NEW BRUNSWICK ELECTRICAL

Troubleshooting

Flickering lights, tripping breakers, and diagnosing problems

19 Expert Answers from Electric IQ

newbrunswickelectrical.com/construction-brain

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Q1

Loud buzzing from my electrical panel — why?

A loud buzzing from your electrical panel is a serious warning sign that requires immediate attention from a licensed electrician. This sound typically indicates loose connections, overloaded circuits, or failing components that could lead to electrical fires or electrocution.

The most common cause of panel buzzing is **loose electrical connections**. Over time, the constant heating and cooling cycles cause wire connections to loosen at breakers, bus bars, or the main lugs. When electricity arcs across these loose connections, it creates that distinctive buzzing sound along with dangerous heat buildup. This is especially common in older panels or homes that have experienced temperature fluctuations during New Brunswick's harsh winters.

Overloaded circuits are another frequent culprit. If you're drawing more power than your panel or individual circuits can safely handle, the electrical components will vibrate and buzz under the strain. This often happens when homeowners add new appliances, EV chargers, or space heaters without upgrading their electrical service. In New Brunswick, many older homes still have 100-amp services that struggle with modern electrical demands.

Failing breakers can also cause buzzing, particularly in older panels like Federal Pacific or Zinsco brands that are known fire hazards. These breakers may buzz even when not overloaded, indicating internal component failure. Some breakers naturally hum slightly under load, but loud, persistent buzzing is never normal.

Immediate safety steps: If the buzzing is accompanied by burning smells, sparking, or the panel feels hot to touch, shut off your main breaker immediately and call for emergency electrical service. Even without these additional warning signs, don't ignore panel buzzing – it won't fix itself and will likely worsen.

Under TSANB regulations, any panel repairs or replacements require proper permits and inspections. A licensed electrician will need to identify the source of the buzzing, which may involve thermal imaging to detect hot spots, tightening connections, replacing faulty breakers, or potentially upgrading your entire panel if it's outdated or damaged.

Don't attempt DIY repairs on electrical panels – this is extremely dangerous and illegal in New Brunswick. Panel work requires shutting off power from NB Power, working with high-voltage connections, and ensuring proper grounding and bonding.

Need help finding a qualified electrician for emergency panel service? New Brunswick Electrical can match you with local professionals who offer 24/7 emergency service and can diagnose your buzzing panel safely.

Q2

Burning smell from an outlet — what should I do?

A burning smell from an outlet is an electrical emergency that requires immediate action. Turn off the circuit breaker for that outlet right now, unplug anything connected to it, and don't use the outlet until a licensed electrician inspects it.

The burning smell indicates dangerous overheating that could lead to an electrical fire. This typically happens when wires are loose, connections are corroded, or the outlet is overloaded beyond its capacity. In New Brunswick's humid maritime climate, moisture can also cause corrosion in outlets, especially in basements, bathrooms, or exterior locations, making this type of failure more common.

Immediate steps you need to take:

First, locate the circuit breaker that controls this outlet and switch it off immediately. If you're not sure which breaker it is, turn off the main breaker to be safe. Remove any plugs from the outlet, but don't touch the outlet itself - it may be hot enough to burn you. If the burning smell is very strong or you see any smoke, leave your home immediately and call 911.

What's likely happening inside that outlet:

Loose wire connections create resistance, which generates heat. Over time, this heat burns the plastic outlet, wire insulation, or even the wooden framing behind it. Aluminum wiring (common in 1960s-70s NB homes) is particularly prone to this problem because aluminum expands and contracts more than copper, loosening connections over time. Federal Pacific panels, still found in some New Brunswick homes, can also cause outlet overheating due to breakers that don't trip properly.

Why this is dangerous in New Brunswick homes:

Many NB homes have older wiring systems, and our maritime humidity accelerates corrosion in electrical connections. Ice storms and power fluctuations from NB Power can also stress electrical systems. Additionally, many homes still have knob and tube wiring or aluminum wiring that's more susceptible to these failures. The combination of older electrical systems and Maritime climate conditions makes burning outlet smells a serious fire risk.

What happens next:

A licensed TSANB electrician needs to inspect the outlet, the circuit, and potentially your entire electrical panel. They'll determine if it's a simple outlet replacement or a more serious wiring problem. This work requires a TSANB permit and inspection - don't let anyone tell you otherwise. The electrician will also check for similar problems at

other outlets on the same circuit.

Insurance considerations:

If this leads to fire damage, your insurance company will investigate the electrical system. DIY electrical repairs or unpermitted work could void your coverage. Having a licensed electrician handle this properly protects both your safety and your insurance coverage.

Emergency contacts:

If you smell burning and can't locate the source, or if the smell is getting stronger, call 911 immediately. For NB Power outages or downed lines, call 1-800-663-6272. Many New Brunswick electricians offer 24/7 emergency service for situations exactly like this.

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Q3

My outlet is warm to the touch — fire hazard?

Yes, a warm outlet is a serious fire hazard that requires immediate attention. Stop using the outlet right away and have it inspected by a licensed electrician as soon as possible.

Warm outlets indicate dangerous electrical problems that can quickly escalate to fires. The most common causes include loose wire connections inside the outlet box, which create electrical resistance and generate heat. Over time, this heat can ignite surrounding materials like insulation or wooden framing. Other potential causes include an overloaded circuit, a failing outlet that can't handle its rated amperage, or backstabbed wires (a

connection method that's prone to loosening over time).

In New Brunswick's older homes, this problem is especially common with aluminum wiring installed in the 1960s-70s, which expands and contracts more than copper, leading to loose connections. Knob and tube wiring can also develop hot spots where connections have deteriorated over decades. Even in newer homes, poor installation techniques or cheap outlets can create these dangerous conditions.

Take these immediate safety steps: First, stop using the outlet completely - don't plug anything into it. If you can safely access your electrical panel, consider shutting off the circuit breaker for that outlet until an electrician can inspect it. However, don't attempt to remove the outlet cover or touch any wiring yourself. If you smell burning, see scorch marks around the outlet, or notice the outlet cover is discolored, treat this as an emergency.

This is not a DIY repair - warm outlets involve live electrical connections that can electrocute you, and the fire risk is real. In New Brunswick, outlet replacement typically requires a TSANB permit when it involves rewiring or circuit modifications. A licensed electrician will need to diagnose whether it's a simple outlet replacement, loose connections, or a more serious wiring problem that could affect other outlets on the same circuit.

Don't wait on this issue - electrical fires can start without warning, and insurance companies may deny claims if they discover known electrical hazards that weren't addressed. The repair cost is typically $150-300 for a simple outlet replacement, but could be more if circuit rewiring is needed.

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Q4

What is the most common cause of house fires related to electricity in New Brunswick?

The leading electrical causes of house fires in New Brunswick are aging wiring with deteriorated connections, overloaded circuits in older homes, and misuse of portable heating equipment — many of these are preventable with proper electrical maintenance.

Top electrical fire causes in NB homes:

1. Aging and deteriorated wiring (most common) New Brunswick has a significant inventory of homes built in the 1950s-1970s. Over decades, wire insulation degrades, connections loosen, and components wear out. The most dangerous situations:

- **Loose connections** at outlets, switches, and panels generate heat through electrical arcing. This is especially common with aluminum wiring (1965-1976 homes) and backstab connections
- **Knob and tube wiring** (pre-1950 homes) that contacts insulation — common when homeowners add blown-in insulation to attics without addressing the old wiring
- **Damaged wire insulation** in attics exposed to extreme NB temperature swings (hot summers, freezing winters)

2. Overloaded circuits Older NB homes with 60-100 amp panels and limited circuits can't handle modern electrical demands. When circuits are overloaded:

- Wire insulation heats beyond its rating
- If the breaker/fuse fails to trip (common with Federal Pacific panels), the wire continues to overheat
- Extension cords used as permanent wiring compound the problem — they're not rated for continuous high loads

3. Space heater misuse Particularly relevant in NB where supplemental heating is common:

- Space heaters placed too close to combustibles (curtains, bedding, furniture)
- Plugged into extension cords or power strips not rated for the load
- Running on circuits shared with other high-draw devices
- Left unattended or used overnight

4. Federal Pacific Stab-Lok panels These panels, installed in many NB homes during the 1970s-1980s, have breakers with documented failure rates. When a breaker fails to trip during an overcurrent event, the wire overheats with no protection — direct path to fire.

5. DIY electrical work NB requires all electrical work to be done by licensed electricians, but unlicensed work happens. Common DIY fire starters:

- Oversized fuses (putting a 30A fuse where a 15A was to "stop it from blowing")
- Junction boxes not properly secured or covered
- Wire connections without proper connectors
- Circuits without adequate overcurrent protection

Prevention checklist for NB homeowners:

- [ ] Have a licensed electrician inspect your panel if your home is 30+ years old
- [ ] Replace Federal Pacific or Zinsco panels immediately
- [ ] Address aluminum wiring with COPALUM pigtailing or AlumiConn connectors
- [ ] Install AFCI breakers on bedroom circuits (detects arcing faults before they cause fires)
- [ ] Stop using extension cords as permanent wiring — add circuits instead
- [ ] Never use space heaters on extension cords or power strips
- [ ] Test smoke detectors monthly and replace batteries annually
- [ ] Keep 1 metre clearance around your electrical panel
- [ ] Don't overload outlets — maximum 2 high-draw devices per circuit

When to be concerned:

- Burning or acrid smell from outlets, switches, or panel — **call an electrician immediately**
- Discoloured or warm outlet covers
- Sparking when plugging in devices
- Breakers that trip and won't reset
- Lights that flicker throughout the house (indicates loose main connections)

If you smell burning from an electrical source and can't identify it, **call the fire department first**, then an electrician. NB fire departments respond to electrical emergencies and can help identify the source safely.

