Analysis of Wind Plant Generation VS Load For the Thirty Highest Daily Peaks 2009-2012 Updated 1/25/2013

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NYSRC Installed Capacity Subcommittee

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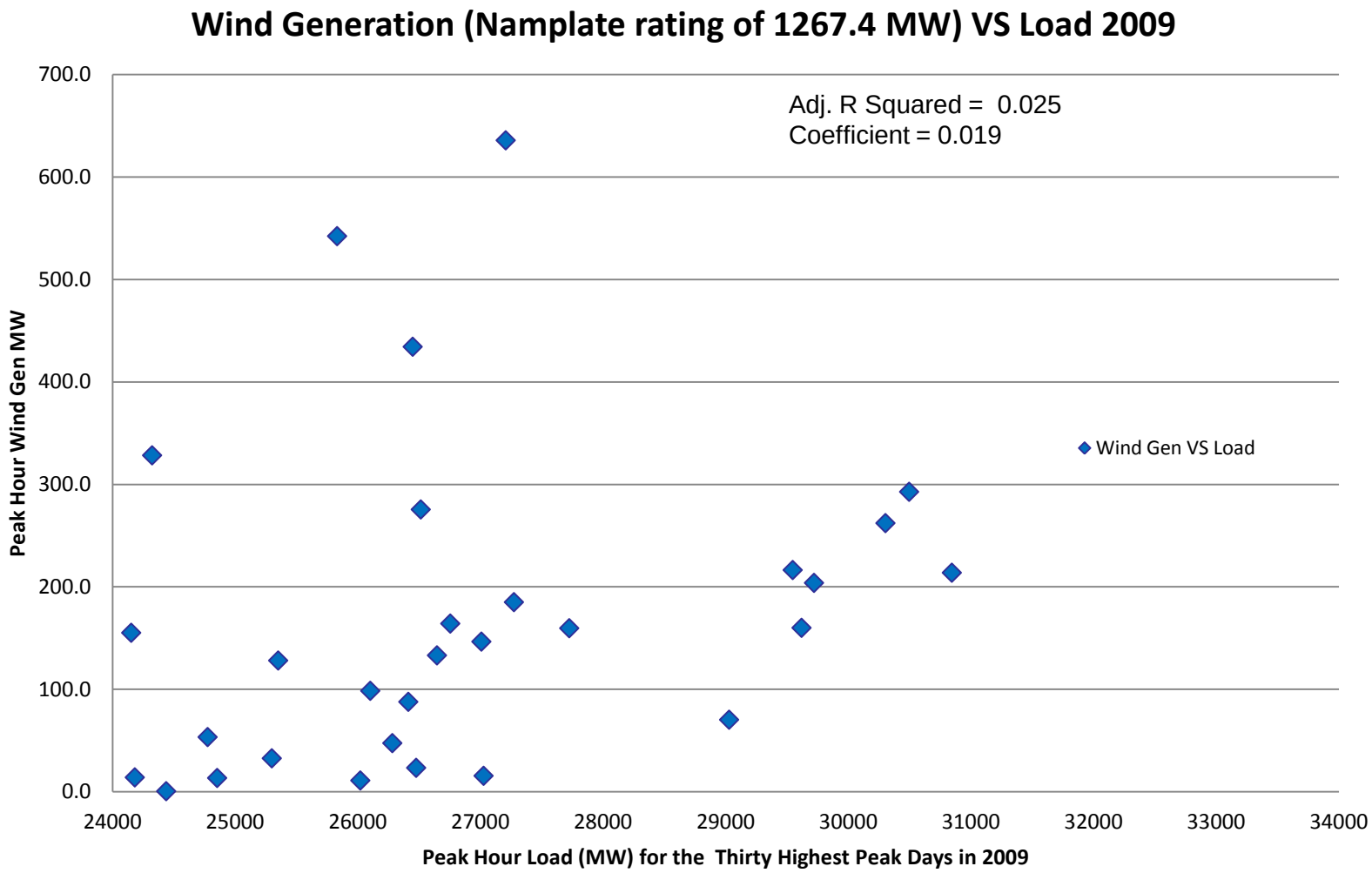
Meeting Site KCC

