Southwest Ontario Regional Electricity Forum

Meeting Notes - November 8, 2018
Kitchener, ON

Introduction

Amanda Flude, Advisor, Regional and Community Engagement, IESO, opened the meeting noting that the purpose of the Regional Electricity Forums is to bring together communities to discuss local electricity matters and how the unique characteristics of each region can factor into the electricity planning processes. She said that the IESO knows the importance of having these conversations at the local level and encouraged participants to join in the day's discussion.

Deborah Whale, IESO Board of Directors, acknowledged that the meeting was being held on the traditional territory of the Anishnaabe, Haudenosaunee, and Neutral peoples and welcomed participants and presenters. This forum is the first in a series taking place this fall and in spring of next year and local expertise is valued and appreciated by the IESO. She encouraged discussion around the key energy issues in the region and said the outcomes of this meeting and others will help inform regional and provincial electricity planning initiatives.

Sarah Marsh, Acting Mayor, City of Kitchener, also encouraged participation and feedback to help inform the next steps in meeting Kitchener's and the broader region's future electricity needs. Collaboration means stronger solutions for issues such as emerging technology and demand fluctuations across power-based industries.

Keynote

Leonard Kula, Chief Operating Officer and Vice-President Planning, Acquisition and Operations, IESO
Presentation: http://www.ieso.ca/-/media/Files/IESO/Document-Library/regional-planning/Forums/2018/SW-Keynote-Address-Leonard-Kula-IESO.pdf?la=en

Mr. Kula expressed that the IESO's goal is to strengthen engagement on the local level and collectively contribute to a reliable energy future for Ontario.

Forum discussions are necessary to help the IESO focus on continuous improvements to our planning models. He noted that previously, the province focused on large, centralized generators to meet Ontario demand. This model is no longer as effective as it once was. Now

the province has an increased number of small, local generators, also known as distributed energy resources (DERs), storage, and demand-side resources within communities to meet their own needs, all of which add new levels of complexity to processes and forecasts for future electricity planning.

Therefore, community engagement is also increasing. What happens at the local level affects the entire system, as the IESO works toward fostering and maintaining purposeful partnerships. Local voices have never been more important, and information is necessary for a productive energy dialogue.

Electricity planning includes local distribution planning, regional planning, and provincial bulk planning. 20-year regional electricity plans ensure a reliable electricity supply to communities and look at a variety of options, including conservation, generation, transmission and distribution, and other innovative solutions.

Planning approaches are evolving, and technical planning conferences hosted by the IESO will be held on an annual basis to provide greater transparency in IESO planning processes. With its planning partners, the IESO focuses on regional planning processes, community engagement, land use, community-based power solutions, energy efficiency and opportunities to inform planning at the local, regional, and provincial levels.

Mr. Kula reiterated that community engagement is a top priority for the IESO and asked participants for advice on how to provide opportunities for communities to stay informed and engaged in matters that are important to them. He provided a link to the IESO's regional planning and community engagement webpage: http://www.ieso.ca/en/Get-Involved/Regional-Planning and encouraged participants to provide input through those channels.

Innovation and the Changing Electricity Landscape

Dr. Rupp Carriveau, Director, Environmental Energy Institute, University of Windsor
Dr. Lindsay Miller, Environmental Energy Institute, University of Windsor
Presentation: http://www.ieso.ca/-/media/Files/IESO/Document-Library/regional-planning/Forums/2018/SW-Presentation-Innovation-and-the-Changing-Electricity-Landscape.pdf?la=en

Dr. Carriveau and Dr. Miller talked about CLEEN 2040—the Climate Led Energy Evolution Network 2040, and how their research illustrates how consumers, corporations, and municipalities purchase power and forecast its use.

They presented that in some locales, corporations have more control over procurement. There is an increase in the demand for renewable energy, and companies can set an environmental

profile for the energy that they purchase and that legacy assets that are currently under government contracts in Ontario could eventually be under contract to big box stores or corporations. Another example shows that consumers can purchase power from their neighbours using blockchain technology.

