FINAL

Meeting Summary	
Date:	September 26, 2017
Location:	Toronto Region Board of Trade First Canadian Place, 77 Adelaide Street West, 4th Floor, Toronto, ON
Subject:	Toronto Local Advisory Committee (LAC) Meeting #5
Attendees:	**Committee Members:** Mario Chiarelli Jack Gibbons David Kiguel Julia Langer John McGrath Rob McMonagle Jeff Parker **Regrets:** Jim Baxter Peter Bettle Darren Borden Fernando Carou Keith Foster Gordon Kaiser Clare Schulte-Albert Bala Venkatesh Jane Welsh **Toronto Hydro:** Angelo Boschetti Thelma Hatzis Rei Marzoughi Andrew Sasso Jack Simpson **IESO:** Carrie Aloussis Chuck Farmer Ahmed Maria Steven Norrie Joe Toneguzzo Humphrey Tse **Hydro One:** Ajay Garg Farooq Qureshy
LAC Meeting Materials:	http://www.ieso.ca/en/get-involved/regional-planning/gta-and-central-ontario/central-toronto-engagement

Discussion	Follow-up Actions
Opening Remarks & Roundtable Introductions Chuck Farmer, Director, Stakeholder and Public Affairs, IESO, welcomed all to the meeting. Jack Simpson, Director, Generation Capacity and Planning, Toronto Hydro, said a new regional planning cycle for Toronto has begun. At the last Toronto LAC meeting on February 15, issues around planning assumptions and decision criteria were raised. In response, today's meeting will include a discussion of plan objectives and evaluation criteria. Resiliency was also raised at the last meeting. The IESO has initiated a study of resiliency requirements, which the LAC will hear about at this meeting. As well, a status update on a study regarding the achievable potential for conservation will be discussed. Toronto Hydro acts on regional planning recommendations that include conservation, distributed generation, and wires options. On the conservation front, Toronto achieved incremental energy savings of approximately 273 megawatt-hours (MWh) in 2016. The associated demand reduction was 37 megawatts (MW). The energy savings forecast for 2017 year end is 336 MWh. The local demand response (DR) initiative was started for Cecil Station. Various engineering projects are under way: a 2-MW/8-MWh battery storage project, a voltage reduction program, and a smart thermostat program to accompany the enrolment of large DR customers. The 2015 Integrated Regional Resource Plan (IRRP) and corresponding 2016 Metro Toronto Regional Infrastructure Plan (RIP) recommended some capacity initiatives. Among them, Toronto Hydro is building the new Copeland Station downtown, which will go into service in mid 2018. The Runnymede Station western expansion will go into service in late 2018. Toronto Hydro and Hydro One are working to upgrade the lines between Richview and Manby stations; construction is expected to begin in 2018. The LAC helps to inform regional plans. Regional plans are implemented by distributors and transmitters. The opinions, knowledge, and interests of LAC members are important.	

Responses to LAC Member Inquiries The IESO received questions from the LAC, and answers have been circulated back. Mr. Farmer invited follow-up questions from LAC members. There were none. Questions can also be submitted by email.	
Regional Planning In Toronto: Where We Are Now Steven Norrie, Senior Planner, Transmission Integration, IESO, said that the Central Toronto IRRP was released in April 2015. This was followed in January 2016 by the Metro Toronto RIP, which focuses on implementation of the infrastructure investments recommended in the IRRP. An IRRP update focused on the need to enable and facilitate the electrification of the Metrolinx lines. The Toronto LAC was established in January 2016. The focus for the working group is now on implementing recommendations from the previous plans and monitoring conservation and load performance. Toronto appears to be doing well on the conservation front. The electricity demand is currently tracking along the low-growth scenario shown in the previous plan. With respect to new capacity, Mr. Simpson said two large projects are under way. Copeland Station, with an additional 144 megavolt amp (MVA) capacity, is 90% complete and is expected to be in service by mid 2018. Customers will be connected through 2020. The Runnymede Station expansion involves a transmission line upgrade and will add 117 MVA of capacity to serve the many new customers expected due to the transit expansion. Construction has begun with an expected in-service date in late 2018. The Cecil Station DR project is expected to defer a wires upgrade by reducing demand by 9 MW. The project is helping Toronto Hydro evaluate the technologies most effective in managing the load. This knowledge will be applied in other areas. The main technologies being used are battery storage, the smart thermostat, and voltage regulation. A LAC member noted that energy storage will provide 2 MW of reduced demand, and asked where the other 7 MW will come from. The working group responded that a 1-MW reduction is expected from the smart thermostat program in the residential market. Another 1 MW will come from small commercial participants. The rest will come from institutional participants.	

