

# Introduction to (State) Energy Storage Policy



*Prepared for the  
Public Service Commission of Wisconsin*

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# Energy storage policy is the focus of this presentation.

- We will be covering the following topics:
  - Introductions
  - Context for discussion
  - Assessing Wisconsin
  - PSC policymaking—Where does energy storage fit?
  - What have other states already done?
  - What can the Wisconsin PSC do?
  - Q&A session

# Introductions

- 25 years in the E&U sector—utility, consultant, and now policy analyst at Sandia.
- Career focus on policy issues from the late 1990s to today (restructuring, AMI, renewables, DERs and now energy storage).
- Worked as a consultant for over a decade during the Obama years.
- Full disclosure: Have worked as a consultant for Alliant Energy, Madison Gas & Electric, Dairyland Power Cooperative and WPPI.
- From Iowa originally; based right here in Wisconsin!



# Policy Context

# Technology and policy trends also provide context.

- “Clean technologies” have continued to improve in performance and decrease in cost.
- U.S. renewables policy dates back to the early 1980s.
- Energy storage policy started to gain momentum in the mid 2010s.
- Sometimes the arc of Wisconsin’s policy has mirrored or tracked with federal policy; sometimes not.
- The same is true for Wisconsin’s policy compared against its neighboring states. (*Politics can play a significant role*).

# Renewables and ES policy are closely related.

## Renewables Policy



1980s  
through  
today

**Federal:** 2007 Energy Independence and Security Act, 2009 American Recovery and Reinvestment Act, federal ITC for solar.

**States:** RPSs, net metering programs, subsidies for distributed energy resources, including solar, renewables required in utility long-term resource planning.

## Energy Storage Policy



Late  
2010s  
through  
today

**Federal:** FERC Orders 745, 841, 2222, federal ITC for solar + storage

**States:** Procurement mandates, interconnection standards, financial subsidies, ownership issues, distribution planning requirements, etc.

# States approach ES policymaking differently.

## STATES

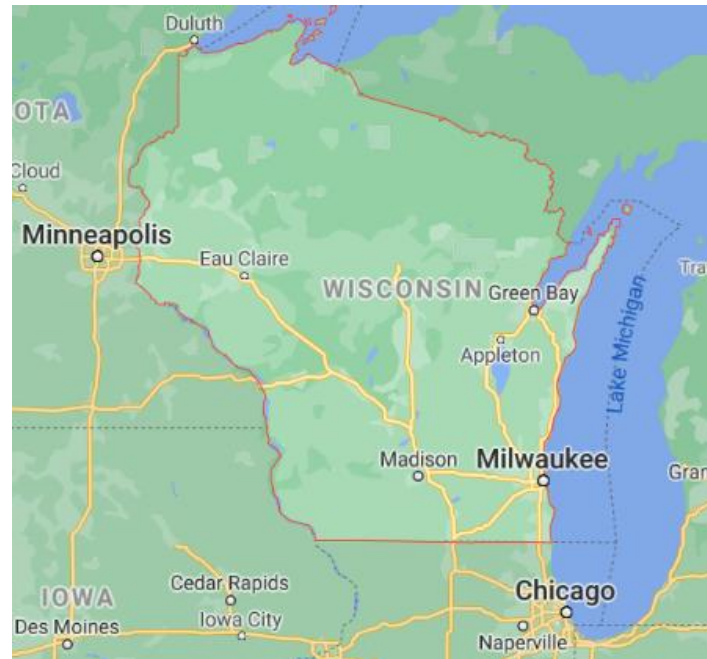
PUCs, state legislatures,  
executive directives from governors  
*(typically, EOs are  
not legally binding)*

*Generally, electric co-ops are  
regulated by independent  
boards, but can specifically  
included in legislative  
policymaking (e.g., RPS).*

- IOUs and Munis
- Retail markets
- Operations of distribution networks
- Utility rates
- Other enabling policies



