



ISO New England CELT Forecasts – Update

Improvements to Heat Pump and EV modeling

Marie Caspard

9-30-2026

Why do we care about the CELT forecast?

- Provides foundational assumptions for markets and studies related to end use electricity consumption
 - Used to calculate Installed Capacity Requirement (ICR) in the Forward Capacity Market (FCM)
 - Used by utilities for transmission and distribution planning
 - Used economic studies, e.g. avoided energy supply cost (AESC) study for program administrators

CELT Forecast Components

Base Load Forecast

- Statistically modeled based on historical load reconstituted for BTM PV
- Combined with electrification forecasts to yield the gross and net load forecasts

BTM PV Forecast

- Adoption forecasting based on NREL's dGen™ tool
- Demand reductions derived using zonal, historical hourly capacity factors

BTM BESS Forecast

- Adoption forecasting based on NREL's dGen™ tool
- Profiling based on retail-based seasonal peak shaving framework

Heat Pump (HP) Forecast

- Adoption forecast along possible heating pathways
- Demand based on weather-dependent building heating needs and HP coefficient of performance (COP) curves

Electric Vehicle (EV) Forecast

- Policy-based adoption forecast (5 vehicle types)
- Demand based on weather-sensitive battery efficiency curves and daily charging profiles

Large Load Forecast

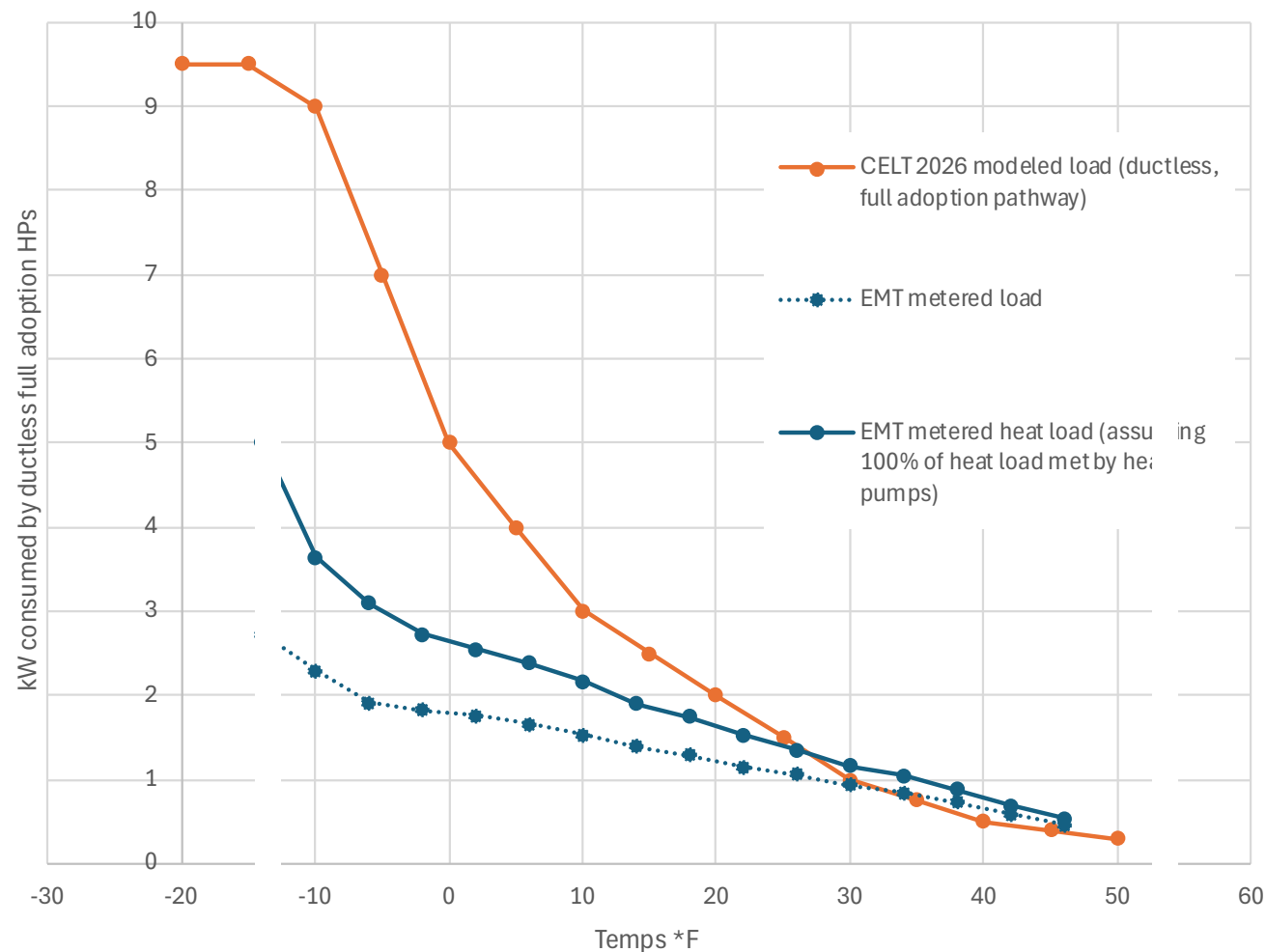
- Large load additions based on Transmission Owner surveys
- Profiling based on operational characteristics provided via surveys, or similar class-based characteristics

