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Protecting the Midwest's Environment and Natural Heritage

The Economics and Politics of Pricing Distributed Solar

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Historical DG “valuation” driven by PURPA and state net metering statutes



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- **PURPA:**
 - “avoided cost”
 - wholesale transaction
- **Net Metering (NEM):**
 - retail rate “credit” (usually) for excess generation
 - can be used to “offset” monthly bill
- **Other approaches:**
 - “feed-in tariffs” (FIT)
 - “value-of-solar” approaches (VOS)

Net metering is common, but program details vary ...



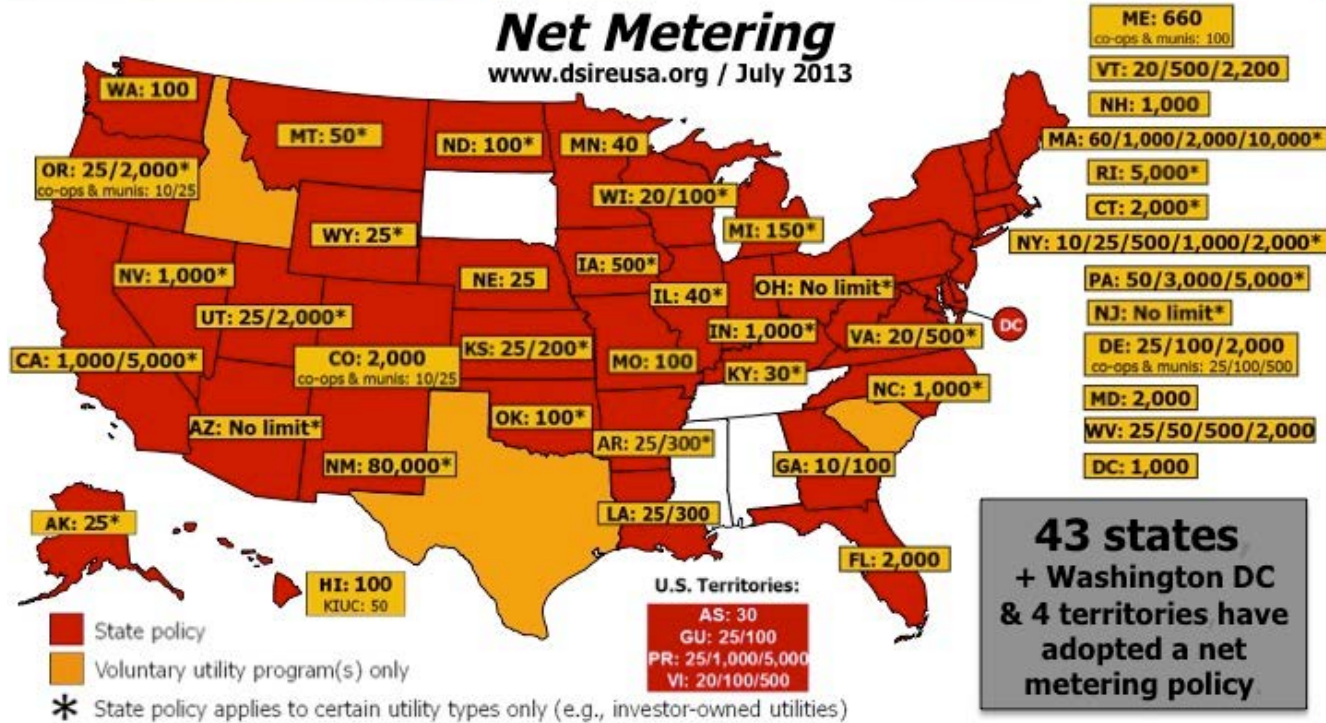
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DSIRE™
Database of State Incentives for Renewables & Efficiency

