

HOW CHANGE HAPPENS: RENEWABLE ENERGY

TYLER HUEBNER, RENEW WISCONSIN

WI ACADEMY'S CLIMATE FORWARD CONFERENCE• NOVEMBER 8, 2019

RENEW WISCONSIN

ABOUT
RENEW WISCONSIN:

FOUNDED 1991

SUPPORT FOR:
- SOLAR
- WIND
- BIOMASS & BIOGAS
- GEOTHERMAL
- HYDROPOWER
- *NEW*: ELECTRIC VEHICLES

RENEW WISCONSIN

HOW CHANGE HAS HAPPENED IN RENEWABLE ENERGY

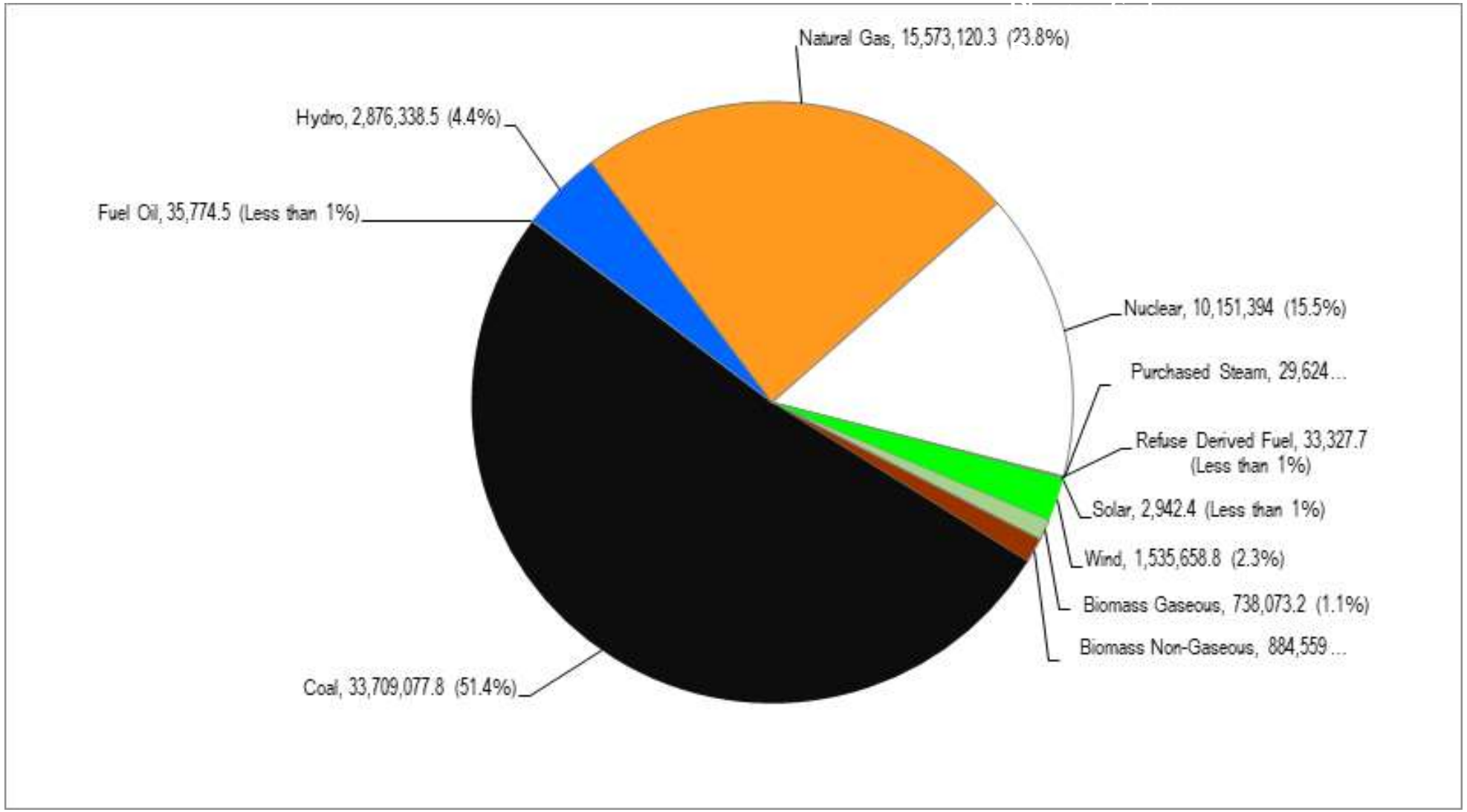
1) POLICIES BROKE THE ICE

2) PUBLIC, POLICYMAKER, AND BUSINESS SUPPORT LED TO GROWTH

