The Homeowner's Conversational Guide to Electrical Load Management

CONSUMER GUIDE

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Introduction

Electrifying your home is an important step in reducing greenhouse gas emissions and improving the overall energy efficiency of a home. Electrification may require an electrical service upgrade; however, there are ways to avoid these potentially costly upgrades. This guide covers key concepts and provides advice on what to ask your electrician to help you avoid electrical service upgrades.

If you want more in-depth information than what is contained in this guide, please check out the companion document Homeowner's Guide to Electrical Load Management!

Step 1: Understand Electrical Service Upgrades

All of the electrical devices that consume electricity in your home are part of your home's electrical load. The total electrical load of a home varies based on how many devices are consuming electricity at the same time. An electrical service upgrade is the term for increasing the maximum electrical load that your home can support at once.

An electrical service upgrade is completed by a licensed electrician and includes permits and fees from both an electrician and your utility provider. A properly sized panel ensures enough power is available to keep your home running. An overloaded panel can damage your home's wiring infrastructure and is dangerous. A load management plan can help ensure your home's electrical load does not exceed what your electrical service can support.

Electrical service upgrade costs

In an average-sized home, replacing a 100 Amp electrical service with a 200 Amp service can cost approximately $3,500 to $7,000 for the panel (as of 2023) plus applicable fees from your electrical utility. If a private power pole or underground service is required the costs start at $8,000. There may be incentives available; check municipal, provincial, and federal programs for current offers.

Step 2: Hire an Electrician

It is important to get professional advice when you are considering upgrading your electrical service. An electrician can determine if an upgrade is actually needed or if you already have sufficient capacity to proceed with your retrofit plans.

Technical Safety BC maintains a list of licensed electricians; you can find who is available in your area at technicalsafetybc.ca/regulatory-resources/find-a-licensedcontractor.

Working with electricity is dangerous and can cause serious harm and/or death. Homeowners should contact a professional electrician for any servicing or maintenance of their electrical panel or equipment, or when adding an additional load to their panel.

When hiring an electrician, follow these tips:

- **Tell the electrician that you are interested in exploring options for adding electrical load without having to upgrade your home's existing electricity service early in the process.** This helps set the objective of the project and will help quickly identify companies that do not want to have this discussion with you.
- **Use word-of-mouth recommendations.** Get recommendations from trusted friends or family.
- **Check online reviews.** Online reviews can help narrow your search for an electrician, but be wary of fake reviews. Click this link or check out the Better Business Bureau's "How to spot a fake review" article to learn more.
- **Cheapest is not always best.** Don't always go for the lowest quote without doing your research and asking questions about the electrician's other work, speaking with their references, and comparing their specific recommendations for your home.
- **Receive multiple quotes.** The electrical service is a vital part of your home. Taking the time to ask questions and receive multiple quotes will ultimately help you make the most informed decision.
- **Work with a licensed professional.**

Ask your electrician these questions:

- Are you familiar with and comfortable with using Technical Safety BC's Information Bulletin: Demand Factors and Use of Rule 8-106 for Single Dwellings, which provides guidance on taking a historical load approach for assessing my home's current electrical load?
- Are you licensed?
- Are you bonded and insured?
- Will you be the one completing the work?
- Do you have any references I can call?
- Which permits do I need?
- Once your electrician has assessed your home's electrical load: Can I use load management to avoid an electric service upgrade for my home and if not, why?

Watch out for red flags

- All electricians must include their business license number anywhere their business name appears, including their website and advertisements. If you do not see this number, they may not be licensed. A license is different than a Red Seal certification. A Red Seal is proof that a tradesperson has met national standards for their trade. A business license is the formal agreement that allows a business to operate.
- If an electrician says you do not need a permit or asks you to obtain the electrical permit for them, it likely means they are not licensed and can't obtain their own permit.
- If an electrician asks to be paid in cash and is unwilling to provide a receipt, they may not be setting up proper permits.
- If your electrician quickly makes a decision on what your home needs after only glancing at your panel, they may not be taking your home's full situation into account. Be sure to ask follow-up questions and get multiple quotes.

Step 3: Make a Load Management Plan with your Electrician

Ask your electrician to assess your home's electrical load

Before you proceed with any changes to your electrical service, ask your electrician to assess your electrical consumption and electrical loads to see if you already have the capacity to complete your planned retrofits. Refer your electrician to the Technical Safety BC's Information Bulletin: Demand Factors and Use of Rule 8-106 for Single Dwellings for guidance on how to do so.

