Ontario Electricity Market Update
December 2020

Power Advisory LLC

Reflecting on 2020, planning for 2021 and beyond

It is safe to say – an understatement more truthfully – that 2020 did not go as planned. The COVID-19 pandemic has had far reaching impacts on society and the economy, and the electricity sector is no different.

In Power Advisory's February 2020 Ontario Electricity Market Update, before the effects of COVID-19 were apparent, we reviewed and provided commentary on recent activities of the Independent Electricity System Operator (IESO). At that time, IESO had just announced a pause on the Resource Adequacy engagement, the Ontario Energy Board (OEB) had deny the Association of Major Power Consumers of Ontario's (AMPCO) appeal to refer the Market Rule amendments enabling the Transitional Capacity Auction back to IESO for further consideration, IESO was set to launch the first Capacity Auction in June 2020, and IESO had just released the 2019 Annual Planning Outlook (APO).

Now at the end of 2020, in this addition of our market update Power Advisory is reporting on many of the same topics. IESO has developed a high-level Resource Adequacy framework, IESO has recently announced the results of their first Capacity Auction, and IESO has published their 2020 APO. The context for how we got from February 2020 to December 2020 has been reported in each of our updates and is not trivial.

Most notably, throughout the year, the Ford Government responded to the public's vocal concern about rising electricity costs by implementing a series of short-term and long-term measures to subsidize electricity rates or curb the impacts of rising Global Adjustment (GA). While many consumers have seen a direct reduction of their electricity charges through government interventions, many service providers (particularly those offering Demand Response (DR) or behind-the-meter storage services) have experienced a volatile year with policy uncertainty about electricity costs and cost-allocation.

Throughout 2020 IESO has provided regular updates on planning and their approach to forecasting the implications of the COVID-19 pandemic for the demand outlook. With future resource needs being driven predominately by the timelines for nuclear retirement and refurbishment, IESO still expects that new resources will be required in the mid-2020s to meet system needs; the extent of the need being driven by economic recovery post-COVID.

All this puts additional pressure on IESO to deliver on the promised, cost-effective framework for meeting Resource Adequacy requirements, and delivering on the savings touted as part of IESO's Market Renewal Program (MRP).

Power Advisory looks forward to working with our clients in 2021, as the globe recovers from COVID-19, and the electricity sector moves forward with new opportunities.

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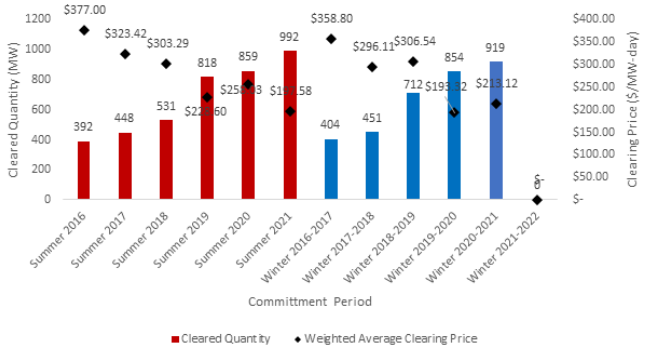
IESO MARKET UPDATES

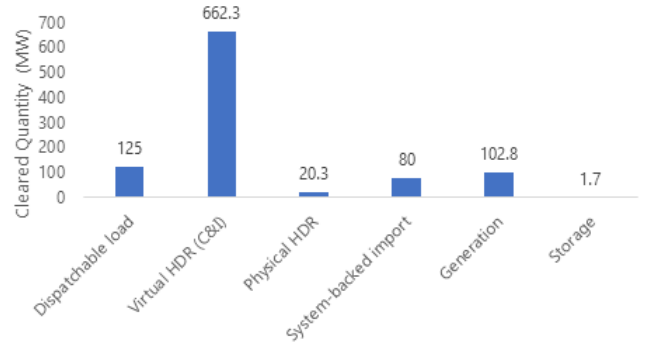
Capacity Auction

On December 10, 2020 IESO announced the results of Capacity Auction #1 (CA1). The Capacity Auction replaces the former DR Auction and allows additional resources to participate alongside DR resources to provide IESO with supply to meet peak demand needs. Unlike previous DR Auctions, CA1 only procured capacity for the summer commitment period (i.e., May 1, 2021 to October 31, 2021). No capacity was procured for the 2021-2022 winter commitment period. The clearing price for CA1 was $198/MW-day, the lowest summer commitment price since the DR Auction was launched in 2015.

A total of 992 MW was cleared in CA1, representing 141% of the target capacity of 700 MW set by IESO. A third of the capacity procured was physical capacity (e.g., generators and dispatchable load), while the remaining two-thirds was virtual capacity (e.g., aggregated hourly demand response (HDR) provided by non-dispatchable load). A majority of the capacity was procured in southern Ontario, with over 40% located in Ottawa and Toronto – Ontario's major load centres, which is beneficial to reducing the risk of transmission congestion.

More than two-thirds of the capacity cleared was from DR and/or energy storage resources, while a single generator (Kingston Cogen) and an importer (Hydro Québec) were successful in CA1.





Power Advisory Commentary: Capacity Auctions are expected to be an ongoing component of Ontario's Resource Adequacy Framework, held annually, and serving to provide flexibility to IESO given uncertainty in forecasting outlooks. At the prices cleared, it appears to be a cost-effective solution at this time. Power Advisory will continue to monitor the cost-effectiveness of Capacity Auctions as Ontario's supply situation tightens over the next decade. The results demonstrate a robust competition for CA1, which had originally been scheduled for December 2019 and then June 2020. CA1 was delayed first by appeal to the OEB by the AMPCO and then by the COVID-19 pandemic. While participation from DR resources remains high, we note that this segment of resources has been particularly hard-hit throughout 2021 with several regulatory, market and policy changes, such as the one-year hiatus of the Industrial Conservation Initiative (ICI) and the reduction of GA charges implemented as part of the Comprehensive Electricity Plan (See Government Policy Updates below).

Market Renewal Program – Energy

As a reminder, the MRP consists of planned changes to Ontario's wholesale electricity market and comprises of changes to the energy market through the implementation of a Single Schedule Market with locational marginal process, Day-Ahead Market and Enhanced Realtime Unit Commitment.

IESO is now in the final stages of the Detailed Design phase of the MRP. IESO has received and responded to approximately 800 comments and questions from stakeholders on the draft Detailed Design documents so far and is in the process of responding to additional stakeholder input on the Pre-Dispatch Calculation Engine and other incremental feedback received December 2, 2020. IESO will provide responses to all feedback received and will publish final Detailed Designs in early 2021.

IESO also proceeds with the implementation phase. They received two submissions on draft Market Rule and Market Manual amendments for Market Entry and Prudential Security (Batch 1) from the Electricity Distributors Association and Ontario Power Generation (OPG). In response to the feedback on registration and dispatch data for hydroelectric resources, IESO will update Market Manual 1.5.

In addition, IESO continues to engage on reference level methodologies for the new Market Power Mitigation processes, including posting guides and technology specific workbooks. In response to industry feedback, IESO is proposing to implement a new process that will allow Market Participants the option to request a third-party review of certain aspects of the materials submitted in support of the proposed reference levels or reference quantities.

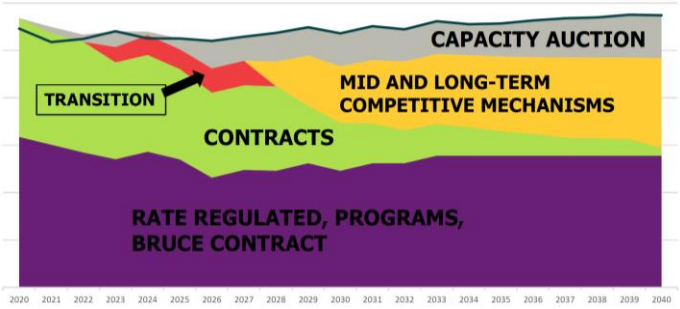
IESO expects that MRP will be implemented fully by 2023.

Power Advisory Commentary: Industry stakeholders now await IESO's responses on feedback received on the draft Real-Time and Pre-Dispatch calculation engine Detailed Designs. As IESO moves to finalize documents, IESO's processes are not clear with respect to the treatment of comments or concerns raised in respect to the v2.0 Detailed Designs. In reviewing the commentary on the v1.0 Detailed Designs, it is clear that IESO plans to address many concerns through the Implementation Phase of the MRP. To date, IESO has not shared a complete engagement plan for the Implementation Phase, nor details on how concerns will be addressed. Power Advisory recommends that IESO establish a transparent process for tracking and responding to industry feedback throughout the Implementation Phase in order to improve confidence in the MRP.

Resource Adequacy Engagement

IESO continues to develop the high-level Resource Adequacy framework, which includes the use of Capacity Auctions along-side other competitive procurement mechanisms as required. IESO staff plan to bring forward the proposed framework to the IESO board of directors for approval (December 2020). If approved IESO will continue consultation on the details of the framework throughout 2021 on the following topics:

- General Framework details, such as eligibility, commitment details, role of government, policy, regulatory, decision-making, capacity auction enhancements,
- Acquisition Target Setting, including methodology for setting targets for the amount of capacity to be acquired and approaches for allocating targets,
- Planning Considerations, including changes to IESO Power System Planning information and products to support the framework, and
- Transition, with focus on period between when contracts expire and when new resources are needed.



