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Regional Planning Process Review Update

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Webinar Participation (including audio)

- To interact, click the "Show Conversation" icon (message bubble symbol) to submit a written question or click on the "Raise hand" icon (hand symbol) at the top of the application window to indicate to the host you would like to speak
- Audio should be muted at all times. To unmute audio, click on the microphone icon at the top of the application window
- This webinar is conducted according to the IESO Engagement Principles

Agenda

1. Background
2. Coordination of Regional Planning and Bulk Planning
3. Enhancing Activities Between Planning Cycles
4. IRRP NWA Process Improvements
5. Regional Planning Dashboard
6. Stakeholder feedback

Presentation Objectives

- To share progress on implementation of regional planning process improvements recommended as part of IESO's Regional Planning Process Review

Regional Planning Process Review

The IESO completed the Regional Planning Process Review in early 2021 which identified:

- key areas in the process for enhancement
- potential barriers to implementing non-wires solutions in regional planning
- opportunities for potential coordination between regional planning and: bulk system planning, community energy planning, and market renewal
- a coordinated, cost-effective, long-term approach to replacing transmission assets at end-of-life

Review Outcomes

The final report details recommendations to improve the regional planning process. While implementation of these recommendations will require collaboration amongst the various participants of the regional planning process, the IESO and OEB are the primary leads for implementation of these recommendations.

In response to stakeholder feedback, the IESO and OEB collaborated to identify the organization responsible for the review and implementation, if appropriate, of each recommendation contained in the Final Report in a document posted to the RPPR engagement webpage.

Update on IESO Led Recommendations

The following are a list of IESO led recommendations for which an update will be provided today:

- Better integrate and coordinate regional planning with bulk planning
- Enhance activities occurring between planning cycles
- Process improvements for consideration Non-wires Alternatives (NWAs) during Integrated Regional Resource Plans (IRRPs)

OEB Led Recommendations

The OEB re-established its Regional Planning Process Advisory Group in December 2020 to assist the OEB in its review to improve the efficiency and effectiveness of the current regional planning process. The review will include consideration of certain recommendations from the high level regional planning process review completed by the Independent Electricity System Operator (IESO). The IESO is a member of the advisory group.

The review work is ongoing, additional details about the work are available on OEB's website.

Coordination of Regional Planning and Bulk Planning

Principles Behind Better Coordination

- Need for clarity around which process (bulk or regional) is most appropriate to addressing identified power system issues
- Forecasts developed through regional planning and those developed through bulk planning should act to inform each other
- Power system improvements must consider both regional and bulk system issues to maximize value for rate payers
- Making system planning more transparent from stakeholder point of view

Coordination on Data Gathering

- Regional planning forecasts are more granular in nature (developed station by station) and can be used to help better inform bulk planning forecasts in terms of distribution of load forecasts, emerging trends in a local area, or new load connections
- Power system changes stemming from regional planning that could impact the bulk system, and/or vice-versa

Coordination on Issues Identification

- Transmission system issues identified during the Needs Assessment as part of regional planning (every five years) will need to be cross referenced with those identified during the Scoping Stage as part of bulk planning (annual) to identify overlapping issues
- Determination on the appropriate planning process to best address the common issues will be required
- Implementing co-ordination using this approach may involve the development of a ongoing "master list" of bulk system and regional system issues

Coordination on Power System Solutions

Power system improvements can address a regional issue, a bulk issue, or in some cases, can address both. Opportunities for integrated solutions should continue to be sought such as:

- Targeting EE or new local resources to address a regional issue may also help alleviate a bulk system issue
- Transmission system improvements or resources to address a bulk system issue may also help address regional issues (given locational considerations)

Enhancing Activities Between Planning Cycles

Activities Between Planning Cycles

Between-cycle activities should be enhanced to support an ongoing dialogue among stakeholders and the Technical Working Group (IESO, Distributors and Transmitters) to:

- Review the accuracy of current load forecasts and monitor the status of local supply
- Report on the status of previous planning recommendations and projects
- Discuss new or ongoing developments that may impact load growth

Regions Between Cycles

The following regions are currently between cycles of regional planning, where a Technical Working Group update meeting may be scheduled:

- Sudbury/Algoma
- Windsor-Essex
- London Area
- Burlington to Nanticoke
- GTA North
- GTA East
- Toronto
- Greater Ottawa

IRRP NWA Process Improvements

IRRP NWA Process Improvements Objectives

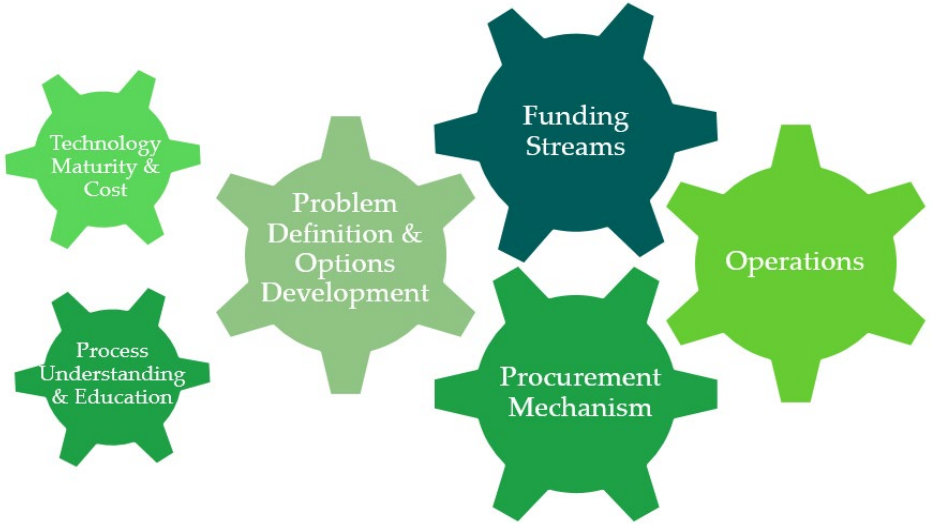
- To recap the Regional Planning Process Review's (RPPR) Barriers to Non-wires recommendations and the IESO's near-term scope of work
- To seek feedback on:
  - Draft process evolution to improve how non-wires alternatives (NWAs) are studied in IRRPs
  - How and when stakeholders are engaged on NWAs during an IRRP
  - Type and granularity of need characterization data to enable stakeholder engagement
- To outline next steps