U.S. DEPARTMENT OF ENERGY Energy Efficiency & Renewable Energy

IREC

NORTH CAROLINA Solar Center



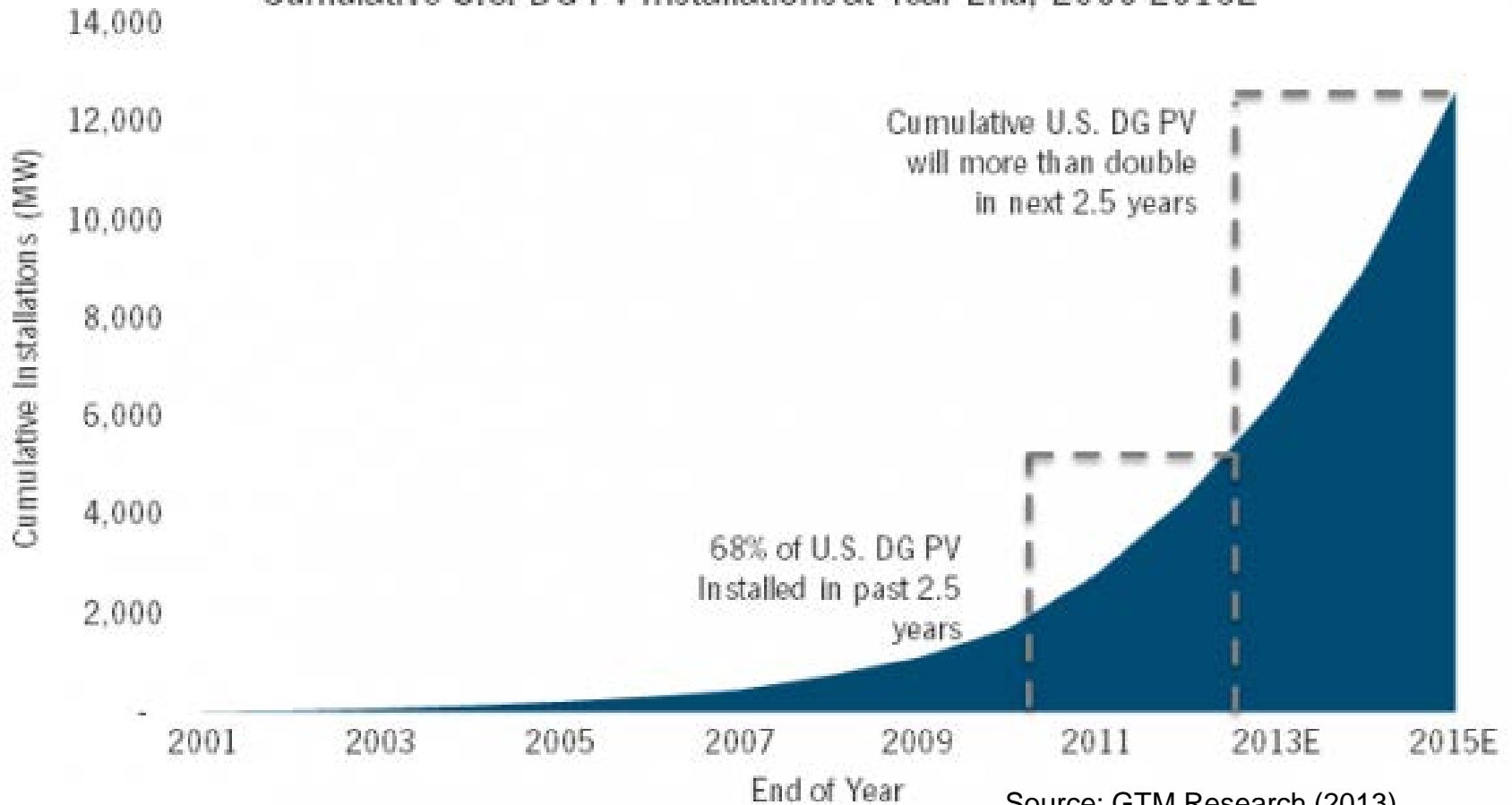
Note: Numbers indicate individual system capacity limit in kilowatts. Some limits vary by customer type, technology and/or application. Other limits might also apply.

This map generally does not address statutory changes until administrative rules have been adopted to implement such changes.



Why is solar “value” a hot topic?

