OPENING UP PUBLIC SERVICE COMMISSIONS TO THE PUBLIC:

WHY CLIMATE POLICY REFORM REQUIRES A SEAT AT THE TABLE

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Themes and topics for today

- **Why Madison350.org should demand a seat at the table before the Wisconsin Public Service Commission.**
- Energy Democracy: A framework for expanding participation in the energy decision-making, addressing climate change and environmental justice, and advancing new policy.
- An introduction to the new energy supply & demand paradigm driving the need for new energy policy.
- State Regulatory Policy Ideas: Highlight the state of the art in other states to address a changing energy system.
- *Try to answer your questions.*

Why Madison350.org should have access to PSC?

- **Knowledge Transfer** – Knowledge transfer refers to sharing or disseminating of knowledge and providing inputs to problem solving. (Without a seat at the table you cannot help solve policy problems and offer creative alternate solutions).
- **Disrupt political status quo** – Utilities and other electrical power status quo stakeholders are not driven to reduce carbon dependency. These are the corporations that funded and perpetuated climate denial for decades.
- **Combat privilege** – Fossil fuel companies and electric utilities have been granted a privileged position in policy arena for decades. To achieve environmental justice and reverse historic discrimination new voices must be heard.

Reasons to seek a seat at the table

- “The restrictive and often contentious nature of conventional regulatory processes make them inadequate to manage the scale, speed, and complexity of the historic transformation taking place in the electricity system.”
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- “Traditional approaches used in regulatory processes—mostly quasi-judicial hearings and contested decision-making consisting of back-and-forth filings between utility commissions, utilities, and stakeholders—are not up to the challenge of guiding participants through new, dynamic, and interrelated topic areas.”
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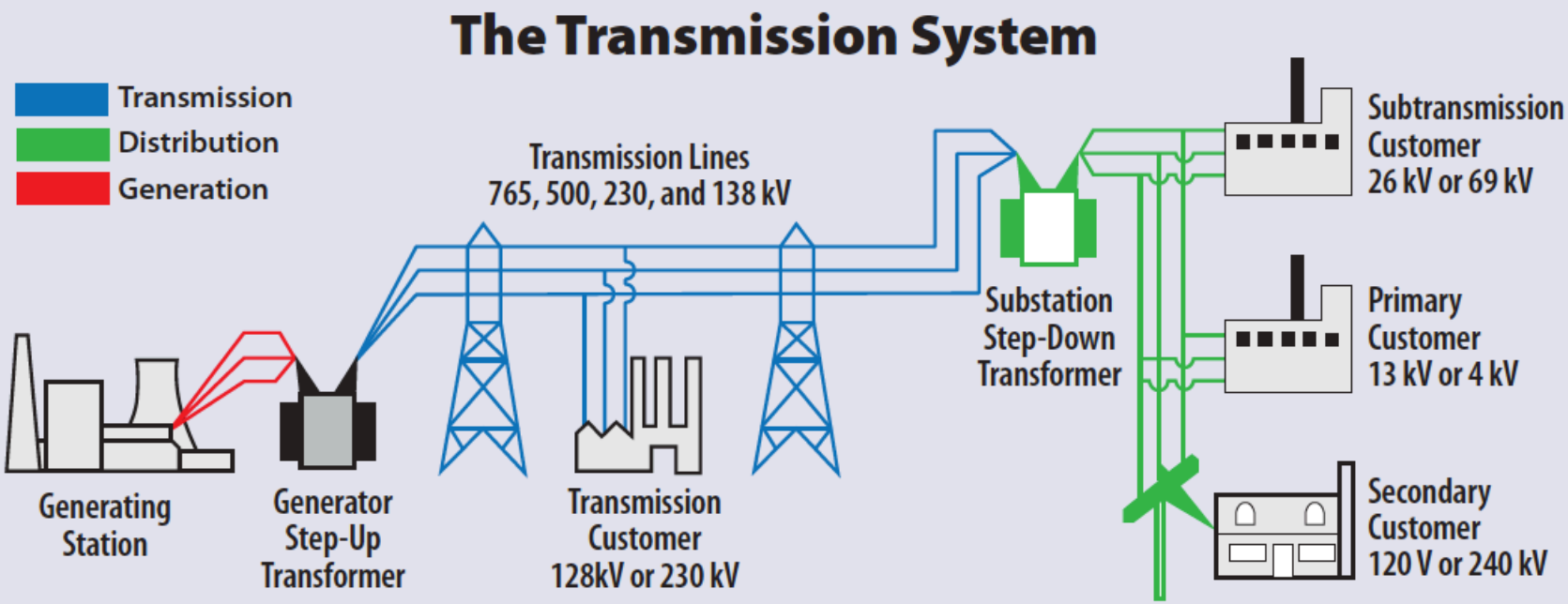
- “New opportunities include different rate design options, more-sophisticated system planning, and alternative procurement mechanisms to more cost-effectively meet grid needs.” (RMI Report)

What is energy democracy?

- Energy democracy is a concept, a social movement and a visionary organizing set of principles.

- Energy democracy is a political, economic, social and cultural concept that merges technology energy transition with a strengthening of democracy and public participation.

Basic Transmission System



Source: US-Canada Power System Outage Task Force final report, April 2004.

Controlling Demand the Best Way to Reduce Carbon Emissions in the U.S.

