GTA West Integrated Regional Resource Plan

DRAFT

Draft Forecast Methodology Document
May 29, 2025

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Powering Tomorrow.

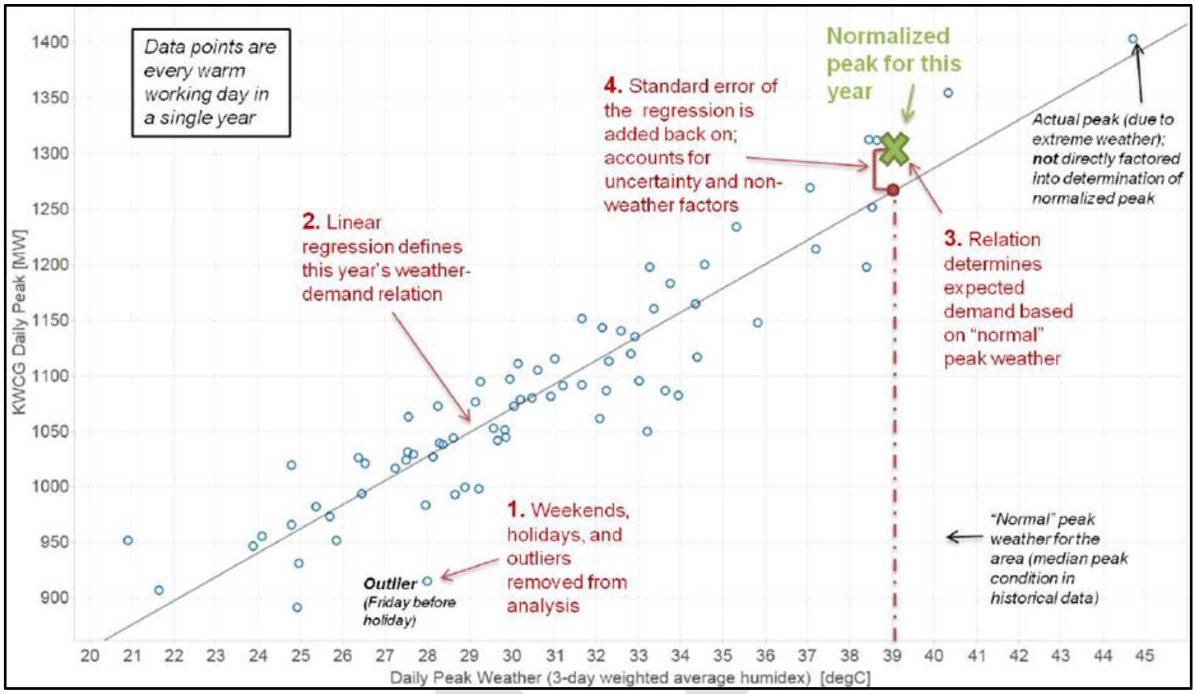
Demand Outlook and Methodology

1. Method for Accounting for Weather Impact on Demand

Weather has a large influence on the demand for electricity, so to develop a standardized starting point for the forecast, the historic electricity demand information is weather-normalized. This section details the weather normalization process used to establish the starting point for regional demand forecasts.

First, the historical loads were adjusted to reflect the median peak weather conditions for each transformer station in the area for the forecast base year (i.e., 2024 for the GTA West IRRP). Median peak refers to what peak demand would be expected if the most likely, or 50th percentile, weather conditions were observed. This means that in any given year there is an estimated 50% chance of exceeding this peak, and a 50% chance of not meeting this peak. The methodological steps are described in Figure 1 and were undertaken for both the summer and winter seasons.

Figure 1: Method for Determining the Weather-Normalized Peak (Illustrative)



The station-level 2024 median weather summer and winter peaks were provided to each LDC. This data was used as a starting point from which the LDCs could develop 20-year gross median demand forecasts using their preferred methodologies (described in the next sections).

Once the 20-year, median peak demand forecasts were submitted to the IESO, the normal weather forecast was adjusted to reflect the impact of extreme weather conditions on electricity demand, and forecast demand savings from CDM and contracted DG were accounted for. The studies used to assess the adequacy and reliability of the electric power system are generally required to be based on extreme weather demand – typically the expected demand under the hottest (or coldest) weather conditions that can be reasonably expected to occur. Peaks that occur during extreme weather (i.e., summer heat waves in southern Ontario) are generally when the electricity system infrastructure is stressed the most.

2. Alectra Inc.: Gross Forecast Methodology and Assumptions

Alectra Inc., through its subsidiary Alectra Utilities Corporation, serves approximately one million homes and businesses across a 1,924 square kilometre service territory comprising 17 communities which include the cities of Mississauga and Brampton. In 2017, Alectra Utilities merged with Enersource and Hydro One Brampton, which then served customers in Mississauga and Brampton, respectively, to provide a reliable supply of electricity and innovative energy solutions for families and businesses in this area. The service territory for Alectra Utilities in the GTA West region is shown below in Figure 2. For the GTA West IRRP Alectra Utilities developed forecasts for all or part of the electrical load of the following stations:

- Bramalea TS
- Cardiff TS
- Churchill Meadows TS
- Cooksville TS
- Erindale TS
- Goreway TS

- Jim Yarrow MTS
- Kleinburg TS
- Lorne Park TS
- Meadowvale TS
- Oakville TS
- Pleasant TS
- Tomken TS

