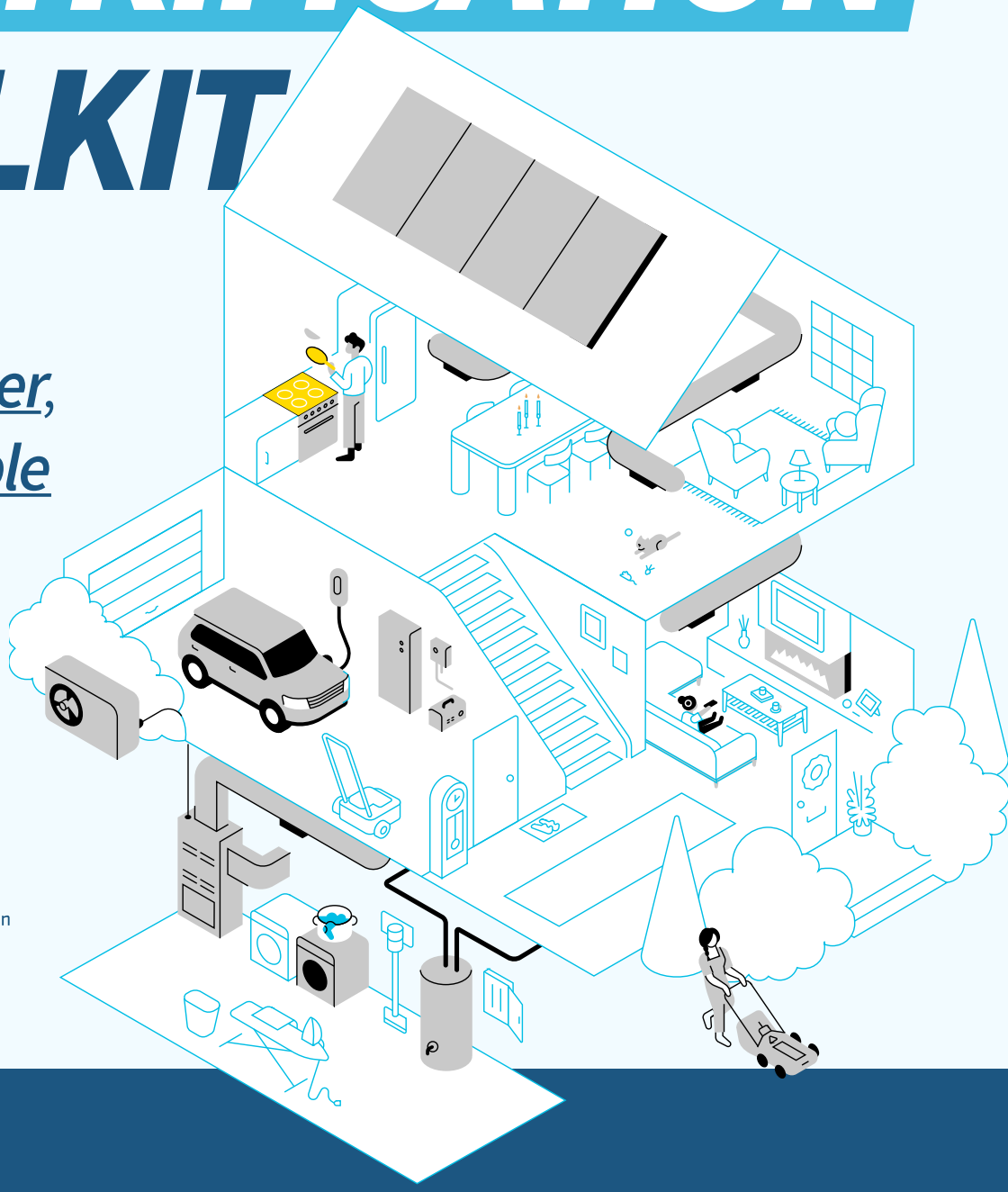
CANADA'S HOME ELECTRIFICATION TOOLKIT

Your guide to a ***cleaner, smarter, more affordable*** home



Building Decarbonization Alliance
pour la décarbonation des bâtiments

ELECTRIFY YOUR:

COOKING

Cooking at a glance

COST

Upfront costs:
$$-$$$

ELECTRICAL NEEDS

240V 40-50 amp

(two outlets if cooktop and oven are separate)

EQUIPMENT LIFESPAN

10-15 years

IMPLEMENTATION

Easy to difficult

EMISSIONS REDUCTION IMPACT

Medium to high

RENTERS

Consider a portable induction cooker

BONUS

Improved indoor air quality when replacing gas

Better cooking experience with induction

Links to further resources

- Natural Resources Canada Cooking Appliances website

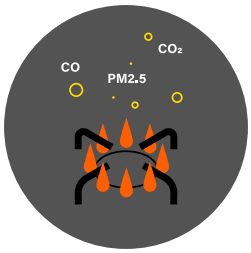
Cooking

“

I love our big induction range—I’d never go back to gas.

