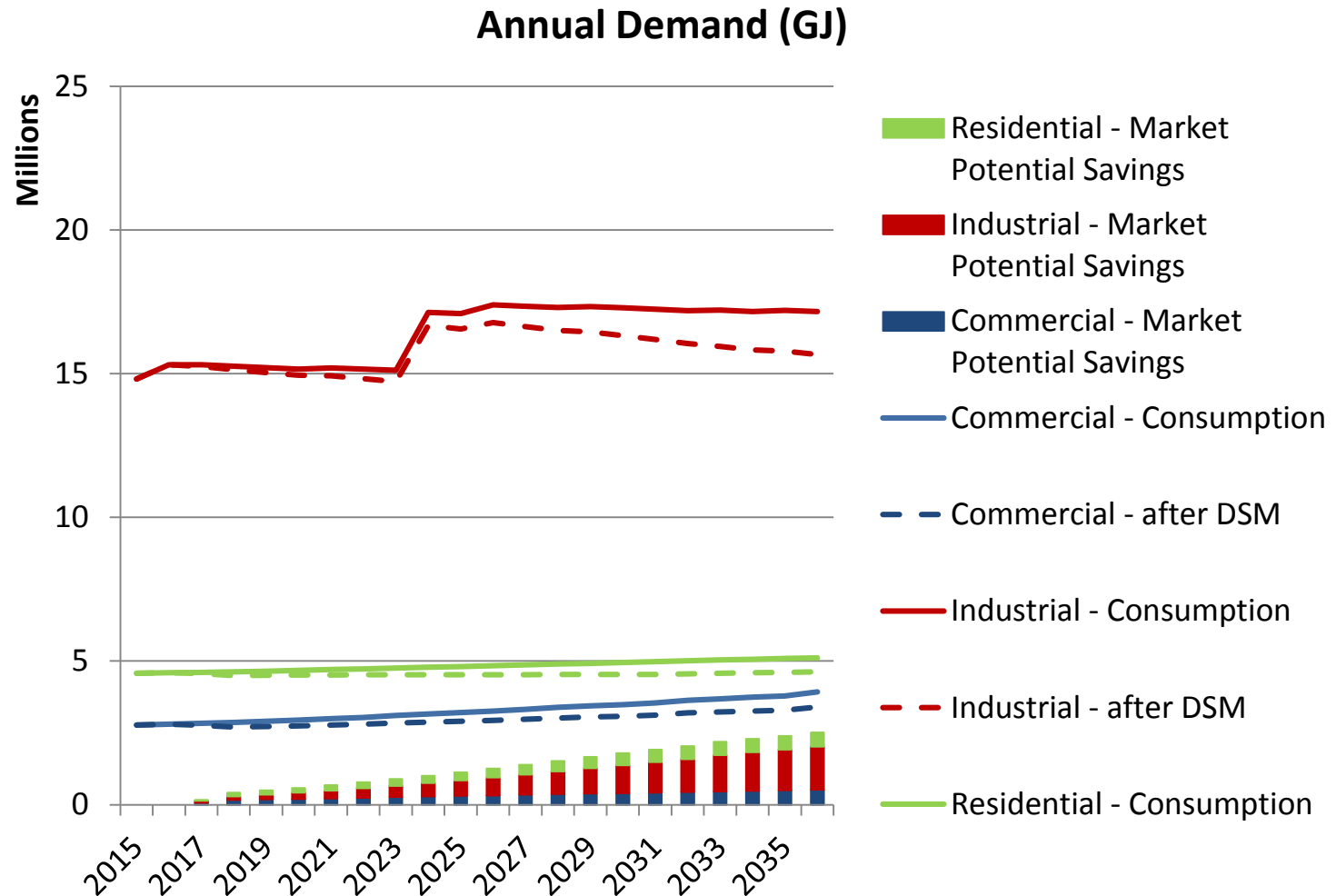
2017 LTGRP – Northern Interior: Reference Case



