Empowering Households

The small but mighty household is key to unlocking the energy transition, but doing so starts with understanding people. While interest in clean technologies is high, barriers keep many would-be adopters at bay.

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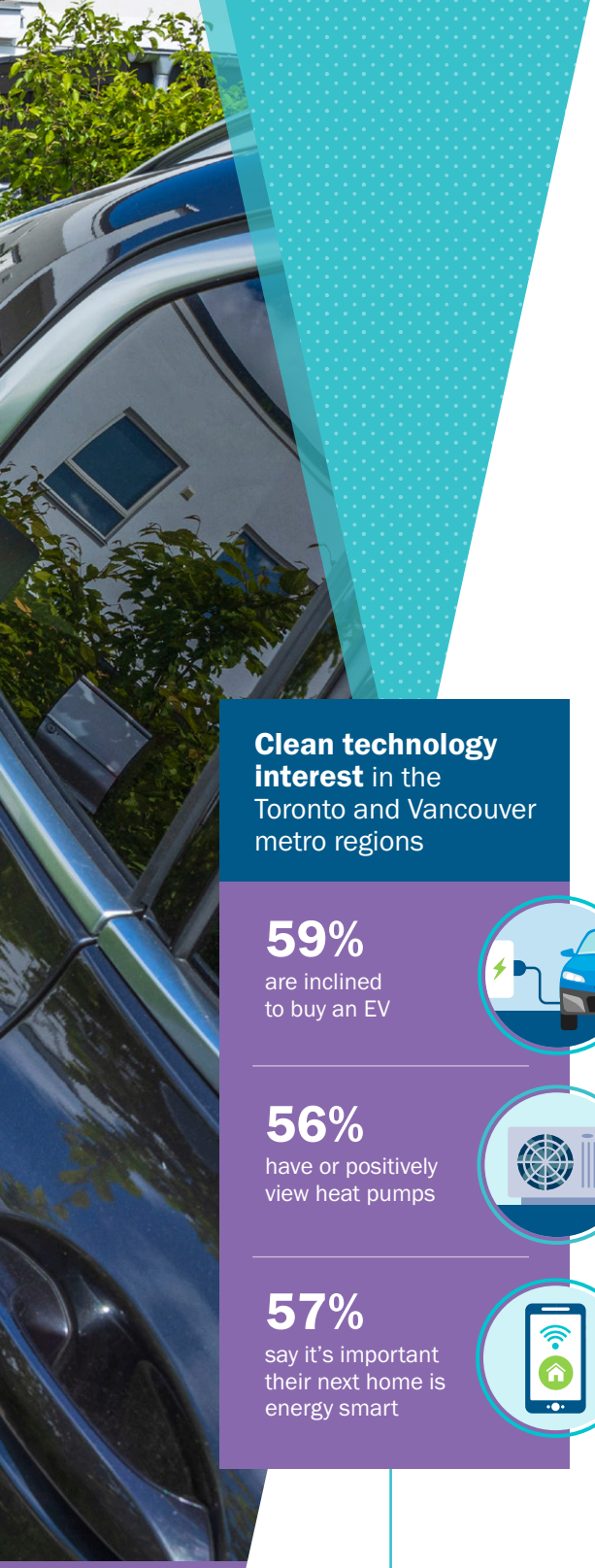


Clean technology interest in the Toronto and Vancouver metro regions

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

The small but mighty household

There are many ways to measure the impact of a climate solution, but often it helps to take the long view. How do we spur the transformational change needed for an electrified, net-zero world? How do we build government will for an energy transition that must persist through an ever-shifting political landscape?

After all, there will be no transition without public buy-in, both literally and figuratively. And thus when it comes to the undertaking of a generation, we must not underestimate the small but mighty household.

All told, households directly account for at least 17% of climate-change-causing emissions in Canada (the combined emissions of consumer vehicles, home spaces, and water heating), and that share is higher in provinces without oil and gas industries, like in Ontario at 30%.[1]

But the real impact of households is greater still.

As more and more households globally adopt rooftop solar panels, EVs, heat pumps, battery storage systems, and more, the share of total energy investments made by households has doubled over the past decade. **In advanced economies with strong policy support, households have accounted for nearly 60% of energy-investment growth since 2016.**[2] Already, China's surging EV market is playing an increasing role in bending global oil demand growth downward.[3] Indeed, the 17% number mentioned above does not account for the colossal impact global clean technology adoption will have on fossil fuel production, which is our biggest source of pollution.

This is why Clean Energy Canada partnered with Abacus Data on first-of-its-kind market research to better understand the next adopters of clean technologies, their barriers, and the solutions they need to help them make the switch.

Our 3,000-person survey of Canada's two largest English-speaking urban and suburban centres, the Greater Toronto and Hamilton Area and Metro Vancouver, identified five distinct groups ranging from the highly motivated to the not-at-all-interested. Overall, respondents are quite 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.

Understanding the modern clean technology adopter through market research

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 (the margin of error is +/- 1.79%, 19 times out of 20). Samples of 1,500 were taken from each metro region, but given the larger population of the GTHA, it weighs more heavily on the results of this report (interest in clean technologies is generally higher in Metro Vancouver). Powered by this survey, segments were then created using latent class analysis, which grouped individuals based on shared characteristics across variables like gender, age, education, carbon footprint motivation, EV ownership, intent to purchase an EV or gas vehicle, importance of an energy-smart home, residence type, family type, income, and birthplace. This approach identified distinct segments based on attitudes, behaviours, and demographics, offering insight into motivations and concerns around adopting clean technologies. While much of this market research broke new ground, results for certain questions were in line with surveys conducted over the past few years, suggesting attitudes around clean technologies are slow to shift and tend to be more personal than political.

The full segmentation report is available on our website.

Unfortunately, our national conversation too often focuses on those who aren't interested in adopting new technologies, or assumes that current adoption rates are equal to interest, when it would be more constructive to instead highlight the giant gap that persists between preference and realization. **Enabling the next wave of clean technology adopters will require not simply selling people on their benefits—many are already sold—but on systematically breaking down the barriers keeping would-be EV drivers and heat pump owners from doing what they already want to do.**

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

In contrast, older people often live in homes they could upgrade, but they tend to have more technology concerns. Education and simplification could help them make the switch. For example, given they typically drive less, most retired drivers will manage comfortably with Level 1 EV charging, which uses a regular outlet and eliminates any need for electrical upgrades, but how often are they receiving this information?

