

COUNCIL PRESENTATION
RTS#16492

Allowing Gas Heating & Hot Water

2024 11 26

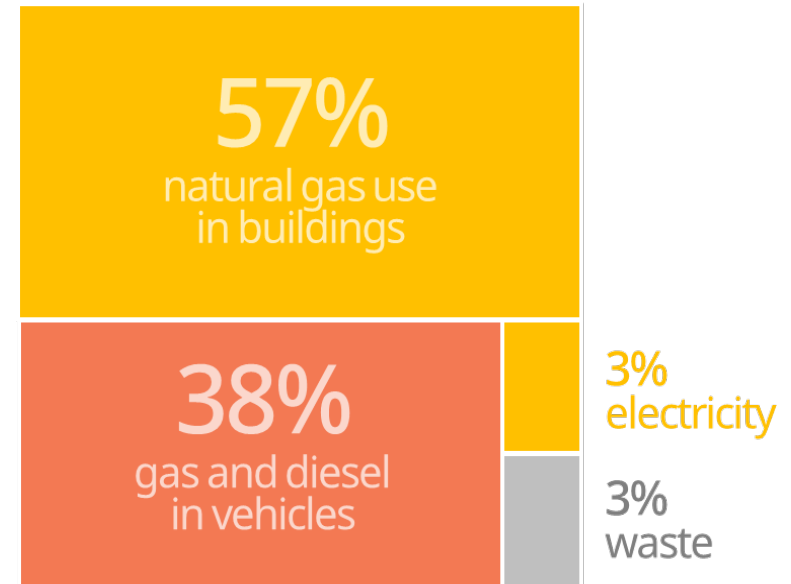
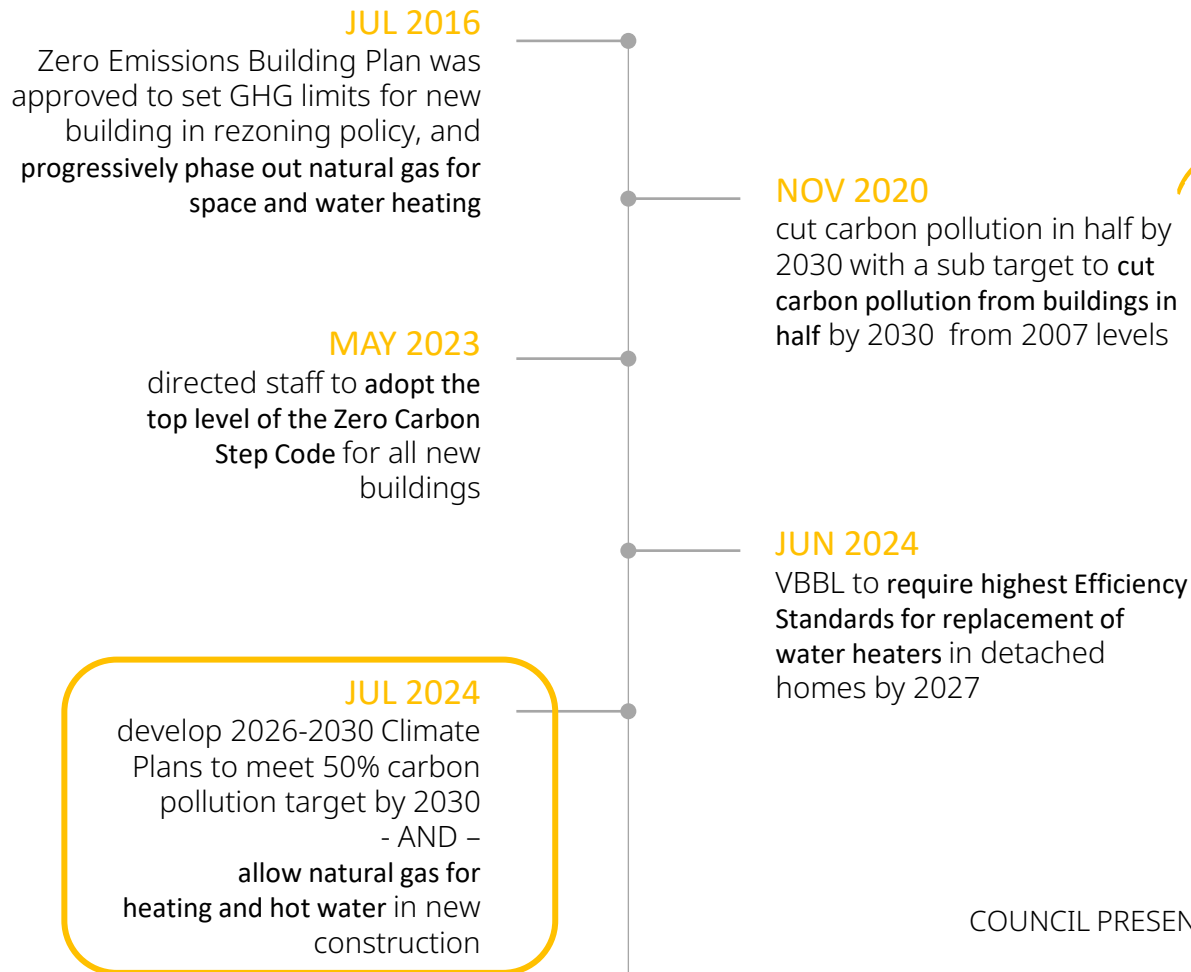


Vancouver
Plan



PURPOSE

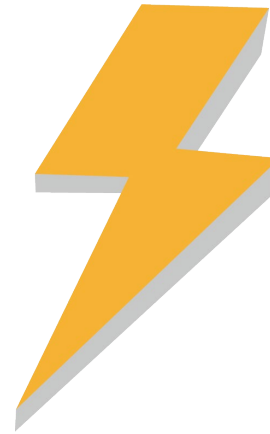
report back on Council direction



City of Vancouver 2023 emissions inventory (GPC Basic, Scopes 1 and 2 + Scope 3 Waste)

ALLOWING GAS IN NEW BUILDINGS

giving builders two options



NOTE: Both paths apply to heating and hot water systems only and will allow gas cooking appliances and fireplaces.

