Forward to the 2022 Refresh of the 2019 Achievable Potential Study

September 8, 2022

In 2022, the IESO engaged Guidehouse (formerly Navigant) to refresh the model built as part of the 2019 Integrated Ontario Electricity and Natural Gas Achievable Potential Study (2019 APS). The purpose of this 2022 refresh was to understand how recent changes to forecasted electricity demand, avoided system costs, and retail rates affect the amount of cost effective achievable electric energy efficiency savings that are available in Ontario. The 2022 refresh found that considerable incremental cost effective savings are available above what is being targeted as part of the 2021-2024 CDM Framework and above what was forecasted in the 2019 APS over the study period. This forward summarizes the refresh activities and the updated results and insights gathered.

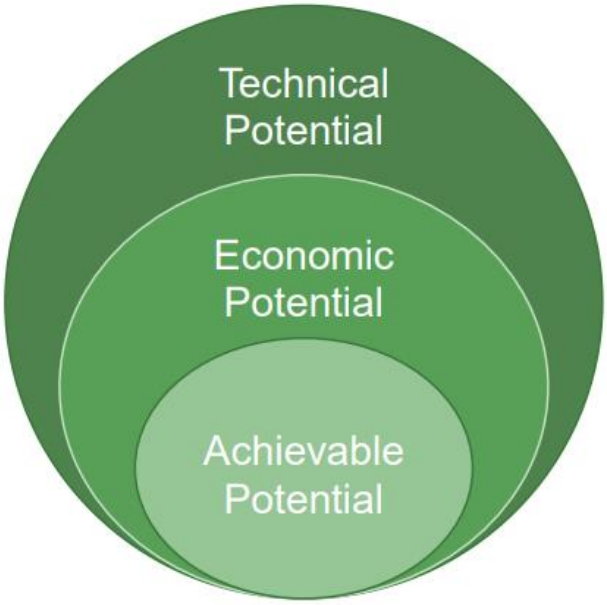
What is an Achievable Potential Study?

A conservation achievable potential study is a quantitative analysis of how much energy (electricity and/or natural gas) can be saved through the implementation of energy efficiency measures within a given geographical area (such as a province). The analysis usually includes three main potential screens:

1. **Technical potential** is the total energy savings resulting from the implementation of all technically feasible energy efficiency measures, regardless of cost effectiveness or market acceptance.

2. **Economic potential** is the total energy savings resulting from the implementation of all measures included in the technical potential that also pass cost effectiveness screening (that is their benefits exceed their cost), regardless of market acceptance.

3. **Achievable potential** is the total energy savings taking into account realistic adoption rates of cost-effective measures over the study period considering several factors including market barriers, customer payback acceptance, perception of non-energy impacts and awareness of energy efficiency measures.



Context

In 2019, the IESO and OEB contracted Guidehouse to conduct the 2019 APS which was the first integrated gas and electric potential study completed in the province. The original study represents a considerable amount of time and effort contributed not only by the IESO, the OEB, and Guidehouse, but also from the many stakeholders engaged in the process. These included the 2019 APS Advisory Group, a panel of CDM and conservation potential study experts and interested members of the public who reviewed the inputs and results of the study and shared their valuable insights. This time and effort cumulated in the development of a potential study model that was calibrated to Ontario's energy efficiency landscape using Guidehouse's proprietary DSMSim™ model. Leveraging this existing model for the 2022 APS refresh provides continuity with the previous study and considerable time and cost efficiencies. The 2019 APS report and APS engagement webpage provide additional details about the achievable potential context and modeling methodology.

The 2022 APS refresh further supports the 2021-2024 CDM Mid-Term Review. As part of the Mid-Term Review, the IESO has been directed to review the alignment of the current Framework's demand reduction target, electricity target and budget against the provincial, regional and/or local electricity system needs as identified by the IESO. Modeling the impacts of recent system changes on cost effective achievable potential provides information about the level of CDM spending and savings that is optimal and implementable given current and forecasted system conditions.

Study Objectives

The objective of the study refresh was to update the Maximum Achievable Scenario (i.e., Scenario B) from the original 2019 APS to reflect changes in the market, such as projected energy demand and avoided energy costs. In the original study, this scenario represented unconstrained potential, or the maximum amount of energy and demand potential that is estimated to be possible to deliver in the province. Specifically, the parameters for this scenario include:

- Incentives set at 100% of the incremental cost of each measure (i.e., the cost of baseline and efficient equipment is equal from a customer's perspective)
- Best-in-class program design (i.e., minimal market barriers and higher adoption rates).

Development of the Study Refresh

As part of the study refresh, the following inputs were updated based on the most recent available data from the IESO.

