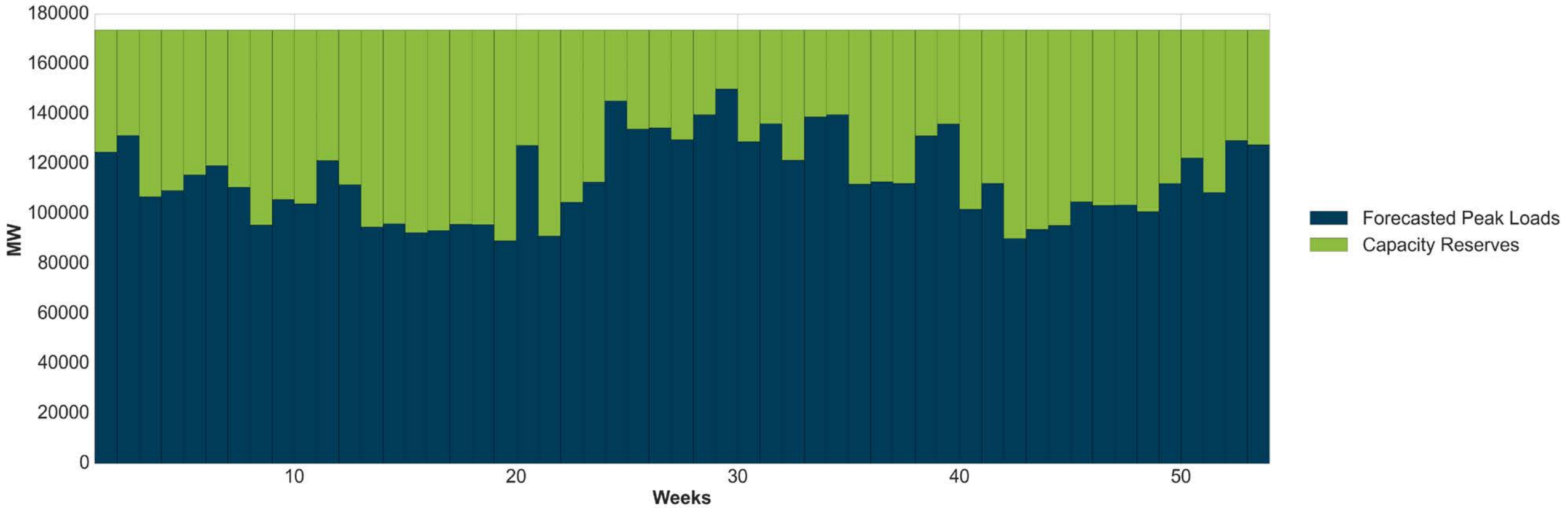
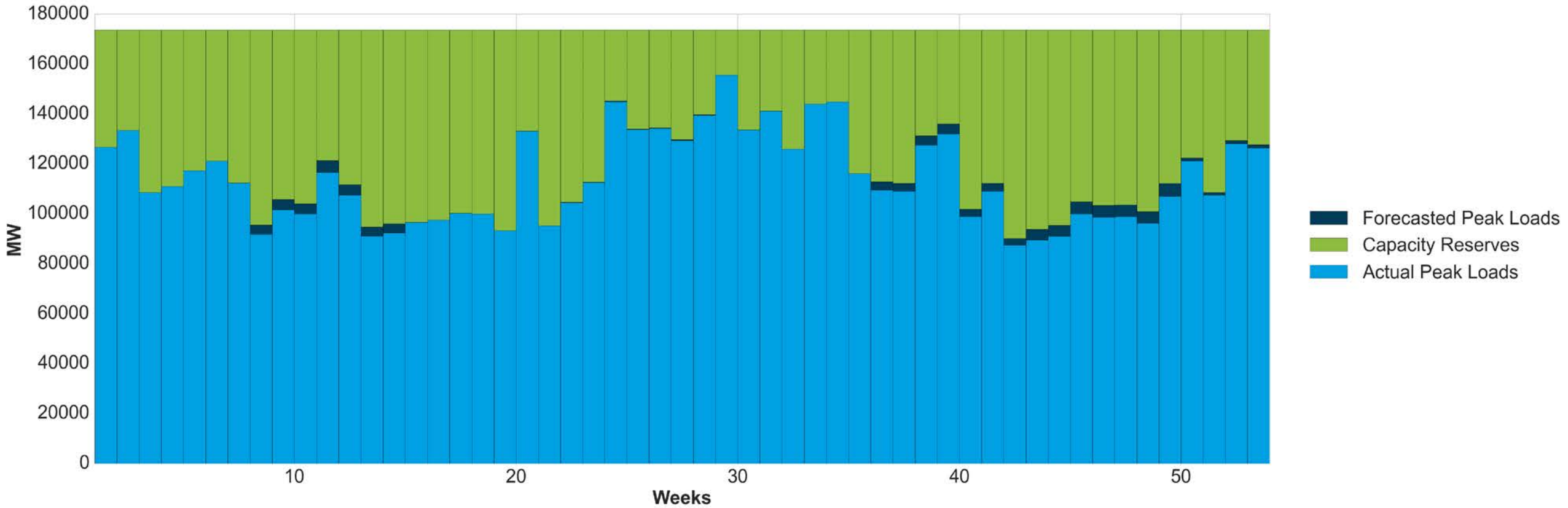


