The background image shows two ducks in flight over a field of tall, golden-brown grass. The duck in the foreground is a black and white mallard, flying towards the left with its wings spread wide. The duck in the background is a brown duck, possibly a canvasback, flying towards the right. The sky is a clear, pale blue. The overall scene is a natural, outdoor setting.

Annual Summit on Integrating Energy Efficiency & Smart Grid

October 15, 2013
Washington, DC

Artist: George Lockwood



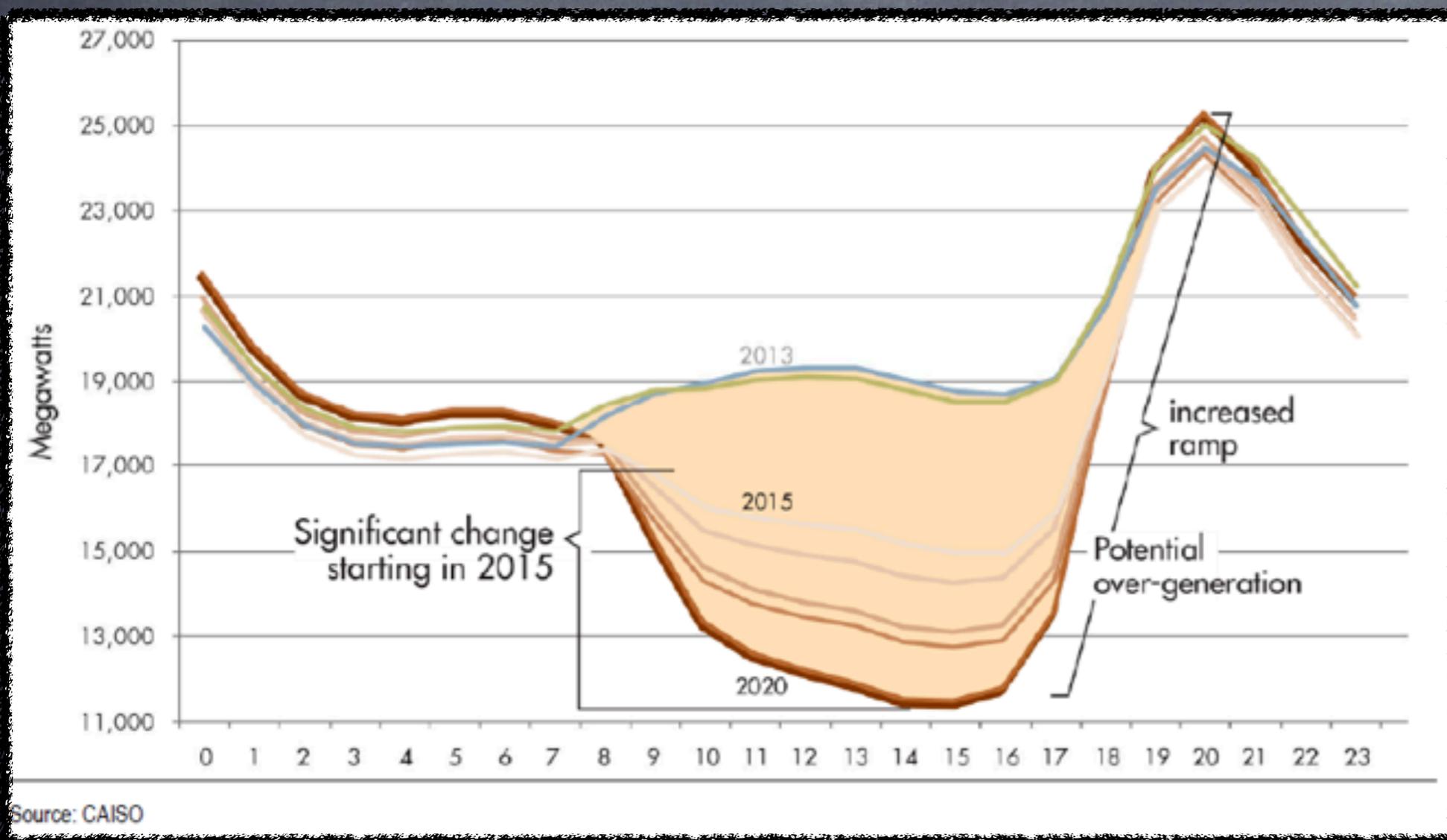
Monday, November 4, 2013



Monday, November 4, 2013



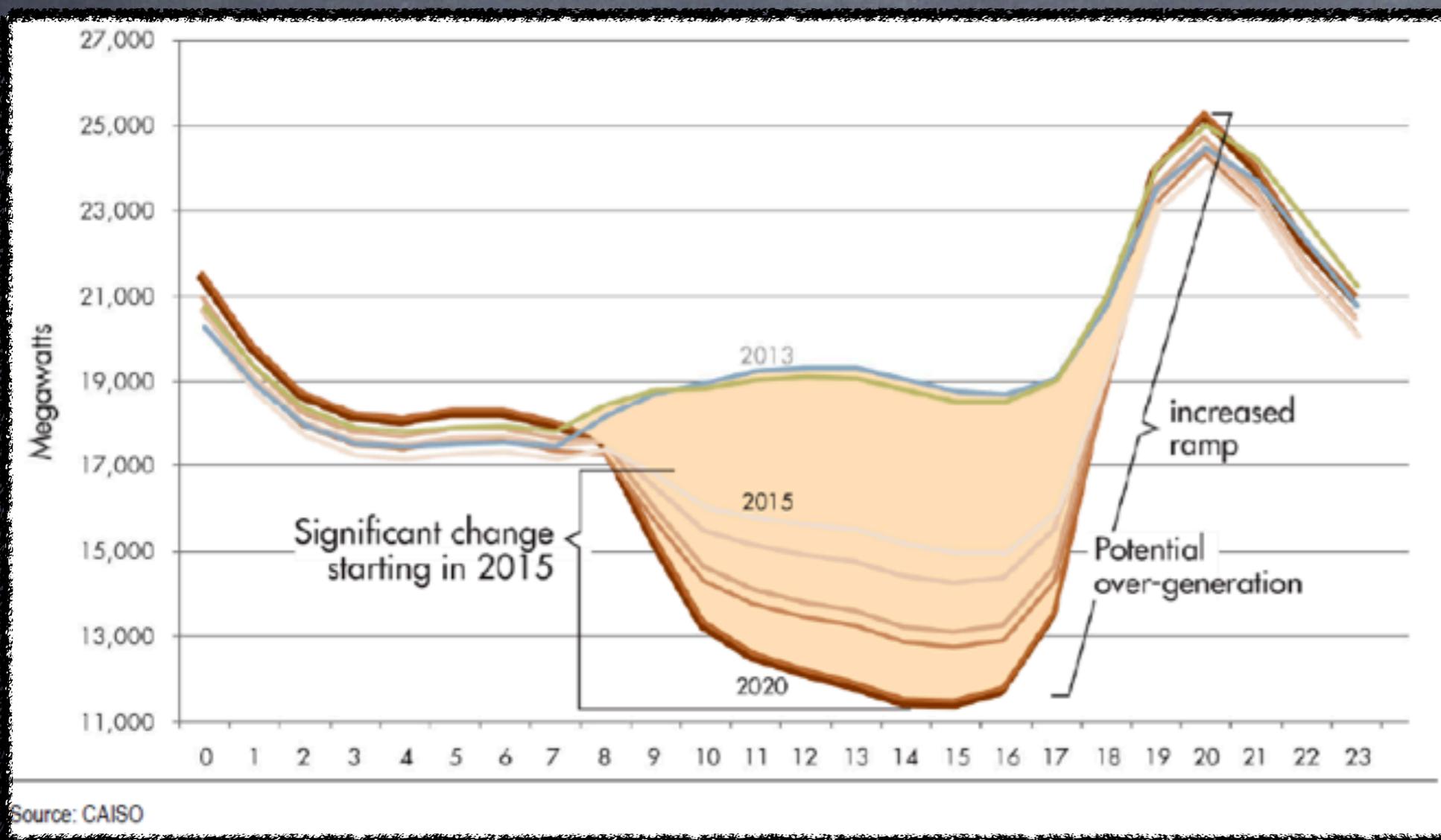
California's Duck Curve: CAISO Projected Net Load, 2013-2020



Source: CAISO

Source: Dumoulin-Smith, Julien. *Not All Capacity is Created Equal*. UBS Investment Research. June 19, 2013

