

NEW BRUNSWICK ELECTRICAL

Panels & Breakers

Panel upgrades, circuit breakers, fuses, and service capacity

15 Expert Answers from Electric IQ

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What are the panel grounding requirements in NB?

Panel grounding in New Brunswick must follow strict Canadian Electrical Code requirements enforced by TSANB, including proper grounding electrode connections, bonding of all metal components, and separation of neutral and ground conductors.

The **grounding electrode system** is the foundation of electrical safety in your home. In New Brunswick, the CEC requires connection to at least one grounding electrode - typically a ground rod driven at least 2.4 meters (8 feet) into the earth, or connection to a metal water service pipe where it enters the building. The grounding electrode conductor must be sized according to your service - for a typical 200A residential service, this means a minimum #4 AWG copper conductor.

Bonding requirements are equally critical for safety. All metal components in and around the electrical panel must be bonded together, including the panel enclosure, neutral bar, and any metallic raceways or cable armor. The main bonding jumper connects the neutral bar to the panel enclosure, but this connection should only exist at the main panel - never in subpanels. In subpanels, the neutral and ground bars must remain separate, with grounds connected to the panel enclosure and neutrals isolated from it.

Ground and neutral separation is a common code violation TSANB inspectors catch. At the main panel, grounds and neutrals connect to the same bar (with the main bonding jumper). However, in any subpanel, these must be kept separate. Mixing them in subpanels can create dangerous current flow on grounding conductors and metal components.

The **grounding conductor sizing** follows CEC Table 17 based on your service amperage. For 100A service, minimum #8 AWG copper; for 200A service, minimum #4 AWG copper. These conductors must be continuous - no splices allowed except with approved methods.

TSANB inspection requirements mean any panel work involving grounding modifications needs a permit and inspection. Inspectors specifically check grounding electrode connections, proper bonding, and ground/neutral separation. Improper grounding is a serious safety hazard that can prevent proper operation of breakers and create electrocution risks.

Special considerations for New Brunswick include our maritime climate and soil conditions. Coastal areas may require additional corrosion protection for grounding electrodes, and our freeze-thaw cycles can affect ground rod connections over time. Some older homes may have grounding through metal water pipes that have since been replaced with plastic - these systems need updating to current code.

If you're experiencing electrical issues or planning panel work, proper grounding is non-negotiable for safety. TSANB requirements may vary based on your specific installation - confirm details with your licensed electrician who can ensure your grounding system meets current code requirements.

Q2

What are the signs of overloaded circuits in an older New Brunswick home?

Overloaded circuits are one of the most common electrical issues in older New Brunswick homes — especially those built before the 1980s that weren't designed for today's electrical demands.

Warning signs of circuit overload:

- **Breakers trip frequently** — If you're resetting the same breaker regularly, that circuit is carrying more load than it's rated for. This is the breaker doing its job — never replace it with a higher-rated breaker as a "fix"
- **Lights dim when appliances start** — If your kitchen lights dim when the microwave runs, or bathroom lights dim when the hair dryer starts, those circuits are overloaded or the panel is undersized
- **Warm or discoloured outlet covers** — Feel your outlet and switch plates. Warmth indicates excessive current flow through connections. Discolouration or melting is an emergency — cut power immediately
- **Buzzing from outlets or switches** — Electrical connections under heavy load can buzz. This usually means loose connections being stressed by high current
- **Extension cords as permanent wiring** — If you rely on power bars and extension cords because there aren't enough outlets, you're likely overloading the existing circuits
- **Fuses blow repeatedly** — In older NB homes still running fuse panels, repeatedly replacing fuses is a clear overload sign. Never use a higher-rated fuse — this removes the overcurrent protection and creates a fire hazard
- **Burning smell** — An acrid, plasticky smell from outlets or the panel is an emergency. This means wire insulation is overheating

Why older NB homes are particularly vulnerable:

- **Undersized panels:** Many 1950s-1970s NB homes have 60-amp or 100-amp panels that served the original load but can't handle modern appliances, electronics, and electric baseboard heat

- **Shared circuits:** Older wiring often has one circuit serving an entire floor. Today's code requires separate circuits for kitchen countertop outlets, bathrooms, laundry, and other high-demand areas
- **Electric baseboard heat:** Very common in NB and draws significant power. A single room with two baseboard heaters can draw 20+ amps on one circuit — leaving nothing for outlets on the same circuit
- **Aging connections:** 40-50 year old wire connections loosen over time, increasing resistance and heat

What to do about it:

- **Short term:** Redistribute loads — move space heaters, microwaves, or other high-draw appliances to different outlets on different circuits
 - **Medium term:** Have an electrician add dedicated circuits for high-demand areas (\$300-\$600 per circuit)
 - **Long term:** Panel upgrade to 200 amps (\$2,500-\$4,500) and additional circuits throughout the home
- If you notice warm outlets, burning smells, or frequent tripping, call a licensed electrician for an assessment. These symptoms can indicate fire risk.

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Q3

How do I know if my electrical panel needs more circuits added?

If you're relying on extension cords, tripping breakers regularly, or planning any renovation, your New Brunswick home likely needs additional circuits — here's how to assess what you need.

Clear signs you need more circuits:

- **Extension cords and power bars everywhere** — these are temporary solutions being used as permanent wiring. Each regularly used power bar often indicates a missing dedicated outlet/circuit
- **Breakers trip when running multiple appliances** — especially in kitchens, bathrooms, and workshops
- **Only one outlet on an entire wall or room** — common in older NB homes where bedrooms might have just 1-2 outlets
- **No dedicated circuits for major appliances** — code now requires separate circuits for: microwave, dishwasher, garbage disposal, each bathroom, laundry room, furnace, and kitchen countertop outlets
- **You're adding electric baseboard heaters** — each heater needs its own dedicated circuit

Modern CEC requirements vs older NB homes:

Area	Current Code Requirement	What Older NB Homes Have	----- ----- -----
Kitchen countertop	2 dedicated 20A circuits	Often 1 shared 15A circuit	Each bathroom
	Dedicated 20A circuit	Usually shared with bedroom	Dedicated 20A circuit
Laundry room	Dedicated 20A circuit	Often shared	Garage
	At least 1 dedicated circuit	Sometimes no circuit at all	Outdoor outlets
	At least 1 front, 1 back	Often none	Bedrooms
	AFCI-protected circuits	Standard breakers, shared circuits	

Panel capacity check: Your electrician will check if your panel has available breaker spaces. Options if the panel is full:

- **Tandem breakers:** Fit two circuits in one breaker space — only if the panel is rated for them (check the panel label)
- **Sub-panel:** Add a secondary panel fed from the main panel — good for workshops, additions, or garages
- **Panel upgrade:** Replace with a larger panel with more spaces — the best long-term solution

Costs for adding circuits in New Brunswick:

- Single new circuit (outlet to panel): \$300-\$600
- Dedicated kitchen circuit: \$400-\$700
- Sub-panel installation: \$1,500-\$3,000
- Full panel upgrade with additional circuits: \$3,000-\$6,000
- TSANB permit: \$100-\$200

When to act: If you're planning any renovation, that's the ideal time to add circuits — walls are already open and wiring is accessible. Adding circuits after finishing walls costs significantly more due to fishing wire through closed walls.

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What is a tandem breaker and can I use one in my New Brunswick panel?

A tandem breaker (also called a slim-line, twin, or duplex breaker) fits two circuits into one breaker slot — but you can only use them if your specific panel model is rated for them in specific slots.

How tandem breakers work: A standard breaker takes one slot and protects one circuit. A tandem breaker takes the same single slot but has two switches protecting two separate circuits. This effectively doubles the number of circuits in those slots without increasing the panel's physical size.

