

**ONTARIO ENERGY BOARD**

**IN THE MATTER OF** the *Ontario Energy Board Act*, 1998, S.O. 1998, c. 15, Sched. B, as amended;

**AND IN THE MATTER OF** an application by Hydro One Networks Inc. for the Hawthorne to Merrivale Reconductoring Project.

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**REPLY SUBMISSIONS OF THE  
INDEPENDENT ELECTRICITY SYSTEM OPERATOR**

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## I. INTRODUCTION

1. These are the written reply submissions of the Independent Electricity System Operator (“**IESO**”) in support of the request by the applicant Hydro One Networks Inc. (“**Hydro One**”) for leave to reconductor existing transmission circuits M30A and M31A spanning between Hawthorne and Merivale Transmission stations (the “**Project**”). The IESO was granted a right to file a reply submission for the purposes of responding to the written submissions of Board staff dated March 23, 2021.

2. The IESO submits that the evidence in this proceeding clearly demonstrates the Project is needed based on the following propositions:

- (a) the M30A and M31A circuits do not meet the scenario-based standards for transmission planning that are utilized by the IESO to meet its reliability obligations;
- (b) the limitations on the M30A and M31A circuits require the IESO to implement operational measures such as load shedding to accommodate existing system load and generation utilization during peak demand conditions;
- (c) the use of operational measures adversely impacts customers and cannot be relied upon by the IESO to meet the required transmission planning standards;
- (d) the existing situation will be exacerbated as demand in the Ottawa area is projected to grow in the next 5 to 15 years;
- (e) the implementation of the Project will eliminate the IESO’s reliance on operational measures (such as load shedding) to manage flows on the M30A and M31A circuits and can accommodate future flows based on the current 20-year demand forecast;
- (f) the Project is relatively low cost, technically feasible and has short implementation timelines compared to other non-wires alternatives that were screened out of the IESO’s analysis; and
- (g) the implementation of the project will provide secondary benefits that result from the facilitation of capacity imports from Quebec.

3. The IESO believes the case for Project need is clear-cut and does not support Board's staff submission to delay approval of the Project in order to undertake further analysis of Project need and other alternatives.

## II. BACKGROUND

4. On February 1, 2019, the IESO provided a letter (the "**Hand-off Letter**") to Hydro One, requesting Hydro One to proceed with the Project to address an existing system capacity need. The Hand-off Letter explained that the Project was the IESO's preferred solution "[c]onsidering the relatively low cost, technical feasibility and short implementation timelines".<sup>1</sup>

5. Hydro One filed this application with the Board on December 2, 2020 seeking leave to construct for the Project. In accordance with the Board's *Filing Requirements for Electricity Transmission Applications*, Hydro One included the Hand-off Letter in its materials as evidence in support of need.

6. On January 14, 2021, the IESO submitted a request for intervenor status in this proceeding.<sup>2</sup> The request noted that the IESO is responsible for "maintaining reliability of the IESO-controlled grid" and has "the mandate to ensure the adequacy and efficiency of electricity supply in the province through planning of electricity supply and forecasting demand."<sup>3</sup> The Board granted the IESO intervenor status in Procedural Order No. 1 dated February 2, 2021.

7. By way of Procedural Order No. 2, the Board set March 3, 2021 as a tentative date for a Technical Conference "to clarify matters arising from the interrogatories related to Alternatives 3 and 4 only."

8. The date of the Technical Conference was moved to March 16, 2021 by Procedural Order No. 4 to accommodate Environmental Defence's request to file evidence on Alternatives 3 and 4. The stated purpose of the Technical Conference remained "to clarify matters arising from the interrogatories related to Alternatives 3 and 4 only."

9. The IESO assisted Hydro One in responding to interrogatory request from Board staff and Environmental Defence. The responses were filed on February 26, 2021. Neither Board

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<sup>1</sup> Exhibit B-3-1, Attachment 1.

<sup>2</sup> Letter from Devon Huber, Senior Manager, Regulatory Affairs dated January 14, 2021.

<sup>3</sup> The IESO is the sole entity accountable to the North American Reliability standards Corporation ("**NERC**") and the Northeast Power Coordinating Council, Inc. ("**NPCC**") for compliance with NERC and NPCC reliability standards in Ontario.

staff nor Environmental Defence expressed any objections to the adequacy of the interrogatory responses.