AGENDA

Part 1: background/context

Part 2: compliance paths

Part 3: technical analysis

Part 4: engagement results

Part 5: staff summary

Part 6: Q+A

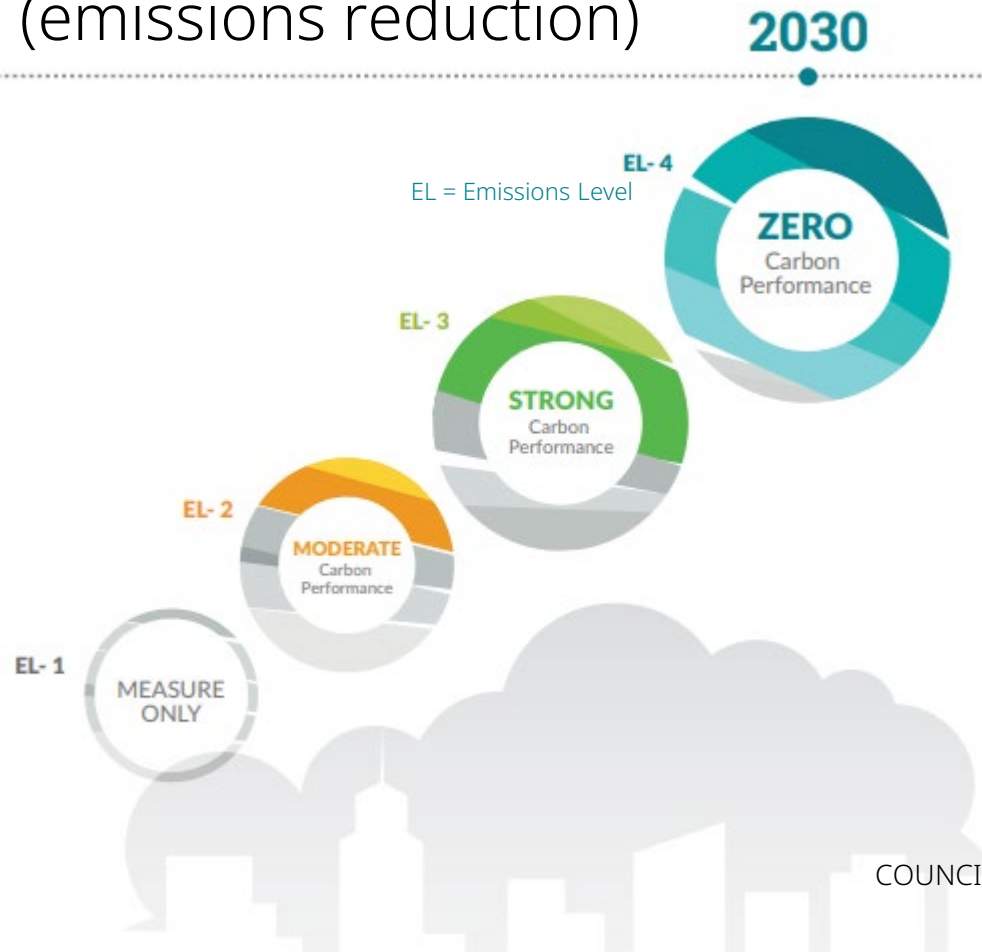
PROJECT timeline



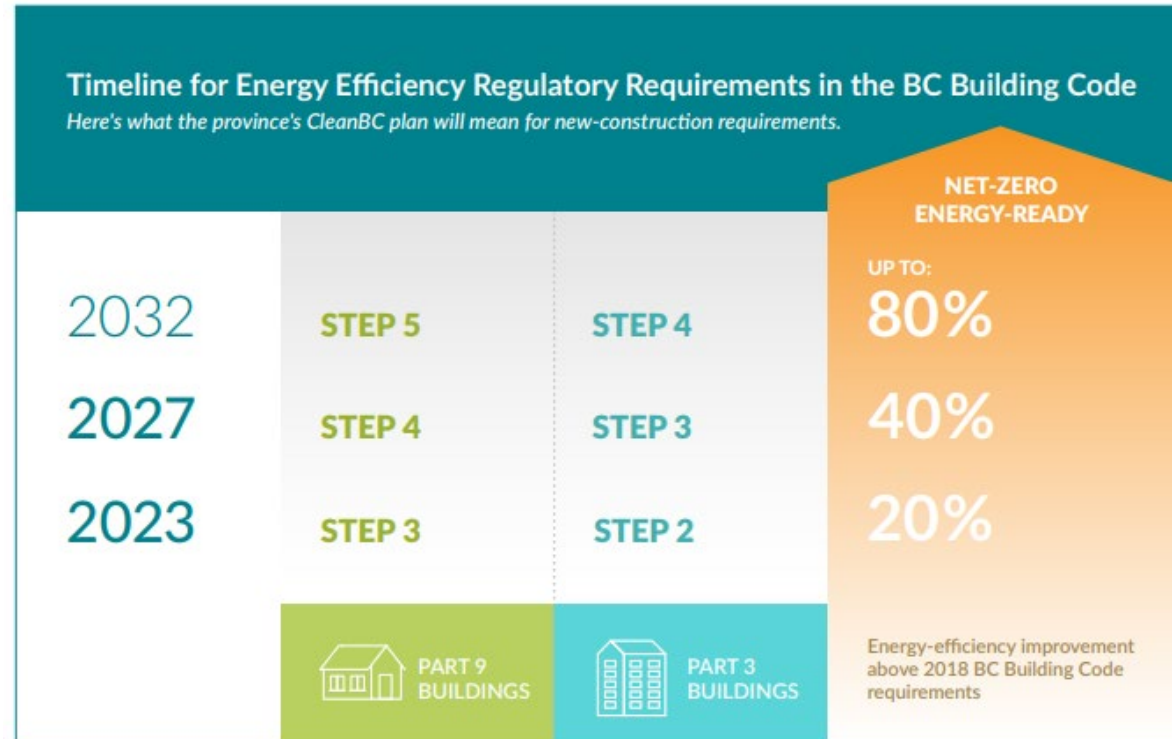
CONTEXT

provincial step codes

ZERO CARBON STEP CODE (emissions reduction)



BC ENERGY STEP CODE (energy efficiency)

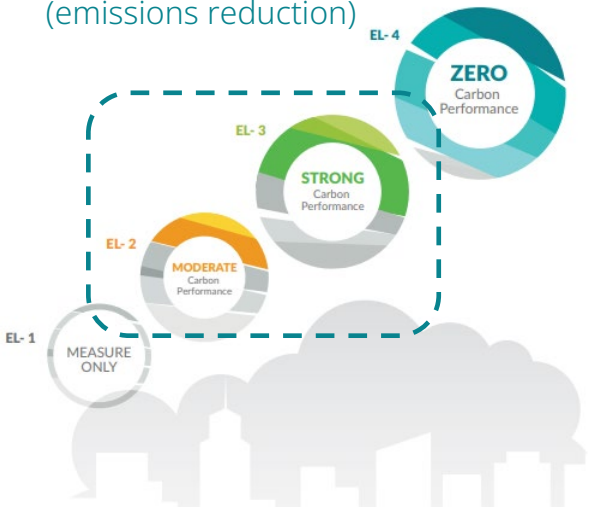


CONTEXT

step code adoption in Vancouver



ZERO CARBON STEP CODE
(emissions reduction)



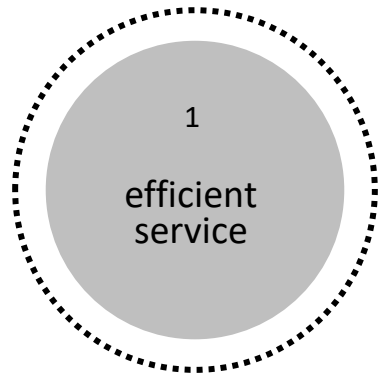
BC ENERGY STEP CODE
(energy efficiency)



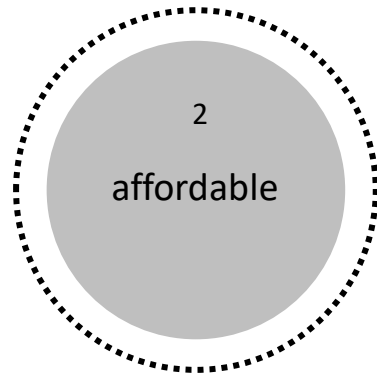
VANCOUVER'S CURRENT VBBL

- mid-to high level of BC's Zero Carbon Step Code
- nearing the top of the BC Energy Step Code

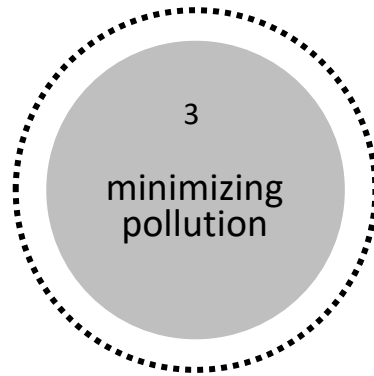
PROJECT principles



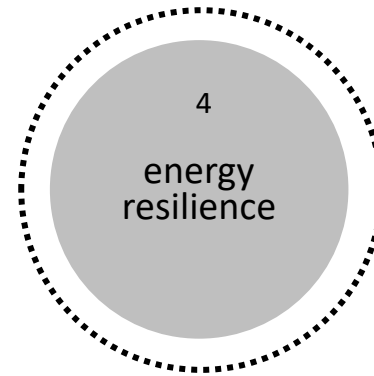
MINIMIZE IMPACTS
on City permitting &
BC Hydro service



