



Advanced Energy in Michigan

House Energy Committee
March 6, 2019

Laura Sherman, Ph.D., Vice President of Policy Development
Cory Connolly, Vice President of Development and Community Projects

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Michigan Energy Innovation Business Council

Michigan EIBC's mission is to grow Michigan's **advanced energy economy** by fostering opportunities for **innovation** and **business growth** and offering a unified voice in creating a business-friendly environment for the advanced energy industry in Michigan.



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Institute for Energy Innovation

The **Institute for Energy Innovation (IEI)** is a Michigan-based non-profit that works to promote greater public understanding of **advanced energy and its economic potential for Michigan**, and to inform the policy and public discussion on Michigan's energy challenges and opportunities.



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Leadership Council



Members



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Who are we?

- Manufacturing
- Biomass
- Combined Heat and Power
- Wind
- Solar
- Energy storage
- Electric vehicles
- Corporate purchasers
- Energy efficiency
- Building contractors
- Financing
- Consulting
- Legal
- Regulatory



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What do we do?

Represent the voice of the advanced energy industry to legislators, regulators, and state government

- Legislator education
 - Legislative policy
 - Regulatory policy
- Industry networking
- Stakeholder convenings



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Energy 101 Lunch & Learn: Future Dates

Solar 101 – May 22
TBD 101 – October 22

Michigan House Office Building
Mackinac Conference Room
11:30 am – 1:30 pm



EIBC Annual Member Meeting -- April 23rd
Michigan Energy Innovators Gala -- November 14th



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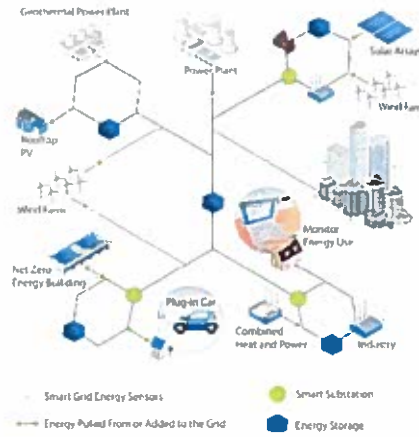
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U.S. Energy System

Past



Present and Future

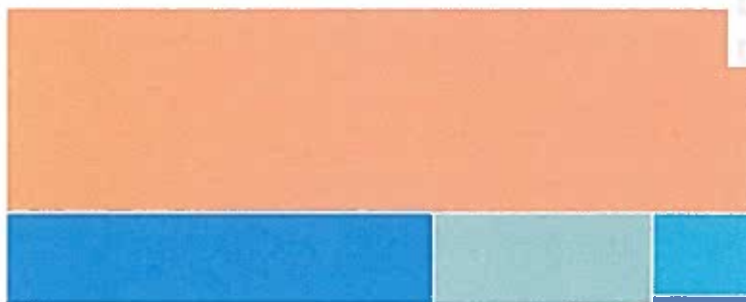


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Clean energy jobs in Michigan

Michigan: 122,264 clean energy jobs



State	Clean Energy Jobs	State Workforce	Clean Share of Workforce
Illinois	165,387	6,562,495	2.5%
Indiana	61,702	3,161,660	1.9%
Iowa	26,527	1,577,356	1.6%
Kansas	25,217	1,468,546	1.7%
Michigan	122,264	4,371,891	2.8%
Minnesota	64,879	2,326,460	2.8%
Missouri	54,566	2,666,768	2.0%
Nebraska	16,430	1,393,599	1.2%
North Dakota	6,226	424,360	1.5%
Ohio	106,024	6,126,641	1.7%

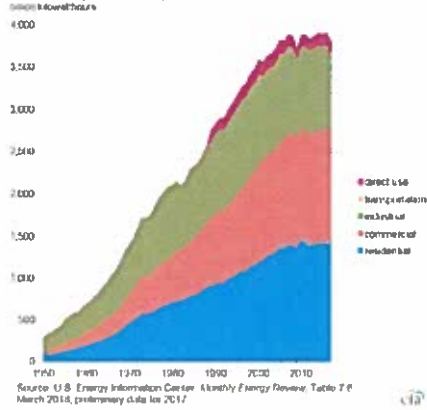
Clean Jobs Midwest 2018

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Electricity Loads: Flat to Declining

U.S. electricity retail sales to major end-use sectors and electricity direct use by all sectors (1950-2017)