10. In response to a request from Environmental Defence, the IESO agreed to make a witness panel available at the Technical Conference to respond to questions related to Alternatives 3 and 4, recognizing that some areas of questioning would be outside of the scope of Hydro One.<sup>4</sup>

11. On March 15, 2021, the Board issued Procedural Order No. 6 that expanded the scope of the Technical Conference scheduled for March 16, 2021 “to include the clarification of matters arising from the interrogatories related to project need.”

12. At the Technical Conference, the IESO witness panel responded to questions from Environmental Defence and Board staff. Board staff questioned the level of detail included in the evidence submitted on need.<sup>5</sup> This was the first time in this proceeding that the IESO learned there were concerns with the sufficiency of the evidence on Project need. Despite these alleged deficiencies, Board staff did not request that the IESO produce or undertake further analysis following the Technical Conference.

### **III. SUBMISSIONS**

#### **A. The Need for the Project has been Clearly Defined by the IESO**

13. Board staff state in their written submissions that the need, and the Project’s role in addressing that need, “remain unclear” based on the evidence filed in this proceeding. In particular, Board staff state that the IESO has referenced “various drivers” of project need in its hand-off letter and the interrogatory responses.

14. Board staff’s position on need appears to be based on a fundamental misunderstanding of the evidence filed in this proceeding. The IESO has not identified “various drivers” for need; to the contrary, the IESO has consistently stated that the driver of this Project is the need to maintain the reliability of the integrated power system. This is reflected in the Hand-off Letter, the interrogatory responses in this proceeding and in the responses of the IESO witness panel to questions from Environmental Defence and Board staff at the Technical Conference.

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<sup>4</sup> Transcript of Technical Conference dated March 16, 2021 at p. 55, l. 17 to 22: “MR. ELSON [Counsel to Environmental Defence]: This has been very helpful and I would like to thank the IESO for providing a witness panel at short notice in this hearing. I think it really helped us get a better grasp on some of the issues.

<sup>5</sup> For examples, see Transcript of Technical Conference dated March 16, 2021 at p. 68, l. 26 to 28, p. 76 l. 10 to 18, p. 77, l. 10 to 18, p. 81, l. 2 to 12, p. 86, l. 7 to 12, p. 86, l. 28 to p. 87, l. 11 and p. 103, l. 12 to 20.

15. In the Hand-off Letter, the IESO described the need for the Project as follows:

Need and Alternatives

Recently, a demand forecast for the Ottawa Area was updated as part of regional planning for the Ottawa area. With this latest demand forecast and the latest information on Eastern Ontario resources including the new Napanee generating station in Kingston, load flow studies indicate that the M30/31A circuits are inadequate today to supply the demand in west Ottawa and the required bulk power transfers under summer peak conditions. These studies assumed no imports from Quebec. Furthermore, the overload will become more severe in the longer term as the demand in west Ottawa is forecast to increase by about 150 MW in the next 10 years.<sup>6</sup> [Emphasis added.]

16. No other drivers of need were identified by the IESO in the “Need and Alternatives” section of the Hand-off Letter.

17. That reliability is the driver of the need for the Project was reinforced in the responses to interrogatories. A number of the responses stated that the IESO was recommending the upgrade of the M30A and M31A circuits “to meet reliability standards and criteria”<sup>7</sup> and “the identified existing transmission reliability need”.<sup>8</sup> The IESO elaborated upon the existing transmission reliability need in response to Board Staff Interrogatory #6:

The circuits M30A and M31A are “Network Facilities” since they form a physical path between two network stations, Hawthorne TS and Merivale TS4. Combined with other “Network Facilities” in the province they form part of the transmission system shared by, and providing benefits to, all electricity users in the province. “Network Facilities” function to transmit bulk power from large generators and interconnected neighbors to supply Ontario demand.<sup>9</sup>

[...]

The M30A and M31A circuits are inadequate **today** based on existing system load and generation utilization during peak demand. This was determined by conducting load flow analysis in accordance with the planning standards identified in Exhibit I, Tab 1, 15 Schedule 1, Question 1 part a).<sup>10</sup> [Underline added; bolding in original; footnotes omitted.]

