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February 28, 2013

BY COURIER (2 COPIES) AND EMAIL

Ms. Kirsten Walli
Board Secretary
Ontario Energy Board
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Dear Ms. Walli:

Re: Environmental Defence – Written Submissions
EB-2012-0064 – Toronto Hydro-Electric System Ltd ("THESL") 2012-2014 Rates

Enclosed please find a copy of the Submissions of Environmental Defence in the above matter. We are providing these written submissions, in addition to making oral submissions, so that our oral presentation can be completed within the allotted time and to ensure that the various references to the evidence are easily accessible by the Board.

The enclosed submissions make reference to the Environmental Defence Cross-Examination Reference Book as this collates a significant portion of the evidence relevant to our submissions. We therefore ask that copies of this reference book be put before the Board members for the oral submissions scheduled for tomorrow.

Yours truly,

Kent Elson

cc: Applicant and Intervenors

K9.1

EB-2012-0064

ONTARIO ENERGY BOARD

IN THE MATTER OF the Ontario Energy Board Act 1998, S.O. 1998, c.15, (Schedule B);

AND IN THE MATTER OF an application by Toronto Hydro-Electric System Limited for an order approving just and reasonable rates and other charges for electricity distribution to be effective June 1, 2012, May 1, 2013 and May 1, 2014.

SUBMISSIONS OF ENVIRONMENTAL DEFENCE

February 28, 2013

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OVERVIEW AND RELIEF REQUESTED

1. Toronto Hydro-Electric System Ltd. ("THESL") is seeking approval for the construction of the Bremner Transformer Station ("TS"). The total cost of the project would be approximately $272 million, which entails a very substantial rate increase for THESL's customers of approximately $25 million, or 4% per year.[1] Environmental Defence submits that THESL has not provided sufficient evidence to establish that the Bremner Project is necessary or the most cost-effective option to meet downtown Toronto's electricity needs.

2. THESL has identified the following needs in downtown Toronto:

   a. Providing back-up to the Windsor Transformer Station while its obsolete switchgear equipment is replaced;

   b. Connecting new loads in the Windsor TS service area; and

   c. Meeting the electricity needs of existing or new buildings in downtown Toronto.

3. However, THESL has not adequately assessed or provided evidence on alternative methods of meeting these needs, including feeder ties to other stations, increased conservation and demand management ("CDM"), and increased distributed generation ("DG"). THESL also has not assessed or weighed the significant *benefits* of those alternatives, including increased security of supply and significant cost savings.

4. In addition, THESL's evidence regarding the needs in downtown Toronto is based on a highly flawed load forecast that "double counts" the impact of new buildings and fails to incorporate key factors such as anticipated electricity price increases, incremental small-scale DG projects, incremental CDM beyond 2014, new provincial codes and standards, time-of-use rates, demand response, and the 19 initiatives discussed in the report by Bob Bach.

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[1] Transcript Vol. 7, p. 24, ln. 24 to p. 25, ln. 16.

5. Environmental Defence respectfully requests that the Board deny THESL's application with respect to the Bremner TS.

APPLICATION REQUIREMENTS RE ASSESSMENTS OF ALTERNATIVES

6. THESL has the burden to provide sufficient and comprehensive evidence to establish that the Bremner TS project is the most cost-effective option. This burden flows from section 78(8) *Ontario Energy Board Act* (which states that "the burden of proof is on the applicant").

7. *Chapter 3 of the Filing Requirements for Transmission and Distribution Applications* states that that capital projects *must* satisfy the "prudence" requirement:

> The amounts to be incurred must be prudent. This means that the distributor's decision to incur the amounts must represent **the most cost-effective option** (not necessarily least initial cost) for ratepayers. (emphasis added)[2]

8. The filing requirements further state that "a distributor requesting relief for incremental capital during the IRM3 plan term must include **comprehensive evidence** to support the claimed need…" (emphasis added).[3]

9. In this proceeding, the assessment of cost-effectiveness and alternatives is referred to in issue 2.2, which reads as follows:

> 2.2 Has THESL provided **sufficient evidence** including consultant reports, business cases and **consideration of alternatives**, for the proposed capital projects to adequately justify them? (emphasis added)[4]

10. The Applicant's burden to prove its case is more than a legal technicality. It is reasonable to place the burden on the applicant as it has access to the information needed to assess and compare alternatives and it is the applicant that is seeking increased rates.

ASSESSMENT OF NEED FOR BREMNER TS

11. THESL retained Navigant Consulting Inc. to "investigate solutions to meeting the long-term electrical demand for downtown Toronto."[5] In its report, entitled *Business Case*

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[2] *Chapter 3 of the Filing Requirements for Transmission and Distribution Applications*, June 22, 2011, p. 9.
[3] *Chapter 3 of the Filing Requirements for Transmission and Distribution Applications*, June 22, 2011, p. 12.
[4] *Procedural Order No.1,* Appendix A: Approved Final Issues List, August 16, 2012.

Analysis Downtown Toronto-Electric Supply Evaluation (the "Navigant Report"), Navigant identified two major benefits of the proposed Bremner TS:

> Installation of a new station at the proposed Bremner site will provide **back-up to** the **Windsor** station to enable replacement of equipment without compromising reliability
>
> ...
>
> The downtown Toronto area will need additional station capacity by 2017. The existing five stations will serve nearly 1000 MW of critical load and cannot accommodate **new demand** without additional station capacity, either by expanding existing or adding new stations. (emphasis added)[6]

12. In his oral evidence, Jack Simpson, Director of Generation and Capacity Planning for THESL, first identified a third benefit of the Bremner project, namely, more feeder connection capacity for new buildings:

> Bremner TS will provide more **feeder connection capacity** for new buildings that are currently being constructed in the vicinity of the Windsor TS. There is no more available bus capacity at Windsor TS for new load connections, and we cannot accommodate growth that way. (emphasis added)[7]

13. These three identified "drivers" for the Bremner TS are discussed below.

Back Up for Windsor TS

14. Environmental Defence acknowledges that there is a need to replace the aging switchgear equipment at the Windsor TS and that back-up electricity supply is needed while the equipment is being replaced. However, THESL has not established that the construction of the Bremner TS is necessary or the most cost-effective option to provide back-up for the Windsor TS.