3) ECONOMICS & SCALE ARE TAKING OVER

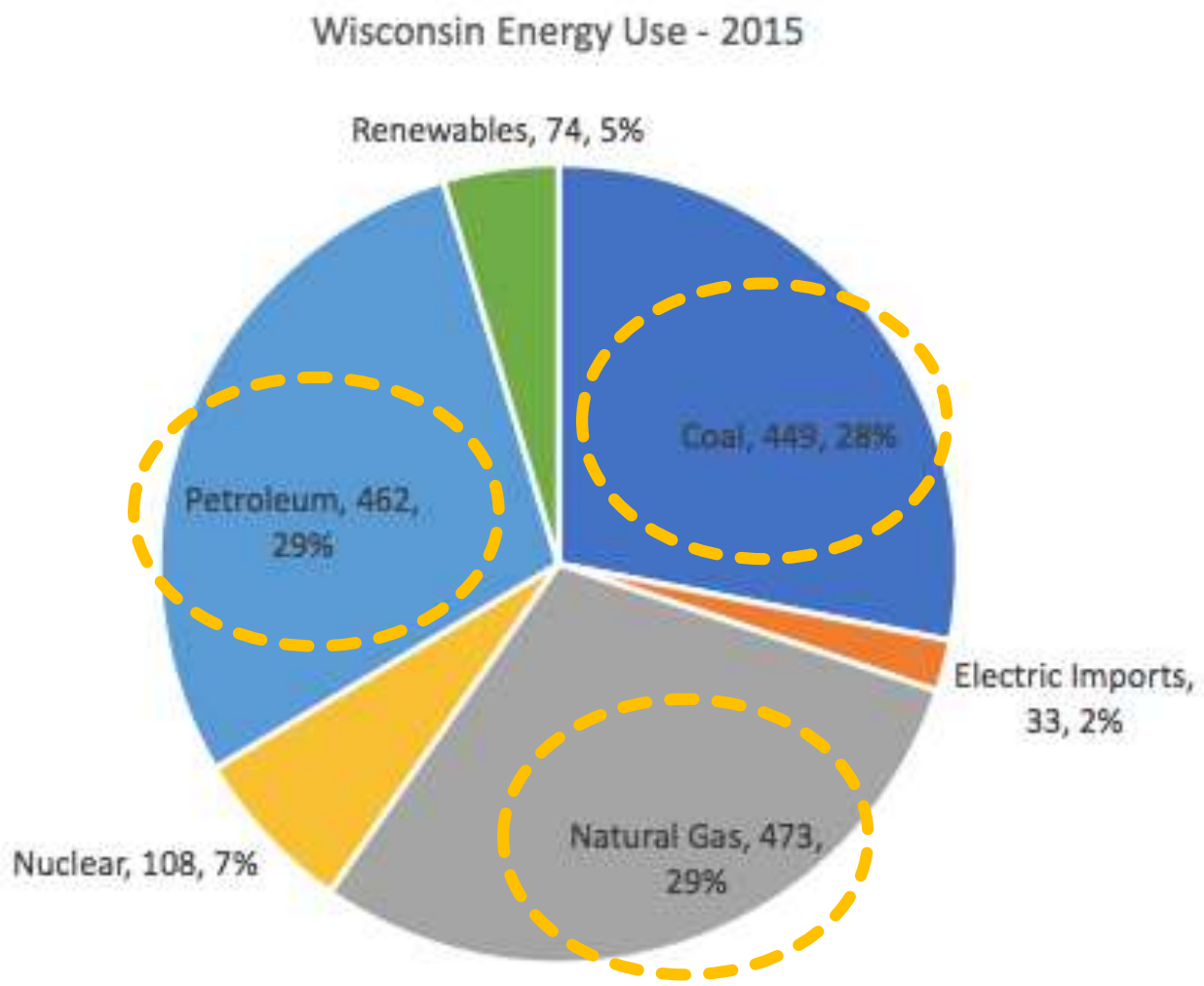
RENEW WISCONSIN

Level-Setting - WI 2017 Electric Generation Mix



Source: Public Service Commission Strategic Energy Assessment

ECONOMIC IMPLICATIONS OF WISCONSIN ENERGY USE



Costs to Import Resources (2015)

Coal:	$1.1 billion	
Natural Gas:	$4.1 billion	
Petroleum:	$8.2 billion	(down from $11+ billion 2011-2014)

Wisconsin Energy Statistics Book – Total Energy Use by Source, in Trillions of BTUs

