

DOCKETED

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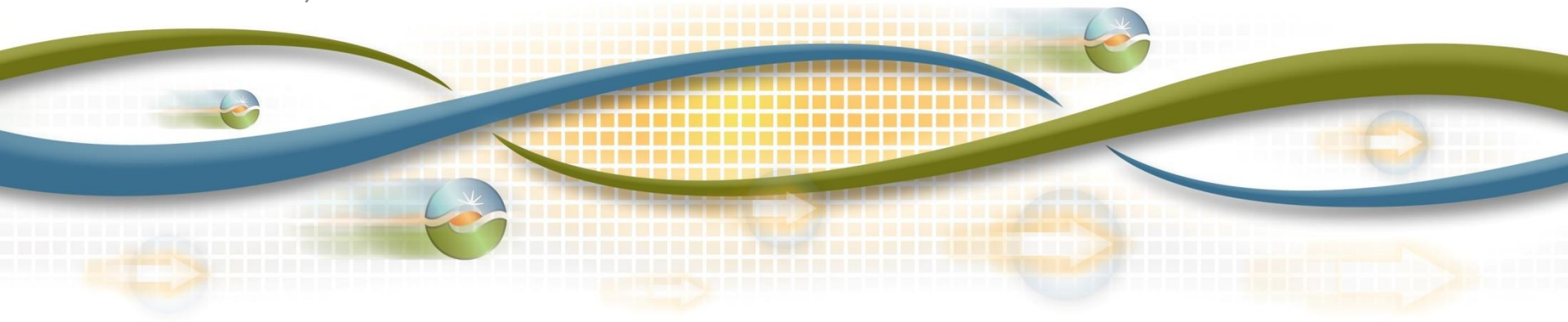


CAISO Short-Term Load Forecasting Model Overview

Robert Emmert
Manager, Interconnection Resources

CEC IEPR Commissioner Workshop on Methodological
Improvements to the Energy Demand Forecast for 2017 and Beyond