15. THESL has identified two lower cost options to provide back-up to the Windsor TS:

    a. Installing 16 feeders between Windsor TS and Strachan TS; or

    b. Installing 16 feeders between Windsor TS and Esplanade TS.

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[5] Navigant Consulting, *Business Case Analysis Downtown Toronto-Electric Supply Evaluation*, April 2012, p. 1 ("Navigant Report") (Tab 4, Schedule B17, Appendix 3) [Environmental Defence Cross-Examination Reference Book ("ED Ref. Book"), tab 3].
[6] Navigant Report, p. 29 (Tab 4, Schedule B17, Appendix 3) [ED Ref. Book, tab 3].
[7] Transcript Vol. 6, p. 87, lns. 4-8.

16. The *Business Case Analysis* prepared by Navigant Consulting (the "Navigant Report") clearly states that these are viable alternatives:

> The Strachan and Esplanade sites each have sufficient space to accommodate new transformers and feeder positions. These stations are located in areas targeted for development and are electrically close to downtown load and the Windsor station. However, a considerable amount of new underground 13.8kV feeder capacity would be needed to transfer load from Windsor to these two stations. Nonetheless, the expansion of Esplanade and Strachan should be considered as a potentially viable option for meeting capacity deficiencies in downtown Toronto. Of these stations, Esplanade is a superior near-term choice as it can accommodate more new feeders.[8]

17. According to the Navigant Report, the cost of installing 16 feeders between Windsor TS and Strachan TS and implementing the consequential station upgrades would be $55.7 million.[9] That is, the cost of this back-up option is $216.3 million lower than the total cost of the proposed Bremner TS ($272 million - $55.7 million). In addition, it is $139.3 million lower cost than the first phase of the Bremner TS project ($195 million - $55.7 million).[10]

18. According to the Navigant Report, the cost of installing 48 feeders between Windsor TS and Esplanade TS would be $146 million.[11] Assuming a linear relationship between the number of feeders and costs, the cost of installing 16 feeders between the two stations would be approximately $48.7 million. Therefore this back-up option is also much lower cost than the proposed Bremner TS.

19. According to THESL, the Bremner TS could provide back-up to the Windsor TS starting in the fourth quarter of 2014, whereas the Stachan and Esplanade options would not be in service until 2016.[12] Therefore, the key issue when comparing these three back-up options is whether it is necessary spend an extra $139.3 to $216.3 million to advance the in-service date for the back-up option by less than two years. It is Environmental Defence's submission that THESL has failed to provide any quantitative evidence or analysis to demonstrate that spending an extra $139.3 to $216.3 million to speed up the

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[8] Navigant Report, p. 18 (Tab 4, Schedule B17, Appendix 3) [ED Ref. Book, tab 3].
[9] Navigant Report, p. 19 (Tab 4, Schedule B17, Appendix 3) [ED Ref. Book, tab 3].
[10] Navigant Report, p. 21 (Tab 4, Schedule B17, Appendix 3) [ED Ref. Book, tab 3].
[11] Navigant Report, pp. 19 & 21 (Tab 4, Schedule B17, Appendix 3) [ED Ref. Book, tab 3].
[12] Navigant Report, p. 19 (Tab 4, Schedule B17, Appendix 3) [ED Ref. Book, tab 3].

in-service date for the back-up option by less than two years will provide good value for money for Toronto's electricity ratepayers.

20. In addition, there is no evidence on the public record that advancing the in-service date for the back-up option by less than two years is necessary to achieve compliance with the Independent Electricity System Operator's *Ontario Resource and Transmission Assessment Criteria* or with other reliability standards or criteria.

21. THESL has not established that the construction of the Bremner TS is either necessary or the most cost-effective option to provide back-up for the Windsor TS.

Need for New Feeder Position Connection Capacity in the Windsor TS Service Area

22. THESL's Director of Generation and Capacity Planning, Jack Simpson, states that the Bremner TS is needed to provide "more feeder connection capacity" for new buildings that are currently being constructed in the vicinity of Windsor TS.[13]

23. However, as Mr. Simpson's testimony reveals, the incremental loads in the Windsor TS area can be served at a relatively low cost by installing new feeder connections from existing transformer stations. Mr. Simpson describes this option as follows:

> Increasingly, Toronto Hydro has served new customer requests in the Windsor area from stations further afield, and that has involved incremental costs for those customers.
>
> In the year 2012 alone, approximately 37 megawatts of new feeder connections were received for Windsor TS, and 29 megawatts of these had to be diverted to Terauley TS at an incremental cost of 3.3 million[14]

24. THESL has provided no evidence to demonstrate that it is more cost-effective and beneficial to customers to build a $272 million new transformer station to avoid the need to invest $3.3 million per year on new feeder connections from existing transformer stations.

25. Furthermore, THESL has not provided sufficient evidence on the nature of this connection capacity issue, including whether there are other even lesser cost options of resolving it. It may very well be that the new connections can be just as easily served by

[13] Transcript Vol. 6, p. 82, lns. 4-8.
[14] Transcript Vol. 6, p. 88, lns. 16-19.

