

FortisBC Resource Planning Community Stakeholder Workshop

Long Term Resource Planning

Fall 2014

Workshop Objectives

1. Obtain feedback on Long Term Resource Planning issues
2. Provide a better understanding of the energy planning environment
3. Raise awareness of our energy conservation and transportation programs, local community initiatives and integrated energy solutions
4. Discuss local infrastructure and operations
5. Identify community opportunities and concerns

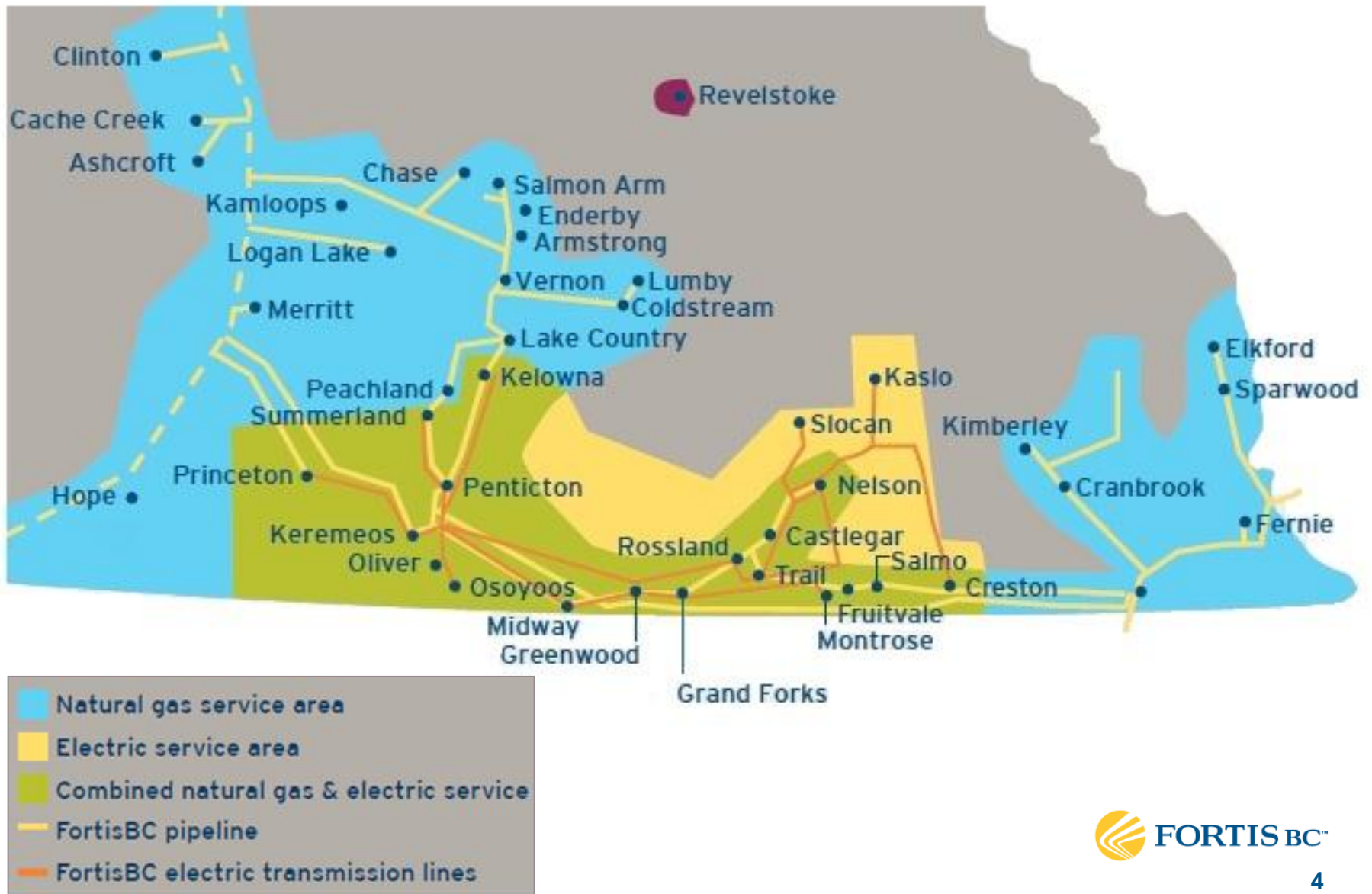
FortisBC

Natural Gas, Electricity and Propane

- Approx. 1.1 million customers
- 21% of energy consumed in B.C.
- 135 communities and 91 First Nations across B.C.
- 2,260 employees
- Combined assets of \$6.9 billion
- Planned capital investment of \$2.5 billion over next five years
- Integrated energy solutions