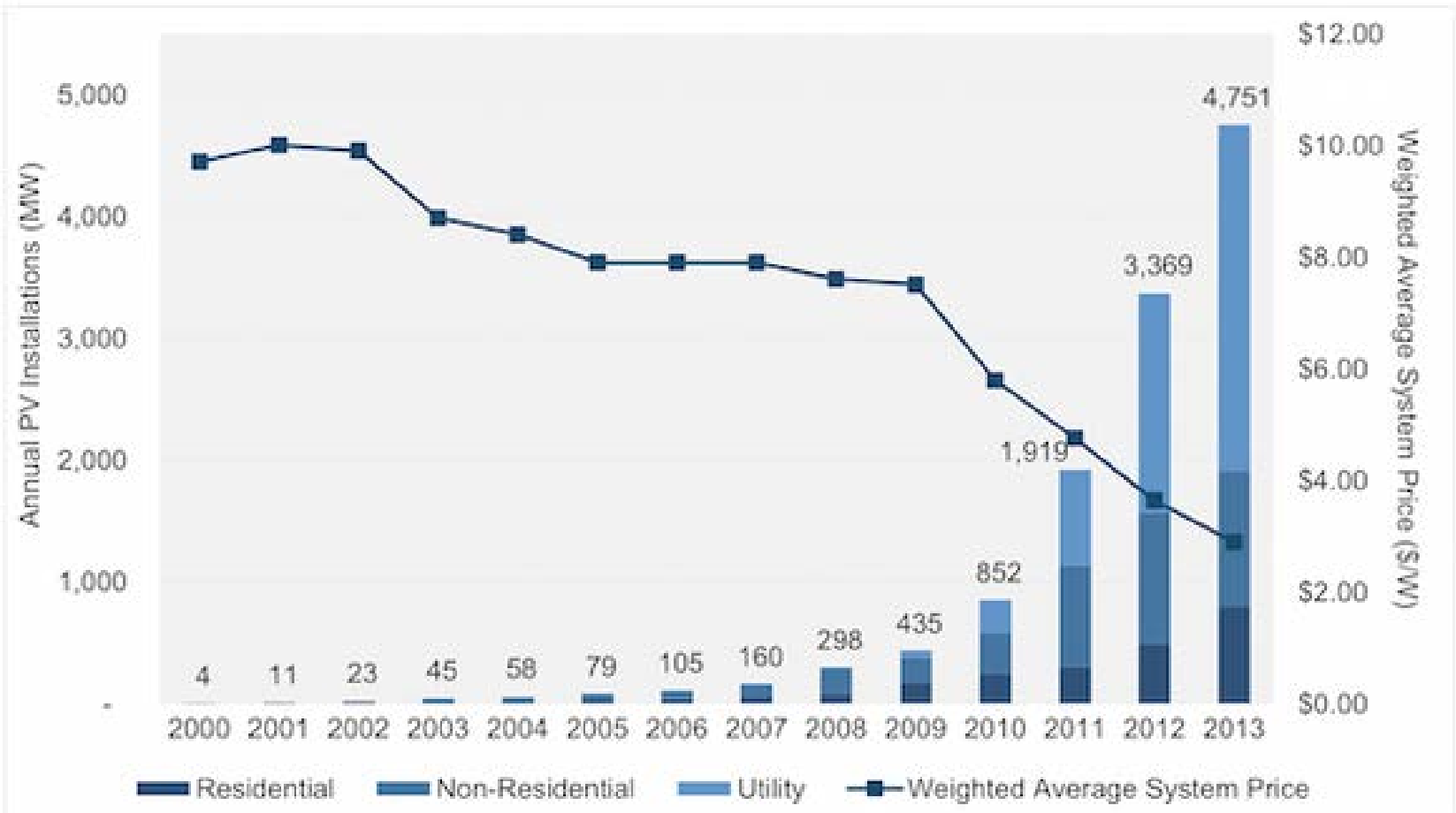
Cumulative U.S. DG PV Installations at Year End, 2000-2015E



Source: GTM Research (2013)



Falling costs driving solar boom...

