SEPTEMBER 22, 2025

# GTA North Regional Electricity Planning

# Webinar #3
# Detailed Options Analysis and Draft Recommendations

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# Territory Acknowledgement

The IESO acknowledges that the GTA North (York Region) is the traditional territory of many nations including the Mississaugas of the Credit, the Anishnabeg, the Haudenosaunee and the Wendat peoples, including those covered by the Williams Treaties.

The IESO would also like to acknowledge all First Nations, Inuit and Métis peoples and their valuable past and present contributions to this land.

# Agenda

1. Ontario's Electricity Sector and IESO's Role
2. Recap: Regional Electricity Planning Process, the Demand Forecast, Electricity Needs & Option Screening
3. Options Analysis and Draft Recommendations
4. Electricity Demand-Side Management Framework and Opportunities
5. Considerations and Linkages
6. Next Steps and Discussion

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**Generators** >>> **Transmitters** >>> **Local Distribution Companies** >>> **Energy Consumers**

<<< **Communities** >>>

# Overview

- **Significant electricity needs are emerging in GTA North**, driven by economic development, the electrification of buildings and transportation, and growth driven by provincial housing targets across several municipalities.
- With the majority of the transmission network concentrated in the southern part of the region, the current infrastructure is not sufficient to support this growth.
- At this stage, **a detailed options analysis has been completed** to identify draft recommendations to meet the growing demand.
- A mix of new transmission infrastructure, upgrades to existing infrastructure and incremental electricity Demand Side Management (eDSM) are recommended in this plan. Among the plan's recommendations is a strong call to action for customers to participate in eDSM and Distributed Energy Resources (DER) program opportunities – the uptake of these important initiatives may defer future longer-term electricity infrastructure.
- These **solutions form an integrated approach to improve reliability and meet growing electricity needs in a cost-effective way.** Your input will help ensure that local perspectives and relevant information are considered as the IESO finalizes the Integrated Regional Resource Plan (IRRP).

# Seeking Input

**Local considerations and feedback are a critical component to the development of an Integrated Regional Resource Plan (IRRP). The IESO wants to understand:**

- What feedback is there on the proposed recommendations?
- What information needs to be considered in these recommendations?
- How can the IESO continue to engage with communities and stakeholders as these recommendations are implemented, or to help prepare for the next planning cycle?

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

# Recap: Regional Electricity Planning Process, Demand Forecast, Electricity Needs & Option Screening



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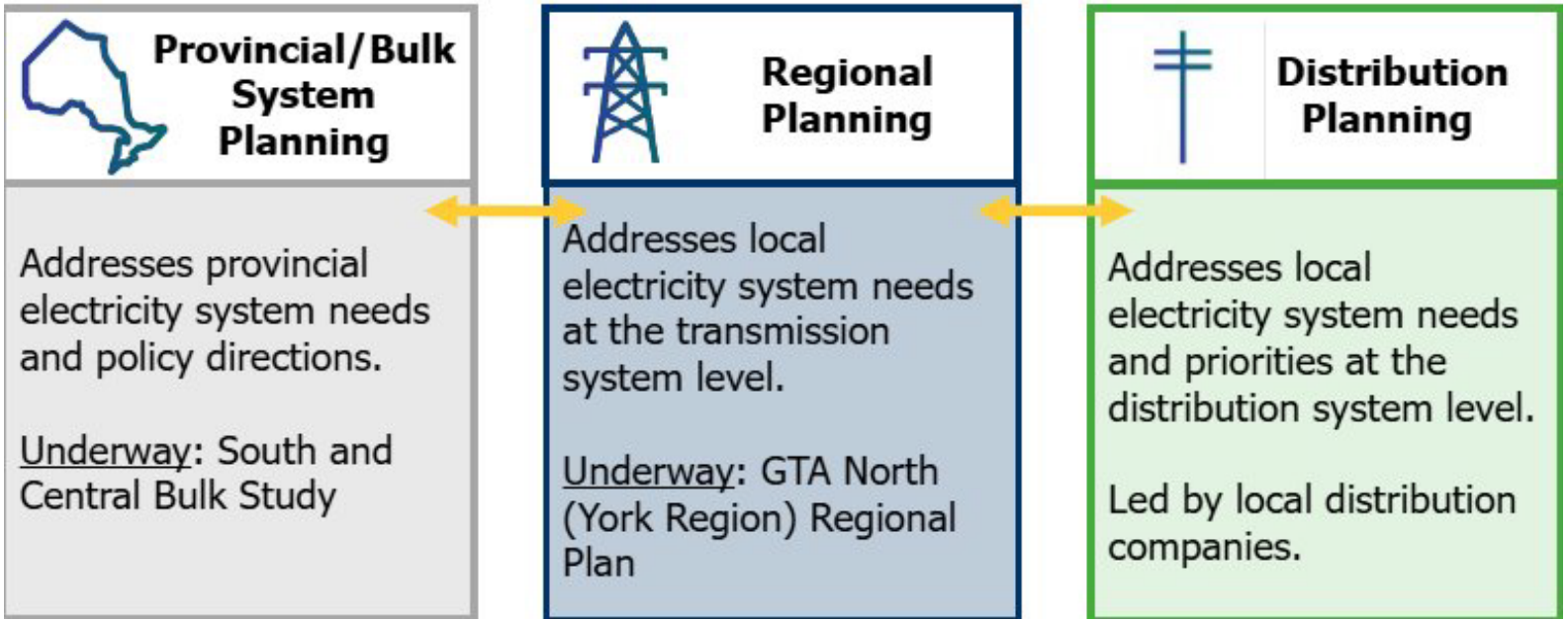
# Electricity Planning in Ontario*





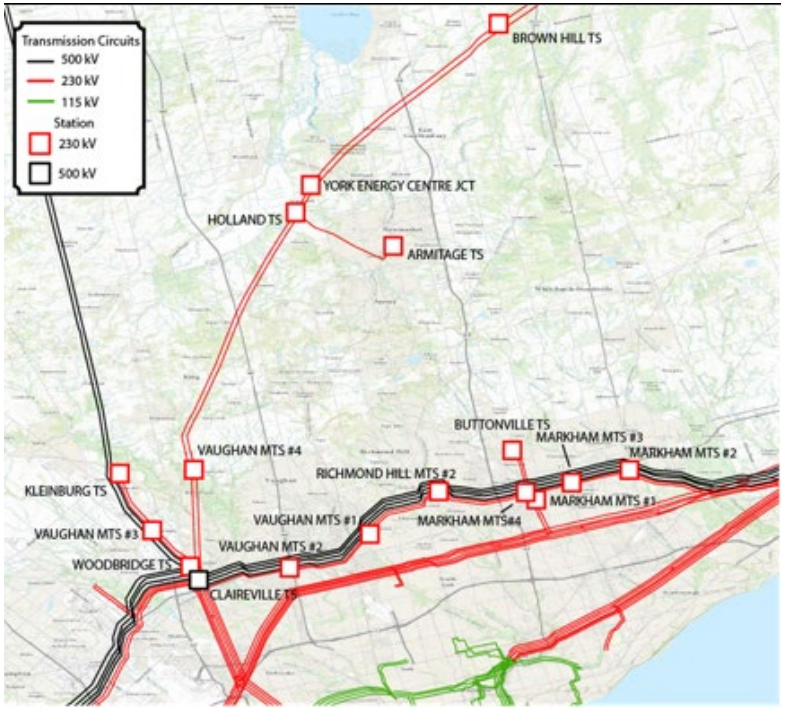

*In the energy sector, the Ontario Energy Board ensures that consumers are treated fairly, and projects are in the public interest.

# Regional Planning in the GTA North Area

Regional electricity planning aims to ensure affordable and reliable electricity to local regions across Ontario, considering the unique needs of each region, and a range of integrated resource options to keep the lights on.

Regional planning is completed at regular intervals to ensure planning is flexible and responsive to a range of future outcomes.

An Integrated Regional Resource Plan (IRRP) is being developed by a Technical Working Group coordinated by the IESO with Hydro One Networks Inc., Alectra Utilities, and Newmarket Tay Power.



