

# California Power Markets



*Better Models. Better Decisions.*



## Implications for Regional Trading & Planning

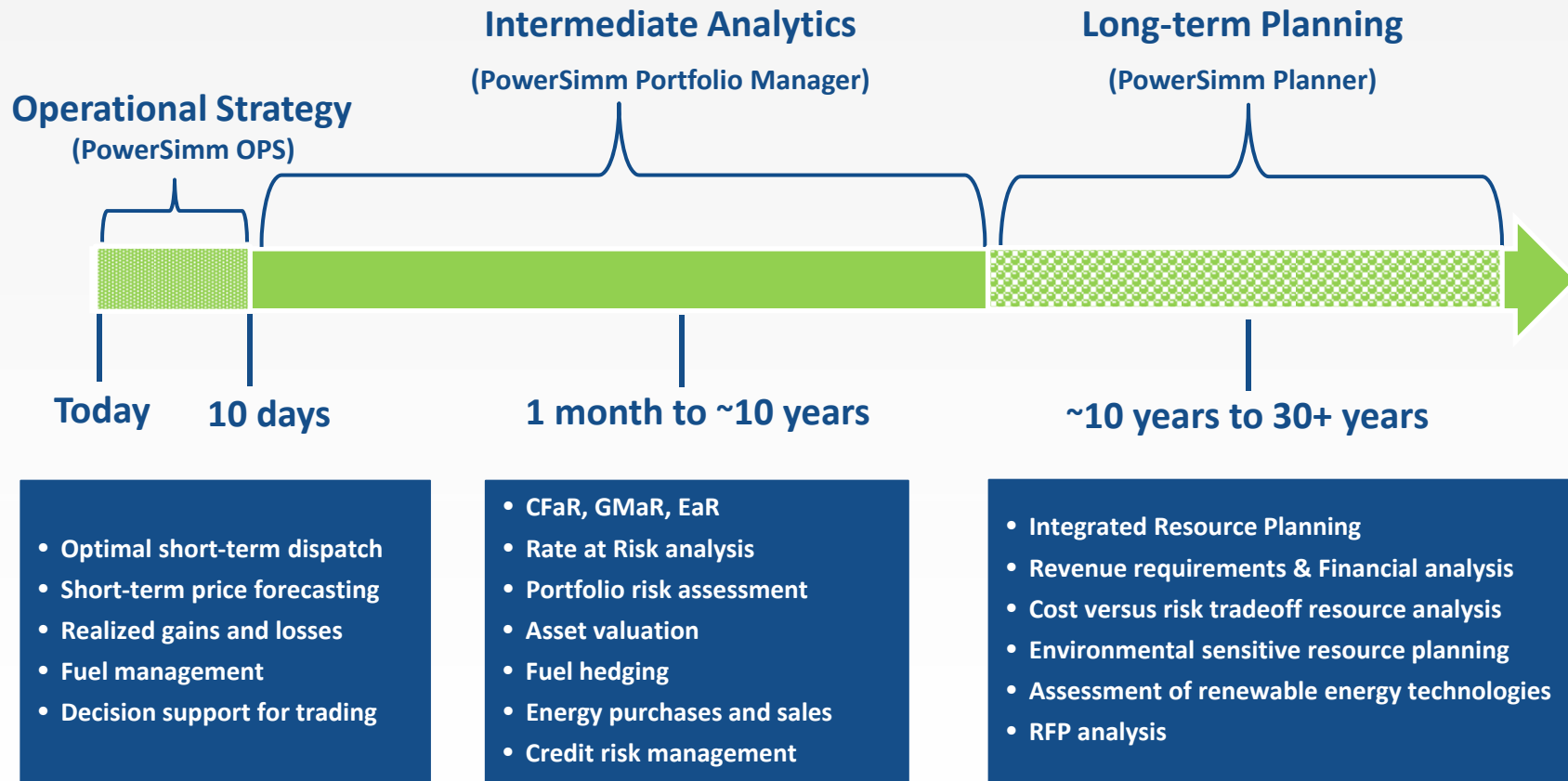