- *Reference forecast:* Guidehouse leveraged the 2021 APO net reference forecast, which shows a decrease in electricity demand in the near term and a substantial increase in demand over the long term compared to the 2019 APS inputs.
- *Avoided costs*: Guidehouse used the avoided costs associated with the 2021 APO for the APS refresh, which rise significantly compared to the 2018 avoided costs used in the original study, particularly in the later years.[1]

[1] Updated avoided costs based on the 2021 APO are available as a module at https://www.ieso.ca/en/Sector-Participants/Planning-and-Forecasting/Annual-Planning-Outlook

- *Retail rates:* The updated retail rates, associated with the 2021 APO, used in the study refresh are slightly lower than those used in the original study.

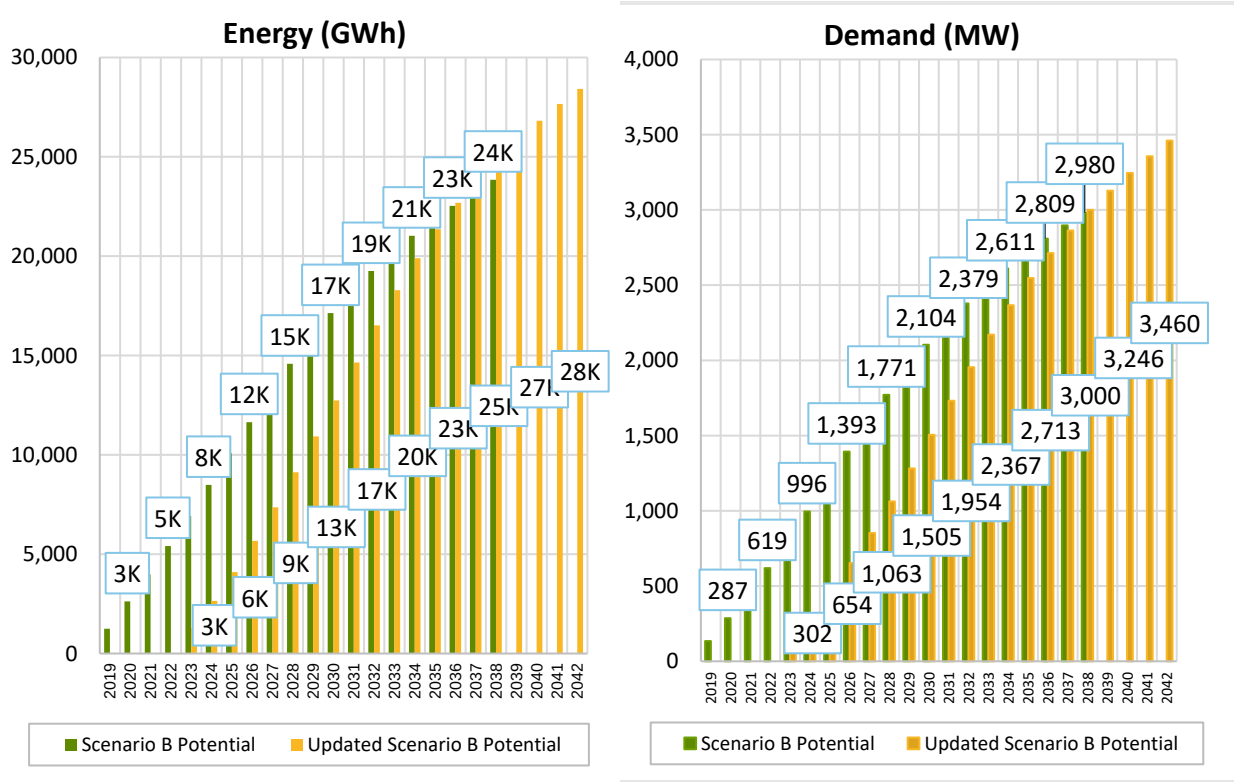
Certain important inputs were not changed from the original study. These include:

- Measure level assumptions including measure savings, cost, density, and saturation values.
- The list of measures from the original study. No new technologies were assessed as part of the refresh.
- Achievable adoption logic has been retained from the original study.

Summary of Results

Across all sectors, the updated study showed an increase in the maximum achievable potential, mainly due to the rise in forecasted electricity demand compared to the original study. This can be seen in **Figure** 1 below, where electric energy savings cumulate to 28 TWh in the final year of the updated study compared to 24 TWh in the final year of the original study.