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<sup>6</sup> Exhibit B-3-1, Attachment 1.

<sup>7</sup> Exhibit I, Tab 1, Schedule 2, part (a).

<sup>8</sup> Exhibit I, Tab 1, Schedule 5, part (g). See also, Exhibit I, Tab 2, Schedule 6, part (a) and Exhibit I, Tab 2, Schedule 5, parts (a) and (d).

<sup>9</sup> Exhibit I, Tab 1, Schedule 6, part (d).

<sup>10</sup> Exhibit I, Tab 1, Schedule 6, part (e).

18. The limitations of the existing M30A and M31A circuits are already impacting customer reliability. The IESO is required to implement operational measures such as load shedding (i.e. the deliberate shutdown of loads to prevent a system failure) during peak demand periods. In response to Board Staff Interrogatory #7, the IESO detailed the operational measures that are currently being undertaken to manage flows across these circuits:

During hot summer days, the flows across the circuits M30A and M31A can exceed their thermal capability as system demand during this period is at its highest, and the ratings of the equipment are most limiting. The IESO has [had] to take control actions such as opening breakers at Merivale TS, Albion TS and Ellwood TS to shed load by configuration or shift power flows to prevent exceeding the capability of the circuit after a recognized contingency. Prior to taking these control actions, if at the time the IESO was importing energy from Quebec on the Outaouais and Beauharnois interfaces, the IESO would first reduce those imports. This implicitly would affect the ability to meet demand needs in Ontario and require re-dispatch measures elsewhere in the province.<sup>11</sup>

[Emphasis added.]

19. Under its transmission planning criteria, the IESO cannot rely upon the use of load-shedding as a means of meeting the required transmission planning standards.<sup>12</sup> The implementation of the Project will eliminate the need for such operational measures based on the current 20-year demand forecast:

The operational measures identified above are acceptable in the operating time frame, but not in the planning time frame. Planning criteria is designed to be more conservative than operating criteria to ensure that the power system is robust enough to handle many different operating conditions.<sup>13</sup>

[...]

Upon completion of the [Project] the flows are expected to remain at acceptable levels based on the current 20-year demand forecast. As such, the control actions described above will no

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<sup>11</sup> Exhibit I, Tab 1, Schedule 7, part (a).

<sup>12</sup> IESO Ontario Resource and Transmission Assessment Criteria, Issue 5.0, sections 3.4 and 7.1 specify the permissible control actions that may be considered in the IESO's transmission planning. With any one element out of service, section 7.1 states: "Planned load curtailment or load rejection, excluding voluntary demand management, is permissible only to account for local generation outages."

<sup>13</sup> Exhibit I, Tab 1, Schedule 7, part (c).

longer be required with all elements in service.<sup>14</sup> [Emphasis added.]

20. The other “various drivers” referenced in Board staff’s submissions – notably the benefits that arise from the facilitation of capacity imports from Quebec – are not being relied upon by the IESO to support the need case. The Project will facilitate access to Quebec capacity imports, which will lead to additional benefits for the integrated power system, but this is distinct from the existing reliability need. These secondary benefits were discussed in the Hand-off Letter in a separate section from the discussion of “Need and Alternatives”:

With the increased M30/31A capability required for addressing the Ottawa area system needs, another major benefit that would be derived from the HxM path uprate is the capability to access capacity imports from Quebec. The 2017 Quebec interconnection study identified that 1250-1650 MW of capacity imports from Quebec would be enabled following the reinforcement of the M30/31A circuits. Having this non-domestic capacity to participate in Ontario’s electricity markets will improve market competition resulting in lower costs for capacity overall. An additional source of capacity east of the GTA can also mitigate the impact of any transmission constraints in the GTA and enhance system resilience in the Ottawa area.<sup>15</sup> [Emphasis added.]