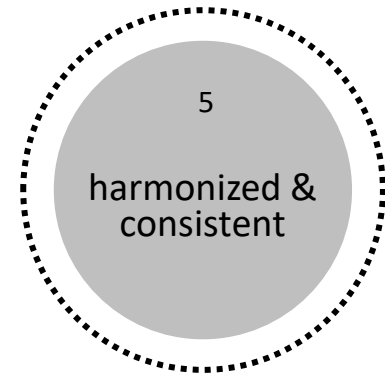
CONSIDERS COST
burden for those
most in need



MINIMIZES CLIMATE IMPACTS
& aligns with
climate goals



ENSURES RELIABLE HEATING
for residents



ALIGNS WITH OTHER GOVERNMENTS

AGENDA

Part 1: background/context

Part 2: compliance paths

Part 3: technical analysis

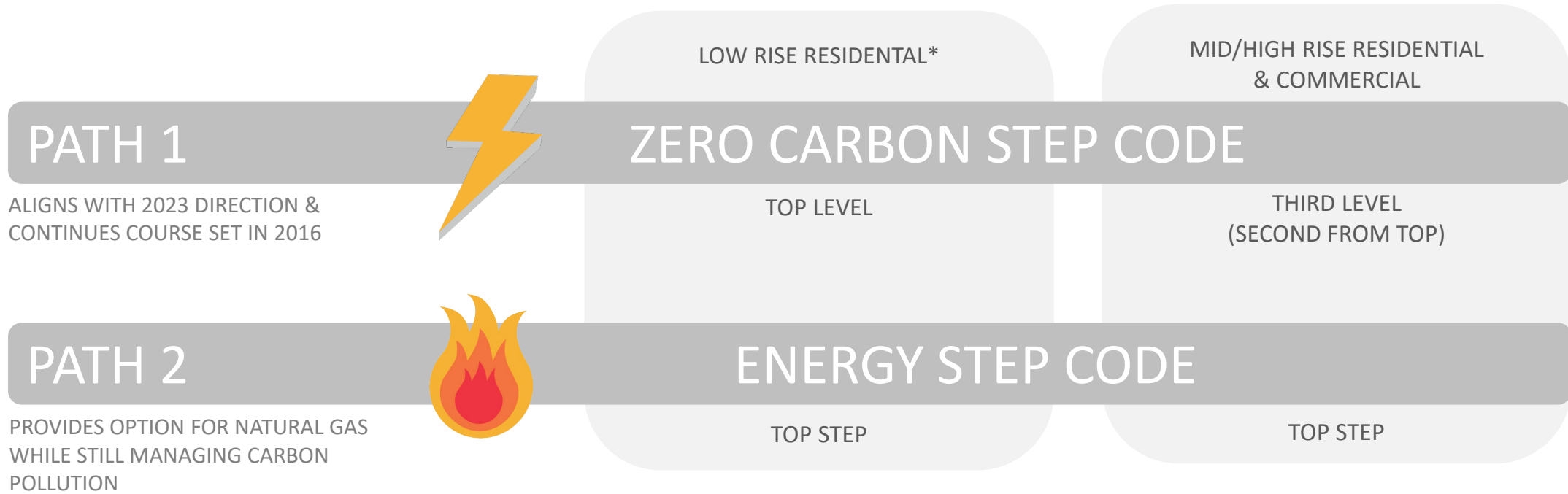
Part 4: engagement results

Part 5: staff summary

Part 6: Q+A

ALLOWING GAS IN NEW BUILDINGS

compliance options for industry



In this presentation we'll refer to low rise residential as "small buildings" & mid/high-rise residential and commercial as "large buildings".

*For large homes, the two-tonne emissions limit will remain intact.

PATH 1 & 2 in practice

CITY OF VANCOUVER



electric heating & hot water are required in all low-rise residential since January 2022 & mid-rise residential since June 2023.

ZERO CARBON STEP CODE



81% of industry are already meeting or very confident they can meet ZCSC by 2030.



ENERGY STEP CODE

North Shore, New Westminister, & Richmond all allow gas equipment when building to the top step.

AGENDA

Part 1: background/context

Part 2: compliance paths

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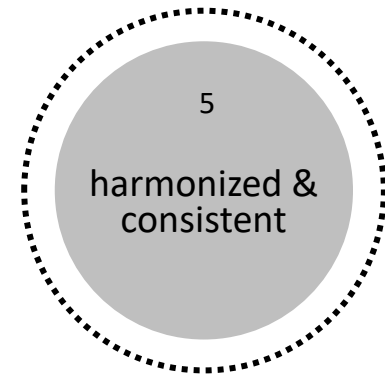
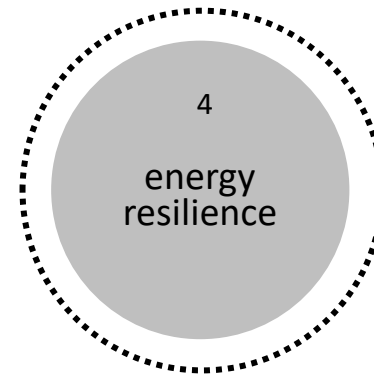
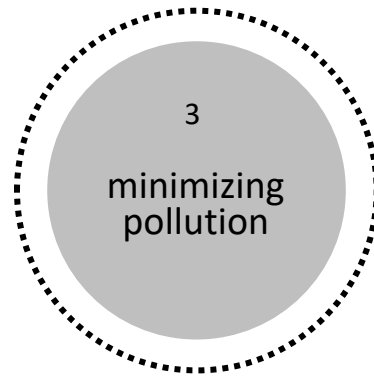
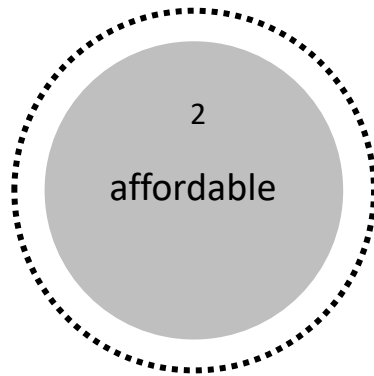
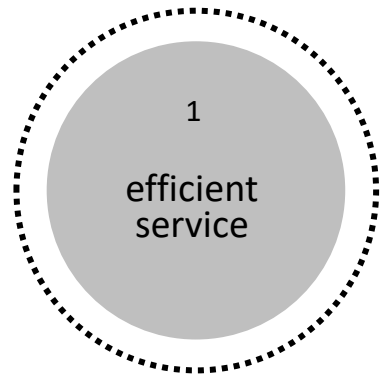
Part 4: engagement results

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TECHNICAL ANALYSIS

overview



TECHNICAL ANALYSIS

summary

The technical analysis of the two compliance paths showed:



PATH 1 will reduce carbon pollution & provide better alignment.



PATH 2 will allow builders the option to use gas for heating/hot water but adds carbon pollution.

**NEITHER
PATH**

will materially reduce affordability challenges, speed up permits or construction, or improve heating reliability for residents.



SERVICE ANALYSIS SUMMARY

Neither path 1 nor path 2 have a meaningful impact on City or BC Hydro service.

