Terrace to Kitimat Transmission (TKT) Project

Overview

Terrace to Kitimat Transmission (TKT) Project

Background

The 287 kilovolt transmission line that links Minette Substation (which serves the Kitimat area) to the transmission system at Skeena Substation just outside of Terrace has reached the end of its serviceable life and needs to be replaced. This transmission line (known as 2L99) is an important asset for BC Hydro. Not only does it provide electricity to Kitimat, but it also connects the electricity system to existing industrial facilities in the area (such as Rio Tinto Alcan and its Kemano generating facility) and can provide an interconnection point for proposed LNG facilities and other future developments in the area.

Due to the need to keep this area connected to the BC Hydro integrated transmission system at all times, there are no feasible alternatives to replacing this transmission line that involve interrupting the continuous connection to the BC Hydro integrated system.

If the North Coast Transmission (NCT) project[1] had proceeded, the need to rebuild 2L99 would have been eliminated as the two new 500 kV transmission lines proposed between Terrace and Kitimat would have made 2L99 redundant. Because the NCT project is no longer proceeding, the problems with 2L99 need to be addressed.

In addition to replacing 2L99, BC Hydro is also proposing to replace the short 287 kV transmission line 2L103, that runs from Minette Substation to the Rio Tinto Alcan site. This transmission line is the same design and age as 2L99 and is experiencing the same "end-of-life" issues.

While addressing the end-of-life issues relating to the line, BC Hydro also needs to consider the future potential loads that may wish to connect in the Kitimat area. These load requirements are expected to come from the proposed LNG plants; however, of the total expected LNG loads, only certain facilities are proposed to be located in the Kitimat area, and may not require electricity supply for full compression purposes. The two issues that this raises are capacity and reliability.

Capacity – Based on the anticipated new industrial customer connections in the Kitimat area and the associated load growth, a 287 kV circuit will be capable of supplying the necessary power. There is no identified need to build a 500 kV line, however, we are continuing to study the load growth in the area.

Reliability – Having only one transmission line between the Skeena and Minette substations means that any problems on this line could result in the Kitimat area being disconnected from the system. Reliability can be achieved by replacing the existing single transmission line with two new circuits that would share the load, allowing one to take over if the other one experiences a problem or requires maintenance. BC Hydro will be assessing whether this enhanced reliability is required.

Potential route

Two potential "corridors" exist for building the Terrace to Kitimat Transmission project (see map). The new transmission line(s) could follow a similar route to the existing transmission line along the east side of the valley between Terrace and Kitimat (route A). Alternatively, a new, more direct route could be followed along the west side of the valley (route B).

[1] The North Coast Transmission Project (NCT) proposed building a second 500 kV circuit from Prince George to Terrace to parallel the existing circuit and building two 500 kV circuits from Terrace to Kitimat, largely to meet anticipated demand for electricity from planned LNG facilities. This project was cancelled when the anticipated load requirements of the proposed LNG facilities were reduced.

Options

Combining the options of one or two lines to replace 2L99 and the route options of east or west gives the following potential options:

Option 1

Construct a new 287 kV transmission line on the east side of the valley (route A) adjacent to the existing 2L99 transmission line and then dismantle the existing 2L99. (The existing 2L99 must remain in service while the replacement is constructed to avoid any long-term outages.)

Option 2

Construct a new 287 kV transmission line on a new route on the west side of the valley (route B) and then dismantle the existing 2L99.

Option 3

Construct a new 287 kV transmission line on the west side of the valley (route B); then dismantle the existing 2L99 and build a second new 287 kV transmission line on the east side of the valley, in the existing 2L99 right-of-way

Option 4

Construct a new 287 kV transmission line on the east side of the valley adjacent to the existing 2L99 transmission line (route A); then dismantle the existing 2L99 and build a second new 287 kV transmission line on the existing 2L99 right-of-way.