21. Throughout this proceeding, the IESO has been careful to distinguish between the reliability need and the secondary benefits that the Project can offer. In response to Environmental Defence Interrogatory #5, the IESO stated that the secondary benefits are not required to substantiate need:

The [Project] is needed to address reliability requirements. Increased capacity imports are only a secondary benefit. As such, potential benefits arising from increased capacity imports from Quebec have not been quantified and are not required for the Project.<sup>16</sup>

22. This distinction was also captured in the following exchange during the Technical Conference between Mr. Andrew Pietrewicz (Board staff) and Ms. Megan Lund (IESO):

MR. PIETREWICZ: [...] Are you proposing to build the Hawthorne to Merivale reconductoring project to facilitate -- or as a precondition to some specific capacity import that has been arranged with Quebec?

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<sup>14</sup> Exhibit I, Tab 1, Schedule 7, part (d).

<sup>15</sup> Exhibit B-3-1, Attachment 1.

<sup>16</sup> Exhibit I, Tab 2, Schedule 5, part (d).



MS. LUND: No. The purpose of building this reinforcement is to address the reliability need we have on the system today.

MR. PIETREWICZ: Great. So just to follow up on that, it sounds like in your evidence, in your hand-off letter, and in the interrogatory responses that Quebec imports aren't the prime driver of this project, in [your] view. Right? Could you agree with that? It is not the prime driver of this project?

MS. LUND: Yes, I would agree with that.

MR. PIETREWICZ: Would you say it is more of a nice to have, or a bonus?

MS. LUND: Yes.

MR. PIETREWICZ: Why would it be a nice to have, in your view? Why would you say -- why would you raise the Quebec imports?

MS. LUND: It is a nice to have because there are, you know, upcoming capacity needs in Ontario and so imports, capacity imports are one way that could help address those long term capacity needs that we are seeing. As well like energy is being scheduled in real time and while we can always back off imports from other jurisdictions, it does create like operational issues as well that the path is so limited. So it a nice to have in that it would address those issues currently with the Quebec imports.<sup>17</sup>

23. Contrary to the submissions of Board staff, the IESO believes that the evidence submitted in this proceeding clearly identifies and articulates the existing reliability need, the Project's role in addressing that need and the secondary benefits that will result from the implementation from the Project.

#### **B. The Reliability Need has been Adequately Articulated**

24. Board staff have questioned the IESO's conclusion that the Project is needed to address an existing reliability need with respect to the M30A and M31A circuits. In support of that position, Board staff argue that the IESO did not relate the need for the project to any specific reliability criteria and failed to characterize important dimensions of the stated need, including its frequency and magnitude.

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<sup>17</sup> Transcript of Technical Conference dated March 16, 2021 at p. 65, l. 16 to p. 66, l. 16.

25. The IESO believes that the reliability need which drives this Project (including the applicable reliability criteria and standards) has been adequately characterized in the evidence presented in this proceeding. In response to Board Staff Interrogatory #1, the IESO identified the specific reliability standards and criteria that it utilizes for transmission planning:

The IESO controlled grid is planned in accordance to the following reliability standards and criteria where applicable:

- NPCC Directory #1 – “Design and Operation of the Bulk Power System”
- NERC Standard TPL-001-4 – “Transmission System Planning Performance 7 Requirements”
- IESO Ontario Resource and Transmission Assessment Criteria [**ORTAC**]<sup>18</sup> [Footnotes omitted.]

26. The NPCC and NERC standards set out the requirements for transmission system studies and the events that must be assessed to ensure compliance with these standards. The purpose of the ORTAC is to “identify the technical criteria for use in the assessments of the *adequacy and security* of the *IESO-controlled grid* and to clarify how the *IESO* will apply the relevant *NPCC* and *NERC* standards and implement them within Ontario.”<sup>19</sup>

27. Section 2.6 of ORTAC identifies various scenarios that are utilized by the IESO to assess reliability, including assumptions around contingency conditions, peak demand flow and generation output:

The magnitude and direction of future power flow requirements on the area studied should be determined for normal and contingency conditions. Peak, off-peak, and light load flow requirements should be considered.

With all *transmission* facilities in service (normal conditions), the schedule for generation in the receiving area should be based on the historically typical conditions. That is, for pre-contingency conditions, nuclear and run of river hydro-electric generation should be assumed at a level that is available 98% of the time. For example, on-peak conditions should be assessed with peaking hydroelectric generation plants, fossil plants and wind farms running at maximum output. Where reliability depends on local generation, sensitivity studies should be done to assess the

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<sup>18</sup> Exhibit I, Tab 1, Schedule 1, part (a).

