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Grid Balancing with Demand

Adding a Degree of Freedom for the System Operator

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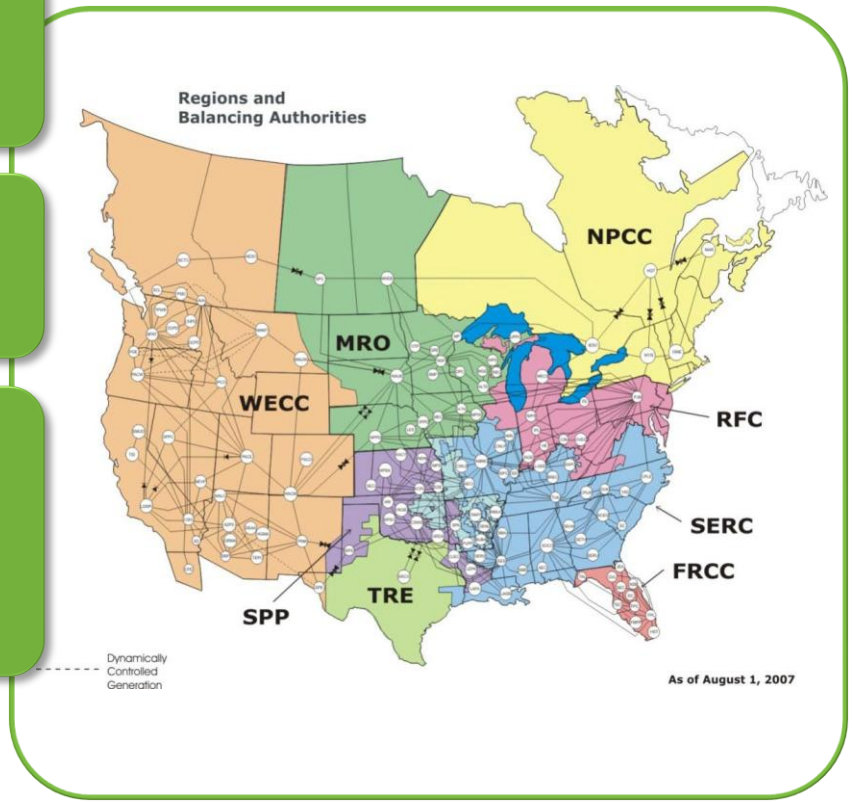
Grid Balancing

Grid Balance is a critical part of electricity generation and distribution

There are over 130 NERC Balancing Authorities (BA's) of varying sizes across North America

Grid Balance is provided in essentially the same way by each individual operator

- Large generator production is constantly adjusted to meet changing electricity demand