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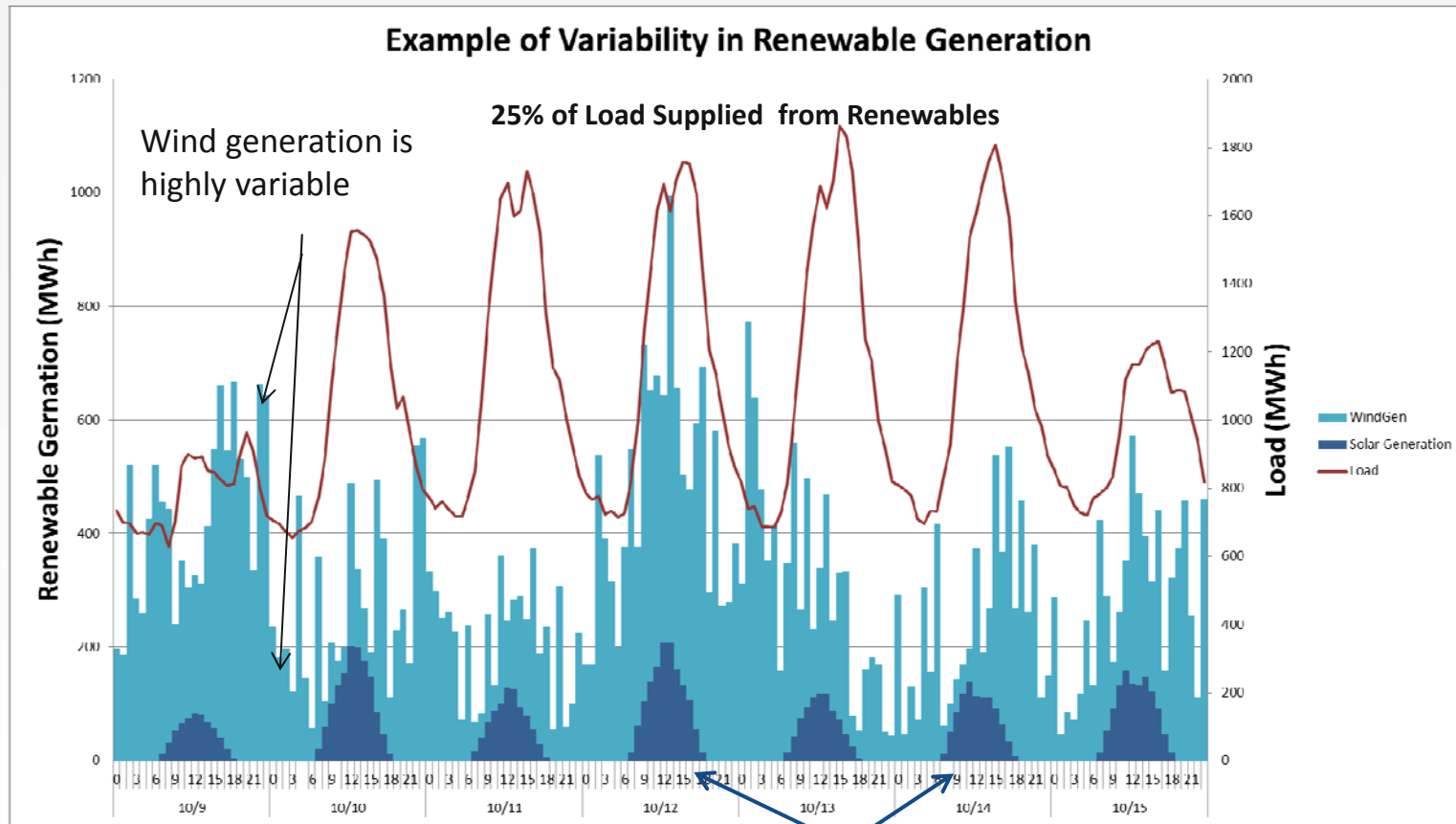
# Ascend Analytics Software Solutions

