CLIMATECARE.

HOME COMFORT OVERHAUL **FOR A NEW NORMAL**

HOME COMFORT
NEW NORMAL

Life as you know it in Canada, and the rest of the world, has changed. Covid-19 has made sure of that. Irrevocably. In this mid-pandemic 'new normal', your home is:

- **Your office** - Working from home or just going into the office a lot less frequently?
- **The school** - Kids, schedules on different devices, constant snacks and drinks because everyone is home. Sound familiar?
- **Your vacation spot** - Taking less, or even zero vacations?
- **Your gym** - Exercising at home instead of at the gym?

You catch the drift!

Your home is your base, comfort zone and increasingly, the hub of nearly ALL your activity – where you live, sleep, and often, where you work. In our mid-pandemic new normal, we are spending more time at home than ever before. It's a reality that most of us couldn't have imagined at the start of 2020. Yet we've adapted on many fronts in a matter of months.

The reality of this new normal is many of us will travel less and spend more time indoors. The not-so-great side effect of that is you might find your energy bills creeping up.

Along with another elephant in the room - **the quality of our indoor air**.

The airborne contaminants in your home creep up because of the people and activity in it. For example, the more time you spend at home, the more your air quality is compromised (and that's just from normal, everyday activity).

So, while you're saving on items like entertainment, gas and flight tickets, it's worth realigning your budget to invest in your sanctuary.

This report is a home comfort overview. Hopefully the only one you'll ever need.

> **"It's worth realigning your budget to invest in your sanctuary."**

OUR **GOALS**

1. **Health** - Why air quality is so important and when you need to test.
2. **Optimization** - Easy DIY tips and tricks you can use right now to improve your indoor air quality and energy consumption. You can, indeed, overhaul your home comfort without breaking the bank, while being kind to the environment.
3. **Maintenance** - Education on efficiencies to help you understand what needs to happen to keep your systems running smoothly on above-average loads.
4. **Fixing** - What to do when you see warning signs - what to look out for if things are not working as they should. Advice to guide you when it's time to repair or upgrade your heating, ventilation or cooling (HVAC) system. Sometimes you have to call in a doctor, and it helps to know when.
5. **Conservation** - What can help reduce your energy bills? How do you get better rebates? Own or rent? We aim to provide some answers that may inspire earth-friendly choices, with little dent to your wallet.

OUR **METHODOLOGY**

ClimateCare is a ***cooperative of independent, locally-owned heating and cooling professionals.***

We called on the best advice from our *LOCAL community-based experts* (who also happen to be industry thought leaders - though they'll likely never admit it).

In this 3-part report, you'll find a variety of input from our expert network.

ABOUT **OUR EXPERTS**

Gord Cooke

President of Building Knowledge Canada

Gord Cooke is a professional engineer and the President of Building Knowledge Canada and Air Solutions. He has expertise in applied building science, energy-efficient housing initiatives, innovative HVAC systems, ventilation, and Indoor Air Quality (IAQ). He runs training for the Heating, Refrigeration and Air Conditioning Institute of Canada (HRAI).

Glenn Mellors

Director of Business Development and Implementation

Glenn Mellors is the Director of Training and Implementation at the ClimateCare Cooperative Corporation and a certified Radon Tester and Mitigator. Born into a plumbing family, he picked up the trade in 1973 before entering the HVAC side of the business in the 80s. While working at Lennox Industries, he was recognized as an outstanding performer and leader. He brings his considerable expertise in HVAC to his role as Director of Training and Implementation for ClimateCare.

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PART 1

HVAC SYSTEMS AND AIR QUALITY

THE EFFICIENCY CONNECTION CENTRAL TO YOUR HOME COMFORT

Like the human body, your heating, ventilation, and cooling (HVAC) system relies on many things working together so you can get the most comfort with the least energy expended.

An HVAC system continuously works behind the scenes to ensure the best possible indoor air quality. But just like your body, you might take your HVAC system for granted and forget to maintain it like you should, even though it's vital to the health of your home.

In some cases, your HVAC system could see problems because of its age. In general, older-generation furnaces and air conditioners are simply not as efficient as modern HVAC equipment.

The average life expectancy of a furnace in our climate is 12 to 15 years. After that, the efficiency starts to drop and repair visits begin to go up. Newer, more efficient furnaces can reach up to 98% efficiency and come with excellent warranties too.

If your unit is getting old, it's a good idea to look at a system upgrade as an ***investment***. Replacing it with a more energy-efficient system that is the appropriate size for your space will use less energy and result in lower costs over time and a good return on investment. If the thought of spending your savings on a new system makes you cringe, there are subscription or monthly payment options that can lessen the blow - some even include annual maintenance and repairs rolled in!

JUST LIKE YOUR CAR, YOU NEED TO CLEAN AND MAINTAIN YOUR HVAC SYSTEM TO KEEP IT OPERATING EFFICIENTLY

Any moving machinery, such as those in a car, have parts that need to be maintained, cleaned, and checked for safety.

Most home comfort systems are used even more than your car. With your family spending much more time at home, they're in OVERDRIVE.

"By cleaning and changing filters and performing an annual inspection and tune-up, you'll be preventing problems before they occur. Think of it as maintaining the brakes before you crash," Glenn Mellors says.

> **"By cleaning and changing filters and performing an annual inspection and tune-up, you'll be preventing problems before they occur."**

HOME DIY MAINTENANCE TIPS

Here's what you can do yourself

1 **Our number one tip is to check your furnace filter**. Now that you're home more often, you're increasing the number of airborne contaminants just by being indoors. Changing filters is a low-cost, high-value way to increase the efficiency of your HVAC system. For example, if you're spending 50% more time at home than you used to, you'll need to change your filters twice as often.

