

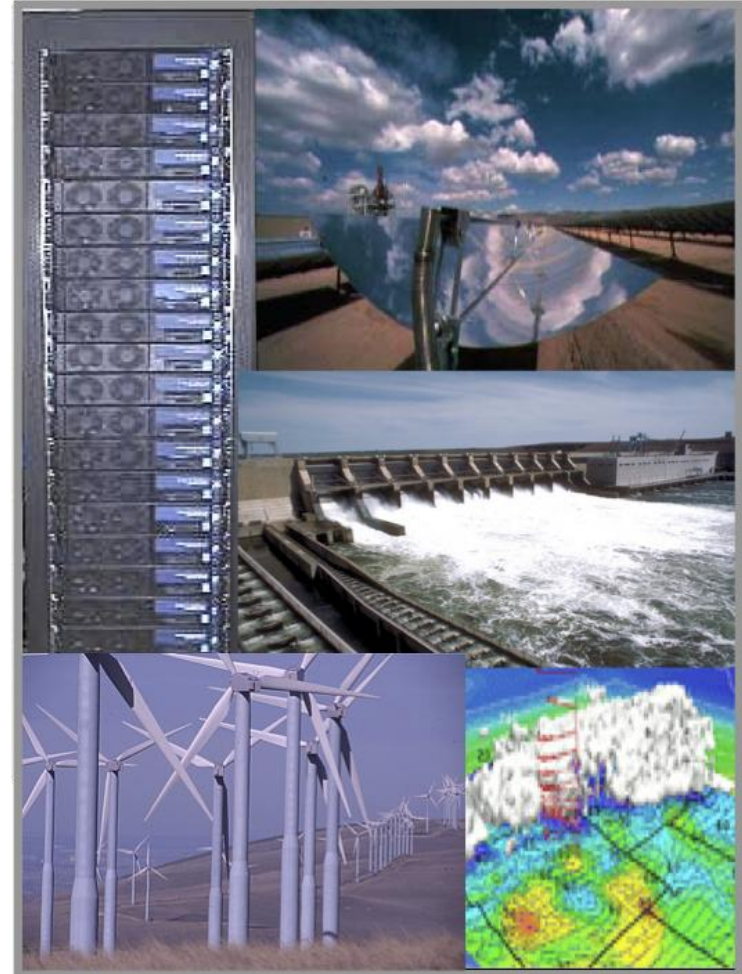
WIND POWER FORECASTING: KEY TO EFFICIENT WIND ENERGY INTEGRATION

Panel Presentation by:
Eric Gritmit, PhD
Senior Scientist

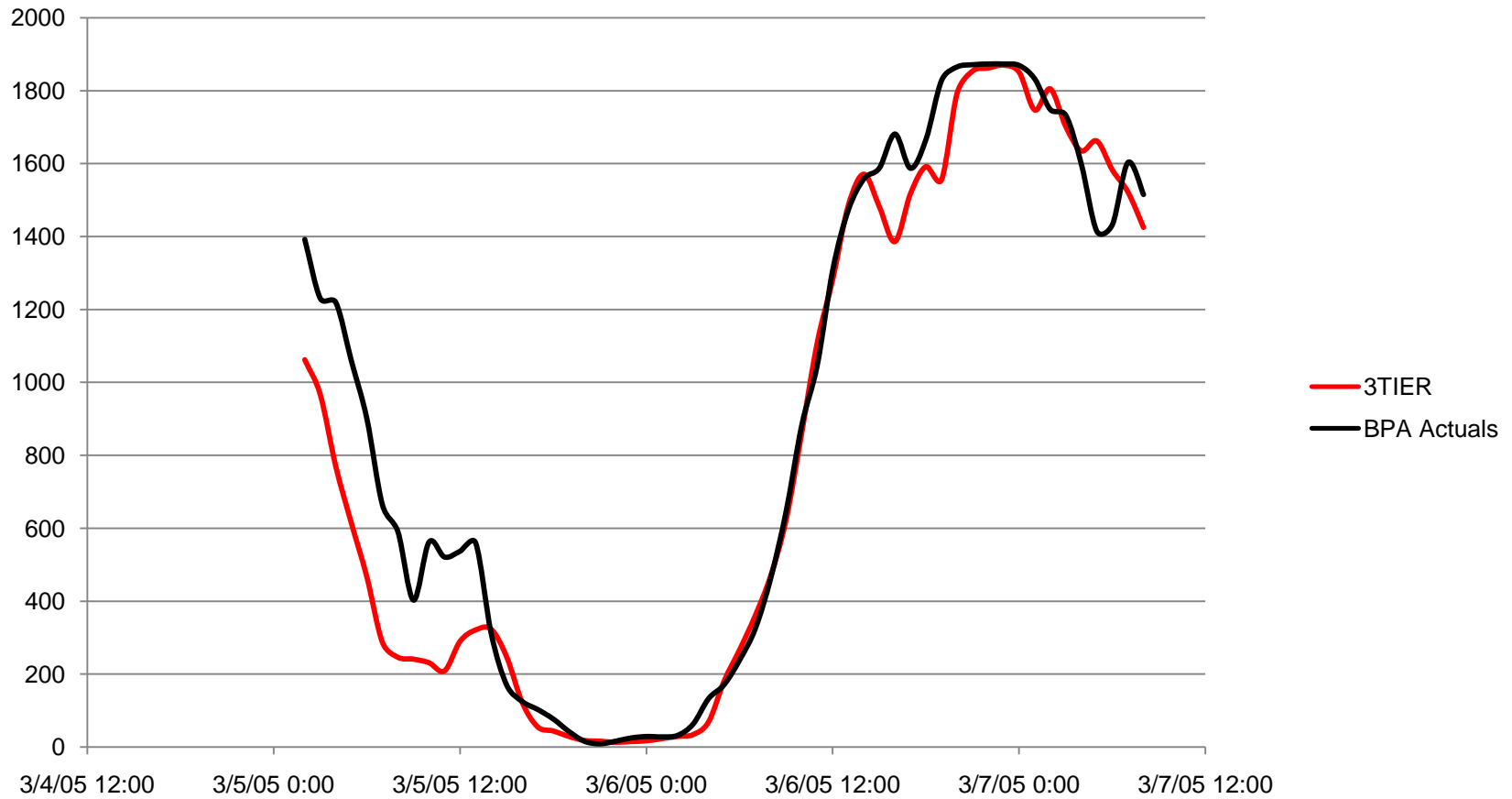
March 18, 2009

About 3TIER

- » HQ in Seattle, WA
- » International Offices
- » Founded by scientists and engineers to put the best of academic research into practice
- » Focus on the renewable energy sector
 - › **8,000 MW** wind energy forecasting
 - › **3,500 MW** hydropower forecasting
 - › Extensive international wind resource assessment
 - › Solar assessment and forecasting



