



Welcome to today's CHBA Net Zero Webinar!



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The CHBA Net Zero Team





Housekeeping

- **This webinar is being recorded.** CHBA Members can access the Net Zero webinar archive at www.chba.ca/NZwebinars. (Recording + slide deck.)
- **You will be in “listen-only” mode** for the duration of the webinar.
- **After the presentation we will have time for questions. Please use the question section of the dashboard** throughout the webinar and they will be relayed to the presenter(s).
- You can **change your screen view** by clicking on the  **View icon** in the top right corner, and by dragging the slider between sections to make the slideshow/webcams smaller/larger.

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- High Performance Building Enclosure Systems

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Our Next Webinar

September 23 from 10:30-11:30 PT / 1:30-2:30 ET

Affordable Energy Solutions for New Net Zero Homes

Presented by Jeff Salazar, Geothermal Specialist, Enbridge Gas



There are many energy options for new Net Zero Homes, which can leave a builder wondering which option is the best for their project and, more importantly, is the Net Zero option affordable? In this webinar, Jeff Salazar of Enbridge Gas will speak to how a Net Zero Home can be built cost-effectively by combining solar, hybrid heating, geothermal and natural gas solutions. In addition, Jeff will speak to how combining these energy sources provides long-term flexibility to the homeowner and how builders can easily include these options within their building permit applications - a win-win-win solution.

Join us on September 23rd to learn more about the innovative energy solution combinations for your new Net Zero Home projects.

Register at chba.ca/NZwebinars





Today's Webinar

August 26 from 10:30-11:30 PT / 1:30-2:30 ET

Using Diversified Pathways to Reach GHG Reduction Targets



Presented by: Ben Nishi, Regional Energy Solutions Manager, Fortis BC

In 2019, FortisBC commissioned Guidehouse, a well-regarded consultancy with expertise in both energy and environmental issues, to study how a diversified pathway that utilizes natural gas and electric systems could perform using many of the actions Fortis BC is taking today to pursue their 30BY30 target (to reduce their customers' emissions by 30% by 2030). These actions include:

- Investing in low carbon transportation
- Increasing the supply of Renewable Gas for Fortis BC customers
- Greater investment in energy efficiency programs and initiatives

Join us on August 26th to explore the Pathways to 2050 Report and see how a pathway of diversified energy systems can achieve BC's 2050 GHG emissions target.

Recording & slide deck will be available at chba.ca/NZwebinars





POLLS



FortisBC Clean Growth Pathway to 2050

Rethinking BC's energy future

Ben Nishi

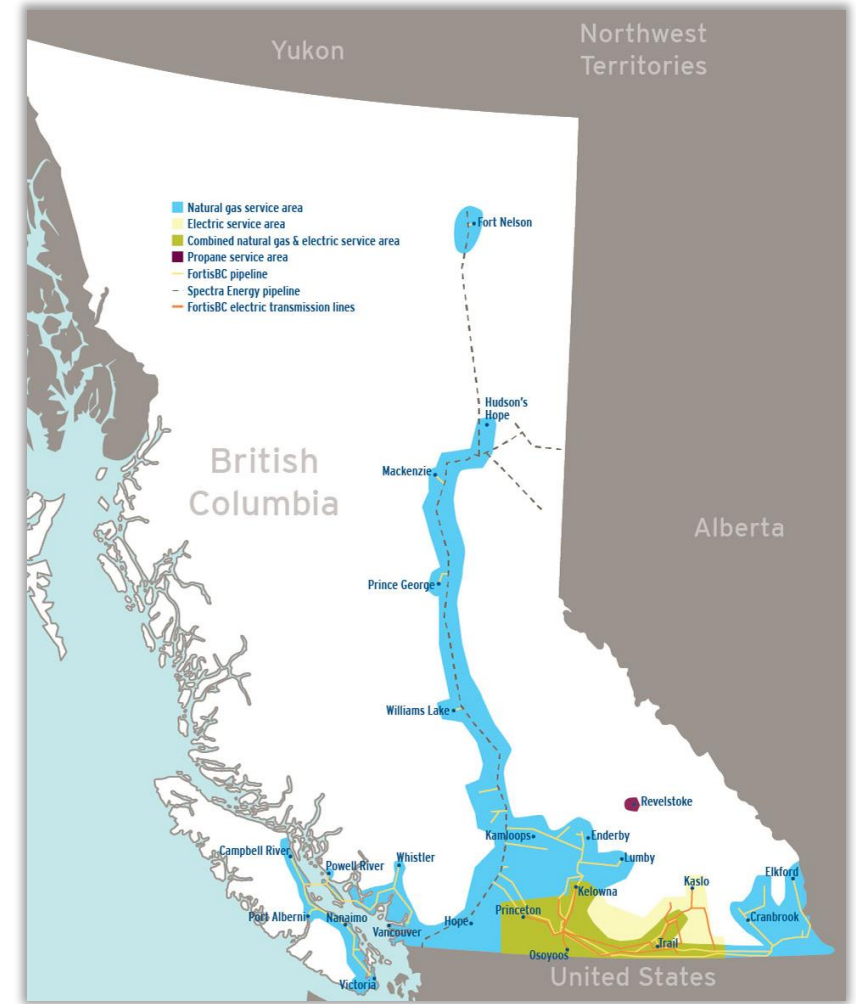
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FortisBC

We're the largest energy provider in the province and we're putting more than 100 years of knowledge into creating a cleaner, healthier tomorrow for BC.

- We serve **1.2 million** customers providing:
 - electricity
 - natural gas
 - renewable gas
 - propane
 - alternative energy solutions
- Directly employing **2,400** British Columbians
- 5 year **\$4.3 billion** capital plan



What is 30BY30?

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



4 pillars of our Clean Growth Pathway to 2050



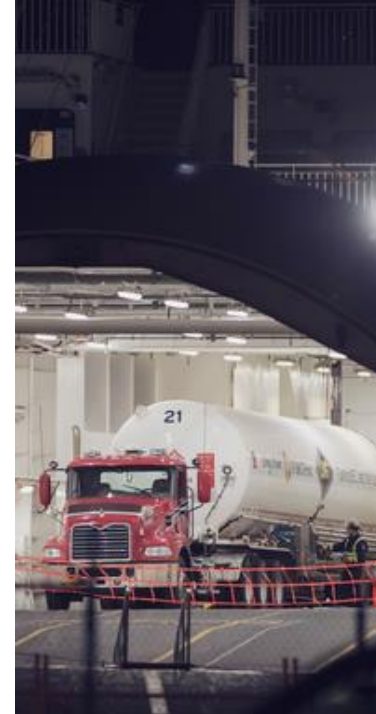
**Energy
efficiency**



**Renewable
gas**



**Zero and
low carbon
transportation**



Global LNG

Can the gas system help reduce emissions?