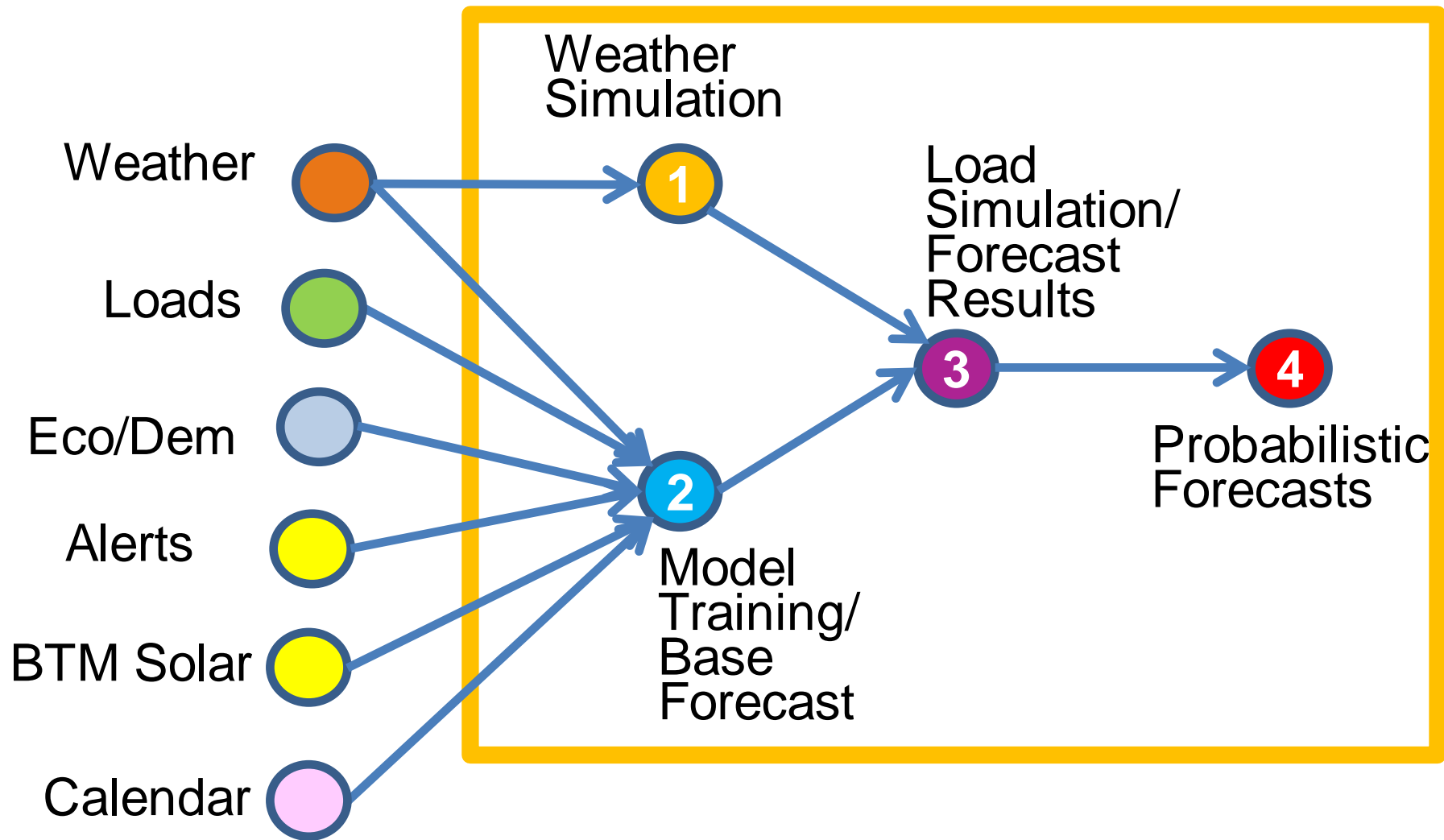
June 23, 2016



Benefits to CAISO in using vendor forecasting tool

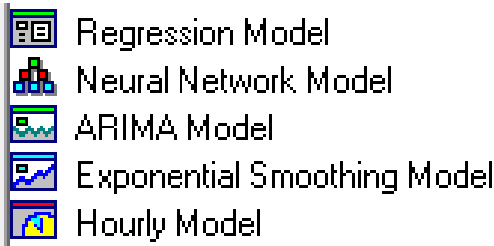
- Proven platform with ongoing improvements
- Vendor provided expertise in initial model build
- Long-term vendor support on an as needed basis
- Same basic platform for day-ahead and short-term
- User group with other ISOs in US & Canada
 - Sharing of best practices
 - Sharing of new approaches and improvements
 - A forum that fosters continuing improvement