California's Duck Curve: CAISO Projected Net Load, 2013–2020

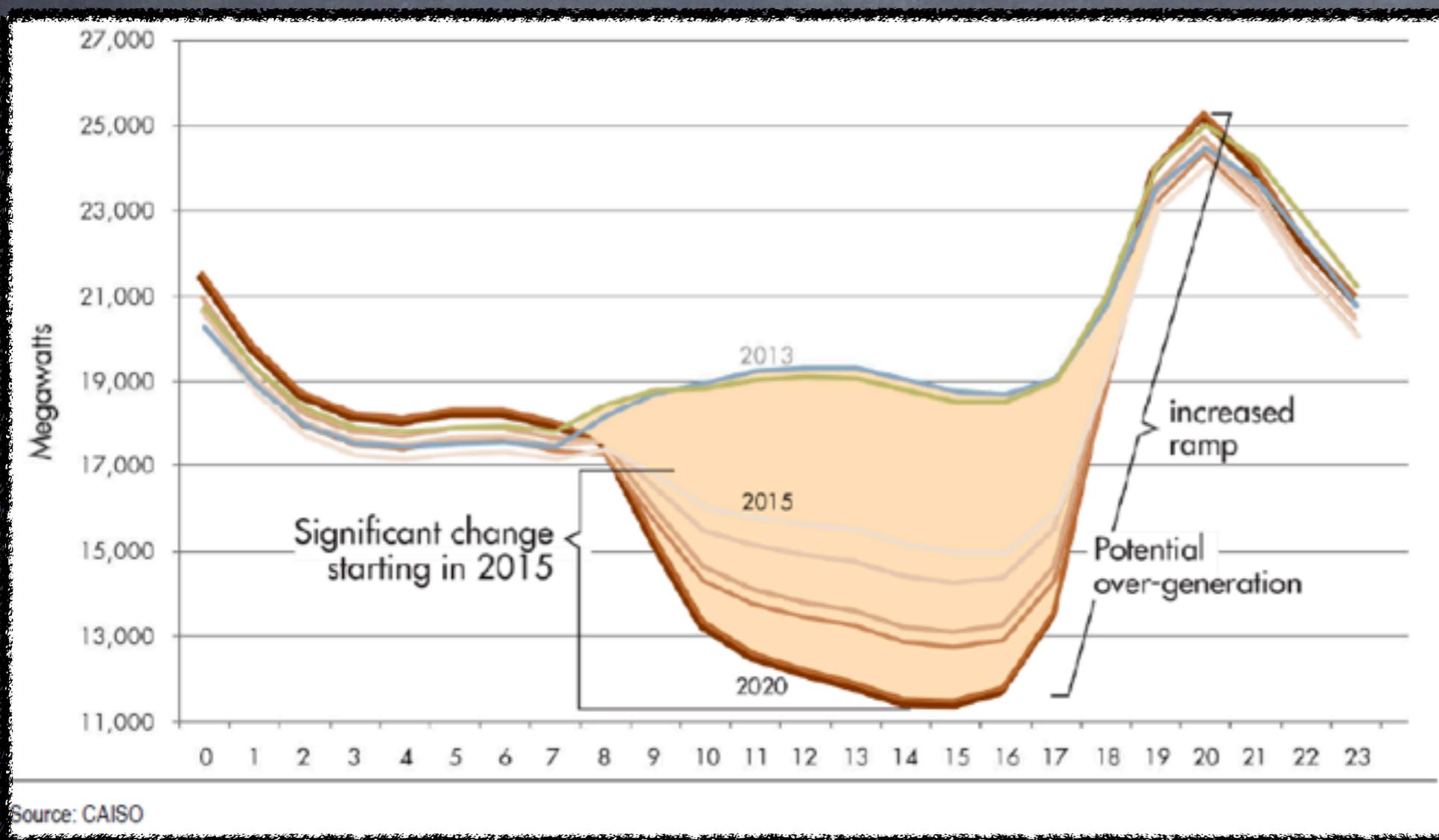


* Variability of wind/solar increase risk of overgeneration

Source: CAISO

Source: Dumoulin-Smith, Julien. *Not All Capacity is Created Equal*. UBS Investment Research. June 19, 2013