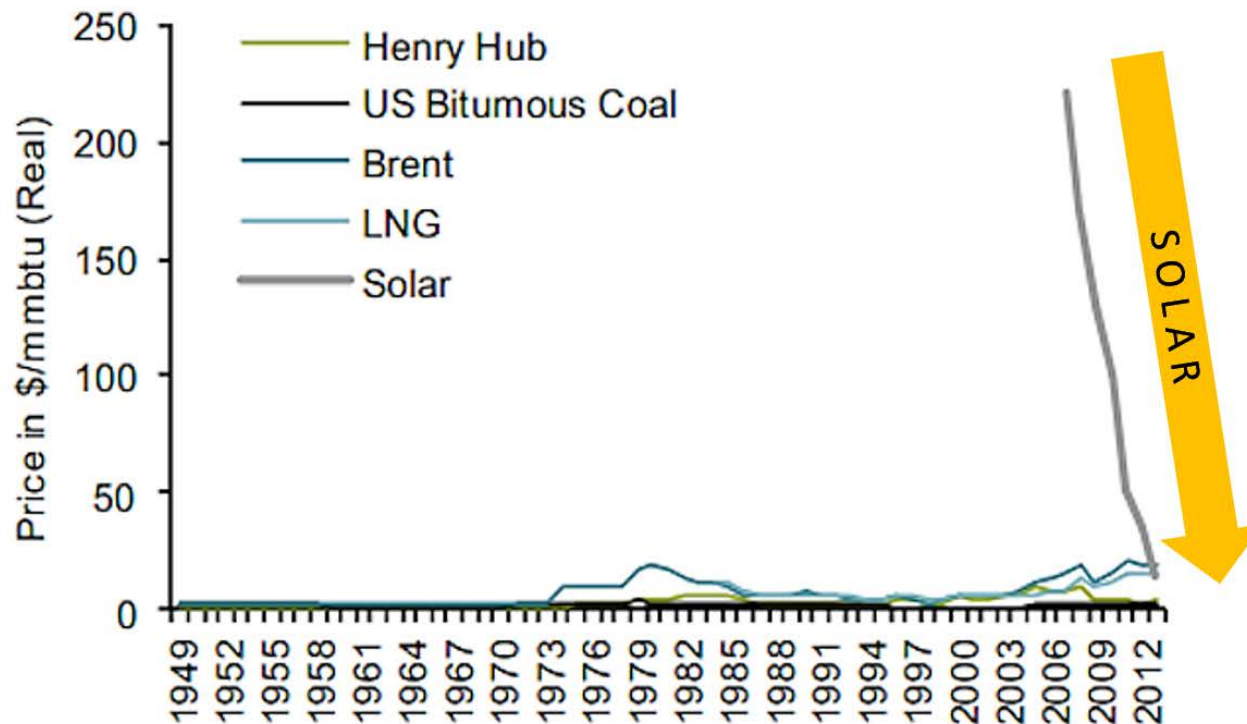


Source: GTM Research, SEIA



Terrordome?

Welcome to the Terrordome... \$/MMBTU by Energy Type

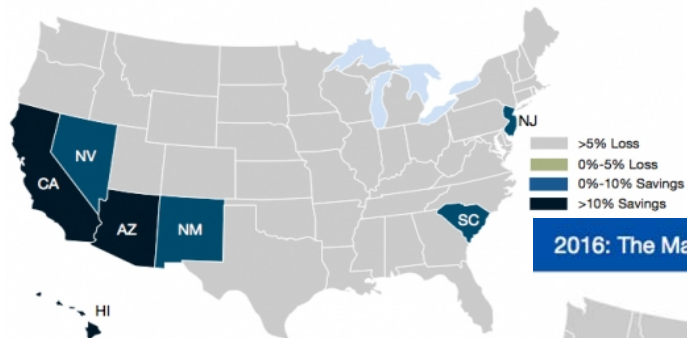


Source: EIA, CIA, World Bank, Bernstein analysis

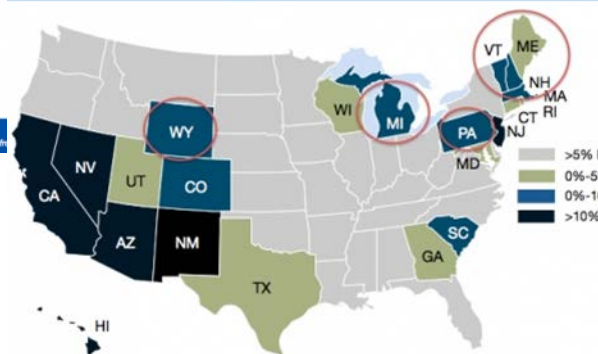


Solar “grid parity” is here...

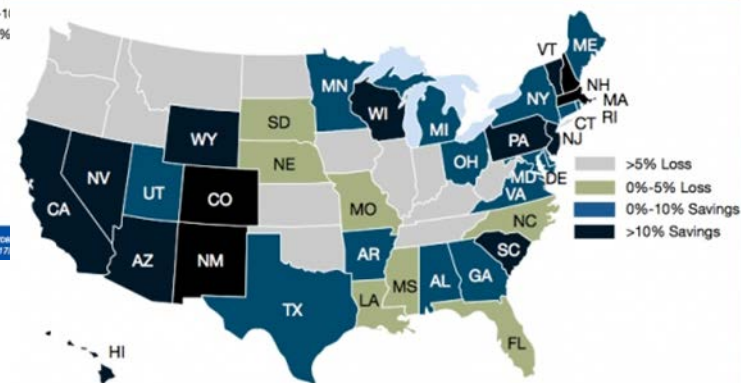
2014: Three States Already at the Tipping Point



2016: The Market Begins to Blossom



2020: The Real Fun Begins





So what are the incumbents doing?

(1) Some are attacking rooftop solar ...



(2) Some are getting into the game ...



Utility strategy: Focus on “fairness” and challenge net metering



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Washington Post, [Utilities wage campaign against rooftop solar](#), March 7, 2015

NPR, [Utilities fight for revenue lost to solar power](#), Jan. 03, 2015.

New York Times, [Solar panel payments set off a fairness debate](#), June 4, 2012



What are the Challenges and Obstacles for Fairness?