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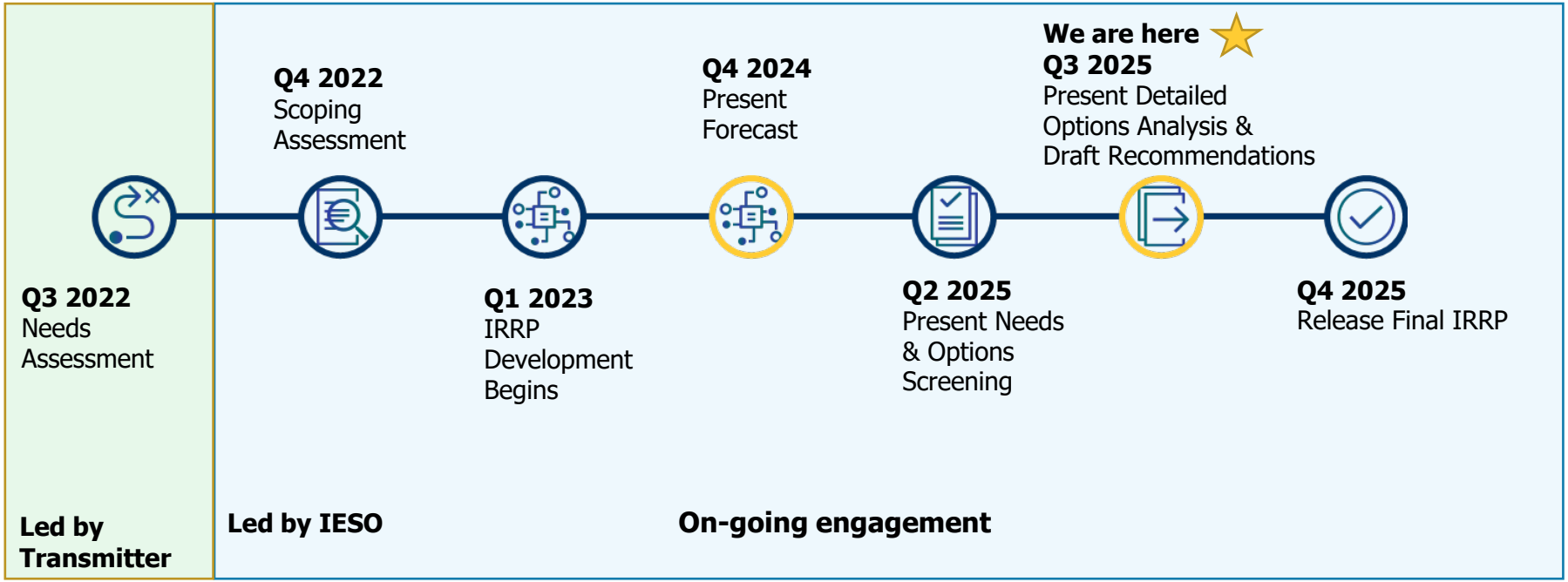
# Regional Planning Timeline



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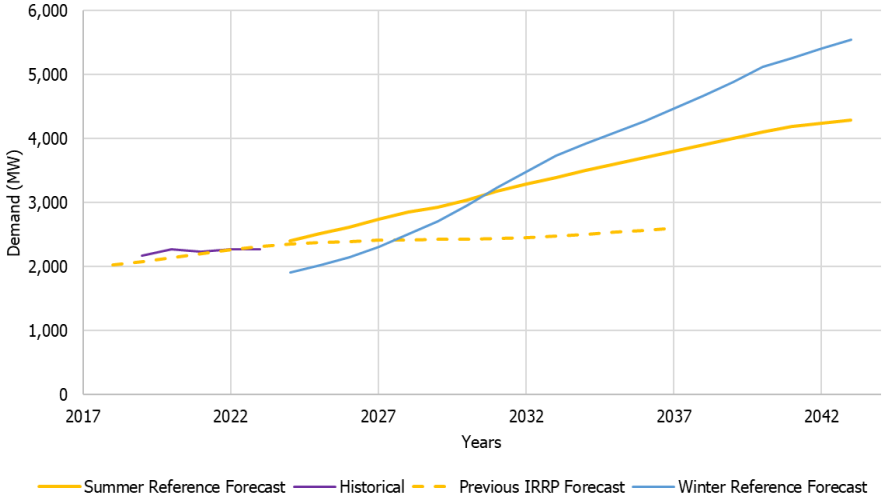
# Recap: Electricity Demand Forecast

- Electricity demand in GTA North is expected to **double in the summer** and **triple in the winter** by 2043.
- This demand is driven largely by economic development, electrification and intensification.
  - Example, provincial housing targets for several municipalities including Aurora, Bradford West Gwillimbury, East Gwillimbury, Georgina, Markham, Newmarket, Richmond Hill, Vaughan and Whitchurch-Stouffville.
- This forecast will continue to be monitored and evaluated on an annual basis and through future planning cycles.



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# Recap: Electricity Needs in York Region

Based on the forecasted growth, the following needs have been identified:

| Timing | Impacted Equipment |
|---|---|
| Near-term *(5 years)* | 3 station capacity needs<br>2 system capacity needs<br>1 load security need |
| Longer-term *(+5 years)* | 3 station capacity need<br>2 system capacity need<br>3 load restoration needs<br>2 load security need |

These needs are grouped based on geographic proximity into three key areas: Northern York, Markham & Area and Richmond Hill/Vaughan


* Numbers correspond to the needs detailed in slides 60 and 61



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# Recap: Summary of Options Screening Results

| Type of Needs | Screened in - further evaluated in the plan | Screened out – cannot be relied on to meet the need(s) |
|---|---|---|
| **Station Capacity**<br>(Ability to step power down from the transmission system to supply the local distribution network) | • **Wires** (such as new or expanded station or line infrastructure); and<br>• **Wires plus integrated solutions** including eDSM, and DERs* including battery storage, renewables and district energy | • Transmission connected large generation such as wind and solar generation, and wind and/or solar + Battery Energy Storage System<br>• Gas generation |
| **Supply Capacity**<br>(Ability to deliver sufficient power through the transmission lines to supply step-down stations) | • **Wires** (such as new or expanded station or line infrastructure); and<br>• **Wires plus integrated solutions** including eDSM, transmission connected Battery Energy Storage System, and DERs* including battery storage and renewables | • Transmission connected large generation such as wind and solar generation, and wind and/or solar + Battery Energy Storage System<br>• Gas generation |
| **Load Restoration & Security**<br>(The system's ability to restore power after an outage or the maximum load it can shed under specific planning conditions) | • **Wires** (such as breakers) | • Distributed generation and transmission-connected generation |

* Typically connected to local distribution systems and that can generate or store energy, or control load

# Feedback Received (1/2)

| Key Areas of Feedback | Incorporating Feedback/Considering Feedback |
|---|---|
| Coordinated energy planning that aligns with local priorities and policies | The IESO continues to engage municipalities and stakeholders at each milestone of the IRRP process, ensuring that local needs and sustainability goals are reflected in plans. The Technical Working Group carefully considers local planning and policy drivers, such as Official Plans, climate action goals and energy priorities, in the evaluation of wire and non-wire options to understand feasible alternatives for meeting the needs in the region. |
| Prioritize evaluation of non-wires alternatives (NWAs) and utilize YEC to the end of its lifespan to defer infrastructure investments | NWAs, in addition to the locally sited York Energy Centre (YEC), can help defer transmission infrastructure; however, given the significant growth across York Region, investments in grid reinforcement are needed. The magnitude of new electricity demand forecasted cannot be addressed solely with NWAs. There is an ongoing opportunity for local resources, including electricity Demand Side Management (eDSM) to contribute to meeting local priorities and help alleviate capacity constraints, while delivering benefits to customers.<br><br>Through the IESO's 2025-2036 eDSM framework, Save on Energy, several energy efficiency programs are offered for residential, small business and industrial residents seeking to reduce their electricity demand, improve energy efficiency, and invest in small-scale solar. Interested parties can visit the Save on Energy website to learn more. |

# Feedback Received (2/2)

| Key Areas of Feedback | Incorporating Feedback/Considering Feedback |
|---|---|
| More engagement with municipal and Regional Councils | The IESO is committed to continuing engagement with municipalities across York Region on this plan, and to inform subsequent plans. Municipal and Councilor input, and perspectives are welcomed even between planning cycles. |
| Further details on screening out solar-only and wind-only solutions | Behind-the-meter DERs are encouraged to help with demand management, however, standalone large scale solar and wind have been screened out as standalone solutions (i.e., as a replacement for grid reinforcements), based on the magnitude and pace of growth drivers and the large capacity and associated land that these types of resources would require to reliably address the projected growth in York Region.<br><br>The wires investments forming the draft recommendations will help alleviate system constraints on siting new resources, including renewables, locally. |
| Ensure alignment with local land use policies before siting transmission | Precise locations for wire options are not determined at the IRRP stage. Once the IESO publishes the final IRRP report, the implementation of any recommended infrastructure is the responsibility of the transmitter. Environmental assessments will assess potential impacts of new infrastructure and potential measures to avoid, mitigate or manage these effects in the evaluation of siting and/or route alternatives. |

# Options Analysis and Draft Recommendations Background



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# Summary of Approach to Meet Needs

**Electricity needs in GTA North are increasing rapidly**, driven by economic development, intensification, and electrification. With the transmission network concentrated in the south of the region, the current infrastructure is not sufficient to support this growth.

