DENTONS

Helen T. Newland

helen.newland@dentons.com
D +1 416 863 4471

Dentons Canada LLP
77 King Street West, Suite 400
Toronto-Dominion Centre
Toronto, ON, Canada M5K 0A1

T +1 416 863 4511
F +1 416 863 4592

Salans FMC SNR Denton
dentons.com

April 18, 2013

VIA E-MAIL & COURIER

Ms. Kirsten Walli
Board Secretary
Ontario Energy Board
2300 Yonge Street
27th Floor, Box 2319
Toronto, ON
M4P 1E4

Dear Ms. Walli:

Re: RES Canada Transmission LP;
East-West Tie Line Designation Proceeding;
Argument-in-Chief;
Board File Number EB-2011-0140

I am writing on behalf of RES Canada Transmission LP ("**RES Transmission**") and pursuant to Procedural Order 6 to file RES Transmission's Argument-in-Chief.

We will file hard copies by courier as soon as possible.

Yours truly,
Dentons Canada LLP

(signed) Helen T. Newland

Helen T. Newland
HTN/ko
Encls.
c.c. All Registered Transmitters
All Intervenors
Mr. Jerry Vaninetti
Mr. Darrell Gerrard
Ms. Jennifer Lea

APPLICATION OF
RES CANADA TRANSMISSION LP

FOR

DESIGNATION AS AN ELECTRICITY TRANSMITTER TO DEVELOP THE EAST-WEST TIE LINE

ARGUMENT-IN-CHIEF

Filed: April 18, 2013

EB-2011-0140

IN THE MATTER OF sections 70 and 78 of the *Ontario Energy Board Act 1998*, S.O. 1998, c. 15 (Schedule B);

AND IN THE MATTER OF a Board-initiated proceeding to designate an electricity transmitter to undertake development work for a new electricity transmission line between Northeast and Northwest Ontario: the East-West Tie Line.

RES CANADA TRANSMISSION LP

ARGUMENT-IN-CHIEF

April 18, 2013

INDEX

A. Overview

The East-West Tie Designation

1. On March 29, 2011, the Minister of Energy directed the Ontario Energy Board ("**OEB**" or "**Board**") to select "the most qualified and cost-effective transmission company to develop the East-West Tie."[1] This request broke with the practice of the past century whereby the government-owned utility, Ontario Hydro (and later Hydro One Networks Inc. ("**Hydro One**")), designed, constructed, maintained and operated virtually all transmission infrastructure in Ontario. The Minister sought to challenge the Ontario Hydro legacy entities and bring competition to transmission in Ontario with new entrants, new resources and new ideas. In short, the Ontario government was looking for a better way to drive economic efficiency for the benefit of electricity ratepayers. The East-West Tie was to be the pilot project for this new direction.

2. By the close of this proceeding, six applicants will have spent close to $12 million preparing and prosecuting their applications for designation. The Board and intervenors will also have invested considerable time and resources. At the end of the day, the real issue is not who will become the designated transmitter but whether electricity ratepayers will receive the benefit of a competitive process or the same "old" thing, at the same "old" price. This is the challenge that faces the Board in this proceeding.

3. RES Canada Transmission LP ("**RES Transmission**" or the "**Applicant**") seeks to be a new entrant into Ontario's transmission system and the designated transmitter for the East-West Tie Line ("**EWTL**" or "**Project**"). The Board and the Ontario Power Authority (the "**OPA**"), with the assistance of the Independent Electricity System Operator ("**IESO**"), have encouraged applicants to propose alternative and innovative designs that provide tangible benefits for ratepayers. While the other applicants have proposed designs

[1] Letter dated March 29, 2011 from the Minister of Energy to the Chair of the Ontario Energy Board.

based on the IESO's Reference Case, largely replicating what Ontario Hydro and Hydro One have done in the past, RES Transmission has proposed a new and innovative design, adapted to northern Ontario, verified by a comprehensive IESO feasibility study and proven to work elsewhere in North America.

4. RES Transmission's design is the least cost design submitted in this proceeding. Most importantly, it accommodates the installation of the full 684 megawatts ("**MW**") of transfer capacity at one time or, alternatively, in stages over time – at the option of the OPA and IESO. By matching transmission infrastructure investment with forecasted demand, ratepayers become the beneficiaries of significant economic efficiencies.

The Applicant

5. RES Transmission is an Ontario limited partnership formed for the purpose of pursuing opportunities in the electricity transmission sector in Ontario. RES Transmission holds Electricity Transmission Licence ET-2011-0282 which permits RES Transmission to participate as a registered transmitter in this proceeding.

6. Renewable Energy Systems Canada Inc. ("**RES Canada**") and MEHC Transmission Canada Limited Partnership ("**MTC**") hold equal interests as limited partners in RES Transmission.[2]

7. RES Canada and its affiliate, Renewable Energy Systems America Inc. ("**RES Americas**"), are part of the RES Group of companies. RES Canada and RES Americas are in the business of developing and constructing renewable generation facilities and associated transmission facilities in Canada and the United States, respectively. They have developed and/or constructed over 5,700 MW of renewable generation facilities in North America and 890 kilometres ("**km**") of transmission lines. In Ontario, RES Canada developed and constructed two large wind farms and their associated high-voltage transmission facilities: the 99 MW Greenwich Wind Farm near Thunder Bay and the 99

[2] A detailed description of the Applicant's ownership structure is included in the Application at Exhibit C-1-2.

MW Talbot Wind Farm in southwestern Ontario. In Alberta and Montana, subsidiaries of RES Canada and RES Americas, respectively, are near completion of the construction of the Montana-Alberta Tie-Line, a trans-border 345 km, 230 kV electricity transmission line that runs between Alberta and Montana. Recently, RES Canada was selected by the IESO to provide regulation services in Ontario and by Samsung Renewable Energy Inc. and Pattern Energy Group LP to construct the South Kent Windfarm, including 33 km of 230 kV transmission line.

8. MTC is an affiliate of MidAmerican Transmission, LLC ("**MAT**") which is, in turn, a wholly-owned subsidiary of MidAmerican Energy Holdings Company ("**MEHC**"), a Berkshire Hathaway company. MEHC and its subsidiaries comprise the "**MidAmerican Group**". The MidAmerican Group owns and operates generation capacity of more than 22,000 MW and more than 30,000 km of high-voltage transmission lines. The MidAmerican Group is currently involved in the construction and/or development of more than 5,000 km of high-voltage transmission lines in North America. Through MAT, the MidAmerican Group is also engaged in the development of non-vertically integrated electric transmission facilities in organized and traditional markets in the United States. This includes participation in joint ventures with Prairie Wind Transmission and Electric Transmission Texas, a developer, owner and operator of independent transmission facilities in the state of Texas, including facilities that are part of the Competitive Renewable Energy Zone ("**CREZ**") program that connects renewable generations with load centres.

The Applicant's Proposals

The Applicant's First Nation and Métis Participation Proposal

9. RES Transmission has developed a Participation Plan that provides a variety of participation opportunities to all potentially affected First Nation and Métis communities. The opportunities include opportunities to participate in the Project as equity partners, opportunities to become suppliers and service providers and

opportunities related to employment, skills training and capacity funding. All of these opportunities are designed to provide long-term benefits to affected First Nation and Métis communities. Each First Nation and Métis community can choose the mode of participation that best suits its particular circumstances.

10. In terms of equity participation, RES Transmission is prepared to offer as much as a $50 million investment opportunity to affected and interested First Nation and Métis communities, provided such investment, in total, does not exceed 20 percent of the equity interest in RES Transmission.

11. RES Transmission's Participation Plan does not exclude any potentially affected First Nation or Métis community from equity participation on the basis of its Aboriginal status; nor does its plan give preferential treatment to communities with pre-existing commercial relationships. RES Transmission's Participation Plan gives all potentially affected First Nation and Métis communities an equal opportunity to participate in the Project.

The Applicant's Design and Route Proposals

12. RES Transmission has proposed two options for the design of the EWTL: a reference design option (the "**Reference Design**") and a preferred design option (the "**Preferred Design**").

    (i) The Reference Design comprises a double circuit 230 kV transmission line, as described by the OPA in its June 30, 2011 Report on the Long-term Electricity Outlook for the Northwest[3] and assessed by the IESO in a feasibility study on options for reinforcing the East-West Tie.[4]

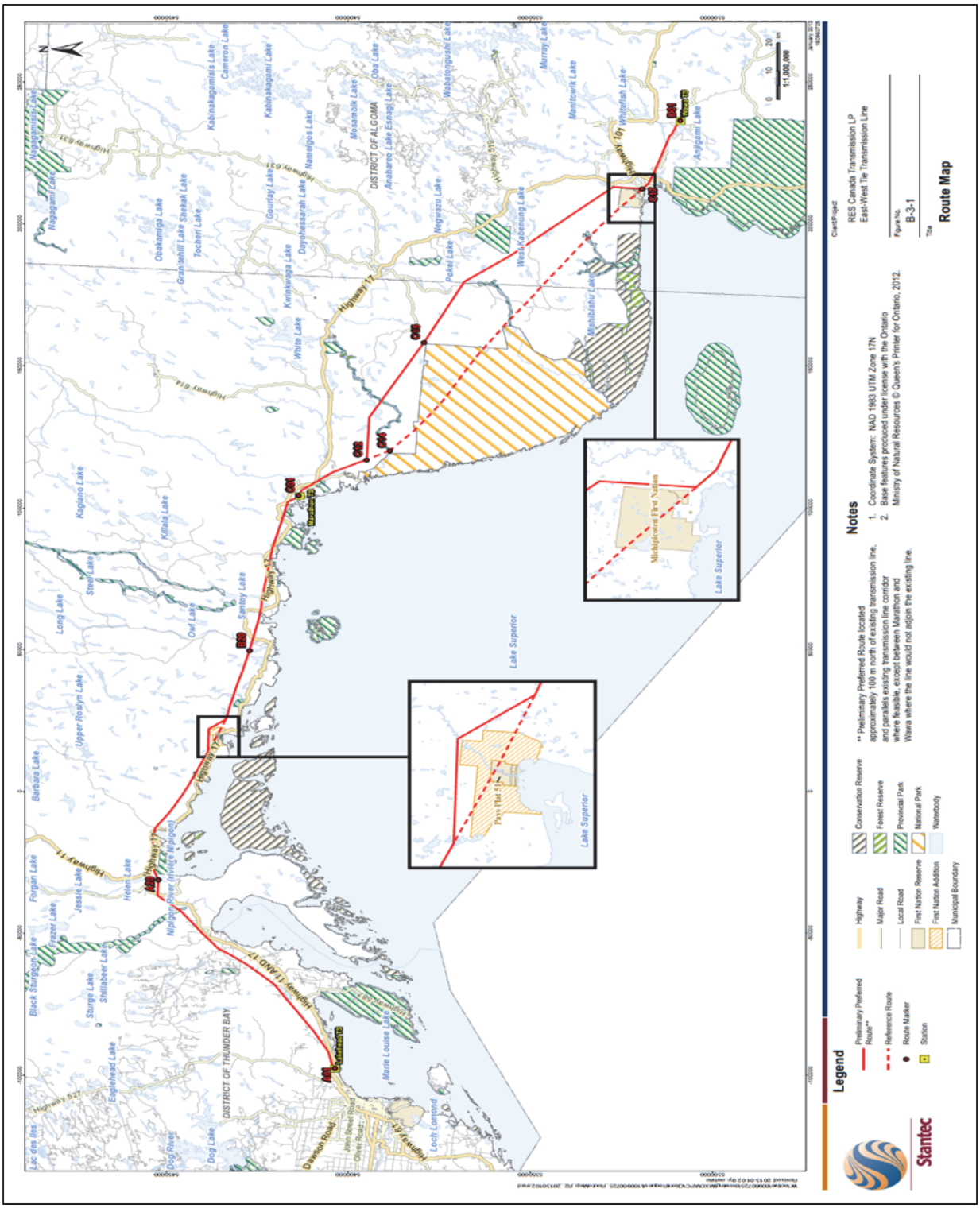
[3] Ontario Power Authority, "Long Term Electricity Outlook for the Northwest and Context for the East-West Tie Expansion" (June 30, 2011); the OPA assumes that the expanded East-West Transmission Line would comprise a new double-circuit 230 kV overhead transmission line.
[4] Independent Electricity System Operator, "Feasibility Study: An assessment of the westward transfer capacity of various options for reinforcing the East-West Tie", August 18, 2011.

(ii) The Preferred Design comprises an innovative, single circuit 230 kV transmission line that meets or exceeds all applicable system reliability and system performance requirements, as confirmed by the IESO in a feasibility study prepared for RES Transmission in 2012 and included at Exhibit H-2-3 of the Application.

13. In simple terms, the Reference Design is a double circuit transmission line that uses two sets of conductors installed on a common tower. To achieve the required transfer capacity, the Reference Design (compared to the Preferred Design) requires less equipment to be installed in the three existing Hydro One transformer stations to which it will interconnect, but requires larger towers and foundations and more complex station interconnections. The Preferred Design, on the other hand, is a single circuit transmission line with one set of conductors. The Preferred Design requires the installation of more station equipment but utilizes smaller towers and foundations, has a simpler, single set of transformer station interconnections, can be put into service more quickly and can be constructed in stages, over time, matching capacity with system requirements.

14. RES Transmission has identified two potential routes for the Project: the reference route, a 401 km route that adjoins Hydro One's existing East-West transmission line (the "**Reference Route**") and the preliminary preferred route, a 409 km route that departs from the corridor of Hydro One's existing East-West transmission line for 130 km (the "**Preliminary Preferred Route**"). Portions of the Reference Route would traverse First Nation reserve lands and 34.5 km of Pukaskwa National Park. The Preliminary Preferred Route avoids these areas, thereby reducing the impact on First Nation and Métis communities and on environmentally sensitive lands while, at the same time, providing better construction and access conditions, thus reducing costs. A map of the Reference Route and Preliminary Preferred Route is provided in Figure A-1 on the following page.

Figure A-1: Project Overview Map



The Applicant's Cost and Risking Sharing Proposals

15. Both the Reference Design and the Preferred Design can be constructed along either of the two proposed routes. RES Transmission is prepared to develop, construct, own and operate any of the four design/route options, as selected by the OEB. It is also prepared, at the option of the Board, to develop and construct either the Preferred Design or the Reference Design along the Preliminary Preferred Route for a firm cost of $413.4 million and $493.7 million, respectively (each, the "**Bid Amount**") (collectively, the "**Firm Bid Proposal**"), subject to approval of the Board in a future proceeding, of industry-indexed adjustments for inflation, accounting practices and the calculation of interest.

16. The Firm Bid Proposal is also conditional on the Board, in a future rate proceeding, approving RES Transmission's Risk Sharing Proposal.[5] This proposal incents RES Transmission to complete the development and construction of the EWTL on time and on budget, by rewarding it if it completes the Project for less than the Bid Amount and penalizing it for exceeding the Bid Amount. While the incentive/penalty rate structure is applicable throughout the life of the Project, it is intended that development and construction overages or underages be determined at the time of the first cost-of-service rate application filed after the Project is placed in-service. For each year thereafter that the Project is in service, allowances for overages and underages would be amortized for the same depreciable life as plant in service.

17. RES Transmission acknowledges that Board approval of its Firm Bid Proposal and its Risk Sharing Proposal, for rate-making purposes, may be beyond the scope of the designation proceeding. RES Transmission is, nevertheless, prepared to commit to these proposals as a condition of designation by undertaking to prepare and submit its Leave

[5] The Firm Bid Proposal and the Risk Sharing Proposal, together, comprise RES Transmission's "Development and Construction Cost Proposal", as defined in its Application.

to Construct ("**LTC**") application and its first cost-of-service application after the EWTL is placed in service, on the basis of these proposals.

Conclusion

18. The OPA, in its June 30, 2011 Report on the Long-term Electricity Outlook for the Northwest, assumed that "a single-circuit 230 kV line would likely have a similar cost to a double-circuit 230 kV line, but would have reduced operability during planned and forced outages."[6] [emphasis added] The applications filed in this proceeding disprove these cost and operability assumptions. RES Transmission's Preferred Design is approximately $80 million less costly than its Reference Design.[7] EWT LP ("**EWT**") estimated the cost savings of its single circuit option as between $70 and $110 million. With respect to reliability, the IESO has verified that RES Transmission's Preferred Design meets all applicable requirements pertaining to transfer capacity, system performance and system reliability. To be clear, the single circuit Preferred Design is as reliable as the double circuit configuration.

19. The evidence that has been filed in this proceeding clearly demonstrates that RES Transmission's Preferred Design is the superior option, from both a design and a cost perspective. If, however, the Board decides that the redundancy offered by a double circuit design is actually required, notwithstanding the evidence of historical outages and its much higher cost, then RES Transmission's proposal to construct its Reference Design for the Firm Bid amount of $493.7 million, is the next best alternative. None of the other applicants has offered ratepayers this level of cost predictability and certainty.

[6] Ontario Power Authority, "Long Term Electricity Outlook for the Northwest and Context for the East-West Tie Expansion" (June 30, 2011), s. 7.1, lines 6-7.

[7] See the "Costs" section below. Further support for the argument that single circuit designs are cheaper than double circuit designs can be found in EWT LP's response to interrogatory OEB All-21.

B. Technical Capability and Financial Capacity

Technical Capability

Experience

20. RES Transmission, with the benefit of the collective experience of the RES Group and the MidAmerican Group, satisfies the Board's technical capability requirements for designation. Its collective experience is extensive and has, in a number of cases, been acquired in conditions similar to those that will be encountered during the development, construction and operation of the EWTL. An indicative sample of the most recent experience in this regard is described, in detail, in Exhibit E of the Application and can be summarized as follows:

(i) more than 30,000 km of high-voltage transmission lines owned and/or operated by the MidAmerican Group in the United States, under both state and federal jurisdiction; these include 115 kV, 138 kV, 230 kV, 345 kV and 500 kV transmissions lines owned and/or operated by PacifiCorp, MidAmerican Energy Company and MidAmerican Transmission LLC all members of the MidAmerican Group.

(ii) 890 km of high-voltage (138kV, 230 kV and 345 kV) transmission lines developed and/or constructed by the RES Group throughout North America since 1998, including 27 generation tie lines and the recent construction of the Montana Alberta Tie Line (345 km 230 kV line). These include two 230 kV generation tie lines in Ontario, one of which is connected to the existing Hydro One East-West Tie Line between Thunder Bay and Nipigon;

(iii) the 3,300 km PacifiCorp Energy Gateway Project, a U.S. $6.0 billion, project comprising 230 kV, 345 kV and 500 kV lines currently in-service, under development or under construction in parts of several Northwest and Rocky Mountain States;

(iv) 400 km in MidAmerican Energy Company MISO Projects;

(v) the 188 km MidAmerican Transmission Company Joint-Venture Project in the Southwest Power Pool; and

(vi) 666 km MidAmerican Transmission Company Joint-Venture Projects in ERCOT.

21. RES Transmission confirms that all of the transmission projects sponsored by its related parties and which have commenced construction, have been completed and brought into service or are in the process of being brought into service.

Addressing Challenges

22. The RES Group and the MidAmerican Group's prior experience in the areas listed below will be particularly relevant to the development and construction of EWTL.

(i) **Experience in the extreme topographic and weather conditions in the Rocky Mountains and northwestern Ontario** – the region of northern Ontario in which the EWTL will be located is subject to severe weather and the ability to manage construction timetables in such conditions, will require reliance on appropriate prior experience.

(ii) **Experience working in ground conditions prevalent in the Northwest and Rocky Mountains and the Canadian Shield** – the proposed route for the EWTL will involve traversing variable ground conditions, including bedrock, muskeg, and rocky soils.

(iii) **Experience constructing long spans and river crossings in the U.S. Pacific Northwest and Midwest, including long spans over the Mississippi and Columbia Rivers and/or their tributaries** – the proposed route for the EWTL will require sensitive management of proximate watercourses and water bodies.

(iv) **Experience with vegetation management regimes in the Pacific Northwest, Rocky Mountain states and Midwest** – the proposed route for the EWTL may involve the passage through a national park and, in any event, the EWTL will traverse parts of northern Ontario that are ecologically sensitive, such as provincial parks and conservations areas.

(v) **First Nation experience in Ontario and tribal experience in Nevada, Idaho, Montana, Arizona and Utah** – past consultation experience with many of the First Nation and Métis communities identified as potentially affected by the EWTL; the negotiation and execution of Impact Benefit Agreements between RES Canada and two of the First Nations within the footprint of the EWTL (Fort William and Red Rock) in connection with the Greenwich Wind Farm; and the negotiation and execution of MOUs with the Ontario Ministry of Energy for the delegation of procedural aspects of the Crown's duty to consult, also in connection with the Greenwich Wind Farm. A detailed description of the capabilities and experience of the RES and the MidAmerican Groups in First Nation, Métis and tribal consultation is included in the Application at Exhibits E-6-1 and E-6-2.

(vi) **Experience with transmission-related regulatory proceedings, including LTC proceedings in Ontario and comparable processes in various U.S. jurisdictions** – the extensive experience of the RES Group and the MidAmerican Group and their external advisors, in obtaining successful LTC and similar types of authorizations, will be critical to the EWTL process.

(vii) **Experience in developing sound structure grounding solutions in very high resistance soils** – RES Transmission plans to employ multiple spar grounding at each structure with as many as ten spars on H-frame structures and twelve spars on lattice structures. Structures that do not reach the 20 ohm level will be

assessed and additional measures (such as counterpoise) employed to achieve the best grounding level possible in order to meet or exceed minimum technical criteria. This will help to ensure necessary lightning protection and shielding, aid in proper operation of protective relays and apparatus and reduce incidence of flashovers of line and station insulation during voltage transients.

23. The RES Group and the MidAmerican Group recognizes that it is essential to maintain flexibility during the development and construction process. No matter the degree of planning and foresight or the experience of the project proponent, circumstances outside the control of that proponent can materially impact project schedule. In interrogatory OEB All-32, the Board asked applicants about schedule variances on projects greater than 100 Km. All applicants, in their responses, identified projects that had experienced scheduling delays. In the cases cited by MidAmerican Group, the projects were still delivered on or under budget (see "Budget Variance Table" in the response to interrogatory OEB All-32). Put another way, schedule overruns that were beyond the control of the MidAmerican Group did not result in corresponding budget overruns.

Financial Capacity and Experience

Financing Capacity

24. The MidAmerican Group had operating revenues of $11.6 billion in 2012 and retained earnings of $15.7 billion as of December 31, 2012.[8] The MidAmerican Group, through its parent entity, MEHC, exhibits strong investment grade ratings with Moody's, Standard & Poor's and Fitch: Baa1, BBB+ and BBB+, respectively. Such ratings allow the MidAmerican Group to maximize pricing benefits in the debt capital markets. This, in turn, will enable RES Transmission to pass on the benefits of lower debt costs to ratepayers.

[8] See 2012 Annual Report of MidAmerican Energy Holdings Co., pp. 84-88, available at http://www.midamerican.com/include/pdf/sec/20121231_99_mehc_annual.pdf

25. MidAmerican Energy Holding Company is 90 percent owned by Berkshire Hathaway, (which maintains a credit rating of Aa2/AA+/A+). This ownership provides the MidAmerican Group with access to equity capital and with it, the flexibility to construct large electricity infrastructure projects, across the globe.

26. MidAmerican Group subsidiaries and/or joint venture partners have, from time to time, issued debt with maturities ranging from 5 to 30 years, in capital and private placement markets, based on prevailing market conditions.

27. In sum, the MidAmerican Group has significant financing capacity and enjoys significant financing advantages, relative to many developers of in energy infrastructure across the globe.

28. The RES Group had revenues for fiscal year 2011 of approximately $1.2 billion and total capital and reserves of approximately $267 million, as of October 31, 2011. The parent entity in the RES Group, Renewable Energy Systems Holdings Ltd., is a privately held company with very little corporate level debt. Accordingly, it does not have a rating with the major rating agencies. Renewable Energy Systems Holdings Ltd. is owned by shareholders of the Sir Robert McCalpine Group, formed in 1872. The Sir Robert McCalpine Group has significant experience in major construction projects, ranging from the 401 Highway in Ontario, to nuclear power generating facilities, to the recently constructed London Olympic stadium. Through this cumulative financial strength and experience, the RES Group has considerable access to capital, both through its shareholders and through third party financings.