- Hidden subsidies like net metering allow higher income customers to avoid system costs, which are then paid by middle and lower income customers
- Loss of customers. California reported over 1,000 MW and over 104,000 solar projects at the end of 2011.
- Under net metering, such projects pay little distribution or other fixed costs, despite the fact they impose new costs on the system
- Competition. Third parties owned 72% of residential solar systems and over one-quarter of non-residential solar systems installed in 2012 (through May 27) in California



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Utility strategy: Raise “fixed” costs and add solar fees

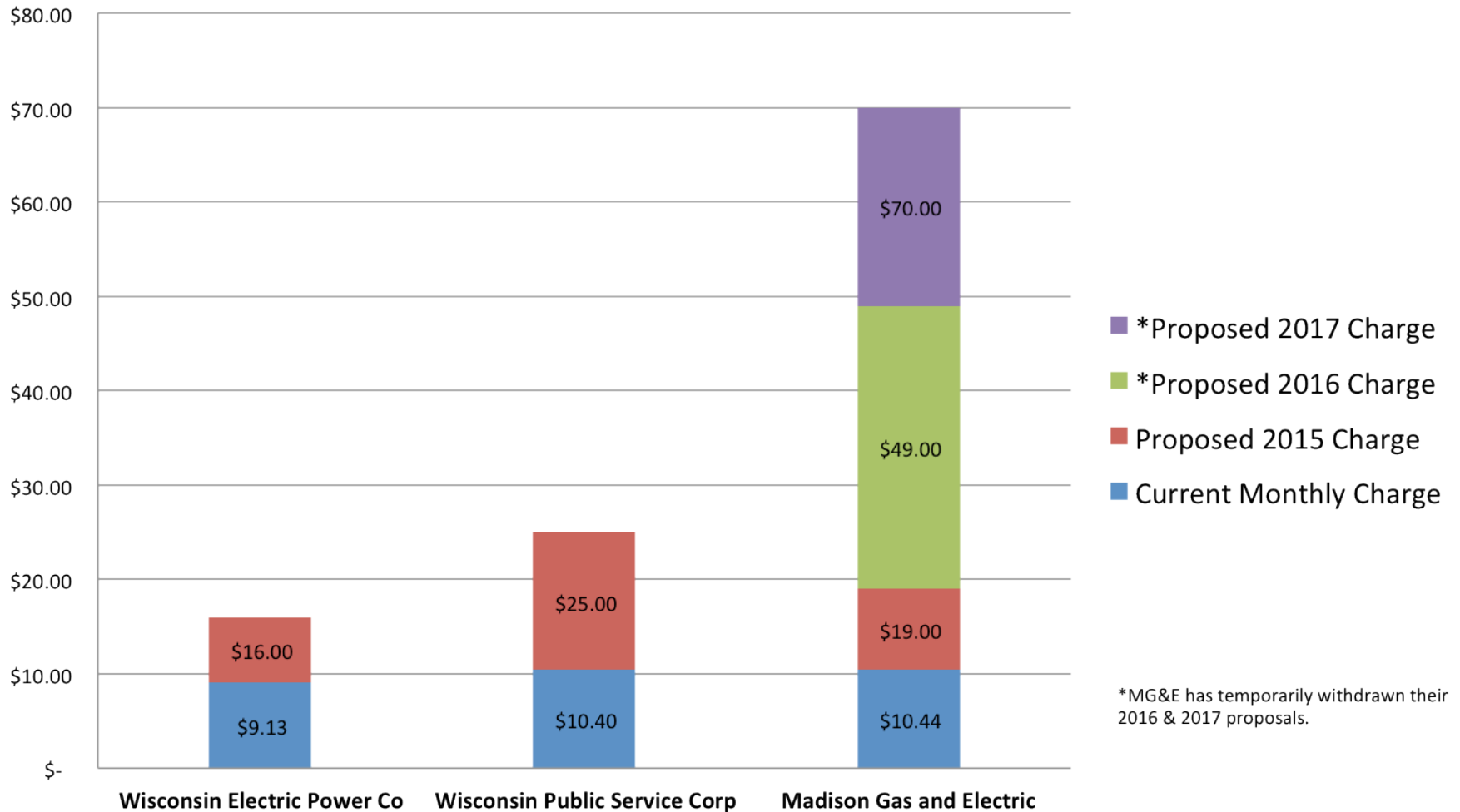


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- Wisconsin: *Regulators agree to increase fixed charge on We Energies electric bills* (Nov. 14, 2014)
- Arizona: *SRP's proposed rate hike targets new rooftop-solar customers* (Dec. 4, 2014)
- New Mexico: *New Mexico's largest utility wants to charge solar owners up to \$30 a month* (Dec. 22, 2014)
- Utah: *"Solar tax" on the table in Utah general rate case* (July 30, 2014)