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Q5

Why does my GFCI outlet keep tripping in my bathroom and how do I fix it?

A GFCI (Ground Fault Circuit Interrupter) outlet that repeatedly trips in a New Brunswick bathroom is one of the most common electrical complaints homeowners bring to electricians. While annoying, the GFCI is doing its job — detecting a fault condition that could be dangerous. The key is figuring out whether the fault is in the outlet itself, the wiring, or a connected device.

How a GFCI Works

A GFCI constantly monitors the current flowing out through the hot wire and returning through the neutral wire. These two values should be **exactly equal**. If the GFCI detects a difference of **5 milliamps (0.005 amps) or more**, it trips in **1/40th of a second** — fast enough to prevent electrocution.

That 5 mA threshold is extremely sensitive, which is why GFCIs can trip from conditions that seem harmless.

Most Common Causes in NB Bathrooms

1. Moisture Infiltration (The #1 Cause)

New Brunswick's Maritime climate means **high humidity year-round** — particularly problematic in bathrooms. Moisture can cause GFCI trips in several ways:

Condensation inside the outlet box: During cold months (October through April in NB), the temperature difference between a cold exterior wall and a warm, steamy bathroom creates condensation inside electrical boxes mounted on exterior walls. This moisture creates a slight current leak to ground that the GFCI detects.

Steam from showers: Bathrooms without adequate ventilation accumulate steam that penetrates outlet cover plates. Over time, mineral deposits from hard water (common in areas of NB served by well water — particularly rural Moncton area, Kings County, and the Saint John River Valley) build up inside the outlet and create conductive paths.

Fix: Ensure your bathroom exhaust fan is working properly and sized for the room. The building code requires a minimum of **50 CFM** for a bathroom. Run the fan during and **20–30 minutes after** showering. If the GFCI is on an

exterior wall, an electrician can add weather-resistant gaskets and ensure the box is sealed.

2. Faulty Appliance

A device plugged into the GFCI circuit may have a slight ground fault:

Common culprits:

- Hair dryers (especially older ones with worn cord insulation)
- Curling irons and straighteners
- Electric shavers and their chargers
- Portable space heaters (should NOT be in a bathroom, but people use them)
- Heated towel racks or heated mirrors

Diagnosis method: Unplug ALL devices from the GFCI outlet and any outlets downstream of it (more on this below). Reset the GFCI. If it stays on, plug devices in one at a time. The device that causes the trip is your culprit.

Fix: Replace the faulty appliance. Do not bypass the GFCI — it's detecting a real fault that could shock you, especially in a wet bathroom environment.

3. Downstream Wiring or Outlets

A single GFCI outlet often protects **multiple downstream outlets** — that's how bathroom circuits are typically wired in NB homes. The GFCI is the first outlet on the circuit, and standard (non-GFCI) outlets downstream are protected by it. A fault anywhere downstream will trip the GFCI.

Common downstream issues:

- A standard outlet in another bathroom that's exposed to moisture
- An outdoor outlet on the same circuit (exposed to rain or snow)
- A garage outlet sharing the circuit (moisture, dust, tool faults)
- Loose wire connections at any downstream outlet
- Rodent-damaged wire in the wall cavity (more common in rural NB properties)

Diagnosis: Open the GFCI outlet and disconnect the "LOAD" wires (the downstream wires). Reset the GFCI with only the "LINE" wires connected. If it holds, the fault is downstream. Reconnect downstream outlets one at a time to isolate the problem.

Fix: Repair or replace the faulty downstream outlet or wiring section. An electrician charges **$100–$300** to diagnose and fix downstream issues.

4. Worn-Out GFCI Outlet

GFCI outlets have a **limited lifespan of 10–15 years**. The internal components degrade over time, and the outlet becomes either overly sensitive (nuisance trips) or — more dangerously — stops providing protection entirely.

Signs of a worn GFCI:

- Trips with nothing plugged in and no apparent moisture
- Won't reset at all (clicks but immediately trips)
- Resets but the indicator light doesn't illuminate (or shows red/amber instead of green)
- Has been installed for 10+ years

Fix: Replace the GFCI outlet. A new residential GFCI outlet costs **$15–$30** at Kent Building Supplies, Home Hardware, or Canadian Tire in New Brunswick. A licensed electrician charges **$75–$150** to replace one. If you're comfortable with basic electrical work (breaker off, voltage tester used), GFCI replacement is a manageable DIY project.

5. Wiring Issues

Less common but more serious causes:

Reversed polarity: If the hot and neutral wires are swapped at the GFCI or at a downstream outlet, the GFCI may trip intermittently. This is a code violation that should be corrected.

Shared neutral: In some older NB homes, two circuits may share a neutral wire (a multi-wire branch circuit or MWBC). If a GFCI is installed on one circuit of an MWBC without proper configuration, the different current on the shared neutral causes the GFCI to see an imbalance and trip.

Ground fault in wiring: Damaged wire insulation — from age, staples driven too tightly, nail penetration, or rodent damage — can create a current leak to a grounded surface (metal box, stud, pipe). This is a genuine fault that the GFCI is correctly detecting.

Fix: These require a licensed electrician with diagnostic tools (megohmmeter for insulation testing, circuit tracer for wiring identification). Cost: **$100–$400** depending on complexity.

6. Electrical Panel Interference

GFCI breaker plus GFCI outlet (double protection): Some NB homes have both a GFCI breaker in the panel AND a GFCI outlet on the same circuit. This "double GFCI" configuration causes nuisance trips because both devices are monitoring the same circuit and can interfere with each other.

Fix: Use one or the other — either a GFCI breaker in the panel (protects the whole circuit) or a GFCI outlet at the first position (protects downstream). Having both is unnecessary and problematic.

Step-by-Step Troubleshooting

- **Unplug everything** from the GFCI and all outlets it protects
- **Reset the GFCI** — press the RESET button firmly
- **If it holds:** Plug in devices one at a time. The one that causes a trip is faulty.
- **If it trips immediately with nothing plugged in:**

  - Try replacing the GFCI outlet (if it's more than 10 years old) - If a new GFCI still trips, the fault is in the wiring — call an electrician
- **If it trips only in certain conditions** (humid weather, after showers, during rain):

  - Moisture is the likely cause - Improve ventilation, seal the outlet box, and check for outdoor outlets on the same circuit

When to Call an Electrician

- GFCI trips repeatedly and you can't identify the cause after basic troubleshooting
- GFCI won't reset at all
- You smell burning or see scorch marks
- Multiple GFCI outlets in different locations trip simultaneously
- The problem started after a renovation, storm, or rodent activity

  A licensed electrician in New Brunswick charges **$85–$120/hour** and can typically diagnose and fix a bathroom GFCI issue in **1–2 hours** ($100–$250 total).

Prevention Tips for NB Homes

- Run the bathroom exhaust fan during and after every shower
- Replace GFCI outlets **every 10–15 years** proactively
- Test GFCI outlets monthly using the TEST/RESET buttons — takes 5 seconds
- Don't use extension cords in bathrooms

- Ensure outdoor outlets on the same circuit have weatherproof covers rated for "in-use" protection
- In homes with well water, hard water mineral deposits can accelerate GFCI degradation — consider a water softener for overall home benefit

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Q6

What causes lights to flicker when it's windy outside in New Brunswick and should I be worried?

Flickering lights during windy weather are extremely common in New Brunswick — especially in exposed coastal areas along the Bay of Fundy, the Acadian Peninsula, and in communities like Shediac, Bathurst, Campbellton, and Grand Manan. While it's often harmless, some causes require immediate attention.

The Most Common Cause: NB Power Service Connection

The majority of wind-related flickering comes from **your overhead service connection** — the wires running from the NB Power utility pole to your home's weatherhead (the curved pipe at the top of your service mast). During strong winds, these wires sway and can create momentary loose connections at either end.

What's happening: The service drop wires are typically aluminum, connected to the utility pole with a wedge clamp and to your weatherhead with split-bolt connectors or compression fittings. Over time, these connections can loosen due to thermal cycling (aluminum expands and contracts with temperature changes — a significant factor in New Brunswick where temperatures range from +35°C in summer to -30°C in winter) and constant wind stress.

Signs this is your issue:

- Flickering affects the **entire house** — not just one room or circuit
- Flickering correlates directly with wind gusts
- You may notice the lights dim slightly rather than flicker rapidly
- The problem is worse during nor'easters and strong westerly winds

What to do: Contact **NB Power** to inspect the connection at the utility pole (their responsibility) and have a licensed electrician check the connection at your weatherhead and meter base (your responsibility). NB Power won't charge for inspecting their side. An electrician checking your weatherhead/meter base connection typically charges **$100–$200** and can retighten or replace connectors.

Loose Connections at the Meter Base

Your electric meter sits in a metal box (meter base) on the exterior of your home. The connections inside — where the service entrance cable meets the meter socket — can loosen over time. This is the **second most common cause** of whole-house flickering during wind, because the wind physically shakes the meter base and wiggles the connections.

Warning signs:

- Burn marks or discolouration around the meter base
- A humming or buzzing sound from the meter area during wind
- The meter glass looks foggy or shows signs of heat damage
- A warm spot on the wall behind the meter base (check from inside)

This is potentially dangerous. A loose connection at the meter base causes arcing, which generates heat and can start a fire. If you notice any of these signs, contact your electrician and NB Power promptly. NB Power will need to pull the meter for the electrician to work safely inside the meter base.

Repair cost: **$200–$500** for the electrician, plus NB Power's meter pull/reinstall (usually no charge).