California's Duck Curve: CAISO Projected Net Load, 2013-2020



Source: CAISO

* Variability of wind/solar increase risk of overgeneration

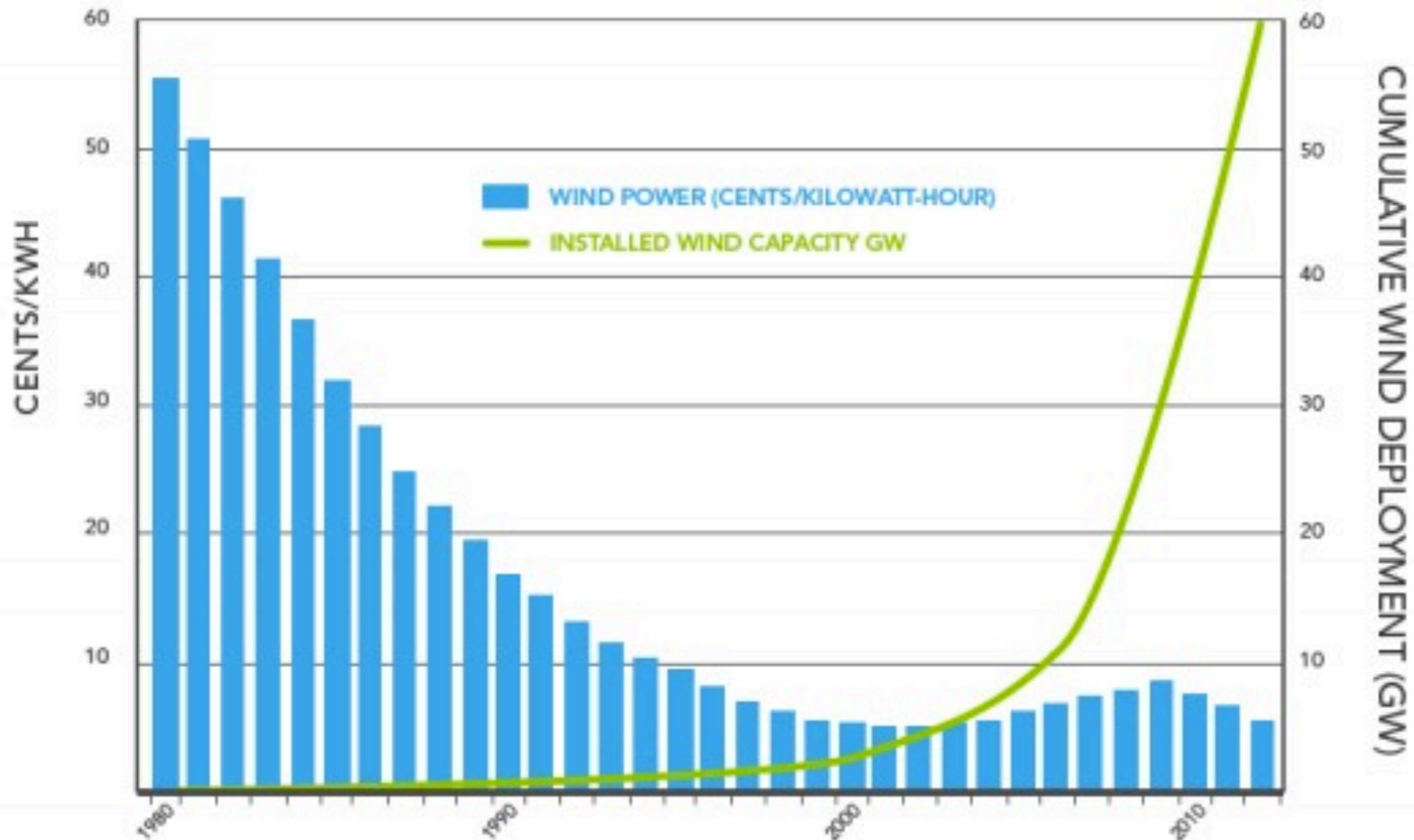
*Overgeneration primarily concern during large/ steep ramps

Source: Dumoulin-Smith, Julien. *Not All Capacity is Created Equal*. UBS Investment Research. June 19, 2013

