

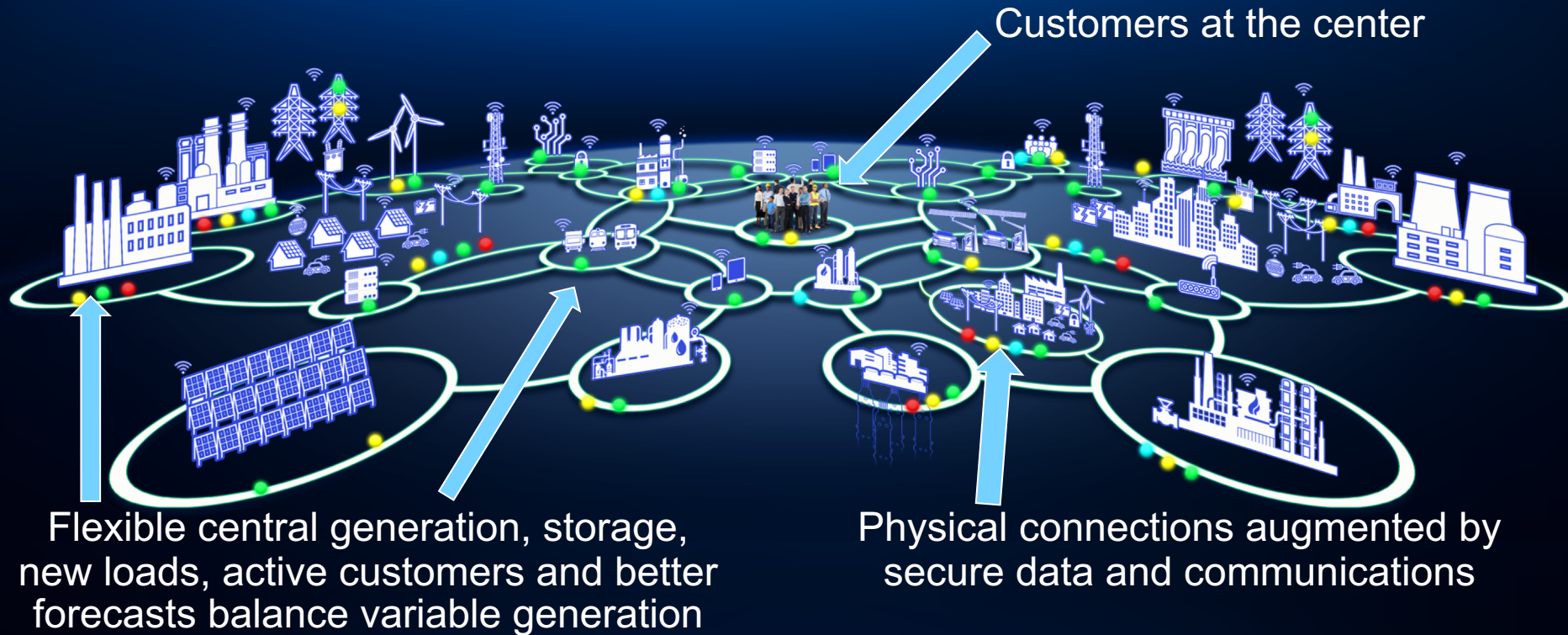
Transitioning the Energy System

2nd International Conference on ESI

Aidan Tuohy, EPRI
Program Manager, Bulk System Renewable/DER
Integration
March 25, 2019