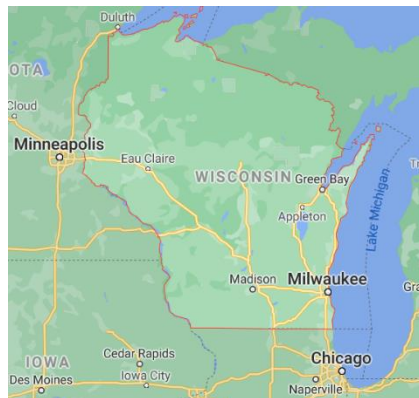
# Assessing Wisconsin



# Resources & Policies

## Resource Mix

- Like many states, Wisconsin historically relied upon fossil fuels.
- Wisconsin has no natural gas reserves or coal mines; all imported from other states, although decreasing rapidly (in 2019, coal fueled accounted for 42% of the state's generation mix, first time under 50% in three decades).
- Of the approximately 3,900 dams in Wisconsin, only about 150 are used to generate hydroelectric power.



## Policies

- RPS established since 1999, goals met.
- State-run grant & subsidy programs for renewables
- Net metering
- Governor directives

*5,000 MW of solar; 1,000 MW of wind, and 170 MW of battery storage “being evaluated.”*

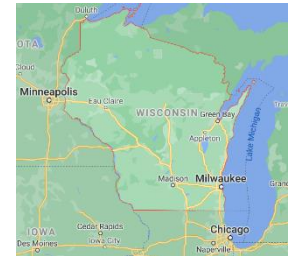
# Where is Wisconsin today?

- All Wisconsin electric providers are required to provide their retail electricity customers with a certain percentage of electricity from renewable resources.
- But what is the driver now that the RPS has been met?
- 2019: Governor Evers' executive order established a state Office of Sustainability and Clean Energy and set a goal that all electricity consumed in the state be 100% carbon-free by 2050.
- . Current resource mix for renewables
  - Hydro: About  $\frac{1}{4}$  of the renewables
  - Wind energy about 3 %
  - Solar mostly coming from customer-sited, small-scale (less than 1 megawatt installations).



# Assessing Wisconsin

STATE	RPS	YEAR	ORIGIN
IOWA	105 MW	Met	Legislation
ILLINOIS	25%	2025-2026	Regulatory
MICHIGAN	35% (stretch goal)	2021	Regulatory
MINNESOTA	26.5%	2025	Legislation
WISCONSIN	10%	2015 (met in 2013)	Legislation



- The Environmental Law and Policy Center (ELPC) has called upon the state of Wisconsin to increase its RPS to 25% by 2025.
- And again Gov. Evers’ goal now calls for all electricity in Wisconsin to be 100% carbon-free by 2050.

# Assessing Wisconsin

Comparing Wisconsin renewable policy to Minnesota renewable policy.



## *Findings from the Environmental Law and Policy Center*



- Transitioning quickly from a fossil fuel-based environment to a clean energy environment.
- Suite of new clean energy policies
- Value of solar replaced net metering
- Updated interconnection standards
- Robust community solar programs
- Ranked 13<sup>th</sup> best among states for solar generation (WI is 41<sup>st</sup>); MN 8<sup>th</sup> best for wind, WI is 25

- No clearly established clean energy policy.
- Outdated interconnection policies
- Outdated RPS goals
- No statewide solar community solar legislation or regulatory policy
- Main source of carbon dioxide emissions is still from power production
- Outdated and widely varying net metering policies

# Wisconsin utilities are acting on their own.



- Increasing its use of renewable resources by adding nearly 1,100 MW of solar end of 2023.
- Retiring coal-fired facilities.
- Community Solar programs.



*Don't forget Xcel Energy!*



- Goal to supply 30% of retail energy sales with renewables by 2030.
- Working toward greater use of renewable resources and targeting net-zero carbon electricity by 2050.



- Goal to reduce carbon dioxide emissions by 55% by 2025 and be carbon neutral by 2050.
- Solar Now program, through which We Energies partners with entities to host solar panels.
- Combined, We Energies and WPS have retired more than 1,800 MW of coal-fueled generation since 2018.

# Wisconsin PSC's regulatory role provides opportunities for ES policymaking.

- Regulates 12 IOUs, 81 municipal utilities.
- Many of these utilities are pursuing their own renewables initiatives. Some face federal mandates.
- No clear policy on energy storage technologies or how they will be used to achieve the Governor's carbon-free goal.



