

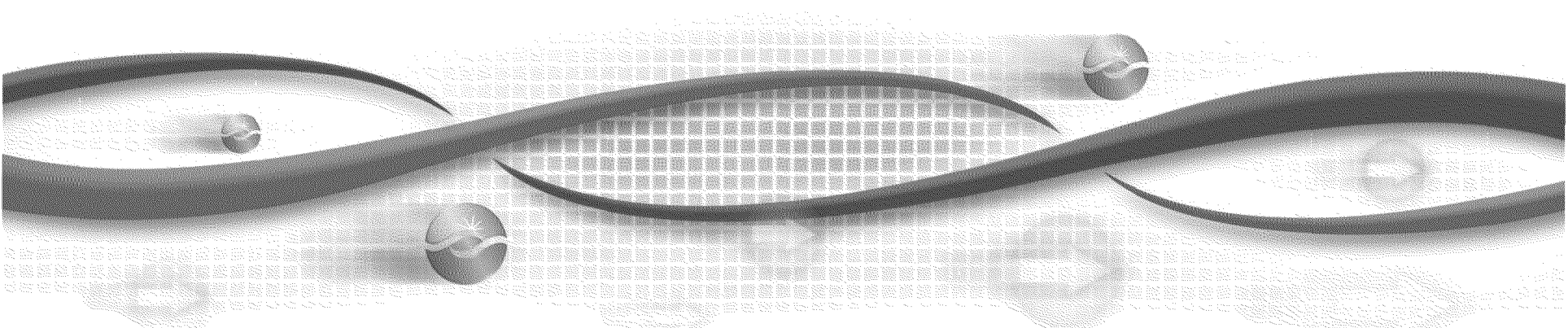


California ISO
Shaping a Renewed Future

Demand Response Workshop: *Overview of California ISO*

Delphine Hou
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October 15, 2013