Can you use them in your panel? This depends entirely on your panel model. Check the panel door label or cover — it shows a diagram indicating which slots accept tandem breakers. Common scenarios:

- **Full-size only panels:** Some older panels (especially common in 1960s-1970s NB homes) don't accept tandem breakers at all. Every slot must have a full-size breaker
- **Designated tandem slots:** Most modern panels allow tandems in specific slots only — typically the bottom half of the panel. The label shows these with "CTL" (circuit total limiting) designations
- **All-tandem panels:** Some panels accept tandems in every slot — but this is rare

Panel models common in NB homes:

- **Square D Homeline:** Accepts tandems in designated slots. Look for HOMT tandems
- **Siemens:** Accepts tandems in some models. Use Q2020 tandem breakers
- **Eaton/Cutler-Hammer BR:** Widely compatible with BD tandems in most slots
- **Federal Pacific (Stab-Lok):** These panels have known safety issues — don't add tandems, consider replacement instead

Important CEC rules:

- Tandem breakers cannot be used for circuits requiring AFCI or GFCI protection (bedrooms need AFCI, bathrooms need GFCI) — use full-size AFCI/GFCI breakers for those
- The total number of circuits cannot exceed the panel's CTL rating, even with tandems installed
- Each tandem circuit must be properly labelled in the panel directory

When tandems are a good solution:

- Adding 1-2 circuits to a panel that's nearly full
- Running a new circuit for a specific need (workshop outlet, outdoor GFCI, dedicated appliance circuit)
- Temporary capacity increase while planning a full panel upgrade

When tandems are NOT the answer:

- Panel is an older model that doesn't accept them
- You need AFCI/GFCI protected circuits
- You need more than 3-4 additional circuits (panel upgrade is better value)
- Panel is a known problem brand (Federal Pacific, Zinsco)

Cost in New Brunswick: A tandem breaker itself is \$20-\$40. Installation by a licensed electrician plus the new circuit runs \$300-\$600 per circuit including TSANB permit.

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Q5

Should I replace my Federal Pacific or Zinsco electrical panel if I live in New Brunswick?

Yes — replace it as soon as possible. Federal Pacific Electric (FPE) Stab-Lok panels and Zinsco panels are widely considered the two most dangerous residential electrical panels ever manufactured in North America. If your New Brunswick home has one, replacing it is one of the most important safety investments you can make.

Why These Panels Are Dangerous

Federal Pacific Electric (FPE) Stab-Lok

Federal Pacific panels were installed in millions of North American homes from the **1950s through the 1980s**. Many homes in Saint John, Fredericton, Moncton, and smaller New Brunswick communities built during this era still have them.

The problem: **FPE Stab-Lok breakers fail to trip when they should.** Multiple independent testing laboratories have found that these breakers fail to respond to overcurrent conditions at rates ranging from **25% to over 60%** — meaning when a circuit draws dangerous amounts of current (due to a short circuit or overload), the breaker stays on instead of tripping.

A breaker that doesn't trip defeats the entire purpose of having a breaker panel. The result can be overheated wiring, melted insulation, and house fires.

Specific findings:

- A landmark study by the **Consumer Product Safety Commission (CPSC)** contracted to Dr. Jesse Aronstein found FPE breakers failed to trip under standard test conditions at alarming rates
- The breakers' "Stab-Lok" connection to the bus bar can also loosen over time, creating arcing and hot spots inside the panel
- FPE was found to have **fraudulently obtained UL listing** by submitting modified breakers for testing that differed from production units
- An estimated **2,800 fires per year** in the US were attributed to FPE panels at the height of their installed base

Zinsco (GTE-Sylvania)

Zinsco panels were manufactured from the **1960s through the 1970s** and share similar failure modes:

- Breakers can **fuse to the bus bar**, making them impossible to trip even manually
- The aluminum bus bars are prone to overheating
- Breakers may appear to be in the "off" position while still allowing current to flow
- Internal arcing and melting are common findings when these panels are opened for inspection

Both brands were eventually taken off the market, but neither was subject to an official recall — meaning millions remain in service across Canada and the US.

How to Identify These Panels

Federal Pacific / Stab-Lok:

- Panel door or cover says "Federal Pacific Electric" or "FPE"
- Breakers are labelled "Stab-Lok" (sometimes abbreviated "S-Lok")
- Distinctive red, black, and sometimes blue breaker handles
- The bus bar connection uses a notched "stab" design rather than screw clamps

Zinsco:

- Panel says "Zinsco" or "GTE-Sylvania" or "Sylvania-Zinsco"
- Breakers often have **coloured handles** — pink, green, red, blue
- Made in Gardena, California (noted on label)
- Slim breaker profile, distinctive tongue-and-groove bus bar connection

If you're unsure, have a licensed electrician inspect your panel. An experienced electrician will identify these immediately — they see them regularly in older NB homes.

The Replacement Process

Replacing an FPE or Zinsco panel involves:

- **Electrician performs load calculation** — verifies your new panel size is adequate (almost certainly 200 amps; many FPE homes are only 100 amps and should upgrade)
- **NB Power disconnects service** — scheduled with NB Power, typically 1–3 week wait for the appointment
- **Old panel is removed** — breakers, bus bars, panel box all come out
- **New panel is installed** — modern Square D, Eaton, or Siemens panel with appropriately rated breakers
- **All circuits are re-terminated** — each wire is landed on a new breaker
- **Meter base may need replacement** — if the existing meter base is deteriorated (common with panels this old)
- **TSANB inspection** — required for any panel replacement
- **NB Power reconnects service** — after TSANB approval

Timeline: **1–2 days of electrician work**, but the NB Power disconnect/reconnect scheduling can extend the overall project to 2–4 weeks.

Cost in New Brunswick

| Scope | Cost Range | |-----|-----| | Panel replacement only (100A ? 200A) | \$2,500–\$4,500 | | Panel + meter base replacement | \$3,000–\$5,500 | | Panel + meter base + service mast upgrade | \$4,000–\$7,000 | | TSANB permit fee | \$75–\$200 | | NB Power disconnect/reconnect | \$0–\$500 |

The final cost depends on:

- **Number of circuits** — more circuits means more labour to reconnect
- **Condition of existing wiring** — if old wires are brittle or damaged, some may need replacement

- **Service entrance condition** — the weatherhead, mast, and service entrance cable may need updating to meet current CEC standards
- **Location** — rural areas (Campbellton, Edmundston, Grand Falls) may have higher travel charges

Insurance and Real Estate Implications

Home insurance: Many insurance companies in New Brunswick now specifically ask about Federal Pacific and Zinsco panels on application forms. Some will:

- **Refuse to insure** a home with a known FPE/Zinsco panel
- **Charge higher premiums** (10–25% more) with an exclusion for electrical fires
- **Require replacement within 30–90 days** as a condition of the policy

If you currently have insurance and haven't disclosed your panel type, be aware that a claim investigation after an electrical fire would almost certainly discover the FPE/Zinsco panel and could result in claim denial.

Home sales: Real estate transactions in New Brunswick increasingly flag these panels. Home inspectors routinely identify FPE and Zinsco panels as **major safety concerns**, and buyers' offers frequently include panel replacement as a condition of sale. Replacing proactively adds value and avoids last-minute negotiation pressure.

What About "Just Replacing the Breakers"?