IRRP NWA Process Improvements: RPPR Recap and Near-term Scope of Work

RPPR Report Recap: Barriers Identified

- NWA barriers exist across the industry in interlinked processes managed by multiple entities
- Although the RPPR initiative was focused on regional planning, barriers were systematically catalogued regardless of the organization accountable for addressing them
- Report recognized that the barriers are not limited to IESO processes and industry-wide action would be needed

- Barriers were organized into 6 interdependent categories:



RPPR Report Recap: Recommendations

- Regional planning process improvements alone would have limited impact due to barriers downstream of the planning process
- Therefore, the report structured the recommendations to provide general guidance for the industry while focusing on more actionable recommendations for the IESO and regional planning

Structure of Recommendations

- **High-level Direction** for the sector at large meant to provide context for near-term IESO-specific recommendations
- **Near-Term Actions** for the IESO to incrementally advance consideration of cost-effective NWAs
  - Actions set out specific improvements to regional planning and documented other ongoing IESO initiatives

NWA Action Items for Regional Planning

Sub-Process Formalization

- Consistent and predictable approach to studying NWAs both for public stakeholder and internal teams contributing to IRRPs

Screening/Scoping Mechanism

- Efficiently rule out needs where NWA are not suitable and do not require further NWA analysis

Detailed Needs Characterization

- Methodology and tools to characterize and communicate the need in sufficient detail to assess viability of NWAs

Options Development

- Develop (or solicit proposals for) NWA options in sufficient detail to operationalize as IRRP recommendations and assess economic viability given available monetized value streams

Ongoing Industry Collaboration & Research

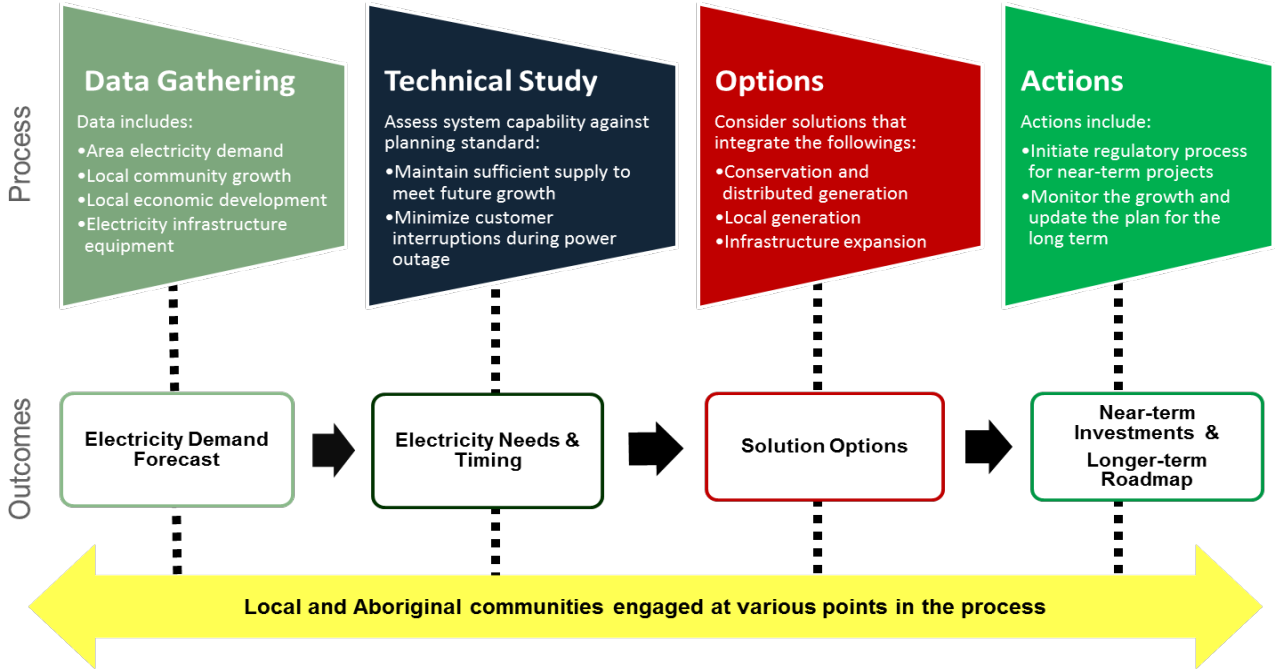
- Industry collaboration and research is ongoing to further test how NWAs like distributed energy resources (DERs) are operated and procured to meet distribution and transmission system needs
- The OEB/IESO DER Placemat (part of the OEB's Framework for Energy Innovation: Distributed Resources and Utility Incentives initiative) summarizes ongoing related initiatives pertaining to the procurement, connection, and operation of DERs