**Both wire solutions and combinations of wire and non-wire alternatives were considered** to ensure a balanced, cost-effective approach.

Recommended solutions include new transmission infrastructure, upgrades to existing assets, and incremental eDSM programs. Together, these form an integrated strategy to enable reliable service and support new connections for these expanding communities.

**The GTA North IRRP's draft recommendations outline near-term solutions and identify longer-term reinforcements** that will continue to be monitored and evaluated on an annual basis and through future planning cycles.

# Options Evaluation

Wire and Non-Wire Options are evaluated based on the following key considerations:

| | |
|---|---|
| Technical Feasibility | • Can the option be executed? i.e., outlook for technology, proximity to customers, routing and spacing considerations, operation |
| Ability to Address Needs | • Does it address the need while complying with the established reliability standards and criteria for the electric power system? |
| Cost-Effectiveness | • Is there the ability to solve multiple needs simultaneously?<br>• How much can it cost and what are the benefits? |
| Lead Time | • New transmission infrastructure is expected to take at least 5-7 years – how does this compare to the timing of needs? |
| Community Considerations | • Input from community preferences and feedback regarding potential options, for example does it improve resilience for extreme weather? |

# Option Analysis and Draft Recommendations

# Markham & Area



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# Technical Electricity Needs in Markham & Area

| | | | Magnitude | | |
|---|---|---|---|---|---|
| **Electricity Need** | **Impacted Infrastructure** | **Timing** | **2025** | **2035** | **2043** |
| **Station Capacity:** ability of a station to deliver power from the grid down to the distribution system | Markham | Near-term | 0 MW | 241 MW | 426 MW |
| **Supply Capacity:** ability of the system to supply power through the transmission lines to a local area | Parkway to Buttonville (Markham, Richmond Hill) | Near-term | 0 MW | 256 MW | 290 MW |

# Options Analysis for Markham & Area – Non-Wires

| Option | Solar + Battery Energy Storage System (BESS) | Wind + Solar + BESS |
|---|---|---|
| **Technical Feasibility** | × Not Feasible | × Not Feasible |
| **Ability to Address Need** | ✓ Able to defer transmission line and next station upgrade to the end of the study period<br>× Large amount of land | ✓ Able to defer transmission line and next station upgrade to the end of the study period<br>× Large amount of land |
| **Land Requirement** | 18,000 hectares required to site | 31,000 hectares required to site |
| **System Cost Estimate*** | $16B - $22B | $7.8B - $10.9B |
| **System Net Benefit*** | -$6.1B to -$512M | -$3.1B to $0 |
| **Lead-Time** | 4-5 years | 4-5 years |



*NPV 2026 - 2102 in $2025 Real (in Millions)

# Options Analysis for Markham & Area – Non-Wires

| Option | Up to 120 MW BESS (8-10 hour reservoir) | Incremental eDSM |
|---|---|---|
| **Technical Feasibility** | × Not Feasible | ✓ Can be implemented with existing infrastructure |
| **Ability to Address Need** | ✓ Addresses the system capacity need until 2034, inclusive<br>× Does not address station capacity needs to enable new customer connection capability at distribution level | ✓ Given the size of needs, this option would reduce the electricity demand by 105 MW by 2043 but not fully meet the needs. |
| **Land Requirement** | Up to 4 hectares | N/A |
| **System Cost Estimate*** | Up to $750M | To be pursued through current eDSM framework |
| **System Net Benefit*** | -$51M to $0 | $0 |
| **Lead-Time** | 3-4 years | 1-2 years, savings building over time |



*NPV 2026 - 2102 in $2025 Real (in Millions)

# Options Analysis for Markham & Area - Wires

| Option | Rebuild Transmission from Armitage TS south towards location of future Northern York TS #2 | Rebuild Buttonville TS to Armitage TS |
|---|---|---|
| **Technical Feasibility** | ✓ Feasible | × Not feasible – introduces new limitations |
| **Ability to Address Need** | ✓ Able to support unexpected large load growth in Northern and Eastern York<br>✓ Leverages existing transmission corridor<br>× Triggers new needs in longer term based on load growth<br>× Does not provide additional benefits to bulk and other regional needs in the area | ✓ Offloads Claireville to Holland TS circuits<br>✓ Able to support unexpected large load growth in both Northern and Eastern York<br>✓ Leverages existing transmission corridor<br>× Triggers new needs in longer term based on load growth<br>× Does not provide additional benefits to bulk and other regional needs in the area |
| **System Cost Estimate*** | $112 M | $158 M |
| **Lead-Time** | 5-7 years | 5-7 years |



*costs are in $ CAD (2025)

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# Options Analysis for Markham & Area - Wires

| Option | Reconductor P45/46 between Parkway TS and Buttonville TS | Rebuild and extend transmission line from Buttonville TS towards Northern Markham |
|---|---|---|
| **Technical Feasibility** | ✓ Feasible | ✓ Feasible |
| **Ability to Address Need** | ✓ Increases capacity on lines from Parkway TS going north towards Buttonville TS<br>✓ Able to phase reconductoring sections of the circuits based on the in-service date of Markham MTS #5 | ✓ Able to support large load growth in Northern Markham, Northern Richmond Hill, and Whitchurch-Stouffville, through the connection of Northern York MTS #2 and Markham MTS #6.<br>✓ Leverages existing transmission corridor<br>✓ Address security needs by creating redundant path for Markham #4 MTS |
| **System Cost Estimate*** | $14 M (phased) | $55-185 M |
| **Lead-Time** | 3-4 years | 5-7 years from recommendation to proceed with implementation |



*costs are in $ CAD (2025)

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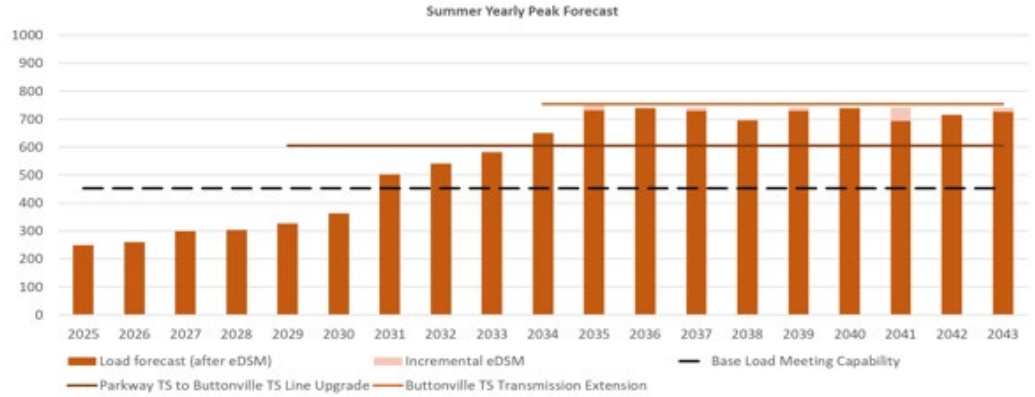
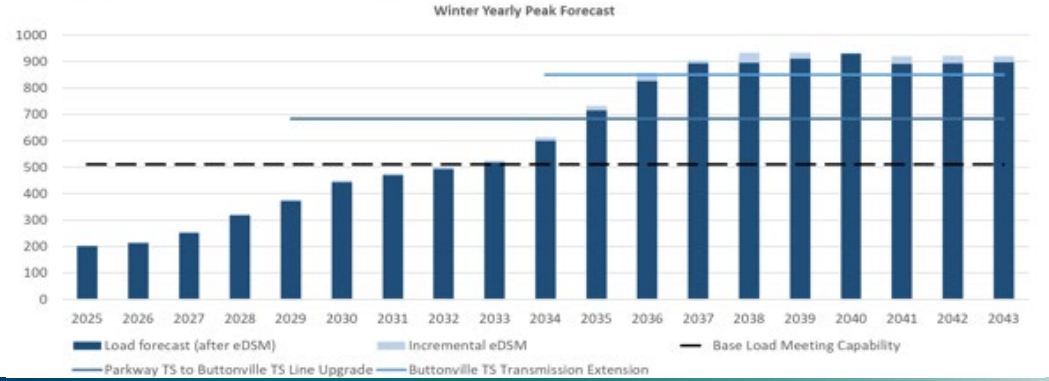
# Markham & Area Load Profile Analysis




Lines on the graphs illustrate the present-day system capacity and new capacity following each recommended reinforcement option against the current yearly peak demand forecast on the most limiting circuit between Parkway TS and Buttonville TS.