Financing Experience

29. The MidAmerican Group owns electric and gas assets totalling $47.7 billion. In 2011, it undertook $2.6 billion in capital expenditures and supported $2.5 billion of ongoing operating expenditures. Since 2004, the MidAmerican Group has invested or committed to invest $6 billion in owned and operated wind power generation. As part

of a recent expansion into the ownership of independent power projects, the MidAmerican Group, financed approximately $336 million of transmission capital expenditures and is committed to another $103 million, through 2014. This includes the CREZ infrastructure build-out in Texas and the Prairie Wind Transmission Project in Kansas. In sum, the MidAmerican Group has considerable experience in accessing the debt and the capital required to support all of its project development activities.

30. The RES Group also has considerable experience financing electricity infrastructure projects. The RES Group has directly financed more than 600 MW of renewable electricity generation projects (spanning more than 30 different wind/solar facilities), representing over $1 billion in total investment. Over the past 20 years, the RES Group has also been involved in developing and constructing over 6 GW of renewable energy generation, all of which has been successfully financed.

31. Both the MidAmerican Group and the RES Group enjoy close relationships with banks, financiers, investors, insurers, manufacturers, consultants and legal specialists. These relationships are key to successful project financings.

32. Exhibit E-2-1 of the Application describes MidAmerican Group and RES Group projects that have employed successful and, in many cases, innovative financing techniques to secure cost effective financing. This experience will assist RES Transmission in minimizing the cost of financing the EWTL.

Financing Plan

33. RES Transmission has financed its pre-designation costs from sponsor equity. RES Transmission does not intend to seek recovery of the costs incurred in this phase of the Project. These costs are now estimated to be $1.8 million.

34. RES Transmission intends to finance 100 percent of its development costs through sponsor equity. This is because the cost of securing debt financing (interest rate plus

associated financing fees) in the development phase, when the Project is not generating any revenue, would be prohibitive.

35. RES Transmission intends to finance its construction phase costs through a construction debt facility and sponsor equity contributions, in accordance with a 60:40 debt-equity capital structure. By drawing on the experience and relationship of the RES Group and MidAmerican Group, RES Transmission is confident that it will be able to obtain construction debt at competitive rates.

36. After the EWTL is placed in service, RES Transmission intends to obtain long-term debt financing for 60 percent of the total Project costs; it intends to finance the remaining 40 percent through sponsor equity contributions. It is anticipated, although difficult to predict so far in advance, that long-term debt fixed interest rates in the order of 4.5 percent to 5.0 percent, will be available at such time, based on a 10-year term.

37. RES Transmission may consider supplementing its long-term debt facility with a short-term, revolving facility with a three-year renewable term and a fixed interest rate. The facility would be reviewed at the end of each term and debt limits, based on the following three year's forecasted needs for the operation of the EWTL, would be negotiated. This approach would serve to minimize commitment and issuance fees.

38. Due to the regulated nature of the EWTL and the magnitude of its cost, relative to the collective financial capacity of the RES Group and the MidAmerican Group, the EWTL will not have a material impact on RES Transmission's cost of debt or on the credit rating and financial capacity of its two partners. This is the case, regardless of the extent of First Nation or Métis equity participation which, in any event, will be capped at 20 percent of the total equity interest in RES Transmission. Cost overruns or delays are not a concern in the context of the financial capacity of the RES Group and the MidAmerican Group and their ability to access debt markets. Both groups maintain prudent levels of

capital and reserves and will be able to manage unexpected cost impacts, in an efficient and cost effective manner.

C. First Nation and Métis Participation

Overview

39. The participation in the Project by First Nation and Métis communities is of vital importance to its success. RES Transmission's First Nation and Métis Participation Plan ("**Participation Plan**") (which is distinct from RES Transmission's First Nation and Métis Consultation Plan) is a detailed blueprint of how RES Transmission intends to work with affected First Nation and Métis communities to effect meaningful participation – including equity participation – in the EWTL Project.[9] The Participation Plan is included at Exhibit D-2-1 of the Application.

40. The Minister of Energy has identified 18 First Nation and Métis communities that may be affected by the EWTL. These communities, along with a number of others that RES Transmission has identified[10], informed the development of the Participation Plan. The Participation Plan was also informed by the advice that RES Transmission received from former Grand Council Chief of the Union of Ontario Indians, John Beaucage, and Coxswain Row Capital Corp., both retained as advisors to RES Transmission on First Nation and Métis issues, and by the collective experience of the RES Group and the MidAmerican Group.[11]

41. RES Transmission recognizes that the diversity of First Nation and Métis communities means that there is a corresponding diversity of expectations, interests and tolerances for risk. The Participation Plan takes this into account by offering a range of participation opportunities, including equity participation. RES Transmission expects

[9] A summary of the key aspects of RES Transmission's Participation Plan was included at Exhibit D-1-1 of the Application. The most recent copy of the First Nation and Métis engagement log was provided in RES Transmission's response to OEB All-11, at Appendix 2.

[10] Through past consultation experience in the region, RES Transmission has identified the Kiashke Zaaging Anishinaabek (Gull Bay First Nation) as another potentially affected community with possible interest in the Project.

[11] This is described in greater detail in the Participation Plan at Exhibit D-2-1 at pp. 12-14 of the Application and in response to interrogatory OEB All-5.

that each affected First Nation and Métis community will participate in a manner that reflects the nature of its interest in the Project. Accordingly, terms of participation will be negotiated, individually, with each community in the form of either a Participation Agreement or an Impact Benefit Agreement.

42. RES Transmission's Participation Plan describes and discusses the participation opportunities that will be available to all affected First Nation and Métis communities in the event that RES Transmission becomes the designated transmitter. The opportunities outlined in the Participation Plan include, but are not limited to, opportunities to participate in the project as equity partners, opportunities to become suppliers and service providers and opportunities related to employment, skills training and capacity funding. All of these opportunities are designed to provide long-term benefits to affected First Nation and Métis communities.

43. It is expected that the scope and nature of each community's participation will reflect that community's level of interest in the Project, its appetite for investment and associated risk and the impact of the Project on the community's traditional lands and rights. Under RES Transmission's Participation Plan, affected First Nation and Métis communities who are not interested in making an equity investment in the Project could choose to enter into Impact Benefits Agreements with RES Transmission.

44. Any material changes in the Applicant's Participation Plan will be reported to the Board in quarterly updates, in accordance with the Board Staff's submission in this regard.[12]

Non-Discriminatory Participation

45. Unlike EWT, RES Transmission does not believe that any affected First Nation and Métis community should be excluded from equity participation on the basis of their Aboriginal status; nor does RES Transmission believe that preferential treatment should be given to

[12] Ontario Energy Board Staff Submission (April 8, 2013) ("Staff Submission"), p. 5.

communities with which it has pre-existing commercial relationships.[13] All potentially affected First Nation and Métis communities should be given an equal opportunity to participate in the Project. RES Transmission's Participation Plan reflects this strongly held view.

46. RES Transmission submits that any participation plan that discriminates among affected First Nation and Métis communities, on any basis, is susceptible to legal challenge under the *Canadian Charter of Rights and Freedoms* and otherwise. In the event that the Board were to accept such a plan, there is a real and significant risk of legal challenge. This could, in turn, delay the development and construction of the EWTL, possibly for years. This is especially concerning in light of recent court decisions that have had the effect of expanding Métis rights.[14]

Equity and Other Participation Opportunities

47. In the then Minister of Energy's letter to the Board dated March 29, 2011 regarding the EWTL, the Minister stated that he "would expect that the weighting of decision criteria in the Board's designation process takes into account the significance of aboriginal participation to the delivery of the transmission project…"

48. In RES Transmission's view, the Board should give significant weight to designation applicants who offer equity participation opportunities to Métis and First Nation communities. The participation plans proposed by UCT and Iccon/TPT do not appear to offer any investment opportunities to First Nation and Métis communities.

49. RES Transmission is prepared to offer as much as a $50 million investment opportunity to affected and interested First Nation and Métis communities, provided such investment, in total, does not exceed a 20 percent equity interest in RES Transmission. RES Transmission expects that the commercial terms of the equity Participation

[13] See the response of EWT to interrogatory OEB All-6 and the responses of RES Transmission to OEB All-6 and 7.
[14] See, for example, *Daniels v. Canada*, 2013 FC 6.

Agreements that it negotiates with First Nation and Métis communities will be consistent with conventional commercial practices, terms and conditions and will reflect the investor's percentage interest in the Project.

50. RES Transmission recognizes that not all communities who wish to become equity investors, will have the capacity, financial or otherwise, to do so. RES Transmission is committed to helping these communities overcome any obstacles in this regard. To this end, it has assembled an experienced participation implementation team to facilitate participation – including equity investments – by First Nation and Métis communities. Assistance could take the form of advising First Nation and Métis communities about forming an investment group, securing loans through Ontario's Aboriginal Loan Guarantee Program and developing appropriate financing strategies.[15]

[15] For additional information on how RES Transmission will assist First Nation and Métis communities in obtaining necessary financing, see the Participation Plan at Exhibit D-2-1, pp. 6-8 of the Application and the response of RES Transmission to interrogatory OEB All-11.

D. Design

Overview

51. RES Transmission has proposed two options for the design of the EWTL: a reference design option and a preferred design option.

    (i) The Reference Design comprising a double circuit 230 kV transmission line, as described by the OPA in its June 30, 2011 report on the long-term electricity outlook for the Northwest[16] and assessed by IESO in a feasibility study on options for reinforcing the East-West Tie.[17]

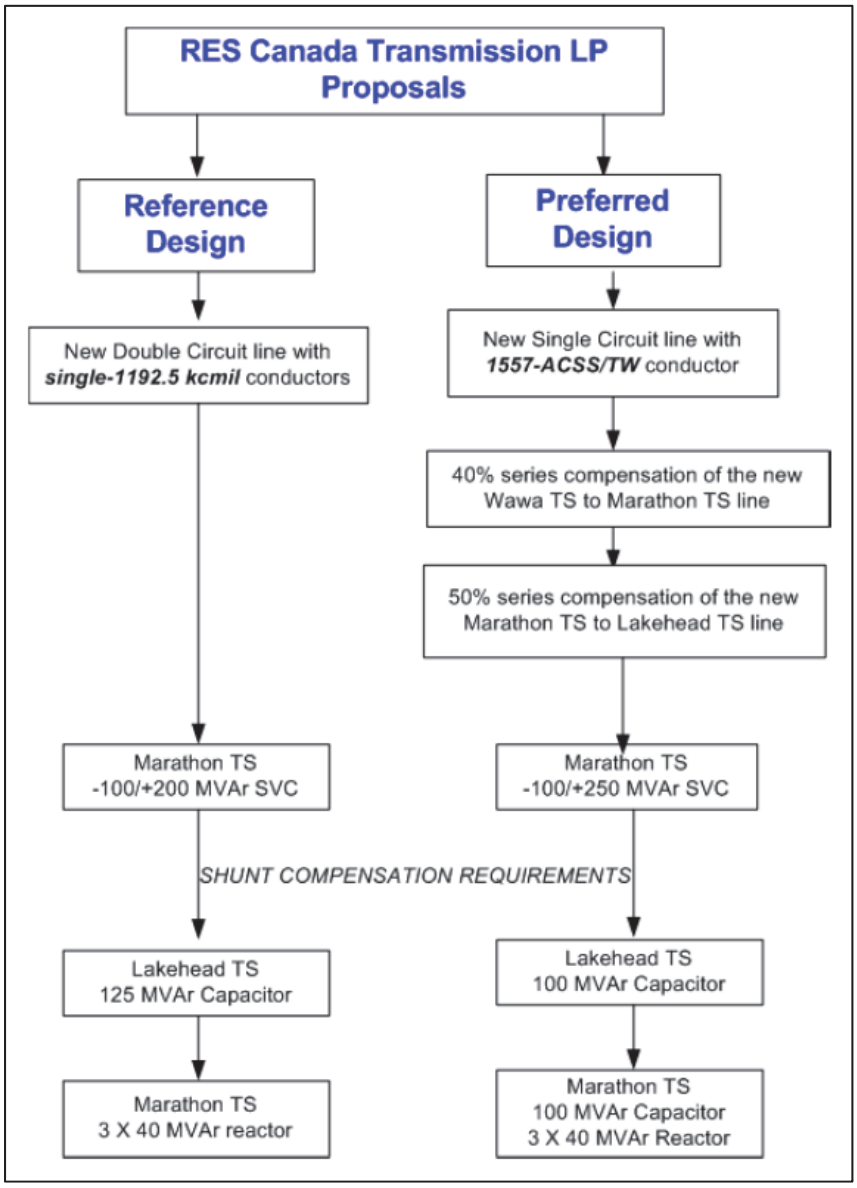
    (ii) The Preferred Design comprising an innovative, single circuit 230 kV transmission line that meets or exceeds all applicable transfer capacity, system reliability, and system performance requirements of the OEB, OPA, IESO, North American Electricity Reliability Corporation ("**NERC**") and Northeast Power Coordinating Council, Inc. ("**NPCC**") as confirmed by the IESO in a feasibility study prepared for RES Transmission in 2012 ("**Preferred Design Feasibility Study**") and included at Exhibit H-2-3 of the Application.

52. Both designs meet or exceed all applicable requirements with respect to transfer capacity, system reliability and system performance. The principle differences between the Reference Design and the Preferred Design are shown on the following page in Figure D-1. Simply put, the Reference Design is a double circuit transmission line that uses two sets of typical 1192.5 kcmil ACSR conductors ("**ACSR Conductors**"). Compared with the Preferred Design, the Reference Design requires less equipment to be installed in the three transformer stations but needs larger towers and foundations and more complex station interconnections. The Preferred Design, on the other hand, is a single

[16] Ontario Power Authority, "Long Term Electricity Outlook for the Northwest and Context for the East-West Tie Expansion" (June 30, 2011); the OPA assumes that the expanded East-West Transmission Line would comprise a new double-circuit 230 kV overhead transmission line.
[17] Independent Electricity System Operator, "Feasibility Study: An assessment of the westward transfer capacity of various options for reinforcing the East-West Tie", August 18, 2011.

circuit transmission line with one set of 1557 ACSS trapezoidal conductors ("**ACSS Trapezoidal Conductors**"). The Preferred Design requires the installation of more station equipment but utilizes smaller towers and foundations, has simpler connections to transformer stations, can be put into service more quickly and can be constructed in stages to expand transfer capacity as demand increases.

Figure D-1: Comparison of the Reference Design and the Preferred Design



53. The Preferred Design is a superior option, relative to the Reference Design, from a design perspective and from a cost perspective (discussed, below, in paragraphs 105-146). From a design perspective the Preferred Design provides:

(i) superior voltage control and stability;

(ii) superior reactive power management;

(iii) greater overall transfer capacity (684 MW v. 650 MW), based on the IESO feasibility studies;

(iv) reduced vulnerability to wind and ice (important in northern Ontario); and

(v) lower environmental impact.

54. The Preferred Design has the added benefit of being able to accommodate staged construction of transformer station equipment so that facilities are only built (and paid for) as system demand materializes. This could defer or avoid expenditures of $62.5 million savings that could increase by $12 million for each year that the installation of station upgrades is delayed.

55. In sum, the Preferred Design meets or exceeds all applicable requirements with respect to transfer capacity, system performance and system reliability but also allows for more rapid construction, improved performance, increased flexibility and substantial cost reductions.

The Preferred Design

56. RES Transmission's Preferred Design comprises six distinct components:

(i) a single circuit design;

(ii) innovative, high ampacity ACSS Trapezoidal Conductors;

(iii) transformer station equipment upgrades with electrical performance benefits;

(iv) simplified transformer station interconnections;

(v) smaller (i.e., cheaper) towers and foundations; and

(vi) flexible installation.

57. Each of these components is described, in turn, followed by a discussion of key issues relevant to the Preferred Design.

Single Circuit Design

58. The total length of conductor required in the single circuit design is half that of the double circuit design (1,200 km vs. 2,400 km). This reduces the amount of labour and materials required in the construction phase, resulting in lower overall line costs and lower operations and maintenance ("**O&M**") costs in the future.

59. The single circuit design also facilitates the use of smaller towers and smaller foundations, thereby reducing the cost of labour and materials. There are two factors that contribute to this. The first is that the total weight of conductors to be borne by a single tower is approximately 30 percent less for single circuit designs, compared with double circuit designs (three conductors vs. six conductors).[18] The second factor is that ice and wind stress is expected to be approximately 40 percent less in respect of the three-conductor design of the single circuit option, compared to the six conductor design of the double circuit option.[19]

[18] See Exhibit G-1-1 of the Application.
[19] See Exhibit G-1-1 of the Application.

60. Conductors in a single circuit design can be arranged horizontally.[20] This horizontal arrangement provides two important benefits (relative to other conductor arrangements), namely:

(i) it renders the single circuit design largely immune to the risk of single-loop galloping faults – a level of protection that double circuit designs can only achieve at substantial cost;[21] and

(ii) it reduces the number of incidental bird strikes[22] – a significant consideration since the EWTL will pass through migratory bird habitat, provincial parks and, potentially, a national park.

61. Where tubular steel H-frame structures are used, the single circuit option requires a narrower right-of way (46 metres vs. 50 metres) compared to the double circuit option. This has the effect of reducing the cost of acquiring necessary land rights.

The ACSS Trapezoidal Conductors

62. The Preferred Design uses higher ampacity conductors to increase the current that can be carried by the single circuit, making it comparable to a double circuit design, without materially increasing the size of the tower and foundations (and, thus, the corresponding costs) required to support a larger ordinary ACSR conductor. Instead of using ordinary ACSR Conductors, RES Transmission has, instead, opted to use more advanced ACSS Trapezoidal Conductors that have a higher current carrying capacity and superior tensile strength-to-weight ratio.

63. The proposed ACSS Trapezoidal Conductors have superior technical capabilities, relative to the ACSR Conductors of the IESO's Reference Case, including:

[20] See the responses of EWT and RES Transmission to interrogatory OEB All-17.
[21] Additional measures to be taken by RES Transmission to protect against single-loop galloping faults can be found at Exhibit H-2-1, p. 4 of the Application.
[22] See the response of EWT to interrogatory OEB All-21.

(i) reduced line sag during emergency electrical loads;

(ii) an ability to operate at higher temperatures;

(iii) excellent self-damping properties that reduce vibration from high winds; and

(iv) less vulnerability to wind an ice due to its more compact shape.[23]

64. The ACSS Trapezoidal Conductors' high tensile strength-to-weight ratio and their greater capacity to handle high winds and ice make them an ideal choice for the harsh environmental conditions of northern Ontario.

Transformer Station Equipment Upgrades

65. The transformer station equipment upgrades that are required to support the Preferred Design and the Reference Design are summarized in Table D-1, on the following page. Relative to the Reference Design, full implementation of all stages of the Preferred Design requires more transformer station equipment upgrades (see paragraphs 91-94 on "Staged Capacity Additions" below) but simpler (and cheaper) transformer station interconnections. Technical details of the required transformer station equipment upgrades are included in Exhibits G-2-1, G-6-1 and H-1-1 of the Application.

[23] Further details on the technical capability of the ACSS Trapezoidal Conductors can be found at Exhibits G-6-1, H-2-1 H-4-1 of the Application and in the responses of RES Transmission to interrogatories OEB All-15 and 22.

Table D-1: Required System Upgrades[24]

	Equipment	Preferred Design	Reference Design
1.	**Static VAr Compensators**		
	a. Marathon Transformer Station ("**TS")**	Yes	Yes
	b. Wawa TS	No	No
	c. Lakehead TS	No	No
2.	**Series Compensators**		
	a. Between Wawa TS and Marathon TS	Yes	No
	b. Between Marathon TS and Lakehead TS	Yes	No
3.	**40 MVAr Shunt Reactors**		
	a. Marathon TS[25]	Yes	Yes
	b. Wawa TS	No	No
	c. Lakehead TS	No	No
4.	**Shunt Capacitor Banks**		
	a. Marathon TS	Yes	No
	b. Wawa TS	No	No
	c. Lakehead TS	Yes	Yes
5.	**Protection and Control**		
	a. Marathon TS	Yes	Yes
	b. Wawa TS	Yes	Yes
	c. Lakehead TS	Yes	Yes

66. As described in paragraphs 91-94 below, the additional station equipment required in the Preferred Design does not need to be installed upfront but can be added over time,

[24] This table is also included at Exhibit G-1-1, Table G-1 of the Application.
[25] Three shunt reactors are required to be installed at Marathon TS.

as demand increases. While full implementation of the Preferred Design requires a greater number of transformer station equipment upgrades than in the IESO's Reference Case (and RES Transmission's Reference Design), the costs savings inherent in the Preferred Design are more than sufficient to offset these additional station equipment costs, with savings to spare (see paragraphs 105-146 on costs below). The additional station equipment upgrades required by the Preferred Design, namely the addition of series compensators, shunt capacitor banks and a higher rated static VAr compensator (relative to the IESO's Reference Case), also confer several important benefits in terms of the reliability and performance of the EWTL, including superior voltage control, voltage stability and management of reactive power. These are described below.

Series Compensation

67. The Preferred Design includes the use of 230 kV series compensators to achieve the required transferred capacity. Series compensation is a well-established technology that has long been the preferred solution for increasing carrying capacity and electrical stability in long (typically more than 200 km) transmission corridors. Series compensation will provide the EWTL with increased system stability, including increased voltage stability. Hydro One currently has two 500 kV series compensators operating on its system and the MidAmerican Group employs extensive use of series compensators on its current transmission systems, which are in operation at 230 kV, 345 kV and 500 kV.

68. As stated in response to interrogatory OEB All-12, upon designation, RES Transmission will work with the IESO during the development phase of the Project to identify the optimum series compensation station layouts. RES Transmission also understands that Hydro One will be responsible for all future upgrades and interconnections at its existing transformer stations. In the event that the Preferred Design's series compensation facilities are required (i.e., that the staged capacity additions are required) and cannot

be incorporated into existing Hydro One transformer stations, RES Transmission is prepared to design, construct, operate and maintain these facilities, itself, in coordination with Hydro One and the IESO. At this time, RES Transmission has no preference as to how series compensation is allocated within each line segment (e.g. from Wawa TS to Marathon TS and from Marathon TS to Lakehead TS) of the EWTL.[26]

Shunt Capacitor Bank and Shunt Reactors

69. Shunt capacitor banks and shunt reactors are included as part of the Preferred Design and Reference Design in order to provide voltage control and system stability at the required EWTL transfer capacity. The Preferred Design also includes an additional shunt capacitor bank at Marathon TS.

Static VAr Compensator ("**SVC**")

70. SVCs are an innovative, flexible alternating current transmission system device that can provide instantaneous voltage support by absorbing or providing reactive power, as necessary. SVCs can improve power system transmission performance by increasing transfer capacity and reducing losses, while maintaining a smooth voltage profile under different operating conditions. The MidAmerican Group employs SVCs extensively on its own transmission systems.

71. While both the Preferred Design and the Reference Design require the installation of SVCs, the Preferred Design uses a higher rated SVC (+250 MVAr vs. +200 MVAr in the IESO's Reference Case) that will provide additional system benefits in terms of voltage stability, reduced transmission losses, a higher transient stability limit, increased damping of minor disturbances and power oscillation damping.

[26] See the response of RES Transmission to interrogatory OEB All-31.

Improved System Performance

72. Taken together, the additional station equipment to be installed as part of the Preferred Design (i.e., the series compensators, shunt capacitor banks and a higher rated static VAr compensator) improves the reliability and performance of the EWTL (relative to the IESO's Reference Case) by providing:[27]

(i) superior voltage control and reactive power management during normal transfer levels; and

(ii) greater total transfer capacity (684 MW vs. 650 MW), as confirmed by the IESO feasibility studies.