1. Policies Break the Ice

POLICIES BREAK THE ICE

Examples of some key policies:

1992: Wisconsin Energy Priorities Law

1992: Advanced Plan 6 Decisions: 10 MW wind pilot; 20 kilowatt net metering for small distributed generators

1992: First federal tax credits for wind energy

1999: Wisconsin's first Renewable Portfolio Standard: 2.2% renewables goal

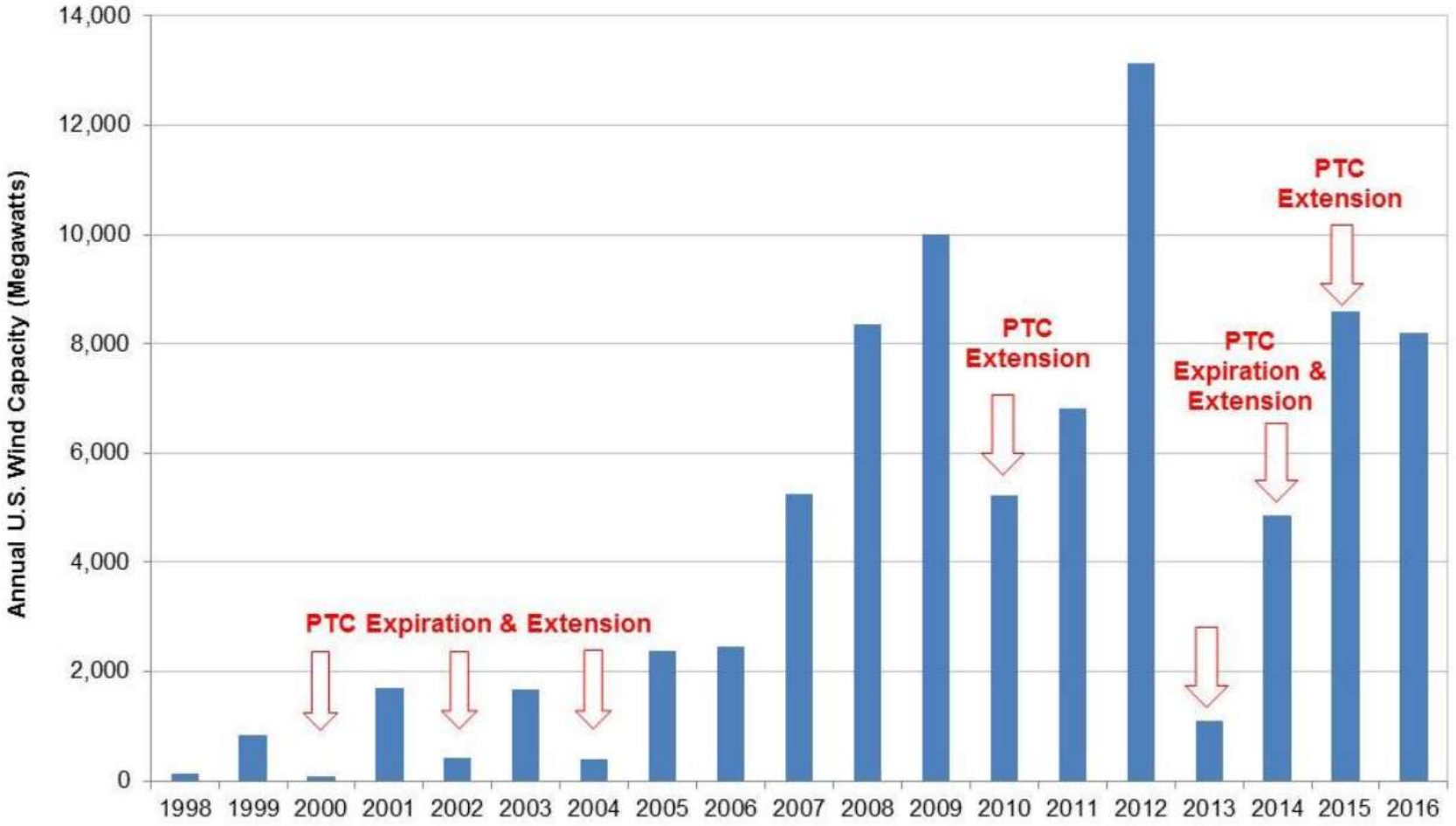
2005: Wisconsin's 2nd RPS: 10% statewide goal; Focus on Energy re-vamp