Day-Ahead Wind Power Forecasts



Coupled Forecast of Ramp Event Probability

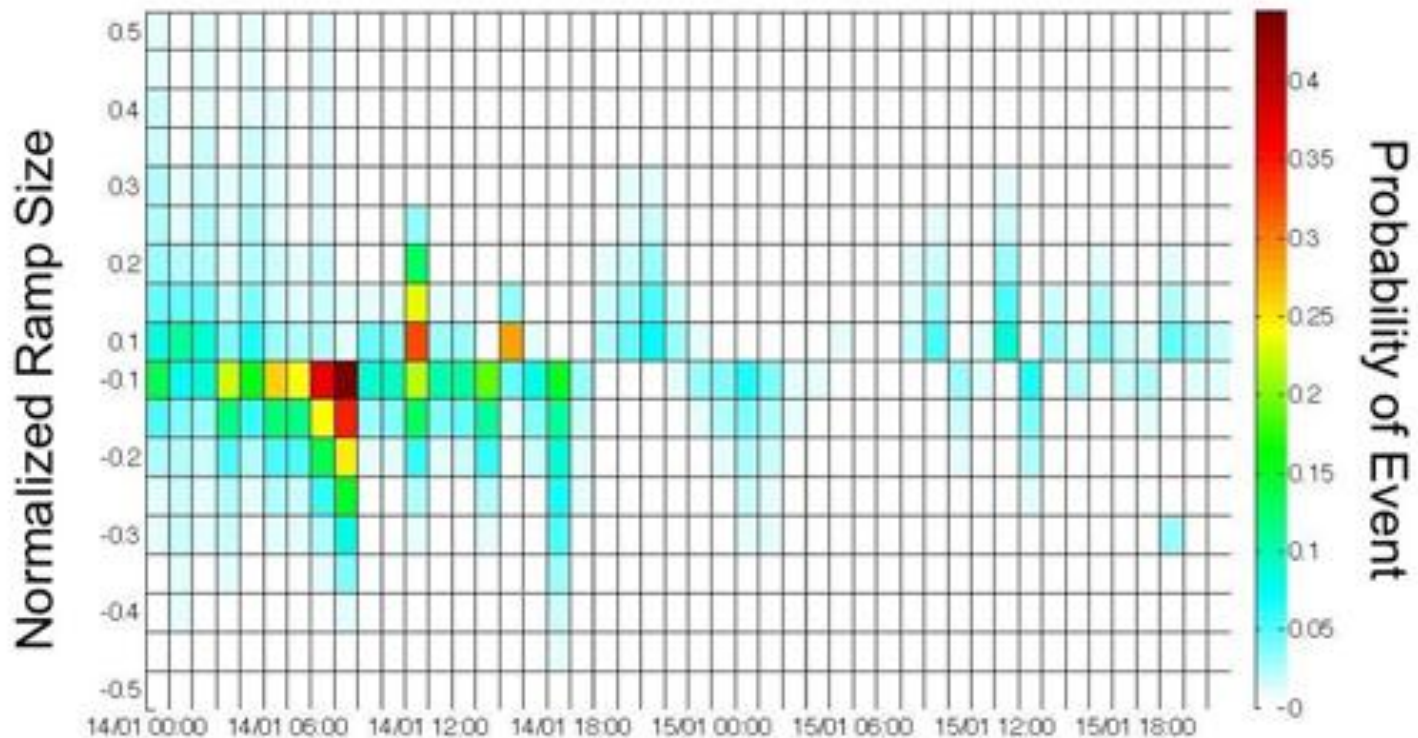
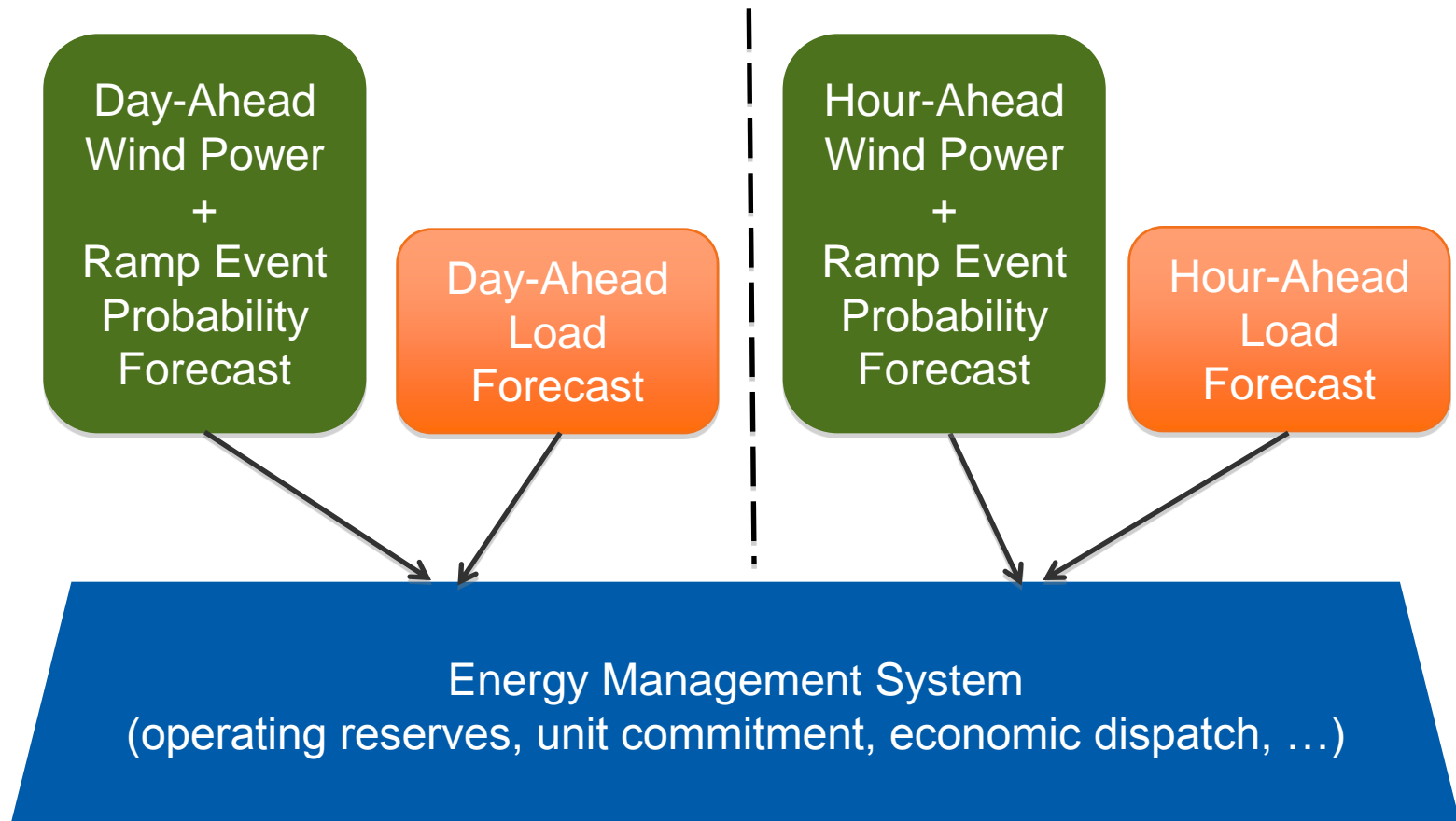


Figure 1. Conceptual interface design showing a real RRE probability forecast.

Energy Management System Integration



3TIER Perspective

- » Existing “best-estimate” wind power forecasts have significant value, if they are actually used
 - › Further value added with skilled human interpretation / adjustments
- » Coupling with probabilistic forecasts of wind ramp events and tracking to real-time is essential
 - › Existing methods are available, more R&D will only improve their utility
- » EMS integration of combined wind and load probabilistic forecasts is needed
 - › Optimal scheduling and economic dispatch