ISO short-term load forecast process

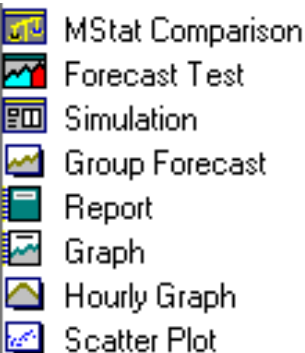


Variety of model options with multiple regional models in a single file

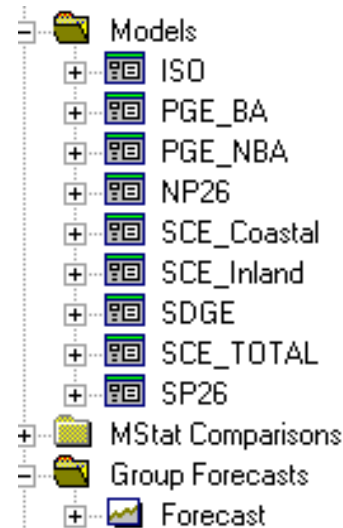
1. Model Options



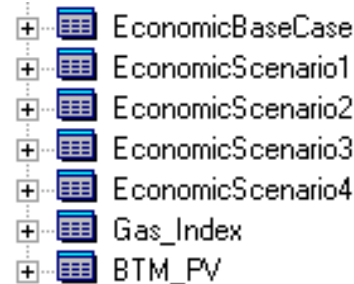
2. Analysis Tools



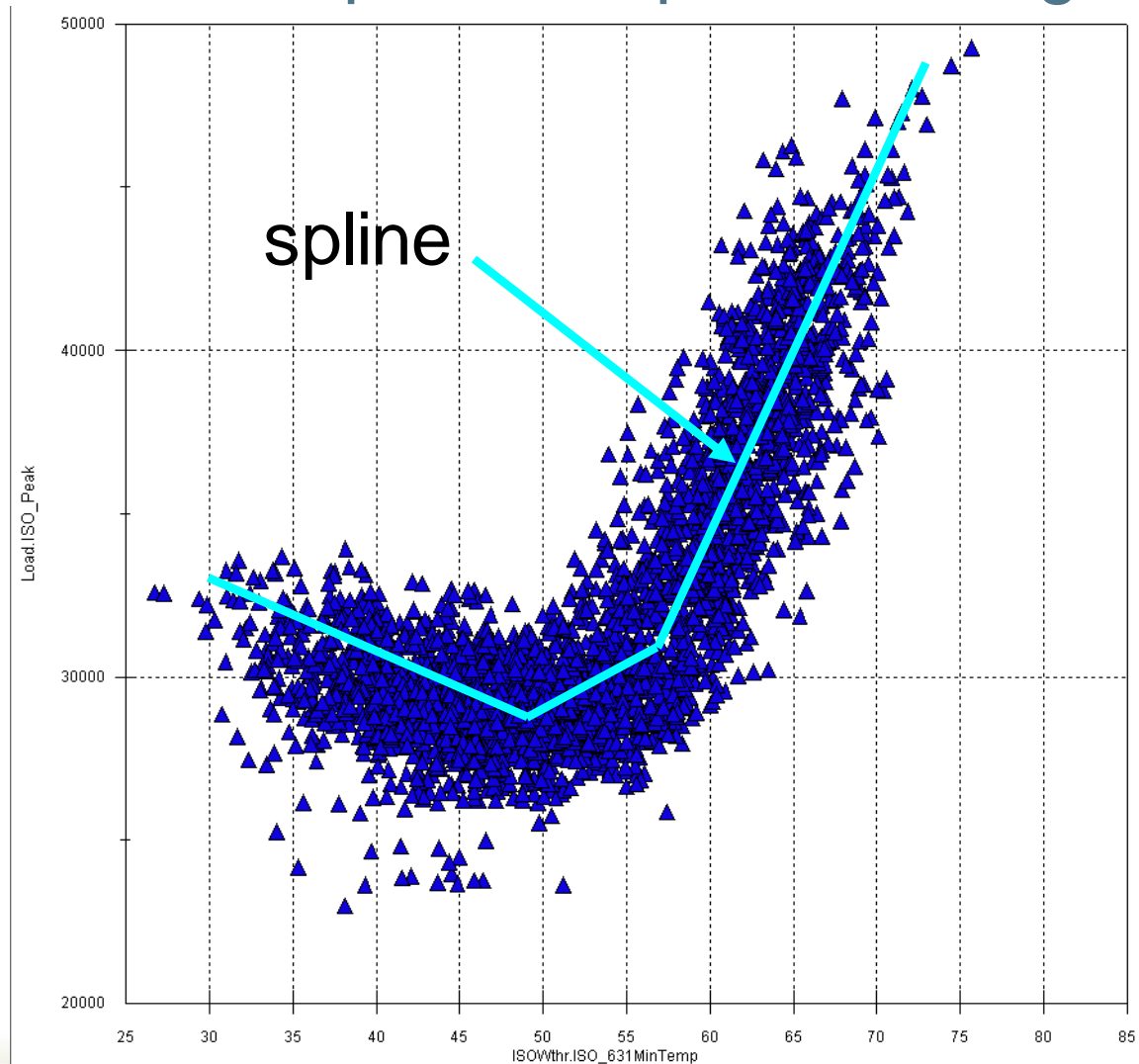
