



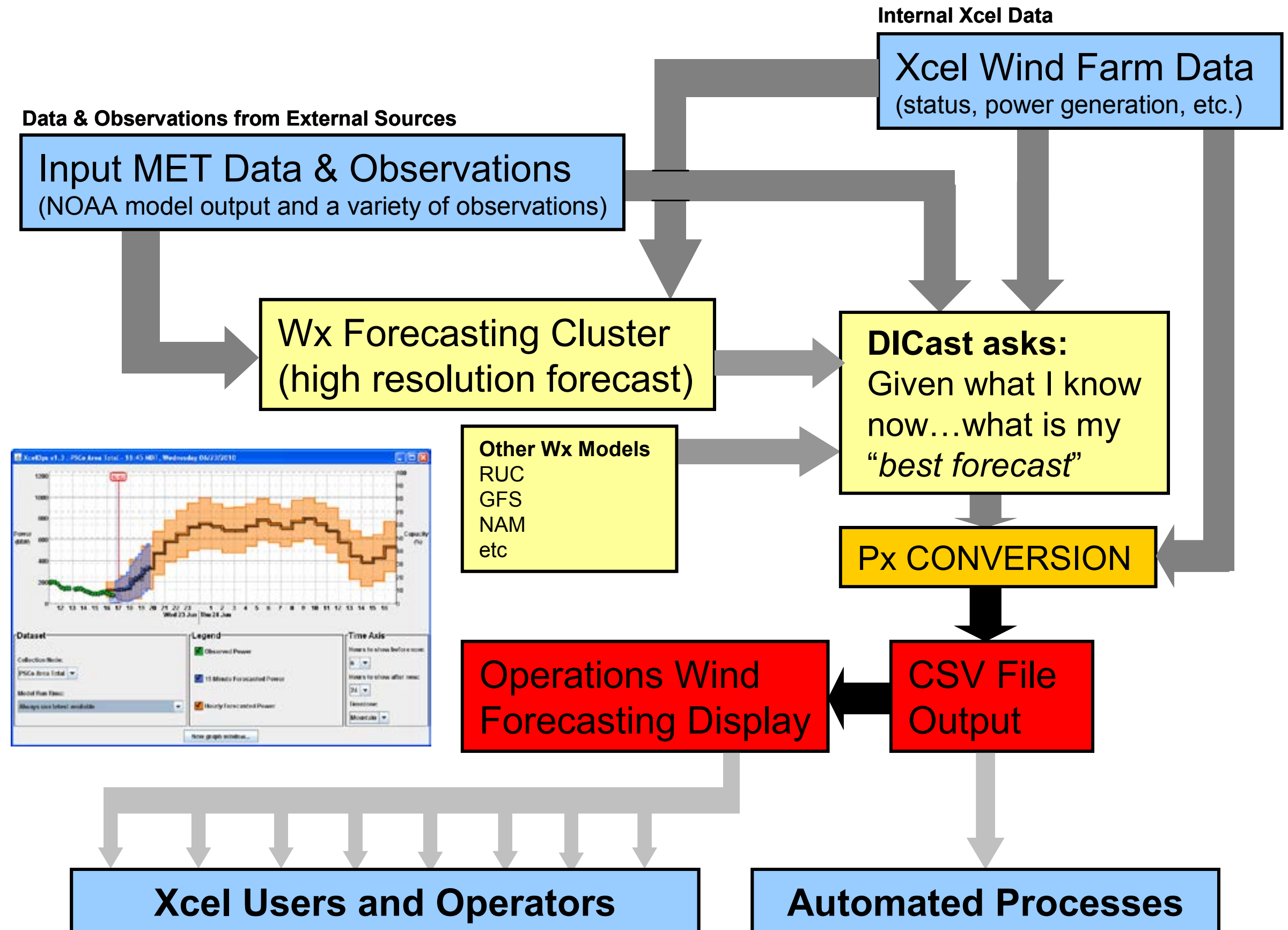
## **Wind Energy Forecasting: A Collaboration of the National Center for Atmospheric Research (NCAR) and Xcel Energy**