FortisBC Shared Service Territory



FortisBC Community Engagement



FORTIS BC™

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



Community Investment Program

Youth education programs

Residential Energy Efficiency Works (REnEW) Program

Lower Similkameen Indian Band School Wind Turbine Project

Penticton Indian Band EcoSage Efficient Housing Project

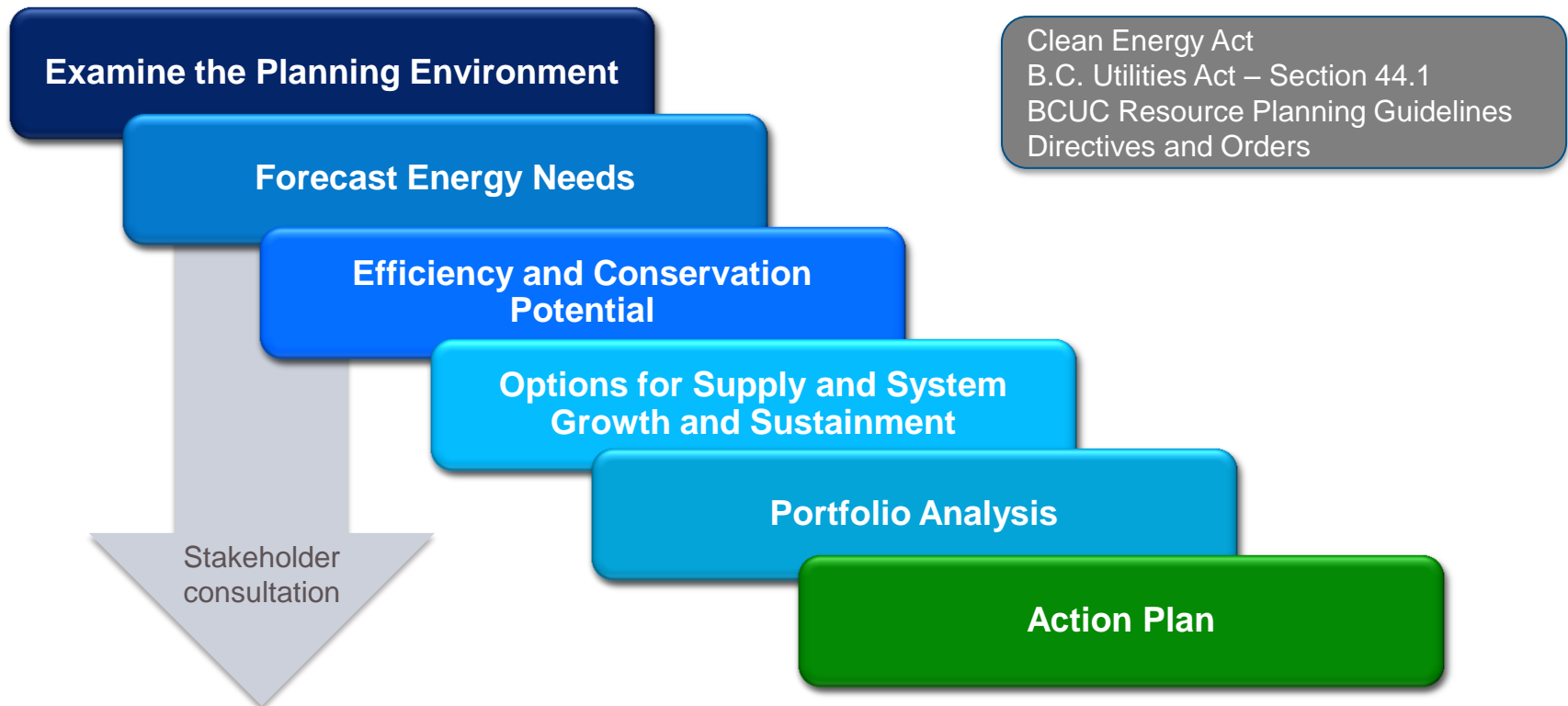


FORTIS BC™

Long Term Resource Planning

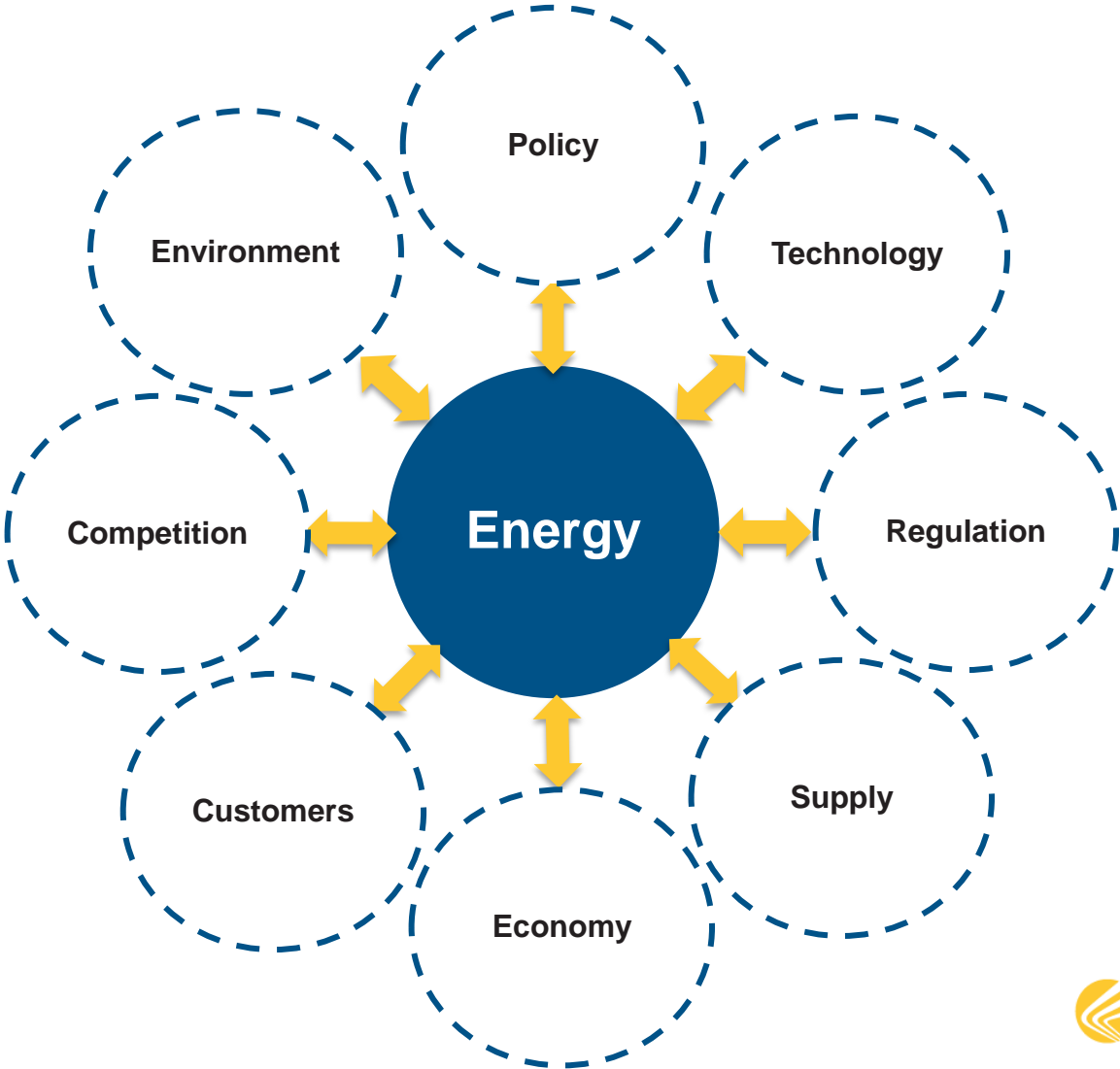
Long-Term Resource Planning Process

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



Planning Environment

Factors that influence long term planning analysis and decisions



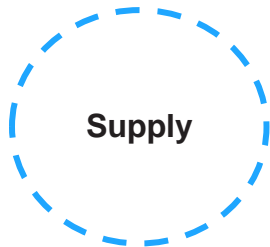
Examples of Planning Uncertainty

What elements may change throughout the planning horizon?



New end-use technologies

- Heat pumps reduce gas use, increase electricity use
- Higher efficiency appliances and industrial processes
- Electric vehicles present potential new electricity load



Shifting supply environment

- Substantial new domestic supplies of natural gas
- Impacts to natural gas demand from LNG
- New sources of renewable electricity supply

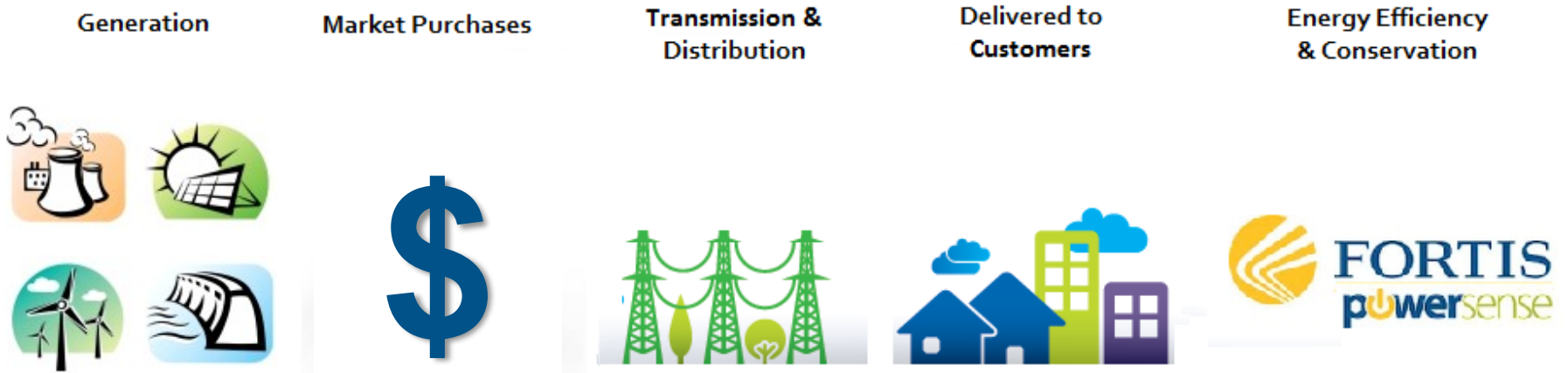


Customers interacting differently with the energy grid

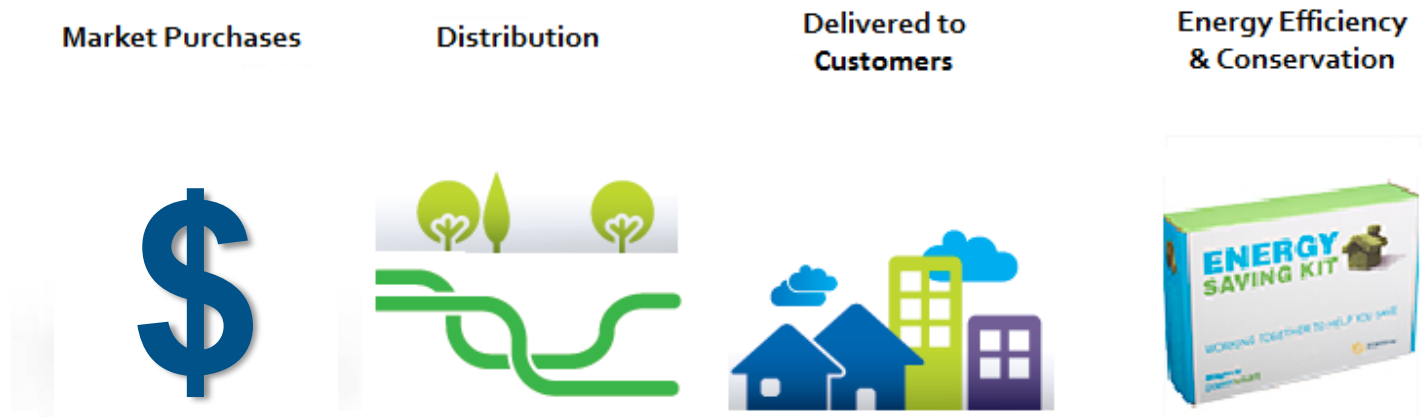
- Distributed generation (e.g. localized solar and geothermal)
- Producing and choosing renewable natural gas (RNG)

Natural Gas vs. Electric Resource Planning

Electricity



Natural Gas



Energy Efficiency and Conservation

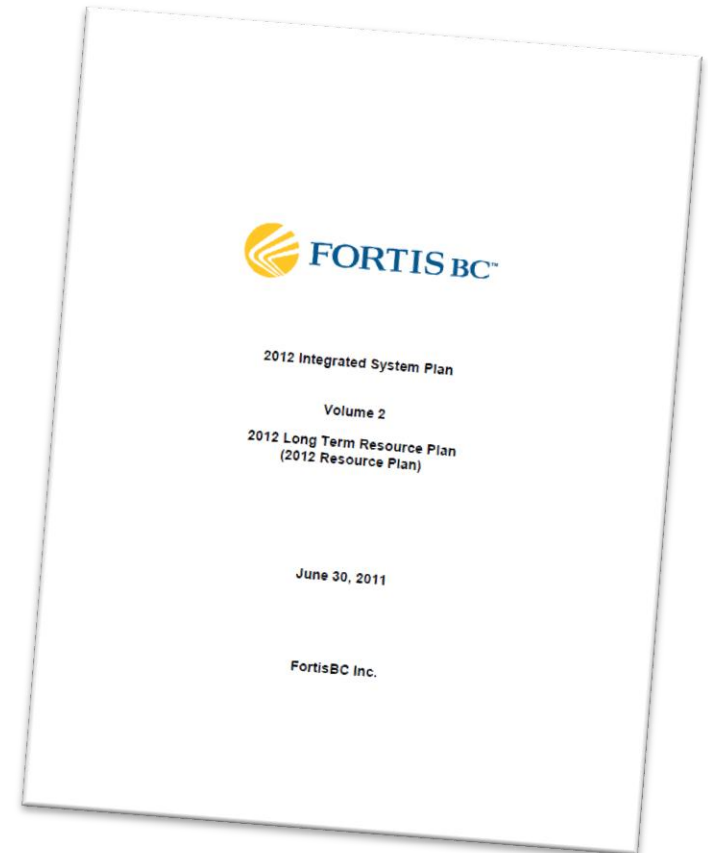
- **Electric: PowerSense**
 - \$6.9 million dollars invested in 2013
 - Annual energy savings of 29.5 GWh
 - Key regional programs: Kootenay & Okanagan Community Energy Diets
- **Gas: Energy Efficiency and Conservation**
 - \$27.6 million dollars invested in 2013
 - Annual energy savings of 498,000 GJ
- **Cooperation between FortisBC and BC Hydro**
 - New “Whole Home” programs for residential customers



Electricity Resource Planning

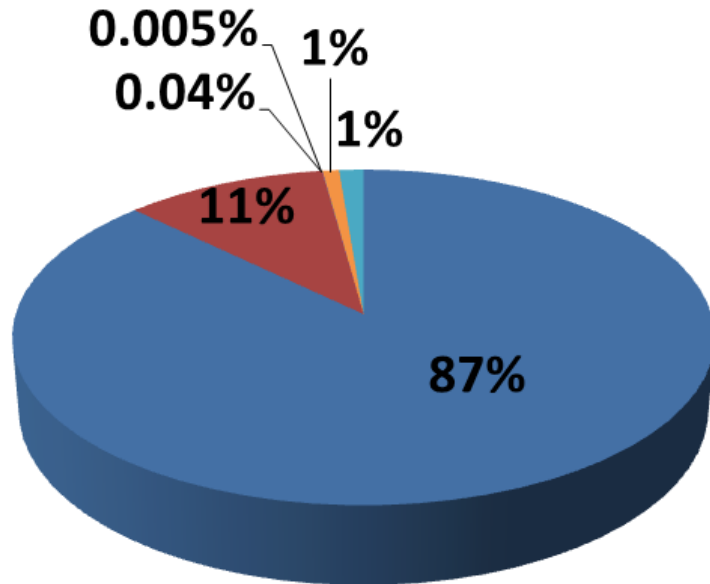
Long Term Electric Resource Plan

- FortisBC submitted the last Long Term Resource Plan to the BCUC in June 2011
- BCUC accepted the plan in August 2012
- FortisBC plans to submit the next one in June 2016