The Challenges for Intelligent Efficiency

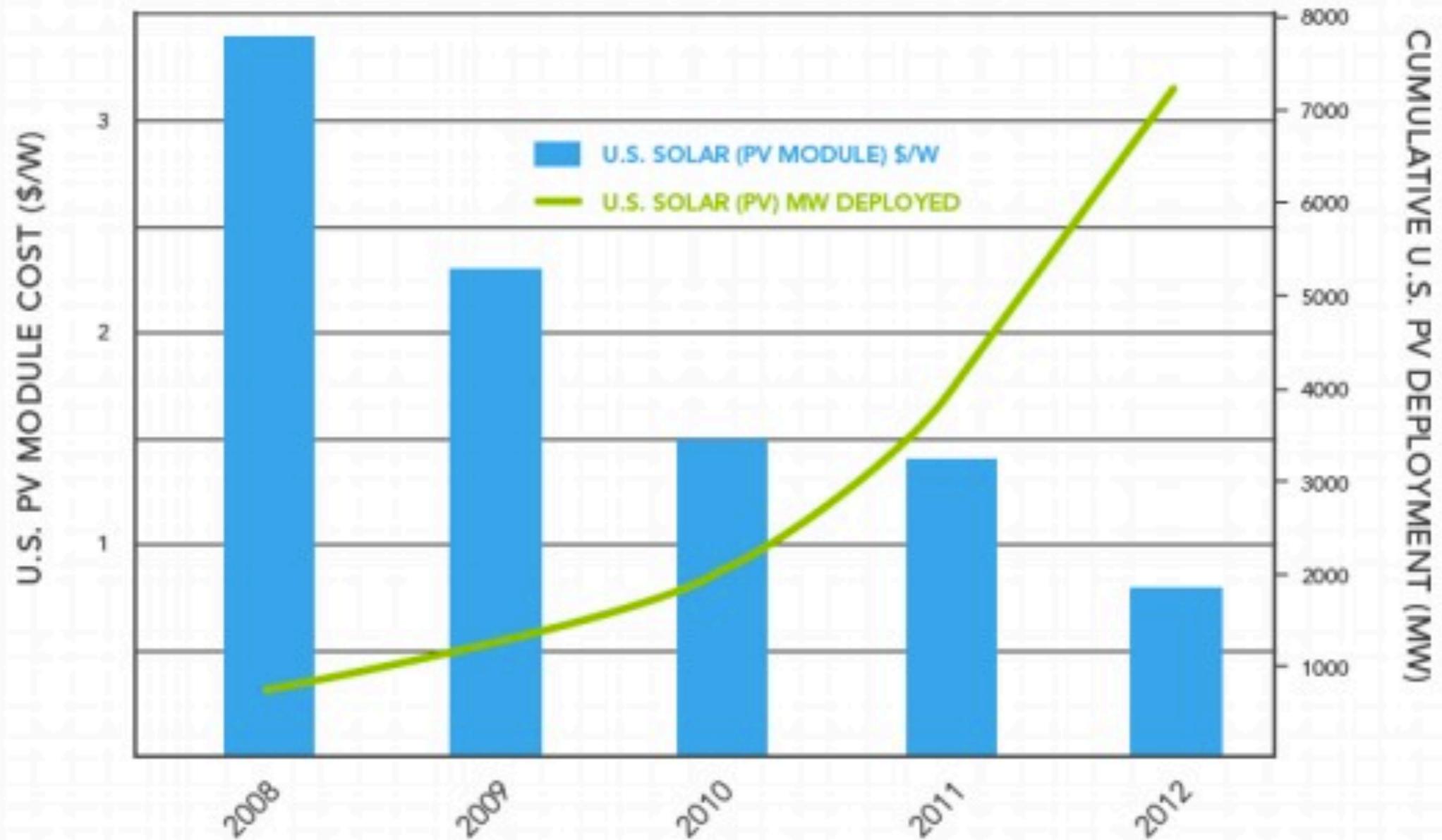
The Challenges for Intelligent Efficiency

