LoadSimm

LoadSimm™ accurately simulates electricity demand by incorporating weather simulations (WeatherSimm™) into a state-space time series simulation model

Analytical Questions Addressed

- What could the hourly load be over the next 10 days (short-term)?
- What could the hourly load be over the next 2-20 years (long-term)?
- What would be energy demand in a 1 in 10 summer?
- What is the uncertainty in load caused weather variability?
- What is the probability peak demand will exceed resources?
- What customers are weather sensitive?
- How do you integrate short- and long-term weather simulations into a single continuous load simulation system?

Applications

LoadSimm™ has a broad range of analytical applications ranging from pricing of competitive retail offerings to rate cases, resource planning, and near-term position uncertainty. LoadSimm™ provides a systematic method for simulating load across multiple customer categories including: load profile customers, commercial customers, and industrial customers. LoadSimm™ helps drive complex decisions beyond expected values and scenario analysis by capturing the elements of uncertainty.

For the short-term time horizon, LoadSimm™ captures the uncertainty in daily load forecasts through capturing the variability in forecast versus actual weather. The incorporation of uncertainty and probabilities of changing load forecasts enables short-term portfolio managers to more effectively balance purchases and sales. With forecast error less than 1.5%, this translates to better decisions, fewer mistakes, and more stable short-term operations.

Uncertainty abounds in electric market prices; LoadSimm™ uses a system of state space and time series models to capture uncertainty in load. By using simulated weather from WeatherSimm™ across multiple locations, LoadSimm™ captures the climatic variability that drives load. The simulation of weather enables users to capture the effect of climatic variability on future costs. For complete uncertainty analysis, tie LoadSimm™ to WeatherSimm™ and PriceSimm™.

Output

- Short-term hourly load simulation forecasts
- Long-term hourly load simulation forecasts
- Monthly customer demand simulation forecasts
- Sales attrition and growth simulation forecasts
- Monthly peak demand simulation forecasts
- Weather-based uncertainty analysis
- Revenue simulation forecasts
- Weather event probabilities tied to load simulation forecasts

Figure 1. Industrial customer load uncertainty based on 100 simulations

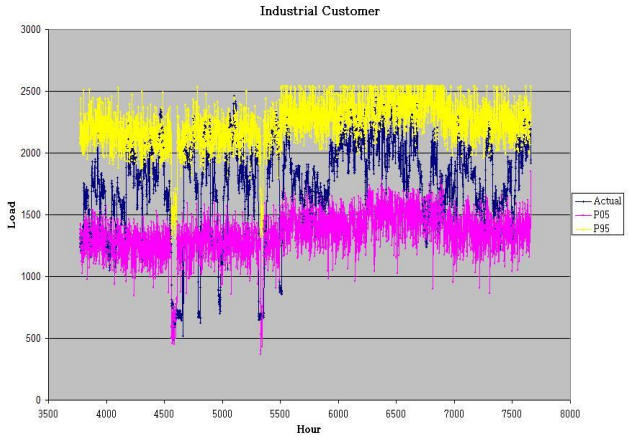
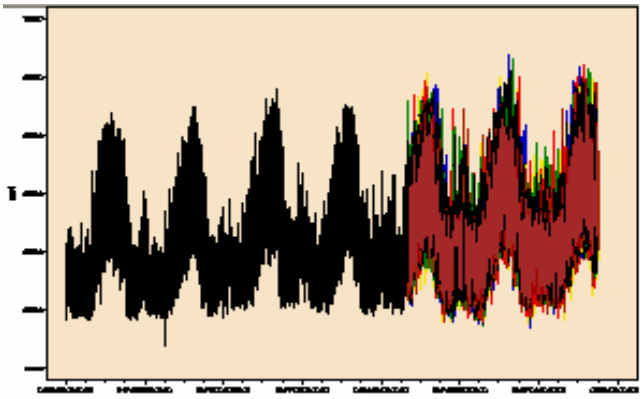


Figure 2. ERCOT System Load Simulation (10 realizations)



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