



Cable Faults 101

What is a cable fault?

A cable fault occurs when an electrical cable's current is disrupted, meaning the normal flow of electricity is unable to carry full voltage. Simply put, a cable fault may indicate a breakage in the cable(s), deterioration or corrosion of cable insulation and/or third-party damage. These faults may occur to primary or secondary lines, in overhead or underground cables. This document will review electrical grid terminology and provide high-level cable fault information to help guide conversations and questions you may receive from customers.

TECHNICAL KNOWLEDGE

Overhead cables

Overhead cables are strung between power poles, transmission towers and some residential and commercial properties. Because of their accessibility, overhead cables are often easier to perform repairs and maintenance on. In addition, overhead repairs typically don't require ground disturbance which can reduce disruption to properties.

Underground cables

Underground cables are installed underground and are not visible or accessible without excavation. Given that underground cables are not easily accessible, maintenance and repairs need to be completed by first locating, then excavating and finally repairing the cable. This work can take multiple certified technicians to complete. Furthermore, the responsibility to repair underground cables depends on where the cable fault occurs.

Primary cables

Primary cables can be underground or overhead. They distribute power across long distances, to multiple locations and electrical equipment. Primary cables carry higher voltage than secondary cables, can supply power to entire communities and can be found within utility rights-of-way or city-owned land. When cable faults occur on primary cables, ENMAX Power is responsible to locate the damaged section of cable and make necessary repairs to restore power. During primary and secondary cable faults, ENMAX Power Trouble Response and Field Services crews will be dispatched and attempt to temporarily restore power to impacted customers by redirecting electricity through alternate power feeds.

Secondary cables

Secondary cables are fed from transformers and distribute lower voltage to individual properties. Secondary cables can either be overhead or underground.

Overhead secondary cables are viewable, as they are strung from a power pole (often located in an alleyway) connecting to a property's service mast. ENMAX Power owns the overhead secondary cable until it connects to a privately owned service connection point (i.e.: demarcation point). Therefore, ENMAX Power is responsible for repairing the overhead secondary cable up until the demarcation point. Any damages beyond the demarcation point are the property owner's responsibility to repair and maintain.

Underground secondary cables are located either within a utility right-of-way (URW) or directly within private property. Since URWs are owned by the municipality, the responsibility to maintain and repair lies with ENMAX Power. When a secondary cable fault occurs to a cable on private property, this is the property owner's responsibility to repair it. The repairs can be costly, time-consuming, and difficult to understand for customers.

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COMMON CAUSES OF CABLE FAULTS

- Natural aging can cause the insulation of cables to become brittle and crack.
- Deterioration of the outer layers of the cable due to ground contaminants such as grit and moisture.
- Natural interference such as animals, wildlife, and tree roots.
- Human interference such as cable contact during excavation work.
- Environmental stressors such as the extreme weather fluctuations Alberta experiences throughout the year.

RESULTS OF CABLE FAULTS?

- Flickering lights and inconsistent power.
- Appliances suddenly not working.
- Sudden power outage to the entire property.
- In extreme cases, a large primary cable fault can cause a power outage to an entire area.

CUSTOMER RESPONSIBILITIES – SECONDARY CABLE FAULTS

- Customers should always contact the ENMAX Power Trouble Response team to report inconsistent power (see Resources).
- Underground cable faults that occur within private property are the responsibility of the customer to repair.
- Customers are responsible to contract a certified electrician and cover all associated repair costs.
- When sourcing an electrician, customers should be aware that the electrician will be able to facilitate the entire cable fault repair process, including:
 - Obtaining City of Calgary electrical permit(s).
 - Facilitating private property utility locates.
 - Trenching and backfilling to expose or bury underground cables.
 - Completing electrical repairs.
 - Organizing the City of Calgary's final electrical inspection.
 - Organizing ENMAX Power to make the site safe before work begins and restore full power to the property once work is complete.
- Contact their Home Insurance company to open a claim.
 - Important note: Homes built within one year of an experienced cable fault may be the responsibility of the home builder under new home warranty programs.
- Site remediation, which can include ground leveling and landscaping.