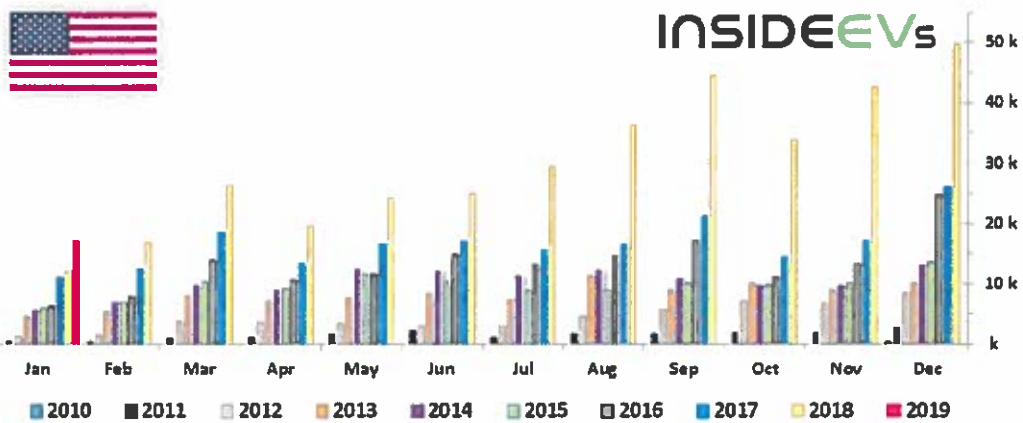
Retail sales of electricity, United States, monthly



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Increasing sales of electric vehicles


U.S. Plug-In Car Sales




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Michigan's Unique Global Cluster

