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FORT MCMURRAY WEST 500-KV TRANSMISSION PROJECT

The technical details of facilities associated with the Fort McMurray West 500-kV Transmission Project are described in this fact sheet. Designs may vary as plans are finalized.



Existing Sunnybrook Substation

The project will require modifications to the existing Sunnybrook substation located immediately northwest of the Genesee Power plant, in the northwest quarter of Section 36-50-3 W5M.

New 500-kV Transmission Line

We are planning to build 400 km of new transmission line to connect the Sunnybrook substation to the Livock substation and 100 km of new transmission line to connect the Livock substation with the planned Thickwood Hills substation.

Existing Livock Substation

The Livock substation (called 939S) will be expanded to accommodate a 500-kV transmission line. The Livock substation is located in the southwest quarter of Section 19-85-9 W4M.

Planned new Thickwood Hills Substation

Plans for the new Thickwood Hills substation (to be called 951S) will be designed to accommodate a 500-kV transmission line. The Thickwood Hills substation will be located approximately 15 km west of the city of Fort McMurray.

THE DETAILS

AltaLink will be making modifications to the Sunnybrook substation to accommodate this project.

THE DETAILS

The planned transmission line will be 500-kV and approximately 500 km long. The line will consist of:

- three conductor wires
- two overhead shield wires
- Guyed 'V' lattice structures

The typical structure is described in more detail on the back of this fact sheet.

THE DETAILS

The Livock substation will be expanded to include the following new 500-kV equipment:

- four 500-kV circuit breakers
- related support equipment and structures

THE DETAILS

The Thickwood Hills substation is planned as part of an adjacent project. It will be expanded to include the following new 500-kV equipment:

- one 500-kV transformer
- three 500-kV circuit breakers
- related support equipment and structures

What It Will Look Like

If approved by the Alberta Utilities Commission, the 500 kilovolt (kV) transmission line will be built with Guyed 'V' structures similar to the one shown on the right. Four guy wires are required to support each structure.

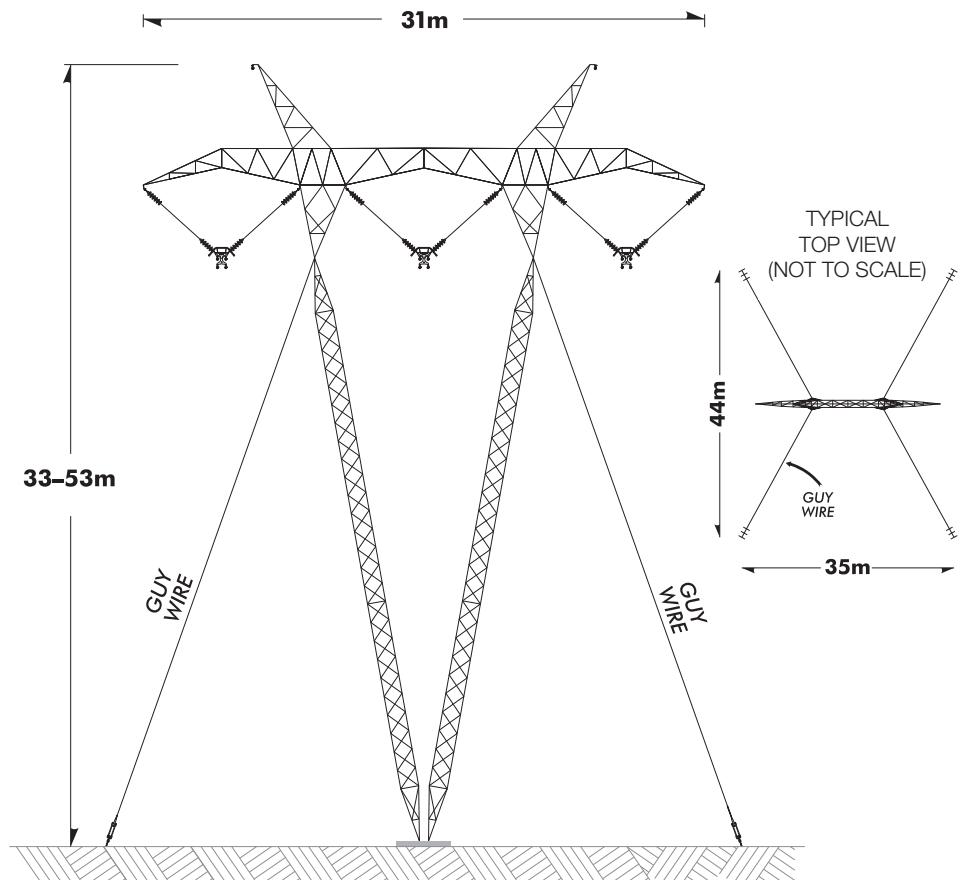
Structures will be single-circuit. This means that they will have one set of three wires strung across them. Two overhead shield wires will be strung from the tops of the structures to protect the line from lightning.

The typical height of the structures will be 33 to 53 metres (m) and the width of the top of the structure will be 31 m. The distance between structures will range from 350 to 400 m and the typical right-of-way width will be 60 m.

Non-typical structures with wider bases or multiple poles may be required where the line ends or bends, at corners and to go over and around obstacles. In all cases minimum clearance will meet or exceed the requirements of provincial safety regulations.

**Details may change as the project develops and designs are finalized.*

Typical Single-Circuit 500-kV Guyed 'V' Structure



Definitions

Circuit breaker: An automatic switch that is designed to protect an electrical circuit from overloading by shutting off the flow of electricity.

Consultation: A discussion where advice, information and views are exchanged.

Kilovolt (kV): A kilovolt is equal to one thousand volts. This unit of measurement is most commonly used when describing transmission and distribution lines. Distribution and transmission lines in Alberta carry between 2.4 kV (2,400 volts) and 500-kV (500,000 volts).

Right-of-way: A right-of-way is the use of a strip of land acquired for the construction and operation of a transmission line. The term right-of-way is also used to refer to the physical space a transmission line encompasses, including areas on either side of the line.

Substation: A substation is a fenced area that contains all of the electrical equipment, such as circuit breakers and transformers, where transmission lines begin or end.

Single-Circuit: A circuit is a group of wires electricity flows through. A single-circuit line is one isolated transmission line consisting of one set of three wires. A transmission line may also have one or two shield wires on the top of the structures to protect the line from lightning.

Transformer: A transformer is the device in a substation that steps voltage up or down. It 'transforms' the electricity from higher transmission voltages to the lower distribution voltages that power your home.

Termination: A termination is the point where a power line ends and connects to a substation.