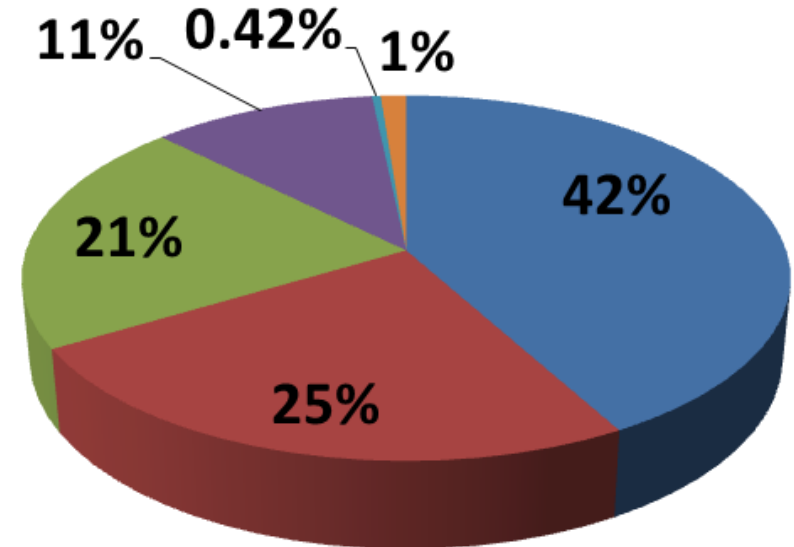


Customer Base & Demand Profile

2013 Customer Base by Sector

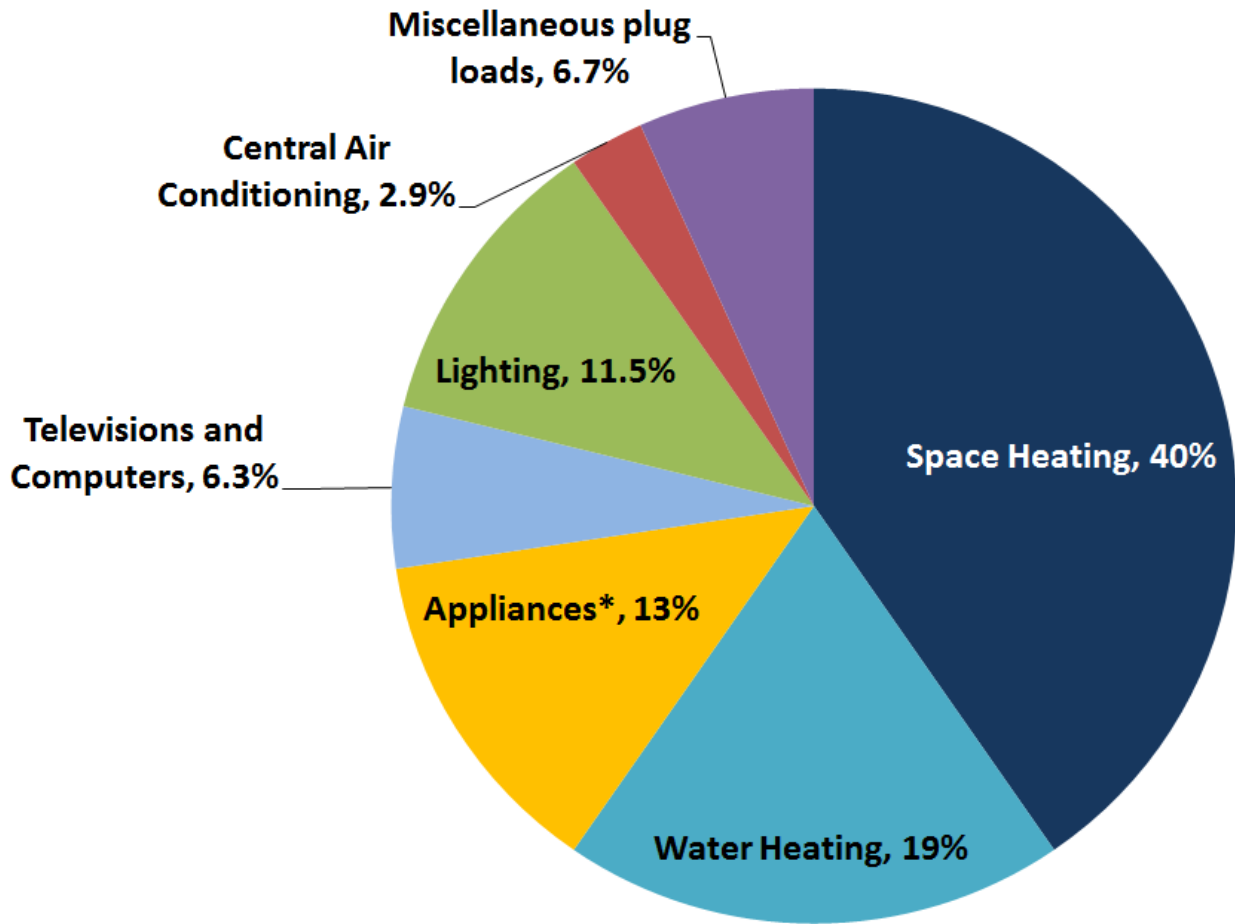


2013 Annual Demand by Sector



■ Residential	■ Commercial
■ Wholesale	■ Industrial
■ Lighting	■ Irrigation

Energy Consumption (Single Family Dwelling)



Typical consumption for a FortisBC electric-only single family dwelling is **20,800 kWh** per year

*Appliances include refrigerators, freezers, ranges, clothes washers, and electric dryers.

Energy vs. Capacity

Energy



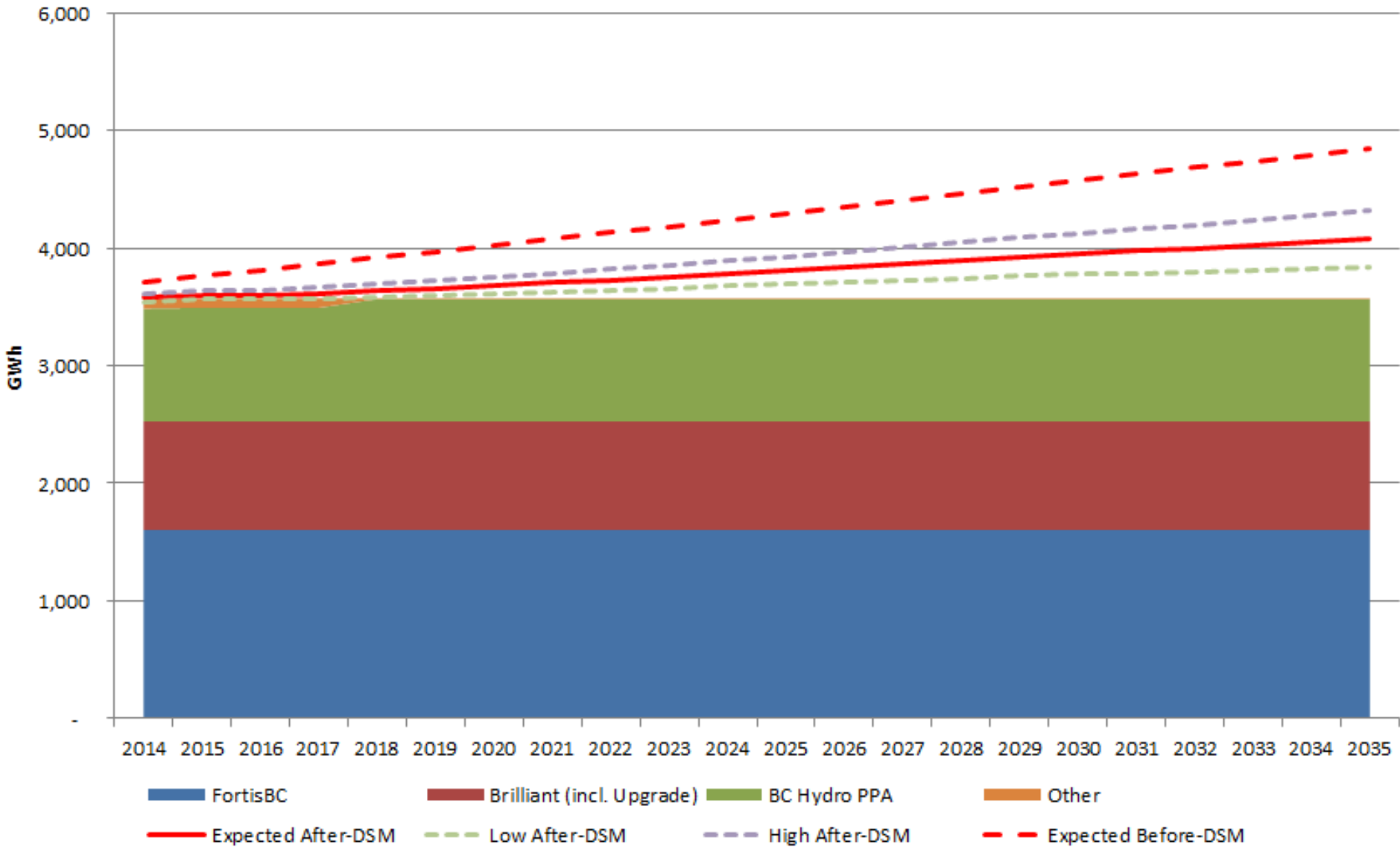
- the electricity produced or used **over a period of time** (e.g. a year)
- is analogous to an ***Odometer*** reading
- usually measured in **kWh and GWh**