Option 5

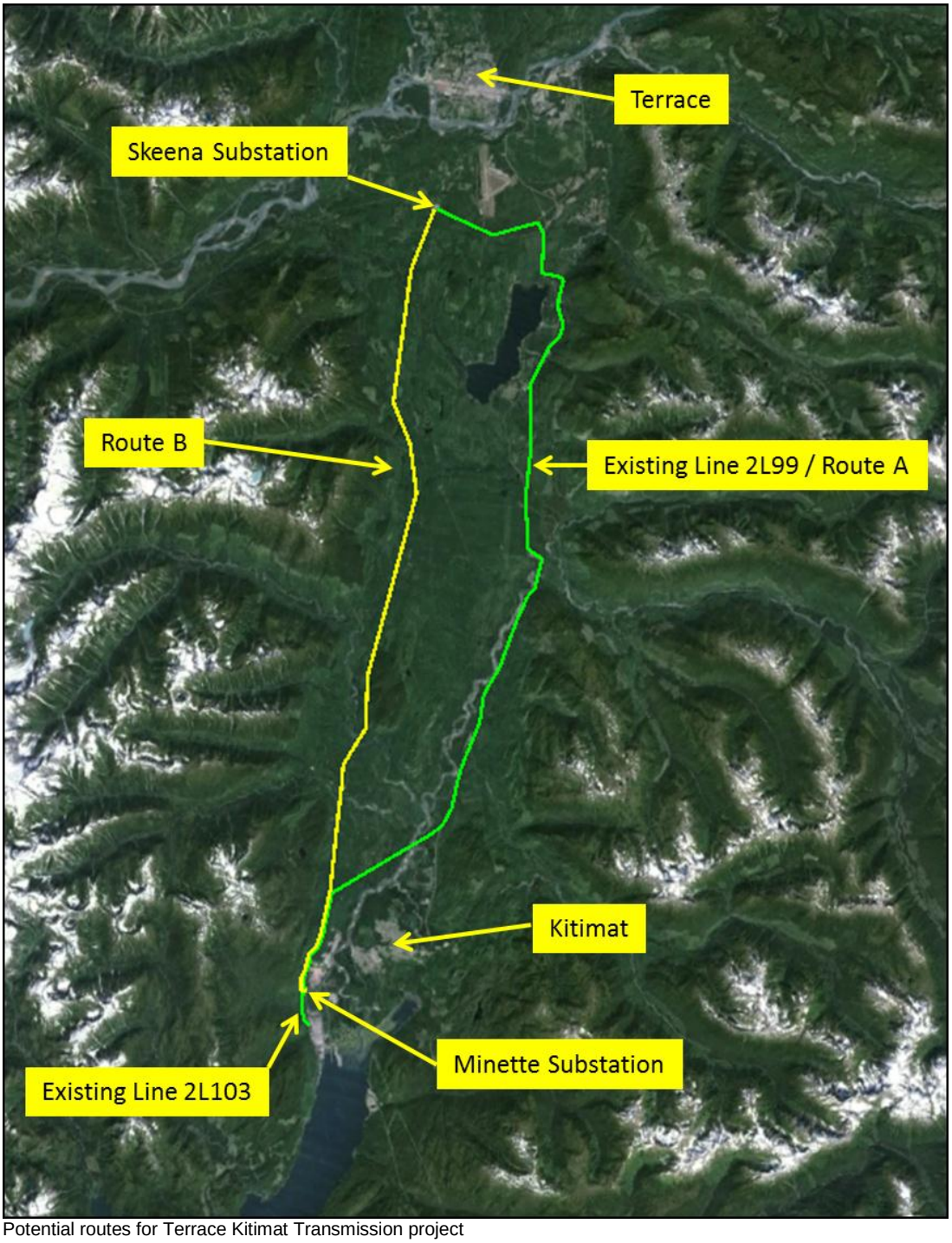
Construct two new single circuit 287 kV transmission lines on the west side of the valley (route B) and then dismantle the existing 2L99.

Additional Considerations

Where two new transmission lines are proposed on the same route (options 4 and 5), a further option might exist to build these lines as a “double circuit”. This means that both circuits would be supported by the same structures. The advantage of this arrangement is a slightly smaller footprint, however, the disadvantage is that the failure of a single structure (for example, if a structure was severely damaged by a landslide) would impact both circuits and defeat the purpose of having two circuits for improved reliability. On this basis, BC Hydro does not intend to build a double circuit arrangement.

BC Hydro may decide to build only one circuit to replace 2L99 at this time (i.e., options 1 or 2) but may preserve the option to build a second circuit in the future if the need arises.

The proposed route for the replacement of 2L103 runs alongside the existing 2L103 transmission line between Minette substation and the Rio Tinto Alcan substation. There is no requirement to replace this existing transmission line with two circuits.



Potential routes for Terrace Kitimat Transmission project

Next Steps

During this identification phase for the Terrace to Kitimat Transmission project, BC Hydro will be conducting various studies on the options (technical, environmental, cost estimating, constructability, etc.) and gathering input from First Nations and impacted stakeholders. Following this, BC Hydro will identify a leading or preferred option in 2014 for further definition studies. BC Hydro is aiming to implement the Terrace to Kitimat Transmission project with a target in-service date of late 2018, so that the new circuit is available before any of the anticipated new loads (LNG facilities) come on line.