Strachan TS or Esplanade TS. Indeed, the Navigant report notes that these stations "are located in areas targeted for development and are electrically close to downtown load and the Windsor station."[15]

26. THESL's analysis of alternatives appears primarily in the Navigant Report. However, the Navigant Report does not squarely or comprehensively address this "connection capacity" issue. Instead, it focuses on only two drivers for the Bremner TS: replacing aging Windsor TS switchgear and load growth.[16] During cross-examination by Mr. Sheppard, Mr. Simpson acknowledged that this feeder connection capacity issue was not analyzed in the pre-filed evidence and was first raised in oral testimony. Their exchange on this topic concluded as follows:

> MR. SHEPHERD: I understand. And I'm asking: In your evidence, am I going to find those additional considerations described somewhere?
>
> Because the first time I heard of it -- and it may be just because I am not an engineer and I didn't understand -- but **the first time I heard of it was when you talked about it in oral evidence.**
>
> So can you show me where in the evidence I can look at it and say: Okay, now I understand?
>
> MR. SIMPSON: **It may not appear in the evidence.** I know that recent connection requests for Windsor through 2012 have had to be largely served from Terauley, because of the size of the connection and the lack of available feeder positions at Windsor.[17]

27. THESL has failed to provide details such as the expected connection positions required and the cost of serving that capacity from neighbouring stations or through other alternatives. It thus has not established that the Bremner TS is necessary or the most cost-effective method to address this issue. And again, the evidence provided by Mr. Simpson's oral testimony suggests that the feeder connection position issue can be remedied (through connections to other stations) at a cost far lower than the $272 million Bremner TS project.

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[15] Navigant Report, p. 18 (Tab 4, Schedule B17, Appendix 3) [ED Ref. Book, tab 3].
[16] Navigant Report, pp. 2-3 (Tab 4, Schedule B17, Appendix 3) [ED Ref. Book, tab 3].
[17] Transcript Vol. 4, p. 88, lns. 12-18.

Load Growth in Downtown Toronto

28. THESL has failed to show that the Bremner TS project is required to meet load growth in downtown Toronto because:

    a. THESL's load forecast is highly flawed and;

    b. THESL has not adequately considered CDM and DG as alternatives.

THESL's Original Load Forecast

29. THESL's load forecast is highly flawed. As discussed below, it "double counts" the impact of new buildings and fails to incorporate key factors such as anticipated electricity price increases, incremental small-scale DG projects, incremental CDM beyond 2014, new provincial codes and standards, time-of-use rates, demand response, and the 19 initiatives discussed in the report by Bob Bach.

30. According to THESL's pre-filed evidence, the demand for electricity in downtown Toronto will grow by 2% per year and hence the proposed Bremner Station must be in-service by 2017 meet rising demand.[18] The capacity deficit forecast by THESL is summarized in Table 1.

Table 1: Forecast Electricity Demand in Excess of Existing Transformer Station Capacity on Hot, Summer Days in Downtown Toronto[19]

2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
2 MW	9 MW	20 MW	33 MW	54 MW	71 MW	92 MW	111 MW	134 MW	151 MW

31. THESL justifies its 2% per year growth forecast based on a simple regression analysis of five data points, namely, the peak day demands of its downtown Toronto customers in 2007, 2008, 2009, 2010 and 2011. According to this regression analysis, during the past five years demand grew by 2.16% per year. And as a result, Mr. Odell of THESL believes that THESL's 2% growth rate forecast is "prudent":

[18] Navigant Report, p. 10 (Tab 4, Schedule B17, Appendix 3) [ED Ref. Book, tab 3].
[19] OCAA, *The Bremner Transformer Station vs. Energy Conservation and Distributed Generation,* December 18, 2012, p. 3, Table 1 [Ex. K6.4, Tab 6, p. 87]; Transcript Vol. 6, p. 158, lns. 1-14; Navigant Report, p. 2-3 (Tab 4, Schedule B17, Appendix 3) [ED Ref. Book, tab 3].

> Mr. ODELL: No. The purpose of this exercise in the application was to explain our load forecasting methodology, and specifically to look at some of the assumptions that we have made with respect to base load growth.
>
> And it was stated earlier that in the downtown area we use a 2 percent annual growth number.
>
> So what this was, was an attempt – using our actual information – to show whether or not the 2 percent load growth was, indeed, accurate and prudent.[20]

32. Environmental Defence submits that a simple regression of 5 annual peak demand points is a highly simplistic and unreliable methodology to forecast the rate of growth in electricity demand during the next 10 to 20 years. The 2% load growth assumption ignores a myriad of important factors needed to estimate growth, as detailed below.

Overestimating Growth from Existing Buildings

33. First, the simplistic five point regression analysis and 2% load growth figure fails to consider that there are two distinct drivers of electricity demand in downtown Toronto, namely, new and existing buildings. New buildings will lead to new demands on the electricity grid. However, according to the unchallenged testimony of Mr. Bach, the demands of downtown Toronto's existing buildings are declining. Mr. Bach also testified as follows:

> And the bulk of the evidence in my report relates to existing buildings, and I firmly believe that the load in existing buildings is not growing, but is shrinking, in the downtown area. And that's for a number of the examples I listed in the way of programs, including benchmarking, and monitoring and tracking.
>
> The remarkable change in the attitudes and desires of major tenants, and I should say expectations that they have towards their building owners and property managers, in terms of requiring that they demonstrate continual improvement in the energy and environmental performance of their buildings.[21]

34. Mr. Bach's report outlined 19 drivers for this declining growth. In the following passage, Mr. Simpson acknowledged that THESL's load forecast did not account for these 19 initiatives:

> MR. ELSON: If I could refer you to the table of contents of Mr. Bach's report, that is at Roman numeral I.
>
> I won't take you to the specific sections, but in the table of contents, you can see that sections 3 to 7 describe a number of CDM initiatives.

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[20] Transcript Vol. 6, p. 125. lns. 2-8.
[21] Transcript Vol. 7, p. 117, lns. 1-12.

> Have these initiatives been expressly accounted for in Toronto Hydro's load forecast?
>
> MR. SIMPSON: No. As mentioned earlier, only the projections up to 2014 from presently-funded programs are incorporated.
>
> And so some of these aspects, in Mr. Bach's report, are not in the forecast.[22]

35. Mr. Bach anticipates that in the future the aggregate demand for electricity in downtown Toronto will *decline* since the shrinking demands of the existing buildings will exceed the rising demands of new buildings:

> ...at some point I believe that the reduction in load of existing buildings is going to be greater than the net load addition of new buildings.
>
> This has to occur at some point, because there is a limitation on the amount of available land to build new projects. In fact, I think we are at about the same point in this period as we were in 1989 when the real estate market fell dramatically. A lot of it was condominiums. A lot of it was office buildings. And the rate of construction, the rate of new additions dropped dramatically, if not completely.
>
> So I've always found in my work that if you go out and talk to customers, you find out some rather fascinating things, because they're on the inside, and otherwise you're on the outside looking in.[23]

36. THESL's load forecast overestimates growth from existing buildings without providing a detailed analysis to support these high growth estimates.

