MICROGRID KNOWLEDGE
CONFERENCE SERIES

Microgrid 2019
CONFERENCE

Microgrid as a Foundation for DERMS

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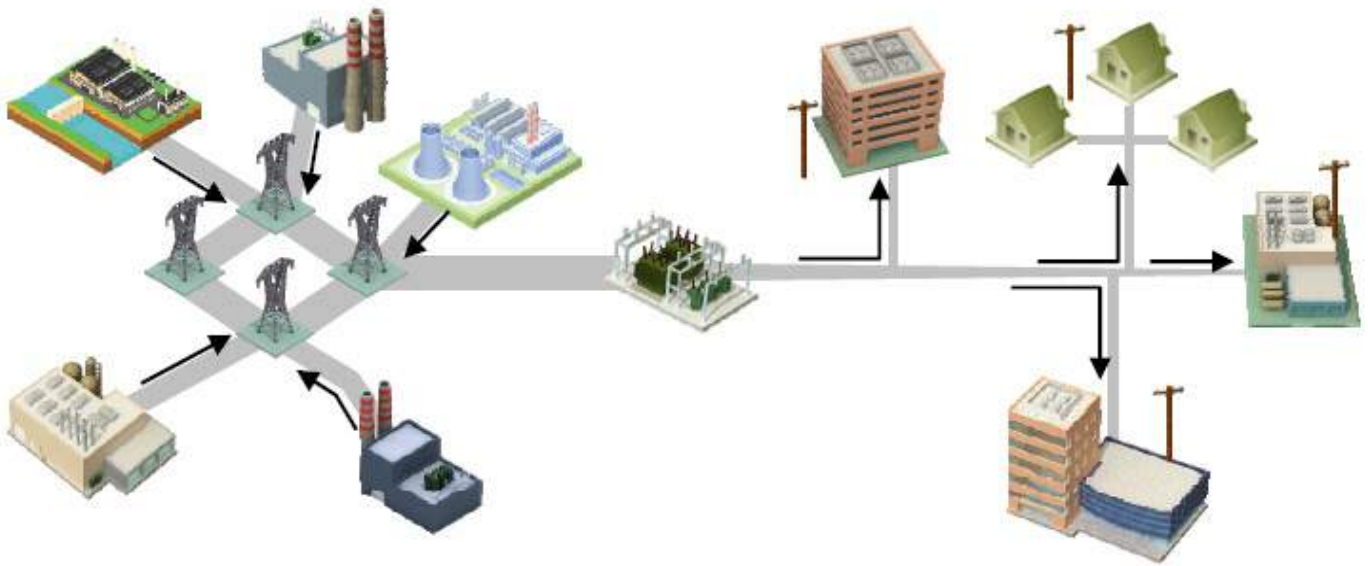
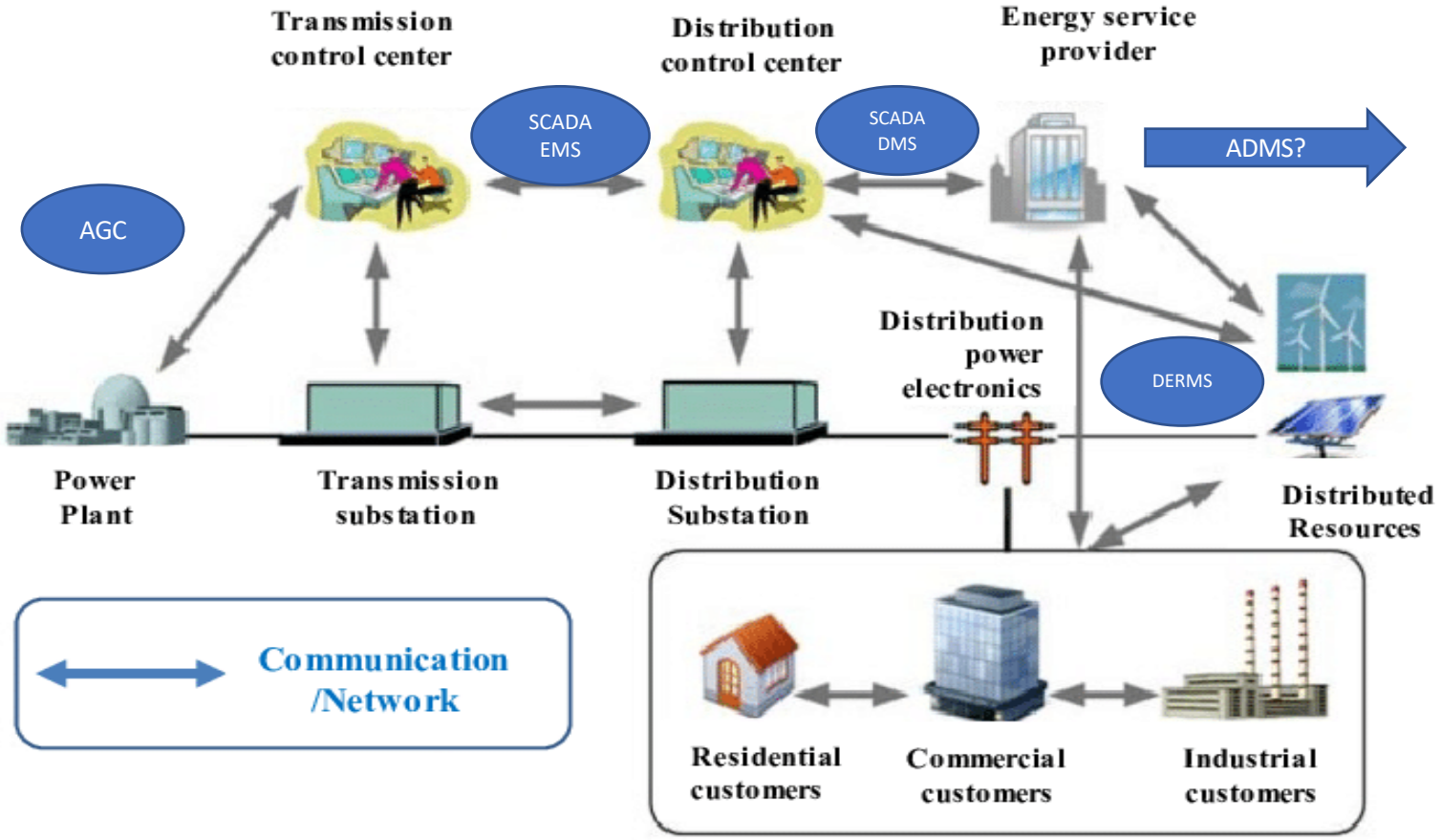
Current Power System Design