2030-2031: The forecast is expected to surpass the system capacity, triggering the need for the first reinforcement, Parkway to Buttonville Line Upgrade. This reinforcement would increase the capacity limit by ~ 150 MW.

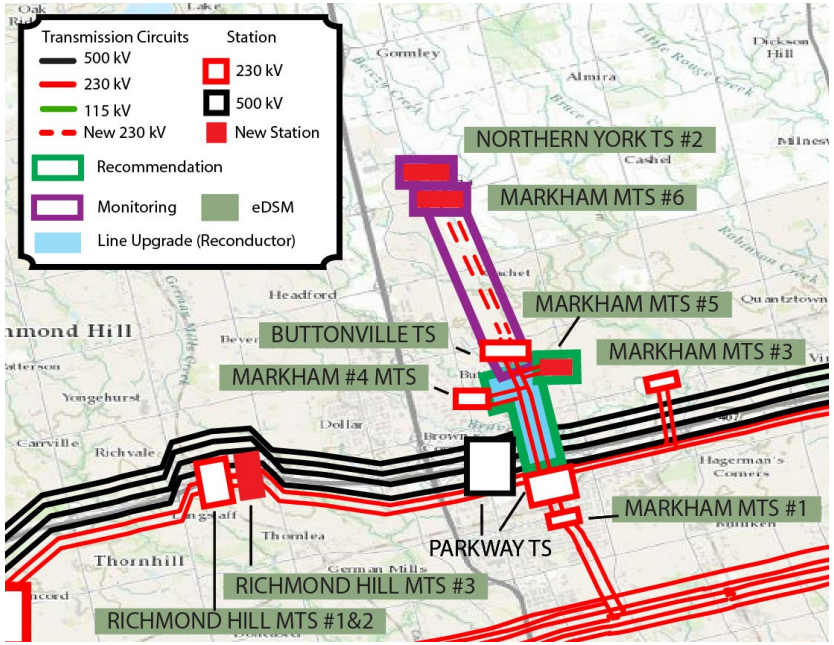
2033-2034: Next system capacity limit is reached, triggering the need for the second reinforcement, Buttonville TS Transmission Extension. This reinforcement would increase the capacity limit by ~ 150 MW.

2036-2037: Approximately 70 MW remain unresolved through reinforcements towards the end of the forecast. Additional eDSM, including DERs, can be utilized to manage demand at a local level.

# Draft Recommendation Markham & Area

There are significant electricity needs in northern Markham, driven by intensification and electrification. To meet growing demand, draft recommendations include:

- **Additional targeted incremental eDSM to manage demand** and ease pressure on the system.
- **Upgrade the existing transmission line** between Parkway TS and Buttonville TS to support the new Markham #5 station. This work is targeted for completion between 2028 and 2029. (Near-term recommendation)
- **Extend and upgrade transmission infrastructure** north of Markham to connect future stations, Markham #6 MTS and Northern York TS #2, with an estimated in-service date of 2034, with the current forecast. The Technical Working Group will monitor the forecast and meet annually to determine the need of this upgrade. (Monitoring)




These recommendations will meet growing demand, ensure reliable service and accommodate new connections for these growing communities.



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# Option Analysis and Draft Recommendations

# Richmond Hill/Vaughan



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# Near-Term Technical Electricity Needs in Richmond Hill/Vaughan & Area

| | | | Magnitude | | |
|---|---|---|---|---|---|
| **Electricity Need** | **Impacted Infrastructure** | **Timing** | **2025** | **2035** | **2043** |
| **Station Capacity:** ability of a station to deliver power from the grid down to the distribution system. | Richmond Hill<br>Vaughan | Near-term | 0 MW | 153 MW | 153 MW |
| **Load Security:** Maximum amount of power that can be interrupted following specific planning contingencies. | Parkway to Claireville (Richmond Hill and Vaughan) | Immediate | 94 MW | 293 MW | 359 MW |

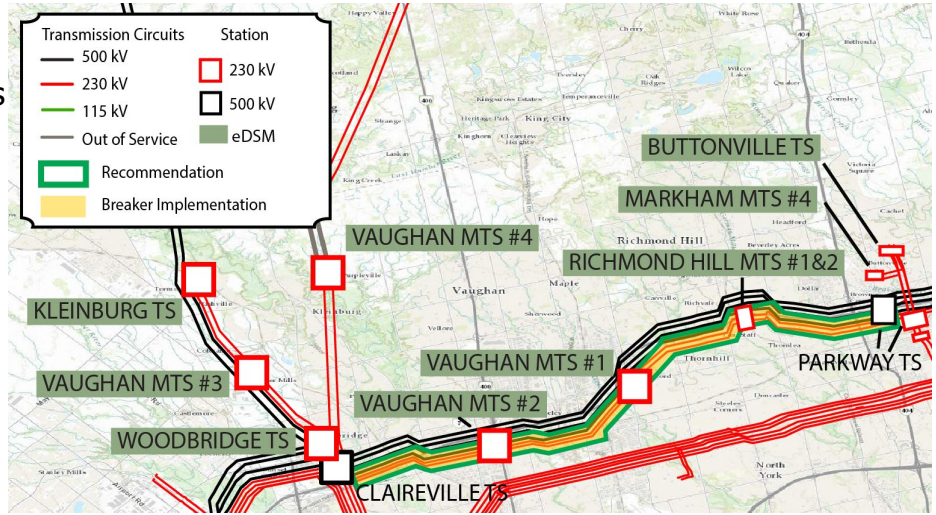
# Draft Recommendation Richmond Hill/Vaughan & Area

Parts of southern Vaughan and Richmond Hill are currently at risk of power interruptions that exceed the province's reliability standards. This means the system may not be able to handle certain outages or emergencies without affecting customers.

To improve reliability and support ongoing development, especially around the Yonge-North Subway Extension and Vaughan Metropolitan Centre, the draft recommendation is:

- **Installing new breakers along the Parkway to Claireville corridor** to relieve pressure on the system and bring it back within acceptable limits.

This action will help prevent outages, support future growth, and ensure residents and businesses continue to receive reliable electricity.



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# Option Analysis and Draft Recommendations

# Northern York



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# Technical Electricity Needs in Northern York

| | | | Magnitude | | |
|---|---|---|---|---|---|
| **Electricity Need** | **Impacted Infrastructure** | **Timing** | **2025** | **2035** | **2043** |
| **Station Capacity:** the ability of a station to deliver power from the grid down to the distribution system | Northern York | Immediate | 16 MW | 400 MW | 755 MW |
| **Supply Capacity:** the ability of the system to supply power through the transmission lines to a local area | Claireville to Brown Hill (Northern York) | Near-term | 0 MW | 371 MW | 713 MW |

# Options Analysis for Northern York – Non-Wires Options

| Option | Solar + BESS | Wind + Solar + BESS |
|---|---|---|
| **Technical Feasibility** | × Not feasible due to short circuit limits at Claireville TS | × Not feasible due to short circuit limits at Claireville TS |
| **Ability to Address Need** | ✓ Able to defer transmission line and next station upgrade to the end of the study period<br>× Lead time for this solution may be too long to meet the 2027 need<br>× Large amount of land | ✓ Able to defer transmission line and next station upgrade to the end of the study period<br>× Lead time for this solution may be too long to meet the 2027 need<br>× Large amount of land |
| **Land Requirement** | 18,500 hectares required to site | 38,000 hectares required to site |
| **System Cost Estimate*** | $13B - $16B | $6.1B to $8.2B |
| **System Net Benefit*** | -$3.9B to -$365M | -$2.1B to $0 |
| **Lead-Time** | 4-5 years | 4-5 years |



*NPV 2026 - 2073 in $2025 Real (in Millions)

# Options Analysis for Northern York – Non-Wires

| Option | Up to 420 MW BESS (10-hour reservoir) | Incremental eDSM |
|---|---|---|
| **Technical Feasibility** | ✗ Not feasible due to short circuit limits at Claireville TS | ✓ Can be implemented with existing infrastructure |
| **Ability to Address Need** | ✓ Addresses the need until 2038, inclusive<br>✓ Maintain sub-region reliability until next grid reinforcement is in service<br>✓ Enables new connections in the region<br>✗ Lead time for this solution may be too short to meet the 2029 need | ✓ Given the size of needs, this option would reduce the electricity demand by 210 MW by 2042 but not fully meet the needs. |
| **Land Requirement** | Up to 13 hectares required to site | N/A |
| **System Cost Estimate*** | $2.2B to $2.5B | To be pursued through current eDSM framework |
| **System Net Benefit*** | -$233M to $0 | $0 |
| **Lead-Time** | 3-4 years | 1-2 years, savings building over time |