Yes

Step 1 : FortisBC's Renewable Gas

Renewable Natural Gas is carbon neutral



Vancouver-area landfill to produce renewable natural gas



Renewable natural gas from landfill will be used to power city buildings, vehicles, neighbourhoods

CBC News · Posted: Oct 24, 2019 2:21 PM PT | Last Updated: October 24



Converting landfill gas to renewable natural gas is part of Vancouver's efforts to cut carbon pollution by 50 per cent by 2030, the city says. (CBC)

FortisBC Renewable Natural Gas program celebrates 10th anniversary

Aug 11, 2021

Share



Renewable Natural Gas supply increasing to meet the growing demand

SURREY, BC, August 11, 2021: FortisBC Energy Inc. (FortisBC) is celebrating a significant milestone in climate action in British Columbia (B.C.) - the 10th anniversary of its Renewable Natural Gas (RNG) program. FortisBC was the first utility in North America to offer RNG to its customers and the demand for RNG has grown substantially over the last decade. Over the last year and a half, the organization has been focused on growing RNG supply and moving forward with a number of projects and agreements to meet the growing demand for renewable energy.

Why does Renewable Gas matter?

Emission Factors & GHGI

Renewable Natural Gas is the lowest carbon option

Fuel Source Emissions Factors	
<i>Source: 2018 B.C. Methodological Guidance for Quantifying Greenhouse Gas Emissions</i>	
Fuel Type	Emissions factor (CO ₂ e/GJ)
Renewable natural gas	0.29
Electricity (supplied by FortisBC)	0.72*
Electricity (supplied by BC Hydro)	3.0*

Why does Renewable Gas matter?

Emission Factors & GHGI

Renewable Natural Gas is the lowest carbon option

$$GHGI \left[\frac{kgCO_{2e}}{m^2a} \right] = \frac{\sum \left(Site \ Energy \ Use \left[\frac{kWh}{a} \right] \times Emissions \ Factor \left[\frac{kgCO_{2e}}{kWh} \right] \right)}{Modelled \ Floor \ Area \ [m^2]}$$

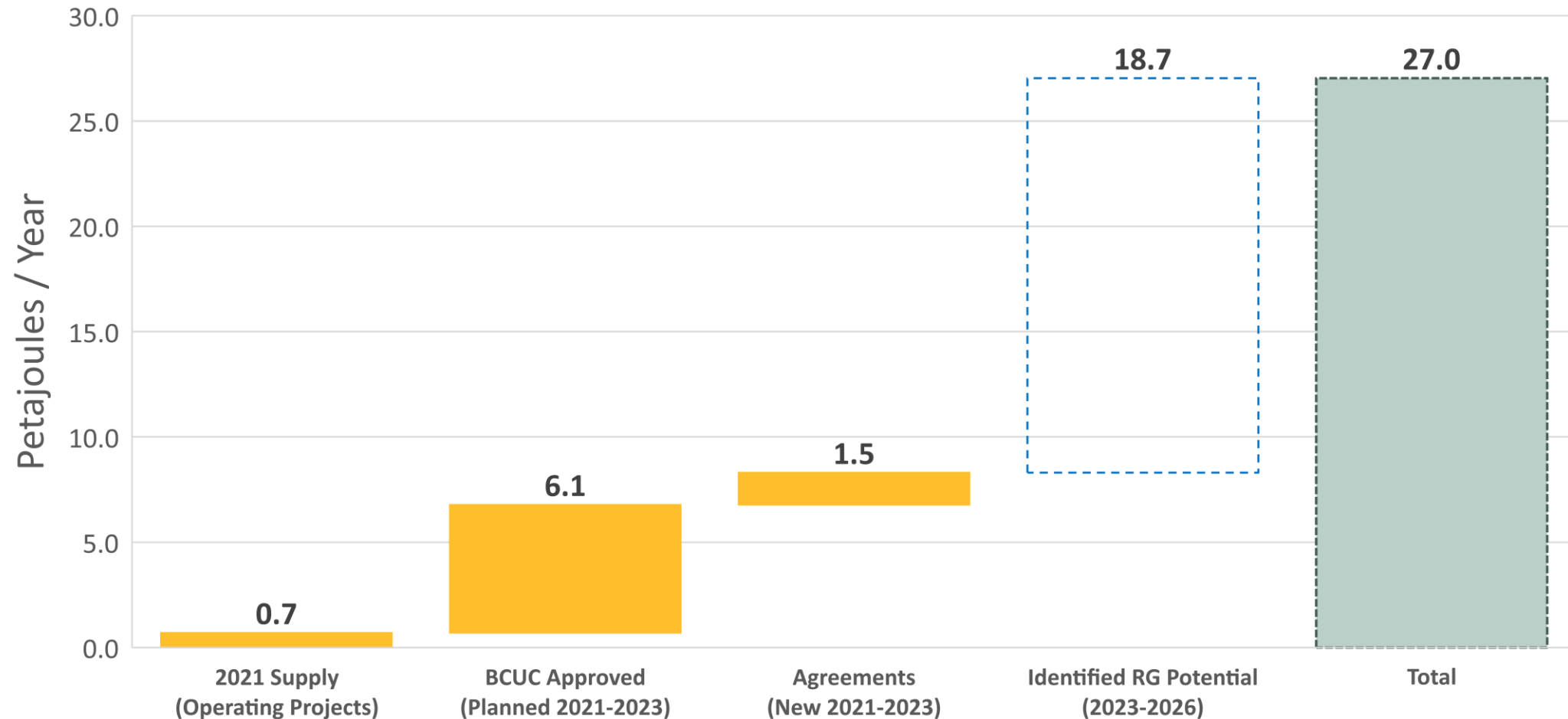
Fuel Source Emissions Factors

Source: 2018 B.C. Methodological Guidance for Quantifying Greenhouse Gas Emissions

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Renewable gas short-term supply outlook

