



# Short-Term Load Forecasting

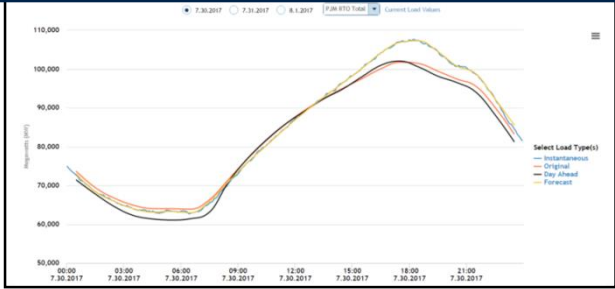
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	PJM Planning Forecast (PJM Manual 19)	PJM Operations Forecasts		
	Long-Term	Short-Term	Very Short-Term	
Forecast	Monthly peaks for next 15 years	Hourly averages for next 7 days	5-minute averages for next 6 hours	
Posting location	PJM.com > Library > Reports & Notices	Data Miner 2 and Data Viewer	Data Miner 2	

# Why is Short-Term Load Forecasting Important?

From Dispatch LoadCast tool, load forecast is used for...

Postings for PJM Members, via Data Miner 2 and Data Viewer



PJM Operations and Markets functions, via in-house tools



Balancing load and generation, via Security Constrained Economic Dispatch



- Day-ahead unit commitment
- Maintenance margin calculations
- Approving generation and transmission equipment outage requests

Multitude of PJM's core functions drive need for accurate short-term load forecast

## Short-Term (7-Day) Forecast Inputs

### Temporal

- Season
- Day of week
- Time of day
- Holidays

### Weather

- Temperature
- Cloud cover
- Wind
- Humidity

### Load

- Measured load
- Similar historical days

### Solar

- Forecasted behind-the-meter solar output

Current and next day forecasts are modified by PJM operators based on experience and judgement

## Neural Networks

Machine learning algorithms

- **Temperature-Based:** uses historical load and temperature and forecasted temps
- **Weather-Indexed:** uses THI / effective temp instead of temperature
- **Weather Optimized:** optimized for sudden changes in weather patterns
- **Backfill:** configuration to handle sudden changes in weather patterns

## Pattern Matching Algorithms

Looks for similar historical days

- **Similar Day:** uses weather pattern matching
- **Similar Day Lookup:** suggests a number of similar days from which operator can choose

## Blended Models

“Best weighted most” average

- **Ensemble:** uses [vendor-provided forecasts](#)
- **Mix:** uses [PJM forecasts](#)