IESO Regional Planning Near-term Scope of Work

- RPPR action items focus on how NWAs are studied in regional planning and is one part of a broad collection of initiatives across the industry
- While implementation of certain action items can be advanced now, others depend on and will need to move in step with other initiatives
- This year, the scope of work is focused on Integrated Regional Resource Plan (IRRP) NWA process formalization, screening mechanisms, and detailed needs characterization
- Further work on options development will continue in step with other regulatory and procurement initiatives

IRRP NWA Process Improvements: Draft Sub-process Formalization

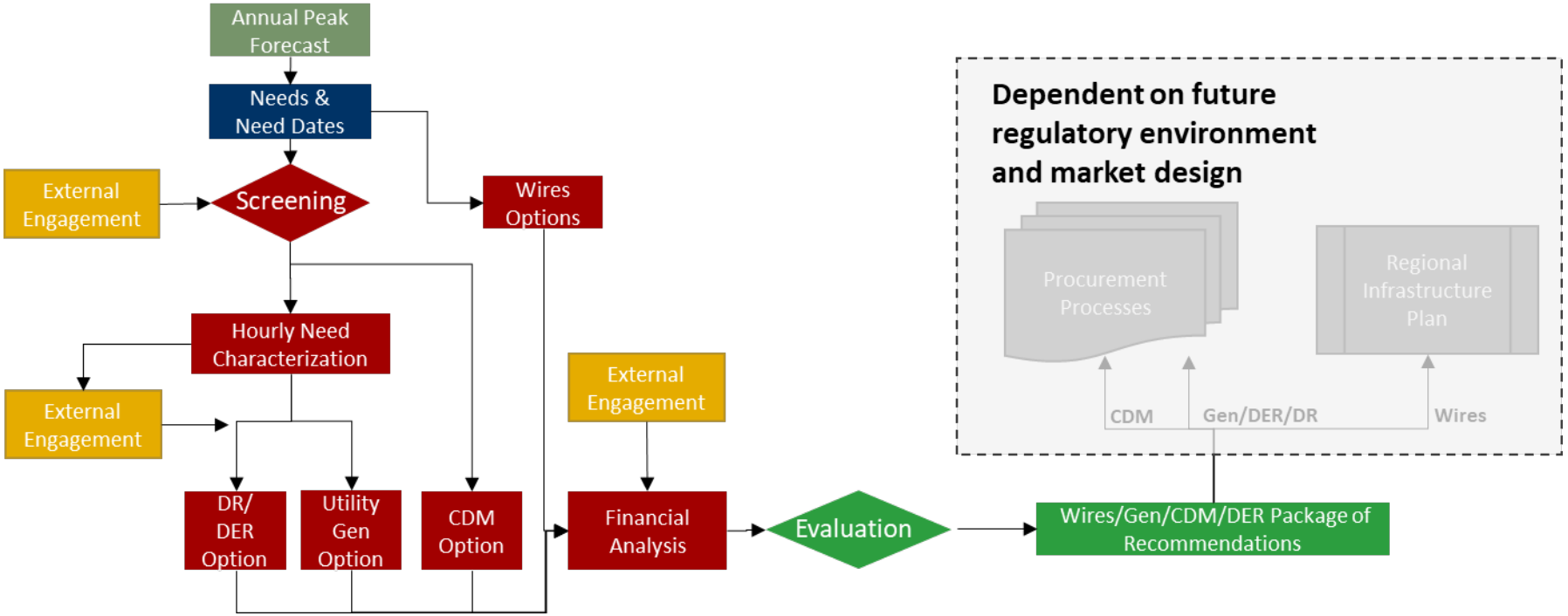
General IRRP Process Overview



Goals for NWA Process Formalization

- First cycle IRRP processes were well suited for traditional wires and utility scale generation solutions
- In the past few years, the process and methodology for studying NWAs have incrementally evolved from one IRRP to the next in an effort to incrementally improve and respond to stakeholder feedback
- Summarizing and formalizing this incremental evolution is needed to:
  - Enhance transparency to stakeholders
  - Improve consistencies between regions
  - Leverage lessons learned in past regional plans and pilots

Draft NWA Process Diagram



Draft NWA Process Diagram – Commentary

- The diagram is color-coded to match the general steps in slide 10 to illustrate where each element falls within the broader IRRP process
- This diagram is intended to highlight how NWAs are studied in an IRRP with a focus on new or evolving elements; it does not capture all elements of an IRRP
- For example, the "Annual Peak Forecast" box is a multi-step process with its own engagement component but are not shown in detail here
- The greyed post-IRRP activities are out of scope for this year because they depend heavily on the outcome of other ongoing initiatives pertaining to DER ownership, market design, procurement mechanisms, the transmission-distribution system interface, and other operational matters