96 of Top 100 Suppliers







76% of U.S. Auto R & D Investment
2200+ Facilities




11 Assembly Plants



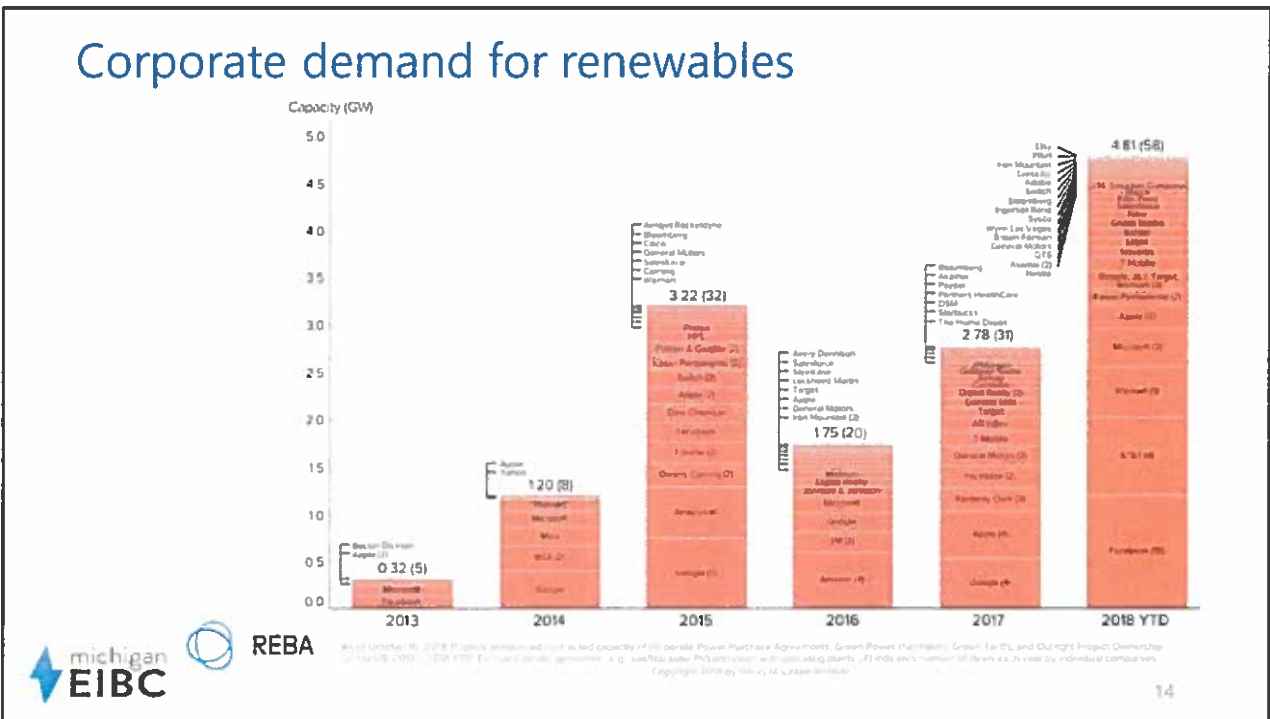


11% of NA Vehicle Production



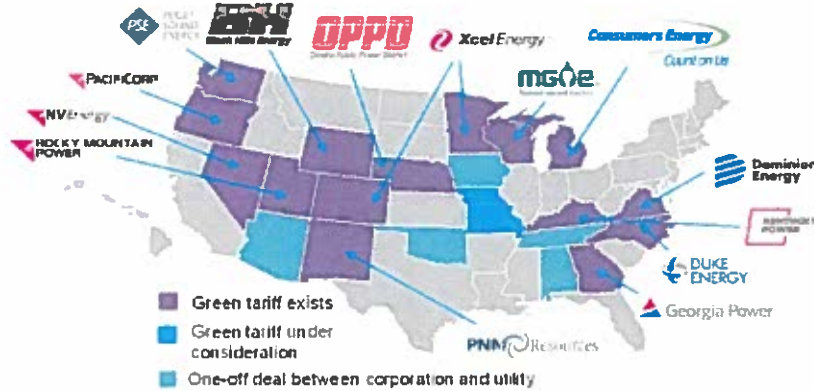
MICH auto
Michigan's Automotive Accelerator

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Voluntary green tariff programs



Source: BloombergNEF, World Resources Institute

10 August 3, 2018

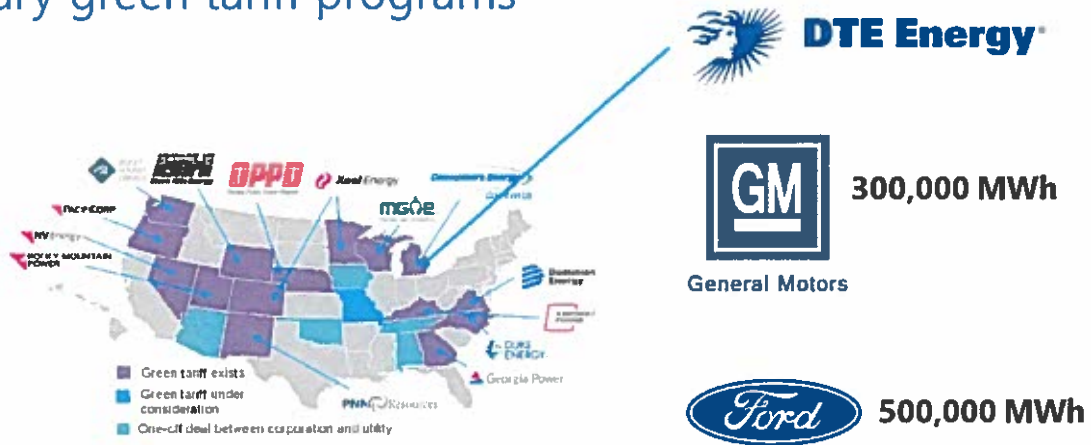


BloombergNEF

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Voluntary green tariff programs



Source: BloombergNEF, World Resources Institute

10 August 3, 2018



BloombergNEF

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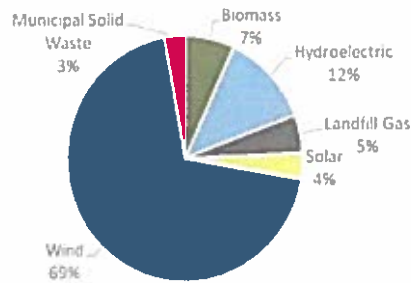
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2018 Report on the Renewable Energy Standard

Figure 4: Renewable Energy Generators in Michigan, by Technology Type
Approximately 3,000 MW Nameplate Capacity