Plans need to be in place for the strategic integration of production, storage, and policy. The example of the California 'duck curve' showed an opportunity to encourage electric car operators to recharge during low-demand times during the day, thereby evening out the electricity demand curve. The IESO, LDCs and DER owners and operators will have to expand their coordination efforts to maintain the reliability and resiliency of the power system while capturing the value that DERs can provide.

To support good decision making, models are needed to show what would happen if corporations, municipalities, and individuals decoupled themselves from the markets. Scenarios give stakeholders the ability to look to the future and consider many variables.

Currently, the Environmental Energy Institute at the University of Windsor creates a unique demand curve for stakeholders, benchmarking on current data and then adding modifiers that should be considered when looking at the demand curve, i.e., commercial, household, industrial, electric vehicle (EV), and rooftop.

The intention is to create as many scenarios as possible to alleviate the worry about the likelihood of the scenarios materializing – since forecasts are likely to improve over time. The more participants in this study the better. The resulting wide spectrum of scenarios is given to researchers, who order the scenarios by degree of likely occurrence. The study hopes to create a large catalogue of scenarios. Several international studies have been examined, as well, enabling researchers to look at high-penetration EV models in Norway, for example.

Anyone interested in learning more about CLEEN2040 or having a demonstration session is welcome to contact the Environmental Energy Institute.

The following poll was conducted with participants to express their concerns: What is important to you when considering ways to meet your electricity needs?

Of the choices offered—cost, environment, reliability, diversification, innovative technologies, other—participants said reliability was the overwhelming consideration.

Integrating Local Planning Initiatives

René Gatien, President and CEO, Waterloo North Hydro

Presentation: http://www.ieso.ca/-/media/Files/IESO/Document-Library/regional-planning/Forums/2018/SW-Presentation-Integrating-Local-Planning-Initiatives.pdf?la=en
Mr. Gatien talked about how Waterloo North Hydro is working to support the evolving demand of its customers. Innovation is necessary to keep up with the industry and he presented how the future of electric utilities is focused on the following:

- Rapid change driven by technology, regulations, and competitive sources
- The search for cleaner sources
- The search for smarter sources
- Decarbonization, decentralization, digitalization
- The need to reduce greenhouse gasses
- The move to smaller, renewable sources

Digital tools are needed to respond to these concerns, but the question is whether LDCs can make investments fast enough to meet future demand and look after changing customer expectations. Advanced self-service, mobile applications, data analytics, and energy management solutions must be available to customers.

The path forward will include a change from one-way power flow to two-way power flow, which is different from the past. Cyber security has to be a priority, along with real-time monitoring. Customer behaviours have changed: customers use less energy, they use more electricity at night, and they can generate their own electricity.

The outage management system is available online, so customers do not have to call in. Crews can move to solve the issue without waiting for a phone call from customers, saving time and money.

Consumers want to know more about their electricity usage and options, and need access to data that will inform their decisions. They also need easy access to their distributor. Waterloo North Hydro redesigned its bills to make them easier to read and understand. The new customer portal allows 24-hour access to initiate account move in or move out. This is a great innovation for a city with a large student population, and it reduces call volume.

Six feeders have new fault location isolation and service restoration (FLISR) software installed in 2018 for self-healing of the network to keep power moving around disruptions. More feeders will have the software installed in 2019.

Software and digital systems are being developed to help customers manage local generation and to efficiently operate the distribution system with the spread of distributed generation. Virtual net metering is a next step, but regulations are needed to allow it to work. Virtual net metering for third parties is also requested by customers.

A participant asked what changes are required on the regulator side to allow Waterloo North Hydro to start integrating virtual net metering and storage. Mr. Gatien replied that the current systems such as EBT (electronic business transactions) for retail settlement and existing technology should be sufficient to allow for virtual net metering and storage. Blockchain is not necessary for transactions within Ontario.

