Electricity Planning in the West of London Area

Responses to feedback received

The IESO hosted a public webinar on July 15, 2021 to provide an update on the bulk electricity planning study underway for the broader area west of London and the regional study focused on Kingsville-Leamington. Feedback was sought on the options evaluated and recommended solutions to finalize the West of London Bulk Plan and Windsor-Essex Integrated Regional Resource Plan (IRRP) Addendum, two electricity planning initiatives underway in the West of London area. The presentation material and recorded webinar are available on the engagement webpage.

This document summarizes feedback received under the following key themes:

- West of London Bulk Plan Recommendations
- Windsor-Essex IRRP Addendum Recommendations
- Non-wires Alternatives
- Implementation of Recommendations
- Open Access to Data
- Engagement
- Other Considerations

Feedback received is in response to the West of London Bulk Study and Windsor-Essex Integrated Regional Resource Plan (IRRP) Addendum, and in some cases intersects both initiatives, as indicated in this document. The IESO appreciates all of the input, which will be considered as the recommended solutions to meet the future electricity needs of the West of London area are finalized.

Feedback was received from the following parties and posted on the engagement webpage:

- Capital Power
- County of Elgin
- Energy Storage Canada
- Enwin Utilities
- Heliene Inc.
- Hydro One
- South Essex Fabricating
- Sundara Energy

Theme 1 – West of London Bulk Plan Recommendations

1. Feedback provider(s): South Essex Fabricating and Hydro One Networks Inc.

Feedback: Strong support for the 500 kV line option to provide flexibility and accommodate future growth.

IESO response: Thank you for your feedback.

2. Feedback provider(s): South Essex Fabricating and Energy Storage Canada (ESC)

Feedback: Extending the Brighton Beach contract is not supported. IESO should provide cost comparison with other resources and transparency regarding Brighton Beach production costs, including the costs of destroying the heat should be provided.

IESO response: The near-term need is immediate and is large in magnitude due to the ongoing and forecast load connections in the area. While the same economic assumptions were used to evaluate alternatives to address the near-, mid-, and long-term needs, the lead time would significantly limit potential cost-effective options available to address the near-term need in 2024-2027 (i.e. insufficient time for large transmission reinforcement or for initiating a competitive procurement). In addition, the initial magnitude of the need when it emerges, and impacts of forecast growth in the area, limits the pool of technically feasible options, even if lead time were not an issue. Reacquiring existing resources with expiring contracts presents a cost-effective and least risk solution to ensuring the area's existing and growing needs are met until the mid-term recommendations are in place.

Brighton Beach Generating Station represents the only supplier in the local area with requisite scale to address this immediate need to support the growing loads in the Focus Area. This is an existing facility supporting the area's needs today, which will come to the end of its contract in 2024, but has been identified as being needed to ensure the reliability of the area as an interim solution to address the near-term needs.

3. Feedback provider: Hydro One Networks Inc.

Feedback: The use of a single 500 kV circuit will pose substantial challenges not only to operations and maintenance flexibility, but negatively impacting the reliability and security of supply to customers. IESO should undertake further assessments on the benefits of a double-circuit 500 kV line.

IESO response: A double-circuit 500 kV line would not provide any additional supply capacity to the area (according to Ontario's planning standards installing a second circuit on the same tower does not count as additional supply; to increase supply the second circuit would have to be on a separate tower), and would fully utilise the capability of the Lakeshore Transformer Station (TS) to accommodate 500 kV circuits, thus closing off the option for an additional single 500 kV circuit, if needed to continue to supply the area beyond the reference forecast, without significant expansion of Lakeshore TS. The IESO recognises a double-circuit 500 kV line could provide additional flexibility

in taking 500 kV circuits out of service for maintenance. However, IESO studies indicate that there will be sufficient flexibility to take the 500 kV circuit (or other circuits in the area) out of service if needed. Having said this, the IESO will continue to monitor load growth and work with HONI prior to the EA process to confirm the best solution. There is potential value from a land-use and operability standpoint to build the single circuit on towers that could accommodate two circuits in the future under a scenario where load levels remain relatively stable post 2035, or alternatively, could help address a scenario where load grows beyond the level that two single circuit 500 kV lines could accommodate. The IESO will continue to monitor the load growth, progress of developments toward plan deliverables, conservation measures, and pace of new connections in the Focus Area and the WOL area as a whole to ensure that the most prudent set of recommendations is maintained.