Tree Branch Contact With Power Lines

New Brunswick's dense tree coverage means branches regularly grow into or near power lines. During wind, branches can:

- Make intermittent contact with the service drop to your home
- Sway into the main distribution lines on your street, causing neighbourhood-wide flickering
- Break and fall across lines, causing outages (common during ice storms and autumn nor'easters)

What to do: If you see a branch touching or very close to power lines, **do not attempt to remove it yourself**. Contact NB Power's tree trimming program. They maintain vegetation clearance around their lines at no charge. For branches near your service drop specifically, you may need to hire a certified arborist — costs range from **$200–$800** depending on the tree and accessibility.

Problems Inside Your Home

Sometimes what seems like wind-related flickering is actually an internal wiring issue that's more noticeable during storms (because you're home, lights are on, and you're paying attention). Internal causes include:

Loose neutral connection at the panel: The main neutral wire connecting your panel to the service entrance can loosen at the bus bar. This causes a voltage imbalance between the two 120V legs of your service, making lights on one half of your panel dim while lights on the other half get brighter. This is **dangerous** — it can damage electronics and appliances.

Loose breaker connections: Individual breakers can lose their tight connection to the bus bar, especially in older panels. This causes flickering on specific circuits rather than the whole house. The panel may be physically moving slightly in wind if it's mounted on an exterior wall, worsening the connection.

Aluminum wiring connections: Homes built in New Brunswick during the late 1960s and 1970s may have aluminum branch circuit wiring. Aluminum expands more than copper and can work loose at connections over time. Wind vibration transmitted through the building structure can cause intermittent contact at these connections. If your home has aluminum wiring, have an electrician inspect connections using approved anti-oxidant compound and CO/ALR-rated devices.

When to Be Worried

Seek immediate attention if:

- Lights **brighten** dramatically on one circuit while dimming on another (neutral problem — turn off sensitive electronics immediately)
- You smell burning or see sparks at any electrical connection
- The flickering is getting progressively worse over weeks or months
- You hear a buzzing or crackling sound from your panel, meter base, or weatherhead
- A breaker trips during windstorms (potential arcing)

Monitor but not urgent:

- Brief, mild flickering during strong gusts that resolves immediately when wind dies down
- Flickering that affects the whole neighbourhood (NB Power distribution issue — they're likely already aware)

- Occasional flicker in one fixture (may be a loose bulb or failing LED driver)

Maritime-Specific Context

New Brunswick experiences some unique conditions that contribute to this issue:

- **Salt air corrosion:** Coastal homes near the Bay of Fundy, Northumberland Strait, and along the Saint John River estuary experience accelerated corrosion of aluminum connections. Annual inspection of your service connections is advisable.
- **Ice loading:** Our infamous Maritime ice storms add tremendous weight to overhead lines, stretching connections. After any significant ice event, flickering may increase.
- **Post-tropical storms:** When remnants of hurricanes and tropical storms track through the Maritimes (typically September-October), sustained high winds can cause significant service connection stress.

  For persistent wind-related flickering, the systematic approach is: **NB Power checks the pole connection ? electrician checks weatherhead and meter base ? electrician checks panel connections**. This process of elimination usually identifies the problem within one or two service calls, totalling **$100–$500** to diagnose and repair.

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Q7

What does it mean when my lights dim randomly in my New Brunswick home?

Random Light Dimming: Causes and Solutions for NB Homes

Lights that dim briefly when an appliance kicks on are usually normal. Lights that dim randomly, repeatedly, or stay dim for extended periods indicate a problem that needs diagnosis.

Normal vs. Abnormal Dimming

Normal (usually harmless):

- Brief dim (under 1 second) when the furnace, AC, well pump, or fridge starts
- Slight dim when a high-draw appliance (microwave, hair dryer) turns on
- Consistent with one specific appliance starting

Abnormal (needs investigation):

- Dimming that lasts more than 2 seconds
- Random dimming with no apparent trigger
- Dimming in some rooms but not others
- Dimming accompanied by flickering, buzzing, or warm outlets
- Dimming that's getting progressively worse
- Lights going brighter than normal (overvoltage — potentially dangerous)

Cause 1: Loose Connections (Most Dangerous)

Loose electrical connections create resistance. Under load, that resistance causes voltage drop to downstream devices (dimming) and generates heat (fire risk).

Where to look:

- **Panel connections** — loose bus bar connections, loose breaker terminals
- **Service entrance** — loose connection at the meter base, the mast, or the weatherhead
- **Outlet and switch terminals** — especially backstab (push-in) connections that loosen over time
- **Neutral wire connections** — a loose neutral is particularly problematic because it affects all circuits sharing that neutral

Why it's dangerous: A loose connection is an active fire hazard. The resistance generates heat proportional to the current flowing through it. Under heavy load (winter heating, cooking), a loose connection can reach temperatures that ignite surrounding materials.

Fix: A TSANB-licensed electrician uses a thermal imaging camera ($300–$500 for the scan) to identify hot spots at connections throughout the panel and accessible wiring. Tightening or replacing the affected connections resolves the dimming and eliminates the fire risk. Cost: $100–$500 depending on the scope.

Cause 2: Overloaded Circuit

When a circuit is loaded near its capacity, every additional device causes a noticeable voltage drop.

Example: A 15A circuit serving a bedroom with a space heater (12.5A) leaves only 2.5A for everything else. Turning on a lamp (0.5A) barely registers, but plugging in a hair dryer (10A) would trip the breaker — and running a vacuum (8A) causes visible dimming before the breaker trips.

Fix: Redistribute loads across circuits or add a new circuit for high-draw devices. Cost: $300–$600 for a new circuit.

Cause 3: Undersized Panel or Service

A 60A or 100A panel serving a home with electric heat, a dryer, a stove, and modern appliances may not deliver enough current during peak demand. The entire house dims when multiple large loads run simultaneously.

Common in NB: Older homes in Moncton, Saint John, Fredericton, and rural areas with original 60A or 100A panels that were never upgraded. Adding a heat pump, EV charger, or hot tub to an already-loaded panel makes this worse.

Fix: Panel upgrade from 100A to 200A. Cost: $2,500–$4,500. This is the permanent solution for whole-house dimming under heavy load.

Cause 4: Utility-Side Problem

If dimming affects your entire house AND your neighbours report similar issues, the problem is on NB Power's side:

- **Failing transformer** — the neighbourhood transformer may be overloaded or deteriorating
- **Loose connection at the pole** — the connection between NB Power's lines and your service drop can loosen over time

- **Overloaded neighbourhood feeder** — too many homes drawing power from the same feeder line, especially during cold snaps when everyone's baseboard heaters are at maximum

  Fix: Report to NB Power at 1-800-663-6272. They'll investigate at no cost to you. If the problem is their equipment, they'll repair or replace it. If it's the connection at the pole, they'll address that too. Turnaround is typically 1–5 business days for non-emergency voltage issues.

Cause 5: Failing Main Breaker or Neutral

A deteriorating main breaker or a corroded/loose main neutral connection can cause voltage imbalances between the two 120V legs of your electrical service. Symptoms:

- Some lights dim while others get brighter
- Dimming that shifts between different areas of the house
- Appliances on 240V (stove, dryer) working fine while 120V circuits fluctuate

  This is called a **floating neutral** or **lost neutral** and it's dangerous — overvoltage on one leg can damage electronics and appliances. If you notice some lights getting brighter than normal, turn off the main breaker and call an electrician immediately.

  Fix: Electrician repairs the neutral connection or replaces the main breaker. Cost: $150–$500 for the repair, or part of a panel upgrade if the panel is old.

Diagnostic Steps

- **Note the pattern** — when does it happen, which lights are affected, how long does it last?
- **Check the breaker panel** — feel for warm breakers (with the panel door open, carefully touch breaker handles — they should all be the same temperature)
- **Ask neighbours** — if they're experiencing the same thing, call NB Power
- **Check for correlation** — does it happen when a specific appliance runs?
- **Call an electrician** if the dimming is persistent, random, affects multiple rooms, or is accompanied by other symptoms (buzzing, warm outlets, burning smell)

  A diagnostic visit costs $80–$175 in most NB communities. Given that loose connections are a fire hazard, this is well worth the cost for peace of mind.

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Q8

What causes a popping or crackling sound in my electrical panel?

Popping or Crackling Sounds from Your Electrical Panel

Any unusual sound from your electrical panel — popping, crackling, buzzing, or sizzling — demands attention. While some sounds are benign, others indicate dangerous conditions that can lead to electrical fires.

Sounds and What They Mean

Occasional soft click: Normal. Breakers make a subtle click when they cycle, and AFCI breakers periodically self-test with an audible click. If the click is occasional, brief, and not accompanied by any other symptoms, this is normal operation.

Persistent buzzing or humming: May be normal for certain breaker types. AFCI and GFCI breakers have electronic components that can produce a faint hum. However, a loud or increasing buzz suggests a breaker is handling more current than it should, or a connection is loose.

Popping or crackling: This is a warning sign. Popping and crackling sounds indicate arcing — electricity jumping across a gap. Sources:

- Loose bus bar connection (breaker not fully seated)
- Loose wire terminal on a breaker
- Corroded or oxidized connection point
- Damaged breaker with internal arcing
- Moisture inside the panel (corrosion + arcing)

Sizzling: This is an emergency. Sizzling sounds mean sustained arcing or overheating is occurring. Turn off the main breaker and call a licensed electrician immediately. Do not wait.

What to Do Right Now

If the sound is a pop or crackle (not sizzling, no smoke):

- **Don't panic** — but don't ignore it either
- **Look at the panel** (without touching anything) — do you see sparking, discolouration, or smoke?
- **Feel the panel door** with the back of your hand — is it warm or hot? (Panels should be near room temperature)
- **Smell for burning** — burning plastic or electrical smell is a serious warning
- **Call a TSANB-licensed electrician** for a same-day or next-business-day diagnostic

If you see sparks, smoke, or smell burning:

- **Turn off the main breaker** if you can safely reach it
- **If you cannot safely reach the panel** — leave the house and call 911
- **Do NOT spray water** on an electrical panel
- **Do NOT open the inner panel cover** — the bus bars inside carry lethal current
- **Call 911** if there are flames or heavy smoke
- **Call an electrician** for emergency service

Common Causes in NB Homes

1. Breaker not fully seated When a breaker isn't firmly clipped onto the bus bar, the connection has high resistance. Under load, current arcs across the gap — causing popping sounds and generating heat.

