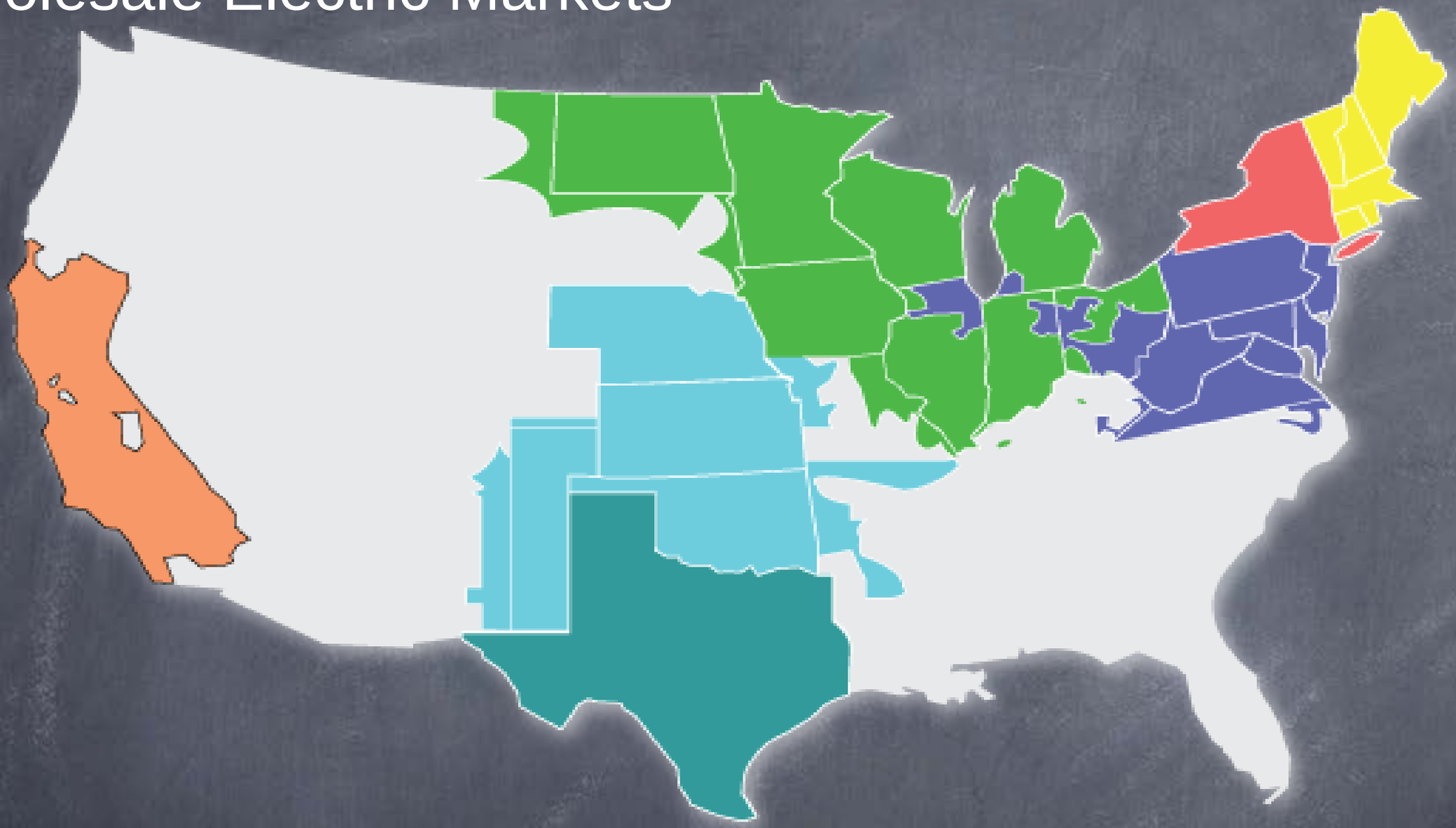
FERC Orders 745 and 755
Or
How Much Fun Can You Have in One Afternoon

- What are Organized Wholesale Markets
- What is Demand Response
- Why is Demand Response important in Markets