Renewable Gas 5 Year Supply Outlook As of Q3 2021



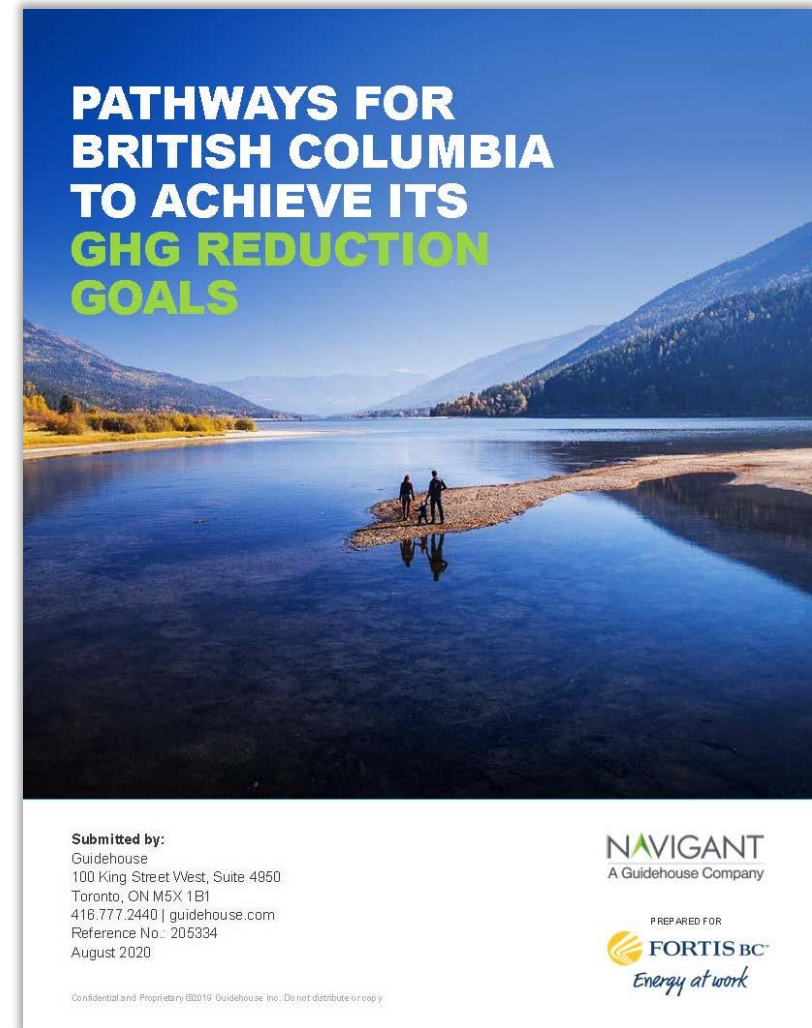
Renewable gas short-term supply outlook

	Project	Type	Province	Contract Status	BCUC Approval Status	Anticipated Start Date (Month-Year)	Contract Max Annual Volume (TJ/Yr)	Proportion of Total Max Contract Volume (%)	Expected Annual Volume (TJ/Yr)	Proportion of Total Expected Volume (%)
Existing	Fraser Valley Biogass	Farm Digester	BC	Contracted	Approved	N/A	91	1.1%	67	1.1%
	Seabreeze Farms	Farm Digester	BC	Contracted	Approved	N/A	120	1.4%	90	1.5%
	Kelowna Landfill	Landfill	BC	Contracted	Approved	N/A	118	1.4%	62	1.0%
	Columbia Shushwap Regional Dist.	Landfill	BC	Contracted	Approved	N/A	40	0.5%	16	0.3%
	City of Surrey	Organics Processing	BC	Contracted	Approved	N/A	160	1.9%	75	1.2%
	Tidal Stormfisher	Organics Processing	ON	Contracted	Approved	N/A	237	2.9%	180	2.9%
	Quadrogen (Previously "Project #1")	Landfill	BC	Contracted	Approved	N/A	80	1.0%	60	1.0%
	Total Existing (TJ/Yr)							846	10.2%	550
Future	Lulu Island Waste Water	Waste Water Treatment	BC	Contracted	Approved	Mar-21	40	0.5%	40	0.7%
	Faromor	Farm Digester	ON	Contracted	Approved	May-21	120	1.4%	60	1.0%
	Dicklands Farm	Farm Digester	BC	Contracted	Approved	Jul-22	160	1.9%	100	1.6%
	Lethbridge Biogas	Farm Digester	AB	Contracted	Approved	Sep-21	474	5.7%	225	3.7%
	Bradam Hamilton	Carbon Energy Recovery	ON	Contracted	Approved	Dec-21	1,500	18.1%	1,125	18.3%
	Tidal Niagara	Landfill	ON	Contracted	Approved	Dec-21	694	8.4%	675	11.0%
	City of Vancouver	Landfill	BC	Contracted	Approved	Dec-21	298	3.6%	250	4.1%
	Project #2	Landfill	BC	Contracted	In Progress	Dec-22	104	1.3%	78	1.3%
	Bradam Napanee	Carbon Energy Recovery	ON	Contracted	Approved	Jul-22	1,500	18.1%	1,125	18.3%
	Matter	Farm Digester	BC	Contracted	Approved	Mar-22	100	1.2%	75	1.2%
	REN Energy	Wood Biomass	BC	Contracted	Approved	Jul-22	1,200	14.5%	900	14.7%
	GSE	Hydrogen Reduction	ON	Contracted	Approved	Dec-22	800	9.7%	600	9.8%
	EPCOR	Waste Water Treatment	AB	Contracted	Approved	Mar-22	280	3.4%	210	3.4%
	Walker RNG	Farm Digester	ON	Contracted	Approved	May-22	160	1.9%	120	2.0%
	Total Future (TJ/Yr)							7,430	89.8%	5,583
Grand Total Volume (TJ/Yr)							8,276	100.0%	6,133	100.0%

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



Submitted by:

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August 2020

NAVIGANT
A Guidehouse Company

PREPARED FOR
FORTIS BC
Energy at work

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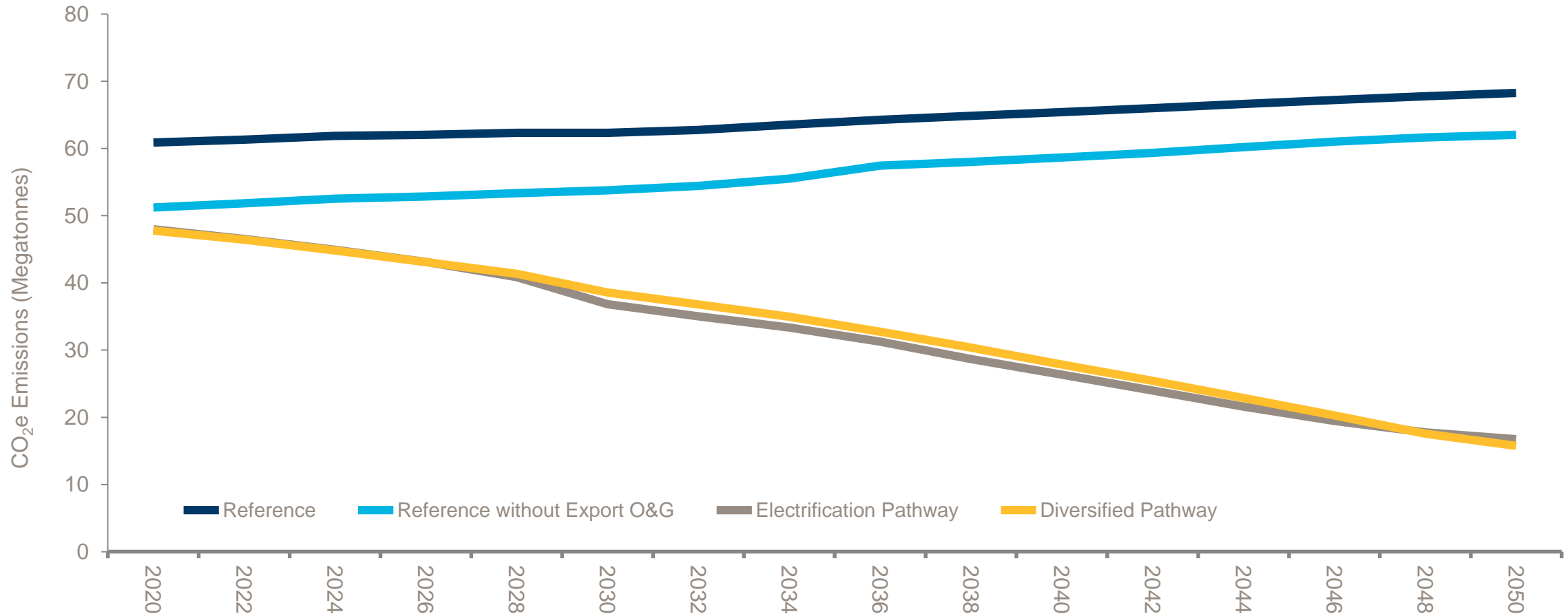
Why?