This happens when:

- A breaker was tripped and reset without fully engaging
- The breaker was removed and reinstalled (for panel work) without proper seating
- The breaker clip has weakened with age

Fix: Electrician firmly reseats or replaces the breaker. Cost: $50–$150.

2. Loose wire on a breaker terminal The wire connecting a circuit to its breaker is held by a screw terminal. If the screw loosens (from vibration, thermal cycling, or improper initial tightening), the wire can arc against the terminal.

Fix: Electrician tightens all connections in the panel. Often done as part of a panel maintenance service. Cost: $100–$300 for a full panel tightening.

3. Corroded connections Moisture inside the panel causes corrosion on bus bars, breaker clips, and wire terminals. Sources of moisture in NB:

- Panel located in a damp basement (very common)
- Condensation from exterior walls (panel on an outside wall)
- Water entry through the service entrance conduit from above
- Flood damage

Fix: Clean corroded connections, replace damaged breakers, and address the moisture source. May require panel relocation in severe cases. Cost: $200–$1,000 depending on severity.

4. Overloaded breaker A breaker carrying current near its rated capacity runs hot and can produce a faint buzz or hum. If the connection is also slightly loose, the heat + loose connection creates arcing sounds.

Fix: Redistribute loads or add circuits to reduce the breaker's load. Cost: $300–$600 per new circuit.

5. Failing breaker Breakers have a finite lifespan. After 25–40 years, internal components degrade. A failing breaker may:

- Make unusual sounds
- Feel warm to the touch
- Trip intermittently at loads below its rating
- Not trip at all (the most dangerous failure mode)

Fix: Replace the breaker. Cost: $50–$200 per breaker installed. If the panel is old enough for breakers to be failing, consider a full panel replacement.

Prevention

- **Annual panel inspection** — have a licensed electrician open the panel, check for loose connections, signs of overheating, corrosion, and moisture annually or every 2 years. Cost: $100–$200.
- **Dehumidifier in the basement** — if your panel is in a damp basement (as most NB panels are), keep humidity below 60% to prevent corrosion.
- **Report unusual sounds early** — a loose connection that pops today becomes an arcing fire hazard tomorrow. The cost to fix a loose connection is $50–$150. The cost of an electrical fire is immeasurable.
- **Don't overload circuits** — persistent overloading accelerates breaker wear and connection degradation.

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Q9

How do I troubleshoot an outlet that stopped working?

Troubleshooting a Dead Outlet in Your New Brunswick Home

A single outlet that stops working usually has a simple cause. Before calling an electrician, work through these steps — you can often fix it yourself in minutes.

Step 1: Check If It's Just That Outlet

Test other outlets in the same room and adjacent rooms. If multiple outlets are dead, the problem is likely a tripped breaker or a tripped GFCI upstream — not the individual outlet.

Step 2: Check the Breaker Panel

Open your panel and look for a tripped breaker — it will be in the middle position (between ON and OFF) or may show an orange/red indicator. Reset it by pushing firmly to OFF, then to ON.

If the breaker trips again immediately, you have a short circuit or ground fault on that circuit — stop and call an electrician.

Step 3: Check Upstream GFCI Outlets

This is the most common cause of a "dead" outlet that people miss. In many NB homes, one GFCI outlet protects several downstream outlets. If the GFCI trips, all outlets it protects go dead — even outlets in other rooms.

Where to look for the GFCI:

- Bathroom (most common)
- Kitchen
- Garage
- Basement
- Outdoor outlets
- The electrical panel (GFCI breakers have a TEST button)

  Press the RESET button on any tripped GFCI. If it clicks and the dead outlet comes back to life, the GFCI was the issue. The GFCI may have tripped due to moisture, a faulty device, or a ground fault somewhere on the circuit.

Step 4: Test the Outlet Itself

Plug a lamp or phone charger (something you know works) into both sockets of the outlet. If neither socket works and the breaker is on and GFCIs are reset, the outlet itself may have failed.

Check with a voltage tester ($15–$25 non-contact tester):

- Hold the tester near the narrow (hot) slot of the outlet
- If it beeps/lights up: power is present but the outlet's internal contacts may be worn
- If no indication: no power reaching the outlet — the problem is in the wiring, not the outlet

Step 5: Check for a Switched Outlet

Many NB homes, especially in living rooms and bedrooms, have outlets controlled by a wall switch. Try every switch in the room — including any that seem to control nothing. Half-switched outlets (top socket always on, bottom socket switched) are common.

If flipping a switch brings the outlet back to life, you've found a switched outlet. Not a malfunction — just a feature you weren't aware of.

Step 6: Check for Loose Connections (Power Off First)

If none of the above solved it:

- **Turn off the breaker** for that circuit
- **Verify power is off** with a voltage tester
- **Remove the cover plate and unscrew the outlet** from the box

- **Inspect the wire connections:**

  - Are any wires disconnected from their terminals? - Are screw terminals loose? (Gently tug each wire — it should be firmly held) - Are backstab connections (wires pushed into holes in the back) making good contact? Backstab connections are notorious for failing over time. - Is there any blackening, melting, or burn marks? (If yes, stop — call an electrician)
- **Tighten all screw terminals** or, better yet, move backstab wires to screw terminals
- **Reassemble and test**

Step 7: Check Downstream Wiring

In a typical circuit, outlets are wired in series — power comes in from the panel, passes through outlet 1, continues to outlet 2, outlet 3, etc. If a connection fails at outlet 1, outlets 2 and 3 lose power too.

If only one outlet is dead but the ones before and after it on the circuit work, the problem is at that specific outlet's connections. If all outlets downstream of a certain point are dead, the break is at the last working outlet (where the wire to the dead outlets connects).

When to Call an Electrician

- You see burn marks, smell burning, or the outlet or wall feels warm
- The breaker trips repeatedly when you reset it
- You can't identify the tripped GFCI or breaker
- Connections look intact but there's still no power (fault may be in the wall)
- You have aluminum wiring (don't disturb aluminum connections yourself — improper handling worsens the oxidation problem)
- You're not comfortable working inside an outlet box

  A diagnostic visit from a licensed electrician in Moncton, Saint John, Fredericton, or elsewhere in NB costs $80–$175. Common fixes (loose connection, failed outlet replacement, GFCI reset) are often resolved during the same visit for $100–$250 total.

Prevention

- Replace outlets with backstab connections with screw-terminal connections when doing any work on them
- Don't overload outlets with high-draw devices (space heaters, power tools)
- Test GFCI outlets monthly to ensure they're functioning

- If an outlet feels warm during normal use, have it checked — warmth indicates a loose connection or overloaded circuit

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Q10

What causes a circuit breaker to keep tripping and how do I find the problem?

Diagnosing a Circuit Breaker That Keeps Tripping

A breaker that trips once is doing its job. A breaker that trips repeatedly is telling you something is wrong — and the fix depends on which of several possible causes is responsible.

The Three Reasons Breakers Trip

1. Overload (most common) The total current draw on the circuit exceeds the breaker's rating. A 15-amp breaker trips when more than 15 amps flows through it, and a 20-amp breaker trips above 20 amps.

Common overload scenarios in NB homes:

- Space heater (12.5A) + hair dryer (10A) on the same 15A circuit = 22.5A ? trips
- Kitchen toaster (8A) + kettle (12A) on the same 20A circuit = 20A ? right at the limit, may trip
- Multiple baseboard heaters on an undersized circuit during a cold snap
- Christmas lights added to an already loaded living room circuit

2. Short circuit A hot wire touches a neutral wire or ground wire, creating a near-zero-resistance path that draws massive current instantly. The breaker trips immediately and forcefully — you may hear a loud snap or see a spark.

Causes:

- Damaged wire insulation (from a nail, screw, rodent, or age)
- Loose wire connection that lets conductors touch
- Faulty appliance with internal wiring failure
- Water intrusion into an outlet or junction box

3. Ground fault Current leaks from the hot wire to ground through an unintended path — often through water, a person, or damaged insulation touching a metal surface. GFCI breakers and GFCI outlets detect this and trip at just 4–6 milliamps.

Common in NB:

- Outdoor outlets exposed to rain or snowmelt
- Basement outlets in damp or flooding-prone areas
- Bathroom circuits where humidity causes moisture in outlet boxes

- Well pump circuits with moisture in the conduit

Step-by-Step Diagnosis

Step 1: Identify the circuit Your panel directory should tell you which rooms/outlets are on the tripped breaker. If your panel isn't labelled (common in older NB homes), now is a good time to map it — turn off one breaker at a time and note what loses power.

Step 2: Unplug everything on the circuit Unplug every device, appliance, and lamp on the affected circuit. Turn off all switches.

Step 3: Reset the breaker Push firmly to OFF, then to ON.

Step 4: Evaluate the result

If the breaker holds with nothing connected:

- The problem is one of the devices that was plugged in
- Plug devices back in one at a time, waiting 5 minutes between each
- When the breaker trips, the last device you plugged in is likely the culprit
- That device may have a short circuit, ground fault, or simply draws too much current for the remaining circuit capacity

If the breaker trips immediately with nothing connected:

- The problem is in the wiring itself — a short circuit or ground fault somewhere in the walls, outlets, or junction boxes on that circuit
- This requires a licensed electrician to diagnose. They'll use a megohmmeter (insulation resistance tester) to identify where the fault is located.

