California Power Markets



Better Models. Better Decisions.



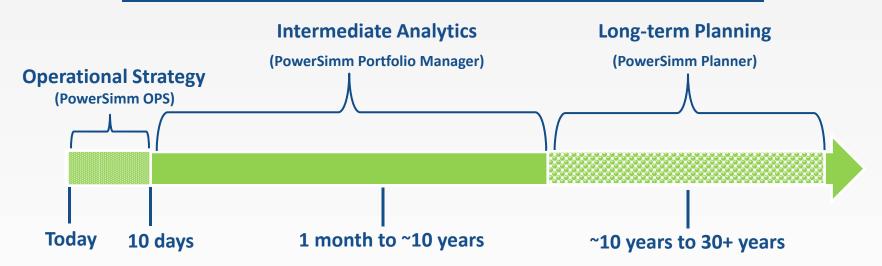
Implications for Regional Trading & Planning

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Risk Based Decision Analysis – One Model Through Time



- Optimal short-term dispatch
- Short-term price forecasting
- Realized gains and losses
- Fuel management
- Decision support for trading

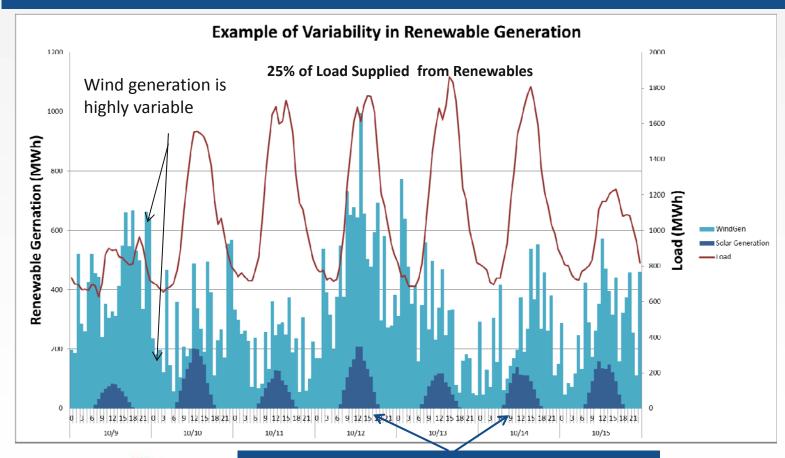
- CFaR, GMaR, EaR
- Rate at Risk analysis
- Portfolio risk assessment
- Asset valuation
- Fuel hedging
- Energy purchases and sales
- Credit risk management

- Integrated Resource Planning
- Revenue requirements & Financial analysis
- Cost versus risk tradeoff resource analysis
- Environmental sensitive resource planning
- Assessment of renewable energy technologies
- RFP analysis

Generation Operations Under Renewables

Perception that increasing renewables creates value for flexible resources

■ Large potential swings in supply → greater demand for ancillary services and flexibility

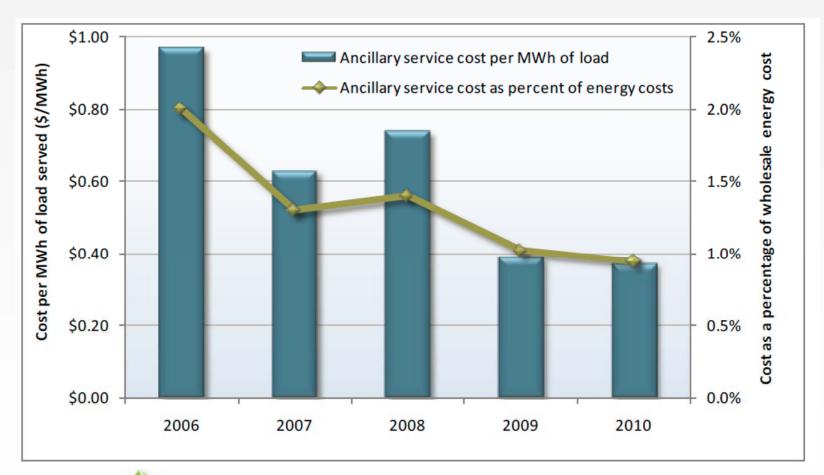




Solar follows a more consistent generation profile coincident with peak load

Ancillary Service Costs

Overall cost of ancillary services



Trading and Resource Planning Implications



- Regional Excess Energy and Capacity
 - Downward pressure on regional prices
 - Dis-equilibrium conditions (ERCOT)
- Premium for Flexibility
 - Storage
 - Cycling (Drax paradigm)
 - DSM
- Planning Considerations
 - More market price volatility
 - Greater operational uncertainty and position exposure risk
 - Systematic use of uncertainty in portfolio management and planning process
 - Requires detailed assessment of energy and ancillary services





Contact Information



Better models. Better decisions.

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