–
James Ramsden of Michelin-starred East London Restaurant Pidgin.[1]

More and more people are switching to induction ranges and cooktops because they provide fast and controlled heating with easy cleanup and no combustion gases. Gas stoves are a significant source of indoor air pollutants such as nitrogen oxides (NO_2, NO), carbon monoxide (CO), and fine particulate matter (PM2.5).



Pollutants from stoves are bad for climate change and can increase the risk of asthma and other illnesses, with children being particularly susceptible.[2] The open flame of a gas stove is also a fire hazard that can be avoided when switching to cooking with electricity.

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[1] Sawa, D.B. (2015). **My kitchen gallery: James Ramsden**. The Guardian. Retrieved from https://www.theguardian.com/lifeandstyle/gallery/2015/aug/18/my-kitchen-gallery-james-ramsden

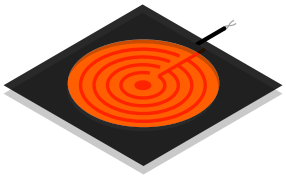
[2] Gruenwald, T. et al., (2023). **Population Attributable Fraction of Gas Stoves and Childhood Asthma in the United States**. International Journal of Environmental Research and Public Health 20, no. 1: 75. https://doi.org/10.3390/ijerph20010075

OPTIONS

Coil cooktops and ranges:

These are traditional electric ranges coil elements. They are simple and easy to use.

Ceramic cooktops and ranges (aka radiant or glass cooktop):

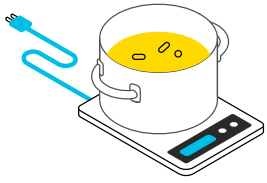


These use an electric coil that is covered by a ceramic or glass surface, making it easy to clean.

Induction cooktop:

Electromagnets under a glass surface induce a small current in the cookware, causing them to heat up directly. Cooking with induction is faster, allowing for instant temperature control and fast clean up.

Portable induction cookers:



Single element induction cookers are cost-effective options that plug into regular kitchen outlets. Although less powerful, they still offer the benefits of cooking with induction without the large investment in a new appliance and are a great option for renters.

Conventional electric oven: These ovens have a broil element at the top and a baking element at the bottom of the oven. They are simple and easy to use.

Convection oven: These are conventional ovens with an added fan that circulates hot air through the oven. They allow for faster and more even cooking.

BENEFITS

Cooking with gas generates combustion gases and fine particulate matter that is bad for your health (see above). Even when a gas range is turned off, it may be releasing air pollutants through gas leaks. Any of the electric options listed here will result in better indoor air quality and reduced health risks.

Induction is by far the fastest and most efficient way to cook food because these cookstoves heat the pot directly. Electric coils are also faster than gas, but ceramic cookers take longer than electric coils due to the extra layer of ceramic to heat.

Induction and radiant cooktops have a ceramic or glass top that is easier to clean than a gas or electric coil element.

Gas stoves put out a lot of heat, most of which ends up in your kitchen, not your food. Electric stoves, and especially induction stoves are better at directing the heat to your food. Induction stoves are so good at heating just the pot and the food that the stove surface can be cleaned right after cooking!

Induction provides instant temperature control with multiple settings.