FERC Independent Organized Wholesale Electric Markets



Midwest ISO

PJM Interconnection

California ISO

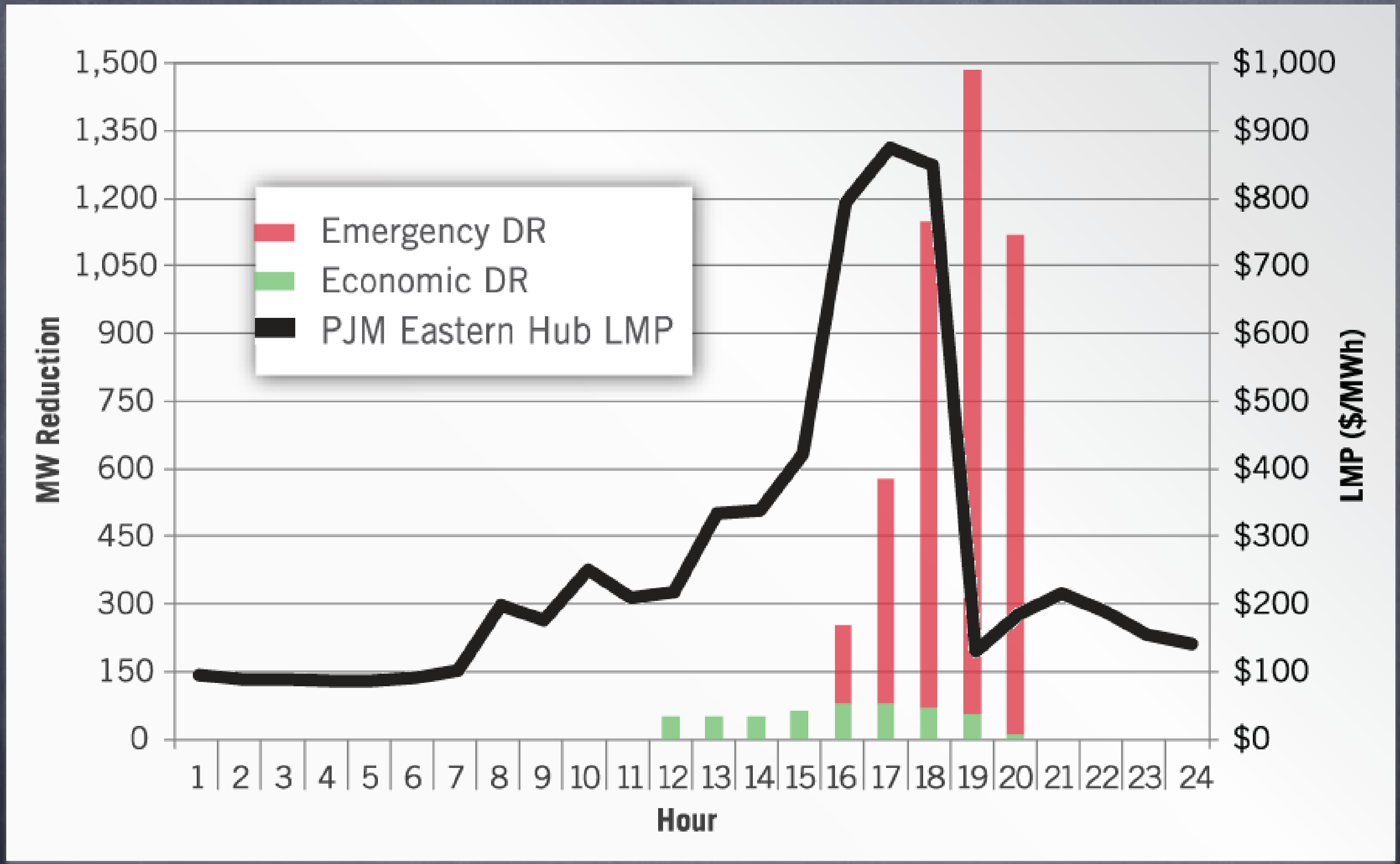
New York ISO

ISO New England