2 **Replace lower-end filters with higher-quality ones that trap more smaller sized contaminants.** Check the MERV (Minimum Efficiency Reporting Value) rating of your filter - the higher the MERV rating[1], the better its ability to filter the air. Your lungs have a MERV 8 rating, so make sure your system is filtering out more than what your lungs can. According to Glenn Mellors, a MERV rating between 10 and 13 hits the sweet spot, although some air filters do go as high as MERV 16.

#1 TIP

(if you only get one take-away from this book)

Check your furnace filter regularly!

Consider purchasing a MERV 14 to 16 to use only during the weeks when seasonal allergies are at their highest. Then change back to a MERV 10-13 for the rest of the year. This will extend the life of your more expensive filter.

3 **Make sure filters fit snugly and are airtight.** Don't try to fit a 4" filter onto a cavity that's supposed to fit a 5". You'll find that the filter will be loose, which defeats the purpose of the filter, as the air that gets through is unfiltered. Closely follow the manufacturer's recommended size.

4 **For your AC, check that there is no vegetation growing on the outside unit** and free it from debris to allow the maximum amount of heat to get out.

5 **Balance or adjust the vents in summer and winter.** In summer, close vents on the lower floor so more air gets directed upstairs instead of down to the basement, which is already cool. Cold air sinks. Warm air rises. In the winter, adjust the vents to direct the heat where you want it.

[1] *What is a MERV rating and why should I care?*
https://www.climatecare.com/blog/what-is-a-merv-rating-and-why-should-i-care/

WHEN TO CALL IN A PROFESSIONAL

If you've checked and replaced your filter and tried some of the strategies above and still find that your heating and cooling system isn't working quite like you'd want it to, then it might be time to call in an expert.

An expert will look at your system holistically and run tests to see if issues exist. For example, ducts often leak air at a rate of 20-30%, significantly impacting the effectiveness of your HVAC system. "As a homeowner, you would likely never know this; only a professional could help you diagnose such an issue," says Gord Cooke.

Many experts offer maintenance plans to ensure your comfort, safety, and efficiency, and help avoid costly emergency repairs. Several companies, ClimateCare included, usually provide annual maintenance on your equipment at a low monthly fee, as well as priority service, no overtime charges, and discounts on parts and labour.

Protect your home comfort system with a monthly maintenance plan.

A professional will be able to tell you if:

- The MERV rating on your filter is too low.
- You need system adjustments or upgrades to offer greater efficiencies in your space.
- The airflow going over the coil is adequate.
- If the fan isn't working properly or your ducts are leaking.
- The HVAC system you're using isn't correctly sized. A larger air conditioner or furnace isn't necessarily better. An oversized or undersized HVAC system will never run at the efficiency it is designed for.
- Heated and cooled air is being properly distributed to ensure air flow throughout the system.
- Air sealing the ductwork is required to control the loss of airflow. For example, if you are funneling hot air to your basement, and your basement is still cold - you could be experiencing unnecessary heat loss due to air escaping your system.
- HVAC zoning would be a solution. For example, in cases where your home has a room that's too hot or too cold, a home office or gym that requires different temperatures, vacant rooms, or family members with different temperature preferences, this type of system customizes heating and cooling by using dampers in the ductwork to regulate and direct air to specific areas of the home. Each zone has its individual thermostat to control temperature, which allows increased comfort and efficiency.
- It's time to clean your air ducts[2]. If you've recently completed major renovations, have a suspected blockage or moved into a new subdivision and the sod has been laid, those are prime times to have your ducts cleaned.

  If you have shedding pets, a good rule of thumb is to have your ducts cleaned approximately every five years.

  Dirt, dust, mould and even mouse droppings accumulate in the cracks and crevices. As dust builds up and mats along the inside of your ducts, the size of the space for air to pass through decreases, allowing less air to pass through the system. Just doing this can extend the life of your air filters. But don't try to do this yourself. Without the proper training and tools, cleaning your ductwork could release contaminants into your home or even damage your HVAC system.

[2] *When to get duct cleaning for your home. http://climatecare.com/blog/get-duct-cleaning-home/*

Here's a quick checklist of some of the warning signs that may indicate whether it's time to repair or replace your HVAC system. If you are experiencing some of these, it's probably time to call in a professional to determine if you need to start budgeting for a new system, or if a repair will do!

Warning Sign Checklist

- ☐ Room difficult to heat or cool (uneven temperature distribution)
- ☐ The home becomes uncomfortably warm before AC turns on
- ☐ The home becomes uncomfortably cold before the heating system turns on
- ☐ Excessive dust in the home
- ☐ Allergy, hayfever or asthma symptoms while at home
- ☐ The home feels muggy and clammy on warm, humid days and nights
- ☐ The home feels dry and drafty on cold, winter days and nights
- ☐ High fuel or electricity bills
- ☐ Excessive, loud noise coming from the HVAC system
- ☐ Dirt or condensation around registers or grills

Before you make decisions, get an expert to evaluate your system's energy performance and advise on whether maintenance and repairs will do the job. If air sealing, attic, wall, or basement insulation is required, you may qualify for government or utility rebates that cut down the cost of installation.

Our ClimateCare experts will also be able to advise you on how to get further rebates for water heaters, boilers or furnaces that need to be replaced with more efficient units.