If the breaker trips after several minutes with nothing connected:

- Rare but possible — could be a failing breaker, a loose connection in the panel generating heat, or an intermittent wiring fault. Call an electrician.

When It's an Overload (Not a Fault)

If the breaker only trips when you're running specific combinations of appliances, the circuit is simply overloaded. Solutions:

- **Reduce the load** — don't run the space heater and hair dryer at the same time
- **Move devices to different circuits** — plug the space heater into an outlet on a different breaker

- **Add a new circuit** — have an electrician run a dedicated circuit for the high-draw device. Cost: $300–$600 in most NB homes.

Specific to NB Homes

Electric baseboard heating circuits are the most common source of repeated tripping in New Brunswick. Each 240V baseboard heater draws 6–8 amps. If three or four heaters share a single 20-amp circuit, a cold snap that drives all of them to maximum output simultaneously can trip the breaker. The fix is splitting the heaters across multiple circuits — a TSANB-licensed electrician can assess and rewire the heating circuits for $500–$1,500 depending on scope.

Older panels with worn breakers — breakers lose their calibration over decades. A 20-amp breaker in a 40-year-old panel might trip at 17 or 18 amps due to aging thermal elements. Replacing the breaker ($50–$150 installed) solves this, but if the panel itself is old, consider a full panel upgrade.

When to Call an Electrician

- Breaker trips with nothing plugged in
- Breaker trips immediately upon reset (won't hold at all)
- You smell burning or see scorch marks
- Multiple breakers trip simultaneously
- The main breaker trips (whole house loses power)
- You've identified an overload but can't easily redistribute loads
- The problem started after a storm, flood, or renovation work

A diagnostic visit costs $80–$175 in most NB communities. If the electrician identifies a wiring fault, repair costs depend on location and accessibility — accessible junction box repairs run $100–$300, while a fault buried in a wall may require $500–$1,500 to locate and fix.

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Q11

How do I fix a buzzing or humming sound from a dimmer switch?

Fixing Buzzing or Humming Dimmer Switches

A buzzing, humming, or vibrating dimmer switch is one of the most common minor electrical complaints in New Brunswick homes. It's rarely dangerous, but it's annoying — and usually fixable without an electrician.

Why Dimmers Buzz

The basic physics: A dimmer switch works by rapidly switching the power on and off — up to 120 times per second (at 60Hz). This chopping of the AC waveform causes the filament in incandescent bulbs or the components in LED drivers to vibrate at audible frequencies. The result is a buzz or hum that varies with the dimming level.

Louder at certain dimming levels: Most buzzing is worst at the 25–75% dimming range. At full brightness (100%) or very low (under 10%), the buzzing often disappears or is much quieter.

Common Causes and Fixes

1. Incompatible dimmer and bulb combination (most common with LEDs)

Old-style dimmers designed for incandescent bulbs use a technology called TRIAC dimming. Many LED bulbs don't work well with TRIAC dimmers — the result is buzzing, flickering, or limited dimming range.

Fix: Replace the dimmer with an LED-compatible model. Look for dimmers specifically labelled "LED/CFL compatible" or "ELV" (Electronic Low Voltage). Quality LED dimmers from Lutron, Leviton, or Legrand cost $25–$60.

2. Cheap or unrated LED bulbs

Budget LED bulbs with poor driver circuits buzz more than quality LEDs. Even with a compatible dimmer, a $2 LED from a discount store may buzz while a Philips or GE LED stays silent.

Fix: Try a different brand of LED bulb. Check the dimmer manufacturer's compatibility list — Lutron publishes an extensive database of tested bulbs. Switching to a recommended bulb often eliminates the buzz completely. Cost: $5–$15 per bulb.

3. Overloaded dimmer

Every dimmer has a maximum wattage rating (typically 150W for LED dimmers, 600W for incandescent). If your total bulb wattage exceeds the dimmer's rating, it works harder and may hum.

Fix: Check the dimmer's rating (printed on the body or packaging) and add up the wattage of all bulbs on that dimmer. If you're over the limit, either reduce the number of bulbs or upgrade to a higher-rated dimmer. A 600W incandescent dimmer typically handles about 150W of LED.

4. Loose dimmer wiring

A loose wire connection at the dimmer creates resistance and can cause buzzing or humming, especially under load.

Fix: Turn off the breaker, remove the dimmer faceplate and inspect the wire connections. If using wire nuts, ensure they're tight. If the dimmer has screw terminals, tighten them. If using push-in (backstab) connections, consider switching to screw terminals for a more secure connection.

5. The buzzing is in the bulbs, not the switch

Sometimes the buzz comes from the light fixture, not the switch. Stand near the fixture and the switch separately to identify the source.

Fix: If the bulbs are buzzing, replace them with a dimmer-compatible model. If the fixture itself resonates (metal housing, thin glass, loose components), tighten any screws and ensure the bulbs are fully seated.

6. Transformer-based fixtures

Low-voltage lighting systems (some track lighting, under-cabinet lights, landscape lighting) use transformers that can buzz when dimmed. Magnetic transformers are particularly prone to humming.

Fix: Use a dimmer rated for the transformer type. Magnetic (MLV) transformers need an MLV-rated dimmer. Electronic (ELV) transformers need an ELV-rated dimmer. Using the wrong dimmer type causes buzzing and can damage the transformer.

Recommended LED-Compatible Dimmers

| Dimmer | Price | Features | |--------|-------|---------| | Lutron Caseta | $60–$80 | Best overall, works without neutral wire, very quiet | | Lutron Diva CL | $25–$35 | Slide dimmer, adjustable low-end trim, excellent LED compatibility | | Leviton DW6HD | $30–$45 | WiFi smart dimmer, good LED compatibility | | Legrand radiant | $25–$40 | Clean design, good performance |

When It's NOT the Dimmer

If buzzing persists after replacing the dimmer and bulbs:

- Check for loose wire connections in the junction box behind the switch
- Check the fixture for loose components
- Listen at the electrical panel — a buzzing breaker indicates a different problem (loose breaker, overloaded circuit, or failing breaker)
- A persistent buzz in the walls (not at the switch or fixture) could indicate arcing in the wiring — this is a fire hazard. Call a TSANB-licensed electrician immediately.

Cost Summary

| Fix | Cost | |-----|------| | Replace dimmer with LED-compatible model | $25–$60 (DIY) or $125–$200 (electrician) | | Replace bulbs with compatible LEDs | $5–$15 per bulb | | Tighten connections (DIY) | $0 | | Electrician diagnostic (if fixes above don't work) | $80–$150 |

In most cases, a $30–$60 LED dimmer swap solves the problem completely. Start there before calling an electrician.

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Q12

Why does my smoke detector keep beeping and how do I fix it?

Smoke Detector Beeping: Causes and Fixes for NB Homes

A beeping smoke detector is one of the most common — and most annoying — household issues. But before you rip it off the ceiling, understand what the beeping means and how to fix it properly.

Decoding the Beep Pattern

Single chirp every 30–60 seconds:

- **Low battery** — the most common cause. Replace the 9V battery (or AA batteries in newer models). Even hardwired smoke detectors have backup batteries that need periodic replacement.

  Three beeps, pause, three beeps (repeating):

- **Smoke detected** — this is the actual fire alarm pattern. Check for smoke, cooking fumes, steam from the shower, or dust. If no visible cause, the detector may be malfunctioning.

  Four beeps, pause, four beeps:

- **Carbon monoxide detected** (combo smoke/CO detectors). This is a life-safety emergency. Evacuate immediately and call 911. Do NOT re-enter until emergency services clear the home.

  Five beeps or continuous chirping:

- **End of life** — many smoke detectors chirp a distinct pattern when they've reached their expiration date (10 years for ionization/photoelectric, 5–7 years for CO detectors). The detector must be replaced.

  Intermittent beeping that stops and restarts:

- Temperature-related false alarms (common in NB homes with detectors near drafty areas or in unheated spaces during winter)
- Dust or insect contamination inside the detector
- Humidity from a nearby bathroom or kitchen

Fix #1: Replace the Battery

The vast majority of chirping smoke detectors just need a fresh battery:

- Twist the detector counterclockwise to remove it from the mounting plate
- Open the battery compartment and remove the old battery
- Install a **fresh, name-brand 9V alkaline battery** (Duracell or Energizer). Don't use cheap dollar-store batteries — they have shorter life and can leak.
- Press the TEST button for 3–5 seconds until you hear the alarm sound
- Reattach to the mounting plate

Pro tip: Replace ALL smoke detector batteries at the same time, twice a year. Many NB fire departments recommend doing it when you change your clocks for daylight saving time (March and November).

Fix #2: Clean the Detector

Dust, cobwebs, and cooking residue build up inside smoke detectors and cause false alarms:

- Remove the detector from the ceiling
- Use compressed air (canned air, $5–$10 at any office supply store) to blow out the sensing chamber
- Vacuum around the vents with a brush attachment
- Wipe the exterior with a dry cloth
- Reinstall and test

In NB homes with wood stoves, pellet stoves, or fireplaces, smoke detectors near the stove accumulate particulates faster and may need cleaning every 3–6 months.

Fix #3: Replace the Detector

Smoke detectors have a limited lifespan:

- **Ionization and photoelectric smoke detectors:** 10 years from manufacture date (printed on the back)
- **CO detectors and combo units:** 5–7 years (check manufacturer's specs)
- **Heat detectors:** 10–15 years

If your detector is past its expiration date, no amount of battery changes or cleaning will stop the end-of-life chirp. Replace it.

Cost: $15–$35 for a quality combination smoke/CO detector. Brands like Kidde and First Alert are widely available at Kent, Home Hardware, and Canadian Tire in NB.

Hardwired vs. Battery-Only

Hardwired detectors (connected to your home's electrical system) are required in new NB construction. They're interconnected — when one detects smoke, all detectors in the house alarm simultaneously. They still have backup batteries for power outages.

