Independent Statistics and Analysis
U.S. Energy Information Administration

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AEO2026 Fact Sheet: EIA Refines Modeling of Electricity Load and Demand

Within the Electricity Market Module (EMM) in the *Annual Energy Outlook 2026* (AEO2026), we refined how we aggregate hours of the year in the National Energy Modeling System. The change more accurately groups hours with similar dispatch characteristics to better reflect the increasing market share of intermittent resources such as solar and wind.

Background and previous methodology

The Electricity Load and Demand Submodule (ELD) aggregates hourly profiles of the various sources of electricity demand into nine time slices using load-duration curves for EMM. First, load data are split into three seasons; within each season, the load data are sorted from highest to lowest demand hour. The sorted data are grouped into three load segments: a peak segment representing the top 1% hours of load, an intermediate segment for the next 49% of hours, and a base segment representing the last 50% of hours.

Previously, we sorted hours based on gross load to define the time slices, but as more variable renewable capacity (like wind and solar) is added to the grid, gross load is no longer a reliable indicator of similar system dispatch conditions. As a result, our previous methodology no longer consistently groups hours with similar dispatch characteristics in load segments.

New methodology

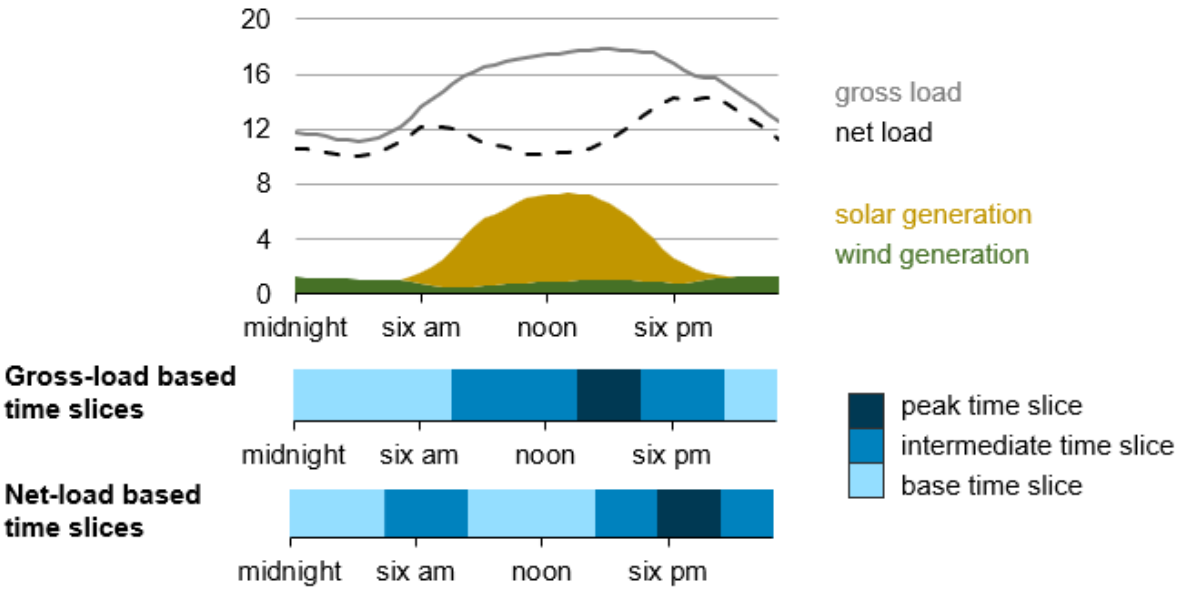
To better reflect how variable renewable generation influences wholesale electricity prices and dispatch decisions, we now sort hours using net load—gross electricity demand net of variable renewable generation—instead of gross load to define time slices. Using net load ensures that peak time slices correspond to hours when *peaker* capacity such as combustion turbines are most likely to operate and set the highest marginal cost. Hours with lower net demand, where different generating resources set the marginal cost, are grouped into intermediate and base time segments in a given season to reflect declining costs.

Impact to projections

The largest impact of this change is on projected solar and battery capacity builds. Since solar only generates during daytime, it can heavily shift the ordering of net load hours. The absolute peak demand hour usually occurs in mid-afternoon while the sun is still relatively high in the sky. However, the peak net load hours are later in the evening after sunset, when electricity demand remains high. Under the updated time slice definition, solar generation is less available in the time slices with high electricity prices. As a result, solar resources have lower potential revenue, and it is less economical to build new capacity. Since battery storage capacity is often built to complement solar generation, reducing solar deployment results in lower battery capacity additions.

Illustrative time slice defined using gross load vs net load

gigawatts



Data source: U.S. Energy Information Administration

Note: Illustrative data based on *Annual Energy Outlook 2026* analysis.