A Smart Grid Strategy for Resource Integration

Rural Smart Grid Summit 2013
Jon Wellinghoff

Palm Beach, Florida
October 6, 2013

Monday, November 4, 2013

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81
31

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Success Brings Challenges

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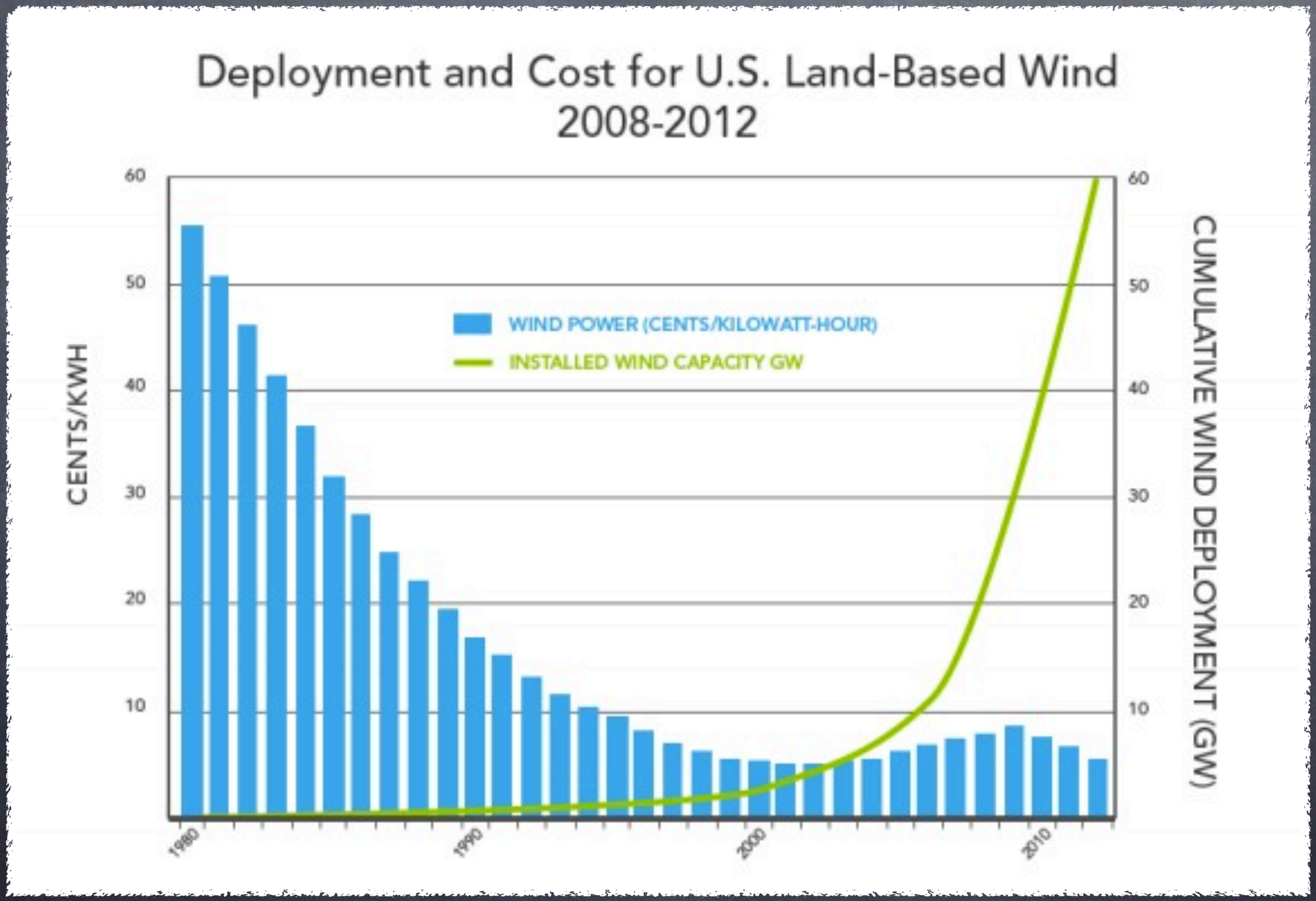
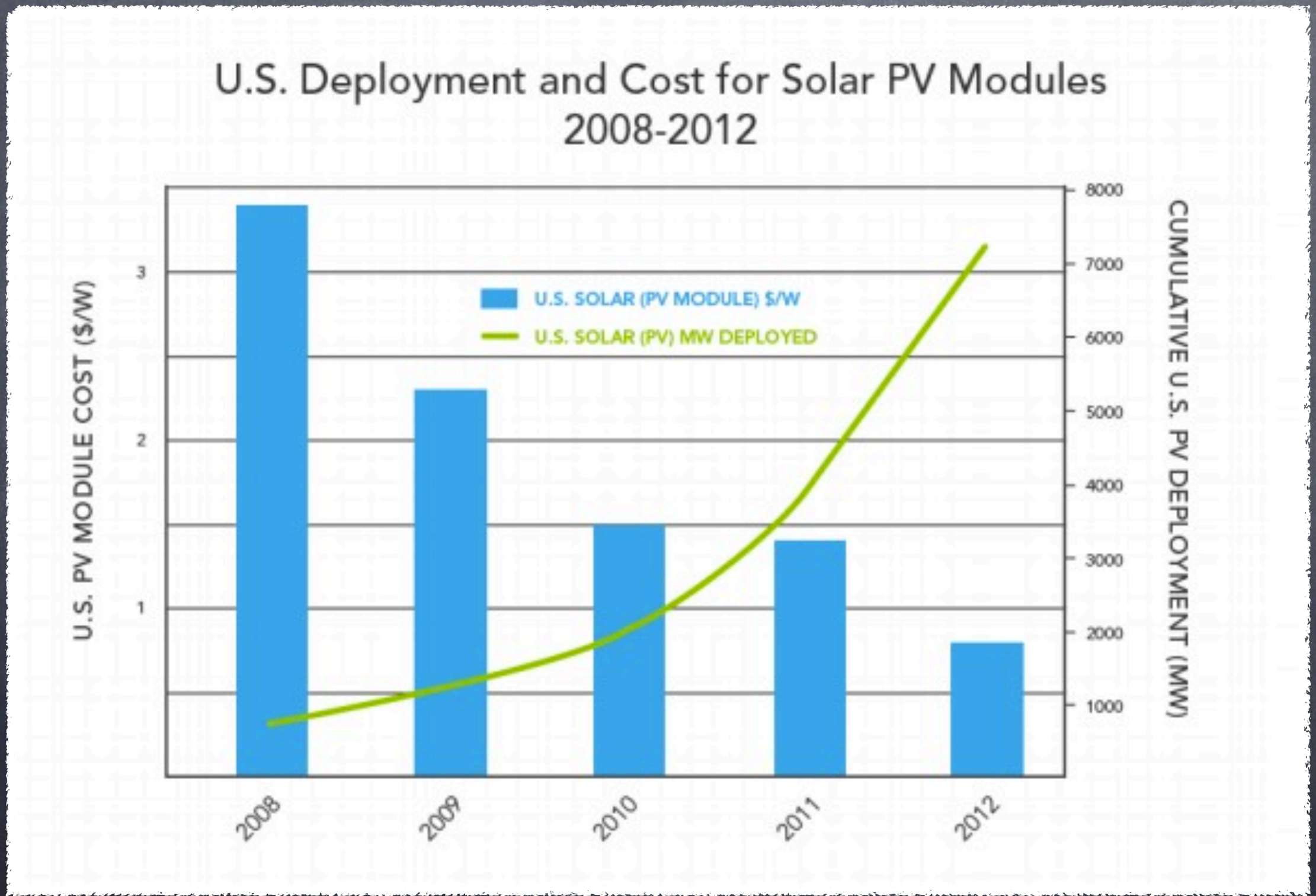
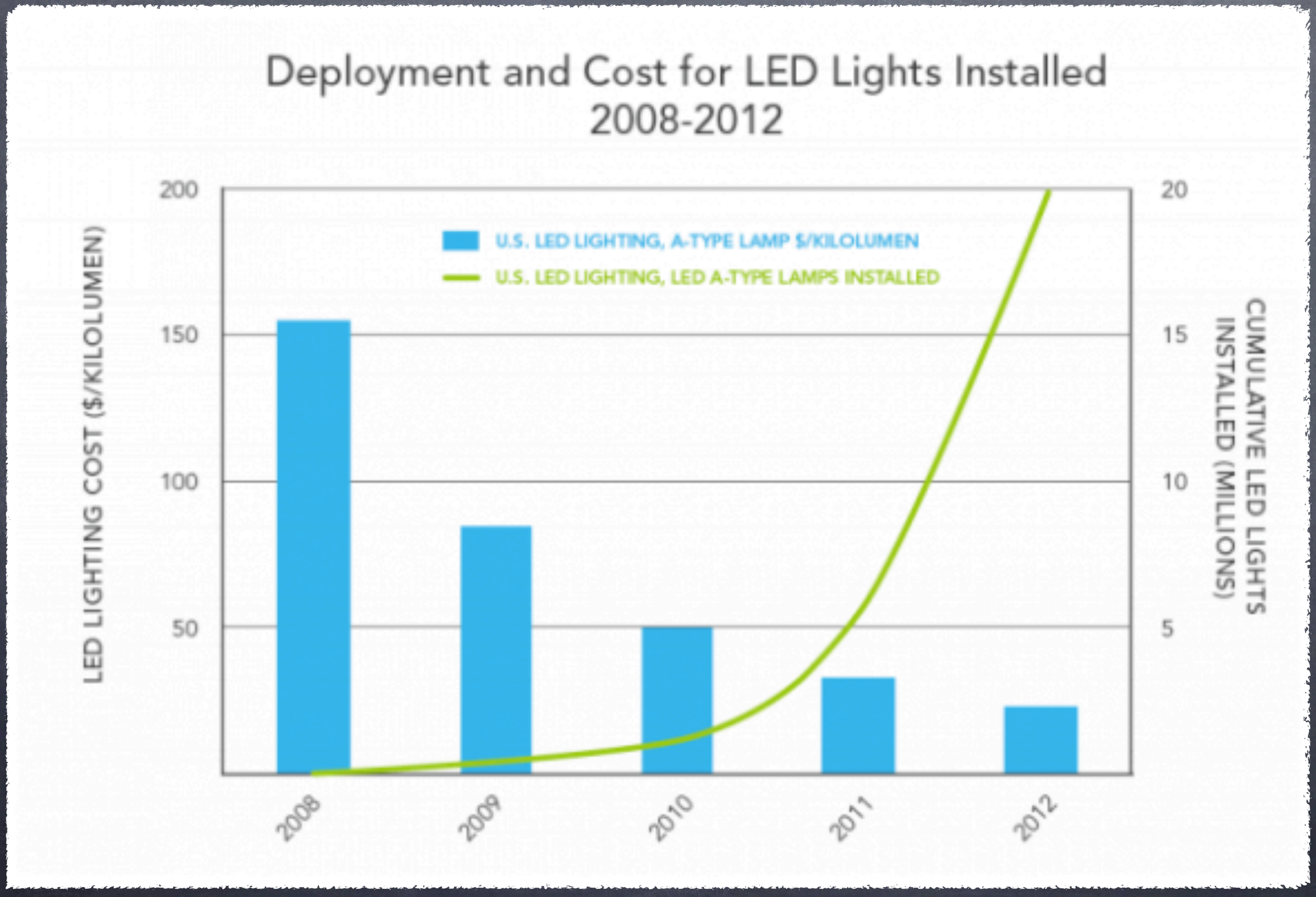