SERVICE ANALYSIS

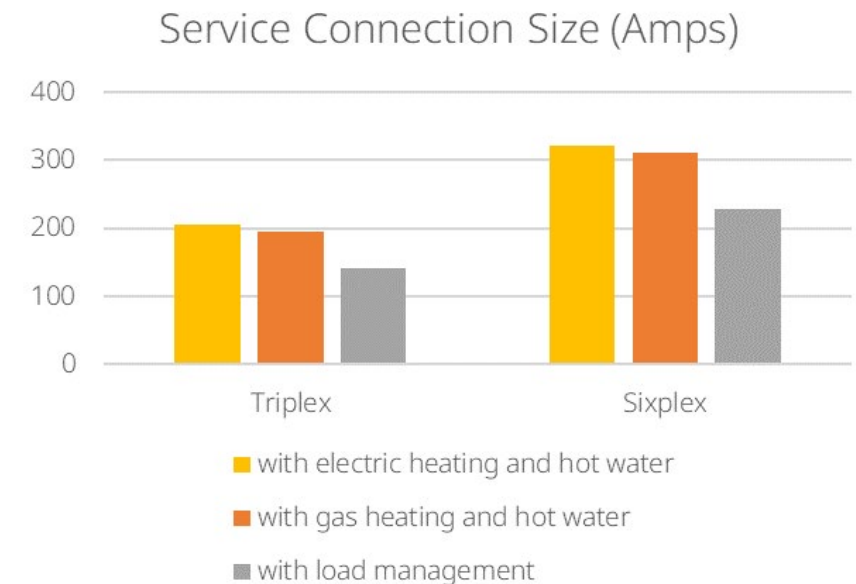
electrical connections



HYDRO SERVICE

In new homes with air conditioning, we found that using gas for heating & hot water **does not change the size of electrical service** in most cases.

- Electrical service size, type, and process are driven by density and new loads like air conditioning & EVs.
- Some builders have experienced challenges & we're working to solve them.



SERVICE ANALYSIS

electrical connections

THE CHALLENGE

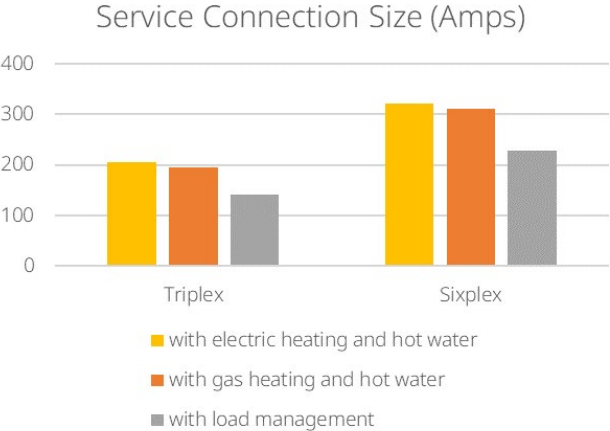
Managing electrical connection size, cost, and time in new homes and multiplexes.

MANY SOLUTIONS UNDERWAY

Staff are working closely with BC Hydro to make connections easier for builders.

SOLUTION #1

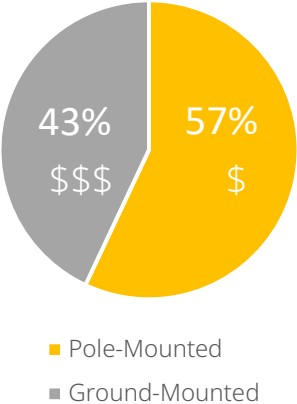
load optimization & management



SOLUTION #2

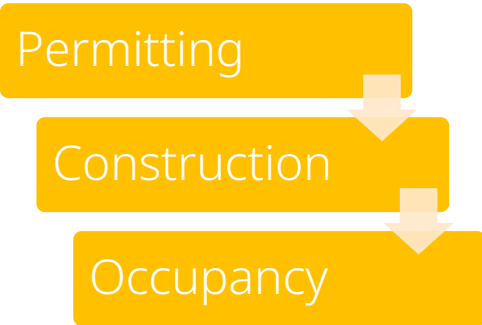
overhead service

TRANSFORMER TYPE IN MULTIPLEXES



SOLUTION #3

streamlined connection process (supported by a new guide for builders)



SERVICE ANALYSIS

city permitting



CITY SERVICE

Permitting staff indicate the proposed paths will not affect the speed of permits.





AFFORDABILITY ANALYSIS SUMMARY

There is no meaningful difference between path 1 or 2 on affordability.