The LAC member asked whether the contract with institutional participants would involve competitive procurement. The working group replied that it will be a standard rate based on the value to Toronto Hydro ratepayers. The LAC member asked whether Toronto Hydro would be delivering the smart thermostat program. The working group confirmed that it would. The LAC member asked who will pay for storage and whether there will be competitive procurement. The working group said Toronto Hydro has a budget for wire upgrades that will help to fund energy storage and other technical measures. Other government funding is being leveraged to make the project more cost-effective. The utility is working with a company that has introduced an opportunity to provide storage, and the utility is providing a host site. The LAC member asked whether 9 MW of relief would prevent the need for a wire solution. The working group replied that this is the intent. The LAC member asked whether a cost-benefit analysis has been done. The working group said it is included in the rate application filed with the Ontario Energy Board. The LAC member asked whether it could be shared with the LAC. The working group said early engagement with the LAC has been very helpful in preparing for the next planning cycle. LAC priorities are diverse and include preparing the system for economic growth, enhancing resiliency and balancing multiple priorities of the region including cost-effectiveness, community support and environmental impacts. The plan must be structured to balance these competing priorities in a transparent way. Some LAC concerns may not fit within the scope of regional planning, and when this occurs the working group will point the LAC in the right direction. As the planning process progresses over the next two to three years, the working group will do its best to share methodologies, modelling, and data inputs. Discussions will take place around who will pay for certain enhancements that may benefit Toronto customers but not all customers on the grid. It is hard to ignore capacity concerns given the pace of growth in Toronto. The increase in peak demand that was expected a few years ago has not	The LAC requested an estimate of the avoided transmission distribution costs for Cecil Station. The Working Group will see if this information is available.

been realized, perhaps due to conservation measures and improved building standards. Toronto's greenhouse gas (GHG) emissions targets are aggressive. The working group recognizes the importance of alignment with city policies and goals, as well as recognizes the tremendous value of current assets in building the system of the future. A full list of LAC priorities and feedback has been published on the LAC web page. A LAC member asked what evidence the working group has to support the statement that LAC priorities are competing with each other. It is possible that this is not the case. The working group responded that there is ample evidence to support competition among various objectives, especially related to energy system development. Hydro One initiated a needs assessment in June, and the report is expected in a few weeks. It will identify areas where existing infrastructure is insufficient and address potential liabilities. It will also include infrastructure end-of-life considerations. The IESO will then take the lead in a scoping assessment to determine the scope of the next plan and the appropriate planning approach. It will be a 90-day process that includes stakeholder engagement and the development of terms of reference. Development of the IRRP will begin in early 2018 and will last up to 18 months. There will be an opportunity to discuss Toronto Hydro's demand forecast with the LAC, develop scenarios, and explore alternatives. Engaging the community more broadly will be part of the discussion. There will be challenges related to growth plans, transit plans, electrification, and GHG emissions targets. Following the IRRP, an infrastructure plan led by Hydro One will address the implementation of any wires options resulting from the IRRP. A LAC member asked when the needs assessment will be finalized. The working group said it is a 60-day process, and the results will be posted on the Hydro One website as a public document. A LAC member asked what the working group will do with the needs assessment. Another LAC member said it might be preferable for Hydro One to take the lead in making recommendations, since the terms of reference	