Deployment and Cost for U.S. Land-Based Wind 2008-2012



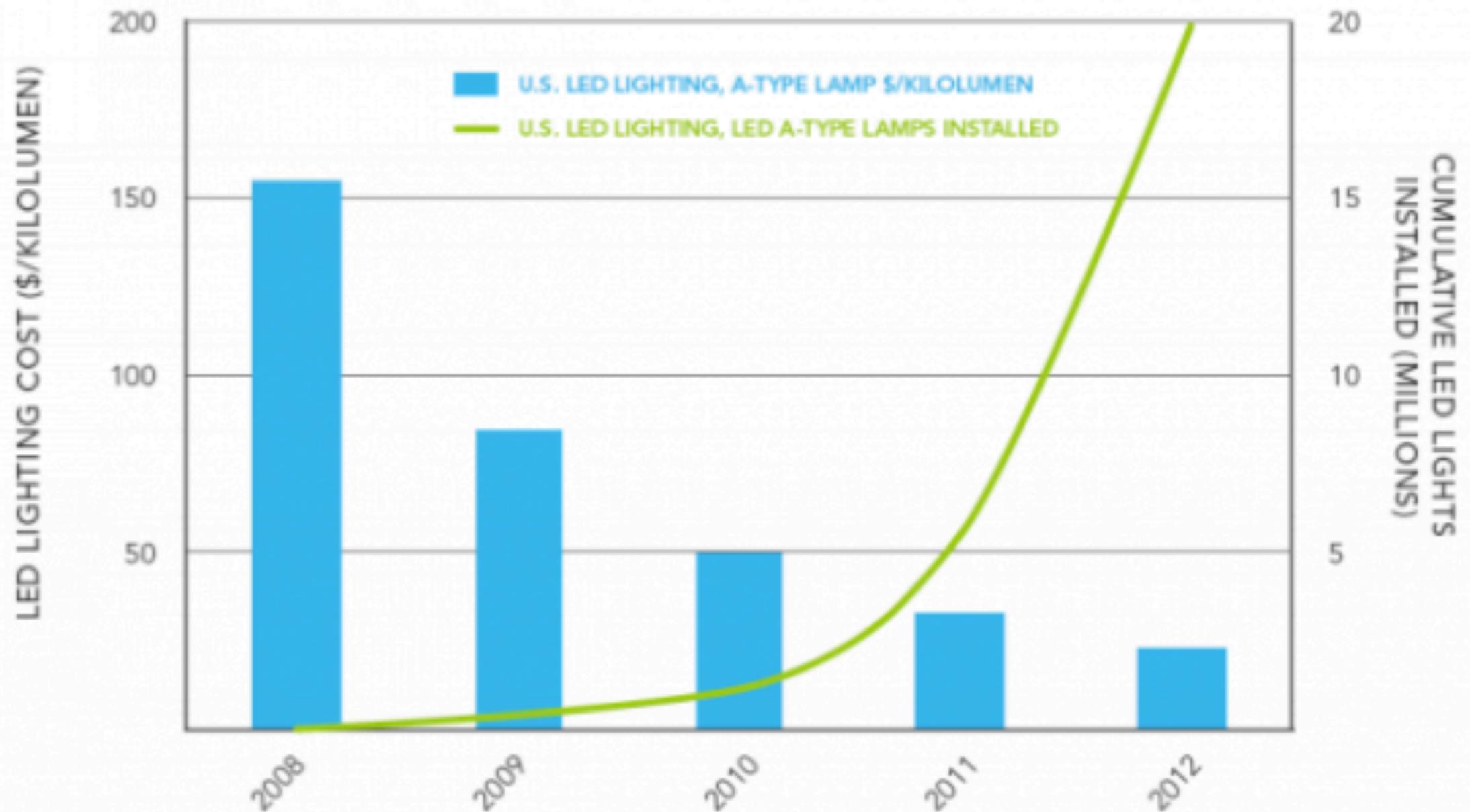
The Challenges for Intelligent Efficiency