Some homeowners ask about replacing the breakers while keeping the panel box. **This is not recommended:**

- Aftermarket "replacement" Stab-Lok breakers are not manufactured by FPE (the company no longer exists) and compatibility is questionable
- The bus bars themselves may be damaged from years of arcing
- The panel box may not meet current CEC clearance and labelling requirements
- Insurance companies and home inspectors won't accept breaker-only replacement as a fix
- The cost difference between replacing breakers and replacing the entire panel is only **\$500–\$1,000**, making full replacement clearly worthwhile

TSANB and Code Requirements

TSANB requires an electrical permit and inspection for any panel replacement. The new panel must comply with the **current Canadian Electrical Code**, which includes:

- **Arc-fault circuit interrupter (AFCI) breakers** on bedroom circuits

- **GFCI protection** on bathroom, kitchen countertop, outdoor, and garage outlets
- **Proper bonding and grounding** — many older FPE installations had inadequate grounding that must be corrected
- **Panel directory** — every circuit must be clearly labelled

The Bottom Line

If you have a Federal Pacific Stab-Lok or Zinsco panel in your New Brunswick home, replacement is not a matter of "if" but "when." These panels are a documented fire hazard, and the \$3,000–\$5,500 cost of replacement is a small price compared to the risk of an electrical fire. Contact a licensed New Brunswick electrician for an assessment — most will provide a free evaluation and quote for panel replacement. The peace of mind alone is worth every dollar.

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Q6

What size electrical panel do I need for a home with electric baseboard heat in New Brunswick?

Electric baseboard heating is one of the most common heating methods in New Brunswick, and it places a significant demand on your electrical panel. Choosing the right panel size is essential — an undersized panel won't safely support your heating load plus your other household circuits, while an oversized panel wastes money unnecessarily.

Understanding the Load

Electric baseboard heaters are rated in watts, and each heater draws a predictable amount of current. A standard **1,500-watt baseboard heater on a 240V circuit draws 6.25 amps**. The Canadian Electrical Code (CEC) requires that heating circuits be rated at **125% of the continuous load**, so that single heater actually needs 7.8 amps of breaker capacity.

Here's where it adds up quickly. A typical 3-bedroom home in Moncton, Saint John, or Fredericton might have:

Room	Heater Size	Circuit Load (125%)
Living room	2,000W	13 amps
Kitchen	1,500W	9.8 amps
Master bedroom	1,500W	9.8 amps
Bedroom 2	1,000W	6.5 amps
Bedroom 3	1,000W	6.5 amps
Bathroom	750W	4.9 amps
Hallway	500W	3.3 amps
Basement	2,000W	13 amps

That's roughly **8,250 watts just for heating** — about 34.4 amps at 240V (or 43 amps at 125% CEC rating). And that's a modest home. Larger homes in areas like Quispamsis, Riverview, or Dieppe with 4–5 bedrooms and a finished basement can easily reach **12,000–15,000 watts of baseboard heat alone**.

Panel Size Recommendations

100-amp panel: The absolute minimum for a small home (under 1,200 sq ft) with electric baseboard heat. This leaves very little room for future additions like an EV charger, hot tub, or workshop. Most electricians in New Brunswick would advise against this for new installations — it's too tight.

200-amp panel: The standard recommendation for most New Brunswick homes with electric baseboard heat. A 200-amp service provides **48,000 watts of total capacity at 240V**, giving you ample room for:

- All baseboard heaters (8,000–15,000W)
- Electric range (8,000–12,000W)
- Electric dryer (5,000W)
- Electric water heater (4,500W)
- General circuits — lights, outlets, appliances (3,000–5,000W)
- Future additions like an EV charger (7,600W for Level 2)

Even with all of these running, you're using roughly 40,000–50,000 watts. The CEC demand factor calculation reduces the actual calculated load (not everything runs simultaneously at full power), so a 200-amp panel typically works well.

400-amp panel (or dual 200-amp): Only needed for very large homes (over 3,500 sq ft) with all-electric heating, multiple EV chargers, workshops with heavy equipment, or homes planning significant additions. Some newer construction in Fredericton's subdivisions or rural properties near Sussex and Woodstock that include

heated garages and outbuildings may warrant this capacity.

The CEC Demand Calculation

Your electrician will perform a **CEC Section 8 load calculation** to determine the exact service size needed.

This calculation accounts for:

- First 5,000W of general load at 100%
- Remaining general load at 25%
- Electric heating at 100% (no demand factor for heating — it's all counted)
- Electric range at a demand factor based on size
- Air conditioning (if applicable) — compared to heating, only the larger load counts

Because electric heating gets **no demand reduction** in the CEC calculation, it has a disproportionate impact on your required panel size compared to gas-heated homes.

Real-World Costs in New Brunswick

Panel upgrade costs vary by scope:

- **100-amp to 200-amp upgrade:** \$2,500–\$4,500 including the panel, new service entrance cable, meter base, and TSANB inspection
- **New 200-amp panel installation (new construction):** \$1,800–\$3,000
- **Adding a sub-panel for baseboard circuits:** \$800–\$1,500

TSANB (Technical Safety Authority of New Brunswick) requires an electrical permit and inspection for any panel upgrade or new installation. Your electrician typically pulls the permit, but confirm this upfront. NB Power will also need to disconnect and reconnect the service, which may add **\$200–\$500** and a scheduling delay of 1–3 weeks.

Future-Proofing Advice

Given New Brunswick's push toward electrification and the growing popularity of heat pumps (which NB Power actively promotes with rebates), consider that even if you plan to add a heat pump, you'll likely keep some baseboard heaters as backup for the coldest Maritime days when temperatures drop below -20°C. A 200-amp panel gives you the flexibility to add a heat pump, an EV charger, and still maintain your baseboard heating without running into capacity issues.

For new construction or major renovations, **200 amps is the right answer for virtually every New Brunswick home with electric baseboard heat.** The marginal cost difference between 100-amp and 200-amp during initial installation is only \$300–\$500 — far less than upgrading later.

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What is the difference between a fuse box and a breaker panel?

Fuse Box vs. Circuit Breaker Panel: What NB Homeowners Need to Know

Many older New Brunswick homes still have fuse boxes, and homeowners are often confused about whether they need to upgrade. Here's the practical difference between the two systems and when replacement makes sense.

How Fuse Boxes Work

A fuse box uses **replaceable fuses** to protect circuits from overcurrent. Each fuse contains a metal strip calibrated to melt at a specific current (15A, 20A, 30A). When too much current flows, the strip melts ("blows"), breaking the circuit and preventing overheating.

Types of fuses in residential panels:

- **Screw-in (Edison base) fuses:** The most common. They screw into a socket like a light bulb. The fuse window shows the condition — clear glass means good, darkened or broken filament means blown.
- **Type S fuses:** Tamper-resistant — each amperage rating has a different base size, preventing overfusing. Required by code when replacing Edison base fuses.
- **Cartridge fuses:** Cylindrical fuses used for 240V circuits (stove, dryer, main disconnect). They pull out of spring clips.

How Breaker Panels Work

A circuit breaker panel uses **resettable switches** to protect circuits. When too much current flows, a bimetallic strip or electromagnetic mechanism trips the switch to the OFF position. You reset it by pushing the handle from TRIPPED ? OFF ? ON.