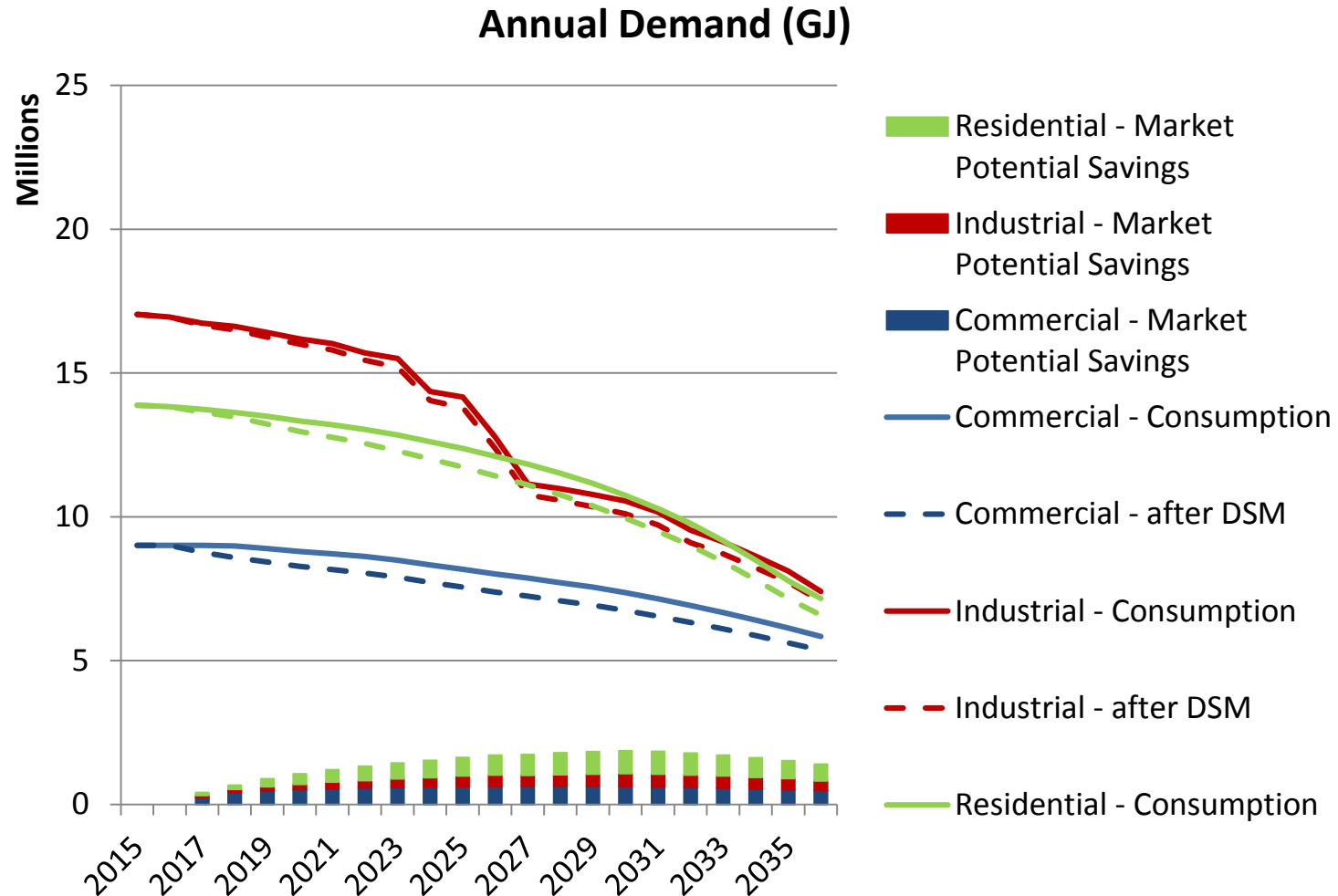
2017 LTGRP – Southern Interior: Upper Bound