73. The Preferred Design Feasibility Study (Exhibit H-2-3 of the Application) and for the IESO's Reference Case and Alternative Case (Exhibit I-2-2 of the Application) analyzed electrical system performance at rated transfer capabilities under multiple contingency scenarios.

74. While the Preferred Design has similar performance attributes to the IESO's Reference Case when the line is heavily loaded, the Preferred Design provides superior voltage control and management of reactive power during normal transfer levels. This is important since the OPA's flow duration chart, shown in its June 30, 2011 Long-Term Electricity Outlook for the Northwest Report, indicates that the EWTL would not be at its rated capacity (i.e., the EWTL will be at normal transfer levels) for approximately 95 percent of the time, in any one year.[28]

75. During light flow conditions, the Preferred Design allows the series compensators to be bypassed for greater discrete system voltage control and reduced voltage stress on

[27] For additional details on the superior electrical performance of the Preferred Design, please see Exhibit G-6-1 of the Application and the response of RES Transmission to interrogatory RES-10.
[28] Ontario Power Authority, "Long Term Electricity Outlook for the Northwest and Context for the East-West Tie Expansion" (June 30, 2011), p. 14.

system equipment. In contrast, the IESO's Feasibility Study for the Reference Case concluded that the loss of the SVC under light flow conditions would result in a voltage of 255 kV at Marathon TS – a violation of the 250 kV maximum permitted under the IESO's Market Rules.[29]

76. In summary, the Preferred Design will provide better system operation and flexibility in terms of voltage control and stability under approximately 95 percent of expected operating conditions. For the remaining 5 percent of time, the Preferred Design and the IESO Reference Case are approximately equivalent.

Transformer Station Interconnections

77. Single circuit transformer station interconnections are simpler than double circuit connections because only one set of three conductors is required to interconnect with each transformer station (as opposed to the two sets of three, or a total of six conductors required by the Reference Design). This, in turn, significantly reduces the number of circuit breakers required. While the associated cost savings are not reflected in RES Transmission's line cost estimates, they are reflected in RES Transmission's estimate of the station work that would have to be completed by Hydro One.[30] These station costs are discussed below, in paragraphs 125-127 in the "Costs" section.

78. Exhibits H-4-3 and H-4-4 of the Application provided optional station configurations for each affected station under the Preferred Design. These configurations were developed to provide typical industry cost estimates only.[31] Upon designation, RES Transmission is committed to working with the IESO and Hydro One to determine final station interconnection designs that meet or exceed all performance requirements.[32]

[29] See the response of RES Transmission to interrogatory OEB All-21 and diagram 37 from the IESO's Feasibility Study for the Reference Case and the Alternative Case included at Exhibit I-2-2 of the Application.
[30] See the response of RES Transmission to interrogatory OEB All-32.
[31] See the response of RES Transmission to interrogatory RES-11.
[32] See the response of RES Transmission to interrogatory OEB All-31(d).

Towers and Foundations

79. The Preferred Design's single circuit design with ACSS Trapezoidal Conductors provides opportunities, unavailable in a double circuit design, to reduce the cost and time required to construct the towers and foundations.[33] Smaller towers and foundations can be used in the Preferred Design, relative to the IESO's Reference Case, for three reasons:

(i) the total weight of the conductors is 30 percent lighter;

(ii) using only one set of conductors instead of two reduces expected ice and wind stress by 40 percent; and

(iii) the ACSS Trapezoidal Conductors' more compact shape further reduces the ice and wind stress on the towers.

80. The Preferred Design uses a combination of tubular steel H-frame structures and steel lattice structures to optimize the line for local conditions and reduce costs.[34] Wherever possible, H-frame structures will be used since they are cheaper than the steel lattice designs. The choice of tower structure (H-frame vs. lattice) will depend on the suitability of each tower to particular line crossings, the ease of constructing foundations in local conditions,[35] the types of foundations that are required at each site and the availability of local materials. Tower selection at each location will also be informed by the more than 50 person-days RES Transmission has spent in the field assessing construction options, access roads and staging locations to determine how the EWTL will be constructed given the prevailing local conditions along the routes.

[33] See Exhibit G-1-1, pp. 5-6 of the Application for a comparison of the towers and foundations for the Preferred Design and the Reference Design. See also the response of AltaLink to interrogatory AltaLink-5.
[34] See Exhibit H-1-1 of the Application for a summary of tower and foundation design for the Preferred Design.
[35] See Exhibit G-7-1 of the Application for RES Transmissions plan addressing project challenges including construction and foundation design solutions in local conditions.

81. Both the single circuit H-frame towers and the steel lattice towers used in the Preferred Design are significantly smaller than their double circuit counterparts and, accordingly, require:

(i) less material (i.e., steel);

(ii) less installation-related labour; and

(iii) smaller foundations (i.e., concrete, gravel and rebar steel).

82. Since less material is required for construction, there are also reduced material transportation requirements, less need to transport heavy machinery and reduced access road grade requirements. Over the approximately 400 km length of the EWTL, the use of smaller towers under the Preferred Design will result in substantial savings in construction costs, materials and time.

83. To the extent that the Preferred Design uses H-frame structures, only two, rather than four foundations are required for each tower. Even after taking into account the closer spacing (and, thus, greater number) of H-frame structures, the Preferred Design still provides substantial savings. Finally, the smaller towers used in the Preferred Design are expected to have less visual impact than the larger towers used in the IESO's Reference Case. A comparison of the towers and foundations used in the Preferred Design and the Reference Design was provided in response to interrogatory OEB All-19 and is reproduced as Table D-2 on the following page.[36]

[36] Design assumptions for subsurface conditions and subsurface properties are included at Exhibit H-5-1 of the Application. Tower design assumptions and strength specifications are included at Exhibit H-5-2 of the Application. A schematic of the single-line H-frame towers to be used in the Preferred Design are included at Exhibit H-5-3 of the Application. A schematic of the single-line lattice towers to be used in the Preferred Design are included at Exhibit H-5-4 of the Application.

Table D-2: Tower and Foundation Comparison

	RES Transmission Designs		
	Referenced Design	**Preferred Designs**	
Structure Type	double circuit lattice	single circuit lattice	tubular steel H-frame
Tower Spacing	410 m	410 m	335 m
Conductor	1192.5 kcmil 54/19 ACSR Grackle	1557.4 kcmil 45/7 ACSS/TW HS285 Potomac/TW	1557.4 kcmil 45/7 ACSS/TW HS285 Potomac/TW
Right-Of-Way Width	50 m	50 m	46 m
Typical Centerline Distance from HONI Existing Centerline	50 m	50 m	48 m
Foundations	(4) 1/leg	(4) 1/leg, somewhat smaller than Reference Design	(2) 1/leg, direct embed opportunity

84. Selected towers will also be configured to facilitate interconnections along the EWTL for future generation and load projects with minimal disruption.[37]

Tower Testing

85. RES Transmission's construction schedule (included at Exhibits N-3-1 and N-3-2 of the Application) incorporates time for the design and full scale testing of the lattice tower structures proposed in both the Reference Design and the Preferred Design. The construction schedule does not incorporate time for full scale testing of the tubular steel H-frame tower structures proposed for the Preferred Design because such testing is not typically carried out on H-frame towers due to the simplicity of their basic design.[38]

[37] See Exhibit B-1-1, pages 8-9 of the Application.
[38] See the response of RES Transmission to interrogatory OEB All-15.

86. The H-frame towers are designed to meet the specific conditions encountered in northern Ontario and have been utilized by RES Transmission's affiliates in jurisdictions with similar terrain and environmental conditions (see the response of RES Transmission to interrogatory OEB All-15). H-frame towers present little risk in terms of project development and construction. Nevertheless, RES Transmission has assessed the potential risks associated with its proposed H-frame designs and has incorporated this information into its cost and schedule proposals.[39]

Alternative Tower Designs Considered

87. RES Transmission considered the use of less-costly guyed transmission structures for both its single circuit Preferred Design and its double circuit Reference Design.

88. With respect to the single circuit Preferred Design, RES Transmission's assessment concluded that guyed transmission towers (as proposed by EWT) were not suitable for the EWTL for the following reasons: [40]

(i) greater visual impact (a concern in the provincial and national parks);

(ii) increased risk to avian wildlife (particularly in migratory bird habitat, provincial parks and the national park);

(iii) increased risk to recreational users, particularly snowmobilers, of the transmission right of way;

(iv) the difficulty in managing vegetation around guyed structures;

(v) higher annual operation and maintenance costs;

(vi) the requirement for a larger right-of-way; and, most importantly,

[39] This analysis is included in the Application at Exhibit N-3-6, Table N-2 and at Exhibit P-5-1, Table P-10. Also see the response of RES Transmission to interrogatory OEB All-15.

[40] See the supporting materials included as part of proposed interrogatory 7 of RES Transmission to Upper Canada Transmission Inc. ("**UCT**"), filed January 30, 2013.

(vii) durability concerns in northern Ontario's harsh climate regarding safety and the increased risk of cascading tower failure.

89. The experience of the MidAmerican Group with guyed structures in the United States suggests that such structures are not suitable for use in areas that are characterized by hilly, steep terrain that would necessitate a significant amount of vertical traversing during construction. RES Transmission's pre-application site inspections, along both of its EWTL route options, confirmed that both the Reference Route and the Preliminary Preferred Route traverse many areas characterized by elevated and undulating terrain. A guyed tower design is simply not viable in these circumstances.

90. It is significant that guyed transmission structures have never been used in Ontario by any of the applicants in this proceeding. Moreover, upon investigation, RES Transmission was unable to find any location in North America that has used guyed transmission structures for a double circuit transmission line, (as proposed by UCT).[41] In RES Transmission's view, double circuit guyed structures are an untested design, not suitable for a project as significant as the EWTL.

Flexible Installation

Staged Capacity Additions

91. The Reference Design requires that all facilities be constructed in the same time frame; accordingly, the full 650 MW of transfer capacity becomes automatically available as soon as the EWTL is placed into service. Under the Preferred Design, however, the full available transfer capacity (684 MW) could be installed at once or, alternatively, in stages, as system requirements materialize. The electricity demand scenarios that are included in the OPA's 2011 long-term electricity outlook for the Northwest indicate that the full 650 MW of transfer capacity that is stipulated in the OEB's definition of the

[41] See the responses of UCT and EWT LP to interrogatory OEB All-15. All of the examples of guyed transmission structures provided are for single circuit, not double circuit transmission lines.

EWTL, may not be required by the initial EWTL in-service date. It is possible that the need for this transfer capacity will develop over time. In these circumstances, it makes economic sense to construct only those facilities that will be required in the foreseeable future and defer the construction – and cost – of additional capacity to future periods, when they are deemed necessary by the IESO, OPA and OEB.

92. Table D-3 below describes the staged approach that is possible under the Preferred Design.

Table D-3: Staged Installation of Capacity

Stage	Facilities Added	Total Installed Transfer Capacity (MW)	Incremental Transfer Capacity Added (MW)
1	transmission line constructed from Wawa Transformer Station to Lakehead TS with an interconnection at Marathon TS	387	
2	series compensation added between Wawa TS and Marathon TS	436	49
3	series compensation added between Marathon TS and Lakehead TS	484	48
4	shunt capacitors added at Lakehead TS and Marathon TS, static VAr compensator added at Marathon TS (without series compensation between Marathon TS and Lakehead TS as described in Stage 3)	614	130
5	stage 4 plus series compensation added between Marathon TS and Lakehead TS	684	70

93. The completion of Stage 1 would increase the total transfer capacity of the existing transmission corridor to 387 MW and improve system reliability, facilitating more efficient and cost-effective dispatch of existing generation resources. The completion of stages 2 through 5 would involve the construction of transformer station equipment upgrades. The stages would only be constructed if and when system demand materializes. Each stage can be constructed quickly in order to respond to any changes

in system demand and more than one stage could be constructed in the same time frame, if necessary.

94. Adding transfer capacity in stages and only if and when required by system demand, as proposed in the Preferred Design, would defer, or avoid altogether, the expenditure of the significant capital costs of stages 2 through 5. The associated costs savings are discussed, below, in paragraphs 128-130 in the "Costs" section.

Key Issues

Reliability and Inherent Redundancy

95. Hydro One's existing double circuit EWTL has experienced reduced reliability due to a planned or unplanned outage on one or both of the existing circuits. When both circuits of the existing EWTL are out of service, northern Ontario does not have a transmission tie to the east and the region must rely on local generation and/or imports from neighboring jurisdictions (from the west and the south) to meet demand. NERC and NPCC reliability standards require transmission system operators, such as the IESO, to plan for potential outages of a single line, or in the case where two lines share a common tower (as is the case of the existing EWTL), for potential outages of both lines. Accordingly, the OEB acting on the recommendations of the IESO and the OPA, seeks system reliability improvements on the EWTL for flow conditions as they exist today, as well as those that may occur in the future.

96. The feasibility studies conducted by the IESO indicate that both the Reference Design and the Preferred Design meet all applicable reliability requirements, at the required transfer capacity, following all combinations of single element, double element and N-1-1 contingencies. In its response to interrogatory RES-9, RES Transmission stated that the IESO did not study N-1-1 contingencies for RES Transmission's Preferred Design because "in the event of such a contingency, the control actions described in IESO REP 0748 for the single-circuit Alternative Case would apply to RES Transmission's Preferred Design."

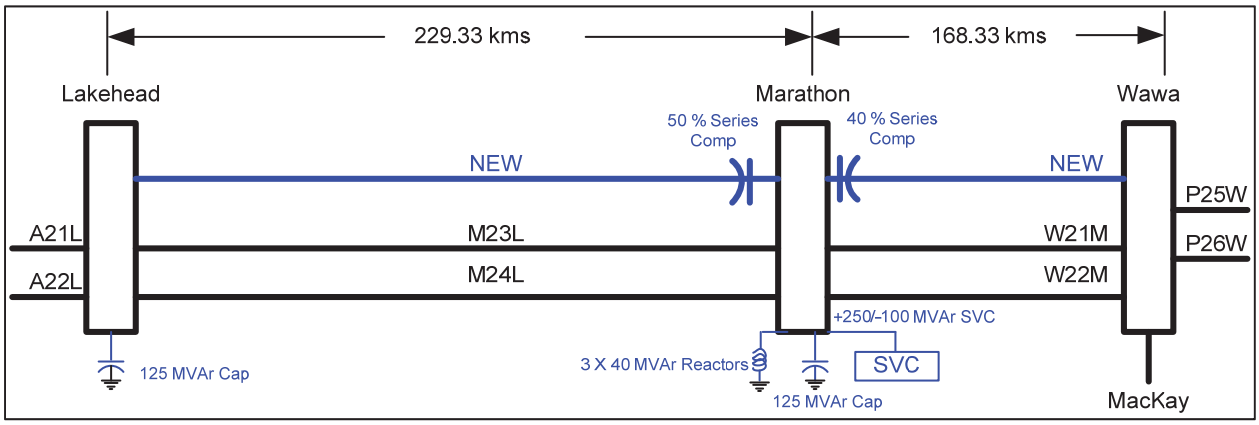
Subsequently, the IESO advised RES Transmission that it had, in fact, assessed these contingencies for the Preferred Design. This assessment underpinned the IESO's conclusions that the Preferred Design meets all applicable reliability requirements, as stated above. Despite this conclusion, concerns have been expressed that the single circuit design is not as reliable as the double circuit design, under a specific N-1-1 contingency (described in section 16 of the IESO's Preferred Design Feasibility Study).[42]

97. The concern about this specific N-1-1 contingency does not take into account three important points. First, the future performance of the EWTL depends not only the new line to be constructed, but also on the transmission systems to which it will interconnect.

98. The existing EWTL comprises a double circuit 230 kV line to the west of Lakehead TS (the westernmost point of the EWTL). To the east of Wawa TS (the easternmost point of the EWTL), there are three 230 kV circuits (one double circuit line and one single circuit line); in other words, an identical configuration to that proposed by RES Transmission in its Preferred Design.[43] Figure D-2, below, graphically depicts the interconnections under the Preferred Design.

[42] See the responses of AltaLink Ontario Limited Partnership ("**AltaLink**") and UCT to interrogatory OEB All-21.
[43] This is shown in RES Transmission's Application at Exhibits H-4-3 and H-4-5 for Wawa TS and Lakehead TS, respectively, and in the IESO's Feasibility Study for RES Transmission's Preferred Design, included in the Application at Exhibit H-2-3.

Figure D-2: Preferred Design Transmission System Interconnections



99. In light of the above, a new double circuit line (for a total of four circuits) along the EWTL offers no material reliability advantages over a new single circuit line (for a total of three circuits), as the EWTL will still be limited by transmission system constraints to the east of Wawa TS (only three circuits) and to the west of Lakehead TS (only two circuits). Put another way, building a four-lane bridge to connect a two-lane highway with a three-lane highway, simply does not make sense.

100. Second, the argument that two circuits are more reliable than one does not provide a principled basis for deciding whether to construct a single circuit or a double circuit EWTL. If two circuits are better than one, would not three circuits be more reliable than two? The real question is whether the additional reliability gained from a double circuit line in the event of a N-1-1 contingency, warrants the extra cost. In considering this question, it is important to note that the IESO has confirmed that the Preferred Design meets all applicable requirements with respect to transfer capacity, system performance and system reliability. Moreover, the N-1-1 contingency that underpins the argument about the benefits of a double circuit design, relative to a single circuit design, is a discrete, rare event that may not ever occur over the expected life of the EWTL. Nonetheless, the IESO has considered the effects of such a contingency, as it relates to RES Transmission's Preferred Design, and has concluded that in the event of

such a N-1-1 contingency, system reliability can be more than adequately addressed through the use of other control measures, as identified by the IESO.[44]

101. Third, for the Preferred Design, the IESO already has evaluated the need for control actions following a N-1-1 contingency affecting the EWTL and has indicated that adequate control actions are available (such as dispatching additional generation) to maintain system reliability.[45] The incremental cost of dealing with this rare contingency, by requiring the construction of a double circuit line, is simply not warranted.

Line Losses

102. The IESO's Preferred Design Feasibility Study (included at Exhibit H-2-3 of the Application) concludes that line losses associated with the ACSS Trapezoidal Conductors are comparable to those of the ACSR Conductors. This is demonstrated in Table D-4, below.

[44] See RES Transmission's response to interrogatory RES-8 and the accompanying letter from the IESO included as Appendix 4 to the response.
[45] See the response of RES Transmission to interrogatory RES-8 and the accompanying letter from the IESO included as Appendix 4 to the response.

Table D-4: Comparison of Line Losses

Design Option	Transfer Capacity (MW)	Load modeled to setup transfers (MW)			System Losses (MW)			Losses on EW Tie (MW)
		Ontario	North west	North east	Ontario	North west	North east	
Reference Design	652	26100	950	1241	869	83	70	40.4
RES Option 2A (Stage 1)	387	25860	705	1241	821	60	47	16.9
RES Option 2C (Stage 2)	436	25890	751	1241	776	65	46	20.3
RES Option 2B (Stage 3)	484	25930	795	1241	783	70	48	25.7
RES Option 2E (Stage 4)	614	26060	908	1241	869	93	60	42.4
RES Option 2F (Stage 5)	684	26100	950	1241	831	99	65	48.8

Expansion Potential

103. The preamble to interrogatory OEB All-21 stated that a double circuit design has "a higher thermal rating (up to about 800 MW) that can be exploited for future expansion by adding more voltage control or compensation equipment". It is important to note that a higher thermal rating is not an indication of a higher transfer capacity. Regardless of whether a double circuit or single circuit design is chosen, there are underlying system constraints that limit the transfer capacity of the EWTL, including transfer capacity limitations to both the east and west of the EWTL, voltage stability issues and limits inherent in the existing EWTL.

104. No studies, to date, have demonstrated that the double circuit Reference Design can have a transfer capacity greater than 650 MW. The design with the highest IESO-verified transfer capacity is RES Transmission's Preferred Design at 684 MW.

E. Costs

Overview

105. RES Transmission's line cost estimates for developing and constructing the EWTL ("**Line Costs**"), for each of its four design/route options, are shown in Table H-1, below.

Table E-1: Line Costs (2012$ millions)

		Reference Route (401 km)	**Preliminary Preferred Route** (409 km)
Reference Design (2 circuits)	**Development Costs**	$21.5	$21.5
	Construction Costs	$476.7	$472.2
	Total Line Costs	**$498.2**	**$493.7**
Preferred Design (1 circuit)	**Development Costs**	$21.5	$21.5
	Construction Costs	$400.4	$391.9
	Total Line Costs	**$421.9**	**$413.4**

106. RES Transmission's Line Cost estimate for the Preferred Design is approximately $80 million lower than its Line Cost estimate for the Reference Design. This differential reflects the significant cost savings associated with RES Transmission's single circuit Preferred Design, relative to its double circuit Reference Design. These savings more than offset the cost of additional interconnection station facilities – approximately $25 million (excluding the time value of money) – that are required under the Preferred Design.[46] Interestingly, EWT considered a single circuit option and estimated associated savings in the order of $70 - $110 million, relative to its double circuit option.

107. In its Application, RES Transmission has committed to develop and construct either of Option 1 (Preferred Design/Preliminary Preferred Route) or Option 3 (Reference Design/Preliminary Preferred Route) for a firm cost of $413.4 million and $493.7 million,

[46] Station costs are discussed, below, in paragraphs 125-127.

respectively (i.e., the Bid Amounts), subject to certain terms and conditions (the "**Firm Bid Proposal**"). In other words, RES Transmission's Line Cost estimates for Options 1 and 3 are not estimates at all but, rather, firm amounts.

108. RES Transmission is also proposing a risk sharing mechanism ("**Risk Sharing Proposal**") that incents it to complete the development and construction of the EWTL on time and on budget, by rewarding it if it completes the Project for less than the Bid Amount and penalizing it for exceeding the Bid Amount. RES Transmission's Risk Sharing Proposal is discussed, below, at paragraphs 139-142.

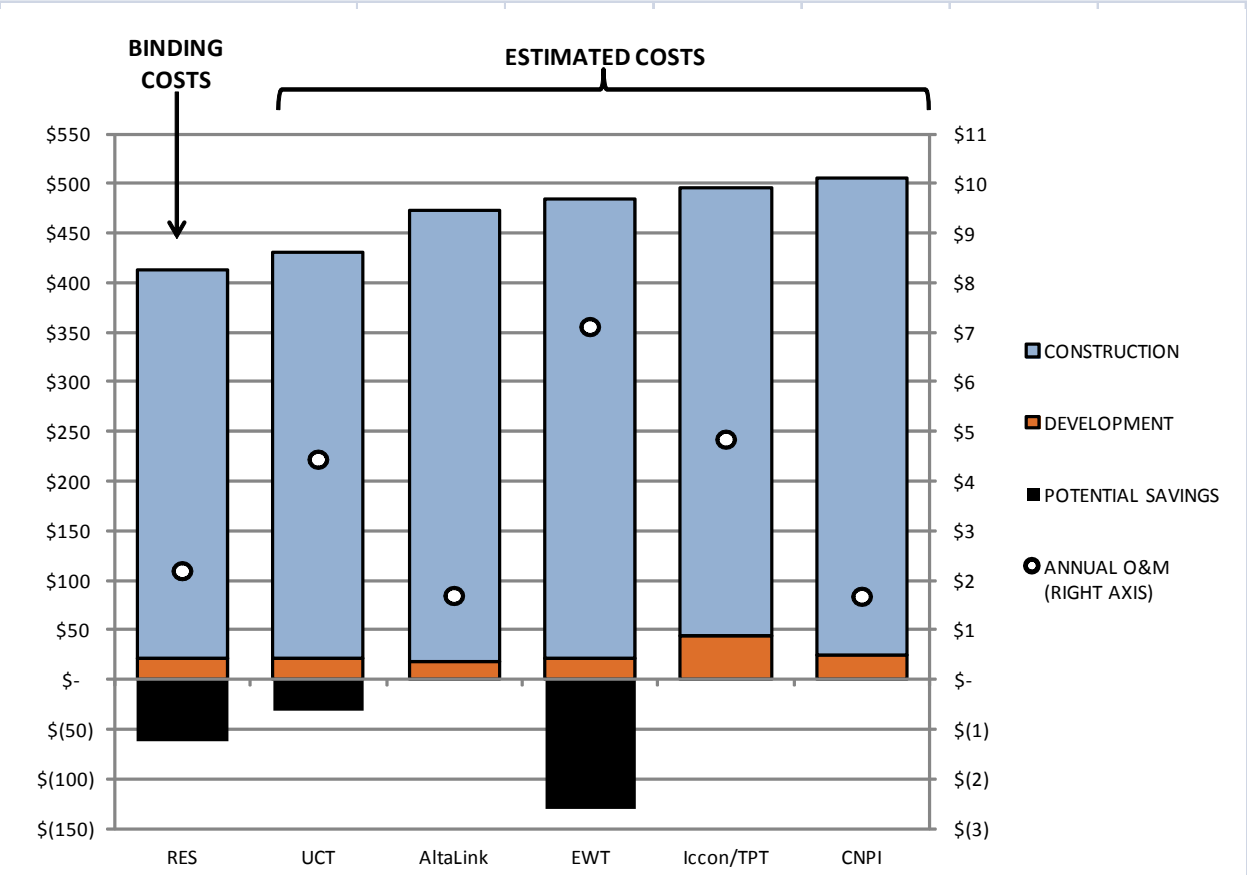
109. Figure E-1, on page 47, compares RES Transmission's Bid Amount for Option 1 (Preferred Design/Preliminary Preferred Route) with the line cost estimates of the other applicants for "conventional" structures. RES Transmission's Bid Amount for a single circuit line is $17.4 million to $91.4 million lower than the line cost estimates of other applicants, for their double circuit/conventional structure design options. The differential between RES Transmission's Bid Amount and the non-binding estimates of the other applicants reflects cost savings that are directly attributable to RES Transmission's choice of a single-circuit design. These costs saving design attributes are discussed above in the "Design" section.

