Empowering Households

The small but mighty household is key to unlocking the energy transition, but doing so starts with understanding people

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CLEAN ENERGY CANADA

SFU MORRIS J. WOSK CENTRE FOR DIALOGUE

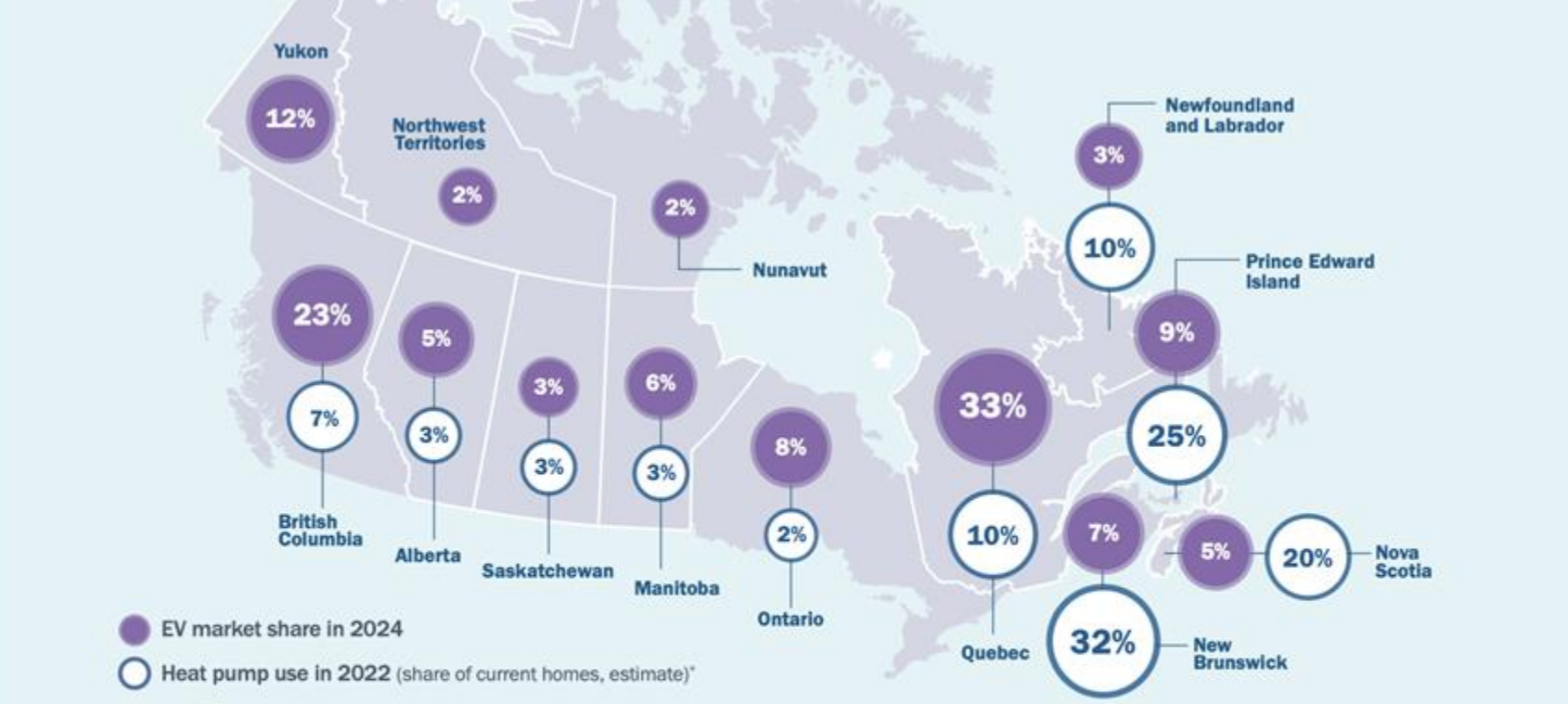
PART 1

Why households matter

Why household clean technology adoption is critical

- **Drives down direct emissions:** Accounting for 17% nationally, but up to almost a third of emissions in provinces without oil and gas sectors. Canada can't hit its targets without EVs and heat pumps.
- **Reduces fossil fuel demand:** Private vehicles were responsible for more than 25% of global oil use in 2023, and an uptake in electric vehicles in China is already reducing global oil demand growth
- **Spurs technology development:** For every EV, heat pump, rooftop solar panel, or battery built, sold, and deployed, we drive down the cost of the next one.
- **Grows clean investment:** In advanced economies with strong policies, households have accounted for nearly 60% of clean energy investment growth since 2016.
- **Creates a network effect:** Each adopter increases the likelihood that their neighbours will also adopt a technology, and there is some evidence that one technology can be a gateway to others.
- **Expands our electricity resources:** Electro-technologies that produce, store, or manage power—like rooftop solar, home batteries, and EVs—can be managed collectively by utilities as a single "virtual power plant" to help reduce costs and the build-out required to meet electricity demand.

