APRIL 19, 2023

Windsor-Essex Scoping Assessment Webinar

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Objectives of Today's Webinar

- To provide an overview of the regional planning work underway in the Windsor-Essex region
- To discuss the draft Windsor-Essex Scoping Assessment and seek feedback
- To provide a timeline and next steps

Seeking Input

Some key questions to consider when reviewing the Scoping Assessment:

- What additional information should be taken into account in determining the planning approach that will be taken moving forward?
- What considerations should be made for the areas of identified needs to be addressed in the region?
- What other areas or issues should be examined through regional planning?

Please submit your written comments by email to engagement@ieso.ca by **May 3**

Overview of the IESO and the Regional Planning Process

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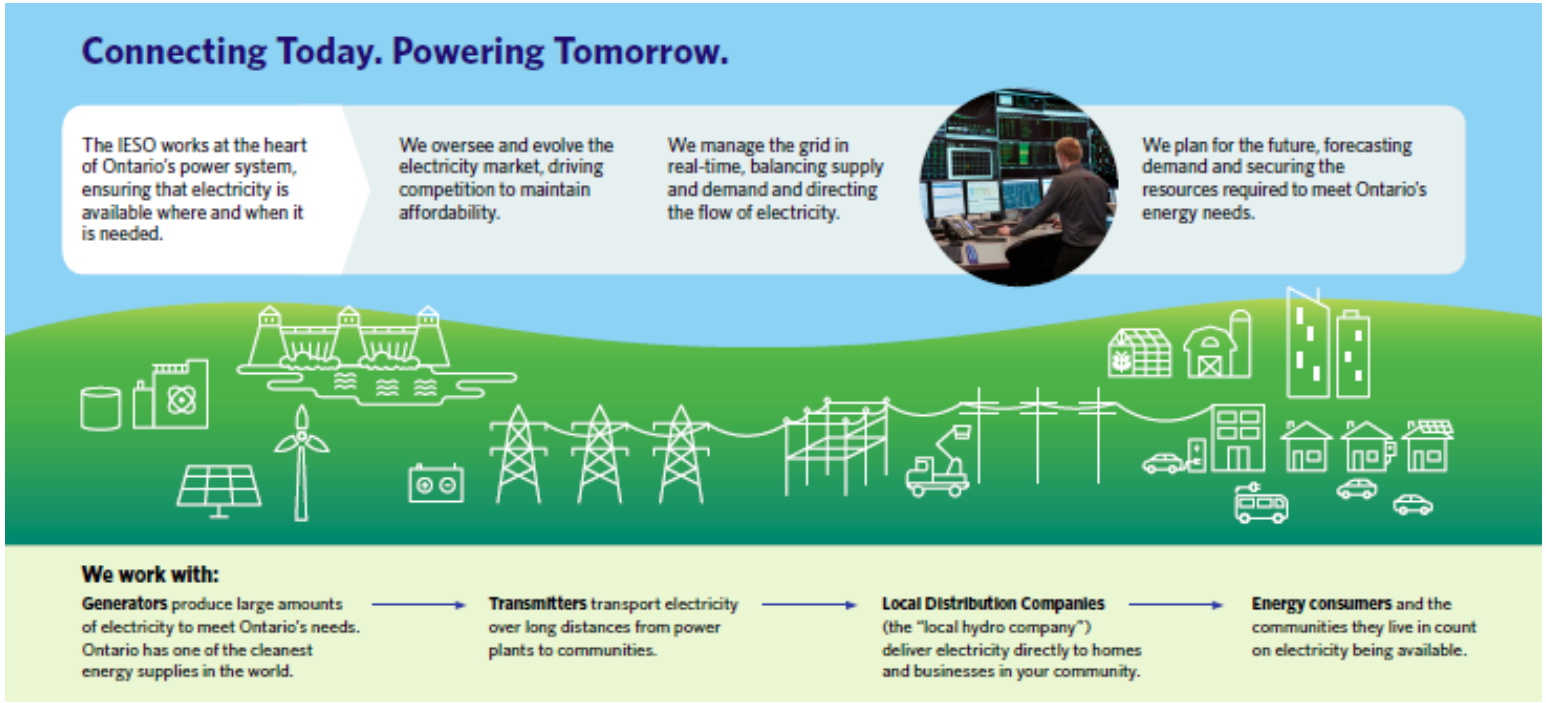
Ontario's Electricity Sector



