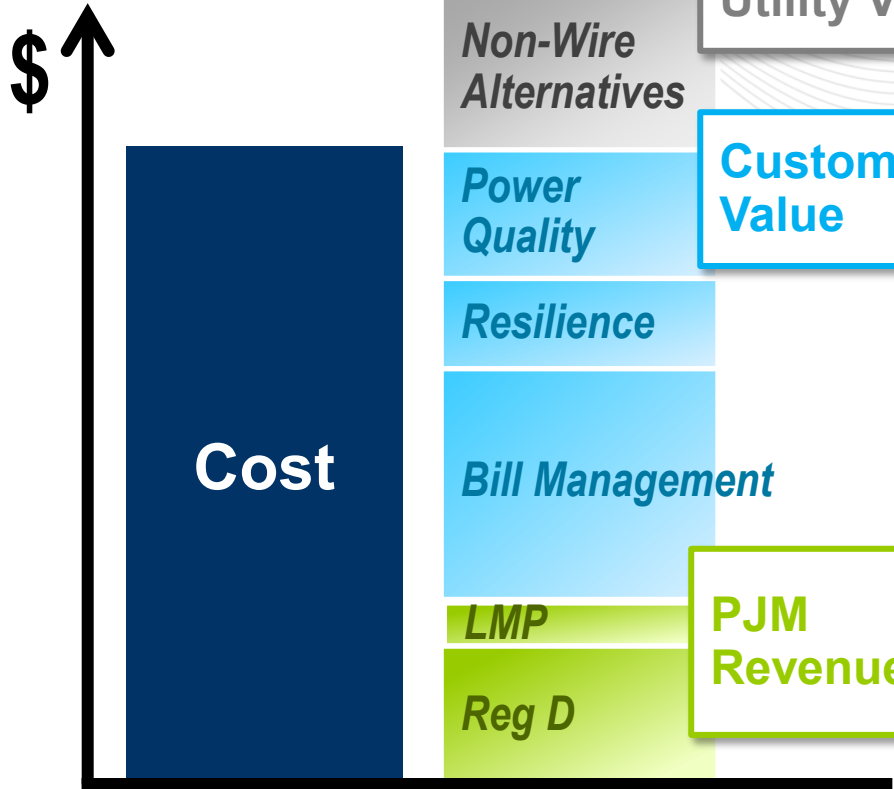


Energy Storage Opportunities in PJM



Scott Baker
Applied Innovation

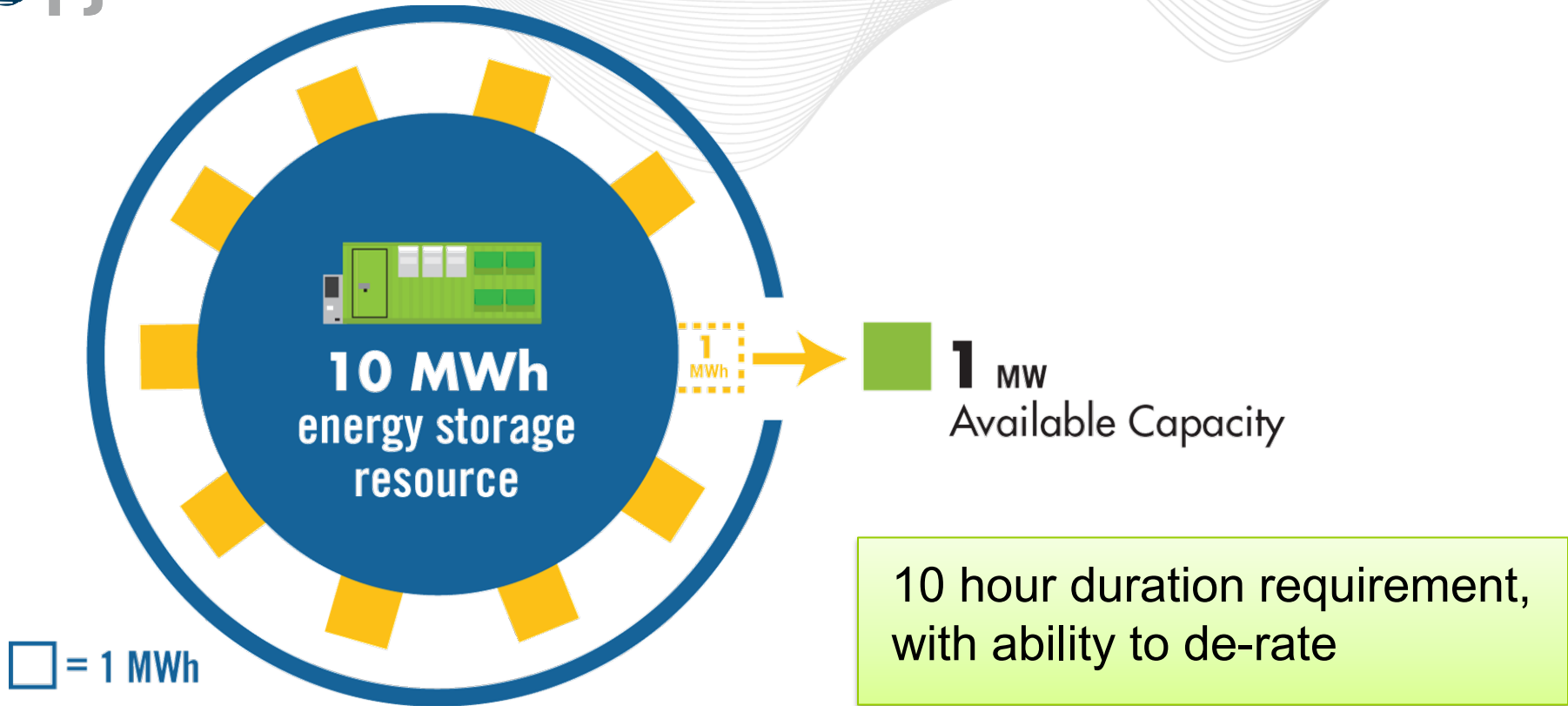
Scott.Baker@pjm.com



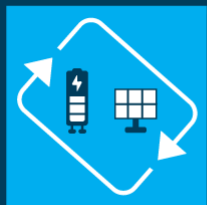
Village of Minster, OH

- Reducing Peak Load
- Voltage Control and Power Factor Correction
- Regulation (PJM Market)