Capacity

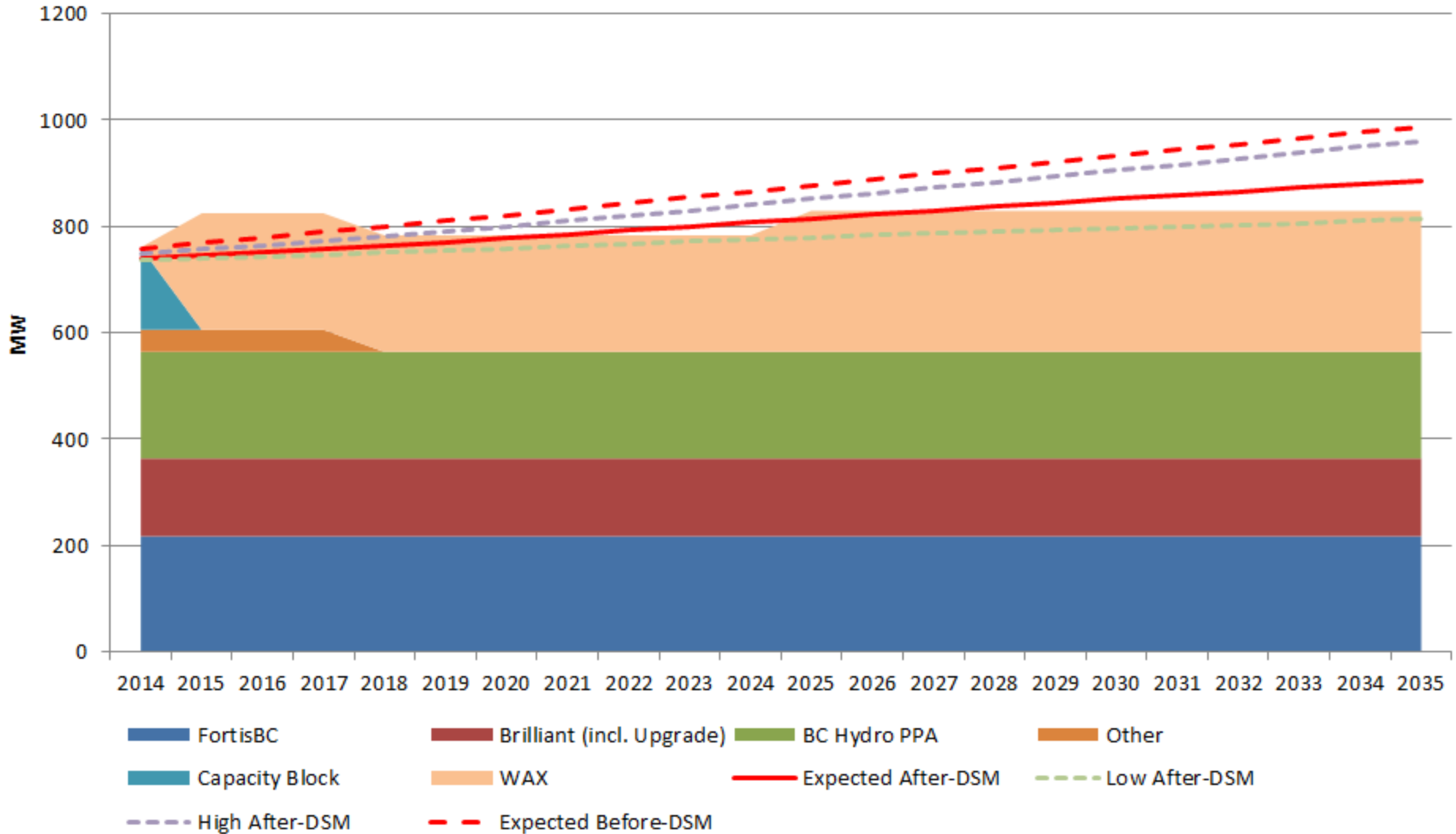


- the **instantaneous** system electricity demand at any given time
- is analogous to a snapshot ***Speedometer*** reading
- usually measured in **MW**