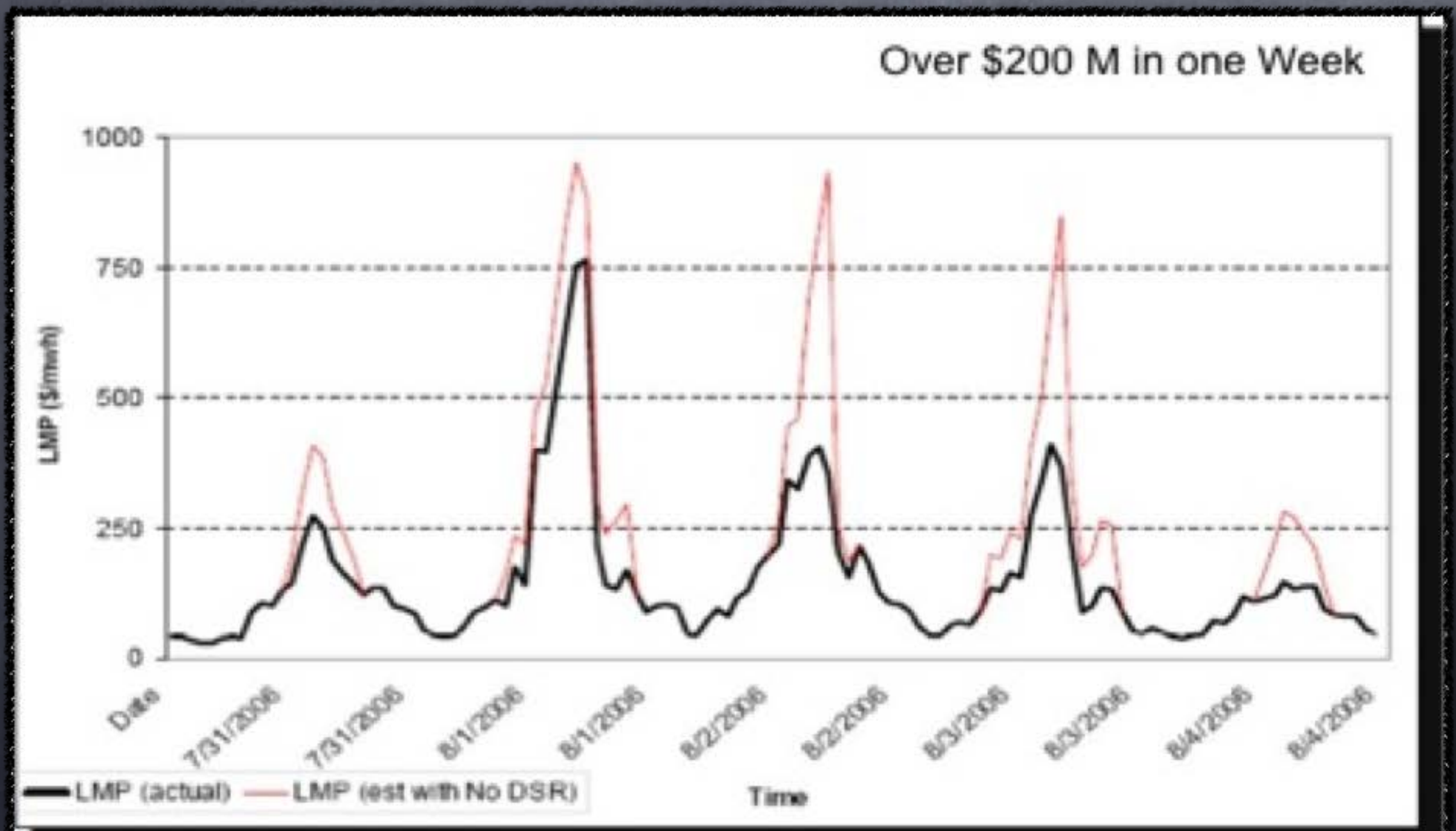
Southwest Power Pool

Electric Reliablity Council of Texas

DR in PJM on May 31, 2011

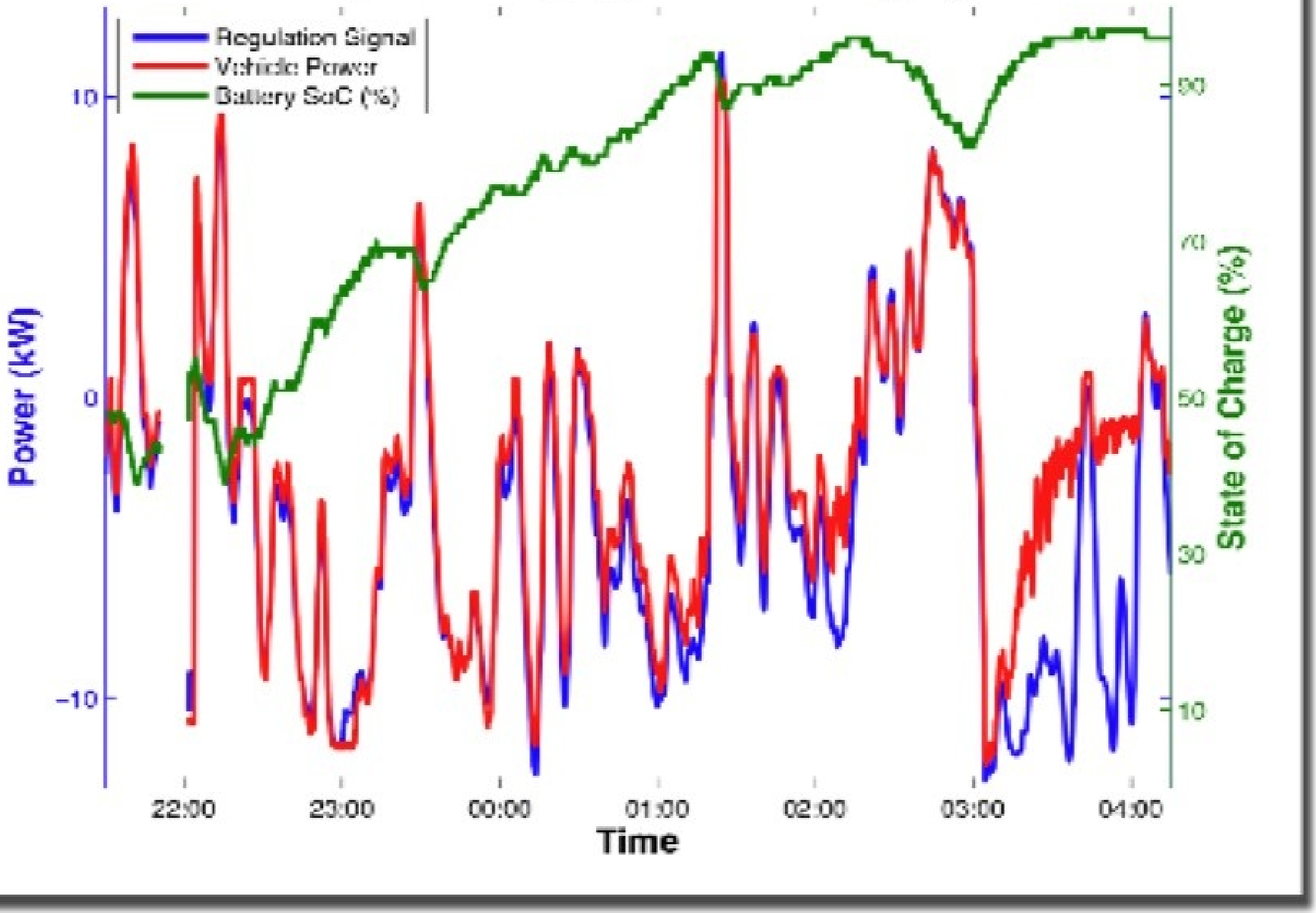


