Elenchus Demand Allocation Methodology

EPL's load profiles have been updated for all rate classes. Load profiles were derived using weather-normalized 2022-2023 hourly load data provided by EPL to Elenchus. Adjustments were then made to align the 2023 load profiles with the proposed 2025 Load Forecast (i.e. consumption forecast). The weather-normalization process involves three steps:

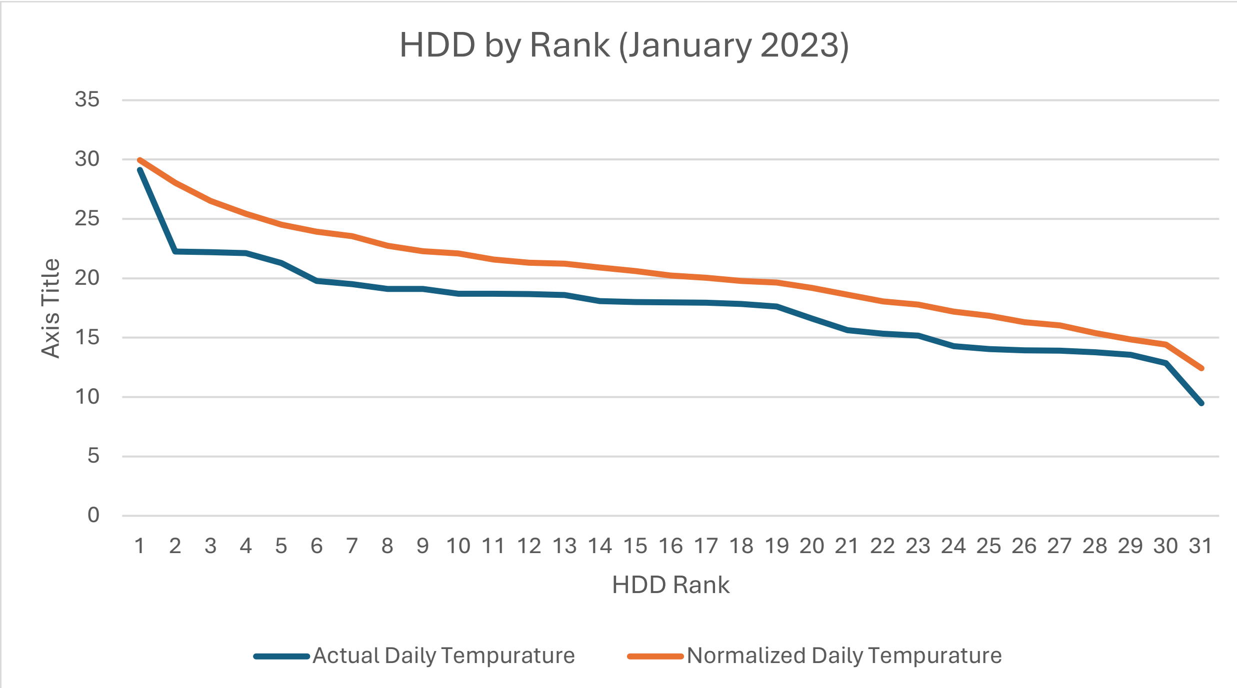
a) Derive weather profile of a typical year;
b) Derive the impact of heating degree days ("HDD") and cooling degree days ("CDD") on hourly load; and
c) Adjust actual load to typical load with the degree day impacts.

a) Derivation of Daily Temperatures

The weather profile of a typical year in EPL's service territory is calculated using average daily temperatures from 2014 to 2023. Average daily temperatures are defined as the average highest to lowest daily temperatures within a month (i.e. average of the coldest January day in each January from 2014 to 2023), rather than average temperatures on a specific calendar date (i.e. the average temperature on each January 1st). This process maintains the shape of the load profiles by determining typical monthly peaks and lows without smoothing those peaks.

