

Hot Water at Home

Updating efficiency standards for water heaters
in existing detached homes

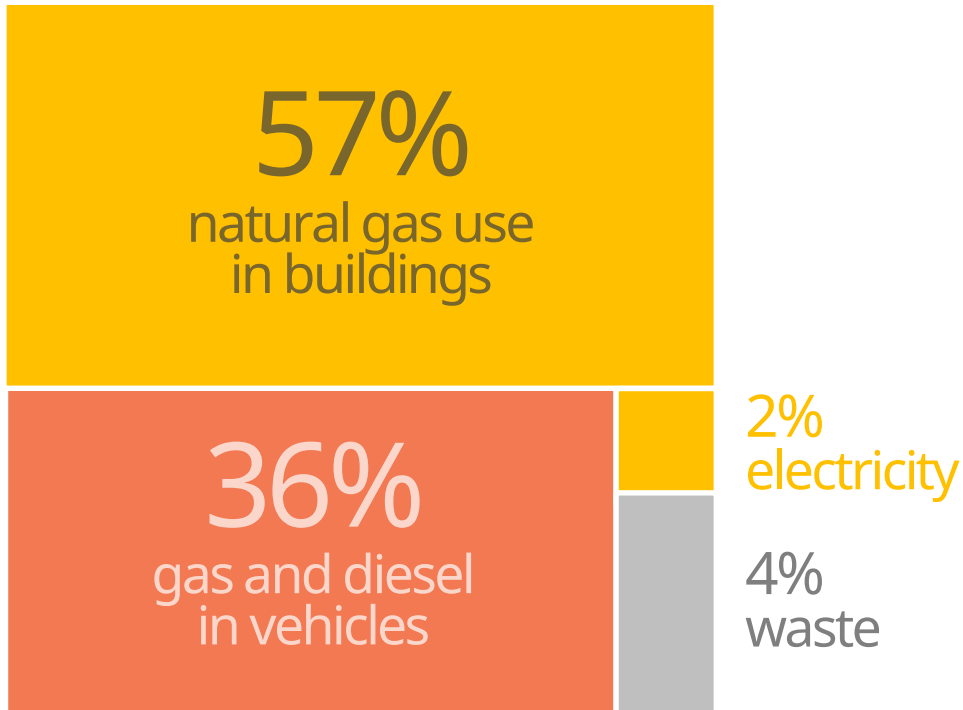
Council
2024-06-11





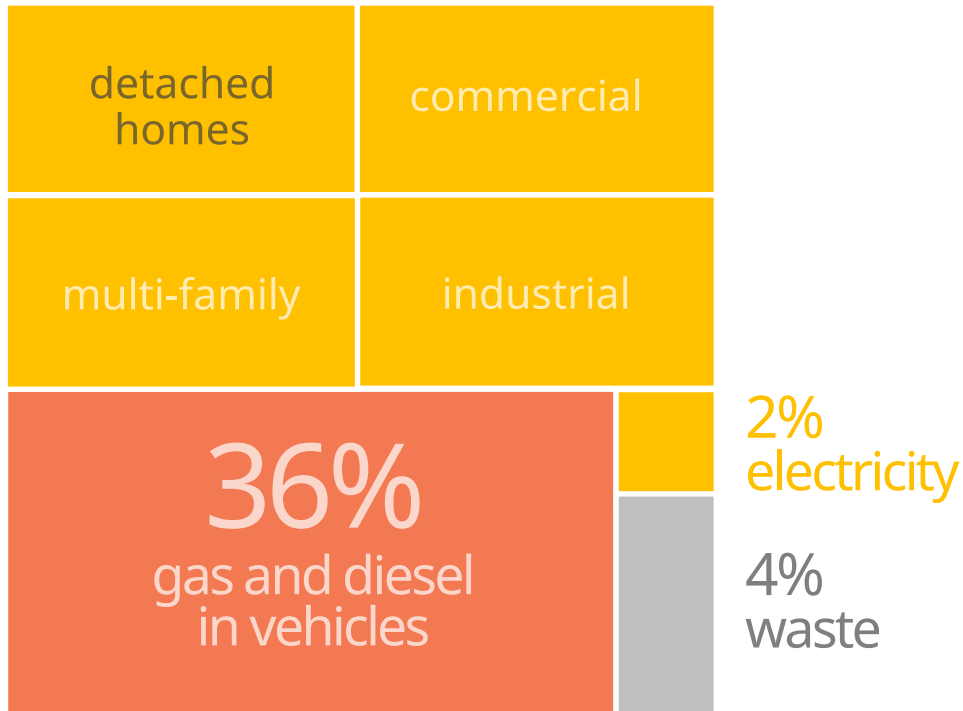
context

Vancouver's Carbon Pollution



*City of Vancouver 2020
emissions inventory
(GPC, Scopes 1 and 2)
Due to rounding, numbers presented may
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What we've done so far

New detached homes

- Near zero emissions – electric space heat and hot water; gas allowed for cooking & appliances

Existing detached homes

- All A/C must be a heat pump
- All renovations >\$250k must include electric space and water heating

Existing commercial buildings

- Annual emissions reporting for all commercial buildings >100,000sf
- GHG limits for office & retail buildings over 100,000sf



A scenic view of a city skyline across a body of water, framed by trees and a bench in the foreground. The text "Proposed changes" is overlaid in white. The scene is captured from a park-like setting with a large tree on the left, a bench on the right, and a paved walkway leading to the water's edge. The city skyline in the background features numerous high-rise buildings under a clear blue sky.