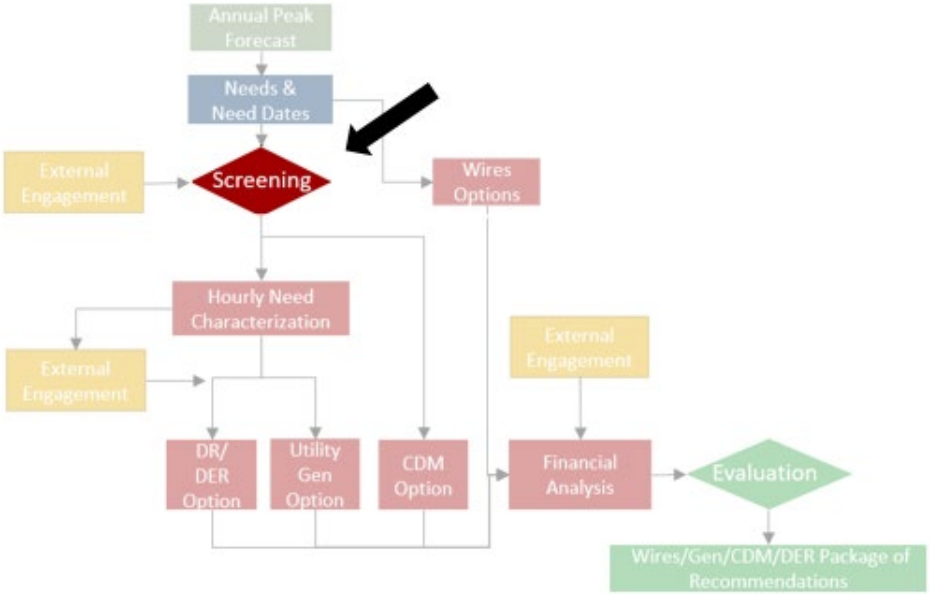
Draft NWA Process Diagram: Notable Elements

- Some notable elements:
  - Screening mechanism to "triage" needs and help identify opportunities where detailed NWA analysis is warranted
  - Hourly needs characterization to improve granularity and capture temporal nature of needs
  - Focused stakeholder engagement when detailed NWA analysis is warranted
  - Parallel wires and NWA options development
- Most of the changes introduced here are not "new" – they have appeared on an ad hoc basis in IRRPs such as those in York, Windsor-Essex, Ottawa, and GTA West
- Process will continue to be refined over the remainder of this year and iterated upon over upcoming IRRPs
- The following sections will elaborate and solicit input on the screening mechanism, need characterization, and engagement

IRRP NWA Process Improvements: Screening Mechanism

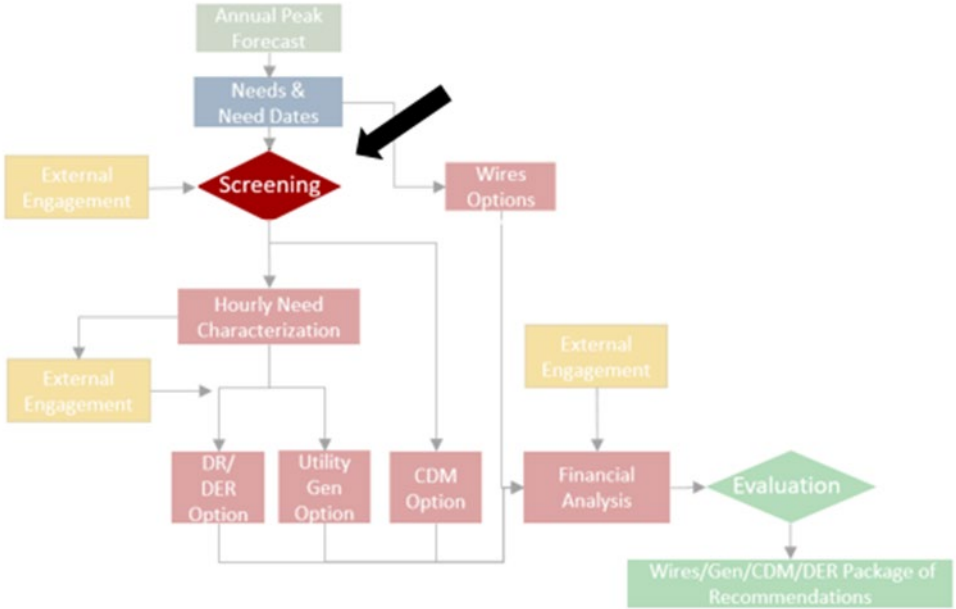
Screening Mechanism

- Screening occurs early in the IRRP study after local reliability needs are known but before options analysis
- Screening identifies opportunities where NWAs are most likely to succeed while scoping out unsuitable NWAs to better focus options analysis and related stakeholder discussions
  - Note that this is incremental to Scoping Assessment activities that focus on recommending a general planning approach