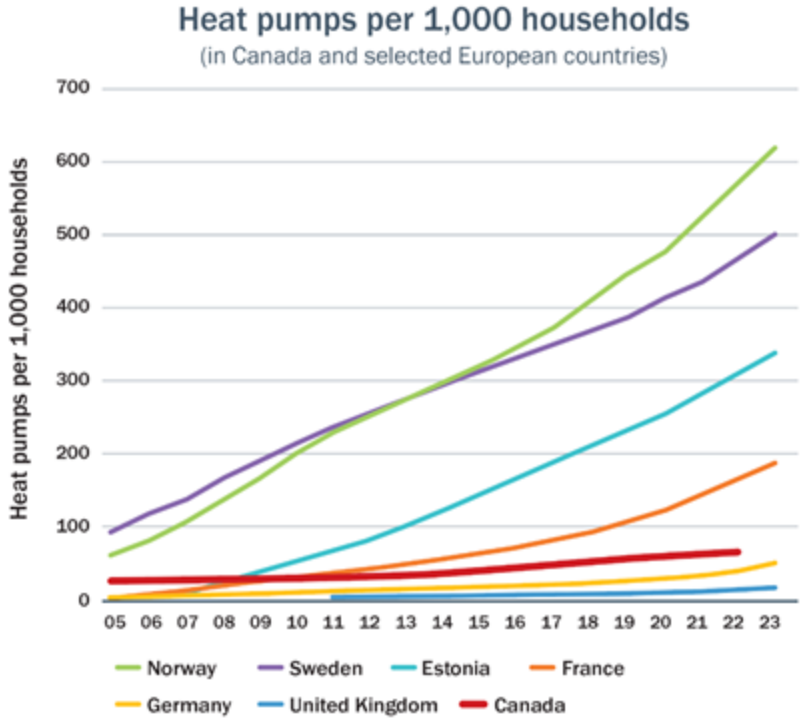
An energy smart home

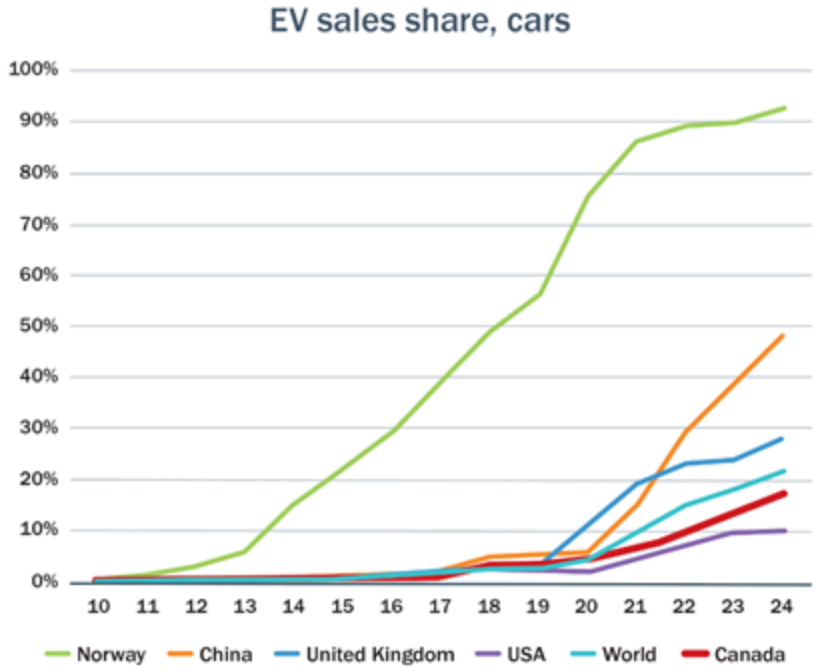


EV and heat pump adoption abroad (2024)**

	China	U.K.	France	Sweden	U.S.	California	Canada
EVs	48%	28%	24%	58%	10%	25%	15%
Heat pumps	11%	2%	20%	50%	13%	3%	6%

How is Canadian adoption faring compared to the rest of the world?