Capacity Reserves vs Operational Reserves

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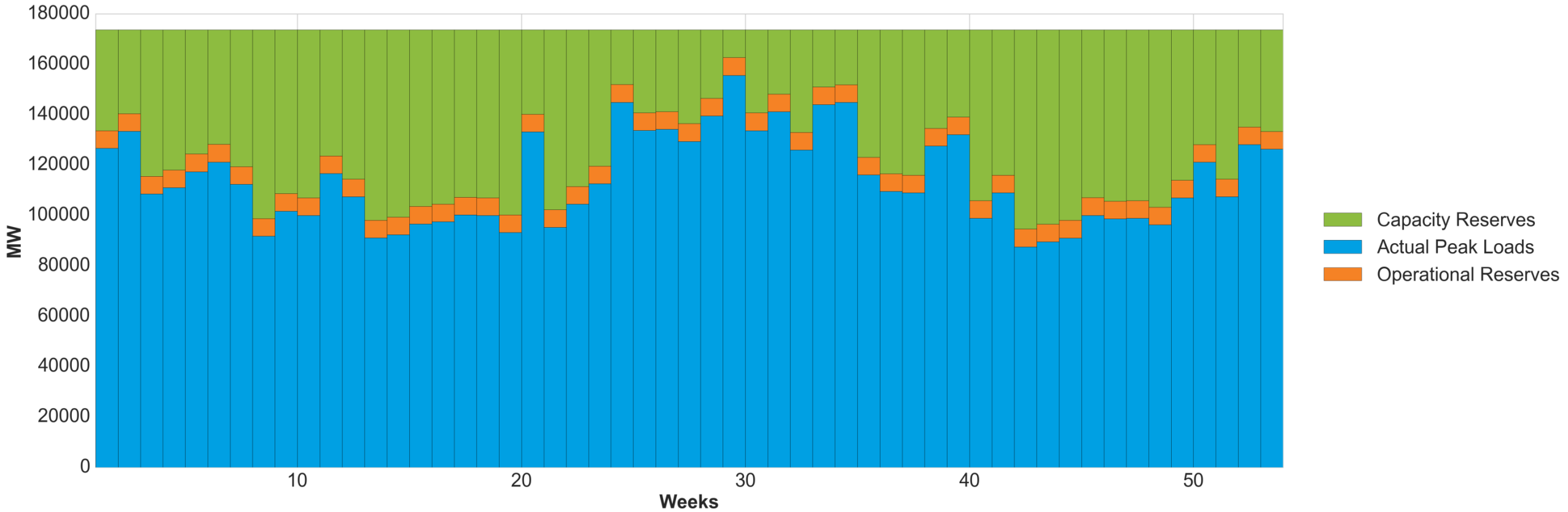
- Additional resources above (long-term) expected load
 - Objective is to protect the power system against long-term uncertainties (load forecast, generation performance, transmission)
 - Procured via Reliability Pricing Model (RPM) 3 years ahead in a Base Residual Auction
 - Additional procurement or capacity release may occur in Incremental Auctions (IAs)
 - Procurement is based on the Variable Resource Requirement (VRR) demand curve whose main inputs are the Installed Reserve Margin (IRM) and the forecasted peak load





- Additional resources above (short-term) expected load that can be received within 10 or 30 minutes.
 - Objective is to protect the power system against potential operating events, such as loss of energy or short-term load forecasting errors
 - Procured in real-time (for 10 minutes) and day-ahead (for 30 minutes)
 - Requirement is determined based on RFC requirements or largest contingency in the RTO (for real-time) and load forecast error plus forced outage rate (for day-ahead)
 - Capacity resources have a must-offer requirement in the markets for operational reserves (but energy-only resources are also eligible to offer)

Capacity Reserves & Operational Reserves



- **Capacity Reserves**

- Address long-term uncertainties
- No flexibility requirement
- Procured 3 years ahead
- Requirement based on IRM and peak load forecast
- The set of resources comprising the Capacity Reserves is constant throughout the year

- **Operational Reserves**

- Address short-term uncertainties
- Flexibility requirements (response time within 10 or 30 minutes)
- Procured in real-time and day-ahead
- Requirement based on largest contingency and short-term forecast errors
- The set of resources comprising the Operational Reserves varies throughout the year

- Capacity Reserves are based on the Installed Reserve Margin (IRM). The IRM is calculated using the 1 day in 10 years Loss of Load Expectation (LOLE) criterion. Key inputs to the IRM study are:
 - Monthly peak load shape
 - Load uncertainty
 - Resource performance uncertainty (forced outage rate, planned outage requirement)
- The amount of resources available to participate in the PJM markets **does not** impact the IRM requirement.

- Revenues in the energy, ancillary services and capacity markets are interdependent.
 - The Energy and Ancillary Services offset used to establish the Net Cost of New Entry (CONE) in the Variable Resource Requirement (VRR) curve is the mechanism whereby revenues in the Energy and Ancillary Services markets are accounted for in the Reliability Pricing Model (RPM).