4. Feedback provider: ENWIN Utilities Ltd.

Feedback: The greenhouse load is not as critical as other conventional loads. Most greenhouse customers have their own generation and the actual lighting load would exist only for short periods. It is suggested to consider what savings could be realized in the design if criticality of the incremental loads were taken into account.

IESO response: The IESO holds that the transmission system should be planned to accommodate all load connections with the same level of reliability specified by Ontario Resource and Transmission Assessment Criteria (ORTAC). Reinforcements are required to allow new customer connections in the West of London area while maintaining reliability to already-existing loads. Greenhouse customers may choose to pursue other strategies, such as investing in their own generation or modifying lighting operations, as part of their participation in other mechanisms (i.e., the capacity auction, demand response auction, or the Industrial Conservation Initiative program), if eligible.

5. Feedback provider: ENWIN Utilities Ltd.

Feedback: Clarification requested if estimated greenhouse load only exists for short periods and there is flexibility to move load, whether the infrastructure build be reduced through the use of imports and existing generation.

IESO response: Stakeholder feedback, as well as some historical load data, have indicated that greenhouse electricity demand (particularly in the winter) persists at high levels and for multiple hours to compensate for lower solar insolation. Further sample load profile information will be published with the West of London Bulk Study report.

Note that there is currently no firm import agreement for the Ontario-Michigan interconnection. Moreover, flow on the interconnection is scheduled as a whole – imports cannot be directed to flow only onto the Windsor-Detroit tie as opposed to the Sarnia-Port Huron ties. In addition, the Midcontinent Independent System Operator's 2020 Planning Resource Auction for the Michigan zone cleared at the cost of new entry of $250/MW-day. While this constraint was not reflected in the 2021 auction, it indicates that there may be limited resources that would subsequently be available to provide imports from Michigan to Ontario to meet Ontario provincial or local supply needs.

The contribution from existing generation is already accounted for in the study results, with different assumptions considered as resources' contracts expire, in order to fully appreciate the impact these resource have on addressing the area's needs.

6. Feedback provider: ENWIN Utilities Ltd.

Feedback: If the 500 kV option is selected, the Lakeshore switching station may need additional interface transformers.

IESO response: When evaluating the technical feasibility and costs of the 500 kV option, station upgrades (i.e., new 500 kV/230 kV autotransformers, breakers, disconnects) were considered.

7. Feedback provider: ENWIN Utilities Ltd.

Feedback: The incremental cost for 500 kV line is $200-250M. It should be noted that the area needs an additional capacity of 1,100 MW (2030-2035), which might justify the incremental cost.

IESO response: Thank you for your feedback. Cost-effectiveness and ratepayer value are priorities for the IESO's recommendation, alongside other factors such as flexibility to accommodate long-term needs, land-use, resiliency, and community preferences. It should be noted that all long-term options considered will enable the same amount of additional capacity (1,100 MW), but the 500 kV line will preserve options to accommodate future growth if load increased beyond the reference forecast.

8. Feedback provider(s): Energy Storage Canada (ESC) and Capital Power

Feedback: The criteria by which the IESO determines what term of commitment to use when assessing costs is unclear. The methodology uses a 70-year period which unfairly and inappropriately ensures that a wires solution is selected and should be eliminated. The long-time frame is not used in any other IESO planning assessment including resource adequacy, regional planning, and ancillary service needs. Request for the IESO to identify its framework for assessing costs/benefits of competing solutions and the analysis undertaken. Without a proper assessment framework and further access to data on the analysis of options, the difference between a 230 kV line and 500 kV line cannot be appropriately considered.