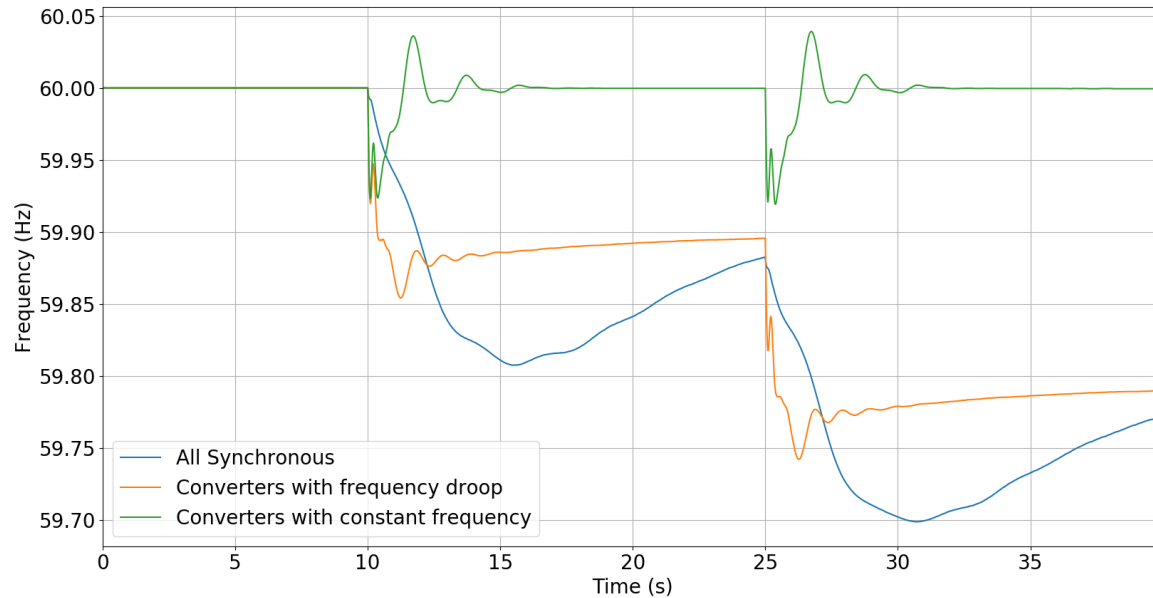
Integrated Energy Network



Energy and Natural Resource Systems are Integrated to Provide Reliable, Safe, Affordable, Cleaner Energy and Expanded Customer Choice