<sup>19</sup> IESO Ontario Resource and Transmission Assessment Criteria, Issue 5.0, section 1.1.

impact of outages of local generation.<sup>20</sup> [Italics in original; underlining added.]

28. Section 2.7 of ORTAC sets out the requirements for contingency-based assessments and specifies that the system must be planned with “sufficient capability to withstand the loss of specified, representative and reasonably foreseeable contingencies” and that the application of these contingencies “should not result in any criteria violations”.<sup>21</sup> Section 2.8 directs the IESO to assess reliability in study conditions where “system load and generation conditions under which the contingencies are assumed to occur are chosen on a deterministic basis to represent the reasonable worst case scenario.”<sup>22</sup>

29. Section 7.1 of ORTAC specifies the required performance of the system both before and after a contingency that results in the loss of a single element:

With any one element out of service, equipment loading must be within applicable long-term emergency ratings, voltages must be within applicable emergency ranges, and transfers must be within applicable normal condition stability limits. Planned load curtailment or load rejection, excluding voluntary demand management, is permissible only to account for local generation outages.<sup>23</sup> [Emphasis added; footnotes omitted.]

30. In practical terms, ORTAC requires the system be planned to accommodate a variety of scenarios, including the simultaneous occurrence of a contingency event (i.e. extreme weather) that results in the loss of a single element (i.e. the M30A or M31A circuit) under peak demand conditions. In response to Board Staff Interrogatory #1, the IESO explained that the existing flows across the M30A and M31A circuits do not meet these reliability criteria:

The reliability standards and criteria listed above stipulate the planning events required to be assessed (e.g., system’s initial condition and system contingencies) and the system performance required to be met. The IESO’s planning studies indicate that the power flows across the existing 230 kV circuits M30A and M31A exceed their transfer capability (e.g., exceed their long-term emergency ampacity ratings after a contingency) today based on extreme weather forecasts. Generation located in eastern Ontario was dispatched as the IESO would expect it to be dispatched to

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<sup>20</sup> IESO Ontario Resource and Transmission Assessment Criteria, Issue 5.0, section 2.6. The application of section 2.6 and the related assumptions for generation dispatch was the subject of discussion at the Technical Conference: Transcript of Technical Conference dated March 16, 2021 at p. 82, l. 19 to p. 85, l. 14.

<sup>21</sup> IESO Ontario Resource and Transmission Assessment Criteria, Issue 5.0, section 2.7.

<sup>22</sup> IESO Ontario Resource and Transmission Assessment Criteria, Issue 5.0, section 2.8. Recent events in the state of Texas demonstrate the importance of maintaining system reliability when times of peak demand and extreme weather coincide with contingency events.

<sup>23</sup> IESO Ontario Resource and Transmission Assessment Criteria, Issue 5.0, section 7.1.

help meet demand during peak hours, which is typically how the IESO carries out its planning studies.<sup>24</sup> [Emphasis added; footnotes omitted.]

31. In response to Board Staff Interrogatory #6, the IESO confirmed that, based on the required planning criteria identified above, “load flow studies have confirmed the capability of the path is already exceeded” and that “[l]oad in Ottawa and in the province overall is forecast to continue to increase over the next 5-through-15-year timeframe, which will increase the need for the [Project].”<sup>25</sup>

32. The IESO further explained in the interrogatory responses that, contrary to the submissions of Board staff, the frequency and magnitude of the exceedances are not relevant considerations in determining need under the applicable reliability criteria. In response to Board Staff Interrogatory #1, the IESO stated that system performance must meet the required reliability standards in the specific planning scenarios required by ORTAC and are not probabilistic in nature:

[The] applicable reliability standards and criteria stipulate the planning events required to be assessed and the system performance required to be met. The reliability standards and criteria take a deterministic rather than a probabilistic approach to planning the transmission system. For this reason, the statistical frequency and or magnitude of power transfer capability insufficiency across circuits M30A and M31A is only meaningful when assessing the economic benefits of the Hawthorne to Merivale Reconductoring (HMR) project and not for assessing the reliability of the transmission system and hence was not determined.<sup>26</sup> [Emphasis added.]