Whether you're young, old, financially stable, or living paycheque to paycheque, the upfront cost of clean technology adoption is likely your number one barrier, as it was for every group analyzed, even despite the fact that 64% correctly recognized that a household with an EV, heat pump, and other clean technologies would end up paying less over time.

Incentives have already proven essential to early EV and heat pump uptake because they soften upfront costs, but generally they're designed to kickstart the market until prices become so competitive that they are no longer needed. Governments should also be looking at other levers to help address upfront cost: Canada could open its car market to more of the lower-cost EVs sold in other countries, and regulations like the EV availability standard could incentivize automakers to make more models available at more price points.

Governments may also be operating under the assumption that the people who care most about the environment are the ones choosing these technologies. But consider the following. Our "Retired Homeowner" group is almost twice as motivated to lower their carbon footprint as our parent-age "Practical Families" group, and yet their openness to various clean technologies, from EVs to heat pumps to smart homes, is effectively the same.

Ultimately, solutions will vary for different adopters. What is abundantly clear is that governments and policymakers would benefit from a sophisticated understanding of who needs help and what kind of help. With a sharper, detailed picture of Canadians, they might better design incentives, determine investments, and craft communications in a way that meets people where they're actually at—and where they want to be.

Mightier than you think

For many Canadians, 2025 has seen concern about climate change take a backseat as trade tensions and the cost of living dominate our headlines and conversations.

Thankfully, clean technologies can provide an answer to more than one crisis. Household technologies like EVs and heat pumps are often more affordable over time than their traditional counterparts (the lifetime cost savings of an EV are especially significant). In fact, average households in advanced economies, including Canada, will spend less on energy in a net-zero future.[4,5] Beyond savings, these technologies possess unique powers to effect change. Here are six ways that electrifying households is a mightier solution than you might think.

1 Drives down direct emissions

Household vehicle use and home (space and water) heating account for 17% of emissions in Canada, and that share is considerably higher in provinces without oil and gas industries, like in Ontario at 30%.[1] It's no wonder that recent modelling from Corporate Knights found that Canada simply could not hit its climate targets without EVs and heat pumps.[6] But the full emissions impact of electrifying homes is even greater than these numbers suggest.

2 Reduces fossil fuel demand

Fossil fuel production, the largest source of emissions in Canada, exists in large part to supply fossil-fuel-burning vehicles. Private cars and vans were responsible for more than 25% of global oil use in 2023.[7] In other words, fewer fossil fuel vehicles means less fossil fuel production down the road, including all of the associated emissions. Already, China's surging EV adoption is playing an increasing role in bending global oil demand downward.[8]

3 Spurs technology development

Consumer growth in clean technologies also results in shrinking prices. For every EV, heat pump, rooftop solar panel, or battery that is built, sold, and deployed, we drive down the cost of the next one.[9,10] This growth also expands the uses of these technologies for other, high-polluting sectors of our economy that also must decarbonize. Lighter, more powerful EV batteries—developed for the consumer market—make electrified commercial vehicles increasingly viable and cost-competitive.[11,12]

4 Grows clean investment

The share of energy investments by households has doubled from 9% in 2015 to 18% in 2023 globally due to growth in rooftop solar installations, investments in building efficiency, and EV purchases. In advanced economies with strong policy support, households have accounted for nearly 60% of clean-energy-investment growth since 2016.[2] And that trend could continue, according to the International Energy Agency's most recent *World Energy Investment* report: "Through purchases such as home solar and battery systems, households are becoming a more important driver of energy investment over time."[13]

5 Creates a network effect

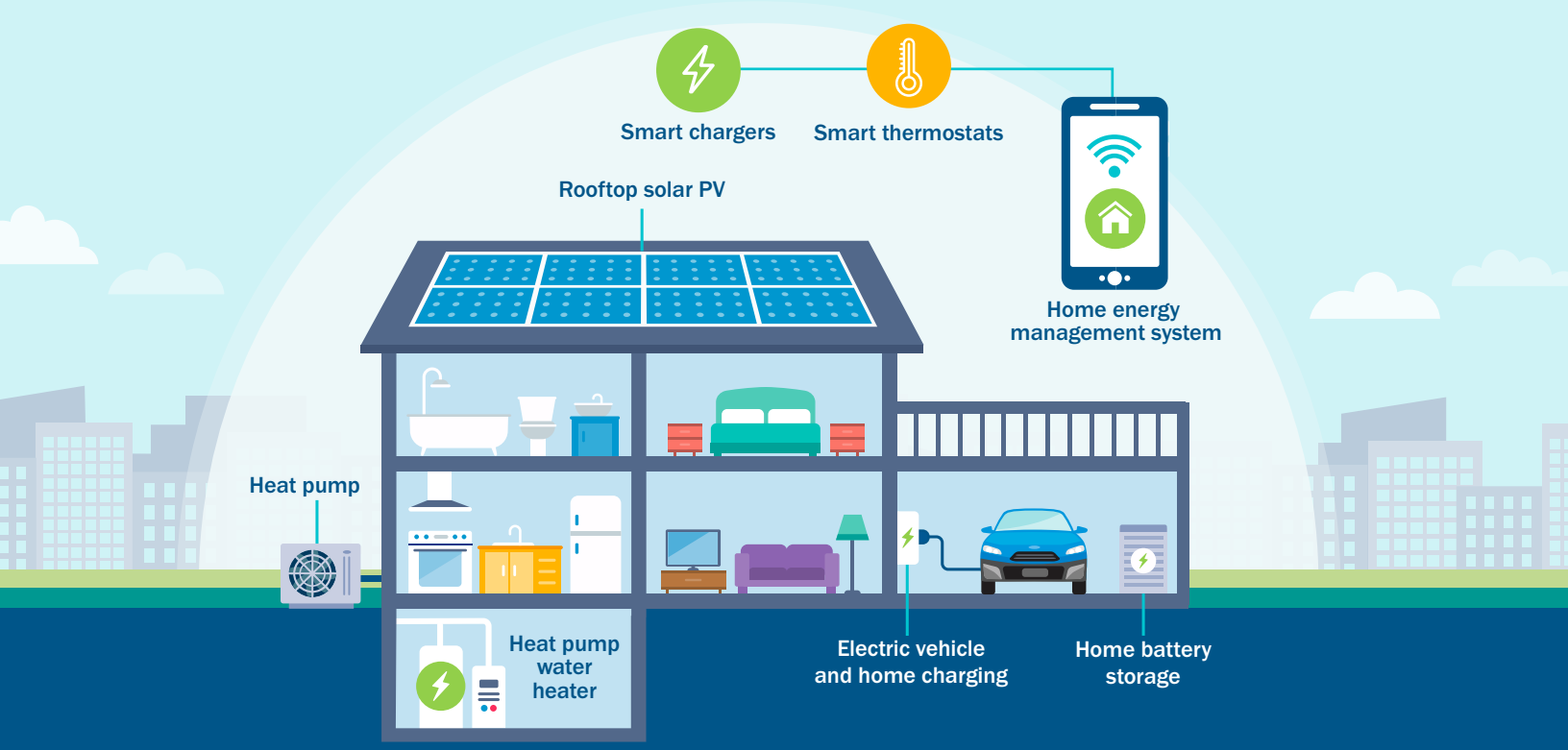
Numerous studies have pointed to a network effect associated with rising EV adoption. In short, if you drive an EV, your neighbour is more likely to. And policy plays a key role: one study in China found that jurisdictions with EV subsidies experience a stronger network effect than those without.[14] What's more, adopting one kind of technology can act as a gateway to new kinds. For instance, EV drivers are seven times more likely to have solar panels on their home, according to a U.K. study.[15] Clean Energy Canada's survey found that 73% of people who knew an EV driver were inclined to get one too, compared to 59% of all respondents.

