

IESO/OEB Achievable Potential Study

Advisory Group – Meeting Minutes #6

Agenda

Date: Thursday November 8, 2018	Time: 10:00 a.m. to 1:15 p.m.
Location:	OEB Office (2300 Yonge St., room 2803)
Meeting Chair:	Tina Nicholson (IESO)

Meeting Objective(s):

- Provide project schedule and status updates
- Clarify key reference forecast drivers and alignment of assumptions
- Share updates on measure list development and measure characterization review
- Overview technical potential modeling process and assumptions and discuss measure stacking approach

Attendees:

Members: Andy Armitage (Thunder Bay Hydro), Tony Chau (ClearResult, teleconference), Cory Cook (Toronto Hydro), Drew Everett (Union Gas), Ian Jarvis (Enerlife Consulting), J.J. Knott (Healthcare Energy Leaders Ontario), Daniel Johnson (Enbridge), Shahid Naeem (Peele School Board, teleconference), Sean Meleschuk (Utilities Kingston), Sahar Mishriki (Hydro One, delegate for George Katsuras)

Observers: Clarence Cheng (Ontario Ministry of Environment, Conservation and Parks), Kyra Bell-Pasht (Environmental Commissioners Office), Haris Ginnis (Union Gas), Mehdi Hosseini (GreenON), Patrick Tomlinson (Ontario Ministry of Energy, Northern Development and Mines)

Project Team: Valerie Bennett (OEB), Pascale Duguay (OEB), Trevor Esdaile (IESO), Katelyn Margerm (IESO), Tina Nicholson (IESO), Simon Zhang (IESO)

Navigant: Ben Grunfeld, Farhad Daruwala, Dixon Grant, Divya Iyer, Peter Steele-Mosey, Tyler Capps (teleconference), Leo Barlach (teleconference)

Regrets:

Sam Byers (Enbridge), Bala Gnanam (BOMA Toronto), George Katsuras (Hydro One), Michael Lio (Buildability), Jeff Quint (Waterloo North Hydro), Ryan Shaw (CLEAResult)

Action Items Identified	Status/Timing
Follow-up on request to share Delphi panel list with the Advisory Group once finalized	Report back at next AG meeting.
Consider suggestion to add back steam to hot water conversion measure.	Report back at next AG meeting.
Consider suggestion to remove energy recovery ventilator from bundled ventilation optimization measure.	Report back at next AG meeting.
Consider suggestion to refine HVAC optimization measure to cover heating only so that measure bundles cover heating, cooling and ventilation optimization.	Report back at next AG meeting.
Consider suggestion to add elevator optimization / regeneration measure.	Report back at next AG meeting.
Consider suggestion to add back thermal oxidizer measure	Report back at next AG meeting.
Consider how simultaneous heating and cooling particularly in hospital segment can be addressed – e.g., through ventilation optimization measure.	To be considered as part of measure characterization.
Provide additional details on why electricity demand forecasts do not include adjustments to heating and cooling degree days as a result of climate change.	Report back at next AG meeting.
Provide additional details on whole building benchmark task and whether technical and economic potential will be identified in addition to achievable potential.	Report back at next AG meeting.
Follow-up on the approach used to address natural conservation in the BC study (i.e., was it considered at the measure or end-use level).	Report back at next AG meeting.

Agenda Item 1: Welcome and introduction

Speakers: Tina Nicholson (IESO)

Tina introduced the group, walked through the agenda and reviewed the meeting objectives.

Agenda Item 2: Review previous meeting actions and confirm meeting minutes

Speakers: Valerie Bennett (OEB)

The group confirmed the past meeting minutes as final noting one member's additional comments. Valerie walked through the action items from the October 11th AG meeting. She highlighted the whole building benchmarking datasets that have been explored since the last meeting.

A member noted that Tower Renewal does have data, though it's possible they may not be able to share it.

Agenda Item 3: Status Updates & Current Project Schedule

Speakers: Peter Steele-Mosey (Navigant)

Peter walked through the schedule & status update slides. He noted that the schedule hasn't changed since the last meeting but emphasized that timelines are still very tight.

