

REGIONAL PLANNING PROCESS REVIEW WEBINAR

Straw Man

March 13, 2020

Webinar Participation

- Webinar link: <https://ieso-nh.webex.com/ieso-nh/onstage/g.php?MTID=e8ed645460186505609d2109e120f88ea>
- Guest Dial-in Numbers:
 - Local - Toronto (+1) 416 764 8640
 - Toll Free - North America (+1) 888 239 2037
- Submit a question at any time using the Q&A or Chat functions
- We will pause for questions from the webinar and phone periodically throughout the webinar

IESO Engagement Principles and Process

- Stakeholder engagement plays an important role in IESO interactions with market participants and the broader public
- Stakeholder engagement is an essential part of the IESO decision-making process
- IESO Engagement Principles:
 - Analyze Opportunities for Engagement
 - Ensure Inclusive and Adequate Representation
 - Provide Effective Communication and Information
 - Promote Openness and Transparency
 - Provide Effective Facilitation
 - Communicate Outcomes
 - Measure Satisfaction

IESO Regional Planning Process Review

- Objective of engagement – to seek input from stakeholders and communities as part of the IESO's regional planning process review
- Two engagement mechanisms:
 - The Regional Planning Review Advisory Group will perform an advisory role to support and assist the IESO in the regional planning process review
 - Broader engagement initiative that will seek to inform the broader public and seek feedback – starting with this public webinar
- For more information, visit the stakeholder engagement [webpage](#).

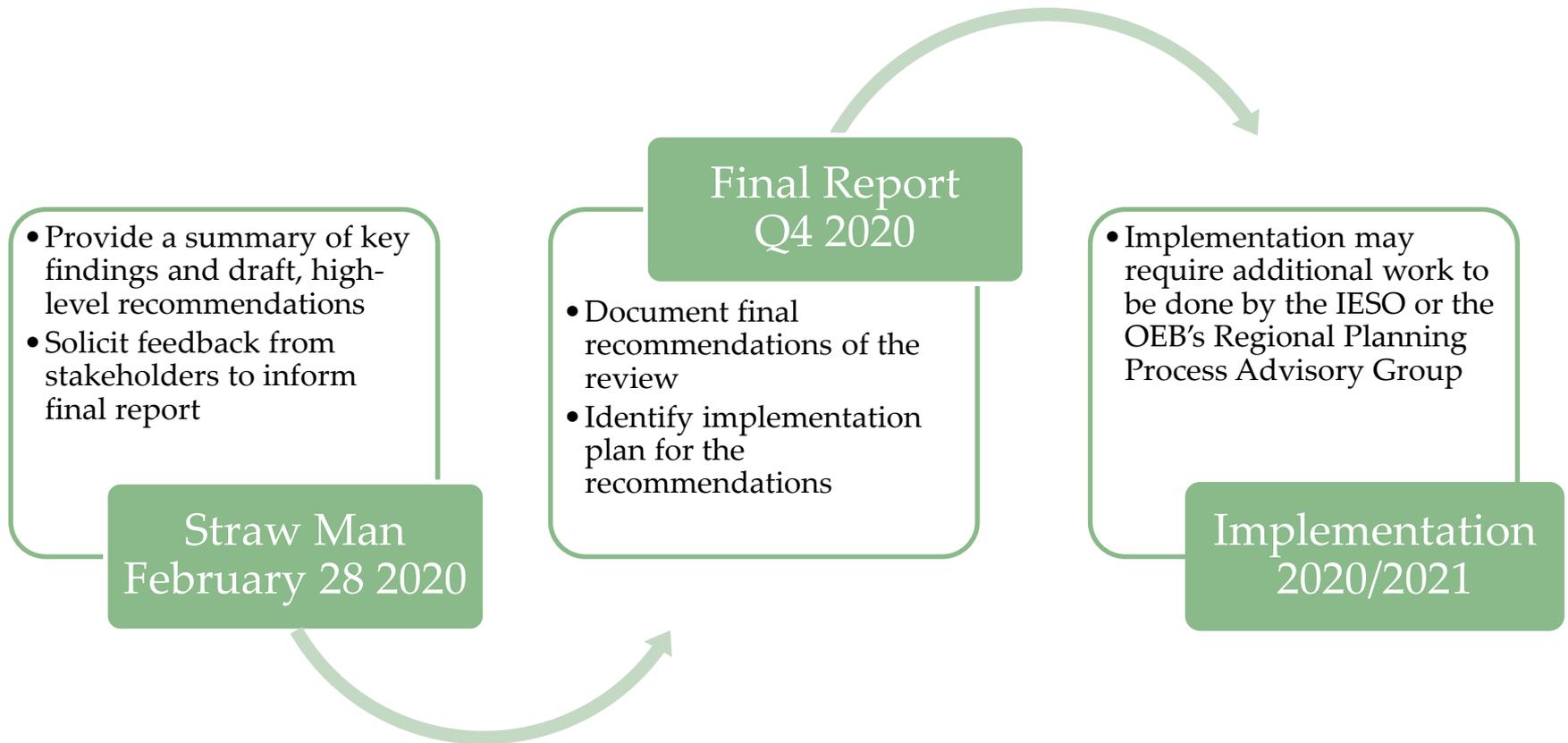
Today's Objectives

- Provide an overview of the Regional Planning Process
- Describe the scope of the Regional Planning Process Review
- Review the key recommendations and proposed actions in the Straw Man Design
- Provide an opportunity for stakeholder feedback and questions

Overview of Regional Planning Process Review

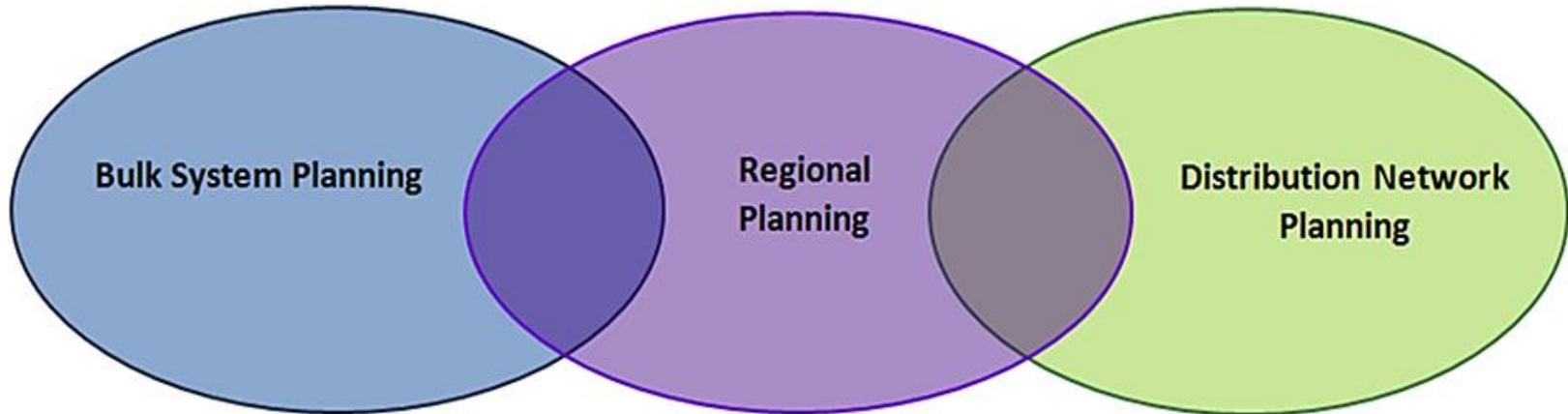
- Launched as part of continuous improvement efforts and in response to a 2017 Ministerial Directive, the Regional Planning Process Review focuses primarily on three key areas:
 - Identifying opportunities to improve process efficiency and flexibility
 - Better aligning transmission facility end-of-life needs with regional and bulk planning
 - Making recommendations to address potential barriers to implementing non-wires alternatives (NWA) in regional planning
- IESO has engaged stakeholders throughout the review:
 - Formed the Regional Planning Review Advisory Group to assist in conducting the review
 - Gathered feedback from key stakeholders and industry participants on opportunities to improve and enhance the process, based on lessons learned during the first cycle of regional planning