110. In its application, UCT suggests that using guyed structures instead of conventional structures to support its double-circuit design would result in $31.1 million in savings, thereby reducing UCT's line cost estimate from $430.8 million to $399.7 million (shown in Figure E-1, on the page 47, in the line entitled "Potential Net Cost"). There is no precedent anywhere in North America for the use of guyed towers in combination with a double circuit design. For this reason, the Board should consider disregarding UCT's line cost estimate for the guyed tower option.

111. In its application, EWT discusses the possibility of using a cross rope suspension ("**CRS**") – single circuit design option. EWT estimates the potential costs saving from this option

to be $130.0 million (shown in Figure E-1, on the next page, in the line entitled "Potential Savings"). The experience of the MidAmerican Group with guyed structures in the United States suggests that such structures are not suitable for use in areas characterized by hilly, steep terrain that would necessitate a significant amount of vertical traversing of the line routes. RES Transmission's pre-application site inspections along both of its EWTL route options, confirmed that the Reference Route and the Preliminary Route traverse many areas characterized by steep vertical profiles and elevated, undulating terrain. A guyed tower design is simply not viable in these circumstances.

Figure E-1: Line Costs ($MM – 2012)



	RES	UCT	AltaLink	EWT	Iccon/TPT	CNPI
CIRCUITS	1	2	2	2	2	2
BASIS OF COSTS	BINDING	ESTIMATED	ESTIMATED	ESTIMATED	ESTIMATED	ESTIMATED
DEVELOPMENT	$21.5	$22.2	$18.1 [1]	$22.1	$43.7 [3]	$24.0
CONSTRUCTION	$391.9	$408.6	$454.1 [2]	$462.0	$452.6	$480.8
TOTAL LINE COSTS	$413.4	$430.8	$472.3	$484.1	$496.3	$504.8
COST DIFFERENTIAL	BASE	$17.4	$58.8	$70.7	$82.9	$91.4
POTENTIAL SAVINGS [4]	($62.5)	($31.1)		($130.0)		
POTENTIAL NET COST	$350.9	$399.7	$472.3	$354.1	$496.3	$504.8
ANNUAL O&M (STAND ALONE)	$2.2	$4.4	$1.7	$7.1	$4.9	$1.7

[1] Post-application/pre-designation costs and land costs were not included in AltaLink's development estimate

[2] Contingency costs were not included in AltaLink's construction estimate

[3] $30.7M incurred during development phase and $13.0M incurred during construction phase

[4] RES - Staged substation upgrades (revenue requirement); UCT - unconventional guyed structures (capital); EWT - guyed CRS structures & single-circuit (capital)

NOTE: All cost data from applicants' responses to OEB Interrogatory #26 and their original applications (cost sections)

RES Transmissions Cost Estimates

Designation Costs

112. It is estimated that by the time a Designation Order is issued, the costs incurred by RES Transmission to prepare its Application for designation, participate in the designation proceedings before the Board and conduct pre-designation development work (collectively, the "**Designation Costs**"), will be in the order of $1.8 million. This estimate includes the cost of the early development activities that RES Transmission has already carried out as part of its pre-designation work described below in paragraph 116.

113. The Applicant does not intend to seek recovery of its Designation Costs. This has the effect of reducing some of the development costs that would otherwise be recovered from ratepayers.[47]

Development Costs

114. The Board has defined the development phase of the Project as commencing upon designation and concluding on the date the designated transmitter files its application for LTC. RES Transmission's project schedule contemplates a 24-month development phase with an estimated development cost of $21.5 million for any of the four design/route options selected. This amount comprises the sum of a detailed base estimate of $20.1 million and a contingency amount of $1.4 million.[48]

115. RES Transmission determined the contingency amount as follows: identification of possible risks; allocation of estimated cost to each risk; allocation of estimated probability of occurrence of each risk; allocation of estimated severity of impact of each risk if it occurred; calculation of overall risk coefficient by multiplying risk value by probability by severity; and development of a mitigation strategy for each specific risk.[49]

[47] See Application, Exhibit B-1-1 at p. 17 of 35.
[48] The table provided in RES Transmission's response to interrogatory OEB All-26 shows how the development cost estimate is allocated amongst specific development phase activities.
[49] RES Transmission's response to interrogatory OEB All-29.

116. RES Transmission has a high degree of confidence in its development cost estimate. This confidence is underpinned by:

- data and information generated by 50 person-days of field investigations;
- an extensive, segment-by-segment desktop analysis of the Preliminary Preferred Route and the Reference Route[50];
- a rigorous and systematic analysis of field and desk-top generated data and information;
- the results of a detailed risk analysis;
- the accumulated experience of the RES Group and the MidAmerican Group in developing cost estimating models and methodologies and constructing thousands of kilometres of high-voltage electricity transmission lines; and
- a series of expert reports prepared by external consultants (e.g., Stantec and PowerTel) and by RES and MidAmerican subject matter experts.

117. If the actual costs of development are greater than the $21.5 million estimate, RES Transmission would seek to recover the actual costs incurred (i.e., estimate amount plus overage), with one exception. The one exception relates to project management costs. The $21.5 million development cost estimate includes project management costs of $4.3 million. RES Transmission has capped its project management costs at $4.3 million. If the actual project management costs incurred in the development phase are less than $4.3 million, the RES Transmission's development cost estimate of $21.5 million would decrease by the amount of the underage. If, however, the actual project management

[50] Details of RES Transmission's risk analysis are included in its Application, at Exhibit P-5-1.

costs incurred in the development phase are greater than $4.3 million, then RES Transmission proposes to forego recovery of the overage.

118. RES Transmission submits that its actual development cost, estimated at $21.5 million, is reasonable and prudent in the context of its overall development plan and should be accepted for the purpose of future recovery of rates, for the reasons set out below.

(i) It is comprehensive, reflecting the comprehensive nature of RES Transmission's development plan. It includes a contingency component of $1.4 million, calculated on the basis of RES Transmission's risk assessment analysis.[51] It also includes all the costs of carrying out the key elements of its development plan, including: completing the selection of a preferred route; completing the scoping and terms of reference component of the environmental assessment process; completing a significant portion of environmental assessment and consultation activities; completing engineering and cost estimating activities; collaboration with the OPA in connection with a "needs" assessment; securing option agreements for land and agreements with parties who have pre-existing mineral and timber rights; initiating the competitive bid process to select an Owners' Engineer; and negotiating with First Nation and Métis Participation Agreements and Impact Benefit Agreements.

(ii) It is reliable for the reasons set out in paragraph 12, above.

(iii) It minimizes costs, to the greatest extent possible, by:

- capping project management costs at $4.3 million in the development phase and foregoing the opportunity to seek recovery of any overages in this regard;

[51] Application, Exhibit P-5-1.

- excluding the cost of early development activities that were carried out during the pre-designation phase in order to obtain data to inform the Application; and

- avoiding the risk of unnecessary or premature expenditures by deferring expenditures related to the acquisition of land rights and the conclusion of First Nation and Métis Participation Agreement and Impact Benefit Agreements, until after an LTC authorization is obtained.

119. In its submission on Phase 2 issues, Board Staff addresses the issue of materiality for a prudence review of development cost overages, relative to the approved estimate. Board Staff proposes that a 10 percent or greater overage is an appropriate threshold in this regard. RES Transmission agrees.[52] For RES Transmission, an overage equal to or greater than $2.10 million would be subject to review under this proposal.

Construction Costs

120. The construction phase of the EWTL project commences when an LTC application is filed with the Board and concludes on the date that the EWTL is placed into service. RES Transmission's project schedule contemplates a 42-month construction phase which includes 12 months for LTC proceedings.

121. RES Transmission has developed construction cost estimates for each of its four design/route options. The construction cost estimates for Option 1 (Preferred Design/Preliminary Preferred Route) and Option 3 (Reference Design 1 Preliminary Preferred Route) are $391.9 million and $472.2 million, respectively. The table provided in RES Transmission's response to interrogatory OEB All-26 shows how the construction estimate amount for Option 1 is allocated amongst specific construction phase activities.

[52] Proceeding EB-2011-0140, Phase 2, Ontario Energy Board Staff Submission (April 8, 2013), at p. 7.

122. RES Transmission's base construction cost estimate for Option 1, relative to the estimates of other applicants, reflects its cost controls, design, risk mitigation practices and delivery experience, as well as its decision to adopt a single circuit design that has a lower cost of construction and of ownership, relative to the IESO's Reference Option. Option 1 also offers the opportunity to defer or avoid costs by facilitating the installation of the full amount of transfer capacity (684 MW) in stages, matching capacity with system requirements, as they materialize (this feature of the Preferred Design is discussed, in detail, at paragraphs 91-94 above).

123. The Option 1 construction cost estimate also reflects the decision to identify a preferred route option – the Preliminary Preferred Route - that avoids First Nations reserve lands and Pukaskwa National Park, thereby reducing the impact on First Nations and Métis communities and on environmentally sensitive lands and simplifying and shortening the environmental assessment and permitting process. The Preliminary Preferred Route is also better suited to the use of prefabricated, H-frame towers which are less costly to construct and install compared with heavier lattice frame steel towers. This results in reduced construction costs.

124. RES Transmission's low construction cost estimate also reflects its decision to propose a 2018 in-service date, as opposed to the 2017 target date specified in the OEB's proposed scope of the EWTL,[53] thereby avoiding the imposition of significant cost inefficiencies associated with expedited and rushed development and construction phases.

Station Upgrades

125. A complete East-West Tie expansion comprises three parts: (i) the line itself, including conductors, structures and protection and communication systems; (ii) upgrades to

[53] Letter, dated December 20, 2011, from OEB to all Registered Electricity Transmitters, Attachment 1, "Project Definition for Designation for the East-West Tie Line."

existing transformer stations; and (iii) station interconnections[54]. The Board's Filing Requirements for Designation Applications ("**Filing Requirements**") require all applicants to provide an estimate of the cost of developing and constructing the line component of the EWTL (i.e., line costs) but also require those applicants, whose proposal is not based on the IESO's Reference Option, to provide an estimate of the additional facilities and work required at the transformer stations to effect the proposed design ("**Station Costs**"), relative to such costs under the IESO's Reference Option[55].

126. While additional transformer station system upgrades are required to achieve transfer capacity of at least 650 MW under the IESO's Reference Option and under RES Transmission's Preferred Design, the type of upgrades required is different for each option. The upgrades required for the Preferred Design are discussed above in paragraphs 65-76 and Table D-1, in the "Design" section.

127. RES Transmission's estimate of the cost of the station upgrades required to achieve at least 650 MW of transfer capacity is $103 million for its Reference Design and $128 million for its Preferred Design, a difference of $25 million.[56] This $25 million differential is more than offset by the cost differential between RES Transmission's Reference Design and its Preferred Design and may be further offset by staging the installation of the station upgrades over time, in order to match capacity with requirements.

Cost Savings of Staged Installations of Capacity

128. As discussed above in paragraphs 91-94 above, in the "Design" section, the significant advantage of RES Transmission's Preferred Design is that its full transfer capacity (684 MW) can be installed at once or, alternatively, in discrete stages over time, as system requirements materialize. This defers and, thus, reduces costs to ratepayers.

[54] *ibid.*
[55] Phase 1 Decision and Order, *op.cit.*, p. 11, s.8.8.
[56] RES Transmission's response to interrogatory OEB All-31.

129. Table E-2, below, shows the magnitude of the capital costs deferred or avoided altogether, assuming that the full transfer capacity (684 MW) is installed in five stages, over an eight year period, commencing in 2018. The avoided costs range between $55 million and $163 million, relative to the Reference Design. The present value of total savings in owning and operation costs over the same period (i.e., reductions in revenue requirement), would be approximately $62.5 million.[57]

Table E-2: Savings of Staged Installation of Station Upgrades

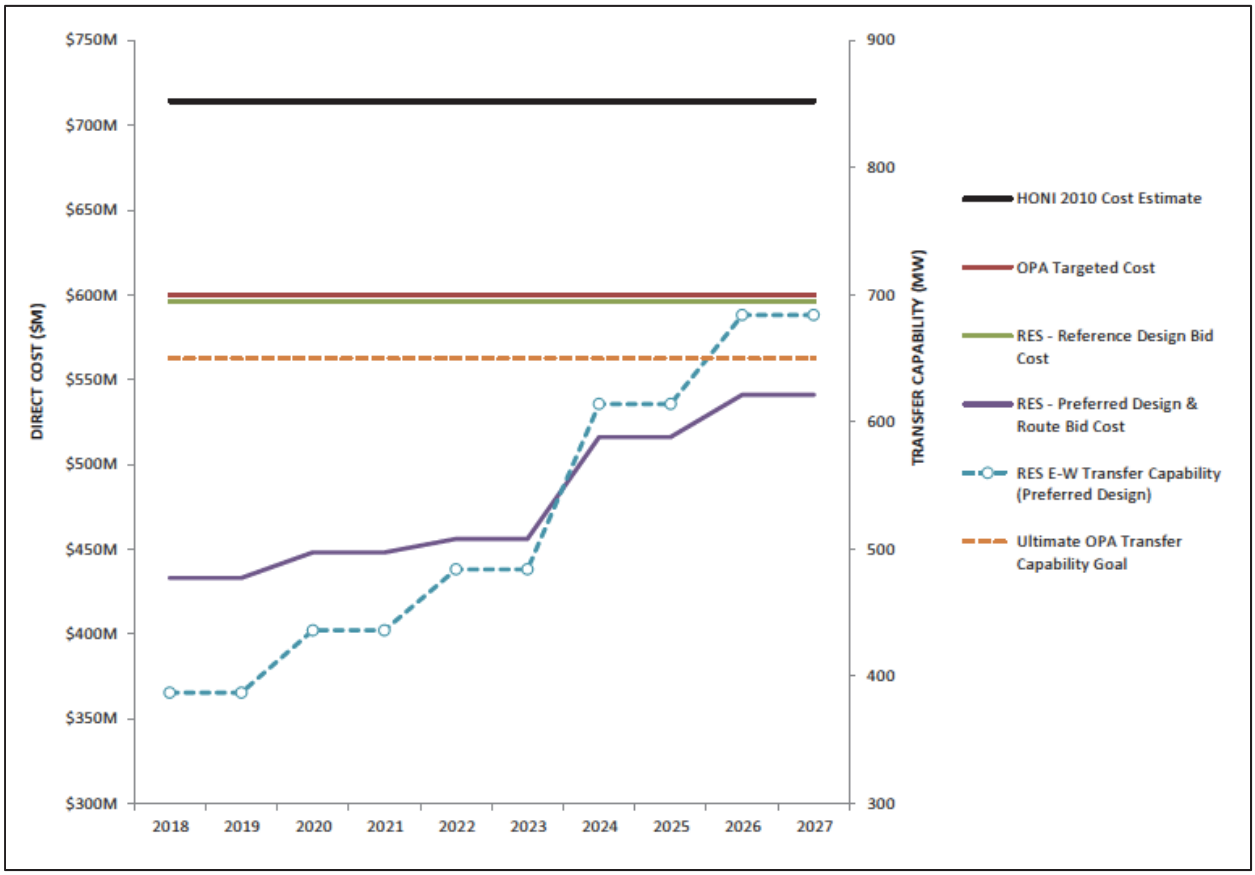
Design Scenario for Preliminary Preferred Route	Circuits	Transfer Capacity (MW)	Bid Amount	Other Costs (Hydro One) ($M)	Total Costs ($M)	Avoided Costs ($M)[1]	Incremental Cost ($M/MW)
Reference Design	2	650	$493	$103	$596	Base	NA
Preferred Design (Stage 1)	1	387	$413	$20	$433	$163	NA
Preferred Design (Stage 2)	1	436	$413	$35	$448	$148	$0.31
Preferred Design (Stage 3)	1	484	$413	$43	$456	$140	$0.17
Preferred Design (Stage 4)	1	614	$413	$103	$516	$80	$0.46
Preferred Design (Stage 5)	1	684	$413	$128	$541	$55	$0.36

1. Avoided costs calculated as the sum of the Bid Amount plus Hydro One costs for each stage, subtracted from the total costs for the Reference Design ($596 million).

130. Figure E-2, below, graphically compares the OPA's estimate of constructing the Reference Option with RES Transmission's estimate of the cost of constructing its Preferred Design.

[57] Application, Exhibit B-1-1, p. 2 of 8.

Figure E-2: Project Line, Station and Interconnection Costs[1]



2. Application, Exhibit B-1-1, p. 11 of 35..

Control Actions

131. The OEB asked each of RES Transmission and EWT an interrogatory about the availability and cost of the control actions that would be required, under the single circuit design option, during an N-1-1 outage period (OEB - RES 8 and OEB – EWT 5). RES Transmission worked with the IESO to prepare its response to this interrogatory. In its response, RES Transmission included a letter from the IESO that confirmed the availability of sufficient control actions. The IESO stated that it had evaluated the control actions (e.g. increasing generation, increasing imports or curtailing or rejecting load) against the load security criteria found in Section 7.1 of its Ontario Resource and Transmission Assessment Criteria and had concluded that sufficient control actions were available to

satisfy these criteria. The IESO went on to state that it had not determined the annual costs of these control actions.

132. EWT derived its own estimate of the annual cost of the required control actions: $7.0 million. In RES Transmission's view, this cost estimate is extremely unrealistic as it overestimates the number of hours of outages in which control actions would be required and it overestimates the cost of re-dispatching generation to accommodate outages**.**

(i) EWT assumed a total of 405 hours per year during which any one circuit of the EWTL could be expected to be on a sustained outage, thus requiring a corresponding control action. This estimate comprises 333 hours of planned outages and 76 hours of unplanned outages. In RES Transmission's view, control actions are required only during unplanned N-1-1 type outages affecting the EWTL, which are extremely rare. RES estimates the number of hours of outage that may require a control action to be in the order of a few hours per year.

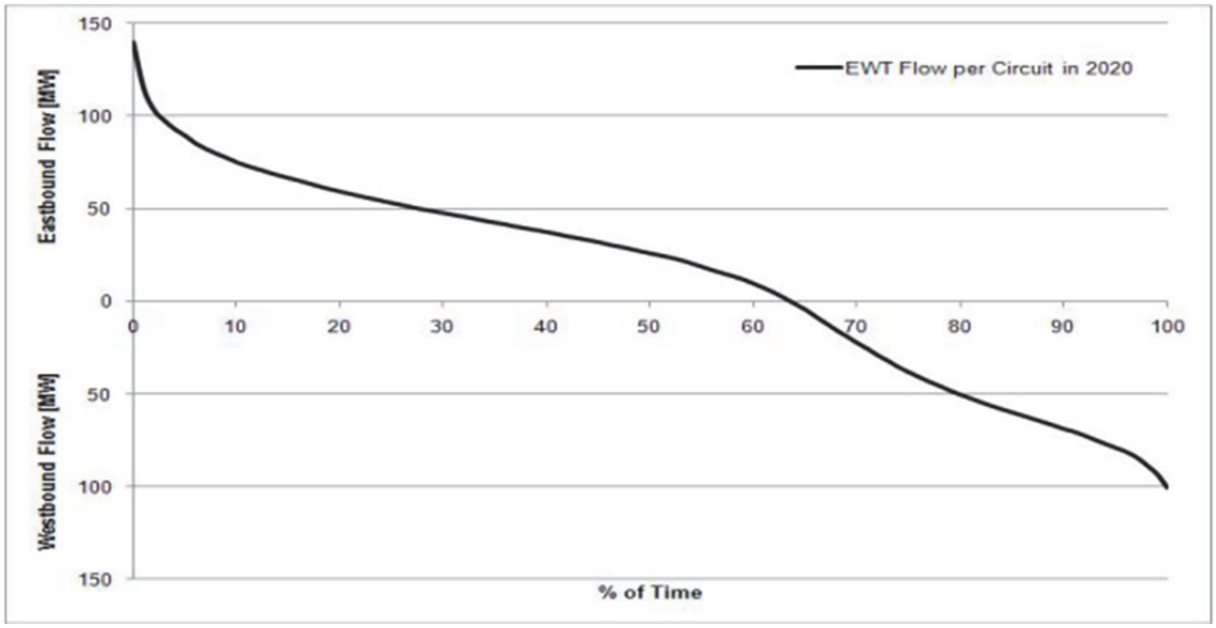
(ii) EWT has assumed actual power costs for re-dispataching generation to accommodate an outage when it should have only considered the incremental cost of replacement power. In the result, it may have overestimated power costs by as much as a factor of five.

133. EWT, in its response to interrogatory OEB-5, assumes that there would be a need to replace 300 MW of generation by means of a control action, for all of the hours in the period that any one line on the EWTL is out of service. Based on the duration curve included in Appendix A of the OEB's Minimum Technical Requirements for the EWTL (Figure E-3),[58] the cumulative probability of the occurrence of an outage on the EWTL, coinciding with a period of high tie line power flows (>300MW), is extremely low (see

[58] OEB "Minimum Technical Requirements for the Reference Option of the E-W Tie Line", Appendix A (November 9, 2011).

Figure E-3 below). In light of this, RES Transmission estimates that a maximum of 100 MW of generation replacement is a more appropriate estimate.

Figure E-3: OEB East-West Tie Duration Curve



134. In a letter dated March 25, 2013 to RES Transmission, the IESO stated as follows:

> For the single-circuit option, the IESO has evaluated increasing generation, increasing imports, and managing load in the North West in the event of a second single-element contingency after experiencing an initial single-element contingency. The IESO is confident enough control actions are available to satisfy the load security criteria found in §7.1 of its Ontario Resource and Transmission Assessment Criteria even without firm long-term arrangements with neighbouring jurisdictions.[59]

135. RES Transmission agrees. Moreover, when considering this issue, it is important to recognize that the combination of the existing East-West Tie (two circuits) and RES

[59] See RES Transmission's response to OEB interrogatory RES-8.

Transmission's Preferred Design (one circuit) mirrors the physical configuration of the existing transmission system between Wawa TS and Mississagi TS. As such, the second circuit on a new double-circuit line would be of little utility. This is discussed above in the "Design" section, at paragraphs 97-99.

Operating and Maintenance Costs

136. RES Transmission's annual O&M costs are estimated to be in the order of $2.2 million on a standalone basis (i.e., reflecting the full cost of operating and maintaining the EWTL line, including the cost of services provided by affiliates or other regulated utilities).[60] Certain annual or periodically recurring expenses that are not capitalized, such as payments to First Nation and Métis communities, would be in addition to this estimate.

