

**IESO Stakeholder Advisory Committee**  
**Meeting Notes**  
**March 23, 2016**  
**St. Andrew's Club & Conference Centre, Toronto**

**Advisory Committee Members:**

Mr. Brian Bentz – Chair (representing Distributors and Transmitters)  
Ms. Ersilia Serafini – Vice Chair (representing Ontario Communities)  
Mr. John Beaucage (representing Ontario Communities)  
Ms. Darlene Bradley (representing Distributors and Transmitters)  
Mr. Jack Burkom (representing Related Businesses/Services)  
Mr. David Butters (representing Generators)  
Mr. Jared Donald (representing Generators) (via teleconference)  
Ms. Julie Girvan (representing Consumers)  
Mr. Geoff Lupton (representing Ontario Communities)  
Mr. Rob Mace (representing Distributors and Transmitters)  
Mr. Mark Schembri (representing Consumers)  
Mr. James Scongack (representing Generators)  
Mr. Adam White (representing Consumers)  
Mr. Todd Wilcox (representing Distributors and Transmitters)  
Mr. Terry Young (representing IESO)

**Absent:**

Mr. Steve Baker (representing Related Businesses/Services)  
Ms. Valerie Helbronner (representing Generators)  
Mr. Paul Shervill (representing Related Businesses/Services)

**Presenters:**

Mr. Shawn Cronkwright  
Mr. Chuck Farmer  
Ms. Susan Harrison  
Mr. Mike Lyle  
Mr. Andrew Pietrewicz  
Mr. Joe Toneguzzo

**IESO Board Members:**

Mr. Tim O'Neill – Chair  
Mr. Bruce Campbell  
Ms. Cynthia Chaplin  
Mr. Murray Elston  
Mr. Ronald Jamieson  
Ms. Margaret Kelch  
Mr. Bruce Lourie  
Ms. Deborah Whale  
Ms. Carole Workman

### **Item 1: Welcome – Brian Bentz**

Mr. Bentz welcomed everyone to the second Stakeholder Advisory Committee (SAC) meeting of 2016. He noted that this is the last meeting for Mr. Adam White, who was appointed to the SAC in 2007. IESO Chair Tim O'Neill thanked Mr. White on behalf of the Board of Directors for his exceptionally strong service.

Mr. Bentz introduced the IESO Board and encouraged SAC members to provide comments on the information and input items.

### **Item 2: IESO Business Update – Terry Young**

Mr. Young provided updates on IESO business and engagement activities.

The IESO is working to introduce the Conservation and Demand Management Information Solution (CDM-IS) system to the local distribution companies (LDCs) for the Conservation First Framework. There have been some delays and small schedule changes.

The first two contracts for multi-site energy managers have been awarded to FirstService Residential and Loblaw.

With respect to *peaksaver* PLUS, the IESO is reviewing through the comments received at the last SAC meeting and expects to respond within the next few weeks.

Year-end results for 2015 corporate performance measures have been provided along with the targets for the end of 2016.

A draft plan for the Market Renewal engagement initiative has been posted, and a communication will be sent out shortly inviting participation in this engagement.

The Smart Metering Entity (SME) Licence Renewal Order Implementation Working Group held a kick-off meeting.

With respect to the Adequacy Reporting Refresh initiative, a memo has been posted to provide information on the changes coming in the IESO's adequacy reports.

The nomination process has begun to replace outgoing SAC member Adam White.

Feedback from the February 10, 2016, meeting will be consolidated with responses from today's meeting and posted. Discussions held on the proposed terms of reference for the Technical Panel have already been posted, and the IESO is seeking broad feedback beyond the Technical Panel and SAC. The revised terms of reference will be taken to the next Technical Panel meeting on April 26.

## Comments

Mr. Wilcox asked whether any major changes are coming to targets for the Achievable Potential Study. Mr. Young replied that it is too early to say. The IESO anticipates bringing the results of changes back to the next SAC meeting on May 11. There was some dispute in the last study over the assumption of a 8.7-terawatt-hour (TWh) target, as such the IESO responded with a new process to engage the community in this study. Another study on combined heat and power (CHP) potential will be released at the same time.

Mr. Beaucage asked for clarification about the words “Five Nations” in the memorandum on the Conservation First Framework. Mr. Young clarified that the IESO is working to finalize the three First Nation LDCs expenditures who are a part of Five Nations Energy. This is a priority.

Mr. Bentz said the Conservation First Framework progress report looks good with respect to already achieving 1 TWh of the 7-TWh energy savings target by 2020. He asked how much of the achievement in 2015 was a result of carry-over from the prior framework, and whether this would impact the goals for 2016. He asked whether there is a baseline to build on.

Mr. Young said that many programs that contributed were from the legacy 2011–2015 framework, and the rules have changed in the new framework. The challenge is to get new, local programs in place because pilot projects take a long time. The focus now is for LDCs to take more ownership. Programs that are developed locally should be considered for their ability to move into regional programs.

Mr. Bentz said the transition to LDCs for local programs will be critically important in the planning outlook. The baseline demand, not adjusted for conservation, still grows to about 180 TWh, and a lot of that will come down through conservation.

Mr. White commented that the Achievable Potential Study work does not get at behavioural response. The adoption curves are mechanistic, and classical assumptions have been made about production, diffusion, and uptake. There is growing literature on applying social practice theory and behavioural approaches to engaging customers, and the IESO should build some of its own evidence with respect to behavioural incentives.

Ms. Girvan asked about the criteria for the 14 LDC pilot projects within the Conservation First Framework. Mr. Young said the IESO looks at expected results and costs and whether the project has been done elsewhere.