During the November 18, 2020 engagement meeting, IESO announced that it has begun negotiations with OPG to extend the contract for the Lennox Generating Station (GS). The current contract is set to expire in 2022. It is unclear at this time the details of the proposed contract extension (i.e., price, terms). IESO indicated that the negotiated contract extension for Lennox GS was required given the potential for market power, especially during the Transition phase as new competitive procurement mechanisms are under development.

Power Advisory Commentary: On balance, Power Advisory commends IESO for its efforts in developing the new high-level framework to secure resources. We anticipate that 2021 will bring additional opportunities to provide input into the development of the detailed framework. The timely finalization of the framework is required given that IESO anticipates capacity needs emerging in the mid-2020s. The framework should provide improved transparency in IESO's governance and decision-making framework. The decision to extend the Lennox GS came as a surprise to many industry stakeholders given IESO's emphasis on the use of competitive processes to re-acquire resources as contracts expire. As IESO launches the new framework, confidence in IESO processes will be essential.

Storage Design Project (SDP)

On December 4, 2020 the Technical Panel (TP) posted materials and its recommendations for the proposed Market Rule amendments for the implementation of the interim storage design that was developed by the Energy Storage Advisory Group (ESAG) under the Storage Design Project (SDP). Subsequently, on December 10, 2020 IESO's Board of Directors voted, approving the market rule amendments. Detailed rationale provided by the TP its vote and the Board in its vote can be found under MR-00446: Implementation of the Interim Storage Design.

Demand Response Working Group (DRWG)

On December 3, 2020, the DRWG met to provide an update on the 2020 DRWG work plan, and specifically, conduct a broader discussion with industry stakeholders on market development priorities. The meeting included a presentation of the Advanced Energy Management Alliance (AEMA).

IESO has prepared the following objective statement for HDR resources:

> *The primary objective of the Hourly Demand Response resource type is to provide capacity to maintain reliability during times of localized or global system stress.*
>
> *IESO is broadly supportive of exploring design changes that can enhance the value of the resource type, and demand side resources more broadly, for maintaining system reliability, such as increasing flexibility of utilization, or enhanced competition in the IESO-Administered Markets, including through the provision of additional services.*
>
> *Consistent with expectations for other resources, the IESO expects the HDR resource type to be dependable in the planning timeframe (e.g. HDRs reliably make their full obligated capacity available in the energy market) and operational timeframe (e.g. energy market bids reliably reflect actual capacity available); and when activated, to comply with dispatch instructions for the duration of the activation.*

The AEMA presented on their current DR priorities, including:

- Transparency and Decision-Making,

- Enabling Measurement and Verification Alternatives,
- Integration of DR and distributed energy resources (DERs), and
- Removing Barriers to Participation.

IESO will review the feedback from the December 8, 2020 meeting and will draft a list of DR market development priorities. The priorities will be presented during the next DRWG meeting, which is anticipated to be the final meeting of the DRWG.

Power Advisory Commentary: Outside of the DRWG, issues impacting DR/DER resources are discussed in a wide-range of IESO forums, including the Resource Adequacy Engagement, Capacity Auction Engagement, Expanding Participation Operating Reserve and Energy (EPOR-E), and the Innovation and Sector Evolution Whitepaper Series. As announced during the last IESO Stakeholder Advisory Committee meeting, IESO is in the midst of a reset of its stakeholder engagement processes. Power Advisory looks forward to more details on the revised engagement framework, and anticipates that it will provide continued opportunities to engage on how best to ensure efficient participation from DR/DER.

IESO PLANNING UPDATES

Annual Planning Outlook

On December 17, 2020 IESO the Annual Planning Outlook. The document provides the IESO's projections for future system needs and offers insight into potential opportunities and risks in the Ontario electricity sector.

Power Advisory is reviewing APO in detail and will circulate a separate summary and commentary note shortly.

System Planning Outlook and Updates

On November 18, 2020 IESO provided an update on its Bulk and Regional Planning Initiatives and Activities. The updates were divided into three parts. Part I consisted of insights from the 2020 APO and updates from the Formalizing Integrated Bulk System Planning process and the Regional Planning Process initiative. Part II consisted of updates on bulk planning, mainly the areas of Flow East Towards Toronto Plan, West of London Bulk Study, and Gatineau Corridor End-of-Life Study. Part III consisted of Regional Planning Activities and Community Engagement, mainly North Ontario and Greater Toronto Area / Central regions, southwest and East Ontario region, and community engagement. This section will selectively cover only some of the updates contained.

In terms of formalizing integrated bulk system planning, IESO released a high-level design outlining (1) the stages in the process from information gathering to the recommendation of acting and timing, (2) interaction with IESO's resource acquisition mechanisms and regional planning processes, and (3) how stakeholders can participate in the planning process. This multi-year staged implementation plan will be begin undergoing implementation in Q1 2021.

As for the regional planning process review, IESO will build on the documents released so far. There are three main pillars, which are; (a) ensuring process efficiency and flexibility, (b) planning for assets reaching end-of-life, and (c) eliminating barriers to non-wires alternatives (NWAs).

The West of London (WL) bulk study is meant to address the transmission system limitations east of Chatham, that are not resolved by the recommendations provided by the 2019 Windsor-Essex bulk study. Specifically, there is an impacted connection of 400 MW of load at South Middle Road TS expected to arise by 2022/23. The study has short listed two options to addressing the identified need: (1) reinforcing the Lambton x Chatham corridor and local 650 MW generation/storage west of Chatham,

and (2) reinforce the Chatham/Lambton x Longwood corridor and separate generation/storage option. The final study will be published in late Q1 2021.

Power Advisory Commentary: IESO has not yet established a procurement process for NWAs or resource needs pursuant to their regional planning exercises. Power Advisory anticipates that the IESO's Resource Adequacy Framework will need to include reference and procedures for acquiring resources to meet specific, identified, local needs. We are encouraged that the IESO has included reference to non-traditional options, and recommend that the IESO continue to engage with industry providers of solutions to ensure options are considered on a level-playing field.

OTHER IESO UPDATES

IESO Releases Results for York Region NWA Demonstration Project

On November 25, IESO announced the results of the York Region NWA Demonstration Project. The Project consisted of a local capacity auction to procure 10 MW of capacity from resources connected in southern York Region (i.e., Markham, Richmond Hill, and Vaughan) for the commitment period of May 1, 2021 – October 31, 2021. In total, 7 participants were successful with the largest contribution from a single participant being 3,000 kW and the smallest being 400 kW. The local capacity auction clearing price was 0.64 dollars (or 64 cents) per kW-day. A full list of successful participants can be found in the post-auction report.

The Project was conducted in partnership with Alectra Utilities, who will be assuming the role of a "distribution system operator" to monitor and dispatch the resource as system needs arise in real-time. $10 million in funding was also provided from IESO's Grid Innovation Fund and Natural Resources Canada (NRCan). As for resource types, 7,100 kW of cleared capacity are provided by DR resources and the remaining 2,900 kW will be provided by gas-fired resources. No storage resources provided any offers into auction, while gas-fired and DR offered a total of 34,315 kW.

Exploring DER Participation in Wholesale Markets Part II White Paper Released

On November 6, 2020 IESO published its draft white paper on Exploring Expanded DER Participation in IESO-Administered Markets – Part II: Options to Enhance DER Participation. This is the second paper in the series and is part of the Innovation and Sector Evolution White Paper initiative (ISEWP). An accompanying engagement session was held on November 19, 2020 to deliver the findings of this paper. The purpose of the second paper was to explore options to address the barriers identified in the first white paper, evaluate the potential impacts of those options, and provide key insights and considerations to inform future market design work related to DERs.

In assessing the different options to enabling further participation, the paper categorizes each option as either (a) merits further consideration, (b) pilot – where feasibility needs to be tested prior to making a decision, and (c) does not merit further consideration at this time. Items considered for piloting or further discussion include:

1. Phased approach for reducing the minimum-size threshold
2. Clarifying existing rules for aggregations
3. Modifying aggregation boundaries
4. Modifying aggregation compositions:
5. Creating a participation model for aggregated non-dispatchable generation
6. Permitting alternative forms of telemetry
7. Identifying bulk system hosting capacity and system needs
8. Enhancing transmission and distribution interoperability.

Power Advisory Commentary: Power Advisory commends IESO on this draft white paper. As indicated by Federal Energy Regulatory Commission (FERC) Order 2222, integrating DERs effectively in

wholesale markets is required in order to ensure just and reasonable rates. We look forward to the finalization of this white paper, but beyond that, we look forward to IESO's plans to prioritize and implement solutions. IESO will have ample opportunity to learn from the experience of other market operators who are preparing compliance filings for FERC Order 2222.