CELT 2026 Cycle Feedback

Heat Pumps

- No electric resistance backup should be assumed in full heat pump adoption (e.g. all electric heat) pathways
- The proportion of full heat pump adoption should be reduced
- The proportion of ducted unit adoption should be reduced

kW consumed by ductless full adoption HPs, per single family home

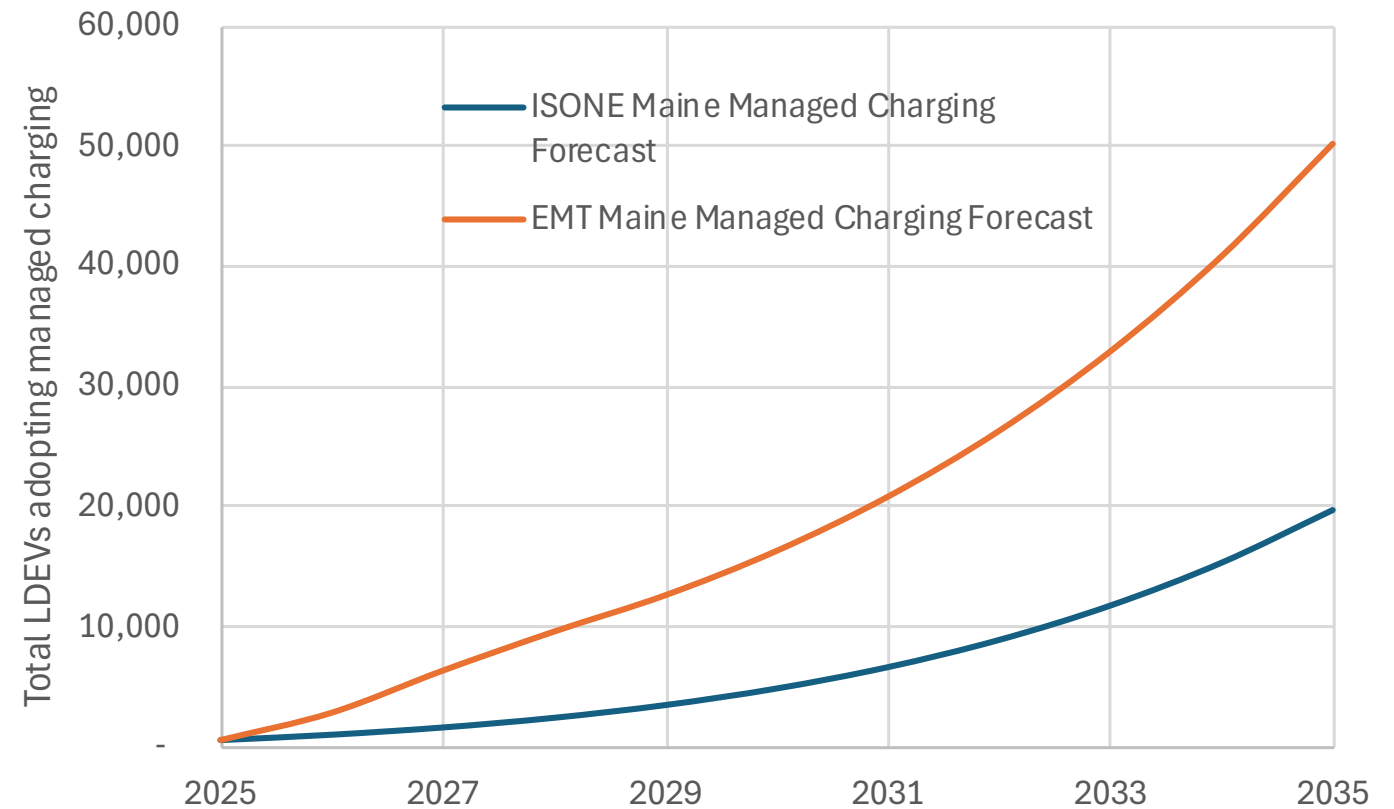


CELT 2026 Cycle Feedback

Electric Vehicles

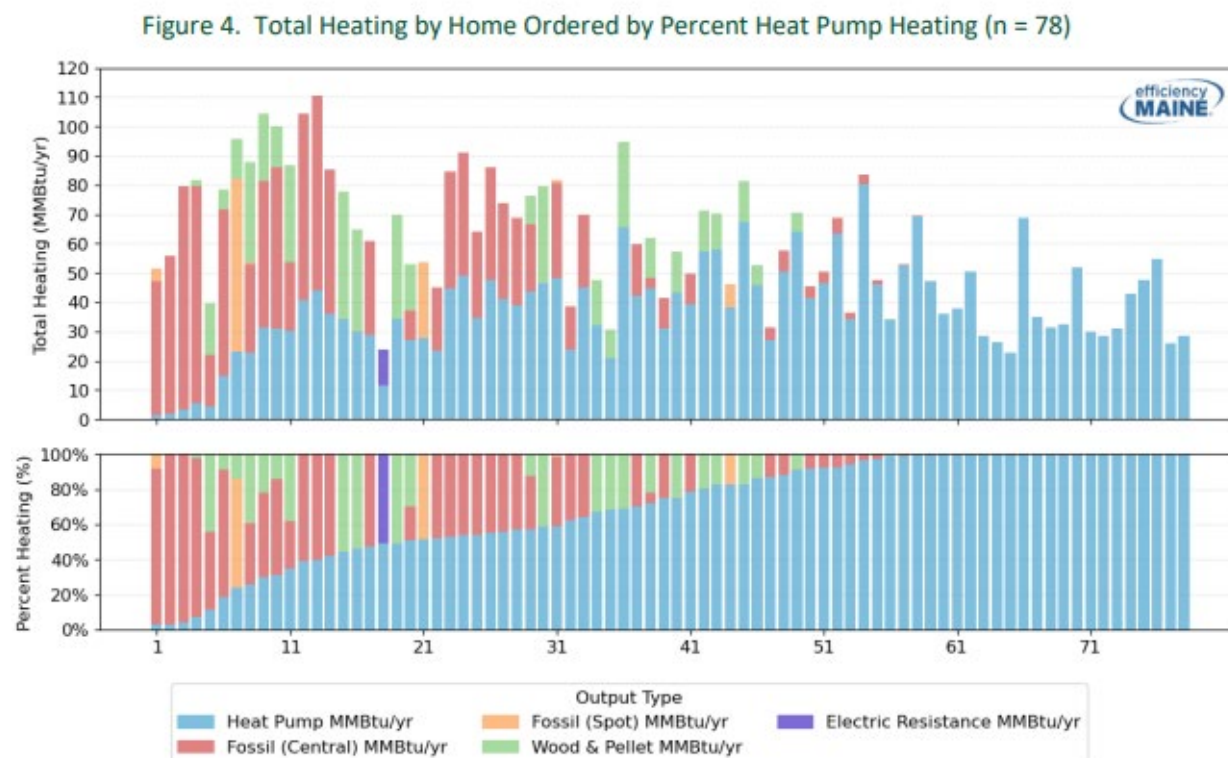
- Plug-in hybrid electric vehicles should be modeled separately
- Pace of managed charging adoption should be accelerated

ISONE vs. EMT Managed/Off-Peak Charging Adoption Forecast



Summer 2026 Collaboration

- The Trust shared raw metering data for each home metered winter 24-25 in the [Assessment of Heat Pumps in Maine Homes](#) (2026)
- ISO-NE findings addressed electric resistance backup usage, whole-home heat loads, switchover at low temperatures for partial displacement, operational strategy



CELT 2027 HP Demand Modeling Updates

Model Update	CELT 2026 Approach	CELT 2027 Implementation*	Directional Impact
Remove auxiliary backup assumptions from eligible pathways.	Auxiliary backup systems are employed by the entire heat pump stock across all pathways below assumed minimum operating temperatures.	Remove auxiliary capabilities from 100% of the ductless heat pump stock and 20% of the ducted heat pump stock.	↓
Adjust fossil fuel-to-heat pump load conversions to reflect observed operations.	- Heat pumps deliver the same heating loads as fossil fuel systems. - Ductless heat pumps require the same whole-home heat delivery as fossil fuel systems.	- Reallocate peak heating loads (Btu) in the reference fossil fuel profiles to reflect continuous heat pump operation. - Reduce ductless heat pump whole-home heating requirements 3-10%, depending on building type, to account for localized heating effects such as microzoning.	↓