6 Expands our electricity resources

Energy is no longer a one-way street. In modern energy systems, 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." Ratepayers benefit from this arrangement through lower bills, while utilities can better manage supply and demand, improving grid stability. Utilities can also defer large investments in grid infrastructure, avoid them altogether by using existing electricity more efficiently, and better utilize cheaper sources of energy like renewables by shifting how much energy is used at different times—all of which can bring down prices for consumers.[16]

Home sweet home

Canadians can use a range of technologies to cut costs and carbon. Not every household will need (or even be able to access) all of them, but each has its own benefits and barriers. In many cases, these technologies can work together to cut bills and boost energy efficiency—sometimes even offering benefits for the power grid to boot.



Example of an energy smart home

Transportation

Electric vehicles

Changing the type of car you drive is likely to have the biggest impact of any household technology on your monthly bill and carbon footprint. EVs can save drivers thousands of dollars a year in fuel and maintenance costs. In 2024, 15.4% of new cars sold in Canada were electric, with Quebec at more than double that.[17] Like many clean technologies, electric cars are significantly more efficient than their gas-powered counterparts, with 77% of the energy in electricity converted to movement, versus only 12% to 30% of the energy in fuel.[18,19] Transportation is the second-highest spending category for households and also the second biggest source of climate pollution in Canada.[20] Switching all passenger cars on Canadian roads to electric versions would save 82 megatonnes of carbon emissions—about 12% of Canada's annual total—via tailpipe pollution alone, which doesn't even include the indirect emissions benefits of reducing oil and gas demand mentioned earlier in this report.[21]

EV home charging

Perhaps one of the great advantages of EV ownership is the ability to plug in at home or work, charging as you go about your life. Unsurprisingly, an overwhelming majority of EV owners (81%) currently plug in at home.[22] But depending on your driving needs, this can require new technology. While one study found that Level 1 charging (with just a regular power outlet) can mostly meet the needs of roughly 80% of drivers, many will still want—or in some cases need—faster Level 2 capabilities.[23] Installing a bidirectional Level 2 charger can also enable other potentially energy-bill-slashing capabilities, like using your car as a home energy storage system or allowing it to lend power to the grid when not in use. Apartment owners and renters, however, face unique challenges when it comes to installing EV charging. A 2023 survey found that 38% of EV owners residing in multi-unit buildings did not have access to home charging, compared to only 2% for single-family homeowners.

› You can head to Clean Energy Canada's report, *Electrifying the lot*, for more on the challenges faced by apartment dwellers—and the solutions.[24]

Types of charging	Approximate charging time from 0% to 100%	Range added per hour	Installation requirements
LEVEL 1	8–50+ hours	3 to 8 kilometres	No installation required, can be plugged into a standard 15 or 20-amp outlet
LEVEL 2	4–10 hours	16 to 50 kilometres	This can be installed on a regular panel in most homes
LEVEL 3	25–30 minutes	Up to maximum vehicle driving range	Requires a DC outlet (not typically applicable to residential charging)

Source: Natural Resources Canada.[25]

