Future of Data Centres in the GTHA & Ontario

WE BUILD CLIMATE LEADERS

November 24, 2025

Project Objectives

I. Develop robust, informed estimates of economically competitive compute growth in Ontario over the next 10 years

II. Quantify the local and system-level power, energy, and GHG emission impacts from compute growth and explore potential solutions to reduce those impacts

III. Facilitate collaboration between the energy and digital infrastructure industries, including AI developers and users, innovators, regulators, and policymakers

Project Overview

• Explore AI tech roadmap and potential for demand growth as a baseline • Develop a working AI MW baseline to inform WSI discussions	• Validate demand growth estimate from data centre development • Discuss this impact on energy system	• Discuss mitigation options • Discuss these options' mitigating impact on the energy system	• Review mitigating scenarios • Discuss how key system stakeholders can take action	• Report back on project findings and next steps

Advisory Committee Members

Workshop Attendees

CIB BIC

Compute Ontario

CUSHMAN & WAKEFIELD

enersion

CBRE

CORE DATA CENTRES

ENBRIDGE

enwave

Extract Energy

hydro one

ieso
Connecting Today.
Powering Tomorrow.

Innovation, Science and Economic Development Canada

INTERMARKET PROPERTIES

Ministry of Economic Development, Job Creation & Trade

Ministry of Energy, Northern Development & Trade

ONTARIO ENERGY BOARD

sussex

TORONTO

THERMAcity

ONTARIO POWER GENERATION

TELEHOUSE

TORONTO HYDRO

URBACON

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Growth Scenarios & Mitigating Case Studies

