K 9.2

EB-2012-0064

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.

BOMA's Factum for Argument

Introduction

BOMA will make four points in their argument.

First, that THESL has not demonstrated the urgency of proceeding with the Bremner station at this time.

Second, that THESL's load forecast, and that of the OPA for the Central and Downtown Toronto regions (and its five transformer stations) is compromised by its uneven treatment of supply risk and demand side (CDM resources) and should be disregarded by the Board as a basis for any decision with respect to Bremner.

Third, that THESL's and the OPA's projection of the contribution of DG to the Central and Downtown Toronto plan underestimates and marginalizes the contribution of distributed generation, and that THESL has been slow to engage customers (other than microFIT customers, who are candidates for DG). This failure has undermined the integrity of the load forecast.

Fourth, and finally, the Navigant study, prepared for this case, did not provide any independent analysis of the potential contribution of CDM and DG in assessing the urgency of, and the need for, the Bremner station at this time.

Urgency and the Need for the Bremner Station

BOMA is of the view that THESL has not demonstrated the immediate need for the Bremner station.

THESL made submissions to the Board seeking approval to construct Bremner in both EB-2009-0139 (2010 rate case) and EB-2010-0142 (2011 rate case), at D1, T7, Sch 1, p17 et al, and D1, T9, Sch 6, p3, respectively. In EB-2009-0139, the application was for 72 MVA of new firm transformation capacity,

> "with space for future transformers and switchgear to provide an additional 216 MVA (3x72 MVA) firm capacity, as the need arises".

THESL provided the same rationale, word for word, for the project as in the current case.

THESL and the intervenors entered into a Settlement Agreement dated January 22, 2009. Pursuant to that Agreement, THESL agreed to reduce its 2010 capital budget from $423.6 million to $350 million. There was no reference to preferred treatment for Bremner in the Agreement. The Agreement went on to state that:

> "THESL will accommodate the reduction in its capital budget by slowing down the pace of non-critical renewal and new emerging capital programs. THESL will review its prioritization schedule to ensure that it yields the maximum benefits for its customers. THESL believes that the level of capital expenditures agreed to as part of this settlement will still allow for the majority of the required capital projects to proceed, avoiding material effects to customers or the system in the Test Year".

THESL made the identical submission for Bremner a year later, in EB-2010-0142.

As in the previous year, THESL and other intervenors entered into a Settlement Agreement, in this case, dated March 25, 2011. As one of the items of partial settlement (all intervenors supporting, except two parties that took no position), THESL agreed to reduce its 2011 capital budget from $498 million (requested) to $378.8 million.

The Agreement provided that:

> "THESL agrees that, based on its agreed capital budget, it can continue to operate its system in a safe and reliable manner in the test year" (s4.2).

The Agreement made no special provision for the Bremner station.

BOMA questions the sudden urgency of the current request to approve Bremner in time for a Hydro One Board Meeting in April, when it has been applying for approval for the station for the last three years. If the need of Bremner was so urgent, why did not construction start in 2011 or 2012? It would appear that only $8 million was spent in 2011, and $4.5 million in 2012.

THESL has stated that this is a "near-term" need to refurbish end-of-life obsolete switchgear at Windsor station, and that 72 MVA of capacity is necessary to begin work on the first of several switchgear assemblies. However, the switchgear has remained in service without incident for many years. While it is clear that the sufficient excess capacity was not available at Windsor station to permit the initial assembly to be taken out of service (24 MVA at Windsor vs. 72 MVA required), THESL did not make clear that the excess capacity at the other four stations (Strachan-63 MVA, Terauley-57 MVA, Esplanada-18 MVA, and Cecil-41 MVA) could not be used in some combination to backstop the removal of feeders at Windsor. In other words, it was not necessary to rely on new station capacity (Bremner) [T6F, Sch 9-3; Response to Pollution Probe IRs, Issue 2.2, IR #3]. A failure of certain switchgear busses at Windsor would result in an

interruption of power to customers in the order of 50 MV. A mobile switchgear operator would restore power within three days [Hydro One, City of Toronto Electric Supply Study, August 10, 2006, Exh J1.1, 16, 729, 2007].

With respect to a failure in supply to Windsor, power could be restored in two hours [Ibid, p14, ln 9]. However, Bremner, if built, would cover less than half the loss occasioned by a failure of supply at Windsor.

