

To: All HQ Directors: Operations, Planning & Major Projects
All Regional Directors
All District Managers, Transportation
All Electrical Engineering Staff
All Managers, Electrical Services

Subject: Transmission Lines Up to 287kV Phase to Phase on Ministry Right of Way

Amends: Utility Policy Manual, Chapter 10, Section 1 (1995).

Background:

As stated in the 1995 edition of the Utility Policy Manual, Chapter 10, Section 1, the Ministry of Transportation and Infrastructure (MoTI) does not permit the installation of transmission lines of voltages greater than 60kV phase to phase within the highway right-of-way. The Ministry has commissioned and accepted a report: *The Effects of High Voltage Transmission Line in Proximity of Highways* which concludes that transmission lines of voltages up to 287kV phase to phase can be accommodated on MoTI right-of-way, provided certain criteria are met.

Discussion:

High voltage transmission lines cause corona discharge, radio interference and audio noise through generation of electric and magnetic fields. The impact of these effects on the travelled roadway is proportional to the distance from the roadway and the voltage level of the transmission line. In order to reduce these effects to an acceptable level, high voltage transmission lines must be located away from the traveled roadway and require a minimum right-of-way.

In most cases the right-of-way requirements result in structures being located outside the MoTI clear zone, however with lower transmission voltages this may not always be the case. In cases where the right-of-way requirement indicates a structure may be located within the MoTI clear zone, the MoTI clear zone requirements shall take precedence.

Structures shall be centered in the right-of-way as measured from the outside painted edge/fog line. Minimum transmission line offset requirements from the outside painted edge/fog line shall be as follows:

| Voltage (Phase To Phase) | Minimum Pole Offset from Outside Painted Edge/Fog Line (m) ¹ | Right of Way Width (m) |
|--|---|-----------------------------|
| 69kV on wood pole | 5 ² | 10 |
| 138kV on single wood pole | 10 | 20 |
| 138kV conductors arranged horizontally | 10 + conductor offset ³ | 20 + (conductor offset X 2) |
| 230kV on 32m structures - conductors arranged vertically | 11.7 | 23.4 |
| 230kV on 18m structures - conductors arranged horizontally | 15 | 30 |
| 287kV on 32m structures - conductors arranged vertically | 14.2 | 28.4 |
| 287kV on 18m structures - conductors arranged horizontally | 17.5 | 35 |

¹Pole offset shall provide stated clearance under conditions of maximum specified design swing for the conductor nearest highway edge/fog line.

²MoTI clear zone requirements to take precedence if greater.

³Conductor offset is distance from pole center to conductor nearest roadway.

The report *Effects of High Voltage Transmission Line in Proximity of Highways*, Section 8 lists applicable codes and regulations for transmission line design and Section 4, *Right of Way Requirements*, provides an example summary of clearance requirements for voltage of 287kV.

Policy:

Transmission lines with voltages up to and including 287kV phase to phase may be accommodated on highways provided:

1. They meet the requirements outlined in the report: *The Effects of High Voltage Transmission Line in Proximity of Highways*. This report is available on the Ministry of Transportation & Infrastructure Engineering Publications website at: http://www.th.gov.bc.ca/publications/eng_publications/electrical/transmission_line_study.pdf
2. The installation has been approved by the Ministry of Transportation & Infrastructure Regional Director in consultation with the Chief Engineer.

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