Understanding of the MOE's estimate of the impacts of the Ontario Fair Hydro Plan

March 22, 2017

Purpose: Understand the analysis by Energy as provided in their spreadsheet estimating the impact of the Ontario Fair Hydro Plan, identify further questions required for modelling, and highlights some possible risks with the GA financing costs as it is based on a forecast.

Planning Division's Work with Regarding the Ontario Fair Hydro Plan

The Planning Division is working to understand the objectives of the Ontario's Fair Hydro Plan (OFHP) in order to implement this mechanism into the total cost of electricity and the residential rate projections for future long-term integrated resource plans; such as, the upcoming 2017 LTEP. This analysis is focused on total annual GA forecasts and bill impacts only. It is not concerned with the day to day mechanics of managing these values in real time.

In order to produce these future outlooks, the Planning Division has been in discussions with the Ministry of Energy to understand how they went about producing their proposal for the Ontario Fair Hydro Plan and the estimated GA financing costs they derived to subsidize the eligible Regulated Price Plan (RPP) customer bills.

In order to facilitate our understanding of the OFHP mechanism, the Ministry of Energy (MOE) provided us a spreadsheet with their calculation. Based on this data provided, the Planning Division's understanding of the calculation is a follows:

1) In the Ontario Planning Outlook (OPO), IESO's status quo outlook was the "Case B Outlook". Subsequent to the OPO release, changes to electricity sector occurred via the throne speech and various other announcements that resulted in a need to refresh the status quo outlook; referred to as "Revised Case B". The Revised Case B is the Case B Outlook in the OPO, updated to include the following:
    a. Throne speech announcement,
        i. ICI expanding to 1 MW,
        ii. 8% Rebate to be effective Jan 1, 2017,
        iii. Increased collection of Ontario Energy Savings Plan,
        iv. Increase to Rural Remote Rate Plan (RRRP);
    b. Cancellation of LRP II and EFW, and
    c. Updated Hydro Quebec Agreement

    MOE used the Revised Case B Outlook results to develop their proposal for the Ontario Fair Hydro Plan and estimated GA financing costs.

2) In the Revised Case B Outlook - IESO developed the ICI expansion to 1 MW from 3 MW based on the MOE report produced by Navigant on Feb 29, 2016 entitled "Industrial

Conservation Initiative".

3) IESO provided MOE with the 20 year annual forecast (2017 to 2035) for HOEP, GA Class A and Class B rates, residential bills and industrial rates from this Revised Case B run.

4) MOE's OFHP analysis uses the following general assumptions to build the GA Financing Costs:

Class B share of consumption	0.82
Class B share of GA cost	0.88
Annual interest on debt	5.116%
Class B GA Rate - Average Growth Rate 2028-2034 - applied to future GA Rates (2036 – 2047)	-7%
Average monthly residential consumption (MW)	0.75
Average Demand Growth Rate 2026-2035	0.004
Average Residential Bill Annual Growth Rate 2029-2035	0.005
Assumed RPP Eligible Demand (TWh)	72

5) GA Rates were provided by IESO for the period 2016 to 2035. The MOE estimated GA rates beyond that to 2047 based on the average year over year growth in the last few years of the IESO input. Using these GA rates and the cost shares and consumption shares shown above the MOE calculated the total GA costs. These were then converted to contributions in the residential bills and used to calculate the impacts of achieving the 25% target reduction for 2017 and the restriction on the following year over year increases as per the OFHP.

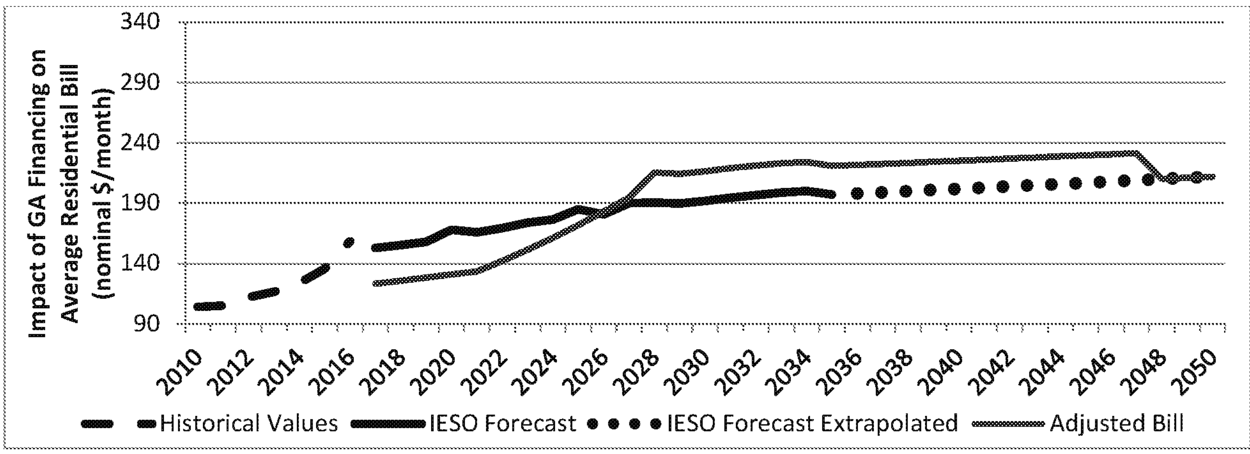
6) The consumption share value for the Class B of 82% assumed by MOE is different from the Class B share consumption value used in the GA Class B rate calculation for the Revised Case B analysis by IESO. IESO's residential bill calculation relied upon a 77% consumption share to reflect a lower volume usage in Class B due to the expansion of the Class B eligibility from 3 MW to 1 MW. The Revised Case B run does not include an adjustment to the consumption for the Class A's further expansion from the 1 MW to the 500 KW, as this was announced is part of the new Ontario Fair Hydro Plan. Further discussions with MOE will be required to estimate any further share adjustments required to reflect the change from 1 MW to 500KW.