137. RES Transmission's O&M estimate of $2.2 million does not include the incremental costs that would be incurred by Hydro One in respect of the operation and maintenance of station upgrades. As explained in its response to interrogatory OEB All-30, RES Transmission assumed that designation applications were to deal only with the transmission line component of the EWTL and that Hydro One would be responsible for constructing, owning and operating station upgrades required under any design option (i.e., the IESO's Reference Option or RES Transmission's Preferred Design). Subsequent to filing its Application, RES Transmission learned, through interrogatories, that while Hydro One would provide O&M services in respect of any upgrades to its transformer stations for the Reference Option, it may not provide such services for the series compensation facilities required under RES Transmission's Preferred Design.[61] If Hydro One persists in this position, RES Transmission is prepared to provide the required O&M services. RES Transmission estimates that the annual cost of doing so would increase its estimate of annual O&M costs by about $0.5 million.[62] This amount is likely more than

[60] See RES Transmission's response to interrogatory OEB All-29.
[61] The information about Hydro One's position in this regard was conveyed by the IESO in proposed interrogatory 3, filed with the Board under cover of letter dated January 30, 2013.
[62] See RES Transmission's response to interrogatory OEB All-30.

Hydro One's incremental costs of providing this service, given that Hydro One already provides O&M services in respect of existing series compensation facilities.

RES Transmission's Cost Proposals

Firm Bid Proposal

138. RES Transmission is prepared to develop, construct, own and operate any of the four design/route Options, as selected by the OEB. It is also prepared, at the option of the Board, to develop and construct either of Option 1 (Preferred Design/Preliminary Preferred Route) or Option 3 (Reference Design/Preliminary Preferred Route) for a firm cost of $413.4 million ($21.5 + $391.9) and $493.7 million ($21.5 + $472.2), respectively, subject to approval of the Board, in a future proceeding at the appropriate time, of the following:

(i) for development costs that are expressed in 2012 dollars, an annual inflation adjustment based on the Statistics Canada Consumer Price Index for the period December 2012 to the date that an LTC application is filed;

(ii) for construction costs that are expressed in 2012 dollars, an annual inflation adjustment to the Bid Amount (minus the development cost) based on the Statistics Canada Electric Utility Construction Price Index for the period December 2012 to the date that the EWTL is placed in service;

(iii) the utilization of U.S. Generally Accepted Accounting Principles for regulatory accounting, reporting and rate-making purposes; and

(iv) the calculation of carrying charges for Construction Work in Progress ("**CWIP**") accounts at a blended rate as follows: the ROE determined by the Board, annually, on 40 percent of development costs and the lesser of the actual construction facility rate (once established) or the interest during construction ("**IDC**") rate, determined by the Board, annually, on 60 percent of the CWIP

amount. To be clear, RES Transmission is not seeking a cash return on CWIP during the construction phase. It is simply seeking approval of a blended carrying charge that has an equity and an interest rate component, as opposed to a pure IDC-based carrying charge

Risk Sharing Proposal

139. The Firm Bid Proposal is conditional on the Board, in a future rate proceeding, approving RES Transmission's Risk Sharing Proposal.[63] This proposal incents RES Transmission to complete the development and construction of the EWTL on time and on budget, by rewarding it if it completes the Project for less than the Bid Amount and penalizing it for exceeding the Bid Amount. The Risk Sharing Proposal methodology, described below, would apply in each year that the EWTL is in service.[64] While the incentive/penalty rate structure is applicable throughout the life of the Project, it is intended that development and construction overages or underages be determined at the time of the first cost-of-service rate application filed after the Project is placed in-service. For each year thereafter that the Project is in-service, overages and underages would be amortized for the same depreciable life as plant in service and revenue requirements would be determined in accordance with the methodology, described in the Application at Exhibit P, Tab 7.

140. RES Transmission's Risk Sharing Proposal provides as follows:

(i) cost underages: for each year that the EWTL is in service, the value of its Board-approved rate base would be reduced by the amount of any cost underages ("**Subtracted Amount**"). Sixty percent of the remainder would earn a return at the Board's deemed cost of long-term debt, determined annually, and 40 percent of the remainder would earn an ROE determined by the Board, annually.

[63] The Firm Bid Proposal and the Risk Sharing Proposal, together, comprise RES Transmission's "Development and Construction Cost Proposal", as defined in its Application.
[64] See RES Transmission's response to interrogatory RES-15.

Forty percent of the Subtracted Amount would earn an incentive return equal to the sum of the ROE and 300 basis points. Sixty percent of the Subtracted Amount would earn a return at the Board's deemed cost of long-term debt, determined annually;

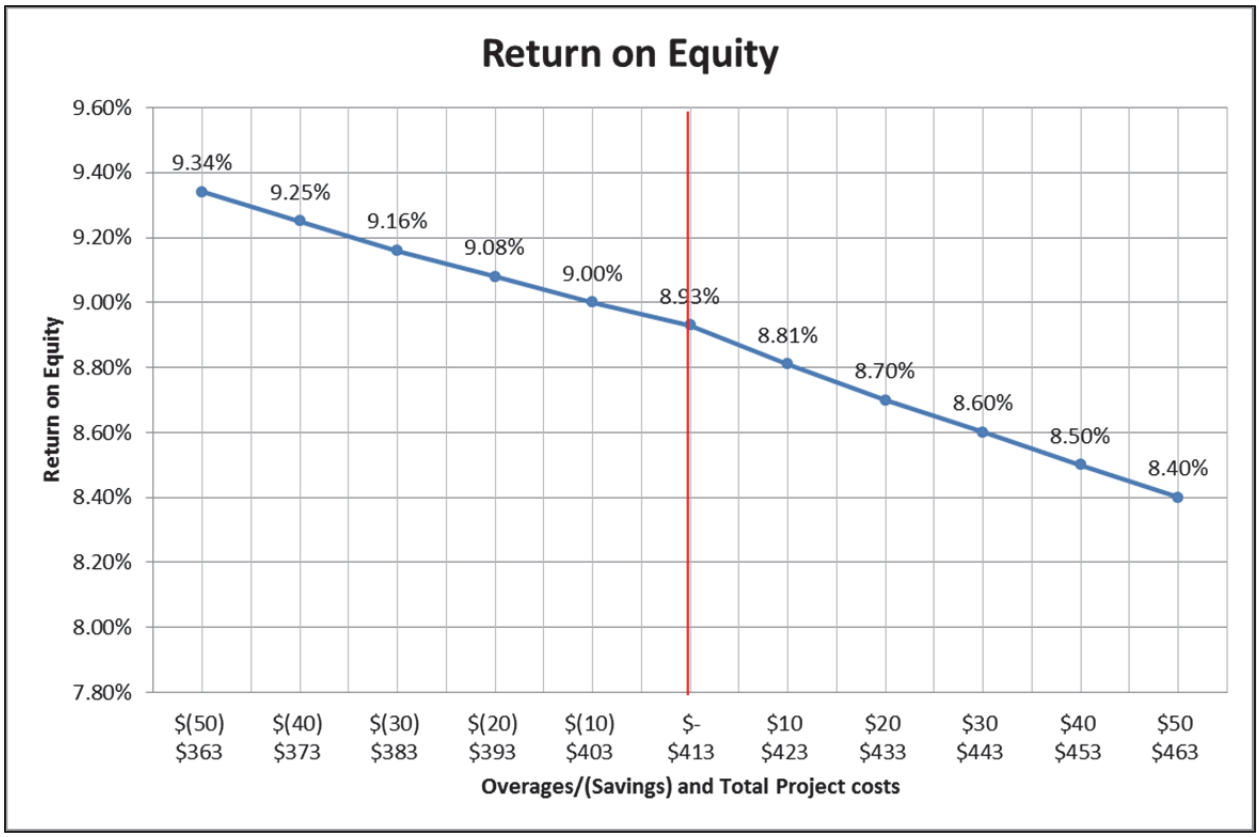
(ii) cost overages: for each year that the EWTL is in service, the ROE that would otherwise be earned on 40 percent of any prudently incurred cost overages would be reduced and RES Transmission would instead earn only the deemed cost of long-term debt, as determined by the OEB annually, on 100 percent of such overages; and

(iii) exceptions: The equity portion (i.e., 40%) of the difference between the actual costs incurred in four cost categories over which the Applicant has little or no control and the estimates of such costs that are embedded in the Bid Amounts in the four categories, up to a specified limit, would earn a return at the ROE determined by the Board, annually, and would not be subject to the penalty that would be otherwise applicable to cost overages under the Applicant's proposed incentive rate methodology. The four categories are as follows: land acquisition (up to $15.5 million); First Nation and Métis participation costs and accommodation (up to $1.0 million); environmental and permitting costs (up to $2.5 million); and Line Costs in respect of a total line length that exceeds 410 km ($1 million for each additional km);

141. Under RES Transmission's Risk Sharing Proposal, the risk that either of the Bid Amounts is exceeded would be borne, in large measure, by RES Transmission. This is illustrated, in the case of Option 1 (Preferred Design/Preferred Route), by Figure H-5 below. In sum, assuming a rate of return on equity of 8.93 percent and a $20 million overage of the Bid Amount (excluding Exceptions), RES Transmission's ROE would be reduced by

0.23 percent. Conversely, however, if RES Transmission "beats" the Bid Amount by $20 million, its ROE would be increased (relative to 8.93%) by just **0.15 percent**.

Figure: E-3: ROE Implications of Risk Sharing Proposal[1]



1. Source: Application, Exhibit B-1-1, p. 21 of 35.

142. RES Transmission acknowledges that Board approval of its Risk Sharing Proposal, for rate-making purposes, may be beyond the scope of the designation proceeding. RES Transmission is, nevertheless, prepared to commit to its proposal as a condition of designation by committing to prepare and submit its LTC application and its first cost-of-service application after the EWTL is placed in service, on the basis of the proposal.

Development Cost Deferral Account

143. In this Application, RES Transmission is requesting that the Board establish a deferral account ("**Deferral Account**") in which cash expenditures during the development phase

may be recorded for future recovery in rates. Board Staff, in its submission, has also recommended the establishment of such a deferral account[65]

144. The Applicant is also requesting that the OEB vary its usual methodology that prescribes interest rates for approved regulatory accounts,[66] such as the requested Deferral Account, and approve, instead, a blended debt/equity rate ("**Blended Interest Rate**") as follows: the sum of the rate of return on common equity, determined by the Board, annually, on 40 percent of development expenditures, and the lesser of the deemed short-term debt rate (determined by the Board annually) or the Board-approved IDC rate, on 60 percent of development expenditures. The ongoing balance associated with this accrual would be tracked separately on RES Transmission's financial statements.

145. The incremental cost of RES Transmission's Blended Interest Rate proposal over the life of the Project, relative to the Board's usual methodology, would be $521,503, assuming:[67]

(i) a prescribed interest rate for approved deferral accounts of 1.47 percent under the Board's usual methodology based on the rate set by the Board for Q1 2013; and

(ii) a Blended Interest Rate of 4.82 percent, calculated at the current allowed ROE of 8.93 percent on 40 percent of development costs and at the deemed short-term debt rate of 2.08 percent, on 60 percent of development costs, assuming that the short-term debt is established at a rate of 2.08 percent or higher.

146. RES Transmission believes its request for approval of a Blended Interest Rate is appropriate and reasonable because:

[65] *Supra*, footnote 53, at p. 51.
[66] Under the Uniform System of Accounts, this rate is the sum of the Bankers' Acceptances three-month rate (as published on the Bank of Canada's website) and 25 basis points.
[67] See RES Transmission's response to interrogatory OEB-14.

(i) RES Transmission intends to finance development phase activities solely by equity contributions from its two sponsors. Relative to the small amount of project level debt required to finance development costs, the origination and commitment fees associated with putting debt facilities in place would be prohibitive. Moreover, without a revenue stream, obtaining debt financing at competitive rates would be difficult and costly; and

(ii) the Project will not be placed in service until a full five and one-half years after the commencement of the two-year development phase. The application of a rate that comprises only a short-term debt component is not appropriate in these circumstances because it is not consistent with the life cycle expected for the underlying regulatory asset (assuming the Deferral Account is not cleared until after the EWTL is place in service).

F. Project Management and Delivery

Overview

147. Drawing on the combined resources of the RES Group and the MidAmerican Group, RES Transmission has assembled an EWTL Project team with the depth, breadth and experience necessary to develop, construct, operate and maintain the EWTL efficiently, safely and reliably. RES Transmission's Project team includes experts in transmission design, transmission construction, operation and maintenance, land acquisition, permitting, environmental assessment, regulation, financing and First Nation and Métis consultation and participation. RES Transmission's Project management plan is included at Exhibit F-1-1 of the Application.

Project Management Team

148. Jerry Vaninetti, President of RES Transmission, will lead the Project team. Mr. Vaninetti is the Senior Vice President of Transmission for RES Americas and has 40 years of management experience in the electricity industry, including ten years with a utility, 13 years in project development (mainly transmission), nine years as a management consultant and eight years in energy transportation. Most recently, he managed two major transmission projects under development in the western U.S. Rocky Mountains: the Wyoming-Colorado Intertie Project (300 km of 345 kV transmission line) and the High Plains Express Project (3,500 km of 500 kV transmission line).

149. Mr. Vaninetti will be supported by Darrell Gerrard, Vice President of Transmission System Planning at MAT. Mr. Gerrard will be responsible for project planning, design, operations, maintenance and delivery management. Mr. Gerrard has 35 years of experience in planning, developing and managing electricity utility transmission systems, including MAT's $6 billion Energy Gateway projects.

150. Other key positions for the Project management team have also been staffed, including the individuals responsible for project coordination, project delivery, land and

permitting, communications and consultations, commercial and finance matters and regulatory and legal matters. Detailed descriptions of the roles and responsibilities of the Project management team are included in Exhibit F-1-1 of the Application and in response to interrogatory OEB All-1.[68]

151. The experience, qualifications, roles and responsibilities of the key personnel that comprise RES Transmission's development, design, construction, operations and maintenance team are described in Exhibit F-3-1 of the Application and in response to interrogatories OEB All-1 and 3.[69]

152. The Project management team and the design, development and construction team will be supported by other employees of the RES Group and the MidAmerican Group, as required. RES Transmission has budgeted for:

(i) 5.1 to 6.5 full-time employee equivalents ("**FTEs**") for the development phase, up to the time a LTC application is filed with the Board;

(ii) 6.6 to 8.0 FTEs during the LTC hearing phase; and

(iii) a phased-in decrease from 6.1 to 3.5 FTEs, during the construction phase of the Project.

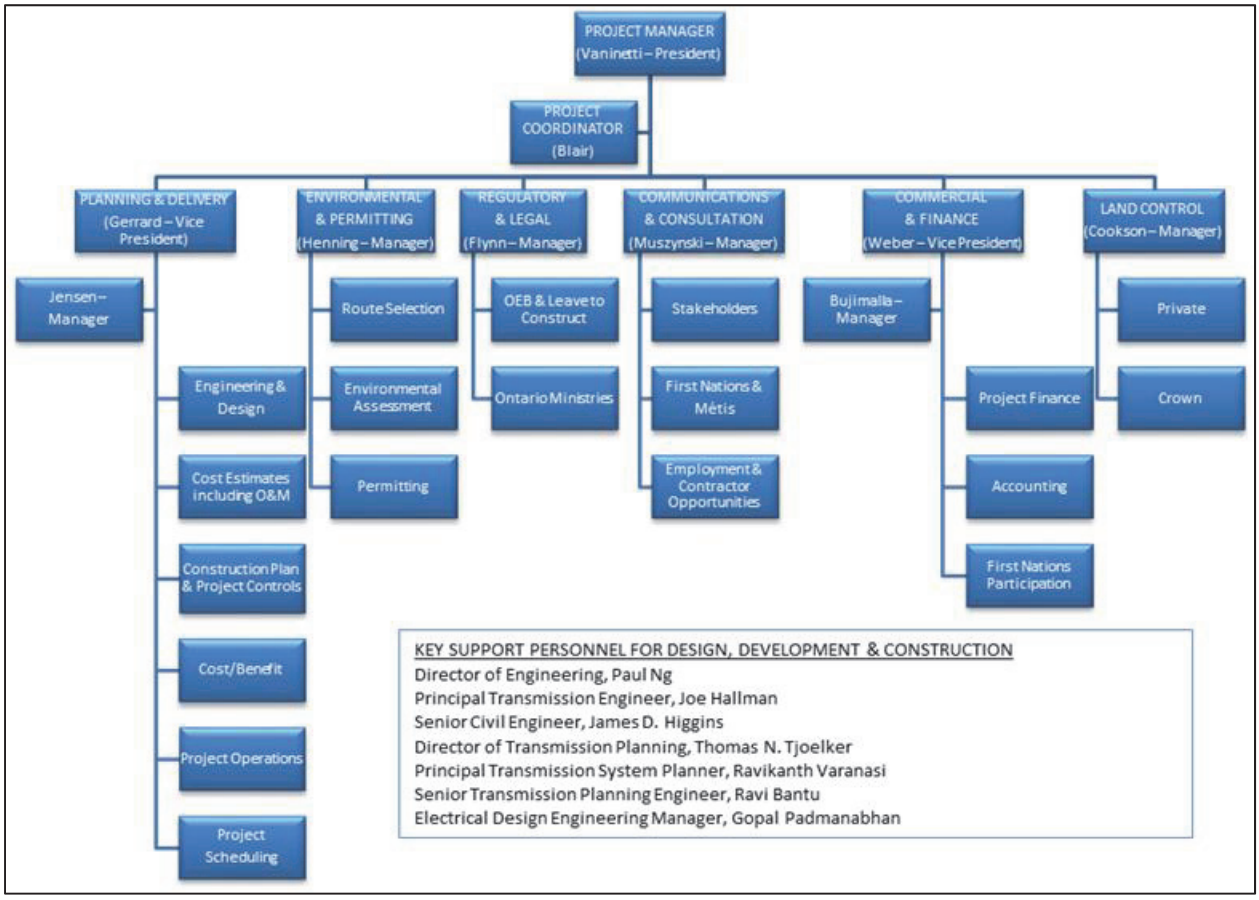
153. The estimate of construction phase FTEs will be revised closer in time to the construction phase.[70]

[68] See Exhibit F-1-2 of the Application and the response of RES Transmission to OEB All-1 for resumes of the project management team.
[69] See Exhibit F-1-2 of the Application for resumes of the design, development and construction team.
[70] See Exhibit F-1-4 of the Application for a graph depicting the FTEs required each quarter for all Project activities.

Project Management Organization

154. RES Transmission's Project management team and proposed Project management structure are depicted graphically in Figure F-1, below.

Figure F-1: Project Management Team and Organization



155. The Project management team, shown above, will subdivide Project responsibilities into six categories, each overseen by a member of the Project management team.

(i) **Planning and Delivery:** this project task will include development of plans for engineering and design, cost analysis, construction, cost control and overall cost benefit analysis, operation and maintenance, and project scheduling.

(ii) **Environmental and Permitting:** this project task will include route selection, environmental assessment and permitting.

(iii) **Regulatory and Legal:** this project task will include all matters related to OEB and Ontario government issues, including the preparation and prosecution of RES Transmission's LTC application for the EWTL.

(iv) **Communications and Consultations:** this project task will include the development and execution of communication and consultation strategies with First Nation and Métis groups, local municipalities and communities, and other stakeholders.

(v) **Commercial and Finance:** this project task will include project finance planning, accounting and First Nation and Métis participation and accommodation.

(vi) **Land Control:** this project task will include activities critical to securing required land rights, including rights on private and Crown lands.

External Project Support

156. The Project Management Team will be supported by Canadian consultants, advisors and contractors, some of whom also assisted RES Transmission in the conduct of pre-designation studies and in the preparation of its designation Application, as follows:

(i) **Legal:** Denton's Canada LLP (Toronto, ON);

(ii) **Environmental & Technical Consultant:** Stantec Consulting Limited (Guelph, ON & Vancouver, BC);

(iii) **Construction Advisors:** PowerTel Utilities Contractors Limited (Whitefish, ON);

(iv) **Aboriginal Advisor:** John Beaucage, former Grand Council Chief of the Anishinaabek Nation (Union of Ontario Indians) (Parry Sound, ON);

(v) **Communications:** Campbell Strategies Inc. (Toronto, ON);

(vi) **First Nation Financing & Investment Advisor:** Coxswain Row Capital Corp. (Toronto, ON);

(vii) **Project Development:** Juan Anderson (Thunder Bay, ON);

(viii) **Cost/Benefit Analysis:** Energy and Environmental Economics; and

(ix) **Rate Regulation:** JT Browne Consulting (Toronto, ON).

157. The organization and reporting structure that will pertain to RES Transmission's external service providers is described in detail at Exhibit F-4-1 of the Application.

158. At this time, RES Transmission has not selected the Owners' Engineer or any of the other major construction contractors since sole-sourced construction contracts (as proposed by Altalink, CNPI and Iccon/TPT) may not provide the best value to ratepayers. This is an important consideration as the costs associated with these contracts will likely be in excess of $100 million (excluding material costs). RES Transmission will choose major construction contractors, after designation, through a competitive bidding process.

G. Project Schedule

RES Transmission's Development and Construction Schedule

159. RES Transmission proposes a development and construction schedule designed to achieve a year-end 2018 in-service date. This milestone is conditioned upon the receipt of timely but not expedited regulatory (i.e., LTC) and permitting approvals.

160. On the basis of its preliminary development activities RES Transmission does not believe that a 2017 in-service date is achievable at reasonable cost.[71] To achieve a 2017 in-service date would require that key development tasks be undertaken simultaneously rather than sequentially, thereby imposing significant inefficiencies on the development and construction process. This would also create the potential of problems resulting from rushed and incomplete consultation, route refinement and mitigation processes. Moreover, a 2017 in-service date would require all regulatory and permitting approvals to be obtained on an expedited basis, at increased cost. Notwithstanding the challenges of achieving a 2017 in-service date, RES Transmission would be willing to make every reasonable effort to meet this date, on the understanding that the effort involved would likely increase total project costs by as much as 20 to 30 percent.[72]

161. In order to achieve a year-end 2018 in-service date, RES Transmission proposes an aggressive but realistic five and one-half year development and construction schedule, commencing in mid-2013. The process comprises the following three periods:

(i) a two-year development periods;

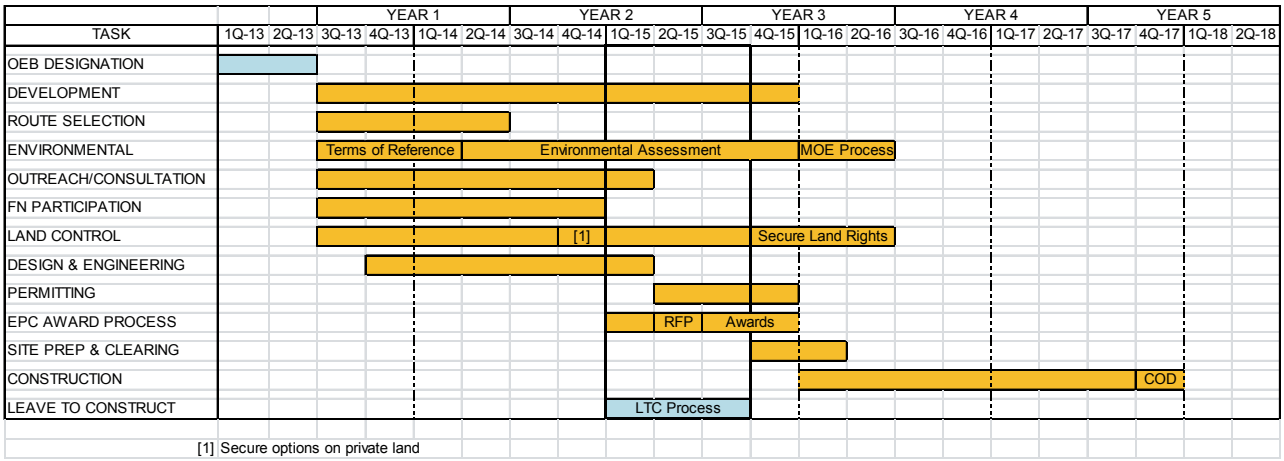
(ii) a one-year LTC period; and

(iii) a two-and-one-half-year construction period.