Once this assessment is complete, you can proceed with planning how to optimize your existing electrical service to accommodate all desired loads. This conversation may include removing some existing or planned electrical loads from the home or using load management devices (see below for explanation). This reference chart shows some examples of electrical loads to discuss with your electrician as you plan what loads you expect to have in your home. Note that your load sizes may vary from the examples, check your product manual, information plate or sticker to determine its load.

Heat pump	**20-60 Amps**
Electric baseboard	**20 Amps each**
Heat pump water heater	**5-20 Amps**
Lightbulbs (40 bulbs)	**12-36 Amps**
Hot tub & sauna	**12-45 Amps each**
Electric dishwasher & dryer	**10-30 Amps each**
Electric induction stove	**8.5-50 Amps**
Electric outdoor space heater	**6-25 Amps**
Electric fireplace	**2-12.5 Amps**
EV Charger Level 1	**16-20 Amp**
EV Charger Level 2	**20-60 Amps**

Professionals Recommend

- Ask your electrician to assess your electrical loads using the Technical Safety BC Information Bulletin: Demand Factors and Use of Rule 8-106 for Single Dwellings.
- Discuss load sharing opportunities with your electrician early in the planning process such as a device that can share power between your electrical vehicle charger and your dryer or stove.
- Look for ENERGY STAR® ratings for major appliances like stoves, dryers, and water heaters and choose more efficient options.
- **Get a cold climate heat pump**; they often don't require a backup heating system that would otherwise take up panel capacity.
- Consider using a level-1 EV charger instead of a level-2 charger to reduce overall power usage.

Ask about ways to reduce your electrical load

A good place to start is load shedding, which involves removing or reducing electrical loads to free up space for new loads. A good example of load shedding is removing some baseboards when adding a heat pump since the heat pump will now be providing the heat. First steps can include:

- Before installing a new heating system, improve your home's building envelope by adding insulation, air sealing, and upgrading windows/doors to minimize the size of the electrical heating system you will need.
- Choose a heat pump water heater or dryer instead of a standard electric water heater or dryer. Heat pump water heaters use 2-3 times less electricity than a standard electric water heater.
- Avoid oversizing your electrical vehicle charger. If you commute less than 65 kilometers in a workday, a standard Level 1 EV charger is typically suitable.
- Also consider eliminating loads that are never used.

Ask about using load management technology

Talk to your electrician about using load sharing technologies in your home. These technologies generally involve prioritizing the electrical equipment in your home so that secondary loads (like an EV charger or a hot tub) automatically turn off during times of high electricity demand, such as when cooking with an electric stove or doing laundry. Load sharing devices (sometimes called energy management devices) can be great solutions for adding an additional load that cannot be accommodated by load shedding and efficiency measures alone. For example, you can consider using a load sharing technology to connect your EV charger to the same circuit as a dryer to ensure they never run concurrently, freeing up electrical capacity. There are both hard-wired and plug-in options available, ask your electrician for details. Devices to consider may include Branch Circuit Sharing, Branch Circuit Switching, and Load Pausing devices.

Examples of Load Sharing:

Primary Loads (must run, but run infrequently)	**Secondary Loads** (can usually be shut down for an hour or so without inconvenience)
Electric Stove/Oven	Electric Vehicle Charger
Electric Dryer	Tanked Electric Water Heater

Step 4: Implement the Load Management Plan

Work with your electrician to implement the plan by reducing your electrical load and installing appropriate load sharing devices in addition to any other energy efficient upgrades you are planning.

Step 5: Access Rebates and Offers

Check for incentives from your electricity utility, local municipality, provincial programs, or federal offers. Make sure you apply within deadlines. Check BetterHomesBC.ca for rebate information in British Columbia.

Looking for more information?

Read the companion document *Homeowner's Guide to Electrical Load Management* here.

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Disclaimer

This guide does not apply to multi-family or strata-titled properties in BC. Strata corporations in BC with 5 units or more must have an electrical planning report completed. It is recommended to complete this report before making electrical upgrades, conversions, or additions to ensure sufficient electrical capacity for the community. Electrical services in strata corporations may be common property and require the consent of the strata corporation before proceeding with upgrades such as the installation of EV charging stations or heat pumps.

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