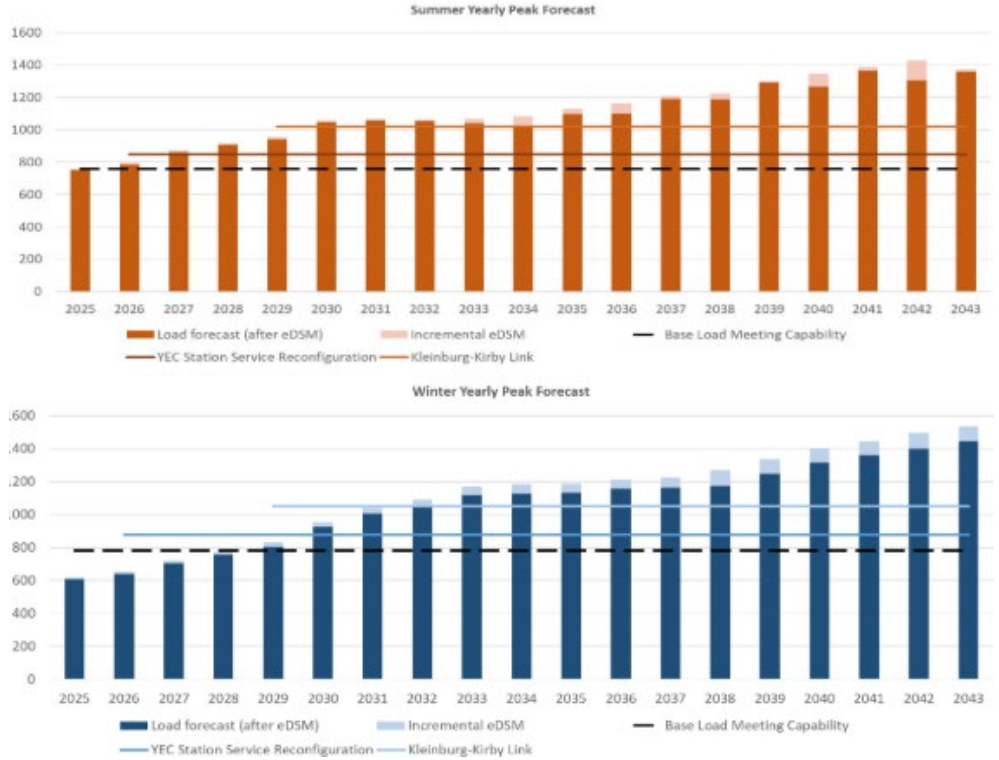
*NPV 2026 - 2073 in $2025 Real (in Millions)

# Options Analysis for Northern York – Wires Options

| Option | One 230 kV double-circuit from Kleinburg TS to Kirby TS (Kleinburg-Kirby Transmission Line) | Rebuild Buttonville TS to Armitage TS | One 230 kV double-circuit from Kleinburg TS to Holland Marsh junction |
|---|---|---|---|
| **Technical Feasibility** | ✓ Feasible | × Not feasible – introduces new limitations | ✓ Feasible |
| **Ability to Address Need** | ✓ Offloads Claireville to Vaughan MTS #4 section of the Claireville to Holland TS circuit to enable the connection of Northern York TS #1<br>✓ Able to support medium-term growth depending on magnitude<br>✓ Leverages bulk system and GTA west potential options to avoid over-building<br>✓ Improves short circuit constraints to enable DER connections<br>× Additional reinforcements may be required in the long term with potential unexpected large load growth | ✓ Offloads Claireville to Holland TS circuits<br>✓ Able to support unexpected large load growth in both Northern and Eastern York<br>× Triggers new needs in longer term based on load growth<br>× Does not provide additional benefits to bulk and other regional needs in the area | ✓ Offloads Claireville to Holland TS circuits<br>✓ Able to support unexpected large load growth in Northern York only<br>× Does not provide additional benefits to bulk and other regional needs in the area<br>× Likely would trigger additional $200-250 M switching station at Holland Marsh junction, though other bulk considerations could alter need and alternatives |
| **System Cost Estimate*** | $39 M | $158 M | $223 – 315 M |
| **Lead-Time** | 6-7 years (in conjunction with Bulk upgrades at Kleinburg TS) | 5-7 years | 5-10 years |
| **Other Considerations** | ✓ Expected to follow along eastern segment of Highway 413 | ✓ Leverages existing corridor | × Requires expanded corridor development |

 *costs are in $CAD (2025)

# Northern York Load Profile Analysis




Lines on the graphs illustrate the present-day system capacity and new capacity following each recommended reinforcement option against the current yearly peak demand forecast on the most limiting circuit between Claireville TS and Brown Hill TS.

2025-2026: The forecast is expected to surpass the system capacity, triggering the need for the first reinforcement, YEC Station Service Reconfiguration. This reinforcement would increase the capacity limit by ~ 100 MW.

2028-2029: Next system capacity limit is reached, triggering the need for the second reinforcement, Kleinburg-Kirby Transmission Link. This reinforcement would increase the capacity limit by ~ 170 MW.

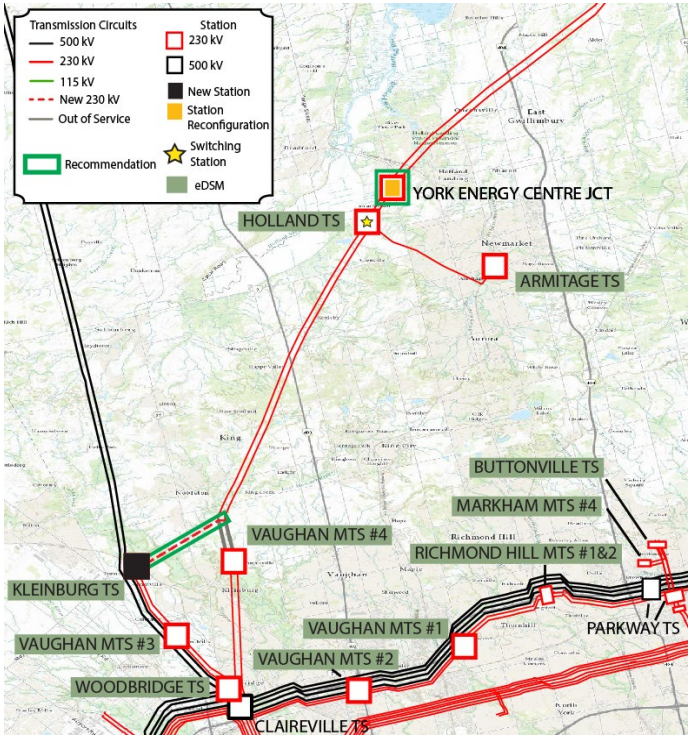
2030-2031: Based on the current forecast, the system limit is surpassed, triggering the need for Northern York TS#3. The Technical Working Group will continue to monitor the forecast to trigger actions in response to the demand. Additional eDSM, including DERs, can be utilized to manage demand at a local level in the interim.

# Draft Recommendations in Northern York Region

Electricity demand in Northern York is rising rapidly, and timely action is needed to maintain reliability while supporting new housing and economic growth. Draft recommendations include:

- **Incremental eDSM, including DERs, to manage demand** and ease pressure on the system.
- **Reconfigure the York Energy Centre's power supply** to improve reliability and reduce the risk of outages. This is expected to be completed by 2026. (Near-term recommendation).
- **Build a new 230kV transmission line along the future Highway 413 corridor** (Kleinburg to Kirby), to support growth across York Region and Simcoe County. This is expected to be in service by 2031–2032. (Near-term recommendation).
- **Monitor future electricity needs and begin early planning for new infrastructure**, including Northern York TS #3 and the Holland switching station. Local generation will be explored in upcoming planning cycles.

Together, these recommendations will enable the connection of new local renewable resources, improve reliability, support new housing & economic development, and ensure the electricity system can grow with the community.