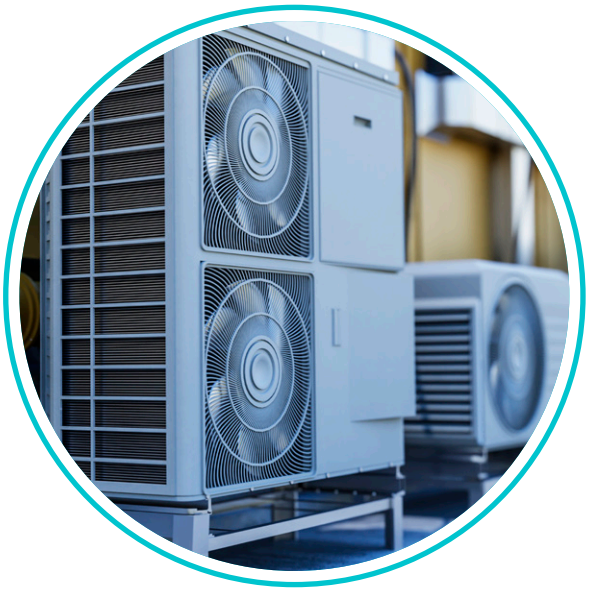
Heating and cooling

Heat pumps

Heating is often the biggest source of a home's emissions, and heat pumps provide an efficient alternative. Despite the name, heat pumps cool as well as heat and thus can add cooling to a home or replace both heating and A/C systems—a benefit that matters more and more in a warming world. Heat pumps come in different shapes and sizes, for homes with and without ducts, and many of them are attuned to cold climates. They can also significantly bring down utility bills for households that replace electric furnaces or baseboards or oil-based heating systems. For households with a natural gas furnace, heat pumps can be an emissions-free, cost-effective alternative in many parts of Canada.[26] Like many clean technologies, heat pumps are incredibly efficient, operating two to five times more efficiently than electric baseboard heating or a natural gas furnace—and with a nicer, more even heat.[27–29] As of 2022, 54% of energy used for heating in Canada is natural gas, and home heating is responsible for 36 megatonnes of emissions, which makes up about 5% of Canada's annual total.[30]

Heat pump water heaters

Heat pump water heaters, also called hybrid water heaters, use up to 70% less energy than a standard electric water heater.[31,32] They also tend to have longer lifespans than traditional storage water heaters.[33] Additionally, they can be a money-saving solution, especially for households already using an electric water heater with our research finding overall savings (including upfront cost) of up to $560 annually.[26] Energy use for hot water is responsible for 11.5 megatonnes of emissions, about 2% of Canada's annual total.[32]



Producing and storing electricity

Rooftop solar PV

Residential and industrial "behind the meter" solar produced about 0.2% of Canadian electricity in 2023.[34] To keep the expansion of Canada's electricity grid as low-cost as possible, estimates suggest that rooftop power alone would need to contribute up to 4% of Canada's electricity needs by 2050.[35] One study in Ontario found net savings are $1,270 per year with time-of-use electricity pricing and in conjunction with a heat pump, though payback periods on the technology (the time it takes for bill savings to repay the upfront cost) can be 15.5 years.[36] Savings are expected to be greater for single family, semi-detached, and electrified homes with available roof space. While this technology is typically not available for individual condos, balcony solar products do exist.[37] Alberta and Saskatchewan, in particular, are good locations for solar installations with higher-than-average sunshine and relatively expensive and emissions-intensive power grids.[1,38,39]

Home battery storage

Home battery storage systems, often used in conjunction with rooftop solar, can help cut bills—especially in places with time-of-use electricity pricing—enabling owners to switch to battery power during peak and thus pricey hours. For rural households, battery storage also offers a quiet and air-pollution-free alternative to diesel backup generators. Additionally, they are more resilient in extreme weather, whereas generators can freeze up in storms, and produce no dangerous carbon monoxide (generators have caused 1,300 carbon monoxide deaths in the U.S. since 2000).[40,41]

The role of electrified homes on the grid

Electrification is not going to break the grid. In many cases, it will even help. For example, meeting B.C.'s ambitious 2030 EV sales target (90% of new car sales in 2030) would only increase electricity demand in the province by 2%.[47] Similarly, a natural gas ban in new construction in B.C. starting in 2030 would increase electricity demand also by 2% in 2035 compared to current levels.[48,49] Heat pumps, meanwhile, are highly efficient and when replacing baseboard heating, they significantly lower overall electricity demand via efficiency gains.[27] Demand for electricity will nonetheless gradually increase, but provinces and utilities have time to get ahead of it.

There is also an opportunity to rethink energy as no longer being a one-way street. In modern energy systems, 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." Ratepayers benefit from this arrangement through lower bills, while utilities can better manage supply and demand, improving grid stability. Utilities can also defer large investments in grid infrastructure, avoid them altogether by using existing electricity more efficiently, and better utilize cheaper sources of energy like renewables by shifting how much energy is used at different times—all of which can bring down prices for consumers.[16]

Another low-tech way grids are getting smarter that almost anyone can take advantage of is already being offered in Ontario, B.C., and parts of Alberta: time-of-use pricing.[50–53] These voluntary programs essentially adjust what participating customers pay for electricity based on the time of day, making it cheaper when demand is lowest. By encouraging people to spread out their power use, the utility avoids importing more expensive power to meet spiking demand and, conversely, exporting excess electricity at below-market rates during periods of low demand. For ratepayers, the savings are real: Ontario residents pay less than half the normal cost to charge their EVs (2.8 cents/kWh) with the province's "ultra-low overnight" plan.[54] Heat pumps also tend to draw more electricity overnight when it is coldest, enabling owners to pair their heat pump with a smart thermostat to preheat or precool their home when electricity is cheapest.[55] As mentioned previously, some smart thermostats also have time-of-use settings.