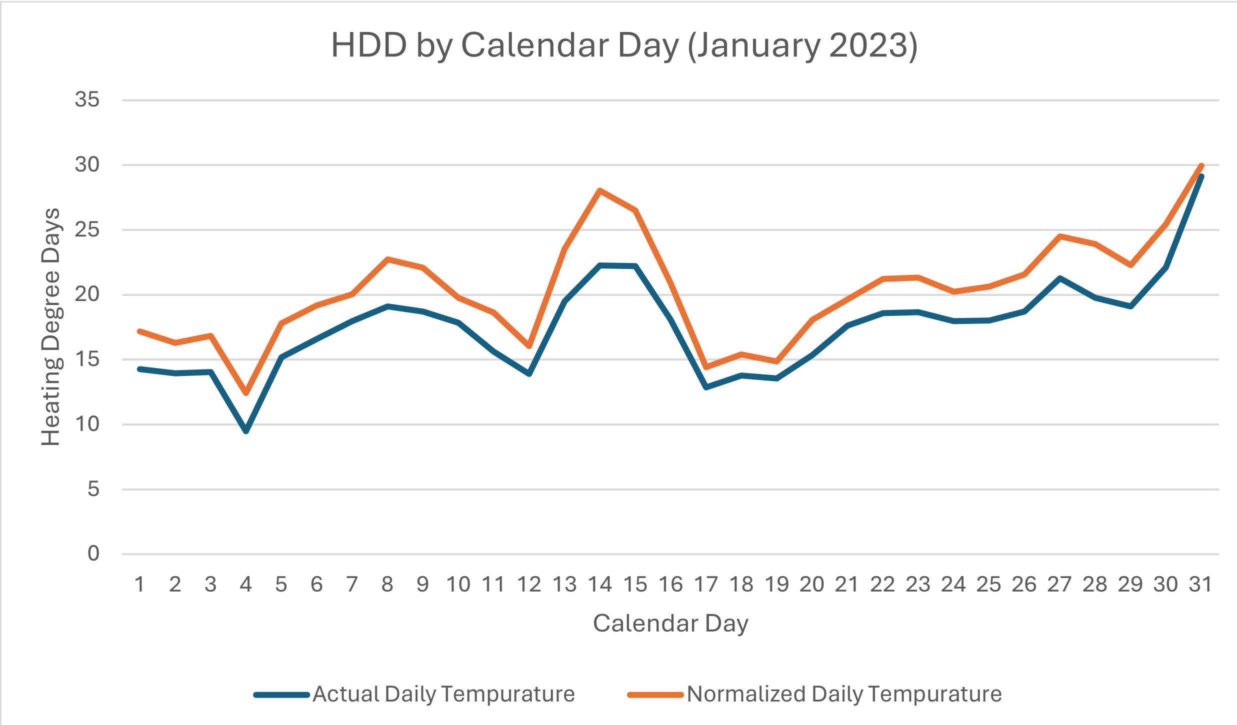
Average daily temperatures are derived by first ranking each day in each month from 2014 to 2023 from highest to lowest by HDD as measured at both Environment Canada's Windsor A Weather Station. HDD and CDD base values other than relative to 18°C are considered, which is discussed in further detail in Exhibit 3. The average HDDs among equivalently ranked days within a given month are then used as the average HDD for that ranked day in that month. For example, the days in January 2014 are ranked from 1 to 31 by HDD and this is repeated for each year from 2015 to 2023. The average HDD of the January days ranked 1 is calculated to provide the typical highest HDD day in January. All days in January ranked 1 are assigned this calculated average HDD. This process is repeated for the January days ranked 2 to 31. An example of average daily temperatures from 2014 to 2023 and actual temperatures in January 2023 ranked from 1 to 31 is provided in Figure 1 below.

Figure 1 - 10-Year Avg. Daily HDD and Actual January 2019 HDD by Rank



Average daily temperatures reflect the January normal-weather profile in EPL's service area. Figure 2 below displays the same information by calendar date using the average and actual temperatures associated with each ranked day.

Figure 2 - 10-Year Avg. Daily HDD and Actual January 2023 HDD by Calendar Date



Typical daily CDDs are determined by the same ranking and averaging methodology described above, using average daily CDD data from 2014 to 2023. January 2023 was the mildest January from 2014 to 2023 so the weather normalization process increases 2023 loads to reach weather-normalized loads.

b) Impact of HDD and CDD on Hourly Load

The impact of HDDs and CDDs on hourly load is calculated with a regression of two years of actual hourly loads (2022 and 2023) on daily HDDs and CDDs. The regression results provide the estimated impact of a change in degree days on load.