The need for made-in-BC, low-carbon pathways

- FortisBC has a proven history in BC's energy industry.
- BC already has:
 - significant existing energy infrastructure
 - a clean electricity system
 - large renewable, natural gas and biomass resources
- a relatively large winter heating load



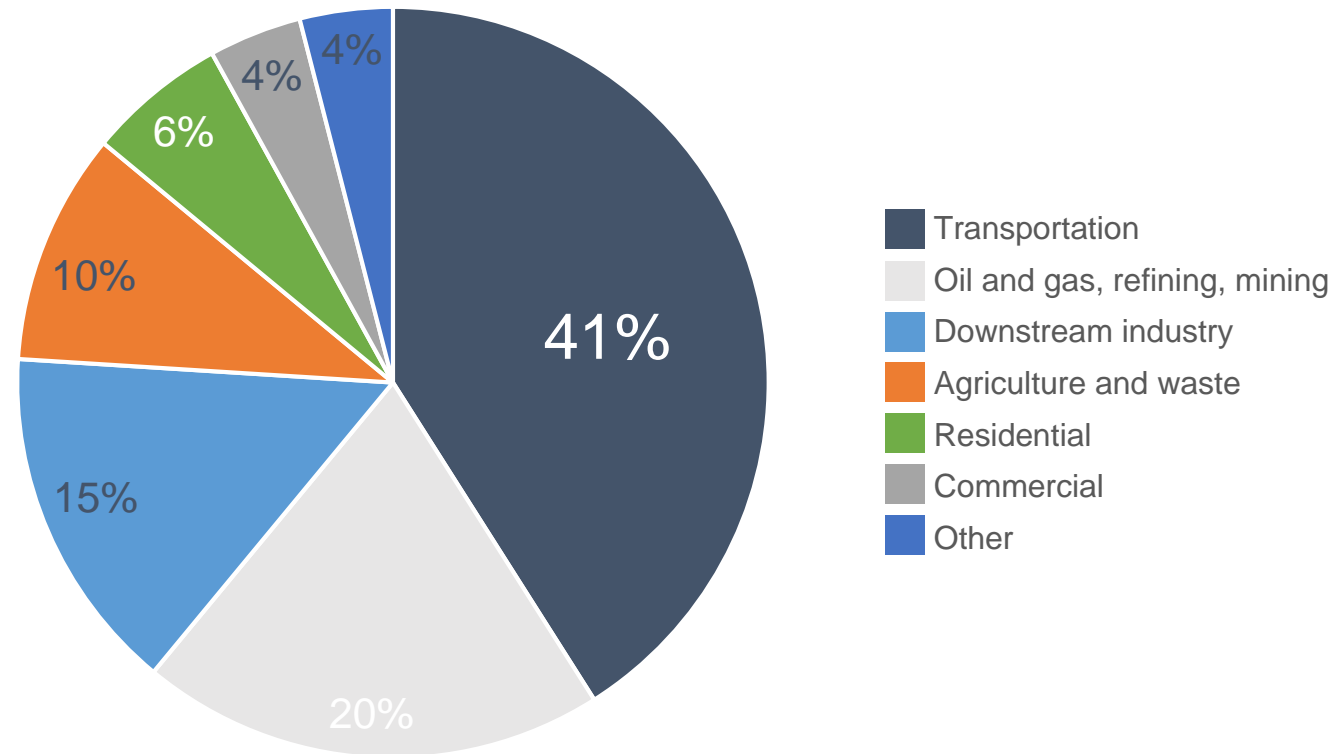
Both pathways achieve the same level of GHG reductions