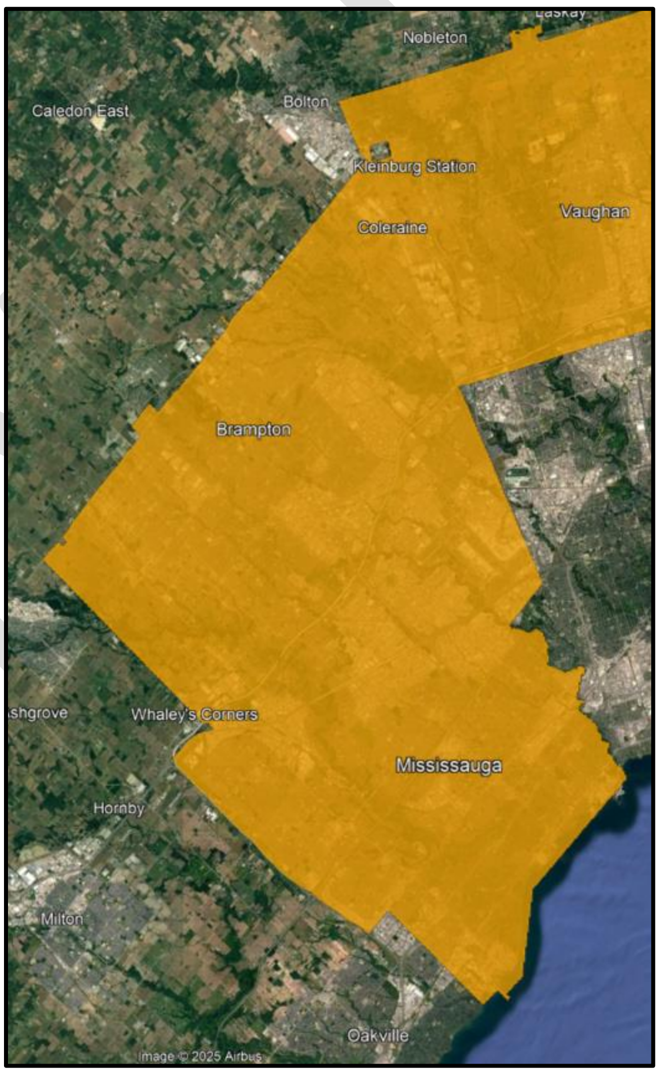
2.1 Factors that Affect Electricity Demand

Load growth is accounted by considering past system peak performance and trend analysis, and by quantifying other factors that are less traditional and therefore are not reflected in historic trends.

Past System Peak Performance and Trend Analysis

The trend analysis is performed to forecast the system peak from historical peak demand results. The purpose of the trend analysis is to compare the results with end-use method to obtain more realistic long term load projections considering the historical demand peak.

Figure 2: Alectra Service Territory Map in GTA West



Other Factors

The other contributing factors to long-term load projections are CDM, DG contribution and other government incentives and programs (i.e. Global Adjustment), emerging industrial technologies (i.e. Microgrid, battery storage, CHP, etc.), newly introduced load types (i.e., electric vehicles, fleets) that are reviewed and assessed in load forecast procedure.

Distributed Generation: Alectra Utilities forecast considers the existing DG and DG connections forecasted over the horizon period.

Electrification of Transportation: Alectra Utilities continues to monitor the uptake of EV vehicles and projects related to electrification of transportation to better understand and determine the impact on local electricity needs. Alectra Utilities uses the available information on EV adoption and evaluates the impact of EV's at the peak.

Decarbonization: Alectra Utilities continues to monitor the uptake of decarbonization of residential and non-residential sectors to better understand and determine the impact on local electricity needs. Alectra Utilities uses the available information on heat pump adoption and evaluates the impact of the decarbonization's at the peak.

2.2 Forecast Methodology and Assumptions

The load forecast is performed once a year by Alectra Utilities to provide an indication as to where and how much load increases are occurring. An increase in the peak demand is normally the biggest factor driving the requirement for reinforcement of the system.

Alectra Utilities performs a combination of two methods of forecasting to determine the long-term system capacity adequacy assessment:

- End-use analysis using the latest information available from municipal report; and
- Past system peak performance and trend (statistical) analysis.

End-Use Analysis Using the Latest Information

Alectra Utilities reviews economic development and outlook for different regions that include Ontario

Government development, population growth and job growth projections, municipal economic analysis report, past housing completion statistics and future housing projection, ICI building activities and news from media.

Population Growth: Historical annual population growth is obtained from Regional Annual Economic and Municipal Development Review Reports. Long-term annual population projection is obtained from provincial and municipal official plan reports published by Ontario government, and regional/municipal government.

Employment Growth: Historical employment and economic growth statistics reports published by

Provincial and Municipal governments are used to extract the historic economic development and growth rates. Employment growth and structure projection are used to develop long-term employment forecasts potentially categorized by the sector, industry and service types.

Housing Activities: Number of housing completions, mix of housing completions, vacancy rate and building permit activities in the Region and Municipal boundaries and residential developments plan are reviewed for long-term capacity need forecast. Plans for subdivision and condominiums are obtained and analyzed to develop the long-term load forecast.

ICI Building Activity: Industrial and Commercial development rate, commercial vacancy rate, industrial sale prices per square feet, total ICI construction and commercial/industrial building permits are obtained and compiled to develop the long-term load forecast for the region.

Weather Correction

Alectra uses weighted 3-day moving average temperature to correlate the peak demand and weather. Peak demand weather normalization is the process for estimating what peak demand would have occurred in each time period if the weather had been normal (1 in 2). The weather normalized peak demand is used as the starting point for the forecast. Alectra uses "1-in-10" (extreme) weather scenario for system planning purposes to contemplate the impact of extreme weather (i.e. high temperatures) on peak demand.

In conclusion, there is a level of uncertainty with respect to any forecasting exercise. Any major unexpected changes to assumptions, economic pressure or crisis events, government directives and other social/economic/political events that can impose changes and that were not contemplated at the time of forecasting are reviewed and forecast is adjusted annually accordingly to reflect the changes.