Regional Planning Process Review Timeline



OVERVIEW OF REGIONAL PLANNING

Planning Processes



Addresses
provincial
electricity system
needs and policy
directions

Integrates local
electricity priorities with
provincial policy
directions & system
needs

Examines local
electricity system
needs and
priorities at
community level

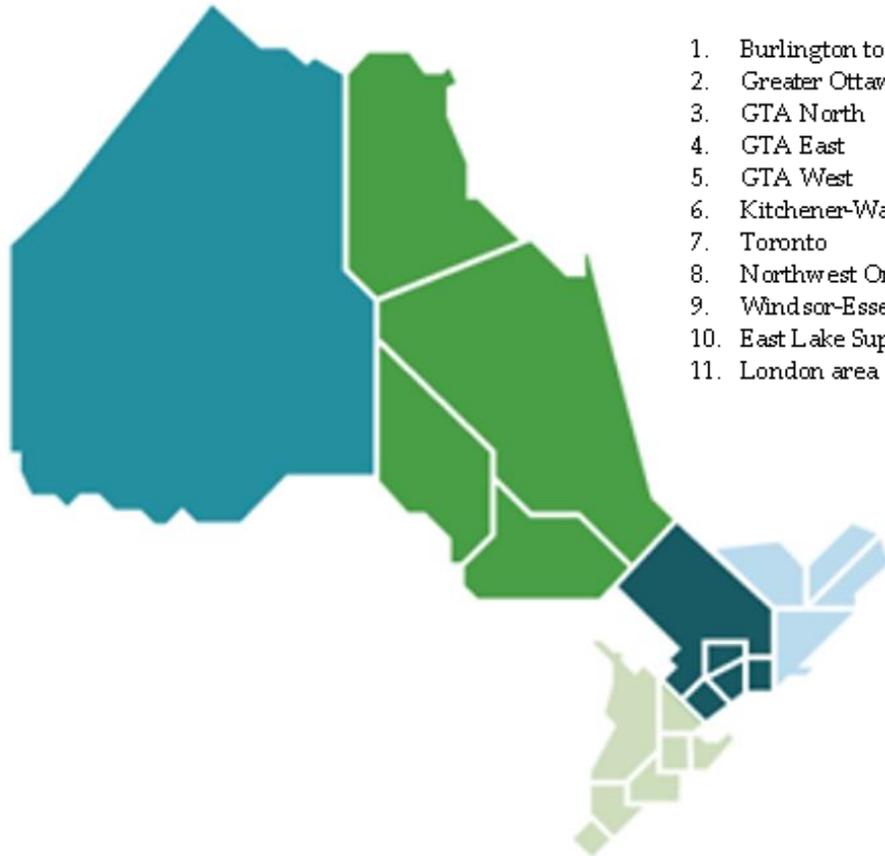
Why do we carry out Regional Planning?

Purpose: To assess the adequacy and reliability of electricity supply to customers in a local area and to develop a 20 year plan that:

- Summarizes the electricity needs and recommends infrastructure investments or near-term actions (e.g., monitoring, initiating pilot) to maintain reliability of supply for a local area
- Supports regulatory (e.g., distribution and transmission rate filing) and any related acquisition processes (e.g., generation or distributed energy resources procurement), if applicable

Regional planning has been conducted on an as needed basis in Ontario for many years. In 2013, the process was formalized by the Ontario Energy Board (OEB).

Ontario's 21 Planning Regions



1. Burlington to Nanticoke
2. Greater Ottawa
3. GTA North
4. GTA East
5. GTA West
6. Kitchener-Waterloo-Cambridge-Guelph
7. Toronto
8. Northwest Ontario
9. Windsor-Essex
10. East Lake Superior
11. London area
12. Peterborough to Kingston
13. South Georgian Bay/Muskoka
14. Sudbury/Algoma
15. Chatham/Lambton/Sarnia
16. Greater Bruce/Huron
17. Niagara
18. North of Moosonee
19. North/East of Sudbury
20. Renfrew
21. St. Lawrence

There are 21 electricity planning regions in Ontario, defined by electrical boundaries. The OEB requires regional planning be conducted at a minimum of every five years for each of the planning regions.

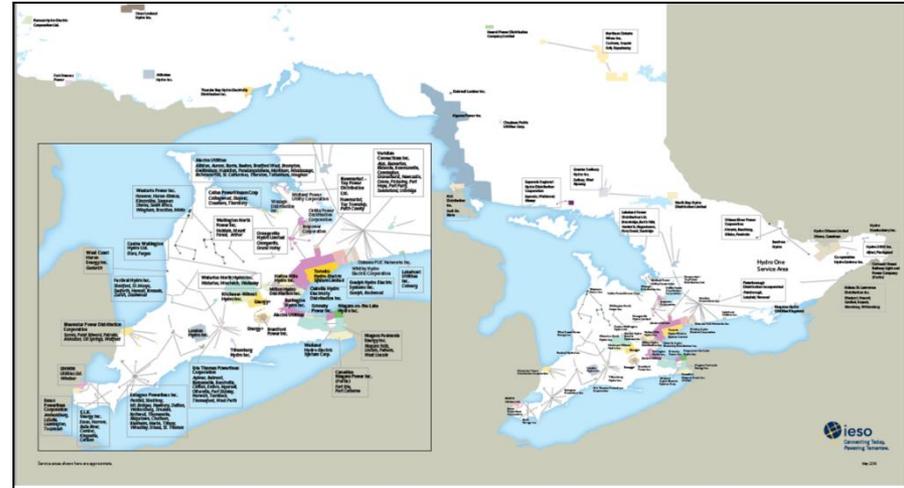
Process Participants



System Operator



Transmitters



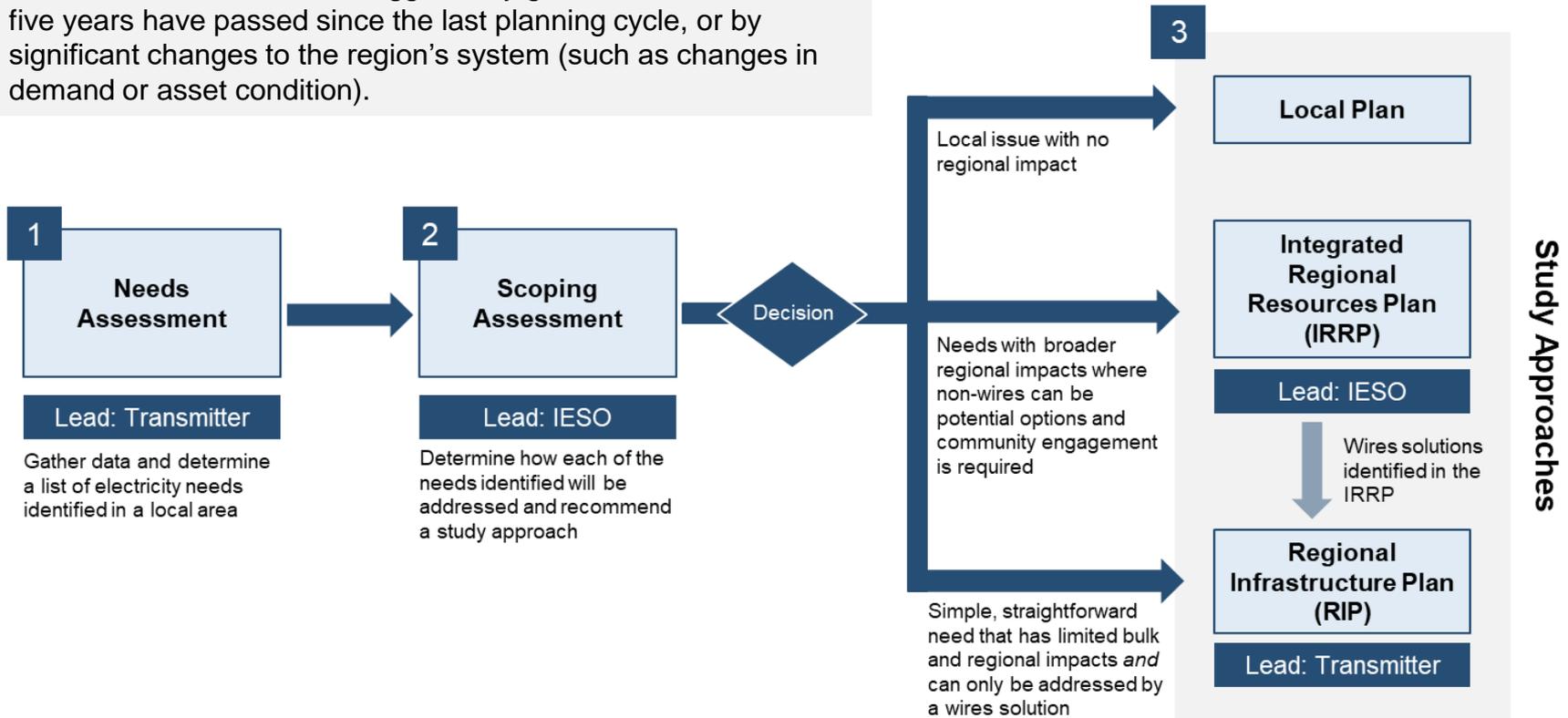
Distributors

The IESO, transmitters, and distributors form the Technical Working Group, are mandated by the OEB to carry out the Regional Planning Process in Ontario.