> **"You may qualify for government or utility rebates that cut down the cost of installation."**

The average Canadian spends about $4000 a year on energy bills[3] including gas and electricity (and that's before our new normal where we spend more time at home than ever before). Your furnace and air conditioner account for the most significant portion of this energy expense, followed closely by the hot water heater. By regularly cleaning and maintaining your equipment, it will stay in good shape all year round, and lead to increased efficiencies that save you money.

If you do need to upgrade, make sure you get the best mix of efficiency and function.

If you feel like you might have an efficiency issue that merits an upgrade, contact your local ClimateCare retailer right away.

Advantages of an efficient HVAC system:

- Lower utility bills
- Better indoor climate control
- Reduced carbon footprint
- Efficient and noise-free operation
- Longer lifespan

[3] *https://www.cer-rec.gc.ca/nrg/ntgrtd/mrkt/snpsht/2016/11-04rgltnmrktcndtn-eng.html?=undefined&wbdisable=true*

PART 2
WHY AIR QUALITY IS SO IMPORTANT
A CLOSER LOOK AT HUMIDITY, VENTILATION, HEPA FILTERS AND RADON TESTING

While many of us might think that the air inside our home is cleaner than the air outside, according to the Environmental Protection Agency (EPA)[4],

> **"Your indoor air could have two to five times as many pollutants as the air outside has!"**

As we're busy cleaning and sanitizing and wearing face masks, surely we also need to stay vigilant about the air quality in our homes. It's where we spend the majority of our time, even during the *old normal.*

While air quality has always been important to builders, designers and HVAC professionals, with the increased knowledge that viruses and bacteria can be transmitted through the air, homeowners are becoming increasingly aware of the quality of their indoor air and looking for ways to make improvements.

Pollutants such as dust, pet dander, fumes created by paint, cleaning products and fragrances, mould, and bacteria can exacerbate asthma, allergies or respiratory illnesses.

Fortunately, there are things you can do to improve the quality of the air now, and in the future.

[4]Indoor Air Quality: What are the trends in indoor air quality and their effects on human health? Environmental Protection Agency. https://www.epa.gov/report-environment/indoor-air-quality

TAKE CONTROL OVER HUMIDITY

The humidity levels in your home affect your health and the health of your hardwood floors, artwork and furnishings.

Many factors contribute to increased levels of humidity, especially now that we're spending more time at home. Typical morning and evening rush hours are now expanded to a stream of activities throughout the day. When you leave your home for hours at a stretch, you give the AC a chance to dehumidify. In the current scenario, you're adding to its workload significantly when you leave it running continuously.

People today are showering, cooking and doing laundry at different times of the day, exercising at home, and even opening and closing the doors more often, increasing humidity levels in the home.

During the summer, we want to aim for 45-55% relative humidity in our homes. If the humidity is higher than that, we would need to set our air conditioner at a lower temperature to combat that humidity. That is a lot of extra work for your cooling system.

UNDERSTANDING HUMIDITY AND TEMPERATURE

Home comfort levels are based not just on temperature, but on a combination of humidity and temperature. At optimum humidity, it takes less heat for us to feel warm and comfortable when it's cold. It also takes less cooling to feel cool and comfortable when it's hot. Improper levels of humidity can lead to issues such as sinusitis, breathing problems or asthma, and even contribute to colds and flus. **While there isn't a perfect temperature (because we all feel heat and cold differently), there is an ideal level of humidity we can strive for.**

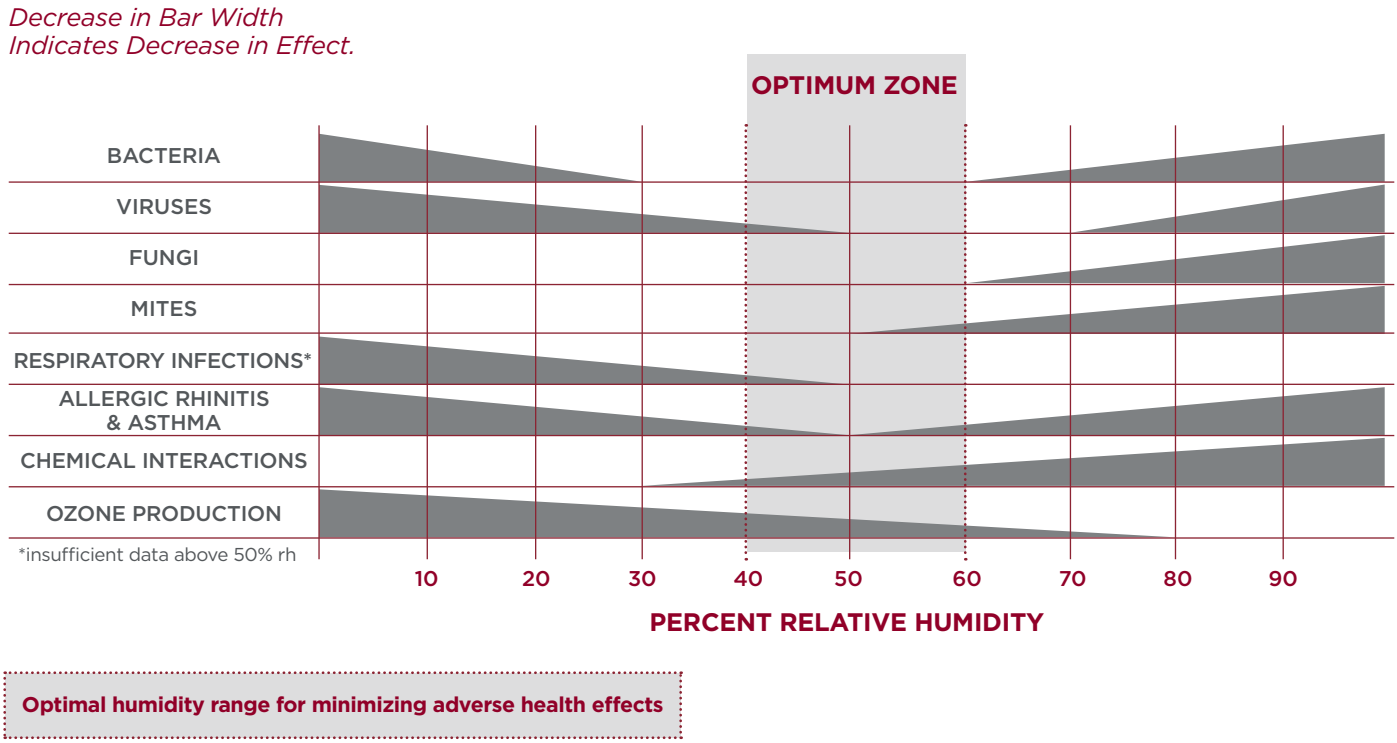
The Sterling Chart[5], also known as the Relative Humidity Chart, was first developed in 1985. It demonstrates the optimum relative humidity for health and well-being. It shows that in winter (when the air becomes very dry), a healthy home should be between 40 – 60 percent relative humidity to combat production of bacterias and viruses that lead to colds, flu, dry eyes or itchy and cracked skin.

