



Date: March 22, 2017

To: IESO Stakeholder Engagement  
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Subject: **Comments on 2017-03-03 IESO Market Renewal Report**

MIDAC supports the Independent Electricity System Operator's (IESO's) proposed market renewal proposal. The changes proposed should make a significant improvement to the electricity wholesale market operation. MIDAC also agrees with the benefits case presented.

However, to achieve Ontario's Climate Change Action Plan carbon reduction goals, we need additional innovation in the planning processes and design of other markets that determine how Ontario's various energy systems interact with each other.

MIDAC recommends the IESO undertake discussions with the Minister of Energy, Minister of the Environment and Climate Change and Minister of Finance to address the issues described below.

### **Curtailment of Zero Emission Generation in Ontario**

The IESO Market Renewal Report correctly points out that present curtailment of Ontario's zero emission generation will be reduced in the new market design. However, that is true only while the current supply mix of the USA power systems that Ontario is connected to remain significantly more carbon intensive than Ontario's.

As those adjoining USA markets become less carbon intensive the reverse will be true. Curtailment of Ontario's zero emission generation will begin to rise again. Ontario Power Generation's (OPG's) large hydroelectric plants have relatively high water use taxes (gross revenue charges) applied to power production. This has the effect of creating an artificially high marginal cost of production for those facilities. Lower marginal cost facilities in the USA and Quebec can force those Ontario facilities to curtail production because the wholesale market dispatches plants on a marginal cost basis.

IESO may want to review the real time market dispatching orders to see if low marginal cost imports from Hydro Quebec hydroelectric plants are already forcing curtailment of OPG's larger hydroelectric plants.



The curtailment of OPG's larger hydroelectric plants by lower marginal cost plants in adjoining power systems is NOT a wholesale market design problem. It is happening because of the way Ontario applies the water use taxes to the plant's production. Those taxes are causing OPG's larger hydroelectric plants to curtail production prematurely.

The IESO should consult with the Minister of Energy and Minister of Finance to redesign how water use taxes are applied so the wholesale market can operate efficiently and not disadvantage OPG's larger hydroelectric facilities. Also the water use tax, as it is currently applied, raises the wholesale market price of electricity when OPG's larger hydroelectric plants are setting the market price. This interferes with the carbon reduction efforts of Ontario's larger industrial and commercial consumers who could use lower cost surplus zero emission electricity to displace some of their fossil fuel use. The premature curtailment of those plants also results in reduced government tax revenue and the waste of clean energy (spilling of water) because those larger OPG plants have very limited water storage capability.

### **Interruptible Retail Electricity Market**

MIDAC suggests that to utilize most of the available surplus zero emission capacity both in Ontario and from adjoining power systems, Ontario should develop an "interruptible retail electricity market". Zero emission electricity that would otherwise be wasted can be purchased on an interruptible basis at its marginal cost of production on the wholesale market and used to displace fossil fuels in other sectors using fuel switching technologies. This will help Ontario meet its Climate Change Action Plan goals more economically. By utilizing spare zero emission electrical capacity, there would be less need to add electrical capacity specifically to reduce carbon emissions in other sectors.

The current Climate Change Action Plan would require purpose built electrical capacity to supply winter season electricity for air source heat pumps in the building sector. That is a very high cost way to achieve those carbon emission reductions. An interruptible retail electricity market can achieve carbon emission reductions at a much lower marginal cost per tonne of CO<sub>2</sub> compared to purpose built electrical capacity.

### **Capacity Market Design**

MIDAC agrees that the incremental capacity market can be used to secure capacity at a lower "power system integrated cost" than the current procurement process. However, an incremental capacity market is not sophisticated enough to acquire all the required capacity types to achieve a reliable, low cost and low emission electricity supply system.

Furthermore, it is becoming clear that to achieve Ontario's long-term carbon emission reduction goals in other sectors, low emission electricity will need to be used to displace

fossil fuels in those sectors. Relying too heavily on a short-term incremental capacity market may interfere with the province's goal of reducing carbon emissions in other sectors. Short-term incremental capacity markets tend to procure fossil fuelled generation because of its low fixed cost.

To cost effectively reduce carbon emissions in other sectors we will need to find a way to displace fossil fuels in those sectors with low emission electricity at a reasonable cost. Low emission electrical systems tend to have very high fixed costs and very low marginal costs. A short-term incremental capacity market will require a very high carbon tax to acquire zero emission capacity in preference to fossil fuelled capacity.

Until seasonal or long-term electrical storage becomes much cheaper, low emission generation will inherently produce significant amounts of surplus low emission electricity. That can be either a curse or a blessing depending on whether we integrate the planning of our electrical system with our other energy systems.

Our planning process for the electrical power system needs to evolve into an overall energy planning process. Carbon emission reduction in other sectors cannot be achieved economically unless we find a way to use surplus zero emission electricity at low marginal cost to accomplish the reductions.

This means that "strategic" in addition to "operational" considerations will need to be incorporated into the decisions to acquire both short-term and long-term generation capacity.

Adding purpose built electrical capacity to reduce carbon emissions in other sectors will be very expensive because low emission electrical systems have high fixed costs. However, the marginal cost of low emission electrical energy is lower than the marginal cost of fossil fuel energy. Consequently, if we want to lower emissions in other sectors using low emission electricity we need to find a way to build zero emission electrical capacity using the "uninterruptible" electricity demand to pay for the installed capacity. We also need to use the surplus zero emission electricity, that results from that installed capacity, on an interruptible basis at its marginal production cost to displace fossil fuels using fuel switching technologies.

An analysis of power systems around the world shows the only power systems that meet all three criteria (high reliability, low cost and low emissions) have very high penetration of hydroelectric, nuclear or a combination of both. Power systems with high penetration of intermittent renewables have not been able to achieve all three criteria because of the high cost and low efficiency of our current electrical storage technologies to meet seasonal storage requirements. Large hydroelectric and nuclear generation facilities cannot be procured using a short-term incremental capacity procurement process.



It is important for the IESO, Minister of Energy and Minister of the Environment and Climate Change to develop a more comprehensive integrated energy planning process including changes to markets other than the wholesale electricity market so that we achieve our Climate Change Action Plan goals.

**Summary**

MIDAC supports the IESO's market renewal proposal. However, MIDAC suggests the IESO undertake discussions with Minister of Energy, Minister of the Environment and Climate Change and Minister of Finance to make additional changes to address the issues identified above so that Ontario consumers enjoy reliable, low cost and low emission energy in all sectors of the economy.

Best regards.

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