Mr. Lupton said maintaining momentum for the conservation programs is important. There are different cycles for the public and private sectors for budgeting and projects. Any slowdown creates doubt.

Mr. Schembri asked whether there is an opportunity to look at performance-based incentive programs. Mr. Young said some areas have gaps, and the IESO wants to connect customers who

want to run programs with the LDCs. The numbers are there, but some things need to be addressed at mid-term. The pickup on pay for performance fell short.

#### Question from the Phone

Raj Chintapalli, Customized Energy Solutions, asked whether there is still a multi-year work plan for large market development. Mr. Young said a draft engagement plan has been posted for the market renewal engagement plan.

### **Item 3: Large Renewable Procurement II Engagement**

Mr. Cronkwright provided results of the large renewable procurement (LRP) I process, which began in 2013 and is now concluding. Seventy request for qualifications (RFQ) submissions were received with over 8,700 megawatts (MW) of interest. This exceeded the target by about 15 times and translated into 33 qualified applicants in the request for proposals (RFP) process, with 103 proposals for 3,613 MW of projects submitted. Overall, this represented six times the procurement target, including oversubscription on solar by 11 times and on wind by seven times. Water power and bioenergy were undersubscribed. There were no rooftop solar PV proposals.

Sixteen contracts were offered representing about 450 MW of new renewable energy capacity, including five wind, seven solar, and four hydroelectric projects and no bio-energy projects. Average prices and ranges have been posted for each. More than 80% of projects had Aboriginal participation, including some with more than 50% Aboriginal participation. More than 75% had support from local municipalities, and more than 60% had support from abutting landowners; there were combinations of both. Price caps were published.

Webinars and meetings were held in Toronto in summer 2013 and in five communities across Ontario in winter 2014. Feedback was inconsistent. For example, the IESO heard that there are many ways to achieve community engagement. Two reports with recommendations were made to the minister. From the procurement perspective, a lot of information has been posted publicly, and this will continue.

Ms. Harrison provided an update on the LRP II stakeholder and community engagement plan. A webpage was launched to house meeting materials and provide a survey to identify gaps and to leverage successes in LRP I. Comments on the need for generation or issues related to environmental or regulatory impacts are out of scope of this engagement.

The next two phases of LRP II engagement will focus on the draft RFQ and RFP details.

The draft engagement plan for LRP II is posted for review.

## Comments

Mr. Schembri asked what the IESO reaction is to the absence of applicants for solar rooftop projects. Mr. Cronkwright said that qualification submissions were received, but no proposals were submitted for solar rooftop projects and noted that this an area where we would like to hear from proponents about possible barriers to participation.

Mr. Scongack asked what the IESO means when it says it received 80% Aboriginal support and 75% municipal support for LRP I contracts awarded. Mr. Cronkwright said a multi-level point system was used to evaluate municipal support, including municipal council resolutions; demonstration of an agreement between a municipality and a developer, including on First Nations lands; and support of 75% of the abutting landowners.

Mr. Butters asked whether the IESO has any thoughts on why hydro and biotech projects were undersubscribed. And with respect to the schedule for LRP II, there is concern among generators that the schedule might be too long. He asked whether contracts will be awarded by the end of 2017.

Mr. Cronkwright said that with technologies, connection capacity is a consideration. For example, it is hard to relocate hydroelectric sites to transmission. The biotechnology sector has its own challenges, and feedback from the biotechnology sector about these would be interesting. Second, large-scale hydroelectric and biotechnology projects may have trouble making the economics work. Regarding the timing of contracts, he said each proposal must be given its due on both the developer and the IESO sides. However, given that this is the second procurement process, tighter timelines can be expected compared to LRP I.

Mr. White asked whether the IESO publishes the prices of contracts that are awarded. Mr. Cronkwright said this has not been done to date. Average prices and price ranges are posted, by technology. Mr. White asked whether the terms offered in these contracts vary by technology. Mr. Cronkwright said the terms for all are 20 years, with the exception of hydro, which is 40 years. Mr. White suggested that longer terms of amortization for hydro, for example, would be cheaper, given that these are long-lived assets. He asked how much margin there is for investors. Mr. Cronkwright said that the lowest prices were about 6.5 cents for wind projects, and these would yield the types of returns one would expect in a robust competition.

Mr. White asked to what extent procurement of renewables and other-than-market resources can be handed over to the regions. This would offer a path toward a less prescriptive approach to procurement. He asked whether there is thinking about integrating procurement with regional planning or whether these are managed separately. Mr. Cronkwright said the IESO would like to see all resources integrated within a regional approach.

Ms. Serafini suggested that more detail about the evaluation criteria is needed in the engagement piece, including why some applications did not qualify or whether the decision was based on price alone. Mr. Cronkwright said the evaluation process is public and the rationale is as well. There were technology-specific targets, and they were within half a megawatt for each of solar and wind. The target for hydro and biotechnology was not hit

because there were not enough compliant proposals. These were specific targets that could not be given to other resources like wind or solar.

Mr. Bentz said having two processes for regional planning and procurement do not make sense, and coordination is needed. A broader view should be taken.

Mr. Burkom said capacity tables, interconnection availability, and timing of these releases are an issue. He asked whether the province could have a more traditional interconnection queue process, and whether the IESO could be more robust in presenting information regarding connection capacity earlier, and with more background as it is hard to understand those capacity releases. Mr. Cronkwright said the IESO is looking at ways to provide the proponent community with the best, timely information possible. This is balanced against getting things done quickly – these are competing issues. Whatever timeline is agreed to, the system does not remain static; there are many moving pieces.