Gord Cooke recommends the following target ranges to take control of your humidity and keep the health of your home at peak performance:

- in the summer, when air is moist and humid, target **50 - 55%** relative humidity.
- in the winter, when air is dry, target **30 - 40%** relative humidity.

So, let's discuss how we can get there.

THE STERLING CHART



[5]*Humidity and Occupants. What the latest in humidity research means for you. http://www.ahrinet.org/App_Content/ahri/files/Humidity_Occupants_Presentation.pdf*

WHAT CAN YOU DO TO COMBAT HIGHER HUMIDITY LEVELS

1 **Run an old-school dehumidifier**

The quickest and easiest way to control moisture in your home is to run an old-school portable dehumidifier. While these need to be emptied regularly and can be costly to run, a portable dehumidifier will have an immediate impact on the cooling of your home. It is an extremely effective stop-gap measure to control humidity, allowing you to keep your temperature a bit higher, which saves on the overall energy cost of your AC. If your humidity is under control, you can set your thermostat a little higher and still feel comfortable.

2 **Install a whole-home dehumidifier**

A whole-home dehumidifier automatically senses the humidity levels in your home and regulates the moisture levels as required. Pollutants in the air are removed or diluted as a result of fresh air ventilation. It works together with your entire home comfort system, or on its own to reduce the load on your home air conditioner, making the whole system more effective and efficient. When the humidity inside your home is not regulated properly in the summer, it can be just as hot and muggy indoors as it is outdoors.

"Portable dehumidifiers have a service life of 3-4 years, and they are expensive to operate. Installing a whole-home dehumidifier could pay for itself in 4-5 years," Gord explains.

A whole-home dehumidifier is four times more efficient than a portable, stand-alone dehumidifier. It will help reduce the impact of bacteria and airborne viruses spreading throughout the entire home, and is the most cost-effective solution over time.

WHEN TO CALL IN AN EXPERT

It can be hard to tell if there is humidity and moisture in your home. That's why it's helpful to have the right support to help your family feel comfortable and healthy all year round.

If water is collecting in the pan of the AC, it's usually a sign of humidity - and time to call in your expert! A professional can come in and tell you if your AC is doing enough to control moisture. The HVAC technician will know and understand humidity control and can measure the temperature coming off the AC to see if it's enough to cool your house in summer. They will check the refrigerant and air flows and adjust the fan speed to match the performance of your AC to ensure better efficiency and lower humidity.

"By lowering your relative humidity," says Gord, "even at higher temperatures, you will feel comfortable and enjoy overall net savings because your AC doesn't need to work as hard." Different manufacturers have settings that you can change. It's important that it be set up correctly and not automatically to the default setting.

A question to ask your AC installer is, "Can you please check the temperature drop across the coil and adjust the blower speed accordingly?" This will encourage them to adjust settings for your particular home.

An expert can also advise if a whole-home dehumidifier would be beneficial or if a portable dehumidifier will fit the bill.

VENTILATION

Ventilation is an essential strategy when it comes to improving the quality of air inside our homes.

Ventilation is the intentional introduction of fresh air. According to Health Canada[6] and the Canada Mortgage and Housing Corporation (CMHC)[7], ventilation is needed to direct fresh air into the home to improve air quality and increase your home comfort. Without enough ventilation in your space, you will eventually experience discomfort issues and even health problems.

> **"Fresh air is vital to human health."**
> **— Gord Cooke**

On the one hand, we want to seal up cracks and ducts to ensure we don't lose any heat or cooled air to the outside. On the other hand, as we improve insulation and air sealing to make our homes thermally efficient, that also prevents fresh air from coming in. That is why it's so important to find the right balance between energy efficiency and ventilation.

When too much outside air is coming in, it reduces the efficiency of your HVAC system and drives up your energy bills. However, not enough fresh air coming in makes your space stuffy and traps undesirable contaminants, odours and moisture.

So, what can a homeowner do?