3. Burlington Hydro: Gross Forecast Methodology and Assumptions

Burlington Hydro (BHI) owns and operates the electricity distribution system which serves the City of Burlington. BHI's total service area is 188 square km, located in Halton Region between the north shore of Lake Ontario and the Niagara Escarpment. A map of BHI's service territory is shown in Figure 3. BHI supplies power through five transformer stations: Tremaine TS, Palermo TS, Burlington TS, Bronte TS and Cumberland TS.

BHI currently serves approximately 68,500 customers. The City of Burlington is an area of moderate economic growth, with a fixed urban boundary and a limited supply of land designated for warehouse, manufacturing, and office use. The Ontario government's long-term Places to Grow infrastructure plan has provided an expansion impetus, envisaging the City of Burlington as one of the 25 "Urban Growth Centres" in the Golden Horseshoe. However, the availability of land for residential and commercial expansion is becoming progressively limited as the City of Burlington expands towards the boundary imposed by the Greenbelt, which occupies a large part of its service area. The City of Burlington has responded to the government directive by intensifying vertical development and refurbishment in the downtown core.

3.1 Factors that Affect Electricity Demand

The Growth in the service area is driven mainly by commercial and residential development. The commercial growth is expected to occur along Palladium Way and at the intersection with Appleby. Residential development is expected to occur at Uppermiddle Rd. and Burloak Dr. area and along Tremain Rd south of 407.

The City of Burlington's staff provided guidance including key assumptions pertaining to the Climate Action Plan, population growth, housing development, and economic development. Feedback from the Burlington Climate Action Stakeholder Team confirmed the growing momentum within the City of Burlington for the adoption of EVs and heat pumps. BHI engaged with representatives from the electricity sector, including the Electricity Distributors Association, Electrical Safety Authority, Plug'n Drive, and the Advanced Energy Management Alliance.

Figure 3: Burlington Hydro Service Territory Map

3.2 Forecast Methodology and Assumptions

The forecast methodology adds estimates of expected electricity demand growth in residential, commercial, and transportation sectors to historical electricity demand in a process that is comparable to the industry used electricity demand forecast methodology. The " bottom- up" forecast estimates energy consumption for EV's and heat pump adoption growth as well.

The forecast was developed by leveraging the following key inputs:

- 2020 City of Burlington Climate Action Plan, 2020 City of Burlington Official Plan, and 2022 Halton Region Land Needs Assessment
- Hourly historical metered consumption
- Data from Natural Resources Canada and Statistics Canada including census information, vehicle sales, and energy use details
- Data from the Annual Planning Outlook

The following describes the high-level approach to developing the forecast:

Initially, an annual energy sales forecast is developed by multiplying assumptions for drivers (population and employment/floorspace) with assumptions on fuel share (i.e., the pace of electrification) and assumptions on unit energy consumption (e.g., kWh per household, kWh per employee, and future energy efficiency improvements).

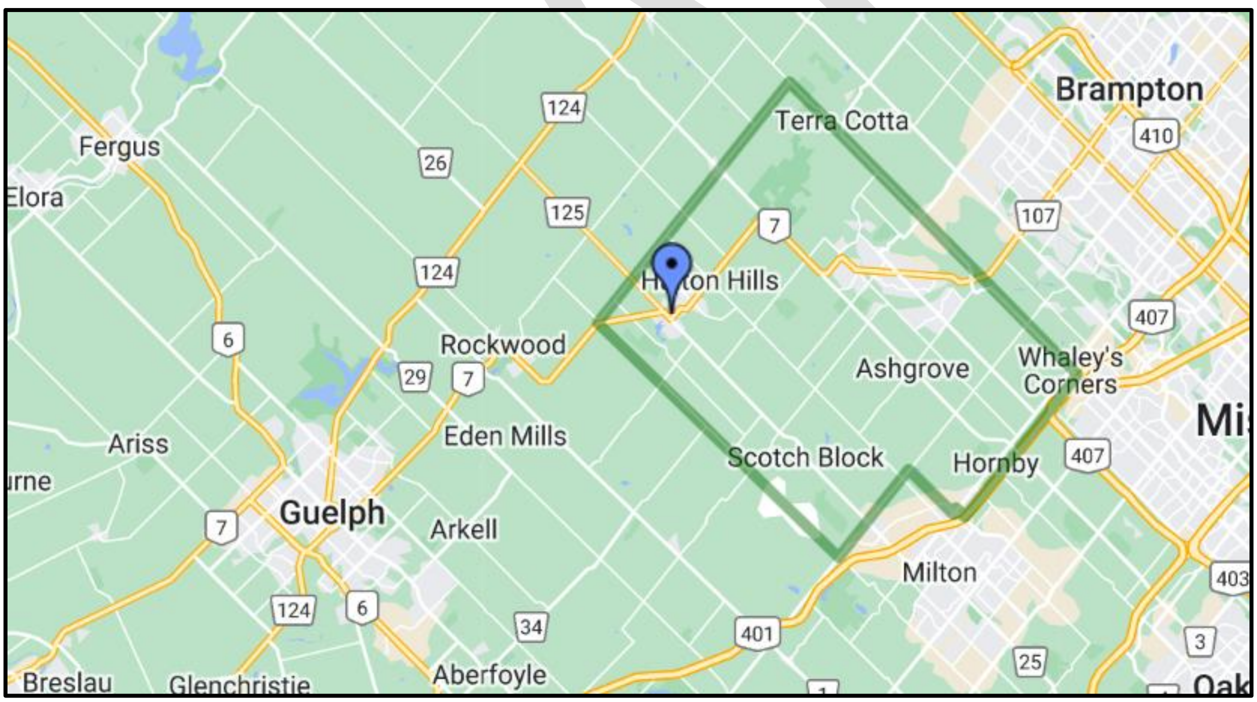
Next, for the 2024 base year, assumptions are calibrated to match measured energy delivered, and growth in housing units and employment is allocated to feeders based on city planning documents and current development applications.