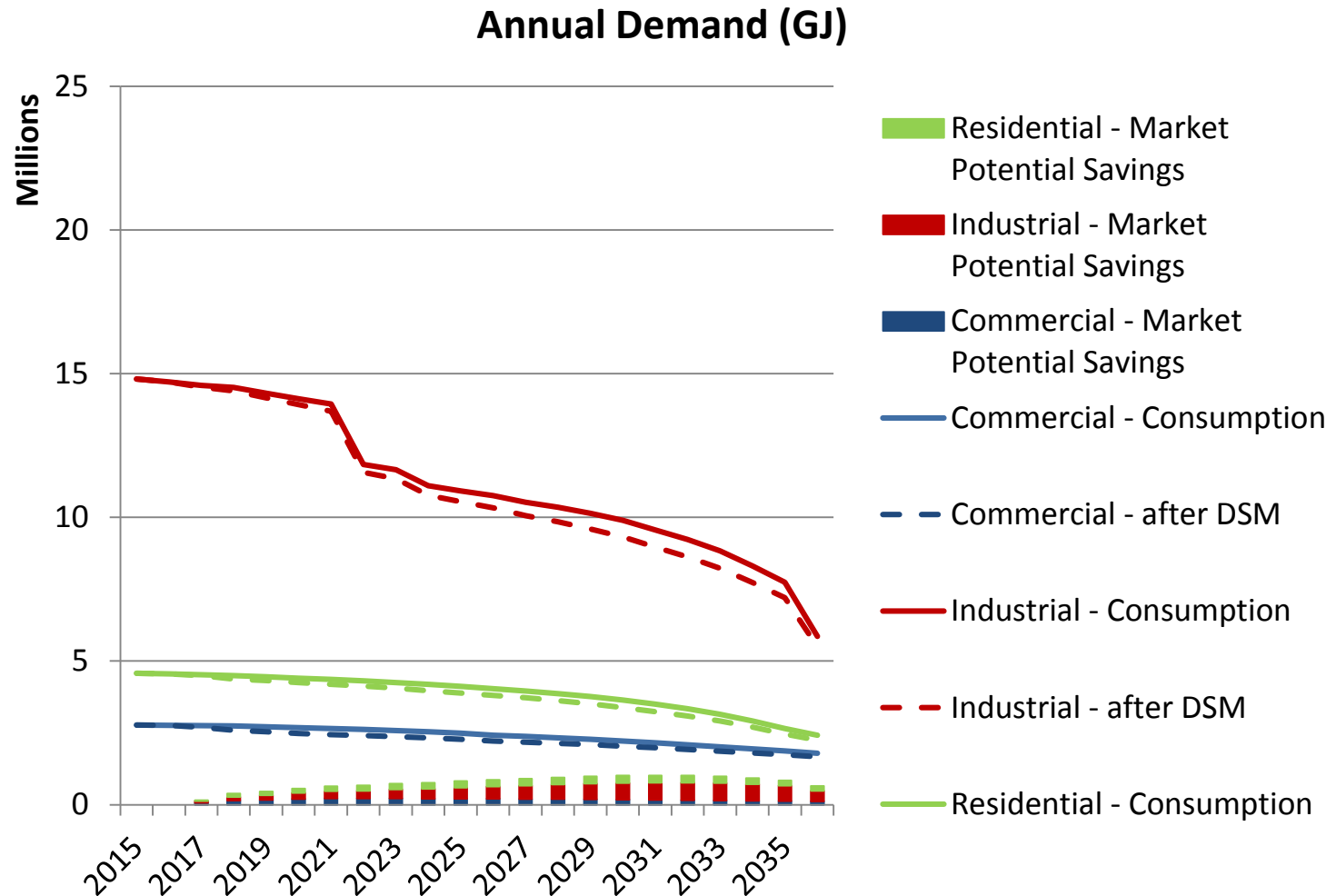
2017 LTGRP – Northern Interior: Upper Bound



2017 LTGRP – Southern Interior: Lower Bound



2017 LTGRP – Northern Interior: Lower Bound

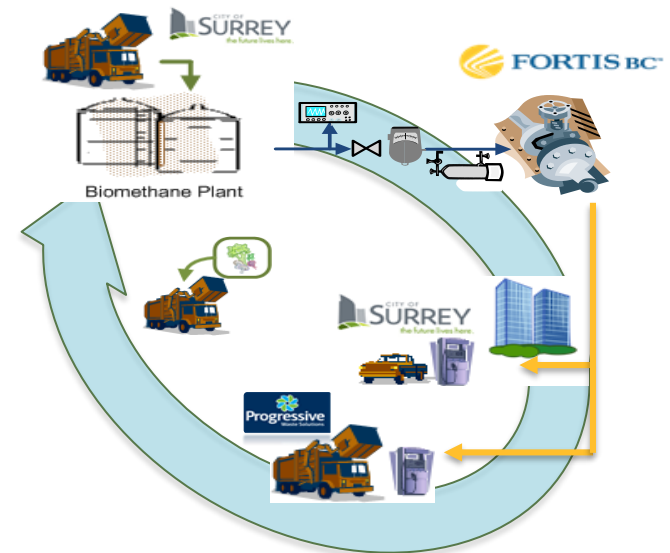


We are seeking to grow the Renewable Natural Gas initiative

October 1,
2016: 29%
decrease in
RNG
commodity
rate

Seeking new
supply:

Kelowna
landfill serves
as a successful
case study



FortisBC provides multiple options for RNG customers

- Average cost premiums for your home:

Lower Mainland, Whistler and Interior

Here is a breakdown based on an average annual usage of 90 GJ:

	5%	10%	25%	50%	100%
Monthly renewable natural gas cost	\$2.50	\$5.00	\$12.51	\$25.01	\$50.03
Annual renewable natural gas cost	\$30.02	\$60.03	\$150.08	\$300.15	\$600.30

*Renewable natural gas and conventional natural gas rates are subject to quarterly rate adjustments.

FortisBC provides multiple options for RNG customers

- Average cost premiums for your business:

Small commercial rate 2

Here is a breakdown based on an average annual usage of 326 GJ:

	5%	10%	25%	50%	100%
Monthly renewable natural gas cost	\$9.06	\$18.12	\$45.30	\$90.60	\$181.20
Annual renewable natural gas cost	\$108.72	\$217.44	\$543.61	\$1,087.21	\$2,174.42