Mr. White said the question of whether one can or cannot connect is up to the discretion of the distributor at the local level, at least. He asked how to get to a place of province-wide transparency of distribution and connection issues. For example, where is the congestion and where are the load centres that are looking for relief? AMPCO members have spent money on a CHP project only to learn of a short-circuit issue that prevents connection. He asked what recourse is available when customers cannot connect, and how the project moves forward.

Mr. Cronkwright said the LDCs are open to having transparent discussions. There are roll-up issues regarding congestion in areas. The IESO wants to avoid doing something in one procurement that causes an adverse event somewhere else.

Mr. Schembri asked whether there were any successful projects in area codes 905 or 416. Mr. Cronkwright said there were none in the Greater Toronto Area (GTA).

Mr. Wilcox said the North Bay experience with LRP I was a drive-by consultation process with developers, possibly due to timelines. He suggested that standards are needed on what consultation means for these projects.

Mr. Bentz said lease costs associated with rooftop are higher in the GTA, and line costs are cheaper in remote areas. With respect to distribution standards, there are different configurations, protection controls, and risk profiles among utilities. Distribution plans with risk-return trade-offs submitted to the Ontario Energy Board (OEB) might bring about some convergence of standards.

Mr. Donald asked whether it is possible to maintain consistency in the procurement process, and whether there is anything that needs significant attention going forward.

Mr. Cronkwright said there is a need to focus smartly, balancing the time for meaningful engagement with the interests of policy-makers to move forward. Also, the availability of connection information is flagged as needing attention and there is a question as to whether the

government might want to revisit community engagement and support. Many things worked well in the engagement, and it is best to leave those alone.

Mr. Donald asked whether any changes to legal documentation are anticipated with respect to financibility of the proposed contract forms. Mr. Cronkwright said if he had anticipated issues, he would not have received 103 bids. He said he is confident that it is financible.

#### Questions from the Floor

A comment from the floor noted the results are a credit to the process of moving from a standard offer program to a competitive procurement, but there is room for improvement. Some connection issues came up as early as 2014. He suggested a feasibility study should be done early in the process. When publishing data under connection tables, it was suitable under the Feed-in Tariff (FIT) Program because thousands of applicants were expected. He suggested a truncated assessment to give people an indication of the reasonableness to connect. Creative solutions could then come forward. He suggested focusing on the key areas and engaging in face-to-face technical sessions.

Another attendee supported the previous suggestion to do feasibility studies. With respect to the engagement plan, there are some issues regarding the timing as well as overlooked aspects of the contract details and RFP. These go hand in hand and should be consulted on simultaneously, as they were in LRP I. A more iterative process beyond webinars, a more expedited process, and a better understanding of when to expect contracts would be welcomed.

Mr. Mace said the guidelines for potential embedded generators require an upfront conversation with the LDCs. It is best to have an early discussion about availability before money is spent.

Mr. Scongack said he would like to see a standard for transparency across all contracts. He asked whether contracts will be posted online. Mr. Cronkwright said contracts are posted, but the specific parameters, including individual bid values are not.

Ms. Girvan asked how the target is developed. Mr. Cronkwright said it is based on government policy.

#### Question from the Phone

A caller noted that some municipal councils gave approval for projects without consulting their constituencies. and asked how this will be managed in future. Mr. Cronkwright said the IESO respects the elected municipal councils. Where municipalities might not be supportive, sometimes local landowners are. The caller asked if the same requirement for municipal council resolution will continue in LRP II. Mr. Cronkwright said it will remain as one of the ways of measuring support.

#### **Item 4: Priorities for the 2017–2019 IESO Business Planning Period**

Mr. Bentz asked all SAC members to provide input on their priorities to inform the IESO business planning process in the short term and any priorities for the longer term period.

Ms. Bradley noted that the total cost for the Meter Data Management and Repository (MDM/R) data will be needed given LDCs will have different information and formats for data so it will be important to provide this clarity and consistency in this process.

Ms. Serafini said the conservation agenda continues to be a key theme, specifically LDC-IESO gas collaboration, and she is looking for ways to remove potential barriers to that collaboration. Evaluation, metrics, criteria, leveraging common tools, data tracking, and reporting are key factors that would help to facilitate strong connectivity to the customer. She questioned the IESO's role in facilitating collaboration between LDCs and gas, considering the big provincial drivers, especially home energy conservation, and the number of pilot projects.

Ms. Girvan said it is important to keep reviewing the conservation file with an eye to ensuring value for money and accountability. Only so much can be done on the residential side, so conservation programs should focus on the most effective programs. She said she becomes concerned when LDCs try things just for the sake of trying things. Thus, accountability of conservation dollars must be a priority for the IESO. She echoed Ms. Serafini's comment about the need for collaboration between the IESO and gas. Gas utilities are increasing their spending on demand side management programs significantly. On the residential side, a lot of money is being spent on audits and retrofits. There appears to be less convergence on the electricity side. On top of that, the government is giving \$100 million to gas LDCs for further retrofit. Coordination is required to make the best use of the money. She asked how the IESO will ensure what is best for customers with cap and trade cost implementation. The OEB is doing work on the gas side. This should be an IESO priority.

Mr. Mace echoed Ms. Bradley's comments about MDM/R data and cost duplications and privacy of data. Work is required on better price signals and consistency for global adjustment. There is a huge surge in demand for CHP, but little is known about the impact of cap and trade. Finally, there is a need to monitor newer disruptive-type technologies and how they impact conservation programs and regional planning. These are gaining traction and require IESO attention.