DRAFT – FOR DISCUSSION PURPOSES ONLY

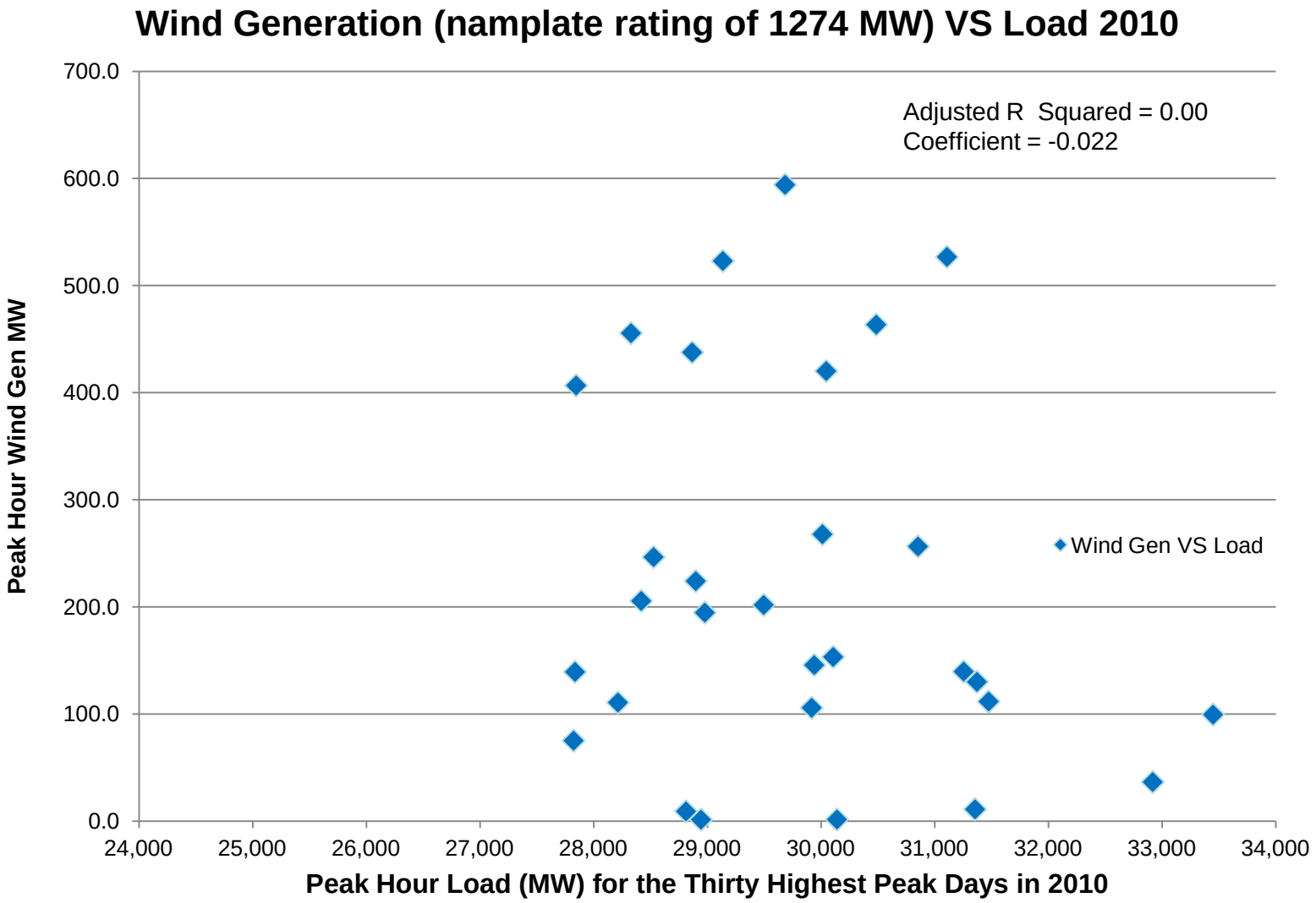
Overview

- GE MARS has new feature to randomly select wind plant generation output for a particular day.
- Analyze wind plant generation VS load to determine if the relationship between wind plant generation and load appears to be random - I.E., Little or no correlation.
- Analyze years 2009 through 2012 for the correlation between wind plant generation and load.