Proposed changes

What we're proposing

1) Time of Replacement

- When hot water heaters are being replaced, they must be “highest efficiency”, including heat pump (electric or gas), hybrid gas/electric, or all-electric water heater
- Exceptions:
 - If electrical panel would need to be replaced
 - No space for new water heating tank
 - Combined heating and hot water systems (common with radiant floors)
- Timing: effective in January 2027

What we're proposing

2) Time of Renovation

- For renovations over \$150k homeowners must also upgrade existing hot water heaters with a heat pump (electric or gas), hybrid gas/electric, or all-electric water heater
- Exceptions:
 - If electrical panel would need to be replaced
 - No space for new water heater
 - Combined heating and hot water systems (common with radiant floors)
 - The existing water heater was installed with a permit in the last five years
- Timing: effective in March 2025
- Remove all other energy upgrades for simple renovations (<\$250k)

A scenic view of a city skyline across a body of water, framed by trees and a bench. The foreground shows a grassy area with a wooden bench and a large tree trunk on the left. The middle ground features a calm blue body of water. The background is a dense city skyline with various skyscrapers under a clear blue sky.

Costs

What are the costs?

The costs of highest efficiency water heaters are similar to a standard-efficiency gas water heater

- electric hot water heaters cost less to buy and install but similar or slightly more to operate
- heat pump water heaters cost more to buy and install but less to operate (and are eligible for Provincial and Federal rebates and CoV top-ups)

Highest efficient water heaters cost less over their lifetime (positive NPV)



Replacement scenarios

Existing equipment

Gas tank

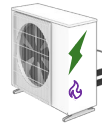


Replacement options

Electric tank



Electric, gas, or hybrid heat pump



Implications

- Costs less to buy and install
 - Costs similar or slightly more to operate
 - Needs second trade (electrician)
 - Not eligible for rebates
-
- Costs more to buy and install
 - Costs less to operate
 - Eligible for rebates

Replacement scenarios

Existing equipment

Replacement Options

Implications

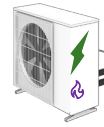
Electric tank



Electric tank



Electric, gas, or hybrid heat pump



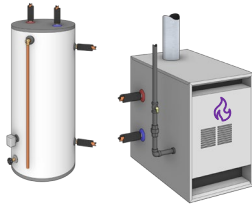
- No change
- Not eligible for rebates

- Costs more to buy and install
- Costs less to operate
- Eligible for rebates

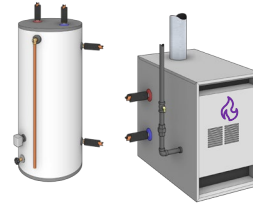
Replacement scenarios

Existing equipment

Combined gas heating and hot water



Replacement Options



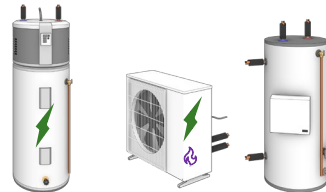
Gas tankless



Gas tankless



Electric, gas, or hybrid heat pump



Implications

- No change (exception for combined systems)
- Not eligible for rebates

- No change (if exception for space applies)
- Not eligible for rebates

- Costs similar to buy and install
- Costs less to operate
- Eligible for rebates

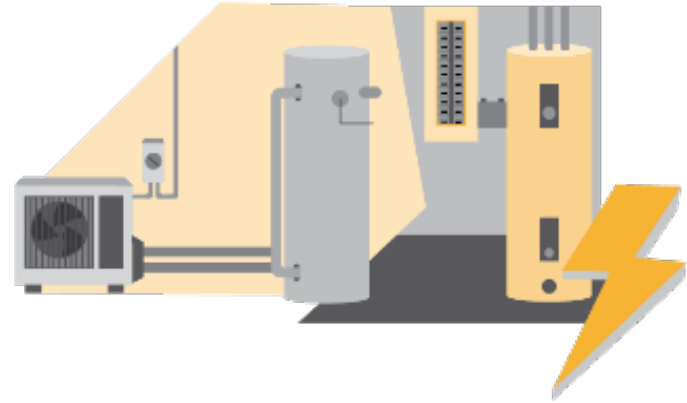
A scenic view of a city skyline across a body of water, framed by trees and a bench in the foreground. The text "2027 Readiness Plan" is overlaid in white. The image shows a lush green park with a large tree on the left, a bench on the right, and a city skyline in the background across a blue body of water.