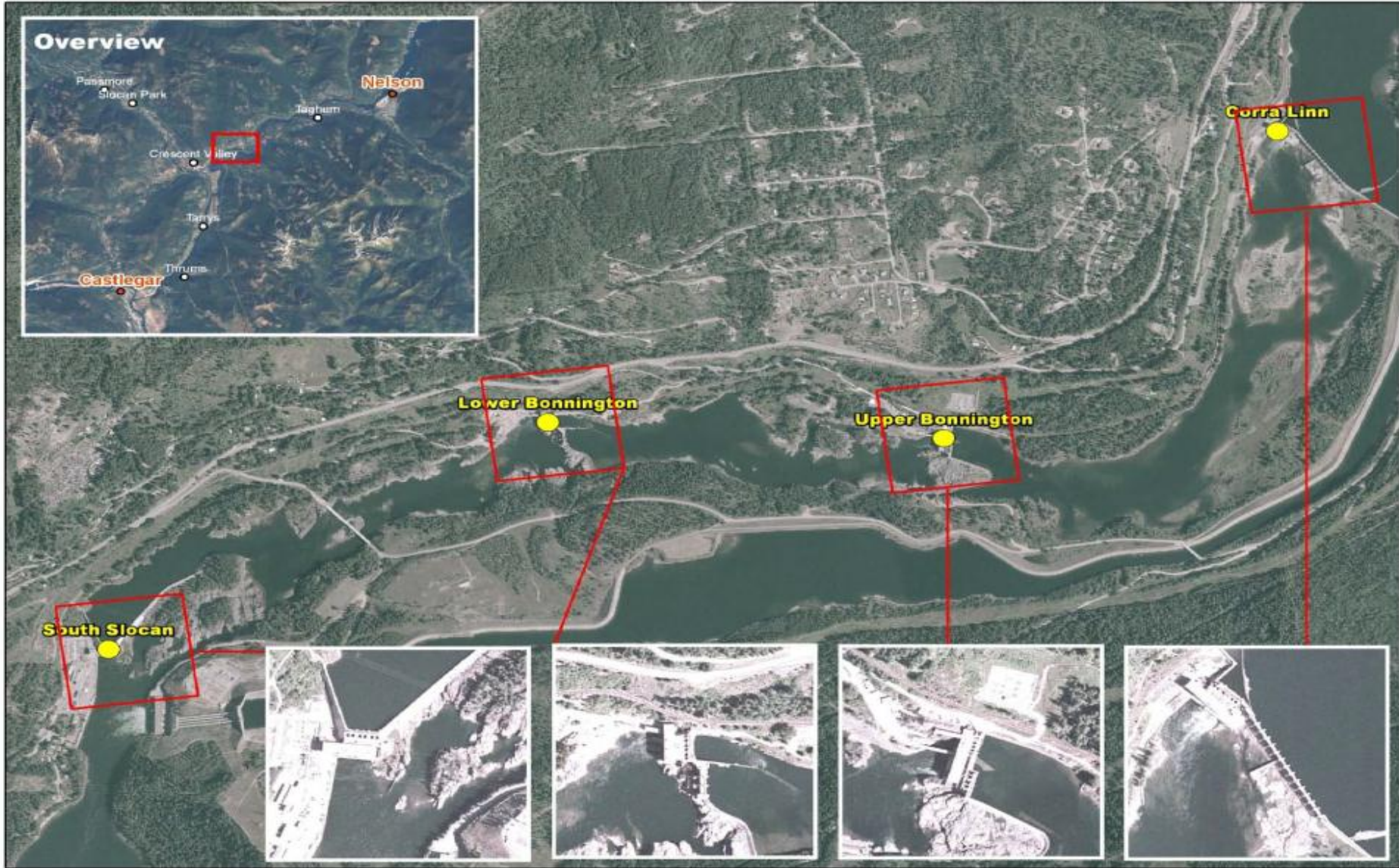
Long Term Energy Balance



Long Term Capacity Balance

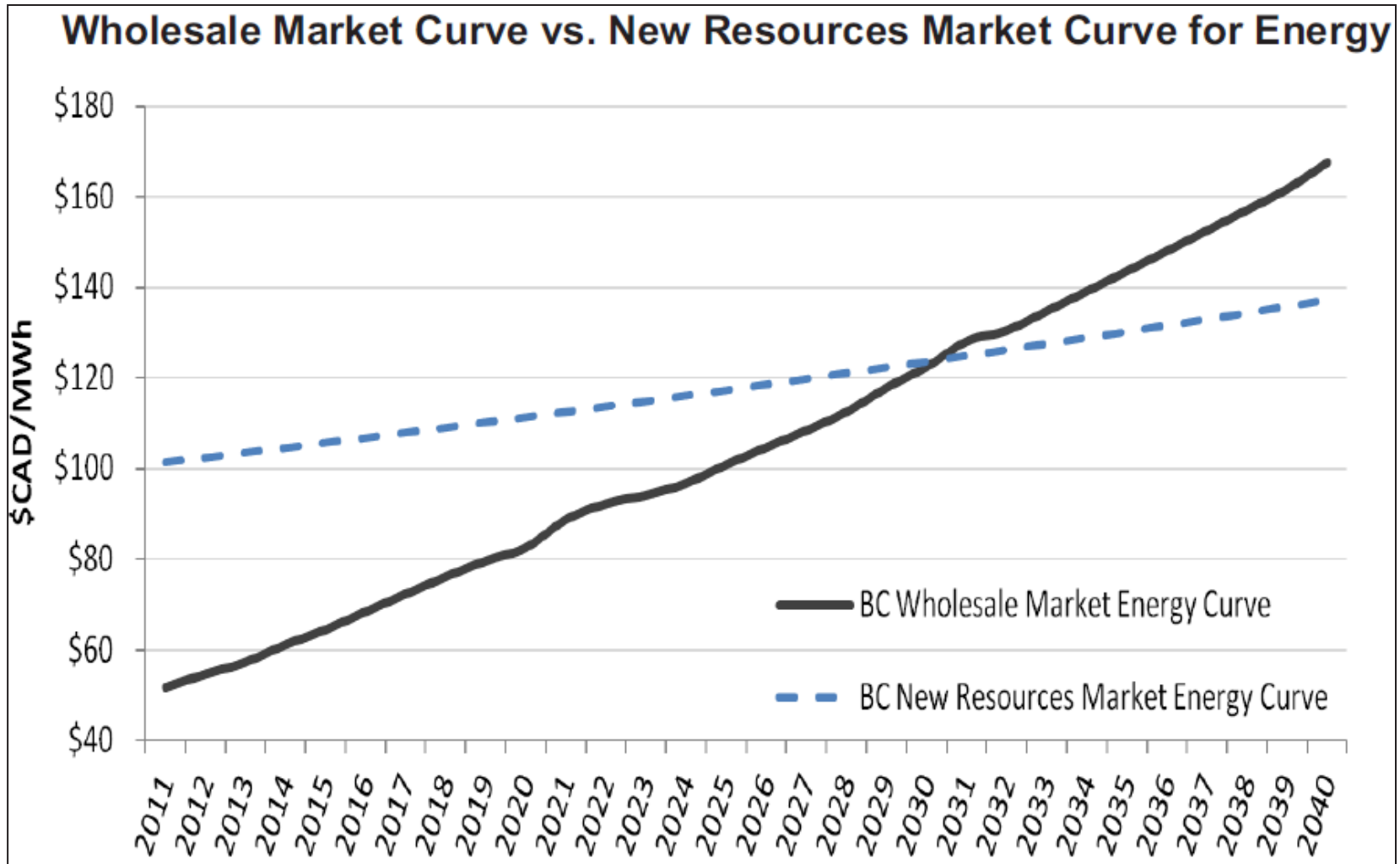


FortisBC Generation Resources



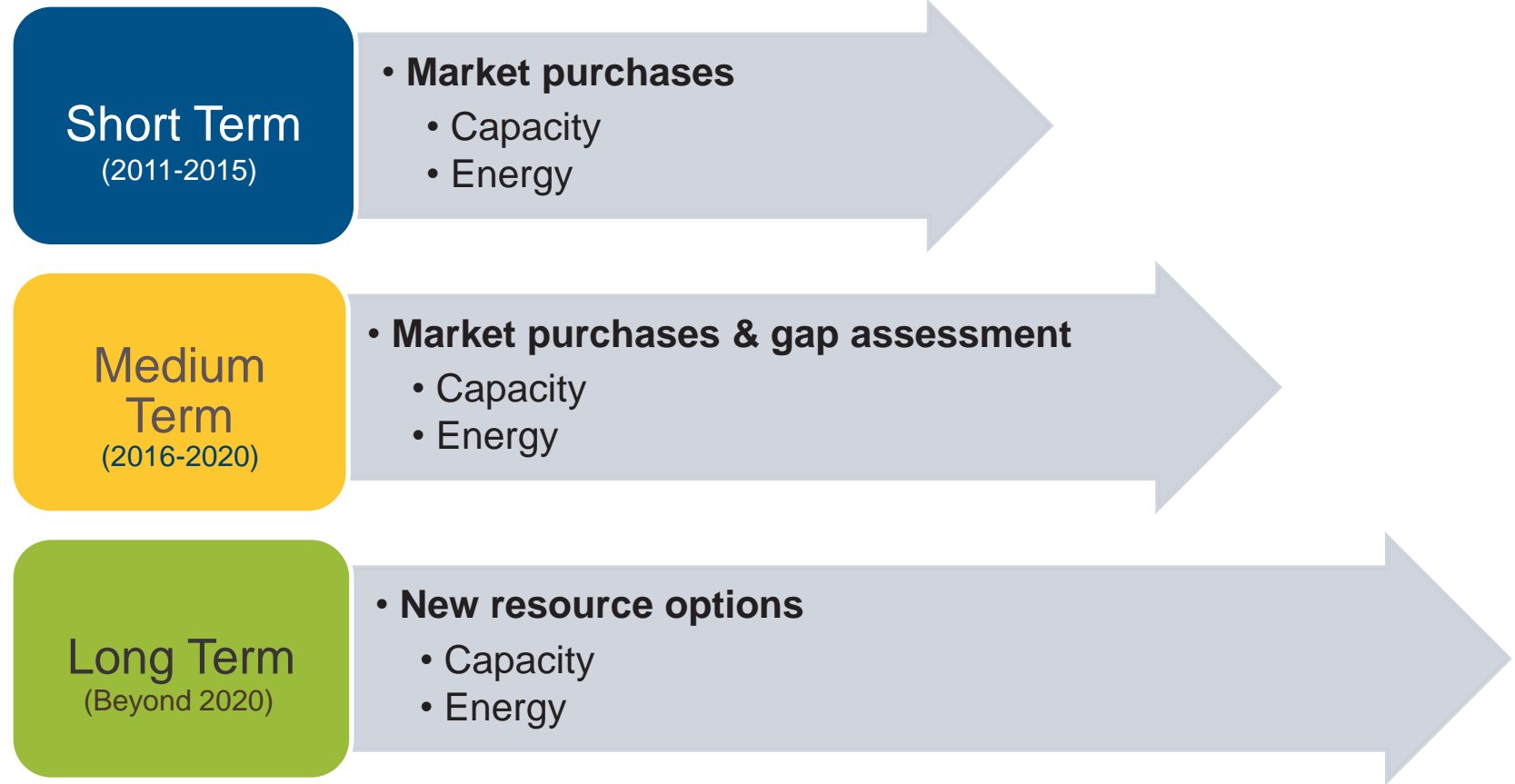
Market vs. New Resources Assessment

Energy



FortisBC Preferred Strategy

2012 Resource Plan



Potential New Supply Resources

Hydro



Gas-Fired



Renewables

Wind

Solar

Biomass

Geothermal



Storage

Batteries

Pumped hydro



Natural Gas Resource Planning

2014 Long Term Resource Plan

- FortisBC Energy Utilities submitted the Long Term Resource Plan (LTRP) to the BCUC in March 2014
- Currently under review by the BCUC



Units of Natural Gas

Gigajoule (GJ), terajoule (TJ) and petajoule (PJ)

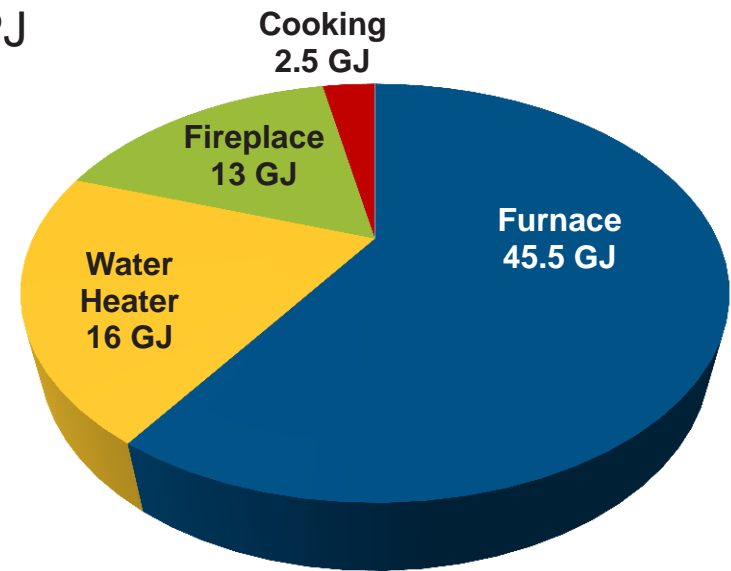
- 1 GJ = approx. the energy in a BBQ propane tank



1 TJ = 1,000 GJ 1 PJ = 1,000,000 GJ

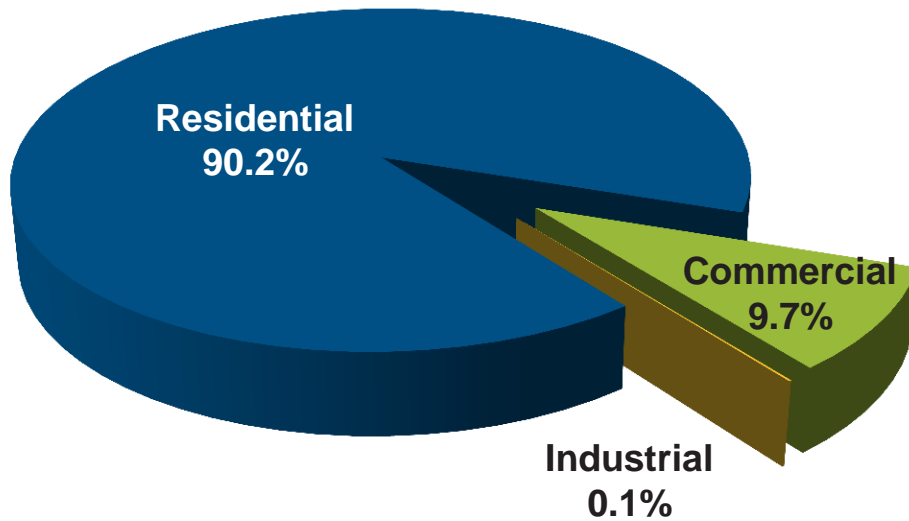
- A large grocery store uses roughly 1 TJ
- A large mill or mine uses roughly 1-2 PJ
- Annual FortisBC throughput is 204 PJ

The typical residential gas customer in FortisBC Interior uses approx.
76 GJ/year