Mr. Lupton suggested a continued focus on developing consistency in programs, creative options, and greater risk-reward in performance within the conservation file.

Mr. Beaucage said communities want to know why energy costs continue to rise and how higher costs equate to savings with carbon retention or decreases in greenhouse gas emissions. He asked whether there is a formula that would allow consumers to say they are doing their part to reduce climate change. The rising cost of energy is destined to switch from the generation side to the transmission side as aging transmission infrastructure throughout the province requires retrofitting.



Mr. Butters said generators want to get the most from existing assets when it is economic to do so and to maintain the value of contracts. It is important to get it right in 2016, ensuring opportunities for good discussion, observation, and examination of the principles of the assumptions. With respect to market renewal, less prescriptive approaches to technology are desired, along with knowing what products or services the system needs in the future and unleashing the creativity of people who are already invested. Carbon pricing will start on January 1, 2017, and generators do not want to be tied to inflexible contract accommodations. There is hope for continuous improvement on stakeholder outreach, engagement, transparency, and fairness.

Mr. White said it is important to define its scope, process, and paths to engagement for the IESO to fulfill its agency and its utility because this is about providing an essential service. The grid is a natural monopoly that needs to be regulated. One of the enduring tenets of the 1998 restructuring is open access. With monopoly and public ownership, the IESO has a role of redeveloping markets in a world of changing customer expectations and needs. The IESO hears many complaints from SAC members about disappointments and differences between expectations and realities and needs to manage expectations. If the narrative is not spoken by the IESO, the void will be filled by others – this is where the sector ends up in trouble.

From an economic perspective, when costs to consumers are increased in the abstract, there are income effects, price effects, and substitution effects. Industrial consumers have different timelines and conceptions of the future. When costs escalate for industry, not only are there income effects, but investors are disappointed, and uncertainty and risk increase; this erodes the potential for investment and adds risk premiums for investment. For all industrial consumers, the cost of electricity is material. These are long-lived assets on different cycles. Large investors and projects have long timelines and need long-term certainty. Behavioural incentives and price incentives induce positive customer outcomes.

When it comes to communicating with government, industry often feels it has no role in the government's vision of Ontario's future. The government seems indifferent and insensitive to industry's concerns about high and rising electricity rates and uncertainty and risk in the future cost of electricity; the government is unaware of the narrative about the role of energy. Thus, it is up to the IESO to inform the government. Unfettered political power is bad for business. The IESO should establish processes, engage with communities, define future possibilities, and develop policies.

Mr. Schembri said reliability is important but not often spoken about at SAC meetings. Given the change in structure at Hydro One, he asked for clarification of the IESO's role in reliability. The IESO has done important work on the demand response front, and Loblaw is excited to leverage resources. It is important work for five to 10 years from now when there is less capacity for generation than there is now. With respect to stability of conservation programs, consumers need to know if these are changing, or if there is a potential for change. With respect to global adjustment (GA) forecasting, Loblaw has a network of franchised operators who are always aware of any escalation of electricity prices. There are complaints, however, when GA

forecasting misses the mark, resulting in significant increases month over month. The IESO needs to work closely with the LDCs to better forecast where GA costs are going to be.

Mr. Wilcox said a recent home show in North Bay had display booths on smart thermostats, LED lighting, and a solar panel. The solar panel got all the attention because customers are increasingly frustrated with electricity pricing and feel a sense of helplessness. He said IESO stakeholders cannot keep ignoring the speed at which technology and customers will move the industry in a new direction. The IESO's 2017–2019 plan must take this into account and understand how to cost it. Stakeholders are not setting the plan, customers are, and technology will drive us.

A lot of progress has been made on the conservation file, but LDCs are stuck between the old and new frameworks. LDCs have been spoon fed by the OPA on rules, incentives, and how much to pay, and they have become dependent on that. The new framework has more flexibility. The IESO should set gateposts, such as target, budget, and cost-effectiveness, but then cut the ties and leave it to the LDCs to execute and to take the risk.

Mr. Burkom said Brookfield's priorities are around planning and market design and renewal. The IESO plays a critical role in planning and there has not been much change since the merger began. He would like it to be more open, both consistently and permanently, for ratepayers and IESO stakeholders. As well, more transparency for connectivity, feasibility studies, and a more rigorous process for the government's Long-Term Energy Plan (LTEP) would be welcomed. Planning should be open to stakeholders, not done behind closed doors at the IESO. Planning should not be driven by discrete planning processes or procurements. The markets should know where the constraints are and have the opportunity to work with IESO planners to test and rebut processes on an ongoing basis. Such processes are seen in other regional transmission organizations around Ontario. There are best practices and benchmarks to look at. There is a lot of risk around nuclear decisions, including capital deployments, massive volumes of supply, and reliability, and it is not clear what the IESO is doing directly to ensure off-ramps for those risks. While it may be possible for the IESO to hold contingent RFPs, there is a need to better understand what options are available.

He said the time is right to change market design and renewal without having a meaningful cost impact today. These decisions should be made in 2017–18 to ensure market structures are in place. Moving forward on capacity exports forms the base for a capacity market. It is important to address risk for how resources are procured in a non-long-term fashion when those assets come off contracts.

Mr. Scongack said the IESO has a strong model for engagement, and the introduction of Bill 135 last fall provides an opportunity to address areas that need improvement in the sector. There is an opportunity for the IESO and the OEB to position themselves jointly to Ontarians. The role of the IESO and the OEB is to protect the reliability of the system and to implement the long-term plan in the best interest of the ratepayer. Resources are needed to communicate to Ontarians. When people understand that these organizations have been set up independently from government to protect their interests, public confidence will increase.