7) The MOE spreadsheet analysis for the Ontario's Fair Hydro Plan appears to assume the 25% residential bill reduction will be from the proxy Toronto Hydro forecast of a residential monthly bill (assuming 750KWh) in 2017 (from the Revised Base Case Model) prior to the following adjustments:
   a. OESP movement from ratepayers to government funding
   b. RRRP movement from ratepayers to government funding
   c. 8% Rebate from government funding

These adjustments are assumed to contribute to the 25% reduction target. The further reduction to achieve the full 25% reduction is then calculated and applied as a revised Global Adjustment rate, assumed to be funded via the GA Financing.

After the initial 25% reduction, residential bills for years 2018, 2019, 2020 and 2021, will only be allowed to escalate by 2% per year as indicated in the Ontario Fair Hydro Plan. The GA Financing will fund the additional money required to maintain the 2% annual bill increases.

8) MOE's spreadsheet indicates that the fund grows in size every year until about 2025 based on allowing higher annual increases (average of about 6%/year) from 2022 to 2029. Ratepayers will actually start to repay the GA Financing Fund in 2026. Rates are expected to stabilize after 2029 to the same trajectory as the base rates without the OFHP and will achieve a zero balance by 2047. The MOE graph of residential bill impacts for collection and payment is shown below.



The graph indicates that residential bills would be lower in the 2017 to 2024 period (by about -16% on average) with the OFHP in place and higher for 2026 to 2047 (by about 10%) versus a bill absent the OFHP. From 2021 to 2025, there is an annual average increase of about 6% per year. The 6% annual increase results in 2025 as the inflection or cross-over year when the residential bills rise above the base value (i.e. with no OFHP in place).

Further discussions with MOE for planning purposes will be required to understand if there are any specific criteria or objectives IESO should be aware of. Assuming that the 25% reduction in 2017 and the 25 growth restriction until 2021 are firm, are there any other parameters that must be held firm beyond that year, such as:

- "Is there a requirement for 2025 to be the inflection point year?"
- "Is there annual average rate impact limitations on the residential bill?"
- "How firm is the 2047 expected end year?"

These answers can influence both the plan as currently laid out as well as our ability to incorporate "the plan" into future forecasts such as the LTEP.

From MOE's model the GA financing plan will fully balance in the 30 year period and there will be reasonable annual bill impacts below 10%[1]. However, given that this analysis is based entirely on a specific forecast with a specific set of assumptions (e.g. demand levels, natural gas prices, carbon prices, market clearing prices, cost of generation after contract expiry, cost of annual interest (5%), etc) there maybe risks to that conclusion. As reality unfolds some items may differ from the forecast and may impinge on meeting the objectives of the payment plan which may require mitigating action.

Some of the potential risks include:

- Eligible RPP volumes, if higher volumes – the GA Financing amount will be greater
- Load forecast could change dramatically from the projection which impacts the total costs
- Distribution cost increases in the proxy LDC (i.e., Toronto Hydro) may cause addition cost to the GA financing
- Generation supply mix and the cost for that supply will differ
- Assumes no change for a movement to a decentralized electricity market
- Natural gas and carbon prices may vary from the outlook that could drive up total costs and thus residential bills and the amount of GA financing
- Interest rates to finance the plan could be different from 5%

[1] Generally, the Ontario Energy Board views a bill increase in excess of 10% to be a rate shock, and would expect a rate mitigation plan to smooth the bill impacts to avoid such increases for customers.