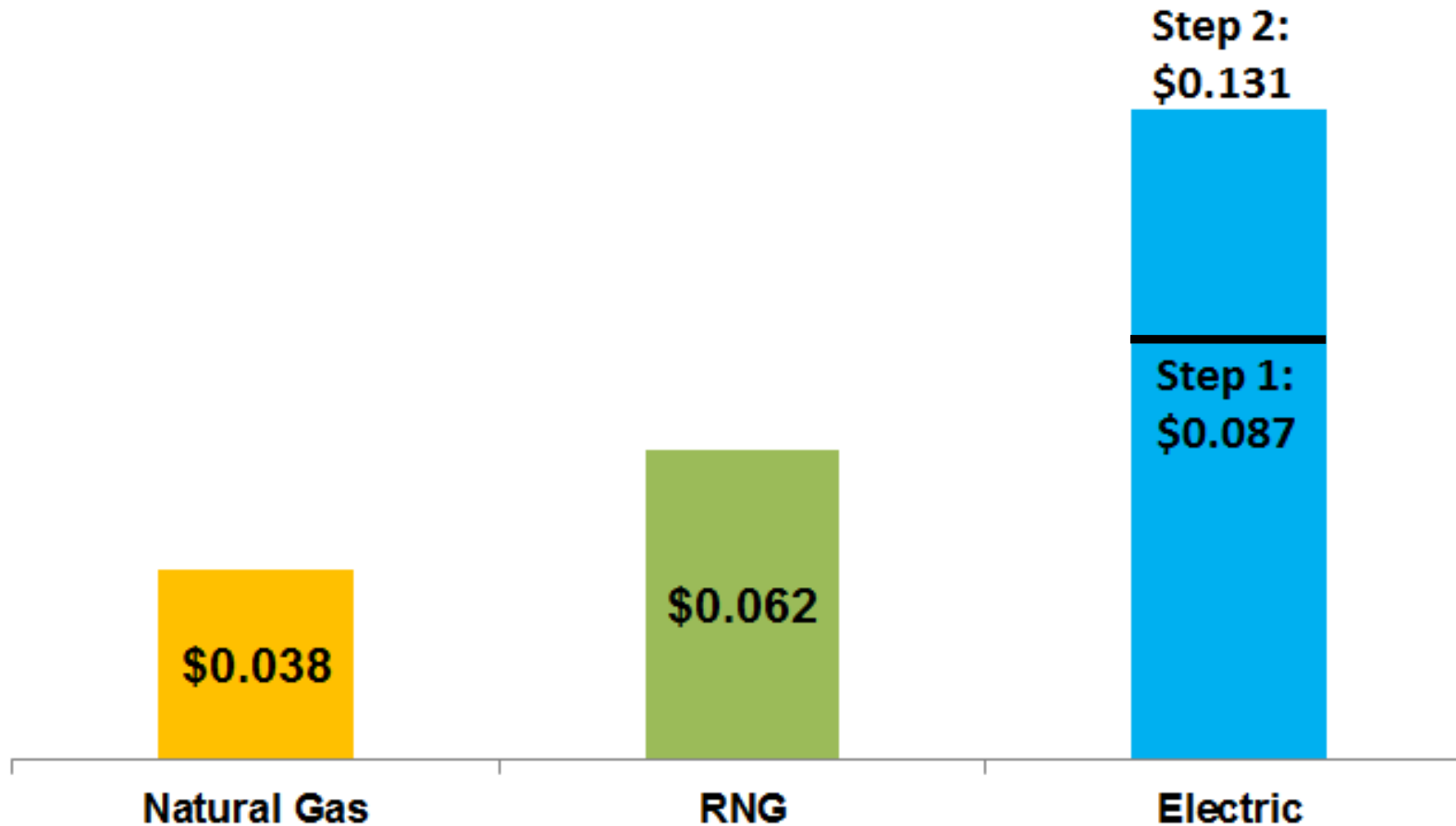
Large commercial rate 3

Here is a breakdown based on an average annual usage of 3,549 GJ:

	5%	10%	25%	50%	100%
Monthly renewable natural gas cost	\$98.63	\$197.27	\$493.16	\$986.33	\$1,972.65
Annual renewable natural gas cost	\$1,183.59	\$2,367.18	\$5,917.96	\$11,835.92	\$23,671.83