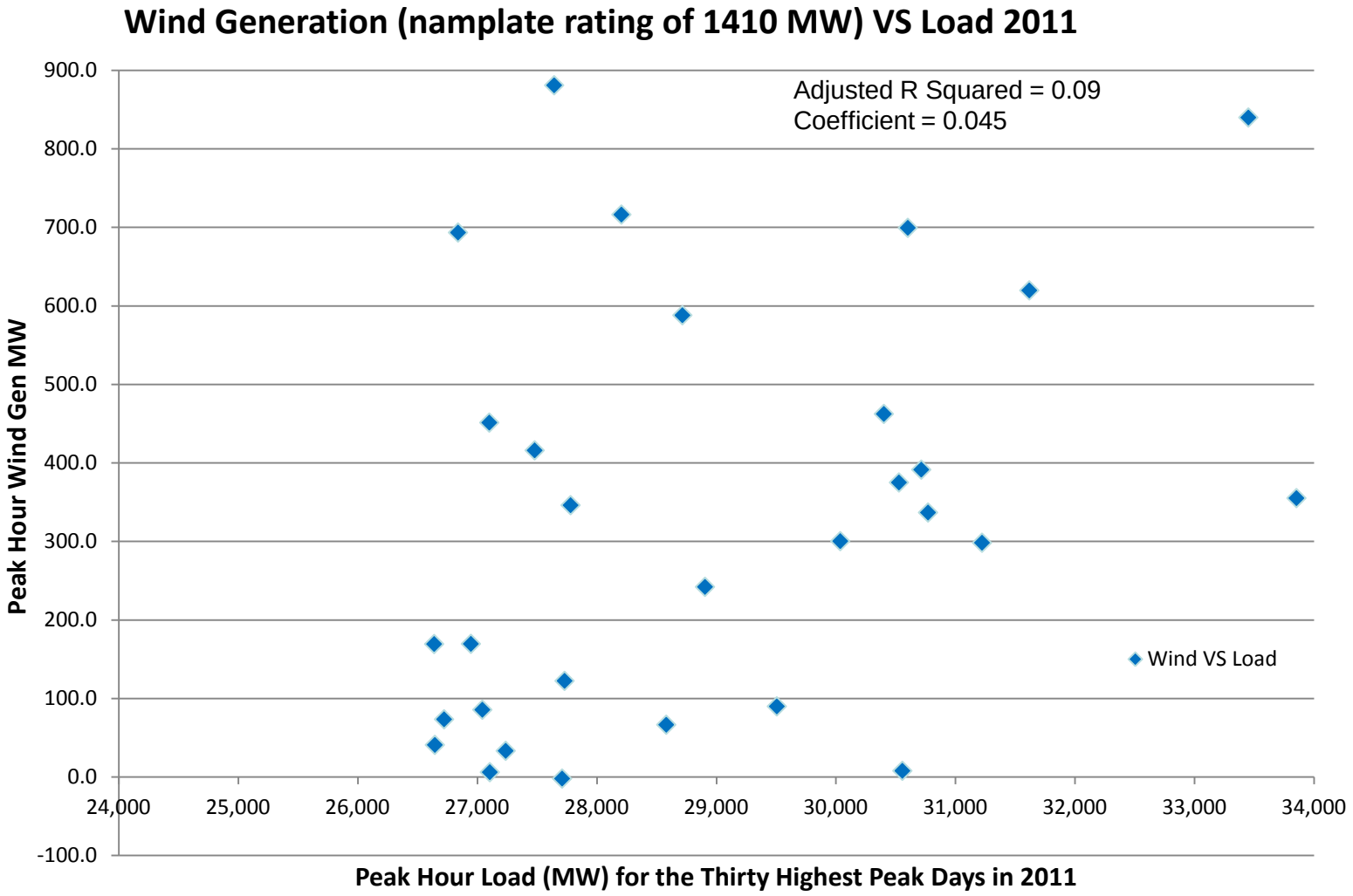
Year 2009



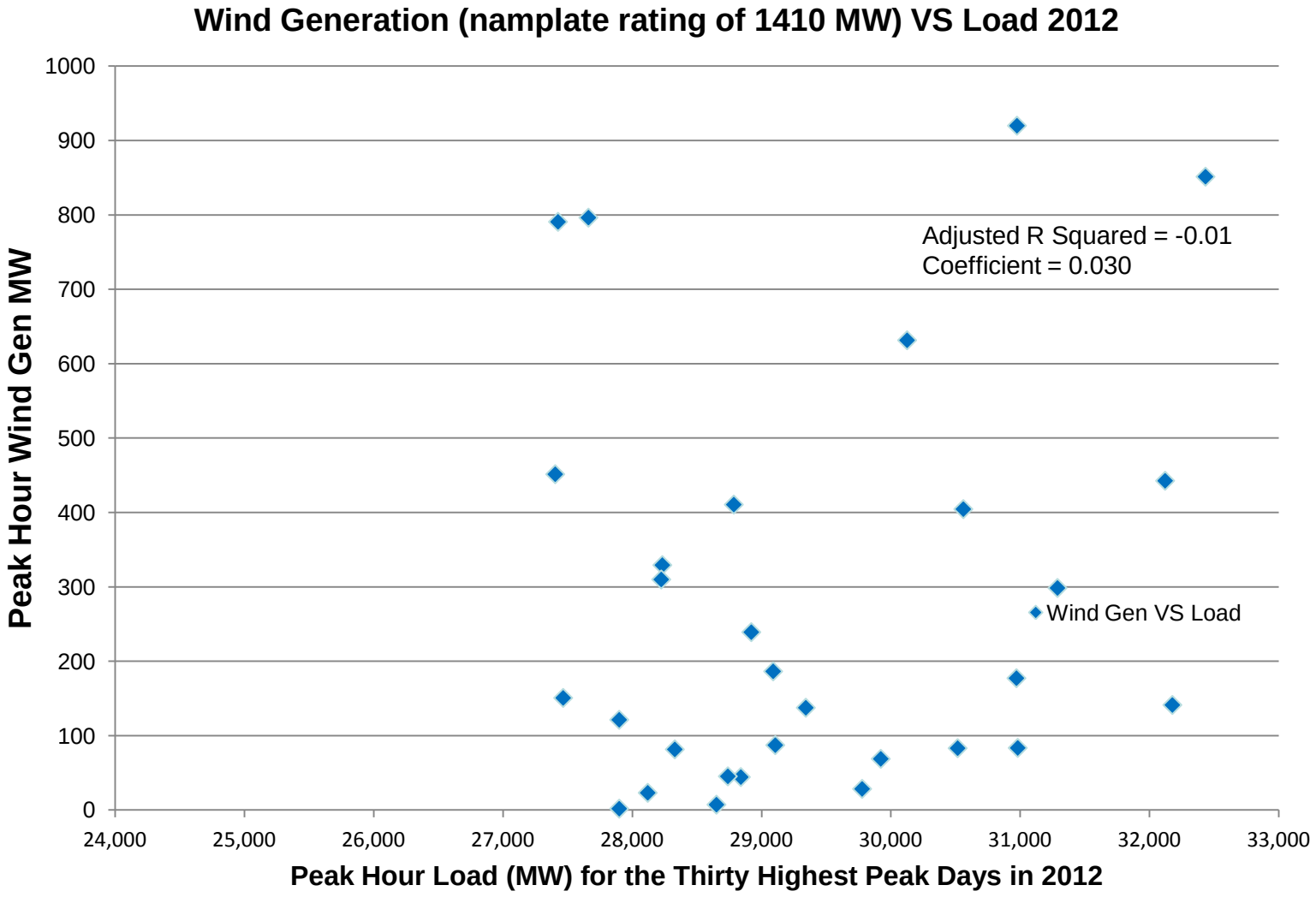
Year 2010



Year 2011



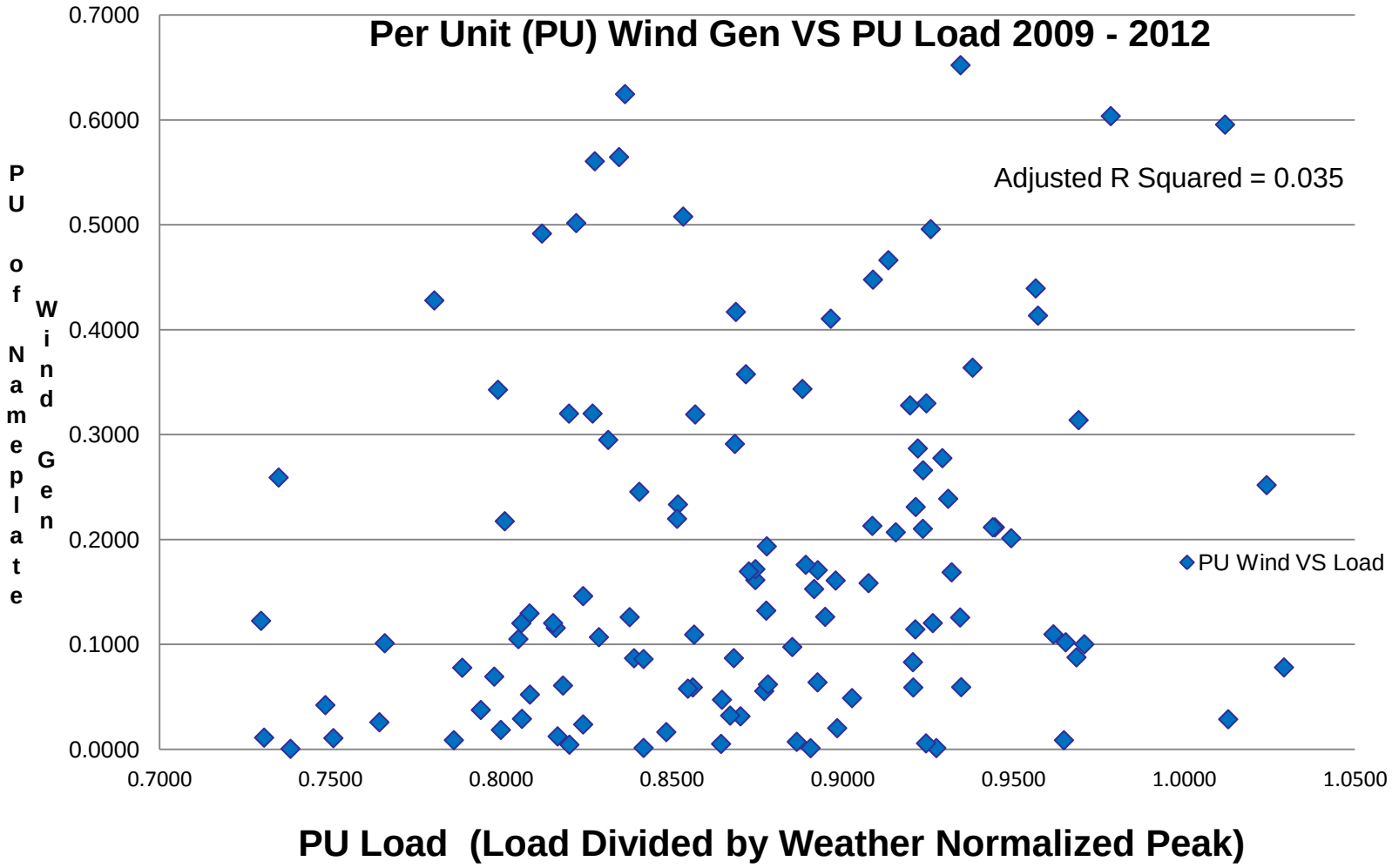
Year 2012



Combine Years 2009 - 2012

- Combine years 2009 through 2012 by dividing wind generation by the nameplate ratings.
- Divide daily peak load by weather normalized peak load for that year
- Plot