2008: First federal tax credits for solar energy

2015: Extension of federal wind tax credits through 2019, solar through 2021

POLICIES BREAK THE ICE

Example: Federal Policy Drives Wind Development



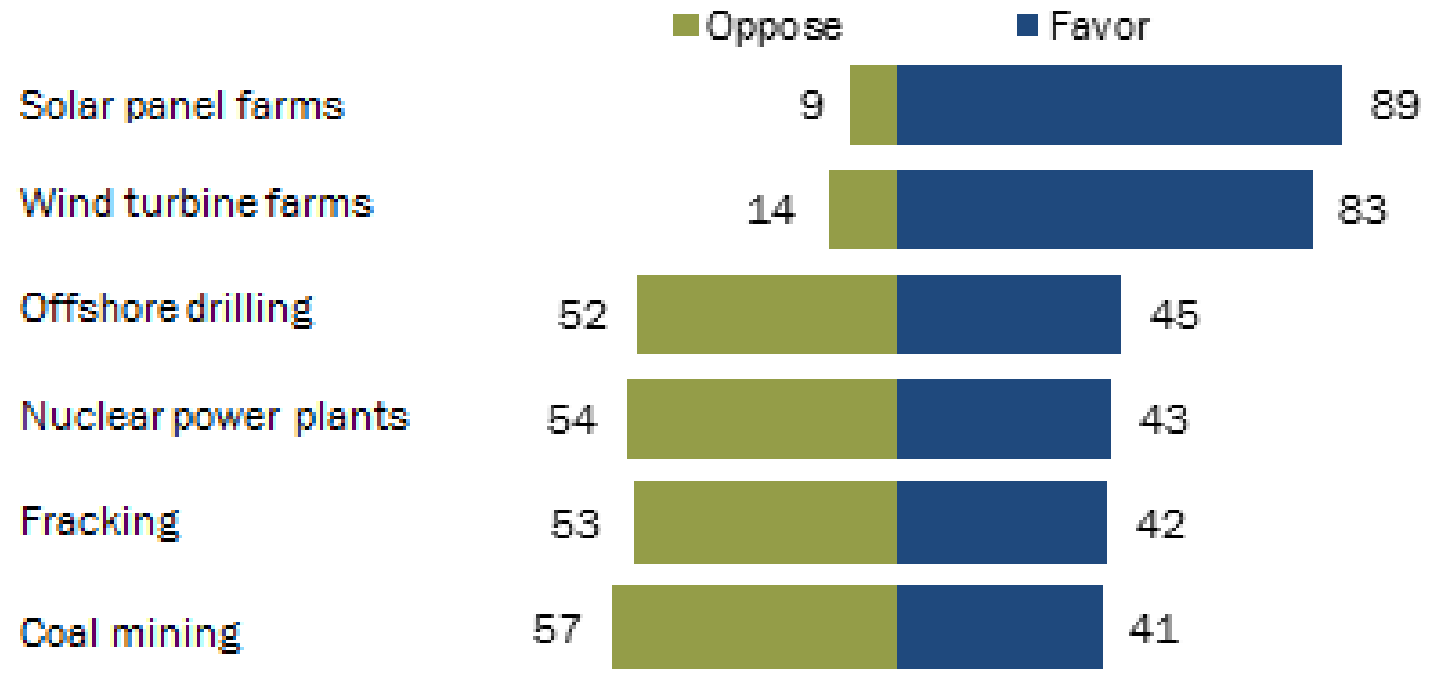
Source:
https://docs.house.gov/meetings/IF/IF03/20170329/105798/HHRG-115-IF03-Wstate-ClemmerS-20170329.pdf

