

April 27, 2021

Submitted online via the Environmental Registry of Ontario

ERO 019-3007 Ontario's long-term energy planning framework

The Ontario Society of Professional Engineers (OSPE) is the advocacy body and voice of the engineering profession. Ontario currently has over 85,000 professional engineers, 250,000 engineering graduates, 6,600 engineering post-graduate students and 37,000 engineering undergraduate students.

OSPE is pleased to present the following submission concerning **Ontario's long-term energy planning framework**.

The current energy planning framework has evolved over time. It initially suited the old paradigm of a centralized and silo structured energy industry in Ontario and focused on the electricity sector. It essentially followed the publicly owned utility process of forecasting the total and regional demand for electricity and developing plans for the centralized generation supply mix and associated transmission network additions required year by year to cost effectively and reliably meet that demand based on net present value (NPV) economics.

To accommodate uncertainty in the growth of the Ontario economy, upper and lower demand forecasts were developed along with a base forecast. Independent power producers, the breakup of Ontario Hydro and the wholesale energy market operated by the IESO came into being around the end of the last century. However, the demand/supply planning approach essentially remained.

The current framework is not suited to the new paradigm, structure, technology developments, interdependencies, and market trends happening throughout the energy industry. Radical change is required. We are now at the dawn of the modernisation, transformation, and transition of the energy industry. This includes:

- Decentralization/distribution of energy resources.
- Digitization throughout energy systems.
- Decarbonisation to mitigate climate change.
- Interdependence of energy sources, transmission and distribution, and end uses.
- Electrification of the end uses of energy, particularly in the transportation sector and building heating.
- The changing role of transmission & distribution
- New technology commercially available and in development.
- The interruptible nature of renewable resources requiring energy storage.
- Technical advances and cost reductions for energy storage and renewable energy
- Customers are both consumers and producers of energy (prosumers).
- The evolution of transactive and flexible markets.

The energy planning framework and processes must change to accommodate these transformations and to reflect and take advantage of the diverse opportunities and advantages they possess while ameliorating their disadvantages and disruption.

Examples of the shortcomings of the current framework and processes are:

- There is no one party delegated to the overall integrating responsibility to ensure the various energy sub-sectors are meeting the overall energy needs of consumers in an effective way that minimizes total energy costs and safety risks for consumers, meets carbon emission targets, and maximizes service reliability and value for the consumer.
- There is no responsible party assigned to manage inter energy sub-sector conflicts, competition, and planning so the outcomes are consumer and environmentally friendly in the longer term.
- There is no single authority to ensure wholesale and retail electricity markets are working efficiently with each other. For example, the wholesale market for electricity management by IESO has provisions to sell interruptible electricity (electricity that is not capacity backed). However, the retail market pricing plans do not recognize interruptible electricity. Consequently, most interruptible (surplus) electricity is sold to neighbouring power systems at very low prices but is not available to domestic consumers at those same prices and conditions. This imposes a competitive disadvantage on Ontario based companies that compete with foreign companies for the sales of goods and services both in domestic and foreign markets.
- There is no single authority to ensure competitive fairness with respect to carbon pricing in Ontario (and Canada) because currently there is no border adjustment for carbon price differences in other jurisdictions relative to Ontario on goods and services that cross the Ontario border in either direction.
- No party has been delegated the responsibility to continuously search for and implement better energy concepts and architectures as energy and communication technologies change. For example, the development of distributed energy technologies, the internet of things (IOT) products, cyber security standards and 5G communication systems may make it possible soon for consumers to choose their energy provider and generation technology rather than have utility entities preselect their energy mix.

The new planning framework and processes should:

1. Address the need to review and change the roles, responsibilities, and accountabilities of the Ministry, the IESO, and the OEB, to address the shortcomings of the current framework. It must also recognize the role, input and expectations of energy stakeholders and end use customers. This includes:
 - The Ministry to set high level goals, policy and strategy and leave the detailed planning & execution to the organizations best equipped to do so. These goals, policies and strategies must be long term and enduring to avoid drastic redirection by a change in government administration. We must keep politics out of energy planning & execution.
 - There has been a tendency for the Ministry to micro-manage the various energy sub-sectors even though it does not have the engineering or economic expertise and analysis capability in each of the energy sub-sectors to execute the task effectively. Over

the past 15 years the Ministry has been issuing “Ministerial Directives” that are over-reaching into design details like supply mixes, detailed rules for pricing, etc. These should be left with the responsible sub-sector entities.