Modern breaker panels also support:

- **GFCI breakers** — protect against ground faults (shock prevention)
- **AFCI breakers** — protect against arc faults (fire prevention)
- **Dual-function breakers** — combine GFCI and AFCI in one device
- **Tandem breakers** — fit two circuits in one slot for space efficiency

Key Differences

| Feature | Fuse Box | Breaker Panel | |-----|-----|-----| | Overcurrent protection | Fuse blows (must replace) | Breaker trips (reset by hand) | | Convenience | Must keep spare fuses on hand | Just flip the switch | | Typical service size | 60A (sometimes 100A) | 100A, 150A, or 200A | | GFCI/AFCI support | Not available | Built-in GFCI and AFCI breakers | | Circuit capacity | Usually 4–12 circuits | 20–42+ circuits | | Age | Typically 1940s–1970s | 1970s–present | | CEC compliance | Grandfathered | Current code |

The Overfusing Problem

The biggest safety issue with fuse boxes isn't the fuse technology — it's **overfusing**. When a 15A fuse keeps blowing (because the circuit is overloaded), homeowners or previous owners often replace it with a 20A or 30A fuse. This defeats the overcurrent protection — the wiring (14 AWG, rated for 15A) can now carry 20A or 30A without the fuse blowing, causing the wire to overheat.

This is extremely common in older NB homes. A home inspector or electrician opening a fuse box and finding 30A fuses on 14 AWG wiring is a fire hazard that needs immediate correction.

Breaker panels prevent this because breakers are specific to the panel and you can't easily swap a 15A breaker for a 30A one — the breaker rating is fixed.

Do You Need to Upgrade?

You should upgrade if:

- Your fuse box is 60A — modern homes need 200A minimum for today's electrical loads
- You're adding major appliances (heat pump, EV charger, hot tub, electric stove)
- You find overfused circuits (wrong amperage fuses for the wire gauge)
- Your insurance company requires it — many NB insurers charge higher premiums or refuse to insure homes with fuse boxes
- You're selling the home — buyers and their inspectors will flag it
- You need GFCI or AFCI protection — only available with breaker panels

You might NOT need to upgrade if:

- Your fuse box is 100A (uncommon but exists)
- All fuses are correctly sized for their circuits
- You're not adding any major loads
- Your insurance company is comfortable with the current setup
- The wiring throughout the home is in good condition

Upgrade Costs in New Brunswick

| Upgrade | Cost | |-----|-----| | 60A fuse box ? 200A breaker panel | \$3,000–\$5,000 | | 60A fuse box ? 200A panel + service upgrade (mast, meter base) | \$4,000–\$6,500 | | 100A fuse box ? 200A breaker panel | \$2,500–\$4,000 |

The process takes 1–2 days. Power is off for 4–8 hours during the swap. NB Power coordinates the disconnect and reconnect. A TSANB inspection is required before reconnection.

What Happens During the Upgrade

- Electrician installs the new panel (often in the same location)
- All existing circuits are transferred to the new panel with appropriate breakers
- New grounding and bonding per current CEC requirements
- New main breaker sized to your service (200A standard)
- AFCI breakers installed on required circuits (bedrooms, living areas) if the electrician is required to bring circuits up to current code
- TSANB inspector verifies the work
- NB Power reconnects service

Finding Spare Fuses

If you're keeping your fuse box for now, stock up on the correct amperage fuses. Type S fuses (tamper-resistant) in 15A and 20A ratings are available at Kent and Home Hardware in NB for \$3–\$8 per fuse. Keep at least 4 spares of each size you use. Having the right fuse on hand at 2 AM during a winter storm prevents the dangerous temptation to overfuse.

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Should I replace my Federal Pacific or Stab-Lok panel in New Brunswick?

Federal Pacific Stab-Lok Panels: Why You Should Replace Them

If your New Brunswick home has a Federal Pacific Electric (FPE) panel with Stab-Lok breakers, replacement is strongly recommended. These panels have a well-documented history of failing to trip during overcurrent conditions, making them a serious fire hazard.

The Problem with Federal Pacific Stab-Lok

Federal Pacific Electric manufactured electrical panels and breakers from the 1950s through the 1980s. They were one of the most commonly installed panels in North America during that era — millions were installed, including many in New Brunswick homes built between 1960 and 1985.

Independent testing has shown that FPE Stab-Lok breakers:

- Fail to trip under overcurrent conditions **up to 60% of the time** in some test series
- May not trip even during a dead short circuit
- Can appear to be in the "off" position while still conducting electricity
- Develop poor bus bar connections that create hot spots and arcing

When a breaker fails to trip, the wire on that circuit overheats with no protection — this is how electrical fires start. The US Consumer Product Safety Commission (CPSC) investigated FPE panels, and while no mandatory recall was issued, the evidence of failure is well-established through multiple independent testing programs.

How to Identify an FPE Panel

Look for these identifiers on your panel:

- **"Federal Pacific Electric"** or **"FPE"** on the panel door or label
- **"Stab-Lok"** printed on the breakers themselves
- **Orange-tipped breaker handles** (some models)
- **Breakers that don't fully click into position** — Stab-Lok breakers are known for loose bus bar connections

FPE panels were commonly installed in:

- Split-level homes and bungalows from the 1960s–1980s
- Apartment buildings and duplexes of the same era

- Rural NB properties where construction standards were less scrutinized

What About Zinsco Panels?

Zinsco (also sold as Sylvania-Zinsco or GTE-Sylvania) is another brand with similar documented failure issues. Zinsco breakers can fuse to the bus bar, making them impossible to trip even manually. If your panel says Zinsco or Sylvania, it carries the same replacement recommendation as FPE.

Insurance Implications in NB

Many insurance companies in New Brunswick have taken action on FPE panels:

- Some **refuse to issue new policies** on homes with FPE panels
- Others require an **electrical inspection** and may issue coverage with conditions
- Some charge **higher premiums** (20–40% surcharge) until the panel is replaced
- When buying a home, your insurer may require FPE panel replacement as a **condition of closing**

If you're selling a home with an FPE panel, expect buyers' home inspectors to flag it. This often becomes a negotiating point, with buyers requesting panel replacement before or at closing.

Replacement Cost in New Brunswick

Scenario Cost Range	----- -----	FPE panel ? 200A modern panel (same location)	\$3,000–\$5,000
FPE panel ? 200A + service upgrade (new mast/meter base)	\$4,000–\$6,500	FPE panel ? 200A + full rewire of known problem circuits	\$5,000–\$10,000+

The replacement includes:

- New 200A panel with 40+ circuit spaces
- All circuits transferred from the old panel
- New grounding and bonding to current CEC standards
- AFCI breakers on required circuits (bedroom, living spaces)
- TSANB inspection
- NB Power coordination for disconnect/reconnect

Is It Urgent?

While FPE panels don't all fail immediately, the statistical failure rate is alarming. Consider your urgency based on:

Replace immediately if:

- You see scorch marks, smell burning, or notice warm/hot breakers
- Breakers don't stay in the off position or feel loose
- You're adding any new circuits or loads (EV charger, heat pump, hot tub)
- Your insurance company is requiring it

Replace soon (within months) if:

- The panel appears functional but is FPE/Stab-Lok
- You're planning to sell the home
- You have high-draw appliances (electric heat, electric water heater) regularly stressing the breakers

The professional consensus among electricians, electrical engineers, and fire safety experts is clear: FPE Stab-Lok panels should be replaced. The cost of replacement (\$3,000–\$6,500) is a fraction of what an electrical fire costs in property damage, insurance complications, and risk to life.

Finding an Electrician for FPE Replacement

This is bread-and-butter work for any experienced residential electrician in NB. Get 2–3 quotes from TSANB-licensed electricians. The job typically takes one full day — power will be off for 4–8 hours during the swap. Most electricians in Moncton, Saint John, Fredericton, and surrounding areas have replaced hundreds of these panels and can provide references from satisfied customers.

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Q9

How do I know if my house in New Brunswick needs a panel upgrade?

Signs Your New Brunswick Home Needs an Electrical Panel Upgrade

Your electrical panel is the heart of your home's electrical system — it distributes power to every circuit and protects against overloads and short circuits. Many homes across New Brunswick are running on outdated panels that can't keep up with modern electrical demands.