[71] For further details regarding why the 2017 in-service-date is not achievable at reasonable cost, see Exhibit N-1-1 of the Application.
[72] To be clear, a requirement to meet a 2017 in-service date would obviate RES Transmission's Firm Bid Proposal.

162. Figure G-1, below, sets out the principal project development and construction timelines. The schedule assumes construction along the Preliminary Preferred Route.[73]

Figure G-1: Project Schedule



163. In order to develop and construct the EWTL in five and one-half years, instead of the seven years estimated by Hydro One in June 2010,[74] RES Transmission made a series of deliberate business decisions aimed at accelerating the project schedule while preserving reliability, performance, safety and adequate time for meaningful consultation. These included the decision:

(i) to identify a route option (i.e., the Preliminary Preferred Route) that provides more favourable construction, foundation and access conditions and, by avoiding Pukaskwa National Park and all First Nation reserves, a potentially shorter permitting timetable;[75]

(ii) to adopt a horizontal conductor arrangement that is more compatible with avian protection plans and requirements and, accordingly, facilitates environmental

[73] The project execution chart for both the Preferred Design and the Reference Design is included at Exhibit N-1-2 of the Application; details of the Project schedule are included at Exhibit N of the Application.
[74] Hydro One's Project Definition Report, June 4, 2010: AR18379 Project Definition Report, Study Estimates for Options, East-West Tie Expansion.
[75] For greater detail, see Exhibits L-1-1 and L-3-1 of the Application. Support for the alternative route can also be found CNPI's response to OEB interrogatory CNPI - 7.

permitting (especially since the EWTL will pass through migratory bird habitat and, possibly, a national park);

(iii) to commit to an accelerated permitting process whereby RES Transmission would undertake the LTC proceeding, the completion of an environmental assessment ("**EA**") process, and obtain necessary non-EA permits, all in the same timeframe;

(iv) to commit to using smaller single circuit steel lattice towers and H-frame structures in the Preferred Design that require less material, less installation-related labour and smaller foundations (and associated transportation and road grade requirements); and

(v) to commit to using largely pre-fabricated H-frame structures where conditions permit, in order to avoid the need for tower laydown and preassembly yards.

Development Phase Schedule

164. RES Transmission's development schedule is aggressive but realistic, assuming the timely (but not expedited) receipt of regulatory and permitting approvals. It comprises the components below:[76]

(i) **Route Evaluation and Selection:** The Project schedule assumes nine months to evaluate and select a route based on the Preliminary Preferred Route.

(ii) **EA Terms of Reference ("ToR"):** This process will occur at the same time as the route evaluation and selection process; assuming three months is required to secure Ministry of the Environment ("**MOE**") approvals, the ToR process should conclude at the end of 2014.

[76] Further details of RES Transmission's development schedule can be found at Exhibits N-1-1 and N-2-1 of the Application.

(iii) **Environmental Assessment:** EA activities will overlap with the latter part of the ToR process and an EA will be submitted to the MOE, in early 2016, mid-way through the LTC process. Assuming that nine months are required for MOE approval, the EA will be completed roughly three months after the completion of the LTC process.

(iv) **Land Control:** RES Transmission will negotiate option agreements before the LTC application is submitted in mid-2015. The options will be exercised immediately after an LTC order is issued. With respect to Crown lands, RES Transmission will file the formal request for the Ministry of Natural Resources ("**MNR**") Land Use Permit required for construction immediately after the issuance of the LTC order. Crown land easements will be finalized with MNR after construction based on "as built" surveys.

(v) **Mining and Timber Rights:** Unlike the other applicants, RES Transmission's development schedule takes into account the need to negotiate agreements with parties that hold existing mining and timber rights on lands the EWTL may traverse. Significant development in mining and forestry activities in northwestern Ontario means that surface and underground rights have been granted, all along the Project route. RES Transmission has identified 97 active mining claims, covering approximately 91 km of the proposed route; consents, in the form of option agreements, will need to be obtained from each claim holder, during the development phase.

(vi) **Outreach, Consultation and First Nation and Métis Participation:** As soon as it is designated, RES Transmission will commence its communication and outreach efforts with landowners, local communities, First Nation and Métis communities, governmental entities and other stakeholders. It will continue these efforts throughout the Project's development and construction phases. This

consultation will be critical in finalizing a route and mitigating impacts. First Nation and Métis Participation Agreements and Impact Benefit Agreements will be negotiated during the development phase but will not be effective until an LTC order is issued.

(vii) **Permitting:** Permitting activities will commence during the LTC process and will end in early 2017.

(viii) **Selection of Owners' Engineer:** Conducting a competitive bidding process to select an Owners' Engineer will require considerable effort and cost. Accordingly, the process will commence when the LTC application is filed and will end shortly after the LTC process ends.

Construction Phase Schedule

165. The construction phase will commence upon the filing of an LTC application. The construction phase comprises the following activities: construction of transmission lines, structures and foundations; construction of access roads; installation of grounding facilities; testing and commissioning; environmental management; vegetation management; localized permitting; and permit compliance efforts.[77]

166. During the construction phase, the transmission line will be constructed up to and including the dead-end transmission line structures within 250 metres of Wawa TS, Marathon TS and Lakehead TS. RES Transmission will coordinate with Hydro One who will be responsible for designing and constructing station equipment upgrades that are required to implement stages 2-5 of RES Transmission's Preferred Design, as well as installing the physical interconnections into the stations. This substation connection work will need to be completed on or before November 2, 2018, in order to allow for testing of the transmission line. Final testing of the transmission line is scheduled to

[77] A detailed construction phase schedule is included at Exhibit N-3-1 of the Application.

occur between November 2, 2018 and December 19, 2018, subject to Hydro One and IESO approval.

Project Milestones

167. RES Transmission proposes 19 different milestones for the development phase of the Project and seven different milestones for the construction phase of the Project. These milestones are largely consistent with Board Staff's Submissions on proposed milestones.[78] In the event of a missed Project milestone, RES Transmission will implement a planned contingency response or revise its approach and strategy in order to ensure that the Project remains on schedule for subsequent milestones. An overview of the Project milestones is included at Exhibit N-1-1 of the Application. Details of the milestone dates for the development and construction phases of the Project are included at Exhibits N-2-2 and N-3-2 of the Application, respectively.

168. RES Transmission's Risk Sharing Proposal (described at paragraphs 139-142 above, in the "Costs" section) creates a strong financial incentive to deliver the Project on time and on budget. Under the Risk Sharing Proposal, RES Transmission would receive a reduced return on the equity portion of any cost overruns that are the result of construction delays or otherwise, subject to four specified exceptions which have to do with costs that are beyond the control of RES Transmission.

169. In the event that a milestone date is missed, RES Transmission agrees with Board Staff's Submission that sanctions, if any, should be determined at the time of breach.[79]

Reporting Requirements

170. RES Transmission agrees with Board Staff's Submissions regarding reporting requirements and proposes to provide the Board with monthly and quarterly progress

[78] Staff Submission, *supra*, footnote 12, at pp. 3-4.
[79] *Ibid*., pp. 5-6.

reports, in both the development and the construction phases of the Project.[80] RES Transmission's management team has a great deal of experience in reporting to regulators in various jurisdictions across North America.

171. RES Transmission will require Project contractors to provide their own status reports to RES Transmission each month, at the same time that they submit their invoices. If a contractor fails to provide a status report, the invoice will be considered incomplete and payment will be deferred until the report is provided. This approach has proven to be an effective tool in ensuring timely reporting. Details of RES Transmission's proposed reporting requirements and the consequences for failing to meet prescribed reporting requirements are included at Exhibit N-4-1.

172. In the event that a reporting requirement is missed, RES Transmission agrees with Board Staff's Submission that sanctions, if any, should be determined at the time of breach.[81]

[80] *Ibid*., pp. 4-5.
[81] *Ibid*., pp. 5-6.

H. Consultation

The Applicant's Landowner, Municipality and Community Consultation Plan

173. RES Transmission is committed to transparent and meaningful consultation with affected landowners, municipalities and communities, to supporting communities that will be affected by the Project, in both the short and the long term, and to resolving issues immediately as they arise. RES Transmission's plan for doing all of this is set out in its Landowner, Municipality and Community Consultation Plan ("**Consultation Plan**"), included in Exhibit M-2-1 of the Application.[82] The Consultation Plan is a comprehensive document that describes the steps in the consultation process and how RES Transmission intends to carry these out.

174. It is one thing to develop a consultation plan, quite another to successfully implement it. RES Transmission intends to draw upon the collective experience of the RES Group and the MidAmerican Group in implementing successful public consultation programs in connection with the many electricity transmission projects that each has constructed throughout Canada (including Ontario) and the United States. In particular, RES Canada has developed and constructed two 99 MW windfarms and associated transmission facilities in Ontario: Talbot in southwestern Ontario and Greenwich in northern Ontario, near Thunder Bay. Moreover, RES Canada is currently implementing public consultation programs in Ontario (including in northern Ontario) and elsewhere throughout Canada in connection with early stage development of renewable energy generation projects under various provincial procurement programs.

Proposed Consultation Process

175. RES Transmission intends to consult with all persons who own or occupy property within the proposed construction zone, as well as with persons residing within approximately 50 metres of the EWTL right-of-way. It also intends to consult with affected townships

[82] See also Exhibit M-1-1 of the Application for a summary of RES Transmission's consultation plan.

and municipalities, special interest groups and non-governmental organizations and agencies as well as with others who declare an interest in the Project, during the environmental assessment process.

176. Prior to construction, all affected stakeholders will be provided with a copy of RES Transmission's construction schedule and with the contact information of its designated community liaison representative. This representative will be instrumental in maintaining positive relationships within the community and addressing stakeholder concerns on a timely basis.

177. Effective consultation does not have a discrete start and end date. RES Transmission will continue to consult with affected stakeholders throughout the development, construction and operating and maintenance phases of the Project. This will involve the publication of notices of the Project's key stages; the distribution of project updates and newsletters to affected landowners, government agencies, First Nation and Métis communities and other interested parties; and the conduct of issues workshops, special interest group meetings and public information sessions. RES Transmission will also establish and maintain a Project telephone hotline and a Project website where key project documents can be accessed.

178. Consultation and close coordination with governments and regulatory agencies will be critical to the success of the Project. To this end, RES Transmission intends to consult, regularly and continuously, with the IESO, the OPA (particularly on its needs assessment and timing of the LTC application), the Ministry of Energy and other provincial and federal ministries and departments, as well as with local governments and conservation authorities who have an interest in the Project.

179. Appropriate consultation activities and relevant communications will be recorded in a consultation database to ensure that stakeholder input is preserved and issues are addressed. A table that summarizes RES Transmission's proposed strategy for resolving

potential major issues that might arise during the consultation process, is included at Exhibit M-1-1 of the Application.[83]

First Nation and Métis Consultation Plan

180. RES Transmission has developed a comprehensive First Nation and Métis Consultation Plan. This Plan has been informed by the collective experience of the RES Group and the MidAmerican Group and by the advice of RES Transmission's First Nation and Métis consultation team and its special advisor, former Grand Council Chief of the Union of Ontario Indians, John Beaucage.[84] (The consultation experience of the RES Group, the MidAmerican Group and of John Beaucage are discussed at Exhibits E-6-1 and E-6-2 of the Application). The Plan describes how RES Transmission proposes to build positive and long-lasting relationships with affected First Nation and Métis communities. The Plan is included at Exhibit M-3-1 of the Application.[85] A table that summarizes RES Transmission's proposed strategy for resolving issues that might arise during the First Nation and Métis consultation process is included at Exhibit M-1-1 of the Application.[86]

181. RES Transmission's consultation strategy contemplates two tiers of engagement with affected First Nation and Métis communities:[87] pre-consultation relationship-building and post-designation consultation with affected communities. RES Transmission has already engaged (and continues to do so) affected and interested First Nation and Métis communities in connection with the Project. It has contacted all such communities to inform them of its intention to participate in the designation process and to seek their input in the First Nation and Métis Consultation Plan. RES Transmission has also met with the representatives of those communities who communicated a desire to do so.

[83] See pages 3-5.
[84] See Application, Exhibit E-6-1, pp. 1-3 as well as RES Transmission's responses to interrogatories OEB General - 5 and 13.
[85] See also Exhibit M-1-1 of the Application for a summary of RES Transmission's consultation plan.
[86] See pages 6-8.
[87] The list of First Nation and Métis Communities that have been identified as being potentially affected by the Project is included in Exhibit M-3-2 of the Application.

An updated log of RES Transmissions First Nation and Métis consultation efforts is included in response to interrogatory OEB-Global – 1 at Appendix 2.

182. RES Transmission anticipates that communities that are signatories or adherents to the Robinson Superior and Robinson Huron Treaties of 1850 and Métis communities with historic connections to Lake Superior's north shore, may also be interested in the Project. Accordingly, RES Transmission will consult with the 14 First Nation and four Métis communities identified by the Minister of Energy, as well as any other First Nation and Métis communities that express an interest in the Project, throughout the entire process.

183. Recognizing that consultation is a flexible, evolving and collaborative process, RES Transmission expects to modify its Consultation Plan in accordance with input it receives from First Nation and Métis communities. Material changes in RES Transmission's consultation plan, if any, will be reported in quarterly updates to the Board, in accordance with the recommendations of Board Staff in its Submission.[88]

184. RES Transmission has first hand experience with the Ontario Ministry of Energy's practice of delegating certain procedural aspects of the Crown's consultation duty to project proponents. RES Transmission's affiliate, RES Canada, entered into two Memorandums of Understanding ("**MOU**") with the Ministry of Energy in connection with the two windfarms – Talbot and Greenwich – that it developed and constructed in Ontario. These MOUs set out the respective roles and responsibilities of the Crown and of RES Canada, for carrying out the Crown's constitutional duty to consult with First Nation and Métis communities. These MOUs are very similar to the MOU that governed Hydro One's Bruce Milton Project. As stated in its Application and reiterated in response to OEB interrogatories, RES Transmission is prepared to enter into a MOU with

[88] See page 5.

the Ministry of Energy on the same or similar terms and conditions as the Bruce Milton MOU.

185. RES Transmission is determined to implement the Project responsibly and respectfully in order that the surrounding First Nation and Métis communities, landowners, agencies and communities will embrace the Project. The ongoing and free-flowing communication process that is inherent in RES Transmission's consultation plans, will ensure successful outcomes for all concerned.

I. Comparative Analysis and Critiques of Applications

Introduction

186. The comparative analysis and critiques included in this section, comprise RES Transmission's response to the proposals of the other applicants in this proceeding, namely: AltaLink; Canadian Niagara Power Inc. ("**CNPI**"); EWT; Iccon Transmission, Inc. and TransCanada Power Transmission (Ontario) L.P. (together, "**Iccon/TPT**"); and UCT.

187. In this section, RES Transmission uses the following naming conventions:

(i) sections of individual applications: for example, RES-Exhibit B-1-1, CNPI-Exhibit B-8.7;

(ii) interrogatories proposed ("**PIR**") by individual applicants: for example, RES PIR-AltaLink #5 (i.e., interrogatory #5 proposed by RES Transmission to AltaLink);

(iii) responses to interrogatories sent by the OEB to all applicants: for example OEB All-1; and

(iv) responses to interrogatories sent by the OEB to individual applicants: for example RES-1, CNPI-2.

188. This comparative analysis and critique is divided into two parts. The first part comprises an issue-by-issue discussion of each of the six applications. As part of this analysis, RES transmission has prepared four exhibits that compare and contrast each applicants' project schedule (Table I-1) and project costs (line costs, total project costs and cost precision: Figure I-1, Figure I-2 and Table I-2, respectively). These tables and figures are included under the heading "Exhibits" starting at page 101.

189. The second part of the comparative analysis and critique comprises three matrices, prepared by RES Transmission, that compare the proposals of the six applicants. The three matrices, included under the heading "Appendices", are:

(i) a summary of applications (entitled, AIC Appendix 1-A);

(ii) a summary of responses to interrogatories posed by the OEB to all applicants (entitled, AIC Appendix 1-B); and

(iii) a summary of responses to interrogatories posed by the OEB to individual applicants (entitled, AIC Appendix 1-C).

Issue-By-Issue Discussion of Each Application

RES Transmission

190. RES Transmission's application is complete and comprehensive with a high level of specificity in the form of underpinning data and calculations and a detailed risk analysis. The relative merits of RES Transmission's application are summarized below.

(i) Schedule: RES Transmission has proposed an aggressive but realistic development schedule in order to achieve a year-end 2018 in-service date. Its project schedule is comparable to the schedules of EWT and CNPI and contrasts with the unrealistic development schedules proposed by AltaLink, Iccon/TPT and, particularly, UCT (RES-Exhibit N; Figure I-1 and EWT-Exhibit B-7). Notwithstanding the challenges of achieving a 2017 in-service date, RES Transmission would be willing to make reasonable efforts to meet this target, if stipulated by the Board, on the understanding that the effort involved would likely increase total project costs by as much as 20 to 30 percent. This reflects the significant inefficiencies that would be imposed on the development and construction process by compressing the project schedule to achieve a 2017 in-service date (RES-Exhibits N-1-1 and P-4-2 and paragraph 160, above).

(ii) Competitive Costs: RES Transmission has submitted the most cost-effective proposal comprising: (1) a development costs estimate of $21.5 million which compares favourably with the development estimates of all other applicants;

and (2) the lowest construction cost estimate for an IESO-verified design (Figure I-1).

(iii) Binding Costs: In contrast to the *indicative* cost estimates submitted by all other applicants, RES Transmission has submitted a *binding* cost proposal (i.e., Firm Bids) for both design options along its Preliminary Preferred Route. The total *binding* cost of its Preferred Design option is between $17.4 million and $91.4 million less that the *estimated* costs submitted by the other applicants for a design that uses conventional structures, suited to northern Ontario (Figure I-1) (as opposed to unconventional guyed structures).

(iv) Risk Sharing: In its Application, RES Transmission commits to share budget and schedule risks with ratepayers. This is intended to incent RES Transmission to complete the development and construction of the EWTL on time and on budget, by rewarding it if it completes the Project for less than the costs identified in the proposal and penalizing it for any overages. The risk-sharing proposal is disproportionately applied to the benefit of ratepayers, RES Transmission would receive a comparatively small reward for cost control, and a comparably larger penalty for cost overages (RES-Exhibit P-5-1, Figure P-6 and discussed further at paragraphs 139-142, above).

(v) Application Content: Of all the applicants, RES Transmission's proposal is the most comprehensive and includes significant detail and supporting calculations on costs (RES-Exhibits P-3-2 and P-4-2), development plans and risk. RES Transmission was able to provide a higher level of detail in its Application because it carried out a comprehensive desktop analysis and completed 50 person-days of on-site, field investigations of potential routes, constructability and construction access (RES-Exhibits H-6-2, H-6-3, and H-6-4).

(vi) Team: RES Transmission has assembled a highly-qualified team of experienced transmission managers and subject matter experts as well as Ontario-based consultants, advisors and legal counsel. RES Transmission's internal team has both Ontario transmission development and construction experience (including two LTC proceedings for private transmission lines) and global experience in developing, financing, building, owning, operating and maintaining more than 30,000 km of high-voltage transmission lines in jurisdictions with varying climates, ground conditions, terrains and regulatory regimes.

(vii) Alternate Design: RES Transmission has proposed an innovative and cost-effective single-circuit Preferred Design that complies with all applicable design, reliability and performance criteria, as confirmed by the IESO's Preferred Design Feasibility Study (RES-Exhibit H-2-3). The Preferred Design is $80 million less expensive than the Reference Design and facilitates staged increases in transfer capacity – an option unavailable in a double circuit design – that could save ratepayers approximately $62.5 million, assuming installation over an eight year period. This amount could increase by $12 million for each year that the additions of transfer capacity are delayed. Moreover, the estimated annual O&M costs of the Preferred Design are lower than the O&M costs for the Reference Design ($2.2 million vs. $2.7 million). EWT, in its application, gives an indicative estimate of the cost savings associated with a single-circuit design. This indicative estimate is in contrast to RES Transmission's Firm Bid for the single-circuit option.

(viii) Route: RES Transmission has identified a Preliminary Preferred Route that is 9 km longer than the Reference Route and which bypasses Pukaskwa National Park and all First Nation reserves in order to avoid culturally and environmentally sensitive lands. The Preliminary Preferred Route takes advantage of construction

access, terrain, and foundation conditions that are more cost-effective, and less risky from a permitting perspective, relative to the Reference Design.

(ix) Mining and Timber Rights: RES Transmission is the only applicant that appears to have considered, researched and planned for the accommodation of parties who have mining and timber rights on Crown lands (which comprise approximately three-quarters of the route or 300 km).

(x) Aboriginal Plans: RES Transmission's First Nation and Métis Participation and Consultation Plans treat affected communities equally and on a non-preferential basis. First Nation and Métis communities can choose the mode of participation that suits their particular circumstances, including up to a 20 percent equity interest in RES Transmission.

(xi) Design – Structures: To minimize costs without compromising safety and reliability, RES Transmission has proposed the use two types of conventional steel structures that are both well-suited to the harsh conditions of northern Ontario: lattice towers and H-Frame-tubular designs. The single circuit Preferred Design can use smaller towers than the double circuit Reference Design, resulting in savings in construction costs, materials and time.

Both EWT and UCT have proposed guyed structures that have never been used in Ontario. RES Transmission also considered the use of guyed structures for the EWTL. However, the experience of the MidAmerican Group in the United States suggests that such structures are not suitable for use in areas characterized by hilly, steep terrain that would necessitate a significant amount of vertical traversing during construction. RES Transmission's pre-application site inspections, along both of its EWTL route options, confirmed that both the Reference Route and the Preliminary Route traverse many areas characterized by elevated and undulating terrain. A guyed tower design is simply not viable in

these circumstances. Moreover, guyed towers are unsuitable for the EWTL due to concerns about durability in extreme climates (particularly the increased risk of cascading tower failure); the difficulty managing vegetation around guyed structures; the need for wider rights-of-way; higher annual operation and maintenance costs; increased risk to bird and bat species; and the risk to recreational users of transmission right-of-way (e.g., snowmobilers) (RES PIR-EWT #10; RES PIR-UCT #7 and discussed in the "Design" section, above at paragraphs 87-90).

(xii) Selection of Contractors: RES Transmission intends to institute a competitive bidding process for major contractors including retaining an Owners Engineer and engineering-procurement-construction ("**EPC**") contactor. This will ensure competitive pricing for services that are likely to exceed $100 million (excluding material costs). Sole-sourced construction contracts to affiliates (as proposed by AltaLink and Iccon/TPT) are unlikely to provide the best value for ratepayers.

AltaLink

191. AltaLink's application has a limited amount of underpinning support for its cost estimates. It has notable deficiencies or shortcomings relative to RES Transmission's application and/or the applications of other bidders, as follows:

(i) Unrealistic Schedule: AltaLink proposes an aggressive and unachievable development schedule of 14 months (Table I-1) that does not provide sufficient time to properly undertake the consultation, environmental, engineering design, and land valuation activities that are required for a complete LTC application (RES PIR-AltaLink #1), as more fully described in EWT's and RES Transmission's applications (EWT-Exhibit B-7 and RES-Exhibit N). Particularly troubling is AltaLink's compressed schedule for completing the First Nation and Métis

consultation process, which experience indicates will be a time-intensive process that cannot be rushed.

(ii) Estimated Costs: AltaLink has understated its development cost estimate ($18.2 million) and has specifically excluded the cost of acquiring or optioning land rights. These costs have been estimated to be in the range of $2 to $3 million by other applicants. AltaLink has also understated its construction cost estimate ($454.1 million) by not including a contingency amount – contrary to OEB's request in interrogatory OEB All-26. Contingency amounts have been estimated by other applicants in the range of $35 to $60 million.