Grid Benefits of Demand Response

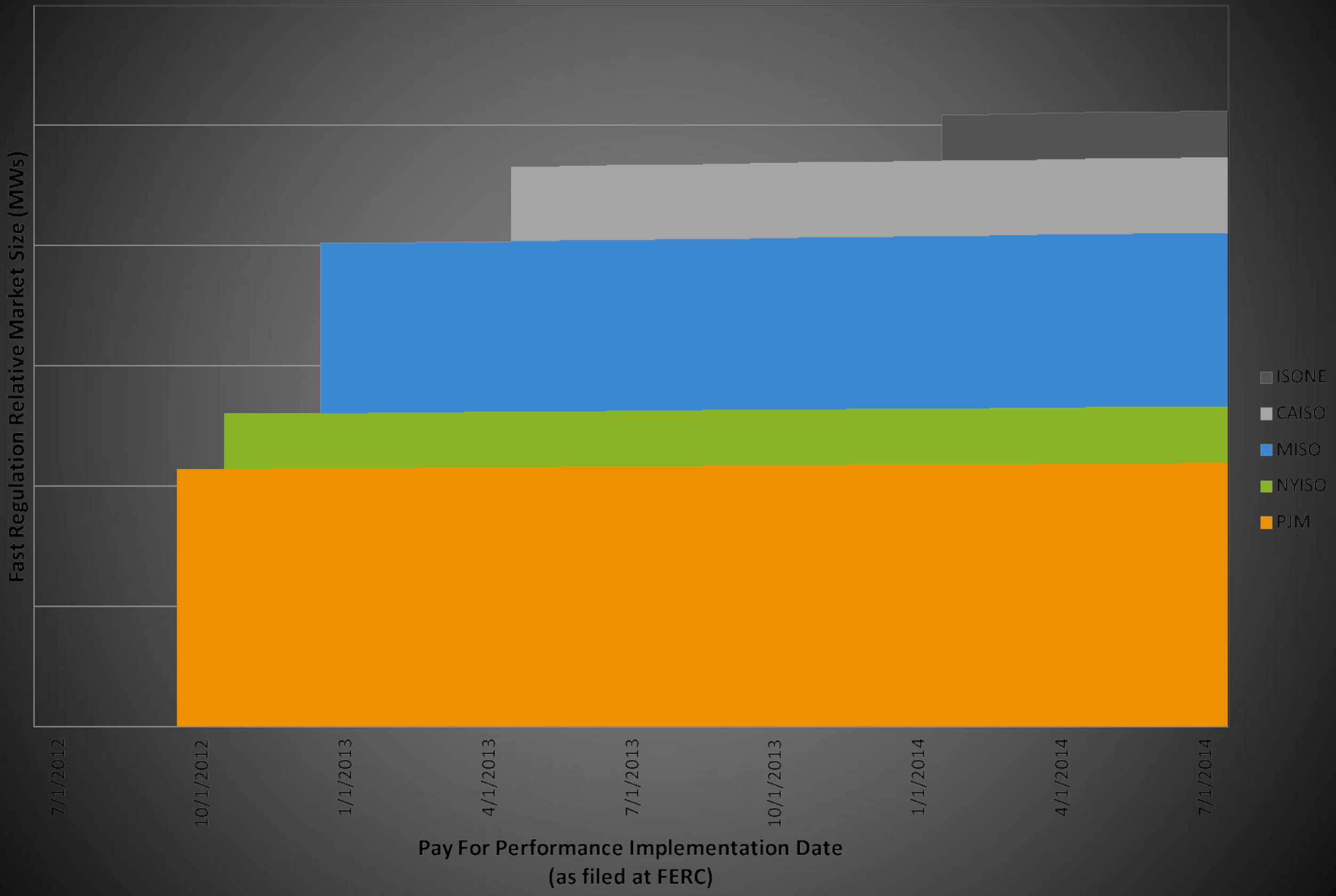


Paying for Performance

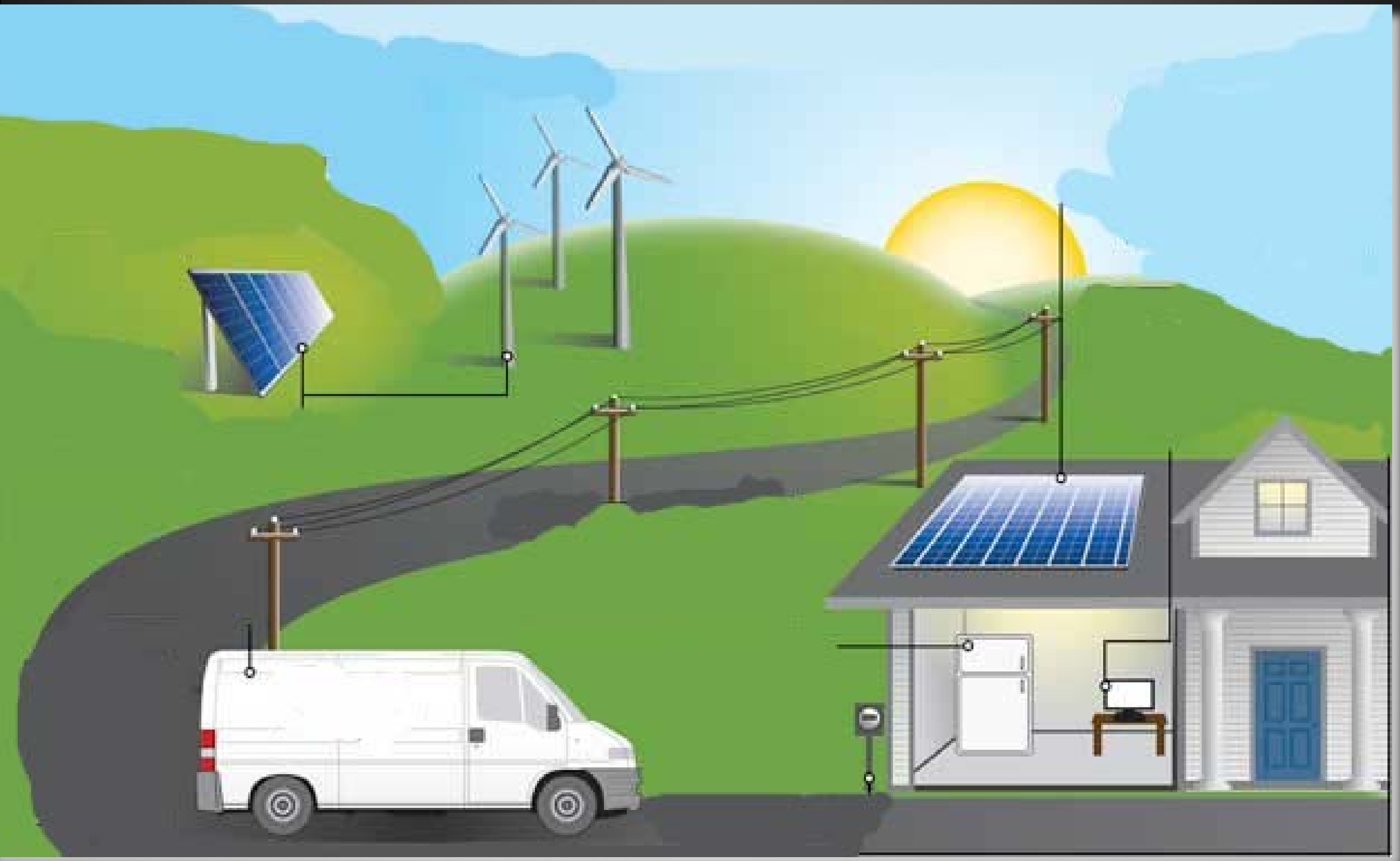
Regulation Supply (incidental charging)