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

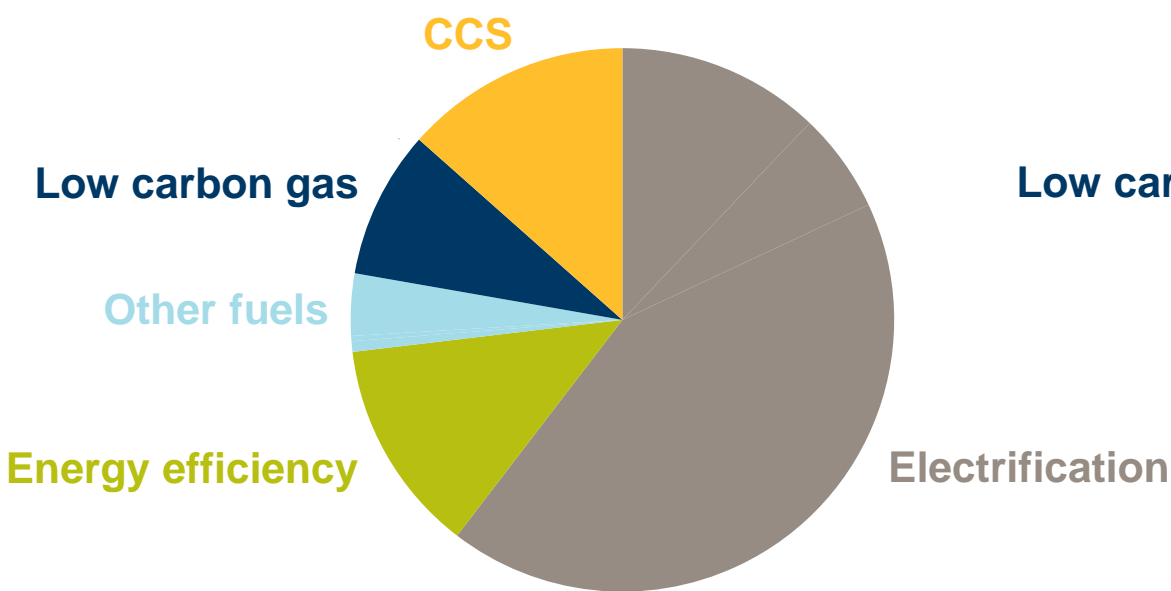
BC's GHG Inventory

- Industry & transportation biggest contributors



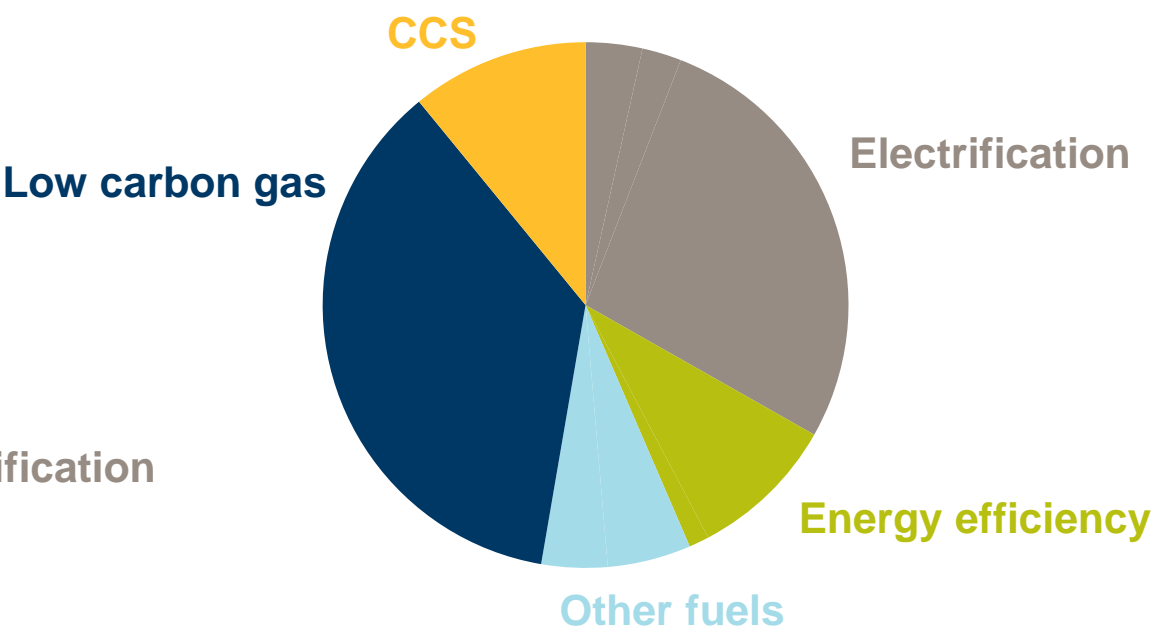
A Diversified Pathway is a more resilient approach

Electric Pathway - 2050



Two-thirds of GHG reductions in the Electrification Pathway requires direct electrification.

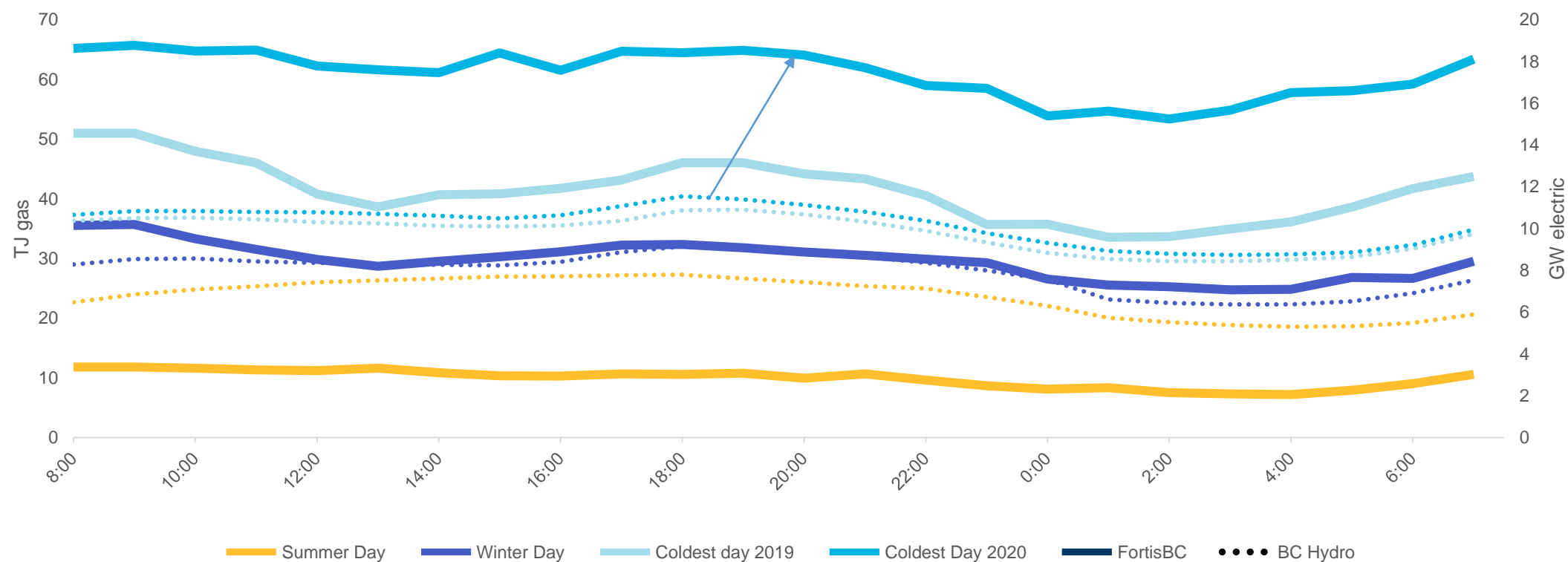
Diversified Pathway - 2050



The Diversified Pathway spreads reduction across more options.