for the needs assessment seem out of sync with the IRRP. The working group said the needs assessment is a high-level screen that identifies electricity needs and equipment requiring replacement. The scope of potential solutions will be identified during the scoping assessment process, and LAC members and the public will have input into the scoping assessment outcomes. A LAC member asked how a needs assessment can be done without first forecasting the load. The working group said the previous load forecast is sufficient for the time being. A LAC member asked whether the LAC would be notified when any documents are filed with the Ontario Energy Board. The working group said this would be done. The working group noted today's discussion was compressed because the June 2017 LAC meeting was cancelled. It is important that the following topics be addressed within the next three months (an extra meeting may potentially be required): • Develop outlook scenarios for the forecast and implications stemming from the next Long-Term Energy Plan (LTEP) • Provide an update on resiliency study • Discuss innovative power system concepts developed by the Advanced Energy Centre, MaRS Discovery District • Discuss the scoping assessment, including terms of reference for the IRRP A LAC member asked how an extra meeting would fit with the regional forum meeting coming up in December. The working group said the forum will be a broader sector overview followed by a focus on trends and innovations in the GTA and Central Ontario. While there will be opportunities for engagement at the forum, engagement on specific topics and projects will remain with the local advisory committees and other targeted engagements. Five regional forums are coming up starting in October, to be held in Thunder Bay, Sudbury, Ottawa, London, and finally Vaughan. The working group said that the needs assessment is ongoing, the scoping assessment will begin this fall, and LAC engagement will continue as the planning process develops, especially with respect to developing plans to engage the broader community.	The LAC will be notified when documents are filed with the Ontario Energy Board.

A LAC member remarked that they are in agreement with the definition of "avoided cost" as it appears on page 4 of the handout entitled "Local Avoided Costs—Overview." It reads: "In the context of electricity planning, avoided costs are the savings associated with the power system not having to generate and deliver additional units of electricity, while still meeting the demand requirements of customers." They noted that the only source of new generation being contemplated in Ontario for the next 20 years involves 10 aging nuclear reactors. In the opinion of one LAC member, one or more of these rebuilds could be avoided if Toronto does conservation and demand management (CDM) and distributed generation. The same LAC member took issue with the avoided cost estimates on page 6 of the same handout, saying the estimates are three years out of date and underestimate the avoided cost of base load generation. The working group said the table is updated periodically and would be updated sometime after the LTEP is released and government policy is made clear. A LAC member said planning cannot be done on this basis. The working group replied that there is a set of avoided costs that deal with energy on a provincial level, generic distribution values across the province, and specific targeted investment values. A LAC member said the first principle in the 2013 LTEP is conservation first. Another LAC member said planning requires knowing the avoided cost and that the LAC has nothing to work with. The working group said local avoided cost is based on the value received from deferring a local distribution or upstream transmission need. For example, when there is a least-cost wires solution to set a baseline, a local avoided cost can be determined. There will not be one local avoided cost for all of Toronto, as local avoided costs are location and time dependent. The LAC member asked whether Hydro One's needs assessment will shed light on avoided costs, and the working group said it would not, as the Needs Assessment only identifies needs and not solutions. The working group said the IESO is looking at growth expectations in Toronto with conservation targets and distributed resources layered on. Then it will look at points where the system will be stressed under each scenario. This will identify points of weakness, the reinforcements that	

would be required, and what is avoidable through other measures or alternatives. A LAC member proposed that the IESO consider a bottom-up approach alongside the conventional top-down approach. There are market realities such as new technology and new customer expectations to consider. The working group replied that there has been discussion about piloting such an approach. It will require thinking about average avoided costs in Toronto, and whether these can be applied for this purpose. The LAC member asked whether Toronto Hydro will be able to use the local avoided cost figures for planning. There is no use in making it a paper exercise. The working group said this question has been raised in other areas. It is a matter of doing a better job of identifying non-wire solutions, and the IESO hopes to have this discussion within a broad framework. Once solutions have been identified, it becomes a matter of making them real so that a utility can take them to the Ontario Energy Board. This is the right place to have this important discussion. A LAC member said builders are sometimes penalized for putting in energy-efficient measures. If there is a rate increase, some solutions will make more sense than others, and capacity will be affected. The working group said there is potential to facilitate this discussion with the Advanced Energy Centre at a future meeting.	
Working Group Liaison At the November 23, 2016, meeting, LAC member David Kiguel was selected to be the interim working group liaison until a formal selection process was undertaken. LAC members are invited to submit a one-page application if they would like to be the liaison, or if they would like to nominate someone. A LAC member asked whether the IESO would object if the LAC elected a colleague at this meeting. The working group said this would not be possible because not all LAC members are present. Mr. Kiguel said he has been invited to only one working group meeting since becoming the interim liaison last year, and that meeting took place in March 2017. The working group said there have been no other meetings because the formal working group for the next planning cycle has yet to be confirmed.	