PART 2

A market research approach

Methodology: Survey of key regions

Between November 2024 and January 2025, Abacus Data and Clean Energy Canada surveyed 3,000 residents of Canada's two largest English-speaking metro regions, the Greater Toronto and Hamilton Area and Metro Vancouver, with a focus on people's understanding of and interest in clean technologies, including benefit awareness and barriers to adoption.

Outside of these two cities, attitudes may vary, but as the nation's largest English-speaking metropolitan areas, **home to 27% of Canada's population,** they represent a crucial swath of potential adopters—and in particular, the next wave of adopters.

Clean technology interest among Toronto and Vancouver metro residents

59%

are inclined to buy an EV

56%

have or positively view heat pumps

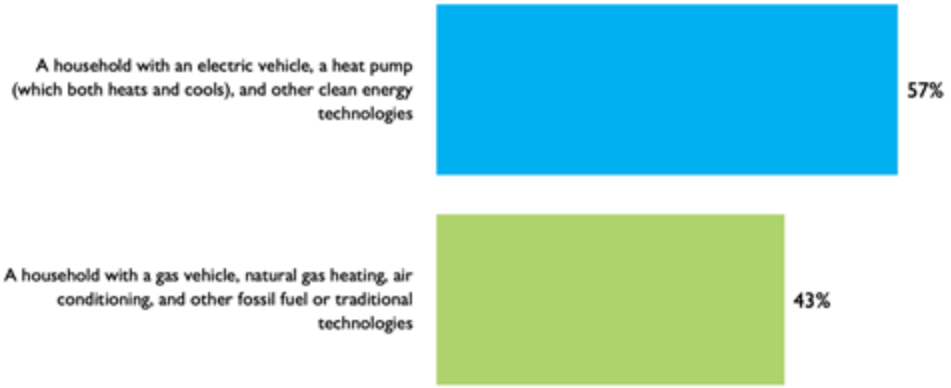
57%

say it's important their next home is energy smart

Nearly 6 in 10 believe clean technologies will lower monthly energy costs

On average, which household do you think pays a smaller monthly energy bill?

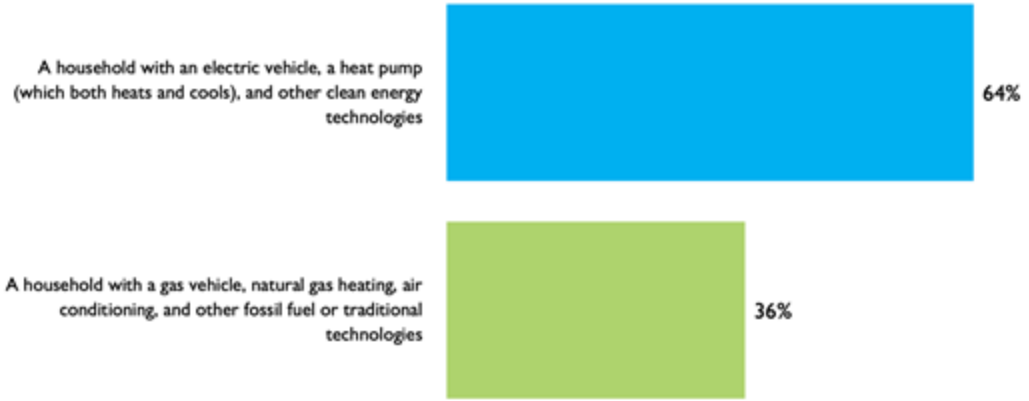
Over half of respondents believe a household with an EV, heat pump, and other clean technologies pays a smaller monthly energy bill than those who do not



Nearly two-thirds understand that households with clean energy solutions will pay less over the next decade

Now, when thinking about 10 years from now, which household do you think will have spent less overall after a decade of ownership? This includes both the purchase price of the technology as well as monthly bills incurred over 10 years.