Finally, the energy consumption forecast is translated into summer and winter peak demand forecasts using peak contribution assumptions; growth in peak demand in the bottom-up forecast is added on to the feeder- and station-level coincident peak from the 2024 base year.

4. Halton Hills Hydro: Gross Forecast Methodology and Assumptions

Halton Hills Hydro is owned by Halton Hills Community Energy Corporation, which is wholly owned by the Town of Halton Hills. Halton Hills Hydro serves approximately 23,055 customers, operates 1,700 km of electricity lines, and covers 277 square kilometres of service territory, as shown below in Figure 4. For the GTA West IRRP, Halton Hills Hydro developed forecasts for Halton TS, Halton Hills MTS, and Pleasant TS.

Figure 4: Halton Hills Hydro Service Territory Map



4.1 Factors that Affect Electricity Demand

Halton Hills Hydro participates in development review committees to review all the new developments arising in the service territory. The forecast was developed based on the information in municipal-level growth plans. Developments reviewed in review committees considered all the new developments arising in the service territory. The forecast was developed from the information derived from municipal level growth plans.

Consideration was given to regional development plans. Georgetown and surrounding suburban areas are expected to undergo moderate growth. This includes potential significant development if the Vision Georgetown plan proceeds as planned. This local planning context was factored into the forecast to ensure alignment with anticipated urban expansion. Specific residential growth projects up to 2035 include:

1. Vision Georgetown: 8013 units
2. Georgetown DGA: 997 units
3. Georgetown Built Boundary: 3067 units
4. Hamlets and other rural: 147 units

The methodology is designed to reflect realistic load expectations under varying growth and weather scenarios.

4.2 Forecast Methodology and Assumptions

The load forecast was developed using a multivariable regression model that incorporates both weather conditions and population growth data. Specifically, the model includes cooling degree days (CDD) and heating degree days (HDD) to capture the impact of extreme temperatures on electricity demand. These weather variables were sourced from the Climate Atlas and Climate.Weather.gc.ca. Population growth, used as a representation variable for customer growth, was based on projections from Municipal Energy Plans (MEPs) and general census data. The forecasting approach used is econometric modelling, which allows for the analysis of historical relationships between variables to predict future load.

Two population growth scenarios were applied: a low-growth scenario based on historical census trends and a high-growth scenario using municipal projections. While population growth is an important driver, the peak demand is primarily influenced by forecasted extreme weather conditions, particularly CDD and HDD.

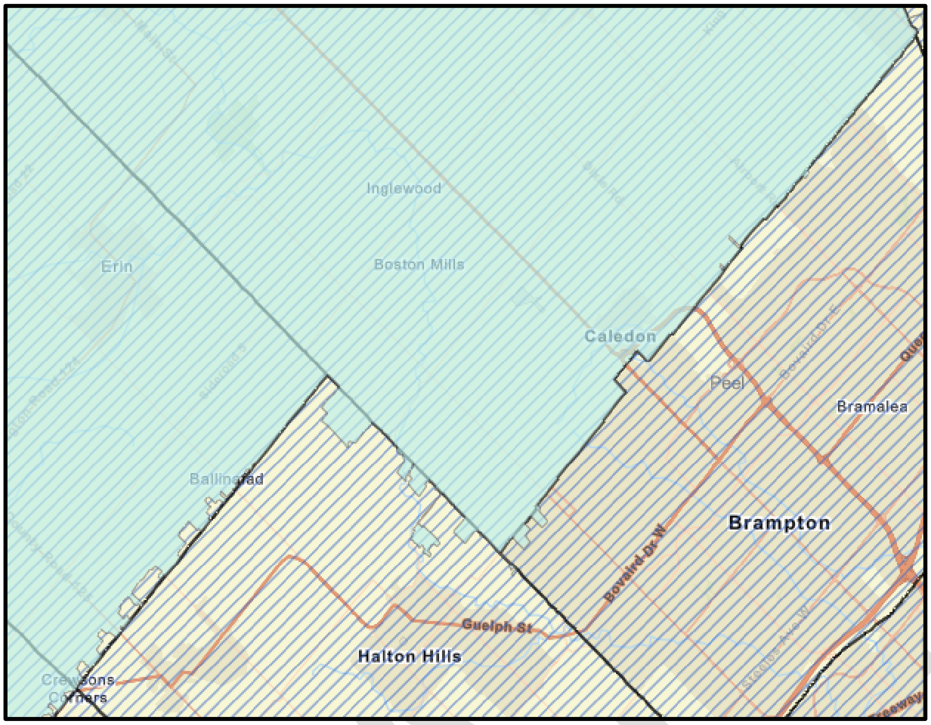
5. Hydro One Networks Inc. Distribution: Gross Forecast Methodology and Assumptions

Hydro One Distribution services the areas of GTA West region that are not serviced by other LDCs. It supplies power through Pleasant TS, Kleinburg TS, and Tremaine TS, included in the study area for the GTA West Forecast. Figure 5 shows part of Hydro One's service territory, which includes the GTA West region.

5.1 Factors that Affect Electricity Demand

Assumptions included in the growth rate can be related to such factors as: Ontario GDP growth rate, housing statistics, the intensification of urban developments (i.e., MW/sq. ft); and electrification trends (e.g., more vehicles switching from gas to electrical vehicles).