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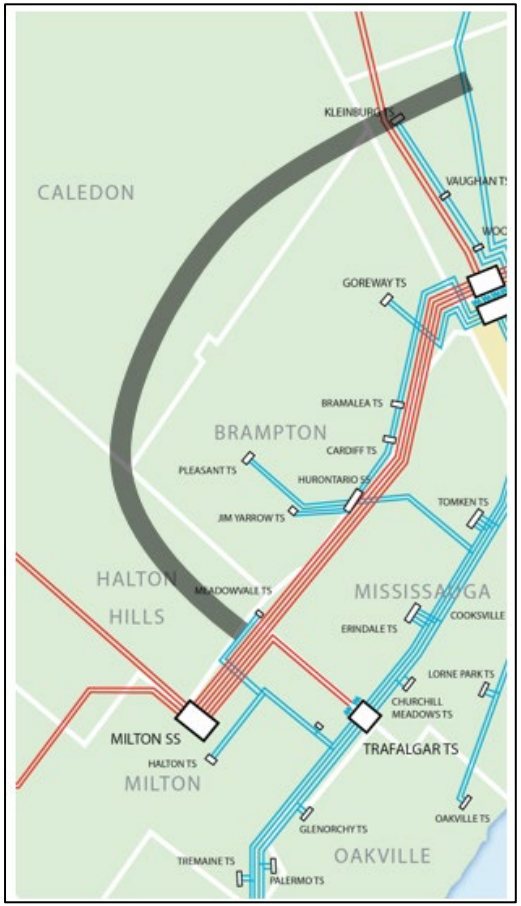
# Northwest GTA Corridor Study

- The IESO and the Ministry of Energy and Mines are engaged in a joint study to assess lands to be protected for future high-voltage electricity transmission.
- Objective is to co-locate future transmission next to the proposed Highway 413, consistent with the Provincial Planning Statement, 2024.
- Protecting land for the future:
  - Maintains ability to accommodate future growth through proactive planning, and
  - Mitigates risk of needing to site transmission infrastructure through built-up areas
- The IESO will identify a linear corridor to be protected for transmission use, ensuring long-term electricity needs can be met. An update will be posted to the Environmental Registry of Ontario.




**Northwest GTA Corridor**



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# Electricity Demand-Side Management Framework and Opportunities

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SAVE ON ENERGY
POWER WHAT'S NEXT

# Save on Energy

- The IESO, through the Save on Energy brand, delivers a suite of energy efficiency programs offering incentives to help customers manage their electricity use and costs, and to directly contribute to a reliable, affordable and sustainable electricity system.
- Since 2011, 19.5 TWh of energy has been saved across the province by participation in Save on Energy programs. This is equivalent to powering a city the size of Ottawa for more than two years.
- To help meet the province's rapidly growing demand for electricity, Save on Energy's energy efficiency programs budget has been expanded from $1 billion over the past four years, to $10.9 billion over the next 12 years. This new long-term commitment ensures programs will continue to be available to customers.



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# Energy Efficiency Opportunities for Residents

Key programs of interest for York Region residents include:

- Peak Perks – Residential electricity customers with an eligible smart thermostat can be rewarded for reducing their energy use when demand for electricity is high in the summer.
- Home Renovation Savings – Homeowners can get rebates up to 30% for home energy efficiency renovations and improvements (including solar panels).
- CoolSaver – Helps homeowners and tenants upgrade their home cooling systems to reduce their electricity consumption and energy costs.



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# Energy Efficiency Opportunities for Businesses

Key programs of interest for York Region businesses include:

- Retrofit – Businesses can get to 50% of eligible project costs covered for targeted energy efficiency retrofits.
- Peak Perks – Small business electricity customers with an eligible smart thermostat can be rewarded for reducing their energy use when demand for electricity is high in the summer.
- Commercial CoolSaver Program – Commercial customers of Alectra Utilities in York Region can receive free rooftop unit, air conditioning or heat pump tune ups for HVAC systems plus exclusive instant discounts on a variety of high efficiency upgrades.
- Existing Building Commissioning Program – Offers financial incentives to owners, operators and managers of commercial and institutional buildings to hire a Commissioning Provider to undertake building recommissioning at their facilities, helping them realize energy savings from improved facility operations and maintenance.
- Small Business Program – Small businesses can receive up to $3,000 for eligible lighting equipment and up to $2,500 for eligible non-lighting equipment.

To stay informed on program developments, sign up for the quarterly newsletter.



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# Additional Considerations and Linkages

# Summary of Draft Recommendations



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# Reducing Reliance on York Energy Centre (YEC)

York Energy Centre (YEC) currently supplies ~400MW of peak summer demand in Northern York. Without the contributions of YEC there would be an immediate 400MW shortfall, in addition to the increased electricity demand identified in this IRRP.

The IESO appreciates the feedback received from communities regarding the future of YEC and is committed to ongoing dialogue as planning continues. Reducing reliance on YEC at this time would introduce a large supply need in a region already facing significant system constraints.

The IESO is exploring two scenarios to reducing reliance on YEC in the long-term:

- **Scenario 1**: New Transmission – Build a high-voltage transmission line to import energy from other regions.
- **Scenario 2**: Local generation of equivalent capacity and energy.

The IESO will continue to evaluate these scenarios in future GTA North IRRP cycles and bulk planning studies, taking into account both technical feasibility and community perspectives.

# South and Central Bulk Study

In addition to the GTA North IRRP, the IESO is also conducting a South and Central Bulk Study, which is examining broader system-level needs and opportunities across southern and central Ontario.

Given the scale and complexity of electricity needs in York Region, the bulk study plays a key role in connecting the near-term recommendations from the GTA North IRRP to the bulk transmission system. This includes:

- Upgrading station (Kleinburg TS) from 230kV to 500kV to support provincial and local needs.
- Building an additional circuit from Essa (Barrie) to Kleinburg TS to strengthen electricity flows north/south.
- Improving bulk system supply from east GTA towards Parkway TS to help support growth in GTA North.
- Determining transmission required to enable decreased bulk system reliance on YEC.

By aligning regional and bulk planning efforts, the IESO aims to develop a coordinated and cost-effective approach to meeting electricity demand across the province.

# Protecting Strategic Corridors

To ensure we can build the transmission infrastructure needed to support electrification, residential and economic intensification, early action is being taken to identify and protect strategic corridors.

Three key studies are identified in high-growth areas, including York Region, where land is limited and electricity systems are nearing capacity:

- **Parkway Belt West Corridor**: Exploring future high-voltage transmission lines and transformer stations to support GTA growth and to enable new generation resources.
- **Barrie to Markham Corridor**: Preserving land for a future transmission line to further link Northern and Southern Ontario, to enable growth in Northern Ontario and to supply Southern Ontario with diversified resources.
- **Northwest GTA Corridor**: Refining plans near Highway 413 to support future infrastructure in York, Peel, and Halton.

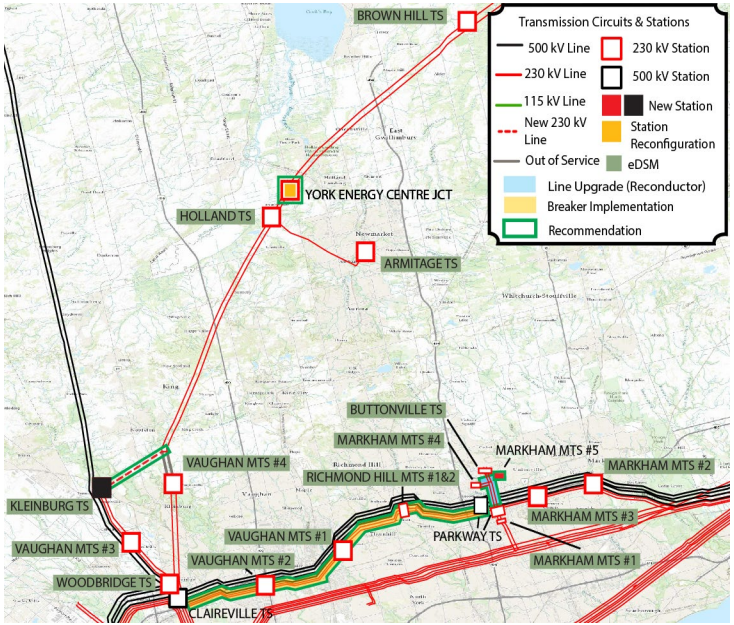
These important studies will play a role in understanding options and preserving land for future, long term needs in York Region. More opportunities for engagement will be shared in the future.