Public stakeholders (e.g., municipal and Indigenous communities, members of local advisory committees) are also engaged at different stages throughout the process.

Regional Planning Process Diagram

Need Assessments can be triggered by government directives, if five years have passed since the last planning cycle, or by significant changes to the region's system (such as changes in demand or asset condition).



STRAW MAN DESIGN PART 1: PROCESS EFFICIENCY AND FLEXIBILITY

Improving Efficiency and Flexibility

- Since formalization of the process in 2013, several changes to improve efficiency have already been made through continuous improvement efforts
- Ideally, the process should be flexible enough to accommodate the unique needs of each region, while still providing a transparent, consistent framework for collaborative and comprehensive planning
- This review more formally considers how consistency and flexibility can be balanced by examining current timelines, roles, accountabilities, and objectives for each process stage
- The review also aims to improve the process on numerous fronts, aspiring to: clarify expectations, avoid duplication of work, promote seamless collaboration, and facilitate effective communication

Summary of Areas for Improvement

Streamlining Load Forecast Development

- Forecasting activities can be redundant and time-consuming, with unclear or inconsistent methodologies

Accelerating and Sizing the IRRP

- The full regional planning process can be lengthy (lasting over two years); the IRRP stage can be better scoped and sized according to needs and complexity

Streamlining the IRRP and RIP

- Overlapping and redundant wires planning activities lead to inefficiencies between the IRRP and RIP

Better Coordinating with Related Processes

- Poor alignment between the regional planning and other processes leads to inefficiencies

Summary of Areas for Improvement (cont'd)

Enhancing Regional Planning Engagements and Transparency

- Regional Planning must continue to incorporate the IESO engagement principles and process to enhance the stakeholder experience and guide expectations

Better Considering Cost Allocation

- Informed recommendations for the most cost-effective solutions can be impeded by an unclear understanding of cost implications

Improving Long-Term Planning

- Greater planning efficacy can be achieved by giving greater consideration to the 10- to 20-year time frame

Enhancing Activities Between Planning Cycles

- Regions and projects evolve significantly between planning cycles; existing between-cycle activities can be enhanced and formalized

Clarifying Process Stages and Final Products

- Process steps require additional clarity, particularly as planning has evolved following the first cycle

Process Efficiency and Flexibility Highlights

- Full details on the proposed process efficiency and flexibility improvements can be found in the Straw Man design
- Today's webinar will highlight three examples where the recommendations will enhance the process:
 - Streamlining load forecast development
 - Better consideration of cost allocation
 - Enhancing activities between planning cycles

Spotlight: Streamlining Load Forecast Development

Key Issue: Development of a 10- to 20-year load forecast occurs in three stages: needs assessment, IRRP, and RIP. Inefficiencies and lack of clarity during time-intensive forecasting activities slow the process and lead to misunderstood needs.

- As new resource and load types connect, the system becomes more complex, making load forecasting increasingly difficult
- Significant time and collaboration is required of the Technical Working Group to:
 - Assess historical net peak loads at the station-level
 - Gather forecast gross loads from distributors
 - Obtain distributed generation and energy efficiency forecasts
 - Correct from median to extreme weather
 - Evaluate the impact of other assumptions
- Planning participants have varying visibility of transmission-connected industrial loads, energy efficiency, demand response, distributed generation, and other DERs
- Also, multiple iterations of a forecast can cause delays and redundancy

Spotlight: Streamlining Load Forecast Development (cont'd)

Overall Recommendation: Reduce the redundancy and time requirements of forecasting activities using more consistent methodologies and the most up-to-date information.

Establish common base assumptions and methodologies

- Formal adoption of an approach to quantify gross and net loads
- Changes to assumptions and methodologies to be explained and justified by the relevant entity

Reduce redundant iterations of the forecast

- Single, comprehensive forecast used throughout the planning cycle,
OR
- 10-year preliminary forecast for the needs assessment and 20-year comprehensive forecast for both the IRRP & RIP

Review load annually

- Technical Working Group to monitor forecast accuracy and its alignment with new regional developments or community energy plans

Spotlight: Better Consideration of Cost Allocation

Key Issue: While decisions on cost allocation fall under the OEB's jurisdiction, misunderstanding of cost allocation factors can negatively impact decision-making during the regional planning process.

- The OEB's Transmission System Code and Distribution Code contain cost responsibility provisions for load customers
- IRRPs strive to recommend integrated solutions (wires, non-wires, generation) that meet local reliability needs at the **least cost to ratepayers**
- Regional planning products (IRRP, RPP) are therefore used to support related regulatory proceedings, such as distributor and transmitter rate applications
- In some cases, technical working groups may not fully understand the financial implications of their recommendations

Spotlight: Better Consideration of Cost Allocation (cont'd)

Overall Recommendation: Seek a clearer understanding of cost allocation during the planning stage.

- To achieve a consensus on the most appropriate and cost-effective solutions, as well as to enable informed decisions, the Technical Working Group should better understand the factors that impact cost allocation through informal IRRP discussions after a solution is developed
- These factors include:
 - The impacted beneficiaries of options
 - The benefit to the broader system vs. local customer connection
- This is relevant to cost-recovery mechanisms for both wires and non-wires solutions

Spotlight: Enhancing Activities Between Cycles

Key Issue: As required by the OEB, regional planning is conducted for each of the 21 planning regions at least once every five years. In practice, planning is continuous and regions evolve between official active planning cycles.

- The full planning process can last 2+ years, as the team gathers data, identifies needs, conducts studies, compares options, and engages stakeholders
- Activities between planning cycles could ensure that the Technical Working Group is advised of new load connections, the next planning cycle is triggered in a timely manner, and the implementation status of previous recommendations is known



- | | |
|--|--------------------------------|
| 1. Burlington to Nanticoke | 12. Peterborough to Kingston |
| 2. Greater Ottawa | 13. South Georgian Bay/Muskoka |
| 3. GTA North | 14. Sudbury/Algoma |
| 4. GTA East | 15. Chatham/Lambton/Sarnia |
| 5. GTA West | 16. Greater Bruce/Huron |
| 6. Kitchener-Waterloo-Cambridge-Guelph | 17. Niagara |
| 7. Toronto | 18. North of Moosonee |
| 8. Northwest Ontario | 19. North/East of Sudbury |
| 9. Windsor-Essex | 20. Renfrew |
| 10. East Lake Superior | 21. St. Lawrence |
| 11. London area | |

Spotlight: Enhancing Activities Between Cycles (cont'd)

Overall Recommendation: Enhance between-cycle activities to support a continuous dialogue, help maintain industry working relationships without unnecessary, time-intensive work, and further expedite subsequent planning cycles.