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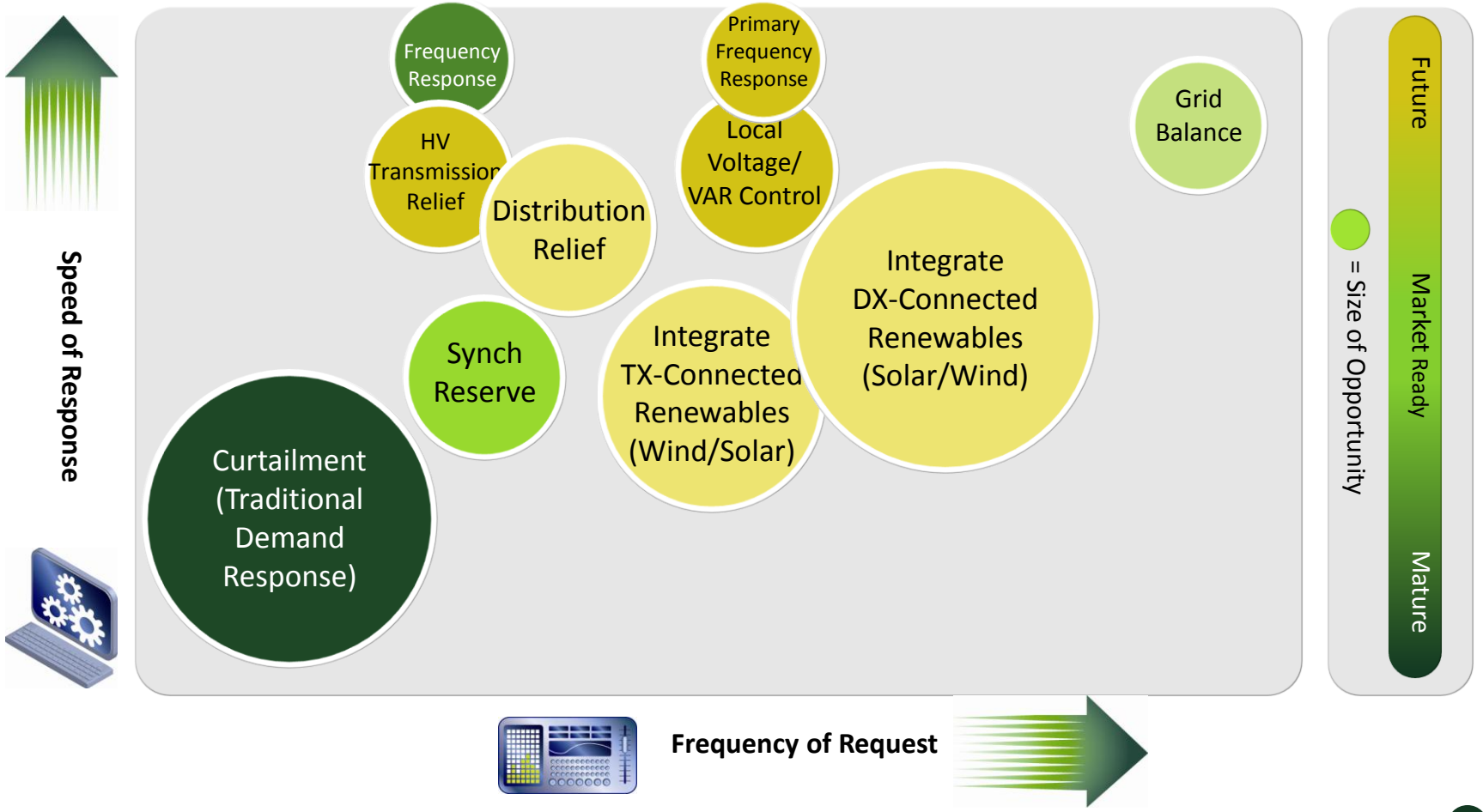
Demand-Side Management Opportunities

Market Maturity for demand side assets to participant



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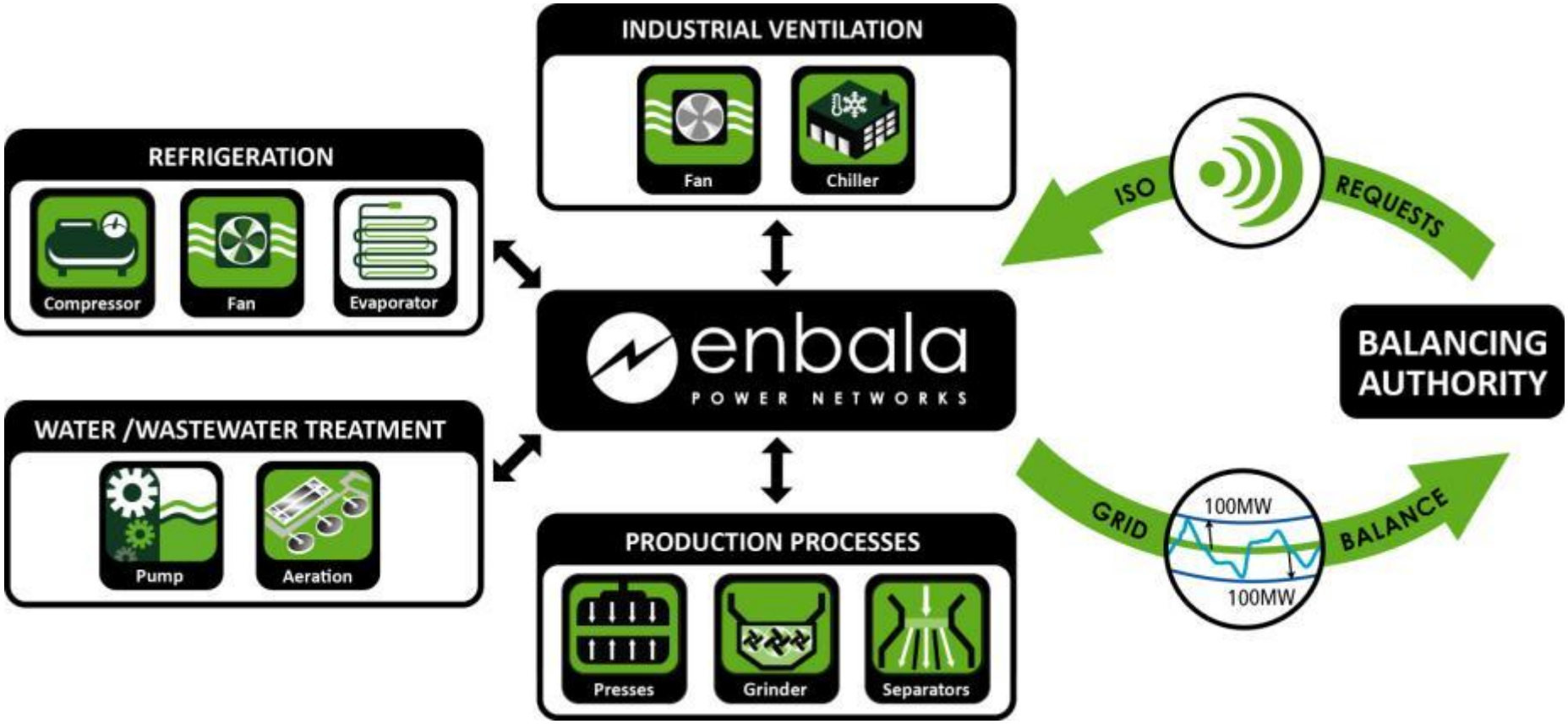
ENBALA Power Network (EPN)