IESO Completes Variable Generation (VG) Forecasting Tool Update

On November 25, 2020 IESO indicated that it has completed implementing a fix to its variable generation forecasting tool. The fix was first proposed by IESO to replace a scheduling input with one that is more accurate. Following stakeholder feedback throughout summer 2020 regarding the impacts this would have on the electricity market – specifically the Hourly Ontario Energy Price (HOEP) – IESO implemented the tool change. The effect of the change is that when the 5-minute VG forecasting tool is disabled and a mandatory dispatch instruction is issued, the Dispatch Scheduling and Optimization will use a VG's 5-minute forecast rather than its maximum offer quantity.

ONTARIO ENERGY BOARD UPDATES

New OEB CEO Issues Letter Forging Ahead with Modernization

On October 30, 2020 Susanna Zagar, the new CEO of OEB, issued a letter to all electricity industry stakeholders indicating that the Board is proceeding with modernization. The letter provides an update on three modernization priorities:

1. Conducting an internal financial review of OEB operations ensuring best value is being delivered for money relative to priorities.
2. Closing the *Corporate Governance Guidance for OEB Rate-Regulated Utilities* initiative and not proceeding with the associated reporting and record keeping requirements, referring regulated utilities to the best practices laid out in the final report issued under that initiative.
3. Initiating a survey of stakeholders to help inform the development of new key performance indicators that focus on decision cycle time, organizational excellence, and stakeholder satisfaction in order to provide a baseline for measuring OEB's progress.

OEB Approves Enbridge's Hydrogen Blended Gas Pilot Project

On October 29, 2020 OEB issued its decision (EB-2019-0294) on Enbridge's application for leave to construct natural gas pipelines and associated facilities in the City of Markham, Regional Municipality of York. The pilot project will enable Enbridge to blend natural gas with up to 2% hydrogen and deliver the blended gas to an isolated portion of Enbridge's distribution system. The purpose of this pilot is to study the impacts of blended gas on the distribution system and customers' end-use appliances while pursuing decarbonization objectives by lowering greenhouse gas (GHG) emissions.

As noted by OEB, while hydrogen is a zero-carbon emission fuel, it also has a lower heat energy value, meaning that more if it needs to be combusted in order to achieve the same amount of heating effect when compared with unblended natural gas. As a result, OEB approved a rate rider for the approximately 3,600 participating customers who will incur larger volumetric consumption on their bills. However, if expanded beyond the limited scope of the pilot, blended gas may provide an avenue for Enbridge to comply with the Federal government's Clean Fuel Standard (CFS).

Pursuant to Enbridge's latest application filed on March 31, 2020 the estimated project cost is approximately $5.23 million, which would be partially offset by a $221,000 grant from Sustainable Development Technology Canada. However, rate increases will not be considered until at least the next rebasing application due for 2024. After 5 years of operation, Enbridge will be required to file a report with OEB addressing the costs of the project, any negative impacts to the distribution system or end-use appliances, and recommendations for next steps.

Power Advisory Commentary: Enbridge's pilot project is aligned with recent government announcements emphasizing the role of hydrogen in achieving climate objectives. Pilots like this will provide important industry knowledge and inform the potential for larger scale initiatives.

OEB Releases Staff Paper to Guide COVID-19 Deferral Account Consultation

On December 16, 2020 OEB issued a letter pursuant to its Consultation on the Deferral Account – Impacts arising from the COVID-19 Emergency (EB-2020-0133). Specifically, OEB Staff published a Proposal with respect to how to effectively and efficiently address the framework for the operation of the deferral account and OEB is inviting stakeholders to submit comments. Following the Ontario government's state of emergency declaration in response to COVID-19, OEB established a deferral account in which all rate-regulated entities may record incremental costs as a result of the ongoing pandemic. The Staff Proposal strives to strike a balance between utility and ratepayer interests while being cognizant of the impacts of the pandemic. The Staff Proposal draws from a study commissioned by OEB and delivered by London Economics International.

OEB staff's position with respect to the deferral account is such that utilities must demonstrate a financial need for recovery of amount in the account. Particularly, staff suggest that a means test based on the lower end of OEB's dead band of approved return on equity (ROE) be implemented such that recovery is only appropriate if utility earnings have been reduced below the point of reasonably expected fluctuations rather than restoration to full profitability margins. Staff further recommends that any material and prudently incurred incremental impacts that are directly attributable to the pandemic should only be eligible for a 50% recovery rate. The only exceptions to this are costs incurred out of necessity to comply with government of OEB directions and where after passing a means test, utilities can demonstrate compromise to their financial viability warranting higher than 50% recovery.

OEB will be hosting a webinar on January 14, 2021 on this topic, allowing stakeholders to ask questions about the London Economics studies. Comments are requested by January 25, 2021 and reply comments can be submitted by February 4, 2021.

OEB Releases London Economics Report Under Utility Remuneration/Responding to DERs Consultation

On December 16, 2020 OEB issued a letter under the Utility Remuneration/Responding to DERs joint policy consultations (EB-2018-0287 and EB-2018-0288), now referred to as the 'sector evolution consultations'. The subject of the letter is to announce the release of the first of two studies commissioned by OEB. The first study is comprised of several parts, conducted by London Economics International, focuses on the impacts of COVID-19, a jurisdictional scan and report on regulatory principles, policies, and accounting treatments applied in response to COVID-19, and COVID-19 impact on DERs.

The COVID-19 Impact on DERs study examines the topics of: (a) identifying the drivers of DER adoption

and the impact of COVID-19 on those drivers, (b) impact on perception of payback periods required to invest in DERs based on impacts to income patterns, (c) impact and government actions on ICI participants, and (d) considerations for prioritizing, pacing, and sequencing OEB policy developments, mainly the sector evolution consultations. OEB has also indicated that the second study, a DER impact study, is expected to be completed and delivered by ICF in early January 2021.

Power Advisory Commentary: We view OEB's sector evolution consultations to be critical for ensuring effective integration of DERs and the development of a regulatory frameworks that supports the identification and development of NWAs. We look forward to next steps from OEB staff.

OEB Issues Guidance for DER Connections

On November 26, 2020 OEB issued a letter providing guidance to local distribution companies (LDCs) with respect to DER connections under the DER Connections Review initiative (EB-2019-0207). The purpose of the review is to identify any barriers to the connection of DERs, and where appropriate to standardize and improve the connection process. A Working Group was convened, which identified a concern with the lack of clear technical requirements for proponents to provide with respect to the preliminary design of the proposed interface protection. The concern is that this can lead to insufficient information and a rejection in the application by the LDC.

As a result, the Working Group suggests establishing a common understanding, which is provided as a protection philosophy made available to all LDCs and DER proponents for the purpose of improving their connection applications and reducing project uncertainty and costs. Specifically, this philosophy applies only to non-exporting inverter-based DERs such as storage, wind, and solar. The philosophy outlines the kinds and categories of protections that are required by LDCs. For example, this includes protections for detecting faults at the facility, feeder, islanding, export scenarios, and other violations such as voltage, where the DER would trip and disconnect. Further details are appendaged to the letter.

Power Advisory Commentary: Power Advisory comments the OEB on their November 26, 2020 letter. There has been a significant amount of stakeholder and industry input in developing the guidance, and we anticipate additional recommendations will be made in 2021 with respect to future reforms to the connection process.

OEB Consulting with Non-Regulated Price Plan (RPP) Class B Customers on Alternative Rate Design

On December 14, 2020 OEB indicated that it will be engaging with individual interested consumer groups from different business sectors to consult on changes in pricing approaches to Non-RPP Class B customers. This initiative is being undertaken pursuant to EB-2016-0201, which previously engaged stakeholders for GA Pricing as an objective from the RPP Roadmap. The Roadmap set out a multi-year plan to redesign the RPP to better respond to policy objectives, improve system efficiency, and enhance consumer literacy and understanding in controlling energy costs.

In February 2019, OEB released a staff research paper on the examination of alternative price designs for the recovery of GA from Class B consumers in Ontario, which described analytical research evaluating a variety of GA pricing options. Since then, OEB has analyzed historical demand patterns, consumer cost impacts across different sectors, and the results of several pilot projects testing alternative RPP price plans. OEB has arrived at two alternative pricing models on the basis of economic efficiency and consumer impacts. A stakeholder meeting will

be held on January 8, 2020 to review the proposed alternatives.

Power Advisory Commentary: GA has been a significant focus of the Ontario government, especially during the COVID-19 pandemic. Power Advisory supports consultation on options for Class B customers. Currently, Class B customers do not have price signals for efficient consumption, nor does the current design of Class B cost-allocation provide options to support lower costs.

OEB Sets New Electricity Rates Under the RPP

On December 15, 2020 OEB set new electricity prices under the RPP for residential and small commercial customers, which will take effect on January 1, 2021. Since RPP prices were last set on November 1, 2020 the Ontario government released the Comprehensive Electricity Plan (CEP) under the 2020 Budget, which shifted a significant portion of costs associated with non-hydroelectric renewable energy contracts from ratepayers to the tax base. (Refer to the next section, Government and Policy Development, for additional details of the CEP.)