If a hardwired detector chirps:

- Replace the backup battery first
- If chirping continues, the detector itself may be failing — replace it

- If ALL hardwired detectors chirp simultaneously, check for a tripped breaker on the smoke detector circuit
- **Replacing a hardwired detector** is a simple plug-in swap if the new detector uses the same wiring harness. Different brands may need an adapter harness ($5–$10).

NB Building Code Requirements

New Brunswick's building code requires:

- **Smoke detectors on every level** of a dwelling, including the basement
- **Smoke detector within 5 metres of every bedroom** entrance
- **Smoke detector inside every bedroom** (in newer construction)
- **CO detectors** on every level with a fuel-burning appliance (furnace, wood stove, gas fireplace, attached garage) or sleeping area near one

  Many older NB homes have only one or two smoke detectors. If your home doesn't meet current requirements, adding detectors is cheap insurance — literally, as some insurance companies offer discounts for verified smoke/CO detector coverage.

When to Call an Electrician

- Hardwired detectors that keep chirping after battery replacement and cleaning
- Interconnected detectors that false-alarm as a group
- Adding hardwired, interconnected detectors to an older home (requires running new wiring between detector locations)
- Detectors on a circuit that keeps tripping the breaker

  Adding hardwired interconnected detectors to an existing NB home typically costs $150–$300 per detector installed, including wiring. It's a worthwhile investment — interconnected detectors give you the earliest possible warning regardless of where the fire starts.

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Q13

Why do my lights flicker when the furnace kicks on?

Why Lights Flicker When Your Furnace Starts

A brief, subtle flicker when your furnace starts is normal. A prolonged dimming or noticeable brightness drop signals a problem that needs attention.

Normal vs. Problematic Flickering

Normal: Lights dim for a fraction of a second (less than 1 second) when the furnace blower motor starts. Electric motors draw 3–7 times their running current during startup, causing a momentary voltage dip on the circuit. This is especially noticeable with a high-efficiency furnace that has a variable-speed blower drawing 800–1,200 watts at startup.

Problematic: Lights dim noticeably for 2+ seconds, dim repeatedly while the furnace runs, or flicker throughout the house. This points to one of several issues.

Common Causes

1. Undersized electrical panel Many older New Brunswick homes — particularly those built before 1980 in Moncton, Saint John, and Fredericton — still have **60-amp or 100-amp panels**. When a furnace motor starts alongside other loads (electric dryer, hot water tank, kitchen appliances), the panel can't deliver enough current without voltage drop. Upgrading to a **200-amp panel** ($2,500–$4,500 installed) resolves this permanently.

2. Shared circuit If the furnace shares a circuit with lighting, the startup surge directly affects those lights. The Canadian Electrical Code requires furnaces to have a dedicated circuit. If yours doesn't, an electrician can run one for $300–$600.

3. Loose connections Loose wire connections at the panel, junction boxes, or the furnace disconnect create resistance. Under load, that resistance causes voltage drop and flickering. This is a **fire hazard** — loose connections generate heat and are a leading cause of electrical fires. Have a TSANB-licensed electrician inspect and tighten all connections.

4. Failing furnace blower motor A motor with worn bearings draws more current than normal during startup, creating a larger voltage dip. If the flickering has gotten worse over time, have your HVAC technician check the motor's amp draw against its nameplate rating.

5. Utility-side voltage issues If flickering happens across your entire house and affects neighbours too, the issue may be on NB Power's side — a failing transformer, loose connection at the pole, or overloaded neighbourhood circuit. Contact NB Power at 1-800-663-6272 to report voltage fluctuations. They'll investigate at no charge.

What to Do

- **Note the pattern** — which lights flicker, how long, and whether it's getting worse
- **Check your panel amperage** — it's printed on the main breaker. If it's 60A or 100A and you have an electric furnace, an upgrade is likely overdue
- **Call a licensed electrician** if flickering lasts more than 1–2 seconds, affects many rooms, or is accompanied by buzzing, warm outlets, or burning smells
- **Don't ignore it** — while brief flickering is harmless, persistent voltage drops stress electronics and can indicate dangerous loose connections

  A diagnostic visit from a licensed electrician in New Brunswick typically costs $80–$150 and can identify whether you need a panel upgrade, a dedicated circuit, or just a connection tightening.

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Q14

How do I troubleshoot an outlet that stopped working in one room of my house?

Troubleshooting a Dead Outlet in Your New Brunswick Home

An outlet that suddenly stops working is one of the most common electrical issues in New Brunswick homes. Before calling an electrician, there are several checks you can do yourself that resolve the problem about 70% of the time.

The key is working through the possibilities systematically rather than randomly checking things.

Step 1: Check if It's Just One Outlet or the Whole Circuit

Test other outlets in the same room — Plug a lamp or phone charger into every outlet. If multiple outlets are dead, the issue is likely the circuit breaker, a GFCI trip, or a broken connection upstream that feeds the whole group.

Test outlets in adjacent rooms — In many New Brunswick homes, especially older ones, a single circuit serves multiple rooms. A dead outlet in your bedroom might share a circuit with the hallway or bathroom. If outlets in multiple rooms are dead, you're looking at a circuit-level issue.

Check lights on the same circuit — If the ceiling light in the room also doesn't work, the entire circuit has lost power.

Step 2: Check Your Electrical Panel

Go to your breaker panel (usually in the basement or utility room) and look for:

A tripped breaker: A tripped breaker sits in a **middle position** between ON and OFF — not fully on, not fully off. This is easy to miss because it looks almost normal at a glance. To reset:

- Push the breaker firmly to the full OFF position first
- Then push it to the ON position
- If it trips again immediately, there's an active fault — **stop and call an electrician**
- If it stays on, go check the outlet

A blown fuse (older fuse panel): If your New Brunswick home still has a fuse panel, check for a blown fuse — the viewing window will be darkened or the metal strip inside will be broken. Replace with an **identical amperage** fuse — never use a higher-rated fuse as a fix.

Step 3: Check All GFCI Outlets

This is the **most commonly missed cause** of dead outlets in New Brunswick homes. A single GFCI outlet can protect multiple downstream outlets. When it trips, everything downstream goes dead — but the GFCI outlet may be in a completely different room.

Where to look for GFCI outlets:

- **Bathroom** — Check every bathroom in the house. A bathroom GFCI can protect outlets in adjacent bedrooms, hallways, or even the garage.

- **Kitchen** — Kitchen counter GFCIs sometimes protect dining room or pantry outlets.
- **Garage** — Garage GFCIs can feed outdoor outlets or nearby interior outlets.
- **Basement** — Basement GFCIs can protect laundry area and workshop outlets.
- **Outdoor** — An outdoor GFCI can protect porch outlets and sometimes interior outlets near the exterior wall.

Press the **RESET** button on each GFCI you find. If one clicks and your dead outlet comes back to life — that's the culprit. If the GFCI trips again soon after, there's a ground fault somewhere on the protected circuit.

Pro tip: In older New Brunswick homes (pre-2000), GFCIs were sometimes installed in unlikely locations by electricians taking the path of least resistance. Check every GFCI in the house, even ones that seem unrelated to the dead outlet.

Step 4: Check for a Switched Outlet

Some outlets in New Brunswick homes are connected to a wall switch — typically the top or bottom half of a duplex outlet. If the switch is off, the outlet appears dead. Test by flipping every switch in the room, especially switches that don't seem to control any light fixture. Builders in the 1970s-1990s commonly wired one outlet per room as switch-controlled for floor lamps.

Step 5: Test the Outlet Itself

If you've ruled out breakers, GFCIs, and switches, the problem may be the individual outlet:

Use a plug-in outlet tester ($10-$15 at Kent or Home Hardware). These inexpensive devices plug into the outlet and display a pattern of lights indicating:

- Correct wiring (two amber lights)
- Open ground (one light)
- Open neutral (no lights)
- Hot/neutral reversed (specific pattern)
- Open hot (no lights)

If the tester shows no lights at all — the outlet has no power reaching it. The break is in the wiring between the panel and this outlet.

If the tester shows an incorrect wiring pattern — there's a wiring fault at this outlet or upstream. Call an electrician.

Step 6: Check for a Loose Wire (Upstream Issue)

In many New Brunswick homes, outlets are wired in series — power comes from the panel to outlet 1, then jumps from outlet 1 to outlet 2, then to outlet 3, and so on. If a wire comes loose at outlet 2, outlets 3, 4, and all downstream outlets lose power while outlet 1 still works.

This is the most common cause when:

- One specific outlet and everything "after" it on the circuit is dead
- The breaker isn't tripped
- No GFCIs are tripped
- The problem started suddenly without any event (it just stopped working one day)

What happened: A wire connection worked loose over time due to thermal cycling (New Brunswick's temperature extremes accelerate this), vibration from heavy appliance use, or a backstab connection failure.

Backstab connections are particularly problematic. Instead of wrapping wire around a screw terminal, the wire is pushed into a spring-loaded hole in the back of the outlet. These connections were very common in New Brunswick homes built from the 1970s through the 2000s. They're code-legal but have a significantly higher failure rate than screw terminals — the spring weakens over time and loses its grip on the wire.

Can you fix this yourself? If you're comfortable turning off the breaker, removing the outlet upstream of the dead one, and checking connections — yes. Tighten any loose screw terminals or replace backstab connections with screw terminal connections. However:

- **Do NOT attempt this if you have aluminum wiring** (silver wire) — this requires an electrician
- **Always turn off the breaker and test for power** before touching any wires
- **Take a photo** of all wire positions before disconnecting anything

Step 7: When to Call an Electrician

Call a TSANB-licensed electrician if:

- The breaker trips again immediately after resetting
- You smell burning or see scorch marks at any outlet
- You've checked everything above and can't identify the cause
- The dead outlet is on a circuit with aluminum wiring
- Multiple circuits have lost power (could indicate a main panel or utility issue)
- The outlet feels warm, sparks, or buzzes
- You're not comfortable working inside an electrical box

Cost for a service call in New Brunswick:

- Diagnostic visit (1-2 hours): $150-$300
- Loose connection repair: $75-$200
- Outlet replacement: $75-$150 per outlet
- Circuit repair (broken wire in wall): $200-$500

Most New Brunswick electricians can diagnose a dead outlet within 30-60 minutes. The repair is usually straightforward once the cause is identified.

