Project: Island Rail Corridor

Subject: Preliminary high-level multiple option evaluation of electrifying the Island Rail Corridor

Date: March 6, 2020

This high-level assessment summary report provides a recommendation on the type of electrification system applicable to the Island Rail Corridor in British Columbia.

A. Overview

The IRCCA Summary Report provides the following conclusions for electrification:

I. Electrification has been ruled out for Esquimalt to Courtney and Parksville to Port Alberni segments.

II. From a review of the available information, including specific characteristics of the existing railway, and the proposed operations plan of the future system, electrification of the Victoria to Langford segment (approximately 13 kilometers) is not currently the preferred option.

B. Future work

Electrification of the Victoria to Langford segment will have an investment cost. The following studies would be required to further evaluate the overall benefit of electrification.

I. A cost-benefit study.

II. A comprehensive electrification study, which is strongly recommended to precisely estimate the impact caused by electrification on other vulnerable systems that are already located in the right-of-way of the Island Rail Corridor.

III. An Electromagnetic Compatibility (EMC) analysis study, which should be done on susceptible systems to study the undesired and hazardous impact of electrification on existing line side railway systems. As a part of this study, mitigation solutions for each Electromagnetic Interference (EMI) related hazard should be provided.

C. Electrification Technology Selection

Electrification is typically achieved through either a Third Rail or an Overhead Catenary System (OCS). If electrification is to be considered, then Third Rail is not the preferred option.

I. Third Rail is typically applicable for exclusive right-of-way corridors where hazards associated with high voltage can be mitigated through access control.

Suite 1000
840 Howe Street
Vancouver, BC, Canada V6Z 2M1

T: +1 604 685-9381
F: +1 604 683-8655
wsp.com

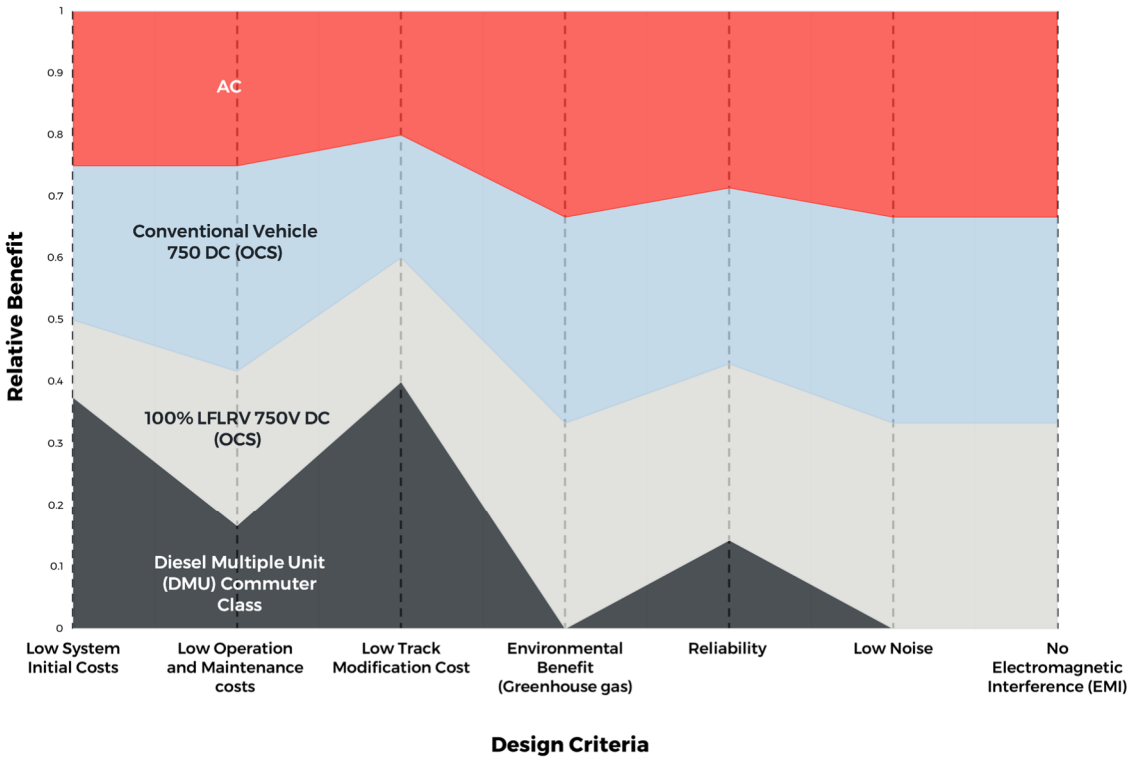
II. Overhead Catenary System (OCS) is the preferred distribution system of traction power for mixed use corridors with limited access control to the public.

Railway electrification can be done with AC system (25 kV) or with DC system (such as 750V DC). AC Systems are typically used for systems with long distances between substations (50 km+), such as is the case for commuter or intercity rail. Therefore, for the Victoria-Langford segment, which is about 13-kilometers long and has low traffic, the following electrification system is recommended:

I. A 750V DC OCS system similar to that of the Eglinton Crosstown Light Rail Transit (ECLRT) project, which is located in Toronto, Ontario. This is also considered a more affordable plan for the electrification of the Island Rail Corridor.

D. A Qualitative Multiple Account Evaluation (MAE) Assessment

Figure *1*, below shows a qualitative multiple account evaluation (MAE) of different design solutions for a typical urban rail project; the weighting and exact scoring of different factors will depend on the details of the implementation, and will need to be determined based on the outcome of additional study into Electrification of the Island Rail Corridor.



Note: Evaluation based on qualitative review of available information. Relative weighting of different evaluation categories not considered.

Figure 1: Qualitative multiple account evaluation (MAE) of different options for Island Rail Corridor