- It is recommended that the Technical Working Group meet annually to do some or all of the following:
 - Report on status of previous planning recommendations and projects
 - Discuss/flag new or ongoing developments
 - As mentioned previously, review the accuracy of current load forecasts and status of local supply
- It is recommended to align these activities with existing annual reporting mechanisms required by the OEB (such as the regional planning annual status report), and leverage the work of regional electricity networks

Implementation of Recommendations

- Many suggested actions are minor modifications which will be implemented in stages after this review
- These recommendations range in complexity and accountability; the IESO can implement some, while others affect various regional planning participants
- Therefore, these recommendations may help inform the OEB's existing Regional Planning Process Advisory Group
- Transmitters, distributors, and other industry participants may all have a role in implementation

STRAW MAN DESIGN PART 2: END-OF-LIFE ASSET REPLACEMENT INFORMATION PROCESS

Better Coordinated End-of-Life Planning

- This review considers how bulk and regional planning processes include a coordinated, cost-effective, long-term approach to replacing transmission assets at end-of-life
- Improving and formalizing the input of asset replacement information to the planning processes will achieve three objectives:
 1. Develop a transparent, timely, and sustainable process for identifying and integrating asset replacement information into the transmission planning processes
 2. Extend the transmission asset owners' planning horizon for asset replacement needs to a 10-year horizon
 3. Develop criteria for screening identified asset replacement needs for opportunities to better align with forecast power system and market conditions through more comprehensive long-term planning

Better Coordinated End-of-Life Planning

(cont'd)

Importance of Coordination

- Rising costs in transmission asset replacements due to ageing infrastructure
- System conditions and needs change over the life of the equipment (upwards of 50-70 years)

Opportunities and Timing

- Aligning equipment replacement needs with regional or bulk system needs can present opportunities for greater value
- Timing is important as plans must be ready well in advance of the replacement need

Information Needed

- Equipment age and expected life by type
- Major equipment such as power transformers, transmission lines, high voltage cables and breakers

Key Terms

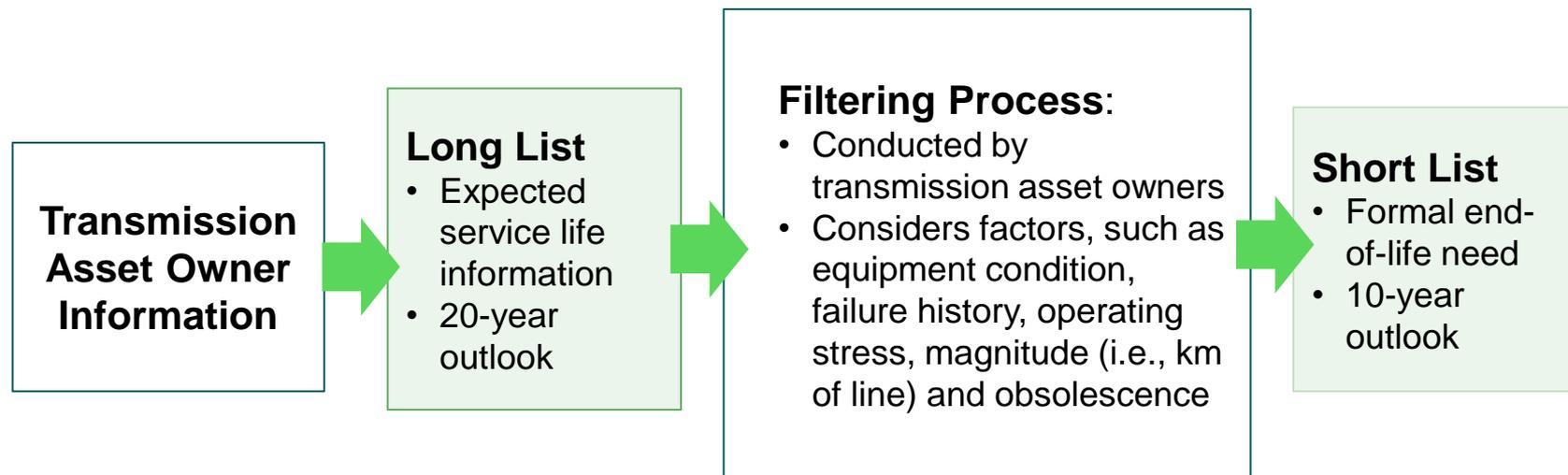
- **Asset End of Life**

- The state of having a high likelihood of failure, or loss of an asset's ability to provide the intended functionality, wherein the failure or loss of functionality would cause unacceptable consequences (as determined by the asset owner's risk-based assessments considering reliability, loss of load, environmental, safety)

- **Asset Expected Service Life**

- A general guideline to inform transmission asset owner investment decisions; the expected service life is defined as the average duration in years that an asset can be expected to operate under normal system conditions and is determined by considering manufacturer guidelines and historical asset performance, failure and retirement data

Recommendation: Asset Replacement Information Process



 Input to Planning Processes

Development of the Long List

On an annual basis, transmission asset owners (including applicable distributors) will provide a “long list” of asset information as input into the transmission planning process. This list will act as a starting point to identify the “short list”, i.e., end-of-life equipment replacement needs over the next 10 years

- Data will be provided for major categories of high-voltage equipment:
 - Transformers (autos and step-downs)
 - Breakers*
 - Transmission lines (including underground cables)
- The long list will be based on expected service life information by asset category, and will include equipment designation, age and location

** In select cases, low-voltage breakers (switchgear) should be captured on the “long list” where the replacement of the switchgear is considered as an integrated replacement (e.g., replacement of indoor metalclad switchgear)*

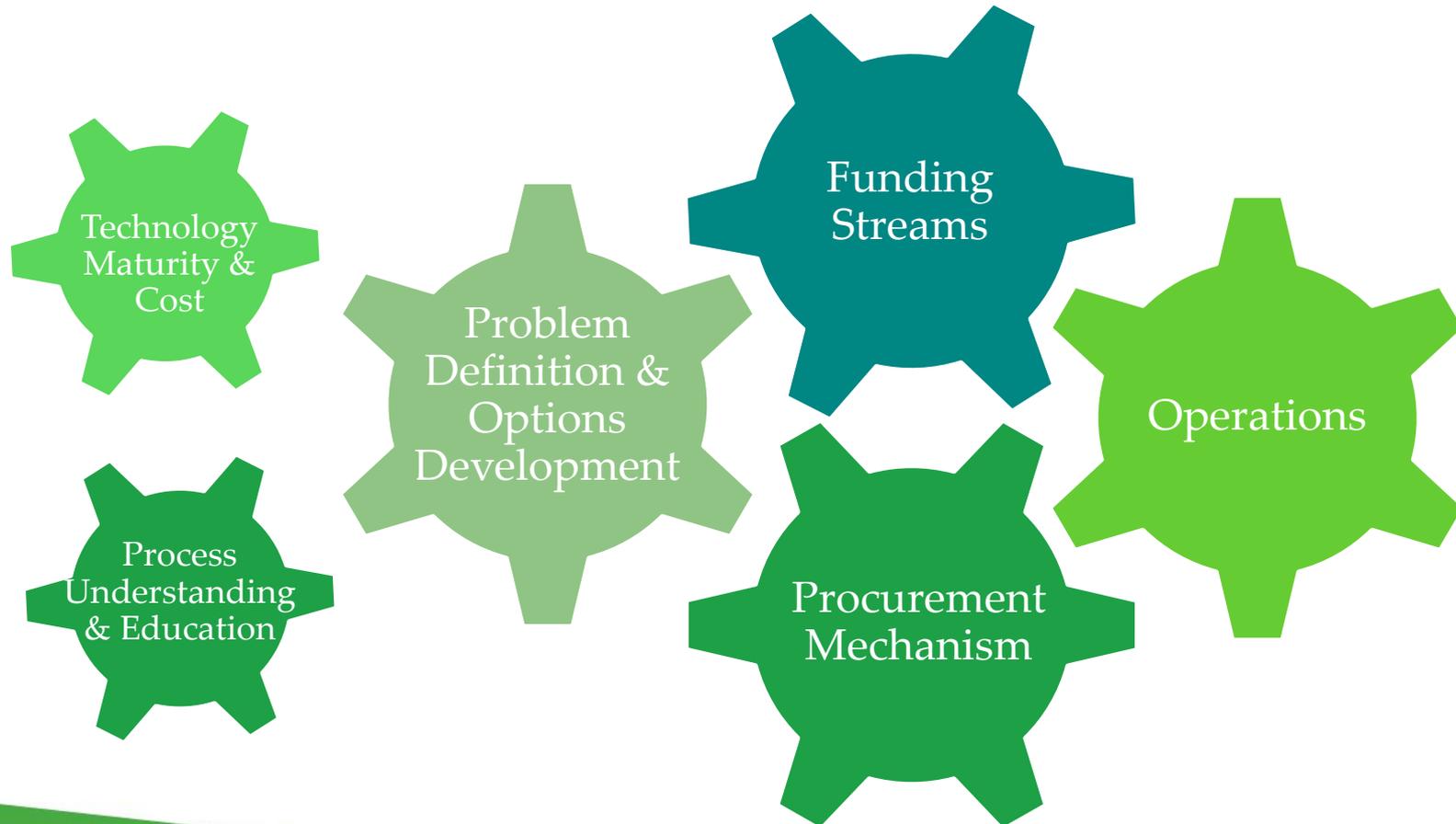
Filtering Process to Produce the Short List