Temperatures impact load differently depending on the time of the day. Consequently, HDD and CDD variables are converted to interaction variables between degree days, the hour of the day, and whether the day is a weekday or a weekend/holiday. There are 24 variables for each weekday HDD, weekday CDD, weekend/holiday HDD, and weekend/holiday CDD equal to the actual degree days in the corresponding hour and 0 in all other hours. A set of 24 binary variables, equal to 1 in the corresponding hour and 0 in all other hours and a trend variable are also included. The resulting coefficients reflect the impact of one HDD or CDD that considers different impacts depending on the hour of the day and type of day.

c) Adjust Actual Load to Typical Load

Actual 2023 hourly load is adjusted by calculating the difference between actual hourly temperatures and the corresponding ranked typical hourly temperature (as identified in Figure 2) and applying the regression coefficient to the difference. After 2023 weather normalized demand is derived for each hour, the load in each hour is adjusted by the same factor such that the sum of hourly loads is equal to the proposed 2025 Load Forecast (i.e. consumption forecast) excluding incremental EV and heating loads. Incremental EV and heating loads were then added based on an average hourly use profile for EVs and a weather-normal HDD profile for heating loads.

Table 1 below provides the calculations used to adjust actual January 1, 2023 weather variables to typical weather for the Residential class.

Table 1 - January 1 Noon Residential Example

Date	Hour	Temp °C	HDD (16)	HDD Rank	Average HDD at Rank	CDD	CDD Rank	Average CDD at Rank
		A	B = 16 – A	C	D	E	F	G
1-Jan	12	4.0	12.0	24	14.8	0	8	0

Date	Hour	2023 Load (kW)	HDD Diff.	HDD12 Coef.	CDD Diff.	CDD12 Coef.	2023 Normal Load (kW)
		H	I = D - B	J	K = G - E	L	M = H + (I * J) + (K * L)
1-Jan	12	33,207	2.8	725.1	0	2,778.7	35,267

Date	Hour	2023 Normal Load (kW)	Sum of 2023 Normal Loads	2025 Forecast Consumption Excluding EVs & Heating	2023 to 2025 Load Adjustment	2025 Normal Load (kW) Excluding EV & Heating
		M	N	O	P = O / N	Q = M * P
1-Jan	12	35,267	277,201,272	274,064,775	0.989	34,868

Date	Hour	2025 Normal Load (kW) Excl. EV&H	2025 EV Load (kWh)	Hourly EV Load	2025 Heating Load	HDD in Hour	Hourly Heating Load (kWh)	Total 2025 Normal Load (kW)
		Q	R	S = R / 8760	T	U	V = T * U	W = Q + S + V
1-Jan	12	34,868	6,113,866	509	1,600,605	0.0124%	761	36,137

The HDD at noon on January 1st, 2023 was 12.0 HDD, which was the 24th highest HDD in the month. The 24th highest January HDD in each year from 2014 to 2023 was, on average, 14.8

HDD. The difference, 2.8 HDD, is multiplied by the weekend/holiday HDD Hour 12 coefficient of 725.1 kW/HDD from the load profile regression to produce the 2,059 kW adjustment. This adjustment is applied to actual load in the noon hour of January 1, 2023 (33,207 kW) to reach the weather-normalized load (35,267 kW). The 2025 Residential load forecast, excluding additional EV and heating loads, is 1.13% lower than the sum of 2023 weather-normalized hourly loads and as such, the initial January 1, 2025 weather-normalized demand decreases to 34,868 kW. Incremental EV load of 509 kW is added using a simplified assumption that demand will be equal in each hour. Incremental hourly heating load is added by multiplying the total annual incremental heating load by the share of total weather-normal HDD in each hour (noon January rank 24 HDD of 8.4 divided by 67,830 total HDD) for an addition of 761 kW.

GS < 50 kW, GS > 50 kW, and Embedded Distributor load profiles are derived by the same methodology. The Street Light and Sentinel Light classes are not weather sensitive and as such its loads are not weather-normalized. The USL hourly load was assumed to have a constant load. The Embedded Distributor volumes include only loads at service points in which Hydro One does not own distribution assets, consistent with the method used in the 2018 COS. After load profiles are derived for all classes, total system and class-specific peaks within each month are compiled to produce Coincident Peak ("CP") and Non-Coincident Peak ("NCP") figures used in Tab "I8 Demand Data" of the OEB's Cost Allocation Model. A model illustrating how demand data was derived is provided as the excel document labelled EPL Load Profile Derivation.

Table 2 – CP and NCP Results

	Residential	GS <50	GS>50	Street Light	Sentinel Light	USL	Embedded Distributor
1CP	83,830	13,787	33,421	-	-	158	21
4CP	317,822	54,836	137,545	-	-	632	235
12CP	674,592	132,177	333,961	2,914	314	1,895	625
1NCP	83,830	16,192	38,527	614	66	158	338
4NCP	324,149	61,958	150,466	2,457	265	632	881
12NCP	697,272	152,995	384,812	7,366	794	1,895	1,874