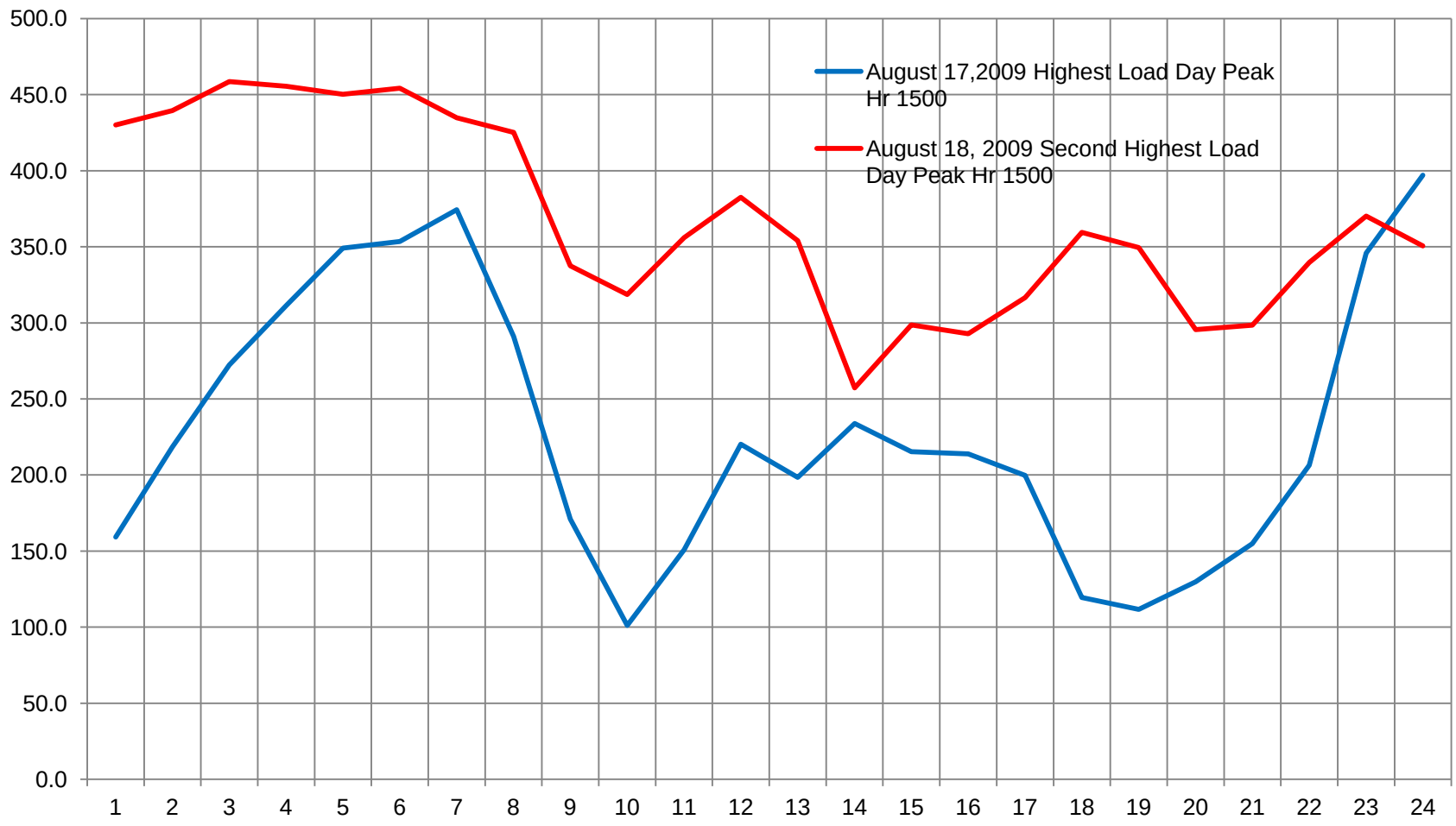
Plot of PU Wind VS PU Load



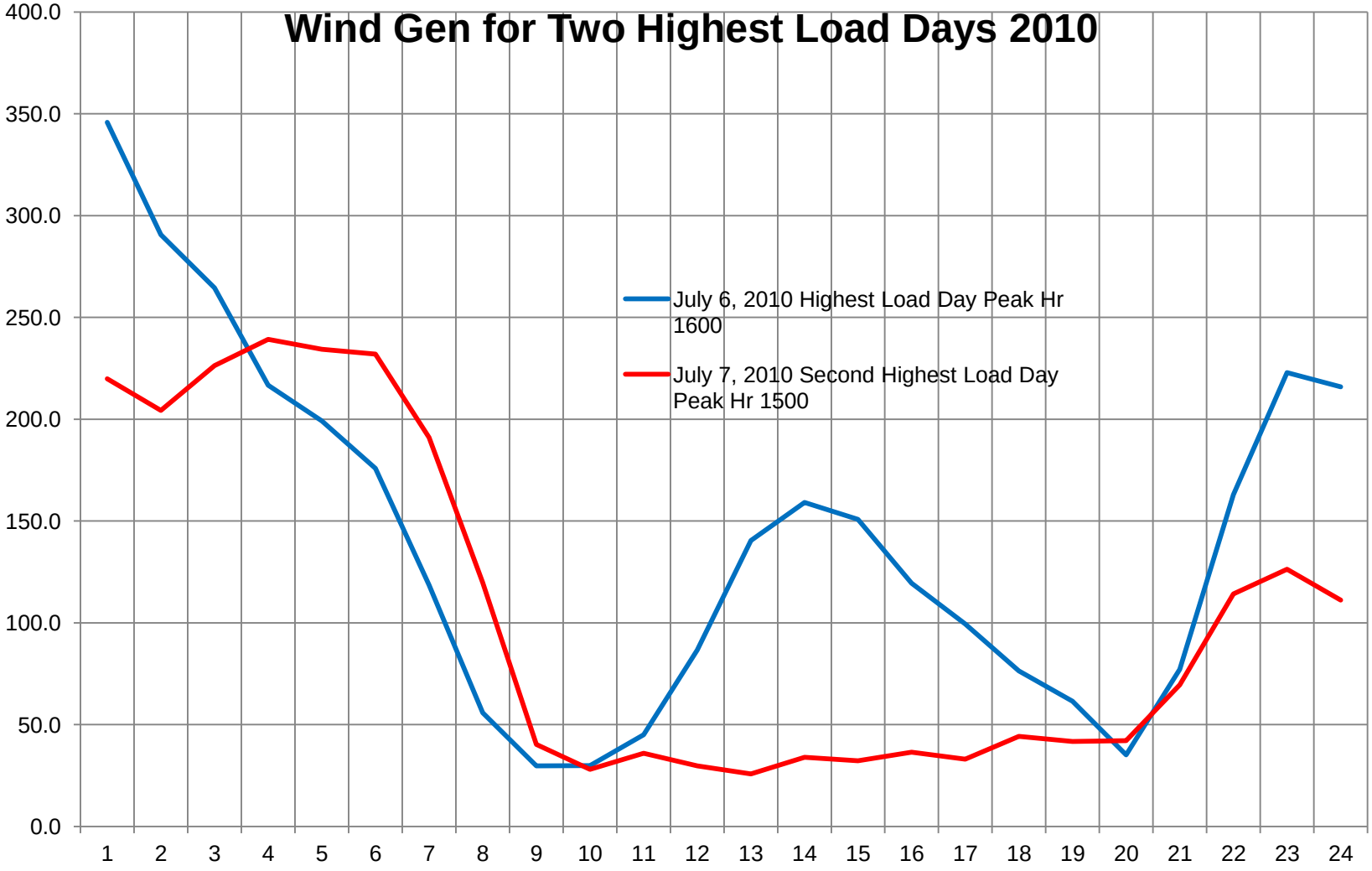
Supplemental Information

- A question was raised as to how wind generation varied hour-to-hour
- To provide some insight for that question hourly daily plots for wind generation were developed
- The two highest load days for each of the years 2009 to 2012 analyzed are presented