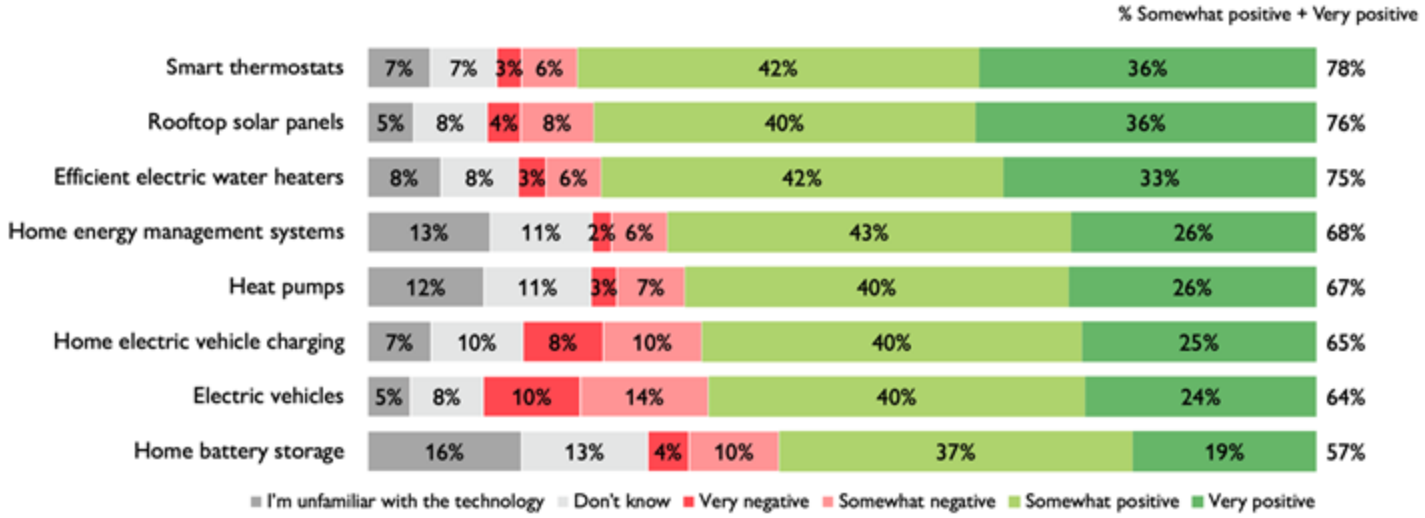
3 in 5 respondents believe a household with an EV, heat pump, and other clean technologies will have spent less overall after a decade of ownership than those who do not



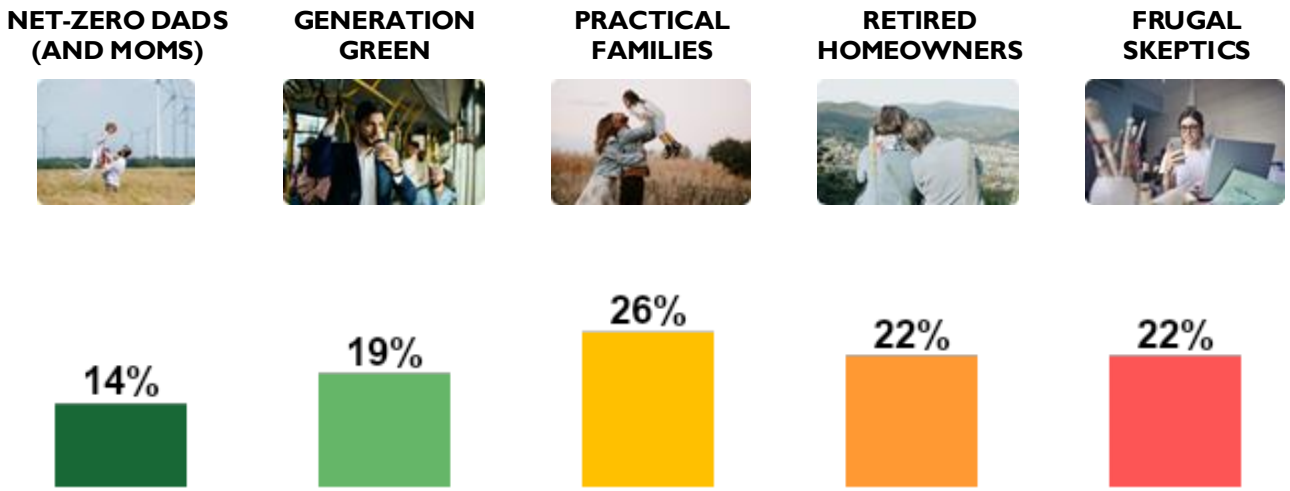
Large majorities have a positive impression of all clean technologies polled

Listed below are a number of clean technologies that households can adopt. Please indicate whether you have a positive or negative impression of them, or if you are unsure.

Many residents in the GTHA and Metro Vancouver hold positive views on clean technologies, with 78% favouring smart thermostats, 76% supporting solar panels, and 75% endorsing efficient electric water heaters.