Preparing for the Next IRRP Mr. Norrie said the working group is looking for objectives and criteria it can use to evaluate alternatives on an equal basis. The objectives must be captured effectively. It is time to look at key outcomes for the plan to deliver. Technical planning standards are established by the IESO through the Ontario Resource and Transmission Assessment Criteria (ORTAC). These criteria specify the performance requirements of the power system. The IESO is concerned with what alternatives can be implemented in time to meet identified needs. If an alternative has not been tested in the market, it may not be vigorously pursued. With respect to community-specific planning, objectives concerning local policies and preferences have to be measured or measurable. A LAC member said caution is needed when talking about compliance using reliability standards developed in the United States. For example, nothing in the standards addresses the maximum amount of interruption of supply to customers. The working group said the ORTAC does specify how much load can be lost and how quickly it must be restored. Hydro One is obligated to monitor performance in its rate application. The LAC member noted that compliance is separate from reliability of supply. Another LAC member said there is concern within the community about reliability. The working group replied that the scope of issues will be considered both locally and provincially. For example, responding to an individual transformer is at the local level. Community engagement is critical in the IRRP in relation to these assets, as they may affect the direct customer experience. A LAC member suggested another level of direction might be required to make it easier to set and achieve targets. The working group said scenarios that include aggressive climate change or electrification will be encompassed within the demand outlook. The plan must be transformed into quantities that can be used in the IRRP. Another LAC member said it is important to know where new technologies will connect to the electrical system in order to understand the impacts on	

the transmission system. The working group said this falls within the scope of the regional plan. Hydro One spends a lot of time on load forecasting. A LAC member said energy sources tend to be viewed separately, but a much larger view is needed. For example, discussion about how to reduce peak demand is needed. Weather conditions are still being forecast based on 1990 data. The working group said forecasts are based on 20-year averages. Forecast assumptions will be revisited at the next Toronto LAC meeting. The IESO asked LAC members and members of the public to break into small groups to discuss what matters to them and why, and to rank these matters in terms of importance. <u>Reports from the Small Groups</u> Group 1: • Objectives are interdependent; one can cascade into another. • Achieving reliability beyond standards can be characterized as resilience but may be difficult to quantify. A judgment scale or probabilistic approach might be useful. • Throughout the plan, better ways to enable customer choice could be sought given the swift evolution of technologies and sharing economies. • Least-cost options may not always offer the most appropriate solutions. • A more integrated energy planning process is needed, encompassing electricity, gas, transportation energy, and other forms of thermal energy. Group 2: • Some objectives are coupled, for example, local policy objectives and community preferences. • There is a need to better understand how to measure an incremental unit of reliability. • A truly integrated plan that looks beyond electricity is also needed. • The utility industry has standard reliability measures that should be monitored on both transmission and distribution sides. • The IESO should look at the lowest long-term costs when planning. • The IESO should consider GHG emissions within scenarios using various technologies. Group 3: • There are similarities between local policies (e.g., reducing GHG	

emissions).
- There is a need for transparency (e.g., listing local policies and how they are met) and a need to demonstrate the correlation between local policies and planning.
- Look at market costs, competitive costs, and what is real to determine optimal costs and benchmarks.
- Market changes (e.g., cost, consumption) should be quantified and captured in the planning process.
- Definitions of reliability and resilience are required.

A working group member from Toronto Hydro asked whether there has been discussion within the IESO about the infrastructure project in southwest Etobicoke with respect to whether or not that community will be engaged in discussion or whether there will be broader community engagement. An IESO member said there has been no discussion about that specific area.