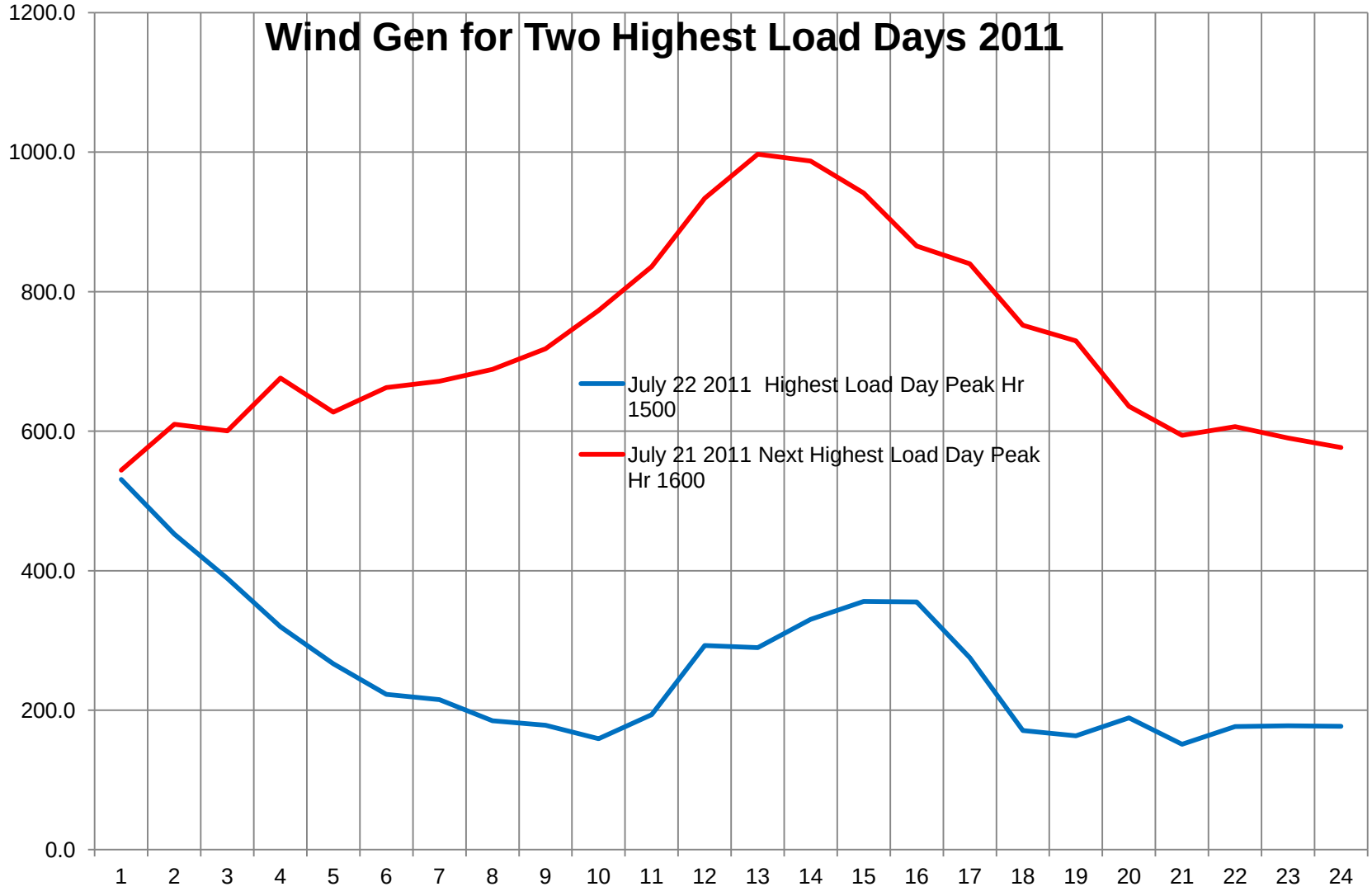
Hourly Wind Gen Two Highest Load Days 09