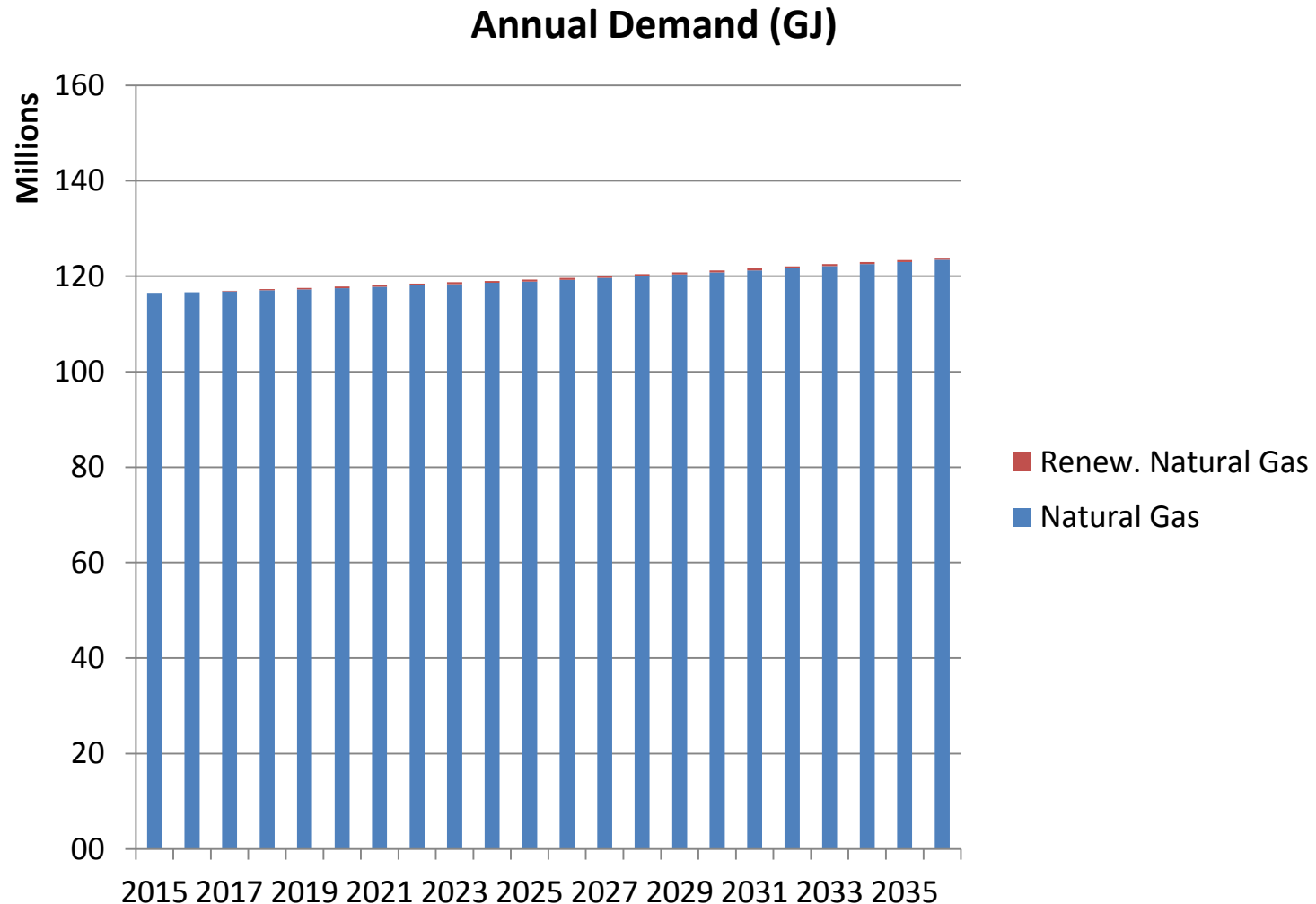
*Renewable natural gas and conventional natural gas rates are subject to quarterly rate adjustments.