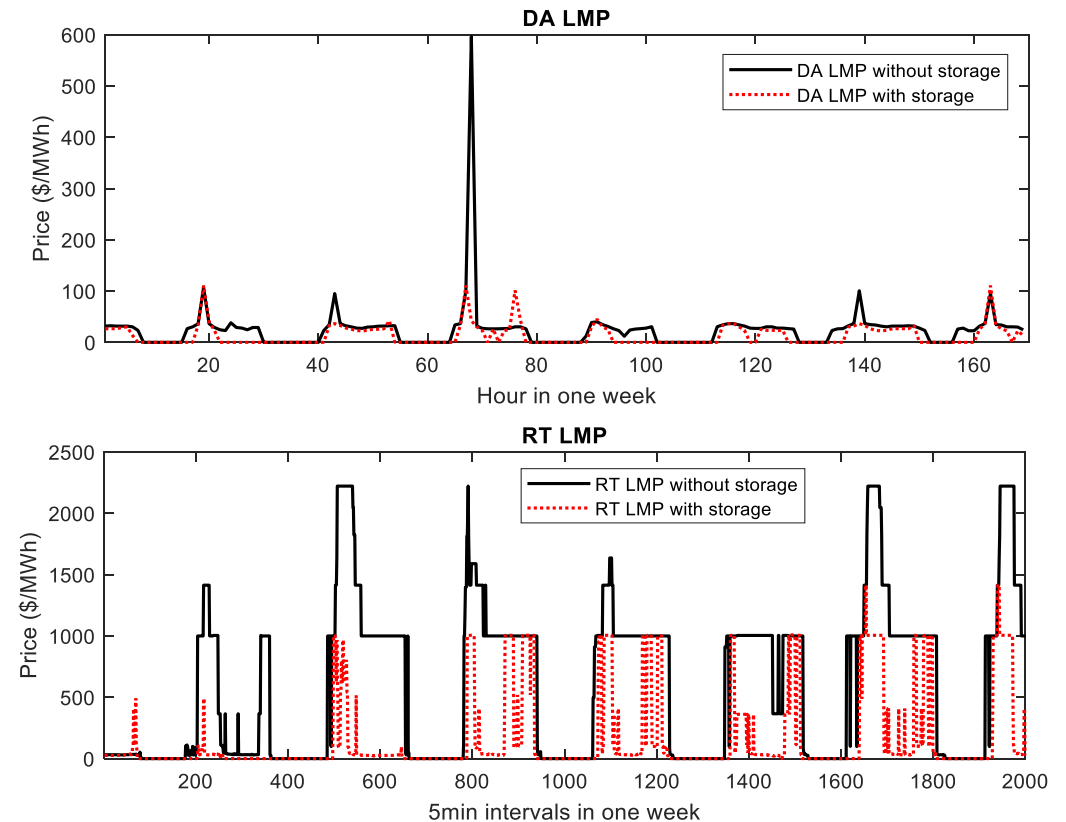
100% Renewables Recent Study Work

100% converter based operations is possible with new controls and some thought



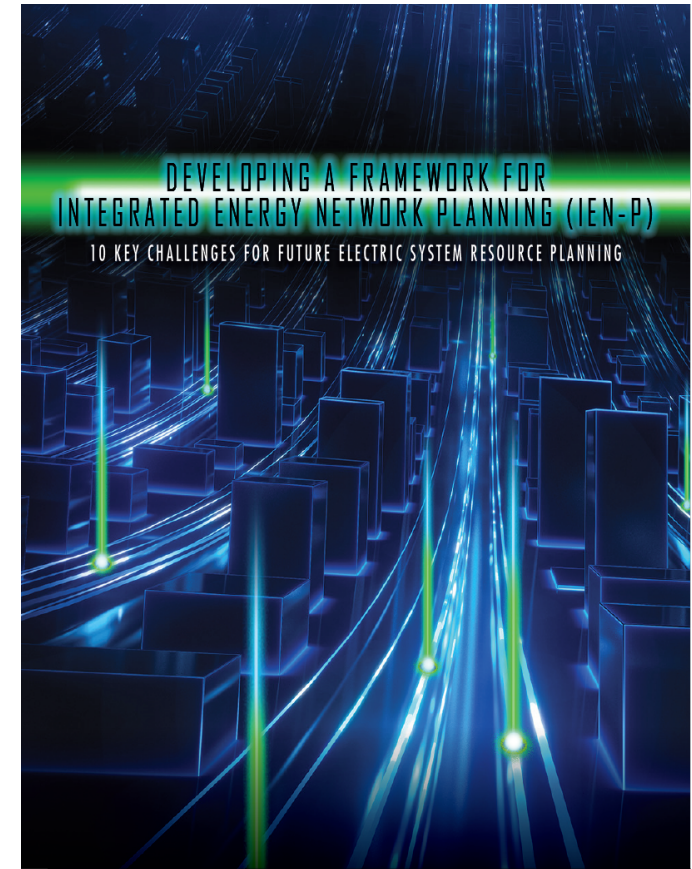
“Grid Operations with 100% Inverter-Based Resources”, 2019 EPRI Product ID# 3002014775 (EPRI members only with public summary soon)

Prices will bounce around and be about determining storage and curtailment



Challenges for studying an Integrated Energy Network

Category	Key IEN Planning Challenge
Modeling the Changing Power System	<ol style="list-style-type: none">1. Incorporating operational detail2. Increasing modeling granularity3. Integrating generation, transmission & distribution planning4. Expanding analysis boundaries and interfaces5. Addressing uncertainty and managing risk
Integrating Forecasts	<ol style="list-style-type: none">6. Improving forecasting7. Improving modeling of customer behavior and interaction
Expanding Planning Boundaries	<ol style="list-style-type: none">8. Incorporating new planning objectives and constraints9. Integrating wholesale power markets10. Supporting expanded stakeholder engagement



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Together...Shaping the Future of Electricity