

Energy Policy Forum: Summary

Forum on Global Energy, Economy, and Security

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Aspen Institute, Aspen, CO
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Webber Energy Group

THE UNIVERSITY OF TEXAS AT AUSTIN

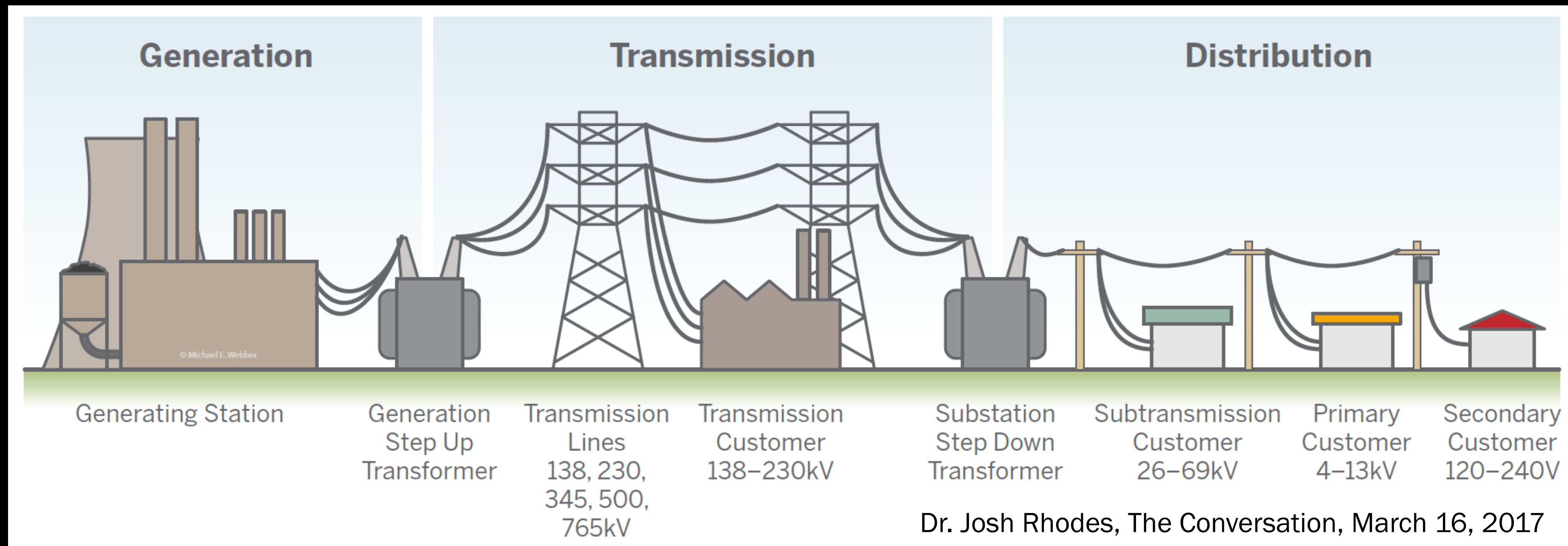
The U.S. Power Sector Has Expensive Assets