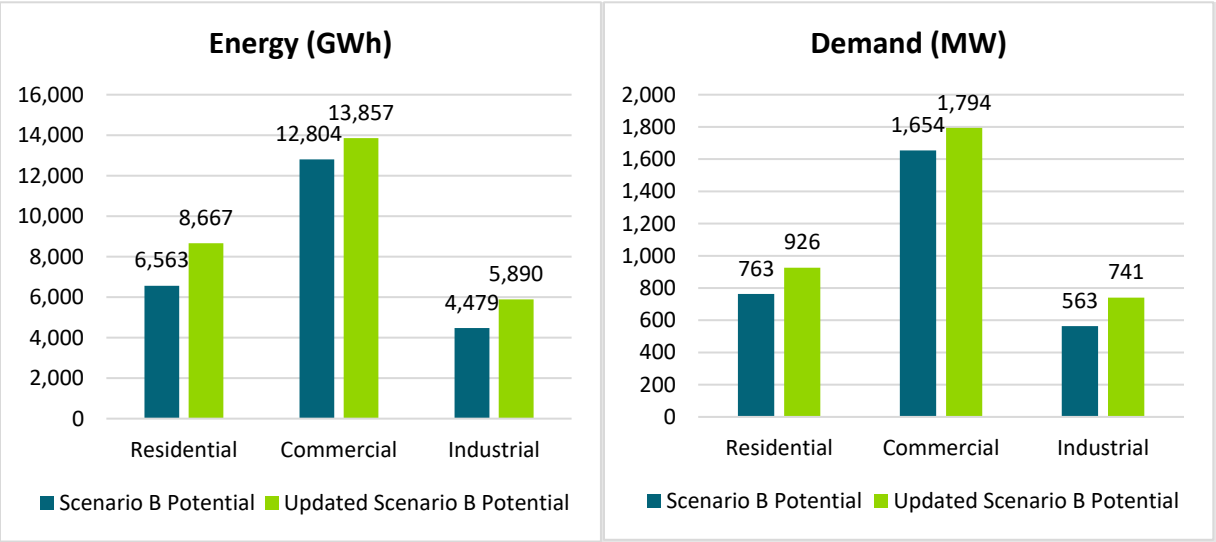
Figure 1. Achievable Electric Energy and Demand Savings Potential Comparison



Residential and industrial energy and demand savings potential increase the most as compared to the 2019 study due to the rise in forecasted electricity demand. Commercial savings potential is expected to increase modestly driven by forecasted

growth in commercial electricity demand, even though commercial building space is forecasted to decrease slightly. Sector level results for the terminal year can be seen in **Figure** 2.

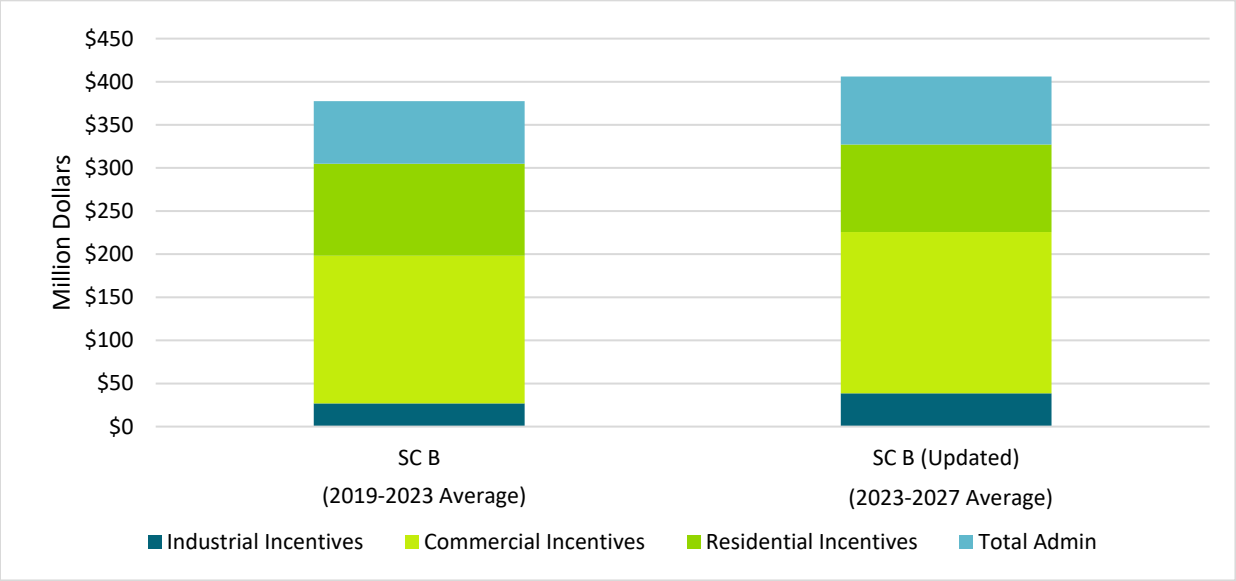
Figure 2. Achievable Energy and Demand Potential by Sector in Last Study Year



The provincial annual budget in the 2019 study was approximately $375M per year on average for the first five years of the study period. This increases to approximately $400M per year in the first five years of the updated study that can be justified based on avoided system costs. The largest increase is seen in the industrial sector, which shows an additional $12M in incentives (+43%) becoming cost effective. Cost effective commercial incentives rise by $16M (+9%) and residential incentives decrease by $5M (5%) compared to the original study.

The total average annual budget for the first five study years can be seen broken down by sector in **Figure** 3 below.

Figure 3. Average Annual Budget for First 5 Years



Next Steps

The results of the APS Refresh will be used by the IESO to inform the Mid-Term Review of the 2021-2024 CDM Framework, to support assessment of CDM non-wires potential in regional planning, and other activities as appropriate. Updated data tables have been made available on the IESO's APS webpage.