IESO response: Net Present Value (NPV) calculations account for the time value of money. In order to perform an apples-to-apples comparison of costs for alternatives considered, the expected useful life is factored into the assessment to ensure options are evaluated for the same period of time. The life of the station upgrades was assumed to be 45 years; the life of the line was assumed to be 70 years; and the life of the simple cycle gas turbine (SCGT) generation and storage assets was assumed to be 30 years and 10 years respectively. Since a transmission line has the longest life, that was chosen for this assessment. For the other alternatives a like-for-like replacement was assumed at the end of life of the asset (e.g. storage asset was replaced like for like after 10 years) to ensure the evaluation is conducted on a similar basis and the full value of all alternatives is capture. If a 30-year period was assumed (the life a SCGT), the transmission costs would be allocated over a shorter period of time, but the benefit would persist for an additional 40 years, artificially increasing the NPV

and not accounting for the full value of the transmission alternative. Further information on the economic assessment will be provided in the bulk report.

Theme 2 – Windsor-Essex IRRP Addendum Recommendations

9. Feedback provider: South Essex Fabricating

Feedback: Strong support for the Leamington TS and South Middle Road upgrades and should be included in all future plans. The growth in the Southwest is being driven by greenhouse growth in the Leamington/Kingsville area so capital investment should be focused in the areas where the need is greatest.

IESO response: Thank you for your feedback. New load supply stations and connection lines are generally recommended based on where the new customers and capacity are required. In this case, the majority of the greenhouse expansions continue to be concentrated in the Kingsville and Leamington areas. Transmission reinforcements here will allow new customer connections while maintaining reliability to the rest of the region.

10. Feedback provider: ENWIN Utilities Ltd.

Feedback: Information requested on whether the IESO considered the upgrade of the 115 kV J3E & J4E circuit conductors to mitigate overloading under contingency situations in response to the Windsor area generation issue. It is unclear whether the total Windsor area generating capacity was taken into consideration.

IESO response: Consistent with the 2019 Windsor-Essex IRRP assumptions, median historical active power generation during historical peak hours is modelled for the total generating capacity currently in the Windsor area. However, given the thermal constraints that limit load meeting capability of the JxE sub-system, sensitivities will be conducted to reaffirm the need under different generation scenarios. The IESO agrees that upgrading of the JxE circuits is a potential option to be evaluated before further recommendations (such as a new 230 kV double-circuit line from Keith TS to Lakeshore TS) are triggered.

11. Feedback provider: Heliene Inc.

Feedback: The Windsor-Essex IRRP Addendum should undertake a deeper evaluation of behind-the-meter (BTM) generation and energy efficiency to better understand their potential to reduce load growth and meet system needs at equivalent costs.

IESO response: The IESO recognizes that given the magnitude and urgency of capacity needs in the Windsor-Essex region, multiple resource types can play a role in managing the load growth and complement the transmission wires reinforcements required. The 2019 Windsor-Essex IRRP forecast included over 40 MW of future peak demand savings from energy efficiency, using assumptions associated with building codes and equipment standards impacts, plus program delivery. Additionally, over 30 MW of peak demand contribution from contracted distributed generation was incorporated

into the forecast – mostly attributed to combined heat and power facilities at Kingsville TS and Leamington DESN 1.

The IESO is aware that energy efficiency measures (i.e., growers opting for LEDs over high pressure sodium lamps or implementing novel and more efficient lighting strategies) can continue to lower the overall load connection queue. Therefore, the response to past and ongoing energy efficiency incentives, plus overall sector trends, will continue to be monitored against the forecast needs in the region, especially for the long-term.

For the IRRP addendum capacity needs, securing over 400 MW of energy efficiency savings and distributed generation would be technically infeasible and/or cost-prohibitive. For example, the amount of new distributed generation that can be connected to transformer stations in the area is subject to thermal and short circuit limitations and is less than the amount of new capacity required. Load supply stations in the Kingsville and Leamington area, as well as connection lines, are necessary to accommodate customers currently waiting for a grid connection. However, there may be an opportunity to explore how dispatchable non-wires alternatives can help meet the regional restoration needs. The wires option of a new transmission line between Leamington TS and the new stations in the Kingsville area would provide approximately 300 MW of restoration capability to the Leamington tap (as well as the new stations in the Kingsville area, once in-service) – a cost-effective solution enough to meet the 30-minute and some of the 4-hour restoration requirements post-contingency. Distributed energy resources, if dispatchable post-contingency under islanding operations and if serving loads at stations in the Kingsville and Leamington area, could be explored by the distributor or customer as options to help meet the remainder of the restoration requirement.