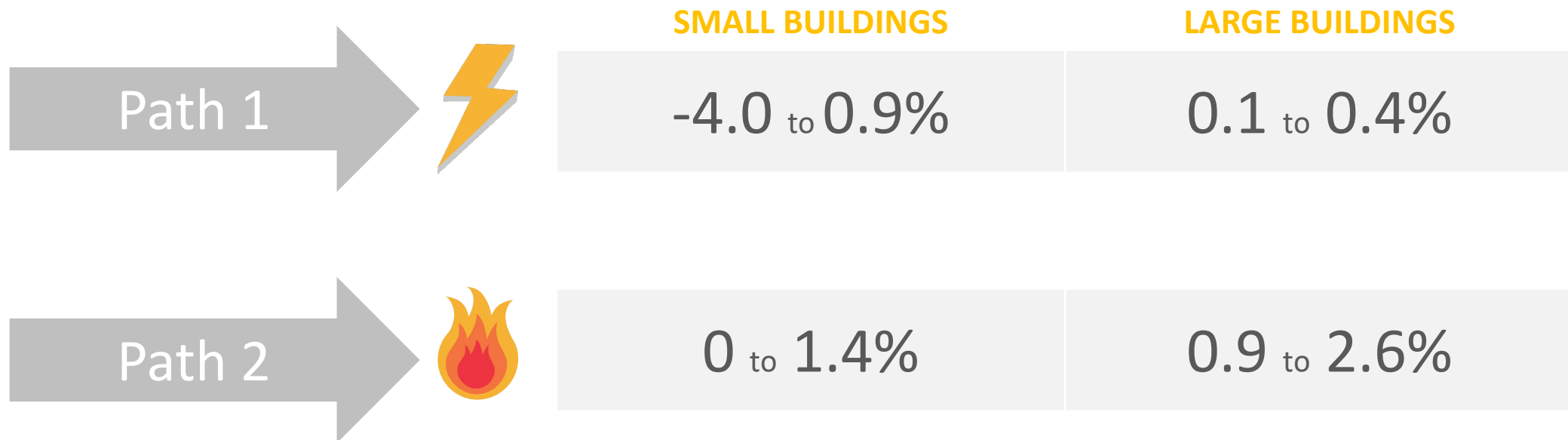
AFFORDABILITY ANALYSIS

builders & developers



CAPITAL COST

incremental construction costs compared to current practice

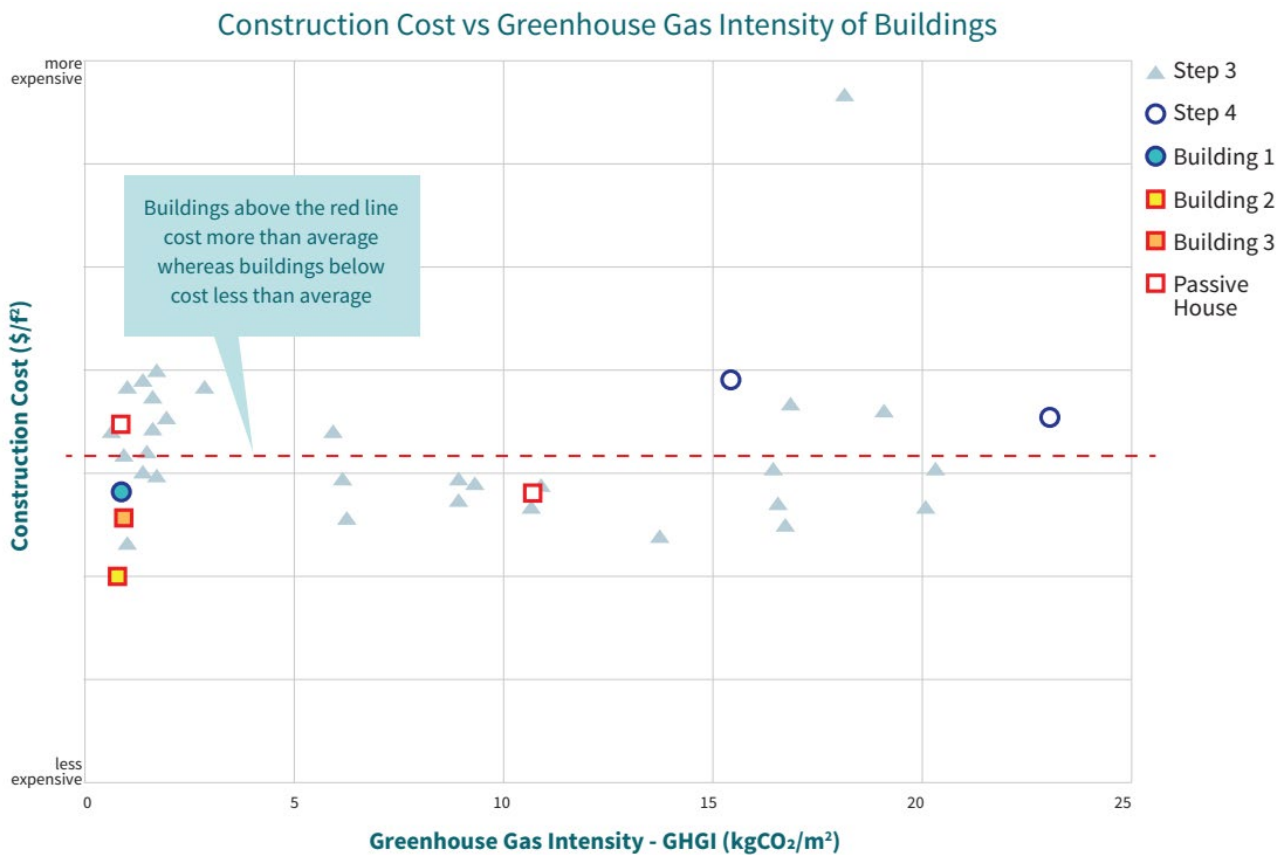


AFFORDABILITY ANALYSIS

developers



CONSTRUCTION COSTS IN PRACTICE



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There is no clear correlation... between (construction) cost and (carbon) performance.

- BC Housing Research Centre

//

Source: *Does High Performance Construction Cost More? A case study of 38 BC Housing buildings*, June 2024

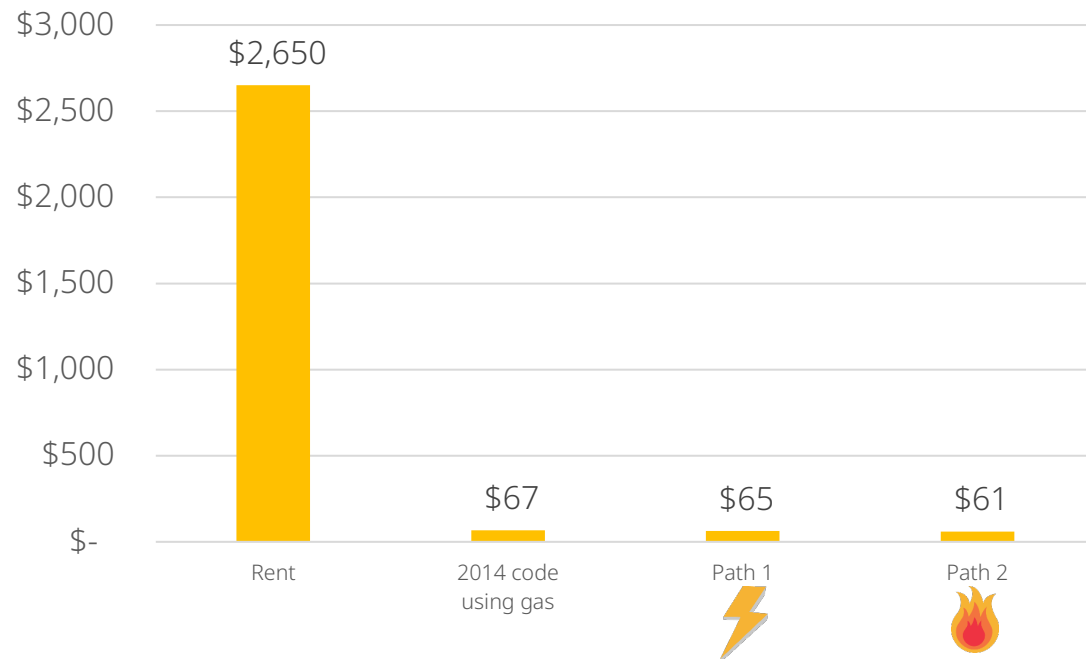
<https://www.bchousing.org/sites/default/files/media/documents/Building-Innovation-Case-Study-June-2024-Final.pdf>

AFFORDABILITY ANALYSIS

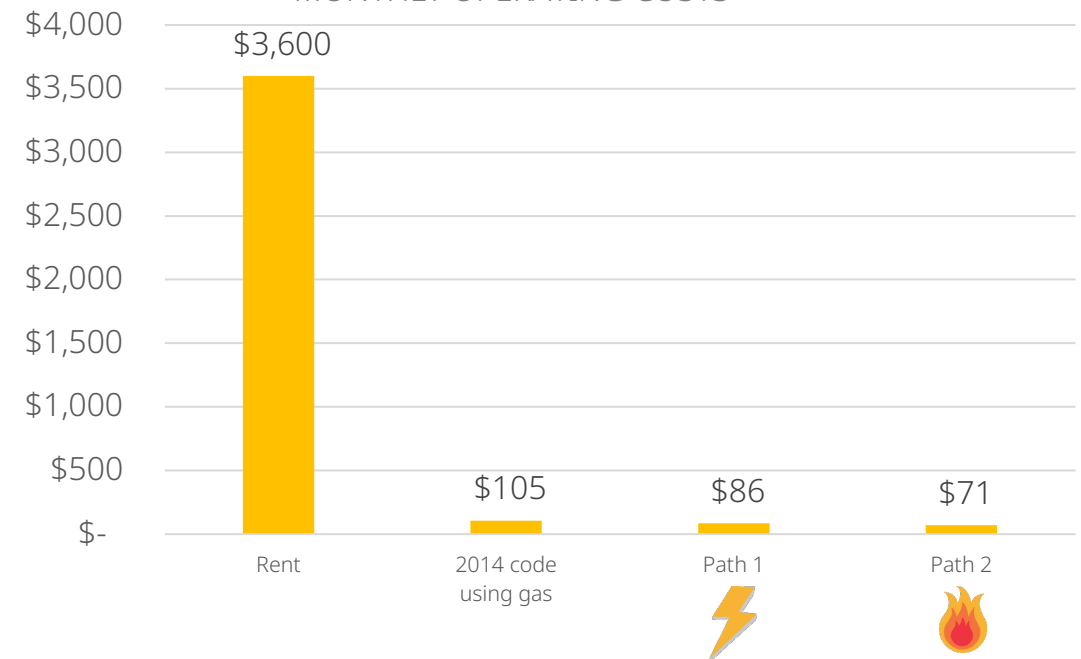
residents



SCENERIO 1
TYPICAL 1 BED APARTMENT
MONTHLY OPERATING COSTS



SCENERIO 2
TYPICAL 2 BED MULTIPLEX
MONTHLY OPERATING COSTS





CLIMATE ANALYSIS SUMMARY

Path 1 offers the best outcomes for climate whereas Path 2 will increase annual carbon pollution.