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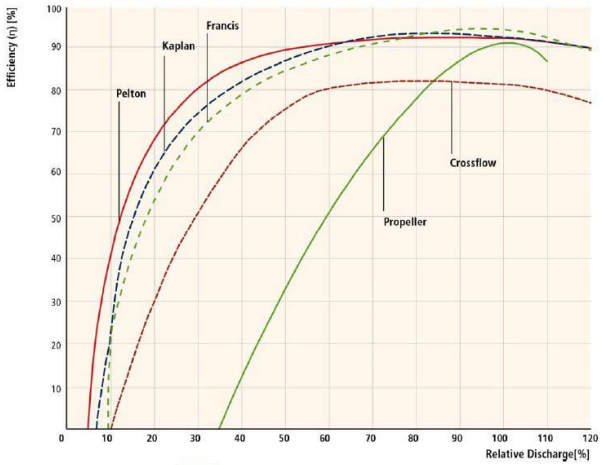
Balancing with Generation

There are many reasons generators can't or prefer not to provide grid balancing

Generating units are limited in their speed of reaction – large mass flow to move

Generator efficiency falls as you move production away from maximum efficient operating point



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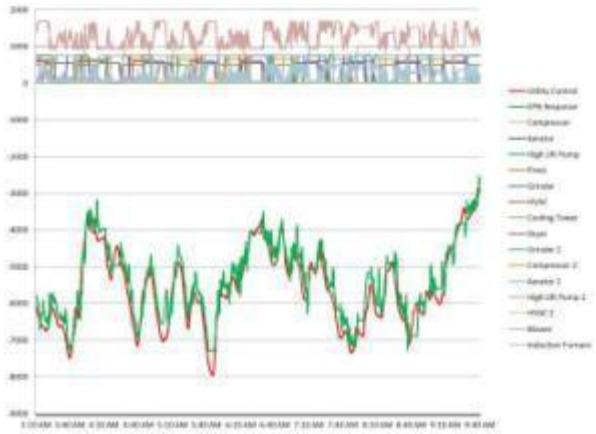
Balancing with Controlled Load is Different

Allow loads to handle volatility, so generators don't have to

A large number of small changes in consumption across a large number of consumers can occur very quickly

Efficiency of load dispatch is flat over short periods - local process storage is used to enable controlled load changes