# Assessing Wisconsin



*“One problem from a policy standpoint is that Wisconsin doesn’t have a modern clean energy goal to meet... It’s important that Wisconsin catch up and move forward.”*

Howard Learner,  
Executive Director for the  
Environmental Law & Policy Center



# What can the WI PSC do?

- The ELPC offers generic guidelines for states that want to create a marketplace for DERs, renewables, etc.

## POLICIES IN STATE SCORES THAT MATTER FOR LOCAL ENERGY

Has customer-friendly **net energy metering** policies.

Ensures **simplified interconnection rules** to encourage distributed renewables.

Requires utility renewable energy procurement to **include distributed resources**.

Allows **shared (community) renewable energy**.

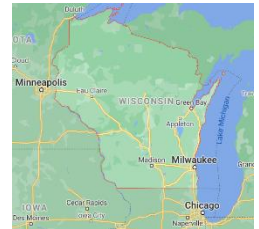
Allows communities to **pick their own energy suppliers**.

Offers **property assessed clean energy (PACE) financing** for:

- + Residential buildings.
- + Commercial buildings.

Allows communities to **go further than state building energy efficiency codes**.

Has a **standard contract for distributed renewable resources**.



*Wisconsin is ranked 6th in the Midwest for solar and wind jobs*

- The ELPC has registered complaints that the interconnection policies in Wisconsin need updating (e.g., PSCW's rules should prohibit utilities from denying grid interconnection based on a customer's choice of financing for their onsite generation).

# Where Does Energy Storage Policy “Fit In”?

# Development of energy storage policy varies greatly state to state.

## *Where is Wisconsin?*

INVESTIGATING	CLARIFYING	ENERGIZING	PLANNING
States that have demonstrated an interest in storage through general investigations, workshops, or briefings.	States that are clarifying existing rules, through revising interconnection, net metering, fire and building codes, and other state standards as applicable.	States that are encouraging energy storage through procurement targets, pilot / demonstration project funding, or other mandates or incentives	States are that are addressing energy storage through broader long-term resource planning, resource valuation efforts, grid modernization or distribution system planning.

# Key Energy Storage Policy Issues—States

Each of the 50 U.S. states (plus territories) will need to develop policy on many energy storage issues:

1. Procurement mandates
2. Utility ownership
3. Changes to RPS mandates
4. Benefit/cost analysis
5. Distribution system modeling
6. Updates to interconnection standards
7. Multiple use applications
8. Incentives / tax credits
9. Including in utility IRPs
10. Changes to net metering programs

# Policy Issue #1—*Procurement Mandates*

**The Issue:** About six different states have established procurement mandates for ES that require utilities to acquire a specified quantity of energy storage and are intended to provide more opportunities for energy storage.

**Questions:** Should Wisconsin establish a procurement mandate or let the market for ES develop in other ways?

**State Examples:** CA, MA, NJ, NY OR, and VA

# Policy Issue #2—*Utility Ownership*

**The Issue:** Given that storage is typically classified as generation, should utilities be allowed to own storage assets in deregulated markets?

**Questions:** Are there restrictions built into Wisconsin policy that would preclude specific entities from owning energy storage assets? Which ownership model will work best in Wisconsin?

**State Examples:** Maryland, Oregon, Texas

*Even as a vertically integrated state, Wisconsin may want to examine various ownership models that range from 100 percent utility ownership to third party ownership to virtual power plants.*

# Policy Issue #3—*Changes To RPS Mandates*

**The Issue:** Should an RPS require energy storage, or should objectives for ES be addressed separately?

**Questions:** Wisconsin's RPS goals were achieved in 2013. The future of the program seems unclear presently. Should Wisconsin update its RPS and make specific requirements for energy storage? Will an RPS still be necessary as the state works toward a 100 percent clean energy or carbon-free future?

**State Examples:** CA, HI, NJ, NY, OR, VT

## Policy Issue #4—*Benefit/Cost Analysis*

**The Issue:** Current market structures and policies lack clear mechanisms to identify and capture the full value of ES.

**Questions:** Should Wisconsin require the preparation of a benefit-cost analysis that is specific to the state? Should the PRC require regulated utilities to conduct such an analysis when providing either pilot programs, IRP plans, cost recovery applications, etc.