CLIMATE ANALYSIS

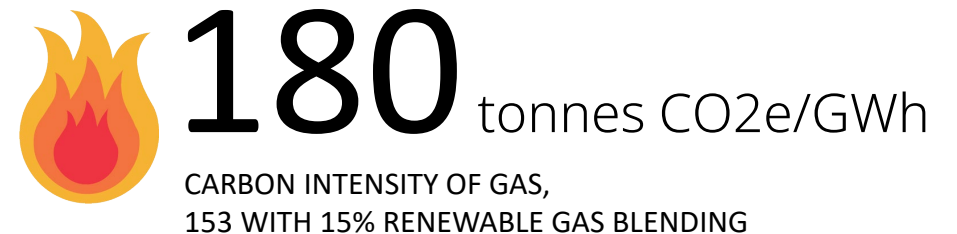
fuel sources



B.C. HAS THE CLEANEST ELECTRICITY IN WESTERN NORTH AMERICA

and amongst the lowest carbon emissions of
North America utilities



- By 2030, **BC Hydro** will need to deliver **100% clean electricity**, which they achieved in 2022 and 2023. The Clean Electricity Trading Standard helps ensure that the electricity BC Hydro supplies its customers is clean.
- By 2030, **Fortis BC** is planning to grow from 1% to **15% renewable energy**.





Source: State and provincial data

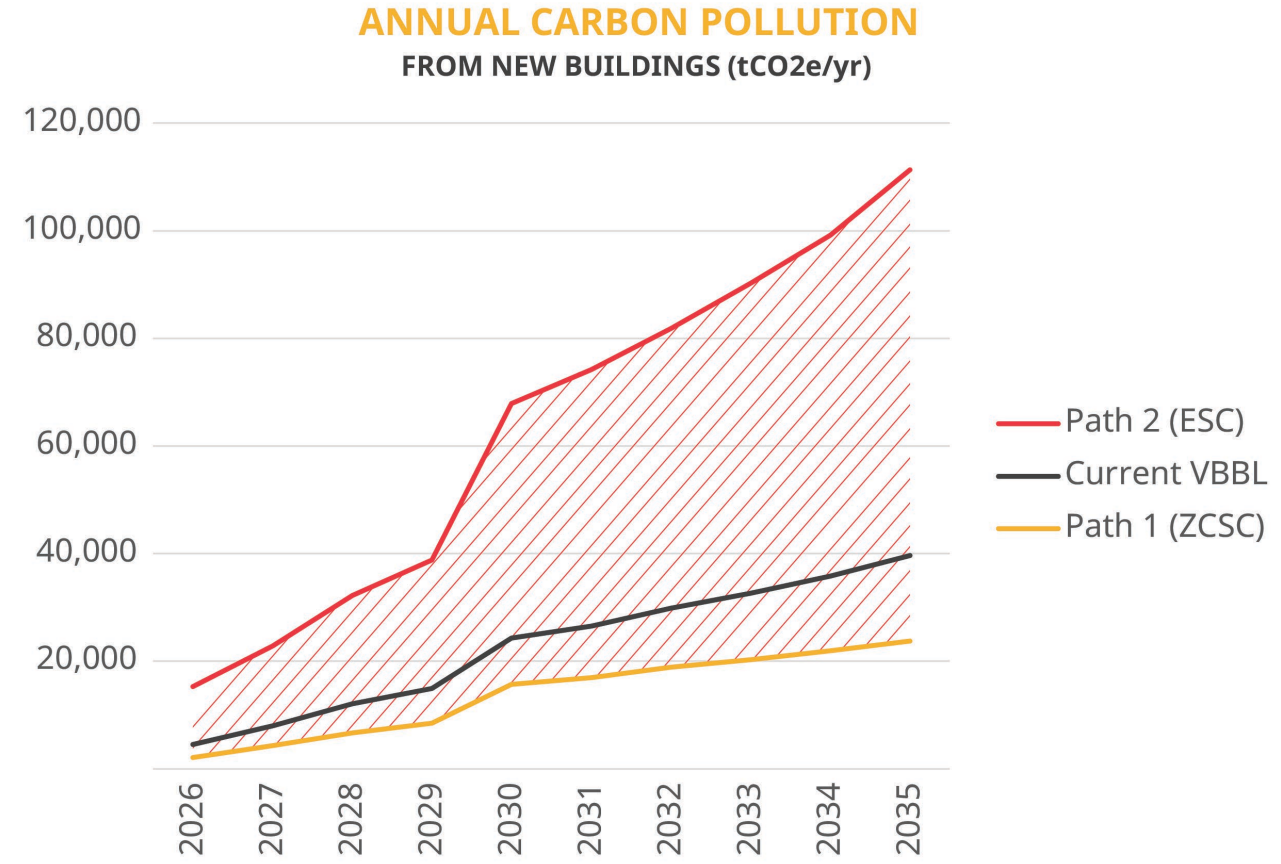
CLIMATE ANALYSIS



 **16K** 
Path 1 alone would decrease carbon pollution by 15,900 tonnes by 2035

 **65K** 
Path 2 alone would increase carbon pollution by 65,100 tonnes per year by 2035

Note: The climate impact will depend on the portion of builders that select path 1 vs path 2. The range of potential climate outcomes is -15,900 to +65,100 tonnes of CO2e per year by 2035.



Source: Licker Geospatial Modelling 2024

CLIMATE ANALYSIS

scenario

0.5
tonnes/year



PATH 1 MULTIPLEX

6.2
tonnes/year



PATH 2 MULTIPLEX



FUEL ANALYSIS SUMMARY

Reliability is not a material issue for electricity in Vancouver.