Keith Parks  
*Xcel Energy*  
*Denver, Colorado*

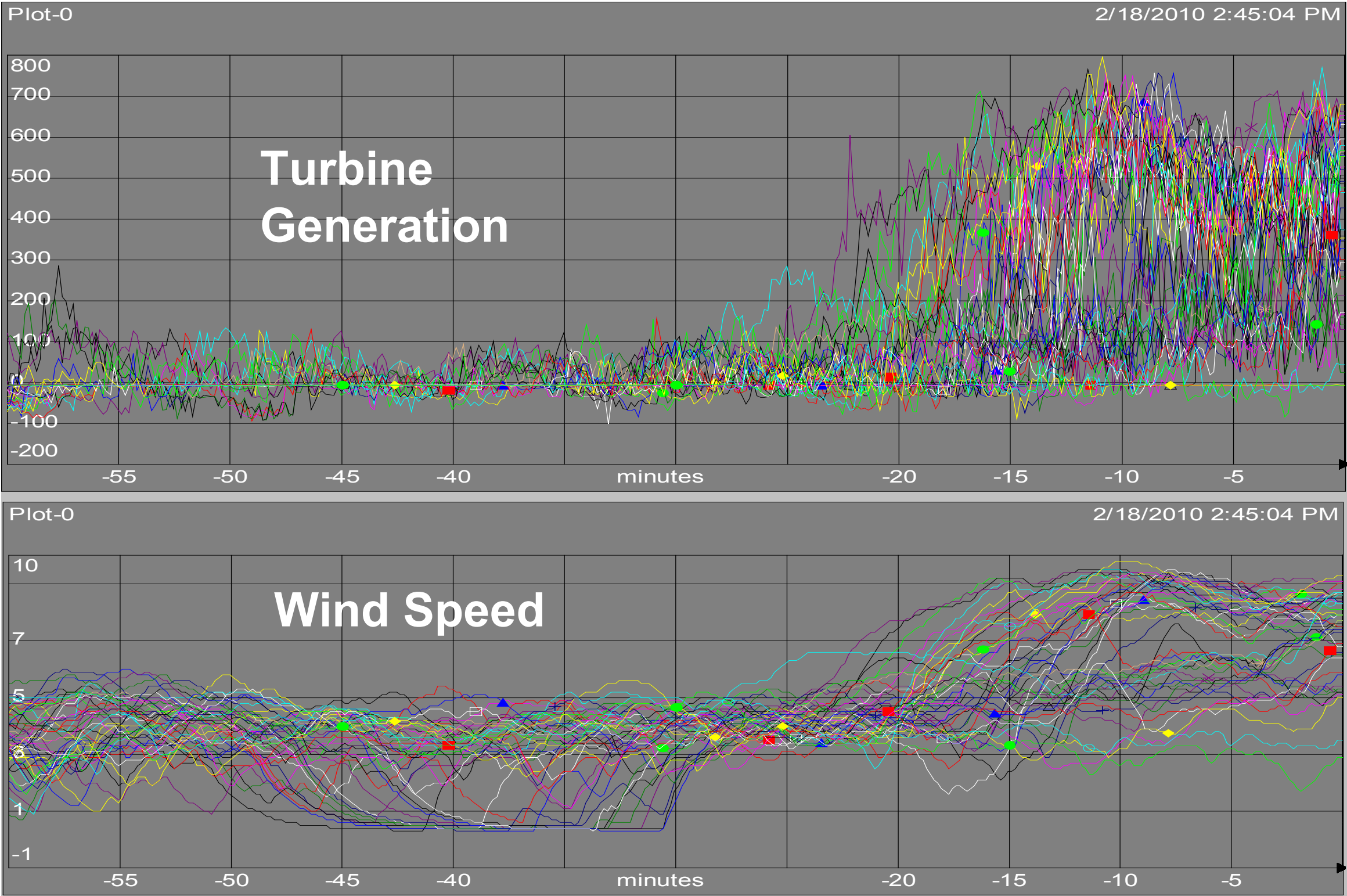
Yih-Huei Wan  
*National Renewable Energy Laboratory*  
*Golden, Colorado*