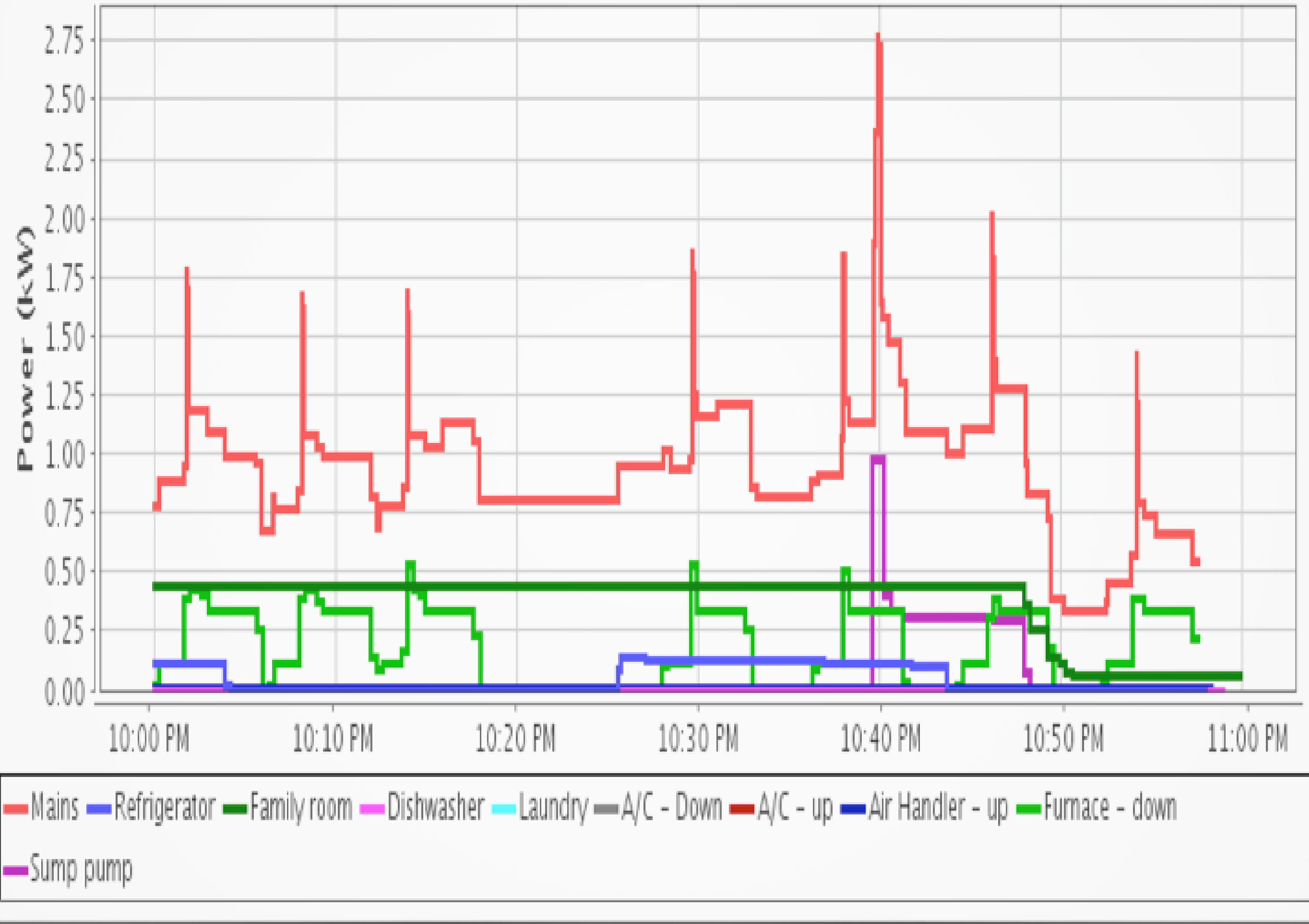
Pay for Performance Market Size and Implementation