Theme 3 – Non-Wires Alternatives

12. Feedback provider: South Essex Fabricating, Heliene Inc. and Sundara Energy

- Feedback related to: West of London Bulk Study and Windsor-Essex IRRP Addendum

Feedback: Increase focus on local generation and in-particular behind the meter (BTM) resources that may be able to offer electricity services at rates equivalent to other options.

Proceeding with a 500 kV line will require that the IESO consider local generation in addition to the 500 kV line. It is important that IESO support local generation options in the short term given the capacity and supply gap that currently exists in the Southwest region.

Option for gas fired CHP are essential – particularly as hydrogen replaces natural gas as primary fuel source. These assets will become stranded as grid space becomes available. New technology should also be encouraged and considered – greenhouse PV solar/storage would be a fantastic candidate for IESO Grid Fund consideration towards widespread integration.

IESO response: The IESO submits that the most effective solution to the long-term capacity needs in the West of London area includes both new transmission between Lakeshore and London, and

550 MW of new or reacquired local resources. The IESO agrees that different resource technologies can play a role in meeting the needs in the area alongside transmission reinforcements. Novel projects can improve understanding of how different resource types can be leveraged to meet needs (i.e., for load displacement or for restoration/back-up power). Lessons learned from the ongoing indoor agriculture projects selected by the Grid Innovation Fund will be incorporated into future planning activities. Building upon the learnings from the Grid Innovation Fund, the IESO would consider the resource options suggested in the feedback to meet the 550 MW resource need identified.

Note that all existing contracted local generation is accounted for in the needs identified in both the West of London bulk study and IRRP addendum. The IESO does not expect these resources to be stranded when transmission reinforcements are in-service. No assumptions are made regarding customers relying on already-existing behind-the-meter generation and whether they would be seeking to meet their load requirements with a grid connection instead – if this is the case, it would be expected that the customer requested a load connection with the distributor and would be included in the overall queue information.

13. Feedback provider: South Essex Fabricating

- Feedback related to: West of London Bulk Study and Windsor-Essex IRRP Addendum

Feedback: The IESO should explore alternatives such as developing a distributed generation plan, other resource alternatives and participation/partnership models that leverage local greenhouse suppliers that will have the ability to utilize heat and CO2.

IESO response: The IESO has been made aware that distribution generation plans, and different resource technologies and participation models may play a role in meeting the capacity and energy needs in the West of London area. The feasibility of non-wires alternatives for load management in the indoor agriculture sector is also still being explored for regional needs.

Incentives for the installation of LED lighting in greenhouses have been developed and are now available, as well projects funded through the Grid Innovation Fund are currently underway.

In addition, the IESO Grid Innovation Fund and the Ontario Energy Board Innovation Sandbox will hold a joint, targeted call later this year for submissions to support research and demonstration projects that have the potential to provide value to consumers and the grid, with a particular interest in innovative proposals that would test the capabilities of Distributed Energy Resources in providing services at both the local and provincial level.

The IESO also has a separate engagement initiative, the Enabling Resources Program, that will identify a plan to enable electricity resources to provide services more efficiently to the wholesale market that they cannot currently provide.

These initiatives will enable different types of resources to help meet the 550 MW resource need identified in the area.

14. Feedback provider: ENWIN Utilities Ltd.

- Feedback related to: West of London Bulk Study

Feedback: Clarification requested on how DERs were considered to meet needs. The IESO should consider the use of DERs for capacity planning. Greenhouse projects are associated with CHP generation, and the actual electrical load to the transmission infrastructure may not be as estimated today. It is critical to consider DERs and their required reliability level to proper evaluate the effective upgrade requirements of the upstream infrastructure.
IESO response: The IESO agrees that the contribution of DERs can lower the magnitude of the capacity need. All known contracted distribution-connected resources at the time of this study are accounted for in the planning forecast; a peak contribution factor (based on technology type and season) is applied to total installed capacity, consistent with the 2019 Windsor-Essex IRRP. Separately, transmission-connected resources are modelled at the bus level in power flow assessments when deriving bulk transmission interface limits.