Fixed Monthly Charges (current and proposed) of Investor-Owned Utilities in Wisconsin



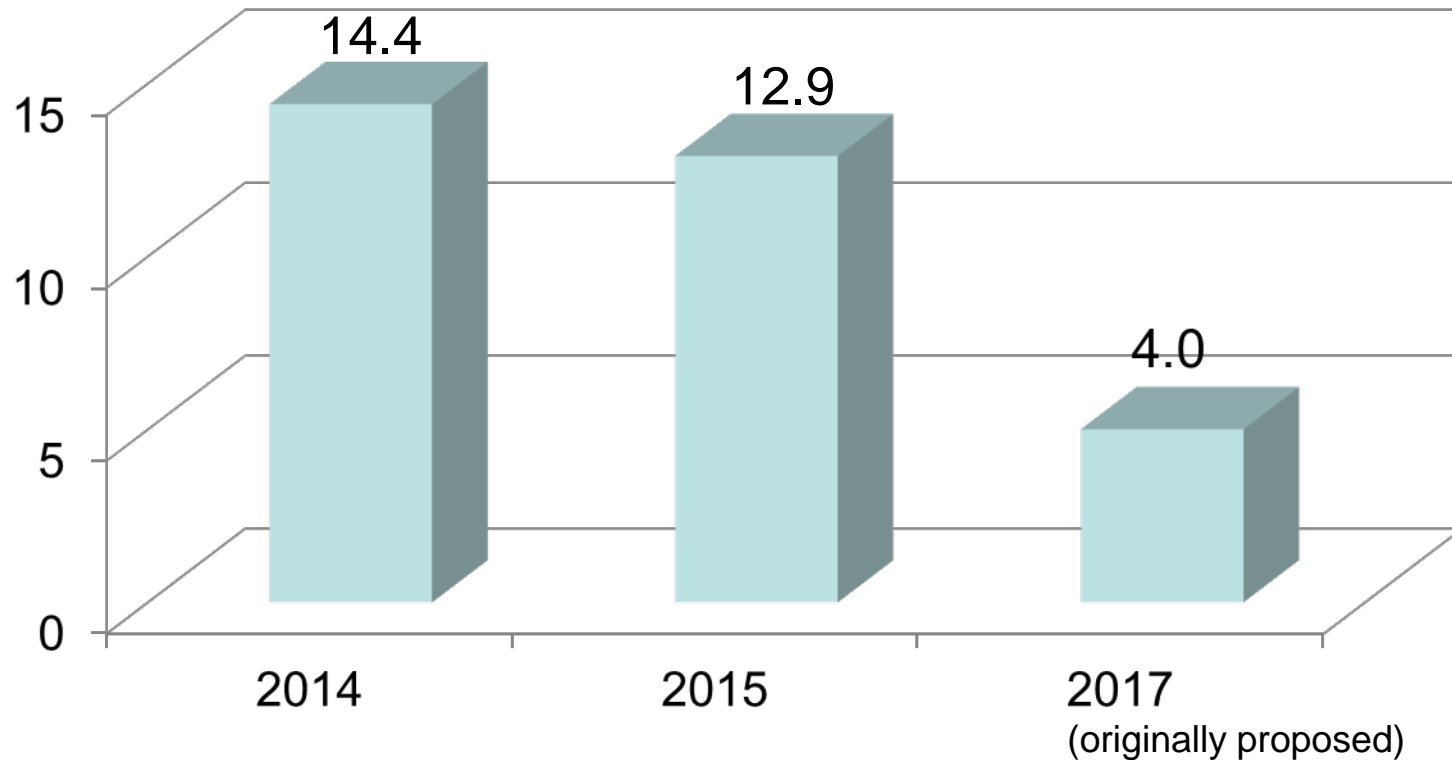
*MG&E has temporarily withdrawn their 2016 & 2017 proposals.