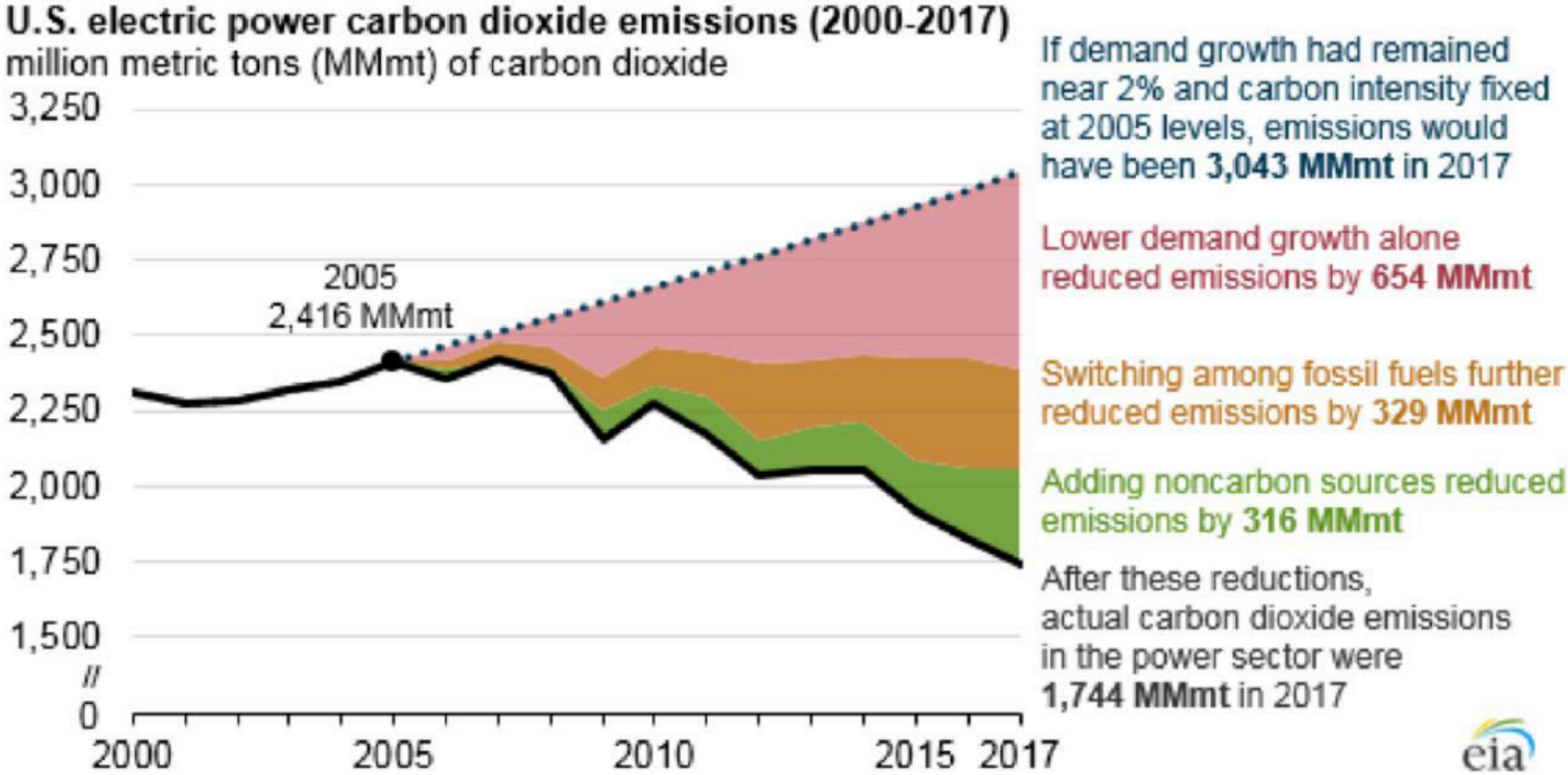
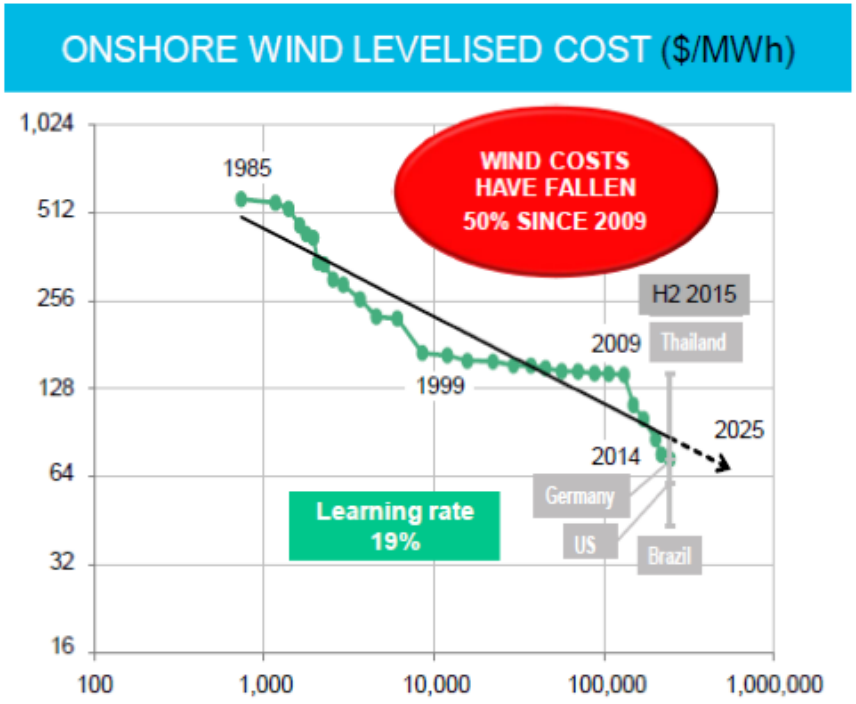
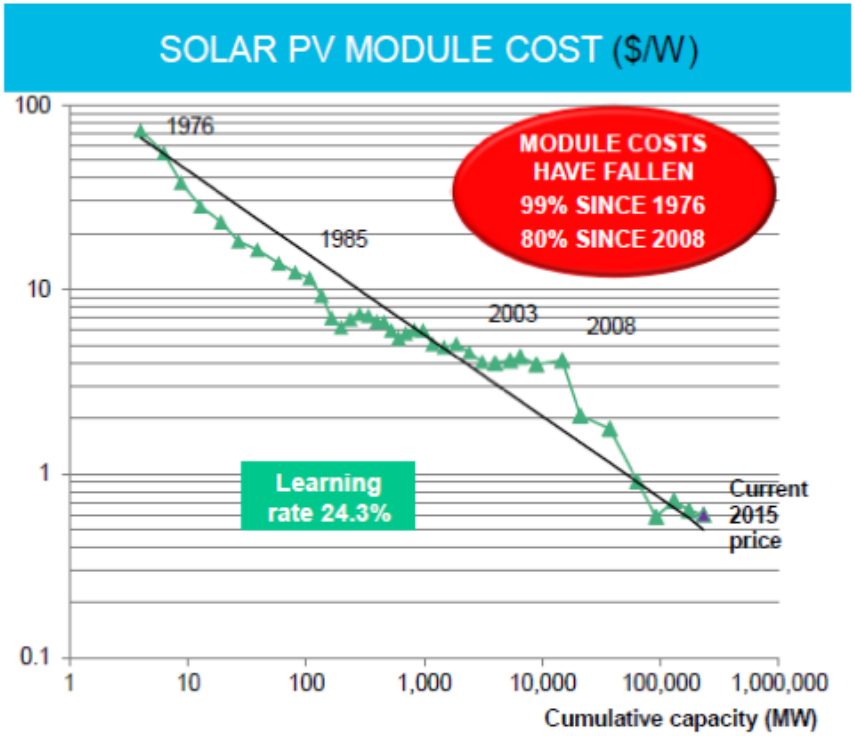


Figure 1. US electric power carbon dioxide emissions (2000–2017). *Source:* EIA 2018.

The First Distributed Energy Evolution Falling Prices & Learning Rates

(Source Bloomberg Energy)

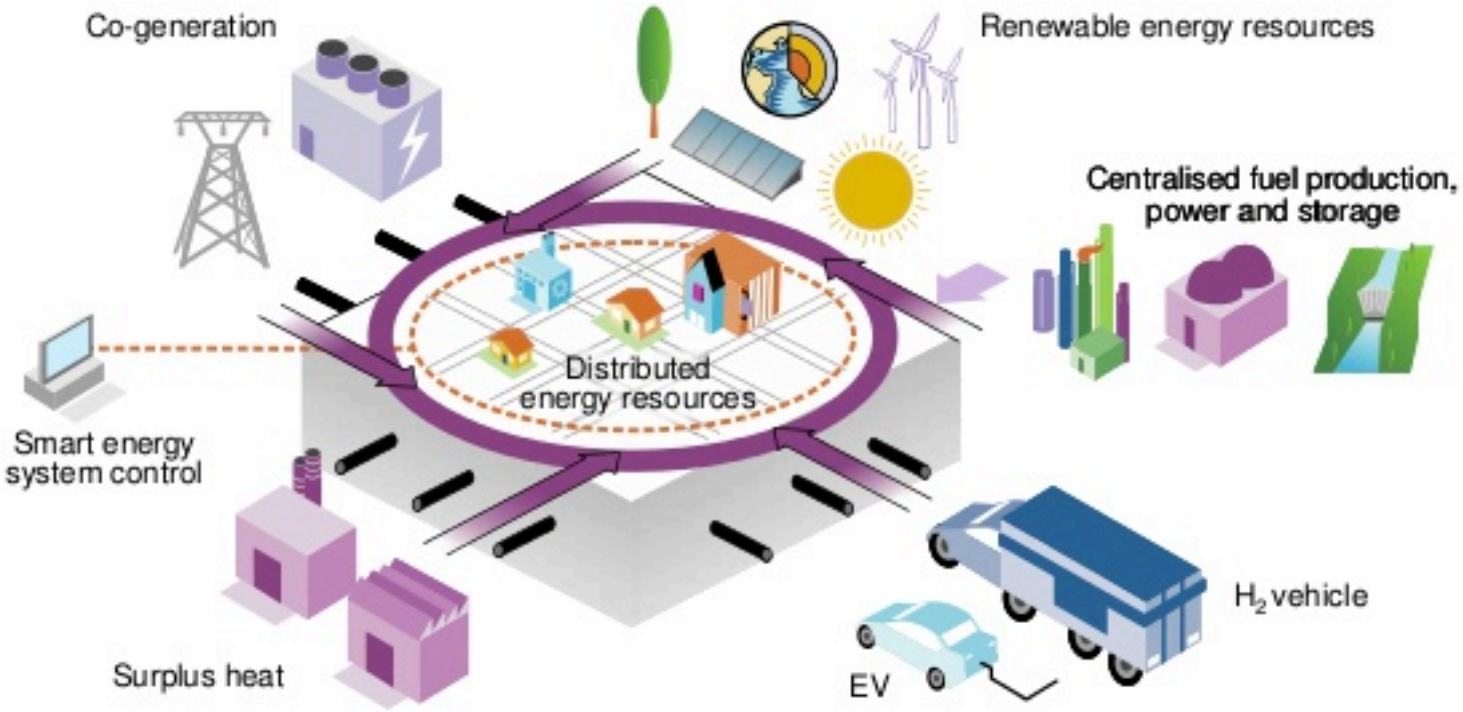




Something to think about: Start with system losses and then redesign the system

- Based on EIA figures for total retail electric sales in the U.S. in 2016 and the average retail price of electricity during the same period, the value per year for total system losses in the U.S. is an astounding $19 billion dollars. This figure is based on EIA's latest calculation of a total average loss factor for the U.S. of 4.7 % in 2015. (Source: *Transmission and Distribution System World Dec. 26, 2017 accessed at energycentral.com 12/27/17)*
- Distribution management and automation technologies, demand management systems and energy storage are just a few of the growing list of smart grid technologies that can help reduce power losses by leveling, reducing or improving the quality, and thereby the efficiency, of power flows. This is existing technology and can be done today!