2. Public, Policymaker, and Business Support Have Led to Growth

PUBLIC, POLICYMAKER, AND BUSINESS SUPPORT

Strong public support for expanding wind, solar power

% of U.S. adults who say they favor or oppose expanding each energy source



Note: Respondents who did not answer are not shown.
Source: Survey conducted May 10-June 6, 2016.
"The Politics of Climate"

PEW RESEARCH CENTER

PUBLIC, POLICYMAKER, AND BUSINESS SUPPORT

In-state job growth and revenue diversification for farmers drives policymaker support

CLEAN JOBS AMERICA

NEARLY 3.3 MILLION CLEAN ENERGY JOBS[1]

In every region and every state in America, clean energy is creating jobs a
Nationwide, more than 110,000 net new clean energy jobs were created in 201
total number of Americans who work in clean energy to 3.26 million.

INDUSTRY JOB TOPLINES

- Energy Efficiency – **2,324,865 jobs**
- Renewable Energy – **508,484 jobs**
- Solar Energy – **334,992 jobs**
- Wind Energy – **111,166 jobs**
- Clean Vehicles – **253,599 jobs**
- Clean Storage – **74,569 jobs**
- Grid Modernization – **64,377 jobs**
- ALL US Clean Energy Sectors – **3,264,383 jobs**

PUBLIC, POLICYMAKER, AND BUSINESS SUPPORT

Procter & Gamble to make iconic brands including Tide and Dawn with wind power

New Texas based wind farm to provide 100 percent electricity to all P&G Fabric & Home Care plants in the US and Canada

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GM Commits to 100 Percent Renewable Energy by 2050

GM pledges to source global electricity from wind, sun and landfill gas, joins RE100

2016-09-14

Organic Valley goes all renewable in deal to bring low-cost solar to rural residents

CHRIS HUBBUCH chubbuch@lacrossetribune.com Nov 2, 2017 16

The Organic Valley office building in Cashton is equipped with solar panels that contribute to the buildings exclusively green power supply. BUY NOW