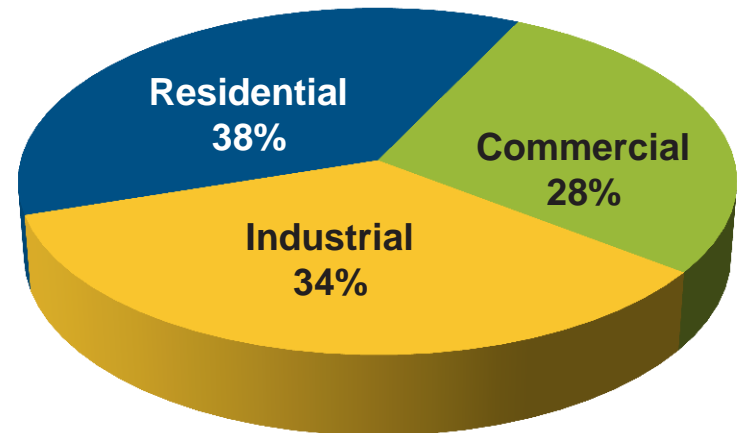


Customer Base & Demand Profile

Customer Base by Sector

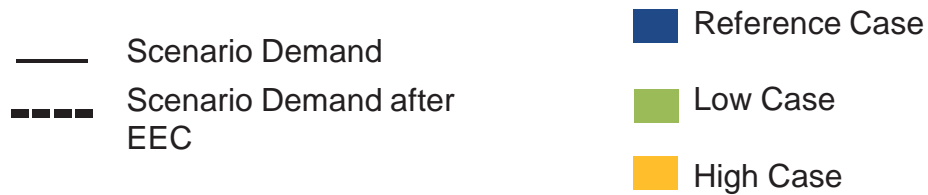
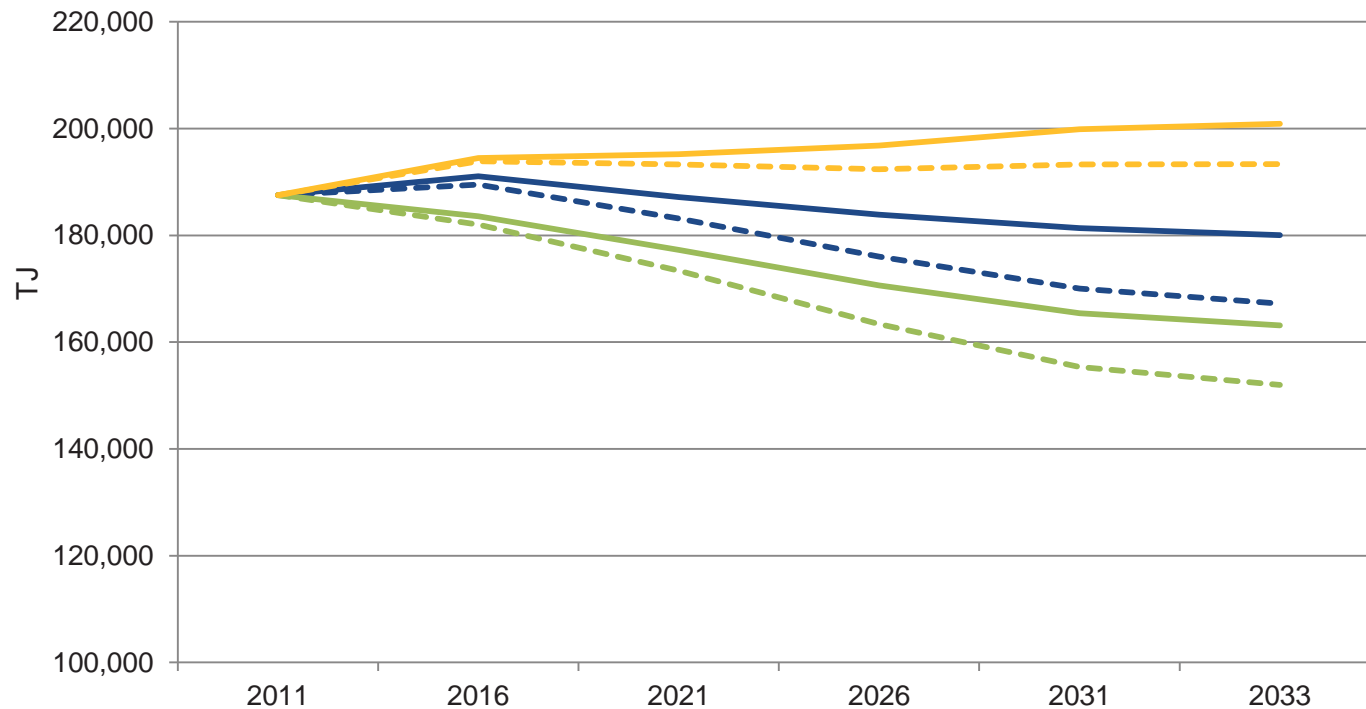


