Effective Modeling for the Valuation of Energy Limited Resources

NY BES+ NEW YORK BATTERY AND ENERGY STORAGE TECHNOLOGY CONSORTIUM

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Observations and Concerns

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The Study Methodology employed by NYISO and GE, and GE MARS software, appear to be inappropriate tools to study the capacity value of energy limited resources

- The process and software is not designed to value energy limited resources
- The approach to scaling load to account for weather and economic uncertainty results in over-long near-peak periods (details in upcoming slides)
- Post processing tool has not been validated or publicly vetted
  - Lack of endogenous optimization of duration-limited resources
  - "Fish Hook" artifact suggests lack of precision and applicability in these

Observations and Concerns (2)

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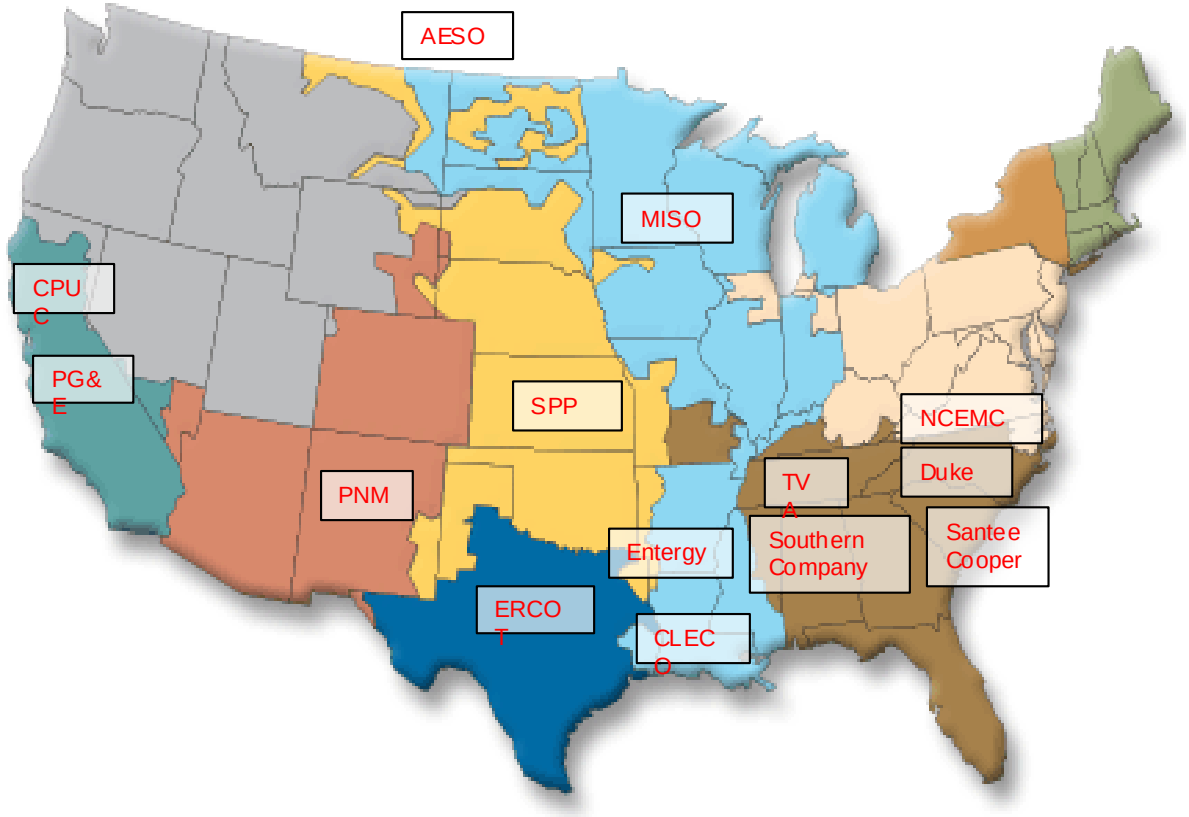
- Renewable levels and concerns with treatment of renewables in the model
  - The modeled values are below the state's targets for the upcoming decade
  - Renewables are represented in the model with an average hourly value
- Other items
  - Non-continuous dispatch/block size
  - Economic v. must run dispatch
  - Valuing at criteria v. "as is" system
  - Energy v. duration limitation

Astrapé Resource Adequacy Experience



Astrapé's SERVM Model:

- In use since mid-80's and vetted nationwide and internationally
- Endogenous treatment of all generator and demand-side constraints
- Economic commitment and dispatch

Load Scaling

IRM process entails selecting representative load shapes from particular weather years and identifying load uncertainty multipliers to address economic and weather uncertainty

- Scaling is flat over day
  - Weather uncertainty is concentrated in a small subset of hours (but IRM model scales all hours)
  - Utilizing a single multiplier to apply to all hours of a year is inappropriate
  - Single-value scaling approach distorts resource adequacy effects on energy limited resources