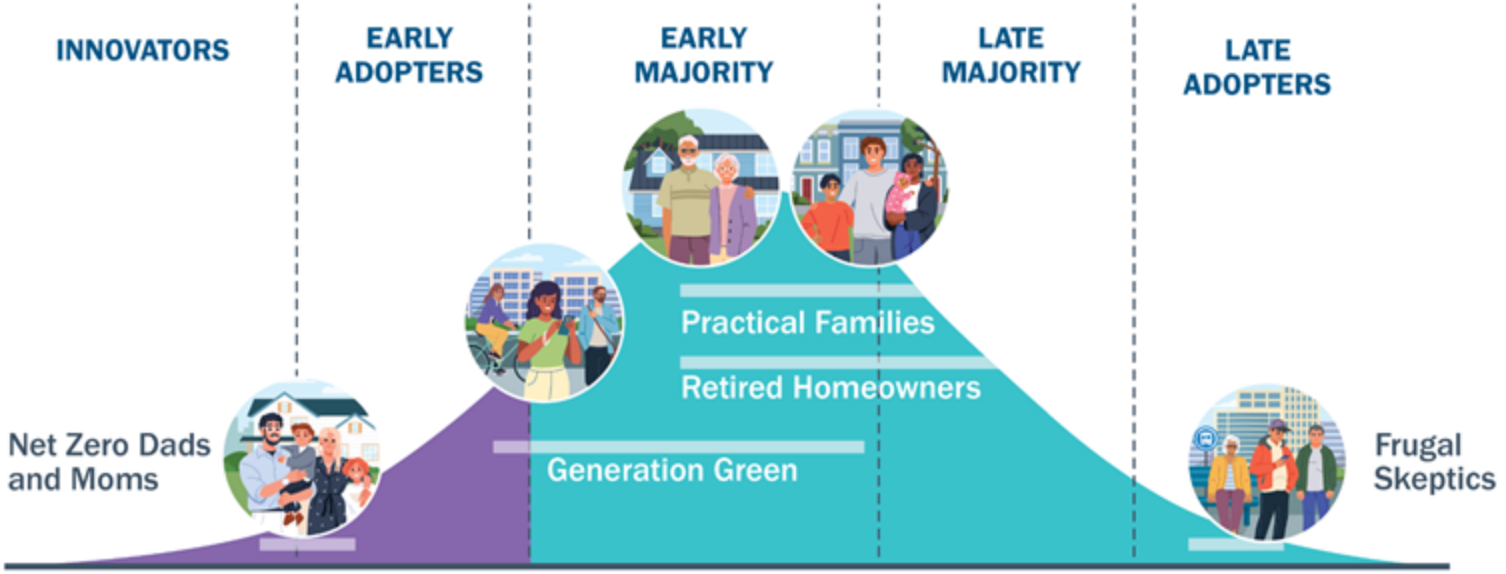


Methodology: Segmentation of groups



Segments were created using Latent Class Analysis, which grouped individuals based on shared characteristics across variables like gender, age, education, carbon footprint motivation, EV ownership, etc. This approach identified distinct segments, offering insights into motivations for adopting clean technologies.

Technology adoption curve for household clean tech



Net Zero Dads and Moms have the interest and resources that make them likely to be innovators and early adopters.

Generation Green, Practical Families, and Retired Homeowners have various levels of interest in clean technology and all face barriers that keep them from being early adopters.

Frugal Skeptics have lowered interest and face high barriers, and are therefore likely to be the last to adopt.

Net-Zero Dads and Moms

14% of population* | **Highly motivated**

KEY FEATURES

- Very motivated to adopt clean technologies
- Younger urban parents with kids in the house
- Higher incomes, usually university-educated
- Typically work full-time jobs, and most commute by car
- Named after a term coined by *The Economist,* Net-Zero Dads make up 61% of this segment, with Moms at 39%[60]

**In the Toronto and Vancouver metro regions*

PERSONAL ACTION

Vehicle ownership

Own an EV **50%**

Know someone who does **88%**

Next vehicle purchase

100%

Inclined to purchase an EV

Energy smart home

94%

Important that next home is energy smart

Heat pump interest

73%

Have, want, or positively view heat pumps

Reduce carbon footprint

89%

Motivated to do so

WHERE THEY GET INFORMATION ABOUT CLEAN TECHNOLOGIES

55%

Social media

56%

Friends and family

BARRIERS TO ADOPTION

Upfront costs

moderate concern

Housing type

minor concern

Knowledge gaps

moderate concern

Infrastructure/electrical

minor concern

Generation Green

19% of population* | **Highly motivated**

KEY FEATURES

- Very motivated to adopt clean technologies
- Younger, childless, likely unmarried, and most rent or live with family
- More likely to take transit, bike, or walk to work
- Only one in four own an EV, but very likely to know someone who does