Annual Demand by Sector

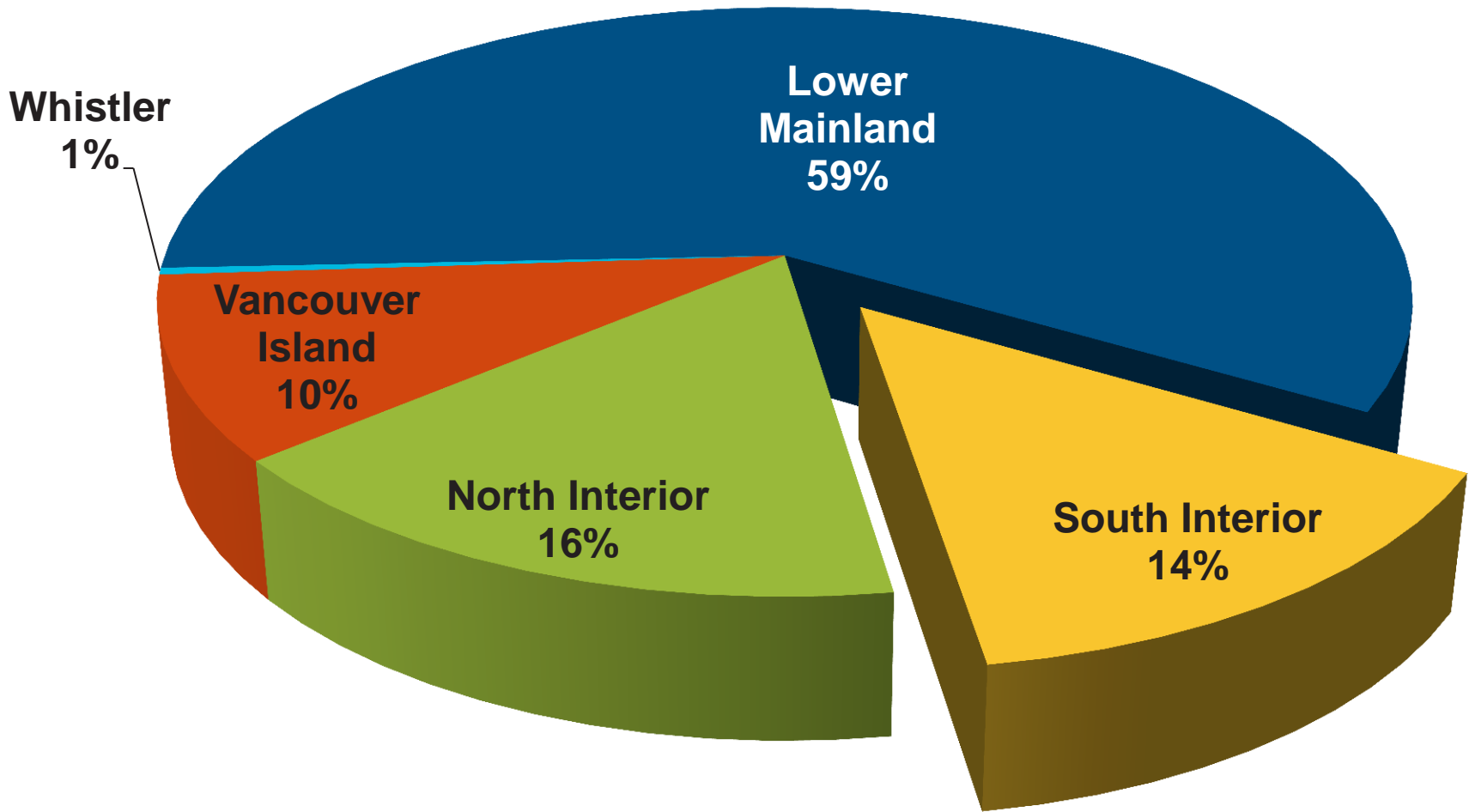


Annual Natural Gas Demand

All regions

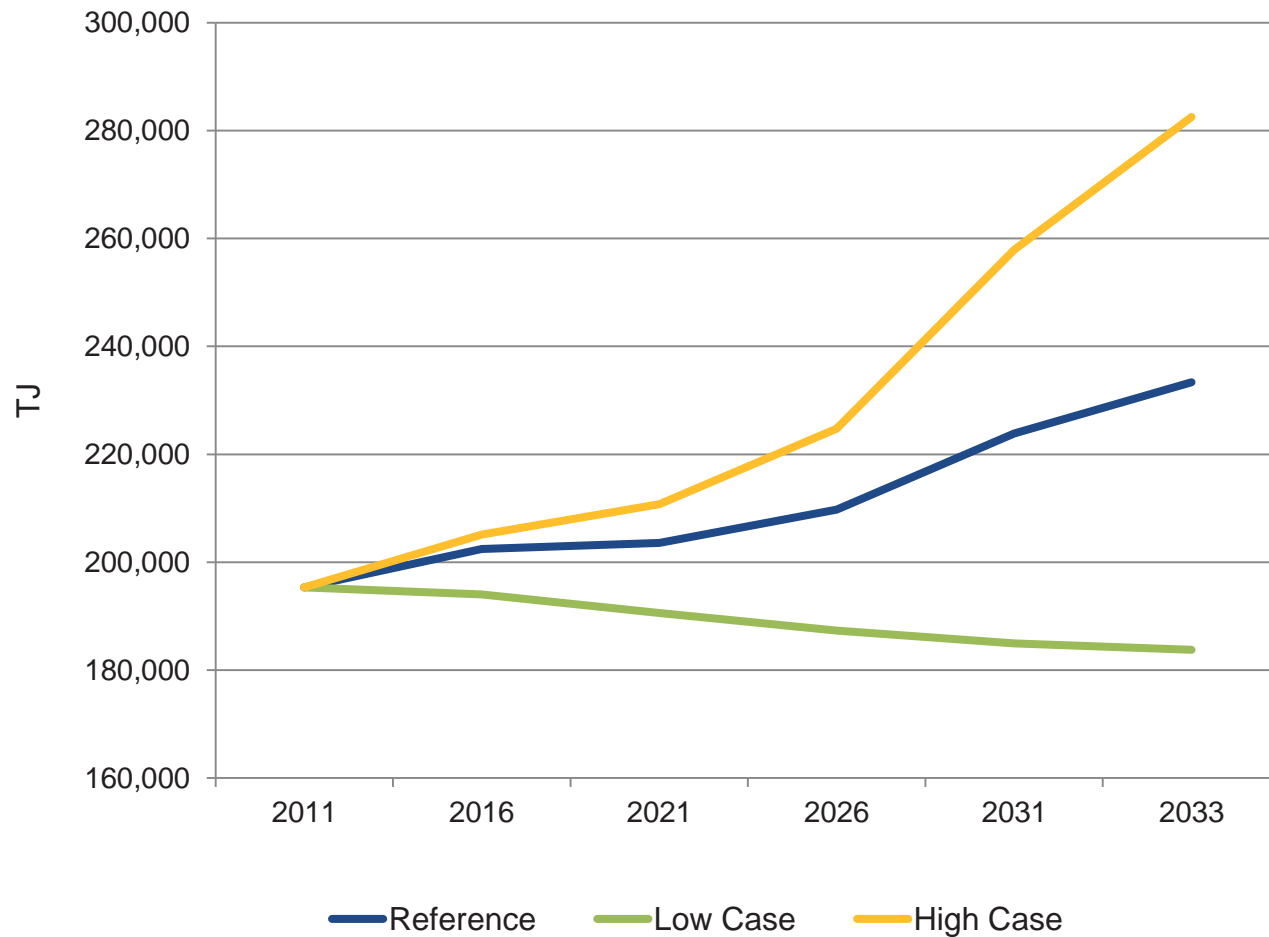


Annual Interior Natural Gas Demand



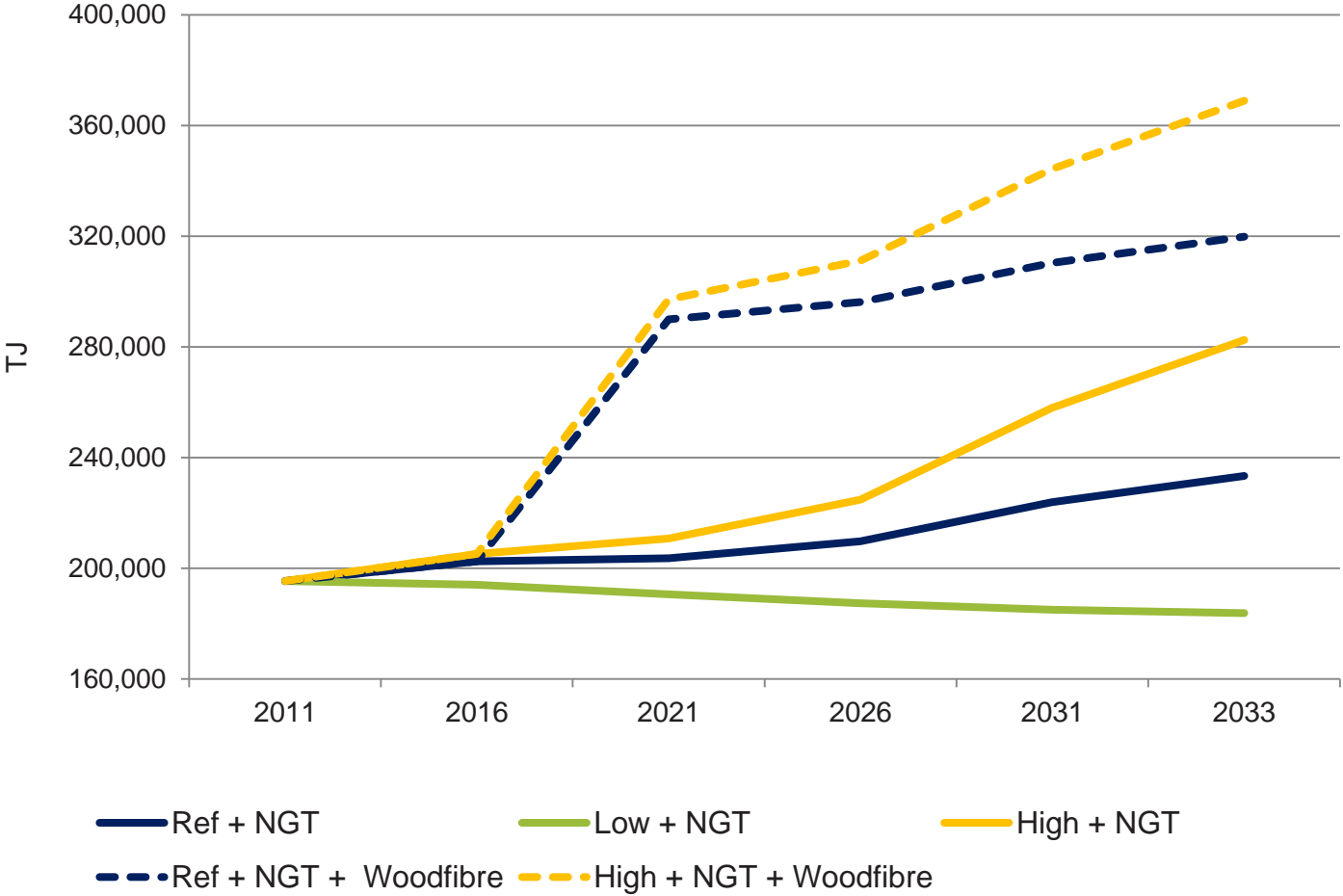
Annual Natural Gas Demand

Including natural gas for transportation (NGT)