U.S. Deployment and Cost for Solar PV Modules 2008-2012

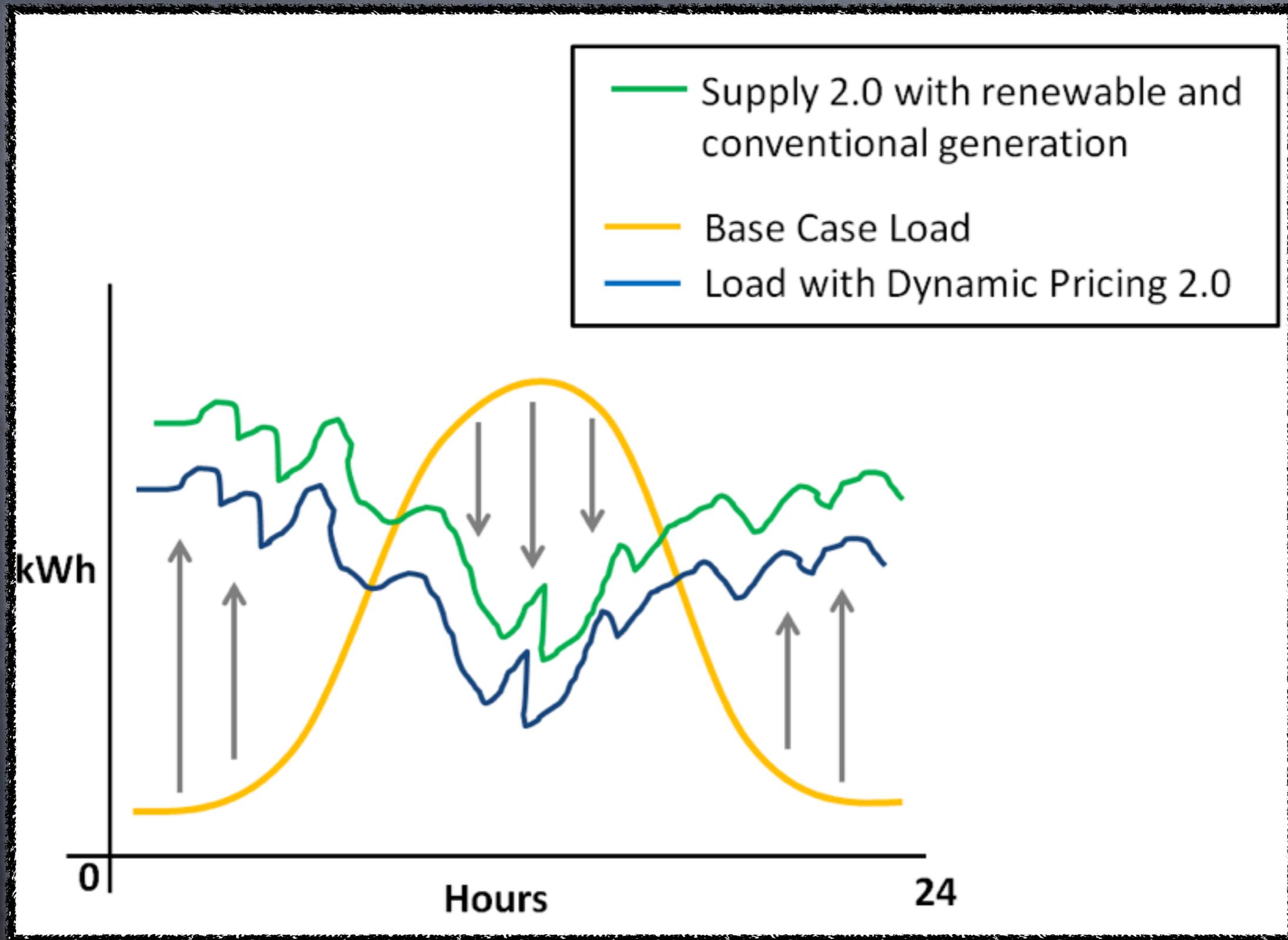


The Challenges for Intelligent Efficiency

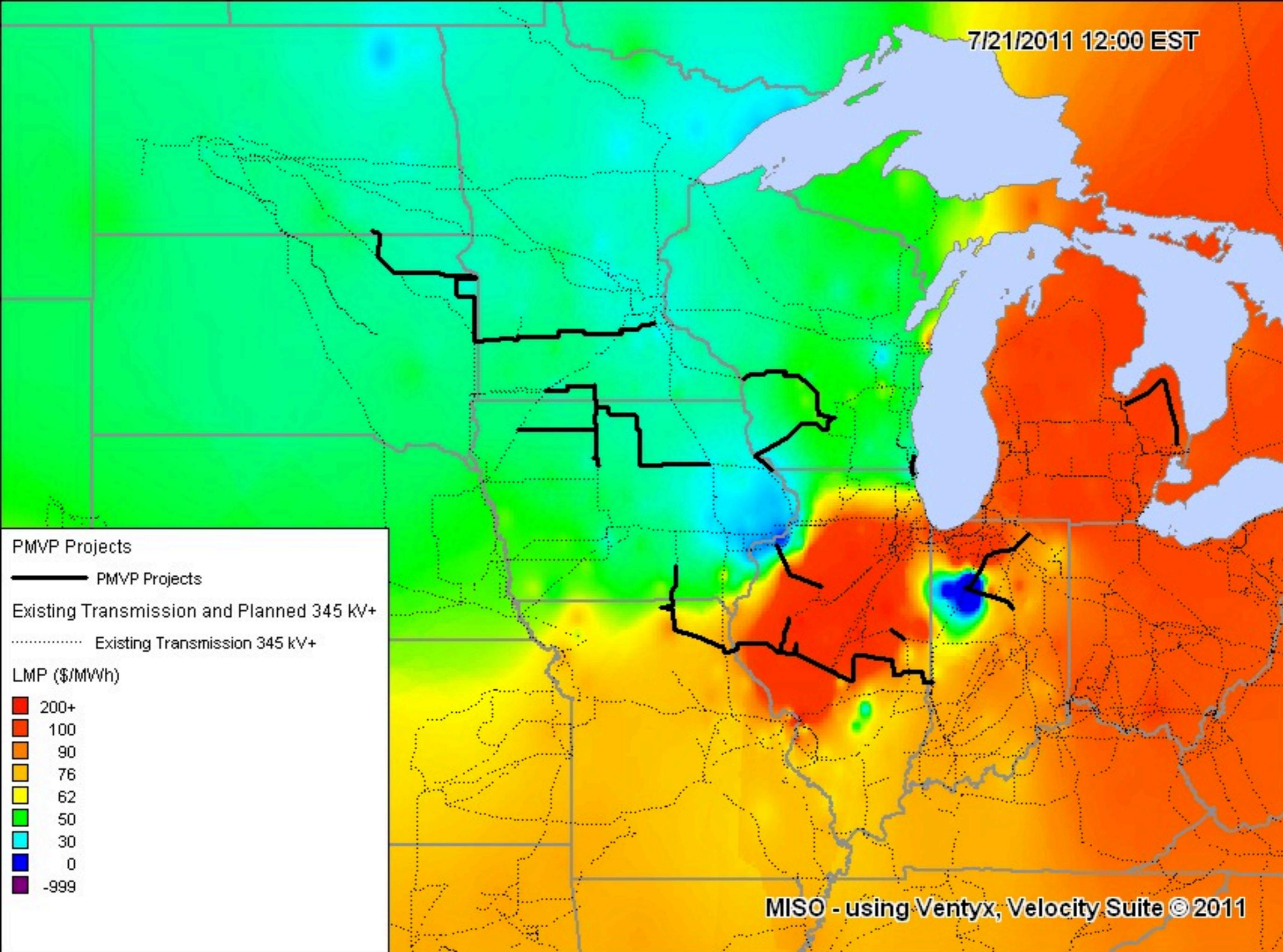
Deployment and Cost for LED Lights Installed 2008-2012



