

Demand Response & Wind Integration

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OUR INDUSTRY IS CHANGING



**INTERNET
OF THINGS**



**INTEGRATING DISTRIBUTED
ENERGY RESOURCES**



**WATER
EFFICIENCY**



**GAS
SAFETY**

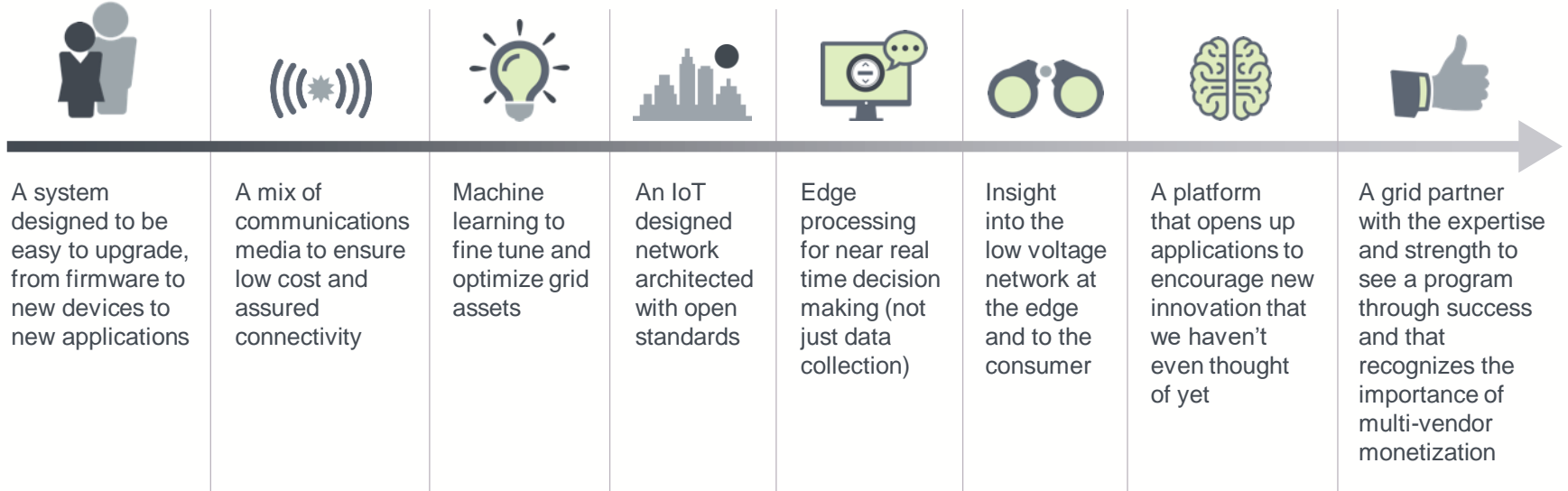


**GREATER CUSTOMER
EXPECTATIONS**

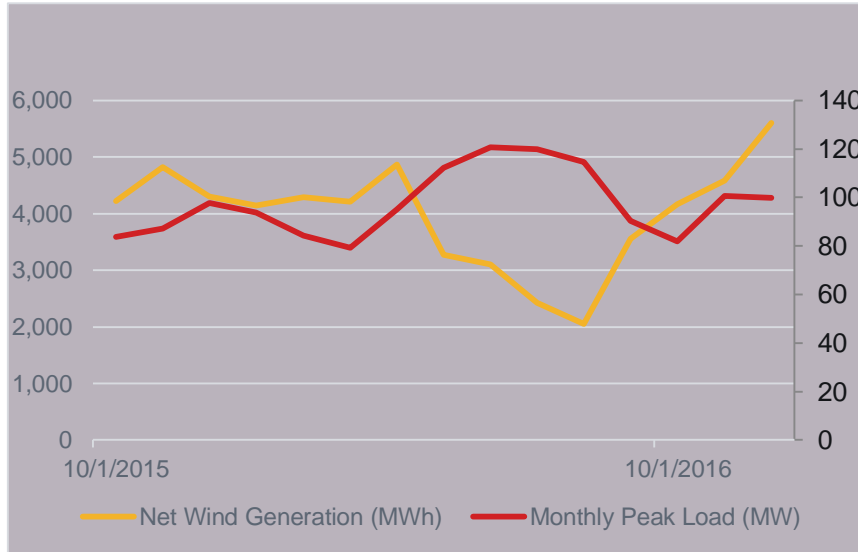


**EVOLVING UTILITY
BUSINESS MODELS**

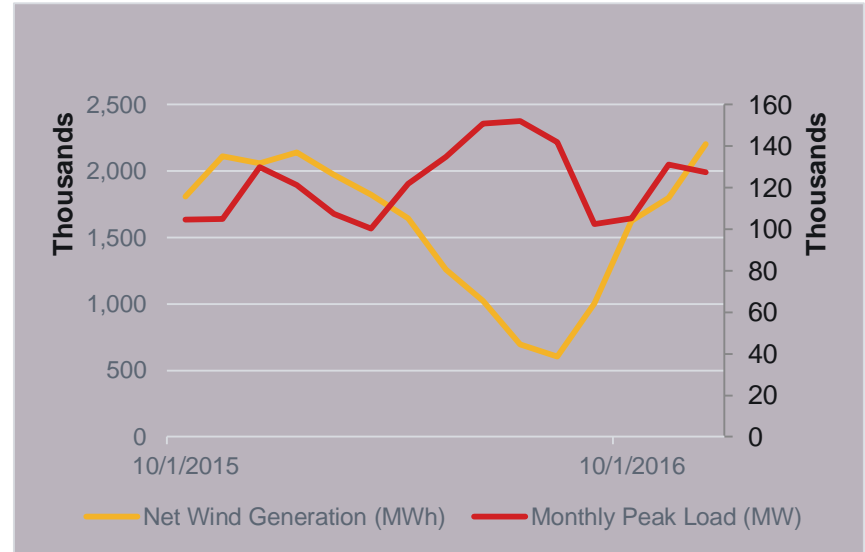
WHAT'S NEEDED FOR THE ACTIVE GRID?



WIND VS DEMAND – PEAK LOAD & WIND GENERATION IN MISO & PJM



MISO



PJM

SEASONALITY OF END USE DEMAND

	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
0	-	-	-	-	-	-	-	-	-	-	-	-
1	-	-	-	-	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	-	-	-	-	-
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16	-	-	-	-	-	-	-	-	-	-	-	-
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21	-	-	-	-	-	-	-	-	-	-	-	-
22	-	-	-	-	-	-	-	-	-	-	-	-
23	-	-	-	-	-	-	-	-	-	-	-	-

- » Average feeder peaks by month & year for large utility, representative of typical peaks
- » Peaks show distinct seasonal disparity
- » DER integration beyond the substation will be critical for intermittent supply
 - Requires greater transparency at the distribution and end-user level
- » Addressing locational demand via greater telemetry & multi-point communications can yield the most cost effective and flexible solution

THANK YOU



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