Who the IESO is and What We Do

Reliably operate Ontario's province-wide system 24/7

Support innovation

Create electricity market efficiencies

Work closely with communities to explore sustainable options

Plan for Ontario's future energy needs

Enable province-wide energy efficiency

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Electricity Planning in Ontario

21 Electricity Regional Planning Regions

- Regional planning has been conducted on an as needed basis in Ontario for many years.
- Process was formalized by the Ontario Energy Board in 2013.
- Regions defined based on electricity infrastructure boundaries.
- Planning is conducted for each region's unique needs and characteristics, at a minimum of once every five years.
- Third cycle is now underway for Windsor-Essex.

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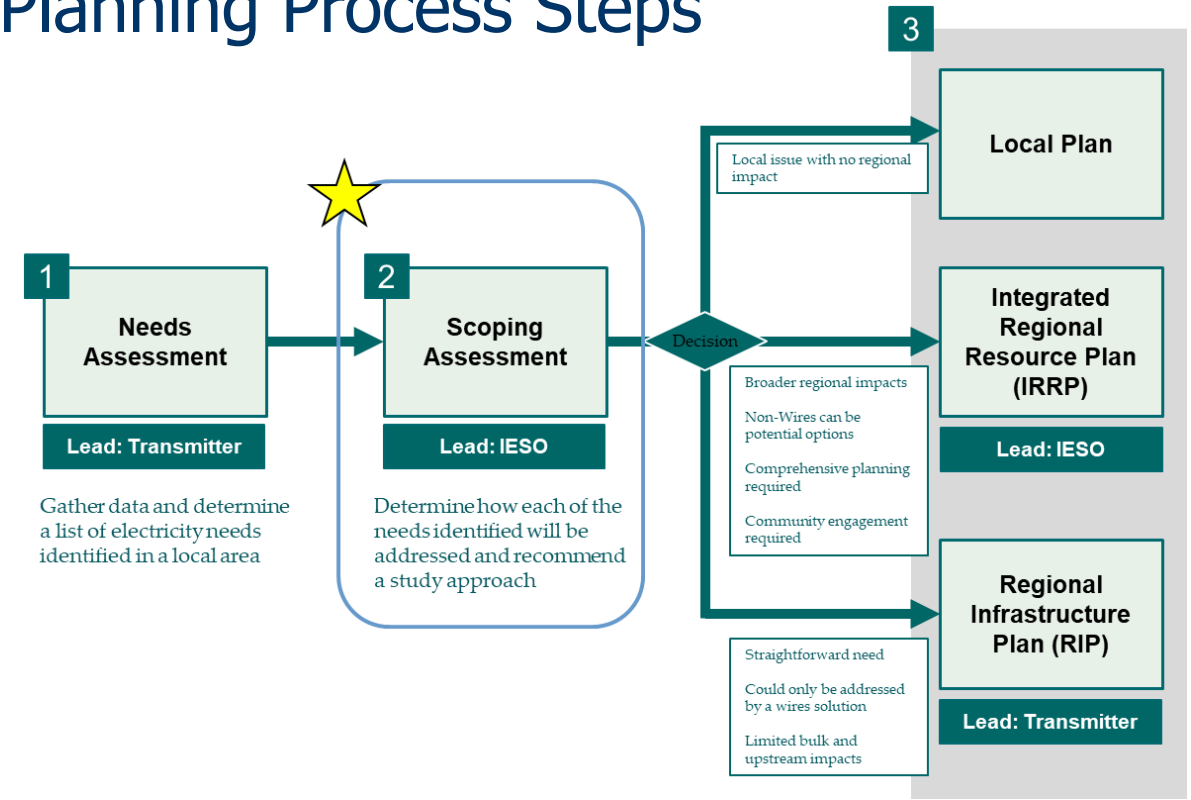
Regional Planning Process Steps



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What is a Scoping Assessment?