The second evolution: DERs allow for a paradigm shift



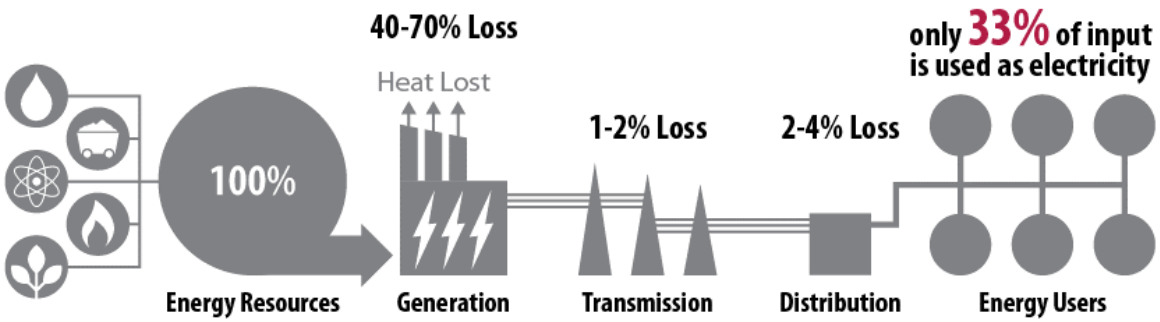
A sustainable energy system is a smarter, more unified and integrated energy system

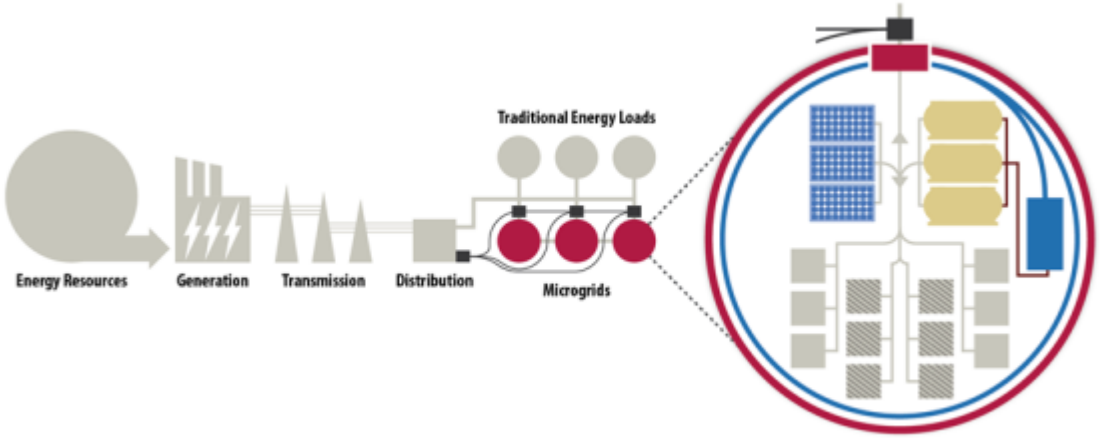
International Energy Agenc

Growing Electricity Customer Options (DERs = New supply & demand paradigm)

- **Buy it**: the legacy grid & utility are no longer the only option
- **Make it**: first challenge to status quo with solar PV, wind and biogas distributed generation options
- **Eliminate it**: energy efficiency or negawatts are raising the bar with innovative solutions and goals to reduce or eliminate waste.
- **Store it**: (energy storage) emerging disruptive to change to address multiple grid services, intermittent renewables,& potentially **dispatch it** yourself
- **Shift it**: demand response or demand flexibility is evolving from a traditional solution to a flexibility tool complemented by other DERs
- **Manage it**: Microgrids, virtual power plants, smart grid, home & business management software, algorithms to help prosumer buy and sell energy when the market is favorable. New business model (**aggregate it**)
- **Sell it or share it**: the advent of transactive energy and blockchain technology advances the concept of a new energy value proposition
- **Reduce it**: No investments in overbuilt generation and fewer system losses.

Microgrids & Advanced Distribution Networks

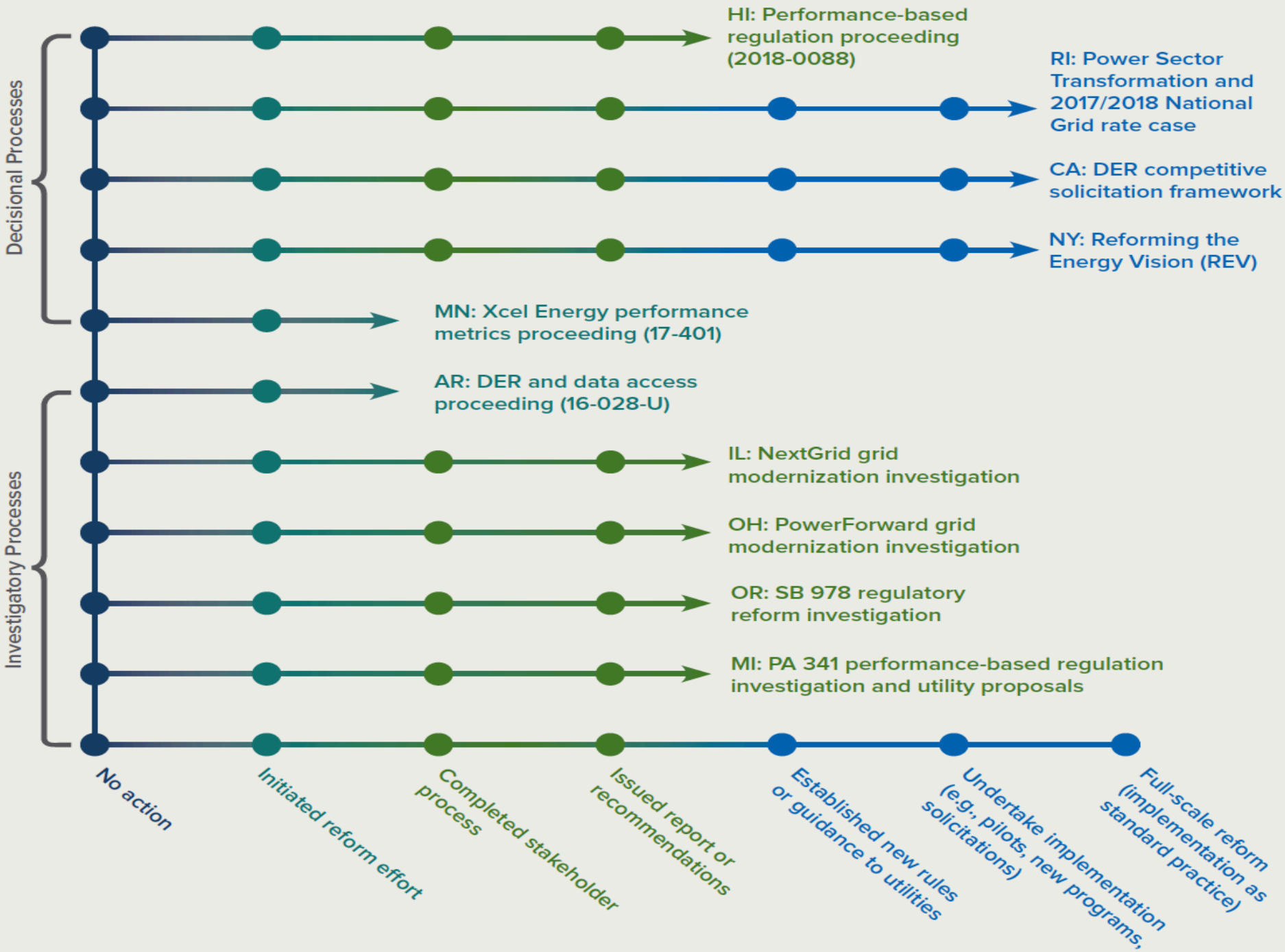




- Enables greater efficiency and resiliency.
- Helps address $100B in business losses due to power disruptions.
- Deployed at hospitals, military bases, factories, more
- Offers new products and supply chains for Wisconsin's electrical equipment manufacturers.