Local Spotlight

Peter Quiring, Owner and President, NatureFresh Farms

Mr. Quiring began constructing greenhouses in 1994, and has been operating greenhouses since 1999. He owns and operates 207 acres of greenhouses with an additional 62 acres under construction. This is a dynamic and innovative industry. Growers have lengthened growing times, and per-acre yields have increased 15 to 20 times. Efficiency is excellent, but infrastructure has had to grow along with the industry. A large power line brought into his community of Leamington was fully subscribed when it was ready, and now a second proposed line is already fully subscribed due to the number of new cannabis operations in the area.

Current electricity policies raise concerns for the greenhouse industry. Mr. Quiring suggested government should see the greenhouse industry as a partner. Greenhouses use their lights only between September and April and not during the high-consumption summer months. By the summer of 2020, greenhouse operations will consume more than 70 MW of power in Ontario.

Mr. Quiring talked about one fear for his business is that rates are subject to change and that a change could be enough to halt the expansion of businesses in Ontario. If prices go up, business is unaffordable.

Mr. Quiring discussed how he believes that raising the rates of large users to reduce rates for lower consumers is misguided. The better scenario is to increase off-peak consumption as a province so that Ontario uses more of the power that it currently exports. There is the prospect of increasing the number of greenhouses in the province by between 100 and 300 acres per year.

The greenhouse industry wants the IESO and the government to find ways to upgrade infrastructure and put pricing in place that will encourage more development.

A participant noted that the University of Guelph is working at using biomass waste to create onsite energy sources, and asked whether that is a source of power the greenhouse industry has considered. Mr. Quiring replied that biomass plants need dry material, and it takes a lot of energy to dry greenhouse waste first. Another problem is that greenhouses use a lot of string

and clips that prevent them from being used as biomass. If they could find a biodegradable string that would last an entire year, they could look into that option again.

Another participant talked about how NASA is investigating the exact wavelengths of light that plants need to flourish with the intent to create custom LED lights for each plant. The participant asked whether that is an option and whether greenhouses use energy to light and to provide heat. Mr. Quiring responded that all the heat they use comes from lights. When the outside temperature reaches the freezing mark, plants need all the heat that lights produce. Radiant heat from lights is also beneficial to plants.

A participant asked whether greenhouses use digesters to create gas. Mr. Quiring replied that they do not.

Asked whether they could use net metering and work with the local community to create enough biomass to provide electricity for all greenhouses, Mr. Quiring answered that there is not enough biomass. The costs for biomass go up when gas prices go up, so it is hard to see the savings.

Another participant asked whether Mr. Quiring had considered putting together a large gas-fired power plant and partnering with other generators to use net metering in his greenhouses. Mr. Quiring replied that there would have to be some political will for that to happen. Because greenhouses use off-peak power when the province has a lot, it does not make sense unless it is less expensive and more desirable to build a large gas fired power plant than upgrading current infrastructure.

Mr. Quiring outlined three problems that the greenhouse industry has:

- It is difficult to get enough power for lights to the greenhouses.
- There is no stability in the pricing structure.
- It takes a long time to get environmental approvals. A wait of five, possibly even up to 10 years is too long.

Aligning Regional and Local Energy Planning—Panel Discussion
Link to video: https://www.youtube.com/watch?v=Nt8q8cBG_BI&t=127s
Presentation: http://www.ieso.ca/-/media/Files/IESO/Document-Library/regional-planning/Forums/2018/SW-Panel-Aligning-Regional-and-Local-Energy-Planning.pdf?la=en

Bob Chow, Director, Transmission Planning, IESO
Alex Chapman, Manager, Climate Change Office, City of Guelph
Darryl Hill, Energy Project Manager, Six Nations of Grand River

Moderator: Carrie Aloussis, Senior Manager, Customer, Stakeholder and Community Engagement, IESO

Following a video presentation illustrating the benefits of the IESO's community engagement efforts with participating communities, a poll was conducted with participants on two points: Asked whether they have been involved in the development of community energy plans, about 50% of participants answered that they had. Asked how familiar they are with the IESO's regional planning process, 60% of the participants responded that they were somewhat familiar, and 27% responded that they were very familiar.