Gerry Wiener and Yubao Liu  
*University Corporation for Atmospheric Research (UCAR)*  
*Boulder, Colorado*

**Figure 1 – Xcel Energy Wind Forecasting System.**

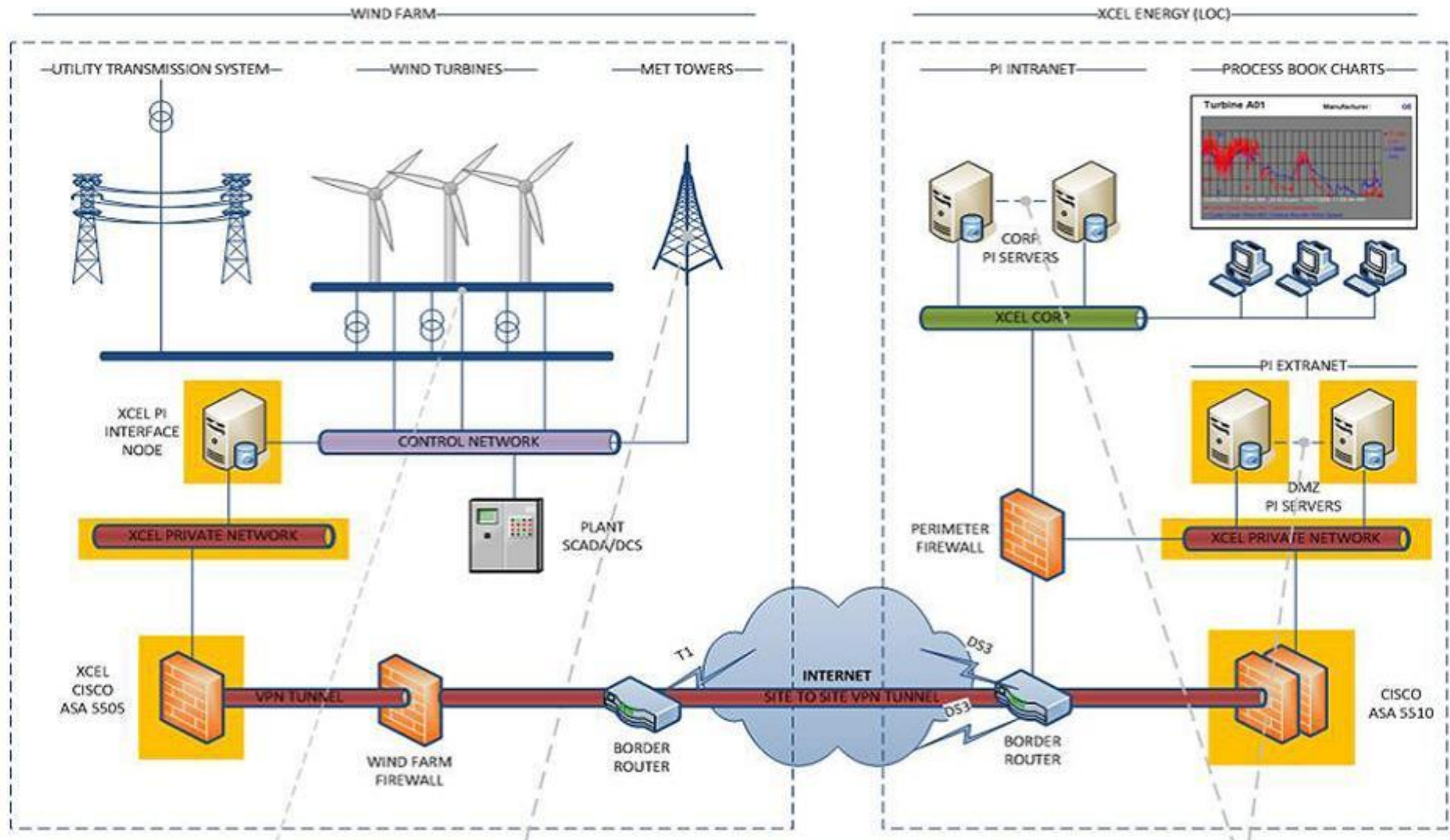