Some key takeaways about microgrids

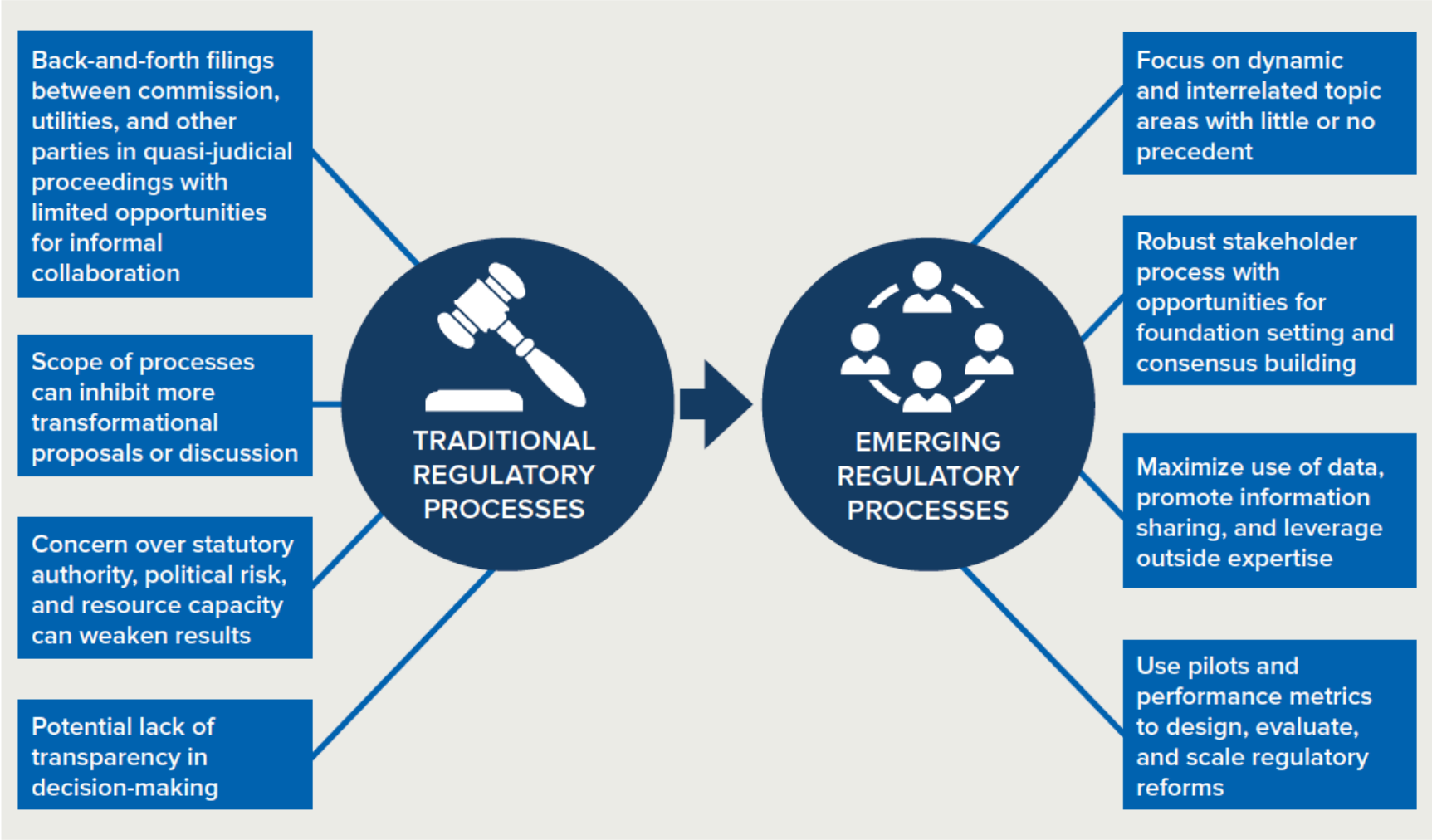
- Microgrids can island – meaning operate independently when the grid goes down (to maintain critical infrastructure).
- Microgrids enable greater system-wide efficiencies because they are located closer to aggregate loads and DERs. (Including opportunities for CHP i.e. heating).
- Microgrids utilization of smart controlers, smart inverters, sophisticated algorithms, sensors and controls, will balance intermittent generation & link with the cloud (IoT).
- Microgrids catalyze the pathway to local energy markets with connections to grid services, new value propositions and transactive energy markets. (DSO & aggregators).


Decisional Processes
Investigatory Processes
HI: Performance-based regulation proceeding (2018-0088)
RI: Power Sector Transformation and 2017/2018 National Grid rate case
CA: DER competitive solicitation framework
NY: Reforming the Energy Vision (REV)
MN: Xcel Energy performance metrics proceeding (17-401)
AR: DER and data access proceeding (16-028-U)
IL: NextGrid grid modernization investigation
OH: PowerForward grid modernization investigation
OR: SB 978 regulatory reform investigation
MI: PA 341 performance-based regulation investigation and utility proposals
No action
Initiated reform effort
Completed stakeholder process
Issued report or recommendations
Established new rules or guidance to utilities
Undertake implementation (e.g., pilots, new programs, solicitations)
Full-scale reform (implementation as standard practice)

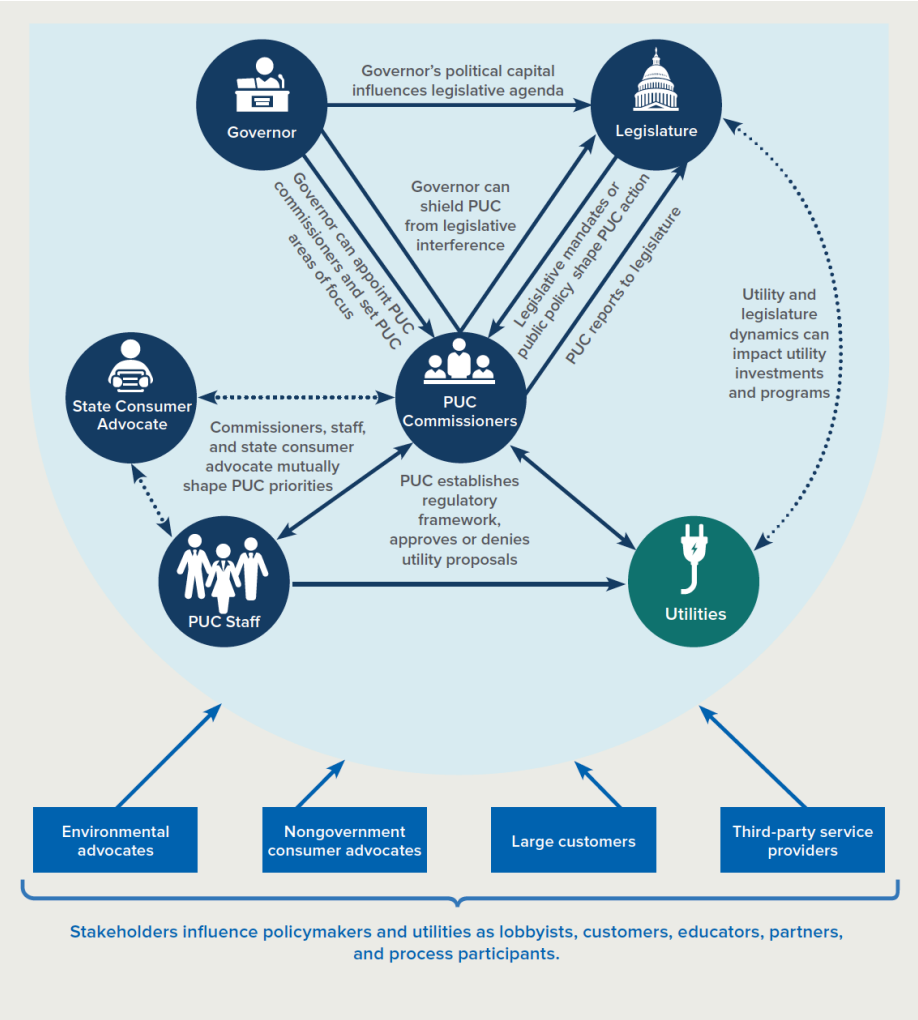
Catalysts for Reform (RMI)

- **1) Grid Modernization or System Planning**: Utilities grid modernization proposals shaped Ohio's PowerForward effort; California's incentive pilot targeted DER procurement to avoid investment in distribution upgrades.
- **2) Public Policy**: Clean energy commitments, greenhouse gas emission targets, and performance incentives in 2016 Future Energy Jobs Act shaped Illinois's NextGrid process.
- **3) Cost Concerns**: high fuel costs in Hawaii have been a major motivator for reform efforts over the years.
- **4) Catastrophic Events**: New York's Reforming the Energy Vision convened in the aftermath of Hurricane Sandy.