Dynamic Pricing: Integrating Renewables by Creating Around-the-clock Flexibility in Load



7/21/2011 12:00 EST



PMVP Projects

— PMVP Projects

Existing Transmission and Planned 345 kV+

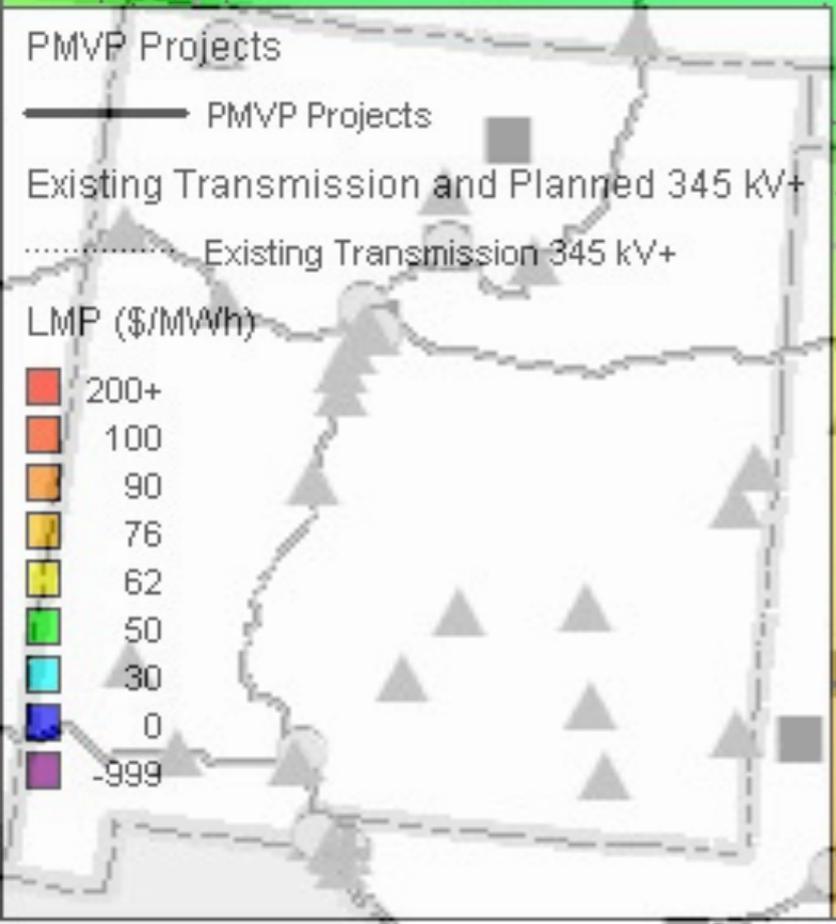
..... Existing Transmission 345 kV+

LMP (\$/MWh)

- 200+
- 100
- 90
- 76
- 62
- 50
- 30
- 0
- 999

MISO - using Ventyx, Velocity Suite © 2011

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