Warning Signs You Need an Upgrade

1. Your panel is 60 or 100 amps Check the number on your main breaker. If it reads 60A or 100A, your panel was sized for a home that used far less electricity than today's households. Modern homes in NB with electric heat, a dryer, hot water tank, and typical appliances need at least 200 amps. If you're adding an EV charger, hot tub, or heat pump, 200A is the minimum.

2. You still have a fuse box Screw-in fuses and cartridge fuses were standard through the 1960s. Fuse boxes aren't inherently dangerous, but they're limited to 60A service in most cases, can't accommodate AFCI or GFCI breakers, and are easily abused — overfusing (putting a 30A fuse on a 15A circuit) is extremely common and dangerous. Insurance companies in NB increasingly require replacement.

3. Breakers trip frequently If you're constantly resetting breakers — especially when running normal appliances — your circuits are overloaded. This means either too many loads on one circuit or the panel itself can't handle your total demand.

4. You see Federal Pacific (Stab-Lok) or Zinsco breakers These brands have documented failure rates. Federal Pacific Stab-Lok breakers have been shown to fail to trip during overcurrent conditions up to 60% of the time in independent testing. If your panel has either brand, replacement is strongly recommended regardless of panel age. Both are found in NB homes built in the 1960s–1980s.

5. You're planning additions or major appliances Adding an EV charger (40–50A), heat pump (30–60A), hot tub (40–50A), workshop (60–100A sub-panel), or in-law suite all require significant available amperage.

6. Burn marks, rust, or corrosion on the panel Any discolouration, melted plastic, corrosion, or burning smell from your panel is an emergency. Turn off the main breaker and call a licensed electrician immediately.

What a Panel Upgrade Involves

A typical upgrade from 100A to 200A in a New Brunswick home includes:

- **NB Power disconnects your service** (coordinated by your electrician)

- Electrician installs a new 200A panel, typically 40–42 circuit spaces
- All existing circuits are transferred to the new panel
- New main breaker, grounding, and bonding installed to current CEC standards
- TSANB inspection before NB Power reconnects
- Total time: 1–2 days, power off for 4–8 hours

Costs in New Brunswick

Upgrade Type Typical Cost	----- -----	100A to 200A panel swap (same location)	\$2,500–\$4,000
60A fuse box to 200A panel	\$3,000–\$5,000	Panel + meter base + mast (full service upgrade)	
\$4,000–\$6,500	Sub-panel addition (garage, workshop, suite)	\$1,200–\$2,500	

NB Power may need to upgrade the service drop (the wire from the pole to your house) if the existing one can't handle 200A. This is typically at NB Power's expense for the line work, but the homeowner pays for the mast, meter base, and weatherhead on the house side.

TSANB Permit Process

Panel upgrades always require a TSANB electrical permit. The process:

- Your electrician applies for the permit (often online)
- Work is completed
- TSANB inspector visits to verify the installation
- Inspector approves and notifies NB Power to reconnect
- Typical inspection wait time: 3–5 business days in Moncton, Saint John, and Fredericton; potentially longer in rural areas

Should You Wait?

If your panel is working and you're not adding major loads, a 100A panel can continue to serve a smaller home safely. But if you're experiencing any of the warning signs above, or if your insurance company is asking questions about your electrical, don't delay. Panel failures cause fires, and the cost of an upgrade is modest compared to the risk.

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Do I need an arc fault breaker in New Brunswick and what does it do?

Arc Fault Circuit Interrupter (AFCI) Breakers in New Brunswick

Arc fault circuit interrupters (AFCIs) are specialized breakers that detect dangerous electrical arcs — the sparking that occurs when wiring is damaged, connections are loose, or insulation has deteriorated. They're one of the most significant electrical safety advances in the past 25 years.

What Is an Electrical Arc?

An electrical arc is a discharge of electricity across a gap — like a spark jumping between a loose wire and a terminal, or current flowing through damaged insulation. Arcs generate intense heat (up to 6,000°C) and are a leading cause of electrical fires. Standard breakers only trip on overcurrent (too many amps) or short circuits. They **cannot detect arcing** because the current flow during an arc may be well within the breaker's normal range.

How AFCIs Work

AFCI breakers use electronic circuitry to monitor the current waveform on the circuit. Normal current flows in a smooth sine wave. Arcing creates characteristic high-frequency patterns that the AFCI recognizes. When it detects a dangerous arc signature, it trips in milliseconds — before the arc can ignite surrounding materials.

CEC Requirements (New Brunswick)

The Canadian Electrical Code, which TSANB enforces in New Brunswick, requires AFCI protection for:

- **All 125V, 15 and 20-amp circuits** supplying receptacles in bedrooms, living rooms, dining rooms, dens, sunrooms, recreation rooms, closets, and hallways
- This applies to **new construction** and **renovations where new circuits are installed**
- Kitchens, bathrooms, laundry rooms, and garages are **not currently required** to have AFCI protection (they have GFCI requirements instead)

When You Need AFCIs in NB

New home construction: Your builder's electrician will install AFCI breakers on all required circuits as part of the permit process. This is non-negotiable — TSANB inspectors verify AFCI compliance.

Renovations: If you're running new circuits or replacing your panel as part of a renovation, the new circuits must comply with current CEC requirements, including AFCI protection. If you're simply replacing a breaker on

an existing circuit without modifying the wiring, you're not required to upgrade to AFCI, though it's recommended.

Panel upgrades: When upgrading from a 100-amp to a 200-amp panel, you're replacing all breakers. While technically only new or modified circuits require AFCI, many electricians recommend installing AFCIs on all bedroom and living space circuits during the upgrade. The incremental cost is relatively small compared to the panel upgrade project.

Costs

Item	Cost
Standard 15A breaker	\$8–\$15
AFCI 15A breaker	\$35–\$55
Dual-function AFCI/GFCI breaker	\$50–\$75
Electrician labour to install (per breaker)	\$50–\$100

For a typical new home with 10–15 AFCI-protected circuits, the added cost over standard breakers is \$400–\$800 — modest considering the fire prevention benefit.

Common Issues with AFCIs

Nuisance tripping is the most frequent complaint. AFCIs can trip from:

- Some vacuum cleaners and power tools with brush motors
- Treadmills and exercise equipment
- Older dimmer switches
- Shared neutral wiring (common in older NB homes being renovated)

Modern AFCIs (2020+ models) have significantly reduced nuisance tripping through better arc detection algorithms. If you're experiencing frequent trips, first check for actual wiring issues — many "nuisance" trips are actually the AFCI detecting a real problem like a damaged cord or loose connection.

AFCI vs. GFCI

Feature	AFCI	GFCI
Protects against	Arcing/fire	Shock/electrocution
Required in	Bedrooms, living areas	Bathrooms, kitchens, outdoors
Detects	Current waveform anomalies	Current imbalance (hot vs neutral)
Cost	\$35–\$55	\$15–\$25 (outlet) or \$35–\$50 (breaker)

Dual-function breakers combine both AFCI and GFCI protection in one device — useful for bedrooms in damp basements or other locations where both protections are warranted.

Bottom Line

If you're building a new home in New Brunswick or renovating with new circuits, AFCI breakers are code-required for living spaces. If you're in an older home, they're not mandatory on existing circuits but are a worthwhile safety upgrade — especially in homes with aging wiring where arc faults are more likely. Ask your TSANB-licensed electrician about adding them during your next panel service.

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Q11

What are the electrical requirements for a home workshop or garage in New Brunswick?