Regulatory Process Redesign Process



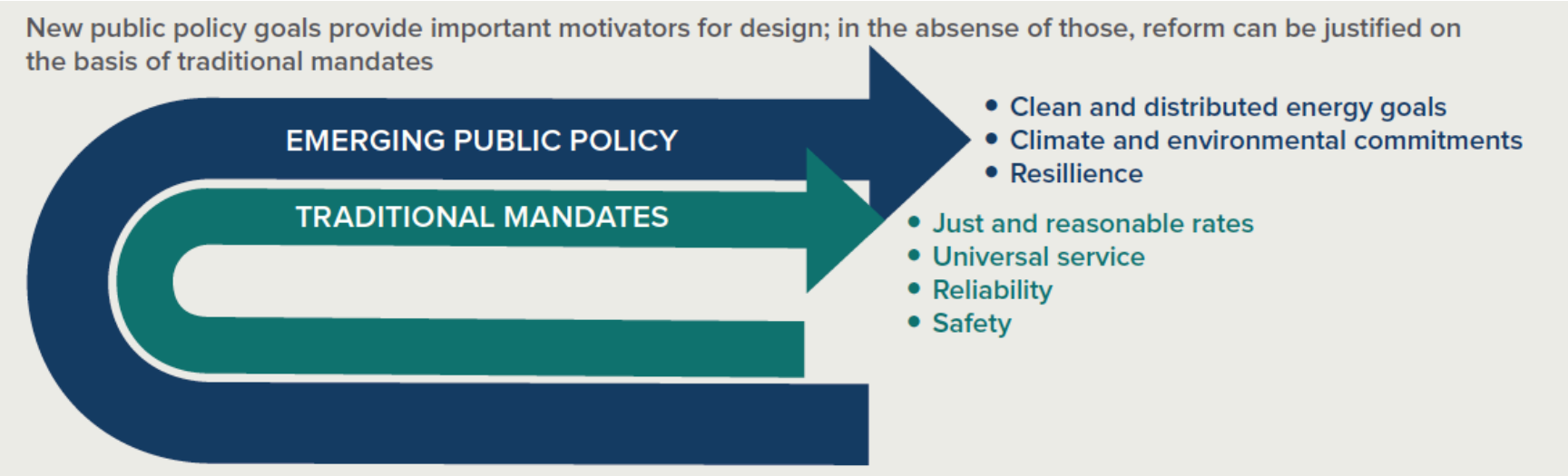
Current Stakeholder Influence Pathways



Common Goals for Reform

- **Enhancing Utility Operations**
- **Improving Customer Experience**
- **Supporting Societal Objectives**

New Policy Goals Require Design Change in Public Utility Commission Inputs (Source RMI)



Enhancing Utility Operations

- **Remedying incentives to overbuild capital under cost-of-service regulation.**
- **Improving system efficiency and reducing system costs.**
- **Improving grid reliability and resiliency.**

Improving Customer Experience

- **Reducing rates and minimizing volatility**
- **Improving customer choice and control over energy consumption**
- **The Prosumer versus the Consumer**

Supporting Societal Objectives

- **Improving information and data utilization and transparency.**
- **Addressing risk allocation across utilities, shareholders and customers.**
- **Integrating renewables and reducing carbon emissions from electricity**

Traditional & New Influencers of Process (Source: RMI)

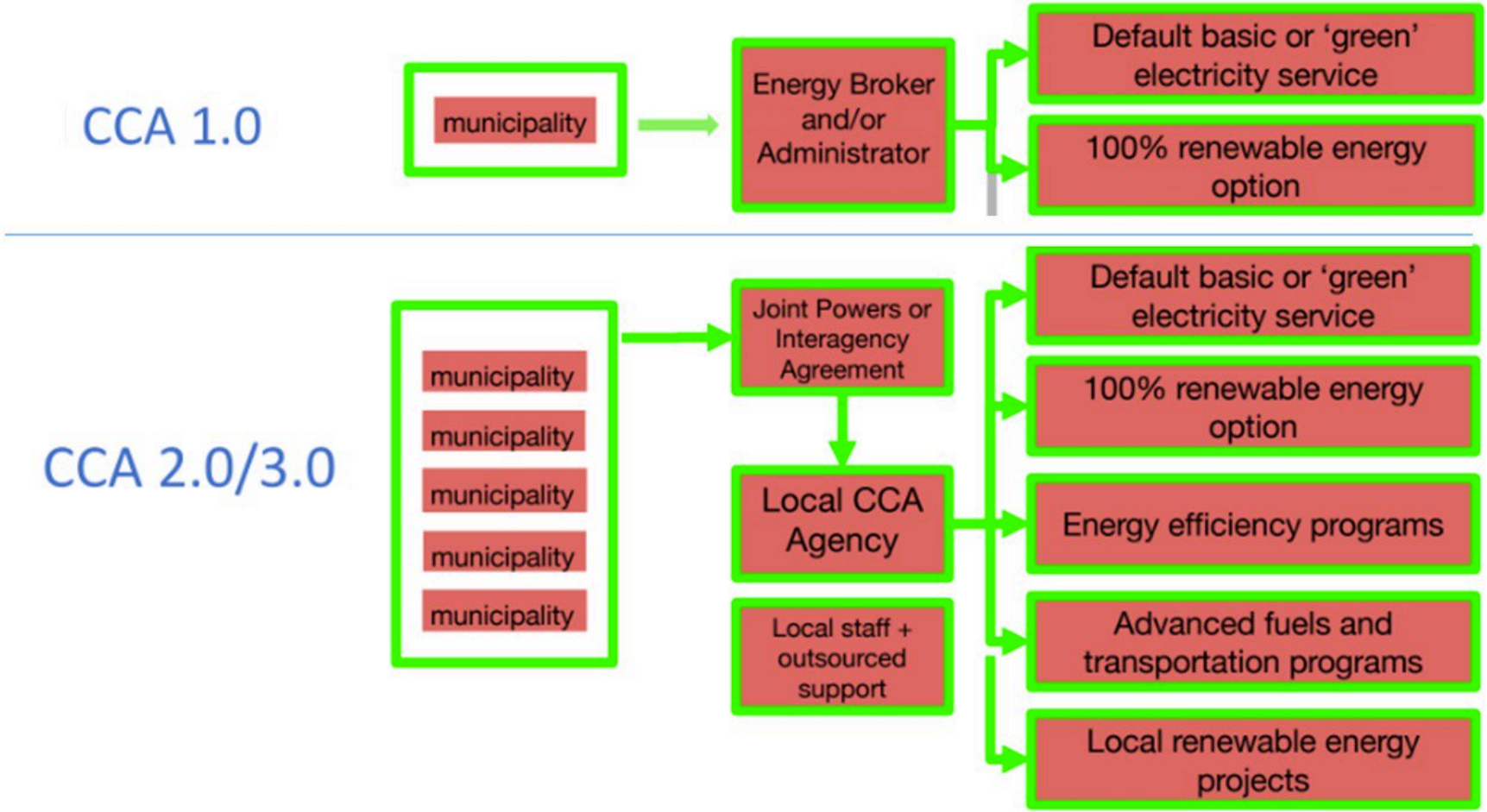
What do you want your role to be in the 21st Century Energy System?

- **Do you want to be a Prosumer or a Consumer in the 21st Century Energy System?**

- **Do you want to be Serf or a Partner in the 21st Century Energy System?**

- (Thank you to Lynn Rundle for the idea)