~100 GW
natural gas + standalone
renewable resources



~4 GW
hybrid renewables
+ storage



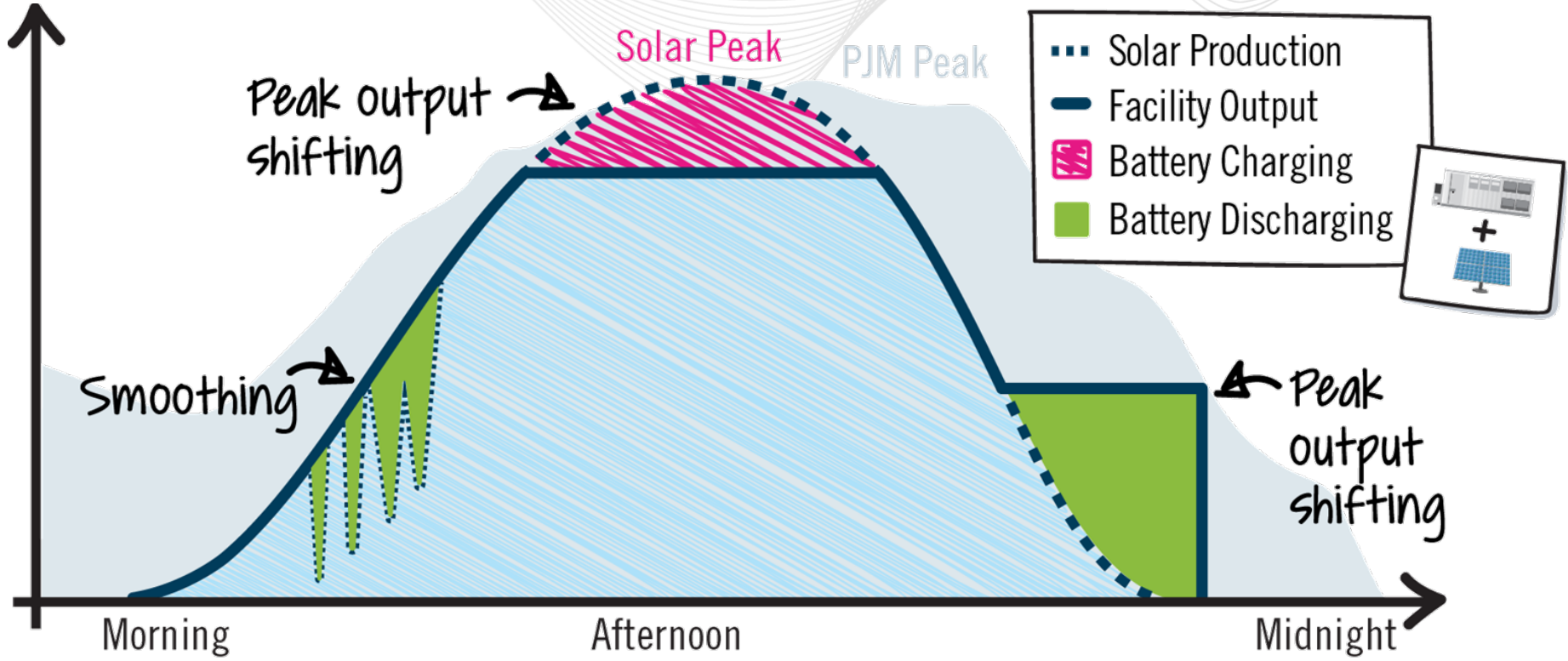
~2 GW
standalone
storage

Hybrid Renewables + Storage

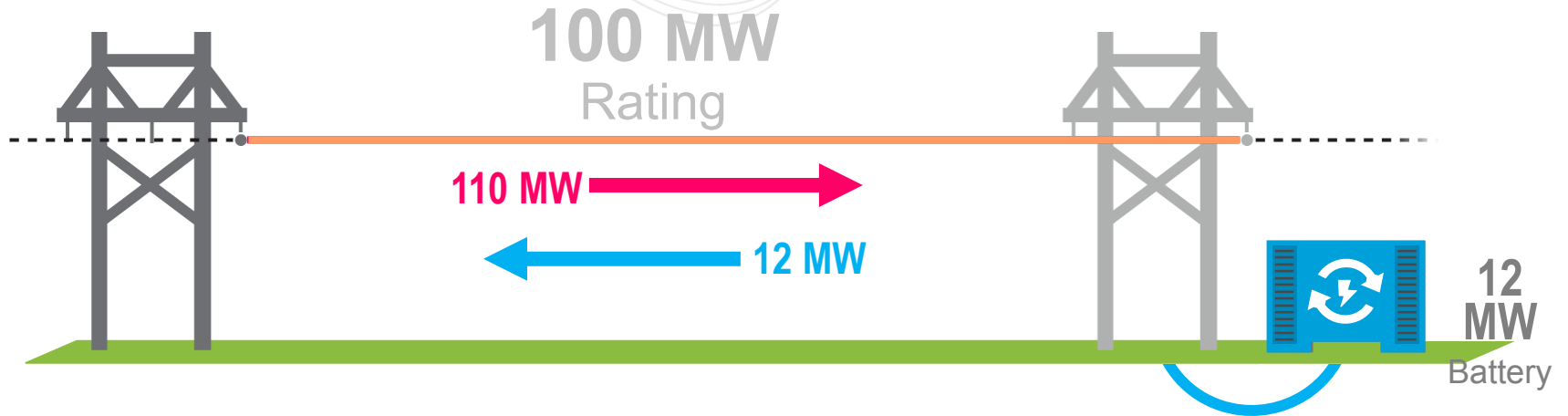
- Mostly >100 MW
- Several < 20 MW
- Several in between