[6]Health Canada, Government of Canada. https://www.canada.ca/en/health-canada.html
[7]Canada Mortgage and Housing Corporation. https://www.cmhc-schl.gc.ca/

WHAT YOU CAN DO TO OPTIMIZE VENTILATION

There are several ways to manage the amount of fresh air in your home. Gord Cooke shares three levels of ventilation, including natural and mechanical options. Here's how:

1. **Open your windows!** Today, many homeowners keep their windows closed due to noise, pollution, dust, cold and humidity. But opening your windows on nicer days is an easy way to bring fresh air into your home – and the most cost-effective!
2. **Run a bathroom fan twice per day, 4 hours at a time, to get rid of stale, moist air.** If your bathroom fan is loud, you might consider upgrading to a new model. Be sure the fan grill is cleaned regularly.
3. **Install a Heat Recovery Ventilator (HRV) or Energy Recovery Ventilator (ERV).** HRVs and ERVs supply air to the home and exhaust stale air while recovering energy from the exhaust air in the process. An HRV transfers heat while an ERV transfers both heat and moisture. They both work to provide a fresh, healthy indoor environment when the filters are cleaned, and the ventilation system is properly maintained. They are typically sized based on the number of rooms and occupants of the home. Your HVAC specialist can help you determine which size and model is right for you.

> **"Opening your windows is the traditional way to ventilate your home, and it's easy, fast and inexpensive."**
>
> **— Gord Cooke**

USE A HEPA FILTER TO REMOVE INDOOR CONTAMINANTS

HEPA (High-Efficiency Particulate Arrestor) filters can improve air quality by reducing debris, allergens, dust, bacteria, mould spores and some viruses from the air. HEPA filters can remove particulates from the air as small as 0.1 microns.

While a HEPA filter can reduce the number of viruses in your home, it can't eliminate them, which is why they should be used together with some of the other strategies we've discussed to improve air quality. Whether you buy a HEPA air purifier, furnace filter or HEPA vacuum, they must be cleaned regularly to keep doing their job correctly.

WHEN DO YOU NEED TO TEST AIR QUALITY?

If you're wondering whether you can DIY test the air quality in your home or whether you should call a professional, in most cases, the answer is to call a professional. You can, however, measure your own humidity levels using a good hygrometer.

The cost of air quality testing equipment is high, which prevents most people from doing their own testing. Meanwhile, getting a professional to record air quality over a period of time, which allows you to see spikes in activity that decrease air quality (such as home exercise, cooking, showering), is likely not as expensive as you may think.

RADON LEVELS

All Canadian homes have some levels of radon, but at high levels, radon becomes dangerous. Radon is the second highest cause of lung cancer in Canada[8] and the US[9]. An invisible radioactive gas that comes from the natural breakdown of uranium, radon is found in soil and rock everywhere in the earth's crust, which is why it can be found in almost all homes in Canada. Concentrations of radon are usually higher in areas where there is a higher amount of uranium in underlying rock and soil.

> **"The only way to be sure of the radon level in your home is to test for it."**
>
> **— Glenn Mellors,**
> ***Certified Radon Tester and Mitigator***

According to Glenn, radon prevention isn't as expensive as one might think. You can buy a home DIY test kit at your local hardware store to test the levels of radon in your house. If you find that the amount of radon is over 200bq/m3, then call a professional to test and confirm these levels. "Don't go out and buy a mitigation system before calling in a professional to test," Glenn warns. "Sometimes, the home test kits show a higher than normal result that is inaccurate. The cost of the professional test is usually included in the installation of a mitigation system too."

Other ways to prevent radon, according to Health Canada[10], are to:

- ✓ Increase home ventilation – reducing radon by 25-50%
- ✓ Seal cracks – lowers radon by 13%

[8] *Take action on Radon, Government of Canada. https://www.canada.ca/content/dam/hc-sc/migration/hc-sc/ewh-semt/alt_formats/pdf/pubs/radiation/take-action-on-radon-occupe-toi/radon-infographic-eng.pdf*
[9] *Health risks of Radon, United States Environmental Protection Agency. https://www.epa.gov/radon/health-risk-radon*
[10] *Take action on Radon, Government of Canada. https://www.canada.ca/content/dam/hc-sc/migration/hc-sc/ewh-semt/alt_formats/pdf/pubs/radiation/take-action-on-radon-occupe-toi/radon-infographic-eng.pdf*

BETTER AIR QUALITY FOR BETTER HEALTH

Now that you're spending more time at home, there's never been a better time to look at air quality.

Improving your air quality means breathing the healthiest possible air, which can result in improved wellness.

"Most people have experienced impaired health their entire life, which is why you might not notice when you gradually improve your indoor air quality. But if it's taken away, you'll really notice the difference," says Glenn Mellors.

While you're exposed to other people's germs, dirt and dust at the office, your home is where you can control and create the environment you're in. But with the new normal, you might be adding to the level of humidity in the house just by your activities throughout the day. An expert can see how these spikes in activity affect your humidity levels at different times in the day and advise on whether a whole-home dehumidifier is a solution.

The key is to be in control of your home comfort. Opening a window, using your bathroom fan or an HRV/ERV are ways that you can allow better ventilation and decrease humidity for improved air quality - without letting contaminants into your sanctuary. A HEPA filter will reduce any pollutants from outdoors or your daily indoor activity.

Ultimately, your best bet for improved air quality and health is to combine some DIY strategies and equipment overhauls with a home audit to ensure your investment in your home comfort pays off in every possible way.

PART 3

DIY TIPS AND TRICKS TO REDUCE YOUR ENERGY BILLS

Information on how to reduce your energy consumption and bills has been around since the 70s, and while we might know what to do, we're still not doing it! With more people at home needing to be comfortable at all times of the day, cooking for the whole family, entertaining and educating children - TVs, laptops, kitchen appliances, and HVAC systems are working overtime!

As you use more energy, your energy bill will start creeping up, and up and up....