- The OEB and the IESO must work closely and cooperatively together to ensure due integration of the wholesale and retail markets and develop new innovative market options.
 - The OEB and the IESO must take lead responsibility for the review and approval of the plans.
 - For transparency, the role and input of stakeholders, customers and the indigenous community must be included in the process through consultation, outreach, and engagement to educate, learn and appreciate their needs, preferences, and expectations.
2. Be market driven and competitive to take advantage of the energy opportunities available to provide safe affordable, reliable, and sustainable energy services for the benefit of all end use customers. This will require significant market reform and development and recognize the interdependence of the wholesale and retail markets. This will also require close cooperation, coordination, and collaboration between the OEB and IESO. (OSPE’s Retail Market Reform Report is relevant.)
 3. Be sustainable to protect the environment and address climate change. Ontario has made excellent progress in reducing carbon emissions in the electricity sector, and it is important that this be maintained and extended. Further electrification of the transportation and building heating sector is essential to meet Canada’s emissions reduction goals, and the electricity supply needs should account for this.
 4. Consider all technologies available and forecast to be available within the planning period. Each has their advantages and disadvantages and may have a role to play - even if small to meet unique situations (horses for courses). This will require detailed analysis of alternatives to establish their affordability, reliability, and sustainability characteristics. The levelized cost of energy (LCOE) should be applied for each technology option.
 5. Support the ongoing Research and Development (R&D) to improve the performance and cost effectiveness of existing technologies and develop promising new technologies to commercial status.
 6. Apply energy efficiency and conservation throughout the energy industry to reduce the resources required to meet the prevailing growth in demand for energy services. This avoids new supply, contributes to decarbonisation, can improve industrial productivity and reduces transmission and distribution (T&D) losses.
 7. Recognize the changing role of T&D and the need for an integrated regional planning approach involving LDCs and municipalities.
 8. Recognize that the existing infrastructure and assets still have value and life and should be part of the planning process. Stranding assets should be avoided where they negatively effect reliability and rates and where there are more cost-effective carbon reduction options (e.g. focusing on the electrification of the transportation and building heating sectors). In

particular, the proposal to accelerate the closing down of the existing natural gas fueled generating plants needs to be subjected to detailed analysis in this regard.

9. Be flexible and dynamic to respond effectively to future uncertainties. This will require studying alternative scenarios such as growth in the economy and demand for energy services, the timing of commercial availability of new and innovative technologies, the role of existing assets, and progress with the reduction of carbon emissions and air pollution.
10. Learn from the successes and failures of other jurisdictions with a similar mix of energy resources and industry structure. The speed of transformation of the energy sector is proceeding faster in some jurisdictions than others. Ontario is not a leader in this regard and can learn and benefit from the successes and failures of other jurisdictions.
11. Implement the peer review of plans including national and international experts from jurisdictions with a similar mix of energy sources.
12. Be compatible with Federal energy policies and strategies to the extent practicable. In particular, plans should be tied to Canada's commitment to the Paris Agreement goals.
13. Consider supply chain availability and limitations. Ontario and Canada are blessed with an abundant availability of materials, resources, know how and skills to develop and build the assets and infrastructure needed to execute the plans. Preference should be given to Made in Canada solutions.
14. Address the disruptions resulting from the transformations in the energy industry such as the expected decline in the oil and gas sector and accelerated growth in the electricity sector. This will require the retraining, reskilling and relocation of employees.

Throughout the planning process the Ministry, the OEB, and the IESO must be willing to foster and be open to innovation. Innovation is the lifeblood of Ontario engineers and engineering.

Additionally, there must be better coordination across the energy industry plus oversight from one organization of all energy sources at a high level (not just electricity and natural gas, but also diesel, propane, gasoline, etc.) so that energy planning is truly holistic.

Sincerely,



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