Consequently, the government is also lowering the Ontario Electricity Rebate (OER). As a result, new time-of-use (TOU) prices for residential customers are 8.5¢/kWh for off-peak, 11.9¢/kWh for mid-peak, and 17.6¢/kWh for on-peak hours. Tiered pricing for electing RPP customers are

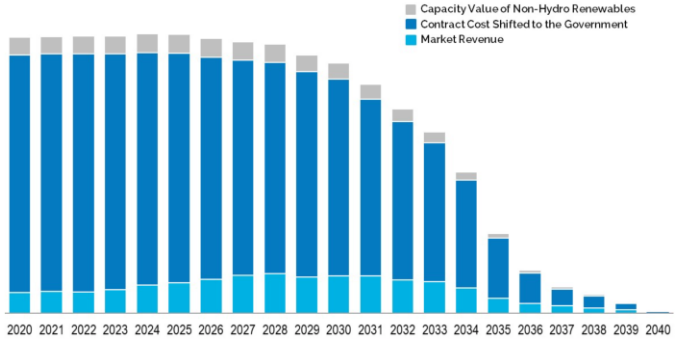
- Tier 1: 10.1¢/kWh for the first 1,000 kWh/month (residential) and for the first 750 kWh/month (non-residential); and
- Tier 2: 11.8¢/kWh for electricity used above the thresholds indicated for residential and non-residential customers.

GOVERNMENT POLICY DEVELOPMENT

Ontario Releases Comprehensive Electricity Plan in Budget to Reduce Electricity Prices

On November 5, 2020 the Ontario government released its 2020 Budget. As part of Chapter 1, Section C: Recover – Creating the Conditions for Growth, the government introduced "A Comprehensive Plan to Reduce Job-Killing Electricity Prices" (Comprehensive Electricity Plan or CEP). The CEP, which will take effect starting January 1, 2021, will shift approximately 85% of the costs associated with contract payments made to wind, solar, and bioenergy resources from ratepayers to the treasury. The government claims that as a result of removing these costs, commercial and industrial (C&I) customers will save about 14% and 16% on their electricity bills, respectively.

Further, the impetus behind the CEP is to make Ontario a more competitive jurisdiction for investment. By lowering the price of electricity, particularly for C&I customers down to an estimated 8.05 and 14.31 ¢/kWh - prices (which are comparable with Michigan, Ohio, and Tennessee) the government hopes to leverage Ontario's 94% non-emitting generating supply mix to tip the scale in Ontario's favour, as the other jurisdiction continue to rely heavily on fossil-fueled generation – especially coal. The costs to the tax base are expected to wind-down over time as contracts begin to expire.



Power Advisory Commentary: The CEP will place significant pressure on the treasury. While we acknowledge that the CEP was a politically motivated choice, it will have long-term impacts on the Ontario market as customers are not exposed to the full cost of electricity. The shift of costs onto the tax-base has impacted the business case for behind-the-meter energy storage and DR. In addition to concern from industry stakeholders, others have expressed concern that the proposed plan unnecessarily subsidizes all electricity users regardless of need.

Ontario Budget Bill 229 Proposes Amendments to OEB Act

On November 5, 2020 the Ontario Minister of Finance introduced Bill 229, Protect, Support and Recover from COVID-19 Act (Budget Measures), 2020. Schedule 34 of Bill 229 proposes the following amendments to the *Ontario Energy Board Act, 1998*:

1. Removal of objectives contained in section 1 relating to smart grid and renewable energy sources and the addition of an objective related to innovation. Also included is the removal of directives related to the system expansion to accommodate renewable resources contained in subsection 28.6(4).

2. Amending sections 4.1, 4.2, and re-enacting subsection 4.3(2) to place restrictions on the persons who may not be appointed commissioners to the Board.

3. Defining the Board's powers with respect to the authorization of persons to enter onto specified land in relation to the proposed construction, expansion or reinforcement of an electricity transmission or distribution line including interconnection, as contained in section 98. This will also align with anticipated changes to the *Environmental Assessment Act.*

Ontario Emissions Performance Standard Amendment

On December 16, 2020, the provincial government posted proposed amendments to Ontario's Emission Performance Standard (EPS). On September 20, 2020, the federal government approved the EPS meaning that the federal Output-Based Pricing System (OBPS) would no longer apply in Ontario once there was agreement on the transition date, which had not yet been determined. The transition date has still not been determined, but the province is proposing these amendments for a January 1, 2021 commencement date for the EPS. The proposed amendments make changes to: O. Reg. 241/19 Greenhouse Gas Emissions Performance Standards ("the EPS regulation") and O. Reg. 390/18 Greenhouse Gas Emissions: Quantification, Reporting and Verification ("the Reporting regulation").

The proposed amendments make changes so that these two regulations align with a January 1, 2021 start date for the EPS and furthermore to ensure that there will be no double charging for emissions under the OPBS and EPS or that there will be no gap in pricing of emissions. There are also changes proposed to the EPS regulation to add sectors that can voluntarily opt into the EPS. Amendments are also proposed to support the continued exemption of registered facilities in the EPS from the federal fuel charge (currently OPBS participants can apply to the Canada Revenue Agency for an exemption from the fuel charge). The proposed amendments also contain administrative and clarifying changes to the two regulations.

Power Advisory Commentary: We welcome the proposed amendments and think they are appropriate in the context of establishing a transition date from the OPBS to the EPS. We hope that the two levels of government can quickly agree on the transition date so that generators that emit carbon have certainty and plan their operations accordingly.

Ontario Government Responds to Comments Submitted to Consultation on Long-Term Energy plan (LTEP) Process

On November 20, 2020 the Ministry of Energy, Northern Development and Mines (MENDM) posted its responses to submissions made in the Environmental Registry of Ontario for the consultation regarding revoking Ontario Regulation 355/17. The purpose of this consultation is to address the MENDM's proposal to remove the timing requirement for releasing Ontario's next LTEP and review and update the Province's long term energy planning process, including clarifying the roles of the Government, IESO, and OEB.

A total of 9 comments were received (8 from the registry and 1 by email). Of the 9 comments, 5 were supportive or neutral while 4 expressed concern, which the MENDM has addressed in its responses. Mainly, there were two interrelated concerns that the MENDM's proposal would (a) negatively affect transparency and accountability, and (b) delay the planning process, timely responses to climate change impacts, and/or energy transition processes. In similar responses to both of these concerns presented, the MENDM clarified that the current proposal is only to remove the timing requirement and allow an opportunity to further develop a new planning process, while IESO will continue its system planning activities. As a result, the MENDM will be proceeding with its proposal.

Joint Ministerial Letter Issues to OEB Regarding Continued Availability of Demand Side Management

On November 27, 2020 a joint letter was issued by the MENDM and Ministry of Environment, Conservation and Parks (MECP) to OEB regarding the continued availability of demand side management (DSM) programs. The letter focused on clarifying guidance relating to natural gas targets, economic recovery, and alignment with the Energy Affordability Program (EAP).

- The natural gas targets are found in the 2018 Made-in-Ontario Environment Plan. Specifically, the plan includes an estimate of the potential for actions related to natural gas conservation, including ratepayer-funded DSM programs. The letter clarifies that the estimate is not intended to be prescriptive but rather a guiding factor for OEB's decision making.

- With respect to supporting economic recovery, the letter emphasizes the importance of maintaining the availability of DSM programs as a measure of helping customers manage their energy costs and keeping them low.

- Pursuant to the new Conservation and Demand Management framework for electricity, which is to be implemented by IESO starting January 2021, the letter encourages OEB to consider aligning the eligibility criteria that will apply to the EAP to any natural gas low-income support programs.

Ontario Begins Development of First-Ever Hydrogen Strategy

On November 19, 2020 the Ontario government commenced a consultation on its Low-Carbon Hydrogen Strategy (LCHS) and published a discussion paper. The LCHS is tied to the 2018 Made-in-Ontario Environment Plan, which commits the province to reducing GHG emissions by 30% below 2005 levels by 2030. The LCHS is also seen as an opportunity to stimulate economic recovery following COVID-19.

The LCHS is intended to achieve 3 main objectives:

1. Support the production of low-carbon hydrogen and related technologies, where low-carbon hydron is derived from either
    a. Water and electricity via electrolysis,
    b. Biomass gasification, or

   c. Natural gas via steam methane reformation but only if paired with carbon and capture use and storage.
2. Build distribution infrastructure, and
3. Enhance opportunities for end-uses across the economy, including industry (e.g., feedstock, fuel), transportation (e.g., fuel cell vehicles), electricity (e.g., storage, grid balancing), and buildings and communities (e.g., fuel).

The discussion paper poses 18 questions for stakeholders that the government is looking for feedback on. These questions are tied into the key principles, including the overall vision, reducing greenhouse gas emissions, generating economics development and jobs, promoting energy resilience, reducing barriers and enabling action, and using hydrogen where it makes sense. The consultation remains open until January 18, 2021.

Power Advisory Commentary: We look forward to the development of the provincial strategy. As options are developed and projects are identified, Power Advisory anticipates that IESO's planning will need to reflect on potential implications for the electricity sector (e.g., electricity demand, energy storage, integration with natural gas systems, etc.)