With respect to conservation, the number of programs, incentives, and opportunities is significant, but Mr. Scongack said he worries that people do not fully understand the benefits of conservation. This is a challenge in a complicated sector. Union Gas does a good job of sending customers a bill every month to communicate with them. The electricity sector has an opportunity to have a direct link with people who need to understand the tools available.

Mr. Donald suggested taking a broad view of the future of the electricity sector to include new technologies, such as solar storage, smart communities, net metering, and micro-utilities. These will become significant in 10 years, and it is important to think about what this means for the aging infrastructure.

Mr. Lupton said cap and trade is the newcomer for rising energy costs. He questioned how consumers and municipalities will be affected. Cap and trade costs will be passed on to taxpayers either as rate increases or as tax increases, and it is important to be mindful of the big picture.

Mr. Shervill's comments were read out by Mr. Bentz [*Note: A full version of Mr. Shervill's remarks is attached as Appendix A to these Meeting Notes*]. He said demand response has good potential as a resource for flexibility and the ability to reduce environmental emissions. It is hoped that the IESO will find ways to increase flexibility. Mr. Shervill offered a number of suggestions: include representation for demand response members on the Technical Panel; continue the work done on capacity markets; re-evaluate and reopen the opportunity for GA aggregation for multi-site facilities; continue education efforts for new market participants.

Echoing comments made by Mr. Wilcox, Mr. Bentz said customers have an appetite for new technologies. New options are becoming more feasible, economic, and available. When the tipping point comes, the sector must be able to manage that risk as system operators with existing assets.

The demand forecast is in the range of 140–150 TWh. Unrestricted, without conservation, demand increases to about 180 TWh. The assumption is that the increase will be met with broadly defined conservation. There is about 10 TWh in the system now from conservation, and that should increase to 30 TWh in 20 years. Of that 20-TWh increase, 75% to 80% will come from new program innovation; therefore, it is important to get that new program innovation right or there will not be enough supply to meet demand. How to transition from a prescriptive to an innovative regime and how conservation is defined will have a large impact on how supply and demand are managed.

Historically, the electricity sector has been a supply-centric model, where demand in IESO-controlled markets either has been aggregated by the government through procurement or has been affected by the world changing through technology and economics. Demand can and should be represented more efficiently, more equitably, and more economically through other parties, such as community grids, aggregating loads, or industrial loads bidding into the market, more demand response, or load-serving entities.

Conservation is much more than changing light bulbs. It must be more broadly defined around behind-the-meter, consumer-empowerment, and comprehensive solutions, and not just individual but aggregated behind-the-meter loads so that the 20 TWh of conserved energy can be found. Reliability should always be a key consideration. Transmission congestion, and integrating regional planning with broader planning must also be considered.

#### Question from the Phone

A caller said the amount of agricultural land in Ontario is shrinking, and the importance of protecting those lands and working with generators and municipalities on large renewables and FIT programs must be communicated to municipalities and ratepayers. The OFA will continue to lobby for enabling energy policy for rural Ontario. If government can provide regulations to facilitate an energy market and IESO stakeholders can access the infrastructure, that comes back to communicating the benefits to ratepayers, especially in urban centres.

He said the IESO's openness is appreciated but could be improved. He suggested having a higher profile to engage the public. The LRP and FIT planning processes should be open and rigorous, engaging ratepayers.

#### **Item 5: Ontario Planning Outlook**

Discussion of the preliminary outlook for Ontario's supply and demand balance to 2035 was led by Mr. Lyle, Mr. Andrew Pietrewicz, Mr. Chuck Farmer, and Mr. Joe Toneguzzo.

Mr. Lyle briefly described the planning process envisioned by Bill 135. In anticipation of the Bill's passage, the IESO has started work to developing a technical report, which is expected to be delivered to government in late spring or early summer. The technical report will be named the Ontario Planning Outlook.

Mr. Pietrewicz and Mr. Farmer addressed the supply and demand picture for the system. Mr. Pietrewicz said that in the past decade Ontario has seen net growth in installed supply. The province has taken away 6,000 MW of coal-fired generation and brought online 14,000 MW to 15,000 MW of new supply via natural gas, renewables, and nuclear refurbishments. Today's installed supply is about 30% greater than in 2005. However, demand has not grown. Growing supply and declining demand have led to steadily increasing supply margins. Since 2005 the supply margin has risen steadily, and today there is a positive supply and demand balance. Concurrently, since 2005 there has been more decarbonization of the electricity mix: 90% of electricity produced in Ontario now comes from non-fossil sources. Renewables comprise 40%, and nuclear comprises about one-third of the installed capacity.

Mr. Farmer said the forecast for peak demand and energy demand is essentially flat. In the short term it is slightly higher than it was in the last LTEP due to rapid adoption of energy-efficient technologies, but in the long term it is lower due to assumptions as to how conservation will come into the plan and the pace of certain elements of electrification.

He referenced slide 14 in the handout showing gross demand and net demand. The adjustment is for demand that will not be there as a result of conservation programs, incremental codes and standards, and all the efforts laid out in the plan, which the government has set as targets. Over the next 10 years the key drivers of demand will be growth in the number of households, commercial space, and GDP for goods production. Growth is expected to be 14% for number of households versus 18% in the previous 10 years, 15% for commercial floor space versus 20% in the previous 10 years, and 2.3% per year for GDP versus 1.4% in the previous 10 years. Fuel choices by customers (electrification) is anticipated mostly within the transportation sector. There is an assumption that the rate of growth in annual sales for electric vehicles is growing at 50% annually. There are currently about 5,000 electrical vehicles on the road. By 2035 there will be about 600,000 electric vehicles. A further assumption is that a substantial transit build-out, including electrification of the GO system and light rail transit, will proceed. The reality is that if there were one million electric vehicles on the road, the impact on the total system would be in the order of 3 TWh of total demand, which is not very impactful. However, on a local basis it is important to manage these impacts.