THESL noted approximately 37 megawatts of new feeder connections were requested at Windsor TS in 2012, and 29 of those had to be diverted to Terauley TS (V6, p88). The fact that Terauley TS was able to connect the 29 MW of feeders, when Windsor was full, meant that Bremner was not required for that purpose in 2012. THESL did not provide evidence to demonstrate capacity of the four stations near Windsor (the other four downtown stations) to connect additional feeders, if required, in 2013, and in each year over the medium term, the next eight years or so.

In fact, THESL does not appear to have provided a forecast of new connections, and, more important, additional feeders required in the downtown core, for 2013, 2014, and the next five to six years after that. All we have is the statement that 139 new condominiums are under construction in Toronto, which is twice the amount in New York. Impressive in its way, but hardly persuasive. Not all new buildings require feeder connections at a transformer station bus. Some are connected to feeder loops, or use feeders connected to existing feeders. There appears to be no evidence on the spare feeder capacity of each of the downtown stations.

For clarity, as the Board is aware, we are talking about the physical availability of ports on the busses in the five stations into which new feeders may be connected. We will talk about load growth later.

THESL noted that the incremental cost of directing the requests to add 29 MW of the 37 MW of feeders from Windsor to Terauley in 2012 was $3.3 million. THESL did not provide details on the make-up of the $3.7 million. But even taking the $3.3 million at face value, that amounts to a little over $100,000 per feeder connection. That amount, while not de minimus, must be assessed in the context of the cost of alternatives, such as having to build an entirely new station, closer to Windsor than Terauley, including the cost to build the feeders in question from the new station. That analysis has not been done.

The next reason we are told that Bremner is required now is to deal with future load growth. Having dealt previously with the issue of how many new feeders in downtown busses are required to service that projected increase in connections (neither of which are directly addressed in THESL's evidence), we now address the supply of distribution voltage electricity service, which is to say transformer capacity in downtown. The load growth for each of the five downtown stations is shown at T6F, Sch 9-3. Windsor station reaches capacity in 2017; Esplanade in 2018; Strachan in 2021, Terauley and Cecil after 2021. So, there is transformer capacity in the downtown to accommodate load growth in the near-medium term.

Finally, both THESL and the OPA noted Bremner is a resource that would provide flexibility to HONI in the event of a serious outage on the east side of Toronto. However, neither of them provided a clear enough explanation of what flexibility meant in this context, and the cost

savings that would result if it were deployed, rather than alternative remedial measures. And, from a transmission point of view, it was in the "nice to have" rather than "must have" category.

At $195 million in 2013 and 2014 (Phase I) and a further $77 million in 2021 (Phase II), the Bremner station is a very costly piece of infrastructure in light of its downtown location, its need to fit into the heritage site and, of and by itself, it will increase rates by approximately four percent. A relatively modest amount of money has been spent to date on engineering and environmental assessment.

The Board must be convinced that it is necessary to construct the station now to approve a capital expenditure of this magnitude.

With respect to alternatives, Hydro One testified that they have not spoken to Enwave about using their existing tunnel to install feeders from Esplanade to Windsor. Nor do they appear to have calculated the cost of an Esplanade option using the Enwave infrastructure, including required upgrades to the Esplanade station, or a Strachan-Windsor option. However, THESL witnesses agreed that there would be longer term benefits from increased interconnection among downtown stations (V6, p154).

They have rather ruled out the Esplanade option because it would take one year longer than Bremner to put in service.

Load Forecast

Looking at "load growth" gets us to a discussion of the integrity of Toronto Hydro's demand forecasts.

BOMA strongly disagrees with the approach Hydro One takes to developing its load forecast, in general, and with particular reference to how it integrates CDM and DG into its forecast. To the extent the load forecast lacks coherence and integrity, all the subsequent decisions, based on that forecast, including transformation capacity and feeder requirements are tainted, and may produce adverse results.

BOMA and CDM

BOMA is intimately familiar with both the supply side and the demand side of the electricity equation. BOMA cannot help but think that the demand side continues to get short shrift despite Ontario government policy to the contrary.

Mr. Bach noted in the hearing (Transcript February 2013, Page 138):

> "I provided the historical results for the BOMA CDM program, which I look at as one of the most successful, in that it was an industry-driven program, and I could wish it was still being delivered that way."