With small, easy-to-implement steps, you can make a significant impact on your energy consumption.

Here are some of our experts' top tips to cut the costs when spending more time at home AND have a positive impact on the environment.

AVOID PEAK TIMES (AND PRICES)*

The price of electricity is lower at night[11], on the weekends and on statutory holidays when overall demand is lowest. While you might be getting a break on peak time rates at the moment, we don't know how long that will last. Therefore, it's a good practice to avoid using your appliances during heavier peak times. For example, it's cheaper to do laundry on the weekend than on a weekday!

To avoid peak times, you need to know when people are using the most electricity.

In winter, it's usually in the morning, when everyone wakes up, takes a shower, makes coffee and so on, and in the evening, when you're making dinner, watching TV and taking a shower or bath.

During these two peak-periods where electricity demand is highest, its cost is the highest.

In the winter months (November to April), you will likely pay:

- ☐ the highest price between 7am to 11am and 5pm to 7pm
- ☐ a lower price between 11am and 5pm
- ☐ the lowest price between 7pm and 7am

In summer, electricity use peaks in the afternoon when people run their air conditioners at the highest setting.

In the summer months (May to October), you will likely pay:

- ☐ the highest price between 11am and 5pm
- ☐ a lower price between 7am to 11am and 5pm to 7pm
- ☐ the lowest price between 7pm and 7am

While these patterns might change as businesses start working remotely and employees adjust their schedules to become more flexible or work from home, peak usage will most likely be the same. So, with just minor adjustments to change your energy consumption outside of peak hours, you can save a significant amount of energy!

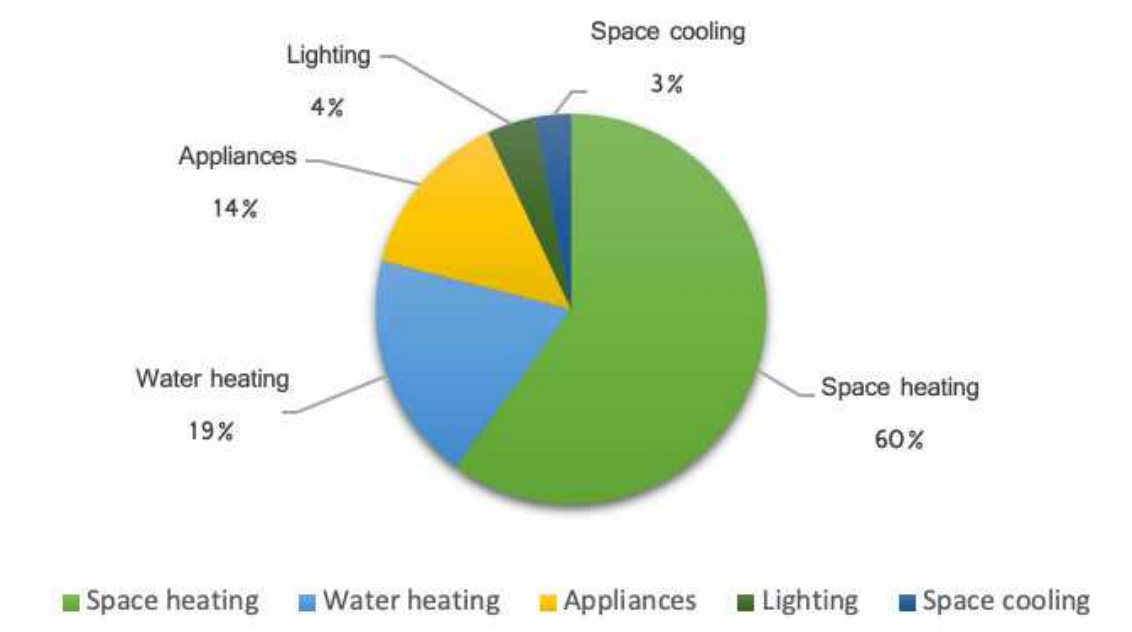
**The electricity use times shown above are based on the Ontario Energy Board's website. Each region in Canada has its peak times and rates, so make sure to check with your local provider to get the peak rates that apply to your area.*

[11] *How to use less electricity at home. Government of Ontario. https://www.ontario.ca/page/how-use-less-electricity-home*

UNDERSTANDING ENERGY USAGE AND PREVENTING UNNECESSARY LOSSES

Some appliances use more power than others. Often, they use power even when they're switched off, drawing what is known as 'phantom power'. According to ENERGY STAR®[12], the average U.S. household spends more than $100 each year to power devices that are turned off. The below chart shows the top 5 energy users in your home[13] and how much of your energy cost they use on average[14].

TOP 5 ENERGY-GUZZLING APPLIANCES IN CANADA



If you think that the space cooling number seems low because your summer electricity bills seem so high - here is something to consider. There are only 600 cooling hours in the year compared to 2580 heating hours. These numbers are, of course, approximated, but an interesting comparison!

[12] *Energy Star home tips. Energy Star. https://www.energystar.gov/products/energy_star_home_tips*
[13] *Residential appliance usage. Burlington Hydro. https://www.burlingtonhydro.com/powertoconserve/residential/appliance-usage.html*
[14] *Appliances for residential use. Government of Canada https://www.nrcan.gc.ca/energy-efficiency/energy-efficiency-products/product-information/appliances-residential-use/13630*

According to Burlington Hydro, the average monthly expenses in Ontario[15] are …

1. Space heating = $120-250 on electricity and natural gas to heat
2. Water heating (family of four) = $80
3. Washer and dryer = $117
4. Oven/hot plates = $79
5. Refrigerator and freezer = $46
6. Hair dryer = $38
7. Garage opener = $37
8. Blender = $22
9. Computer and printer = $14
10. Dishwasher = $2
11. Lighting:
    - Single 100 W lamp = $3
    - Single 60 W lamp = $2
    - Single fluorescent bulb 13 W = $0.50
12. Space cooling (central AC) = $384

These numbers have been rounded and will vary by region[16]. Not everyone has the same breakdown in fuel, which can account for widely varying heating costs. For example, households will have different annual bills depending on whether they are heated with natural gas (significantly cheaper), electricity, propane or heating oil (one of the most costly ways to heat your home).