Theme 4 – Implementation of Recommendations

15. Feedback provider: County of Elgin

- Feedback related to: West of London Bulk Study

Feedback: Solutions should be cognizant of municipal policies. The policies of the County of Elgin Official Plan permit public service facilities and infrastructure in all land use designations, subject to any regulatory requirements such as the provisions of the Environmental Assessment Act. Where companies subject to federal or provincial control propose new utility installations, it is the policy of the Plan to encourage where feasible and appropriate:

a) the screening of antennas and towers from view from roads or scenic vistas through landscaping, fencing or other architectural screening;
b) the use of innovative design measures such as the integration of such uses with existing buildings and/or streetscape features such as gateways, lamp posts and signs;
c) the co-location clustering of different utilities to minimize impacts;
d) the use of existing infrastructure where possible such as water towers or utility poles; and,
e) the siting of utilities away from sensitive land uses.
f) Please note any future infrastructure changes and installations within the County of Elgin road allowance will require road occupancy permits.

IESO response: As described in slide 13 of the July 15, 2021 webinar, the bulk and regional transmission planning process are led by the IESO, while the transmission development work is led by the applicable transmitter. The IESO agrees that community preferences and local policies should be considered during options development and comparison. To ensure that the bulk plan reflects the needs of municipalities, Indigenous communities, community members and interested stakeholders, the IESO conducted targeted outreach, public webinars, and regular communication via email and the IESO engagement webpage. These discussions were instrumental in garnering feedback about

economic developments, alignment and coordination potential with other community planning, local developments and growth plans, as well as land use impacts. The IESO looks forward to continuing this communication pathway for future transmission planning in the area. In moving from a bulk reinforcement recommendation to project development, any such project will be subject to further transmission development work after the planning stage. For instance, a transmitter would have to seek the appropriate environmental approvals, such as an Environment Assessment. During the transmission development work including the Environmental Assessment and Leave to Construct processes, Indigenous communities, community members and interested stakeholders will be consulted further. Considerations include environmental effects, Aboriginal and treaty rights, construction and operation, health concerns, property value, detailed facility design, and routing.

16. Feedback provider: South Essex Fabricating

- Feedback related to: West of London Bulk Study

Feedback: Any expediting of timelines relating to power lines is encouraged as well supporting local energy generation to meet immediate supply and capacity needs. Supporting local (greenhouse) generation is critical to the economic development of the as area and ensuring we maintain Ontario's food security.

IESO response: Thank you for your feedback. For the past few years, the IESO has continuously planned for this region with stakeholder support and made recommendations for reinforcements due to the urgency and magnitude of these supply needs. Transmission reinforcements, once recommended, are subject to development work and timelines separate from the IESO-led regional and bulk planning activities.

17. Feedback provider(s): South Essex Fabricating and Energy Storage Canada (ESC)

- Feedback related to: West of London Bulk Study

Feedback: We encourage the IESO to proceed with the RFP process at the earliest opportunity and explore various partnership models. Develop programs/RFPs that focus on local generation to fill the gap between 2021 and 2030.

Formal requests for information (RFIs) or two stage RFPs can be used to receive pricing for potential solutions. Without a clear procurement mechanisms and compensation framework the IESO will not be able to properly assess alternative solutions to rate-regulated assets.

IESO response: The IESO remains committed to transitioning to the long-term use of competitive resource acquisition mechanisms to meet Ontario's reliability needs and has developed a Resource Adequacy Framework that outlines multiple mechanisms to address reliability needs, including competitive procurements where feasible. Details of the resource need, energy profile, locational considerations, and other requirements will be outlined in the West of London bulk plan, and planned actions used to secure reliability needs will be discussed in the Annual Acquisition Report.

18. Feedback provider: Heliene Inc.

- Feedback related to: West of London Bulk Study and Windsor-Essex IRRP Addendum

Feedback: Provide location and value signals and reduce barriers to selling energy services to the grid for load customers that integrate energy efficiency and generation resources into their facilities and operations including:

- Providing clarity as to where, when and how much capacity, energy and other services are required by the local system and what it is worth
- Ensuring sufficient connection capacity for generation at stations and on feeders connecting customers to the grid
  Creating continuous intake mechanisms (local markets, procurements, or programs) that signal the need for services and enable customers to sell electricity services to the grid with minimal transaction cost on an ongoing basis. Mechanisms with continuous intake are necessary as investment timing decisions of operators often don't align with IESO procurements.