Success Brings Challenges



Success Brings Challenges



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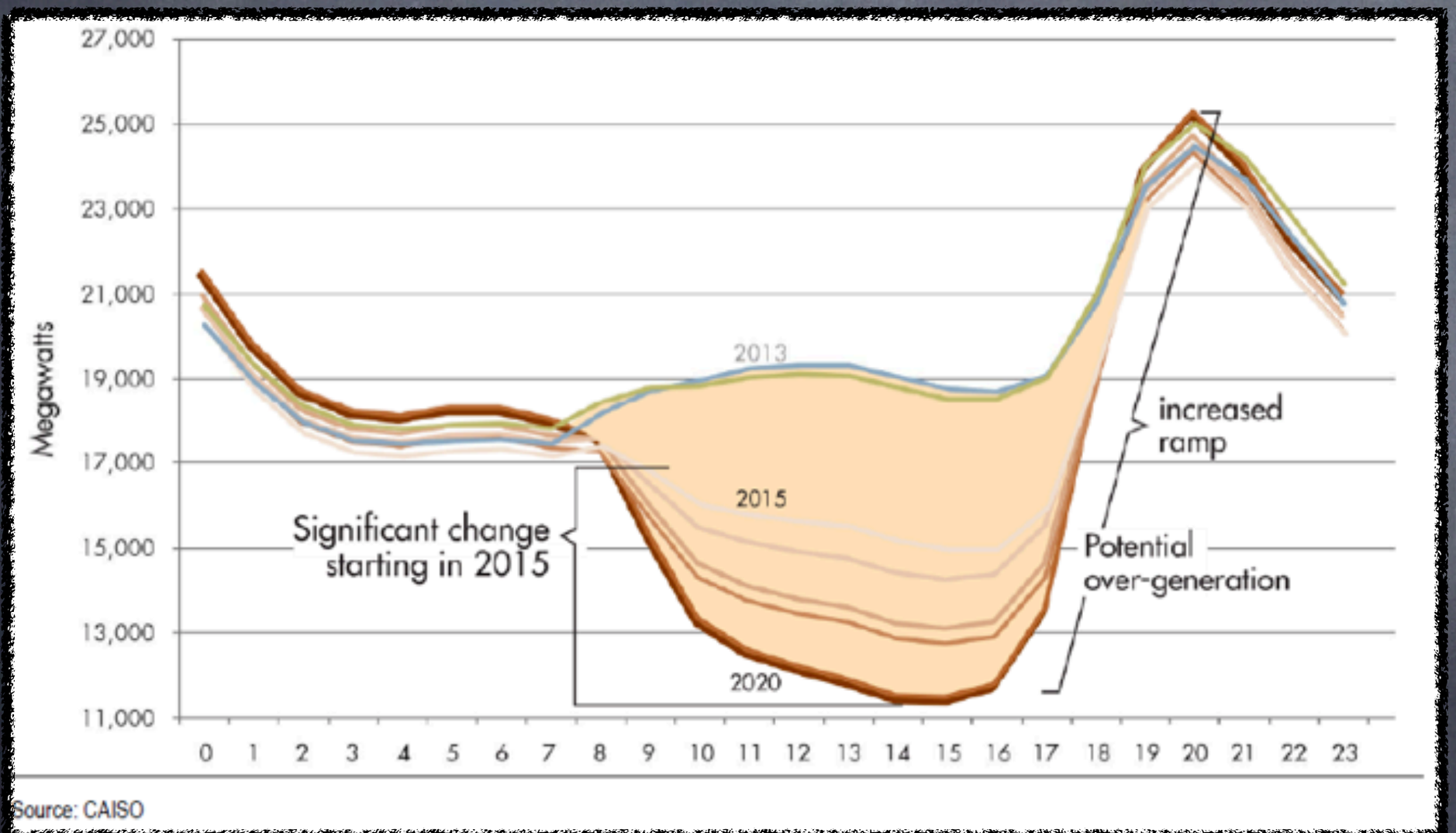
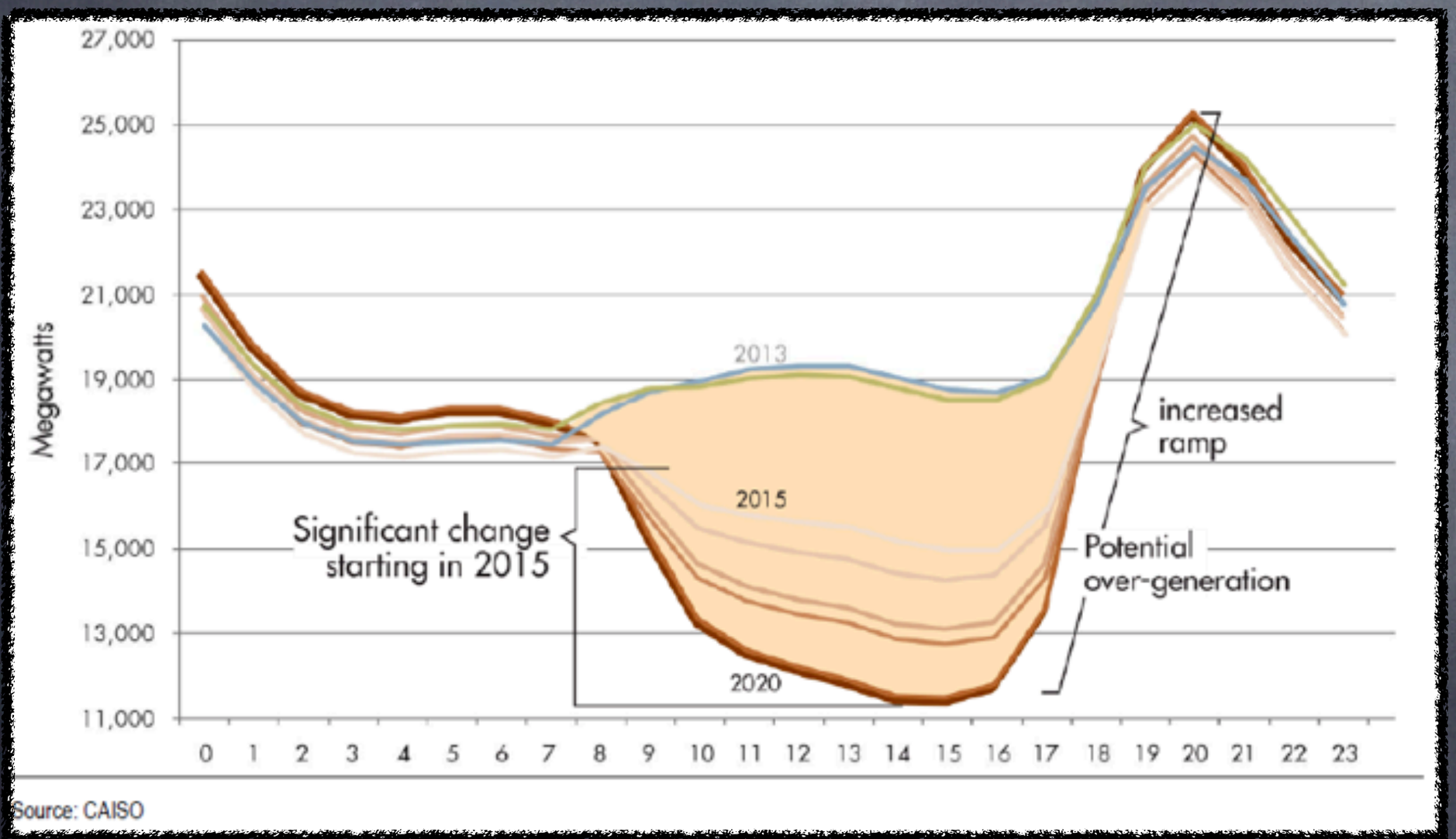
California's Duck Curve: CAISO Projected Net Load, 2013–2020