Baseline Growth Scenario Recap

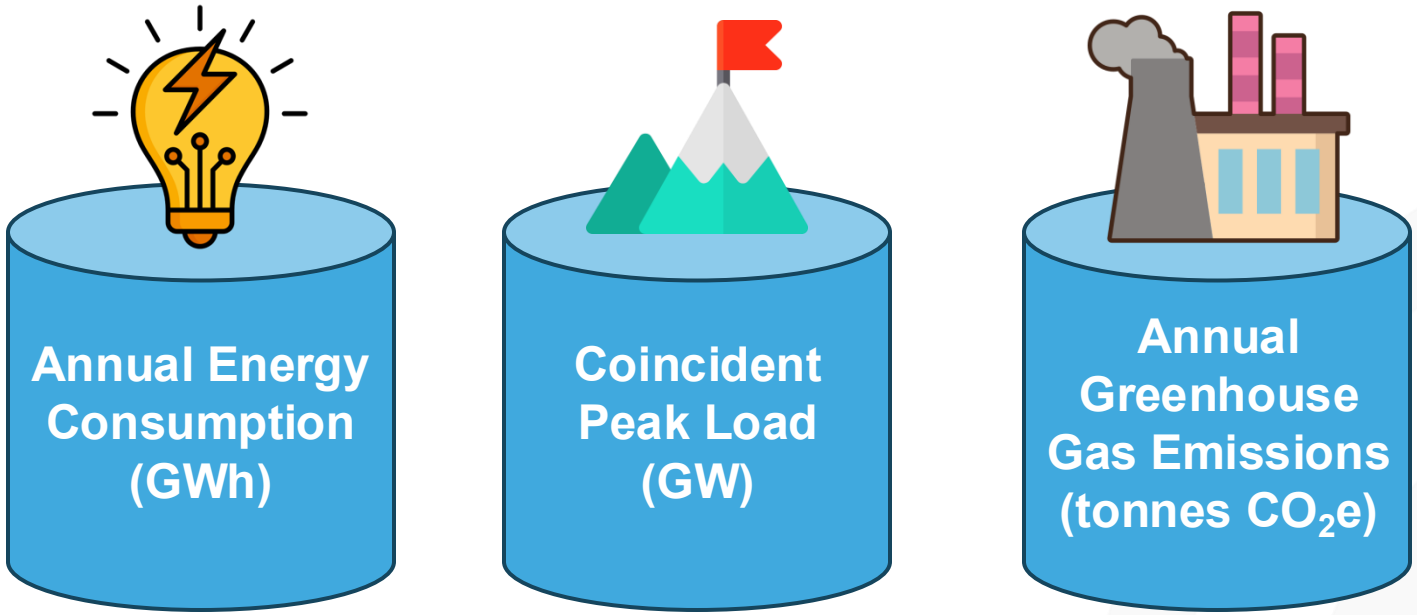
CAGR of 13.5 – 15.5%

Traditional cloud compute and inference in the GTHA

500 MW

Select AI training projects to maintain economic competitiveness

Baseline Growth Scenario Recap

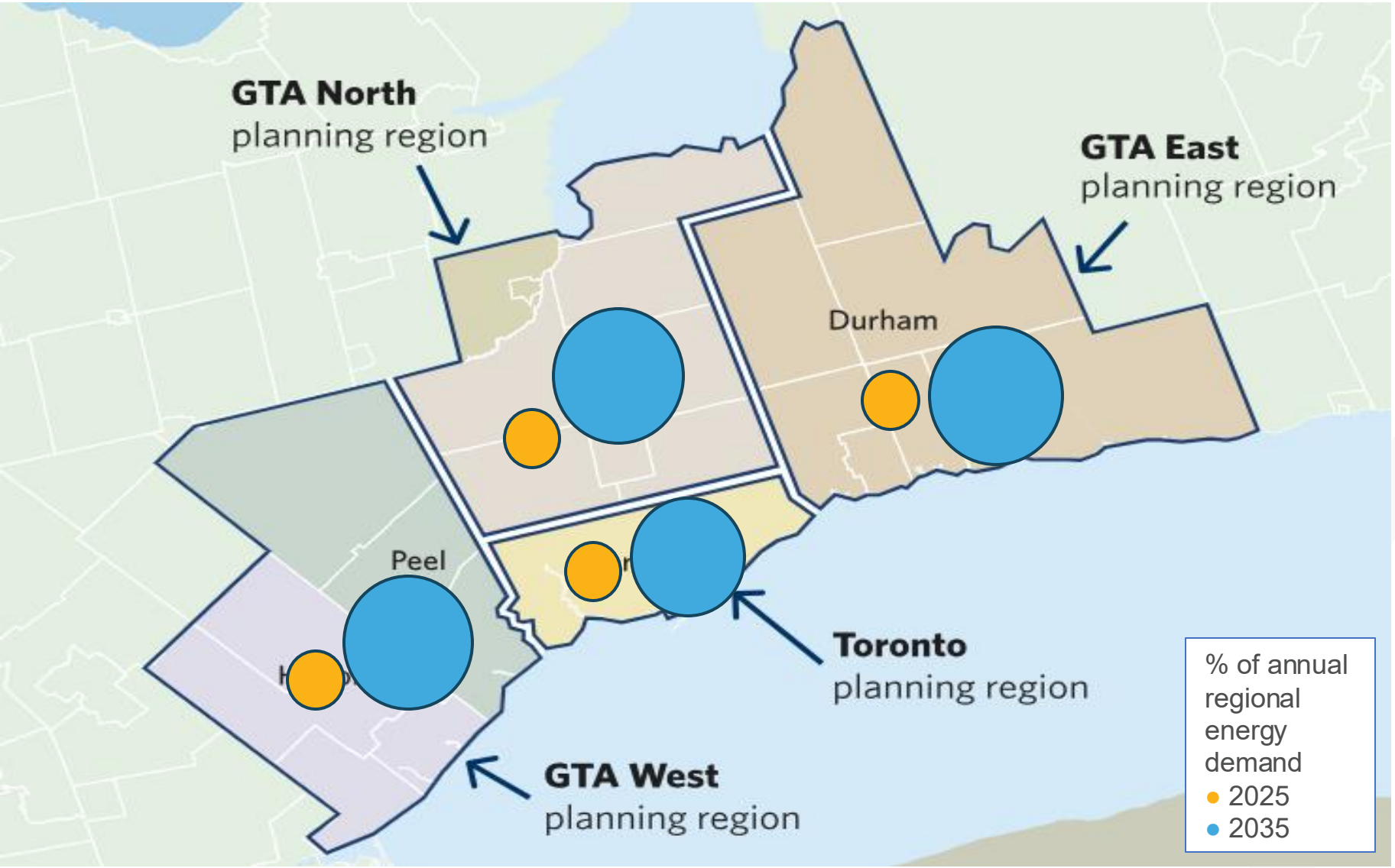


Baseline Growth Scenario Recap

By 2035, data centres in Ontario will account for:

- 7.3% of total electricity consumption
- 5.8% of coincident peak
- 7.3% of total emissions

Data Centre Energy Demand by GTHA Region



By 2035, data centre growth in the GTHA will consume:

- **4→10%** of annual electricity demand
- **3→8%** of coincident peak
- **4→10%** of total GHG emissions

Range of Mitigation Solutions

Total Electricity Consumption

- Waste heat reuse
- Behind-the-meter generation

Peak Demand

- Demand response

GHG Emissions

- Waste heat reuse
- Local PPAs
- Low-carbon fuels
- Low-carbon construction

Testing Solutions Through Case Studies

- To test the impact of different mitigating solutions in Ontario, we created edge case scenarios
- Showcasing the potential impact of some solutions required considering higher data centre buildout – we chose to compare a 1.5 GW baseline growth scenario with a 3 GW growth scenario
- The nature of solutions for differing buildout cases changes dramatically
- We chose a select set to showcase impacts – it is not a prediction, but a case study
- By comparing different levels of solution adoption, we can see system-wide impacts

Scenarios and Case Studies

1.5 GW - Baseline Growth

- 1.5 GW of new data centres by 2035
- Data centre expansion can be accommodated through planned grid expansion
- Mitigation solutions aim to reduce impacts and allow for other electrification initiatives

3 GW - High-end Growth

- 3 GW of new data centres by 2035
- Data centre expansion accommodated through grid and natural gas connections
- Mitigation solutions aim to maintain grid reliability while reducing impacts, where possible

For each scenario, two case studies will be considered:

1) Minimal use of mitigating solutions
2) Significant use of mitigating solutions

Takeaways

- 1.5 GW of growth can largely be accommodated by Ontario's grid
  - Mitigating solutions can support broader system electrification while significantly curtailing emissions

- 3 GW of growth cannot be accommodated without significant behind-the-meter generation
  - Some emissions can be offset with local solar PPAs – these can also make data centres net energy producers

- Many of the proposed solutions are not currently feasible or practical

Project Next Steps

- Synthesize Workshop III discussions
- Prepare final public-facing report and disseminate findings
- Explore opportunities to continue convening this coalition of industry leaders and action on the ideas emerging from the workshops. This includes:
    - Establish a pilot/demonstration site to understand bottlenecks and address inefficiencies in the current process for developing a data centre in Ontario
    - Map grid capacity and geographical hotspots for data centre growth to inform policy development and project investments
    - Identify criteria at the system level to better qualify real projects and fast-track approval processes
    - Host a utility-specific workshop with the digital infrastructure industry to identify real market opportunities

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Thank you

Irene Lam
Irene.Lam@mantleclimate.com