**Figure 2 – Turbine Generation and Nacelle Wind Speed for Fifty Turbines.**





**Figure 3 – Schematic of Turbine-Level Data Collection.**



**Figure 5 – RTFDDA-WRF Model Domains.**

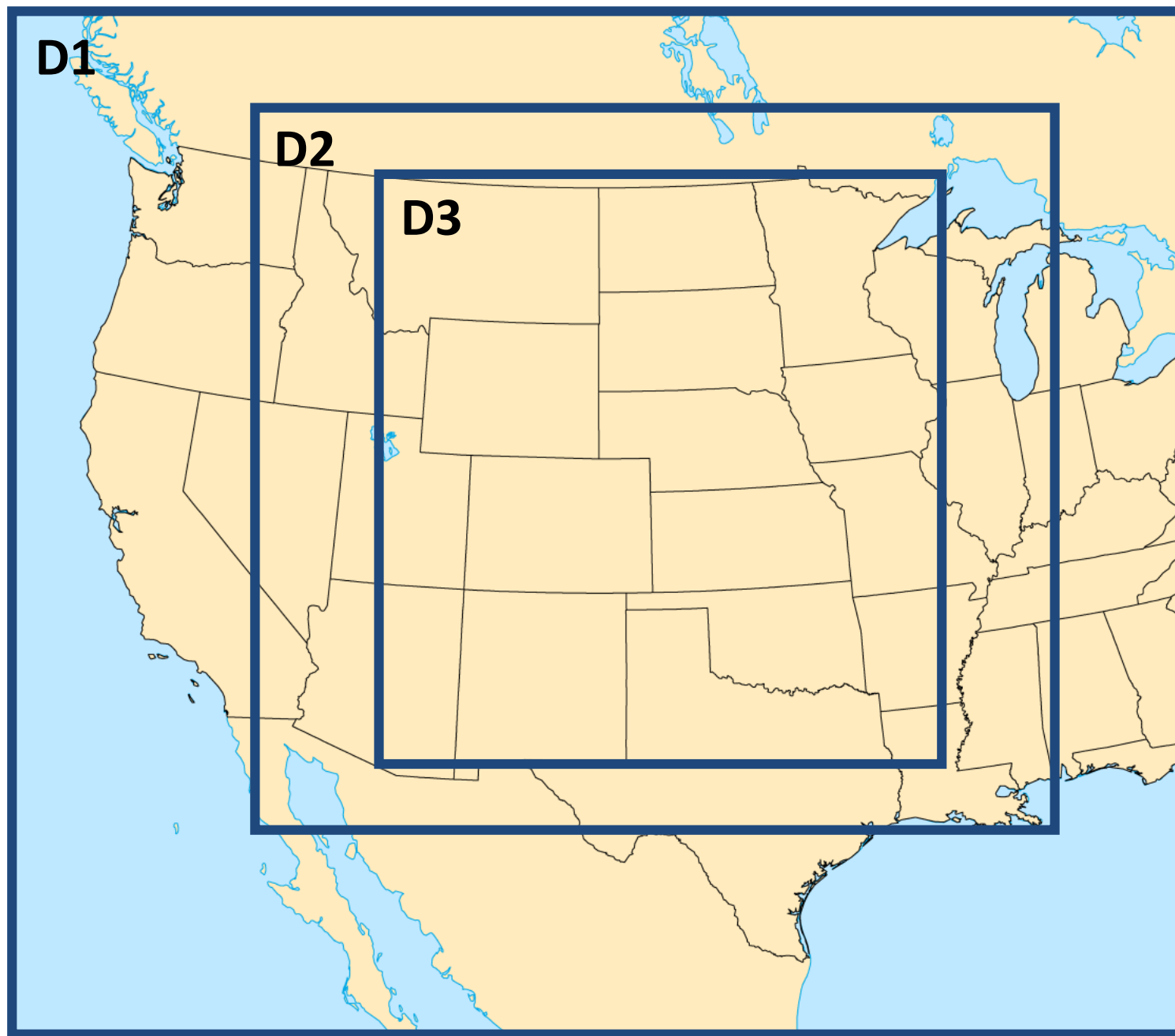


Figure 12 – Operator’s GUI.