3. Multiple Region Model Analysis



4. Variable Input assumptions



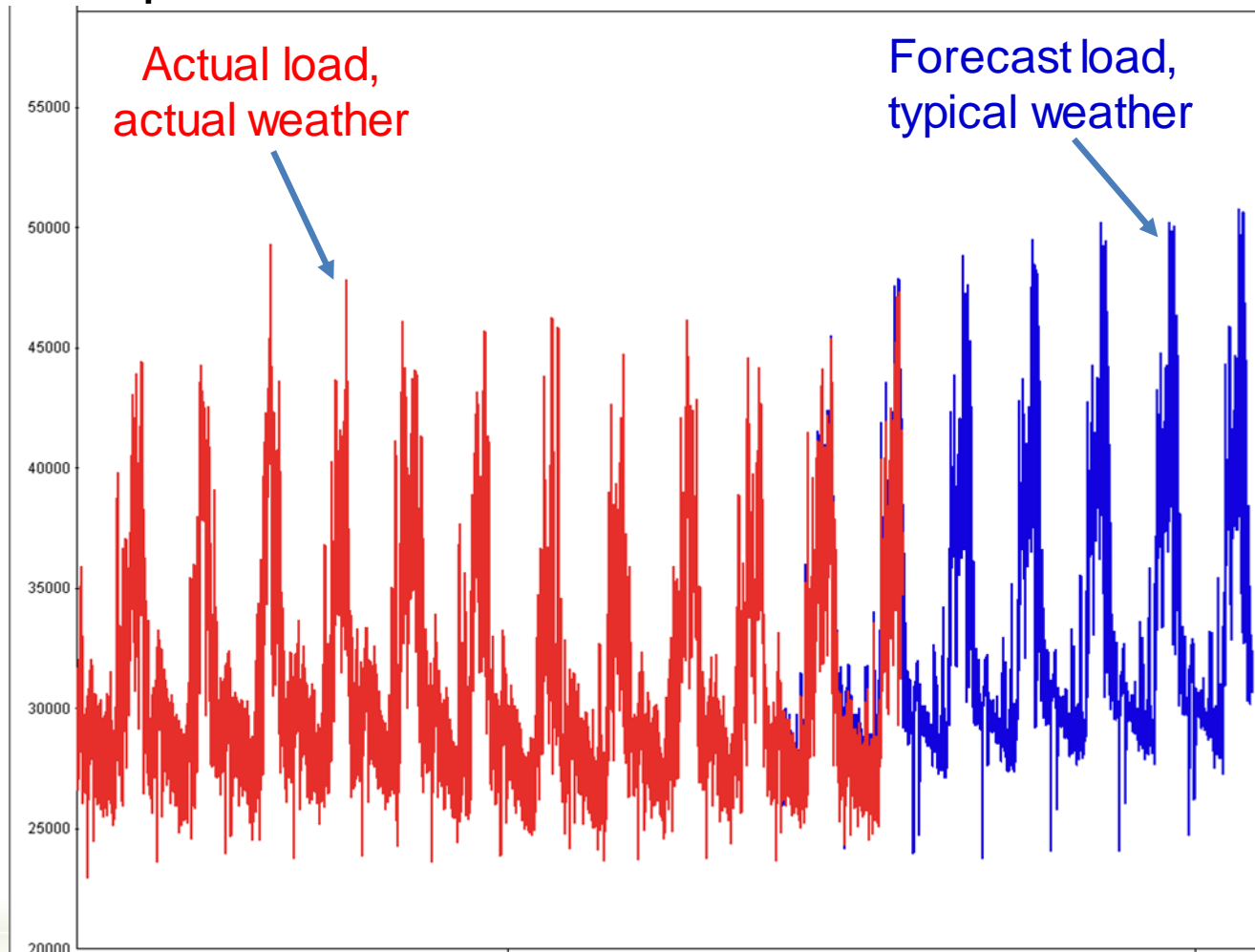
Example of data analysis tool – using scatter plot function to develop linear splines for regression



Models are trained with historical loads & weather,
and historical & forecast GDP and population