- Triggered following the completion of a Needs Assessment by the region's lead transmitter.
- Led by the IESO and includes the transmitter and local distribution companies (LDCs) in the region.

Key Elements

- Review needs that require comprehensive planning
- Determine the geographic grouping (sub-regions) of needs
- Determine the appropriate regional planning approach and scope
- Establish the draft terms of reference for an electricity plan – Integrated Regional Resource Plan (IRRP) – if required, and composition of the Technical Working Group who will undertake this work.

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Identifying the Planning Approach

Approach	Typical Considerations	Parties Involved
Integrated Regional Resource Plan (IRRP)	Where a greater range of options, including non-wires, are to be considered, and/or closer coordination with communities and stakeholders is required	IESO (lead) Transmitter LDCs
Regional Infrastructure Plan (RIP)	Considers more straight-forward wires-only options with limited engagement	Transmitter (lead) LDCs IESO
Local Planning	No further regional coordination is needed	Transmitter LDCs

Regional Planning in the Windsor-Essex Region

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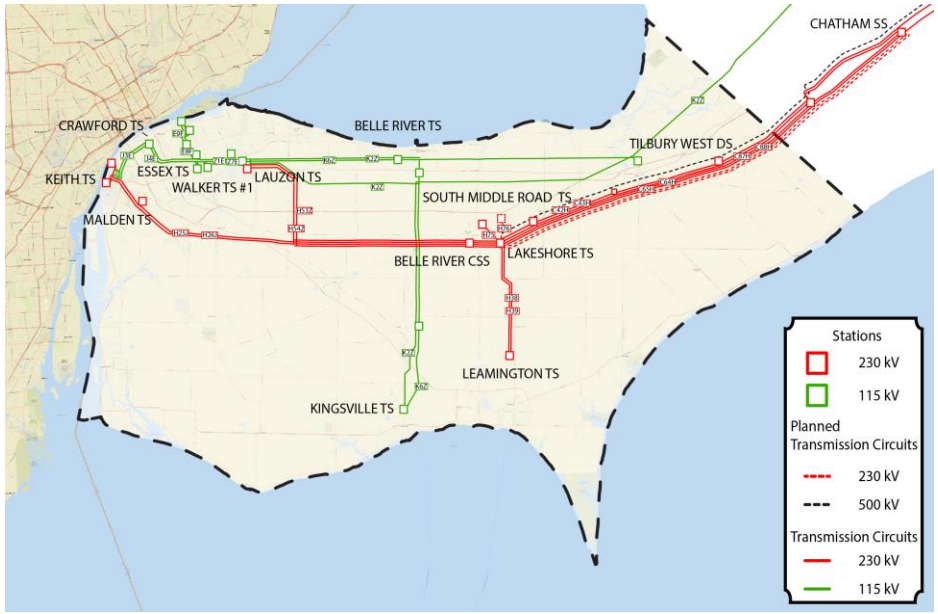
Windsor-Essex Region

- 230 kV and 115 kV transmission system located west of Chatham-Kent proper
- Composed of the City of Windsor, Town of Amherstburg, Town of Essex, Town of Kingsville, Town of Lakeshore, Town of LaSalle, Municipality of Leamington, Town of Tecumseh, the western portion of the Municipality of Chatham-Kent, and the Township of Pelee Island
- Includes several Indigenous communities.