Federal Government Introduces Bill to Legislate Net-Zero Emissions by 2050

On November 11, 2020 the Minister of Environment and Climate Change tabled Bill C-12, *Canadian Net-Zero Emissions Accountability Act*. The thrust of the Act is to create long-term jobs and secure long-term investment to support low-carbon, climate-resilient projects. Several key objectives of the Act are:

- Legally bind the government to a process to achieve net-zero emissions by 2050.
- Set rolling five-year emissions-reduction targets and require actions plans and progress reporting.
- Establish a Net-Zero Advisory Board to provide independent advice to the Government on the best pathway to reach its targets.
- Require the Government to publish an annual report describing the activities and considerations of departments and crown corporations in assessing the financial risks and opportunities of climate change.
- Enshrine greater accountability and public transparency into Canada's plan for meeting net-zero emissions by 2050.
- Provide for independent third-party review by the Commissioner of the Environment and Sustainable Development to ensure accountability for all future governments.

Canada to be Net-Zero Emissions by 2050

On December 11, 2020, Prime Minister Justin Trudeau announced Canada's new strengthened climate plan with the goal of Canada having net-zero emissions by 2050. This announcement follows on the heels of the November 19, 2020 tabling of Bill C-12, the *Canadian Net-Zero Emissions Accountability Act*, in the House of Commons. The Prime Minister's announcement affects the electricity sector directly in two ways. Firstly, new investments in clean energy were announced. Secondly, post-2022 carbon pricing was disclosed.

In terms of new federal investments, the announcement indicates that $964 million over four years will be invested in smart renewable energy and grid modernization projects. This includes investments in wind and solar generation and deployment of energy storage. The federal government will also invest $300 million over five years to assist rural, remote and Indigenous communities in replacing diesel power with cleaner forms of generation by 2030. The federal government will also work with provinces and territories, with the support of the Canada Infrastructure Bank, to build intertie projects.

Currently, the price of carbon is $30/tonne of CO_2 equivalent ("tonne"). Under the federal *Greenhouse Gas Pollution Pricing Act* (GGPPA), the price of carbon increases $10/tonne every year until 2022, when the price will be $50/tonne. In the Prime Minister's announcement, he stated that the federal

government would increase the carbon price by $15/tonne per year starting in 2023 rising to $170/tonne in 2030.

Also, as part of the enhanced climate action plan, the federal government also proposes to consult with stakeholders to develop tax measures to promote the commercialization of clean energy technologies. Furthermore, by the end of 2020, the federal government will launch a Small Modular Reactor Action Plan to set out the steps required to deploy this technology.

It was also announced that the federal government will invest $1.5 billion in a low-carbon and zero-emissions Fuels Fund to increase the production and use of low-carbon fuels (e.g., hydrogen, biocrude, renewable natural gas and diesel, cellulosic ethanol) in a manner that complements federal carbon pollution pricing and regulatory efforts like the Clean Fuel Standard.

The scope of the Clean Fuel Standard has been narrowed to cover only liquid fossil fuels, like gasoline, diesel and oil. This is a departure from the original 2016 scope of the Clean Fuel Standard, when it was proposed that it would cover liquid, gaseous and solid fuels.

Power Advisory Commentary: This enhanced climate action plan is ambitious. The escalation in the carbon price will likely be very contentious. We are still awaiting the Supreme Court of Canada's decision on the provincial challenge to the constitutionality of the GGPPA.

All things being equal, the cost to operate a carbon emitting generator will increase dramatically under the December 11, 2020 announcement. Currently, at a price of $30/tonne, the cost of carbon in our electricity is about $11/MWh. At a price of $170/tonne the cost will be about $62/MWh, which represents an almost six-fold increase in the cost to operate these generators. This may mean that these resources cannot clear the market as often and makes their economic future very uncertain.

Also, the announcement was silent on any other specific changes to the Output-Based Pricing System, to which large emitters (50,000 tonnes or more of annual carbon emissions) are subject. Currently, the standard is 370 tonnes/GWh, which drops to 329 tonnes/GWh in 2022 and annually by 41 tonnes/GWh thereafter until 2030, then it will be 0 tonnes/GWh. Large emitters are responsible for carbon costs for emissions above the standard. Any acceleration in this decreasing output standard will adversely affect these generators.

Federal Government Launches Hydrogen Strategy for Canada

On December 16, 2020 the Minister of Natural Resources announced the release of the Hydrogen Strategy for Canada. The strategy is intended to represent an ambitious framework that seek to position Canada as a global hydrogen leader, cementing this low-carbon and zero-emission fuel technology as a key part of the path towards net-zero carbon emissions enunciated in other recent federal policy developments.

In summary, the strategy is underpinned by a $1.5 billion federal investment (low-carbon and zero-emissions fuels fund) to increase the production and use of low-carbon fuels such as hydrogen. A major pillar of the Strategy is to spur investment and partnerships needed to increase domestic production of hydrogen for domestic and export purposes; the government forecasts that the global market for hydrogen will near $12 trillion by 2050. Additionally, by developing supply expertise, Canada can use hydrogen to lower the emissions of carbon-intensive sectors such as resources extraction, transportation, power generation, and manufacturing.

OTHER ELECTRIC GRID UPDATES

IESO Grants Extension to EDP Renewable's Nation Rise Wind Farm Project

On November 12, 2020 IESO issued a decision to provide an extension to the commercial operation date of EDPR's Nation Rise Wind Farm project beyond June 17, 2021 to allow for enough time for completion. The extension comes in the wake of the project's turbulent development history, where in December 2019 the Ontario Minister of Environment, Conservation and Parks revoked the project's Renewable Energy Approval (REA) only to have that revocation overturned by the Ontario Divisional Court in a decision issued May 13, 2020 – reinstating the REA.

Following local opposition to the project claiming that the contract needs to be cancelled due to breach of condition of not being able to reach commercial operation, EDP Renewables claimed relief under force majeure. In turn, IESO agreed to provide this relief supporting that force majeure was warranted due to the project's REA having been previously cancelled, putting the project on hold.

Calstock Biomass PPA Extension

On December 8, 2020 Atlantic Power Corporation announced the extension of its Power Purchase Agreement (PPA) with the Ontario Electricity Financial Corporation for its 35 MW Calstock biomass plant in Hearst, ON. The PPA extension is for one year and extends the PPA term until December 16, 2021.

Atlantic Power indicates that the one-year extension will allow the Ontario government time to consider future options for addressing mill waste in Ontario, which may include a new PPA for the Calstock plant. The Calstock plant can process up to 320,000 GMT of wood waste per year.

Power Advisory Commentary: It appears that this PPA extension was politically motivated and not driven by a system need. It sends a confusing message to generators when on the one hand IESO has indicated a need for transparent and competitive market mechanisms for re-acquiring capacity post contract expiry per the proposed Resource Adequacy Framework, and on the other hand an agency of the Ontario government extends a contract.

OPG To Be Net Zero By 2040

On November 26, 2020 OPG release its Climate Change Plan. In this plan, OPG committed to becoming a net-zero company by 2040. According to OPG, this goal is aimed at driving efficient, economy-wide decarbonization and economic renewal, while protecting the environment. OPG is now refurbishing Darlington Nuclear Generation Station and has also recently announced the decision to add an Small Modular Reactor (SMR) to the Darlington site. OPG also owns 44 MW Naticoke Solar at the site of the former coal-fired Nanticoke Generating Station on Lake Erie.

Other key actions include:

- Advancing electrification initiatives in the province
- Completing the Darlington Nuclear Refurbishment
- Continued investment in hydroelectric generation
- Focus on adaptation and resiliency of assets
- Exploring opportunities in non-hydro renewables and energy storage
- Investigating negative emissions technology (the removal/sequestration of carbon)
- Supporting nature-based solutions and biodiversity initiatives (including purchasing offset credits and supporting resiliency).

OPG Resumes Planning Activities for Small Modular Reactor at Darlington

On November 13, 2020 OPG announced that it is resuming planning activities for a new nuclear – specifically a SMR project in Clarington on site of the Darlington nuclear generating station. The first license was granted to OPG by the Canadian Nuclear Safety Commission in 2012 following a thorough environmental assessment. It is predicted that the Darlington site may host the SMR, a new type of nuclear technology, as early as 2028.

Darlington Refurbishment Project – Defueling Unit 3 Completed

OPG announced on September 3, 2020 that refurbishment work on Unit 3 at Darlington Nuclear Generating Station had commenced. On November 26, 2020 OPG reported that it had completed defueling Unit 3. Defueling the reactor was planned to take approximately 90 days and was completed early. OPG crew used remotely controlled tooling to remove 6,240 fuel bundles for storage onsite and draining heavy water from the unit. Now that defueling is completed, OPG will isolate Unit 3 from the rest of the station by disconnecting it entirely and constructing bulkheads for physical separation. Refurbishment work is anticipated to be complete by Q1 of 2024.