(iii) Costs and Exclusions: AltaLink has submitted an uncompetitive and understated "preliminary" cost *estimate* ($472.3 million) for the development and construction of the EWTL. AltaLink's cost estimate excludes key cost components (land acquisition costs in the development phase and contingency costs in the construction phase). Notwithstanding, its estimate is still $58.5 million higher than RES Transmission's *binding* Firm Bid for the Preferred Design (Figure I-1).

(iv) Cost Accuracy: The imprecision of AltaLink's total line cost estimate is demonstrated by the wide range of its estimates: $425 to $550 million, a $125 million range (Table I-2).

(v) Selection of Contractors: AltaLink has pre-selected an affiliate (SNC-Lavalin) as its Owners' Engineer and EPC contractor. This precludes a competitive process to obtain market rates for services that are likely to exceed $100 million (excluding material costs) without any associated ratepayer protections for cost overruns (RES PIR-AltaLink #3).

(vi) Alternate Routes or Designs: It does not appear that AltaLink has considered or proposed alternate routes or alternate designs that could provide benefits to ratepayers.

(vii) Risk Sharing: AltaLink has described a conceptual and non-binding risk sharing proposal tied to a cost overrun cap of 10%. AltaLink's application is vague about how this proposal would be implemented and to what parts of its application it applies.

(viii) Mining and Timber Rights: AltaLink does not appear to have considered or planned for the accommodation of parties who hold mining and timber rights on Crown lands. Crown lands comprise about three-quarters of AltaLink's prepared route (approximately 300 km) (RES PIR-AltaLink #2).

(ix) Constructability and Access: It does not appear that AltaLink has assessed constructability or access requirements. This is in contrast to the comprehensive desktop analysis and 50 person-days of field investigations completed by RES Transmission (RES PIR-AltaLink #5).

CNPI (Fortis)

192. CNPI has submitted an application with very limited supporting material, perhaps reflecting CNPI's limited investment in pre-designation activities (only $0.25 million, compared to the approximately $1.5 million expended by most of the other applicants). Notable deficiencies or shortcomings, relative to RES Transmission's application and/or other applications, are listed below.

(i) Estimated Costs: At total *estimated* line costs of $504.8 million, CNPI has submitted the least competitive application; it is $91.4 million higher than RES Transmission's *binding* cost proposal (Figure I-1).

(ii) Cost Accuracy: CNPI's estimate is the least accurate of all applications with a range of $361 million (Table I-2): "the construction estimate should be considered as conceptual with a target accuracy of negative 25% to positive 50%" (CNPI-Exhibit B-8.7).

(iii) Team: CNPI's organization and project team has limited experience with high-voltage transmission, as CNPI's expertise is primarily as a distributor involving lower voltage lines. None of the projects listed in CNPI's response to interrogatory OEB All-32 involved CNPI but, rather, its sole-sourced engineering and construction contractor, TRC engineering. It is unclear if TRC engineering performed any management or ownership functions in the projects listed.

(iv) Selection of Contractors: It would appear that CNPI has pre-selected an Owners' Engineer (TRC Engineering) without going through a competitive bidding process to obtain market prices for such services (RES PIR-CNPI #2).

(v) Aboriginal Participation: CNPI provided ambiguous and non-responsive answers to the interrogatories regarding First Nation and Métis issues (OEB All-5 to 14).

(vi) Schedule and Budget Risks: CNPI has provided only a cursory assessment of its development and construction budget and schedule risks, relative to what has been provided by other applicants.

(vii) Risk Sharing: CNPI has submitted a conceptual, non-binding proposal that does not contemplate risk-sharing with ratepayers for cost overruns.

(viii) Changed Costs: Despite the OEB's admonition not to modify cost estimates from those specified in the original applications, in its response to OEB All-26, CNPI has nearly doubled its O&M cost estimate from $0.974 million to $1.684 million.

(ix) O&M Costs: CNPI's response to interrogatory OEB All-29, regarding stand-alone O&M, costs is unresponsive and ambiguous. This suggests that these costs are not stand-alone costs.

(x) Adjustment to 2012 Dollars: As requested in interrogatory OEB All-26, CNPI has reduced its construction cost estimate by $11.4 million from the estimate originally submitted in its application through eliminating the effects of inflation. No supporting calculations were provided to support this cost reduction.

(xi) Route: CNPI has identified potential route deviations from the Reference Route (CNPI-7; CNPI-Exhibits B-9.3 and 9.4) and has provided additional support for RES Transmission's analysis on the advantages of a more accessible route that bypasses Pukaskwa National Park (i.e., the Preliminary Preferred Route). However, unlike RES Transmission, CNPI has provided no information regarding the cost implications of this route modification.

(xii) Mining and Timber Rights: It would appear that CNPI has made only a cursory assessment of the need to accommodate parties with mining and timber rights on Crown lands (approximately 300 km) (RES PIR-CNPI #1).

(xiii) Constructability and Access: It does not appear that CNPI has made an assessed of constructability or access requirements.

Iccon/TPT

193. Iccon/TPT's application underscores its lack of North American transmission experience. Moreover, its application is light in underpinning information. Notable deficiencies or shortcomings, relative to RES Canada Transmission's application and/or other applications, are described below.

(i) Unrealistic Schedule: Iccon/TPT has proposed an unusually aggressive and unachievable development schedule of 18 months (Table I-1) that does not

provide sufficient time to properly undertake the consultation, environmental, engineering design and land valuation activities that are required for a LTC application. It is unlikely that Iccon/TPT can complete the First Nation and Métis consultation process, proposed in its application, within the time allowed to this activity. Iccon/TPT has not demonstrated that it has budgeted sufficient time to complete pre-construction permitting activities (Iccon/TPT-4 and RES PIR-Iccon/TPT #1).

(ii) Estimated Costs: At total "preliminary" *estimated* line costs of $496.3 million (with limited supporting information), Iccon/TPT's proposal is one of the least competitive applications and is $82.9 million higher than RES Transmission's *binding* Firm Bid for its Preferred Design (Figure I-1).

(iii) Experience: Iccon/TPT has very limited transmission experience in North America and none in Canada. Iccon/TPT has not provided any evidence of transmission experience in the terrain and climatic conditions prevalent along the route of the EWTL.

(iv) Aboriginal Participation: Iccon/TPT's proposed First Nation and Métis participation plan does not appear to include equity participation opportunities for First Nation and Métis communities.

(v) Selection of Contractors: Iccon/TPT has pre-selected an affiliate (Isolux Corsán) as the EPC contractor. This precludes a competitive process to obtain market rates for services that are likely to exceed $100 million (excluding material costs) (RES PIR-Iccon/TPT #3). Sole-sourced major contracts, as proposed by Iccon/TPT, are not likely to provide the best value for ratepayers.

(vi) Risk Sharing: Iccon/TPT has submitted a conceptual and traditional rate-based proposal, potentially including a fixed construction price component, that does not include a risk-sharing component for cost overruns.

(vii) Adjustment to 2012 Dollars: As requested in OEB-All 26, Iccon/TPT has reduced its construction cost estimate by $37.2 million to eliminate the effects of inflation. Iccon/TPT has not provided any supporting calculations in this regard.

(viii) Route: Iccon/TPT has identified potential route deviations from the Reference Route but has made no estimate of the cost implications.

(ix) Mining and Timber Rights: Iccon/TPT does not appear to have considered the accommodation of parties with mining and timber rights on Crown lands (RES PIR-Iccon/TPT #2).

(x) Constructability and Access: It does not appear that Iccon/TPT has assessed constructability or access requirements.

EWT LP

194. EWT's application is relatively complete, but is, nonetheless, lacking in several key areas. EWT's alternate design scenarios have not addressed the suitability of the proposals for the prevailing terrain, climate and ground conditions. Importantly, its alternate designs are not supported by an IESO feasibility study, as required by the Board's Filing Requirements. Notable deficiencies or shortcomings, relative to RES Canada Transmission's application and/or other applications, are described below.

(i) Schedule: Although EWT has proposed a relatively conservative development schedule of 32 months (which might be expedited to 23 months), it has proposed very aggressive LTC and construction schedules of 9 and 24 months, respectively, in order to achieve a November 2018 COD (Table I-1).

(ii) Cost Estimate: In its interrogatory responses, EWT added $63 million for contingency to its original, non-binding Application cost *estimate* (OEB All-26 and 28). In consequence, EWT's new estimated, non-binding total line costs are uncompetitive and $70.7 million higher than RES Transmission's *binding* cost proposal as shown in Figure I-1.

(iii) Cost Accuracy: By EWT's own admission, its construction cost estimates are not accurate and are characterized by a "high degree of uncertainty"; and the "overall accuracy of construction budget estimate is ±22%" (EWT-Exhibit B-8.7).

(iv) Alternate Designs: EWT has raised the possibility of deviating from the OEB's single-loop galloping criteria and has proposed that an alternate design, involving guyed cross-rope suspension ("**CRS**") structures, be studied, subsequent to designation. EWT's application is largely focused on the Reference Option but does identify some alternatives that "can offer considerable cost-savings and other benefits if the development phase determines them to be preferable to the Reference Option" (EWT-Exhibit B-6.5). While EWT provided a construction cost breakdown only for the Reference Design in its application (EWT-Exhibit B-8), in response to OEB All-26, EWT has now provided a construction cost breakdown for its guyed single-circuit CRS design alternative (labelled "ALT-B"), that differs by $39 million from the total construction cost estimate in its application (EWT-Exhibit B-6).

(v) Design – Guyed Structures: The guyed structures tentatively proposed for study by EWT are not appropriate for the EWTL because of issues related to: durability in extreme climates (particularly the increased risk of cascading tower failure); the difficulty managing vegetation around guyed structures; the need for wider rights-of-way; higher annual operation and maintenance costs; increased risk to

bird and bat species; and the risk to recreational users of transmission right-of-way (e.g., snowmobilers) (discussed above at paragraphs 87-90).

(vi) Unequal Aboriginal Plans: EWT is the only applicant that has differentiated between different classes of aboriginal parties (i.e., "participating" vs. "non-participating"), thereby compromising equitable participation and consultation for First Nation and Métis communities (EWT-5 to 14). Further, EWT has pre-selected six "participating" parties before commencing consultation activities involving all of the 18 communities identified in the Ministry of Energy's May 31, 2011 letter to the OPA and, potentially, other affected communities.

A participation plan that discriminates among affected First Nation and Métis communities, on any basis, is susceptible to legal challenge under the *Canadian Charter of Rights and Freedoms* and otherwise. In the event that the Board were to accept such a plan, there is a real and significant risk of legal challenge. This could, in turn, delay the development and construction of the EWTL, possibly for years. This is especially concerning in light of recent court decisions that have had the effect of expanding Métis rights.[89]

(vii) Use of Hydro One Land Rights: EWT's answer to interrogatory EWT-10 is unresponsive and suggests that existing EWTL land rights that are controlled by Hydro One may be used.

(viii) Risk Sharing: EWT has made a conceptual, non-binding proposal that does not include a cost overrun risk-sharing component.

(ix) Control Actions and Costs: EWT's response to interrogatory EWT-5 speculates on the availability and cost of control actions for a specific N-1-1 contingency.

[89] See, for example, *Daniels v. Canada*, 2013 FC 6.

RES Transmission's response to this issue is set out above in the "Design" section (paragraphs 95-101) and the "Costs" section (paragraphs 131-135).

(x) Interconnection and Substation Costs for Alternate Design: EWT estimates the required incremental substation costs for both of its single circuit proposals (using conventional structures and CRS structures) at $8 million, but does not identify what station equipment and work underpin this estimate. Section 8.8 of the Board's Filing Requirements require applicants proposing designs not based on the Reference Option to provide "evidence as to the difference in cost (positive or negative) of work required at the transformer stations to which the line connects, and at any other location identified by the IESO." *[emphasis added]*

(xi) IESO Feasibility Study for Alternate Designs: Notwithstanding section 6.4 of the Filing Requirements, EWT did not file an IESO feasibility study for either of its two alternate single circuit designs. Instead, it speculated on the IESO's possible views on the electrical equivalence between EWT's two single circuit proposals and the single circuit alternatives studied by the IESO in their feasibility study for the Reference Case.

(xii) Recovery of Pre-Designation Costs: It is unclear whether EWT intends to seek recovery of its $1.5 million of pre-designation expenditures and whether this amount is included or excluded in its development cost estimate (RES PIR-EWT #5).

(xiii) Route: EWT has identified potential deviations from the Reference Route but has provided no estimate of the associated costs.

(xiv) Mining and Timber Rights: EWT does not appear to have considered the accommodation of parties with mining and timber rights on Crown lands.

(xv) Constructability and Access: It does not appear that EWT has assessed constructability or access requirements.

UCT (NextBridge)

195. UCT has very limited detail. UCT has not properly addressed the issue of whether its design proposals are suitable for the terrain, climate and ground conditions of the EWTL. Moreover, its alternate designs are not supported by an IESO feasibility study, as required by the Board's Filing Requirements. Notable deficiencies or shortcomings, relative to RES Canada Transmission's application and/or other applications, are described below.

(i) Unrealistic Schedule: UCT's project schedule is the least realistic of all applicants primarily because it proposes a 2017 in-service date, compared with the 2018 and 2019 proposals of other applicants. UCT proposes a 16-month development schedule (Table I-1) that does not provide sufficient time to properly undertake the consultation, environmental, engineering design, and land valuation activities required for a LTC application. UCT provides no evidence to support its assertion that it has allocated sufficient time to complete pre-construction permitting activities (UCT-7). Moreover, UCT proposes a 7 month LTC proceeding; precedent suggests that this is unrealistic for a project of the magnitude of the EWTL.

(ii) Cost Estimates: UCT provides cost estimates for reference and alternate designs that are unsupported by any back-up material. UCT contends that its construction "budget is centered at the mid-point of the range of costs" but does not discuss what that range is (UCT-Exhibit B-8.7). The *estimated* cost of UCT's reference design is $17.4 million higher than RES Transmission's *binding* Firm Bid for the Preferred Design (Figure I-1 and Table I-2). Although the *estimated* cost of UCT's unconventional alternate design is $13.7 million less than RES

Transmission's *binding* Firm Bid for the Preferred Design (Figure I-1), it should be disregarded for the reasons set out below in (iii) and (iv). Finally, both UCT cost estimates specifically exclude the costs of First Nation and Métis participation (OEB All-26).

(iii) Alternate Design: Although guyed single circuit structures are used in limited circumstances in North America, UCT's has proposed a double circuit guyed structure design that does not appear to have been used anywhere in North America. Interestingly, all of the guyed structure examples provided by UCT, in response to interrogatory OEB All-15, involve single circuit structures.

(iv) Design – Guyed Structures: The guyed structures proposed by UCT are not appropriate for the EWTL due to concerns regarding: durability in extreme climates (particularly the increased risk of cascading tower failure); the difficulty in managing vegetation around guyed structures; the need for wider rights-of-way; higher annual operation and maintenance costs; increased risk to bird and bat species; and the risk to recreational users of transmission right-of-way (e.g., snowmobilers).

RES Transmission also notes that the guyed structures proposed by UCT will materially vary the electrical performance of the EWTL, in terms of reactance, resistance, line susceptance and line charging, relative to the IESO feasibility study for the Reference Case. The scope of these electrical performance deviations was provided by UCT in response to interrogatories OEB All-22 and 25. The electrical performance of the guyed structure designs proposed by UCT is unproven because it has not been assessed in an IESO feasibly, study as required by s. 6.4 of the Board's Filing Requirements. It is unknown at this time whether the guyed structure designs proposed by UCT, meet the transfer

capacity, reliability or performance requirements of the OEB, OPA, IESO, NERC or NPCC.

(v) Adjustment to 2012 Dollars: As requested in interrogatory OEB All-26, UCT has reduced its project cost estimates by $19.4 and $21.1 million (for its two proposed designs) by eliminating the effects of inflation. UCT has not provided any calculations to support these results.

(vi) Aboriginal Plans: UCT's proposed First Nation and Métis participation plan does not appear to offer equity participation opportunities to First Nation and Métis communities. UCT's Aboriginal Advisement Team appears to have little or no relevant, Ontario experience.

(vii) Risk Sharing: UCT has submitted a conceptual, non-binding proposal with no cost overrun risk-sharing component. It does, however, provide UCT with elevated (total project) ROEs for coming in under budget. Further, UCT "would seek to design a construct that produces a reasonable prospect for it to realize an ROE in the range of 9.5% - 9.9%". This is materially higher than the Board's current ROE of 8.93% (UCT-Exhibit A-5.4). Additional concerns about UCT's conceptual proposal are addressed in RES PIR-UCT #5 and #6.

(viii) Route: UCT has identified potential route deviations from the Reference Route but does not discuss the associated risk and cost implications. One such route deviation is located outside of the current northern boundary of the Pays Plat reserve but within the boundaries of its planned expansion. This contrasts with RES Transmission's Preliminary Preferred Route, which bypasses the expanded boundaries of the Pays Plat reserve entirely.

(ix) Permitting: UCT has not provided descriptions, costs, or timelines for the studies, fieldwork and other activities that are required as part of the Ontario

environmental assessment permitting process. The environmental assessment process in Ontario is likely to take a significant amount of time and may materially impact UTC's proposed construction and development schedule.

(x) Example Projects: The inclusion of the Texas Clean Energy Express as a representative example of a successful project is inappropriate as this is a non-regulated, private line that was apparently developed and constructed without regulatory oversight and with little public input. Additionally, it appears that premiums were paid for private land rights during this project (RES PIR-UCT #32, Attachment 1).

(xi) Mining and Timber Rights: UCT does not appear to have considered the accommodation of parties with mining and timber rights on Crown lands.

(xii) Constructability and Access: It does not appear that UCT has assessed constructability or access requirements.

EXHIBITS

Table I-1: SCHEDULE COMPARISON

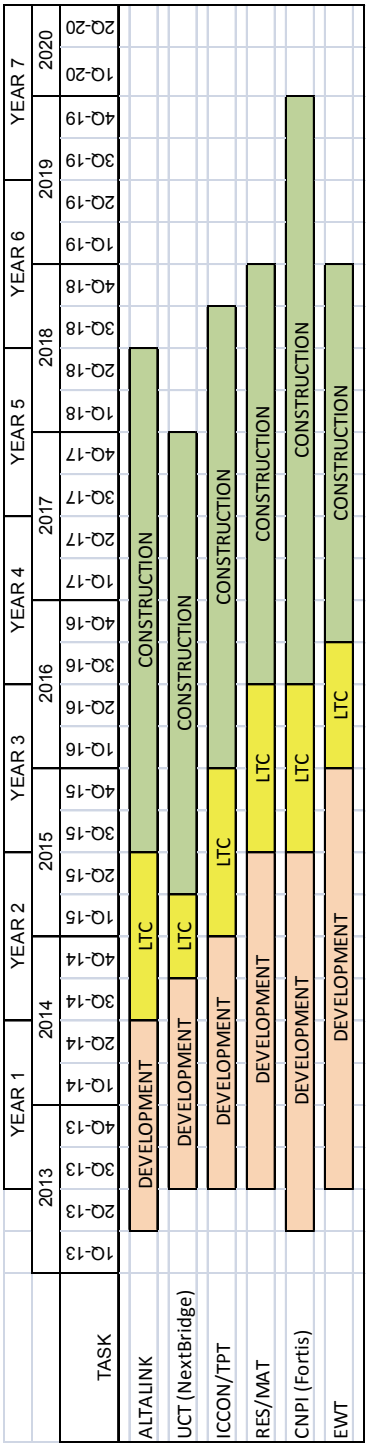
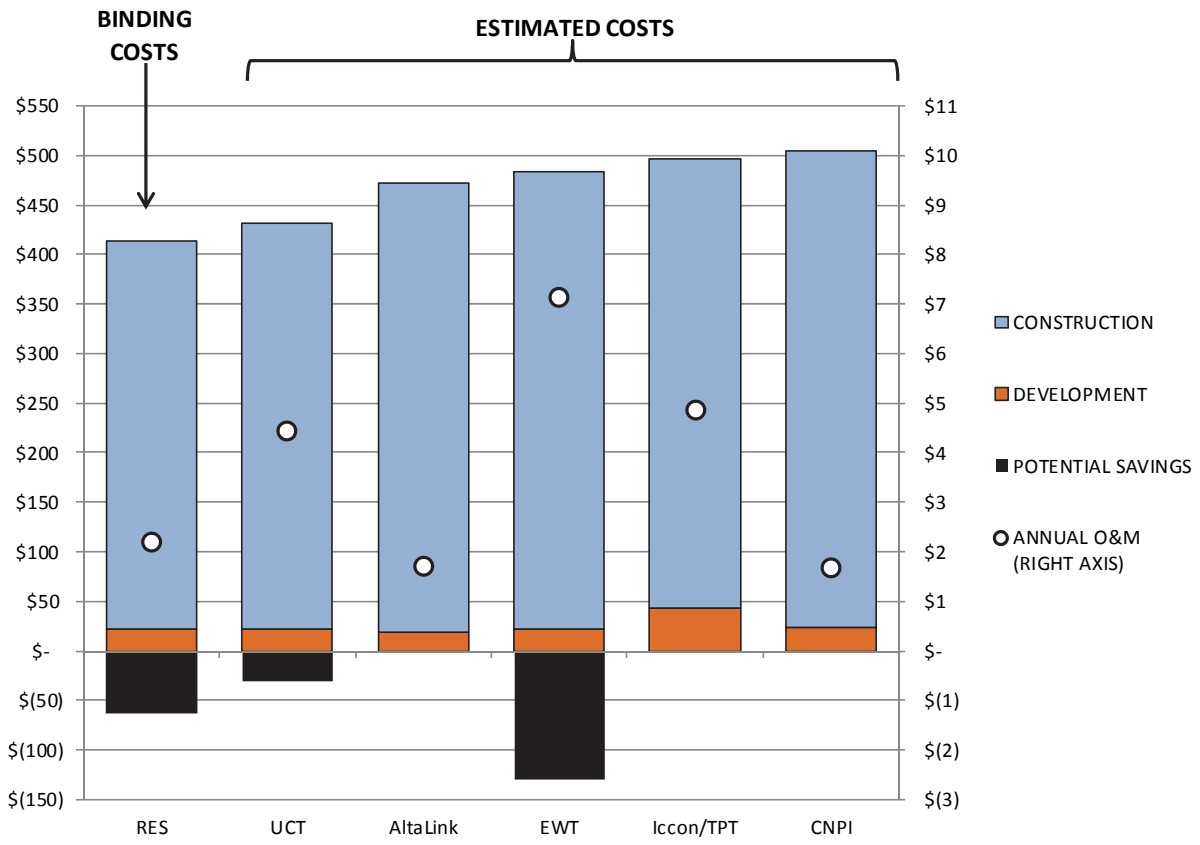


Figure I-1: LINE COST COMPARISON ($millions - $2012)