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Q15

What causes a buzzing sound in my electrical panel and is it dangerous?

Buzzing Sound in Your Electrical Panel — Causes and Dangers

A buzzing, humming, or crackling sound coming from your electrical panel should never be ignored. While some sounds are relatively harmless, others indicate serious safety issues that can lead to electrical fires. Knowing the difference can help you decide whether you need to call a TSANB-licensed electrician immediately or schedule a routine inspection.

Types of Panel Sounds and What They Mean

Faint, steady hum — Usually normal

A very quiet, constant hum from your panel is often normal. The main breaker and branch circuit breakers contain electromagnetic components that vibrate at 60 Hz (the frequency of household AC power). This creates a low-level hum that's only audible in a quiet room when you're standing close to the panel. If this sound hasn't changed and has been present since the panel was installed, it's likely nothing to worry about.

Intermittent buzzing that corresponds with load changes — Investigate

If the buzzing gets louder when the dryer starts, the stove turns on, or the heat pump cycles — and then goes quieter when those loads stop — the sound is related to electrical load. This can indicate:

- **Loose breaker connection:** The breaker isn't making firm contact with the panel's bus bar. As current flows, the poor connection vibrates and buzzes. This gets louder under higher loads. **This is a fire hazard** — the loose connection generates heat through resistance, which can melt the bus bar or breaker housing.
- **Overloaded circuit:** A circuit near its maximum amperage capacity causes the breaker's internal mechanism to work harder, producing more audible vibration. While not immediately dangerous, persistent overloading degrades the breaker's ability to trip during a real overcurrent event.

  Loud buzzing, crackling, or popping — Call immediately

  Loud, aggressive buzzing, crackling sounds, or any sound accompanied by a burning smell is an **emergency**. These sounds indicate active arcing — electricity jumping across a gap in the connection. Arcing generates extreme heat (up to 3,000°C at the arc point) and is a leading cause of electrical fires in Canadian homes.

  Signs to call an electrician immediately:

- Buzzing that you can hear from across the room
- Any crackling, snapping, or popping sound
- Burning or melting plastic smell
- Visible scorch marks or discolouration on the panel cover or breakers
- Warm or hot spots on the panel cover
- Flickering lights throughout the house accompanied by panel noise

Common Causes in New Brunswick Homes

1. Loose breaker connections

This is the most common cause of panel buzzing in New Brunswick, and it's directly related to our climate. The dramatic temperature swings — from -30°C winter lows to +30°C summer highs — cause metal components to expand and contract repeatedly. Over years, this thermal cycling loosens breaker connections that were originally tight. Panels in unheated areas (garages, unfinished basements, exterior walls) experience the most

severe temperature cycling.

Fix: A licensed electrician removes each breaker, inspects the bus bar contact points, cleans any corrosion, and re-seats each breaker firmly. They'll also torque all terminal screws to manufacturer specifications using a torque screwdriver. Cost: $150-$300 for a full panel re-torque.

2. Failing circuit breaker

Breakers have a finite lifespan — typically 25-40 years under normal conditions. As the internal bimetallic strip and electromagnetic trip mechanism wear, the breaker may buzz, fail to trip on overload, or trip randomly. A breaker that buzzes and feels warm is actively failing.

Fix: Replace the specific breaker. Cost: $75-$200 per breaker (including labour), depending on the breaker type and availability. Note: breakers for older or obsolete panel brands (Federal Pacific, Zinsco, Sylvania) may be unavailable, requiring a panel replacement.

3. Double-tapped breakers

A "double tap" is when two wires are connected to a single breaker terminal designed for one wire. This creates a loose connection because the terminal can't properly clamp both conductors. Double taps are common in older New Brunswick homes where additional circuits were added by previous homeowners without adding breaker spaces. They're a code violation and a frequent source of buzzing.

Fix: Install a tandem breaker (if the panel accepts them) or add a sub-panel for the additional circuits. Cost: $100-$300 for tandem breakers, $800-$1,500 for a sub-panel.

4. Corroded connections

Moisture in New Brunswick basements — especially older, unfinished basements — causes corrosion on panel bus bars, breaker contacts, and wire terminals. Corroded connections have higher resistance, generate heat, and buzz under load.

Fix: Clean corroded contacts with electrical contact cleaner, replace badly corroded breakers, address the moisture source. Cost: $150-$400 depending on severity.

5. Known problem panels

Several panel brands installed in New Brunswick homes from the 1960s through the 1990s have known reliability and safety issues:

- **Federal Pacific (Stab-Lok):** Breakers frequently fail to trip during overcurrent conditions. These panels are considered fire hazards by most electrical safety authorities. If you have one, replacement is strongly

recommended regardless of symptoms. Cost: $2,500-$4,500 for full panel replacement.

- **Zinsco (GTE Sylvania):** Bus bar connections degrade over time, causing arcing and overheating. Same recommendation as Federal Pacific.
- **Challenger:** Some models had bus bar connection issues. Not as universally condemned as Federal Pacific but worth inspection if buzzing.

What to Do Right Now

If the buzzing is faint and steady: Schedule an electrical inspection within the next few weeks. Not an emergency, but worth investigating. Cost for inspection: $150-$250.

If the buzzing is intermittent and load-related: Schedule an inspection within a few days. Reduce high-draw loads until the inspection is completed — run the dryer, stove, and other large appliances at different times rather than simultaneously.

If the buzzing is loud, crackling, or accompanied by smell/heat:

- Do not touch the panel
- If safe to do so, turn off the main breaker
- Call an emergency electrician immediately
- If you see sparks, flames, or heavy smoke — call 911 and evacuate

Prevention

Schedule a panel inspection every **5-10 years** in New Brunswick, or every **3-5 years** if your panel is in an unheated space, your home is over 30 years old, or you have a known-problem panel brand. A $150-$250 inspection is cheap insurance against a panel fire that could destroy your home.

A TSANB-licensed electrician in the Moncton, Fredericton, or Saint John area can typically schedule a panel inspection within 1-2 weeks. For emergency buzzing situations, most offer same-day or next-day service.

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Q16

Why do my lights flicker when the furnace kicks on in my New Brunswick home?

Why Lights Flicker When Your Furnace Starts in New Brunswick

Lights flickering briefly when your furnace kicks on is one of the most common electrical complaints from New Brunswick homeowners, especially during our long heating season from October through April. A brief dim lasting less than a second is usually normal, but persistent or severe flickering can indicate an electrical problem that needs professional attention.

Why It Happens — The Normal Explanation

Your furnace blower motor draws a **surge of electricity when it starts** — typically 3-5 times its normal running amperage. A standard residential furnace blower pulls 8-12 amps while running, but during startup it can momentarily draw 25-40 amps. This sudden demand causes a brief voltage drop on the circuit and sometimes throughout your home's electrical system, which you see as a quick flicker or dim in your lights.

This is similar to what happens when a well pump starts in rural New Brunswick homes, or when a heat pump compressor cycles on — any large motor creates an inrush current at startup.

When Flickering Is Normal

A single brief dim lasting less than half a second each time the furnace starts is generally nothing to worry about. This is especially common in older New Brunswick homes with 100-amp electrical services, which were standard in builds from the 1950s through the 1980s across Moncton, Saint John, and Fredericton. The smaller service has less capacity to absorb the startup surge without a noticeable voltage dip.

When Flickering Signals a Problem

You should call a licensed electrician if you notice any of these patterns:

- **Lights dim significantly (more than 30-40% brightness drop)** — This suggests the voltage drop is excessive, possibly due to undersized wiring, a loose connection, or an overloaded panel.
- **Flickering lasts more than 1-2 seconds** — The motor may be struggling to start, which could indicate a failing blower motor, a weak start capacitor, or voltage issues from NB Power's supply.
- **Lights flicker on circuits far from the furnace** — If every light in the house dims noticeably, the issue is likely at the main panel or service entrance, not just the furnace circuit.

- **Flickering is getting worse over time** — Progressive deterioration often points to a loose connection that's getting worse, which is a fire hazard.
- **You hear buzzing or humming from the panel** when the furnace starts — This can indicate a loose breaker connection or a breaker that's beginning to fail.

Common Causes and Fixes

Undersized electrical service (100 amps or less): Many New Brunswick homes built before 1990 have 100-amp services that struggle with modern electrical loads — furnace, dryer, range, hot water tank, and electronics all competing for capacity. Upgrading to a 200-amp service costs $2,500-$4,500 in New Brunswick and resolves most flickering issues. This is especially relevant if you've added loads like a heat pump or EV charger.

Loose connections at the panel: Over time, breaker connections and bus bar contacts can loosen due to thermal cycling — New Brunswick's temperature swings from -30°C winter lows to +30°C summer highs accelerate this. A licensed electrician can inspect and re-torque all connections for $150-$250. This is one of the most common and dangerous causes of flickering.

Shared circuit: If the furnace shares a circuit with lighting (which violates current CEC requirements but is common in older homes), the flickering will be more pronounced. The fix is running a dedicated circuit for the furnace — typically $300-$500.

Failing furnace blower motor: A motor with worn bearings draws more startup current than normal. If flickering has gotten worse and your furnace is 15-20+ years old, have an HVAC technician check the motor's amperage draw.