OPG Hydroelectric Payment Amount (HPA) Adjustment for 2021

On December 3, 2020 OEB approved OPG's September 1, 2020 application for an adjustment to the HPA for 2021. The adjustment was determined using the IR price cap methodology approved in its December 2017 order. The HPA is the regulated price paid for output from OPG prescribed hydroelectric assets under Ontario Regulation 53/05.

The current approved HPA for 2020, $43.15/MWh will be adjusted by a factor of 1+ expected inflation – expected productivity, where expected inflation is 2% and the expected productivity is 0.7%. The HPA for the period commencing January 1, 2021 to December 31, 2021 will be $43.88/MWh.

OPG estimates that the average annual impact on a typical residential customers' monthly bill resulting from the HPA adjustment, including other changes previously approved by OEB, will be -0.03% or -$0.03 in 2021.

OTHER JURISDICTION & ORGANIZATION UPDATES

National Cyber Threat Assessment 2020

On November 18, 2020 the Canadian Centre for Cyber Security ("CCCS"), part of the Communications Security Establishment, released the National Cyber Threat Assessment 2020. The assessment reports that state-sponsored actors are likely attempting to develop cyber capabilities to disrupt Canadian critical infrastructure, such as the supply of electricity, to further their goals.

The assessment notes that in particular these state-sponsored actors are developing cyber capabilities that are required to disrupt the supply of electricity in Canada. CCCS believe that it is very unlikely, however, that cyber threat actors will intentionally seek to disrupt Canadian critical infrastructure and cause major damage or loss of life absent international hostilities. These cyber threat actors, however, may target critical Canadian organizations to collect information, pre-position for future activities, or as a form of intimidation.

These cyber threat actors generally target industrial control systems, which monitor and control physical equipment. The assessment notes that in 2019, Russian actors targeted electricity networks in Canada and the US. North Korean malware has been found in IT networks of Indian power plants and US

utility employees have been targeted by Chinese-sponsored cyber threat actors in the past.

Power Advisory Commentary: This assessment reinforces the need for continued vigilance regarding protecting Canada's electricity infrastructure. Just last year both Siemens and the Government Accountability Office reported that the US electricity grid is vulnerable to cyber-attacks and recommended steps be taken to secure the grid. As grids become smarter, they are more vulnerable to cyber-attack and the effects will become more severe and far-reaching. In 2015 and 2016 alleged Russian-linked actors attacked Ukraine's electricity grid causing widespread blackouts. We only have to cast our minds back to August 2003 to understand the potential impact a cyber-attack causing a blackout might have on Ontario. This is especially so now with so much business and commerce being undertaken remotely that we are more vulnerable to such threats.

Canada Pension Plan Investment Board (CPPIB) Launches European Investment Platform

On December 9, 2020 CPPIB launched Renewable Capital Power Limited (RPC), a UK-based investment company that will be CPPIB's primary platform for project investments in solar, onshore wind and associated energy storage across Europe. CPPIB states that RPC will be the majority owner but will operate RPC's portfolio independently from its other investments.

RPC is headed up by Bob Psaradellis as CEO, formerly of GE Energy Financial Services, where he closed equity investments in energy assets with over €5 billion in enterprise value and raised over $14 billion in third-party equity and debt for GE's power, renewables, oil & gas, aviation and healthcare projects globally. RPC board chair will be Shaun Kingsbury CBE, formerly Chief Executive of the UK Green Investment Bank, which he led from its formation with backing from the UK Government to become the largest renewable energy investor in the UK and ultimately on to privatization in 2017.

RPC will initially target investments in ready-to-build and operating assets in Nordic countries and Spain. Over time, it is the intention to make RPC a scalable and diversified pan-European investment platform. Bob Psaradellis indicates that it already has a well-developed pipeline of projects and expects RPC to make its first investment in early 2021.

Nova Scotia Utilities and Review Board (NSURB) Request to Reduce ROE on Maritime Link Refused by Emera

On November 30, 2020 NSURB issued a decision on Nova Scotia Power Maritime Link Inc.'s (NSPML), a subsidiary of Emera, application for the approval of the 2021 interim cost assessment. While approving the interim cost assessment, the NSURB made an uncharacteristic request to NSPML asking it to voluntarily reduce its ROE from 9% to 8.75%, which would amount to $1.4 million savings to Nova Scotia Power customers in 2021. The reason for this is that the NSURB agreed with the position of intervenors, including the Industrial Group and Consumer Advocate, that the project's benefits were "grossly overestimated" and did not materialize as expected.

Specifically, the intervenors pointed out that in the 2017 Interim Assessment proceeding, where the usefulness of the ML was at issue, NSPML argued that the value of the project would be in excess of $120 million in 2018 and 2019. However, as it turned out the actual value at the end of that period was less than $5 million per year. In the 2021 proceeding, the NSURB noted that while no formal evidence was submitted on the basis of which a binding decision could be made against NSPML, the NSURB found that it was "sympathetic" to the intervenors' argument and found the request to be reasonable.

As a result, the NSURB decided to withhold an issuance on this matter and left it to NSPML to

consider responding favourably and voluntarily to the request. On December 7, 2020 Emera, the parent company of NSPML filed its response refusing to adhere to the request made to it to lower its ROE. Instead, the company responded that it will donate $1.5 million to the Home Energy Assistance Top-up (HEAT) program administered by the Salvation Army, citing it as an "effective and immediate way to reach those most in need in the province while respecting the integrity of the regulatory framework governing the Maritime Link."

Hydro-Québec Launches New Battery Storage Subsidiary

On December 9, 2020 Hydro-Québec announced that it had launched a new subsidiary, EVLO, that will design, market and operate battery energy storage systems. The batteries are lithium iron phosphate batteries, which are a result of research and development work by Hydro-Québec. The batteries do not use any cobalt or rare earth elements, and Hydro-Québec claims that the active materials are 99% recyclable.

The EVLO systems will be utility-scale and EVLO will target generators, distributors, transmission system operators, and any other industrial or commercial customers requiring medium to large-scale systems. EVLO will also provide power control and energy management software with the systems.

Hydro-Québec has been testing battery systems for peak shaving purposes at its Hemmingford substation in Montérégie region and in the Quaqtaq off-grid system in northern Québec. The batteries are also being used in the Lac Mégantic microgrid. EVLO has executed a memorandum of understanding with Innergex Énergie Renouvable Inc. to provide battery systems to its Tonnerre project in France, where EVLO will install a 9 MWh storage system in the transmission system operated by Réseau de Transport d'Électricité, France's transmission system provider. The system is scheduled for commissioning in 2021.

Power Advisory Commentary: A long-duration battery storage system that does not use cobalt or any rare earth elements, and is highly recyclable, is a significant development. The security of supply of cobalt and rare earth elements for conventional Li-ion battery systems has always been a risk for these systems.

FERC Chairman Replaced

On November 5, 2020 President Trump removed Neil Chatterjee as FERC chair and replaced him with James Danly. Danly joined the FERC in 2017 as its General Counsel and prior to being appointed chair he served as a commissioner. Chatterjee speculated that he was being replaced for the recent move the FERC made to support carbon pricing in US electricity markets, which we reported on in the October Ontario Market Update, with a proposed policy statement on carbon pricing.

FERC Approves California Independent System Operator (CAISO) Co-located Resource Model

On November 19, 2020 the FERC approved of CAISO proposal for modelling co-located resources, i.e., a single physical location for both generation and energy storage resources. In the CAISO proposal co-located resources will be treated as separate generation and energy storage resource acting as a load. Hybrid resources are treated as a single resource at a single point of interconnection. Co-located resources are modelled and offer energy separately. Hybrid resources are modelled and offer energy as a single resource. Co-located storage resources will be allowed some flexibility to deviate from dispatch instructions in order to absorb excess solar generation. Hybrid resources will be required to comply with dispatch instructions. Developers will be allowed to choose whether they are co-located or hybrid for the purposes of participating in the market.

Power Advisory Commentary: CAISO has been a leader in integration of storage into its wholesale markets. The implementation of co-located and hybrid resources provides for a great deal of flexibility in integrating storage + generation resources into the CAISO markets.