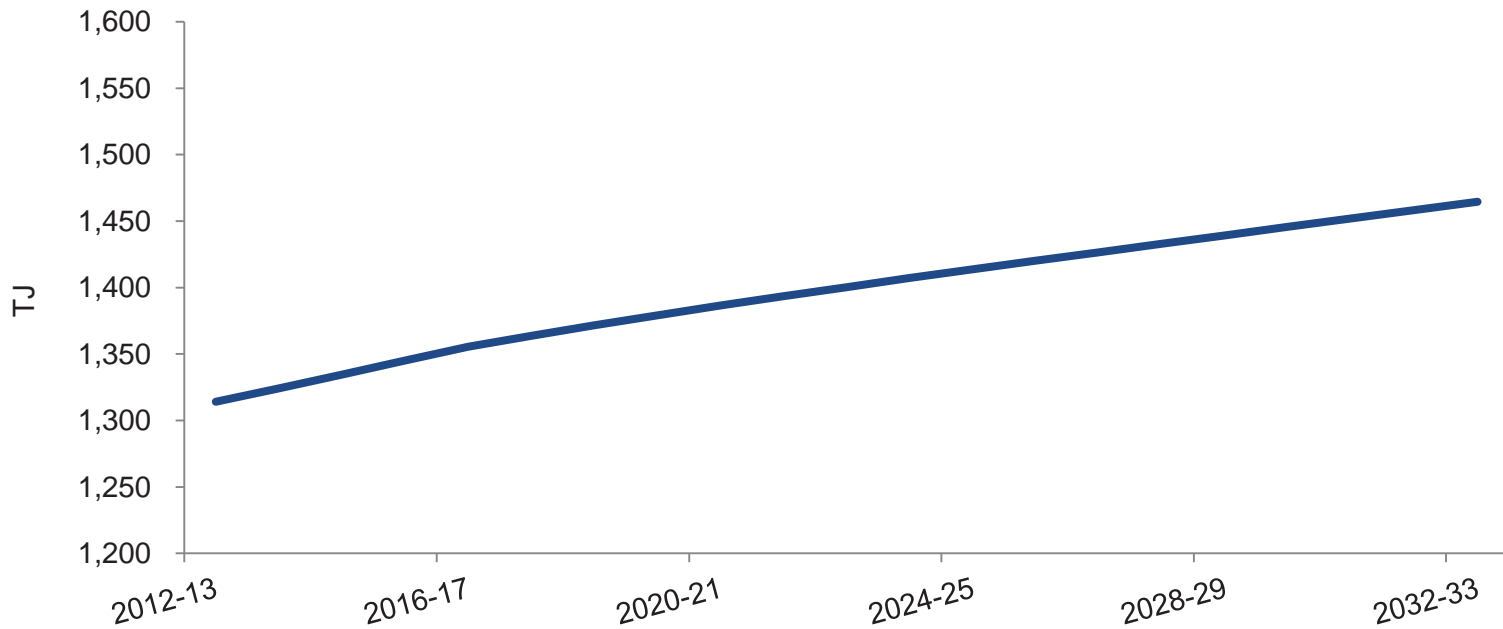
Potential Annual Natural Gas Demand

Including NGT and potential large industrial customer



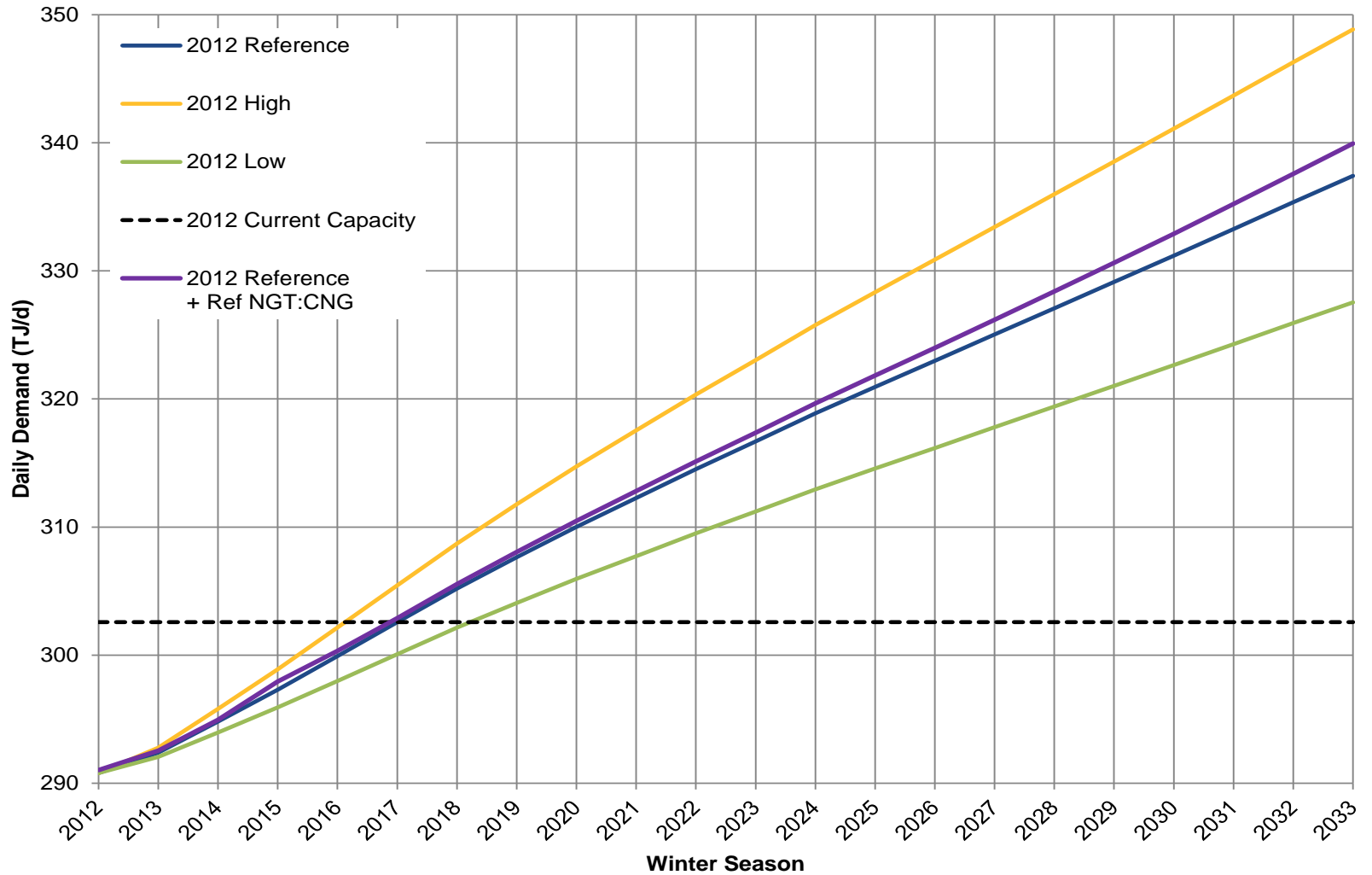
Peak Demand

FEU system-wide

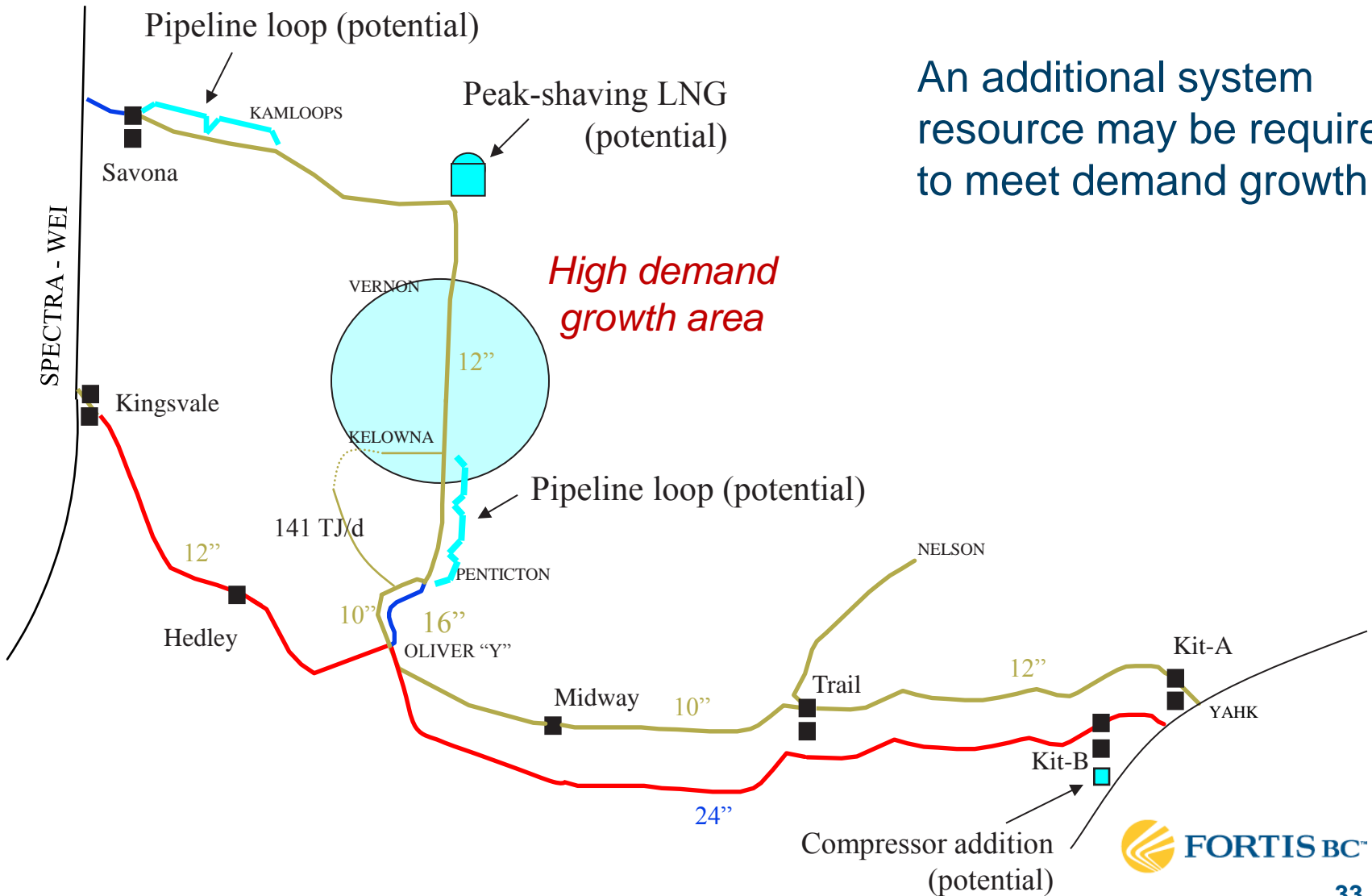


Peak Demand

Regional: Interior transmission system

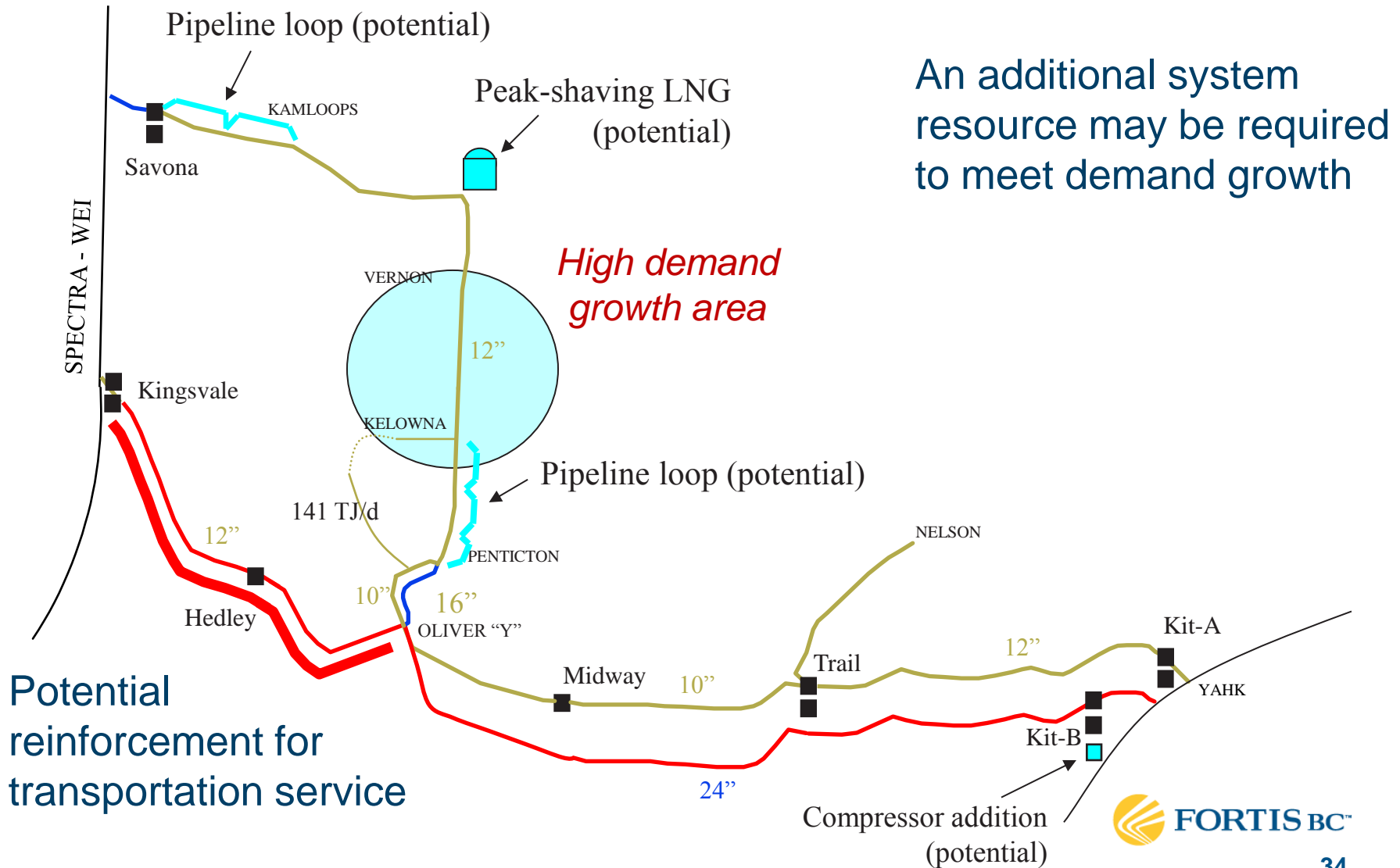


FortisBC Interior Transmission System



An additional system resource may be required to meet demand growth

FortisBC Interior Transmission System



The Future. We're Ready.



Interactive Session: *Envision Your Energy Future*

Energy Resources Available to FortisBC

Natural Gas

- Natural gas—either piped or liquefied
- Renewable natural gas (RNG) or biogas

Electricity

- Hydro
- Solar
- Wind
- Geothermal
- Biomass
- Natural gas-fired electricity
- Market purchases
- Demand response

Both

- Energy efficiency and conservation

Envision Your Energy Future

1. What are your energy needs and priorities?
2. Does your organization have specific goals or specific environmental factors that guide your energy plans?
3. What uncertainties do you foresee that will impact your energy environment and needs in the future (Ex. events, technologies, government policies, economic factors, etc.)?
4. What are the constraints on meeting your current and future energy needs and priorities?



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 Energy Efficiency and Conservation programs
 - Informing our engagement with policy makers
- Ongoing LTRP Stakeholder Consultations
 - Fall 2015



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