Double Counting Growth from New Buildings

37. Second, THESL's load forecast "double counts" the growth from new buildings. THESL estimates a 2% rate of growth based on peak demand in the past five years. This 2% includes all of the growth from new buildings during this period; Mr. Simpson acknowledged that it is even possible that *all* of this 2% growth resulted from new buildings.[24] However, anticipated new loads are then added to the forecast figures based on connection requests received by THESL.[25] The growth from new building is thus counted twice – once in the 2% growth figure and again in the addition of new load from new customers.

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[22] Transcript Vol. 6, p. 173, lns. 4-15.
[23] Transcript Vol. 7, p. 118. lns. 5-19.
[24] Transcript Vol. 6, p. 123. lns. 7-27.
[25] THESL, *Load Growth in Downtown Toronto Area*, p. 4, 8-9 (Tab 4, Schedule B17, Appendix 2) [ED Ref. Book, tab 2].

Not Weather-Normalized

38. Third, THESL's five point regression analysis uses actual, not weather-normalized, peak day demands.[26] As a consequence, if 2007 was cooler than normal and if 2011 was warmer than average, the regression analysis will overstate the "normal" rate of growth in electricity demand.

Ignoring Anticipated Electricity Price Increases

39. Fourth, THESL's simplistic five point regression analysis fails to consider or acknowledge that a very important determinant of the demand for electricity is its price. As the Board is well aware, the price of electricity is forecast to rise dramatically over the next five years. We submit that a load forecast that fails to consider the impact of rising electricity prices on electricity demand is not credible.

Ignoring Impact of Expanded Enwave Deep Lake Cooling System

40. Fifth, THESL's load forecast has not taken into account the impact of the planned expansion of Enwave's deep lake water cooling system on the demand for electricity in the downtown core.[27] This project alone will result in a net 14.5 MW reduction in peak electricity demand.[28]

Ignoring Impact of Small-Scale DG Projects

41. Sixth, THESL's load forecast has not taken into account the impact of new, small-scale (less than 10 MW) distributed generation (DG) projects on the demand for grid-supplied electricity in downtown Toronto.[29]

42. During cross-examinations, THESL undertook (J6.2) to provide a forecast of the number of megawatts of DG under 10 MW per project that will be added to its *downtown* grid in the next one to five years.[30] In its responses, THESL indicated that 380 MW of

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[26] Transcript Vol. 6, p. 121, lns. 22-25.
[27] Transcript Vol. 6, p. 139, lns. 11-15.
[28] Environmental Defence Response to Interrogatory No. 2.2 THESL-15
[29] Transcript Vol. 6, p. 130, lns. 17-28.
[30] Transcript Vol. 6, p. 131, ln. 26 to p. 132, ln. 1.

incremental distributed generation (DG) capacity will be added to the THESL grid by 2017, resulting in a reduction in peak demand on the THESL grid of 193 MW. These estimates appear to be for the whole THESL system, not just the downtown core. If we assume that the amount of new DG capacity in downtown Toronto will be proportional to its contribution to THESL's system peak (18.5%[31]), then incremental DG will reduce the downtown core's peak demand by 35.7 MW in 2017.

43. A 35.7 MW reduction in peak day demand will reduce the need date for new transformer capacity, due to load growth, from 2017 to 2021. See Table 1. Again, this reduction is not accounted for in THESL's load forecast as it excludes DG projects of under 10MW.

Ignoring Impact of Provincial Codes and Standards, Time-of-Use Rates and Demand Response

44. Seventh, THESL's 2% load growth forecast has not taken into account the impact of provincial codes and standards, time-of-use rates and demand response on the future demand for electricity in downtown Toronto.[32] Mr. Simpson's evidence with respect to time-of-use rates and demand response is as follows:

> MR. ELSON: Thank you.
>
> When we left off, we were **reconciling the OPA's data with the load forecast in the Navigant report**, and we heard that the load forecast in the Navigant report is based on Toronto Hydro's forecast. So this was Toronto Hydro work, is my understanding.
>
> And I would like to ask a question in relation to time of use moving on from codes and standards. Again, referring to page 8 of the **OPA evidence** and the column for 2019, it says that **there will be incremental demand reduction for time of use of 48.2 megawatts**. Do you see that number there?
>
> MR. SIMPSON: Yes.
>
> MR. ELSON: By how much does the forecast in Navigant's report at page 9 reduce downtown Toronto's peak demand in 2019 due to time of use rates and demand response?
>
> Actually, let me stick with time of use rates for now.
>
> MR. SIMPSON: **The figure 2 in the Navigant report does not reflect that potential time of use impact.**
>
> MR. ELSON: Is the same answer for demand response? Demand response, again, is in table 2 of the OPA evidence. **Demand response is 106.2 megawatts.** Is that the same answer?
>
> MR. SIMPSON: Yes. **It's not reflected in the Navigant table.**

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[31] Navigant Report, p. 7, Table 1 (Tab 4, Schedule B17, Appendix 3) [ED Ref. Book, tab 3].
[32] Transcript Vol. 6, p. 132, ln. 28 to p. 139, ln. 10; THESL Responses to Undertakings J6.3, J6.4 and J6.5.