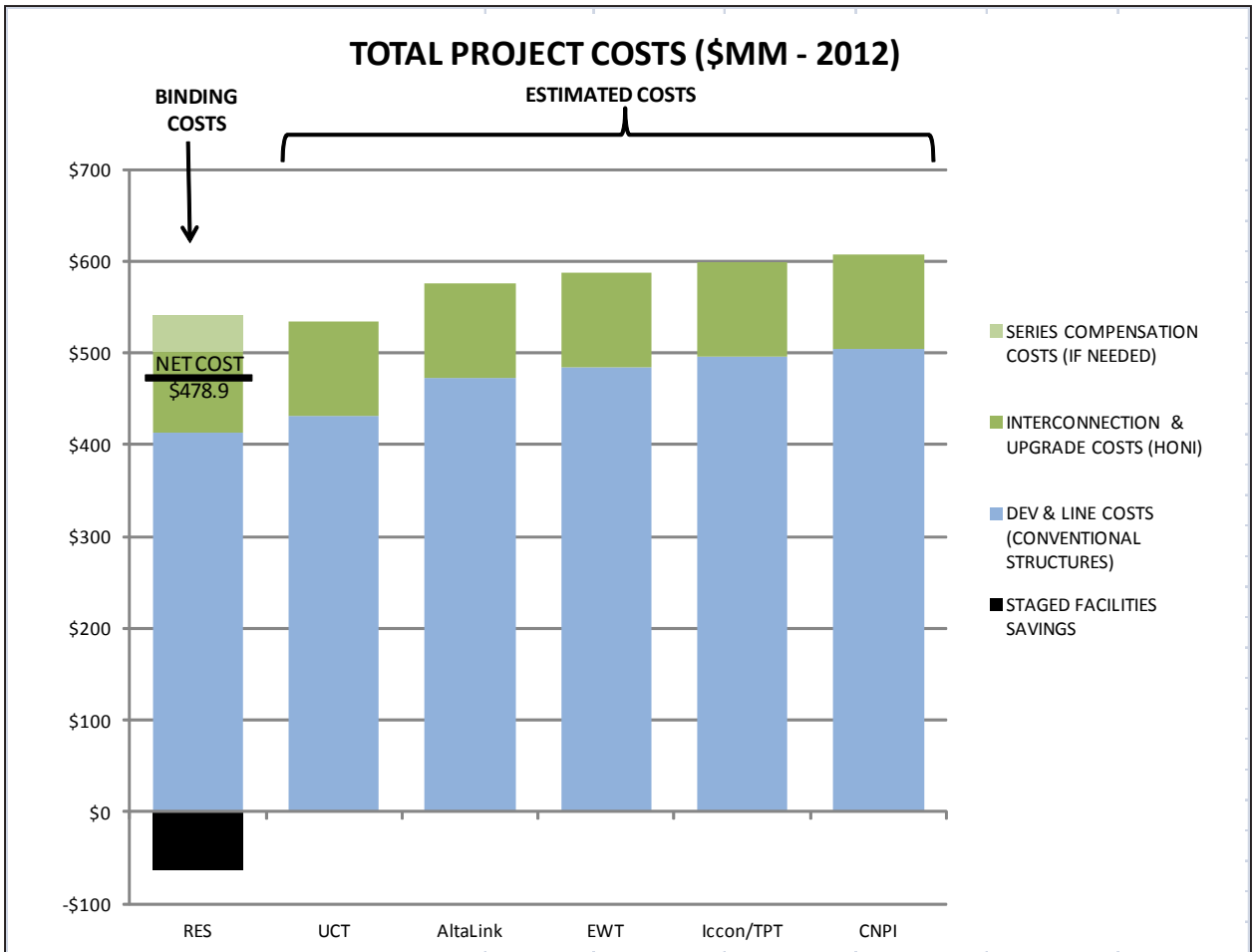


	RES	UCT	AltaLink	EWT	Iccon/TPT	CNPI
CIRCUITS	1	2	2	2	2	2
BASIS OF COSTS	BINDING	ESTIMATED	ESTIMATED	ESTIMATED	ESTIMATED	ESTIMATED
DEVELOPMENT	$21.5	$22.2	$18.1 [1]	$22.1	$43.7 [3]	$24.0
CONSTRUCTION	$391.9	$408.6	$454.1 [2]	$462.0	$452.6	$480.8
TOTAL LINE COSTS	$413.4	$430.8	$472.3	$484.1	$496.3	$504.8
COST DIFFERENTIAL	BASE	$17.4	$58.8	$70.7	$82.9	$91.4
POTENTIAL SAVINGS [4]	($62.5)	($31.1)		($130.0)		
POTENTIAL NET COST	$350.9	$399.7	$472.3	$354.1	$496.3	$504.8
ANNUAL O&M (STAND ALONE)	$2.2	$4.4	$1.7	$7.1	$4.9	$1.7

[1] Post-application/pre-designation costs and land costs were not included in AltaLink's development estimate
[2] Contingency costs were not included in AltaLink's construction estimate
[3] $30.7M incurred during development phase and $13.0M incurred during construction phase
[4] RES - Staged substation upgrades (revenue requirement); UCT - unconventional guyed structures (capital); EWT - guyed CRS structures & single-circuit (capital)

NOTE: All cost data from applicants' responses to OEB Interrogatory #26 and their original applications (cost sections)

Figure I-2: TOTAL PROJECT COST COMPARISON



	RES	UCT	AltaLink	EWT	Iccon/TPT	CNPI
DEV & LINE COSTS (CONVENTIONAL STRUCTURES)	$ 413.4	$ 430.8	$ 472.3	$ 484.1	$ 496.3	$ 504.8
INTERCONNECTION & UPGRADE COSTS (HONI)	$ 88.0	$ 103.0	$ 103.0	$ 103.0	$ 103.0	$ 103.0
SERIES COMPENSATION COSTS (IF NEEDED)	$ 40.0	$ -	$ -	$ -	$ -	$ -
STAGED FACILITIES	$ (62.5)	$ -	$ -	$ -	$ -	$ -
TOTAL PROJECT COSTS	$ 478.9	$ 533.8	$ 575.3	$ 587.1	$ 599.3	$ 607.8
Note: Only RES made estimates of HONI and Series Compensation costs						

Table I-2: ACCURACY OF COSTS COMPARISON

	RES	UCT	AltaLink	EWT	Iccon/TPT	CNPI
BASIS OF COSTS	BINDING COSTS	ESTIMATE	ESTIMATE	ESTIMATE	ESTIMATE	ESTIMATE
QUOTES	"definitive"; "firm bid amount"	"budget is centred at the mid-point of the range of costs"	"preliminary estimate"	"high degree of uncertainty"; "overall accuracy of construction budget estimate is ±22%"	"preliminary estimate"	"conceptual with a target accuracy of negative 25% to positive 50%"
CONSTRUCTION COST*	$391.9	$408.6	$454.1	$462.0	$452.6	$480.8
REFERENCE	B-1-1 & P	B Sec. 8.7	B Sec. 8	B Sec. 8.7	V1 Sec. 8	B Sec. 8.7

* From applicant responses to IR #26

Appendices

RES Transmission has prepared the following three matrices to compare the materials submitted by each applicant:

(i) a summary of Applications (entitled, AIC Appendix 1-A);

(ii) a summary of responses to interrogatories posed by the OEB to all applicants (entitled, AIC Appendix 1-B); and

(iii) a summary of responses to interrogatories posed by the OEB to individual applicants (entitled, AIC Appendix 1-C)

In these three matrices, RES Transmission has categorized the materials submitted by all applicants into three general categories, differentiated by color coding:

(i) white = no apparent issues;

(ii) orange = potentially problematic; and

(iii) yellow = possibly deficient.

No assessments were made of cost values except in those instances where costs were potentially understated or materially different from other applicants. The key topics are identified in bold in the matrix categories. These assessments are not intended to serve in the place of independent assessments made by OEB, OEB Staff, or others.

AIC Appendix 1-A: Summary of Applications

CATEGORY	SUB-CATEGORY (Key Topics in Bold)	References to OEB Documents	RES	AltaLink	EWT	UCT	CNPI	Iccon/TPT
BACKGROUND								
		1.1 - 1.8						
ORGANIZATION								
	Project Team	2.1 & 2.2						
	Experience	2.3 & 2.4						
	Pre-Selection of Major Contractors	2.2 & 4.2	NO	YES (Affiliate)	NO	NO	YES (TRC)	YES (Affiliate)
FN/M PARTICIPATION								
	Basis	3.1 - 3.3	Affected/Equal	Affected/Equal	Preferential; excludes Métis	Affected/Equal	LHATC +	Affected/Equal
	Equity	3.1 - 3.3	≤ 20%	≤ 49%	≤ 33%	None?	≤ 49%	None?
TECHNICAL CAPABILITY								
	Resources	4.1 - 4.2						
	Sample Projects	4.3						
FINANCIAL CAPACITY								
		5.1 - 5.8						
PROPOSED DESIGN								
	Description & TS Interconnections	6.1 - 6.2						
	Conformity to criteria	6.3						
	Reference Design	6.4 - 6.5						
	Alt. Design - Conductor	6.4 - 6.5	Single-Circuit	NA	Single-Circuit	Double-Circuit	NA	NA
	Alt. Design - Structures	6.4 - 6.5	Conventional	NA	Guyed CRS	Guyed	NA	NA
	Alt. Design - IESO Study	6.4 - 6.5	YES	NA	NO	NO	NA	NA
	Alt. Design - Suitability	6.4 - 6.5	YES	NA	NO	NO	NA	NA
SCHEDULE								
	Schedule Charts	7.1						
	Development (months)	7.1	24	14 (12-16)	32 (23-32)	16	27	18
	Leave to Construct (months)	7.1	12	12	9	7	12	12
	Construction (months)	7.1	30	36	24	31	36	33
	TOTAL (months)	7.1	66	48	67	54	75	63
	COD	7.1	2018	2018	2018	2017	2019	2018
	Risk Assessment	7.2 - 7.3					MARGINAL	
COSTS								
	Basis		Binding	Estimate	Estimate	Estimate	Estimate	Estimate
	Pre-Designation ($M)	8.1	$1.80 [1]	$1.80	$1.55 [1]	$1.40	$0.25 [1]	$1.50 [1]
	Development - $M	8.2 - 8.6	$21.5 [1]	$18.2 [1]	$22.1	$22.4	$24.8	$43.7 [2]
	Construction - Supporting Information	8.7						
	Construction - Reference ($M)	8.7	$476.6	$454.1 [2]	$462.0	$408.6	$480.8	$452.6
	Construction - Alt. Design ($M)	8.7 - 8.8	$391.1	NA	$332.0	$377.5	NA	NA
	Accuracy of Costs	8.7 - 8.8	Binding	"Preliminary"	"High degree of uncertainty (±22%)"	Undefined	"Conceptual (minus 25%/plus 50%)"	"Preliminary"
	Range of Construction Costs ($M)	8.7 - 8.8	$342-$438 [2]	$425-$550	NA	NA	$360-$721	NA
	Substation/interconnection costs	8.8	YES	NA	NO	NA	NA	NA
	Constructability/Access Assessment	8.8	YES	NO	NO	NO	NO	NO
	Assessment of schedule & cost risk	8.9						
	Risk-Sharing with Rate-Payers	8.11	DEFINITIVE	CONCEPTUAL	CONCEPTUAL	CONCEPTUAL	TRADITIONAL	TRADITIONAL
	O&M Costs ($M/yr)	8.12	$2.2	$1.7	$4.1-$7.1 [3]	$4.4	$1.7 [2]	$4.9
	Basis for conversion to 2012 dollars	All-IR #26						
	Modified costs from original proposal	All-IR #26 & #28			[4]	[1]	[3]	[3]
	Land acquisition costs ($M)	8.7 - 8.8 & 9.1 - 9.4	$12.5 - $13.0	$12.0	$4.0	$17.1	$16.3	$10.7
OTHER								
	Routes & Metrics	9.1 - 9.4						
	Consultation	9.2						
	Accommodation of mining/timber rights	9.2 - 9.3						
	Collaboration with OPA on needs study							
	Comprehensiveness of Proposal							
NOTES	[1]	Increased from $1.5M to $1.8M in AIC	Project Mgmt capped at $4.3	Excludes land costs	Recovered in rate base?	Eliminated $19.1-$20.9M for inflation	Recovered in rate base?	Recovered in rate base?
	[2]		Binding costs proposed	Excludes contingency	Calculations suspect		Increased from $0.974M	$30.7 in Dev. Phase
	[3]				Potential $3M reduction via HONI contract		Eliminated $45.8 AFUCD & $11.4M inflation; added $0.7M/yr O&M	Eliminated $34.3M AFUDC & $37.2M inflation
	[4]				Added $63M for contingency & eliminated $18-$28M for AFUDC			

NA	Not Applicable
	No Apparent Issues
	Potentially Problematic
	Possibly Deficient

AIC Appendix 1-B: Summary of Interrogatories to All Applicants

CATEGORY	TOPIC (Key Topics in bold)	OEB IR	RES	AltaLink	EWT	UCT	CNPI	Iccon/TPT
Organization	Organizational Structure	All-IR #1						
Organization	Dedicated PM	All-IR #2	Vaninetti	Watson	McPhee/Bettle	van Beers	Daley/Kendall	Martinez
Organization	Identification of key team members	All-IR #3						
Organization	Construction not completed	All-IR #4			Niagara reinforcement			
FN/M	**FN/M consultation/participation experience**	All-IR #5						
FN/M	**Equal FN/M participation?**	All-IR #6	YES - Affected	YES-prioritized IBAs	NO - Preferential	???	YES - Affected	???
FN/M	Affected FN/M participation?	All-IR #7	YES	YES - prioritized	YES - Preferential	YES - prioritized	NO - includes LHATC	Impacted
FN/M	Assist FN/M participation?	All-IR #8	YES	YES	NO	???	YES	NO
FN/M	Assess FN/M impacts?	All-IR #9			???			
FN/M	FN/M impact on credit rating	All-IR #10			???			???
FN/M	FN/M meeting log	All-IR #11			Only with BLP			
FN/M	**FN/M consultation equality?**	All-IR #12				???		???
FN/M	Metis consultation experience	All-IR #13						
FN/M	**Outstanding FN/M disputes?**	All-IR #14						
Design	**New design suitability to Ontario?**	All-IR #15	YES	YES	??? [1]	??? [1]	YES	YES
Design	Testing required?	All-IR #16	YES	YES	YES	YES	YES	YES
Design	Single loop galloping risk & cost	All-IR #17	Low Risk/Minor Cost	Low Risk/Minor Cost	Low Risk/Major Cost	Low Risk/Minor Cost	Low Risk/No cost estimate	Low Risk/Minor Cost
Design	Space limitations?	All-IR #18						TBD
Design	Design impacts on HONI's system?	All-IR #19					???	???
Design	Constr & O&M impacts on HONI's system?	All-IR #20						???
Design	**Single-circuit benefits**	All-IR #21	YES	NO	YES	NO	???	NO
Design	IESO reliability metrics	All-IR #22			CRS study needed			
Design	Alt. Route if >440 km	All-IR #23	409 km	NA	None >440 km	444 km	425 km	424 km
Design	250 kV operation	All-IR #24					???	
Design	Consistent with IESO modeling inputs	All-IR #25				Not Studied		
Costs	**Cost breakdown**	All-IR #26						
Costs	**Consistent with original application?**	All-IR #27	YES	NO [2]	NO [2]	YES	NO [1]	NO [1]
Costs	How were contingency amounts determined?	All-IR #28		???		???		???
Costs	O&M costs stand-alone?	All-IR #29	YES	YES	YES [3]	YES	???	YES
Operations	**HONI services assessed?**	All-IR #30	YES	NA	YES [4]	NA	NA	NA
Operations	**Modification of HONI substations assessed?**	All-IR #31	YES	NA	YES [5]	NA	NA	NA
Performance	Budget & Schedule Performance	All-IR #32		???	Bruce-Milton [6]	MATL	Mixed Results	Pipelines & Transmission [2]

		NOTES						
		[1]		Contingency excluded from Construction Estimate	Guyed CRS may not be suitable	Guyed double-circuit structures are not used in North America	Eliminated $45.8 AFUCD & $11.4M inflation; added $0.7M/yr O&M	Eliminated $34.3M AFUDC & $37.2M inflation
		[2]		$425M-$550M range updated to show specific cost of $454M	Added $63M for contingency & eliminated $18-$28M for AFUDC			List of transmission projects is unreadable
		[3]			$3M/yr potential savings if contracted to HONI			
		[4]			Inconsistent with response to IR #30			
		[5]			Calculations suspect			
		[6]			15% over budget; 1-8 month delay			

NA	Not Applicable
	No Apparent Issues
	Potentially Problematic
	Possibly Deficient

AIC Appendix 1-C: Summary of Interrogatories to Specific Applicants

CATEGORY	TOPIC (Key Topics in Bold)	OEB Specific-IR	RESPONSES
FN/M	BLP governance	EWT-1	RESPONSIVE
FN/M	**BLP exclusivity?**	EWT-2	Only for participation - expires shortly after designation
Design	When will single-circuit decision be made?	EWT-3	Nov 2013, but will need to be vetted with stakeholders
Design	Is CRS comparable to IESO single-circuit studies?	EWT-4	Yes, although different structures
Design	**Control actions/costs for single-circuit**	EWT-5	Not studied by IESO; cost calculations are suspect in RES' opinion
Design	Reconfiguration/retirement of existing lines	EWT-6	Not studied by IESO, but "qualitatively considered" by Power Engineers
Design	Costs of converting existing EWTL to 500 kV	EWT-7	10%-15% higher construction costs for 500 kV capable facilities
Design	Is 6 meter spacing sufficient between phases	EWT-8	YES
Routes	Does schedule and EA plan apply for all routes	EWT-9	YES
Land	**Use of HONI land rights & subsidization**	EWT-10	UNRESPONSIVE - Assumes new land rights.
Organizational	Orgizational structure	UCT-1	RESPONSIVE
Credit	Credit ratings for partners	UCT-2	RESPONSIVE
Performance	FP&L Customer reliability rating of 99.98%	UCT-3	RESPONSIVE
Design	16 km spacing of dead end towers	UCT-4	Internally assessed
Design	Conformance with galloping requirements	UCT-5	YES
Design	6 meter phase spacing	UCT-6	Internal experience and conformity with OEB requirements
Schedule	**Sufficient time for pre-construction permitting**	UCT-7	YES - no supporting information
Costs	25%-30% savings for alt. structures	UCT-8	NO - wrong basis of comparison; "conceptual" estimate
FN/M	**Use of OPA feed-in tariff concept**	UCT-9	FN/M adder passed through to ratepayers
Commercial	Return on CWIP	UCT-10	Alternate to AFUDC?
Commercial	**Performance-based rate-making**	UCT-11	Incentive approach with no cost overrun risk-sharing?
Organizational	Governance structure with FNs	AltaLink-1	Demonstrated experience with a FN equity participant in Alberta
FN/M	Input of FN/M on ToR for EA	AltaLink-2	None to date - will occur after designation
FN/M	Input of FN/M on participation plan	AltaLink-3	Limited
Operations	Location of control center	AltaLink-4	Calgary by AltaLink
Design	Wood vs. lattice H-frame structures	AltaLink-5	No wood proposed; suitability of H-Frame design
Design	Use of screw-pile foundations	AltaLink-6	15% of route suitable
Costs	Pre-designation costs	AltaLink-7	$1.6M for pre-bid costs
Commercial	**Cost estimate of alternative tariff**	AltaLink-8	No estimate provided; costs "may be higher or lower"
Commercial	**Target price for construction**	AltaLink-9	TBD in LTC via negotiations with ratepayer groups - target price vs. lump sum
Commercial	Proposal for target price?	AltaLink-10	TBD in LTC via negotiations with ratepayer groups - target price vs. lump sum
Commercial	**Premiums for cost-sharing for construction**	AltaLink-11	Unresponsive - theoretical: estimate 4% - 8% or 9% - 16%
Credit	Credit rating reports	Iccon/TPT-1	RESPONSIVE
FN/M	Contracting strategy	Iccon/TPT-2	Reference to TransCanada's policies
FN/M	TransCanada's protocol agreement	Iccon/TPT-3	RESPONSIVE
Schedule	**Sufficient time for pre-construction permitting**	Iccon/TPT-4	YES - no supporting information
Organizational	Fortis/CNPI roles on prior projects	CNPI-1	Fortis - yes; CNPI - no
Regulatory	Okanagan project completion report	CNPI-2	RESPONSIVE
Commercial	Credit facility	CNPI-3	Likely to be extended in 2015
FN/M	Governance for LHATC	CNPI-4	RESPONSIVE
FN/M	Variance in FN/M parties listed	CNPI-5	FN name changes
Design	Testing for modified towers	CNPI-6	Included in schedule and costs
Route	**Marathon to Wawa**	CNPI-7	Description of merits of alternate route outside of national park
Organizational	Development personnel for Gateway projects	RES-1	Internal staff supported with external consultants, where required
Organizational	Contemporaneous development with Gateway?	RES-2	Minimal overlap; extensive experience with simultaneous projects
Organizational	Role of BLM in development of Gateway projects	RES-3	Responsibilities shared by MidAmerican and BLM, per regulation
Financial	Current credit reports for MidAm & Berkshire	RES-4	RESPONSIVE
FN/M Consultation	MOU with MOE modifications	RES-5	RESPONSIVE - minor
Schedule	Appplicable to reference & preferred options?	RES-6	YES
Costs	Provide spreadsheets in Excel format	RES-7	RESPONSIVE
Design	**IESO assessment of control actions for single-circuit**	RES-8	RESPONSIVE - reference IESO letter
Design	**IESO N-1-1 Study?**	RES-9	RESPONSIVE - control actions would apply and comply with IESO criteria
Design	**Transfer capabilities for single-circuit**	RES-10	RESPONSIVE - voltage control and voltage control
Design	Ring bus layouts for single vs. double-circuit	RES-11	RESPONSIVE - equivalent or superior
Design	Placement of series capacitors	RES-12	RESPONSIVE - indicative, with final placement to be studied by IESO after designation
Commercial	**Will RES seek returns on CWIP?**	RES-13	NO
Commercial	**Incremental costs for proposed methodology**	RES-14	RESPONSIVE - $521,503 over the life of the project with assumptions provided
Commercial	**Incentive rate applications**	RES-15	RESPONSIVE - for life of project but not annually reviewed
Commercial	**Clarification of elements of proposal**	RES-16	RESPONSIVE - clarifications and examples

	No Apparent Issues
	Potentially Problematic
	Possibly Deficient

J. Conclusion

196. RES Transmission is the only applicant in this proceeding that has offered Ontarians a real alternative: a new transmission line that meets all reliability and performance requirements at a low, firm cost underpinned by a Risk Sharing Proposal, and meaningful opportunities for First Nation and Métis communities to share in the economic benefits of the Project. The other applicants offer only speculative proposals or variations of the *status quo*: conventional designs at estimated costs or, worse, ranges of estimated costs. One of these applicants – EWT – proposes to discriminate between First Nation and Métis communities and provide preferential rights of participation to communities with which it has prior relationships. Other applicants – notably UCT and Iccon/TPT – do not appear to offer any equity participation opportunities to First Nation and Métis stakeholders.

197. RES Transmission is fully committed to developing, constructing and operating the EWTL. To this end, it carried out extensive, pre-application due diligence and field investigations in order to choose a cost-effective and proven design, suited for the harsh conditions of northern Ontario. It identified a route that avoids sensitive environments and First Nation reserves. It retained a former Ontario Grand Council Chief and began to engage First Nation and Métis communities in order to identify their interests in the Project. It engaged Ontario consultants to advise on environmental, permitting, consultation and regulatory issues. It developed robust and comprehensive cost estimates in order to have the confidence to offer the Firm Bids. It considered how best to deliver economic efficiencies to ratepayers and conceived its Risk Sharing Proposal. In sum, RES Transmission did not simply dip its toe in the water. It committed to the Project.

198. The result of RES Transmission's diligence and forethought is a 1,300 page Application describing RES Transmission's proposal for the EWTL. RES Transmission's Application, however, is far more than a proposal. It is a detailed and precise blueprint for how RES

Transmission intends to develop, construct and operate the EWTL for the benefit of electricity ratepayers, First Nation and Métis stakeholders and northern Ontario communities.

199. RES Transmission's proposal is underpinned by the considerable technical and financial capabilities and experience of the RES Group and the MidAmerican Group. These two groups have:

(i) proven capabilities and experience in developing, constructing, owning and operating more than 30,000 km of high-voltage transmission lines in North America;

(ii) experience developing and constructing electricity transmission projects in the challenging environment of northern Ontario in consultation with First Nation and Métis communities;

(iii) a demonstrated ability in financing electricity infrastructure projects of the magnitude of the EWTL; and

(iv) track records of delivering large electricity infrastructure projects on time and on budget.

Under RES Transmission's proposal, Ontario stands to benefit greatly from the contributions of these two world-class energy developers.

200. In sum, RES Transmission has demonstrated that it is the best qualified applicant to develop, construct, own and operate the EWTL on a long term basis. It requests that the Board designate it as such.

ALL OF WHICH IS RESPECTFULLY SUBMITTED THIS 18TH DAY OF APRIL 2013.

(signed) Helen T. Newland

Helen T. Newland

(signed) Nalin Sahni

Nalin Sahni

Counsel to RES Canada Transmission LP