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**Best performing**

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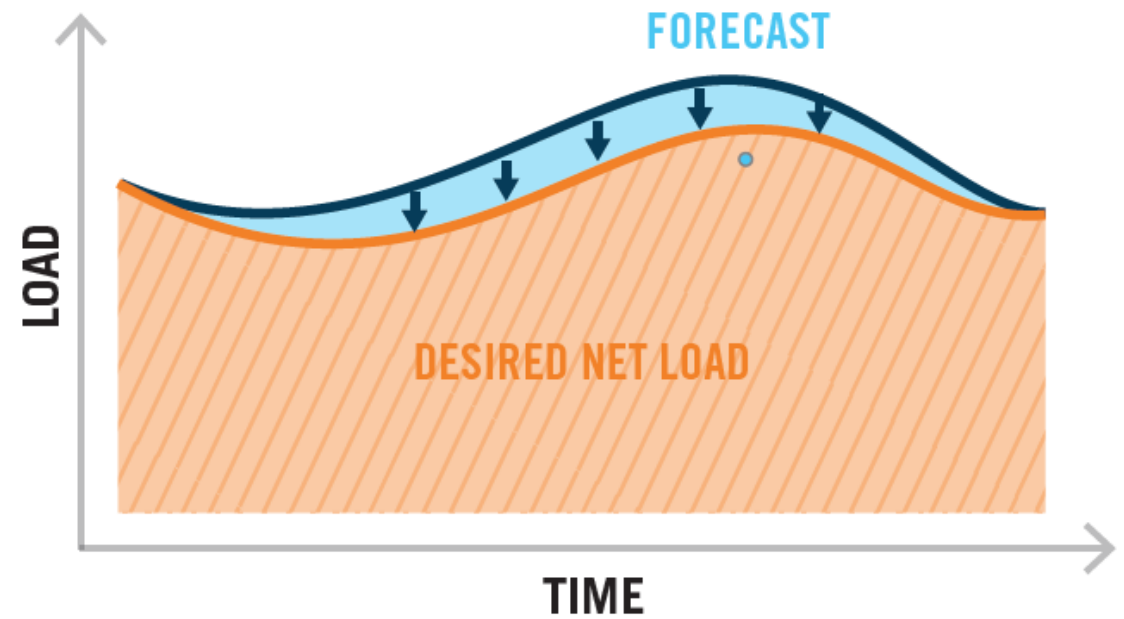
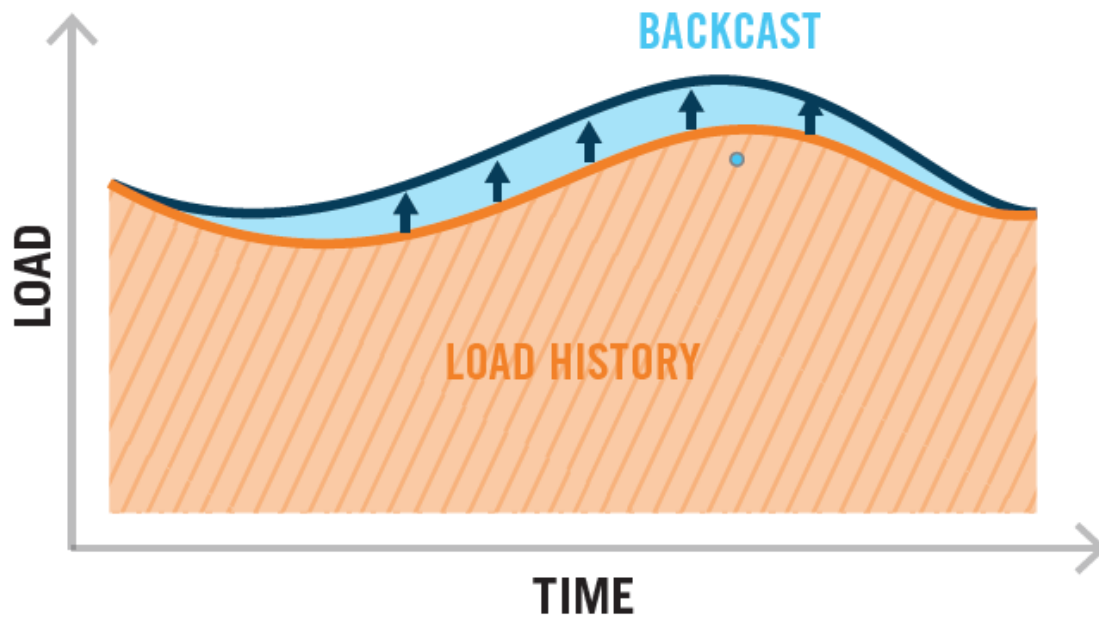
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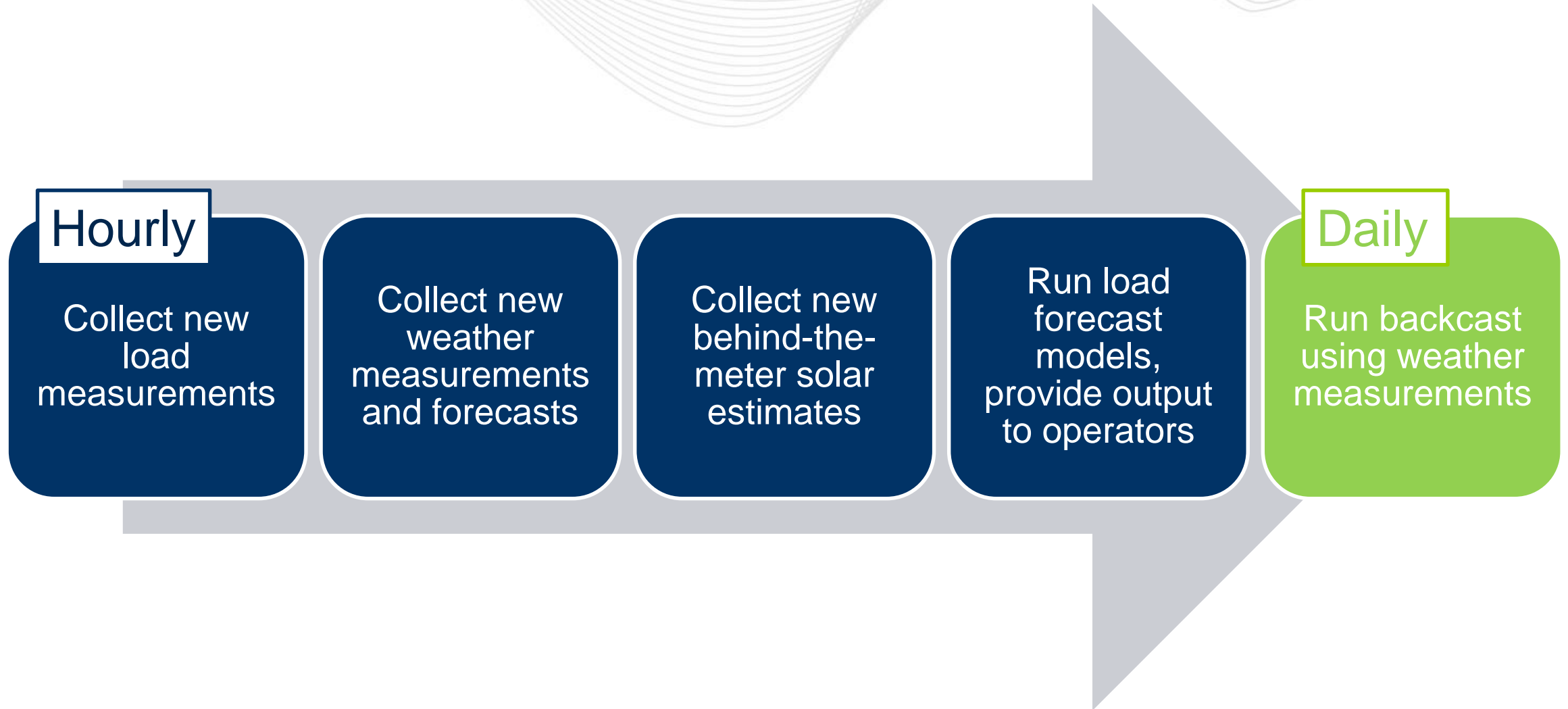
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## RECONSTITUTED LOAD METHOD







10:00 A.M.

**Initial Load Forecast is completed**

**10:15 a.m.:** Forecast posted externally

**11:00 a.m.:** Day-Ahead Market closes

1:30 P.M.

**Updates made to Load Forecast**

**1:30-2:15 p.m.:** Re-Bid Period

**2:15 p.m.:** Run RAC with updated forecast, posted in time for Intraday 2

6:00 P.M.

**Becomes "Original" forecast in Dataviewer**

Final Load Forecast updates made

**6:00 p.m.:** RAC re-run if inputs have changed, posted in time for Intraday 3

- Errors in weather forecasts
- Extreme/unseasonable temperatures
- Storms
- Holidays
- Daylight Savings Time
- Low visibility into sources of load and human behavior