Referring to slide 15, the conservation plan, Mr. Farmer said the target is to achieve 30 TWh of energy savings by 2032 from a base of 2005. The saved energy is coming from programs and from improvements in codes and standards. From 2005 to 2015, approximately 13 TWh were saved. As that moves forward, savings from prior initiatives will decline. By the end of the plan, about 8 TWh of savings can be counted on, so another 22 TWh will have to be found over the next 20 years to meet the government's objective. An additional 6 TWh could come from new codes and standards yet to be introduced. That leaves 16 TWh that will have to be realized from programs. There will be 7 TWh from LDC-delivered programs and 1.7 TWh from the industrial accelerator program. In all, that is more than halfway toward the objective, but there is risk to that with an expected impact of about 10%.

The IESO is looking at two scenarios. First, is a scenario which considers an accelerated pace of electrification, in which there will be rapid adoption of electric vehicles, conversion of oil loads to electricity, and conversion of natural gas and water heating to electricity. The IESO is developing a high-demand scenario to deal with that. Second, there is a scenario of low demand based on continued industrial restructuring. Resultant impacts could be 10–15 TWh hours either way.

Mr. Pietrewicz noted that committed supply is in the pipe, and there is directed supply that has yet to be procured.

Slide 22 in the handout shows that Ontario will have sufficient supply during the next decade. Thereafter, additional resources may be required.

Slide 26 shows that a substantial turnover in the resource base is coming and will bring risk. This includes the retirement of 3,000 MW at the Pickering Nuclear Generating Station, the refurbishment of more than 8,000 MW across 10 nuclear units in the province, and the implementation of new sources of supply, both already and not yet committed.

Slide 30 shows the effects of aging on generator reliability. Slide 31 shows that approximately 18,000 MW of existing supply will reach the end of its contractual term by 2035. Approximately 700 MW of that will take place by 2020. Between 2020 and 2030, another 10,000 MW, and from 2030 to 2035, approximately 7,000 MW. The biggest bang begins in the mid-2020s with gas-fired contracts reaching their terms. Most of the renewables reach their terms in the 2030s.

Slide 34 shows some considerations that might present future opportunities. For example, the costs of renewable technologies are evolving, as are social interactions. For example, people are increasingly interested in new opportunities in interjurisdictional trade. Storage capacities are evolving too.

Slide 35 addresses the propensity for deep change, and is the importance of understanding the drivers of deep change and their implications. Slide 36 addresses investment in current assets and the need to extract the most value from them.

Mr. Toneguzzo referenced slide 24 in the handout showing that future transmission investments will be mainly driven by locational factors. When considering transmission needs it is important to account for local supply and demand changes / patterns. For example, electrical demand has gone down in some rural areas, resulting in a lightly loaded transmission system. This can cause high voltage problems, which must be mitigated. In other areas, generator retirements cause step changes in the local supply situation. This is the case in the GTA with the planned retirement of Pickering NGS, which has the effect of causing major changes in flow patterns in the region and concerns about local voltage control. In many cases it is economic to address these needs with transmission solutions. While overall Provincial demand is flat and the supply picture is expected to be good, local transmission impacts must be given careful consideration. Going forward, we are expecting that local demand changes will be increasingly driven by customer choice. For example, customers are reacting to peak demand prices and as the cost of distributed energy resources continues to decrease they will be viewed as economic options by more customers. Given the importance of local impacts, Regional planning can be a very important tool from a transmission planning perspective, as the process provides for working closely with customers and communities, who are affecting local needs and can also be part of the local solution. Aging transmission infrastructure is also a concern, given the magnitude of facilities reaching end of life and the high utilization of the transmission system. However, when considered within the planning process aging infrastructure also presents opportunities, as refurbishment / replacement decisions can be adjusted to account for changing local circumstances.

### Comments

Mr. Scongack asked for the IESO's view on pumped storage and how it fits in.

Mr. Pietrewicz said there is an increase in public imagination around storage and a widening application of storage capacities at the local and bulk levels. The potential benefits include the addressing of off-peak-on-peak differentials, sopping up baseload generation, shifting energy, and the provision of capacity. Pilot projects around storage are under way, and these will help to identify barriers hindering adoption.

Mr. George Pessione (IESO) said the IESO is aware of several locations in Ontario where pumped storage can conveniently be built. They are limited by location, and value must be matched to the cost equation. The economics are not currently conducive for a pumped storage facility because building costs are high. The cost of carbon, under cap and trade, will be part of future economic assessments.

Mr. Wilcox asked about the potential for demand, as shown in slide 24. Mr. Farmer said the upper line is demand without conservation. The lower line indicates expected demand. The scenarios run in the 10% to 20% band around it. Mr. Wilcox said the confidence levels of the numbers should be noted. He said people do not go back to old technologies. Mr. Farmer said a lot gets locked in through market transformation or codes and standards, and this is being captured in the gross forecast.

Mr. Butters said process and timing are important because risk is the biggest issue in the plan. The outlook plan that goes to the government must be honest, fair, and realistic about risk so that the sector can prepare. Also, the LTEP must be matched with market renewal, as this will become part of risk management.

Mr. White said it would serve Ontario well to communicate in ways that people understand. Nobody knows what a TWh or a KW is, and no one knows how much a house uses at different times of the day and night. The IESO should speak to this.