Schneider
Electric

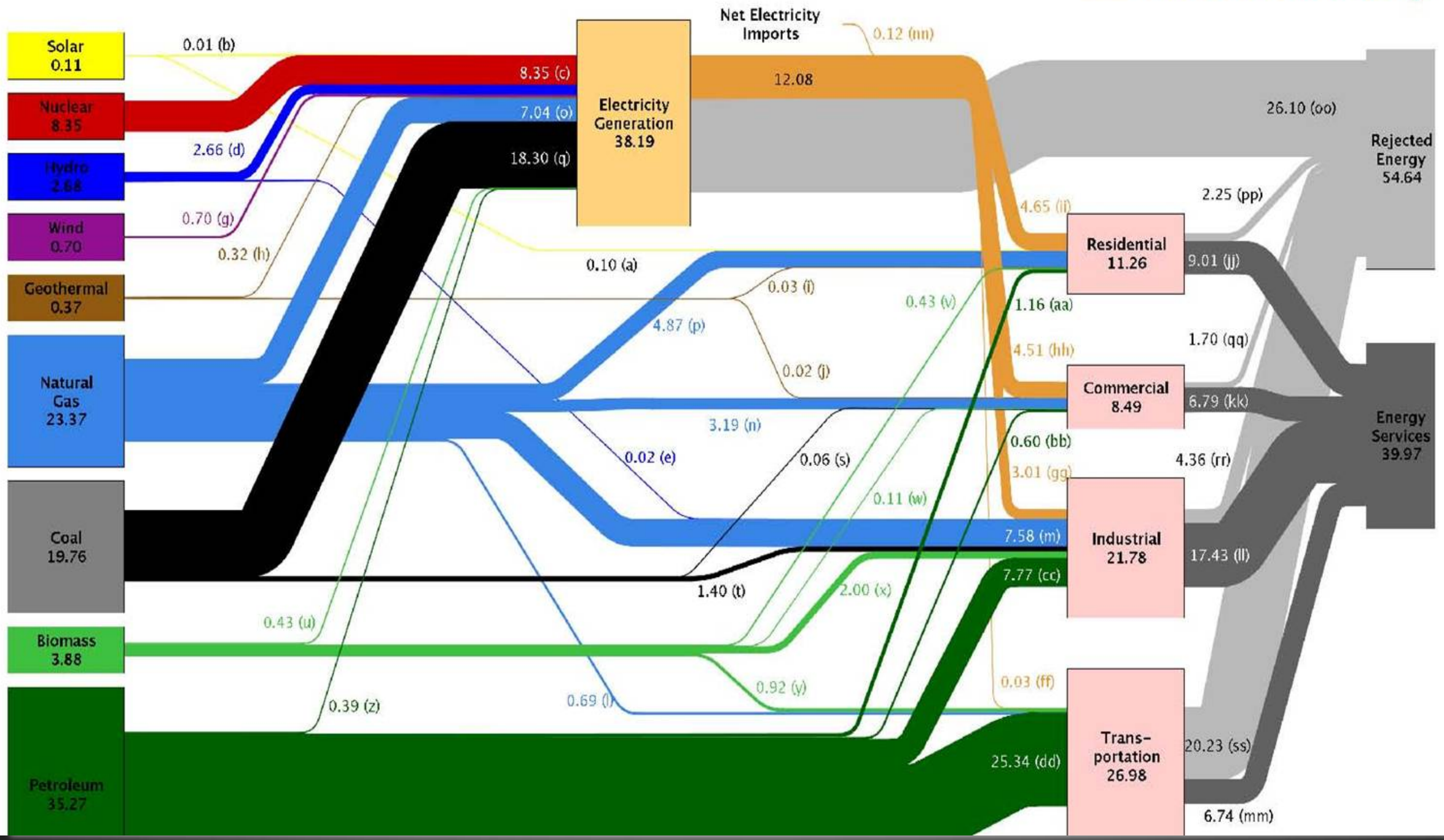


AlertMe
Heating
TEMPERATURE
23
TARGET

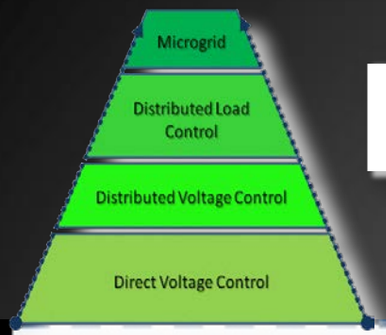

Power (kW)
2.75
2.50
2.25
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
10:00 PM
10:10 PM
10:20 PM
10:30 PM
10:40 PM
10:50 PM
11:00 PM
Mains
Refrigerator
Family room
Dishwasher
Laundry
A/C - Down
A/C - up
Air Handler - up
Furnace - down
Sump pump

Estimated U.S. Energy Use in 2009: ~94.6 Quads

Lawrence Livermore National Laboratory



Dominion MicroGrid Vision



Regional Transmission Operator (RTO)