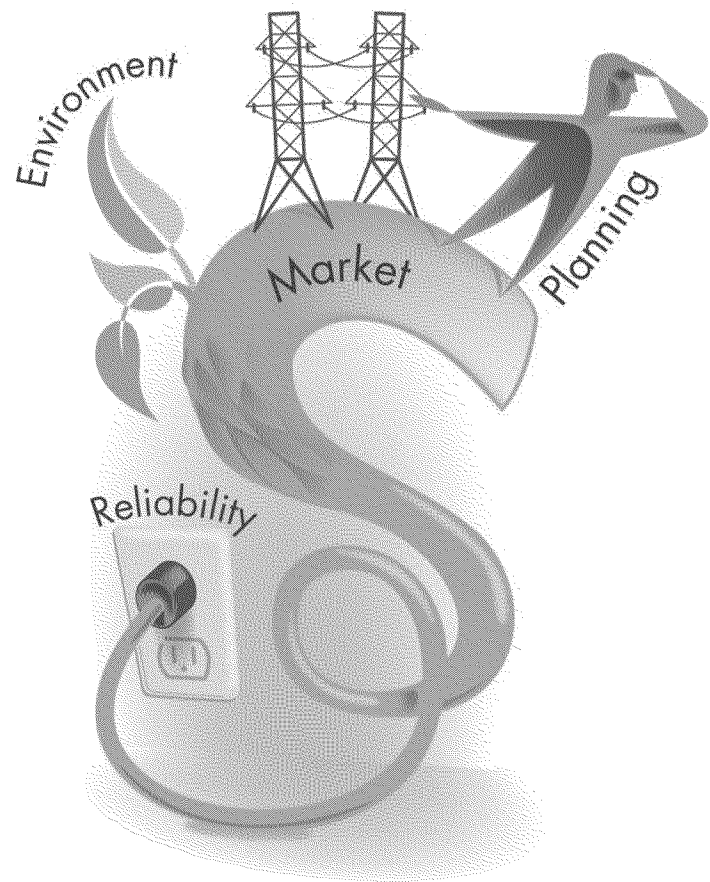


Shaping the industry

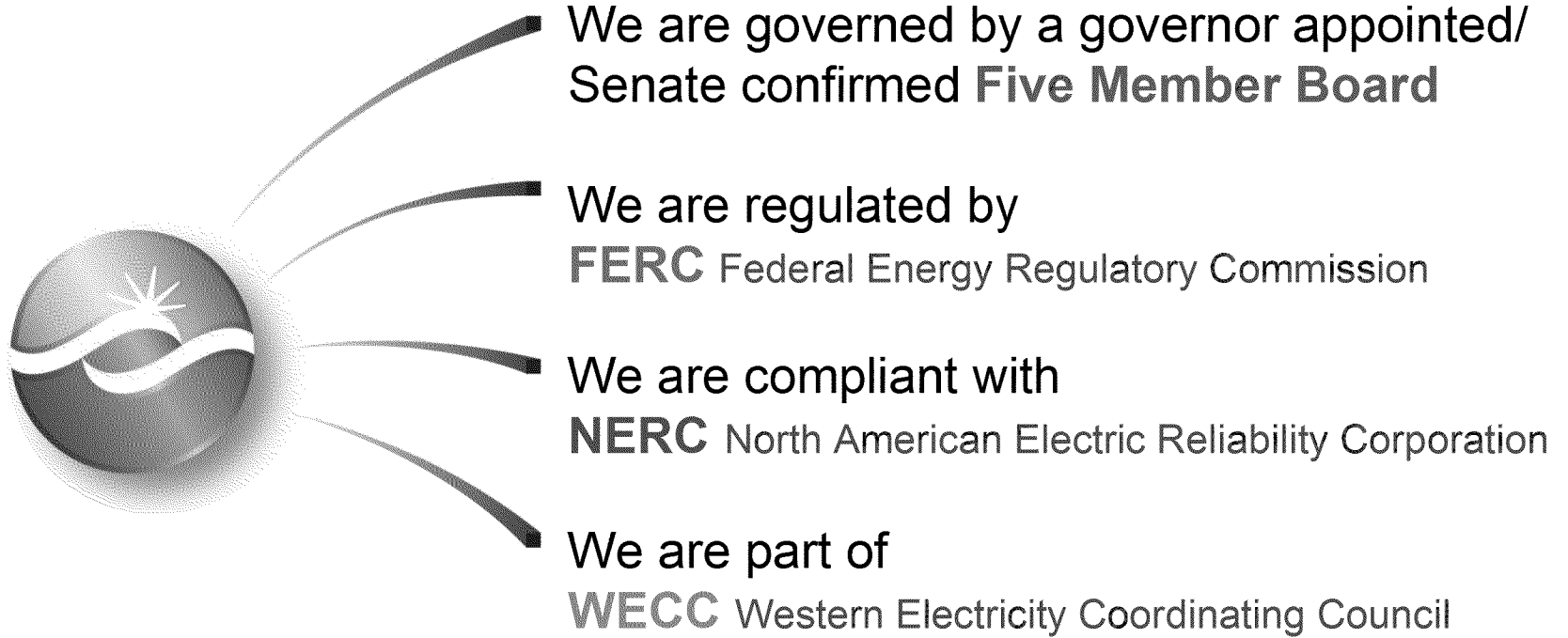
The ISO, a nonprofit public benefit corporation, maintains the constant and reliable flow of electricity for the health, safety and welfare of consumers

How?