R-Squared 0.977

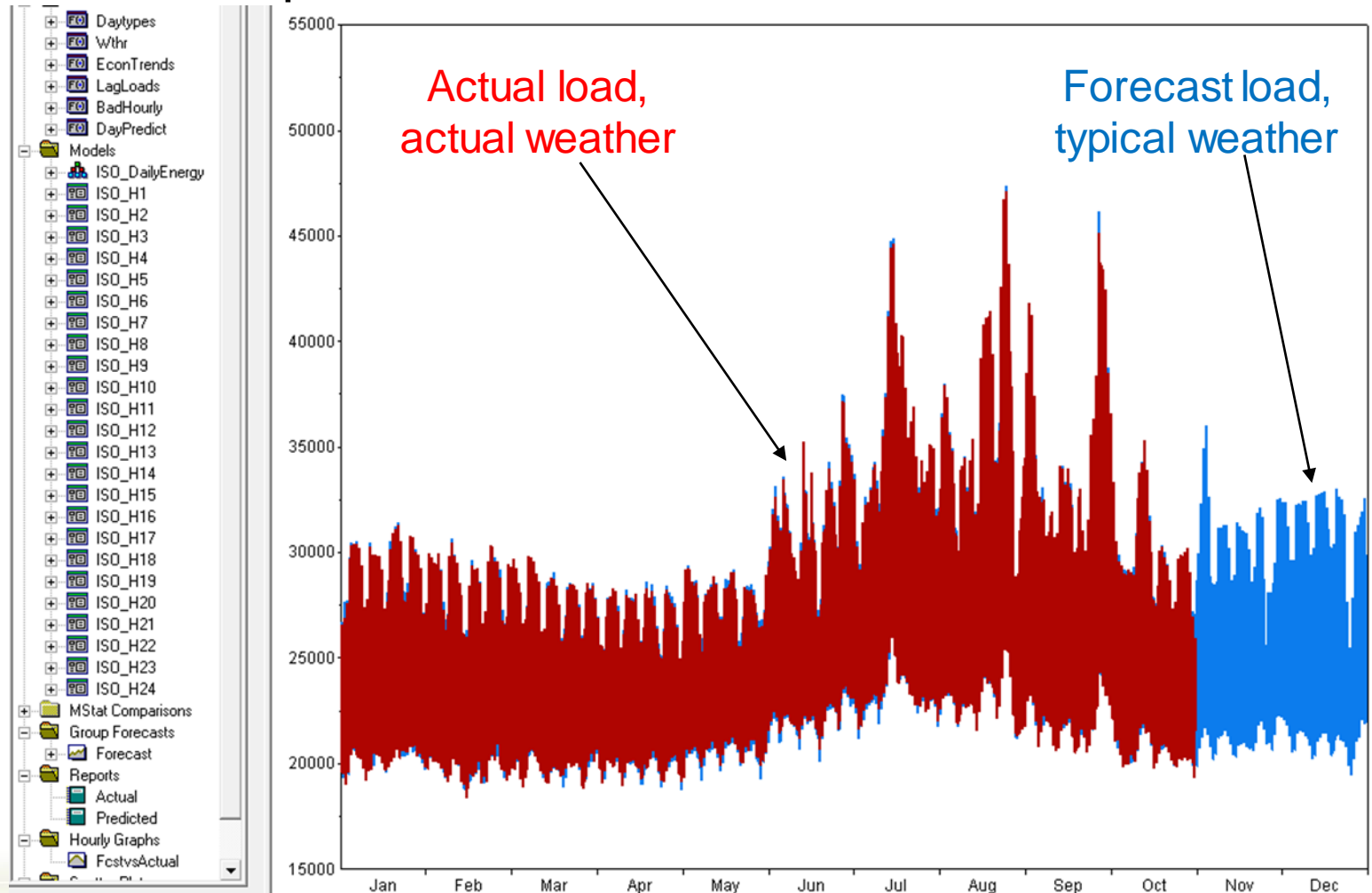
MAPE: 1.55%



Hourly models are trained with hourly weather and other hourly load drivers

R-Squared 0.993

MAPE: 1.32%

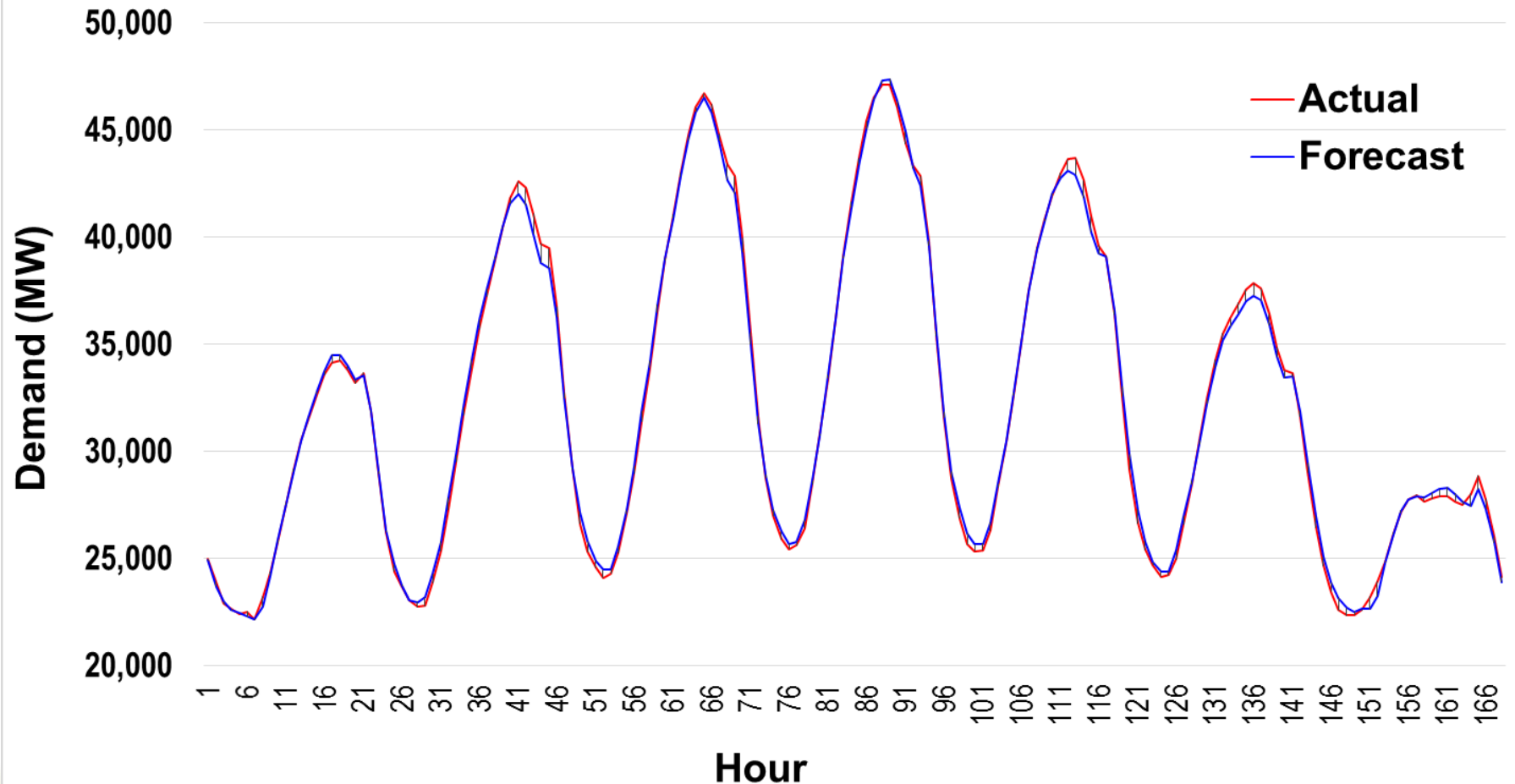


Results of hourly forecast over a summer week

R-Squared 0.993

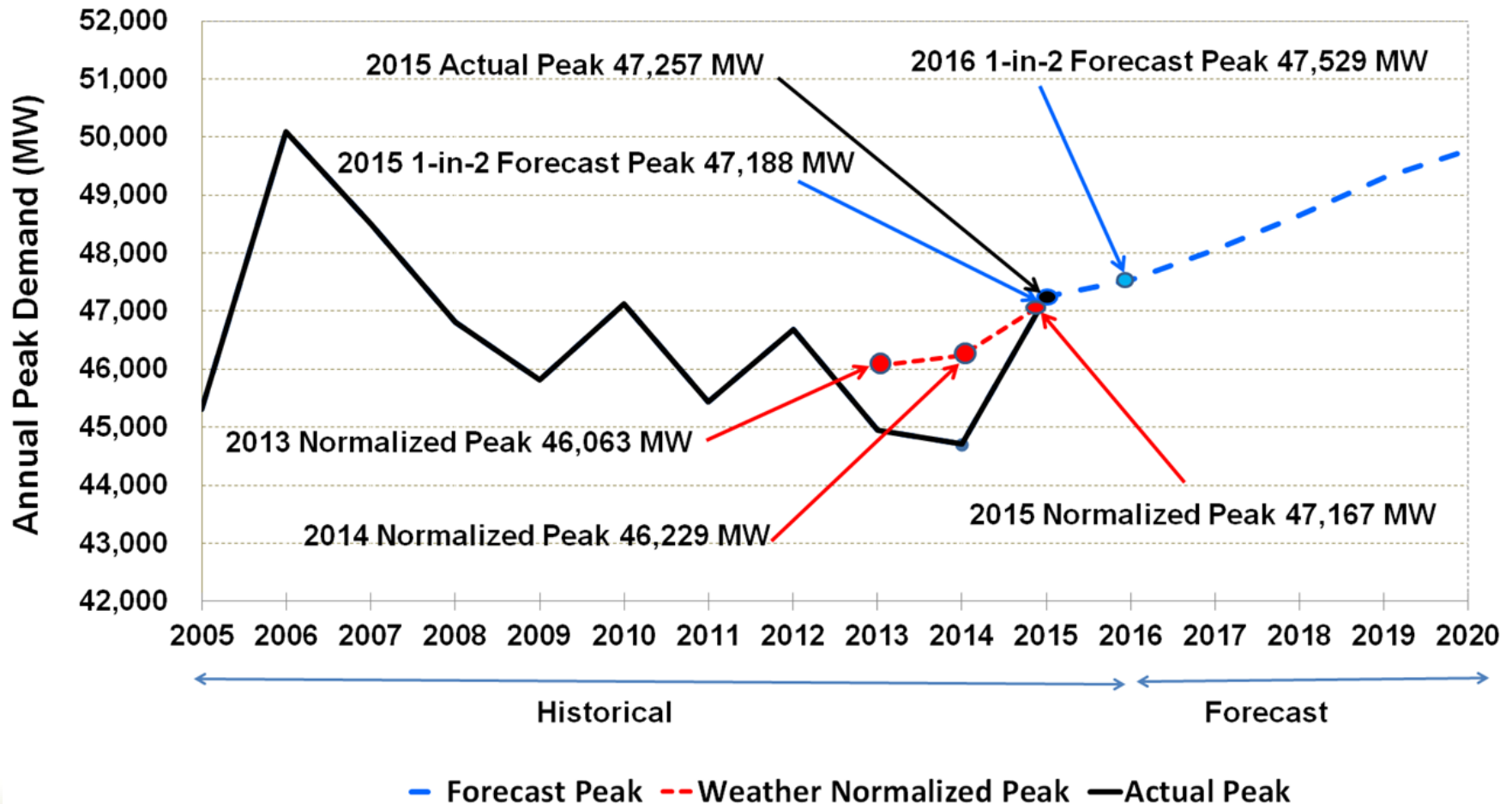
MAPE: 1.32%

Model Demand Forecast vs. Actual Demand



Same forecast model is used to develop forecast and weather normalized historical peak demand

ISO Weather Normalized Peak and 1-in-2 Forecast Peak



Recommend CEC use same or similar tool as CAISO

- More than one option of proven platforms
- Value in participating in user groups with other entities
- Ease in transitioning into future needs
- Synergies in coordination between CEC, CAISO
 - Providing data in common format
 - Long-term consistencies
 - Discussing experience and improvements based on using same weather and load data
 - ISO in day-ahead & short-term, CEC in long-term