Dominion Substation E-Grid Database
Electrical GIS Based Control

System & Regional Operations Center

B G L

Billing
Back Office
Customer
Bills

AMI

Utility Defined Microgrid

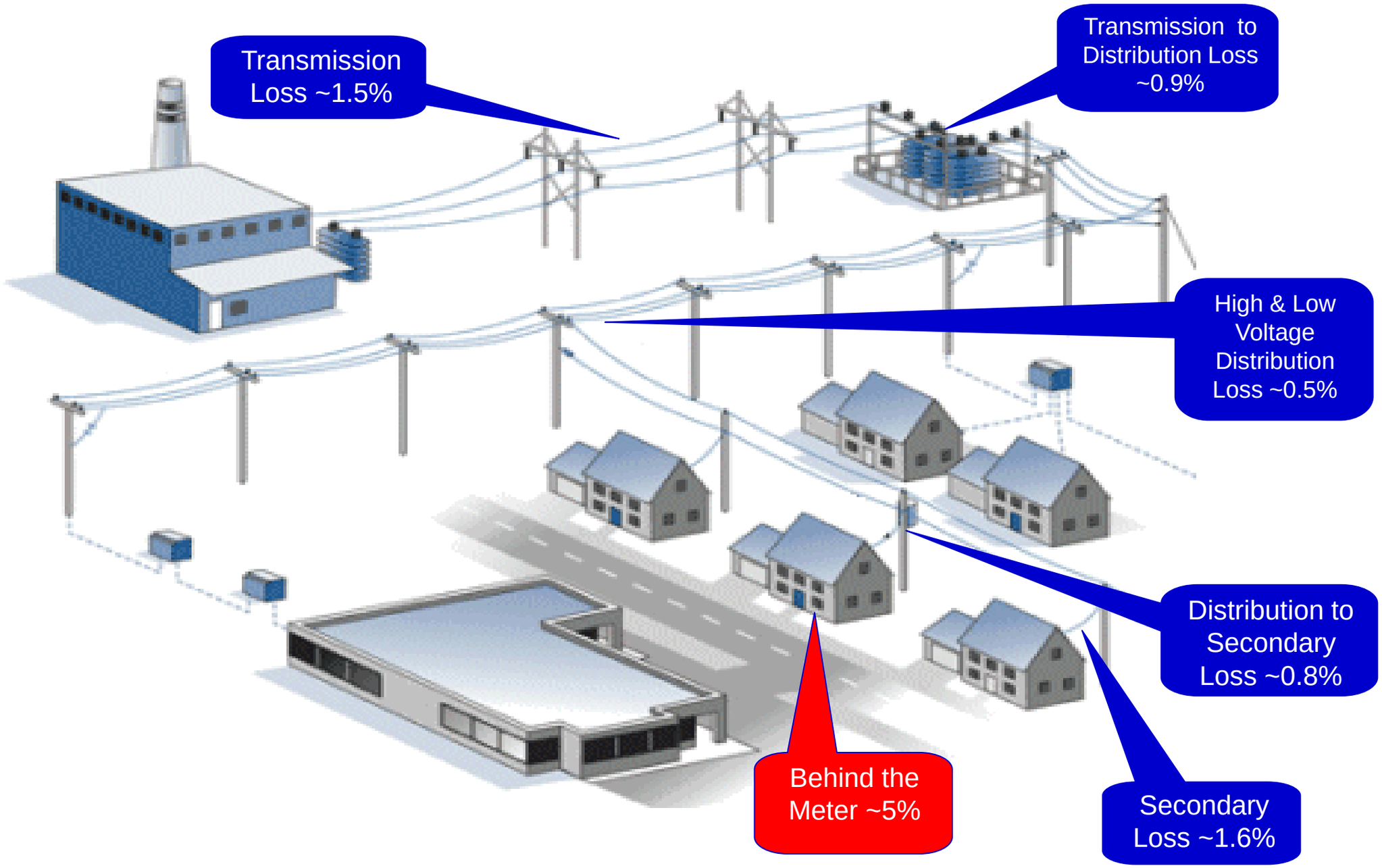
Military, Commercial, Industrial Microgrid

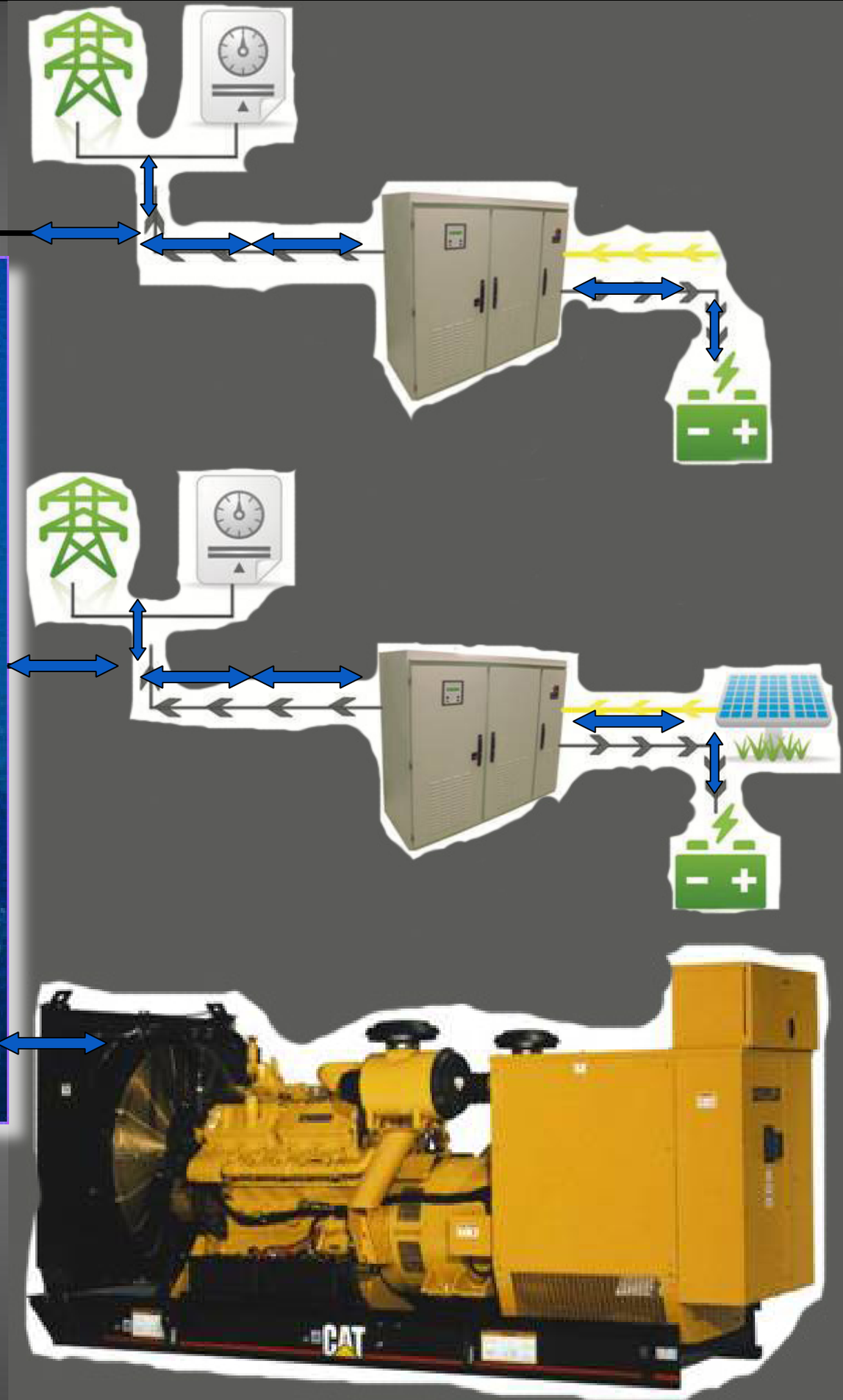
Dist Storage

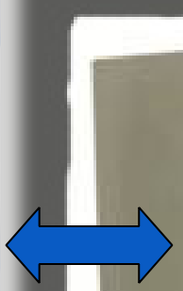
Home Microgrid

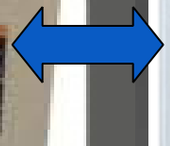
The Hunt for Transmission and Distribution Losses