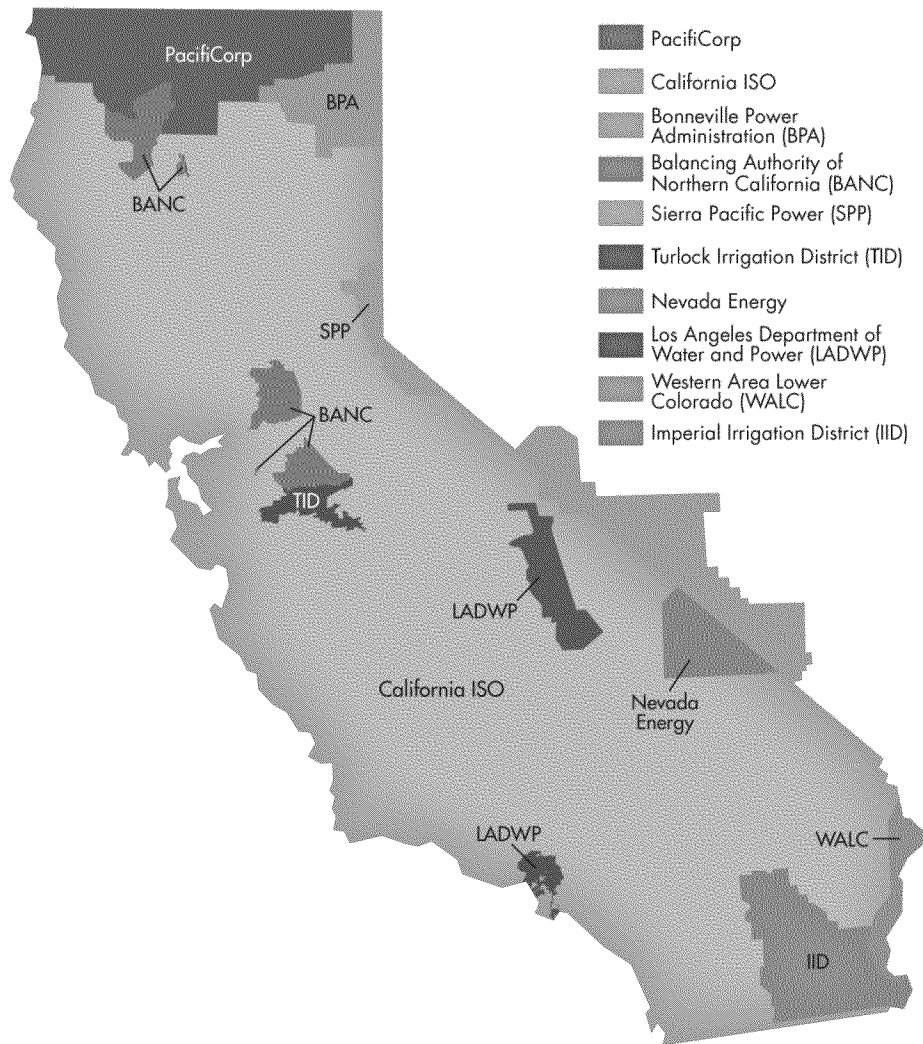
- Delivering electricity to **80%** of California consumers
- Facilitating **fair and transparent** wholesale electricity market
- Performing comprehensive **transmission planning**
- Clearing the way for **clean, green resources** to access the grid



Who oversees us?