MGE (Wisconsin) rate redesign proposal

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Energy charges (cents/kWh)





Impact of Rate Design Proposals

- Low-usage and DG customers will pay more
- Net metering is devalued
- Less incentive to save energy
- Less ability to control energy bills
- Fewer options for self-generation
- Fewer opportunities for innovation and competition



Expert Reactions:

Jon Wellinghoff:

“fixed charges are a false fix”

<http://www.utilitydive.com/news/tong-and-wellinghoff-why-fixed-charges-are-a-false-fix-to-the-utility-indu/364428/>

Dr. Charles Cicchetti:

“abuse of market power”

http://psc.wi.gov/apps35/ERF_view/viewdoc.aspx?docid=214685

Karl Rabago:

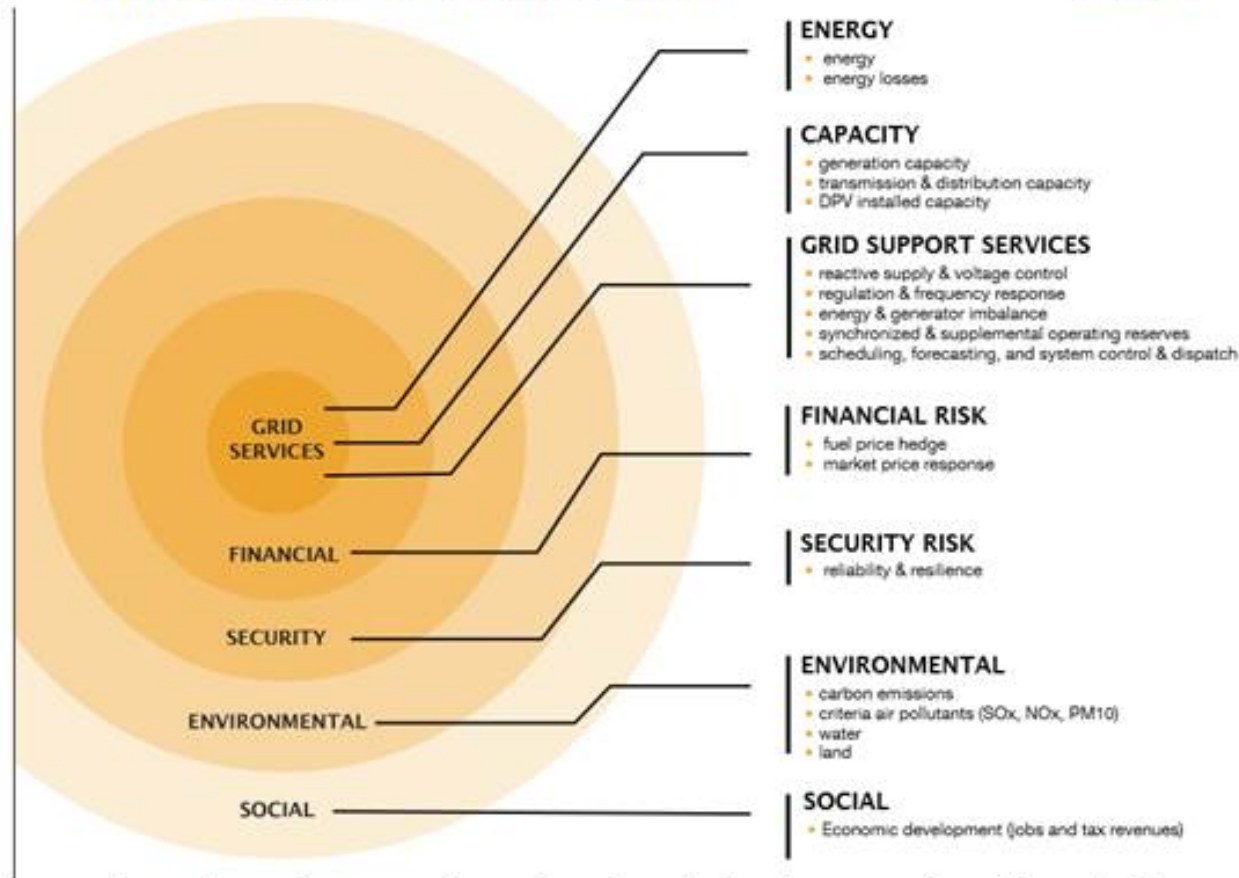
“astounding failure of basic ratemaking”

http://psc.wi.gov/apps35/ERF_view/viewdoc.aspx?docid=214745

“Fairness” depends largely on the “value” of solar.



