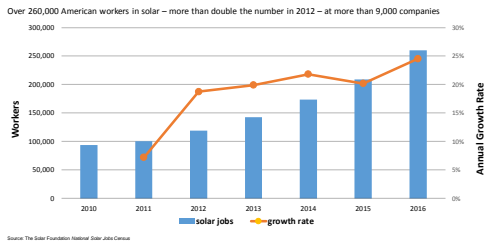




Data Navigator, February 2017

Solar is a Job-Creating Industry



Storage projects operating across the U.S.



Wind farms and factories benefit all 50 states



Source: AWEA U.S. Wind Industry Annual Market Report Year Ending 2016



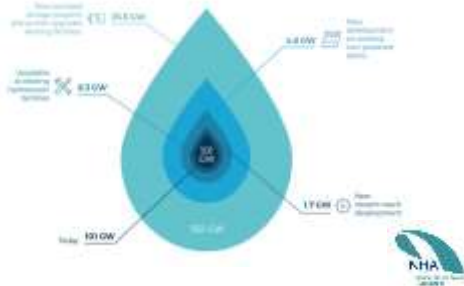
88% of new wind capacity is in states that Trump carried



Source: AWEA 2016 U.S. Wind Industry Market Report



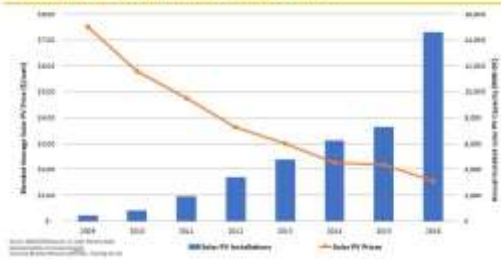
### 50 BY 2050 HYDROPOWER'S VISION FOR GROWTH



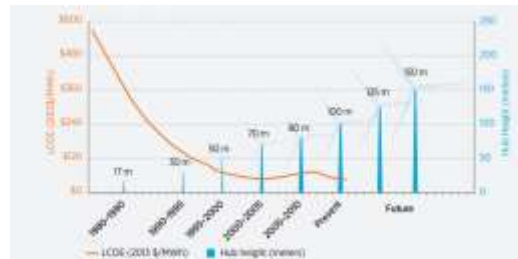
### Solar Growth to Continue



### Growth in Solar led by Falling Prices



### Cost of wind power falling with economies of scale



### Strong year for storage

	2016	2015	Change
Solar (MW)	136	101	Up 35%
Cost of Solar (¢/kWh)	20	16	Up 25%
Wind (MW)	81	71	Up 14%
Cost of Wind (¢/kWh)	11	11	Steady
Utility Scale Storage (MWh)	2,011,200	2,000,000	Steady
Number of Storage (MWh)	1,000	1,000	Up 0%
Utility Scale Storage (MWh)	2,011,200	2,000,000	Up 0%
Construction Year (MWh)	1,000,000	1,000,000	Up 0%



Major brands cutting costs & pollution with wind



Source: Non-utility purchases by year of announcement, Inc. physical and virtual PPA, direct ownership, and large-scale REC purchases from a single wind farm, AWEA U.S. Wind Industry Annual Market Report Year Ending 2016



More transmission will get low-cost renewables to markets



Eastern Interconnect Planning Collaborative

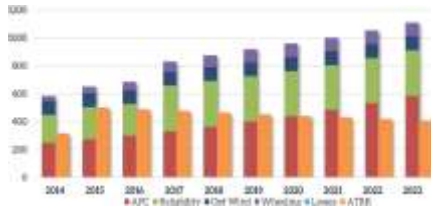


WindVision 2050 case

Benefits of transmission exceed costs: SPP

2012-4 upgrades produced savings 3.5 times the cost

- Nearly \$12 billion in consumer benefits over 40 years, \$2,400 per customer



Benefits (left) greatly exceed cost (right) of transmission upgrades in consumer savings alone

Source: SPP, The Value of Transmission

High-voltage DC lines coming



Source: EBE



Wind power is increasing on the grid, reliably integrated

- The SPP grid across 14 states just peaked at 52% electricity from wind (Feb. 12, 2017)
- Iowa now generates over 35% of its electricity year-round from wind
- 14 states produce over 10% of their in-state electricity from wind



Source: U.S. Wind Energy Share of Electricity Generation, by State AWEA U.S. Wind Industry Annual Market Report Year Ending 2016



New turbines reaching higher winds and more areas



Wind resource at 80-meter turbine hub height

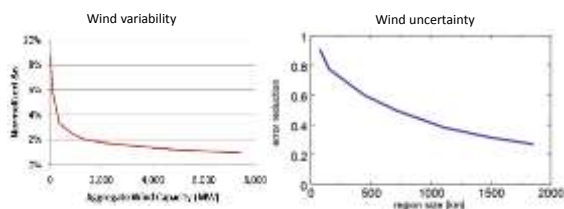
Wind resource at 110 meters

wind map



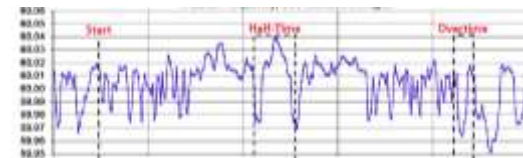
Source: hint.fm/wind

More turbines over larger areas = more predictable output



Variability & uncertainty nothing new for grid operators

Super Bowl Sunday 2017



Austin Frequency, One Minute Averages, 5 pm-10 pm CST

Storage applications

From home systems to a 400MWh facility, storage has numerous applications

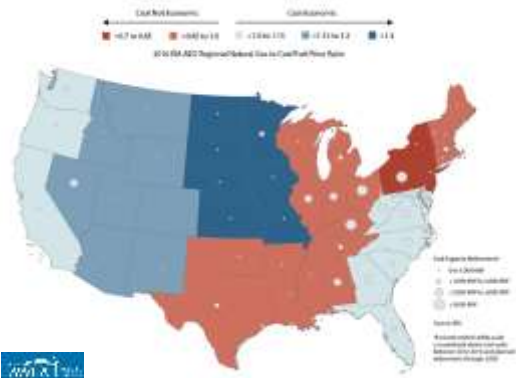
- It's not about 'sunshine at night'
- Single system can provide multiple values to grid and owner
- Systemic value, impacting every facet of supply, transmission and consumption



Recent and Planned Coal and Nuclear Retirements and 2016 U.S. Wind Energy Share of Electricity Generation, by State



Recent and Planned Coal Retirements and Economics of Coal versus Natural Gas, by Region

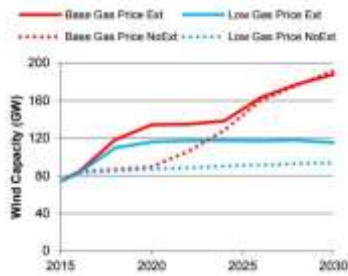


Phase-down of wind & solar tax credits

	2015	2016	2017	2018	2019	2020	2021	Future
<b>Wind PTC</b>	Full	Full	80%	60%	40%	0%	0%	0%
<b>Solar ITC</b>								
Utility	39%	30%	20%	10%	0%	0%	0%	0%
Commercial/Third-Party Owned	39%	30%	20%	10%	0%	0%	0%	0%
Residential Host-Owned	39%	30%	20%	10%	0%	0%	0%	0%

Source: NREL "Impacts of Federal Tax Credit Extensions on Renewable Deployment and Power Sector Emissions," February 2016

NREL: Installed wind capacity post-PTC extension



Source: NREL "Impacts of Federal Tax Credit Extensions on Renewable Deployment and Power Sector Emissions," February 2016