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Scoping Assessment Working Group

Team Lead, System Operator	• Independent Electricity System Operator
Lead Transmitter	• Hydro One Networks Inc. (Transmission)
Local Distribution Companies	• EnWin Utilities Ltd. (“EnWin”) • Essex Powerlines Corporation • E.L.K. Energy Inc. • Entegrus Inc. • Hydro One Networks Inc. (Distribution)

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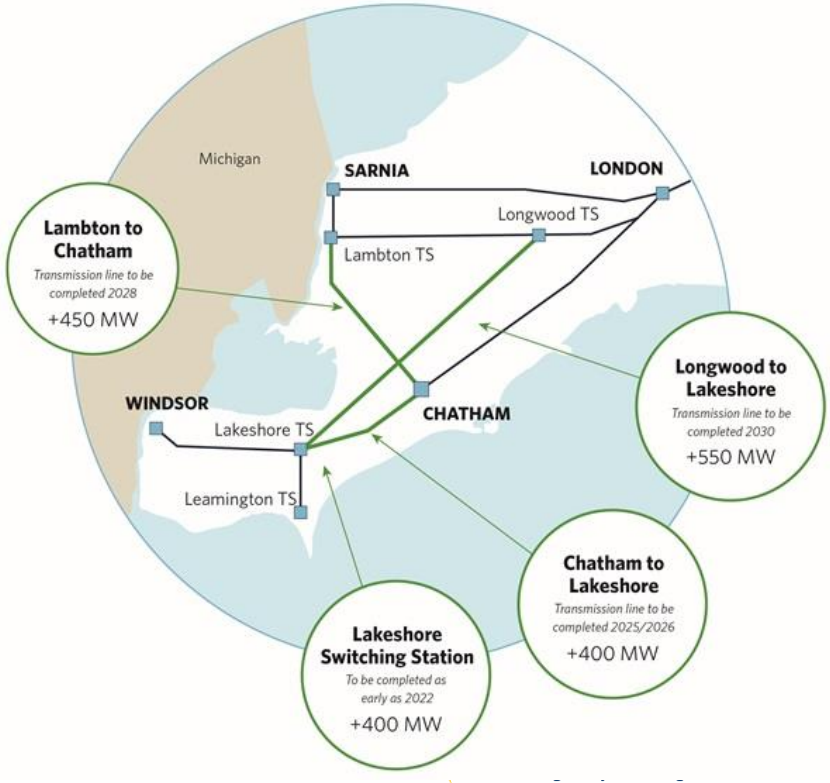
Recent Planning for Southwest Ontario

- A multi-pronged approach to develop solutions that will provide 2,300 MW of additional capacity by 2035 including:
  - New switching station in the Municipality of Lakeshore – in service April 2022
  - Three new sets of transmission lines to be in service by 2025, 2028 and 2030 (Chatham to Lakeshore, Lambton to Chatham and Longwood to Lakeshore)
  - Targeted energy efficiency programs and innovative projects
  - Local generation resources



Innovative Solutions in Windsor-Essex

- $1.1 M+ invested to test energy efficient measures in greenhouses including low intensity LEDs and Artificial Intelligence.
- In collaboration with the OEB, the IESO is testing a near real-time, local electricity market to tap into local energy supplies in Leamington.
- To date, the IESO has committed $65.2 M in incentives to nearly 50 local growers to install LED grow lights that will result in an estimated 618 GWh in energy savings and 2.2 MW in demand savings.
- Continued investment in energy efficiency with expanded programs coming this spring, including incentives to install LED lighting, advanced controls or behind-the-meter resources

Previous Regional Planning Cycle for Windsor-Essex

2019 Windsor-Essex electricity plan – Integrated Regional Resource Plan (IRRP) – recommended a number of actions to address emerging needs