- Using their knowledge, transmission asset owners will work from the “long list” to identify the “short list” of projects:
 - That are likely to reach end-of-life over the next 10 years based on available asset condition information,
 - Where typical replacement options may not be possible, and/or
 - That have imminent near-term needs that require timely planning decisions
- Similar to long list, the short list will be prepared on an annual basis
- This short list will act as another informational input to the regional planning process to identify reliability needs in a timely fashion

STRAW MAN DESIGN PART 3: BARRIERS TO NON-WIRES ALTERNATIVES

Themes at a Glance

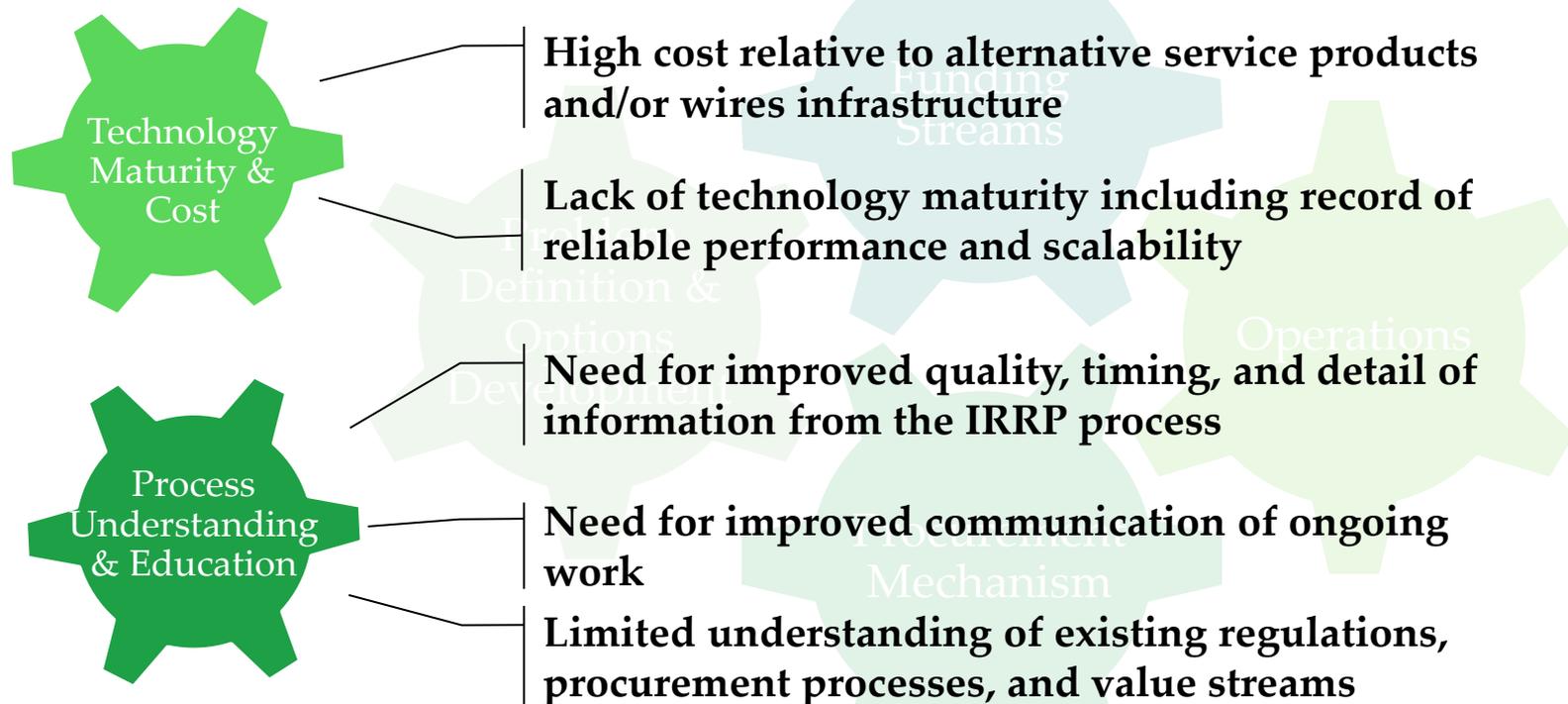
Barriers identified can be summarized in six interdependent themes:



Themes at a Glance

(Technology Maturity & Cost, Process Understanding & Education)

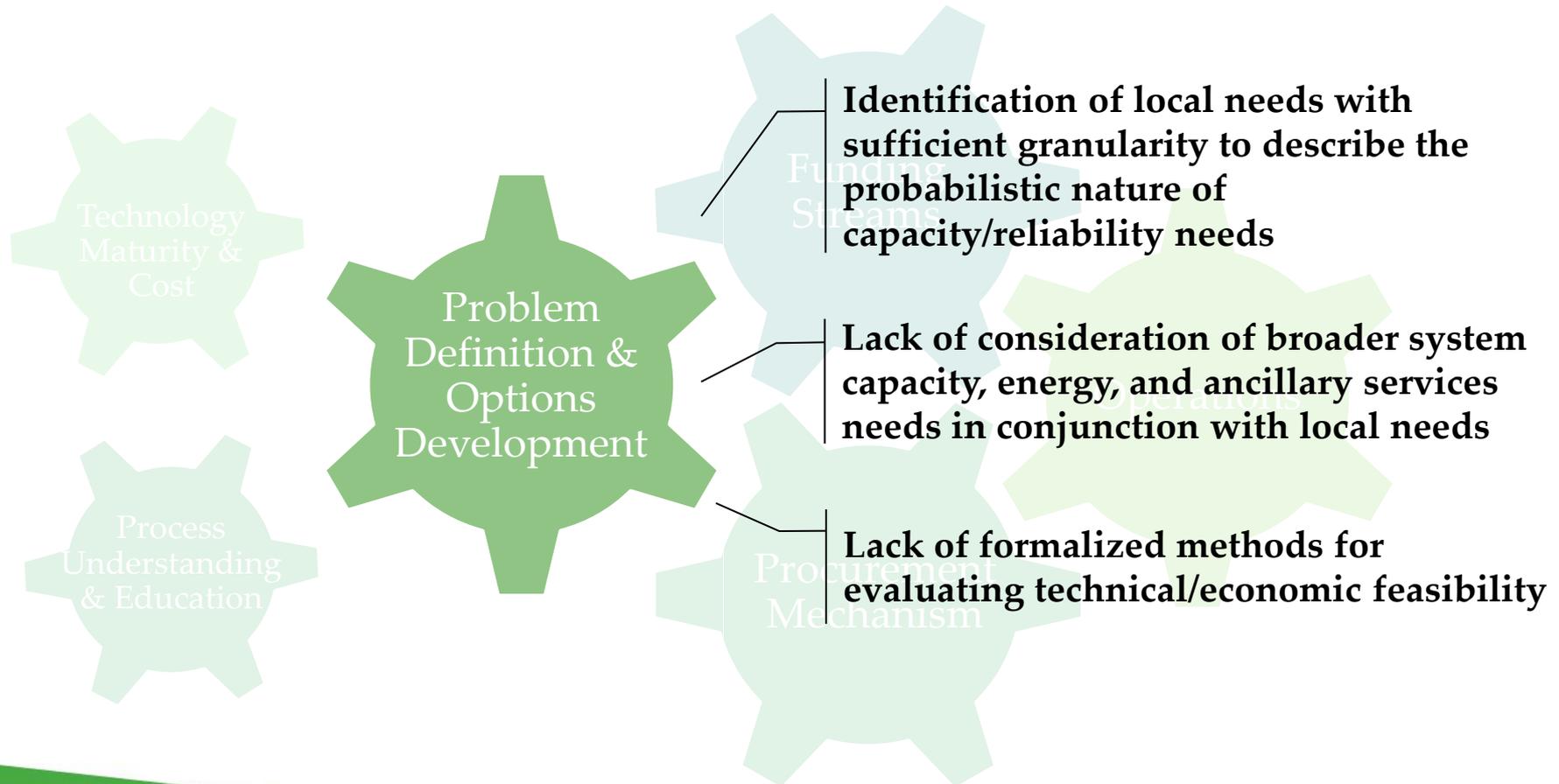
Barriers identified can be summarized in six interdependent themes:



Themes at a Glance

(Problem Definition & Options Development)

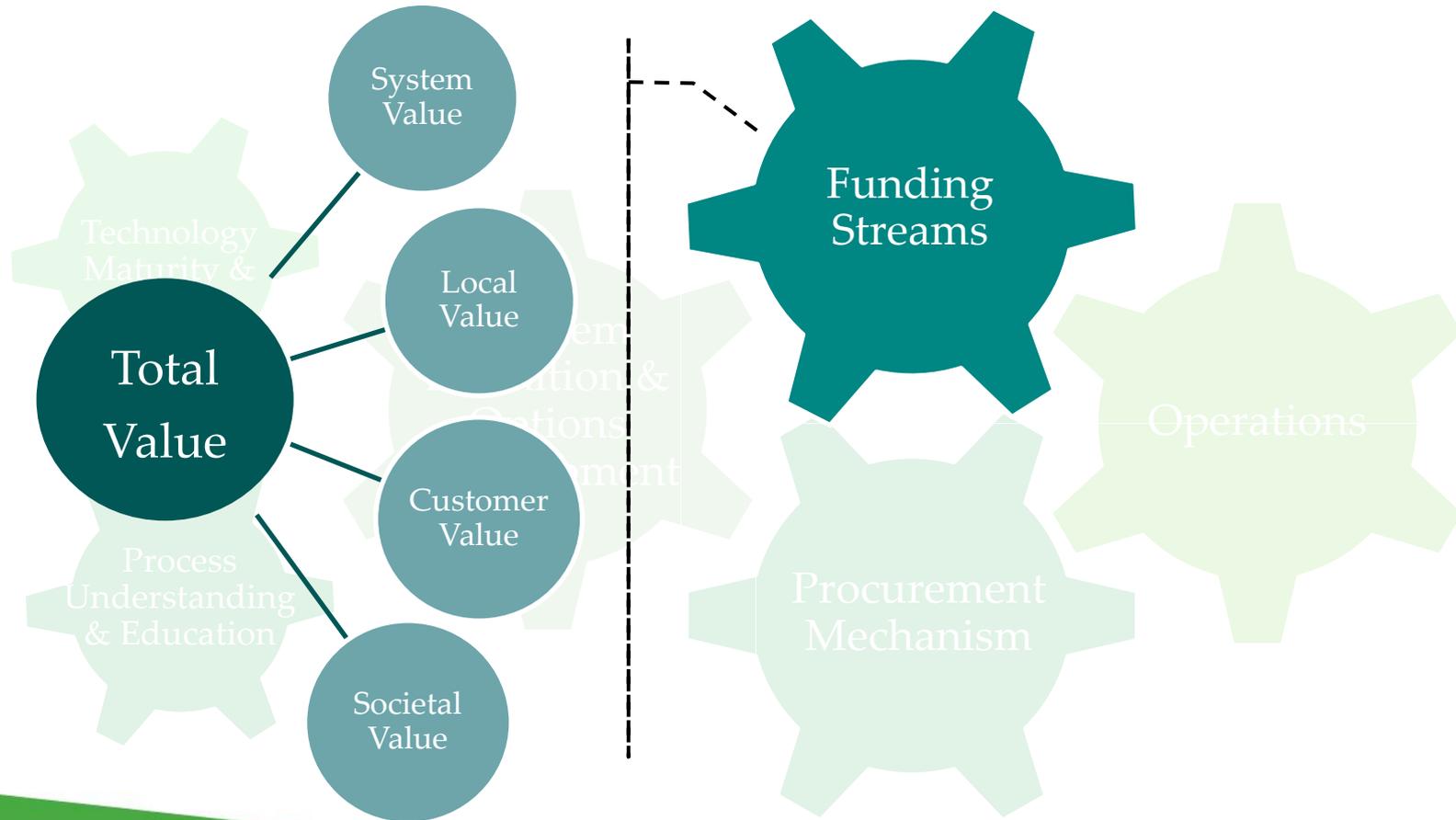
Barriers identified can be summarized in six interdependent themes:



Themes at a Glance

(Funding Streams)

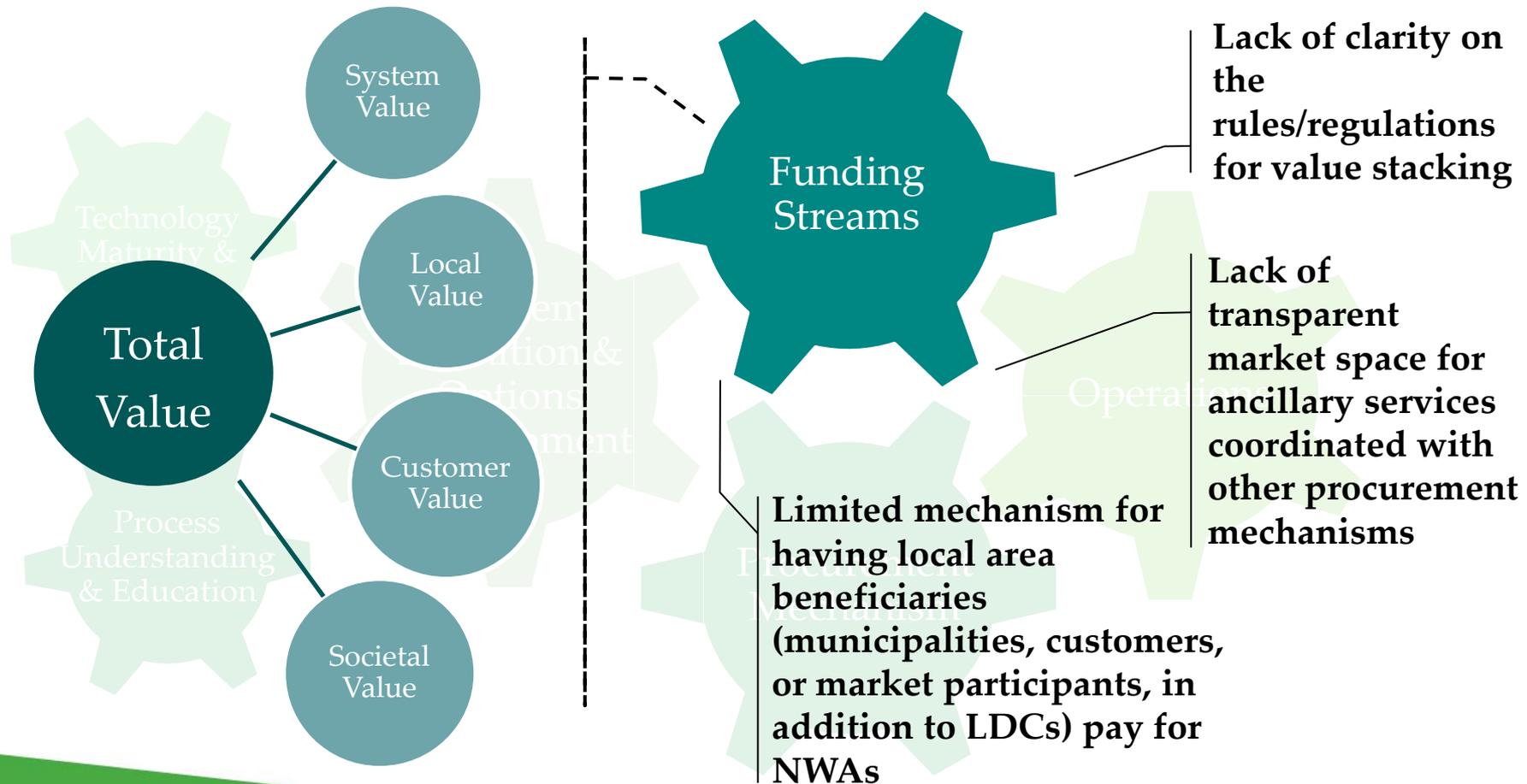
Barriers identified can be summarized in six interdependent themes:



Themes at a Glance

(Funding Streams continued)

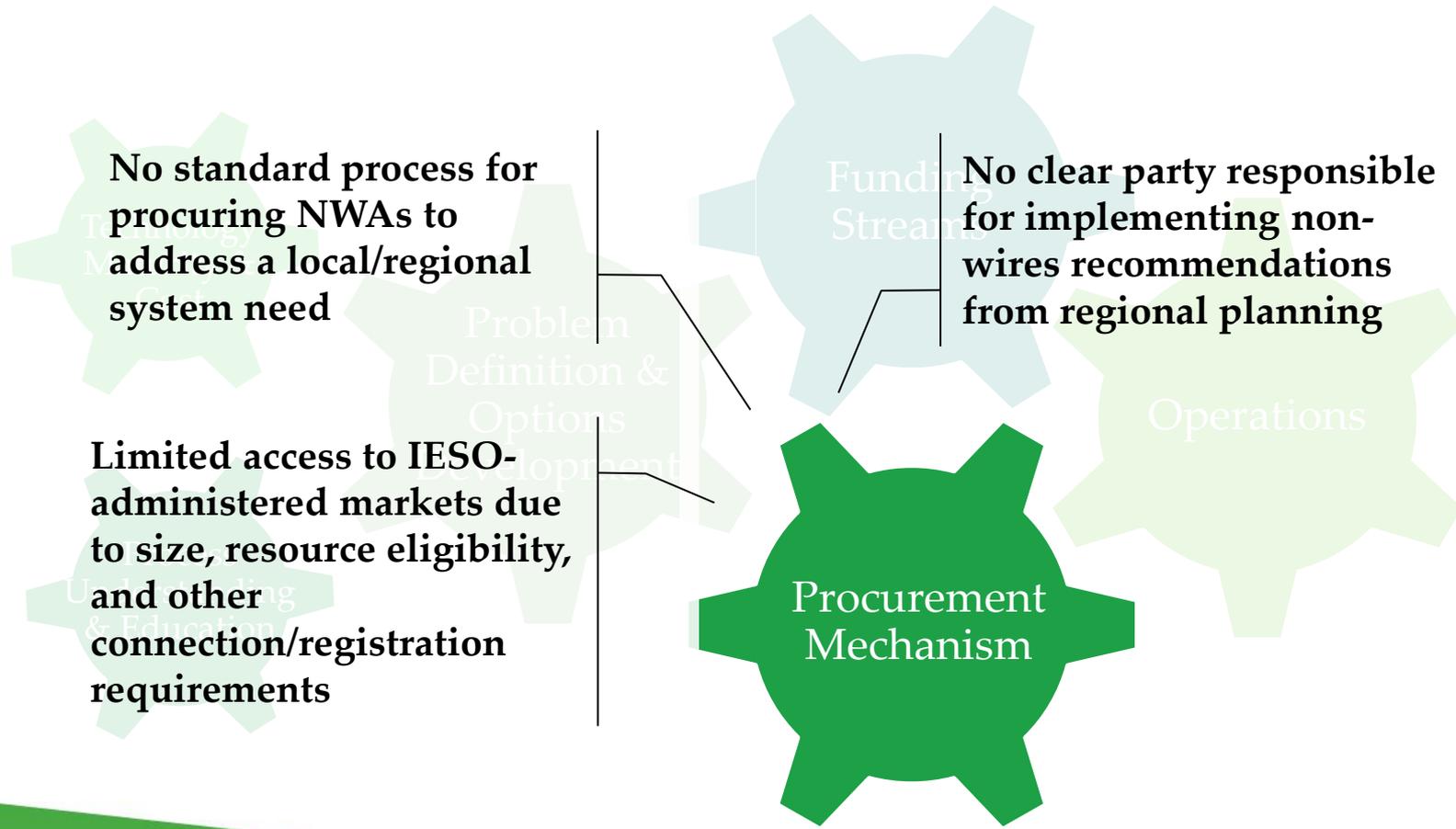
Barriers identified can be summarized in six interdependent themes:



Themes at a Glance

(Procurement Mechanism)

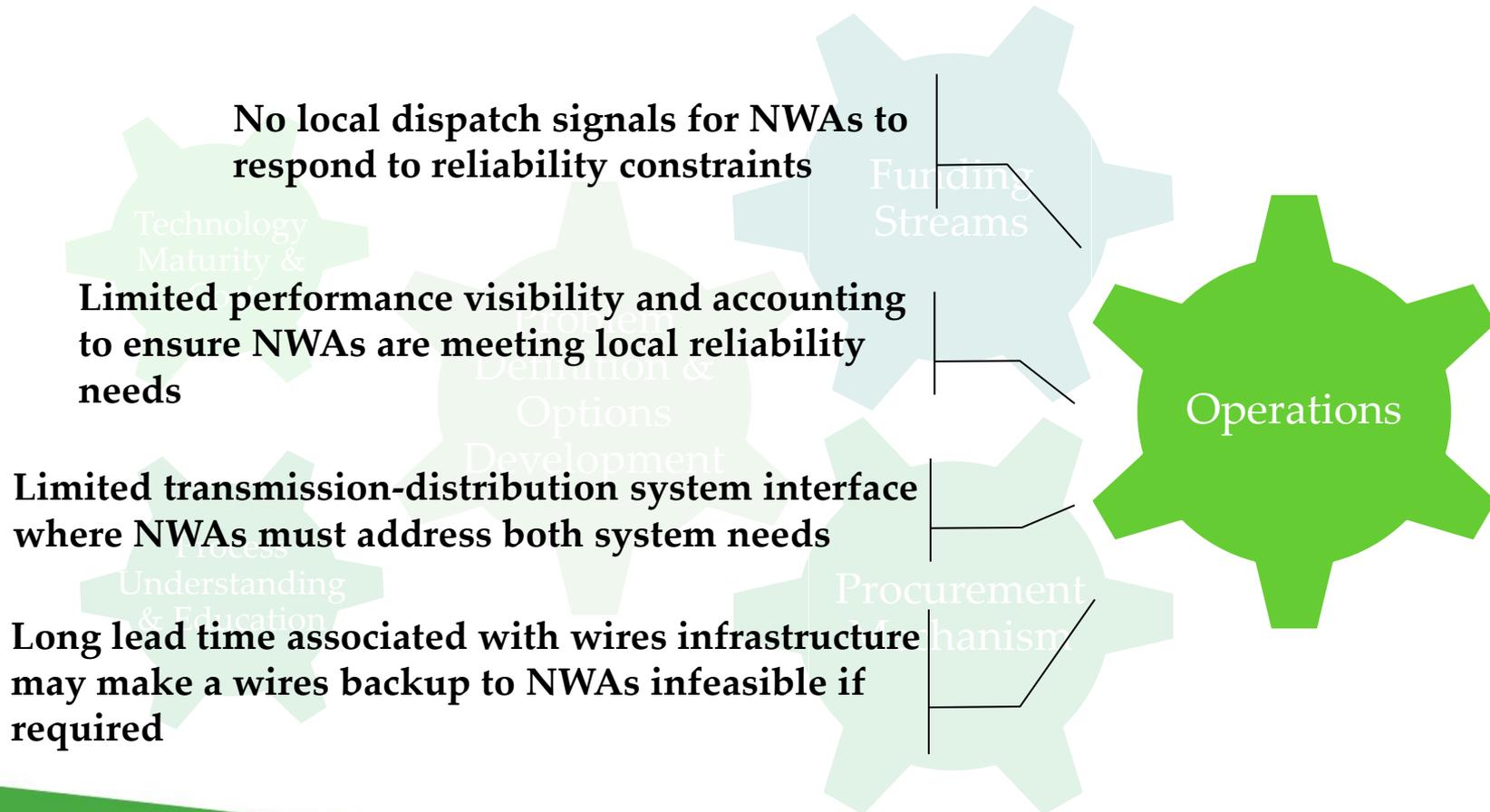
Barriers identified can be summarized in six interdependent themes:



Themes at a Glance

(Operations)

Barriers identified can be summarized in six interdependent themes:



Objectives for Addressing Barriers

Objectives directly related to the regional planning process

1. Understanding the Need and Data Gathering
2. Enabling a Fair Comparison
3. Enabling Market Solutions
4. Empowering Local Community Choice

Objectives related to implementation downstream of regional planning

1. Standardizing Procurement
2. Creating the Framework and Infrastructure for NWA Solutions
3. Streamlining Market Integration & Enabling Value Stacking

*Some of these objectives, in part or in whole, may fall outside the purview of the IESO

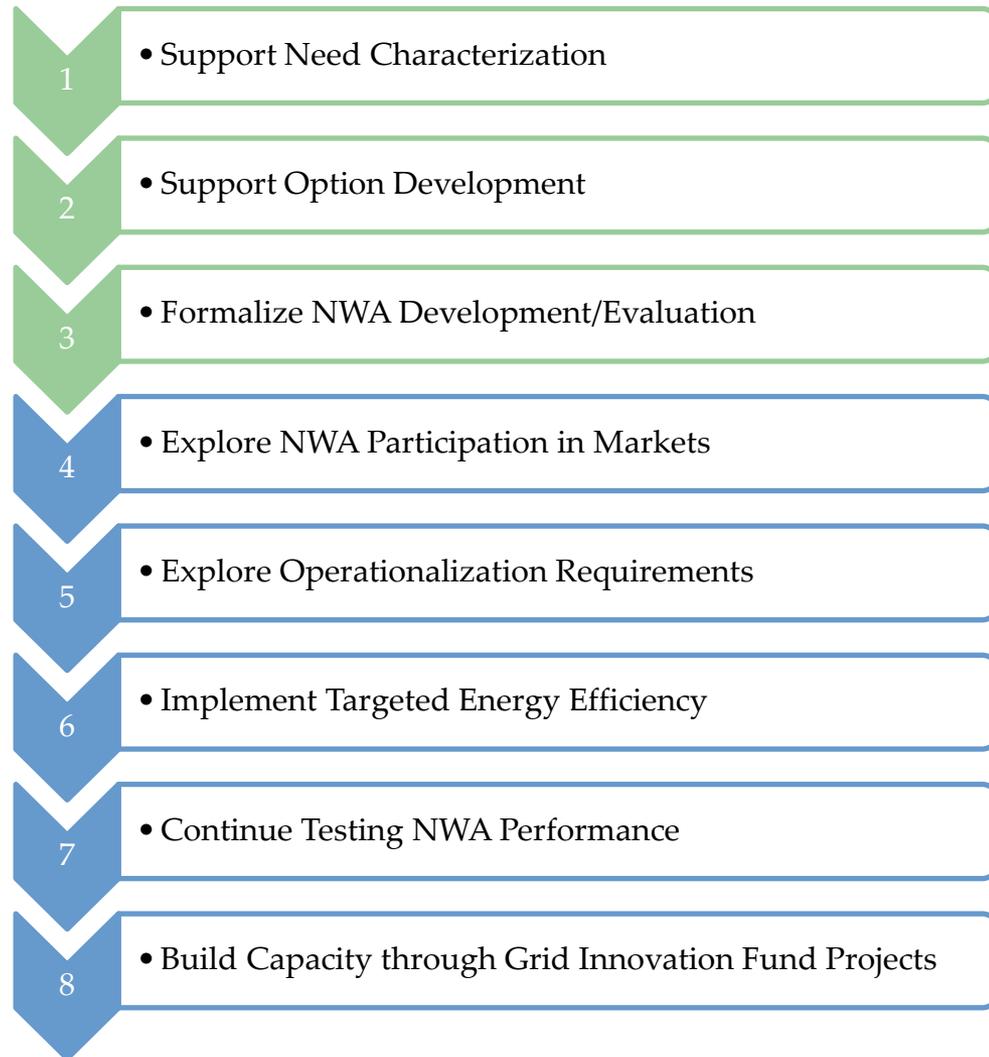
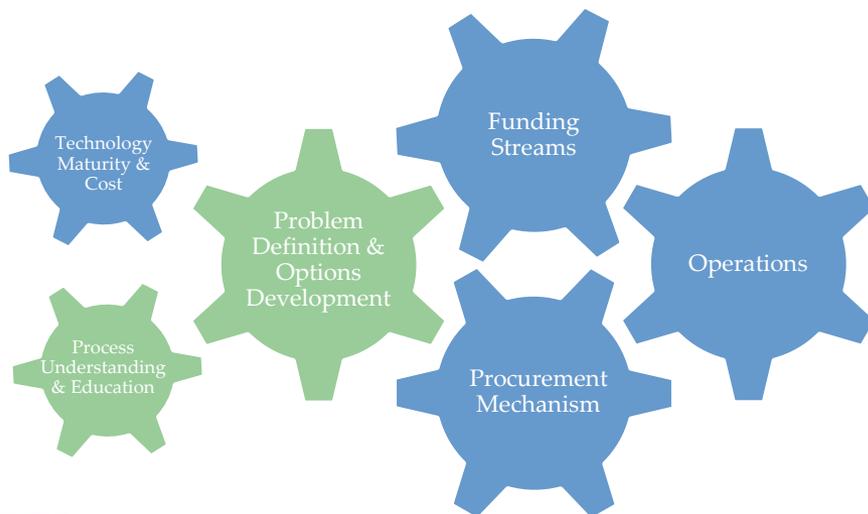
IESO's Near-Term Actions at a Glance

Legend

● Directly related to the Regional Planning Process

● Related to implementation processes downstream of Regional Planning

Themes of NWA Barriers



Barriers to Non-Wires: Next Steps

- Near-term actions will help meet all regional planning related objectives in the previous section
- While they do not fully address all non-regional planning related objectives, they are a starting point for advancing the procurement mechanisms, funding streams, and operationalization of NWA's
- The IESO will continue to influence barriers outside of its direct purview through active participation in OEB initiatives, including:
 - Utility remuneration
 - Responding to DERs
 - DER connections review
 - Other future initiatives and consultations

FEEDBACK AND NEXT STEPS

Stakeholder Feedback

- Stakeholder feedback is requested on the recommendations identified for the three primary areas for improvement
- **Straw Man Design Part 1: Recommendations for improvements to process efficiency and flexibility:**
 - Are there any gaps or deficiencies in the regional planning process that these recommendations do not address?
 - Will the recommendations identified achieve the objectives of streamlining the regional planning process and improving coordination with other, related planning processes?

Stakeholder Feedback (cont'd)

- **Straw Man Design Part 2:** Recommendations to develop a long-term approach to replacing transmission assets at end of life:
 - Will the recommendations identified achieve the objectives of establishing a coordinated, cost-effective, long-term approach to replacing transmission assets at end-of-life?
 - Will the recommendations identified provide the necessary asset replacement information for consideration in the bulk and regional transmission planning processes?
- **Straw Man Design Part 3:** Recommendations to identify barriers to the implementation of cost-effective non-wires alternatives and options to address barriers:
 - Will the recommendations identified adequately address barriers to consideration of cost-effective non-wires alternatives within the scope of regional planning activities that the IESO is responsible for?
 - With respect to the recommendations identified outside of regional planning that the IESO is not solely responsible for, do the recommendations provide a good starting point to address barriers to implementing non-wires alternatives?

Next Steps

- Please provide feedback to engagement@ieso.ca by March 27, 2020 using the feedback form on the [engagement webpage](#).
- Q2/Q3 – Incorporate stakeholder feedback into Final Report
- Q4 2020 - Final Report to be published and implementation plans for recommendations to be developed
- 2020/2021 – Implementation of recommendations to commence

QUESTIONS & COMMENTS?