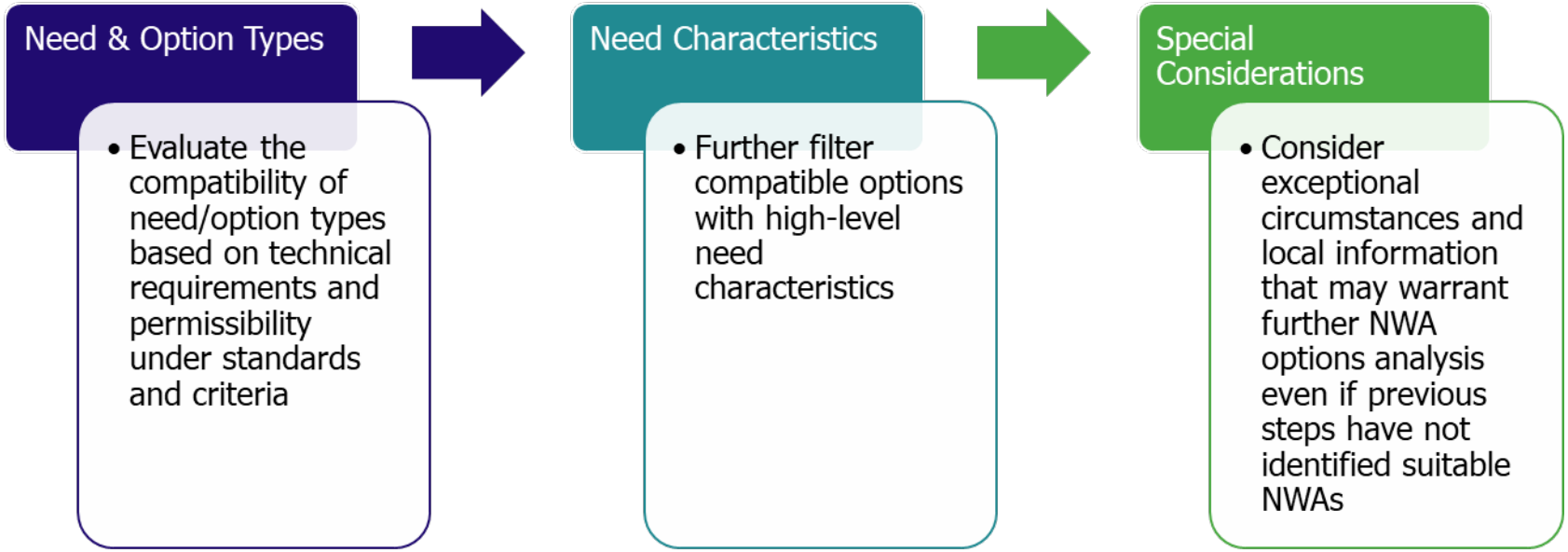


Screening Mechanism Purpose

- Formalizing the screening mechanism will improve transparency in the IRRP's decision making process
- Screening will also help direct time intensive aspects of detailed NWA analysis (hourly need characterization, options development, financial analysis, and engagement) towards the most promising options

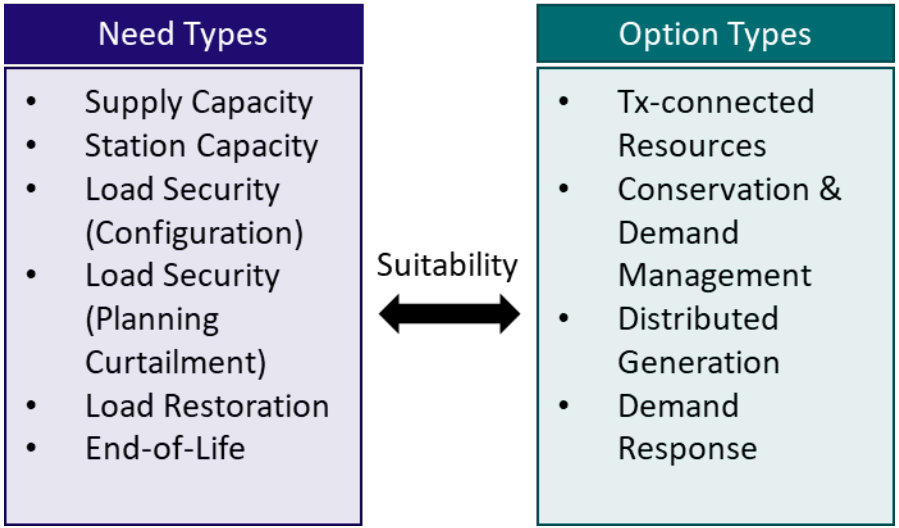


Screening Mechanism Steps



Need & Option Types

- Screening does not consider specific technologies (studied later during options analysis) but rather the suitability between general need types and option types
- These high-level categories are differentiated by limiting phenomenon, operating characteristics, scale, and treatment in current planning standards and criteria



Need Characteristics

- Once a set of suitable need type/option type combinations are identified, they can be further filtered by need characteristics
- Screening occurs before the Hourly Need Characterization step but some high-level characteristics will already be known such as the lead time, magnitude of the need relative to existing load and connection space, and general coincidence with system peaks
- These factors influence the feasibility of certain NWAs especially those that rely on existing procurement mechanisms

Special Considerations

- NWA technologies, procurement mechanisms, operating characteristics, and regulatory environment are evolving rapidly
- New use cases or unique circumstances may emerge that cannot be fully accounted for in a standard screening mechanism
- One of the key strengths of regional planning is the ability to tailor the planning approach to the local context

- Example of special considerations that may warrant further NWA options analysis include:
  - Extraordinary or novel load characteristics
  - Local partners or other planning activities also pursuing NWAs
  - Demand forecast uncertainty
  - Unique topology or limiting phenomenon