California ISO by the numbers



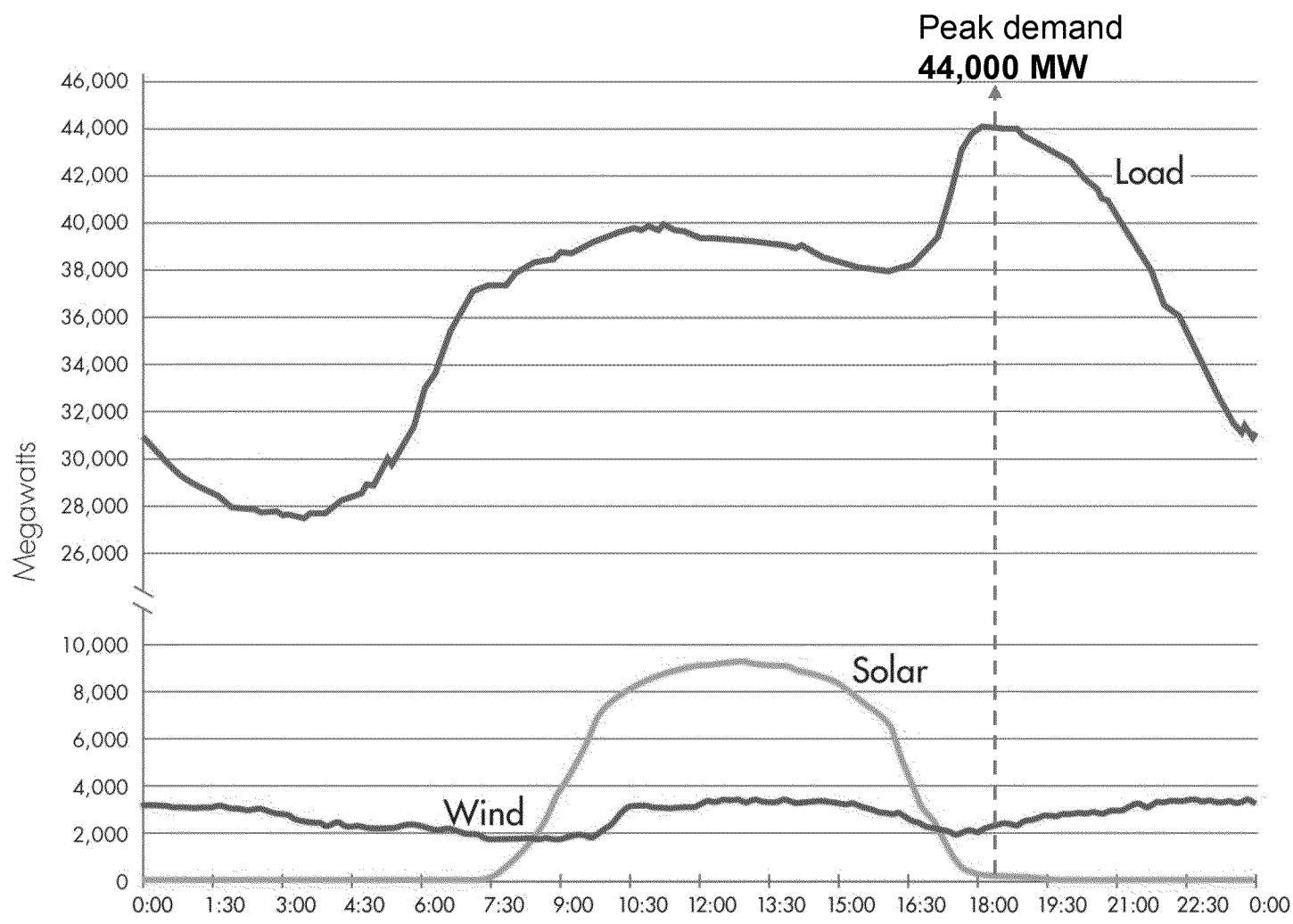
- **60,703 MW** of power plant capacity (net dependable capacity)
- **50,270 MW** record peak demand (July 24, 2006)
- **27,589** market transactions per day
- **26,024** circuit-miles of transmission lines
- **30 million** people served
- **307 million** megawatts of electricity delivered annually

California energy and environmental policies drive renewable integration and transmission needs.

- Greenhouse gas reductions to 1990 levels by 2020
- 33% of load served by renewable generation by 2020
- 12,000 MW of distributed generation by 2020
- Ban on use of once-through cooling in coastal power plants
- Limits on availability of air emission credits for replacement generation