Electrical Requirements for a Home Workshop or Garage in New Brunswick

Setting up a properly wired workshop or garage in New Brunswick — whether it's a woodworking shop in your attached garage, a welding bay in a detached building, or a general hobbyist space — requires more electrical capacity than most homeowners initially expect. Planning the electrical layout before you start buying tools saves expensive retrofit work and ensures your shop can grow with your needs.

Power Assessment: What Do Your Tools Need?

The first step is listing every tool you plan to use and its electrical requirements:

120V Tools (standard household circuits):

Tool	Running Amps	Startup Surge	Circuit Needed
Drill press	5-8A	10-16A	15A shared
Belt/disc sander	6-10A	12-20A	15-20A
Router	8-12A	16-24A	20A dedicated
Circular saw	10-15A	20-30A	20A dedicated
Shop vacuum	8-12A	16-24A	20A dedicated
Air			

compressor (1-2 HP) | 10-15A | 20-40A | 20A dedicated | | Bench grinder | 4-6A | 8-12A | 15A shared |

240V Tools (require dedicated circuits):

| Tool | Running Amps | Circuit Needed | |-----|-----|-----| | Table saw (1.5-3 HP) | 12-20A | 20-30A dedicated | | Planer (2-3 HP) | 15-20A | 30A dedicated | | Jointer (1-2 HP) | 10-15A | 20A dedicated | | Welder (MIG/Stick) | 20-50A | 30-50A dedicated | | Air compressor (3-5 HP) | 15-25A | 30A dedicated | | Dust collector (2-3 HP) | 12-18A | 20-30A dedicated |

Minimum Electrical Setup by Workshop Type

Basic Hobby Shop (hand tools + a few power tools):

- 2-3 dedicated 20-amp, 120V circuits for tools
- 1 general-purpose 15-amp circuit for lighting and small loads
- 1 dedicated 20-amp circuit for a shop vac or dust collector
- Total panel capacity needed: 60-80 amps
- Estimated cost: \$1,500-\$3,000

Intermediate Woodworking Shop:

- 3-4 dedicated 20-amp, 120V circuits
- 1-2 dedicated 240V circuits (table saw, planer, or dust collector)
- 1 lighting circuit with bright LED shop lights
- 1 dedicated circuit for air compressor
- Total panel capacity needed: 80-125 amps
- Estimated cost: \$3,000-\$6,000

Serious Workshop / Welding Bay:

- 4-6 dedicated 120V circuits
- 2-3 dedicated 240V circuits (welder, compressor, major tools)
- Dedicated lighting circuit
- Dedicated heating circuit (electric unit heater for New Brunswick winters)
- Total panel capacity needed: 100-200 amps
- Estimated cost: \$5,000-\$12,000

Sub-Panel vs. Main Panel Extension

For workshops in **attached garages**, you can often run circuits directly from the main panel if it has available spaces and capacity. For a 200-amp main panel, adding 4-6 workshop circuits is usually feasible.

For **detached garages and outbuildings**, a sub-panel is the standard approach:

- **60-amp sub-panel** (\$800-\$1,500 installed): Covers basic to intermediate shops. Fed by 6/3 copper cable or 4/3 aluminum from the main panel.
- **100-amp sub-panel** (\$1,200-\$2,500 installed): Covers serious workshops with 240V tools. Fed by 3/3 copper or 1/0 aluminum cable.
- **200-amp sub-panel** (\$2,000-\$4,000 installed): Full workshop or commercial-grade shop. May require an NB Power service upgrade if your main service is only 200 amps.

Underground feeder to detached garage: The feeder cable from house to detached garage must be buried in approved conduit or use direct-burial rated cable. In New Brunswick, burial depth requirements under the CEC are:

- **Direct burial cable (NMWU):** 24 inches minimum (600mm)
- **Rigid metal conduit:** 6 inches minimum
- **PVC conduit (Schedule 40):** 18 inches minimum

Given New Brunswick's frost depth of 4-5 feet, burying conduit at 24-30 inches is practical — it's below the typical cultivation depth but above full frost penetration. Trenching costs \$15-\$30 per linear foot in the Maritimes, depending on soil conditions. Rocky terrain common in many parts of New Brunswick can increase this significantly.

Workshop Lighting

Adequate lighting is a safety requirement, not just a convenience:

- **General workshop lighting:** Target 50-75 foot-candles across the shop. For a 20x24 foot garage workshop, this means 8-12 LED shop lights (4-foot, 40-watt each), spaced evenly across the ceiling. LED shop lights cost \$25-\$60 each.
- **Task lighting:** Add focused lights above the table saw, workbench, drill press, and any precision work area. Swing-arm LED task lights (\$40-\$80) mounted to the wall save bench space.
- **Put lights on separate circuits from tools** — If a tool trips a breaker, you don't want to be plunged into darkness mid-cut.

Heating Considerations

A New Brunswick workshop without heat is unusable from November through March. Electric heating options and their electrical requirements:

- **240V unit heater (5,000W):** Heats a 400-500 sq ft insulated shop. Requires a dedicated 30-amp, 240V circuit. Operating cost at NB Power rates: approximately \$1.50-\$2.00/hour.
- **Infrared radiant heater (3,000-6,000W):** Heats objects and people directly rather than the air — excellent for large, poorly insulated garages. Dedicated 30-amp circuit. More efficient for intermittent use.
- **Mini-split heat pump:** The most energy-efficient option for a well-insulated detached workshop. Operating cost roughly 40-60% less than resistance electric heat. Requires a dedicated 240V, 15-20A circuit. Installation: \$2,500-\$4,500.

Code and Permit Requirements

TSANB permit required for any new workshop electrical installation in New Brunswick. This includes:

- Running new circuits from the panel
- Installing a sub-panel
- Adding 240V outlets
- Running underground feeder to a detached building

Permit cost: \$75-\$200 depending on scope. The TSANB inspection verifies:

- Proper wire gauge for circuit amperage and run length
- Correct breaker sizing
- GFCI protection on all garage receptacles (CEC requirement)
- Proper grounding and bonding
- Underground cable at correct depth with approved protection
- Sub-panel grounding (separate ground rod required for detached buildings)

Common Mistakes to Avoid

- **Undersizing the sub-panel** — Install more capacity than you think you need today. Going from a 60-amp to a 100-amp sub-panel adds \$200-\$400 to the initial installation but saves \$1,500-\$3,000 if you need to upgrade later.
- **Not accounting for voltage drop** — Long cable runs from house to detached garage cause voltage drop. For a 100-foot run at 100 amps, you may need to upsize the wire by one gauge to keep voltage drop under the CEC's 5% maximum.

- **Skipping the dedicated circuits** — Plugging a table saw and dust collector into the same 15-amp circuit via a power bar is a fire hazard and will trip breakers constantly. Every major tool needs its own circuit.
- **Forgetting winter** — If the workshop will be heated, factor the heating circuit into your panel load calculation from the start. A 5,000W heater draws 21 amps at 240V — that's a significant portion of a 60-amp sub-panel.

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Q12

Should I upgrade from fuses to circuit breakers in my older Moncton home?

Upgrading from Fuses to Circuit Breakers in Older Moncton Homes

If your Moncton home still has a fuse panel — sometimes called a fuse box or fuse block — you're living with electrical technology that's 40-80+ years old. Fuse panels are still found throughout Moncton's older neighbourhoods including the north end, downtown, Lewisville, and sections of Dieppe built before 1970. While fuses themselves aren't inherently unsafe, the panels they're in and the electrical systems they protect are almost certainly inadequate for modern life.

