

Electrification Study Backgrounder



#4 Technology Options

TODAY'S TECHNOLOGY

Throughout its history, GO Transit has used diesel technology to power GO commuter trains, with continuous upgrades to use the most up-to-date diesel fuel technology available. Today, GO provides commuter rail service on seven corridors in the Greater Toronto and Hamilton Area using conventional diesel-electric locomotives and non-powered bi-level coaches that can be pushed or pulled. Plans are in place to develop more advanced diesel technology that meets more stringent "Tier 4" emission standards, further reducing air emissions from GO's rail operations.

ELECTRIFICATION STUDY – WHAT HAS BEEN DONE?

A key task of the electrification study is to compare and assess a broad range of rolling stock technologies that could be used to provide future GO rail service. Rolling stock technologies examined as part of the study generally fall into four categories of technologies:

- **Diesel:** including Diesel Locomotives and Diesel Multiple Units;
- **Electric:** including Electric Locomotives and Electric Multiple Units;
- **Dual-Mode:** hybrid technologies that include both an on-board diesel engine, as well as capability to operate in electric propulsion mode when in electrified territory; and
- **Alternative Rolling Stock Technologies and Fuels:** including Alternative Locomotive Fuels, Hybrid Drive Trains, Hydrogen Fuel Cell Drive Trains, Maglev, and Other New System Concepts.

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Each of these technologies was compared and assessed by the electrification study team using the following “screening” questions:

- Is the technology **proven**?
- Is the technology **commercially viable**?
- Is the technology **compatible with the “Reference Case” infrastructure and service levels?** (The “Reference Case” describes existing attributes and planned enhancements of GO’s rolling stock, rail infrastructure and service levels – as a basis for identifying and comparing rolling stock technologies that could be used for future rail services.)

FINDINGS TO DATE

As a result of the rolling stock technology assessment, four technologies have been carried forward for more detailed study:

- Diesel Locomotives – Bi-Level;
- Electric Locomotives – Bi-Level;
- Electric Multiple Units – Bi-Level; and
- Dual-Mode Locomotives – Bi-Level.

For the Airport Rail Link, service is initially to be provided by single-level Diesel Multiple Units conforming to a “Tier 4” emissions standard, with potential future conversion to single-level Electrical Multiple Units.

FOR MORE INFORMATION

Background report: [Rolling Stocking Technology Assessment for Metrolinx GO Electrification](#)

Available for download at: www.gotransit.com/estudy