33. The IESO elaborated upon its reliability need analysis under questioning from Board staff during the Technical Conference. Mr. Ahmed Maria (IESO) explained that ORTAC identifies specific scenarios the IESO must meet, regardless of the magnitude or frequency of the exceedance in such scenarios:

MR. MARIA: The way we generally plan the system is that the standards specify very specific scenarios we need to look at and plan for. That scenario is described in [ORTAC], and we made some reference to [ORTAC] section 2.6. It specifies the

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<sup>24</sup> Exhibit I, Tab 1, Schedule 1, part (a). The specific limiting phenomena in this case is a thermal violation on the M30A circuit after a contingency that removes circuit M31A from service and *vice versa*. The long-term emergency ratings of circuit M30A (1800 amps) is first reached at a west Ottawa load levels of 600 MW with eastern resources dispatched as required by section 2.6 of ORTAC. As detailed elsewhere in this submission, this load level was exceeded in 2020 without any adjustment for extreme weather conditions.

<sup>25</sup> Exhibit I, Tab 1, Schedule 6, part (f). Emphasis added.

<sup>26</sup> Exhibit I, Tab 1, Schedule 1, part (b).

very specific scenarios we need to plan for. We simulate that scenario and we look to see whether or not any equipment is being overloaded, or any other concerns. And if there are, then we recommend solutions to address it.

The standards do not require us to look at frequency of need. The only time we would look at frequency and duration and those kinds of quantities is if we're considering a non-wire alternative.

However, because of the magnitude of this need and the nature of this need being a bulk system need, we ruled out the non-wire alternatives as a potential solution here. So there was no reason to look at frequency. All we needed to do was look at this particular scenario prescribed by the standards, and recommend a solution on that basis. That's why we didn't look at frequency.<sup>27</sup>

34. Mr. Maria reiterated this point later in his testimony, emphasizing that the IESO's transmission planning scenarios are not based on frequency:

MR. MARIA: ... the way our planning standards are written, frequency is not -- does not make a need more or less important or more or less real. The way the planning standards are written, it is scenario-based, so we basically plan according to meet very specific scenarios, and we have to meet that scenario regardless of whether or not that scenario occurs one in ten years or one in 20 years or one in 30 years. We have to plan the system to meet that specific scenario. That is how our planning standards are [written].

It might be that is appropriate because -- in my view that is appropriate because the -- when we plan our system we need to be conservative to give operators more options to deal with events that are unexpected, for example a tornado in Ottawa, flooding in Toronto. Like, we need to give them options to deal with these things, which is why planning is generally a bit more conservative, very scenario-focused, and these scenarios tend to be very unlikely.

And so frequency is not really -- doesn't make a scenario -- doesn't make any more or less real or important. We have to meet them. We have no choice. The only time that frequency or duration is important in planning is when we are looking at options to meet the need, specifically the non-wire options.

And so in this particular case we have determined that non-wire options technically cannot meet the need, which is why

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<sup>27</sup> Transcript of Technical Conference dated March 16, 2021 at p. 90, l. 3 to 22.

having any information on the frequency of this need would not change our preferred recommendation or the alternative that we are recommending.<sup>28</sup> [Emphasis added.]

35. Ms. Lund explained in her testimony that, while the reliability need for the Project was based on peak demand under extreme weather conditions consistent with what is prescribed by the ORTAC, the IESO's past use of control actions on the M30A and M31A circuits demonstrates that the problem is both severe and frequent enough to be having a "real impact" on customer reliability:

MR. PIETREWICZ: Can you describe to us the nature of that reliability need?

MS. LUND: Sure. Based on peak demand under extreme weather conditions, as well as the generation dispatch that we are assuming according to [ORTAC] 2.6. When I lose one of the Hawthorne to Merivale circuits, I see a thermal exceedance according to long term emergency rating on the remaining Hawthorne to Merivale circuit.

MR. PIETREWICZ: Again you didn't measure how much exceedance it is, or how often it is? It could have been one hour, and that is enough for you, according to the rules?

MS. LUND: Other than the snapshot that that we looked [at], we did not further assess the magnitude of it. That snapshot would have given us one sense of the magnitude on day one set of conditions.