What is important is how the IESO directs central operations in the grid and how it administers markets that utilize the grid. Customers care mostly about their pocketbooks, and this reality must be recognized: if this is the number one issue for the residential consumer, it should be the number one issue of LTEP.

Mr. White said slide 36 looks like an academic exercise in learning and assessing. Customers want to know what they can expect, that they will be well served, and that they will have choices. Looking out to 2035, customers' concerns will have less to do with terrawatts and more to do with what their houses are going to look like. The role of the customer is germane, but missing from the outlook.

Mr. Lyle asked whether the OPO should be targeted at people within the energy sector or more broadly.

Mr. White said if political risks are to be managed, that should happen at the doorstep. Politicians would like to have some answers. He added that the current preliminary plan has academic value but should only be seen as a catalyst for how the IESO will do things differently.

Mr. Bentz said energy literacy in the province is challenging. The IESO can play a role.

Mr. Lupton asked how much time there will be to react if certain plans do not come to fruition within a 10-year cycle. Mr. Pietrewicz replied that rushing is not a good idea: there is a huge

scope for choice ahead, and it should not be squandered. Groundwork is required. Mr. Bentz suggested that potential volatility must be factored in using non-traditional planning methods. An entrepreneurial approach may be required.

Ms. Serafini asked how the rapid pace of technology is being taken into account, especially considering significant impacts such as power walls and storage. Mr. Farmer said convergence of generation and demand is a central theme in forecasting. Net metering is coming, reduced demand from the grid, and locally based resources will change the dynamics of the grid. Slide 43 shows forecasts for gross, net, and grid demand. Grid demand will continue to decline. The nature of embedded generation is putting volatility into grid operation. Market renewal flexibility is needed. How fast it rolls out will be a good force, but a disruptive one, and generators need to be ready.

Ms. Bradley asked how flexibility to do work on the transmission system will affect reliability and cost, as transmitters find that bundling refurbishment / replacement work with other maintenance activities is efficient, but outages are more difficult to arrange. Mr. Toneguzzo said that flexibility to perform refurbishment / replacement and routine maintenance is getting tighter given that over 7,000 MW of renewable generation has been installed around the province. The resulting highly utilized transmission system is making it harder to get the required outages. Maintaining flexibility is a major consideration in long-term planning, but this has not come up a lot in planning discussions to date. As part of its planning work going forward, the IESO will be looking more at flexibility and power system security given the aging infrastructure situation and the need for refurbishment / replacement and more maintenance.

Ms. Bradley said large projects should be staged within the same time frames, to capture work efficiencies. She also said there is an opportunity for collaboration on the need for new transmission corridors, and it would be interesting to explore what opportunities there are to optimize different entities using transportation or gas to minimize costs for responding to growth.

Mr. Toneguzzo said a transportation corridor was planned in the west GTA area and opportunities for coordinated linear infrastructure planning were being explored, in accordance with the Provincial Policy Statement on land use planning. Environmental Assessment work on the transportation project was recently paused, by the provincial Government and the IESO will be discussing implications with the affected municipalities and the Ministry of Transportation. Continuing the joint planning of an energy / transportation corridor, may be necessary to cost effectively meet growth projections of north Brampton and south Caledon. Including the need for this transmission corridor in planning products such as Regional Electricity Plans and Regional / Municipal Official Plans will ensure the required right of way lands are available to enable planned growth.

Ms. Girvan said transparency about the assumptions in the outlook is needed. For example, what has been assumed with respect to demand response going forward? She asked how often the supply-and-demand outlook will be refreshed. Mr. Lyle said that for transparency, the intention is to publish the underlying analysis along with the Ontario Planning Outlook



document. Mr. Farmer said updated views are constantly maintained. Ms. Girvan suggested frequent refreshments would be desirable given the nature of the coming changes.

She asked what the assumptions are around nuclear refurbishment timing. Mr. Pietrewicz said slide 27 in the handout shows starting assumptions made for units at Darlington, Bruce, and Pickering. In addition, potential risks are considered.

Mr. Burkom said a combination of the process and documentation strikes at the heart of frustration with the ability to stakeholder decisions. Stakeholders have two weeks to submit comments, then it proceeds quickly to a plan. It is a good document, but extraordinarily high-level. It lacks transmission information, and there is no transmission transparency. It does not address alternatives or the costs of alternatives.

Mr. Lyle said the value of the new Bill 135 process versus previous LTEP processes is that the independent planning document will be accompanied by detailed supporting information. There will be an opportunity for engagement later on through the LTEP engagement processes. Mr. Burkom said there should be ongoing engagement processes that look at the transmission system, where the renewable resources are, and how best to access them. He suggested a process whereby the market can interface with IESO planners to understand the issues and assumptions, outside of an individual procurement process.

Mr. White said real increases in cost are projected at the bulk energy system level over the next few years; then there are no declines in total or unit costs. If there are demand effects of increasing prices, unit costs will rise in real terms with individual customers. This is inconsistent with almost every other sector and commodity. If the LTEP shows only material increases in real costs and no declines, it begs the question of where the efficiencies are. If there are no economies of scale in bulk system planning, the sector has to offer customers a more comprehensive and perceived-to-be-more-valuable service delivery proposition, such as telecom has done.

Mr. Lyle said most of the rising costs are already committed. As planners there is little the IESO can do about that. Cost is very important, and therefore procurement should not be done until it is actually needed.