Community Choice Aggregation



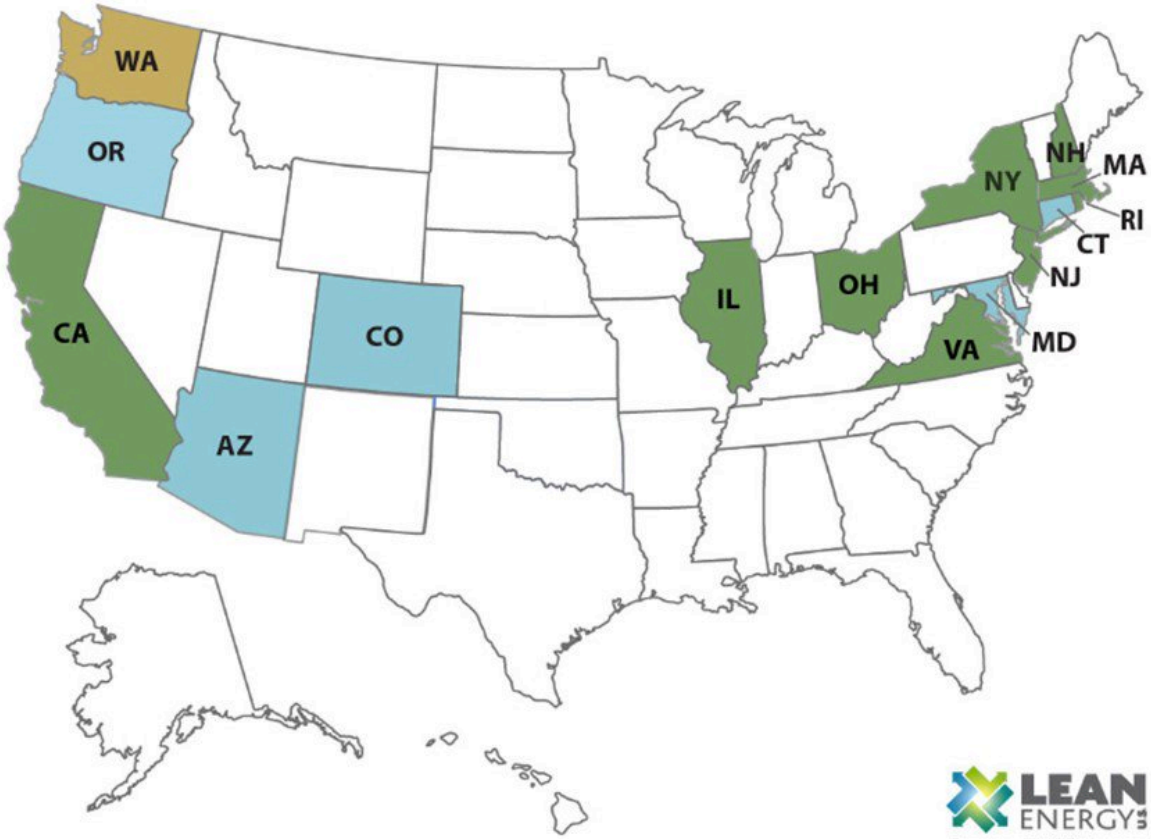
State Community Choice Aggregation

Authorized in 9 States:
- California
- Illinois
- Massachusetts
- New Hampshire*
- New Jersey
- New York
- Ohio
- Rhode Island
- Virginia*

Actively Investigating:
- Arizona
- Colorado
- Connecticut
- Maryland
- Oregon

Watch List/Potential:
- Washington

* Not yet implemented



LEAN ENERGY US

Source: LEAN Energy U.S.
Sept. 2019

Performance Based Rates: Principles

Principles for Performance Incentive Mechanisms

PRINCIPLE 1: A performance incentive mechanism can be considered when the utility lacks an incentive (or has a disincentive) to better align utility performance with the public interest and there is evidence of underperformance or evidence that improved performance will deliver incremental benefits.

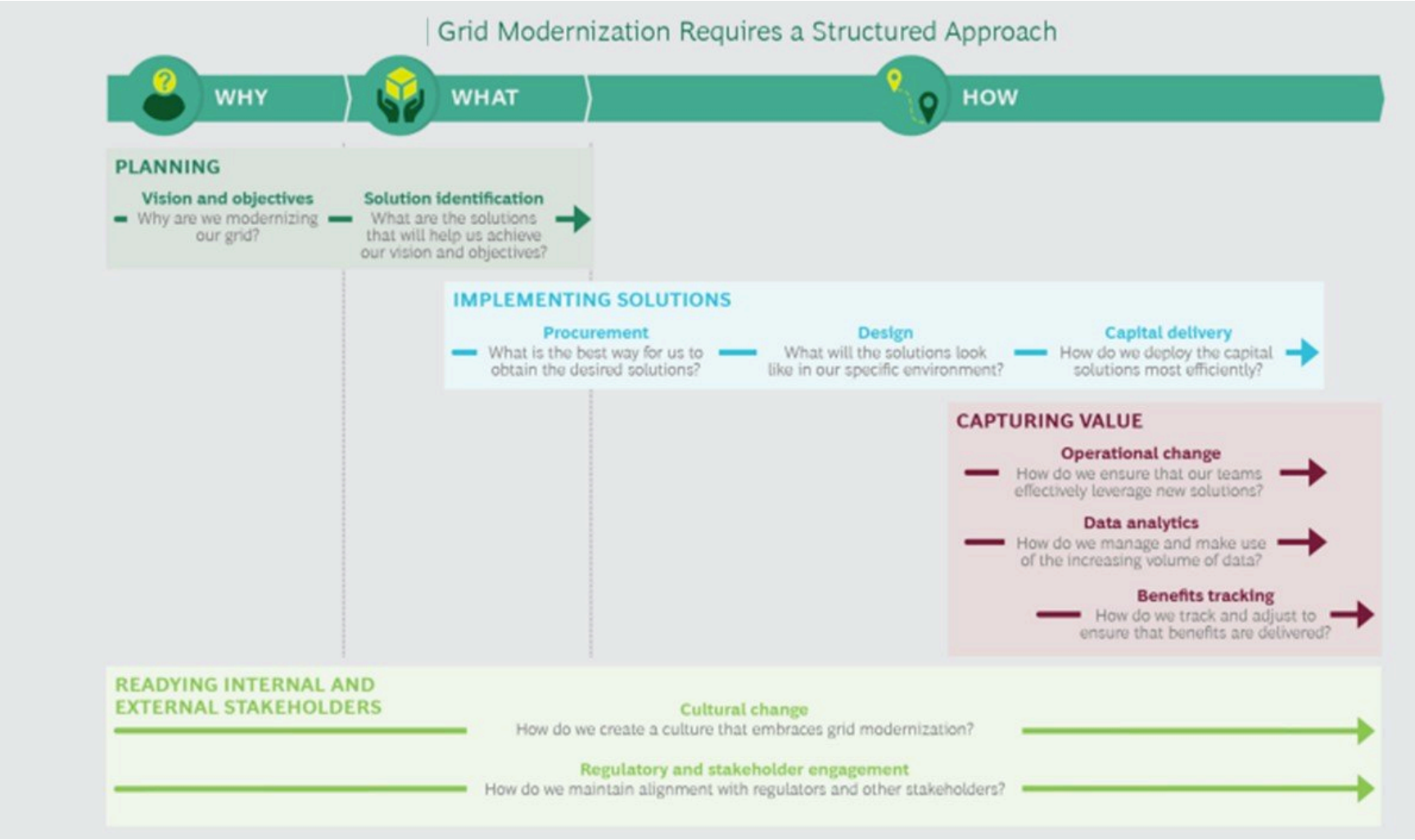
PRINCIPLE 2: Incentives should be designed to enable a comparison of the cost of achieving the target to the potential quantifiable and cash benefits.

PRINCIPLE 3: Incentives should be designed to maximize customers' share of total quantifiable, verifiable net benefits. Consideration will be given to the inherent risks and fairness of allocation of both cash and non-cash system, customer, and societal benefits.

PRINCIPLE 4: An incentive should offer the utility no more than necessary to align utility performance with the public interest.

PRINCIPLE 5: The utility should be offered the same incentive for the same benefit. No action should be rewarded more than an alternative action that produces the same benefit.

Planning for Grid Modernization



Getting Down to Brass Tacks

- (IOU) Utilities *(from their perspective)* only exist for one reason: They make money for their shareholders. They don't care for one second about the environment.

- Utility executives have a paternalist view of the world.
- *"We got this." "We will fix this problem"* – whether it is clean energy or climate change – just stay away.

- **Only you can solve climate change.**
- But, working together you can change the world.
- *(You got to be in the room where it happens).*

CONTACT INFORMATION

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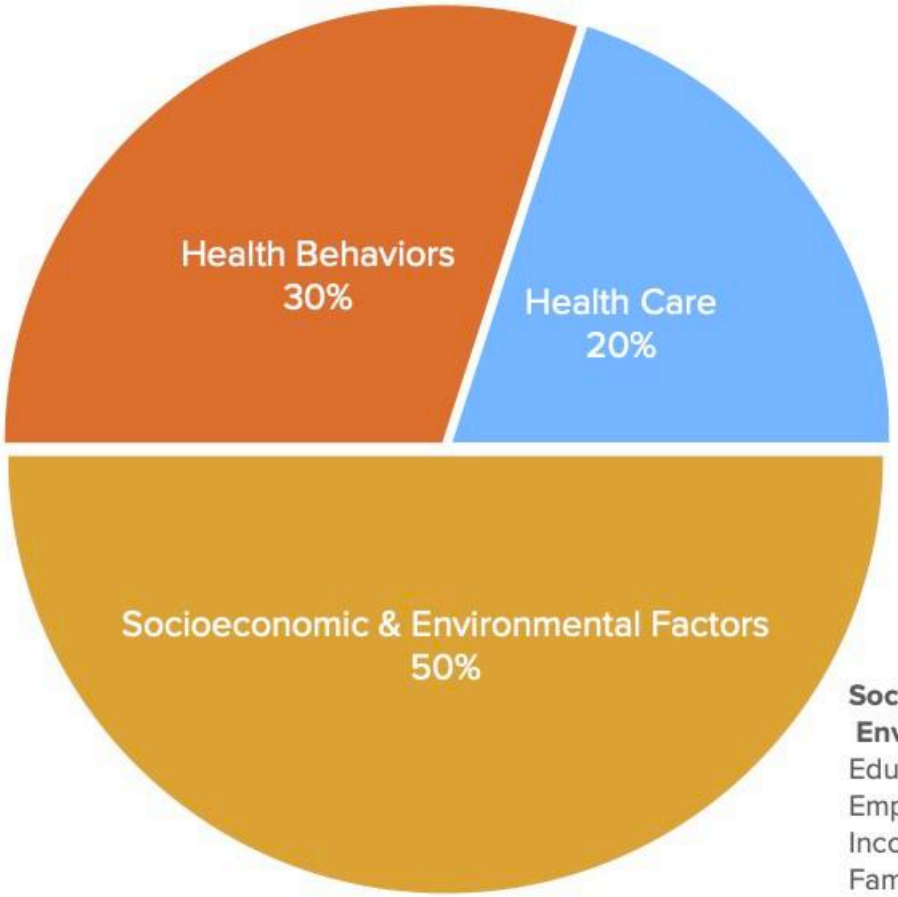
Energy Efficiency Can Help Address Issues Related to Health, Socio-Economic Factors (University of Wisconsin)