[MR. PIETREWICZ]: With all the assumptions that are relied on in terms of resource dispatch and the availability, et cetera. Is this a congestion problem or a reliability problem?

MS. LUND: This is a reliability problem because when we are looking at assessing this versus our criteria, we are seeing a reliability need on the path.

MR. PIETREWICZ: On that path.

MS. LUND: This can kind of be demonstrated as well as how we starting to see these issues occurring in a real time, which speaks to the probability and the frequency of its occurrence. And it is having a real impact where we are taking actions that are decreasing reliability to load in these instances as well.<sup>29</sup>

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<sup>28</sup> Transcript of Technical Conference dated March 16, 2021 at p. 92, l. 17 to p. 93, l. 18.

<sup>29</sup> Transcript of Technical Conference dated March 16, 2021 at p. 99, l. 19 to p. 100, l. 20.

36. Based on the evidence cited above, the IESO strongly believes that the reliability need for the Project has been adequately articulated and explained. This need arises from violations of transmission planning criteria and, as detailed above, customer reliability is already being adversely impacted by operational measures such as load shedding. The situation is projected to deteriorate in the “next 5-through-15-year timeframe” unless the Project is implemented. It is unclear to the IESO what further justification for Project need is required in these circumstances.

**C. Non-Wires Alternatives were Considered by the IESO**

37. In their submission, Board staff assert that “[n]on-wires options were not considered [by the IESO].” With respect, this assertion is incorrect and unfairly characterizes the evidence of the IESO in this proceeding.

38. Board Staff Interrogatory #2 specifically asked if the IESO compared “the suitability, costs and benefits on non-wires alternatives ... for achieving similar outcomes” and requested the IESO comment on the matter. In response, the IESO indicated that it had considered non-wires alternatives, but recommended a transmission wires solution as the most cost-effective solution to meet the identified reliability need:

When considering non-wires alternatives, the IESO looks at a number of factors that can include but are not limited to: timing of need, size of need, community support and siting. Considering these factors and the relatively low cost of the transmission wires solution, a transmission wires solution was recommended to address the reliability need. There are no distribution alternatives.<sup>30</sup> [Emphasis added.]

39. The IESO witness panel elaborated upon the analysis of non-wires undertaken by the IESO at the Technical Conference. In response to questioning from Board staff, the IESO explained that non-wires alternatives had been “screened out” as feasible alternatives based on the size and timing of the need and cost effectiveness:

MR. PIETREWICZ: [...] Do the studies referenced in this evidence in your response, these IESO planning studies, do they include or assume any of the wires or non-wires alternatives to the Hawthorne-Merivale reconducting project in the context of supplying west Ottawa, or are they just not there?

MS. LUND: Alternatives were screened out for the basis of this need. Typically when we look at the feasibility of non-wires

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<sup>30</sup> Exhibit I, Tab 1, Schedule 2, part (c).

alternatives, we look at the timing and the magnitude of the need, and if they are appropriate to a resource or energy efficiency type solution, or I guess operational measures if those are options in some cases. And in this specific instance, due to both the sizing and the timing of the need as well as the low cost of the preferred wires alternatives further investigation of non-wires alternatives was not undertaken.<sup>31</sup> [Emphasis added.]

40. Because non-wires alternatives were screened out as being incapable of meeting the identified reliability need, the IESO did not undertake a cost-benefit analysis of overall system costs that included non-wires alternatives.<sup>32</sup> The IESO witness panel stressed that this did not mean that non-wires were not considered, but rather that they did not warrant that level of detailed analysis because it was obvious they would not meet the identified reliability need and would “cost way more”<sup>33</sup> than the available transmission solutions:

MS. LUND: So in this instance what we did was compare a number of alternatives on a cost basis that can meet the need identified for these facilities. What we didn't do due to the low cost of the reinforcement option that we sometimes do in other instances is, especially when we're comparing to a generation alternative, is look more holistically at how the system overall costs would compare between different alternatives where those costs might be significant to the cost comparison between options, but since that wasn't the case for these facilities the cost analysis was limited to the capital cost of the options.

MR. PIETREWICZ: Thank you. So this was too low cost of a project for you. This wasn't worth doing that kind of analysis for you, was it? Is that right?