- Replacement value: ~\$5 trillion
- Depreciated value: ~\$2 trillion

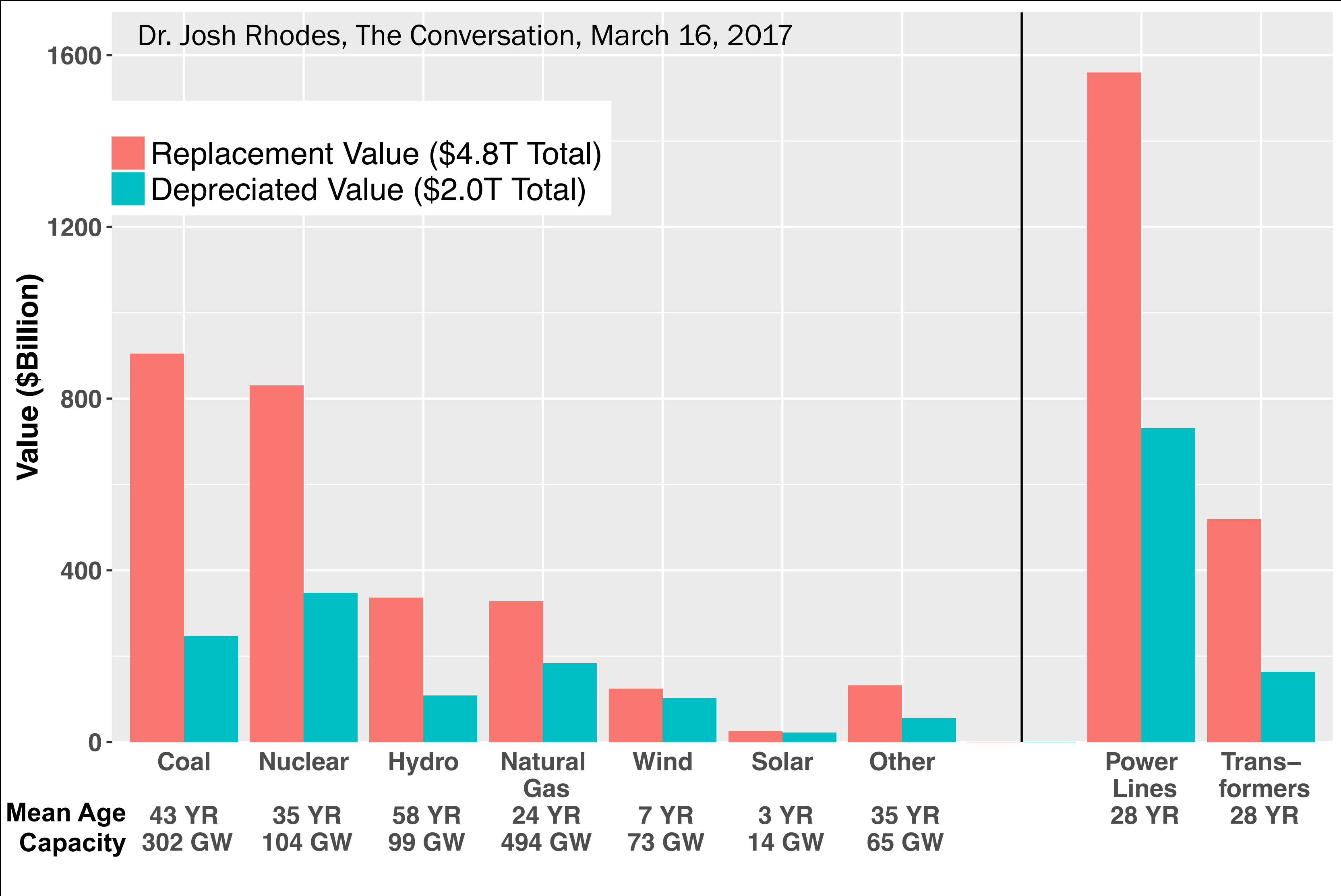
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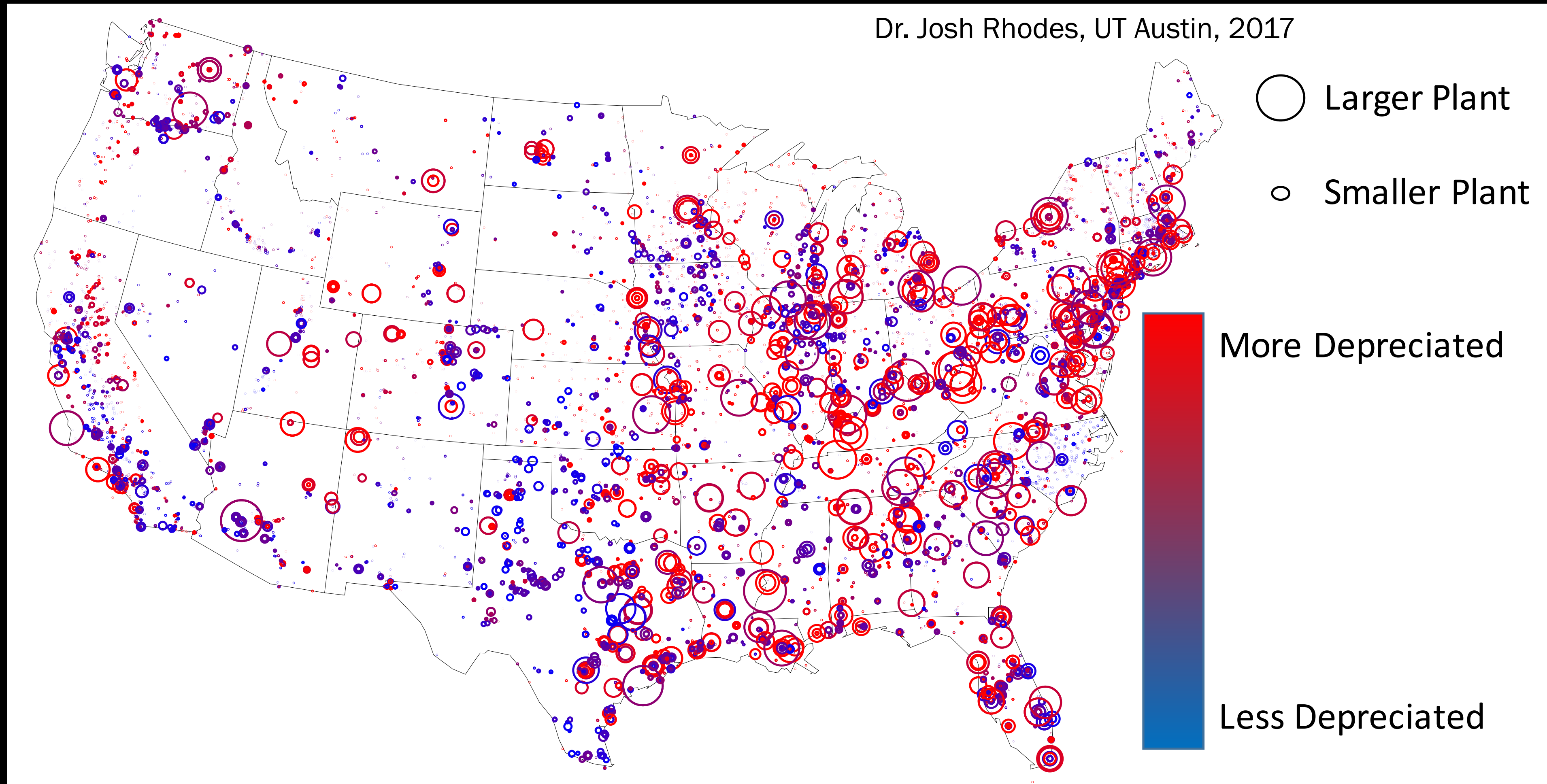
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Coal, Nuclear and Hydro Plants Are Highly Depreciated