BOMA's own successful program BOMA BESt continues to provide the energy savings. In fact, BOMA now regards energy efficiency and conservation as a continuous improvement process. Savings are an asset that must be maintained like the other assets of a building.

Again Mr. Bach's report heralded the market transformation taking place, driven by demand side management (DSM) and Conservation and Demand Management (CDM). (Transcript February 2013, Page 140):

> "MR. BACH: Let me describe my evidence again as more market transformation. And in that market transformation, I cited a number of activities, which indicate that the market has changed from a market push to a market pull. And having been involved in sustainable building activities for more than 20 years, I can tell you it is a refreshing

> change and it's ramping up very quickly at an accelerating pace, and CDM is one tool that will assist building owners and managers to continue that accelerating pace."

BOMA's members are already investing their own resources in energy management in accordance their own investment criteria. Utility CDM and CDM program are useful to get additional attention from senior management and to finance incremental costs beyond normal management payback criteria.

What BOMA would like to see in downtown Toronto for reliability and cost reasons Toronto is analogous to the program cited in Mr. Bach's evidence delivered in New York State. The applicability here is that like the OPA, the New York State Energy Research and Development Authority delivers programs that apply across the whole state; Con Edison, with its unique urban areas recognized the value of topping up NYSERDA's programs in targeted areas in order to address congested areas or to avoid costly upgrades to transformer station and other supply side equipment.

THESL bases its load growth on a formal extrapolation of the last five years of consumption. As noted by Mr. Bach, in his evidence:

> "MR. BACH: As I understand the Toronto load growth forecast, it is looking backwards, taking a -- doing a trend line or regression analysis of the previous five years, and then using the slope and intercept to go forward; in other words, assuming that the growth rate will be the same going forward as it has been in the past.
>
> In fact, even though it was 2.16 percent, they attempted to be more conservative and use 2 percent annual growth. I cannot understand why they would be more conservative, but at 2 percent the entire load is going to double in approximately 36 years. If you believe that that is going to happen, better be looking for new sites for transformer stations today rather than waiting any longer.
>
> I don't happen to believe that that is going to happen.
>
> MR. ELSON: And why don't you believe that the 2 percent growth rate is accurate?

> MR. BACH: For the reasons that I have offered, that the market is pulling the building owners and managers to reduce their load, rather than allowing them to just carry on expanding their load by doing nothing in the way of CDM, operational improvements and tenant engagement. And operational improvements and tenant engagement do not show up in CDM". (Transcript: February 20 2013, page 118)

BOMA urges the Board to pay close attention to Mr. Bach's evidence. Mr. Cass was careful not to attack the quality of Mr. Bach's evidence directly. Mr. Bach is one of the most knowledgeable analysts of, and practical advisors to, businesses and governments on energy efficiency in buildings in Canada. He is careful, not given to exaggeration.

BOMA suggests that THESL should use its own experience in the last decade of involvement in CDM, as well as information from organizations like BOMA and REALpac in their load forecasts. The regression analysis approach described above does not recognize the progress made with respect to existing buildings.

Mr. Bach noted in his evidence that it was very likely, given the programs for the reduction of energy and demand, that energy efficiency in existing buildings would offset new load required by new construction. In addition, THESL seems to disregard the impact of CDM as part of new construction, with CDM targets for specific new buildings (the LEED programs are an example). Mr. Simpson states that the new connections, generally speaking, cannot be dealt with by CDM-type measures. BOMA does not agree with that statement. It is an oversimplification.

BOMA suggests that incremental improvements can be forecast with targeted incentives (higher incentives for CDM in new construction, at both the building design and commissioning phases).

BOMA is concerned that Toronto Hydro's load forecast does not take into account future programs including changing codes standards and the range of initiatives not funded by the OPA which are outlined in Mr. Bach's evidence. REALpac, for example has set targets of "20 by 15",

which translates to reducing the ekWh per square foot in commercial buildings from an average of 38 to 20 – almost 50%.

> "MR. ELSON: So when you are talking about CDM being netted in for the past five years, that doesn't include future CDM. So future CDM is not accounted for or incremental increases in CDM?
>
> MR. SIMPSON: Correct. (Transcript February 20, Page 129)".