**In the Toronto and Vancouver metro regions*

PERSONAL ACTION

Vehicle ownership

Own an EV **25%**

Know someone who does **76%**

Next vehicle purchase

96%

Inclined to purchase an EV

Energy smart home

80%

Important that next home is energy smart

Heat pump interest

66%

Have, want, or positively view heat pumps

Reduce carbon footprint

69%

Motivated to do so

WHERE THEY GET INFORMATION ABOUT CLEAN TECHNOLOGIES

47%
Social media

47%
Friends and family

BARRIERS TO ADOPTION

- **Upfront costs** — moderate concern
- **Housing type** — moderate concern
- **Knowledge gaps** — moderate concern
- **Infrastructure/electrical** — minor concern

Retired Homeowners

30% of population* | **Moderately motivated**

KEY FEATURES

- Moderately motivated to adopt clean technologies
- Older, generally retired empty nesters
- Typically own their homes, often with no mortgage
- More likely to have technological concerns, like assumed electrical upgrades

**In the Toronto and Vancouver metro regions*

PERSONAL ACTION

Vehicle ownership

Own an EV **6%**

Know someone who does **54%**

Next vehicle purchase

51%

Inclined to purchase an EV

Energy smart home

56%

Important that next home is energy smart

Heat pump interest

57%

Have, want, or positively view heat pumps

Reduce carbon footprint

45%

Motivated to do so

WHERE THEY GET INFORMATION ABOUT CLEAN TECHNOLOGIES

53%
News outlets

49%
Friends and family

BARRIERS TO ADOPTION

- Upfront costs — moderate concern
- Housing type — minor concern
- Knowledge gaps — moderate concern
- Infrastructure/electrical — moderate concern

Practical Families

15% of population* | **Moderately motivated**

KEY FEATURES

- Moderately motivated to adopt clean technologies
- Younger parents with kids in the house
- Split between suburban and urban living, housing types, and homeownership status
- Middle-class earners, most with a college or high school education

**In the Toronto and Vancouver metro regions*

PERSONAL ACTION

Vehicle ownership

Own an EV **9%**

Know someone who does **55%**

Next vehicle purchase

48%

Inclined to purchase an EV

Energy smart home

48%

Important that next home is energy smart

Heat pump interest

60%

Have, want, or positively view heat pumps

Reduce carbon footprint

23%

Motivated to do so

WHERE THEY GET INFORMATION ABOUT CLEAN TECHNOLOGIES

53%

Social media

56%

Friends and family

BARRIERS TO ADOPTION

- Upfront costs — moderate concern
- Housing type — moderate concern
- Knowledge gaps — moderate concern
- Infrastructure/electrical — minor concern

Frugal Skeptics

22% of population* | **Mostly unmotivated**

KEY FEATURES

- Mostly unmotivated to adopt clean technologies
- Generally single and childless, but evenly split across age groups and gender
- Typically have a high school education or less with a lower income
- Most rent or live with family

**In the Toronto and Vancouver metro regions*

PERSONAL ACTION

Vehicle ownership

Own an EV **0%**

Know someone who does **35%**

Next vehicle purchase

18%

Inclined to purchase an EV

Energy smart home

22%

Important that next home is energy smart

Heat pump interest

38%

Have, want, or positively view heat pumps

Reduce carbon footprint

14%

Motivated to do so

WHERE THEY GET INFORMATION ABOUT CLEAN TECHNOLOGIES

39%
Social media

33%
News outlets

BARRIERS TO ADOPTION

- **Upfront costs** — major concern
- **Housing type** — major concern
- **Knowledge gaps** — major concern
- **Infrastructure/electrical** — moderate concern