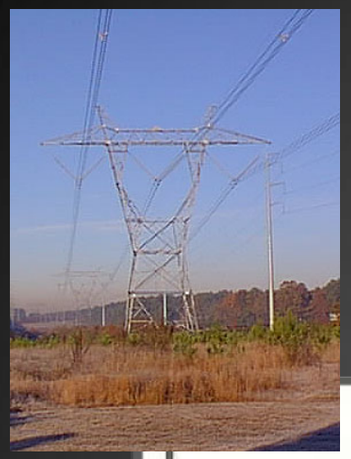
2010 Electric System Loss < 10.3% ***Includes Transmission, Distribution and "Behind the Meter"***




CAT

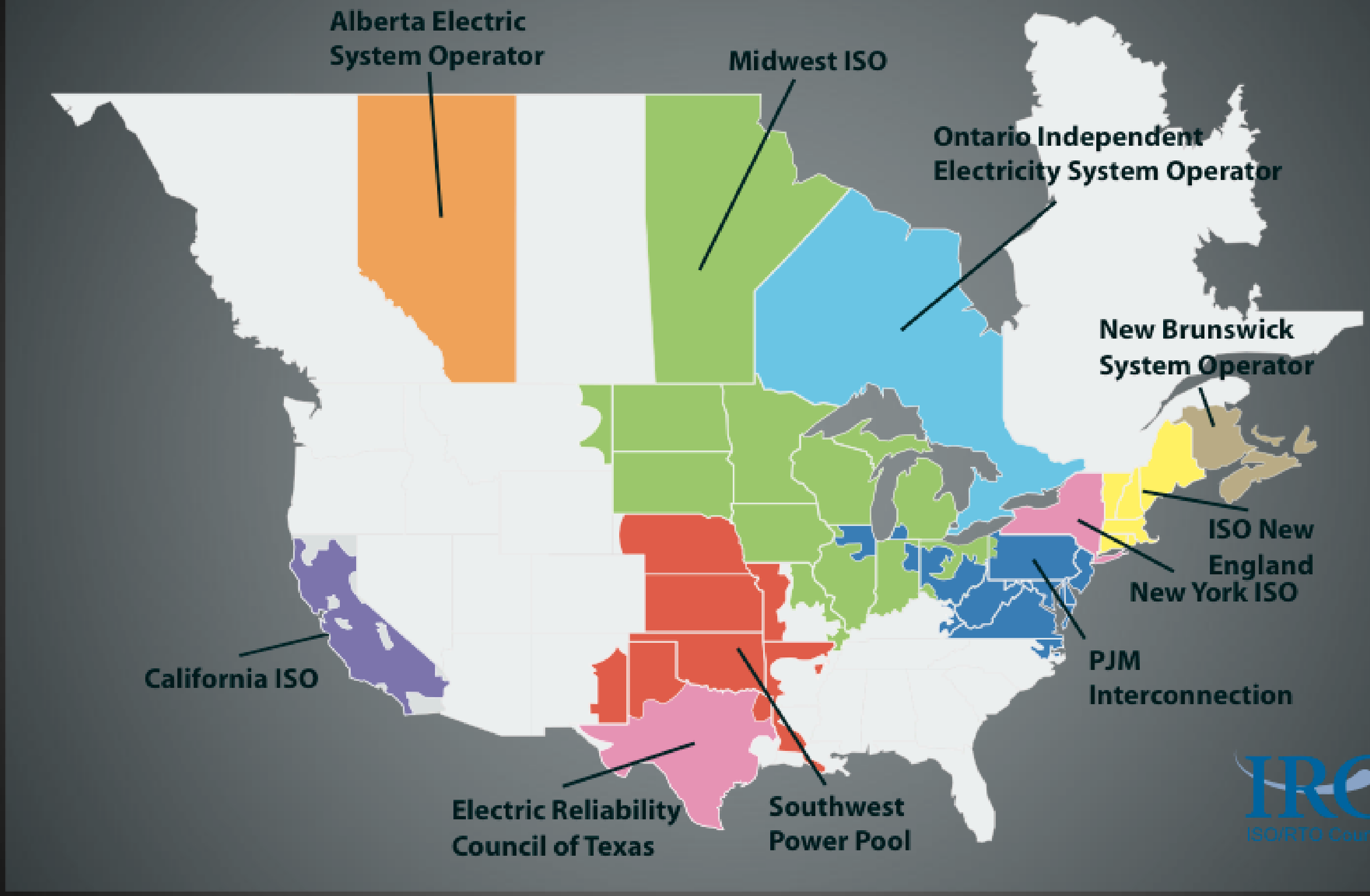






825

DOMBAT
CYCLON


Alberta Electric System Operator
Midwest ISO
Ontario Independent Electricity System Operator
New Brunswick System Operator
ISO New England
New York ISO
PJM Interconnection
California ISO
Electric Reliability Council of Texas
Southwest Power Pool
IRC
ISO/RTO Council