Mr. Simpson provided the same answer to Mr. Brett in response to a similar question. No CDM efforts included in the load forecast after 2014 because there was no assurance of funding post-2014.

That is not an acceptable forecast. Given the policy of the Ontario Government, with its conservation targets for 2014, 2025 and 2030, and the provisions of the Green Energy Act, it is clear that either the OPA, the LDCs, or both, will be mandated to continue with CDM programs for the foreseeable future. Even apart from government and OEB mandated programs, there is increased market driven activity to accelerate the take-up of conservation investments and best operating practices. Mr. Bach points to the tremendous success of the BOMA BESt program, particularly in its original structure, before the OPA terminated it and then a year later restarted it. Providing institutions of government do not complete matters unduly, there remains tremendous scope for an increase in CDM in buildings (see Bach, p26, Table 8.3.1 and text below). This potential is recognized by the City of Toronto by major consulting organizations like McKinsey and by knowledgeable practitioners. With appropriate encouragement by government, including the OEB, there is much more to be done.

To be most useful, and to take into measure the benefits of CDM measures accurately reflect savings in distribution costs, it is important that the analysis of CDM potential and its

implementation be done a transformer station by station basis, with each station being viewed as a collection of feeders and customers, as was done by the Consolidated Edison programs described by Mr. Bach.

The following extract is taken from a paper entitled Con Edison's Targeted Demand Side Management Program: Replacing Distribution Infrastructure with Load Reduction[1].

> "In 2003, with several electric distribution networks within its service territory approaching capacity, Con Edison was facing large capital expenditures to reinforce its distribution system. With much of this network underground, building new infrastructure represented a difficult and expensive endeavor. Instead, Con Edison embarked on a large-scale Targeted Demand Side Management Program, developing a pilot effort to achieve 47 MW of load reduction over a four-year period, primarily from commercial and industrial customers in several affected daytime peaking networks. The company contracted with ESCOs (who acted as aggregators to recruit customers) to provide guaranteed, long-term savings, with the first tranche to be in place in Spring 2005. To ensure the load reductions were achieved and precisely determine the actual savings, Con Edison instituted substantial liquidated damages for shortfalls and contracted with ICF International to perform stringent measurement and verification, requiring 100% inspection of every site before and after installation of the load reduction measures.
>
> The program was subsequently expanded to 149 MW and extended to cover a much larger portion of the company's service territory, including residential customers in certain nighttime peaking networks. To date, over 47,000 customers have participated, generating 89 MW of load reduction (through May 2010). Con Edison estimates that the program will ultimately achieve a benefit/cost ratio of 2.8 and avoid $223 million in capital expenditures".

Mr. Schlatz confirmed the methodology of the program, the station by station approach (V6, p112).

THESL stated that it was only generally aware of the approach at Consolidated Edison, and did not assess conservation potential in a station by station manner (V6, p111). THESL is behind the curve of CDM best practices.

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[1] Presented at the 2010 ACEEE Summer Study on Energy Efficiency in Buildings, Chris Gazze, Steven Mysholowsky, and Rebecca Craft, Consolidated Edison Company of New York, & Bruce Appelbaum, ICF International

BOMA urges the Board to direct THESL to include future DSM projects in its load forecast, and produce a forecast including future CDM and an analysis of station by station CDM along the lines of the Consolidated Edison approach. That approach would take into account, inter alia, the various uses of downtown buildings, the increase of multi-family residential buildings, the continued redevelopment of commercial sites, etc., and the efforts of BOMA, THESL and others to increase the efficiency of existing buildings.

Finally, BOMA is concerned that THESL's sole focus on coincident peak in forecasting demand is missing a significant difference in the traditional load shape of Toronto, especially downtown Toronto, given the influx of multi-residential buildings in the downtown core. THESL should analyze whether a diversity of load shapes is positive or negative with respect to system reliability.

The OPA's Approach to Forecasting

The OPA's evidence is not helpful to the development of a realistic CDM forecast for THESL. To the contrary, the OPA states that:

> "the OPA develops a provincial forecast of annual CDM savings necessary to meet the provincial 2030 target, including expected contribution by the (sic) category of conservation. Next, the provincial demand reduction forecast is allocated to the LDC level, weighted proportionately according to historical demand (Table 2). This approach assumes that CDM achievement will be distributed uniformly across the province based on historical demand".