IESO response: Detailed information regarding the timing and location of bulk supply needs will be included in the West of London bulk plan and corresponding datasets provided. There are potential short circuit limitations at Leamington TS and Lakeshore TS which limit the amount of resources that can be added in the Leamington area, which will require additional reactive devices and balancing of distribution resources and load to resolve and allow generation to continue to connect. For comprehensive information on system capacity and energy needs, consider the IESO's Annual Planning Outlook; for the acquisition targets and mechanisms to secure needs identified in the Annual Planning Outlook and both bulk and regional plans, refer to the Annual Acquisition Report. These WOL and system needs will be addressed using the Resource Adequacy Framework, which the IESO has worked with stakeholders to develop a suite of mechanisms to acquire a portfolio of reliable, competitive and cost-effective supply. Furthermore, the IESO's Market Renewal Program will provide more transparent price signals (e.g., locational marginal prices reflecting transmission congestion) that can help drive market activities to the area.

19. Feedback provider: Heliene Inc.

- Feedback related to: West of London Bulk Study and Windsor-Essex IRRP Addendum

Feedback: The IESO's capacity market and proposed RFP processes for local generation resources may be insufficient to attract small and medium sized BTM or facility integrated generation and efficiency projects. Continuous intake mechanisms such as local markets, procurements, or programs, should be created by the IESO or distributors (or both) that will provide a clear signal of the value and need for additional electricity services at the time that greenhouse operators are considering and committing to new build, expansion or refurb projects.

IESO response: Please refer to the IESO's Resource Adequacy Engagement to provide feedback on the transition to competitive mechanisms for provincial resource adequacy needs. There is also the Enabling Resources Program – an initiative underway to outline how electricity resources can provide services that they cannot provide under the current market design.

In addition, the IESO Grid Innovation Fund and the Ontario Energy Board (OEB) Innovation Sandbox will hold a joint, targeted call later this year for innovative proposals that would test the capabilities of Distributed Energy Resources in providing services at both the local and provincial level.

20. Feedback provider: ENWIN Utilities Ltd.

- Feedback related to: West of London Bulk Study and Windsor-Essex IRRP Addendum

Feedback: The concentration of transmission lines at the Sandwich hub creates a single point of weakness with great consequence should that site be subjected to something such as a tornado or other catastrophe.

IESO response: When evaluating needs and the benefits of different options, planning criteria are respected for all credible contingencies, per ORTAC. Transmission lines at the Sandwich hub will be defined as a Bulk Power System element – as per the Northeast Power Coordinating Council's (NPCC) definition of a system element on which a disturbance can have a significant adverse impact outside the local area – and as such will be subject to the specific requirements applicable to the design, operation, and protection of such elements.

Though utilization of existing transmission corridors is preferred when possible for new transmission lines, system resiliency is maintained through adherence to applicable standards and through a diversity of solution types, such as transmission, generation, energy efficiency, and demonstration projects, as well as giving proper consideration to other assumptions such as intertie capabilities and the long-term location of resources.

21. Feedback provider: ENWIN Utilities Ltd.

- Feedback related to: West of London Bulk Study and Windsor-Essex IRRP Addendum

Feedback: Information requested on the current plan for the cost recovery of the proposed transmission investment.

IESO response: Depending on the type and classification of assets, the costs may be shared by all provincial ratepayers (as with the case for assets that provide a broader value such as bulk transmission reinforcements) or recovered only by the specific customers they serve (e.g., load supply stations solely providing connection facilities to new customers). In some cases, a combination of cost-sharing may occur when there are both provincial and local benefits. Cost allocation and recovery for transmission investments will be decided by the OEB. The OEB will look to ensure that costs are just and reasonable before approving construction.