Recommendation	Status
IESO Grid Innovation Fund targeted call for indoor agriculture projects	On-going support provided between 2020 – 2023
LED Incentive for greenhouses	On-going program until 2024
Upsize Keith T11/T12 end-of-life 230/115 kV autotransformers	Expected in 2023
Upsize Lauzon T5/T6 end-of-life stepdown transformers	Expected in 2026
Decommission Keith TS end-of-life T1 (115 kV/27.6 kV) transformer	Complete
Two new supply stations connected to Lakeshore TS, South Middle Road DESN 1 &2	DESN 1 in-service in 2022; DESN 2 expected in 2025

Other Planning Recommendations

Plan	Recommendation	Status
2019 Windsor-Essex Bulk Plan	Leamington SS	In-service 2022
	Chatham-to-Leamington double 230 kV circuit	Expected 2025
2021 West of London Bulk Plan	Lambton-to-Chatham double 230 kV circuit	Expected 2028
	Initiate bilateral negotiations for Brighton Beach GS	On-going
	Longwood-to-Lakeshore single 500 kV circuit	Expected 2030
	550 MW of new or existing local resources	On-going
2022 Windsor-Essex Addendum	Two new DESNs, connection lines to Lakeshore and option for tie line between Leamington and new DESNs	On hold
	Transfer excess Kingsville load to new DESNs	On hold
	Engage with customers on cost-justified measures for load restoration	On hold

Windsor-Essex Draft Scoping Assessment

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Categories of Needs

Capacity Needs

- Station capacity refers to the ability to convert power from the transmission system down to distribution system voltages
- System capacity (or "load meeting capability") refers to the ability of the electricity system to supply power to customers in the area, either by generating the power locally, or bringing it in through the transmission system

Load Restoration and Supply Security Needs

- Load restoration describes the electricity system's ability to restore power to those affected by a major transmission outage within reasonable timeframes
- Supply security describes the total amount of load interrupted following major transmission outages

End-of-Life Asset Replacement Needs

- Based on the best available asset condition information at the time
- Evaluated to decide if the facility should be replaced "like-for-like", "right-sized", or retired

- The Needs Assessment identified station capacity needs and load restoration and security needs

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Preliminary Needs: 1. Kingsville-Leamington Capacity

Need & Context

- Various station capacity needs in 2023-2024
  - Continued load growth; more than 400 MW over the next 10 years

Considerations

- Greenhouse growth location and rate have changed
  - Electricity load ramps up in 2027/2028
  - Location shifted closer to Lakeshore TS
  - Need to understand forecast developments, expansions, and operations now and into the future

→Need to reassess forecast and previous IRRP Addendum recommendations

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Preliminary Needs: 2. Kingsville-Leamington Security

Need & Context

- Leamington DESN 1&2 and South Middle Rd DESN 1&2
  - Load security needs for loss of one supply circuit*
  - 30 min and 4 hr load restoration criteria violated for loss of both supply circuits*

*Supply circuits for Leamington are H38/H39; for South Middle Rd, H75/H76

Considerations

- Coordinated with station capacity needs from previous slide

→Need to reassess previous IRRP Addendum recommendations

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Preliminary Needs: 3. Lauzon TS Station Capacity

Need & Context

- Lauzon TS T7/T8 DESN station capacity needs identified by 2025, due to higher near-term growth forecast in the outskirts of the city, based on municipal input
    - Timely opportunity to coordinate plan for Lauzon T7/T8 reaching end-of-life, but will require station reconfiguration
- identified due to gradual organic growth

Considerations

- In combination with further industrial growth in Windsor, may trigger a supply capacity need
- Need to understand potential for industrial growth and decarbonization initiatives

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Preliminary Needs: 4. Belle River Station Capacity

Need & Context

- Belle River TS station capacity needs identified due to gradual organic growth

Considerations

- Locational Initiatives Program targeting the Belle River area could provide near-term relief

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Geographic Location of Identified Needs

1. Kingsville-Leamington station capacity needs
2. Kingsville-Leamington security needs
3. Lauzon TS Station Capacity
4. Belle River Station Capacity