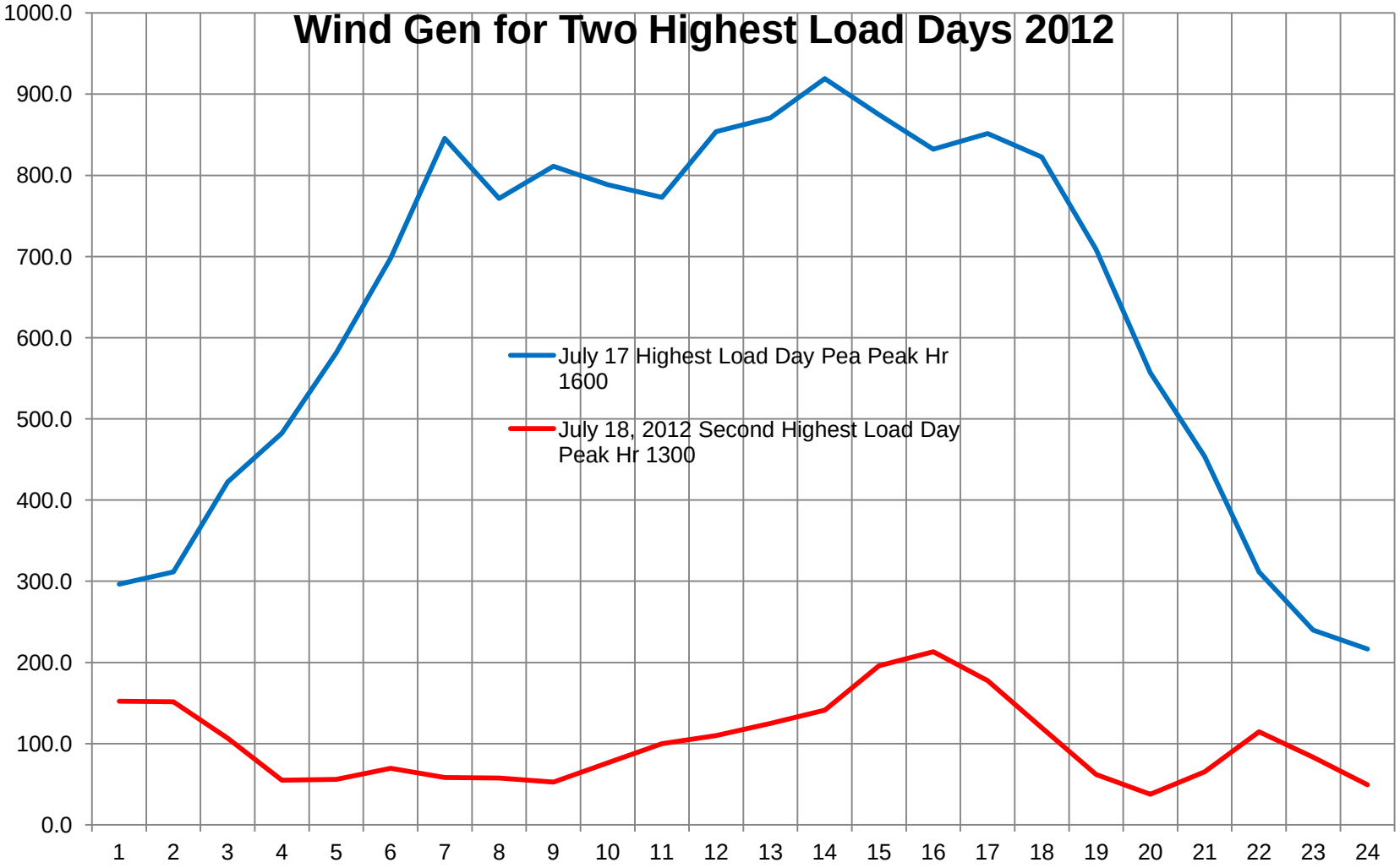
Hourly Wind Gen Two Highest Load Days 010



Hourly Wind Gen Two Highest Load Days 011



Hourly Wind Gen Two Highest Load Days 012



Conclusions

- Correlation between wind generation and load as measured by Adjusted R Squared is consistently close to zero.
- This indicates that the new feature in MARS that treats wind generation as somewhat random is a feature that should be evaluated.
- Recommend that this feature be evaluated for upcoming study year.

Conclusions (cont)

- It also suggest that the matching of particular load shape year and wind shape year is less critical.

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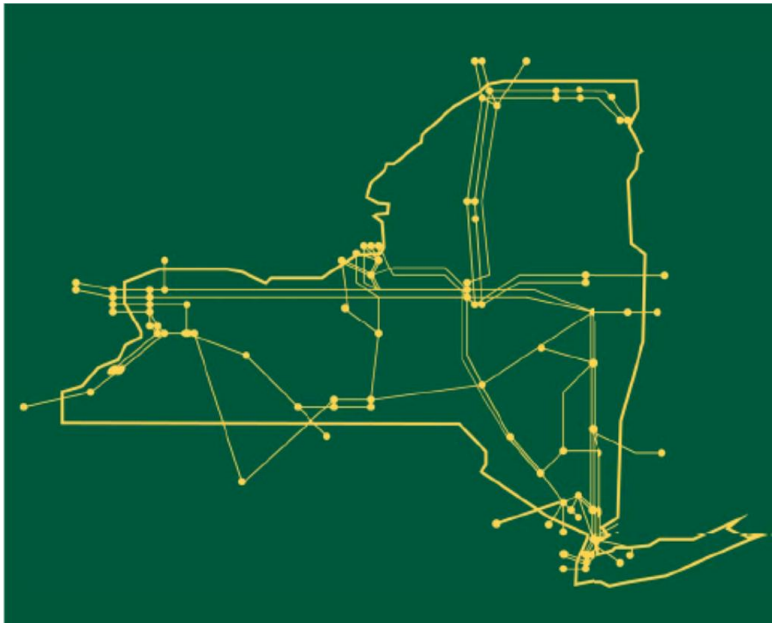

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