



# SUBSTATION 1 REPLACEMENT | Project Overview

ENMAX Power Corporation (ENMAX) is proposing to replace the ENMAX No. 1 Substation (the Project).

- The proposed Project is needed to ensure the reliability and integrity of ENMAX's transmission system, and to ensure the reliable supply of electricity to the City of Calgary.
- The Project is also required to mitigate maintenance and operational safety concerns for workers related to the aging equipment in the existing substation.

# SUBSTATION 1 REPLACEMENT | Project Description

The proposed Project consists of the following:

- a new substation building
- five 50 MVA 138/13.8 kV transformers located outside the building
- high voltage and medium voltage switchgear, and associated auxiliary, protection, and control systems located inside the building
- six 138 kV transmission lines and twenty-four 13.8 kV distribution lines will be disconnected from the existing substation and reconnected to the new substation.

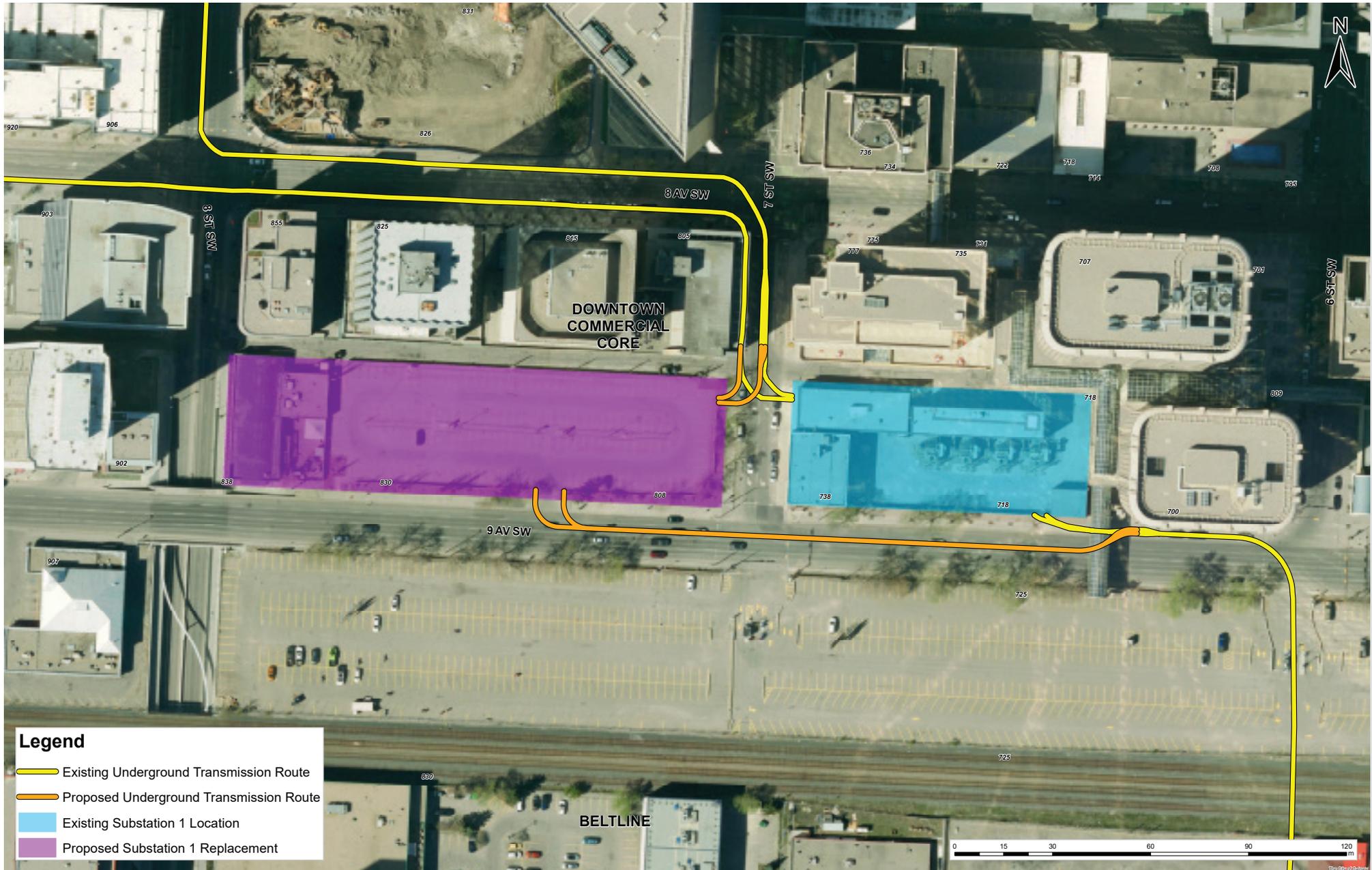
## SUBSTATION 1 REPLACEMENT | Project Location