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HOW ENMAX SUPPORTS CUSTOMERS

ENMAX Power Trouble Response

The first call a customer should make if they are experiencing electrical disturbances, or suspect an underground cable fault has occurred, is to the ENMAX Power Trouble Response Team (403-514-6100). ENMAX Power Trouble Response is available 24/7 and will dispatch a crew to investigate the situation at no cost to the customer. If an underground cable fault causes an area-wide power outage, the ENMAX Power Control Centre may detect the outage and proactively dispatch crews before the customer calls in, or, they may redirect power to the area from an alternate feeder while crews investigate the root cause, reducing unplanned power outage impacts.

Should the Trouble Response crew determine that a cable fault has occurred ENMAX Power takes steps to:

1. Attempt to contact affected customers and provide a direct line to the ENMAX Power Customer Relations Team for additional cable fault support and education.
2. Where possible, crews will arrange temporary power until repairs can be made.
3. Locate the underground cable fault location and determine responsibility for repair.

ENMAX Power Customer Relations

The Customer Relations Team (403-514-3990) acts as a trusted advisor to ensure customers are supported during cable faults. This contact is available only during standard business hours, 8 a.m. – 4 p.m. on weekdays, and can liaise between the customer and crews during the repair process.

ENMAX Power Underground Team

The Underground Team will visit the site for an inspection and utilize specialized tools to pinpoint the approximate underground cable fault location. Once the crew confirms the location, where possible they will relay the message to the customer and outline the next steps.

- If the cable fault is located within a URW or city-owned property, ENMAX Power is responsible for the repairs, including all costs and site restoration.
- If the cable fault is located within private property, the property owner is responsible for the repairs, including all associated costs and site restoration. During this time, the site will remain on temporary power (120V). While on temporary power, properties will not be able to use 220V appliances (i.e.: stoves, air conditioners, ovens, etc.).
- Note: depending on the property and recommendations from the customer's hired electrician, the Underground Team may be hired to complete further work such as, but not limited to:
 - Putting the customer or their electrician in contact with other ENMAX Power departments or specialists.
 - Removing the temporary 120V connection and reconnection the customer to full power when the repairs are completed.
 - Providing recommendations or inspections of the cable fault area.

Insurance support

Many customers do not realize that they may have underground cable fault repair insurance through their home insurance policy. As cable fault repairs can be costly, ENMAX Power always recommends that customers contact their insurance provider. Should a customer require any additional support from ENMAX Power concerning insurance claims, they can contact ENMAX Power's Customer Relations team who will liaise directly with the ENMAX Claims Team.

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TIMELINE EXPECTATIONS

Underground cable faults can be complex which can create altered repair timelines.

- Timelines to repair secondary cable faults (customer-owned) are dependent on the property owner, their electrician's availability, and the City of Calgary Electrical Inspections Team. On average, a straightforward secondary cable fault can take between 2 to 4 weeks to repair; however, complex secondary cable faults and other factors (including, but not limited to, extreme weather conditions and failing electrical inspections may increase these timelines and / or cause unforeseen delays.
- Timelines to repair primary cable faults (ENMAX-owned) are dependent on a number of factors, including crew availability and ongoing repairs and maintenance priorities. For example, larger unplanned events and safety-related incidents are top priority and would take precedence. ENMAX Power crews aim to make repairs in a timely manner. If a primary cable fault is repaired in winter months, site remediation may be delayed until spring/summer.

RESOURCES FOR CUSTOMERS

- **ENMAX Power website:** <https://www.enmax.com/outages-and-safety/outage-causes/damaged-underground-cables>
- **Cable fault sticker left with customers:** <https://www.enmax.com/xSafetySite/Documents/ENMAX-CableFaults-2021.pdf>
- **Get Connected – Electrician Support Services:** <https://www.enmax.com/services/electricity-services/electrician-requested-services>

WE'RE HERE TO HELP

- **ENMAX Power Trouble Response Team:** 403-514-6100 (available 24/7, 365 days of the year)
- **ENMAX Power Customer Relations Team:** powercustomerrelations@enmax.com or 403-514-3990 (available Monday through Friday, from 8 a.m. – 4 p.m.)
- **ENMAX Power TRAC:** TRAC@enmax.com