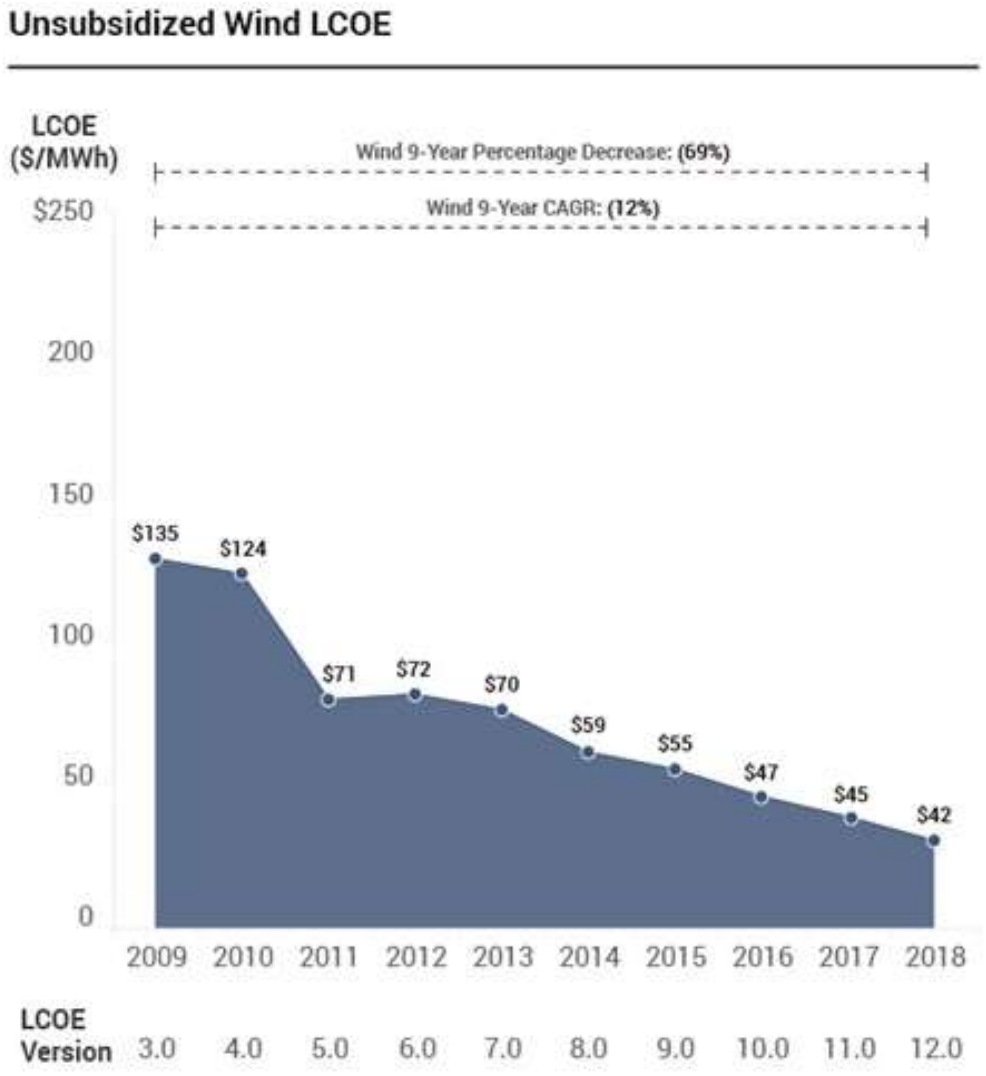
Peter Thomson, La Crosse Tribune

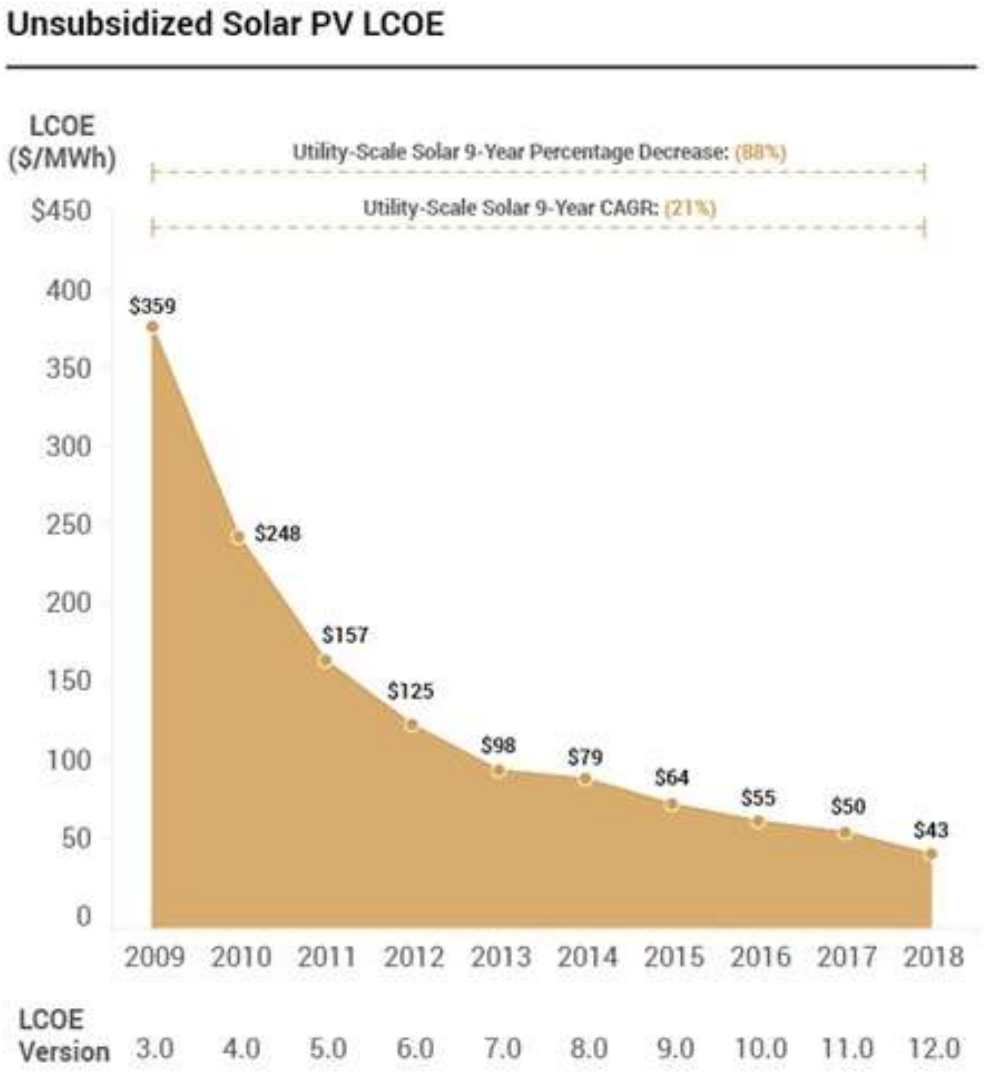
Key Drivers for Business:

- ***Long-term, low-cost, price stability***
- ***Customer interest***
- ***Employee attraction & retention***