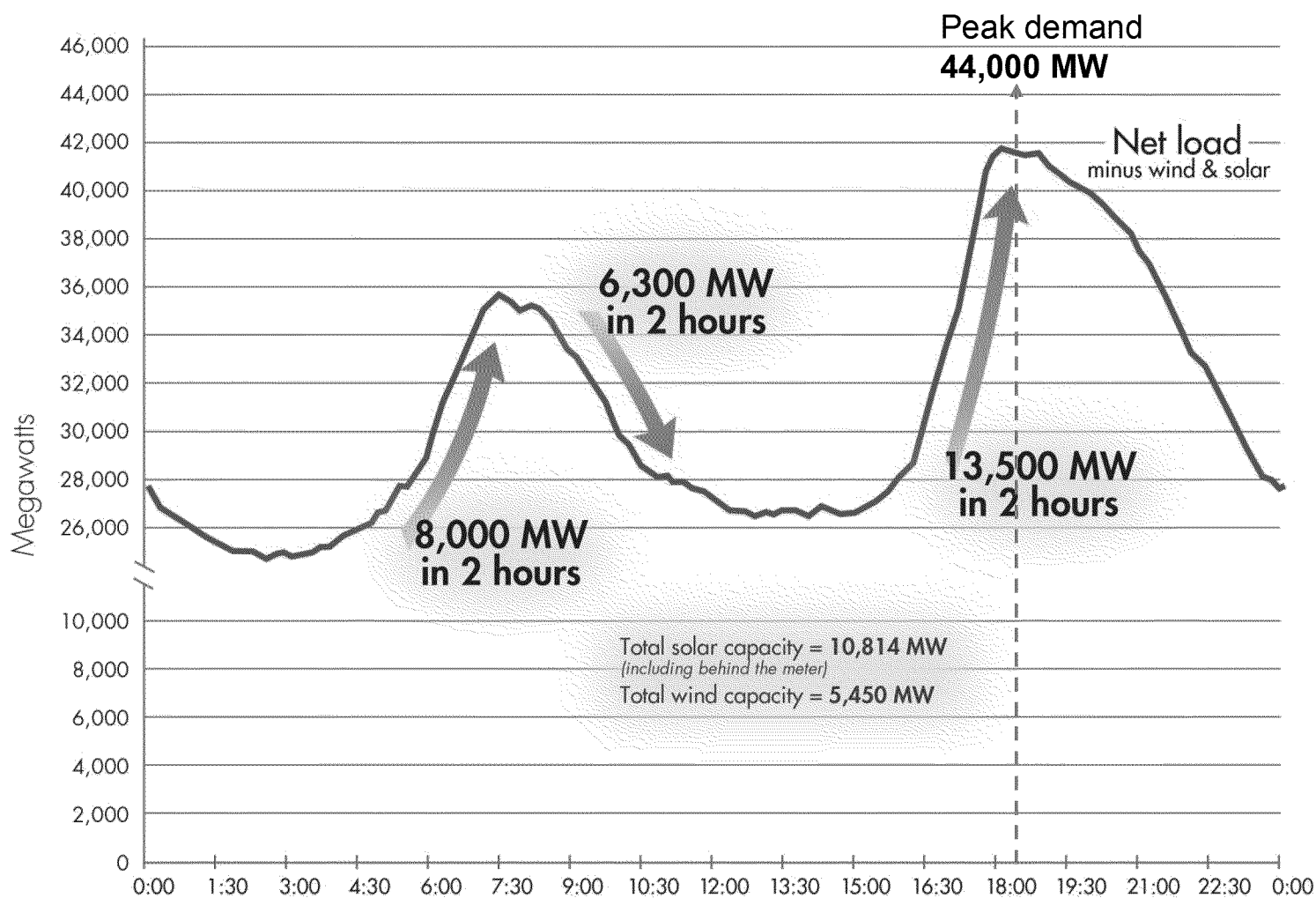
Sample winter day in 2020:

Flexible resources are essential to meeting the net load curve

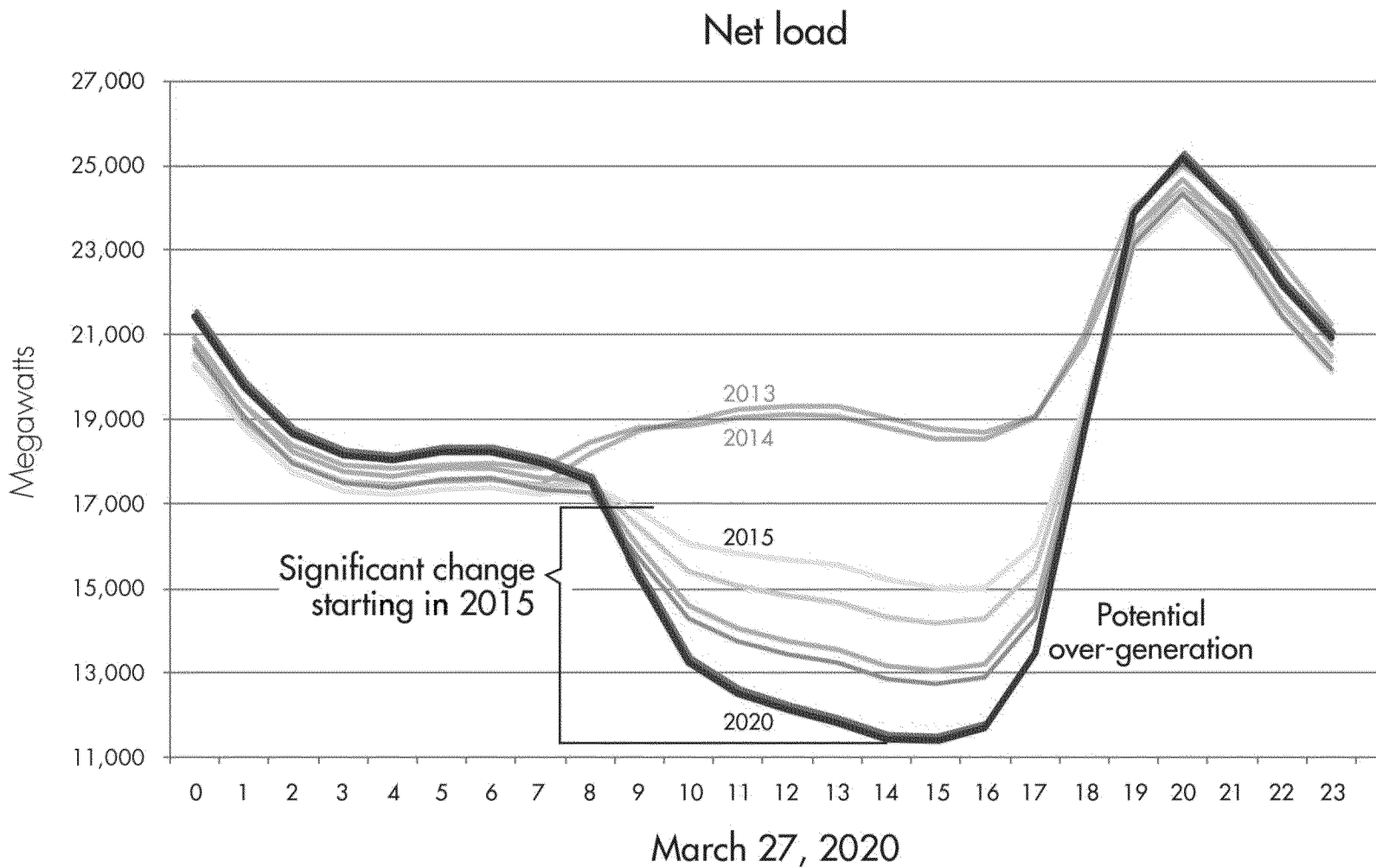


Sample winter day in 2020:

Flexible resources are essential to meeting the net load curve

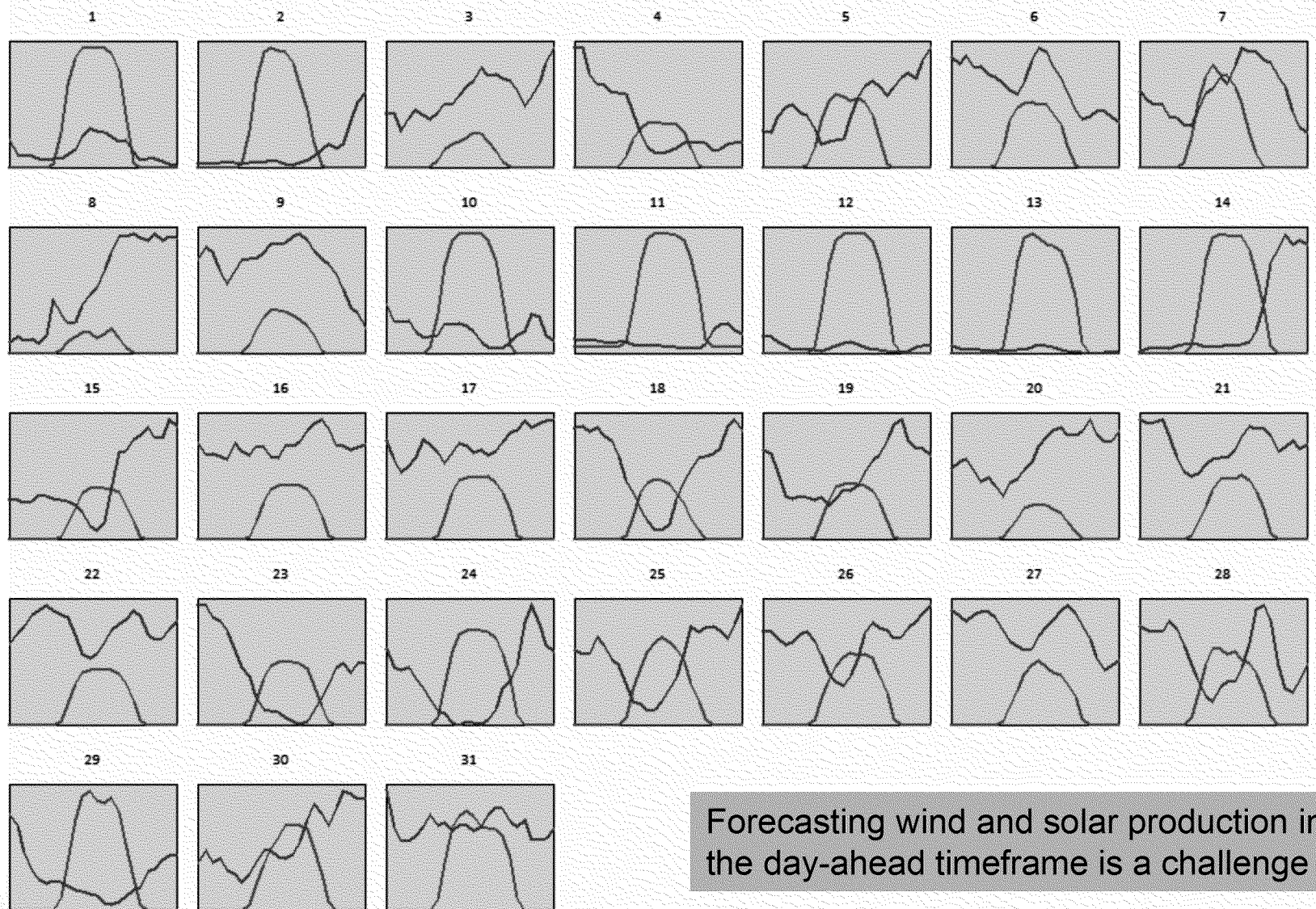


Growing need for flexibility starting 2015



The Net-load shape Continuously Changes.

Actual March 2013 Wind and Solar Data



Market products, design, and mechanisms to encourage flexibility and how DR/DER can participate

Real-time operations



Long-term capacity

Market products, design, and mechanisms	DR/DER
<ul style="list-style-type: none"> Regulation energy management (existing) 	✓
<ul style="list-style-type: none"> Pay-for-performance regulation - FERC Order 755 (existing) 	✓
<ul style="list-style-type: none"> Non-generator resources in ancillary services (existing) 	✓
<ul style="list-style-type: none"> Flexible ramping constraint (existing) 	✓
<ul style="list-style-type: none"> Lowering bid floor (Spring 2014 implementation) 	
<ul style="list-style-type: none"> Flexible ramping product (ongoing) 	✓
<ul style="list-style-type: none"> FERC Order 764 and variable energy resource decremental bidding (Spring 2014 implementation) 	
<ul style="list-style-type: none"> Flexible resource adequacy capacity requirements (ongoing) 	✓

Mismatch between Net Load and Rates

Summer (August 2020) and Winter (January 2020) Net Load vs. Illustrative Summer and Winter TOU Rates