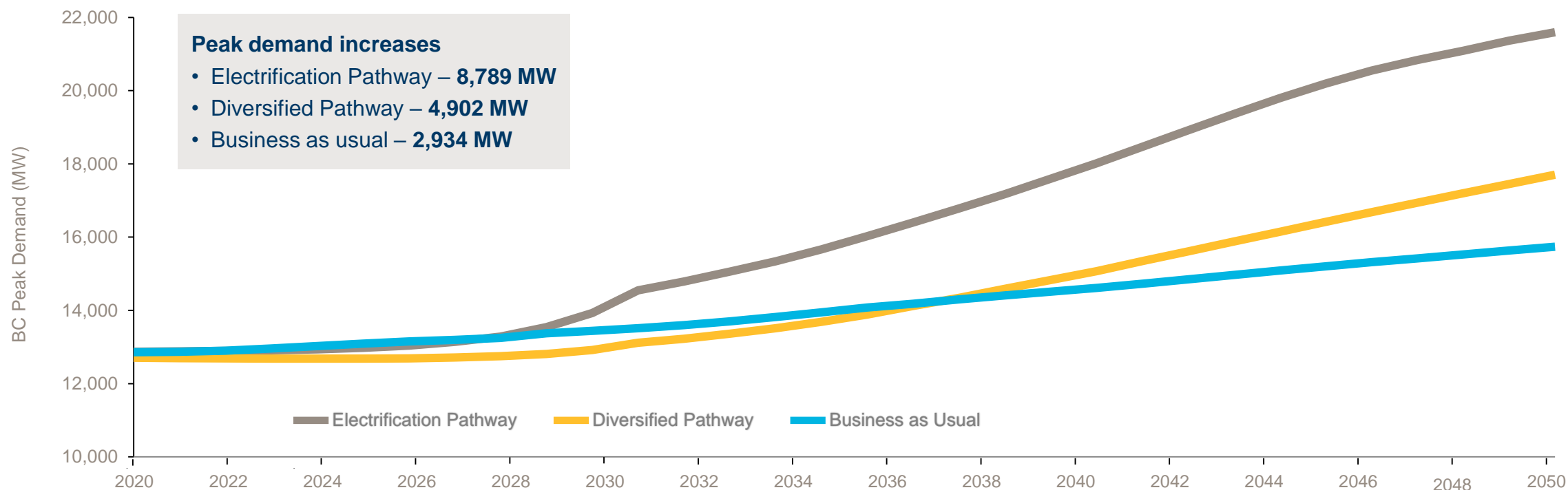
Key challenge: Peak heat demand

On a very cold day, the energy demand on the natural gas system is **60%** higher than the electric system.



Need to expand clean peak capacity

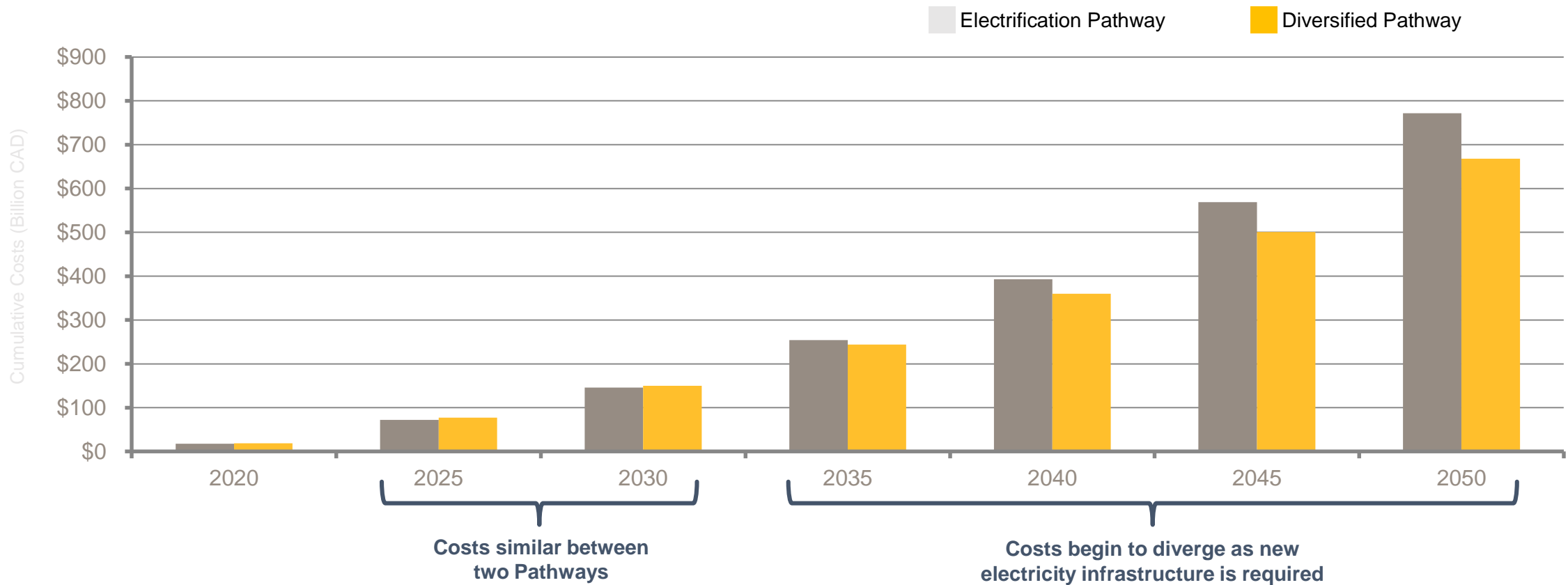
Due to the addition of electric vehicles and electric heating, peak demand is expected to increase by approximately **38%** (Diversified Pathway) and **68%** (Electrification Pathway).



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

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.



Can the gas system help reduce emissions?

Yes

Step 2 : FortisBC's Energy Efficiency Measures

Home Performance Rebate	Energy Advisor Support Rebate	Additional Rebates - Qualified models only	High Efficiency Water Heaters
Step 2 Was \$1,000 – now \$3,000	We provide \$1,000 total in energy advisor support: <ul style="list-style-type: none">The energy advisor receives \$200The builder receives \$800	Natural gas dryer \$100	0.67 EF storage tank Was \$200 – now \$500
		Electric gas dryer* \$100-\$250	
Step 3 Was \$2,000 – now \$4,000		Washer* \$100	Condensing tankless \$1,000
		Fridge* \$50 or \$100	Condensing storage tank \$1,000
Step 4 Was \$4,000 – now \$6,000		Natural gas fireplace Was \$300 – now \$500	Heat pump water heater* Was \$1,000 – now \$2,000
		Drain water heat recovery \$250	
Step 5 Was \$8,000 – now \$10,000		Connected thermostat \$100	Combination heating and hot water system \$1,200