PART 3

Barriers and solutions

Barrier #1: Upfront cost

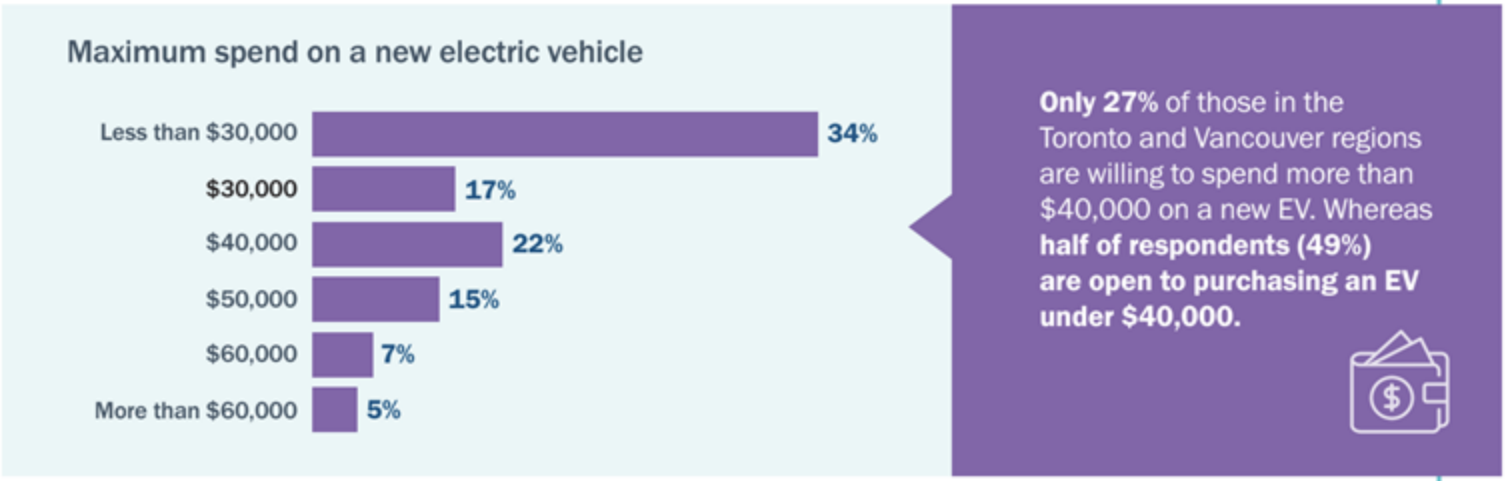
- Number one barrier for every group
- 85% identified it as a major or minor barrier to choosing an EV
- 73% said installation costs are a barrier for heat pumps

Solutions

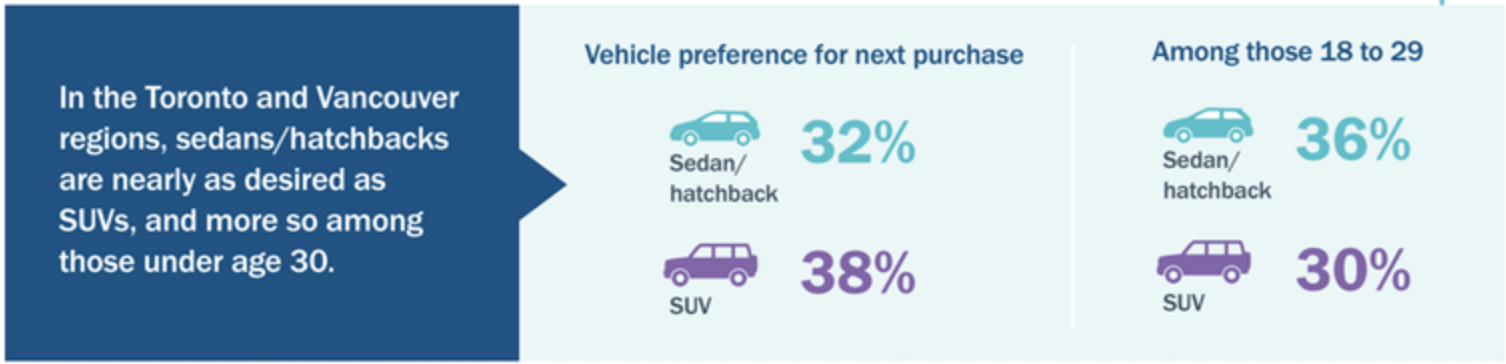
- Government incentives
- Creative financing (zero-interest loans, PACE programs, etc.)
- Keeping the EV availability standard
- Improving competition (more European and Chinese EVs)
- *Clean Energy Canada's new report, Missing Out, uses this research to help build the case for bringing in affordable European EVs*

CEC report

Europe enjoys 21 EVs selling for less than $40,000. Only one is available in Canada.