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Option Categories

Option Type	Description
Wires	Traditional transmission assets such as switching stations, transformer stations, or transmission lines; may also include protection schemes and control and operational actions such as load rejection
Non-wires	Local load modifying solutions such as distributed energy resources (including distributed generation/storage and demand response) or energy efficiency measures - and/or - Large utility-scale generation facilities located to alleviate a local reliability need

- Past IRRPs have identified potential non-wires options after assessing hourly forecasts and characteristics of the need (magnitude, duration, frequency)
- Technology type and sizing of non-wires options are based on capacity and energy requirements; a high-level cost estimate can then inform whether more detailed analysis is required

Local Developments & Considerations - Resources

- Ontario is procuring new generation and storage through a competitive process:
  - As directed by the Minister of Energy, these procurements will acquire the 4,000 MW of capacity, including at least 2,500 MW of energy storage resources, up to 1,500 MW of natural gas
  - The IESO is competitively securing 1,500 MW and 300 MW of capacity through the "Expedited Process" (E-LT1 RFP) and Same Technology Upgrade Solicitation respectively.
  - An additional 2,200 MW to be procured from Long-Term Request for Proposals (LT1 RFP).
- IESO procurements identified the region as a preferred location
  - Lakeshore Council supported four local battery energy storage proposals
  - Windsor Council voted to establish Windsor as a willing host for energy projects to prepare for future economic investments
  - Leamington Council passed a motion of support of the development, construction and operation of Long-Term proposals
  - Kingsville Council unanimously voted to support a battery energy storage proposal

Local Developments & Considerations – Economic Growth

- Local agricultural development
  - Continued agricultural growth in Kingsville-Leamington, however pace changed since last cycle
    - Economic conditions and water moratorium may have put a hold on some expansions and light installation
    - Potential for new commodities such as greens and berries
  - Lakeshore developing Official Plan and Zoning By-law amendments impacting greenhouse development
- Local industrial economic development
  - Windsor NextStar (LG-Stellantis) battery plant scheduled to start ramping up in 2024
  - Invest WindsorEssex developing economic strategy for the city's growth

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Local Developments & Considerations – Local Plans

- City of Windsor's community energy plan targets a 40% greenhouse gas reduction from the 2014 baseline by 2041. City also requested an interim cap on emissions from power plants, and a plan to phase-out gas generation by 2030
  - Community Energy Plan and Climate Change Action Plan are being updated
- Essex County's Regional Energy Plan established strategic directions to be advanced through initiatives, including a Retrofit Entity and Greenhouse Growers Energy Services Co-operative
- Municipality of Lakeshore Energy Management Plan update is underway

Local Developments & Considerations – Load Scenarios

- The IESO published the Pathways to Decarbonization report in Dec 2022, which the government of Ontario is actively consulting on, and may inform the IESO's approach to this regional plan.
- The Working Group will engage with local municipalities, the greenhouse sector, other community representatives on the impacts of potential economic development, energy/climate change action plans and other local planning initiatives on the demand forecast.
  - Outcomes of these discussions seek to inform considerations for potential demand forecast scenarios to be contemplated.

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Draft Scoping Assessment Considerations

When determining the planning approach for needs requiring coordination, consideration was given to whether these needs:

- Have the potential to be addressed by non-wires solutions
- Could be impacted by varying bulk systems flows
- Could potentially be addressed in an integrated manner
- Impact multiple LDCs in the sub-region
- Would require engagement and coordination with community-level energy planning activities

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Draft Scoping Assessment Recommendations

An Integrated Regional Resource Plan is recommended due to:

- Forecast uncertainties of economic development, greenhouse growth and local energy plans and impact on forecast scenarios,
- Potential linkages between needs and their required coordination,
- The opportunity for public engagement,
- The potential for exploring multiple types of options to meet the needs (including non-wires alternatives)
- The potential for regional changes having implications on the upstream bulk power system