Figure 5: Hydro One Service Territory Map (Green Area)



Some developments have already signed connection contracts, and others have applied for a capacity check and shared their development plans and intended connection timelines. In addition, Hydro One Distribution used provincial and local economic and demographic developments and the relation between the two sets, and government policies or mandates were taken into account in developing the forecast.

Where possible, detailed information about load growth, based on local knowledge and or municipal/provincial energy plans, was used to augment the forecast values within the study period.

The town of Caledon is rapidly growing with land rezoning underway for tens of thousands of residential units. In addition, the anticipated 413 highway growing through the town is attracting large industrial loads. Hydro One has seen substantial demand over the past five years and anticipates the trend to continue over the next two decades given the town's official plan and availability of industrial lands.

The forecast developed by Hydro One Distribution for the GTA West IRRP is aligned with the City of Vaughan Municipal Energy Plan, the City of Mississauga 5-Year Energy Conservation Plan, the Oakville 2024 Community Energy Plan, and the Bulington Corporate Energy and Emissions Management Plan.

5.2 Forecast Methodology and Assumptions

Hydro One Distribution used both econometric and end-use forecasting to develop the load forecast provided to the IESO. A baseline forecast (MW station peak in the base year) was developed, considering such factors as normal operating conditions, coincident peak loading, and extreme weather conditions.

Load growth for each station was calculated based on the latest local, provincial information (including historical load, actual and projected economic and demographic factors, municipal energy plans, etc.) and the historical relation between them. Industrial loads were considered based on requested or contracted capacity. Residential loads requirements were based on a per unit capacity requirement.

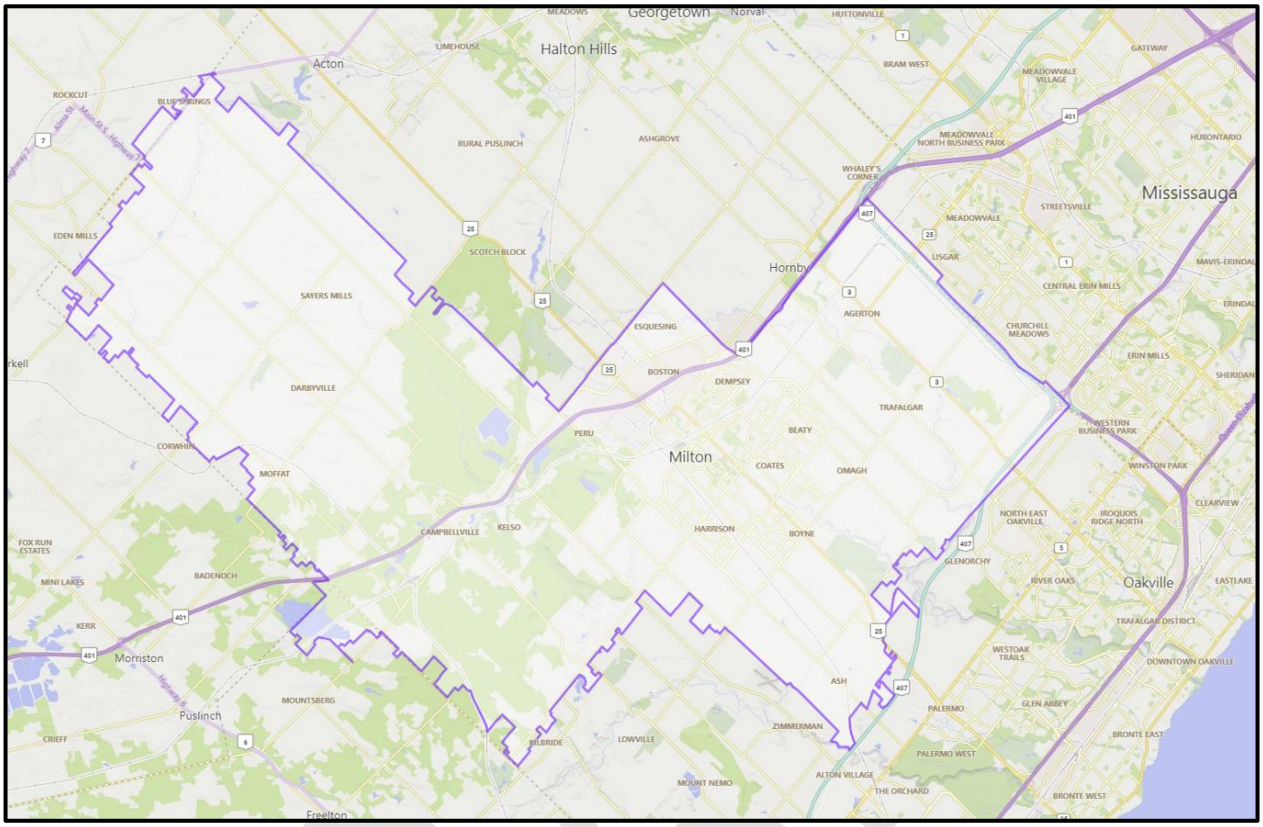
For the GTA West IRRP forecast, Hydro One Distribution used the weather-corrected peak demand levels for the station serving Hydro One customers. From the established baseline year, a growth rate (%) was applied to station demand level to provide forecast values within the study timeframe.

6. Milton Hydro: Gross Forecast Methodology and Assumptions

Milton Hydro Distribution Inc (MHDI) is a local distribution company located in the north-west GTA and distributes power to approximately 44,500 residential, commercial, institutional, and industrial customers in the Town of Milton. MHDI's service territory is shown in Figure 6. In 2023, MHDI undertook a detailed study[1] of our distribution system to plan for growth in the community and understand the impacts, challenges, and opportunities growth brings. Electricity demand is growing quickly in Milton, driven by faster population growth, electric vehicles, and several new large customers. Total demand across primary feeders is forecasted to increase from 198 MW in 2023 up to 326 MW (low growth scenario) or up to 425 MW (high growth scenario) by 2030. The following describes factors MHDI accounted for in developing our load forecasts.