The ENMAX No. 1 Substation, currently located at 738 9 Ave SW, was built in 1912 to power streetlights and the streetcar rail system in the downtown Calgary area.

Subject to completion of the purchase of the proposed site, ENMAX is proposing to construct the new ENMAX No. 1 Substation directly west of its current location, on the southwest corner of 9 Ave and 7 St SW.



# SUBSTATION 1 REPLACEMENT | Project Location



# SUBSTATION 1 REPLACEMENT | Construction

In addition to building the new substation, there will be on-going construction activities that include:

- ENMAX will need to excavate sections of 9 Ave SW, 7 St SW, and 8 St SW to relocate, install, and replace transmission lines, duct banks and manholes
- ENMAX is proposing to dig trenches in the roadway, pull cables through the duct bank located in the trenches and to place manholes using cranes
- Cable pulling and associated work will be required at several locations within a few blocks of the new substation site
- Road and lane closures will be required periodically during construction, but no power outages to customers are anticipated.
- Removal of the four transformers located outside the existing ENMAX No. 1 Substation buildings, and the utility electrical infrastructure located inside the buildings

ENMAX will work with stakeholders and the City of Calgary to minimize the impact to residences, businesses, and commuters in the area.

# SUBSTATION 1 REPLACEMENT | Trench Construction

Construction Method Renderings



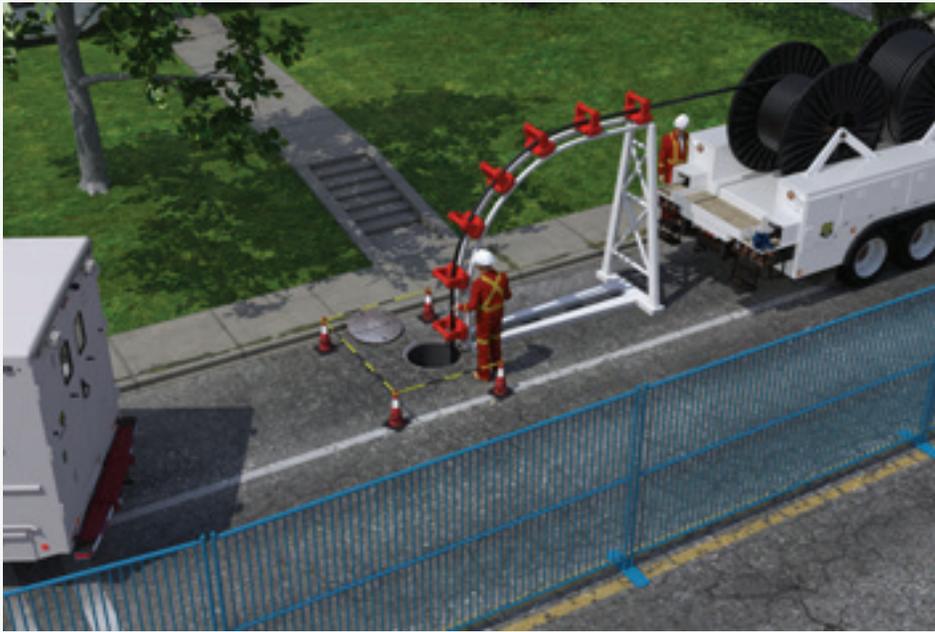
# SUBSTATION 1 REPLACEMENT | Manhole Placement

Construction Method Renderings



# SUBSTATION 1 REPLACEMENT | Cable Pulling

Construction Method Renderings



# SUBSTATION 1 REPLACEMENT | **Noise Assessment**

As part of ENMAX's application to the Alberta Utilities Commission (AUC) for the proposed Project, ENMAX is required to file a noise impact assessment that meets the requirements of AUC Rule 012: Noise Control (Rule 012).