Selecting suitable comparators for RNG pricing*

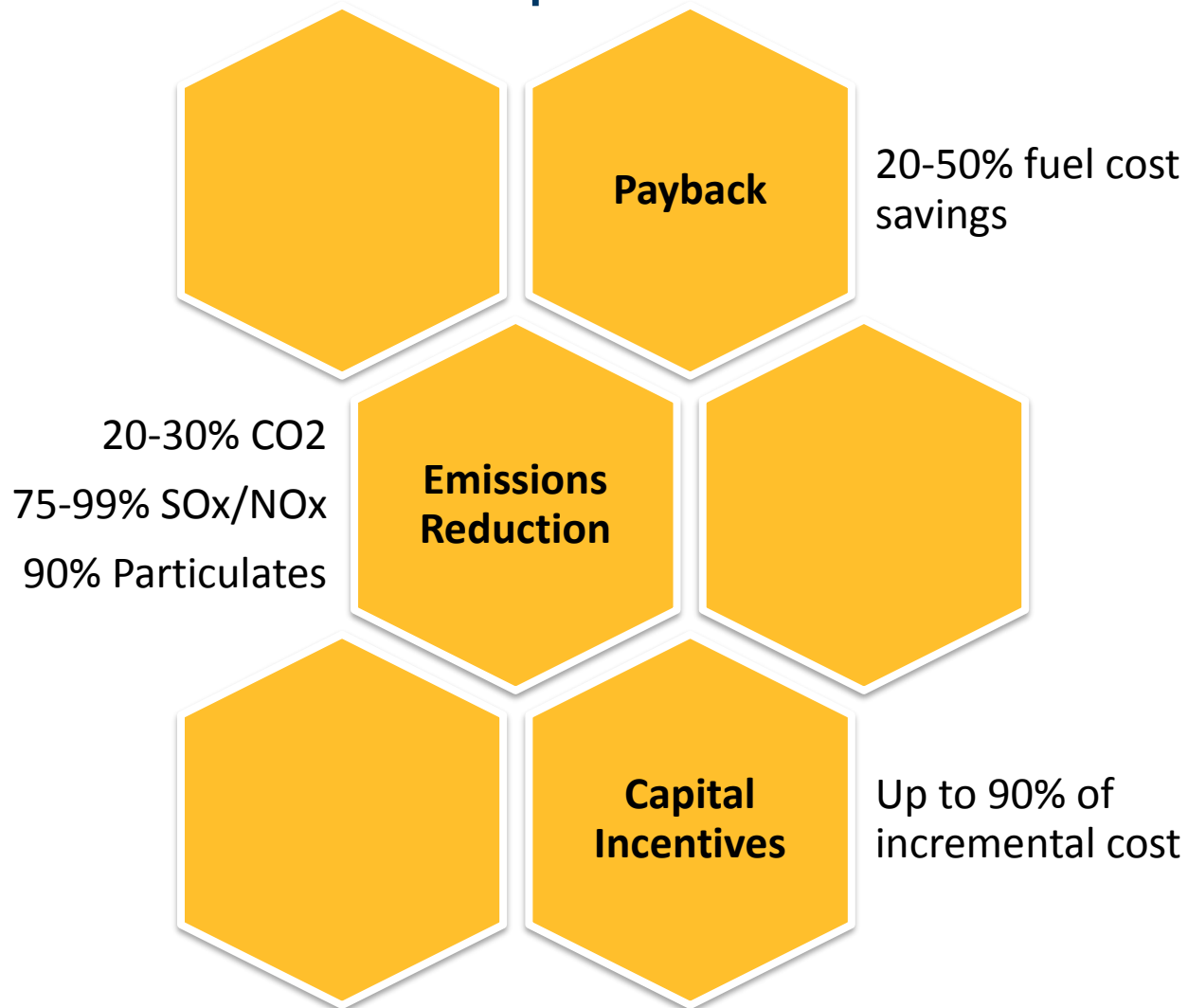


*\$ per kWh residential rates as of Oct. 1, 2016. Electric excludes basic charge

2017 LTGRP – Entire System: Reference Case