MR. ELSON: Thank you. For 2019, **how many megawatts of CDM was subtracted from this table in figure 2, in particular, for conservation, for demand response and distributed generation for 2019?**

MR. SIMPSON: **There isn't a component subtracted or adjusted for for that in figure 2.**[33]

45. Although in a subsequent undertaking response THESL claimed that its load forecast "includes energy efficiency," this is based on flawed logic. THESL's reasoning is as follows: "Since the following years were forecast based on 2011 actuals, the same types of CDM savings are accounted for in the forecast loads beyond 2012."[34] In essence, THESL argues that its 2% natural load growth figure assumes that energy efficiency savings will occur. However, THESL has done no analysis to show that its 2% growth rate figure accurately predicts *future* trends in energy efficiency savings, including those outlined in the Ontario Power Authority's ("OPA") evidence. Furthermore, THESL "verified" its 2% growth projection based on a regression of a mere five data points (peak demand in 2007 to 2011), without assessing the myriad of possible factors underlying that 2% growth over the past five years (e.g. an unusually high number of new connections), and whether those factors will persist in the future. Contrary to THESL's assertions, the 2% growth figure does not account for provincial codes and standards, time-of-use rates and demand response.

46. The OPA has estimated the impact of provincial codes and standards, time-of-use rates and demand response on THESL's total demand for electricity for each year from 2011 to 2031. Table 2 summarizes the OPA's figures for 2017, 2021 and 2026.

Table 2: Allocation of Provincial Peak Reduction Targets to THESL for Long Term Planning (Incremental from 2010)[35]

	2017	2021	2026
Codes & Standards	199.8 MW	326.3 MW	534.7 MW
Time-of-Use	48.2 MW	48.6 MW	51.2 MW
Demand Response	102.9 MW	107.4 MW	109.2 MW
Total	350.9 MW	482.3 MW	708.1 MW

[33] Transcript Vol. 6, p. 135, ln. 23 to p. 136, ln. 7.
[34] THESL Response to Undertaking No. J6.3.
[35] OPA Summary of its Evidence-in-Chief, p. 8 (Ex. K6.3).

47. Table 3 allocates the peak reduction targets in Table 2 to the downtown core in direct proportion to the downtown core's share of THESL's total peak day demand, namely, 18.5%.[36]

Table 3: Allocation of provincial peak reduction targets to downtown Toronto[37]

	2017	2021	2026
Total	64.9 MW	89.2 MW	131 MW

48. As we have noted above in Table 1, according to THESL's 2% per annum load growth forecast, demand in the downtown core will exceeds its existing transformer capacity as of 2017. However, if the peak reduction targets in Table 3 are accurate, there will be no need for new transformer station capacity in downtown Toronto until at least 2023.

Summary re THESL's Load Forecast

49. Each of the above seven factors, when considered alone, would significantly push back the need date for new transformer capacity in downtown Toronto. Incorporating only the OPA's figures pushes that date back to 2023; accounting for small scale DG pushes it back to 2021; even the Enwave project alone results in a 14.5 MW reduction in peak demand. Taken together, those seven factors are conclusive evidence that THESL's load forecast is highly flawed and is an insufficient basis on which to approve a $272 million capital project.

Revised January 2013 Forecast

50. According to THESL's own revised load forecast that it provided to the OPA in January 2013, there will be sufficient transformer capacity available until at least 2026. Table 4 summarizes THESL's new electricity demand forecast for downtown Toronto for 2016, 2021 and 2026 as detailed in THESL's response to Undertaking No. J6.6.

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[36] Navigant Report, p. 7, Table 1 (Tab 4, Schedule B17, Appendix 3) [ED Ref. Book, tab 3]; The figure of 18.5% is derived from the peak demand in the downtown core (982 MVA) divided by the total system peak demand (5301 MVA).

[37] The OPA did not break-out its estimate for THESL according to the downtown core and the rest of Toronto.

Table 4: THESL's Revised Electricity Demand Forecast for Downtown Toronto[38]

2016	2021	2026
997 MW	1,061 MW	1,086 MW

51. According to the Navigant Report, the capacity of its existing five downtown Toronto transformer stations is 1,177 MVa[39] or approximately 1,095 MW. Therefore, based on THESL's revised load forecast, it appears that there is sufficient transformer capacity to meet downtown demand until approximately 2026. This finding is consistent with the oral testimony of Joe Toneguzzo, Director of Transmission Integration for the OPA:

> Mr. SHEPHERD.... Right now, THESL says that this is needed to meet load growth in 2017; right?
>
> Mr. TONEGUZZO: I believe it was a little later. I thought it was much later, in fact."[40]

52. Environmental Defence submits that THESL should have filed the January 2013 load forecast prior to this hearing so that parties could have cross-examined THESL's witnesses on the differences between the forecast submitted in this proceeding and the forecast provided to the OPA. The January 2013 forecast is the kind of new information that must be filed under Rule 11.02, which reads as follows:

> 11.02 Where a party becomes aware of new information that constitutes a material change to evidence already before the Board before the decision or order is issued, the party shall serve and file appropriate amendments to the evidentiary record, or serve and file the new information.

53. Instead, the January 2013 forecast was provided pursuant to an undertaking requested by Environmental Defence on the first hearing day (Tuesday, February 19, 2013). The evidentiary portion of this hearing ended on Wednesday, February 20, 2013. On Friday, February 22, 2013 THESL provided the Board and intervenors with the January 2013 load forecast, except for the spreadsheets breaking out the gross load, CDM, and DG components of the forecast.[41] At 3:35 p.m. on Thursday, February 28, 2013 THESL provided further data in response to undertaking J6.6, which we have not addressed in

[38] THESL Response to Undertaking J6.6, Appendix A, p. 1, 2 & 3.
[39] Navigant Report, p. 10 (Tab 4, Schedule B17, Appendix 3) [ED Ref. Book, tab 3].
[40] Transcript Vol. 6, p. 42, lns. 9-12.
[41] Although a confidentiality issue was raised with respect to this portion of the undertaking response, Environmental Defence requested on Tuesday, February 26, 2013 that the data be provided by station (not by bus), which would eliminate any potential confidentiality concerns.

these submissions due to time constraints. Certain DG data relating to Undertaking No. J6.6 remains outstanding.

54. The January 2013 load forecast clearly shows that there will be sufficient transformer capacity available until at least 2026, and therefore the Bremner TS is not needed for load growth in downtown Toronto.