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

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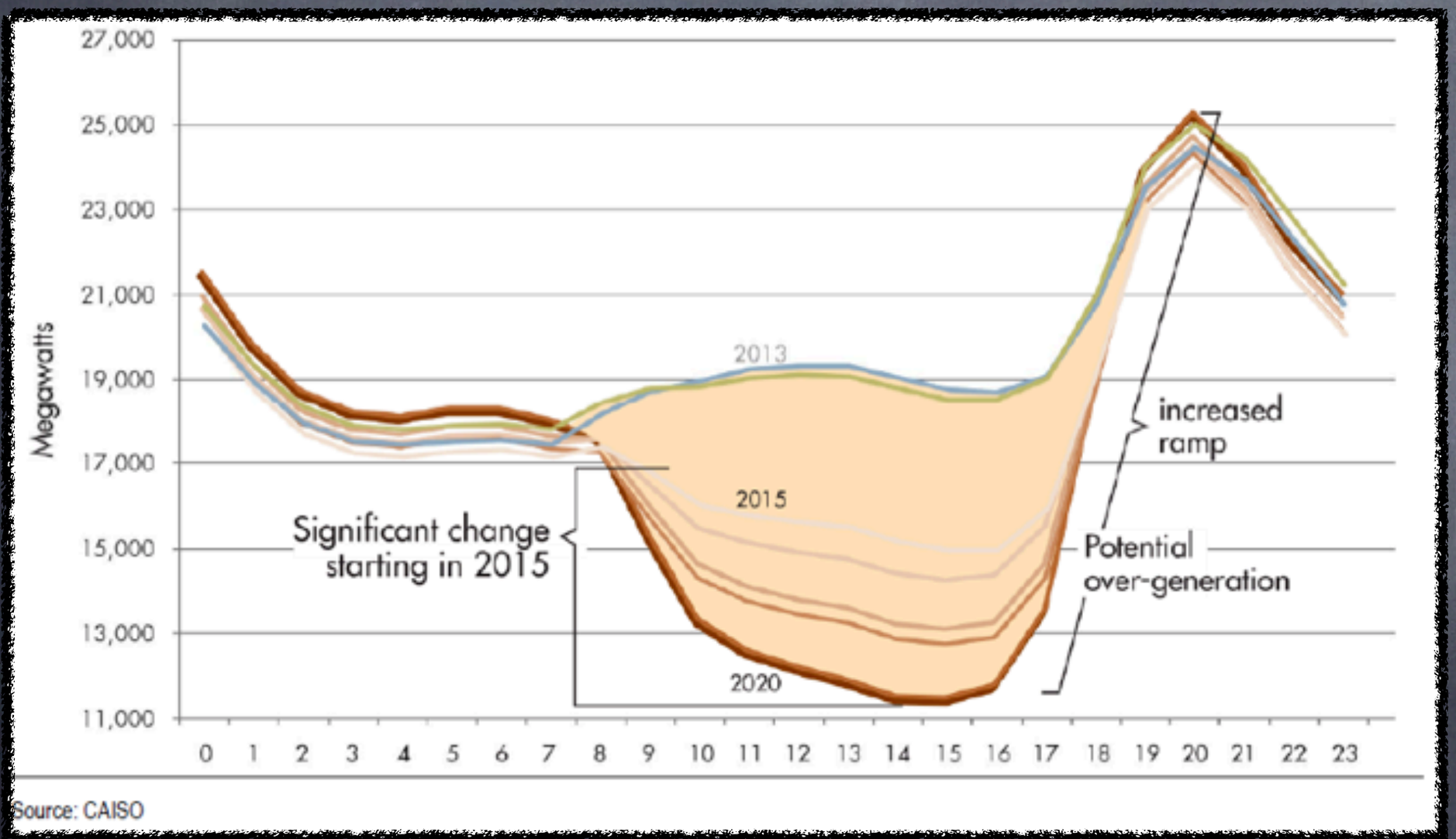
California's Duck Curve: CAISO Projected Net Load, 2013-2020



