

# Potential Improvements to IESO Pathways to Decarbonization Study

## Introduction

1. In December 2022, the Ontario Independent Electricity System Operator (IESO) released its [Pathways to Decarbonization Study \(PDS\)](#) which presents one possible scenario for Ontario to reach a net-zero emissions electrical grid by 2050.
2. In this scenario, the IESO makes the following projections:
  - a. There will be a doubling of electricity consumption from 150 TWh to 300 TWh by 2050.
  - b. The grid will require an additional 69 GW of non-emitting supply and 5 GW in demand reductions from conservation.
  - c. This will require significant capital investments of \$375 to \$425 billion by 2050.

## Assessment of the PDS

3. In response, Sustainability Solutions Group (SSG) released an [assessment report](#) which evaluated the methods, assumptions and results of the PDS in June 2023. The following gaps were observed in the PDS:
  - a. **Too narrow in scope:** The PDS focuses too narrowly on the energy commodity system, and particularly on electricity supply rather than seeing the energy system as a whole and adequately focusing on demand reduction opportunities.
  - b. **Limited engagement:** The IESO engaged mostly technical stakeholders in the development of the PDS. Municipal climate action plans engage a wider diversity of stakeholders.

- c. **Only provides one scenario:** A fundamental aspect of scenario planning is having multiple scenarios to compare. The PDS provides only one decarbonization scenario which leaves out potential alternatives and a business-as-usual scenario to compare against.
- d. **Overestimates future electricity demand:** The PDS projects that electricity consumption will grow by 2.7% per year, reaching 300 TWh by 2050, about double its current level. This conflicts with the estimated 1% per year growth projected by many municipal climate action plans. This overestimation of future consumption is common in provincial energy planning studies which has traditionally overemphasised electricity supply over demand reduction. Overbuilding grid infrastructure is likely to increase prices and impede decarbonization efforts.
- e. **Underestimates renewable energy:** The PDS significantly underestimates the potential role that renewables like solar and wind can play in the future energy mix compared to studies in other jurisdictions.
- f. **Underestimates risks:** Many of the new generation and transmission facilities modelled into the PDS have long lead times. As technology and the regulatory environment evolve, there is a risk that these assets could be stranded before they are at end of life.
- g. **Lack of co-benefits analysis:** Co-benefits such as health benefits, new jobs, or avoided damage from climate change are not analysed or factored into the costing by the PDS.

## Recommendations to improve the PDS

4. [The SSG Assessment report](#) provides 11 recommendations to improve decarbonization pathway analysis with a focus on enhancing modelling, analysis, collaboration, and transparency, and aligning provincial energy planning with municipal climate action plans.
  - a. **Additional Scenarios:** Scenarios are only valuable when they can be weighed against alternatives. In consultation with municipalities, the PDS needs to develop a business-as-usual scenario in addition to various decarbonization scenarios.
  - b. **An Integrated Energy System Analysis:** Decarbonization scenarios need to be developed with an integrated whole-system approach, ensuring a level playing field between reducing energy demand, increasing distributed energy resources at the local level, and increasing supply at the transmission level.
  - c. **Review of the IESO Mandate:** There is a need to modernize the regulatory framework and mandate of the IESO, Ontario Energy Board and Ministry of Energy to address climate change.
  - d. **Regional Disaggregation:** The PDS should identify the challenges, impacts and opportunities of scenarios on each region in Ontario.
  - e. **Climate Change Impacts:** The impacts of climate change need to be incorporated into projections of electricity demand, supply, and system resilience.
  - f. **Transparency:** Modelling assumptions must be transparent and accessible with an appropriate rationale.
  - g. **Comprehensive Economic Analysis:** The economic impacts on health outcomes and the social cost of carbon need to be reflected in the economic analysis of scenarios.
  - h. **Risks:** The risks of stranded assets need to be assessed for each scenario.
  - i. **Accounting Scenarios:** GHG reporting needs to align with an international accounting standard for municipalities, such as the GHG Protocol for Cities, so that municipalities can assess the impacts of the scenarios on their climate action plans.
  - j. **Distribution Transformations:** The implications of local climate action plans on distribution systems needs to be reflected in each of the scenarios.
  - k. **Localized Energy Planning:** Integrated and localized energy systems planning should be undertaken jointly between municipalities, local distribution companies and the IESO.

## Next Steps

5. The Minister of Energy should consider these recommendations to modernize the IESO and support a more comprehensive, integrated, and transparent energy systems planning for a net-zero future.
6. Ontario municipalities should engage with the provincial government to align provincial and municipal energy systems planning and better represent the collective needs and priorities of the municipalities.

## Related Resources

7. [IESO Pathways to Decarbonization Study](#)  
(December 2023)
8. SSG [Assessment of IESO's Pathways to Decarbonization Study](#) (June 2023)
9. [Webinar Recording on the Assessment of IESO's Pathways to Decarbonization Study](#)

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