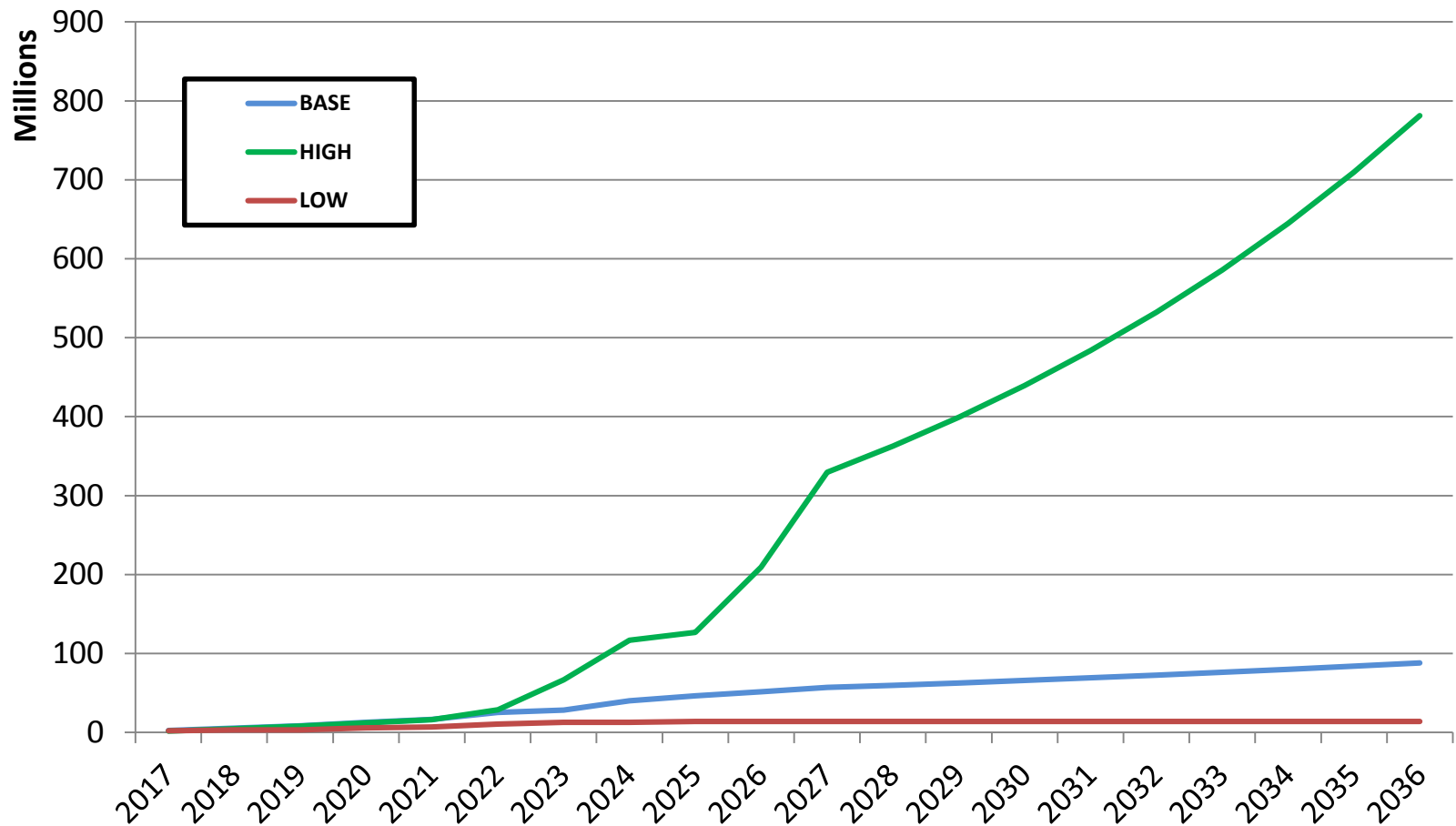


Natural gas for transportation programs remain an attractive option



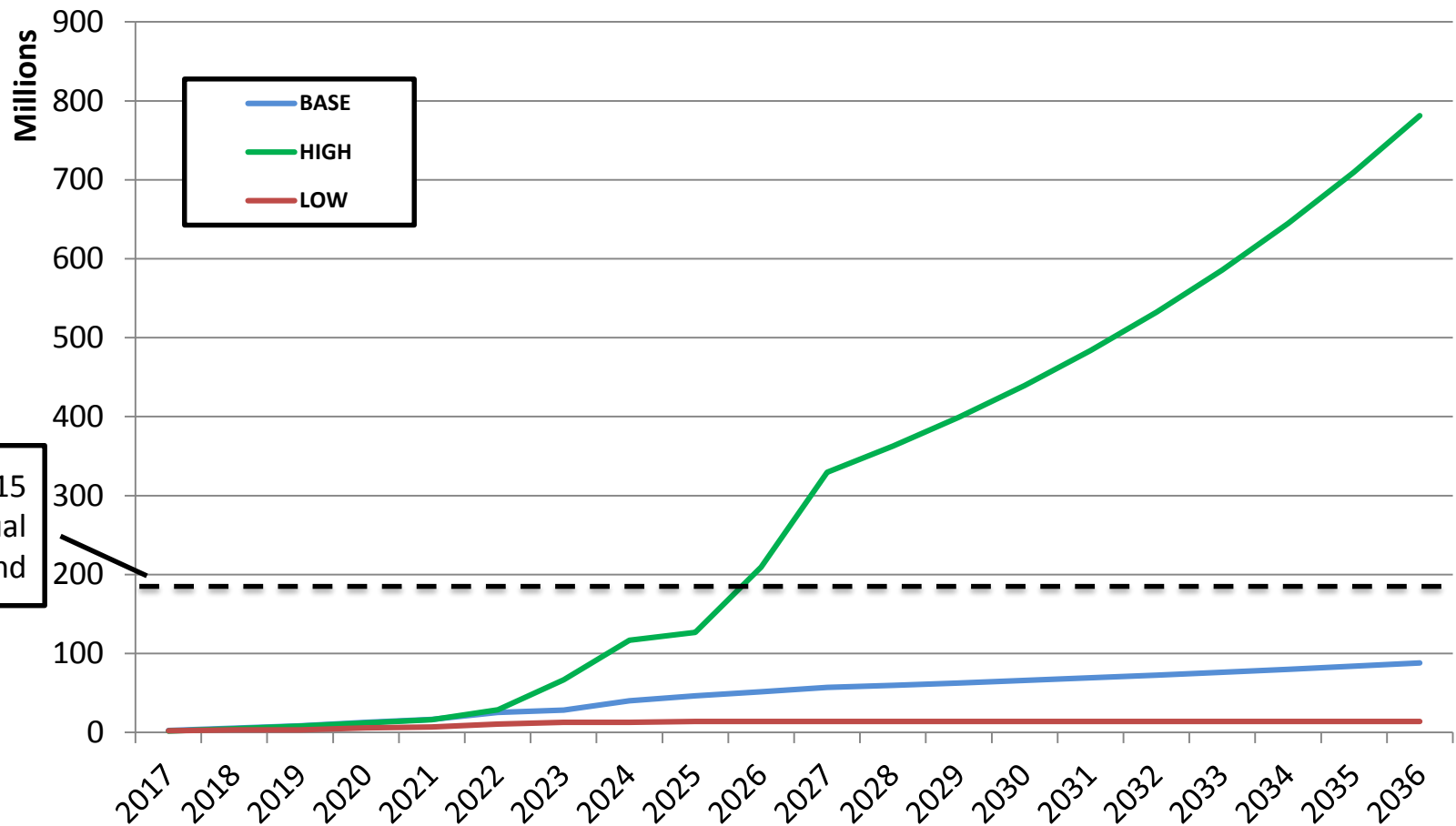
The impact of NGT – 2017 LTGRP preliminary results