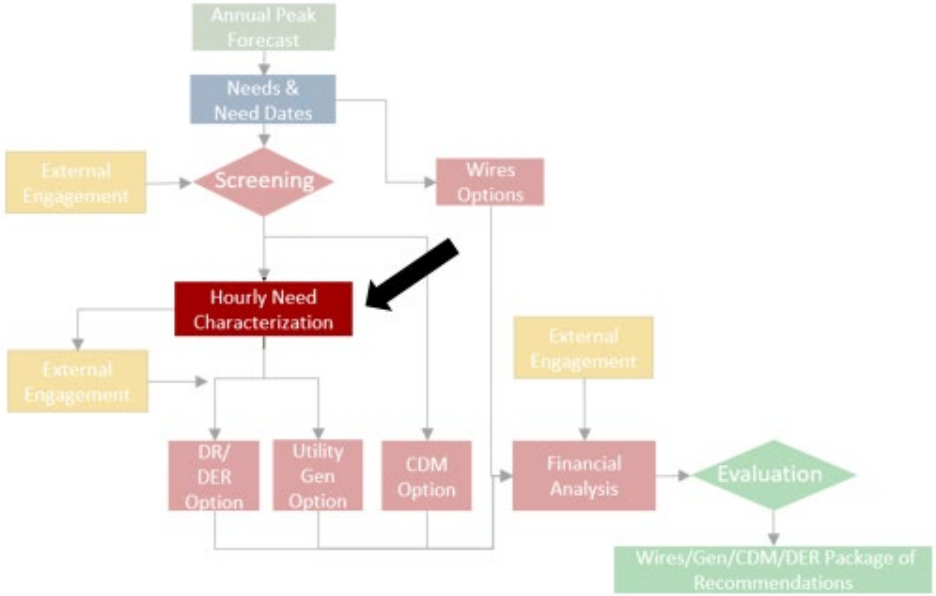
Screening Mechanism Outcome

- There are numerous caveats within each of these steps that this webinar has not elaborated on, but future IRRPs will use this basic framework to articulate the rationale for and seek feedback on why certain NWAs are further studied while others are scoped out
- At the end of the screening mechanism, IRRPs will have a subset of needs and option types where detailed NWA analysis is warranted
- The IRRP would then proceed with hourly needs characterization and NWA options development for this subset

IRRP NWA Process Improvements: Hourly Needs Characterization

Hourly Needs Characterization Purpose

- Studying peak demand hours is sufficient for sizing wires options because they are generally available in all hours once in service
- Evaluating the feasibility of NWAs, particularly energy-limited dispatchable options, require needs to be quantified in greater granularity (duration, frequency, magnitude)
- New tools and methodology has been in development over recent IRRPs to capture and communicate this granularity

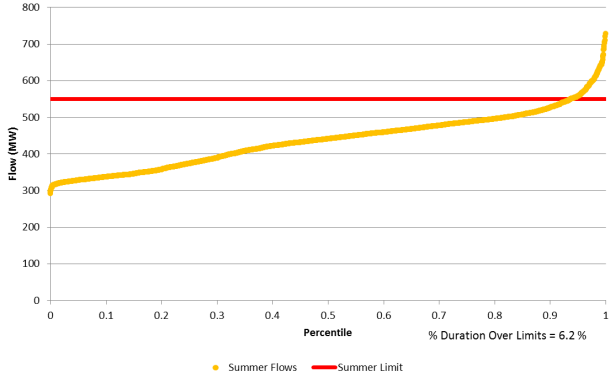


Existing Tools

Characterization tools include two parts:

1. **Hourly forecasting** for areas or stations with needs based on historical load behaviour, weather, calendar variables, and other factors
2. **Needs characterization** to quantify the magnitude, frequency, and duration of overloads and capture how they are dispersed over the days, months, and years in the forecast horizon

Sample Outputs



MW Range	1	2	3	4	5	6	7	8	9	10	11	12
500+	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
444	2%	2%	1%	0%	0%	0%	0%	0%	0%	0%	0%	2%
389	4%	4%	2%	0%	0%	0%	0%	0%	0%	2%	2%	3%
333	4%	4%	3%	0%	0%	0%	0%	0%	0%	3%	3%	4%
278	6%	5%	4%	0%	0%	0%	0%	0%	0%	5%	5%	5%
222	7%	6%	6%	0%	0%	0%	0%	0%	1%	6%	6%	6%
167	7%	7%	7%	1%	1%	0%	0%	0%	3%	7%	7%	7%
111	8%	8%	8%	5%	5%	4%	5%	5%	6%	8%	8%	8%
56	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%
0	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%
	Month											

Limitations of Hourly Needs Characterization

- Hourly need characterization cannot pinpoint specifically which hours demand will exceed the load meeting capability
- Instead, it can give a general sense of when, for how long, and at what frequency needs are at risk of occurring to inform options development choices such as the technology type and size
- The accuracy of hourly load forecasting for a local area (e.g. single transformer station or group of stations) is heavily dependent on the granularity and quality of data available on load segmentation and installed distributed energy resources

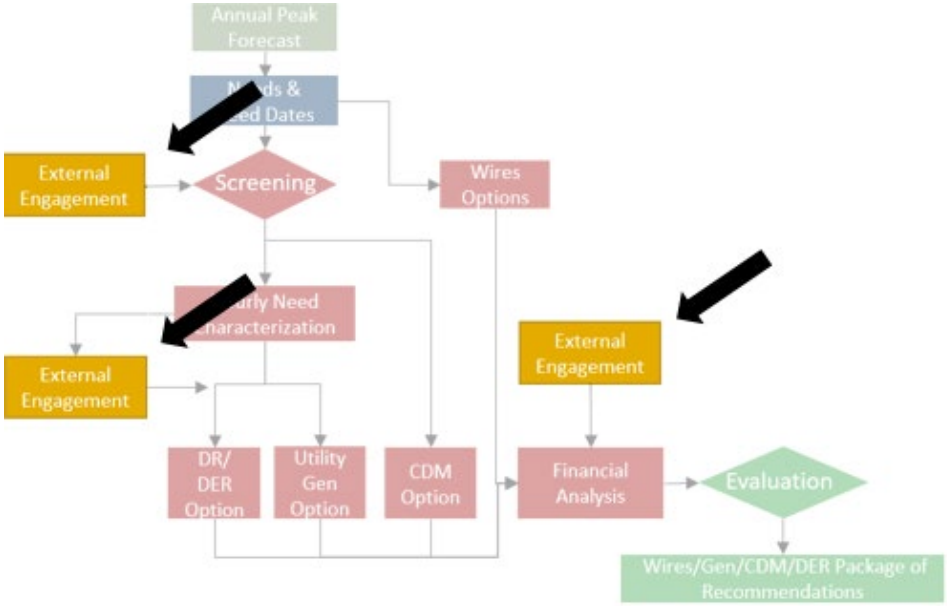
Evolving Need Characterization Tools

- Over the next few months work will continue to improve:
  - Modeling of existing and future distributed energy resources and their impact on the load profile
  - Incorporating future end-use and load composition changes (e.g. electrification, new large industrial customer connections, changing customer segmentation, etc.) into local hourly forecasting models
  - Presenting need characterization results in a more standardized, digestible, and transparent way to enable proponents to propose solutions or provide feedback on the IRRP's NWA options analysis