Grid Control/Management Tools Currently Available



Where is the Gap?

- Current set of tools are too slow. It works great in a pooling concept design.
- No tools to control distribution system
- New tools are needed to adapt to the distributed power design and the loss of inertia of the system

Is DERMS the Answer?

Yes – but partially!

What is a “DERMS”

- Distributed Energy Resource Management System
- Emphasis is on “**Management**”

What does it do?

- Forecast DER generation
  - To what accuracy?
  - At what interval?
- Monitor DER generation
- Coordinate DER generation - scheduling
- Optimizes DER generation based on a given external Network Model

Great now you have a “Mapquest print out of how to get to NY” efficiently!

What do you do now that you've hit road closure?

REAL TIME ADJUSTMENT

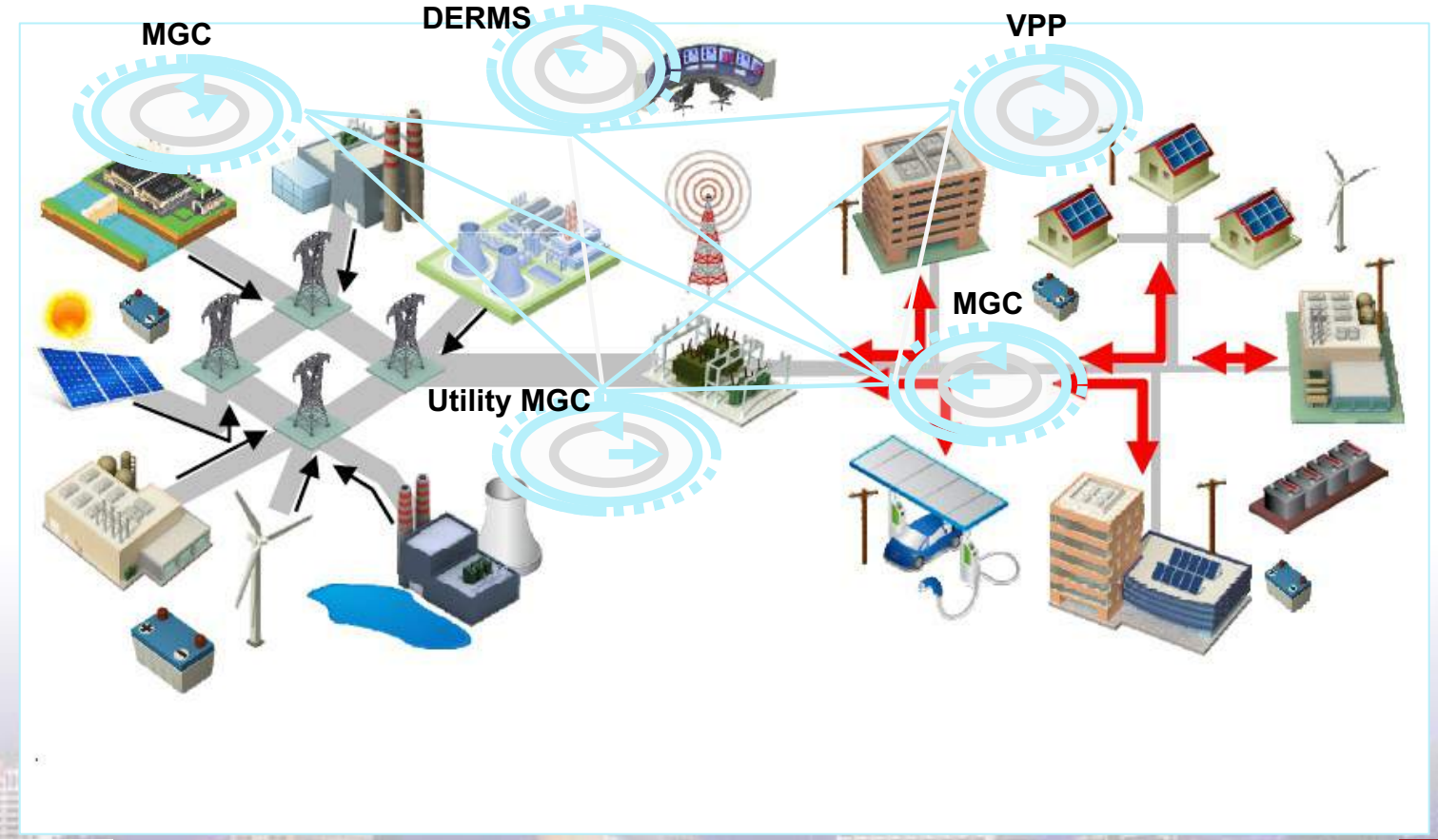
Forecasting, Optimizing, and Monitoring will only get you so far. As intermittencies and load disturbances (e.g. EV Charger) hit, local distribution systems becomes unstable.

What's the Answer?

Local Distribution Grid Control - Microgrids

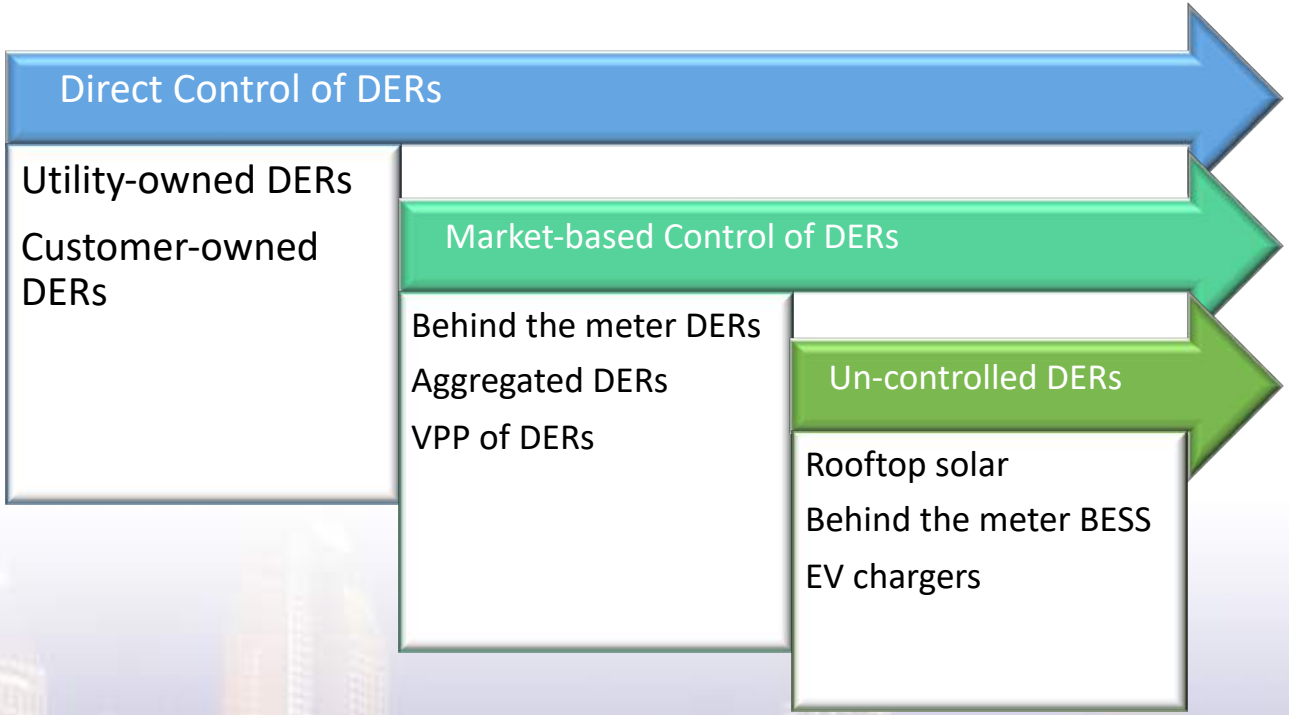
DERMS will optimize assets and come up with schedule but local Microgrids are needed to manage all real time disturbances and intermittencies.