Insufficient Assessment of CDM as an Alternative

55. CDM is a low cost option to defer the need for new transformer station capacity. Nevertheless, THESL did not investigate, assess, or provide sufficient evidence on the possibility that incremental CDM could defer the need for Bremner TS.

56. In response to Pollution Probe Interrogatory No. 7, THESL expressly indicated that it did *not* estimate "the potential for incremental cost-effective energy efficiency and demand response options to reduce the demands of the downtown transformer stations between 2012 and 2026".[42] Furthermore, THESL's load growth forecast lists 5 alternatives that are considered in the event of an anticipated bus/station capacity shortfall, all of which are supply-side; this list does not include CDM (or DG).[43] Similarly, THESL's own *ICM Business Case Evaluation, Bremner TS* does not include CDM (or DG) in the list of options considered.[44]

57. THESL simply did not estimate the potential for incremental CDM, and whether it could defer the need for Bremner. Its entire analysis of CDM as an alternative appears in the Navigant Report. However, Navigant simply conducted a 50% "sensitivity analysis" without actually estimating the potential incremental CDM, as discussed in the following passage from the transcript:

> MR. ELSON: **Do you have any studies to support your assumption or your 50 percent number**, which relate to the maximum CDM that could be achieved in the downtown core by 2014?
>
> MR. SHLATZ: **No**. I solely did that for the sake of analysis.
>
> MR. ELSON: So there is nothing backing up that 50 percent number?

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[42] THESL Response to Pollution Probe Interrogatory No. 7 (Tab 6F, Sch. 9-7) [ED Ref. Book, tab 4, p. 63]
[43] THESL, *Load Growth in Downtown Toronto Area*, p. 5 (Tab 4, Schedule B17, Appendix 2) [ED Ref. Book, tab 2].
[44] THESL, *ICM Business Case Evaluation, Bremner TS*, pp. 13-16 (Tab 4, Sch. B17).

MR. SHLATZ: No. It's --

MR. ELSON: No studies or analysis?

MR. SHLATZ: Typically do sensitivity, 25, 50 percent; it is in that context.

MR. ELSON: Okay. Returning to the third-last row in table 6 on page 16 -- well, actually, you know, I think I'm going to -- sorry, I am going to stay with table 2 here.

What we had been trying to determine was **what you were estimating the incremental or the targeted CDM could be in downtown Toronto for 2014.**

Are you able to provide an estimate of that?

MR. SHLATZ: I'm unable to independently develop or collect those estimates.[45]

58. As a result, THESL never assessed CDM as an alternative option.

59. Furthermore, in response to Pollution Probe Interrogatory No. 19, THESL expressly indicated that it had not "requested funding from the OPA for incremental conservation and demand management programs to defer the need for new transformer station capacity in downtown Toronto."[46] This interrogatory response was discussed during cross-examinations with Chuck Farmer, Director of Conservation and Integration at the OPA. Mr. Farmer was asked whether the OPA would potentially fund programs that could defer the need for Bremner. Although Mr. Farmer could not provide a categorical answer, he stated that "we'd be definitely open to discussing the option to fund those programs, and to participate with Toronto Hydro and find the best way to provide support and funding."[47]

60. Even though the OPA would be willing to fund additional cost-effective CDM to avoid the need for the Bremner TS, THESL did not explore this as an alternative option.

Insufficient Assessment of DG as an Alternative

61. THESL also did not adequately assess or consider DG as an alternative to the Bremner project.

62. According to a 2009 Navigant report for THESL and the OPA, entitled *Central and Downtown Toronto Distributed Generation Final Report*, there is a large technical and

[45] Transcript Vol. 6, p. 163, lns. 1-12.
[46] THESL Response to Pollution Probe Interrogatory No. 19 (tab 6F, Sch. 9-19) [ED Ref. Book, tab 4, p. 79].
[47] Transcript Vol. 6, p. 23, lns. 16-19.

market potential for combined heat and power (CHP) and solar PV in downtown and central Toronto. Specifically, according to the 2009 report, the technical potentials for CHP and solar PV are 1,084 MW and 1,300 MW respectively. The potential market potential was estimated to be approximately 140 MW in the next five years and approximately 550 MW in the next ten years.[48]

63. At the present, due to short-circuit constraints at Hydro One's Leaside, Manby and Hearn Transformer Stations, there is very limited ability to connect incremental CHP generation to the downtown Toronto electricity grid. However, according to a May 2011 Navigant report, *Toronto Hydro System Connection Capacity and Enabling Options For Distributed Generation*, when these short circuit constraints are eliminated there will be the potential to add 490 MW of CHP or 733 MW of solar PV to THESL's central and downtown electricity grid.[49]

64. According to Hydro One's 2012 rate filing, the short circuit constraints at the Leaside, Hearn and Manby stations will be eliminated in 2013 and 2014.[50] However, as Mr. Simpson noted, the Leaside TS upgrades are now scheduled to be completed in 2015.[51]

65. In addition, according to the 2011 Navigant report regarding DG enabling options:

    a. *Additional* DG connection capacity can be achieved on the THESL grid "at a unit cost well below the installed cost of DG capacity"; and

    b. "Together, the upgrade plans proposed in THESL's GEA Plan and HONI's local transmission system upgrades will significantly increase THESL's DG connection capacity."[52]

66. Despite these planned upgrades, THESL did not assess DG as an alternative to the Bremner TS. Again, DG is not listed in THESL's list of 5 options that are considered in

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[48] Navigant Consulting, *Central and Downtown Distributed Generation*, July 28, 2009 (EB-2009-0139, Ex. Q1, tab 4, Sch. 1-3) [ED Ref. Book, tab 11].
[49] Navigant Consulting, *Toronto Hydro System Connection Capacity and Enabling Options for Distributed Generation*, May 2011, p. 36 (EB-2011-0144, Ex. D1, tab 12, sch. 4, app. A) [ED Ref. Book, tab 12, p. 124].
[50] EB-2012-0031, Ex. D1-3-3, Appendix A, p. 3, Updated August 15, 2012.
[51] Transcript Vol. 7, p. 7, lns. 6-20.
[52] Navigant Consulting, *Toronto Hydro System Connection Capacity and Enabling Options for Distributed Generation*, May 2011, p. 3 (EB-2011-0144, Ex. D1, tab 12, sch. 4, app. A) [ED Ref. Book, tab 12, p. 122].

the event of an anticipated bus/station capacity shortfall.[53] Similarly, THESL's own *ICM Business Case Evaluation, Bremner TS* does not include DG (or CDM) in the list of options considered.[54]

67. THESL indicated in its response to Pollution Probe Interrogatory No. 11 that it had not requested that the OPA contract for natural gas-fired generation in downtown Toronto to help defer the need for the proposed Bremner TS.[55] When asked whether the OPA would potentially fund such projects if requested to do so, Mr. Farmer stated that "we certainly would investigate it as part of the Toronto regional plan and bring that forward as a recommendation."