BENEFIT & COST CATEGORIES

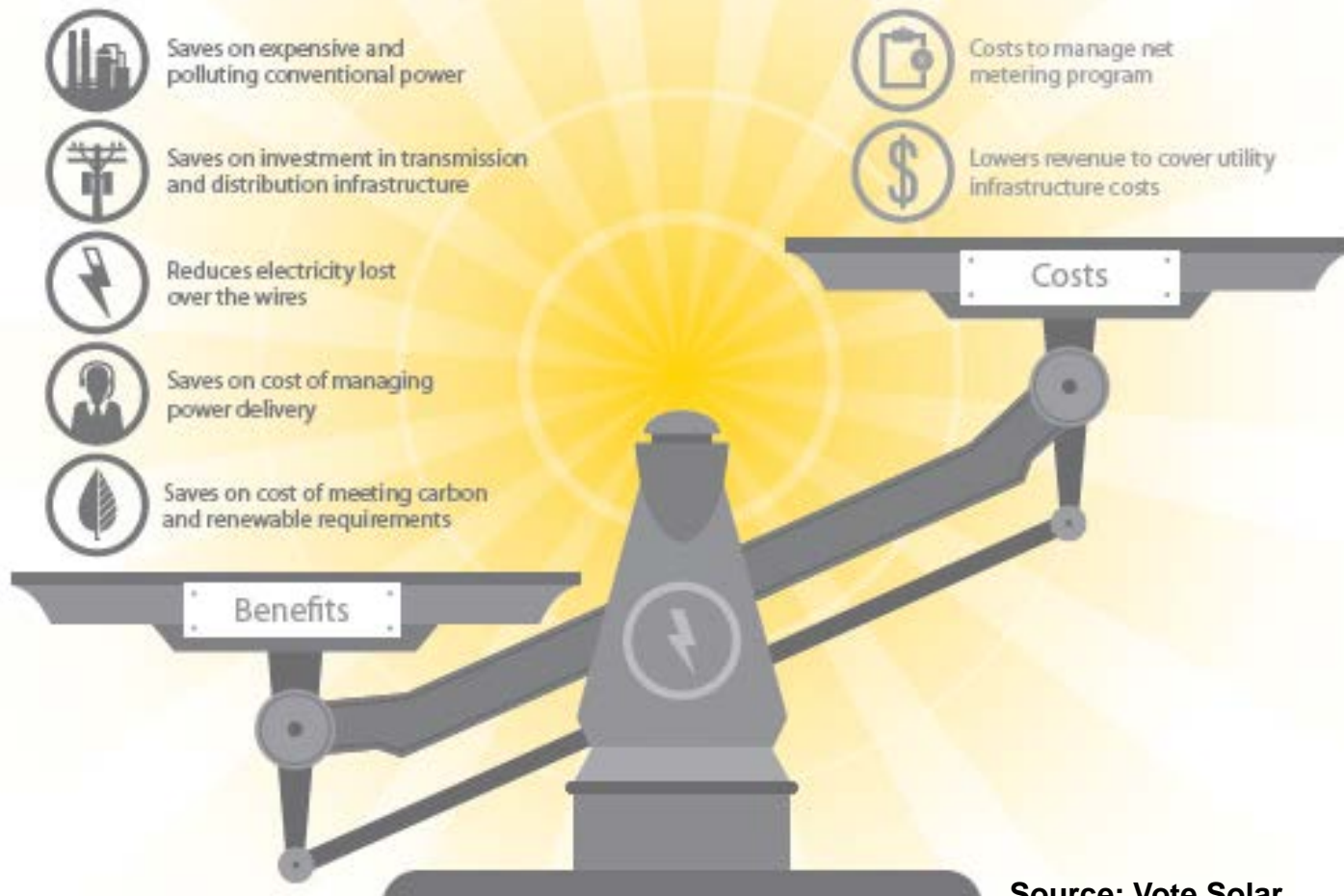


(from the Rocky Mountain Institute’s analysis of DPV cost-benefit studies)

And many studies are finding solar benefits exceed costs.



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Source: Vote Solar



Recent PV valuation studies:

- **Maine:** PUC study values solar at 33 cents/KWh, more than double the price of utility power
- **Nevada:** E3 study determines grid benefits of rooftop solar systems installed through 2016 will exceed costs by \$36 million
- **Mississippi:** PSC study finds solar net metering will provide a net benefit to Mississippi in nearly every scenario analyzed
- Many similar studies from states like **California, Texas, New York, and Vermont**
- **BUT in Louisiana:** Draft study found net cost, when including the cost of state tax credits.

Some states are taking more holistic approach:



- **New York REV docket:** utility as “distributed system platform provider”
- **Massachusetts grid modernization:** advanced meters and dynamic pricing
- **Minnesota e21:** thought experiment in a regulated state



Takeaways:

- Solar cost/benefit and valuation debates have been highly politicized.
- Is current focus on rate design obscuring core social/policy rationale for clean energy transition?
- Fundamental business model reform seems inevitable.
 - Start with clear goals;
 - Learn from NY and other leaders;
 - Focus on data, not unsupported philosophical arguments.