A member asked when details on the whole building benchmarking task approach and interim deliverables will be identified. The Project Team indicated that they are planning to provide a more detailed update on this task at the next meeting.

A member asked that the Delphi panel list be shared with the Advisory Group once finalized.

Agenda Item 4: Task 3 - Reference Forecast

Speakers: Farhad Daruwala (Navigant)

Farhad provided some additional clarifications of the reference forecast drivers based on questions raised at the last meeting.

A member asked whether variations in forecast assumptions can be tested as part of the sensitivity analysis. Navigant will consider whether the sensitivity of this variable can be tested when undertaking the sensitivity tasks.

A member asked whether an acceptable limit for forecast variation will be defined as part of this task. Navigant reiterated that given the different approaches to forecasting as well as the uncertainty of forecast input variables it won't be possible to set a clear cut-off for compatibility. The priority is to ensure that the assumptions are directionally aligned.

An observer highlighted that the important factor to compare around economic growth assumptions is the absolute economic growth at the end of the forecast period, which would capture the compounding effect of growth rather than the year-over-year growth rate.

A member asked how persistence of historical programs is treated in the IESO forecast. The Project Team clarified that historic CDM persistence is calculated separately based on evaluated program results and is then subtracted from the gross forecast.

A member asked whether there are geographic differences in assumed economic growth rates. The Project Team confirmed that the electricity forecast, including economic growth assumptions, are broken out by IESO zone. The gas forecast, on the other hand, is broken out by utility region.

The group discussed the different weather normalization approaches used for electricity and natural gas forecasts and the Project Team clarified that the long-term electricity forecasts are based on normalized base year data and no forward looking assumptions are made about changes in future weather. Members asked whether this approach sufficiently captures potential for future changes in weather / climate. Navigant noted that the APS is primarily used to inform decisions made over the next 5-10 years. Additionally, the uncertainty around weather normalization is relatively small compared to the uncertainty around various other study inputs. The Project Team will provide additional rationale for this approach.

Agenda Item 5: Task 4 – Measure Characterisation

Speakers: Divya Iyer (Navigant)

Divya reviewed feedback provided at the last AG meeting on the measure list and summarized Navigant's responses.

A member asked why furnaces have been de-prioritized and suggested that Navigant should review advancement vs replacement assumptions in more detail. Navigant clarified that the replace on burnout measure is priority two but there is another retrofit measure that is priority three.

Several members noted that there is significant potential to convert inefficient steam systems to hot water systems and that these savings are not outweighed by additional pumping demand. Navigant will consider this feedback.

A member noted that AMO's work on operator training has produced some useful data for behavioural assumptions on the commercial sector. Another member committed to reviewing / providing case studies for behavioural measures.

A member raised concerns about bundling heat recovery ventilators and with demand control ventilation noting that they have very different incremental costs. The member recommended that as we are working through measure characterization, if we see that they have very different

costs Navigant should consider splitting them out into separate measures. Another member suggested removing energy recovery ventilators from the ventilation optimization measure given its high incremental cost. Navigant noted that they are trying to separate the equipment (less costly) from the optimization of equipment (more costly). The aim is to strike a balance between bundling measures to capture compounded savings of integration without distorting the cost effectiveness of individual measures. Navigant will consider these member comments.

A member suggested the bundled optimization measures should capture heating, cooling and ventilation – i.e., HVAC optimization needs to be split up / refined.

A member suggested that elevator regenerative controls should be considered as a new measure. A couple of members committed to looking into case studies for this.

Regarding thermal oxidizers, a member suggested looking at National Pollutant Release Inventory for data. Navigant clarified that the data is lacking around penetration rather than savings potential. Navigant and the Project Team asked for input from members on which industrial segments would have potential for this measure. The Project Team asked for clarification of whether this measure is required by code. A member clarified that the codes is tied to air regulation, however, how you destroy volatile organic compounds and the associated energy consumption can vary.