Smart energy management

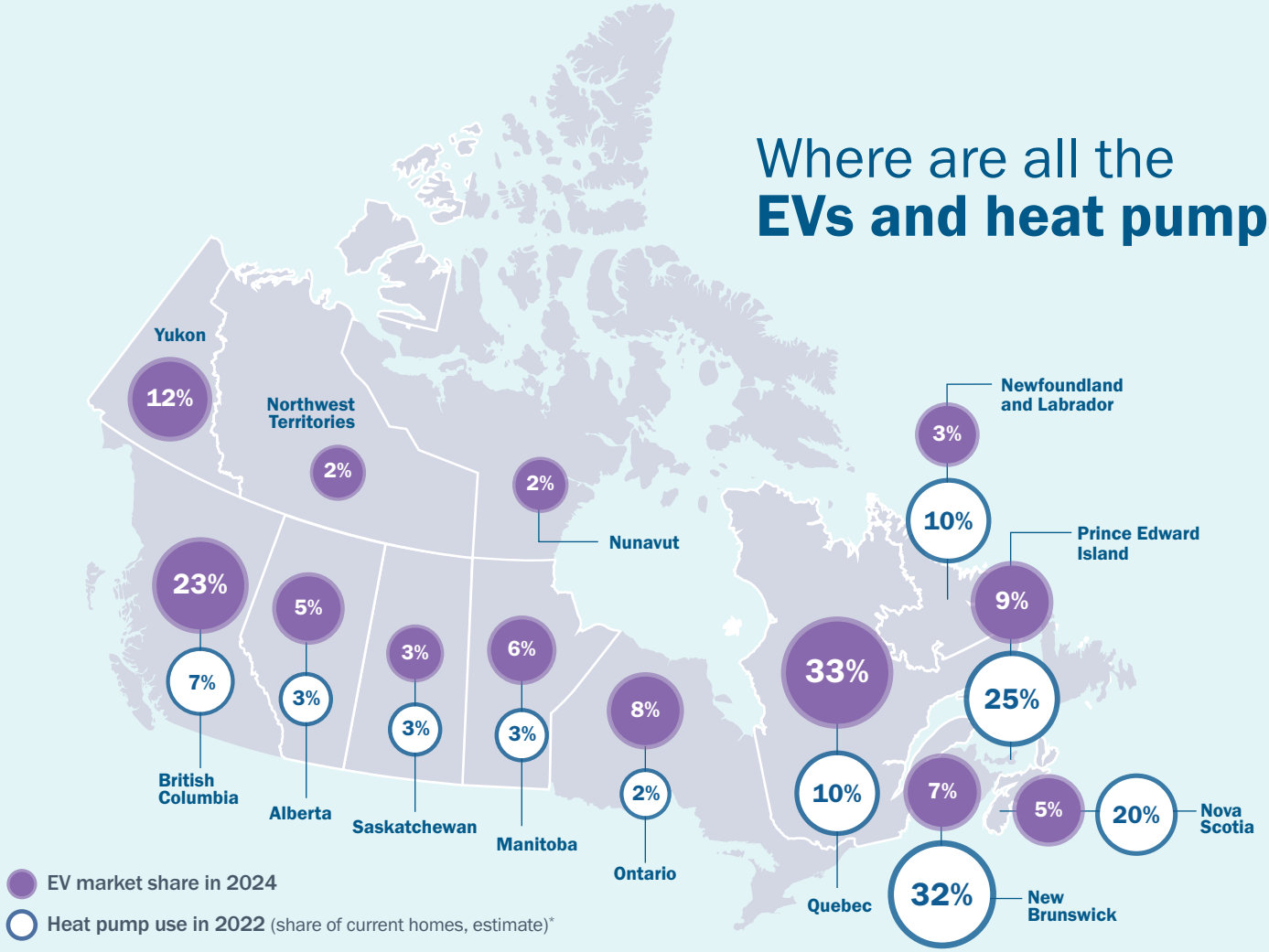
Home energy management systems

Energy-smart homes allow homeowners greater control over their energy use, connecting their appliances, thermostats, lights, and other devices remotely through an internet connection via a smartphone or tablet. A home energy management system monitors and controls energy generation, storage, and consumption within a household. It can optimize a home's energy use for goals such as cost reduction, self sufficiency, or cutting carbon. In many cases, a home energy management system can help when installing a Level 2 EV charger or heat pump, allowing homeowners who thought they needed electrical upgrades to instead strategically allocate the energy they already have.

Smart thermostats

Smart thermostats are a key component when integrating a number of household clean energy solutions. Alone, they can reduce energy consumption—and thus energy costs—by automatically turning down the heat when residents are not in the house or if a window is open. They can also play an important role in grid management and some can be set to take advantage of time-of-use electricity pricing.[42] Ontario's Hydro One estimates that smart thermostats result in annual electricity savings of up to 15%.[43] Given that prices for smart thermostats are considered reasonable (typically ranging from $100 to $400), their payback period can be achieved quickly for many.[44] Some models also have indoor air quality sensors and can alert residents when air quality is poor or humidity is too low or high.[45] Put simply, smart thermostats are an easy, low-barrier technology, with 78% of respondents in our survey indicating they felt somewhat or very positive about them. Indeed, a 2024 Canada Mortgage and Housing Corporation survey found that among homeowners who had completed renovations in the past three years, 30% had installed a smart thermostat.[46]

Where are all the **EVs and heat pumps?**



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%

*Note: EV statistics represent the share of new vehicles sold, whereas heat pump statistics are the share of heating systems installed in residential buildings. These are not directly comparable. *No data was available for heat pump uptake in the territories.* | Source: S&P Global, Natural Resources Canada[17,57]

***Heat pump data for non-European countries from 2020* | Source: International Energy Agency, California Energy Commission, U.S. Energy Information Administration[56,58,86-90]

Vancouver

An impressive **27%** of vehicle sales in Vancouver were electric in 2024, which is the second-highest adoption rate in Canada.[17]

Toronto

Toronto lags when its comes to EV adoption, with a market share of **10%** in 2024, well below the national average of 15%.[17]

Montreal

Montreal saw EVs make up **36%** of all vehicle sales in 2024, the highest share of any metro region in Canada.[17-

The next adopters

When it comes to adopting clean technologies, everyone is different. But certain groups of people tend to share preferences and priorities and, on the flipside, often face similar barriers. That could be the young renter with no way to charge an EV at home or the retired homeowner on a fixed income worried about having to make electrical upgrades.

Powered by our 3,000-person survey of the Greater Toronto and Hamilton Area and Metro Vancouver, Clean Energy Canada and Abacus Data employed a method known as latent class analysis, grouping individuals based on shared characteristics across variables like gender, age, education, carbon footprint motivation, EV ownership, intent to purchase an EV or gas vehicle, importance of an energy-smart home, residence type, family type, income, and birthplace. This approach identified distinct segments based on attitudes, behaviours, and demographics, offering insight into motivations and concerns around adopting clean technologies.

The result: five distinct segments that broadly encapsulate the views of people in these two regions. Colloquially, we are calling them Net-Zero Dads and Moms, Generation Green, Retired Homeowners, Practical Families, and Frugal Skeptics, arranged from most motivated to adopt clean technologies to least. A quick note: we chose names that paint a vivid picture, but they represent majorities of each group rather than entireties (not every "Retired Homeowner" is retired, but seven in 10 are over age 60). Similarly, Net-Zero Dads and Moms is named to reflect the fact that among the two highly motivated groups, there is a gender gap (61% of those keenest to adopt clean technologies are men). 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.[59]

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]

Net-Zero Dads and Moms are highly motivated to adopt clean technologies, driven by a commitment to sustainability and a fascination with new technology.