Thus, the OPA's approach does not take into account the specific conservation opportunities in Toronto, the "specialness" of Toronto's building stock, and the extensive efforts by the City of Toronto, and the private sector in Toronto, as set out in Mr. Bach's evidence.

This is an inadequate and unrealistic approach, one that takes us back to the debacle of the first THESL CDM proceeding, where the OPA insisted that THESL's CDM efforts could not top up the province-wide efforts of the OPA (compare the "dog-in-the-manger" approach to the collaboration of NYSERDA and Consolidated Edison in New York).

If we combine the OPA's "one-size-fits-all approach" to CDM, with THESL's failure to include any CDM in the forecast after 2014, we have a bizarre failure. On the one hand, the present government has established CDM targets, as noted above, out to 2030. The OPA, in establishing targets for the LDCs, including THESL, has simply divided up the province-wide targets by historical demand. On that basis, THESL is assigned a target of 21.2% of provincial demand. However, the Minister's directive on CDM also encouraged efforts to exceed the CDM targets where it was cost-effective to do so, either by the OPA, or by THESL. This failure to engage is strange, given the public comments of OPA executives, including the current CEO, on several occasions, including various OPA Annual Reports, that conservation is the most cost-effective supply source. As noted earlier, that fact is now widely accepted by knowledgeable observers.

The OPA further muddied the water by stating that:

- it could only fund conservation that met provincial needs;

- under its tests for cost-effectiveness, it must ignore any geographic differences:

> "MR. FARMER: So to date, we've used a provincial set of avoided costs, and our efforts have been in pursuit of provincial targets. And we are trying to allocate the resources to achieve provincial targets" (V6, p71)

and that

- it was doubtful that the OPA could fund target CDM as a matter of law:

> "As you know, the OPA functions under directive authority, and in order to be able to provide funding we need to have directives that permit that funding" (V6, p140)

None of these assertions are correct.

Section 25.2(1) of the Electricity Act describes the objectives of the OPA. They include:

> "(e)to establish system-wide goals for the amount of electricity to be produced from alternative energy sources and renewable energy sources;
>
> (f) to engage in activities that facilitate load management;
>
> (g) to engage in activities that promote electricity conservation and the efficient use of electricity".

Clauses (f) and (g), dealing with CDM, are not restricted to "establishing system-wide goals", as in clause (e), which deals with renewable and alternative energy sources. The reason is, of course, that renewable energy is a supply side resource, while CDM is a demand side resource, the value of which, and the opportunities for which, differ on a geographic basis. CDM is very site specific. The BOMA BESt program is a good example of that.

These assertions do not reflect the Electricity Act. The amendments to the Electricity Act that created the OPA included directive power to permit the OPA to conduct activities and for the government to fund OPA activities prior to the OEB's approval of the first Integrated Power System Plan ("IPSP"). The 2004 legislation required OEB approval of the IPSP, and a procurement plan, before the OPA could procure power or conservation resources, or launch CDM programs. During the period 2004 to the present, the Minister of Energy have issued several directives to the OPA on CDM matters. The 2009 amendments to the Electricity Act provided that the OPA could fund programs without having an approved IPSP. Those amendments also retained the directive power to enable the Minister to continue to issue

directives. But, contrary to Mr. Farmer's assertion, the OPA does not require directives under the current legislation to initiate CDM programs.

So the OPA is not constrained in any way from developing Toronto specific CDM programs, which could significantly impact load growth in Toronto, including downtown Toronto.

Moreover, the OPA's ambiguity with respect to the need for the Bremner station is not helpful. On the one hand, we have the letter of Mr. Shalaby to Mr. Labricciosa dated November 21, 2012, which states:

> "At this time, the Toronto Regional Plan assumes that Bremner TS will be available by THESL's proposed in service date. The OPA will defer to THESL for all aspects of Bremner, its rationale, the justification of its costs, and the evaluation of any potential alternatives".

On the other hand, we have the OPA's evidence in chief in this proceeding (p9), which endorsed Bremner for the same reasons THESL does, and in addition, declared it to be a strategic asset. These positions are inconsistent.

The OPA's evidence with respect to the advantage the Bremner station would provide to the transmission system is not clear (see above).