Effect of Load Scaling for Uncertainty

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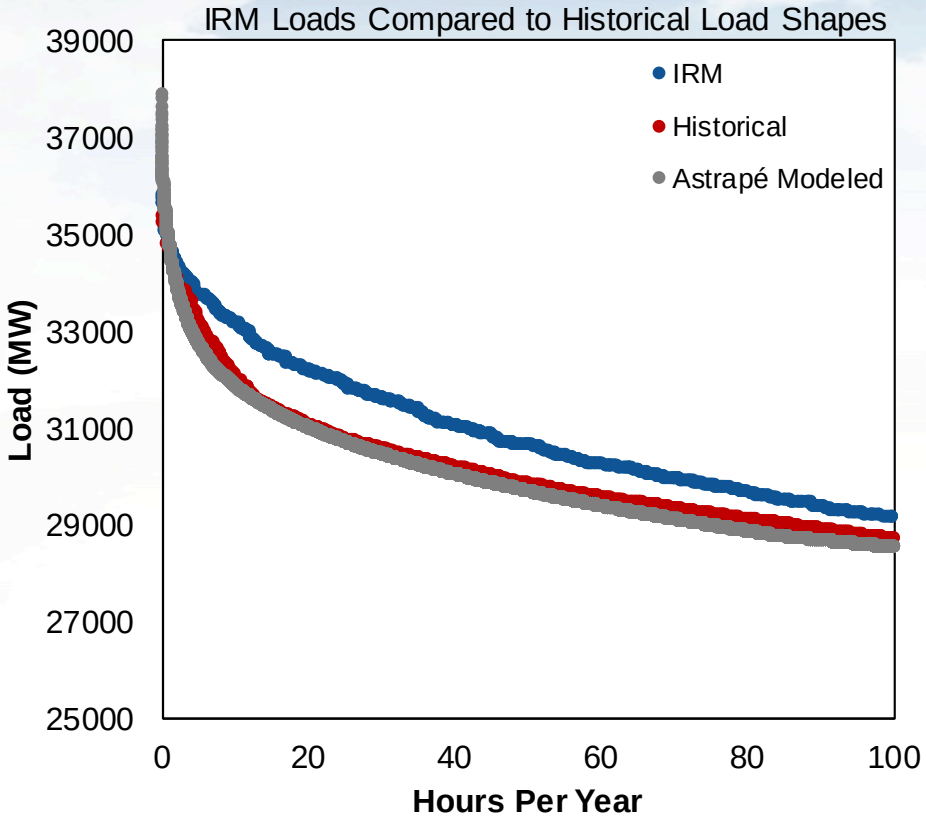

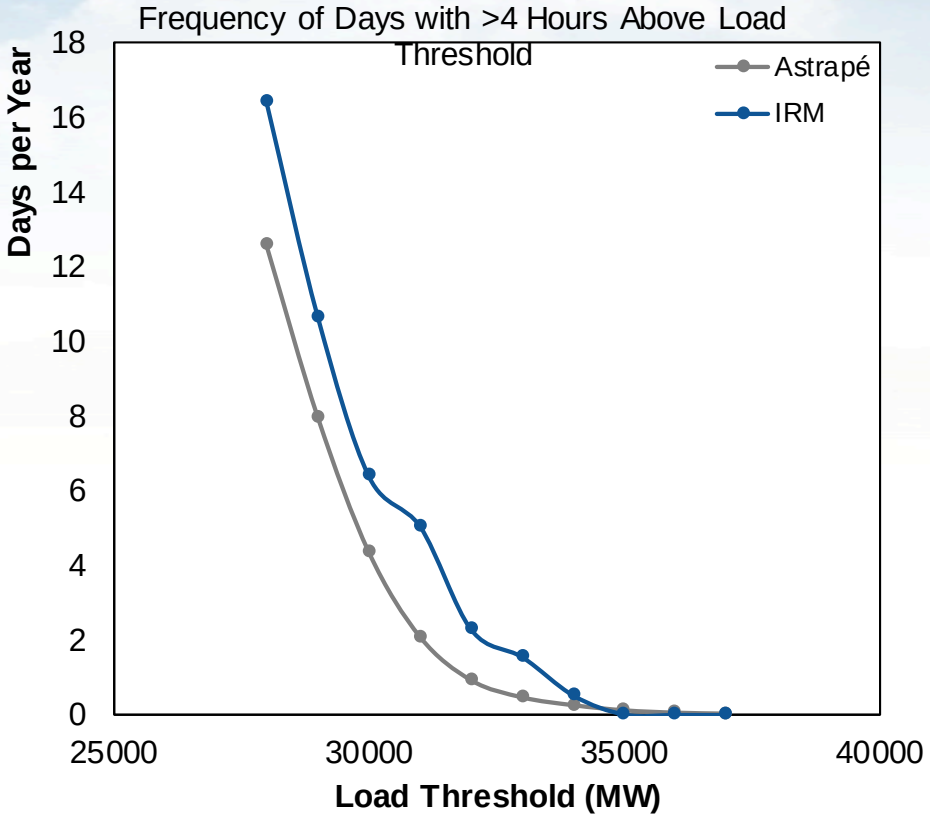

Suggested Next Steps

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Astrapé will be performing further analysis which can be presented at the January 8th meeting

Thank You

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