Why Fuse Panels Are a Problem

Limited capacity: Most fuse panels in older Moncton homes are rated for **60 amps** — a few are 100 amps. Modern homes need 200 amps to safely run heating systems, kitchen appliances, laundry, electronics, and increasingly, EV chargers and heat pumps. A 60-amp panel trying to serve a modern household is like running a garden hose at fire hydrant pressure — something is going to give.

Penny/over-fusing danger: The most common dangerous modification in fuse panels is replacing a blown 15-amp fuse with a 20 or 30-amp fuse — or worse, inserting a copper penny behind a blown fuse to bypass it entirely. This removes the overcurrent protection and allows the wire to overheat beyond its safe capacity. Electricians working in older Moncton homes report finding over-fused circuits in roughly 1 in 3 fuse panels they inspect.

No GFCI or AFCI protection: Fuse panels cannot accommodate GFCI (ground fault) or AFCI (arc fault) protection, which the current Canadian Electrical Code requires for bathrooms, kitchens, outdoor outlets, and bedrooms. These safety devices prevent electrocution and electrical fires.

Insurance issues: Many New Brunswick insurance companies either won't insure homes with 60-amp fuse panels or charge premium surcharges of \$200-\$500 per year. Some require a certified electrical inspection annually. Upgrading to a breaker panel often pays for itself through insurance savings within 5-8 years.

Resale impact: Buyers in the Greater Moncton market and their home inspectors will flag a fuse panel as a significant deficiency. Expect purchase negotiations to include a request for a panel upgrade credit of \$3,000-\$5,000 or even a conditional offer requiring upgrade before closing.

What an Upgrade Involves

A fuse-to-breaker upgrade is really a **complete electrical service upgrade**, not just swapping one box for another. The scope typically includes:

- 1. New electrical panel:** A 200-amp main breaker panel with 40-42 circuit spaces replaces the old fuse panel. The new panel is mounted in the same location (or nearby if the original location doesn't meet current clearance requirements — the CEC requires 36 inches of clear working space in front of the panel and 30 inches of width).
- 2. New meter base:** The meter socket that NB Power's meter plugs into is typically replaced to match the new 200-amp service. NB Power coordinates the disconnect and reconnect — expect a 3-5 business day scheduling window for this step.
- 3. New service entrance cable:** The cable running from the meter to the panel is replaced with 200-amp rated cable. If your service entrance runs through a mast on the exterior wall, the mast may need replacement as well.
- 4. Grounding system update:** Older Moncton homes often have a single ground rod or a ground connection to the water pipe. Current CEC requires two ground rods (minimum 3 metres/10 feet apart) plus bonding to the water service, gas service (if applicable), and any structural steel.
- 5. Circuit transfer:** All existing circuits are moved from the old fuse panel to new breakers in the new panel. The electrician inspects each circuit's wire gauge and condition, ensuring breakers are properly sized — 15-amp breakers for 14-gauge wire, 20-amp for 12-gauge.

6. GFCI and AFCI protection: The upgrade is the opportunity to add GFCI breakers for bathroom, kitchen, outdoor, and garage circuits, plus AFCI breakers for bedroom circuits, as required by the current CEC.

Cost Breakdown for Greater Moncton

| Component | Cost | |-----|-----| | 200-amp panel (40+ spaces) | \$300-\$500 | | 200-amp meter base | \$150-\$250 | | Service entrance cable + mast | \$200-\$400 | | Breakers (15-20 circuits) | \$150-\$300 | | Grounding upgrade | \$200-\$400 | | Labour (12-20 hours) | \$1,200-\$2,500 | | TSANB permit + inspection | \$100-\$200 | | NB Power reconnection coordination | Included | | **Total** | **\$2,500-\$4,500** |

Most Moncton electricians quote this as a package price of **\$3,000-\$4,000** for a straightforward upgrade. Complex situations (panel relocation, extensive wiring repairs, emergency conditions) can push costs to \$5,000-\$6,000.

Timeline

- **Electrician assessment** (1-2 hours): Evaluates existing system, determines scope, provides quote
- **Permit application** (1-3 business days): Electrician applies to TSANB
- **NB Power scheduling** (3-5 business days): Coordinates the disconnect window
- **Installation** (1-2 days): The actual panel swap, typically completed in a single day
- **NB Power reconnection** (same day or next business day after installation)
- **TSANB inspection** (5-10 business days after completion notification)

Total timeline: **2-4 weeks** from initial call to inspected and certified.

During the Upgrade

Your home will be without power for **4-8 hours** during the actual panel swap (the time between NB Power disconnecting and reconnecting). Plan accordingly:

- Charge phones and laptops the night before
- Have flashlights accessible
- Don't open the refrigerator or freezer (food stays safe for 4-6 hours if the door stays closed)
- In winter, ensure your home is warm before the work starts — no electric heat during the outage

Is It Worth It?

Absolutely. A fuse-to-breaker upgrade in Moncton delivers:

- **Safety:** Modern overcurrent protection, GFCI, and AFCI capability

- **Capacity:** From 60 to 200 amps — room for heat pumps, EV chargers, home offices, workshops
- **Insurance savings:** \$200-\$500/year in premium reductions for many homeowners
- **Home value:** Adds \$3,000-\$5,000+ to resale value and removes a major buyer objection
- **Convenience:** No more blown fuses, no more trips to the hardware store for replacements
- **Code compliance:** Brings your service up to current CEC standards

For a typical 3-bedroom Moncton home, the \$3,000-\$4,000 investment pays for itself within 5-8 years through insurance savings alone — and you get a safer, more capable electrical system immediately.

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What is the minimum electrical panel size required for a new home in New Brunswick?

Minimum Electrical Panel Size for New Homes in New Brunswick

The minimum electrical panel size for new residential construction in New Brunswick is 100 amps, as specified by the Canadian Electrical Code (CEC) which is adopted by the province through the Electrical Installation and Inspection Act administered by TSANB. However, virtually no electrician in New Brunswick installs 100A panels in new construction anymore — 200 amps has been the de facto standard since the early 2000s, and there are very practical reasons for this.

Why 200A Is the Real Standard

The CEC sets 100A as the minimum for single-family dwellings, but this minimum was established when homes had fewer electrical demands. A typical new 2,000 sq ft home in New Brunswick with electric baseboard heating, an electric range, electric dryer, and hot water tank can easily draw 80-100 amps at peak — leaving zero room for additions like a heat pump (30-50A), EV charger (40-50A), or workshop circuits.

NB Power's residential service delivery supports both 100A and 200A without additional charges for the standard overhead connection. The cost difference between a 100A and 200A panel at the time of new construction is only \$300-\$600 in materials and labour. Upgrading from 100A to 200A after the fact costs \$2,500-\$4,500. Installing 200A from the start is the only financially sensible choice.

New Construction Panel Specifications

A standard new home electrical panel in New Brunswick in 2025 includes:

- **200A main breaker panel** with minimum 40 circuit spaces (commonly 42 or even 60 spaces in larger homes)
- **200A rated meter base and mast** meeting NB Power's current specifications
- **Copper bus bars** (standard in all modern panels)
- **Main bonding jumper and grounding electrode system** connected to the home's grounding rod(s) and/or water pipe
- **AFCI breakers** for all bedroom circuits (CEC requirement)
- **GFCI breakers or receptacles** for bathrooms, kitchen counters, laundry, garage, and all exterior outlets
- **Dedicated circuits** for kitchen appliances (2 x 20A small appliance branch circuits), dishwasher, microwave, laundry, bathroom, furnace/heat pump, range (40-50A), dryer (30A), and hot water tank (30A)

Panel Brand Considerations

The most commonly installed panels in New Brunswick new construction are:

- **Siemens** — Widely available through Atlantic electrical suppliers, good quality, competitive pricing. A 200A/42 space panel runs \$250-\$350
- **Eaton Cutler-Hammer (CH series)** — Popular with many NB electricians for reliability and breaker availability. Similar pricing
- **Square D Homeline or QO** — Square D QO is considered the premium residential option. A 200A/42 space QO panel runs \$400-\$550

Avoid off-brand panels from unknown manufacturers. Also be aware that Federal Pioneer (now owned by Schneider/Square D) panels are still found in some NB supply houses — these are fine, but confirm the specific model is not on any recall list.