MS. LUND: Yes, so essentially that analysis wouldn't have changed the outcome of what was the more preferred alternative, and since -- yeah.

MR. PIETREWICZ: That is very helpful. Thank you. I am sorry to interrupt.

Is it typical for the IESO to not conduct a cost-benefit analysis for investments that are recommended? Is it typical?

MR. MARIA: Let me just add one thing to Megan's response. I think -- so what we do is we identify a need and then

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<sup>31</sup> Transcript of Technical Conference dated March 16, 2021 at p. 87, l. 20 to p. 88, l. 6.

<sup>32</sup> Exhibit I, Tab 1, Schedule 2, part (a) and Exhibit I, Tab 1, Schedule 3, part (d).

<sup>33</sup> The *Ottawa Sub-Region: Integrated Regional Resource Plan – Appendices dated March 4, 2020* (referenced by the IESO in response to Board Staff Interrogatory #6 (Exhibit I, Tab 1, Schedule 6, part (c))) identified a natural gas-fired simple cycle gas turbine facility as the lowest-cost resource alternative to transmission reinforcements. The capital cost for facility was estimated to be \$1,445/kW, which multiplied by the 305 MW need satisfied by the Project results in a total capital cost of approximately \$440 million for an asset with a shorter life than the proposed transmission solution.



we look at different options for addressing the need and we look at the cost of those options. We identify reliability need, we look at the different options for addressing that reliability need, and we typically recommend the lowest cost option. So that is what we did in this case. Like, we looked at -- there were many different transmission options to address this need, and ultimately this \$20 million investment was the lowest cost, which is why we recommended it.

What Megan said is we didn't look at generation options, because we knew that those options are going to cost way more than 20 million. So it's not that we didn't do a sufficient economic cost-benefit -- cost analysis. We did enough analysis to conclude that this is the lowest cost option to meet the reliability need.

MR. PIETREWICZ: Fantastic. Thank you. And so you have anticipated my next question, and I think you have confirmed it, but perhaps I can clarify. So is it true that the IESO as the planner, when you do planning and you identify some sort of power system investment need, is it true that you assess options for addressing that need?

MS. LUND: Yes, that is true.

MR. PIETREWICZ: Might the various ways of addressing a given need generally involve some combination or subset of wires and non-wires alternatives.

MS. LUND: Yes, there are situations where integrated options make sense.

[...]

MR. PIETREWICZ: Okay. But as it says in the interrogatory response here where you say you did not complete a cost benefit analysis, you just didn't do that in this case. Right?

MS. LUND: We undertook an economic analysis and I think what would be meant by a cost benefit analysis here is if we undertook to quantify like the system benefits of the different reinforcement options, which wasn't done in this case, again due to their materiality on the overall decision that had to be made.<sup>34</sup>

[Emphasis added.]

41. It is inaccurate for Board staff to state that non-wires were not considered by the IESO – as the evidence above clearly demonstrates, the IESO did consider non-wires alternatives and screened them out as infeasible and not warranting further consideration. The IESO is not

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<sup>34</sup> Transcript of Technical Conference dated March 16, 2021 at p. 60, l. 10 to p. 62, l. 25.

aware of, and no party in this proceeding has identified, a possible non-wires alternative that could feasibility meet the existing transmission reliability need identified by the IESO in a cost-effective manner.

#### IV. ORDER REQUESTED

42. The IESO requests that the Board find that need for the Project has been established.

43. In their submission, Board staff recommend that the Board withhold full approval of the Project budget or put the proceeding in abeyance until the IESO completes further analysis of non-wires alternatives. In practice, this would mean delaying action that is needed to address an existing need that is adversely impacting customer reliability in order to undertake a purely theoretical cost-benefit analysis of non-wires alternatives that have already been screened out as infeasible. There is no evidence that suggests this exercise would alter the existing preferred outcome. For these reasons, the IESO cannot agree with or support Board staff's recommendation to undertake this additional work.

44. The IESO takes no position on other matters raised in this proceeding.

ALL OF WHICH IS RESPECTFULLY SUBMITTED this 30<sup>th</sup> day of March 2021.



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Patrick Duffy  
Stikeman Elliott LLP