Implement cold-weather operation strategies for partial displacement pathways.	Partial displacement heat pumps shut off at a switchover temperature between 6°F and 33°F.	66% of the partial displacement stock continues operating in cold-weather conditions, while 33% retains the switchover behavior.	↑
Develop an ensemble representation of displacement heating strategies.	- Full displacement heat pumps are fixed to a design that meets 85-100% of the peak heating load, depending on the pathway. - Partial displacement heat pumps are fixed to a design that meets 30% of the peak heating load.	- Full displacement is modeled as a distribution spanning 70-100% of the peak heating load, specified by the pathway and state policy guidance. - Partial displacement is modeled as a distribution spanning 10-60% of the peak heating load, specified by the pathway and state policy guidance.	↓

*Draft implementation figures and subject to change.

CELT 2027 EV Forecast Updates

- PHEVs will be separated from BEVs and analyzed independently to capture differences in adoption and charging behavior.
- Demand modeling assumptions will be reviewed to ensure energy consumption inputs reflect expected vehicle characteristics.
- Adoption forecasts will be updated using the latest policy information and historical adoption data to align projections with market conditions and emerging trends.
- EV managed charging assumptions will be refined based on state feedback, including updates to participation rates and program performance assumptions.
 - Program designs are under evaluation to review the differences in their potential impacts.