Members asked why new cogeneration as an efficiency measure was not considered, since cogeneration behind the meter could use less gas to produce steam and generate electricity than separate localised boilers to produce steam and centralized natural gas generators. The Project Team noted that the study was scoped to look at measures that directly reduce gas consumption for the customer implementing the measure. The Project Team also noted that savings from efficiency improvements to existing cogeneration equipment was very small in the previous gas study.

A member asked where heat recovery chillers are captured, Navigant replied that this is considered on the new measure list. A member asked whether air and ground source heat pumps are included in the commercial list, and Navigant confirmed that they are.

A member asked about the suggestion to include a measure to avoid simultaneous heating and cooling in hospitals, another member clarified that many hospitals overcool to control humidity control and then reheat air. Navigant replied that this could be considered during measure characterization - e.g., ventilation optimization.

Agenda Item 6: Task 5 – Technical Potential

Speakers: Peter Steele-Mosey, Ben Grunfeld (Navigant)

Peter provided an overview of the technical potential methodology.

A member asked about whether and how whole building benchmarking will be compared to technical and economic potential in addition to achievable potential modeling results. Navigant indicated that the initial project plan contemplated comparing whole building benchmarking results against achievable potential only but that they can provide an update on whether and how this could be done as part of the whole building benchmarking update at the next meeting.

A member asked if or where the value of abating carbon is considered in the study. Navigant noted that the determination of technical potential is not impacted by carbon abatement considerations. The value of carbon emission abatement is captured in the economic potential task's cost effectiveness test through a price for greenhouse gas emissions that is included in the avoided cost assumptions. This has the effect of enhancing the cost-effectiveness of measures in proportion to the extent that they reduce greenhouse gas emissions. The determination of achievable potential may be impacted by carbon abatement considerations, to the extent that the inclusion of greenhouse gas emission costs shortens the pay-back period for measures. Navigant noted that the study has an additional optional task to produce a Marginal Abatement Cost Curve that would illustrate at what greenhouse gas emission prices various measures become cost effective. A member noted again that CHP is a good measure to include if marginal carbon emissions are considered.

Navigant presented their proposed approach to modeling same-fuel energy efficiency measures separately from fuel switching measures for technical and economic potential. A member noted that they support this approach because it allows the study results to first consider potential to conserve energy before alternate supply options are considered.

A member asked about the rationale for modeling same-fuel energy efficiency measures separate from fuel switching measures for economic potential. Navigant responded that the same rationale for separating these measures under technical potential applies and additionally, keeping the measures separate allows the option for using different cost effectiveness tests for fuel switching measures if desired.

A member asked whether the report would be presented in joules. Navigant responded that the report would use m³ and kWh to align with respective sectors' standard units.

A member asked whether free ridership was evaluated at a measure level in the Navigant's modeling on the BC study. Navigant noted that they will follow-up on this, but that the Ontario APS project is leveraging utility forecasts which take natural conservation into account, so the results are net.

The member noted that the natural gas utility forecasts are delivered at the sector level and not at the end-use level and so it is not possible to determine how natural conservation varies by end use. The member noted that this is an important consideration because natural conservation can be concentrated in specific end-uses. The electricity forecasts, on the other hand, explicitly forecast consumption by end use which include end-use level natural conservation embedded in historical trends. The group discussed the need to review any assumptions about changes in end use intensities / breakdowns at the measure or end use level. The Project Team suggested that Navigant review the variation in natural conservation assumptions in the electricity forecast to see how they vary by end use, and determine whether any adjustments to the current natural gas forecasts would be needed, at the end use level.

On the topic of measure stacking, the group discussed considerations for how customers decide what measures to adopt and in what priority. A number of members expressed support for the shared savings approach. An observer asked to revisit this conversation for economic potential, noting a preference to allocate savings based on cost-effectiveness for this task.

Agenda Item 7: Next Steps and 30-day Outlook

Speakers: Peter Steele-Mosey (Navigant)

Peter walked through the next steps and 30 day outlook slide.

Agenda Item 8: Wrap-up

Speaker: Tina Nicholson (IESO)

Tina thanked everyone for participating, summarized the action items from the meeting and noted that the next meeting is scheduled for December 13th.