Future Power System Design



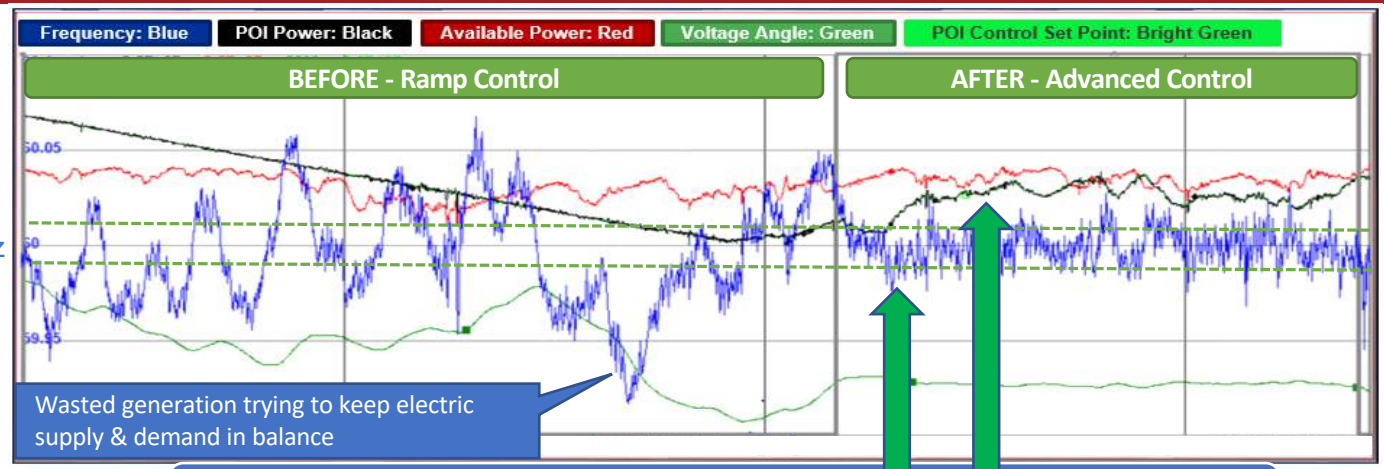
A complete solution for modern grid control should include the following:

A comprehensive solution to manage and control all DERs logically organized as **microgrids**, **VPPs**, and **aggregated resources**



Actual results validated significant value proposition of the PXiSE MGC in isolated grid with large renewable penetration

- 200 MW Peak
- ~100MW of Rooftop Solar
- 70 MW of Utility Scale Wind
- ~35 MW of BESS
- 6 Utility owned thermal Generator on AGC



Stabilized frequency of grid

- Addressed solar PV intermittency issues
- Support more renewables adoption
- Achieved high power quality

Maximizes renewable energy delivery

- More energy delivered from wind turbines with more effective use of battery
- Less operational wind curtailments

Improves thermal generator efficiency

- Less cycling of generators with stable frequency
- More operational flexibility of thermal generators with battery providing regulation service

Questions?