NB Power voltage issues: In some rural New Brunswick areas, particularly during peak winter demand, utility voltage can sag below the standard 120V. If neighbours are experiencing similar issues, contact NB Power at 1-800-663-6272 to request a voltage check at your meter.

What to Do

- **Note the pattern** — Does it happen every time? How long does the dim last? Which lights are affected?
- **Check your panel** — Look for any signs of scorching, melted plastic, or a burning smell (if you find any, call an electrician immediately)
- **Have an inspection** — A licensed TSANB-certified electrician can measure the actual voltage drop during furnace startup with a power quality meter. The CEC allows a maximum 5% voltage drop on branch circuits — anything beyond that needs correction.

Don't ignore worsening flicker — loose connections are a leading cause of electrical fires in Canadian homes, and New Brunswick's older housing stock is particularly susceptible.

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Q17

Why does my power go out during storms but my neighbours stay on in New Brunswick?

Why Your Power Goes Out During Storms While Neighbours Stay On

This is a frustrating situation that many New Brunswick homeowners experience, especially during the nor'easters and ice storms that hit the Maritimes from November through April. The answer almost always comes down to how NB Power's distribution grid is structured in your area and the condition of your specific service connection.

Different Feeders and Phases

NB Power's distribution system delivers electricity through a network of feeders — high voltage lines that branch out from substations to neighbourhoods. Even on the same street, your home and your neighbour's home may be connected to different feeders or different phases of the same transformer. When a tree takes down a line serving your feeder but not the adjacent one, your power goes out while the house next door stays lit.

In cities like Moncton, Saint John, and Fredericton, the grid is more interconnected and NB Power can sometimes reroute power around a fault. In rural areas — and New Brunswick has extensive rural distribution — a single radial feeder may serve your road with no backup path. One fallen tree or broken insulator means everyone on that feeder is dark.

Your Service Line May Be the Weak Point

The overhead service line running from the NB Power pole to your home's weather head is one of the most vulnerable points. If your service line runs through or near tree branches, ice loading and wind can pull it loose, damage it, or bring it down entirely while your neighbour 50 feet away has a clear run from pole to house.

Check these potential issues with your service line:

- **Tree branches within 3 metres** of the service line — NB Power is responsible for trimming near their distribution lines, but the service drop from pole to house is in a grey area. Call NB Power at 1-800-663-6272 to request a service line assessment
- **Weatherhead condition** — The metal mast where the service line connects to your home can corrode over time, especially in coastal areas like Saint John, Fundy coast, or the Acadian Peninsula where salt air accelerates corrosion
- **Service line sag** — If the line droops lower than when originally installed, ice accumulation hits it harder. NB Power will re-tension or replace the service drop at no charge if it has degraded

  #### Panel and Grounding Issues

  Sometimes the power is not actually going out — your main breaker is tripping during storm-related voltage surges. This feels identical to a power outage from inside the house. During a storm, check your main breaker:

- If the main breaker has tripped to the middle position, your home's electrical system tripped — not NB Power
- If the main breaker is fully ON but you have no power, the outage is on NB Power's side

  Older panels (especially those 30+ years old) can develop main breaker sensitivity — they trip at lower current surges than they should. A TSANB licensed electrician can test your main breaker's trip characteristics for $100-$150. Replacing a worn main breaker costs $200-$400.

  #### Underground vs Overhead Service

  If your neighbours have underground electrical service and you have overhead, the difference in storm reliability is dramatic. Underground service lines are immune to wind, ice, and tree damage. Converting from overhead to underground service in New Brunswick costs $3,000-$8,000 depending on distance from the transformer and excavation conditions. NB Power handles the utility side; a licensed electrician handles the home side.

  #### Loose Neutral Connection

  A loose neutral connection at the NB Power meter base or at the pole can cause intermittent power loss that mimics a storm outage. Symptoms include: power that cuts out during wind (the cable physically moves), lights that dim or brighten unevenly (one phase drops while the other stays), or appliances that behave erratically. This

is a potentially dangerous condition — if you see lights going very bright on one side of the house and very dim on the other, turn off the main breaker and call NB Power immediately. They will check and repair the utility-side neutral at no charge.

What You Can Do

- **Report every outage** to NB Power online or at 1-800-663-6272. Each report is logged, and areas with frequent outages get prioritized for line upgrades and tree trimming
- **Request a service assessment** — NB Power will inspect your service line, meter base, and local transformer connections at no cost
- **Trim trees on your property** that threaten your service line. You are responsible for trees on your side of the property line
- **Install a transfer switch** for a portable generator ($500-$800 installed by a licensed electrician) or a whole-home standby generator ($5,000-$12,000 installed) if outages are frequent
- **Consider a battery backup** (like Tesla Powerwall at $12,000-$18,000 installed) if you want seamless switchover without a generator
- **Upgrade your service entrance** if your mast, meter base, or weatherhead are showing corrosion or damage. A new service entrance runs $1,500-$3,000

  If you are experiencing significantly more outages than your neighbours and NB Power's assessment shows no issue on their end, have a TSANB licensed electrician inspect your service entrance, main panel, and grounding system. The issue is likely on your side of the meter.

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Q18

Why does my breaker keep tripping when I plug in a space heater in my bedroom?

Your breaker is tripping because the space heater is drawing more current than the circuit can safely handle, usually because other devices are sharing the same 15 amp circuit. A typical 1,500 watt space heater draws 12.5 amps on a 120V circuit — that's 83 percent of a 15 amp breaker's capacity, leaving almost nothing for anything else on that circuit.

Here's the math that explains why this happens. A 15 amp breaker is rated for a maximum continuous load of 12 amps (80 percent of its rating, per the Canadian Electrical Code). Your 1,500 watt space heater alone draws 12.5 amps, which already exceeds the continuous load rating. Now add a bedside lamp (60 watts, 0.5 amps), a phone charger (12 watts, 0.1 amps), and maybe a TV (100 watts, 0.8 amps) — the total quickly pushes past 13 to 14 amps, and the breaker trips to protect the wiring from overheating.

Why this is especially common in older New Brunswick homes. Many homes built before the 1990s have bedrooms on shared 15 amp circuits — sometimes two or three bedrooms share a single circuit. Modern code requires more circuits and dedicated AFCI-protected circuits for bedrooms, but older homes weren't built to that standard. During New Brunswick winters, when space heaters are running constantly, these older circuits simply can't keep up.

Solutions, from cheapest to most effective:

- **Use a lower wattage heater.** A 750 watt heater draws only 6.25 amps, leaving room for other devices. Many heaters have a low/high switch — use the low setting.
- **Plug the heater into a different circuit.** Use an outlet in the hallway or adjacent room that's on a separate breaker. Check your panel labelling to identify which outlets are on which circuits.
- **Don't use extension cords.** Extension cords add resistance, generate heat, and are a fire hazard with space heaters. Plug the heater directly into a wall outlet.
- **Have an electrician add a dedicated circuit.** For $300 to $600, a licensed electrician can run a new 20 amp circuit to your bedroom. This is the permanent fix and adds value to your home.

  When the tripping indicates a bigger problem. If the breaker trips even with only the space heater plugged in and nothing else on the circuit, the breaker itself may be failing, or you may have a wiring issue. A breaker that's been tripping repeatedly can weaken over time and start tripping at lower currents. If the breaker feels hot to the touch, or if you notice a burning smell at the panel, stop using the circuit immediately and call a TSANB-licensed electrician — this is a fire hazard.

One important safety note. Never replace a 15 amp breaker with a 20 amp breaker to stop the tripping. The breaker is sized to protect the wire behind your walls — 14 AWG wire is rated for 15 amps maximum. Putting a 20 amp breaker on 14 AWG wire means the wire can overheat before the breaker trips, which is exactly how electrical fires start.

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Q19

Why do my lights flicker every time the heat pump kicks on in my New Brunswick home?

A brief flicker when your heat pump starts is usually normal — the compressor motor draws a large surge of current (called inrush current) that momentarily drops the voltage on your home's electrical system. However, if the flickering is severe, lasts more than a second, or happens on every cycle, it could indicate an undersized panel, a loose connection, or a problem with your electrical service.

Heat pumps are incredibly popular in New Brunswick right now, largely thanks to NB Power rebates that make the switch from oil heat very attractive. But many older homes weren't designed for the electrical load a heat pump adds. A typical heat pump compressor draws 15 to 25 amps at 240V when running, but the startup surge can hit 40 to 60 amps for a fraction of a second. If your panel is a 100 amp service that's already loaded with an electric dryer, electric range, and hot water heater, that startup surge can cause noticeable voltage drops throughout the house.

When flickering is a concern. If your lights dim significantly (more than a brief blink), if the flickering lasts several seconds, or if you notice lights dimming at random times unrelated to the heat pump cycling, you should have a licensed electrician investigate. These symptoms can indicate loose connections at the panel, a deteriorating main breaker, corroded service entrance connections, or an issue with the NB Power service drop to your home.

Common fixes include installing a hard-start kit on the heat pump compressor (around $150 to $300 installed), which reduces the inrush current by 30 to 50 percent. If your home is on 100 amp service, upgrading to 200 amps will eliminate the issue entirely and give you capacity for future additions like an EV charger. A loose connection at the panel — which is a genuine fire hazard — needs immediate attention from a licensed electrician.

One important check before calling an electrician. If the flickering is only in one area of your home, it might be a loose connection at a specific outlet or switch rather than a panel issue. Try turning off the breaker for that area and checking if the lights on other circuits still flicker when the heat pump starts. If they don't, the issue is isolated to that circuit. If they do, it's a panel or service issue.

A TSANB-licensed electrician can perform a load analysis on your panel, check all connections with a thermal camera, and recommend the most cost-effective solution. In many New Brunswick homes, a combination of a hard-start kit and tightening panel connections resolves the issue for under $500.

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