[1] Milton Hydro Capacity Needs Assessment, May 30, 2024, by Electric Power Engineers and Power Advisory.

Figure 6: Milton Hydro Distribution Inc. Service Territory Map



Two demand forecast scenarios are considered. The high growth and low growth scenarios use the same assumptions for organic growth, which captures population, employment, energy efficiency and electrification projections. For large customer growth, such as significant regional warehouse complexes or data centres, the high growth scenario considers all customers which maintain active connection requests, while the low growth scenario uses 50% of that growth.

Demand forecast assumptions were informed by publicly available federal, provincial, and municipal plans. These included federal electric vehicle sales targets, provincial assessments such as the IESO's APO, regional documents like the 2022 Halton Region Land Needs Assessment (LNA), and municipal documents like the Town of Milton 2018 Community Energy Plan.

At the time MHDI's load forecast was prepared, potential impacts of tariffs were not factored into growth projections. Future forecasts may be affected by such impacts.

Summer and Winter non-coincident peak load forecast submitted to IESO are found in Appendices A and B of this methodology guide. These tables include a low growth forecast scenario. Variation in load forecast developed as part of our detailed system study and the numbers submitted to IESO are attributed to changes in community load growth projections and timing in Milton.

The contents of this Load Forecast Methodology constitute proprietary and confidential information of MHDI and shall not be disclosed, distributed, reproduced, or otherwise made available, in whole or in part, in any manner or form, without the prior express written consent of MHDI.

6.1 Factors that Affect Electricity Demand

The factors that affect the demand of electricity in the Milton Hydro service territory are described below.

Population and Employment Growth

Growth forecasts are based on the Halton Region LNA from February 2022. Halton Region and its Area Municipalities are developing new population and employment forecasts, consistent with Halton's Regional Official Plan Amendment 49 (ROPA 49), as shown in Table 1.

Table 1: Milton population and employment growth projections

Year	Population		Employment	
	2022 LNA	ROPA 49	2022 LNA	ROPA 49
2021	138,500	137,980	44,500	44,390
2031	185,600	-	67,900	-
2041	261,700	277,000	96,500	100,120
2051	335,000	350,870	130,100	136,270

Household and employment growth was allocated to primary feeders based on planned urban development. Short-term growth was informed by active development applications (solid colors in Figure 7) and connection requests received by MHDI for housing developments and commercial buildings. The most significant single development considered was Milton Education Village, a mixed-use planned neighbourhood in the southern part of the urban area (Tremaine TS) which is targeting 6,503 residents and 3,659 jobs by 2031.

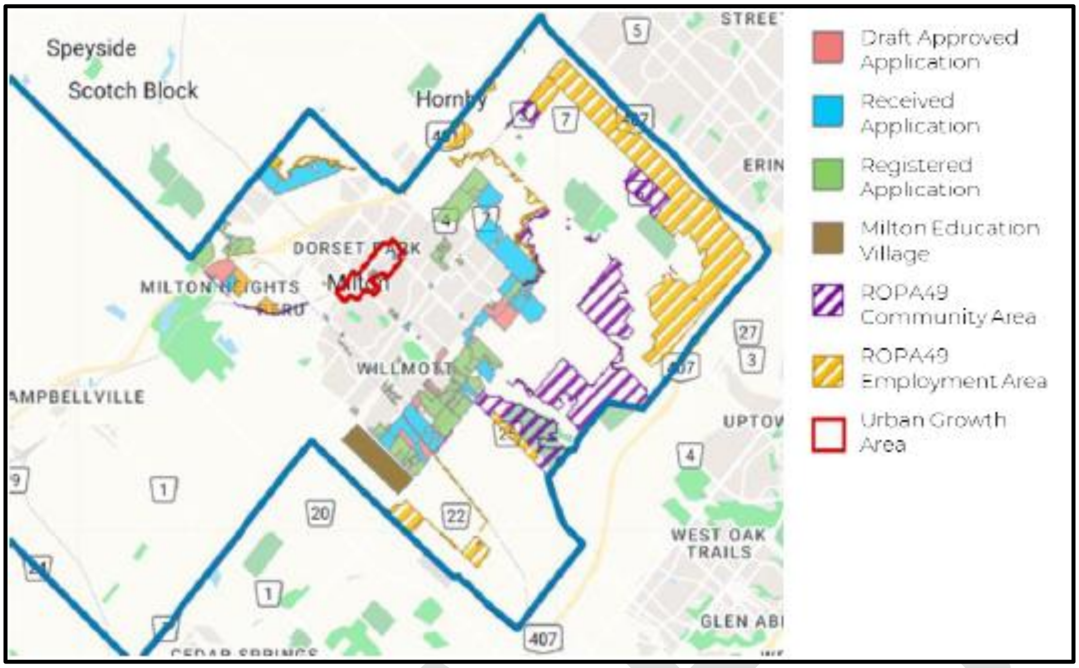
Long-term growth was informed by Regional Official Plan Amendment 49. Greenfield development is anticipated in the cross-hatched areas in Figure 7 which are currently served primarily by Palermo TS and Glenorchy MTS (yellow is employment area, purple is community/household growth). Higher-density housing and intensification is also planned for central Milton near the GO Station (red highlighted area in Figure 7) in the area currently served by Halton TS.

Electrification & Transportation

MHDI's load forecast considers impacts that electrification of household heating and transportation may have on our distribution system. While there are no defined targets specific for home and commercial electrification of heating set by the Province of Ontario, MHDI forecast accounts for a base assumption of up to 20% of buildings switching heat pumps by 2050.