Typically homeowners (68%) with higher-than-average incomes, Net-Zero Dads and Moms are well-positioned to make home upgrades that align with their values and offer long-term financial benefits. This segment is predominantly urban, with a strong family focus. They value the comfort, efficiency, and long-term financial savings of sustainable home solutions. While they are already on the path to adoption, many lack detailed knowledge about the finer aspects of these technologies. When presented with the right information, their likelihood of adoption increases significantly.

PERSONAL ACTION

Vehicle ownership	Next vehicle purchase	Energy smart home	Heat pump interest	Reduce carbon footprint
Own an EV **50%** Know someone who does **88%**	**100%** Inclined to purchase an EV	**94%** Important that next home is energy smart	**73%** Have, want, or positively view heat pumps	**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

Generation Green is the term we're using to describe a group of environmentally conscious, tech-savvy, generally younger individuals (45% are between 19 and 29, and another 26% are between 30 and 44).

They are highly motivated to reduce their carbon footprint and adopt clean technologies, and when provided with information that highlights the environmental and financial advantages of these products, their likelihood of adoption increases significantly. Because of their age, Generation Green individuals are more likely than similarly motivated Net-Zero Dads and Moms to live in condos or rent (59% either rent or live with family), which may present more barriers when making home upgrades. Perhaps for this reason, while almost all of them are inclined to get an EV, interest in an energy smart home or heat pump is lower (albeit still high).

PERSONAL ACTION

Vehicle ownership	Next vehicle purchase	Energy smart home	Heat pump interest	Reduce carbon footprint
Own an EV **25%** Know someone who does **76%**	**96%** Inclined to purchase an EV	**80%** Important that next home is energy smart	**66%** Have, want, or positively view heat pumps	**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

Retired Homeowners are older adults, typically empty nesters, who prioritize comfort, simplicity, and cost savings over technological innovation.

While moderately interested in clean technologies, especially those with immediate financial benefits, they are cautious adopters. As their name suggests, many are retired or close to retirement and prefer purchases that align with their practical needs. On the plus side, they are more likely to own their homes, many with no mortgage, putting them in a position to make upgrades. They are also the group most likely to seek information from news outlets and, when considering home upgrades, directly from installers (38%). Financial incentives and simple solutions can significantly impact their adoption.

PERSONAL ACTION

Vehicle ownership	Next vehicle purchase	Energy smart home	Heat pump interest	Reduce carbon footprint
Own an EV **6%** Know someone who does **54%**	**51%** Inclined to purchase an EV	**56%** Important that next home is energy smart	**57%** Have, want, or positively view heat pumps	**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

Unlike the other largely parent-age segment with young kids in the house (Net-Zero Dads and Moms), Practical Families are more focused on finding cost-effective solutions that meet their practical needs.

While they are open to clean technologies like EVs and heat pumps, they need to see clear, reliable evidence of their long-term benefits before fully embracing them. They are particularly influenced by trusted sources like friends and family and can be motivated by government incentives that ease the financial burden of adopting clean energy solutions, making the decision a simple, financially savvy one. Despite being significantly less motivated by climate concerns, their openness to clean technologies is similar to that of Retired Homeowners.

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

Frugal Skeptics are cost-focused individuals primarily concerned with affordability and practicality. With lower incomes, they are less motivated by environmental concerns and more focused on their day-to-day financial challenges.

They know little about clean technologies, with a strong preference for familiar options with lower upfront costs, like used gas vehicles. Their inclination to act remains low even when provided with information. Most Frugal Skeptics are unlikely to join the next wave of clean technology adopters, given they are both less motivated and faced with more barriers. Their key motivator is cost savings, and they will need straightforward information that clearly demonstrates the immediate financial benefits clean technologies can provide, alongside incentives and solutions aimed at renters, such as affordable housing built with a heat pump already installed.

PERSONAL ACTION

Vehicle ownership	Next vehicle purchase	Energy smart home	Heat pump interest	Reduce carbon footprint
Own an EV **0%** Know someone who does **35%**	**18%** Inclined to purchase an EV	**22%** Important that next home is energy smart	**38%** Have, want, or positively view heat pumps	**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

Barriers and solutions

1 Upfront cost

Cost was the number one barrier to adoption identified in our research, both across technologies and across every single group. Some 85% of respondents identified it as a major or minor barrier to choosing an EV, while 73% said installation costs were a barrier when considering a heat pump.

On the other hand, 57% understood that a household with clean technologies would pay a smaller monthly energy bill than the fossil-fuelled alternative. For EVs, 63% recognized they would end up being cheaper overall, and yet only the most motivated adopters were willing (or able) to spend more money upfront to buy an EV over a gas car (73% want to spend less than $40,000 on a new EV). Upfront cost remains a barrier even for those who already understand that the electric option will save them money down the road.

While such upfront costs have fallen in recent years, and economies of scale should make clean technologies increasingly competitive, there remains a price tag gap that needs to be bridged. Previous Clean Energy Canada analysis has found that while all EVs we analyzed were considerably cheaper than gas cars over a 10-year period, none were cheaper upfront without the inclusion of a government rebate.[61] Similarly, clean technologies like heat pumps, heat pump water heaters, and solar panels could save many households money over time, but come with an upfront price premium. In our survey, 76% of respondents agreed that governments should help make clean technologies more affordable through incentives, zero-interest loans, and investments in public charging (only 13% opposed such efforts).