EDF Renewables Signs Virtual PPA with Nucor Corp in Texas

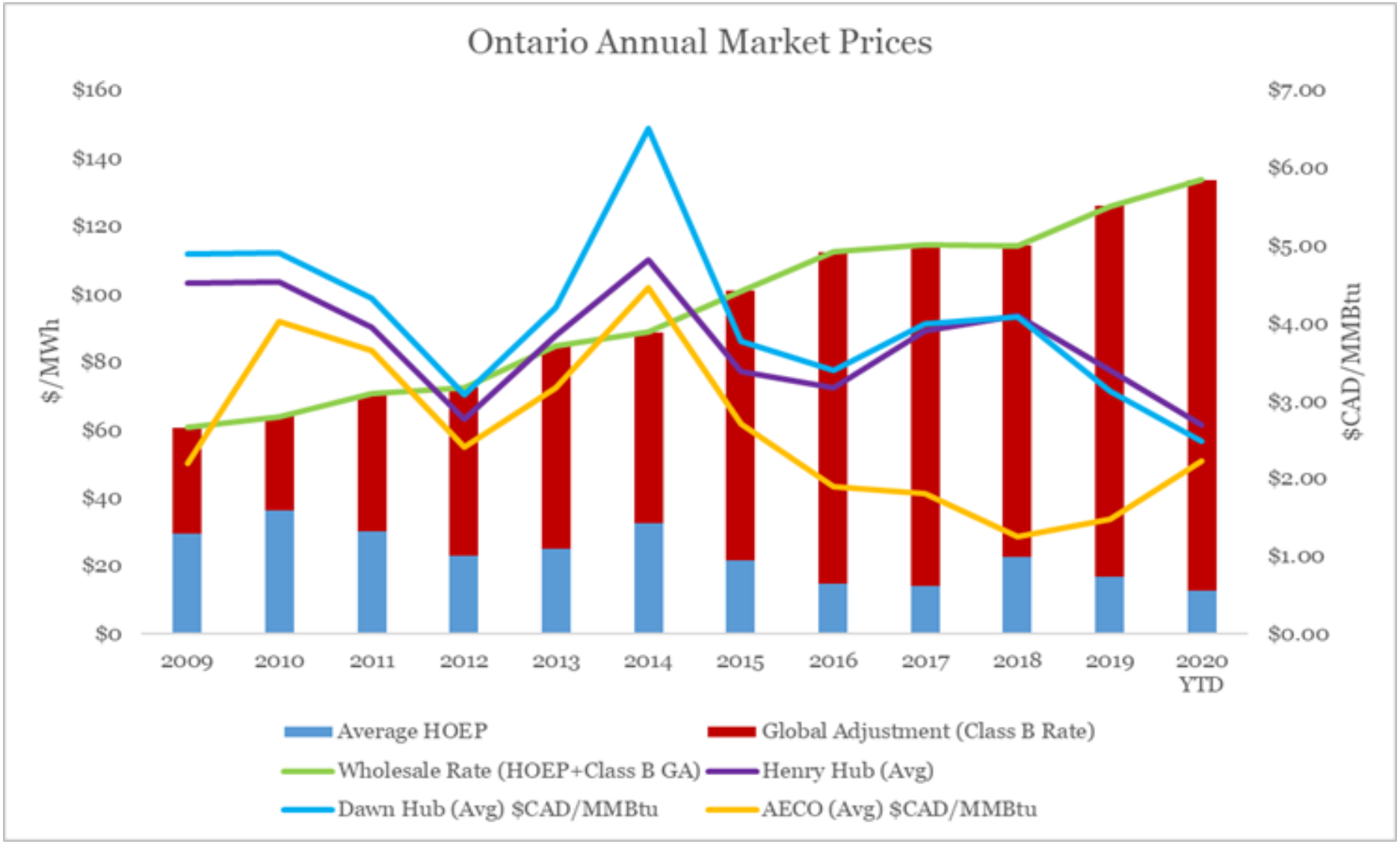
On November 12, 2020 EDF Renewables announced the execution of a 15-year Virtual Power Purchase Agreement (VPPA) with Nucor Corporation, a steel company. The VPPA will provide Nucor with 250 MW of solar energy in Texas from a facility that is expected to begin construction in summer 2022 and reach commercial operation in Q2 2023. This deal is being hailed as the largest of its kind for the steel industry.

MARKET SCORECARD

Annual Price Statistics													
	Units	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020 YTD
Peak HOEP	$/MWh	$1,891	$545	$558	$390	$584	$964	$1,402	$1,620	$1,823	$366	$1,029	$1,258
Average HOEP	$/MWh	$30	$36	$30	$23	$25	$32	$22	$15	$14	$22	$17	$13
Minimum HOEP	$/MWh	-$52	-$128	-$139	-$128	-$106	-$110	-$22	-$10	-$67	-$4	-$59	-$5
On-Peak Average	$/MWh	$38	$42	$36	$27	$31	$41	$28	$14	$18	$29	$22	$17
Off-Peak Average	$/MWh	$24	$32	$27	$20	$21	$27	$18	$15	$12	$18	$13	$10
Global Adjustment (Class B Rate)	$/MWh	$31	$28	$40	$50	$60	$56	$79	$98	$101	$92	$109	$121
Wholesale Rate (HOEP+Class B GA)	$/MWh	$61	$64	$71	$73	$85	$89	$101	$112	$115	$114	$126	$134
Henry Hub (Avg)	$CAD/MMBtu	$4.52	$4.54	$3.95	$2.76	$3.84	$4.82	$3.37	$3.16	$3.90	$4.10	$3.39	$2.68
Dawn Hub (Avg)	$CAD/MMBtu	$4.89	$4.91	$4.33	$3.07	$4.20	$6.51	$3.77	$3.39	$3.99	$4.08	$3.13	$2.48
AECO (Avg)	$CAD/MMBtu	$2.19	$4.02	$3.65	$2.40	$3.17	$4.45	$2.70	$1.89	$1.80	$1.25	$1.47	$2.22
Sources: Electricity Market Prices - IESO, Natural Gas Price Index - SNL													

Source: Electricity Market Prices – IESO, Natural Gas Price Index – SNL

MARKET SCORECARD

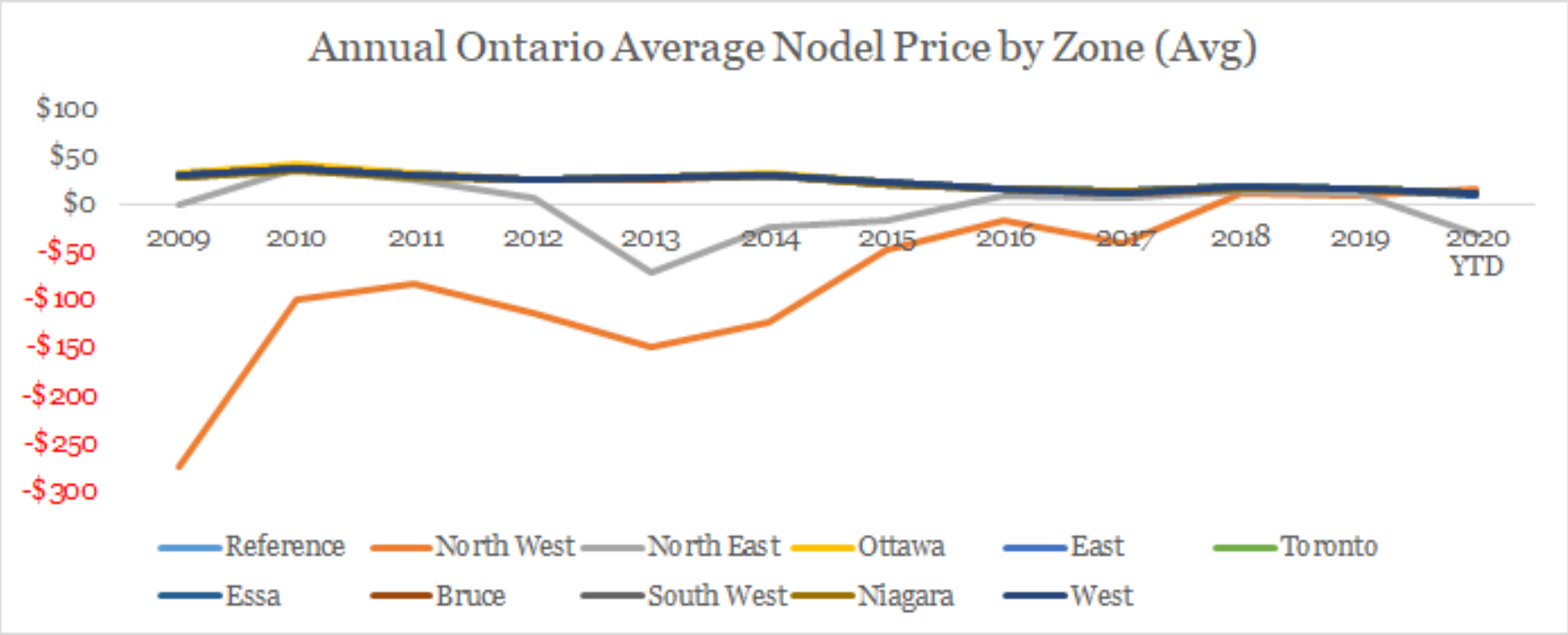


Source: Electricity Market Prices – IESO. Natural Gas Price Index – SNL

MARKET SCORECARD

Ontario Proxy Zonal Price													
	Units	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020 YTD
Reference	$/MWh	$32	$39	$31	$26	$27	$31	$22	$17	$13	$17	$16	$11
North West	$/MWh	-$275	-$101	-$82	-$115	-$150	-$124	-$49	-$17	-$42	$12	$9	$15
North East	$/MWh	-$1	$38	$25	$7	-$71	-$24	-$18	$8	$6	$14	$11	-$30
Ottawa	$/MWh	$32	$41	$32	$26	$28	$31	$22	$17	$13	$17	$16	$11
East	$/MWh	$29	$37	$30	$25	$27	$30	$22	$16	$12	$17	$16	$11
Toronto	$/MWh	$31	$38	$31	$25	$27	$30	$22	$16	$13	$17	$16	$11
Essa	$/MWh	$30	$38	$31	$25	$27	$31	$22	$16	$13	$18	$16	$8
Bruce	$/MWh	$31	$36	$30	$24	$26	$30	$21	$16	$12	$17	$15	$11
South West	$/MWh	$31	$37	$31	$25	$27	$30	$22	$17	$13	$17	$16	$12
Niagara	$/MWh	$28	$36	$29	$24	$26	$30	$22	$17	$12	$16	$16	$11
West	$/MWh	$31	$37	$31	$25	$27	$30	$22	$17	$12	$17	$16	$11