FUEL ANALYSIS

energy reliability

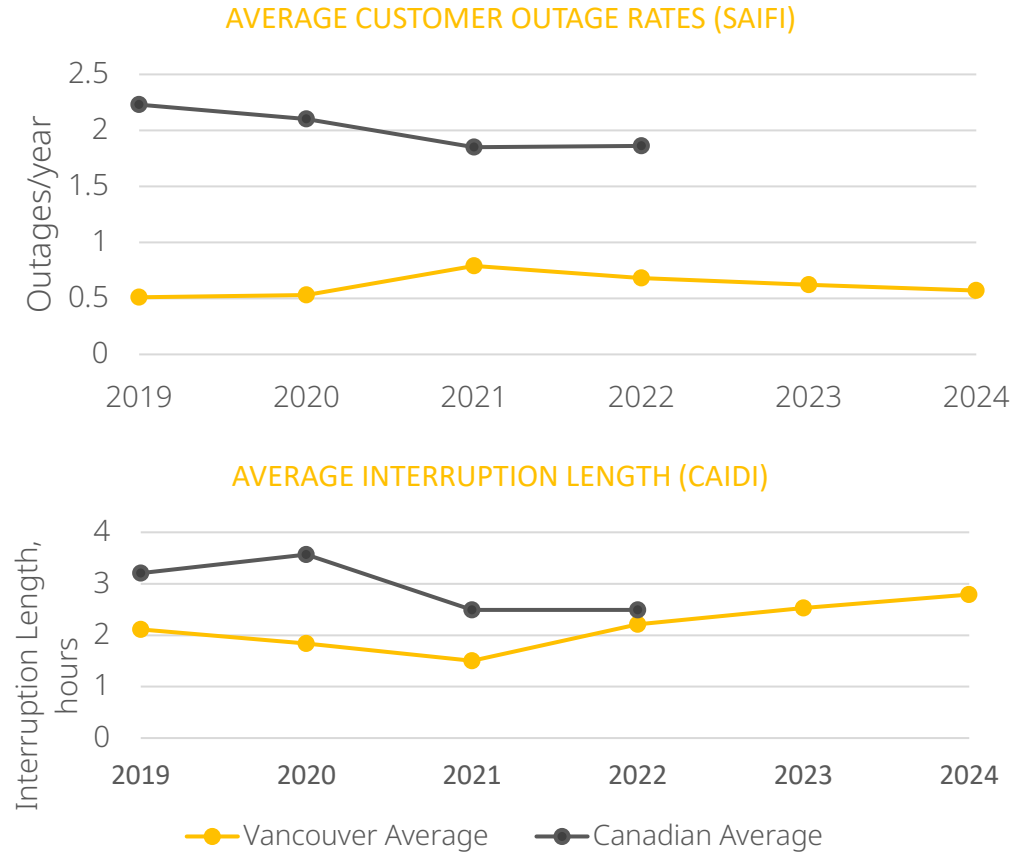


ELECTRICITY IN VANCOUVER IS RELIABLE

- reliability of BC Hydro's service in Vancouver exceeds the Canadian average
- on average, Vancouver customers experience outages ~ every 2 yrs for ~2 hrs (including planned outages)



Note: Gas heating commonly relies on electric power and is impacted by these outages (e.g. for compressors and fans).



Source: [BC Hydro Reporting of Reliability Indices \(2023\)](#), BC Hydro correspondence.

FUEL ANALYSIS

electricity supply



BC HYDRO IS READY FOR FORECASTED GROWTH IN ELECTRICITY DEMAND THROUGH 2041

- BC Utilities Commission approved BC Hydro's Integrated Resource Plan.
- BC Hydro's 2024 call for power demonstrates an abundance of supply in BC.

Note: BC Hydro has been a net exporter of electricity for 7 of the past 10 years.

THE 2024 BC HYDRO CALL FOR POWER PROPOSALS FOR WIND, SOLAR & OTHER RENEWABLE ELECTRICITY TOTALLED

3X

WHAT BC HYDRO CALLED FOR, WHICH IS

2X

THE ENERGY FROM SITE C. Additional calls are expected every two years.

Source: [Province of B.C., 2024](#)



5
harmonized &
consistent

ALIGNMENT ANALYSIS SUMMARY

Path 1 provides alignment with leading BC municipalities & 2030 provincial direction. Path 2 is not fully aligned.

REGULATION ANALYSIS

provincial commitments



PATH 1 ZERO CARBON STEP CODE

Aligned with provincial direction post 2030.



PATH 2 ENERGY STEP CODE

2025
Aligned currently.

2026+
Falls out of alignment as the province phases in the next levels of the Zero Carbon Step Code (top level by 2030).

REGULATION ANALYSIS

path 1 alignment



29

other BC municipalities, and Tsleil-Waututh Nation have adopted some level of the ZCSC

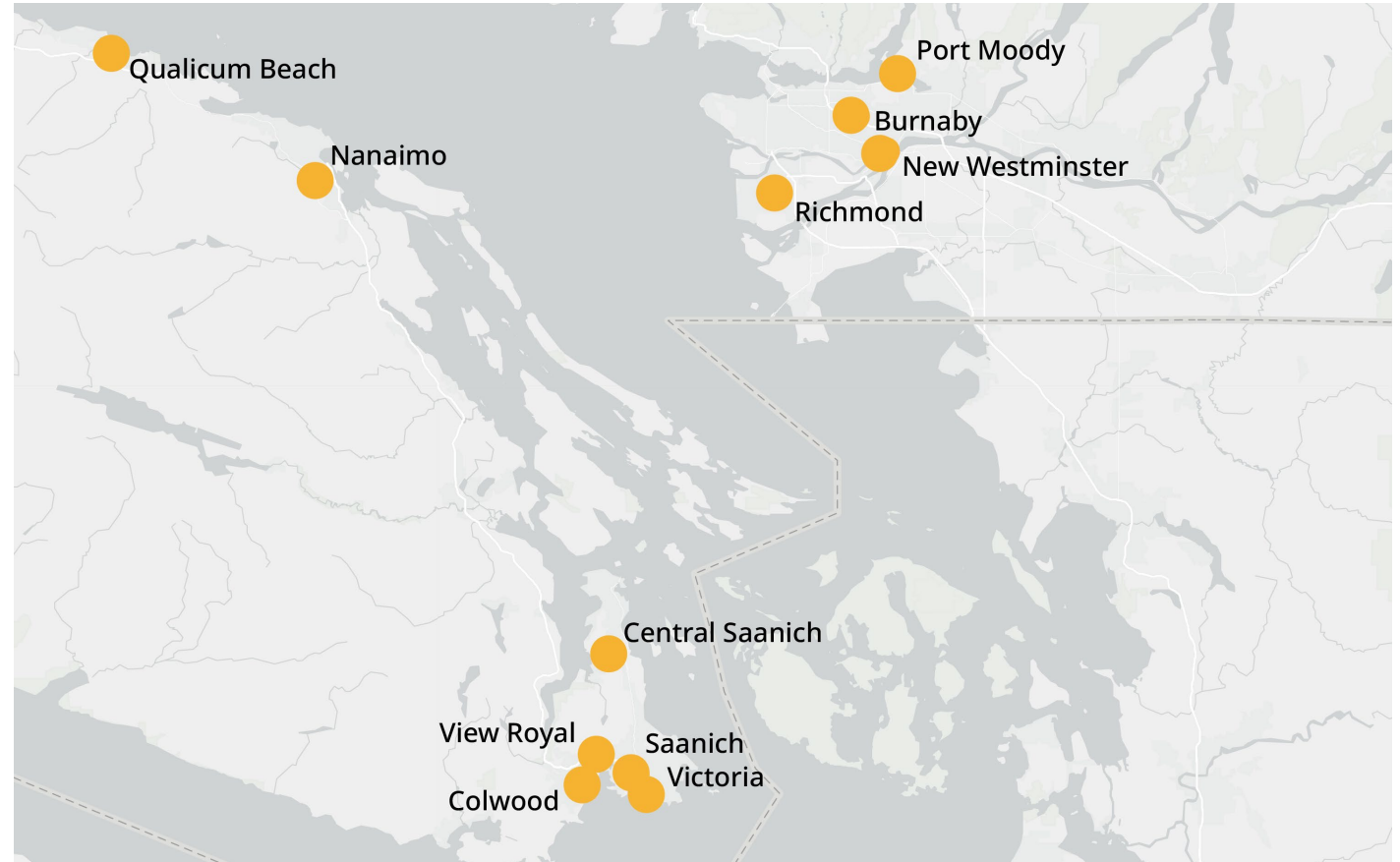
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BC municipalities have already adopted the highest level of the ZCSC