* 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

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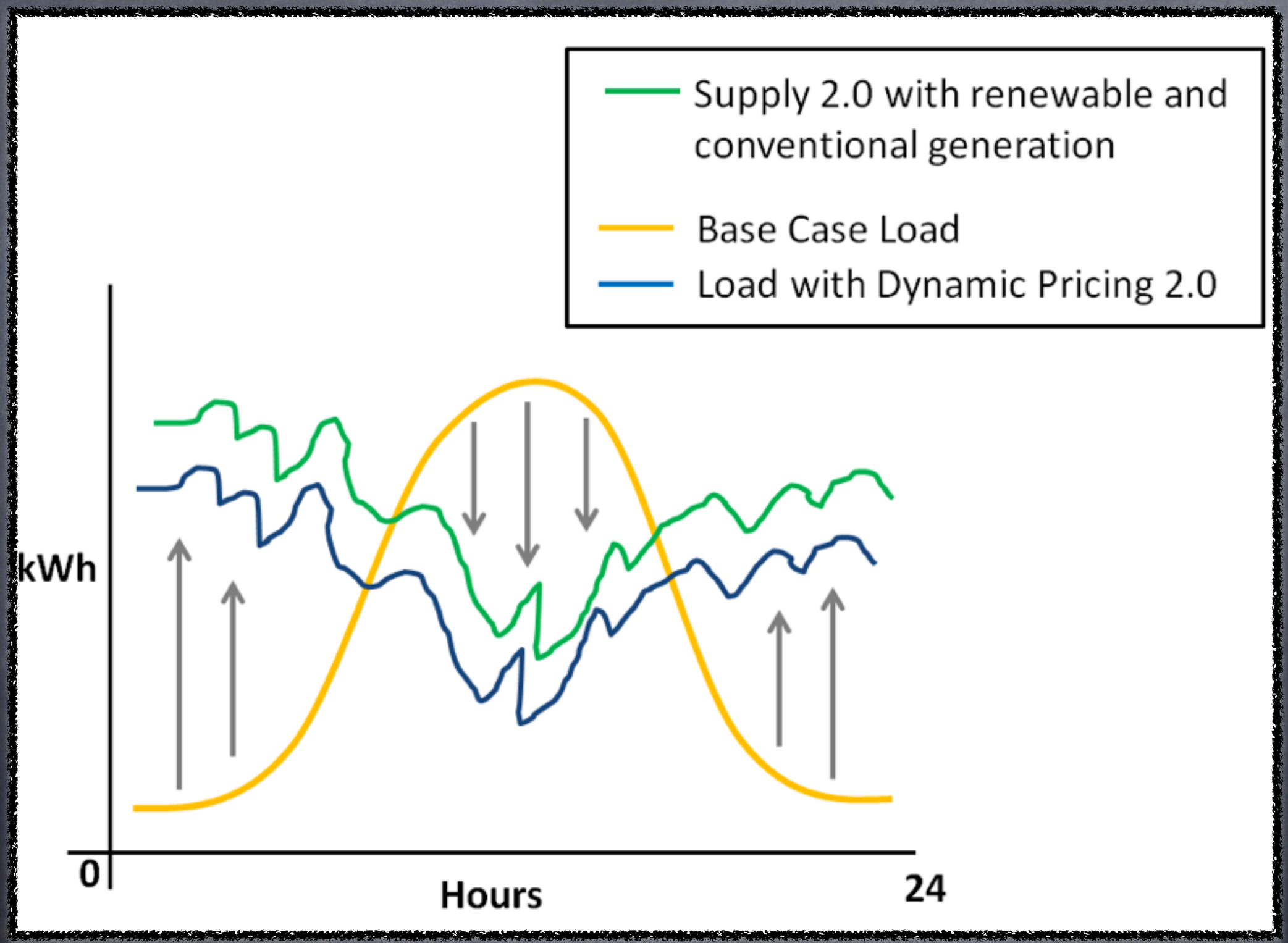
Dynamic Pricing: Integrating Renewables by Creating Around-the-clock Flexibility in Load