IRRP NWA Process Improvements: NWA Engagement

NWA Engagement

- Stakeholder engagement is an important part of IRRPs and can take several forms including webinars, targeted discussion groups, and one-on-one meetings
- An Engagement Plan is proposed early in each IRRP and stakeholder feedback is solicited before it is finalized
- Today's discussion focuses on how the IRRP can best engage stakeholders on NWAs specifically and does not cover all the elements that would normally be found in the Engagement Plan



NWA Engagement: Purpose

- In addition to the goals outlined in the Engagement Plan, the purpose of engagement on NWAs specifically include:
  - Providing stakeholders more transparency and access to local planning data
  - Soliciting input on the local viability of NWAs
  - Market-sounding of costs and assumptions
  - Improving options development and evaluation

NWA Engagement: Timing and Scope

- The level and form of engagement may vary from region to region depending on the local needs and context but there should generally be three touchpoints:

1. **After screening**, to articulate rationale for why options are screened in or out and solicit feedback on any special considerations that may influence the level of options analysis needed
2. **After needs characterisation**, to share details on the need (i.e., hourly load profiles, heat maps) and solicit input on suitable options
3. **After the financial analysis and evaluation**, to share information and seek feedback on assumptions used, cost information, findings and draft IRRP recommendations

NWA Engagement: Data Sharing

- Data sharing is an important part of enabling NWA engagement and improving transparency
- The IESO will provide data in an accessible format as early as possible so that interested parties can provide input on the IRRP's options analysis

Data that will be included in NWA engagements include:

- Annual peak demand by station/sub-area as applicable (CSV/Excel)
- Hourly load profile and/or "energy not served" profile (CSV/Excel)
- Hourly need characteristics summary (heat maps, indicators tables)
- Economic assumptions (e.g. capital cost range, discount rate, time period, etc.)

IRRP NWA Process Improvements: Next Steps

Seeking Feedback - IRRP NWA Process Improvements

Please consider the following items to help guide your feedback after today's webinar:

- How can the draft NWA process presented today be further improved?
- How can the IRRP best engage stakeholder on NWA options?
- What other information or data do you need to participate in NWA-related engagement? What other information should the IRRP consider to better characterize needs or identify NWA options?

Next Steps

- Near-term process formalization will be finalized over remainder of the year with your feedback from today's webinar
- Future IRRPs starting in 2022 will begin implementing these new processes and tools
- The IESO will continue to refine NWA options development in IRRPs
- Upcoming IRRPs where NWAs are found to be feasible will be leveraged to explore potential procurement and implementation mechanisms

Regional Planning Dashboard

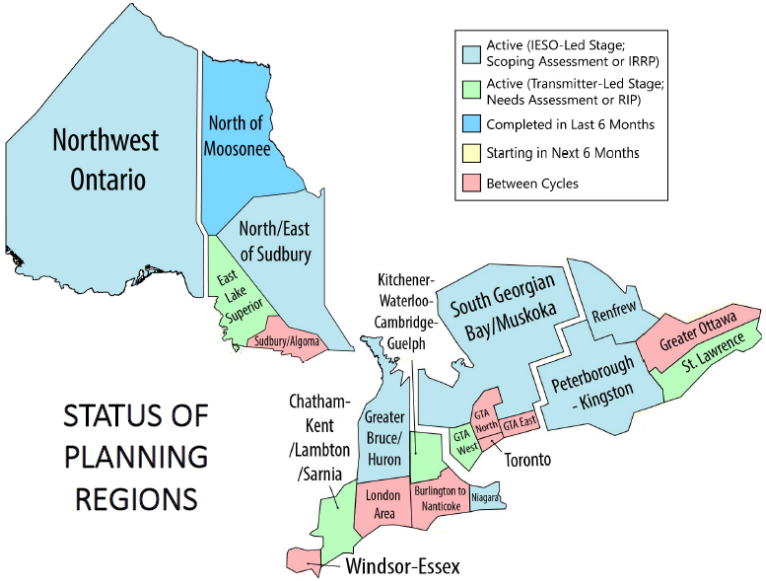
Introducing a Regional Planning Dashboard

- The IESO will develop a regional planning dashboard to support how stakeholders and participants navigate and obtain information from the engagement and regional planning webpages
- Purpose of the dashboard: act as a concise and consolidated source of information on regional planning activities
- The first iteration will be posted on the regional planning webpage in January 2022
- The dashboard will be updated biannually, with the potential for some components to be updated more frequently