# Near-Term Draft Recommendations

As communities across York Region continue to grow, especially in areas like Vaughan, Richmond Hill, Markham, and Northern York, electricity demand is growing significantly. Action is needed to keep the power system reliable, enable the connection of local resources, and ready for the future. The Technical Working Group recommends:

- **Incremental eDSM programs, including DERs,** to help manage electricity demand and ease pressure on the system. Among the plan's recommendations is a strong call to action for customers to participate in eDSM and DER program opportunities.
- **Improving reliability in southern Vaughan and Richmond Hill** by installing new breakers to prevent outages and support development near the Yonge-North Subway Extension.
- **Upgrading infrastructure in Markham area** to support new stations and growing demand, with key transmission projects planned through 2034.
- **Building new transmission lines in northern Vaughan** along the future Highway 413 corridor to support growth across York Region and Simcoe County.

These draft recommendations will keep electricity reliable for homes and businesses, enable the connection of new local resources, support new housing and economic development and ensure the system is ready for future growth.



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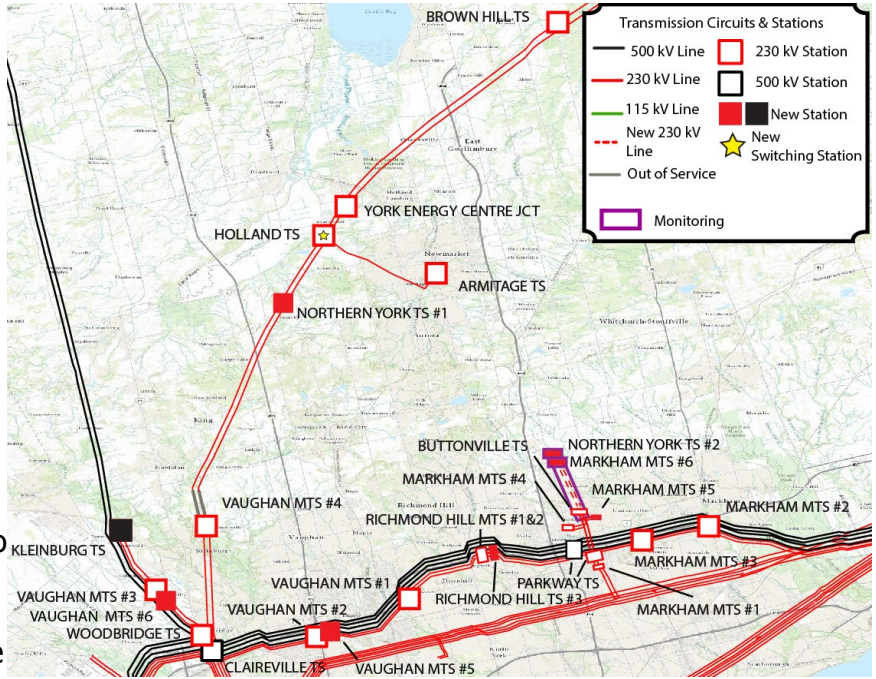
# Monitoring Longer-Term Draft Recommendations

Based on the current forecast, the Technical Working Group recommends continued monitoring of the need to:

- **Build new transmission lines in Markham, north of Buttonville,** to support residential growth.
- **Plan ahead for future stations and switching facilities** to ensure the system can scale with demand.

Implementation of the near-term recommendations, especially the uptake of eDSM, will play a key role in managing and reducing longer-term demand. The success of these initiatives can continue to defer the need for additional new infrastructure.

The Technical Working Group will monitor and meet annually to assess whether these actions are required and to discuss the timing and scope at regular planning intervals. These longer-term draft recommendations will help ensure the system is able to adapt should additional demand materialize.



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# Next Steps and Discussion



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# Next Steps

**Participants can expect to hear from the IESO at these milestones:**

**October 3, 2025:** Deadline for feedback to the IESO on the options analysis and draft recommendations.

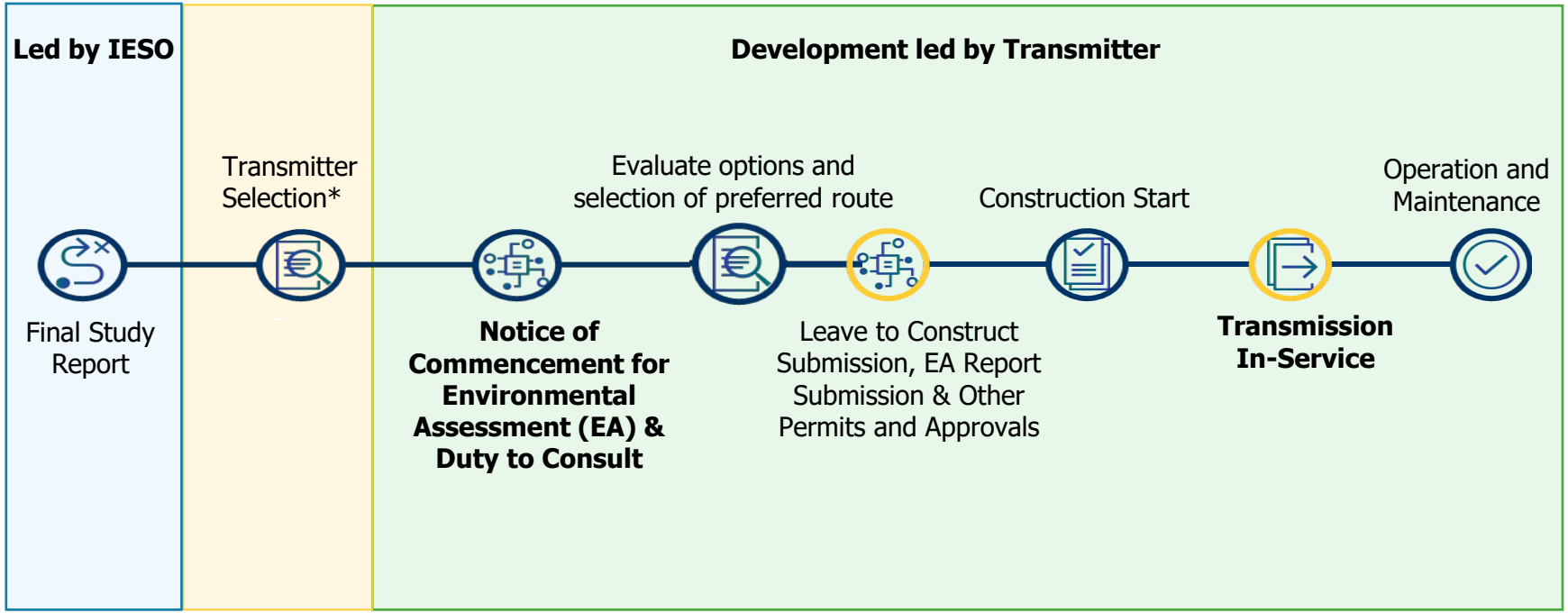
**Q4 2025:** IRRP report will be completed and published on the webpage.

**Following this IRRP:**

- For wired solutions, the transmitter will lead the development of a Regional Infrastructure Plan, which assesses and develops a detailed plan on how wire options can be implemented. For transmission solutions, an Environmental Assessment (EA) will be completed to assess potential effects of new transmission infrastructure, determine measures to avoid or mitigate these effects, and evaluate the route alternatives.
- For non-wire solutions, incremental eDSM programs would be implemented through the IESO's electricity Demand Side Management Framework.
- The Technical Working Group will monitor and meet annually to assess whether the long-term actions are required, and to discuss the timing and scope of future GTA North planning cycles.

This approach ensures the system remains responsive to changing needs, while supporting economic growth, housing targets, and long-term reliability across York Region.

# Typical Process for Transmission Development




*Currently, no standardized process exists to select a transmitter; Transmitter Selection Framework under development

# Seeking Input

**Local considerations and feedback are a critical component to the development of an Integrated Regional Resource Plan (IRRP). As the options phase of the IRRP continues to identify how to best meet the area's infrastructure needs, the IESO wants to hear your perspectives about:**

- What feedback is there on the proposed recommendations?
- What information needs to be considered regarding these recommendations?
- How can the IESO continue to engage with communities and stakeholders as these recommendations are implemented, or to help prepare for the next planning cycle?

**IESO welcomes written feedback until October 3, 2025. Please submit feedback to engagement@ieso.ca using the feedback form on the engagement webpage.**

# Thank You

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# Appendix



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# Ongoing Engagement

Your input plays an important role in developing the electricity plan.