Mr. Chow introduced the regional planning process and opportunities for engagement involving the province's 21 planning regions. Ontario's system planning process includes three groupings:

- Bulk system-level planning, which includes large scale generation such as nuclear
- Regional electricity planning
- Distribution planning by LDCs

Since Ontario established a formal regional planning process in 2013, the IESO, and its planning partners, have considered electricity planning within all of the 21 electricity regions, identified by electricity infrastructure boundaries, marking the completion of the first planning cycle under the new structure. This first cycle helped to inform improvements in the planning process and identified ways to make the process more efficient and more responsive to community feedback.

Mr. Chapman outlined three priorities for energy planning: planet, profit, and people.

Planet: Mitigating climate change by eliminating greenhouse gases is something everyone must do. Ten years ago, Guelph committed to an energy plan that would result in zero carbon by 2050 and the city powered by renewable energy by the same date.

Profit: Guelph spends $488 million on energy every year. Most of that money leaves communities and does not help economic growth. If cities could reduce energy production costs, the province could be where Europe was 10 years ago and spend money locally on energy and become net energy exporters.

People: Something has to be done to help those who have to choose between food and heat.

Mr. Chapman listed four steps to address these priorities:

- Use less.
- Use wisely—consider gas and electricity as power sources for heat and light.

- Plan cities so that people can live, work, and play within walking distance and are less dependent on cars.
- Develop a community energy plan; engage with stakeholders and the community and develop targets.

The course Guelph has plotted to get to its target has a net return of 3.5%. Because that rate is similar to the rate of municipal bonds, the city hopes to attract investors such as life insurance companies and pensions. The city needs to continue to work more closely with utilities and the IESO and understand the implications of the merger of Guelph Hydro with Alectra Utilities Corporation.

Mr. Hill talked about how Six Nations of the Grand River has been involved in energy planning for five years. A survey was used to determine community members' awareness about conservation. Six Nations has three suppliers of energy: Six Nations Natural Gas, a local propane company, and Hydro One. The outcome of surveys and open community sessions was 90% agreement that the community should be using more renewable energy and that people wanted to learn more.

Currently there are 15 projects on Six Nations' territory, including rooftop solar, energy park solar, and renewable wind. Energy audits of 500 homes have had a positive impact.

A participant asked how non-wire solutions can be integrated into community energy plans.

Mr. Chapman replied that Guelph needs to identify its top priority retrofits for residential, commercial, and industrial and look at on-site generation, codes and standards, new construction, and electrifying transit. On the construction side, the city wants to streamline the process to eliminate the challenges involved in moving a project from the usual standard to net zero, thus reducing costs that are passed on to the consumer. Guelph is also looking at the charging structure for electrical transit.

Mr. Hill expressed that Six Nations wants a residential microFIT program and window and door replacement programs. An energy committee is needed to maintain momentum.

A participant asked whether Guelph's energy plan includes strategies for going off grid. Mr. Chapman responded that was not the objective of the plan. Guelph does not plan to be an off-grid city.

The participant asked about complaints about energy costs and their impact on the bottom line. Going off the grid can help communities avoid the irregularities that make long-term planning challenging. Mr. Chapman explained that going off-grid is an exciting idea, and towns in

Germany have done that. But Ontario has an energy infrastructure that works because Guelph is expected to participate and share infrastructure costs. The city has a 32-year plan. Although the idea of going off-grid may be raised in the future, the city advocates for resources on the grid now.

Another participant asked about the creation of Guelph's climate change office. Mr. Chapman replied that different municipalities position climate change action in the organization in different ways; Guelph positions it in the Facilities Management department, while in the past it was part of Business Development and Enterprise. The journey is not over. Guelph's Community Energy Initiative includes a focus on climate mitigation, climate adaptation, sustainable energy, water, and climate change.

A participant asked what the effect of engagement is on regional planning. Mr. Chow replied that constraints should be explained at the beginning of engagement, and more information should be made available as to the scope of the engagement and where opportunity for feedback is. People need to understand why certain things are needed and what options are available.

Mr. Chapman and Mr. Hill agreed that community engagement is essential and said they work hard to encourage involvement by the community.