Theme 5 – Open Access to Data

22. Feedback provider(s): South Essex Fabricating, Energy Storage Canada (ESC) and Capital Power

- Feedback related to: West of London Bulk Study and Windsor-Essex IRRP Addendum

Feedback: Proposed data sets are supported. The IESO is urged to be transparent with their findings and provide cost comparisons based on resources and the various options being considered. The IESO must publish this information prior to public engagement sessions and it must be in a functional and accessible format. Working sheets should also be published for stakeholders to understand the exact logic, assumptions, and conclusions reached. This information should be provided to all stakeholders prior to soliciting feedback on the proposed solution.

IESO response: The IESO agrees that information-sharing can help stakeholders provide feedback and understand planning decisions. Support for these shared data sets and their accessible format will be considered for future regional and bulk plans.

23. Feedback provider: Heliene Inc.

- Feedback related to: Windsor-Essex IRRP Addendum

Feedback: Stakeholders require additional and more detailed information regarding system needs, timing and location in order to provide the best information to the IESO to undertake analysis to better understand the barriers that exist for small and medium sized BTM generation to participate in existing and proposed resource acquisition vehicles/mechanisms.

IESO response: Detailed information regarding the timing and location of the regional capacity and restoration needs will be included in the IRRP addendum report. For comprehensive information on system capacity and energy needs, consider the IESO's Annual Planning Outlook; for the acquisition targets and mechanisms to secure needs identified in the Annual Planning Outlook and both bulk and regional plans, refer to the Annual Acquisition Report. The IESO also has a separate engagement initiative, the Enabling Resources Program, that will identify a plan to enable electricity resources, such as distributed generation, to provide services to the wholesale market that they cannot currently provide.

24. Feedback provider(s): Energy Storage Canada (ESC) and Capital Power

- Feedback related to: West of London Bulk Study

Feedback: The IESO has not provided analysis that shows details of the system needs (e.g. what circuits and load stations would help address the system need, duration, peak capacity need, seasonal). Without further details it is difficult to determine the appropriateness of the preferred wires option or justify development investments. More information from the IESO is required in order for stakeholders to provide constructive and informed feedback to the IESO – feedback relating both to the prudency of the preferred option and the IESO's process for determining the universe of options available and associated costing.

IESO response: Detailed information regarding the limiting phenomena and characterisation of the system needs (including the duration, peak capacity need, annual energy need, and locational and seasonal considerations) will be included in the West of London Bulk Study. The IESO recognizes that providing open and transparent access to information is critical to enable opportunities for purposeful engagement to contribute to electricity planning initiatives. The IESO is currently developing a formalized process for bulk system planning to enhance transparency and opportunities for stakeholder input, and will consider this feedback in the design of that process including with respect to the timing of when data should be provided.

Theme 6 – Engagement

25. Feedback provider(s): Energy Storage Canada (ESC) and Capital Power

- Feedback related to: West of London Bulk Study and Windsor-Essex IRRP Addendum

Feedback: The IESO has completed limited engagement with third parties to investigate potential solutions or determine pricing of solution options. Information requested on how the IESO engaged generators and other competitive service providers during its assessment process. It is not clear what generation options were considered, nor is it clear the extent to which incumbent and existing generators were engaged for the purpose of identifying competitive solutions. The IESO should engage third-parties directly to develop potential solutions and prepare indicative pricing. Frameworks for measuring the economic benefit of various generation/transmission options should consider whether the resource will be capable of meeting local and bulk system needs, and benefit should be assigned to resources that can provide dual benefit.

IESO response: The IESO agrees that engagement is a key activity to support planning options development and recommendations. Throughout the development of the 2019 Windsor-Essex IRRP and Bulk Study, as well as the West of London Bulk Study and IRRP Addendum, the IESO has met with various stakeholders through multiple outreach and engagement avenues. These include:

- Local distributors and transmitter as part of the Technical Working Group
- Local growers and other service providers (i.e., gas utility) as part of the Kingsville-Leamington Local Advisory Committee
- Public webinars, including opportunities for written submitted feedback
- Targeted outreach meetings with local Indigenous communities, municipalities, service providers, and other third party representatives

Cost assumptions to support the economic analysis were informed not only by transmission cost inputs from the lead transmitter in the area and past cost estimates from Leave to Construct application evidence, but also overnight capital costs[1] for different resource types (such as a simple cycle gas turbine and an energy storage facility) from previous studies conducted independently for

[1] Overnight capital cost is the cost of constructing a project as if it were performed the same day (i.e. does not include interest incurred from financing during the construction period).

the IESO or CEATI members, which are in line with other publically available sources (e.g., Lazard's levelized costs). The economic assessment also considers an option of generation production costs, carbon costs, and other values, such as potential system capacity contribution.