3. Economics are Taking Over

ECONOMICS TAKING OVER: WIND & SOLAR PRICE DECLINES 2009-2018





LAZARD

WIND: ▼ 69%

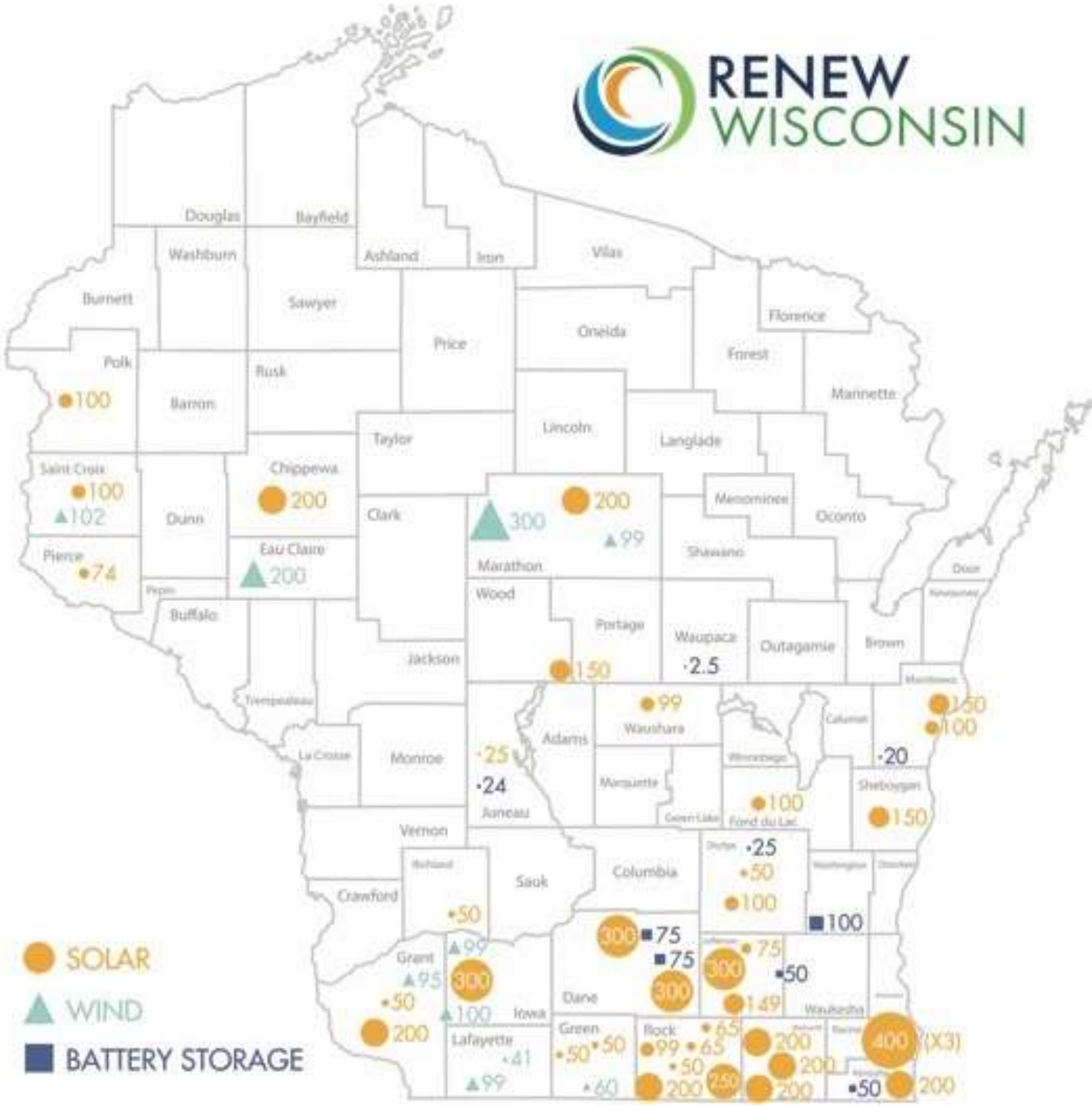
SOLAR: ▼ 88%

WIND & SOLAR ARE ON THE HORIZON

Wisconsin Solar & Wind in August 2019 MISO Queue:

6,150 MW Solar - (130 MW today)
1,196 MW Wind - (737 MW today)
421 MW Battery - (0 MW today)

If all this were built:
16.7% Solar
+6.2% Wind
34% Total Renewable Electricity
$29 million to local governments +
~$33 million to landowners annually



MAJOR UTILITY COMMITMENTS TO RENEWABLE ENERGY BY 2050

Utility Provider	Business Plan	2018 WI Renewables Mix (5-RF-2018) (RPS + GPP)
Wisc. Public Service	80% CO2 Reduction by 2050	6.5%
Wisconsin Electric	80% CO2 Reduction by 2050	6.0%
Alliant	80% CO2 Reduction by 2050	12.5%
MG&E	100% CO2 Reduction by 2050	11.3%
Xcel	80% CO2 Reduction by 2030 + 100% by 2050	24.6%
WPPI	--	15.0%
Dairyland	--	16.7%
Other	--	--
Total WI Mix from RE	--	10.8%

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RENEW Wisconsin Estimate:

- Assume "flat load"
- Assuming IOU commitments are met

- → **~62%** renewable / carbon-free electricity by 2050

LOCAL CHAMPIONS ARE MAKING A HUGE DIFFERENCE

In Chequamagon Bay, local champions are driving major solar change:

- 2016: 300 kilowatt community solar w/ Bayfield Electric
- 2018: 552 kilowatts through solar group buy
- 2017-19: Working with school districts and community: Ashland County Courthouse, Greater Bayfield Wastewater Treatment, Washburn Elementary, and many more
- 2019: ~300 kilowatt solar group buy
- 2019-2020: Electric Vehicles!

Cheq Bay Renewables



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