[15]Appliances for residential use. Government of Canada https://www.nrcan.gc.ca/energy-efficiency/energy-efficiency-products/product-information/appliances-residential-use/13630
[16]Residential appliance usage. Burlington Hydro. https://www.burlingtonhydro.com/powertoconserve/residential/appliance-usage.html

TOP 6 WAYS TO FIGHT PHANTOM ENERGY[17]

1. PLUG ELECTRONIC DEVICES INTO POWER STRIPS WITH TIMERS

Plug electronic devices into power strips with timers to shut them off automatically. You can also use timers for small kitchen appliances like your coffee machine and kettle, so they are only on when you typically use them.

2. GROUP APPLIANCES AND ELECTRONICS

Group appliances and electronics that are used together by plugging them into the same power bar (i.e., coffee maker, microwave and toaster; TV and game console; computer, monitor and printer, etc.). This allows you to easily turn them off and stop them from drawing energy when not in use - like the microwave that draws power just to keep the clock ticking.

3. PULL THE PLUG

Unplug laptops, desktops, cell phone and tablet chargers once devices have finished charging. Up to 50% of the electricity they draw is lost as heat. Laptops and computers left on standby overnight draw power, so you can save up to $50 a year[18] just by turning off your laptop or computer overnight. You can do the same for power tools, vacuums, hairdryers, curling irons or any other appliance that is drawing power.

4. USE YOUR COMPUTER WISELY

Disable computer screen savers, as they can use up to twice as much energy. Instead, activate "sleep" mode or shutdown. According to Marketwatch[19], adjusting your computer to 'sleep' mode after 30 minutes or less, disabling screensavers and setting the monitor to shut down after 10 to 15 minutes can save up to $40 per year.

5. USE ENERGY STAR® PRODUCTS

When purchasing new appliances or electronics, use ENERGY STAR products as they have built-in power-saving features that save energy such as low standby energy usage.

6. RENOVATING OR BUILDING A NEW HOUSE?

Make sure you install switch outlets that allow you to turn off a group of electronics with the simple flick of a switch.

[17]Phantom Power. Hydro One. https://www.hydroone.com/saving-money-and-energy/residential/tips-and-tools/phantom-power
[18]Will turning off my monitor save energy? https://sciencing.com/turning-off-monitor-save-energy-2847.html
[19]These 11 vampire appliances may waste $250 dollars a year. https://www.marketwatch.com/story/these-11-vampire-appliances-may-waste-250-a-year-2014-11-04

Quick tips to save energy:

- Set your monitor to go to 'sleep' after 5 minutes of inactivity
- Keep your computer's air vents unobstructed and clear of clutter
- Switch your bluetooth and wi-fi off when you're not using them (constantly searching for a signal uses a lot of power)
- Turn your computer, printer, and any other work-related appliances off at the end of the day (use a power bar to make this easier!)
- Try purchasing new electronics with a higher energy efficiency rating as this will consume less electricity.

GET SMART ABOUT HEAT

With 60% of Canada's residential energy used to heat spaces[20], your heating bills are responsible for more than 60 percent of your energy costs. One of the easiest ways to decrease your energy usage is to adjust your household temperature for when you need it the most – or the least. You can do this manually by turning your thermostat up or down when you're out of the house or asleep.

A smart thermostat[21] lets you set the temperature that you want your home to be at and then figures out how to save you energy. Ecobee — the manufacturer of several smart thermostats — has conducted research to show that their thermostats can reduce your energy usage by up to 26 percent. For example, when you leave the house, it will automatically turn your home's temperature down to use less energy.

Before you arrive back home, it will turn your furnace back on to warm up the space so that you'll be comfortable the moment you walk in the door. A smart thermostat thus saves you money — by turning down your furnace (or turning your air conditioner up) when you're not around. You can also do this remotely from your smartphone, tablet or computer. It can even remember your temperature setting habits to generate a schedule automatically and avoid peak hours.

[20] *Energy efficiency trends in Canada. Government of Canada. https://www.nrcan.gc.ca/energy/publications/19030*
[21] *Is it time for a smart thermostat? http://dev.climatecare.com/blog/is-it-time-for-a-smart-thermostat/*

WRAP UP YOUR WATER HEATER PIPING AND REDUCE STANDBY LOSSES

Hot water is the second-largest expense in your home and can account for a third of your energy bills[22]. Most residential water heaters are 40 to 60 gallon tanks, which should be set to the proper temperature of 120C. If you need a new water heater, always invest in an ENERGY STAR® certified one or tankless water heater.