## **What is a Noise Assessment?**

In cases where facilities are in areas with high noise levels due to sounds from other sources (e.g., traffic noise), the AUC permits a facility owner to apply for an adjustment to the applicable noise limits under Rule 012. This adjustment is referred to as a Class A2 Adjustment.

The sound levels at your property won't change as a result of the adjustment application. The adjustment application will recognize the existing noise levels in the downtown Calgary area.

# SUBSTATION 1 REPLACEMENT

Existing No. 1 Substation



Future Rendering





# What are electromagnetic fields?

Electromagnetic fields (EMFs) are invisible forces in our environment that occur from natural and man-made sources. Canadians are exposed to EMFs at extremely low frequencies (ELFs) daily through items such as household wiring, lighting, hair dryers, computers and power tools. According to Health Canada, the term “extremely low” is described as any frequency below 300 hertz. EMFs produced by power lines fall into this category. The World Health Organization has not found any conclusive evidence indicating that low level long-term exposure to EMFs from power lines is harmful.

- **Electric fields** are produced by differences in voltage and can be caused by natural sources, like thunderstorms, and man-made sources, such as electrical sockets, cell towers and x-ray machines. Electric fields are measured in kilovolts per meter and are present even when no electric current is flowing. The higher the voltage, the stronger the electric field. Electric fields are weakened by objects like buildings and trees and the strength of the field decreases with distance.
- **Magnetic fields** are produced by electrical currents and are only present when power is flowing through a device or wire. Magnetic fields are measured in microtesla or milligauss and the stronger the current, the stronger the magnetic field. Magnetic fields are not weakened by objects like buildings and trees, but the strength of the field decreases with distance.

## OUR APPROACH

ENMAX is committed to staying informed about any changes to research or guidelines related to EMFs, and to maintaining an ongoing dialogue with our customers and the public.

For further information, or to schedule an in-home magnetic field measurement, call us at **403-514-3724** or email [emf@enmax.com](mailto:emf@enmax.com).

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## REFERENCES AND ADDITIONAL INFORMATION

### Health Canada

[www.canada.ca/en/health-canada/services/home-garden-safety/electric-magnetic-fields-power-lines-electrical-appliances.html](http://www.canada.ca/en/health-canada/services/home-garden-safety/electric-magnetic-fields-power-lines-electrical-appliances.html)

### Canadian Electricity Association

[www.electricity.ca/learn/electricity-today/electric-magnetic-fields-emfs/](http://www.electricity.ca/learn/electricity-today/electric-magnetic-fields-emfs/)

### World Health Organization

[www.who.int/peh-emf/en/](http://www.who.int/peh-emf/en/)

### National Institute of Environmental Health Sciences

[www.niehs.nih.gov/health/topics/agents/emf/](http://www.niehs.nih.gov/health/topics/agents/emf/)



# Environment

At ENMAX, we strive to reduce impacts to air, water, land and wildlife during construction and maintenance of infrastructure. We do this by:

- Identifying potential impacts to the environment during the planning phase of every project.
- Working with regulatory agencies including the City of Calgary, Alberta Environment and Parks, Fisheries and Oceans Canada, and Environment Canada to ensure all required approvals and permits are obtained before starting any project.
- Complying with relevant environmental legislation, regulations, guidelines, policies and operating approvals.
- Developing a site-specific Environmental Management Plan for each project, which includes best practices and protective measures. These measures are implemented prior to and during construction. This plan is followed by all ENMAX employees and contractors working on the site.
- Conducting on-site inspections to ensure workers are adhering to the Environmental Management Plan
- Conducting follow-up site visits once the project is complete to ensure any impacted areas are remediated.
- Maintaining and continually improving upon our Environmental Management System, which is based on the International Standard ISO 14001 and supports our Corporate Environment Policy.

# SUBSTATION 1 REPLACEMENT PROJECT

## Thank you for coming

### Next Steps:

#### Q4 2019/Q1 2020

- File application to the Alberta Utilities Commission (AUC)
- The AUC will notify stakeholders of the filing and how they can get involved in the AUC's application process

#### Q2 2021

- Subject to approvals from the AUC and the purchase of the proposed Project site, construction is anticipated to begin

#### Q4 2024

- Expected in-service date

#### Q4 2025

- Removal of electrical components from existing ENMAX No. 1 Substation complete