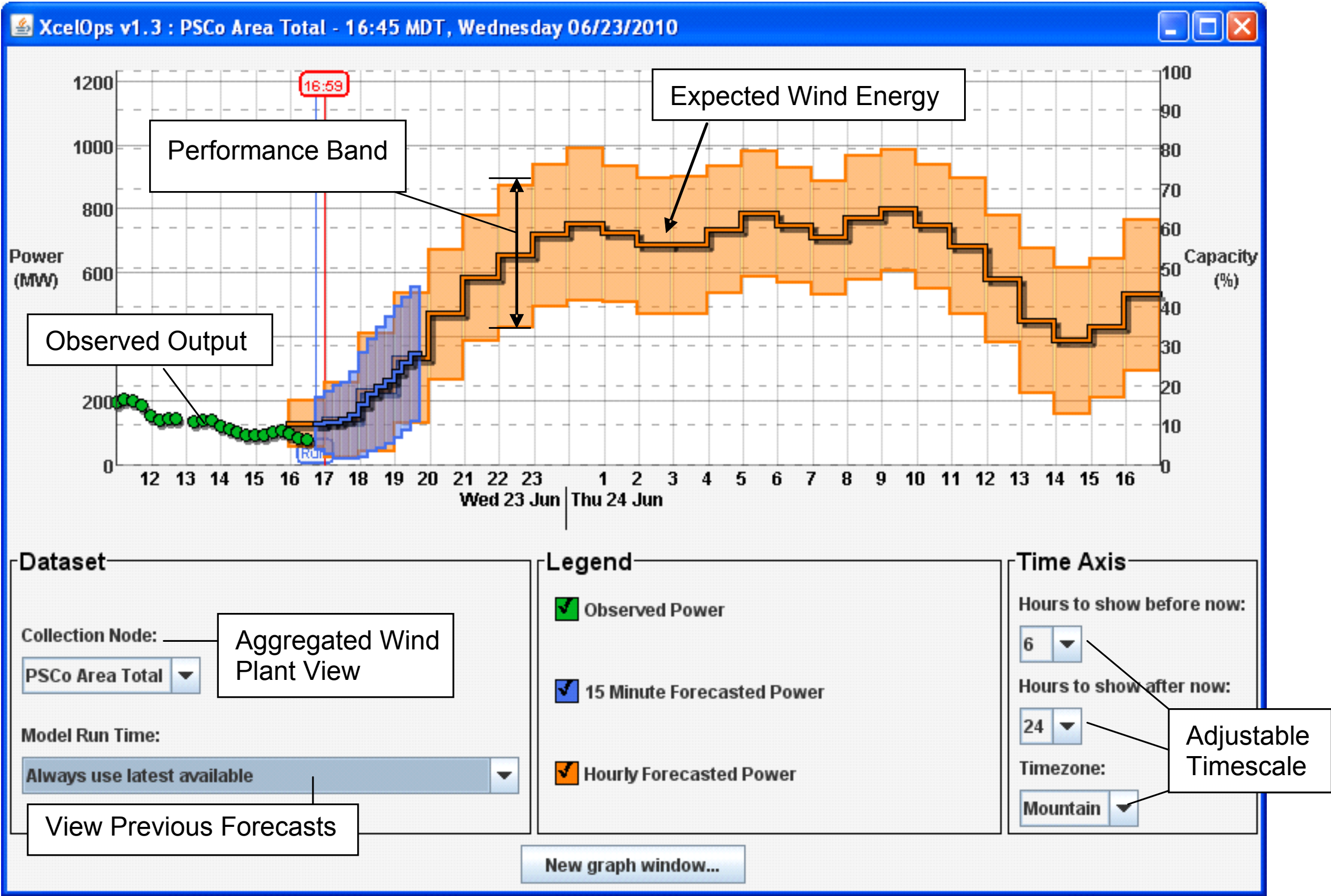
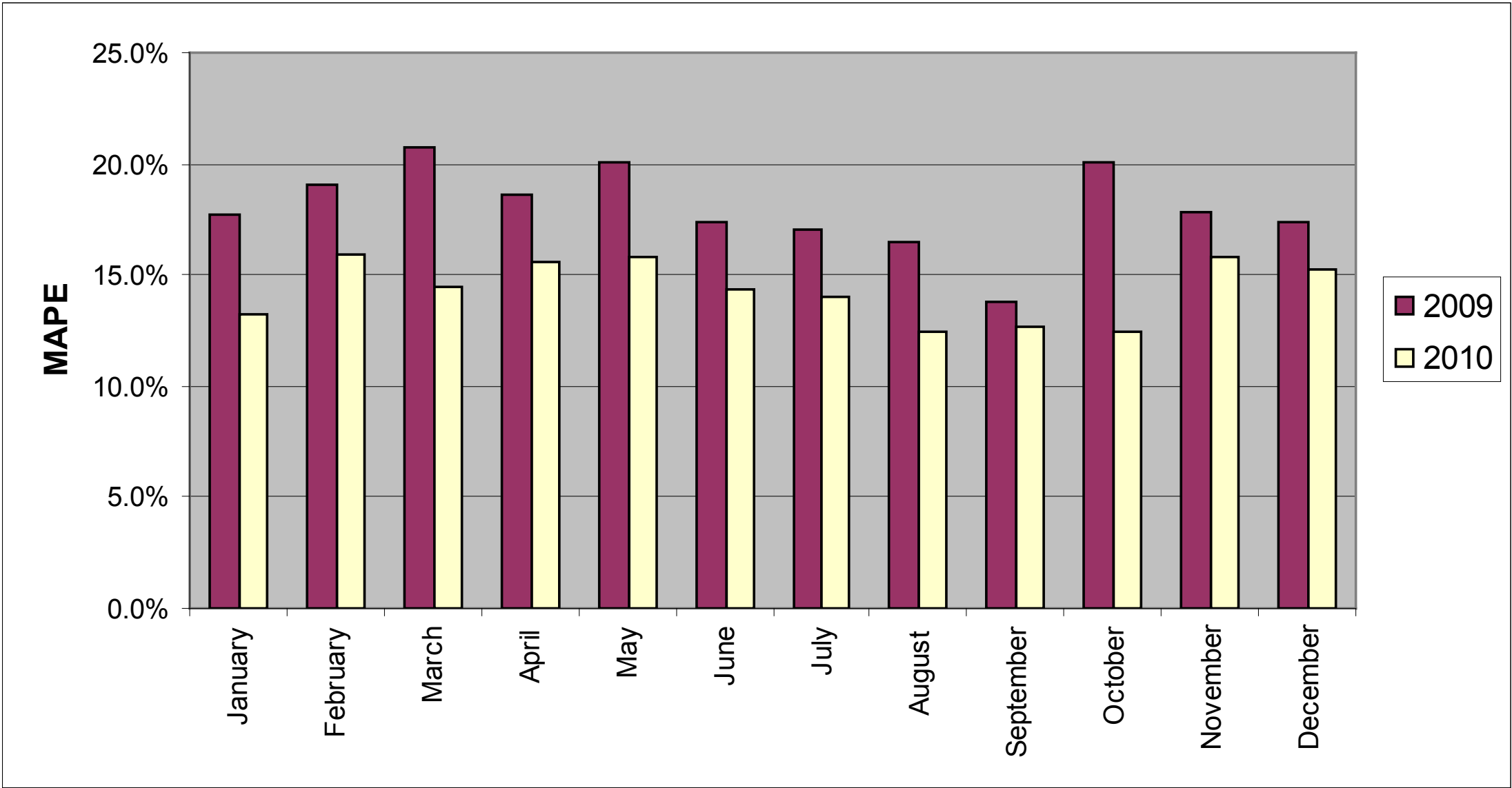


Figure 13 – PSCo monthly day-ahead forecast error.



**Figure 14 – NSP monthly day-ahead forecast error.**