Our larger power plants are concentrated in the east and they are also the oldest



Cheap Solar, Wind and Natural Gas Are Beating New Construction & Conventional, Legacy Thermal Assets

- Coal plants are retiring
- Nuclear plants are announcing early retirements
- Even relatively new natural gas combined cycle power plants are going bankrupt
 - Panda Power, TX
 - La Paloma, CA



The Power Sector Is Facing Several Challenges

- Bad news:
 - Deep decarbonization will be difficult (but easier than for transport)
 - Existing nukes are shutting down
 - New nuclear and coal w/carbon capture is expensive, slow, over-budget
 - Environmental controls (mercury, acid rain, etc.) are still looming
 - Business models are changing quickly, regulators are changing slowly
 - Demand for electricity is flat/dropping
 - (For producers): Wholesale electricity prices are declining in real terms
- Good news:
 - (For consumers): Retail electricity prices are declining in real terms
 - Shallow decarbonization is easy: Power emits less CO₂ than transportation
 - Growing demand from EVs, pot-growing operations, and data centers

N. American Integration Is An Ongoing Desire and Concern

- N. American integration has important implications
 - Reliability
 - Decarbonization
- Bilateral efforts to connect grids have been underway for years
- Trilateral effort (U.S./Mexico/Canada) is newer
- These efforts are expected to continue with Trump Administration

Power Sector Can't Agree On Language Such As “Baseload”

- Baseload = lowest demand over course of year
 - Baseload = paid-off capacity
 - Baseload = power plants that ramp slowly
 - Baseload = coal, nuclear
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- Conclusion: the word “baseload” is now obsolete and possibly even damaging
 - Action item: switch to a supply-following mindset rather than a load-following mindset

Renewables Aren't That Big of A Problem; Distributed Generation is

- Grid management costs went DOWN in TX despite rise in wind
 - Market design improvements
 - Better wind forecasting
 - Geographic dispersion
 - Availability of fast-ramping natgas generators
- Utility-scale solar is probably harder than wind to accommodate
- Distributed generation (rooftop solar, fuel cells, diesel gensets,...) is mysterious because it's behind-the-meter
 - Maybe DER (distributed energy resources) become baseload/primary and the grid moves to the margin

What to do? Mixed signals...

- Consider new market signals to reward cleanliness and reliability
 - Put a price on carbon (helps nuclear...)
 - ZECs (Zero Emission Credits) (helps nuclear...)
 - Capacity payments, etc. (helps nuclear, coal...)
- Re-regulate the markets
 - After decades of calls to de-regulate power markets to achieve efficiency and cost-savings, power sector now openly ponders re-regulation as a way to avoid stranded assets and to achieve deep decarbonization
 - “Cash for Coal Plant Clunkers”, etc.
- Conclusion: markets, technology and policy are required
 - No single dimension gets us all the way there in an elegant fashion

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