Standalone Storage

- Mostly < 20 MW
- Several >100 MW

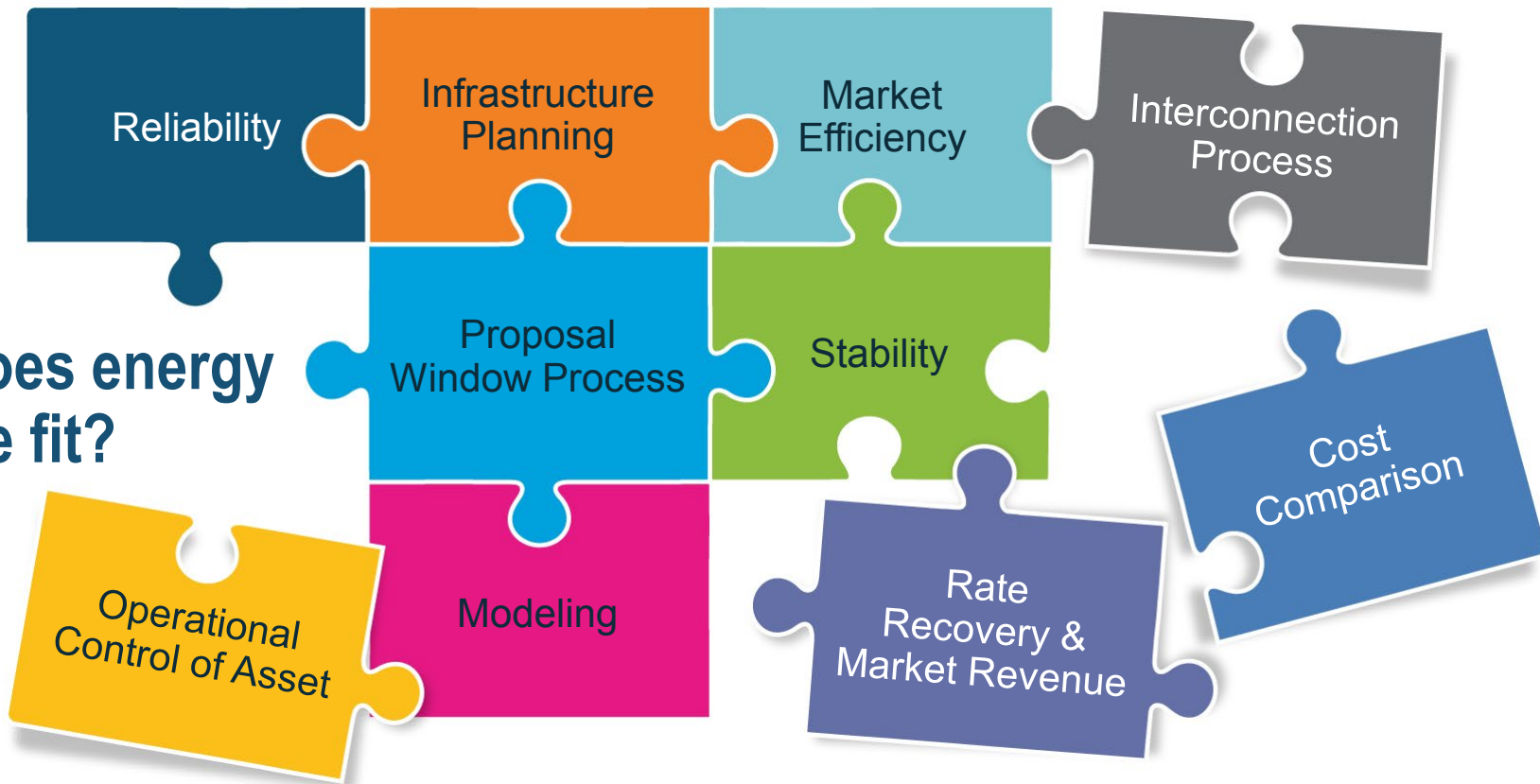


Peak Condition



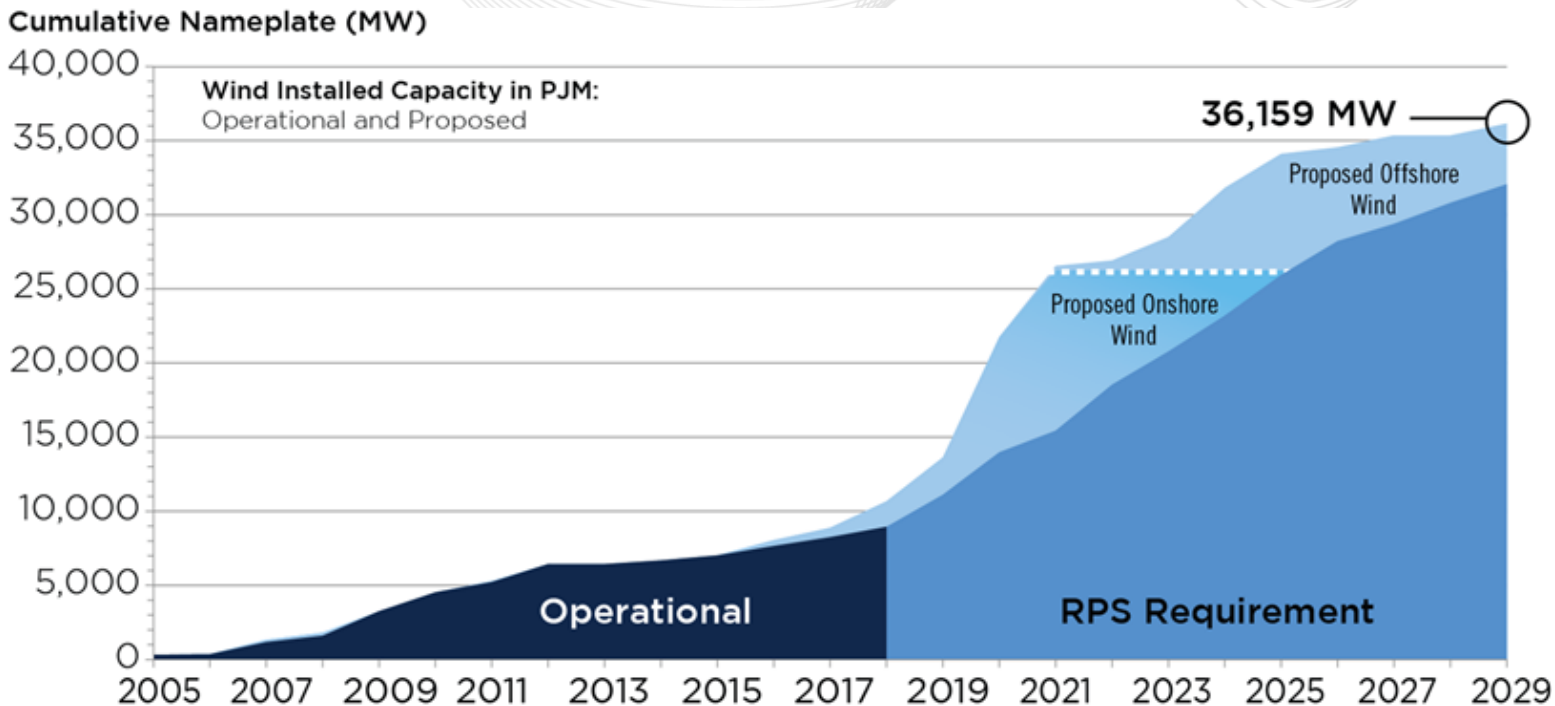
$110 \text{ MW} - 12 \text{ MW}$ counterflow less than 100 MW Rating

How does energy storage fit?





Continued Growth in Renewable Energy Necessitates Efficient Reserve Markets and Flexibility Incentives



The significant expected increase in wind resources in PJM will increase system uncertainty.