2027 Readiness Plan

Opportunity

Electric water heaters:

- Very common across Canada today (48% of national market)
- 25% of Vancouver market
- cost less to purchase and install



Challenges

Same-Day Replacements

- Local industry not broadly organized for same-day replacements of gas to electric water heating

Capacity

- Some homes have space or electrical capacity constraints

Compliance

- Industry may not comply with regulations as most work is currently unpermitted

2027 Readiness Plan

Facilitate Same-Day Replacements

- Support new 'drop-in' equipment in local market
- Support industry practices for same-day replacements

Minimize Exceptions

- Work with BC Hydro to avoid service upgrades
- Facilitate use of smart meter data to avoid service upgrades

Facilitate Compliance

- Build Relationships & Raise Awareness
- Streamline Permitting
- Monitor Uptake

A scenic view of a city skyline across a body of water, framed by trees and a bench in the foreground. The text "Public Engagement" is overlaid in white. The scene includes a large tree on the left, a bench on the right, and a dense city skyline in the background under a clear blue sky.

Public Engagement

Public engagement

Nov-Dec 2023: Shape Your City online survey & two focus groups

- Feedback used to simplify and adjust our recommendations

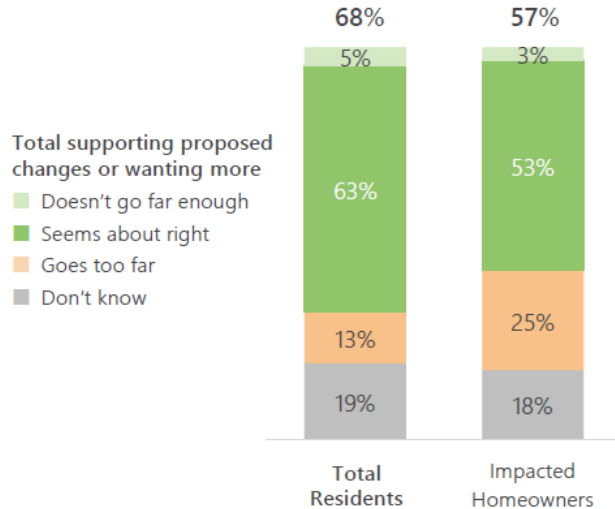
April 2024: Representative online survey

- 434 Vancouver residents, weighted to reflect Vancouver's adult population
- 68% of residents indicate replacement requirement "seems about right" or "doesn't go far enough"
- 59% indicate renovation requirement "seems about right" or "doesn't go far enough"

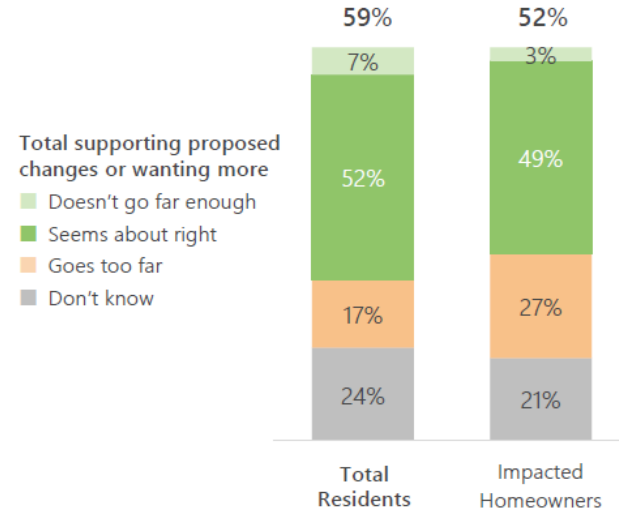


Public engagement

Overall Impression of Proposed Change #1:
Upgrade Hot Water Heater at Time of
Replacement



Overall Impression of Proposed Change #2:
Upgrade Hot Water Heater at Time of
Renovation





Impact



With full compliance, the
proposed changes will reduce
carbon pollution by
14,700 tonnes per year by 2030
&
achieve a 50% reduction in
emissions from water heaters by
2035

Alignment with CleanBC

Proposed Highest Efficiency Equipment Standard (HEES)

- By 2030, all new and replacement water heaters will be a heat pump (electric or gas), hybrid gas/electric, or all-electric water heater

CoV Staff recommended changes align with this *proposed* standard





Thank you!

A scenic view of a city skyline across a body of water, framed by trees and a bench. The foreground shows a grassy area with a large tree on the left and a bench on the right. The middle ground features a wide expanse of blue water. The background is a dense city skyline with numerous skyscrapers under a clear blue sky.

Questions?