Production efficiency across the supply fleet can be increased



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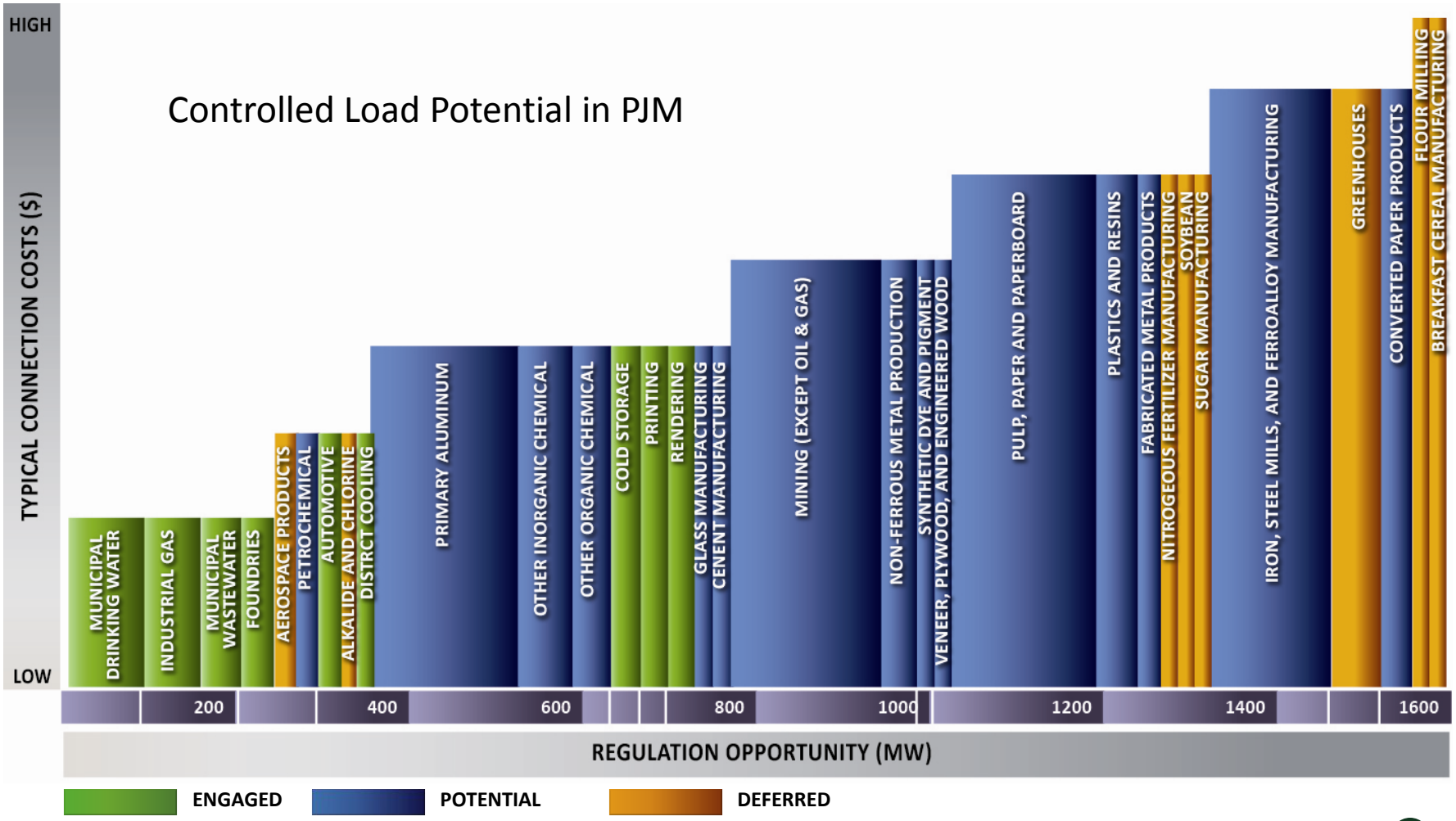
Controlled Loads – Who and How Much?



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EPN Network Performance in PJM

PJM Performance Metric Score: 89.1%

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What we would like to see

- Balancing Authority (BA) be assigned responsibility to ensure sufficient Frequency Response is available
- Ensure that the NERC standard does not define the technology that should provide the response
- BA's procure what they need on an economic basis
- Modify tariff's and/or develop market mechanisms to support the economic selection

- Development along these lines will allow industry to determine the most efficient and effective way to provide necessary Frequency Response

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Thank You

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