What About 400A Service?

Some larger homes in New Brunswick — particularly custom builds over 3,500 sq ft with in-floor heating, workshops, pools, or multiple EV chargers — require 400A service. This is delivered as two 200A panels fed from a single 400A meter base. The additional cost over standard 200A service is \$3,000-\$6,000 including the larger meter base and second panel. NB Power may need to upgrade their transformer or service line for 400A, which can add delays of 4-8 weeks.

Future-Proofing Your Panel

Even with 200A service, circuit space runs out fast. A new home can easily use 30-35 of 42 available circuit spaces before the owners move in. Smart electricians in New Brunswick recommend:

- Install a **60-space panel** (only \$50-\$100 more than 42-space) to ensure room for future circuits
- Pre-wire a **50A circuit** to the garage for a future EV charger even if you do not own an EV yet. The wire cost during construction is minimal (\$200-\$400) versus \$800-\$1,500 to retrofit later
- Run a **conduit to the exterior** for future generator connection or solar panel inverter hookup
- Leave **4-6 spare breaker spaces** clearly labeled in the panel schedule

Permit and Inspection Requirements

All new home electrical installations in New Brunswick require a TSANB permit. New construction typically has 2-3 inspections: rough-in (before insulation and drywall), pre-cover (insulation installed, drywall not yet up), and final (everything complete). The permit fee is based on the scope of work and typically runs \$200-\$500 for a full

new home electrical installation. Your electrician or general contractor normally handles the permit application.

Cost Summary for New Construction

| Component | Cost Range | |-----|-----| | 200A panel (40-60 space) | \$250 - \$550 | | 200A meter base and mast | \$300 - \$600 | | Full home rough-in wiring (labour + materials) | \$10,000 - \$18,000 | | Fixtures and devices (outlets, switches, lights) | \$2,000 - \$5,000 | | TSANB permit and inspections | \$200 - \$500 | | **Total electrical for new 2,000 sq ft home | \$15,000 - \$25,000 |**

These figures are typical for the Moncton, Fredericton, and Saint John markets as of 2025. Rural areas may be slightly higher due to travel time, and custom homes with extensive lighting designs or smart home wiring will be at the upper end.

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Q14

Is it safe to use my old fuse panel or should I upgrade to circuit breakers in New Brunswick?

A fuse panel that's in good condition and properly maintained is technically safe, but there are compelling reasons to upgrade to a modern circuit breaker panel — especially if you're in an older New Brunswick home where the fuse panel is 60 amp service. The biggest issues with fuse panels aren't the fuses themselves but the limited capacity, lack of modern safety features, insurance complications, and the temptation for homeowners to install oversized fuses.

Fuses and breakers do the same basic job — they interrupt the circuit when too much current flows, protecting the wire behind your walls from overheating. A fuse does this by melting a metal strip, while a breaker uses an

electromagnetic mechanism that can be reset. The physics of overcurrent protection actually favours fuses in some ways — they respond slightly faster than breakers. The problems with fuse panels are practical, not theoretical.

The real dangers of fuse panels in older New Brunswick homes.

The most serious risk is **oversized fuses**. When a 15 amp fuse keeps blowing because the circuit is overloaded, it's tempting to screw in a 20 or 30 amp fuse instead. This is extremely dangerous — the wire behind your wall is rated for 15 amps, and a 30 amp fuse won't blow until twice the safe current is flowing, by which point the wire insulation is melting and your wall could be on fire. Electricians in New Brunswick regularly find oversized fuses in older homes, particularly in Moncton's older north end, Saint John's Uptown, and Fredericton's older neighbourhoods.

The second issue is **limited capacity**. Most fuse panels are 60 amp service, which was adequate in the 1950s when a home had a refrigerator, a few lights, and maybe an electric range. Today, with heat pumps, EV chargers, multiple appliances, and dozens of electronic devices, 60 amps is dangerously insufficient. You simply cannot add modern electrical loads to a 60 amp fuse panel.

The third issue is **missing safety features**. Fuse panels cannot provide AFCI or GFCI protection at the panel level, which is required by current code for many circuits. You can add GFCI outlets downstream, but AFCI protection requires either AFCI breakers (incompatible with fuse panels) or AFCI outlet devices (expensive and less reliable).

Insurance and real estate implications. Many New Brunswick insurance companies will insure a home with a fuse panel but at higher premiums. Some won't insure 60 amp fuse panels at all. When selling, buyers' inspectors will flag the fuse panel, and most buyers will request an upgrade as a condition of purchase — or reduce their offer by the cost of the upgrade.

Upgrade costs. Replacing a fuse panel with a 200 amp circuit breaker panel in New Brunswick costs \$3,000 to \$5,000, including the new panel, breakers, service entrance upgrade, NB Power coordination, TSANB permit, and inspection. This is one of the highest-return electrical investments you can make — it improves safety, increases your home's value, reduces insurance costs, and gives you capacity for modern electrical demands.

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Q15

How do I know if my Federal Pacific panel is a fire hazard that needs replacing?

If your home has a Federal Pacific Electric (FPE) Stab-Lok panel, it is considered a fire hazard by virtually every electrical safety authority in North America and should be replaced as soon as possible. These panels have a well-documented history of breakers failing to trip during overloads and short circuits — the exact situation where a breaker is supposed to protect your home from fire.

Federal Pacific panels were installed in millions of homes across North America from the 1950s through the 1980s, and New Brunswick was no exception. Many older homes in Moncton, Fredericton, Saint John, and throughout the province still have these panels. The company was found to have fraudulently obtained their UL listing by submitting specially manufactured breakers for testing while selling inferior breakers to the public.

How to identify a Federal Pacific panel. Look for the name "Federal Pacific Electric" or "FPE" on the panel door or inside the panel cover. The breakers will say "Stab-Lok" on them and have a distinctive design where they plug into the bus bar with a wedge-shaped connection rather than the clip-on style used by modern breakers. The panel may also have the model number starting with "M" (like M112-20). If you're unsure, take a clear photo of the panel with the door open and show it to a licensed electrician.

The specific dangers are serious. Independent testing has shown that FPE Stab-Lok breakers fail to trip 25 to 65 percent of the time during overcurrent conditions. When a breaker doesn't trip, the wire behind your wall overheats until something catches fire. These breakers are also known for a double-tap issue where the breaker appears to be off but is still conducting electricity — a potentially lethal hazard for anyone working on what they believe is a de-energized circuit.

Replacement cost in New Brunswick. Replacing a Federal Pacific panel with a modern 200 amp panel typically costs \$2,500 to \$4,500. This includes the new panel, new breakers, labour, the TSANB permit, and inspection. If your service entrance also needs upgrading (common with older FPE installations), the cost may reach \$4,000 to \$5,500. While this is a significant expense, it's far less than the cost of a house fire — and many New Brunswick insurance companies will either require FPE panel replacement or charge significantly higher premiums if they discover one during an inspection.

Don't wait on this one. Unlike some electrical upgrades that can be planned around your budget and timeline, a Federal Pacific panel represents an ongoing, unpredictable fire risk every single day it remains in service. Contact a TSANB-licensed electrician to assess your panel and provide a quote for replacement.

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