Subscribe to receive updates → select GTA North

Participate in upcoming public engagement webinars

Follow the GTA North regional planning activities online

Visit the Power the GTA website



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# Indigenous Energy Support Program (IESP)

Funding for Community-Led Energy Capacity-Building Projects

Learn more at ieso.ca/IESP or contact the IESO's Indigenous Engagement team at iesp@ieso.ca



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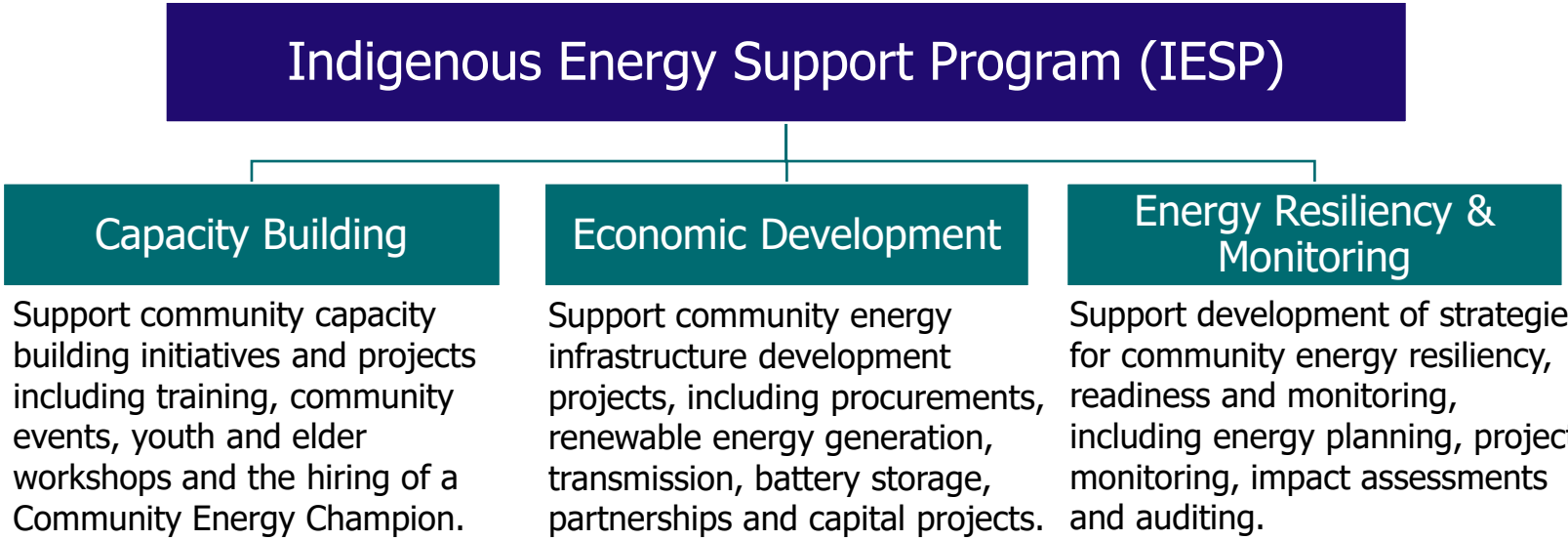
# Indigenous Energy Support Program (IESP) Overview

The Indigenous Energy Support Program (IESP) promotes broad equitable participation in Ontario's energy sector by supporting community capacity building. Funding is available to eligible Indigenous communities and organizations across Ontario for:

- Community energy planning
- Energy skills-building, education and awareness
- Hiring of a Community Energy Champion (CEC)
- Energy infrastructure development

# IESP Areas of Funding

The IESP provides support through three Areas of Funding (AOF).



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# IESP Maximum Funding Amounts

| Area of Funding | Capacity Building | Economic Development | Energy Resiliency & Monitoring |
|---|---|---|---|
| Maximum Funding Amount | **Part A**: Up to $195,000 | Up to $250,000 | Up to $135,000 |
| | **Part B**: Up to $150,000 | Up to $500,000* (Remote Projects Development) | |

**Funding support for eligible expenses associated with supporting diesel reduction initiatives in **Identified Remote First Nations Communities****



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# IESP Project Types

| Capacity Building (Part A)<br>Up to $195,000 | Capacity Building (Part B)<br>Up to $150,000 | Economic Development<br>Up to $250,000* | Energy Resiliency & Monitoring<br>Up to $135,000 |
|---|---|---|---|
| **CEC Salary**<br>Up to $165,000 for 3 years | **Community Energy Engagement** Up to $75,000 | **Feasibility Study**<br>Up to $50,000 | **New Community Energy Plan** Up to $135,000 |
| **Additional Qualification Top Up (if applicable)**<br>Up to $15,000 for 3 years | **Energy Skills Building**<br>Up to $75,000 | **Partnerships**<br>Up to $85,000 | **Update Community Energy Plan** Up to $75,000 |
| **CEC Expenses**<br>Up to $15,000 for 3 years | **Innovative Knowledge & Data Sharing** Up to $60,000 | **Project Development**<br>Up to $250,000 | |
| | | **Innovation**<br>Up to $250,000 | |
| | | **Remote Projects Development**<br>Up to $500,000 | |

**Except for an additional $500,000 available to **Identified Remote First Nations Communities** under "Remote Projects Development" within the Economic Development Area of Funding*



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# IRRP Technical Working Group

| | |
|---|---|
| Team Lead, System Operator | • Independent Electricity System Operator |
| Lead Transmitter | • Hydro One Networks Inc. (Transmission) |
| Local Distribution Companies | • Alectra Utilities Corporation<br>• Newmarket-Tay Power Distribution Ltd. (NT Power)<br>• Hydro One Networks Inc. (Distribution) |



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# Components of an IRRP

| Demand Forecast | Needs | Potential Solutions | Recommendations |
| --- | --- | --- | --- |
| How much power is needed over the planning timeframe? | What needs are emerging in the region that need to be addressed? | What kinds of solutions can meet the future needs for the region? | Based on an assessment of potential options, what recommended actions will ensure a reliable and adequate electricity supply for the region over the long-term? |

# Needs Triggering Regional Planning (1/2)

| | Need Type | Location of Need | Description |
|---|---|---|---|
| 1-3 | Station Capacity | Northern York Region, Markham, Richmond Hill | • Northern York Region's stations are at their capacity limit or require costly distribution to access. New station is recommended.<br>• Markham area stations are expected to exceed their capacities by 2028.<br>• Richmond Hill area stations are expected to exceed their capacities by 2030. |
| 4-5 | System capacity | Northern York | • Thermal overloads and voltage declines under certain worst-case contingencies.<br>• Currently being managed by arming load rejections. |
| 6 | System Capacity | Parkway – Buttonville | • Circuits supplying Markham MTS #4 and Buttonville TS are expected to exceed their capacities by 2031. |
| 7-8 | Station Capacity (longer term) | Vaughan, Northern York, Markham | • Vaughan area stations are expected to exceed their capacities by 2032.<br>• Northern York and Markham exceed capacities by mid-2030s. |


The numbers correspond to the needs map on slide 12.

# Needs Triggering Regional Planning (2/2)

| | Need Type | Location of Need | Description |
|---|---|---|---|
| 9 | System Capacity | Northern York: Claireville – Holland – Brownhill | Circuits supplying Northern York Region stations can exceed thermal capacity today. Currently being managed by arming Load Rejection during high peak periods. Additional capacity required to accommodate new step-down stations. |
| 10-12 | Load Restoration (immediate and longer term) | Claireville – Kleinburg<br>Claireville – Holland – Brownhill<br>Parkway – Buttonville | • Inability to restore customer loads within the timelines established by planning criteria following a major system disturbance |
| 13-15 | Load Security (immediate and longer term) | Parkway - Claireville<br>Parkway – Buttonville<br>Claireville – Kleinburg | • The loss of this line can result in an interruption to over 600 MW of customer load, which is more than permitted by planning criteria |



The numbers correspond to the needs map on slide 12.

# Options Summary

| Timeframe | Approach | Addresses |
|---|---|---|
| Near-Term | • Urgent transmission options (Kleinburg to Kirby line, replacing existing wires, and new & upgraded stations)<br>• York Energy Centre station service<br>• Non-wire options (Energy Efficiency, Energy Resources, i.e., dispatchable generation, energy storage) | • Northern York Region, Markham, Richmond Hill station needs<br>• Northern York: Claireville – Holland – Brownhill supply needs<br>• Immediate capacity constraints due to load growth<br>• Increases customer reliability |
| Monitoring | • New transmission lines to provide additional supply into Northern York<br>• New transmission to provide supply into Northern Markham and Richmond Hill<br>• Non-wire options (Energy Efficiency, Energy Resources, i.e., dispatchable generation, energy storage) | • York Energy Center phase out<br>• Parkway – Buttonville supply needs<br>• New supply into Markham and Richmond Hill<br>• Vaughan station needs<br>• Enables system wide reliability & capacity |