Design Offer

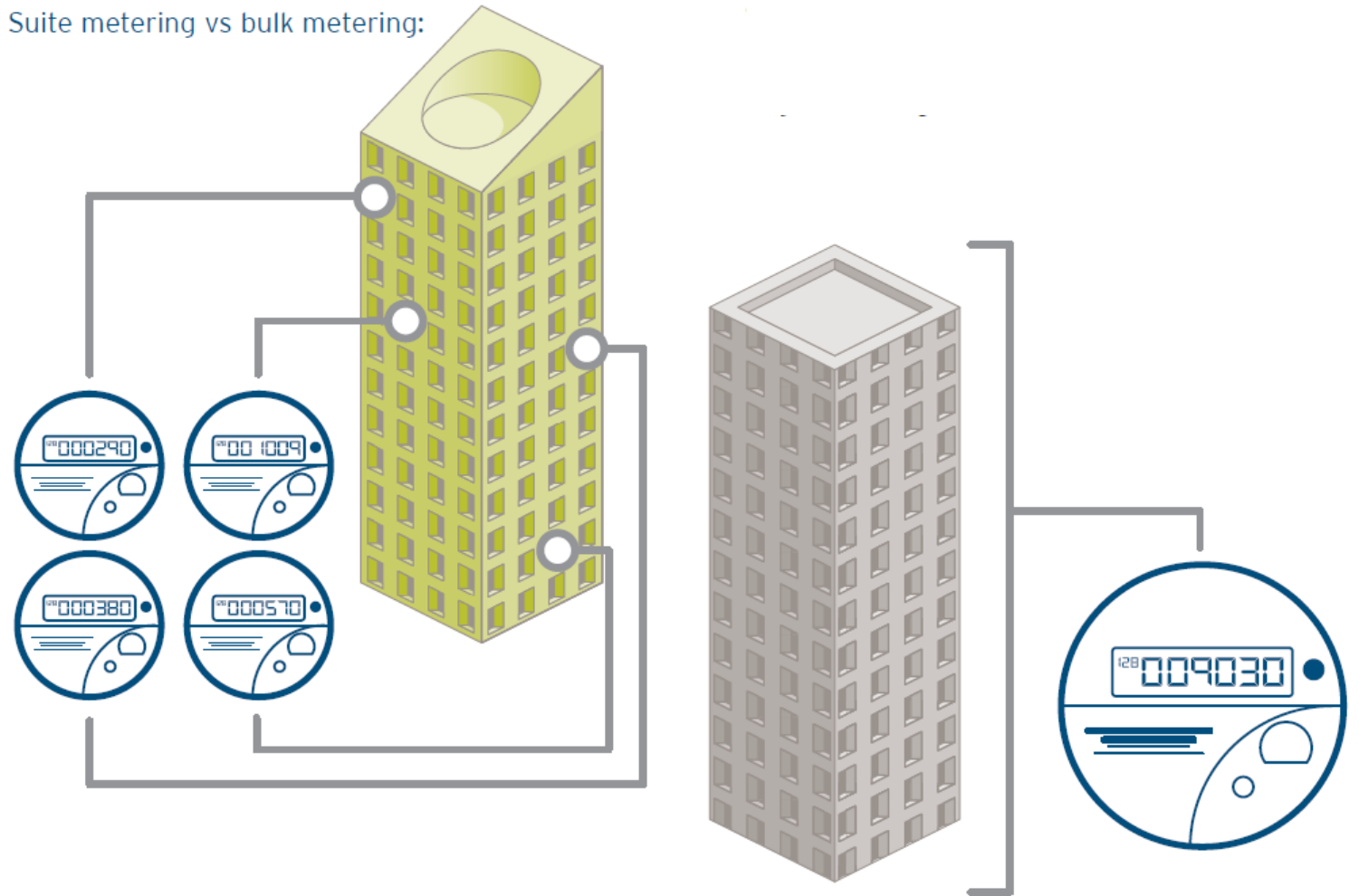
- Offered to projects pursuing **Step 3, 4 or 5**
- Encourage processes that will reduce time and risk, and optimize the design for energy performance, lower construction costs and occupant comfort.
- Applicants can choose to participate in one, two or all three elements of the offer and receive up to **\$7,000** to reimburse the cost of the consultants hired to complete the work.
 - **(1) Integrated Design Process: \$1,000** rebate
 - **(2) Envelope Design and (3) Mechanical Design: up to \$6,000** in rebates
- The incentive is available **per detached home or unique unit in a multi-family complex** (up to **\$50,000** in multi-family projects).
- Available until December 31, 2022.



Step 3 : Metering and measuring demand

Piping to Suites Program

Suite metering vs bulk metering:



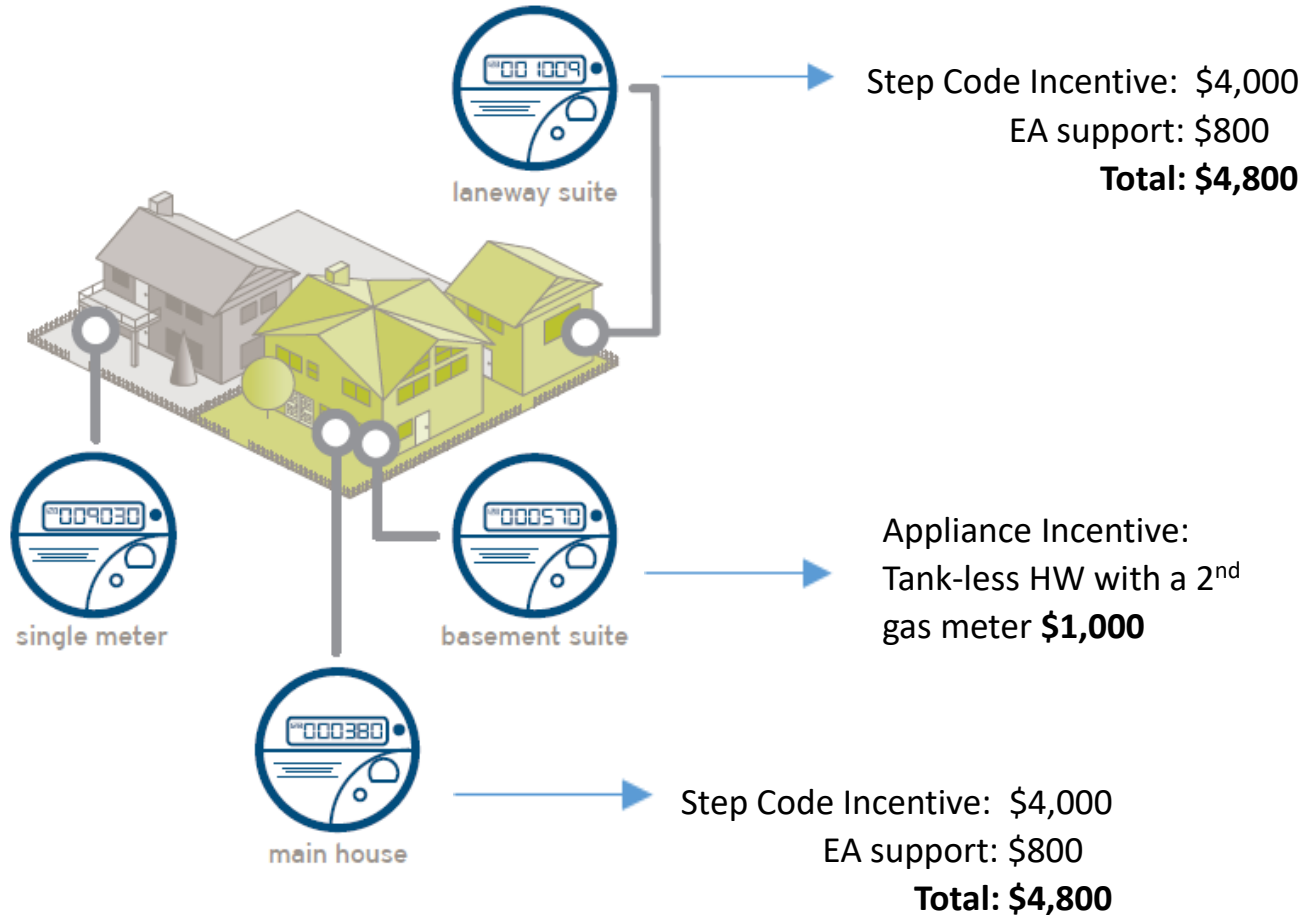


How does it fit together?