Next Steps

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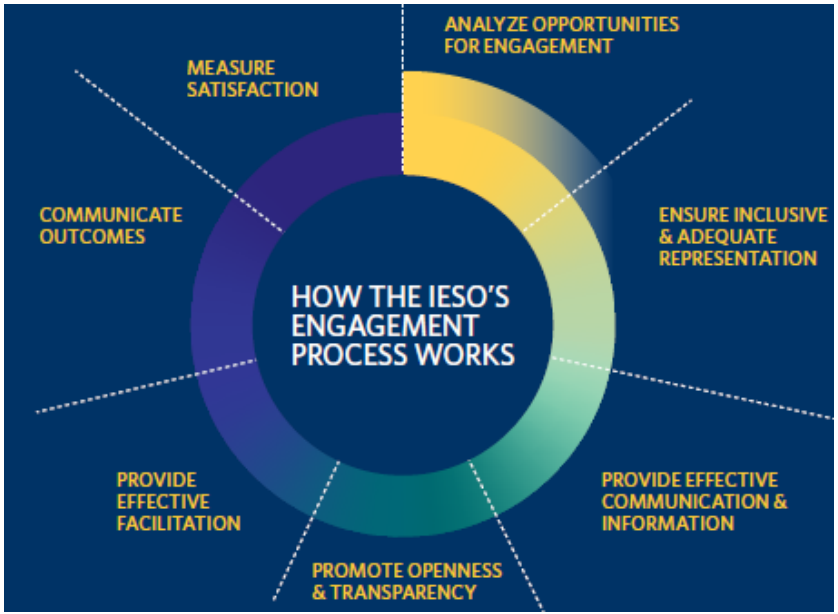
Regional and Community Engagement

- Broaden community engagement efforts
- Increase communication channels
- Enhance engagement process for regional planning



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Who Should Participate?

- Municipalities
- Indigenous communities
- Chambers of Commerce/Boards of Trade
- Large energy users
- Community groups and associations (e.g., resident associations, Business Improvement Areas, home builders' associations, etc.)
- Academia and research organizations
- Energy service providers

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Future Engagement Opportunities

- Further opportunities for engagement may include seeking input on the following major components of the IRRP:
  - Identifying needs
  - Considering options
  - Proposed recommendations

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Information and Data to Enable Participation

- More detail about the proposed schedule and engagement objectives will be communicated through an engagement plan to be published early in the IRRP's development

- To help communities and stakeholders to develop informed feedback, the IESO will communicate the types of information and data that will be made available at various points of the IRRP

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Seeking Input

Some key questions to consider when reviewing the Scoping Assessment:

- What additional information should be taken into account in determining the planning approach that will be taken moving forward?
- What considerations should be made for the areas of identified needs to be addressed in the region?
- What other areas or issues should be examined through regional planning?

Please submit your written comments by email to engagement@ieso.ca by **May 3**

Next Steps

- Feedback due to engagement@ieso.ca by **May 3**
- IESO to post and respond to feedback, as well as the final Scoping Assessment by **May 17**
- Further engagement to follow

How You Can Stay Involved:

- Subscribe to receive updates on the Windsor-Essex regional initiatives on the IESO website http://www.ieso.ca/subscribe
- Follow the Windsor-Essex regional planning activities online at https://www.ieso.ca/en/Get-Involved/Regional-Planning/Southwest-Ontario/Windsor-Essex
- Dedicated engagement webpage https://www.ieso.ca/en/Sector-Participants/Engagement-Initiatives/Engagements/Regional-Electricity-Planning-Windsor-Essex
- Comments and questions on the draft Scoping Assessment Outcome Report can be submitted to engagement@ieso.ca by **May 3**

Questions?

Do you have any questions for clarification on the material presented today?

Submit questions via the web portal on the webinar window, or by email to engagement@ieso.ca

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Thank You

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