**State Examples:** Minnesota, New Jersey, North Carolina, Texas, California.



# Policy Issue #5—*Dist. System Modeling*

**The Policy Issue:** States are including energy storage (and DERs) into distribution planning in a variety of ways.

**Questions:** Should the Wisconsin PRC require regulated utilities to conduct detailed modeling analysis regarding the value of energy storage applications deployed at specific locations across the distribution grid.

**State Examples:** California and New York

# Policy Issue #6—*Updates to Interconnection Standards*

**The Issue:** Interconnection standards that preceded renewables and ES technologies are likely in need of revision.

**Questions:** Wisconsin has existing interconnection standards, but the ELPC has said that they need to be updated to specifically address DERs and ES applications.

**State Examples:** Arizona and Minnesota

## Policy Issue #7—*Multiple Use Applications*

**The Issue:** The unique characteristics of ES (both load and supply) create flexibility to provide multiple uses or applications, sometimes simultaneously, and therefore layer on more than one revenue stream.

**Question:** Does Wisconsin have or should it create policies for energy storage MUAs that will be consistent with MISO policies.

**State Examples:** California, Oregon

# Policy Issue #8—*Incentives / Tax Credits*

**The Issue:** Incentives can serve as a bridge to jumpstart a market while regulatory policies are finalized.

**Questions:** Wisconsin already provides incentives for customer-sited projects. Does more need to be done to incentivize BTM energy storage projects specifically? Would a stand-alone tax credit for energy storage at the state level be appropriate?

**State Examples:** Maryland

# Policy Issue #9—*Inclusion in Utility IRPs*

**The Issue:** Because traditional IRP models do not consider many of the services that energy storage can provide, the technology does not fit neatly into IRP planning processes.

**Questions:** Should Wisconsin require consideration of energy storage technologies in the integrated resource plans submitted by regulated utilities?

**State Examples:** New Mexico, Colorado

# Policy Issue #10—*Changes To Net Metering*

**The Issue:** Pairing solar-plus-storage with NEM has received minimal policy attention to-date due to low level deployments. However, the issue is emerging as pairing energy storage with solar energy systems becomes more economical. Many net metering programs are being discontinued.

**Questions:** Wisconsin has a net metering program in place. Should it be revised? Should it be replaced with something along the lines of a tariff offering specific to energy storage?

**State Examples:** Hawaii, California, Colorado

# Policy Issue #5—*Procurement Mandates*

Procurement mandates are still rather uncommon. Only six states have mandates, with others are looking at the issue.

	CA	MA	NJ	NY	OR	VA
	1,825 MW by 2020	200 MW by 2020	2,000 MW by 2030	3,000 MW by 2030; interim goal of 1,500 MW by 2025	5 MWh by 2020	3,100 MW by 2035
<b>Originating Source</b>	<b>LEGISLATIVE &amp; REGULATORY</b>	<b>LEGISLATIVE</b>	<b>LEGISLATIVE</b>	<b>LEGISLATIVE</b>	<b>LEGISLATIVE</b>	<b>LEGISLATIVE</b>

# Policy Issue #9—*Changes To RPS Mandates*

Six states have each adopted an RPS of 50% or more; four of these states also have separate procurement targets for storage.

	CA	HI	NJ	NY	OR	VT
RPS Mandate	60% by 2030	100% by 2045	50% by 2030	70% by 2030	50% by 2040	75% by 2032
Storage Mandate	1,825 MW by 2020		2,000 MW by 2030	3,000 MW by 2030	5 MW by 2020	



# State Activities—The Current Status

- Approximately 15 U.S. states have developed substantive energy storage policy as 1Q 2021.
- At this time, these states represent “best practices” for state-level energy storage policies.

PM	I/TC	IRPs	NEM	RPS	C/B A	DSM	IC
CA MA NJ NY OR VA	MD	CO IN NJ NM	CA CO HI	CA HI NJ NY OR VT	MN	CA NY	AZ

The energy storage policy landscape  
continues to evolve.

Sandia National Labs monitors and analyzes activity at  
the federal and state levels and publishes information  
in the Global Energy Storage Database, available at this  
link:

[https://www.sandia.gov/ess-ssl/global-energy-storage-  
database/](https://www.sandia.gov/ess-ssl/global-energy-storage-database/)

# Q&A Session

Thank you!

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