The assumed light-duty electric vehicle adoption rate is consistent with federal government sales targets. Approximately 50% of light-duty vehicles would be electric by 2035 and nearly 100% by 2050. A slower adoption rate is assumed for medium- and heavy-duty vehicles (MHDVs), plateauing at 80% share of vehicle stock. The number of vehicle kilometers travelled per person is assumed to remain constant through the forecast period. MHDVs are assumed to consume 5% as much energy as light-duty vehicles, which is consistent with the assumption used in the 2022 APO for electric mobility other than light-duty vehicles.

Figure 7: Growth areas in Milton



Large Customers

MHDI's load forecast also considers large commercial customers and known projects in progress. To avoid double-counting, residential and commercial customer connections were considered as part of population and employment driven growth. The locations of these requests informed the near-term allocation of population and employment growth to feeders.

Remaining connection requests were considered "Large Customers", which are not closely correlated with population or employment. 131 MW of the growth to 2030 is from just five large customers, as seen in Table 2.

Table 2: Large Customer Projection

Customer	2024	2025	2026	2027	2028	2029	2030	Total
Customer 1 - Warehouse (Halton TS)					4.1	8.9	13.8	59.4*
Customer 2 - Warehouse (Halton TS)			5	5	5	5	5	5
Customer 3 - Warehouse (Tremaine TS)			0.8	5.75	7.65	9.5	10	10.0
Customer 4 - Commercial (Tremaine TS)			12.0	12.0	12.0	12.0	12.0	12.0
Customer 5 - Manufacturing (Halton TS)							20.0	20.0
Other Large Customers	11.3	19.5	22.5	25.5	25.5	25.5	25.5	25.5

6.2 Forecast Methodology and Assumptions

Bottom-Up Forecast

The “Bottom-up” demand forecast estimates energy consumption and demand from the residential, commercial, transportation, and large customer sectors separately.

Residential consumption is based on forecasts for household growth, household type (e.g. single family vs. apartment), and consumption per household. Commercial consumption is based on forecasts for employment and consumption per employee. For both residential and commercial sectors, heating- specific consumption is modelled separately to account for potential fuel switching from fossil fuels to heat pumps. The transportation sector accounts for personal light-duty electric vehicles, medium- and heavy- duty vehicles primarily for commercial use, and transit electrification.

Large customers are forecasted based on a connection request list maintained by MHDI. Several significant planned manufacturing, warehouse, and data centre facilities were considered separately from the general commercial sector.

Feeder-Level Demand Forecast

A 2023 Base Year was developed based on historical hourly data for 2021, 2022, and 2023 provided by MHDI. Historical peak summer and winter coincident demand measured at each transformer station was allocated to its feeders based on the feeder’s noncoincident summer and winter demand. This is intended to mitigate the effect of outliers and temporary load transfers on feeder-level seasonal peaks.

The feeder-level demand from the Bottom-up forecast does not precisely match the 2023 Base Year demand. To reconcile the forecasts, the “Delta” method is used; the 2023 seasonal demand for each feeder is set using Base Year, and absolute growth in the Bottom-up forecast is applied from that base. Feeder level forecast is not provided as part of MHDI’s submission to IESO.

Risks & Uncertainties

There are some inherent uncertainties about future events, including economic growth, changing customer preferences and a rapidly evolving policy environment. The uncertainties associated with forecasts will naturally increase with the length of an outlook period and reflect the interdependencies of underlying assumptions. Specifically, there are several sources of uncertainty in the analysis.

1. Planning forecasts under development by Halton Region include 5% higher population and employment for Milton in the 2040s, which would lead to an increase in the demand forecast.
2. The forecast assumes an increase in conservation funding in the next provincial framework to target the full achievable potential. If conservation funding does not reach this target, then demand may increase more quickly.
3. Electrification rates for both transportation and heating are highly uncertain, which has a greater effect on the long-term forecast.
4. Impact of large customers variations in demand growth. Of the anticipated growth by 2030 in the high growth scenario, 131 MW is from five customers and nearly 60 MW is from a single development with multiple large buildings.

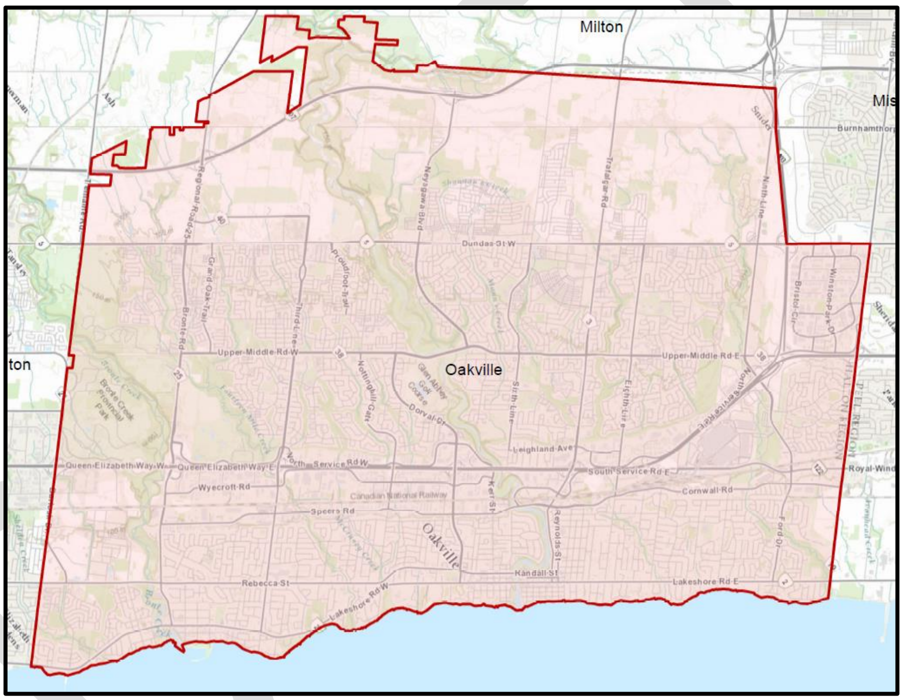
5. Recent impacts of tariffs on the housing and commercial/ industrial markets that are not fully understood.