Planning to Meet the Needs of Ontario's Electricity System

Chuck Farmer, Director, Resource Planning, IESO
Presentation: http://www.ieso.ca/-/media/Files/IESO/Document-Library/regional-planning/Forums/2018/SW-Presentation-Planning-to-Meet-the-Needs-of-Ontarios-Electricity-System.pdf?la=en

The demand for energy has been declining over the past decade, driven by changes to the economy, savings from conservation, embedded generation, and the ability of customers to make different choices. Load forecasts have changed.

New and future conservation programs represent about 15 TWh of energy savings and 2,400 MW of peak demand savings by 2035. Between 2018 and 2035, the IESO expects incremental savings from new conservation programs, in addition to incremental savings from codes and standards. Ontario needs to examine the uncertainties in forecasts caused by trade disputes, industrial conservation initiatives, etc.

In the next 20 years, there will be many changes. Generators are getting to the end of contracts. Gas plants had 20-year contracts beginning in the 1990s, so they cannot be counted on as sources, either.

Electricity providers need to plan for every hour in all weather and conditions. Ontario can withstand shocks on the system and can ensure the supply of electricity when it is needed. The province needs to add more generation to account for more extreme weather demands and invest in refurbishment.

By the end of 2022, demand in summer and winter will exceed resources. There is little surplus in the system. This capacity gap will get bigger through 2025 while the nuclear plants are refurbished.

While most hours of need can be met, resources will be required that can run for short periods of time to fill gaps. The IESO will start forecasting those short-term needs to ensure that the province is adequately covered. The IESO does not yet know what contract holders will do beyond their current contract terms.

Plans to meet the needs will not commit to long-term solutions. Needs are short term, and lots of variability is required. To cover the gaps, the option will be short-term acquisitions of generation and resources using the province's Incremental Capacity Auction (ICA) currently being designed through the Market Renewal Program.

Next steps will lead to an updated forecast by the beginning of 2019 with a new planning outlook that will take us through 2023–2025. The IESO is looking at competitive transmission processes, bulk system planning, and more transparency around planning recommendations and processes, as Mr. Kula mentioned in his opening remarks.

The regional electricity forums are an opportunity for the IESO to receive input to better understand community perspectives. Participants were asked what current and future barriers and opportunities they face in managing local community energy initiatives, and what the IESO should take into consideration in the province's electricity planning.

A participant asked whether the IESO can put a premium on renewable energy because greenhouse gas emissions are increasing. Mr. Farmer replied that as long as an entity is legally able to operate, it can participate in the new incremental capacity auction based on price alone. With an ICA, the market has to work within the regulations. He said the IESO will not only rely on gas units but others if there is a cheaper option.

A participant said that by 2030 conservations programs could save 1,500 TW of energy. He asked whether more conservations programs are planned. Mr. Farmer explained that conservation targets are driven by government. The IESO does not know what future policy decisions will be but added that conservation is a valuable resource.

A participant asked about more information about the ICA, and whether there are any initiatives to disseminate this learning to everybody and how that can be done. Mr. Farmer replied that the issue is complex but must be communicated better because it affects so many people. He said the IESO is more than happy to received requests for more information and that arrangements can be made to present more details.

A participant asked whether consumers can choose to buy only renewable energy and pay the premium. Mr. Farmer outlined how everyone buys from the power pool; consumers could make contracts with their chosen generators. Another participant said Bullfrog Power allows consumers to sign with them for renewable power. They put renewable energy into the system that is equivalent to what those consumers' energy use is.

Another participant asked about transmission development options in the future. Mr. Farmer explained that a process is starting up that involves a central process to decide what transmission is needed and to develop a process to bid to provide that.

A participant asked that as a rural power user, how could they ensure that they have input in policy to make sure that local communities can own and be a part of decision making.

The rural versus urban divide is real, replied Mr. Farmer. The IESO wants to be technology agnostic and run pure competitions. That is the best way to allow people to go through their communities to enter into the process. Forums like these are a good place for communities to have their concerns heard and responded to. Future planning updates will show where the needs are.