Source: Greater Toronto Hamilton Area and Metro Vancouver, January 2025, Abacus Data[1]



Barrier #2: Housing type

- Renters often lack agency to make upgrades; 85% of renters say renting their home is a barrier to adopting a heat pump
- 75% of those living in apartments/townhomes say access to home charging was a barrier to EV adoption; 68% didn't think they could make heat pump installations (versus 44% in detached homes)

Solutions

- Building code changes for new builds
- Energy efficiency standards for rental units
- Government support for retrofits
- Right-to-charge legislation for homeowners to install charging

Interest in various clean technologies relative to respondents' housing situations

	Smart thermostat	Efficient (heat pump) electric hot water heater	Home energy management system	Smart (time-based) EV charging	Rooftop solar panels	Home battery storage
Lives in house	69%	62%	58%	51%	48%	48%
Lives in townhome/ condo	58%	49%	49%	43%	40%	39%
Owner	76%	69%	64%	59%	51%	52%
Renter	54%	49%	49%	42%	46%	41%

Barrier #3: Knowledge gaps

- Knowledge of heat pumps remains relatively low, with less than half of Canadians aware of key facts (53% don't know they cool)
- Exposure to key facts increases intention to get a heat pump from 19 to 30 points (a similar test for EVs increases it 6 points)
- Poor quality information both online and in the media is a problem

Solutions

- Government-led home electrification resource hubs
- Awareness-raising initiatives (Plug'n Drive, Energy Neighbour, etc.)
- Vendor training (EMC, HRAI run courses)
- Specialized reporters in newsrooms

Barrier #4: Infrastructure and electrical concerns

- Upgrades to electrical systems are sometimes required
- The challenge can be even greater in older condo buildings
- Public charging is improving, but is still not ideal
- Electrical hurdles sometimes avoidable when alternatives exist (Level 1 charging, energy management, simple mini-split systems)

Solutions

- Building and electrical codes to avoid this problem from the get-go
- Government grants and zero-interest loans for current buildings
- Educating consumers, installers, cities about simpler solutions
- Investments in public charging

Key Findings

1. **Overall, respondents are very open to clean technologies:** 59% are inclined to buy an EV as their next car (69% in Vancouver, where adoption is much higher), 56% have or positively view heat pumps, and 57% say it's important their next home is energy smart.

2. **Younger respondents are considerably more inclined to adopt clean technologies.** For example, 71% of those under 30 want an EV for their next car, compared to 49% of those over 60. Younger people are also more likely to rent or live in apartments, limiting their ability to make electrification upgrades or access home EV charging.

3. **For older respondents, many live in homes they own and could theoretically make upgrades, but they have more concerns about the technology.** Education and simplification can make an impact: for example, given they typically drive less, most only require Level 1 charging, eliminating the need for electrical upgrades.

Key Findings

4 **Three-quarters (75%) of those living in apartments and townhomes say that access to home charging is a barrier to EV adoption, while 68% say they do not have the ability to make heat pump installations** (compared to 44% of those in detached homes). Efficiency and cooling requirements for rental units and making sure new buildings are built with clean technology infrastructure can help.

5 **Upfront cost is the number one barrier identified by every group, and it's sticky.** While 63% correctly believe an EV will end up cheaper despite the higher sticker price, this isn't enough to motivate most to pay more on day one. Only the most motivated groups were slightly more willing to pay more for an EV. For the moderately motivated groups (Retired Homeowners and Practical Families), there is no willingness to pay more upfront at all.

6 **Support for consumer incentives is high.** Three-quarters (76%) of respondents support incentives such as rebates, zero-interest loans, and investments in public charging, with only 13% opposition. This is higher than introducing market regulations, at 67% support with 17% opposing.

Key Findings

7 **Knowledge of heat pumps is relatively low, with less than half of respondents aware of key facts, but education can impact interest.** At first, 19% of homeowners said they were interested in installing a heat pump, while an additional 25% were interested but needed more information (12% said they already had one). After receiving more information, that 19% jumped to 30% who said they would like to install one, an 11-point increase. (A similar knowledge test with EVs resulted in a six-point increase.)

8 **Numerous studies have pointed to a network effect associated with rising EV adoption.** In our research, 73% of people who knew an EV driver were inclined to go electric for their next car, compared to 59% of all respondents. Interestingly, within the cities we tested, Liberal, Conservative, and NDP voters were about equally likely to know someone with an EV and to have been in it.

9 **Our Retired Homeowner group was almost twice as motivated to lower their carbon footprint as our parent-age Practical Families group, and yet their interest in adopting various clean technologies, from EVs to heat pumps to smart homes, was effectively the same.** Climate as a motivation matters, but it is not always sufficient for changing behaviour, and for many, may not even be necessary.

PART 4

Panel and questions