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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

7/21/2011 12:00 EST

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MISO - using Ventyx, Velocity Suite © 2011

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Amarillo
Shamrock
Hereford
Clarendon
Childress
Muleshoe
Plainview
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Vernon
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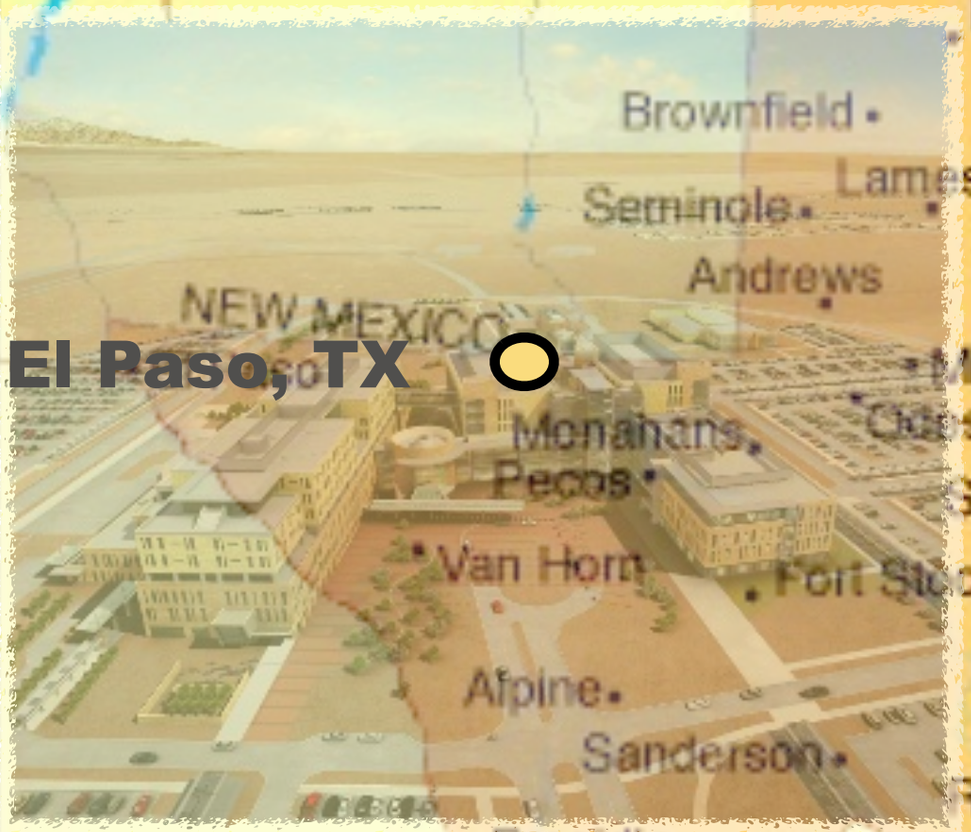
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