A participant commented that this year Waterloo had 20 days of extreme heat compared with the usual eight days. And the projection is 65 days by 2040. It is necessary to plan for this by buying alternative energy and being willing to pay for it. This is not a business decision, but a future-generation decision.

Connected Communities

Susan Harrison, Supervisor, Regional and Community Engagement, IESO

Ms. Harrison showed participants a video about community engagement. After the video, she asked the following survey question: Using one word, what comes to mind when you think about managing your electricity needs? The four primary concerns, in order of importance, were cost, reliability, innovation, and efficiency.

Participants divided into small groups to discuss the following questions:

- What are some opportunities to meet your own or your community's needs? What are the barriers?
- What can we do as a sector to leverage emerging opportunities and overcome potential barriers that were discussed? What do you need to further explore your options?

Through tabletop discussions, participants shared the following viewpoints.

Barriers

- Energy planning is limited to electricity, and other sources of energy are not taken into account
- Public perception can be a barrier; there is opposition to some renewable energy projects, such as wind; not in my backyard (NIMBY)—proponents have to look for property that is a reasonable option
- The true cost of funding of renewable energy projects is expensive
- Not all sectors have a high level of reliability; infrastructure is old and out of date; the current grid made sense in the 1950s, but some areas need more reliable power
- Policy decisions should be discussed across different levels of government and need to align with community need
- There is insufficient funding for new programs; Save on Energy programs may be lost
- Consumers need to have information before they will understand and support changes. Small demonstration projects are needed
- Electricity planners do not always look for other sources; there is a need to understand true efficiencies and look at a variety of options
- There is a mismatch in terms of scale and scope between communities and the IESO. The IESO looks at power on a big scale, but not on a small scale, where communities have a lot of responsibilities, it is difficult to integrate power with all the other issues

Opportunities

- Improve/implement net metering
- Develop energy-efficiency projects so that there is less demand on infrastructure; i.e. generate energy from waste and distributed energy generation—produce energy where it is used, thereby reducing transmission costs
- Change behaviour – i.e. each person could be given a set amount of energy to use in a month with penalties for going over
- Renewable power community co-ops allow for risks to be shared; look to implement combined heat and power in community settings; new subdivisions should be energy independent
- More transparency is needed regarding costs and upkeep and training of people to run and maintain large renewable projects
- Education is needed so that people know the true cost of reliable electricity; are consumers willing to pay what it really costs? Start with education in schools
- Minimize pollution and GHG emissions
- Better manage electricity in the province rather than exporting excess power
- Energy (electricity and natural gas) should be considered one element

Solutions

- Consistent regulation and energy policies are needed to allow for continuity when new government comes into term– i.e. change building codes to make the new standards net zero, R-2000; political will and buy-in are a necessary part of any solution
- Develop an innovation council with LDCs and municipalities; involve 10 people and a leader with time and goals to oversee changes in technology and policy
- Allow LDCs to pilot new technologies to determine the return on investment
- Extend the Conservation First Framework to keep expertise in place
- Renewable energy and storage have to be part of the solution – i.e. provide incentives to communities and co-ops
- Develop a program tied to mortgages: the cost of borrowing over 25 years is known, and it should be possible to calculate the cost of energy for the home over 25 years

Closing Remarks

Ms. Harrison thanked participants for attending the forum and for participating. The IESO appreciates and respects their time and that open and transparent engagement is important to the IESO.

Meeting notes will be posted on the IESO website and sent out as soon as they are available. Participants will also have access to meeting notes from other regional forums, including Timmins (November 2018), Kingston (spring 2019) and Thunder Bay (spring 2019). These will

be posted to www.ieso.ca/en/Sector-Participants/Engagement-Initiatives. A report encompassing all four regional forums will be published next spring.

There are other ways to stay involved. Ms. Harrison invited participants to subscribe to the IESO's weekly e-bulletin, which contains information and links to articles and discussions, and updates on the development and ways to help shape decisions and policies. She encouraged participants to reach out to the IESO with questions or issues that they would like to discuss in the future.