Renewable Gas Energy Efficiency Affordability

BC Energy Step Code 3

Example: Single Family Dwelling

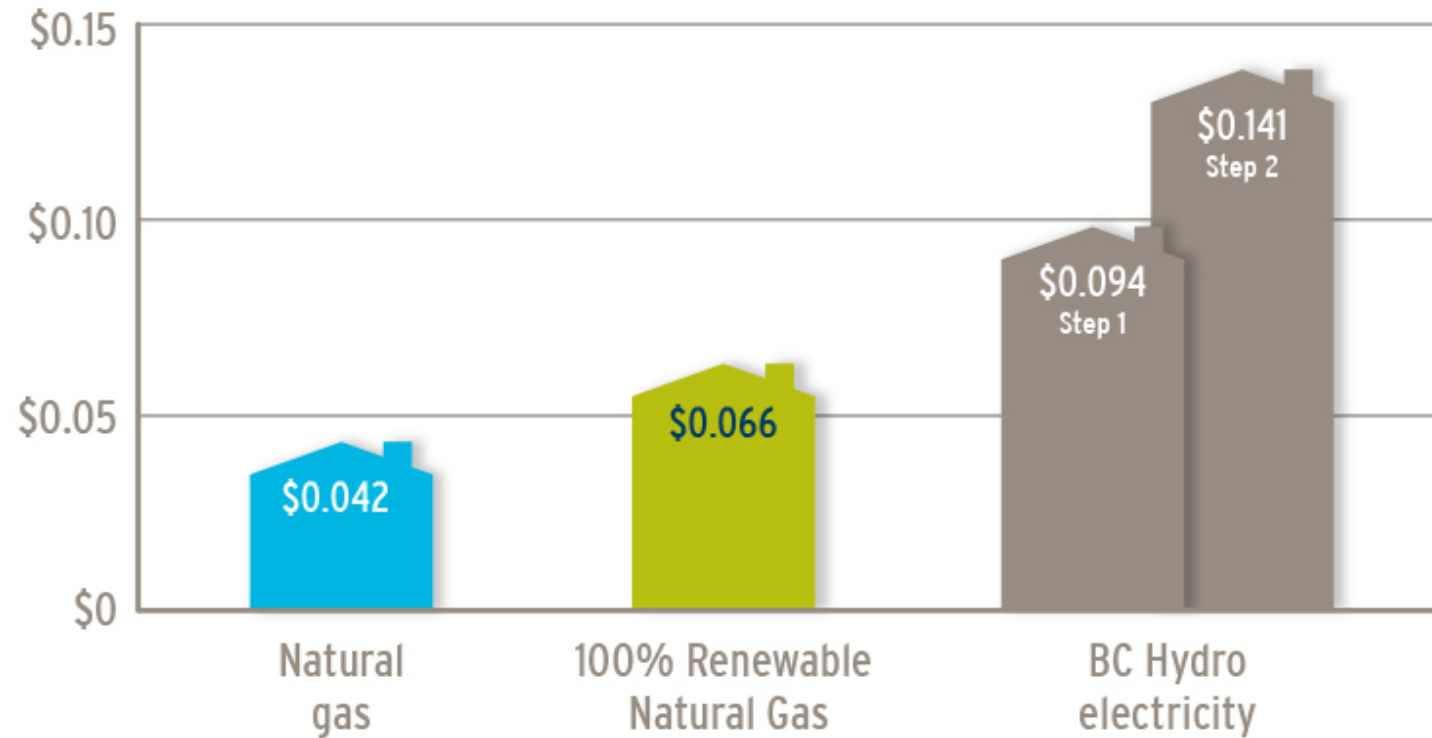


Drain Water Heat Recovery System Incentive:

Main House Additional: \$250
Laneway House Additional \$250
Total: \$500

One Lot Potential ~ \$ 11,100

Residential Gas \$/kWh Price Comparison



Based on rates as of April 2021. Electricity rates exclude basic charges.

Marketing



Natural gas. Good for smaller bills.



FortisBC and Essence Properties offer homeowners the comfort and cost savings of natural gas.

With a high-efficiency natural gas furnace and water heater, you'll enjoy comfortable warmth every day and save money on your energy bills.

Plus, you'll appreciate the convenience and instant heat of natural gas for cooking and barbecuing.

Discover the benefits of natural gas at fortisbc.com/evolve.

Natural gas appliances in your Evolve townhome

- high-efficiency furnace
- high-efficiency condensing storage tank water heater
- barbecue connection
- range

Good for cosy warmth

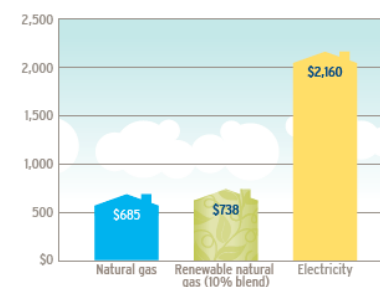
Space heating uses over half of your home's energy.* Compared to electric baseboards, a natural gas furnace costs much less to operate and offers many benefits:

- comfortable, evenly distributed warmth
- circulation of fresh air through the home
- better air quality, as dust and airborne particles are filtered

*Natural Resources Canada, Office of Energy Efficiency, Comprehensive Energy Use Database, residential sector, BC, Table 2: Secondary Energy Use, 2013.

Choosing a home with natural gas can save you money

Annual space and water heating costs† in the Lower Mainland



†These are approximate annual costs for space and water heating of a typical household in the Lower Mainland. A typical household is defined as an existing single family house approx. 2,300 square ft. with average insulation and four occupants. Anticipated savings will be the difference between annual natural gas and electricity costs for various space and water heating equipment. Calculations compare the most energy-efficient space and water heating equipment currently available for natural gas furnace and water heating, and electric resistance heating and water heating and are based on FortisBC natural gas and renewable natural gas rates as of January 2017 and BC Hydro electricity rates as of April 2016 used for the Lower Mainland. These include applicable carbon tax. Savings may vary by household and do not include potential rebates and/or incentives.

Calculate your way to savings

The FortisBC home energy calculator helps you compare costs of heating with different energy sources and estimate annual operating costs for various appliances. Try it at fortisbc.com/energycalculator.

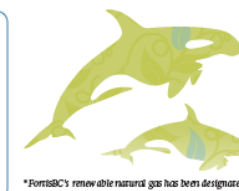
Renewable natural gas.

Stop waste from going to waste.

Renewable natural gas is made right here in B.C. Our suppliers use organic waste from farms and landfills to produce renewable, carbon neutral energy* that we deliver along with conventional natural gas through our gas lines to homes and businesses.

For a few dollars a month for an average home, you can designate a portion of the natural gas you use as renewable natural gas. You'll help reduce your environmental footprint, enjoy exclusive benefits such as contests and receive a B.C. carbon tax credit.

Discover your options at fortisbc.com/rng.



*FortisBC's renewable natural gas has been designated as carbon neutral in B.C. by Offsetters.

Questions?

Call 1-888-224-2710 or visit fortisbc.com.

A diversified path combines energy efficiency & renewable gas to a resilient, reliable, and afford

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

Questions:

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