Health Behaviors
Tobacco Use
Diet & Exercise
Alcohol & Drug Use
Sexual Health



Health Care
Access to Care
Quality of Care

Socioeconomic & Environmental Factors
Education
Employment
Income
Family & Social Support
Community Safety
Air and Water Quality
Housing & Transit

Hawaii Performance Based Rates Draft of 05/2019 Proposal

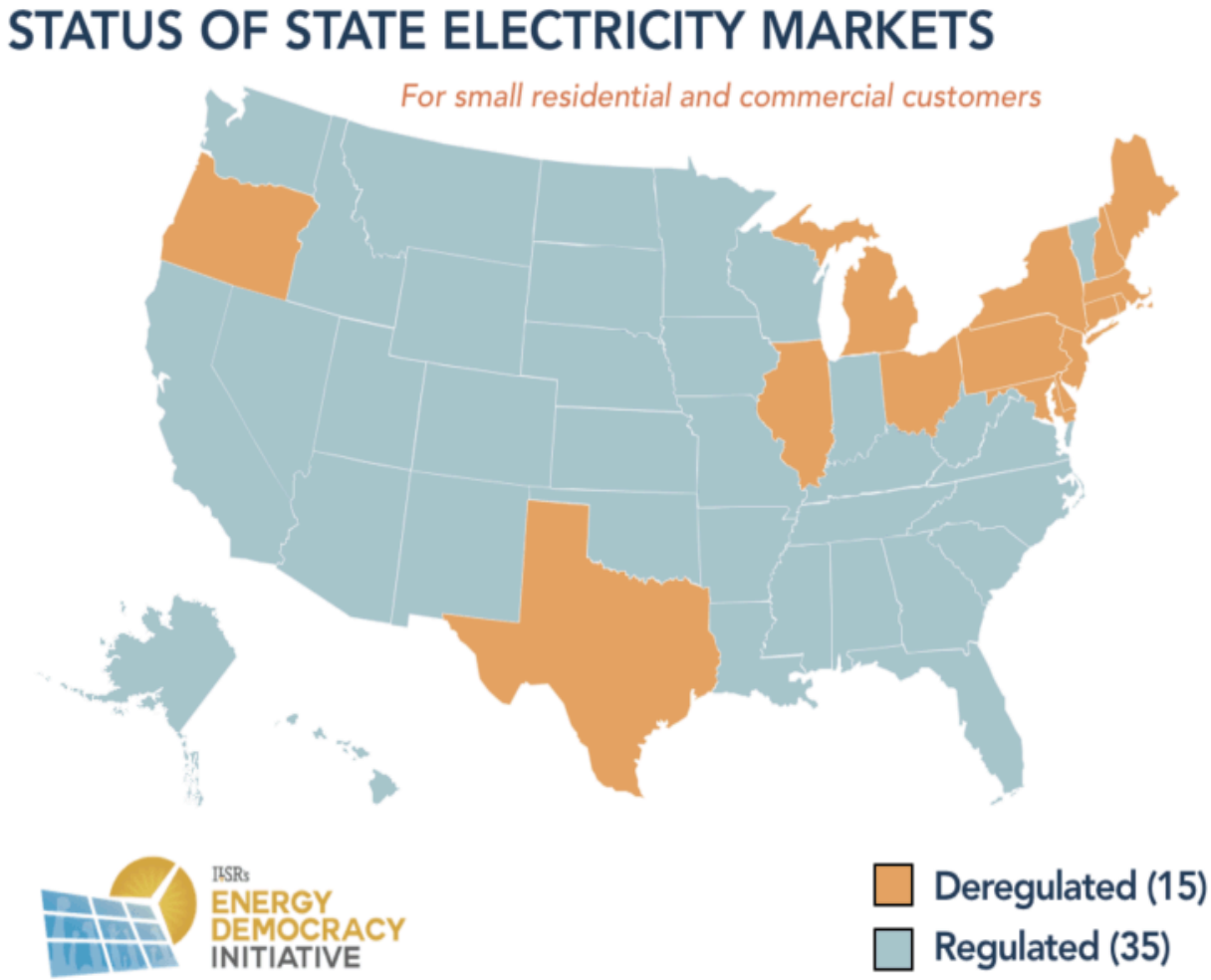
Revenue Adjustment Mechanisms	
Multiyear Rate Plan (MRP) with Indexed Revenue Adjustment	**5-Year Control Period** with **Externally-indexed Revenue Adjustment** allowing interim revenue changes pursuant to an indexed formula: **Annual Revenue Adjustment = (Inflation) - (X-Factor) + (Z-Factor) - Customer Dividend**
Earnings Sharing Mechanism (ESM)	Apply an **ESM** that provides both "upside" and "downside" sharing of earnings between the utility and customers when earnings fall outside a Commission-approved range
Major Project Interim Recovery (MPIR)	Examine the **MPIR adjustment mechanism** to determine how it can continue to provide relief for appropriate major projects during the MRP consistent with other approved PBR objectives and mechanisms
Revenue Decoupling and Existing Cost Trackers	Continue to utilize **revenue decoupling** (i.e., the Revenue Balancing Account) to true up revenues to an annual revenue target, and existing **cost tracking mechanisms** (e.g. PPAC, ECRC, etc.) to track and recover certain approved costs
Off-Ramps	Develop **off-ramp** mechanisms to provide for review of approved PBR mechanisms, pursuant to specified circumstances or conditions
Performance Mechanisms	
Performance Incentive Mechanisms (PIMs)	Implement a set of **PIMs** designed to help drive achievement of the following priority outcomes: *Interconnection Experience*; *Customer Engagement*; and *DER Asset Effectiveness*
Shared Savings Mechanisms	Develop **shared savings mechanisms** to address priority outcomes including *Grid Investment Efficiency* and *Cost Control*, mitigate capex bias, and reward pursuit of cost effective solutions to meet customer needs
Scorecards and Reported Metrics	Publish **Scorecards** with targeted performance levels to track progress against the priority outcomes of *Interconnection Experience, Customer Engagement, Cost Control,* and *GHG Reduction* and utilize **Reported Metrics** to highlight performance on the priority outcomes of *Affordability, Customer Equity, Electrification of Transportation, Capital Formation,* and *Resilience*

Energy Democracy Redux: Steps toward putting the “public” back in public utility

- Restore the working concept of “public utility” that to make an effective and efficient transition to a new energy economy.
- A public utility is an “undertaking” a rethinking of public goals and private industry toward a common sustainable solution. (i.e., We are in this together).
- Utilities can no longer look at the public as a obstacle, but rather as a source of promise.
- Likewise, the public can no longer see utilities as a obstacle to markets and innovation that could secure a low-carbon energy future.
- An “instrument of the commonwealth” must be built into the notion of a public utility. It can remain a business with shareholders and profits, but only after a refocusing on sustainability and the public good.