NGT Annual Demand Forecast (GJ)



The impact of NGT – 2017 LTGRP preliminary results

NGT Annual Demand Forecast (GJ)



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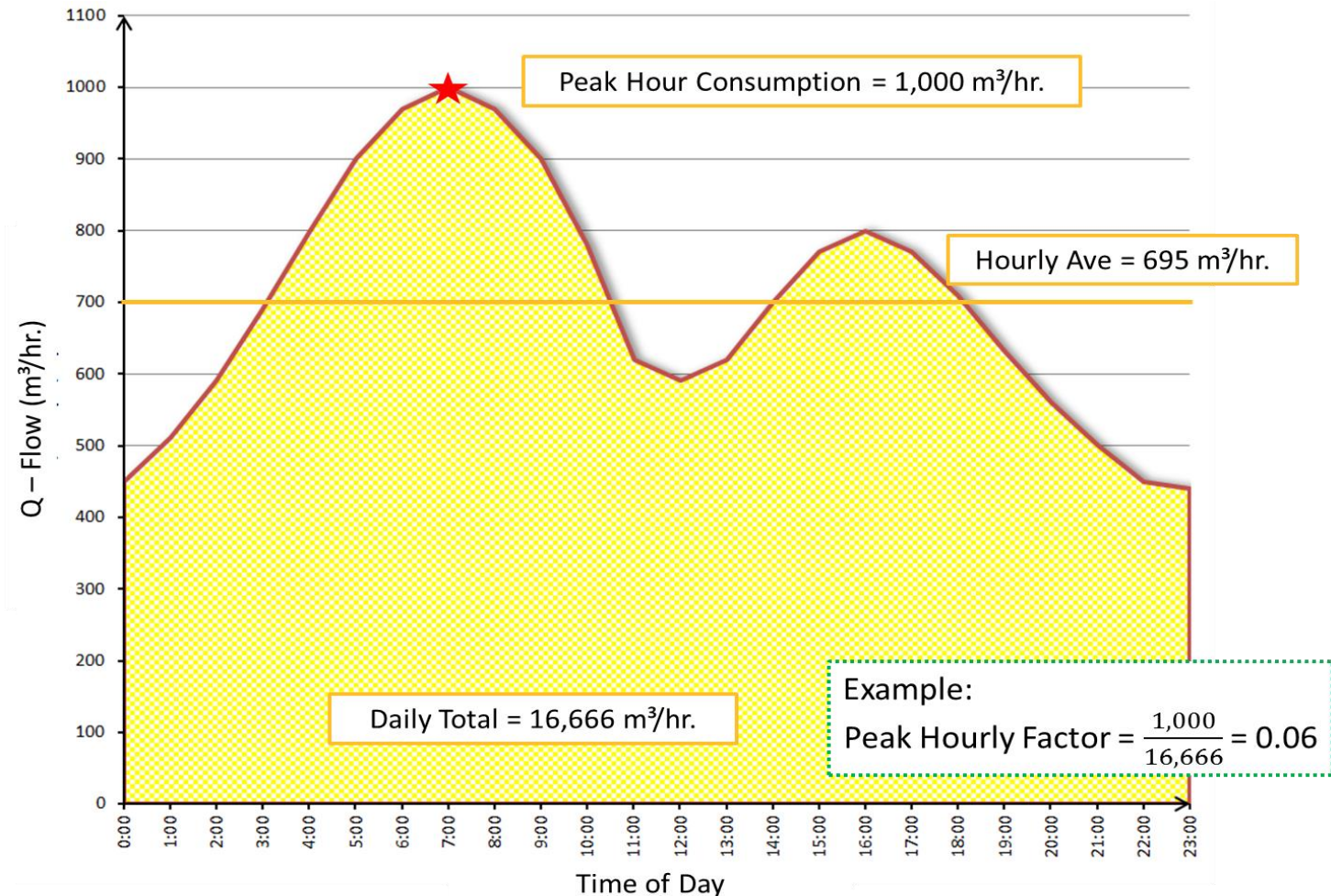
**Wrap-Up &
Networking**

Energy at work



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What this means for our infrastructure development



Gas System Reinforcements

Peak Demand

=

Existing
System
Capacity

Compression



**LNG Peaking
Storage Facilities**



Pipelines



Wrap-up & next steps

- Your inputs are used in our planning processes:
 - Identifying uncertainties
 - Assessing resources to meet new energy demand
 - Developing and offering new energy services such as new Conservation & Energy Management programs
 - Informing our engagement with policymakers
- Further consultations across the province in spring 2017

Thank you



**For further information,
please contact:**

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Fortisbc.com



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