

2025 NYISO Electric Vehicle Forecast

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Demand Forecasting & Analysis

LFTF/ESPWG

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Agenda

- Electric Vehicle (EV) Forecast Methodology
- EV Sales Forecast Scenarios
- EV Stock Forecast Assumptions Sales & Population
- EV Stock Forecast
- EV Energy Forecast Assumptions
- EV Energy Forecast
- EV Peak Impact Assumptions



EV Forecast Methodology



Separate forecast and related calculations for

- Light-Duty Vehicles (LDVs)
- Medium and Heavy-Duty Vehicles (MHDVs)
- School Buses
- Transit Buses

Bottom-up approach

• Each Zone Energy/Demand is modeled separately and later aggregated.



EV Sales Forecast Scenarios

• HIGH: Broadly reflective of NY state policy, including final EV sales saturations:

- LDVs: 100% by 2035
- MHDVs: 100% by 2045
- School Buses: 100% by 2028
- Transit Buses: 100% by 2045
- Reduced Managed / Flexible charging assumptions to generate potential upper bound impacts of EV charging on Peak Demand.

• LOW: Slower saturation of EV sales %

• Significant adoption of managed LDV charging to mitigate peak impacts

BASELINE: Between/Average of the High and Low sales %

• Significant adoption of managed LDV charging



EV Stock Forecast Assumptions - Sales



Primary drivers of EV sales forecast: NY State policy targets and recent growth trends

Sales scenarios were created for different vehicle categories

High scenario assumes LDV and MHDV policy targets are met with 100% EVs

Baseline allows for other technologies for all vehicle categories except for School Buses

School Buses:

High scenario: Assumes 100% EV sales target by the late 2020s.

Transit Bus scenarios are similar to the MHDV category

Low scenarios have slower rates of EV adoption

EV stocks are calculated using typical vehicle survival distributions. Overall vehicle stock decreases over time due to declining NY State population forecast

EV Stock Forecast Assumptions – Sales (cont.)

Year	LDV			MHDV			School Bus			Transit Bus		
. cui	High	Low	Baseline	High	Low	Baseline	High	Low	Baseline	High	Low	Baseline
2025	14%	14%	14%	3%	3%	3%	24%	24%	24%	8%	8%	8%
2026	17%	16%	17%	4%	4%	4%	39%	25%	34%	11%	10%	11%
2027	21%	18%	20%	8%	5%	6%	69%	26%	47%	14%	11%	13%
2028	27%	21%	25%	11%	6%	9%	100%	27%	57%	17%	12%	15%
2029	33%	23%	30%	15%	7%	11%	100%	29%	63%	21%	13%	18%
2030	41%	26%	36%	19%	9%	14%	100%	31%	65%	24%	14%	21%
2031	49%	29%	43%	23%	10%	17%	100%	34%	67%	28%	16%	24%
2032	59%	33%	51%	27%	12%	20%	100%	38%	69%	32%	17%	27%
2033	71%	36%	60%	31%	13%	22%	100%	42%	71%	36%	18%	30%
2034	84%	39%	69%	36%	15%	26%	100%	46%	73%	40%	20%	33%
2035	100%	43%	76%	41%	17%	29%	100%	51%	75%	45%	21%	37%
2036	100%	46%	81%	46%	19%	32%	100%	55%	78%	49%	23%	40%
2037	100%	50%	83%	51%	21%	36%	100%	60%	80%	54%	24%	44%
2038	100%	53%	84%	56%	22%	39%	100%	65%	83%	59%	26%	48%
2039	100%	57%	86%	62%	24%	43%	100%	71%	85%	64%	28%	52%
2040	100%	61%	87%	67%	27%	47%	100%	76%	88%	70%	30%	56%
2041	100%	65%	88%	73%	29%	51%	100%	82%	91%	75%	32%	61%
2042	100%	70%	90%	80%	31%	55%	100%	88%	94%	81%	34%	65%
2043	100%	74%	91%	86%	34%	60%	100%	93%	97%	87%	36%	70%
2044	100%	78%	93%	93%	36%	64%	100%	97%	99%	93%	38%	75%
2045	100%	81%	94%	100%	39%	68%	100%	99%	100%	100%	40%	78%
2046	100%	82%	94%	100%	41%	70%	100%	100%	100%	100%	42%	80%
2047	100%	83%	94%	100%	44%	72%	100%	100%	100%	100%	45%	82%
2048	100%	83%	94%	100%	47%	73%	100%	100%	100%	100%	47%	82%
2049	100%	83%	94%	100%	49%	74%	100%	100%	100%	100%	49%	83%
2050+	100%	83%	94%	100%	50%	75%	100%	100%	100%	100%	50%	83%



EV Stock Forecast Assumptions - Population



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EV Energy Forecast Assumptions

- EV counts are converted into energy using:
 - Vehicle Miles Traveled (VMT)
 - For LDVs, VMT varies by month and location
 - VMT per vehicle is assumed to be constant over forecast horizon
 - kWh/mile at rated conditions
 - Temperature sensitivity
 - Decreased performance at cold and hot temperatures
 - Flat battery efficiency trend offsetting impacts:
 - Battery age reduced efficiency
 - New battery technologies increased efficiency
 - Increasing share of BEVs (Battery EV) relative to PHEVs (Plug-in Hybrid EV) over time

	NYCA Level							
	LDV	MHDV	School Bus	Transit Bus				
Annual VMT	11712	25000	10000	25000				
Nominal kWh/mile	0.31	1.4	1.3	1.3				
Effective Annual Efficiency	93.20%							

Data sources include:

Bureau of Transportation Statistics, US Department of Energy, Federal Highway Administration, NY DMV, NREL, Alternate Fuel Data Center, Geotab, Battery University, National Grid Electric Highway Study, NYISO weather data Alternative Fuels Data center

Alternative rueis Data Center

Office of Highway Policy information Automotive fleet – Vehicle research

US Dept. of Transportation - Federal Transit Administration







These are preliminary baseline estimates and subject to revision prior to 2025 Gold Book



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forecast

EV Peak Impact Assumptions

<u>To estimate peak impact</u>

- Convert annual energy into daily consumption by vehicle category and by month
- Apply per unit charging profile to the daily energy consumption to determine hourly EV MW impacts

Diurnal charging profiles

- LDV charging profiles were developed for managed and unmanaged charging
- Increasing share of LDV managed charging assumed over the forecast horizon
- No managed charging assumed for MHDVs and School Buses

Data sources for charging profiles include: EVI-Pro Lite tool (Alternate Fuel Data Center), National Grid Electric Highway Study, NREL, California DOE, Transmission Owners





LDV Charging Profile Assumptions - Natural and Managed

Data sources for charging profiles include EVI-Pro Lite tool and information from Transmission Owners.

Forecast assumes an increase of managed charging share over the forecast horizon.

New York ISO

Questions?



Our Mission and Vision

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Mission

Ensure power system reliability and competitive markets for New York in a clean energy future



Vision

Working together with stakeholders to build the cleanest, most reliable electric system in the nation