COOKTOP, RANGE AND OVEN FEATURES COMPARED TO GAS EQUIPMENT:

Equipment	Outlet	Time to boil water	Upfront cost	Operating cost*	Emissions*
Gas cooktop or range	120V 15-20 amp				
Electric coil cooktop or range	240V 40-50 amp	faster	▽	△	▼
Radiant cooktop or range	240V 40-50 amp	faster	=	△	▼
Induction cooktop or range	240V 30-50 amp	Much faster	△	△	▼
Electric conventional oven	240V 20-50 amp	N/A	△	△	▽
Electric convection oven	240V 20-50 amp	N/A	△	△	▽

**Updated April 2025, see appendix for breakdown of cost and emissions outcomes by province and territory*

CHALLENGES

- Induction cooktops will only work with cookware that is magnetic—if a fridge magnet sticks to the bottom, you are good to go. You can also buy a heat diffuser or induction adapter plate that transfers heat to your favourite cookware if it is not compatible. Ovens and coil or radiant cooktops will use the same cookware that you use with your gas appliances.
- Induction cooktops can make a buzzing or humming sound during normal operation. The sound may decrease with a different pot, with lower temperature settings, and with higher quality induction cookers.
- Electric cooking appliances will not function during a power outage unless they are connected to a battery or generator.
- Concerns have been raised about the potential for the electromagnets in induction cookers to interfere with pacemakers or defibrillators. Recent studies[3] have shown that the effects on these devices are within the recommended limits unless a person is very close to an active element (e.g. leaning directly over the pot). Persons with these devices are advised to choose coil or radiant cooktops or to keep the induction burners at arm's length when cooking.

OTHER CONSIDERATIONS

- You may need an electrician to add a new 240V, 40-50amp outlet if your home is switching from gas cooking appliances to electric. A range that combines the cooktop with the oven may be a better option as this will require only one high voltage outlet and one breaker on the electrical panel. For a small household, you may be able to avoid these large appliances altogether by using several single element induction cookers, a microwave, and a larger toaster oven.
- Range hoods are used to extract harmful indoor air pollutants generated by burning fuels for cooking but also from cooking the food itself. This is why range hoods are still recommended with electric and induction stoves.
- Using a smaller and simpler appliance to cook small meals or reheat food can save energy—microwaves, electric kettles, and toaster ovens are great examples. Some ovens include a removable divider that allows you to use just half of the oven at a time. Microwaves, electric kettles, and toaster ovens are great examples. A pressure cooker will also cook food faster and with less energy.

[3] T. Campi et al. (2023). **A Simulation Model for EMC Compliance Assessment of Induction Cooktops for Cardiac Implanted Electronic Devices**. Retrieved from https://ieeexplore.ieee.org/abstract/document/10265533?casa_token=wuUHwno41VMAAAAA:bLSZLTsleZT32Y7MF8JyTEH82dY56iz5ZBDRgkwkDirRNPAFKcDlGp4KjuZlTflJZF-XdCWFJ-w

Cooking with induction:

When his air purifier kept showing poor indoor air quality whenever their gas stove was in use, Colin and his family knew it was time to try something different.

Replacing the stove wasn't an option in their Vancouver condo, so they bought a single induction cooker that plugs into a regular outlet. Right away they noticed that cooking was faster and easier than with gas, and the kitchen didn't heat up as much in the summertime.

The indoor air quality improved too, and the lack of open flames means Colin feels safe letting his 12-year-old daughter experiment with cooking on her own.

Today that single element induction cooker is used for 90% of their cooking.

"

The induction cooker has been really great!

–
Colin

This section is part of the Canada's Home Electrification Toolkit. The Toolkit provides clear, concise, and up-to-date information on space heating, cooking, fireplaces, home batteries and backup options, and other household equipment. It also includes tips for renters, strategies for avoiding potentially costly electrical panel upgrades, and case studies from satisfied homeowners.

ADDITIONAL SECTIONS ARE AVAILABLE FOR DOWNLOAD BELOW:

Symbols and terms in this publication:

Upfront or operating cost (no incentives applied)

Symbol	Description
$	Up to $99
$$	$100-$999
$$$	$1,000-$9,999
$$$$	$10,000 and above

Implementation

Term	Description
Easy	Can be implemented by yourself if no electrical upgrade is required
Medium	Can be implemented by someone with DIY skills
Difficult	Generally requires a qualified electrician or other contractor

Emissions reduction potential (onsite emissions reductions using Canadian averages)

Term	Description
Low	1-9 kg CO2 per year
Medium	10-99 kg CO2 per year
High	100-999 kg CO2 per year
Very high	> 1,000 kg CO2 per year

When comparing electric to gas equipment on upfront costs, operating costs and emissions

Symbol	Description
=	Values differ by 10% or less
▽	Electric version is 10-50% lower
▼	Electric version is more than 50% lower
△	Electric version is 10-100% higher
▲	Electric version is more than 100% higher

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Visit buildingdecarbonization.ca/canadas-home-electrification-toolkit for digital downloads, updates, and other information about home electrification.

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