Dashboard Features: Overview of Regions and Status

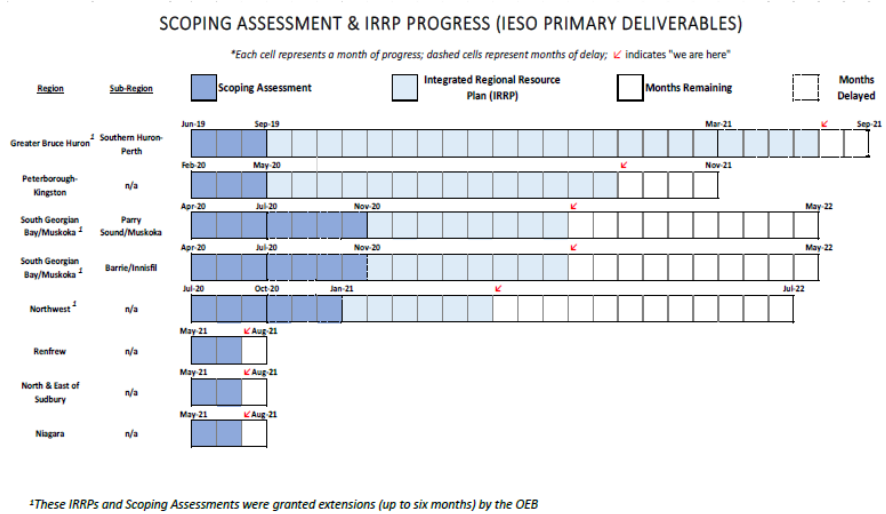
- Map of the 21 planning regions and their status, including:
  - Actively in a planning cycle (in an IESO-led stage)
  - Actively in a planning cycle (in a transmitter-led stage)
  - Between cycles (including recently completed cycles or new cycles starting soon)

Example:



Dashboard Features: Active Regions' Timelines

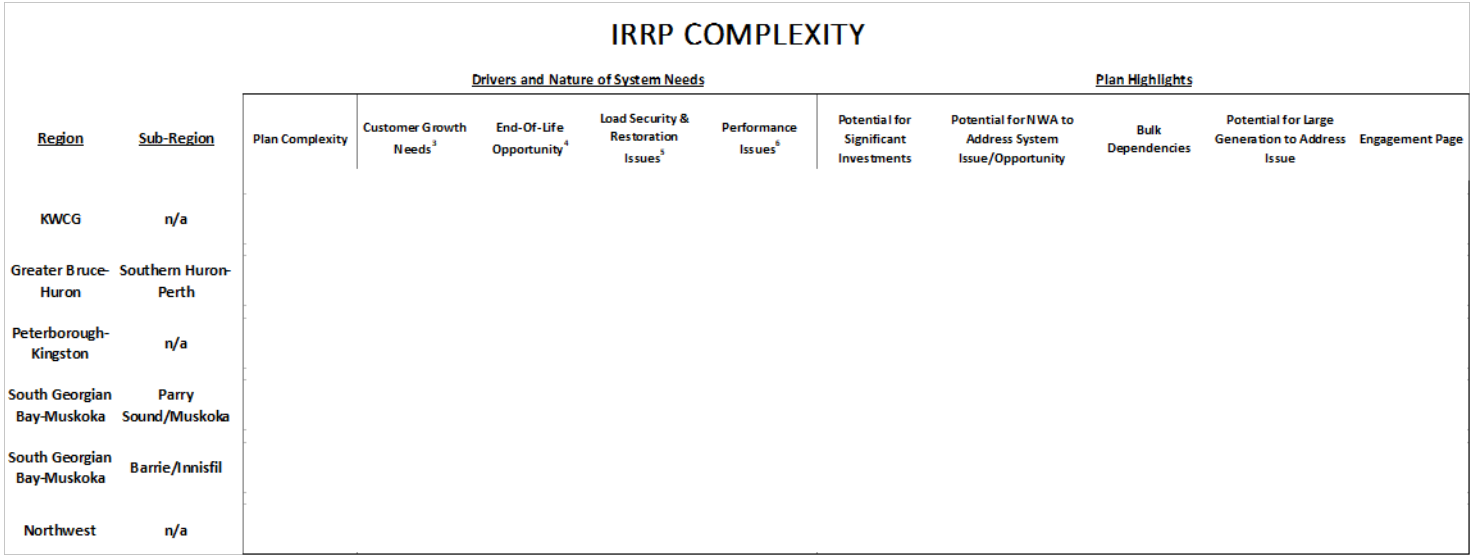
- Timelines and progress of active, IESO-led regional planning deliverables
- Scheduled public touchpoints
- **Example:**



[1]These IRRPs and Scoping Assessments were granted extensions (up to six months) by the OEB

Dashboard Features: Active Regions' Highlights

- Key characteristics of ongoing plans to provide stakeholders with a quick look at major issues
- **Example:**



IRRP COMPLEXITY

Region	Sub-Region	Drivers and Nature of System Needs					Plan Highlights				
		Plan Complexity	Customer Growth Needs[3]	End-Of-Life Opportunity[4]	Load Security & Restoration Issues[5]	Performance Issues[6]	Potential for Significant Investments	Potential for NWA to Address System Issue/Opportunity	Bulk Dependencies	Potential for Large Generation to Address Issue	Engagement Page
KWCG	n/a										
Greater Bruce-Huron	Southern Huron-Perth										
Peterborough-Kingston	n/a										
South Georgian Bay-Muskoka	Parry Sound/Muskoka										
South Georgian Bay-Muskoka	Barrie/Innisfil										
Northwest	n/a										

Seeking Feedback - Regional Planning Dashboard

- What regional planning/engagement information is most useful to you?
- What additional information would you want provided in the regional planning dashboard?

Submitting Feedback

- Please use the feedback form found under the October 19, 2021 entry on the DER Roadmap webpage

- Send written feedback to engagement@ieso.ca by November 9, 2021

Thank You

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