Finally, the OPA, in leading the effort to develop a Toronto Downtown Regional Plan, is not evaluating the Bremner station as one alternative. The plan assures Bremner will be built, although it has yet to receive Board approval.

Navigant Report

BOMA urges the Board should not take into account any of Navigant's evidence on the extent to which CDM and DG is a realistic alternative to the construction of Bremner. Mr. Odell stated, at V6, p107:

> "In respect of the Bremner station, the advice we sought out with respect to the CDM impacts we received from Navigant and their study, and I would like to turn the question over to Mr. Shlatz to talk about the CDM impacts with respect to design".

However, Mr. Shlatz admitted that Navigant did not do an independent assessment of CDM potential as over the near, medium, or longer term in downtown Toronto, as evidenced by the following exchange:

> "MR. BRETT: All right. So you didn't actually make any forecasts at Navigant of the amount of either DG or DSM that could be realized over the next 25-year period, or, in the case of this planning process we're talking about – we were talking about this morning the Toronto regional plan – the next eight years? You didn't do that at Navigant?
>
> MR. SHLATZ: We did not do an independent CDM assessment or forecast" (V6, p109).

And again, when asked about the extent to which Navigant reduced its load forecast of peak demand to take into account the provincial codes and standards in 2019, he answered:

> "MR. SHLATZ: Well, essentially I took the load forecast that the company provided to us, so we did not develop an independent forecast" (V6, p134).

The Role of Distributed Generation

THESL has only recently begun to take steps to remove their technical constraints to many types of on-site generation, and to collaborate with Hydro One to remove the transmission level restraints at the Manby and Leaside stations, notwithstanding that the Board has been urging more attention to DG in past rate cases. As a result, opportunities have been lost to install on-site

generation as an alternative to increased transformer station capacity and other distribution infrastructure.

In EB-2007-0680, issued May 15, 2008, almost five years ago, the Board stated:

> "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. In this study, the Applicant should also incorporate the outcomes, as they pertain to distributed generation, of two items which are currently being considered by the Board: 1) enabler lines and their connection costs; and 2) the IPSP. The study should also be responsive to any new policy or regulatory developments in these areas. The study shall be filed as part of the Company's next application dealing with rates beyond the test period dealt with in this proceeding".

THESL had Navigant do such a study, which was filed as part of its 2010 Application (EB-2009-0139).

In that case, THESL made a determined effort to block any serious consideration of the cost and benefits of DG to Downtown Toronto's system. For example, the Board noted that:

> "In response to claims regarding the existence of short-circuit constraints on its distribution system which impede the installation of natural gas-fired CHP, THESL submitted that Pollution Probe had not made its case that removing short circuit impediments to allow CHP is an imperative or even preferred to other supply alternatives" (EB-2009-0139, pp 33-34).

Notwithstanding THESL's efforts to marginalize any potential contribution from DG, the Board persisted. It stated:

> "The Board finds THESL's response, as reflected in the Navigant study, to be acceptable at this time but incomplete. While informative on some of the challenges associated with the introduction of DG in Central and Downtown Toronto, the study does not identify the actual system costs and benefits related to the incorporation of significant levels of DG.
>
> The study illustrates the potential for uptake of DG in Central and Downtown Toronto from a customer choice perspective based on the current market and policy environment. However, it does not provide sufficient analysis of the system costs and benefits related

> to the power system alternatives discussed in the Navigant study. The Navigant study noted these limitations, stating that this study "is only the first step and further analysis is required to more fully understand how distributed generation could serve the needs of Central and Downtown Toronto and how it could serve the provincial government's policy objectives."
>
> It is appropriate to consider the potential system needs associated with the incorporation of DG at the same time as the Board considers the merits of the applicant's spending related to distribution development or sustaining efforts. This is the case irrespective of whether or not THESL is seeking recoveries for spending related to DG. THESL has submitted that a fragmented planning process would not be informative to the Board. The Board agrees. It is important that all planning initiatives that consider distribution system optimization, irrespective of the impetus, be considered in a holistic fashion.
>
> The Board has not established an expected time-line for the completion of the DG study. However, it expects that the filed plan will contain, at a minimum, a scope of the work associated with the "next steps" or "alternative approach" and a schedule of key milestones within the plan. 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."