A LAC member said there should be a focus on what can be done within each sphere of influence and how it fits in the broader scheme.

Some communities have local energy plans, and their expectations must be managed in terms of reconciling their plans against reliability requirements. Communities may become self-determining by providing funds that do not come out of the rate base, which is where things are probably heading.

The working group said preparing for facility end of life will be a big component of the plan. In some cases, a like-for-like replacement might make sense. There may be rationale for upsizing or downsizing, and opportunities to consolidate and phase out equipment. Planners must look at the forecasted need in an area, adjacent facilities, how heavily uploaded the upstream infrastructure is, and the cost. There are few opportunities in Toronto to build new infrastructure on the surface because of the scarcity of real estate. There are stations with transformers that are 40 to 60 years old. In some cases the equipment has aged prematurely. Cable sections may be degrading and switches are getting old. Major parts of a station may be at or near the end of life. These issues will be reflected in the Needs Assessment.

A LAC member asked if end of life is an endemic problem. The working group replied that it would be a recurrent theme. The load forecast going forward would be affected by things like electrification and climate change.

The Needs Assessment and subsequent plans will address such impacts. The IESO has engaged a consultant to look at resilience. A study is under way looking at hospitals, long-term care homes, the Toronto Transit Commission, Toronto Hydro, emergency services, and telecommunications. Early findings indicate these customers vary widely in their levels of preparedness. One hospital may be best-in-class, and then there is everybody else. Some have working backup generators. Some have not increased their resilience because they have not had any problems. Some do not have the space, budget, or interest to address changes. These customers, in general, have either taken action to mitigate risks, or have actively managed or accepted the risk. A LAC member asked whether people are being put at risk when services are pushed out of hospitals. The Working Group said this was considered within the scope of home-based and institutional care. Such customers can apply for priority in resupply from the utility. The consultant working on the resiliency study is preparing to present their findings. Rei Marzoughi, Lead, CDM Programs, Toronto Hydro, provided an update on the Local Achievable Potential study. Toronto Hydro has received funding from the IESO to conduct the study at four downtown stations (e.g., Basin, Esplanade, Terauley, and Carlaw). The study is looking at local opportunities to manage demand in order to defer capital investments. Demand-side conservation and distributed generation options are being considered. The project will begin soon. A LAC member asked whether this approach is being applied at the Cecil Station area. Ms. Marzoughi said the intent is to defer investment at the Cecil Station. The working group said downtown stations that are approaching or exceeding 95% of capacity are good ones to focus on in terms of conservation and load growth. From a transmission perspective, these stations are supplied from Leaside, which has been identified as a future stress point within the regional plan. Mr. Farmer said the IESO would reach out to the LAC via email to invite input into how to engage a broader community by providing the discussion questions that were planned as part of the meeting's agenda.	

Public Questions A participant from Enbridge Gas Distribution Inc. indicated that over the course of their ongoing IRP study they were able to confirm that the vast majority of energy efficiency measures related to heat load, contributed to both annual and peak hour reductions. The exception to this is adaptive thermostats, with preliminary results projecting an increase to the peak hour load on the natural gas system from the installation of this equipment. This potential increase to peak hour load due to wide spread implementation of adaptive thermostats on constrained networks, could lead to an increase in natural gas infrastructure reinforcement projects. Where LDC's are looking to install adaptive thermostats for DR purposes, it would be prudent to ensure that there is capacity available in the natural gas system in the corresponding area to handle the increased peak hour load. A participant from Magnolia Generation Inc. said Magnolia has proven that resiliency can be built into certain multi-residential buildings at no incremental cost. Magnolia Generation has entered into a 20-year power purchase agreement with a building.	
Meeting Adjournment Mr. Farmer closed the meeting. The next Toronto LAC meeting is currently scheduled for November 1. Any changes to meeting dates will be communicated. **Summary of Action Items** 1. The LAC has requested an estimate of the avoided transmission distribution costs for Cecil Station. The working group will see if this information is available. 2. The LAC will be notified when documents are filed with the Ontario Energy Board.	