100%

BC municipalities will be required to meet the highest level of the ZCSC by 2030



REGULATION ANALYSIS

path 2 alignment

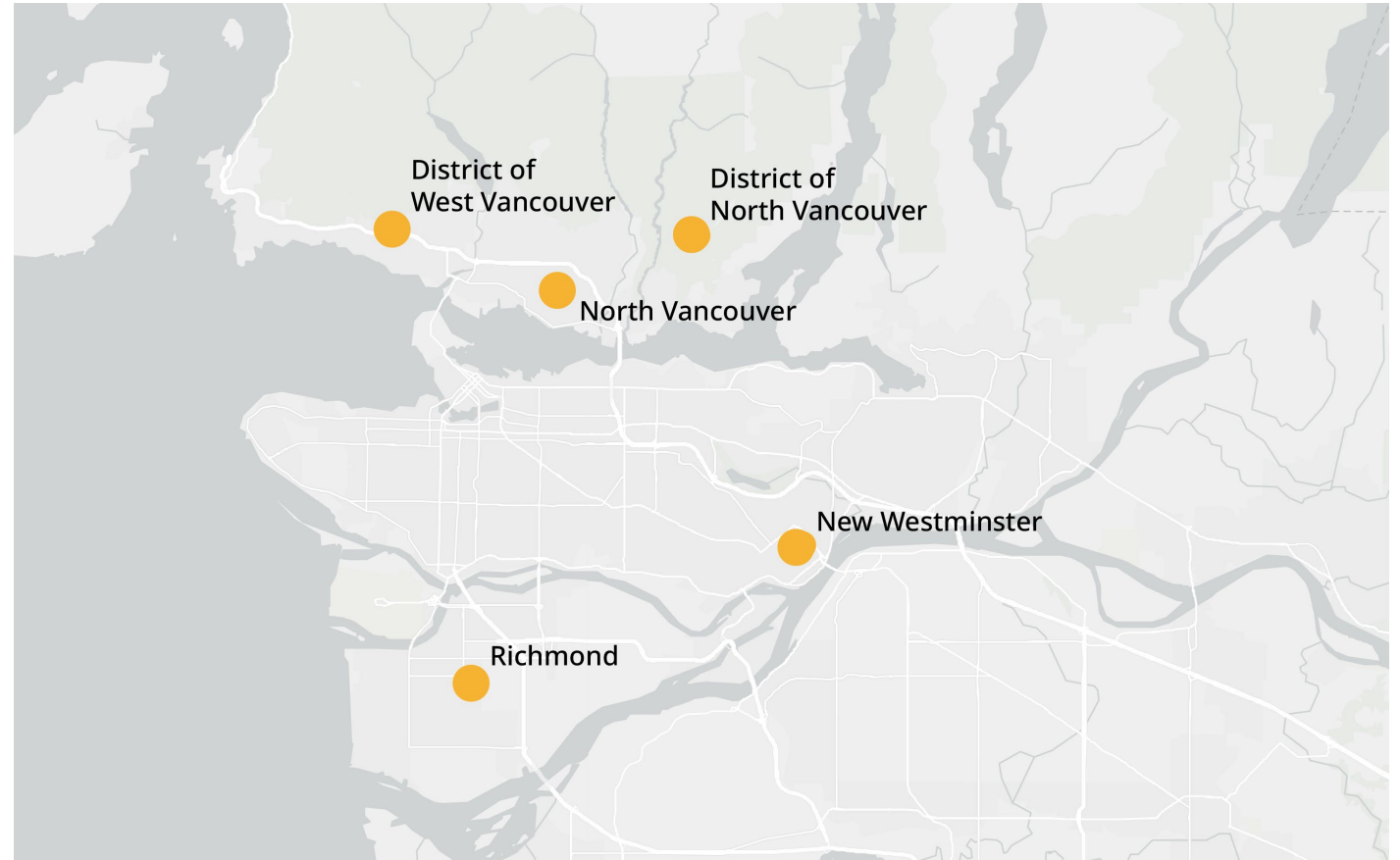


5 

neighboring municipalities have a similar path that allows gas when building to the top step of the ESC

100%

BC municipalities are required to meet steps 2 and 3 of the ESC



AGENDA

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ENGAGEMENT results

INDUSTRY FEEDBACK

- the importance of CoV's leadership regionally, path 2 not being aligned with that leadership
- builders offered two different perspectives: 1) comfort with ZCSC and 2) interest in continuing to use gas
- incentives would make path 1 more attractive to builders, but were not central to engagement (incentives are not proposed in this report)

Based on feedback, staff adjusted the compliance paths in two ways...



ENGAGEMENT results – small buildings

PATH 2 ADJUSTMENT

initially engaged on Highest Efficiency Equipment Standards (HEES)

CONCERNS WE HEARD

- lack of market availability of HEES qualified equipment for gas
- dual-fuel equipment may not operate as intended
- preference for ESC step 5, better industry readiness

HOW WE ADJUSTED

Shifted to ESC as the second compliance path, which mirrors the compliance path for large buildings.

RISK

ESC creates risk there will be insufficient space in some new homes for highest efficiency equipment after 2030, staff will explore ways to manage that risk, including raising builder awareness.



ENGAGEMENT results - large buildings

PATH 2 ADJUSTMENT

initially engaged on the top level (EL4) of the ZCSC

CONCERNS WE HEARD

- top level does not allow gas for peak heating
- gas is needed <5% of the time to reduce equipment capital costs by allowing smaller electrical heating/hot water systems
- concern over potential risk/uncertainty of increasing electrical servicing costs & timelines

HOW WE ADJUSTED

Shifted compliance path to EL3 of ZCSC

RISK

Delays adoption of the top level of the ZCSC. Staff will continue to monitor industry readiness and work towards this direction.



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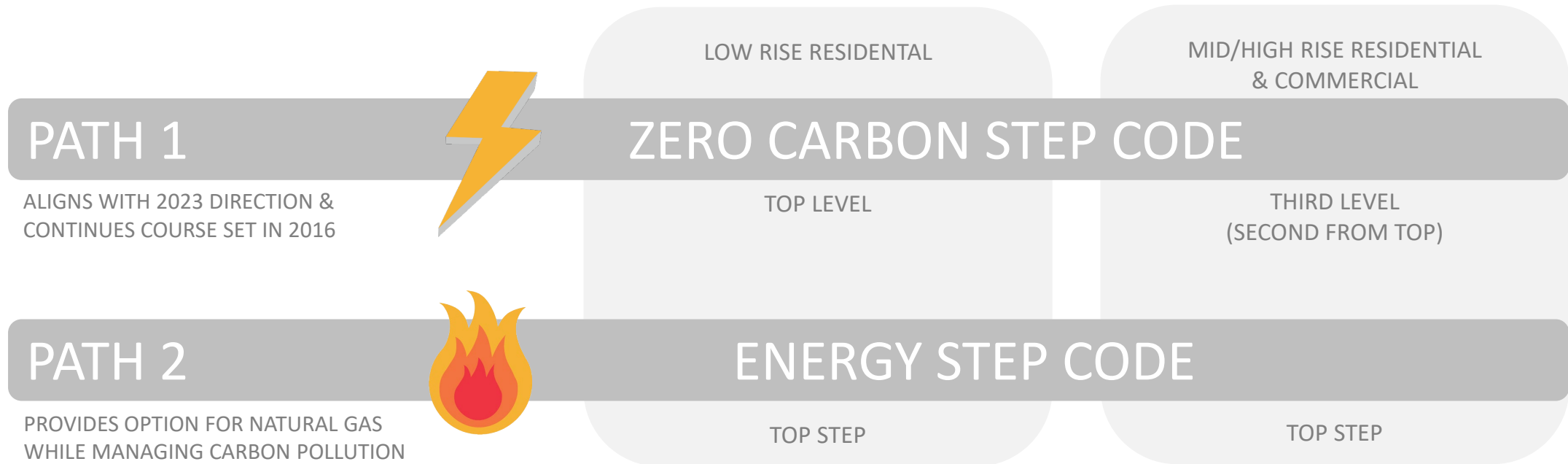
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ALLOWING GAS IN NEW BUILDINGS

compliance path recap



TECHNICAL ANALYSIS

recap

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PATH**

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An aerial photograph of Vancouver, British Columbia, Canada, taken at sunset. The city's dense urban landscape is visible, with numerous high-rise buildings and a prominent circular stadium (BC Place) in the foreground. The city is surrounded by water, with the Pacific Ocean to the west and the Fraser River to the east. The sky is filled with soft, golden light from the setting sun, and the water reflects the light. The overall mood is serene and majestic.

Thank you.
Any questions?



Vancouver
Plan