THESL filed its response to the Board's direction in EB-2009-0139 in EB-2010-0144 (D1, T12, Sch 4, Appendix A), in the form of a Navigant Study, entitled "Toronto Hydro System Connection Capacity and Enabling Options for Distributed Generation". The study was issued in May 2011, so it is recent. It is a very detailed study, which examines capacity on a bus by bus, station by station, and feeder by feeder basis.

In the Executive Summary, Navigant noted that a key change in the environment for DG was:

> "Hydro One Network Inc.'s (HONI's) receipt of Board approval for upgrades to Manby and Leaside TS (scheduled for 2012 or 2013) that will increase DG connection capacity in the THESL system served through these stations.
>
> With respect to DG connection capacity on THESL's 13.8kV and 27.6kV distribution system, several feeders and busses were found to have significant DG connection capacity available, whereas some feeders and busses were found to have very limited or no connection capacity. In most areas with limited or no capacity, the current HONI transmission system is the limiting constraint to new DG installations. THESL equipment is the limiting constraint for only a few feeders and busses.

Navigant's specific findings with respect to THESL's DG connection capacity include:

- Currently, new DG in downtown Toronto and the eastern section of the City is limited to 10 MW for PV (and zero for synchronous DG[2]) due to short circuit capacity limits at HONI's Leaside, Hearn and Manby stations, and transmission limits on the 230kV delivery system East to Cherrywood station in Pickering,

- OEB-approved upgrades to the HONI system over the next few years will increase the DG connection capacity on THESL's 13.8kV system to 377 MW for PV or 207 MW for synchronous DG, and

- Without considering the transmission system to which it is connected, THESL's 27.6kV system has connection capacity for up to 833 MW of PV or 693 MW of synchronous DG.

Considering the transmission system and HONI constraints, the connection capacity is reduced to 356 MW for PV or 283 MW of synchronous DG."

Navigant also summarizes the costs of such capacity as follows:

> "Navigant and THESL jointly assessed the viability of the various enabling options as identified by Navigant for potential inclusion in THESL's GEA Plan. As part of this assessment, Navigant and THESL estimated the likely range of costs and unit costs ($ / kW of DG enabled) for such upgrades based on THESL's system characteristics. Since there are several different types of constraints, varying system configurations across THESL's service territory and non-uniform geographic and temporal distribution of DG connection requests, there is no single "silver bullet" or option to address all of THESL's DG connection capacity constraints".

BOMA calls the Board's attention to the numbers for the 13.8kV system (downtown) are substantial. 377 MW for PV or 207 MW for synchronous (eg. gas-fired DG) .

Against that background, BOMA notes the OPA evidence, which shows that 48.5 MWs of applications under OPA's CESOP and CHP (cogeneration) has resulted in 0.375 MW of contracts to date (p9). The OPA has suggested that existing proposals for CHP (DG) are not

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[2] Inverter-based PV generation has different electrical characteristics than synchronous-based generation (such as for a medium-sized CHP installation), particularly with respect to fault current contribution. Given these differences, the available DG connection capacity will depend on the type of generation to be connected. For simplicity Navigant refers to the connection capacity for PV or for synchronous DG, whereas THESL is likely to get connection requests for a combination of generation types and the connection capacity would likely fall between the values given for PV and synchronous DG.

cost-effective but it has not provided evidence on how it determines cost-effectiveness for the proposed cogeneration projects, eg. Redpath.

The OPA uses the number of 375 kW, or .375 MW (less than 1 MW) as the contribution of DG to its system planning effort for Central and Downtown Toronto, allowing nothing for any future projects, and notes that THESL's view is that it has 18 MW of DG currently connected feeders emanating from the five downtown transformer stations, and an additional 2 MW (in total) to be connected to these stations.

There is obviously a serious disconnect between this assessment and the conclusion of the Navigant 2009 Report, not to mention THESL's undertaking response J6.2 in this case that suggests that the peak reduction contributions for forecast DG for projects under 10 MW, is 28 MW for the five station areas (T8, Sch 6.2, pp 2-3). THESL makes no mention of DG projects over 10 MW.

Clearly, THESL (and the OPA) have decided to downgrade the contribution of DG in their planning. As with their treatment of CDM (cogeneration is generally regarded as both CDM and DG – it is not clear where THESL places it), their attitude compromises the integrity and the usefulness of their demand forecast, and calls into question any conclusions based on that forecast.