68. THESL did not explore DG as an alternative to the Bremner TS even though there is significant market and technical potential and the OPA is willing to participate and plan for its development.

Failure to Adequately Consider CDM & DG in Previous Proceedings

69. THESL has repeatedly failed to adequately consider CDM and DG as an alternative to supply-side options in previous proceedings.

70. First, in EB-2009-0139, THESL sought approval for initial costs relating to the Bremner TS. In its application, THESL considered a number of alternatives, but *not* CDM and DG.[56] In EB-2010-0142 it again excluded CDM and DG in its consideration of alternatives to the Bremner TS.[57] Mr. Simpson candidly acknowledged this on cross-examination:

> MR. ELSON ...
>
> **CDM and DG were not among the alternatives considered and discussed in EB-2009-0139; is that right?**
>
> MR. SIMPSON: **Correct**.
>
> MR. ELSON: Moving over to page 184, this is **in relation to EB-2010-0142.**
>
> ...

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[53] THESL, *Load Growth in Downtown Toronto Area*, p. 5 (Tab 4, Schedule B17, Appendix 2) [ED Ref. Book, tab 2].
[54] THESL, *ICM Business Case Evaluation, Bremner TS*, pp. 13-16 (Tab 4, Sch. B17)
[55] THESL Response to Pollution Probe Interrogatory No. 11 (tab 6F, sch. 9-11) [ED Ref. Book, tab 4, p. 69].
[56] EB-2009-0139, Ex. D1, tab 9, sch. 6, p. 2 [ED Ref. Book, Tab 25, p. 182].
[57] EB-2010-0142, Ex. D1, tab 9, sch. 6, p. 2 [ED Ref. Book, Tab 25, p. 186].

Again, CDM and DG were not among the alternatives considered; is that right?
MR. SIMPSON: **Yes.**[58]

71. This failure to examine DG is particularly problematic in the context of Board orders against THESL in this regard. For example, in EB-2007-0680 the Board held as follows:

> The Board observes that the Applicant's study of distributed generation has not been rigorous. Therefore, the Board directs the Applicant to conduct a study into the capability, costs and benefits of incorporating into the Applicant system, a significant (up to 300MW) component of bi-directional distributed generation in Toronto.[59]

72. In EB-2009-0139 the Board held that the report THESL produced pursuant to the above order was "incomplete." The Board proceeded to provide the following "caution" to THESL:

> The Board reiterates and cautions THESL that it considers the analysis of the incorporation of DG to be an important element of its review of THESL's overall infrastructure spending. The absence of such information diminishes the confidence the Board can place on THESL's overall system plans.[60]

73. Despite these decisions by the Board, THESL nevertheless decided to proceed with the Bremner TS application without adequately assessing CDM and DG as alternatives. By failing to adequately assess and provide evidence on CDM and DG as alternatives, THESL has failed to show that the Bremner TS is the most cost-effective option.

Failure to Consider other Positive Attributes of CDM and DG

74. THESL also failed to assess the other positive attributes of CDM and DG as an alternative to the Bremner TS, as would be necessary in a proper comparison of alternatives. The following are some examples of potential benefits that THESL did not account for in its materials:

    a. CDM results in significant savings to customers because conservation results in lower usage and thus lower bills;

    b. CDM results in lower greenhouse gas emissions;

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[58] Transcript Vol. 6, p. 142, lns. 12-28.
[59] Decision in EB-2007-0680, p. 62 [ED Ref. Book, tab 23, p. 167].
[60] Decision in EB-2009-0139, p. 35 [ED Ref. Book, tab 24, p. 174].

c. CDM and DG could avoid the need for further investment in higher cost generation capacity outside the City of Toronto and thus result in further savings to customers;[61]

d. CDM and DG could defer the need for additional spending by Hydro One to upgrade its transmission system to deliver more electricity to downtown Toronto;[62]

e. CDM and DG could potentially avoid the need for a third transmission line to Toronto, and the associated $600 million cost.[63]

f. DG can greatly increase security of supply by providing a local power source (e.g. hospital power backup in the event of a significant power outage); and

g. DG could specifically protect against a failure at the Hyrdo One Leaside TS, which would otherwise lead to rolling blackouts[64]

75. Environmental Defence acknowledges that the Bremner TS will have some benefits. However, THESL has not assessed whether the alternative options might confer even greater benefits at a decreased cost.

Summary Regarding Failure to Assess Alternatives and Establish Cost-Effectiveness

76. As detailed above, THESL has not satisfied its burden to assess alternatives to the Bremner TS and has failed to establish on the evidence that the Bremner TS is the most cost-effective option. The shorter term needs relating to the Windsor TS can be dealt with through connections to Strachan TS or Esplanade TS (including related station upgrages) at a far lower cost. It is unclear whether the longer term load growth needs will ever come to pass because of the significant flaws in THESL's load growth forecast. If a revised forecast shows a need for increased capacity, THESL should assess whether a combination of CDM and DG would provide a solution at a lower cost, increase security

[61] Transcript Vol. 6, p. 19, ln. 6-11.
[62] Transcript Vol. 6, p. 18, ln. 15-28.
[63] *Ibid.*; OPA, *Ontario's Integrated Power System Plan, Discussion Paper 7: Integrating the Elements – A preliminary Plan*, November 16, 2006, p. 114 (EB-2007-0050, Ex. B, Tab 6, Sch. 5, App. 6) [ED Ref. Book, Tab 18, p. 147]
[64] Transcript Vol. 6, p. 32, ln. 1-11.

of supply, and result in other "upstream" benefits such as avoiding the need for a third transmission line.