MARKET SCORECARD



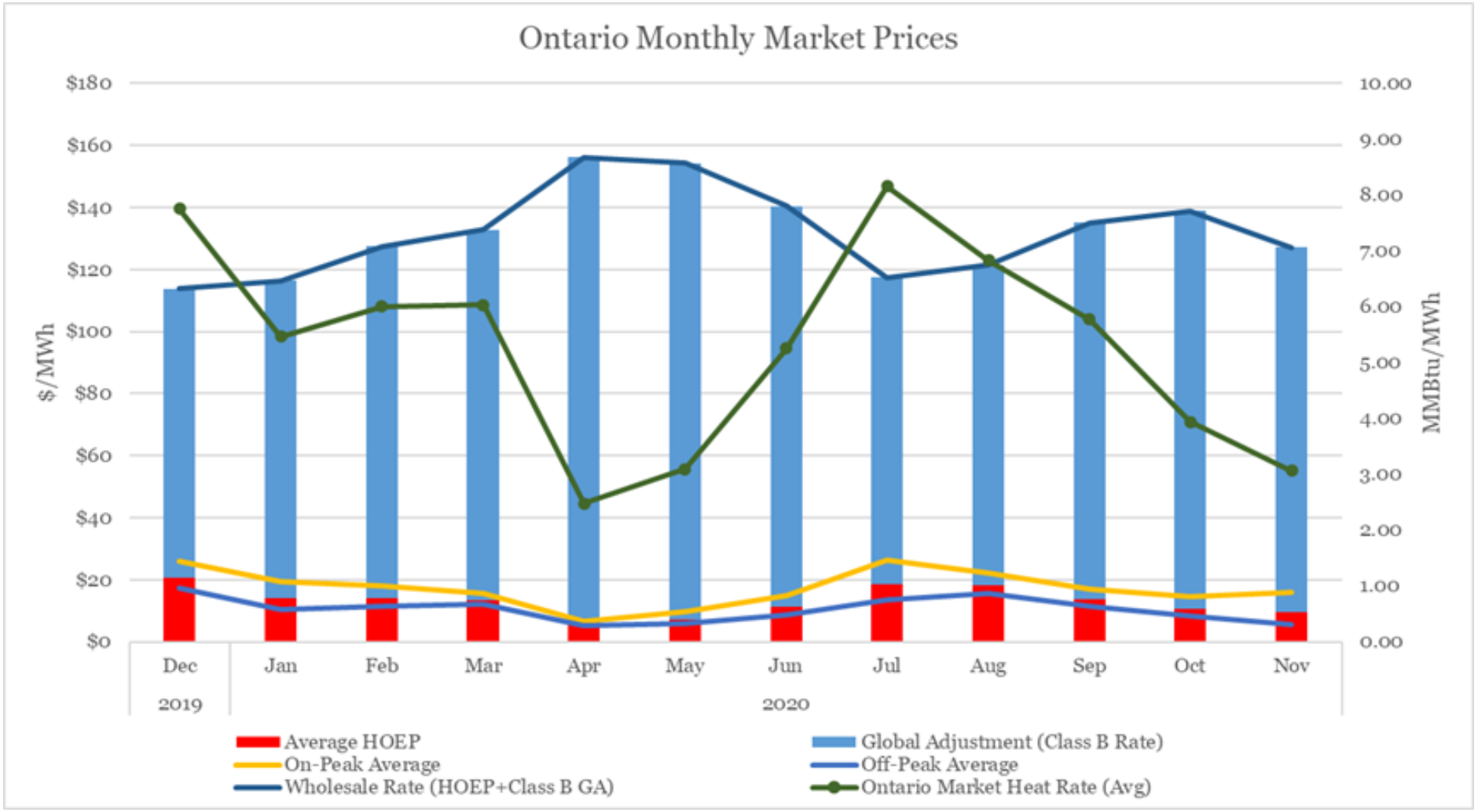
Source: IESO Market Data

MARKET SCORECARD

Monthly Ontario Price Statistics (Dec 2019 - Nov 2020)													
		2019	2020										
	Units	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
Peak HOEP	$/MWh	$960	$1,258	$102	$157	$158	$320	$381	$203	$207	$142	$71	$942
Average HOEP	$/MWh	$21	$14	$14	$13	$6	$7	$11	$19	$18	$14	$11	$10
Minimum HOEP	$/MWh	-$3	-$3	-$0	-$0	-$3	-$4	-$5	-$4	-$4	-$0	-$3	-$3
On-Peak Average	$/MWh	$26	$19	$18	$16	$7	$10	$15	$26	$22	$17	$14	$16
Off-Peak Average	$/MWh	$17	$10	$12	$12	$5	$6	$9	$13	$16	$12	$8	$6
Global Adjustment (Class B Rate)	$/MWh	$93	$102	$113	$119	$150	$147	$129	$99	$103	$121	$128	$118
Wholesale Rate (HOEP+Class B GA)	$/MWh	$114	$116	$127	$133	$156	$154	$140	$117	$121	$135	$139	$127
Henry Hub (Avg)	$CAD/MMBtu	$2.88	$2.65	$2.55	$2.50	$2.44	$2.44	$2.21	$2.37	$3.01	$2.58	$3.07	$3.42
Dawn Hub (Avg)	$CAD/MMBtu	$2.66	$2.55	$2.33	$2.23	$2.33	$2.36	$2.14	$2.28	$2.66	$2.39	$2.70	$3.11
AECO (Avg)	$CAD/MMBtu	$2.37	$2.31	$1.86	$1.94	$1.98	$2.11	$1.91	$2.01	$2.49	$2.30	$2.48	$2.89
Ontario Market Heat Rate (Avg)	MMBTU/MWh	7.75	5.46	6.01	6.03	2.48	3.10	5.25	8.16	6.83	5.77	3.94	3.06

Source: Electricity Market Prices – IESO. Natural Gas Price Index – SNL

MARKET SCORECARD



Source: Electricity Market Prices – IESO. Natural Gas Price Index – SNL

MARKET SCORECARD

Contracted Capacity by Fuel and Contract Status

Contracted Generation Resources (MW)	Total Capacity	Under Development	Commercial Operation
Renewables			
Bio-Energy	359.2	4.0	355.2
Solar	2,673.1	28.8	2,644.3
Wind	5,533.1	99.8	5,433.3
Non-Hydro Renewables	8,565.4	132.6	8,432.8
Hydroelectric	2,409.3	33.8	2,375.5
Renewables - Subtotal	**10,974.7**	**166.4**	**10,808.3**
Natural Gas, Nuclear and other Fuel Sources			
Gas	9,450	27.8	9,422.3
Waste	24.2	0.0	24.2
Nuclear (Bruce)	6,300.0	0.0	6,300.0
Natural Gas, Nuclear and Other - Subtotal	**15,774.2**	**27.8**	**15,746.5**
Total Contract Capacity	**26,749**	**194.2**	**26,554.8**

Source: Table 1, IESO Quarterly Progress Report on Contracted Electricity Supply 2020 Q3. September 2020

MARKET SCORECARD

Committed Generation Resources (as of December 2020)

Project Name	Zone	Fuel Type	Estimated Effective Date	Project Status	Capacity (MW)
Henvey Inlet Wind Farm	Essa	Wind	2020-Q3	Commissioning	300
Romney Wind Energy Center	West	Wind	2020-Q4	Commissioning	60
Nation Rise	Ottawa	Wind	2021-Q2	Commissioning	100
Calstock	Northeast	Biofuel	2021-Q4	Expiring Contract	-38
Iroquois Falls	Northeast	Gas	2021-Q4	Expiring Contract	-131
Total					**291**

Source: Table 4-2, IESO Reliability Outlook as of December 2020 for the period of January 2021 to June 2022

MARKET SCORECARD

Existing Installed Transmission Generation Resources (as of December 2020)

Fuel Type	Total Installed Capacity (MW)	Forecast Capability at Outlook Peak (MW)	Number of Stations	Change in Installed Capacity (MW)
Nuclear	13,009	10,504	5	0
Hydroelectric	9,060	5,133	76	0
Gas/Oil	11,317	9,339	32	0
Wind	4,486	634	39	0
Biofuel	295	254	7	0
Solar	478	64	10	0
Demand Measures	-	28	-	-
Firm Imports (+)/Exports (-)	-	0	-	-
Total	**38,644**	**25,956**	**169**	**0**

Source: Table 4-1, IESO Reliability Outlook as of December 2020 for the period of January 2021 to June 2022