Barrier intensity	Net-Zero Dads and Moms	Generation Green	Retired Homeowners	Practical Families	Frugal Skeptics
	moderate concern	moderate concern	moderate concern	moderate concern	major concern

Solutions

Government incentives

Frictionless point-of-sale rebates are the most immediate and direct way to lower the cost of clean technologies. In the case of EVs, applying strategic price caps (for example, B.C. required EVs to be $50,000 or less) can further motivate automakers to deliver cheaper models in order to maintain eligibility. A number of provinces, the federal government, and even some municipalities have also offered incentives for heat pumps with varying conditions, as well as for rooftop solar power, battery storage systems, and other big-ticket items where upfront cost is likely to be a barrier, even if they eventually pay back their initial investment through savings.

Creative financing

In addition to incentives, creative financing can also ease the upfront and ongoing costs of going electric, in some cases spreading out the cost in such a way that borrowers experience net savings straight away. The federal government currently offers zero-interest, 10-year loans up to $40,000 that can be used for a range and combination of upgrades, from heat pumps to rooftop solar, to heat pump water heaters and even smart thermostats.[62] Additionally, a number of municipalities offer Property Assessed Clean Energy programs, allowing homeowners to pay for upgrades through higher property taxes over a set period, tying the upgrade to the property rather than their personal credit. Manitoba even offers a service model: for $75 a month, homeowners can install a ground-source heat pump with no upfront cost.[63]

Electric vehicle availability standards

Requiring automakers to make more EVs available sends a strong signal: build cars that will sell at scale. One study estimates that the current federal policy could drive EV prices down by 20% as automakers are compelled to supply lower-priced models over luxury ones.[64] Similar policies also exist in B.C. and Quebec.

Competition

Few factors drive prices down like competition. Canada's 100% tariff on Chinese EVs exacerbates an uncompetitive market at the expense of consumers. With a much lower tariff on Chinese EVs, Europe enjoys more affordable electric options, with only modest market share going to Chinese cars.[65] Vehicles approved for roads in Europe should likewise be approved in Canada, opening the door to more compact models.

Program inaccessibility: the devil in the details

Numerous government programs have been designed to help Canadians overcome some of the barriers listed in this report, and while many have proven effective, in some cases they can also become barriers themselves if they are improperly designed, are difficult to navigate, or exclude people who should not be excluded.

In 2023, B.C. introduced an income cutoff for its full EV incentive that was soon below the average income of full-time workers in the province between the ages of 25 and 54.[82] In short, many retirees qualified, but middle-class working parents struggling to buy their first townhome did not. This was even more disharmonious than it sounds, given that nearly four in five Metro Vancouverites under 44 are inclined to buy an EV as their next car, not to mention they drive more.

EV sales in the province flatlined during this period. In our study conducted just before the program was put on pause in early 2025, 57% of Metro Vancouverites believed they would not qualify for B.C.'s full income-capped rebate, and those excluded were far more likely to say their exclusion was unfair (46%) than fair (27%).

Similarly, complexity and wait times can also worsen the accessibility of programs meant to increase it, such as with Canada's previous Greener Homes Grant.[83] The program eventually became very popular and was thus quite effective, but it was also criticized for largely, if inadvertently, excluding low-income Canadians with "up-front costs and administrative burdens," given requirements for energy auditing and the fact that, unlike with point-of-sale EV rebates, applicants needed to foot the bill before receiving their rebate, which also added a layer of uncertainty. At one point, it could take five months to receive a reimbursement.[84,85]

2 Housing type

A third of Canadians rent their homes, with the overwhelming majority (71%) living in large population centres.[66,67] Renters often lack the agency to make clean technology upgrades, and 85% of renters in our survey said that renting their home was a barrier to adopting a heat pump.

There are additional challenges when it comes to effecting change in rental buildings. Tenants typically pay monthly energy bills but do not usually have a say in the installation of more efficient energy technologies. Landlords, meanwhile, would bear the costs of making improvements, but they do not always benefit directly from the cost savings and quality-of-life benefits. This "split incentive" problem can hinder clean technology adoption in rental units.

Similarly, a third of Canadian households reside in apartment buildings, with different levels of access to various technologies and a sometimes limited ability to make required infrastructure changes, even when residents own their homes. Three-quarters (75%) of those living in apartments and townhomes said that access to home charging was a barrier to EV adoption, while 68% said they did not have the ability to make heat pump installations (compared to 44% of those in detached homes).

Barrier intensity	Net-Zero Dads and Moms	Generation Green	Retired Homeowners	Practical Families	Frugal Skeptics
	minor concern	moderate concern	minor concern	moderate concern	major concern

It's not just EVs and heat pumps.

Apartment/townhome owners and renters are less likely to consider a wide range of clean technology upgrades.

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%

Solutions

Building code changes

Requiring new homes, including apartments, to be built with EV chargers (or the electrical wiring to enable easy installation) and heat pumps completely solves this problem from day one in the most cost-effective way—but only for those moving into new homes.

Rental requirements

Energy efficiency standards for rental units could lower operating costs for renters (a measure the U.K. has had in place for years).[68] Additionally, maximum temperature rules for rental units could literally save lives and also necessitate the installation of heat pumps. Vancouver, for example, requires that all permanently installed A/C systems are heat pumps in detached homes, which could apply to rental buildings as well.[69]

Government support

Federal and provincial programs can provide funding support not only for individuals but also to condo boards and stratas undertaking larger building-wide upgrades necessary to electrify their heating and cooling systems or to install charging in parkades, for example. Supports for retrofits in rental buildings should come with safeguards that prevent unintended negative consequences for renters, such as rent increases or "renovictions" related to clean energy upgrades.

Right-to-charge legislation

Currently in place in a number of jurisdictions, right-to-charge legislation legally empowers any homeowner in a condo or townhome to install an EV charger if they are personally willing to incur the cost.[70]

3 Knowledge gaps

Both a lack of knowledge and the prevalence of poor-quality information can have an impact on adoption. Specifically, 19% of homeowners said they were interested in installing a heat pump in the future, while an additional 25% were interested but needed more information (another 12% said they already had one).

Overall, knowledge of heat pumps remains relatively low, with less than half of Canadians aware of key facts, such as their efficiency in cold weather (68% unaware) and even their ability to provide cooling (53% unaware). Encouragingly, after receiving information about heat pumps, that 19% jumped to 30% who said they would like to install one at some point. While interest in heat pumps is growing, educating consumers about their benefits and addressing knowledge gaps is essential for increasing adoption.