THESL'S FINANCIAL INCENTIVES

77. Proceeding with the proposed Bremner TS is a much more profitable option for THESL as compared to other lower cost options to keep our lights on.

78. The proposed Bremner TS has a total capital cost of $272 million. According to the OEB's ratemaking principles, if approved, the full capital cost of Bremner would be added to THESL's "rate base" and 40% of it would be financed by equity and 60% by debt. Furthermore, THESL's OEB-approved return on equity is 8.98% after-tax. Therefore, if Bremner is approved, THESL's after-tax net income would rise by approximately $9.7 million *per year* (minus depreciation in subsequent years).[65]

79. On the other hand, if Bremner is not approved, the Windsor TS can be backed up by installing feeder lines from Windsor TS to the Strachan TS at a cost of $55.7 million and the electricity needs of new buildings can be met by a combination of CDM and DG. The net income impacts would be as follows:

    a. The installation of feeder lines from Windsor TS to Strachan TS will increase THESL's after-tax net income by only $2 million [$55.7 million x 0.4 x 8.98%][66].

    b. According to the OEB's ratemaking rules, the maximum profit incentive that THESL can earn for exceeding its CDM targets is a one-time profit bonus of $10.3 million.[67] That is, this incentive does not continue for thirty years or more (minus depreciation in subsequent years) like supply-side projects that increase THESL's rate base.

    c. Finally, if incremental CHP capacity is installed to meet the electricity needs of downtown Toronto, there will be no increase in THESL's rate base and net income

[65] Impact on THESL's New Income, [ED Ref. Book, tab 19, p. 148].
[66] Transcript Vol. 7, p. 14, p. 12, ln. 25 to p. 14, ln. 19.
[67] Impact on THESL's New Income, [ED Ref. Book, tab 19 pp. 148, 149].

since the OEB does not permit THESL to include any of the capital costs associated with CHP plants in its rate base.[68]

80. Although THESL's witnesses expressed some concern with the above calculations in certain respects, they did agree that "generally, in principle, if Toronto Hydro invests in rate base, your net income impact is higher over the long term than if you invest in CDM?"[69] Although the exact numbers are difficult to predict, it is clear that THESL has a significant profit incentive to continue with the Bremner TS project.

NEXT STEPS AND INTEGRATION WITH THE TORONTO REGIONAL PLAN

81. One positive outcome of rejecting the Bremner TS proposal is that the electicity needs of downtown Toronto could be dealt with as part of the regional electricity plan that the OPA is developing in association with the Independent Electricity System Operator, Hydro One and THESL. There are a number of important features to note about the Toronto Regional Planning Process.

a. It is led by the OPA – the government agency that has the mandate and the expertise to prepare integrated power system plans.

b. The Toronto Regional Planning Process will investigate *all* the options to meet Toronto's electricity needs, including CDM and DG.[70]

c. The goal of the Toronto Regional Planning Process is to meet Toronto's needs for a reliable electricity supply at the least cost to Ontario's electricity ratepayers.[71]

d. The OPA does *not* have a financial incentive to choose options that will the maximize rate base and net income of an electric utility.

e. According to Mr. Joe Toneguzzo, Director of Transmission Integration for the OPA, the proposed Bremner TS is *not* essential to meet Toronto's electricity needs.[72]

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[68] Transcript Vol. 7, p. 17, ln. 21 to p. 18. ln. 10.
[69] Transcript Vol. 7, p. 21, ln. 24 to p. 22. ln. 2.
[70] Transcript Vol. 6, p. 12, ln. 19-23.
[71] Transcript Vol. 6, p. 12, ln. 24 to p. 13, ln. 1.
[72] Transcript Vol. 6, p. 17, ln. 17-22; and p. 36, ln. 16 to p. 37, ln. 1.

f. The first draft of the Toronto Regional Plan will be available for stakeholder review in the spring of 2013.[73]

82. As it stands, the Toronto Regional Plan assumes that Bremner TS will be built. However, the OPA has stated that the plan can "certainly" be developed without the Bremner TS.[74] There would be significant benefits to assessing downtown Toronto's needs through the regional process. This would provide the OPA and Hydro One with the ability to propose alternatives which may be superior for overall system stability. One such example is the ability of increased DG to avoid a third transmission line and to provide backup in the event of a failure at the Leaside TS.

83. If the Board rejects the Bremner TS proposal, THESL will need to reconsider its strategy for meeting the needs of downtown Toronto and fully assess the alternatives. This will be done at least in part through the Toronto Regional Plan process. To this end, the Board may wish to specifically direct THESL to revise its load forecast, to consider CDM and DG as part of a suite of alternatives, and to comprehensively weigh the costs and *benefits* of each alternative option before returning to the Board with another application.

CONCLUSIONS AND REQUESTED RELIEF

84. As discussed above, the onus of proof is on the applicant to show that its capital project is needed and is the most cost-effective option. It is Environmental Defence's submission that THESL has failed to prove that the proposed Bremner TS is a necessary or cost-effective option to:

a. Provide back-up to the Windsor TS while its obsolete switchgear equipment is replaced;

b. Connect new loads in the Windsor TS service area; or

c. Meet the electricity needs of existing or new buildings in downtown Toronto.

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[73] Transcript Vol. 6, p. 15, ln. 19-28.
[74] Transcript Vol. 6, p. 17, ln. 17-22.

85. Environmental Defence respectfully requests that the Board deny THESL's application with respect to the Bremner TS.

COSTS

86. Environmental Defence requests that it be awarded 100% of its reasonably incurred costs of participating in this proceeding.

87. Environmental Defence is a registered charity with no pecuniary interest in the outcome of this proceeding.

All of which is respectfully submitted on February 28, 2013.

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