Mr. White said being a planner does not obviate the risk of significant and material balance sheet adjustments in future years, as assets that are currently committed prove to be underutilized and less valuable. That is how markets rationalize facing changes in technology. There were big corporate write-downs when Ontario Hydro broke up, as well as in telecom. The role for the IESO in future years will be to explain to customers the outcomes they are seeing in ways that will allow the system to continue to operate as it is. If there is a popular consensus that things need to change, things will change. This is a big risk for long-term asset holders.

Mr. Butters supported Mr. Burkom's suggestion to install a working group to work through risks. He asked what current system attributes are really important, and how these will be

different in the future. To Mr. White's point, he noted that stranded assets appear to be the elephant in the room.

Mr. Schembri asked to confirm a comment on whether there will be 15% demand growth in retail space going forward. Mr. Farmer said growth in the commercial sector is moving at a slower rate than in the past. No growth is forecasted due to the trend to online shopping.

*[Note: Appendix A captures input in the absence of SAC Member Paul Shervill and Appendix B captures input from SAC Member Steve Baker.]*

Mr. Young said there will be an update on the outlook report at the May 11, 2016, SAC meeting.

Ms. Serafini adjourned the meeting.

## Appendix A

R P Shervill – Comments for IESO SAC meeting, March 23, 2016

### Item 4 – Sector Priorities for 2017-2019:

- While the DR auction was a welcome step forward, the sector believes that DR continues to be an under-valued resource from the perspective of its use for operator flexibility and for environmental emissions reductions. We are hopeful the IESO will find ways to introduce greater flexibility in the DR auction process to accommodate DR providers with features such as capacity replacements, swaps and other tools which would give the market greater access to cost-effective DR resources. The renewed DR Working Group should have a mandate to grow the resource and to include aggregated DR resources from the residential/small commercial markets. Existing DR market participants must be at the table and part of the discussion when vehicles to access this load are discussed.
- Ensuring the appointment of a Technical Panel member representing the DR community continues to be a priority for the sector.
- The evaluation and potential development of the capacity market seems to have slowed if not stopped. The sector feels strongly that this tool should be re-invigorated and fully explored for its ability to lower future system costs and to provide a means of evaluating all future resources on a level playing field. We appreciate that it must be done in the context of an overall market development plan and commend the IESO for adopting this approach. As we have commented before, the inter-dependency of new market features makes this approach critical – if we don't know where we are heading, any road will do.
- The sector also advocates that the IESO work with government to re-evaluate and re-open the opportunity for GA aggregation to assist electricity customers with multiple locations to consolidate and thereby reduce overall power costs.
- In support of all the above points, the IESO should continue its efforts to support and educate new market participants, particularly those from the demand side, so they may become full and active participants in the market.

### Item 5 – Ontario Planning Outlook:

- Firstly, the sector generally, and DR providers specifically, would like to be part of the IESO's consultation process on the Planning Outlook.
- The IESO should more fully utilize a scenario-based approach to the outlook. If nothing else, we must have learned that it is difficult to predict the future with any certainty and scenario consideration complete with proposed actions is the only way to adequately provide for the plurality of potential outcomes.
- More specifically from the perspective of DR providers, and as mentioned in the sector priorities discussion earlier, we believe DR is not being fully exploited for its value as a low cost resource and as a carbon reduction contributor. The current Long Term Plan

has proposed a significant increase in DR usage but by imposing a current cap, fails to understand the building blocks necessary to grow the resource over the next several years to meet future system needs.

**Paul Shervill, SAC Member, Related Businesses and Services**

## Appendix B

Steve Baker – Comments for IESO SAC meeting, March 23, 2016

- 1) Planning outlook on supply and demand is very helpful – commend you and team on pulling info and thoughts/questions together
- 2) Grid reliability and role of NG – I would suggest/request that information be made available to show how NG plays a key role in managing intermittency of renewables – this is even more important as we move out in time and retire Pickering and refurbish Darlington and Bruce --- there are a number of days during the year when solar and wind are practically zero and NG generation is running close to full out to meet reliability --- I do not think this is well understood by many and raise for your consideration – there is a need to understand and price “reliability” into future planning decisions
- 3) Cap and Trade – I note that base assumption appears to be that given cost advantage of natural gas over electric for home/water heating that IESO does not expect much fuel switching – given the current uncertainty related to cap and trade and some of the policy direction being advanced by MOECC – I would strongly recommend that IESO consider a scenario that looked at x% (say 25% or 50%) of current NG load converting to electric and what that would mean to generation and transmission infrastructure --- I think this will be very important to set a context/constraint on policy actions and directions related to cap and trade and how this could really impact electric system and costs of the system to consumers – specifically, any move of home heating/water heating off natural gas to electricity will have a huge impact on “peak” electricity demand (winter heating load) with the implication of a significant amount of new generation that is “reliable” to meet this peak demand
- 4) I would like the IESO to provide a view and comment within the technical report to frame the next LTEP on the view that we can replace nuclear and NG generation with renewables – and the fact that wind that blows at night is balanced with solar that produces in day such that this is a realistic option with today's technology – you may want to consider providing some context in terms of how things work today so that LTEP policy direction understands this (see (2) above)
- 5) In terms of technology – IESO should be aware that as part of cap and trade, there is a lot of work being done to explore the capture and clean up of existing methane/renewable natural gas (landfill, waste water, agricultural methane) which would provide an opportunity for Ontario to better utilize an existing resource and provide an opportunity to “clean/green” the existing NG stream with Ontario resources – this would allow natural gas to be a lower carbon energy source and a viable option for CNG/LNG transportation, CHP and home/water heating – this would tend to validate the base assumptions made by the IESO in the base supply/demand outlook.

**Steve Baker, SAC member – Related Businesses and Services**