If any of the large customers are not connected, timing of connection changes, if actual demand is much lower than currently estimated, or if new demand is not coincident with other consumers, MHDI’s load forecast could vary significantly

7. Oakville Hydro: Gross Forecast Methodology and Assumptions

Oakville Hydro delivers reliable and safe electricity to more than 77,000 individuals, families and businesses in the Town of Oakville, as shown in Figure 8. The company maintains an active commitment to conservation and safety and is strongly invested in the social and economic well-being of the Oakville community.

Figure 8: Service territory of Oakville Hydro



7.1 Factors that Affect Electricity Demand

Oakville Hydro’s load growth is primarily driven by residential load growth. The factors that contribute to the electric load growth in the Oakville Hydro region are:

- Population and Employment Growth
- Electrification of Transportation
- Building Electrification
- Weather Sensitivity

Electrification of local Oakville Transit Phase 1 and Phase 2 are expected to add around 11MW to a specific feeder.

7.2 Forecast Methodology and Assumptions

Oakville Hydro's 2025–2050 load forecast applies a bottom-up methodology to project future demand across its five TS service areas and associated feeders. The forecast is designed to support long-term capacity planning and grid investment decisions.

Historical daily peak loads were weather-normalized using a multi-variate regression model. The model considered temperature, calendar variables, and customer counts.

Sub-forecasts were developed and combined to estimate total peak demand:

- **Customer Growth**: Derived from regional housing and employment forecasts, translated into peak load by customer class and archetype.
- **Building Electrification**: Based on adoption of electric heating in new and existing buildings, applying peak energy use intensities adjusted for system efficiency.
- **Electric Vehicles**: Estimated using vehicle adoption scenarios, charging behavior profiles, and known fleet electrification projects.

It was assumed that internal combustion vehicles retire after 10 years of use, and that electric vehicles retire in 15 years. Also, the forecast considered that 27% of total job growth (2024-2051) is related to home occupations, home-based businesses, and off-site employment, according to the Oakville Growth Study Analysis, page 52.

The "Halton Region, Joint Best Planning Estimates, August 15, 2023" was used to inform on the drivers, amount, and location of growth. Considerations were given towards the population growth requirements from the Town of Oakville in addition to the Town requirement for EV charging accommodations at all multi-residential locations.
Coincidence factors were developed based on historical data to adjust for diversity in load profiles across feeders, municipal stations (MS), transformer stations (TS), and the system.

8 Conservation and Demand Management Assumptions

Demand side management (DSM) measures can reduce the electricity demand, and their impact can be separated into the two main categories: Building Codes & Equipment Standards, and DSM programs. The assumptions used for the GTA WEST IRRP forecast are consistent with the DSM assumptions in the IESO's 2024 Annual Planning Outlook including the 2021 – 2024 CDM Framework. The savings for each category were estimated according to the forecast residential, commercial, and industrial gross demand. A top-down approach was used to estimate peak demand savings from the provincial level to the Southwest IESO transmission zone and then allocated to the GTA WEST Region. This section describes the process and methodology used to estimate DSM savings for the GTA WEST Region and provides more detail on how the savings for the two categories were developed.

8.1 Factors that Affect Electricity Demand

Ontario building codes and equipment standards set minimum efficiency levels through regulations and are projected to improve and further contribute to demand reduction in the future. To estimate the impact on the region, the associated peak demand savings for codes and standards by sector were estimated for the GTA West zone and compared with the gross peak demand forecast for each zone. From this comparison, annual peak reduction percentages were developed for the purpose of allocating the associated savings to each station in the region, as further described below.

Consistent with the gross demand forecast, 2024 was used as the base year. New peak demand savings from codes and standards were estimated from 2025 to 2044. The residential annual peak reduction percentages for each year were applied to the forecast residential peak demand at each station to develop an estimate of peak demand impacts from codes and standards. The same is done for the commercial sector. The sum of the savings associated with the two sectors are the total peak demand impact from codes and standards. It is assumed that there are no savings from codes and standards associated with the industrial sector.

8.2 Forecast Methodology and Assumptions

In addition to codes and standards, the delivery of DSM programs reduces electricity demand. The impact of existing and planned DSM programs were analyzed, which include the 2021 – 2024 CDM Framework, the existing federal programs, and the assumed continuation of provincial programs beyond 2024 at savings levels consistent with the current framework adjusted for gross demand growth. A top-down approach was used to estimate the peak demand reduction due to the delivery of these programs, from the province to the GTA West zone, and finally to the stations in the region. Persistence of the peak demand savings from energy efficiency programs were considered over the forecast period.

Similar to the estimation of peak demand savings from codes and standards, annual peak demand reduction percentages from program savings were developed by sector. The sectoral percentages were derived by comparing the forecasted peak demand savings with the corresponding gross forecasts in the GTA West zone. They were then applied to the sectoral gross peak forecast of each station in the region.

8.3 Estimated Savings from DSM Programs

As described in the above sections, peak demand savings were estimated for each sector and totalled for each station in the region. The analyses were conducted under normal weather conditions. The resulting forecast savings were applied to gross demand to determine net peak demand for further planning analysis.

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