You can also slow the rate of 'standby' losses that occur when the preheated water tank loses heat in two ways:

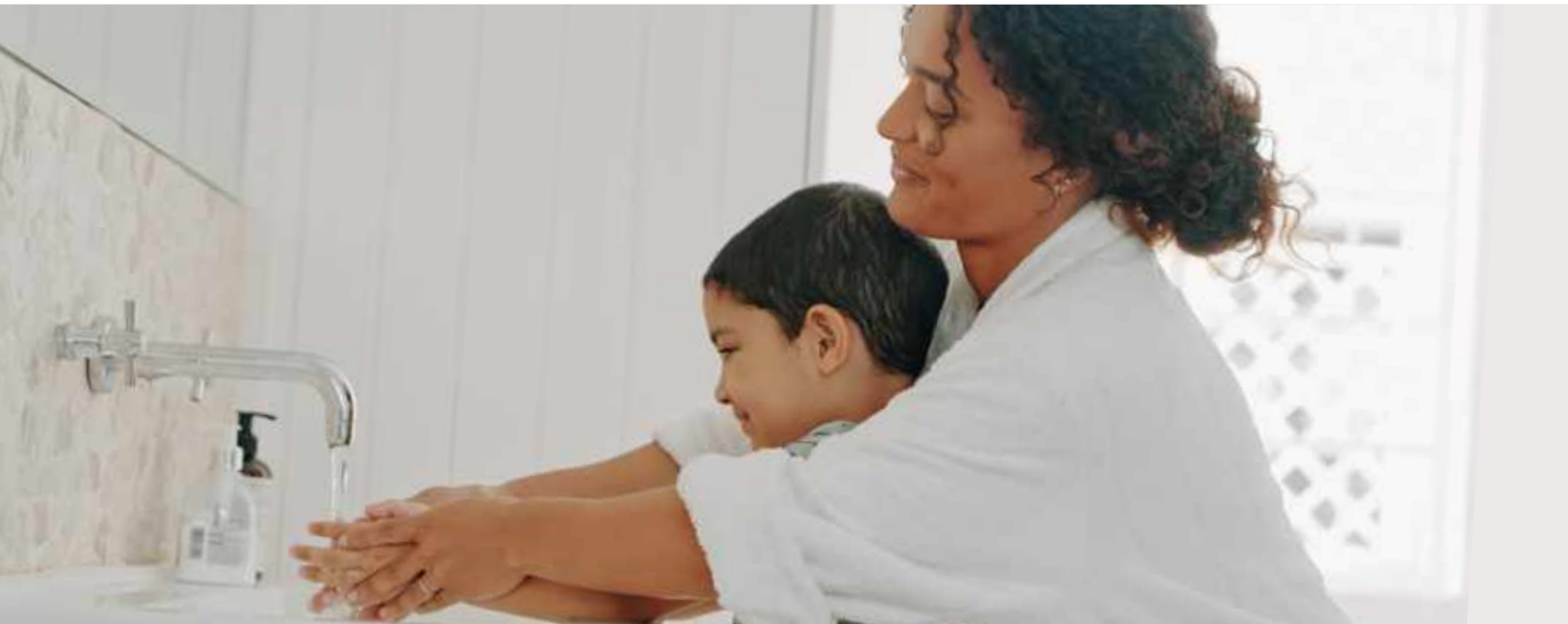
In the past, it was recommended that water tanks be wrapped to better insulate them. Today, all tanks are very well insulated. Consider wrapping your hot water piping instead, to help keep the water inside warmer for longer and reduce your energy bill.

Another great way to save on standby losses and energy bills is to switch off the water heater if you go away.

INVEST IN A TANKLESS WATER HEATER FOR ON-DEMAND HOT WATER

Traditional tanked water heaters are designed to have hot water ready when you need it. But, you don't need hot water on standby all day and night, just like you wouldn't keep your car running, so it's always ready to go. A tankless water heater[23], which heats flowing water without a tank, delivers hot water only when you need it, eliminating standby losses. While it might be a more expensive upfront cost to install, it usually qualifies for rebates, has a much longer lifespan, and will reduce your energy bill over time. They're also about the size of a suitcase, mounted on a wall and best of all, you never run out of hot water.

[22]Sustainability in your home. http://www.ofbrc.com.au/documents/Sustainabilityinthehome.pdf
[23]Domestic water heating. Energy Education Canada. https://energyeducation.ca/encyclopedia/Domestic_water_heating



CHANGE YOUR LAUNDRY HABITS

You can also save on energy costs when doing laundry. Wash clothes in cold water and use the shortest cycle available for up to a 90% reduction[24] in your appliance's energy use. By waiting till you have a full load of clothes, you can also cut energy consumption. Try hanging your clothes outside or on a drying rack (when the heat's on inside) instead of using the dryer, as the dryer is one of the most energy-intensive household appliances[25].

NATURALLY INSULATE YOUR HOME

To keep your home naturally insulated and reduce your energy bills, you can keep your drapes open during the day to let the sun in and close them when the sun goes down to keep the heat in during winter. In summer, do the opposite and use blackout curtains if necessary.

"Closing your drapes to keep the hot summer sun out is a very effective way to decrease your cooling costs," according to Glenn Mellors.

If it gets extremely cold, consider investing in heavier drapes to keep the room warm.

You can also run ceiling fans clockwise in the winter to drive warmer air at the ceiling level back down again (they'll push warm air down instead of cold air). In summer, run them counterclockwise to help lift the cooler air into the room.

[24]How to use less electricity at home. Ontario Government. https://www.ontario.ca/page/how-use-less-electricity-home#section-5
[25]Residential appliance usage. Burlington Hydro. https://www.burlingtonhydro.com/powertoconserve/residential/appliance-usage.html

CONCLUSION

With small easy-to-do-fixes around the house, clear instructions for when you need to call in an expert and DIY tips and tricks to reduce your energy consumption, you can enjoy increased home comfort and air quality and lower your energy bills. Whether it's time to repair or upgrade, improve ventilation, take control over humidity or test your indoor air quality, this guide makes a home comfort overhaul easier than ever before.

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