The knowledge gap is less extreme with EVs but still apparent. After receiving more information about EVs, respondents' intention to purchase one as their next vehicle increased from 59% to 65%, and among Canadians under age 30, the jump was 71% to 79%. In terms of poor-quality information, it's no secret that anti-EV memes run rampant online. Somewhat surprisingly, the second most cited barrier for respondents was potential battery replacement costs. In reality, the battery replacement rate for modern EVs is less than 1%, and nearly all of these replacements happen under warranty.[71] Similarly, older Tesla models that have now been on the road for many years have experienced just 12% range declines after 320,000 kilometres of driving.[72] And yet, 53% said this was a major barrier for them, compared to 36% who said the same about a lack of public charging infrastructure—a concern more grounded in reality.

Barrier intensity	Net-Zero Dads and Moms	Generation Green	Retired Homeowners	Practical Families	Frugal Skeptics
	moderate concern	moderate concern	moderate concern	moderate concern	major concern

Solutions

A home electrification resource hub

Social media and search engines are among the top destinations for Canadians seeking information about home upgrades. Federal and provincial governments could run and advertise electrification resource hubs (imagine an easy-to-use website and app) that answer common and technical questions and connect users with local vendors and applicable incentives—all the information one would need when making and acting on a decision. As an example, the province of B.C. recently introduced a Home Energy Planner that includes individualized household energy scores, recommended upgrades, and the resources to get started.[73]

Awareness-raising events

Seeing is believing—and understanding. Programs like "Energy Neighbour" in Toronto help individuals navigate complex installation processes, while the U.S. Department of Energy under Biden was supporting in-home "heat pump parties" (think tupperware parties) to help homeowners showcase their upgrades to interested neighbours.[74–76] Meanwhile, Ontario-based Plug'n Drive's discovery centre lets people test drive a range of electric options to see how driving an EV feels and which models they might like.[77]

Vendor training

People will struggle to sell what they do not fully understand, but there are ways to educate. Electric Mobility Canada, for instance, hosts a national training program that aims to equip car sales staff with the knowledge they need to answer questions about EVs and sell them effectively.[78] Similarly, the Heating, Refrigeration and Air Conditioning Institute of Canada offers heat pump training to installers and hosts an annual heat pump tradeshow and conference.[79,80]

More specialized reporting

When it comes to clean technology in the news, reporting is often anecdotal and lacking in context. EVs especially suffer from a novelty bias: a gas car's engine replacement would never make the news, but one person's EV battery problem generates national headlines. Assigning more specialized reporters can and already has in some cases improved Canadian coverage of the energy transition.

› Check out Clean Energy Canada's myth-busting resource hub for clear answers to common misconceptions.

4 Infrastructure and electrical concerns

In some cases, upgrades are required to a household's or building's electrical system in order to accommodate new technologies. This could include a new 200-amp electrical panel or wiring for a 50-amp plug.

When it comes to multi-unit residential buildings, the infrastructure challenges can be even greater—and more costly—for the condo boards and stratas navigating them.

Sometimes the challenge isn't as great as it first seems, however. Realizing one can utilize a home energy management system can avoid a costlier electrical panel upgrade. And the best solution may even be an old-fashioned one: keeping it simple. For example, 69% of homeowners who live in houses and townhomes (and who do not currently drive an EV) said they drive less than 50 kilometres a day. For Retired Homeowners, the group most likely to have concerns about electrical upgrades, this increases to 75%. These drivers could comfortably manage using only Level 1 charging, which plugs into a regular outlet, requiring no additional electrical work. Likewise, mini-split heat pumps offer a simpler solution for homes without ducts and can be combined with existing heating systems like electric baseboards to further simplify and lower the cost of installation, yet many may not be aware of these options.

Finally, insufficient public charging continues to be a real barrier for many people, cited as a major barrier by 36% of respondents and a minor one by another 39%. Similarly, the largest survey of EV drivers in Canada, conducted by the CAA, has found a lack of public charging to be one of the more notable gripes among people with actual experience driving EVs (nevertheless, nine in 10 intend to get an EV again).[22]

Barrier intensity	Net-Zero Dads and Moms	Generation Green	Retired Homeowners	Practical Families	Frugal Skeptics
	minor concern	minor concern	moderate concern	minor concern	moderate concern

Solutions

Building and electrical codes

The cheapest way to add EV charging or a heat pump to a home is to install these features when the home is first built. Many places in Canada and elsewhere already require EV charging readiness and increasingly efficient heating systems in new construction. The federal government and provinces should include these requirements in building codes, streamlining the process for builders and future homeowners. As well, homeowners are occasionally compelled to make unnecessary panel upgrades because of electrical codes requiring a theoretical maximum capacity that won't actually be used. Ontario recently allowed home energy management systems to be included in panel size calculations.[81]

Government grants and zero-interest loans

Programs that reduce the cost of upgrading will make it easier for homeowners to make the switch. This support is especially crucial for condo boards and stratas facing costlier, more complex upgrades.

Educating consumers, installers, and municipalities about simpler solutions

From Level 1 charging to a home energy management system in lieu of a costlier electrical panel upgrade, consumers need not be upsold where easier, effective solutions exist that could meet their needs. This can include older apartment buildings, as well, where the electrical challenges of a Level 2 system are considered too cost prohibitive.

Investments in public charging

Governments and the private sector must continue investing in public EV charging, both along highways and in dense urban areas to serve renters and condo owners currently without a place to charge at home.

Key takeaways

Household clean technology adoption is important for climate reasons, but equally so for affordability, energy security, and efficiency. Understanding potential adopters is a crucial step policymakers should take more time with when designing and implementing programs aimed at getting more Canadians behind the proverbial wheel.

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.

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.

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.

Opening the door

An updated approach to climate action from governments, industry, and advocates alike may uncover new, underexplored ways to accelerate the era of electrification. After all, it is the story of what you gain rather than lose—of upgrading your life rather than giving things up. When households are empowered, both figuratively and literally, we may find a far less bumpy road ahead for all of our essential climate efforts.

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