(see: *Boyd, William. (2014). Public Utility and the Low-Carbon Future. UCLA Law Review. 61 UCLA L.Rev. 1614 (2014).*

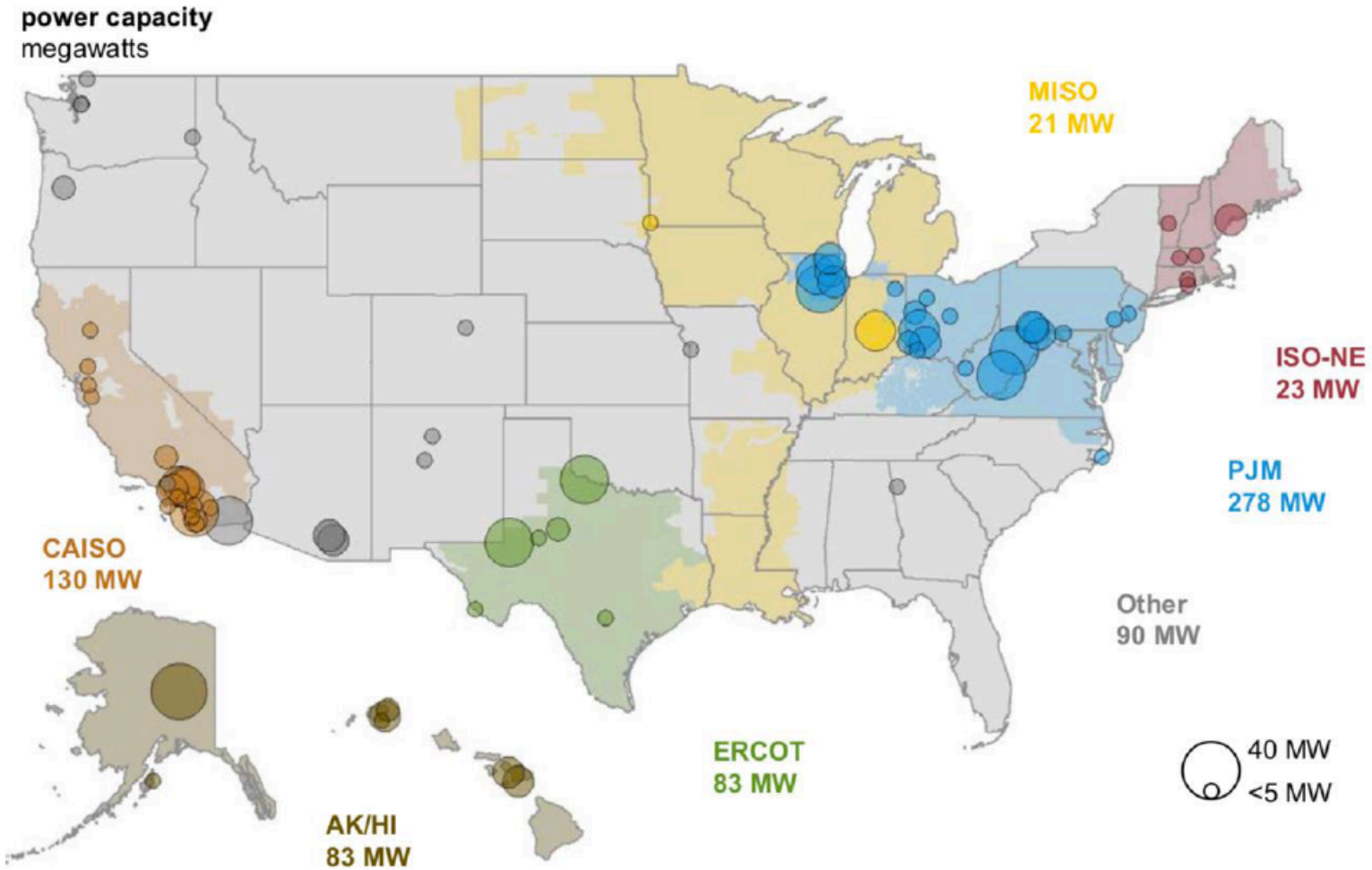
States with deregulated markets



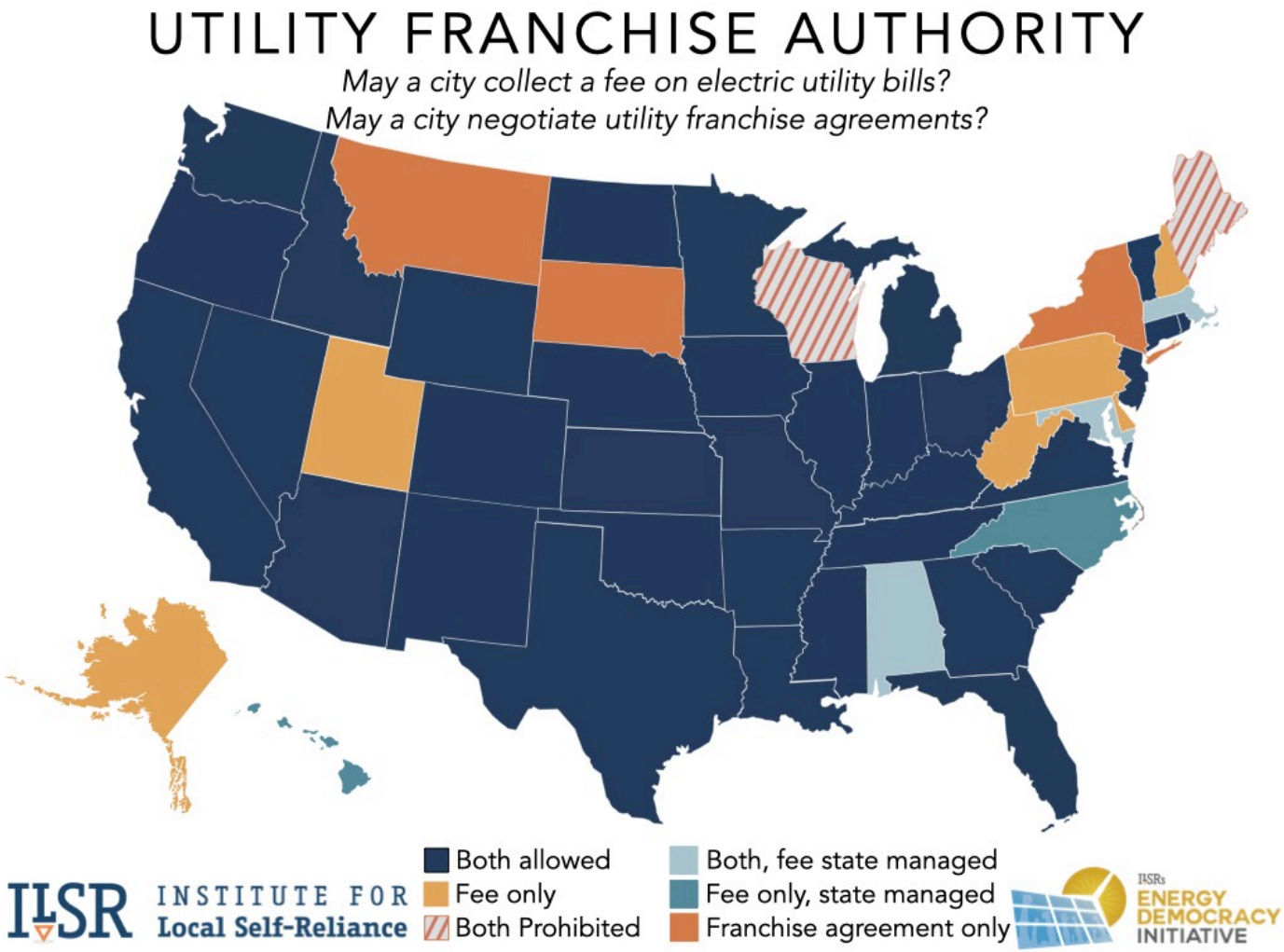
Energy Storage (2017)

(Synapse Energy Economic Colorado Study 2019)

Figure 9. U.S. large scale battery storage installations by region (2017)



Wisconsin is one of only two states that prohibits franchise agreements with utilities or collecting fees on electric bills



State Distribution Planning

(Source: DOE)

	States with advanced practices					Other state approaches										
	California	Hawaii	Massachusetts	Minnesota	New York	D.C.	Florida	Illinois	Indiana	Maryland	Michigan	Ohio	Oregon	Pennsylvania	Rhode Island	Washington
Statutory requirement for long-term distribution plans or grid modernization plans[a]	✓			✓					✓							
Commission requirement for long-term distribution plans or grid modernization plans[a]		✓	✓		✓					✓	✓					
No planning requirements yet, but proceeding underway or planned						✓							✓		✓	✓
Voluntary filing of grid modernization plans								✓				✓		✓		
Non-wires alternatives analysis and procurement requirements	✓				✓										✓	
Hosting capacity analysis requirements	✓	✓		✓	✓											
Locational net benefits analysis required	✓				✓											
Smart grid plans required													✓			
Required reporting on poor-performing circuits and improvement plans							✓	✓				✓		✓	✓	
Storm hardening requirements							✓			✓						
Investigation into DER markets		✓														

(a) For one or more utilities.

Third Distributed Evolution: Value is the key in transactive energy markets

TRANSACTIVE ENERGY SIMPLIFIED

A system of economic and control mechanisms that allows the dynamic balance of supply and demand across the entire electrical infrastructure using value as a key operational parameter.

Source: Burns & McDonnell, 2019

7. Optimized transactions are necessary
8. Maintaining system reliability and control
9. Parties accountable for standards of performance
10. Observable and auditable at interfaces
11. Scalable, adaptable, and extensible
12. Non-discriminatory participation by qualified participants