26. Feedback provider: Sundara Energy

- Feedback related to: West of London Bulk Study

Feedback: Ensure that all alternative competing energy sectors are heard and have an opportunity to be part of the regional planning process and optimal solution.

IESO response: The IESO continues to be committed to engaging stakeholders and providing opportunities for feedback as part of the regional and bulk planning processes. Stakeholders are encouraged to stay connected by joining the IESO's Southwest Regional Electricity Network, which will continue to provide updates and engagement opportunities between planning cycles.

Theme 7 – Other Considerations

27. Feedback provider: ENWIN Utilities Ltd.

- Feedback related to: West of London Bulk Study and Windsor-Essex IRRP Addendum

Feedback: Clarification requested on whether the IESO planning to consider a separate rate class for greenhouse customers to recover the investment due to the localized need. The overall 115/230 & 500 kV system upgrade is primarily due to the Leamington & Kingsville areas greenhouse load growth.

IESO response: Customer rates are out of scope of the IESO's planning accountability. Cost responsibility for transmission investments will be decided by the OEB.

28. Feedback provider: ENWIN Utilities Ltd.

- Feedback related to: West of London Bulk Study and Windsor-Essex IRRP Addendum

Feedback: There have been several inquiries regarding the possibility of relatively large loads that would also require additional investments in the Windsor-Essex area.

IESO response: The West of London bulk study and IRRP addendum have included all known firm load requests (i.e., a System Impact Assessment application has been submitted and/or the customer has specified a connection from the distributer) in the reference forecast. The IESO continues to monitor the area for other large load customers, including recent media articles in EV production and research in the Windsor-Essex region for example, and would encourage stakeholders to provide additional information when confirmed.

29. Feedback provider: ENWIN Utilities Ltd.

- Feedback related to: West of London Bulk Study

Feedback: Clarification requested on whether the IESO has considered using local generation capacity to mitigate some of the power flow limitations. The Windsor area has a relatively large installed generation capacity and some community resistance concerning air quality and sound pollution in the past has been observed.

IESO response: The IESO considered output from the nearly 5,000 MW of installed generation capacity west of London – of which approximately 1,900 MW is located in the Windsor-Essex and Chatham-Kent areas – when conducting power flow assessments to determine transmission interface limits, as well as when identifying overall capacity and energy needs. The IESO is also aware of local preferences regarding generation technologies, such as the City of Windsor's request to the Ontario government to phase-out all gas-fired generation by 2030.

30. Feedback provider: Sundara Energy

Feedback: Several countries abroad have local energy markets that work – there must be synergy and lessons that can be adapted within our market. The support of government policy is essential in making that transition.

IESO response: Thank you for your feedback. The IESO agrees that lessons learned from other jurisdictions can help inform changes in Ontario's electricity system. For instance, the IESO commissioned a jurisdictional scan to support the Regional Planning Process Review and to better understand planning processes in other jurisdictions. The IESO's Innovation Roadmap also includes various initiatives to explore potential changes to the electricity market, including the Innovation and Sector Evolution White Paper Series.

31. Feedback provider: Sundara Energy

- Feedback related to: West of London Bulk Study

Feedback: Climate policies are key considerations due to the increasing importance of carbon boarder taxation adjustments.

IESO response: The IESO continues to monitor the potential impact of climate policies on the needs and solutions in the West of London area. For instance, proposed changes in federal carbon pricing are modelled and support the recommendation that a combination of transmission and incremental generation, such as energy storage, is the most cost-effective solution. The IESO is also aware of local climate targets (such as from the County of Essex, City of Windsor, and Chatham-Kent), and will capture their impacts in future regional electricity plans, if applicable. These impacts may materialize in updated load forecasts or as new energy projects that must be included in power flow assessments.