## Risk Based Decision Analysis– One Model Through Time



# Generation Operations Under Renewables

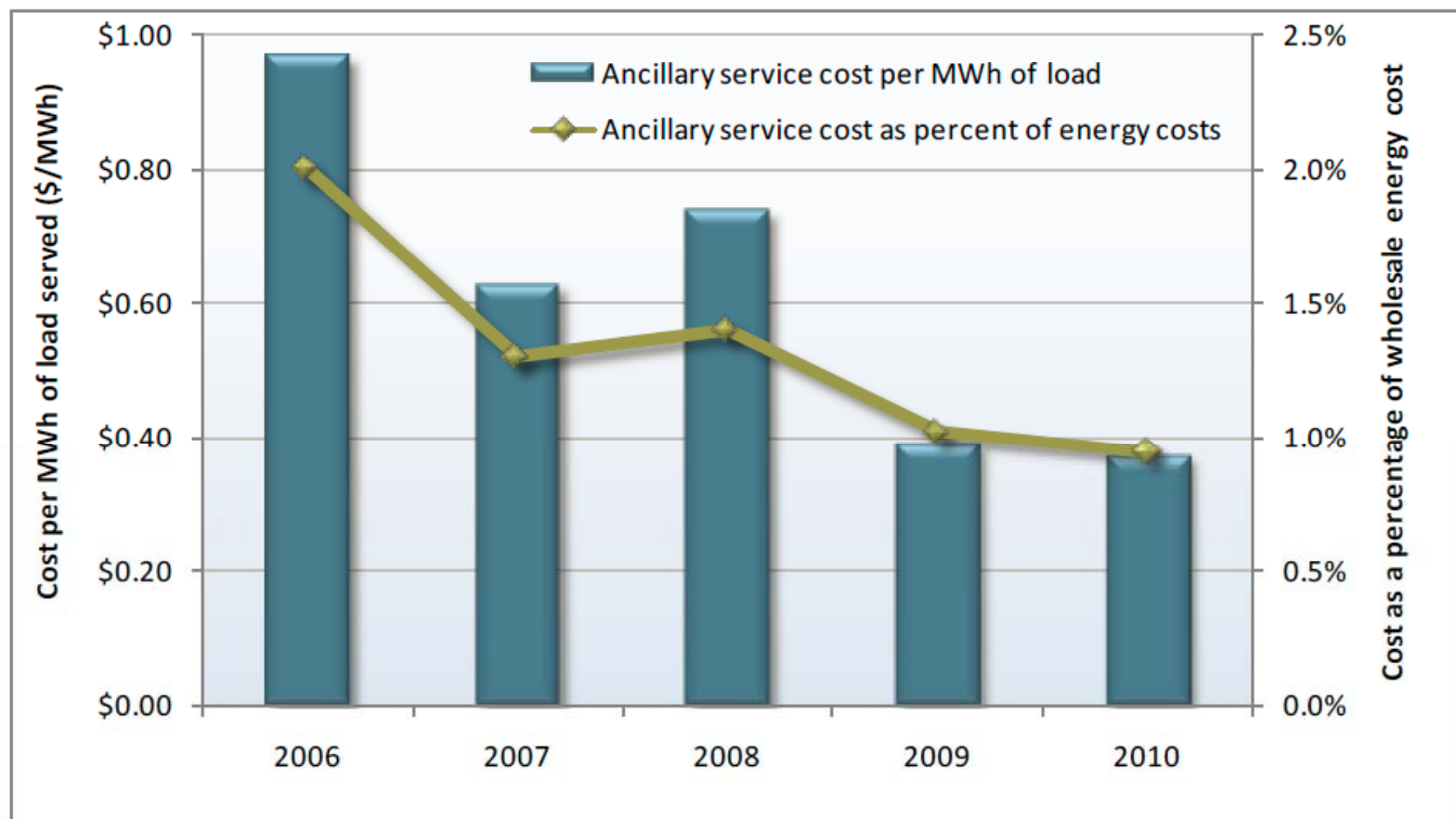
- Perception that increasing renewables creates value for flexible resources
  - Large potential swings in supply → greater demand for ancillary services and flexibility



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



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