Wind:
1,904 installed MW
26 projects
1051 turbines

2017: 4.5% of in-state
energy production

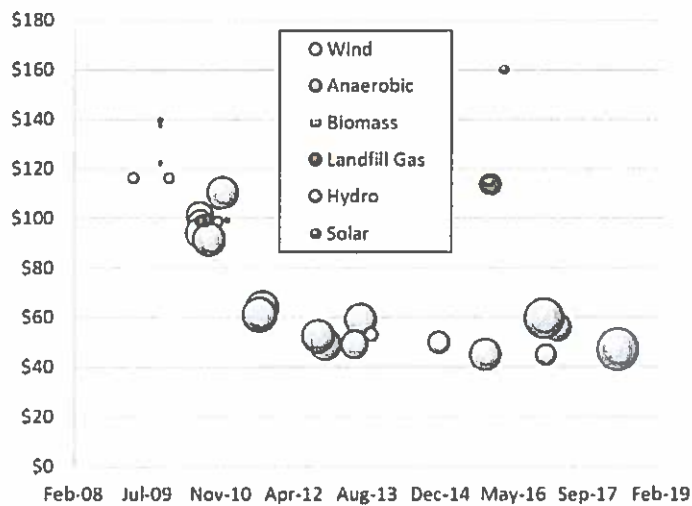


Source: MIRECS Project Registrations

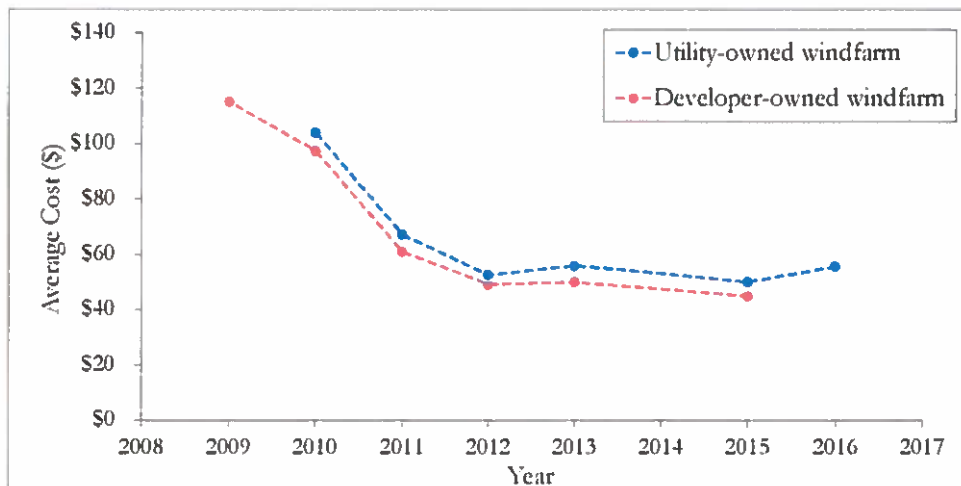


2018 Report on the Renewable Energy Standard

Figure 12: Levelized Cost of MPSC Approved Contracts (\$ per MWh)



2017 Report on the Renewable Energy Standard

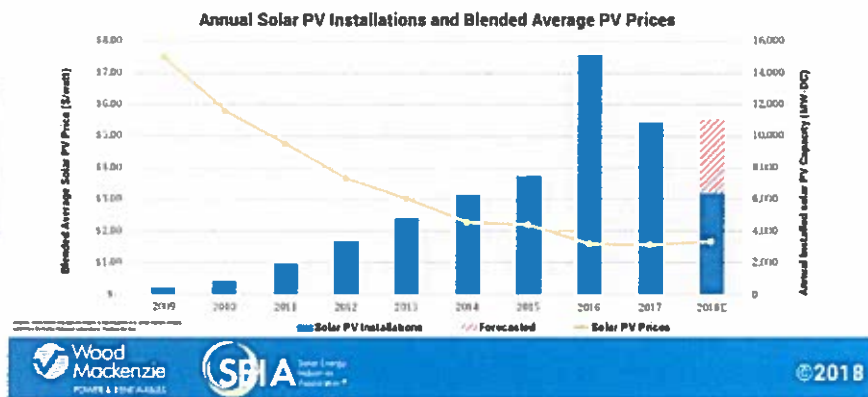


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Decreasing costs of solar energy

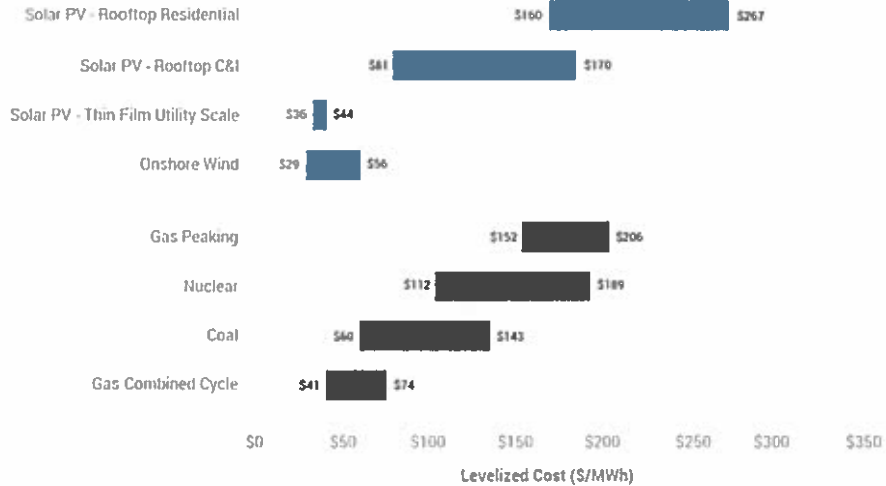
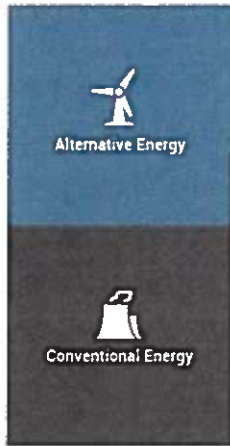
Solar:
149 installed MW
2018: 0.19% of state's electricity



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Low cost of renewables



Lazard 2018

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Ability to predict and store energy

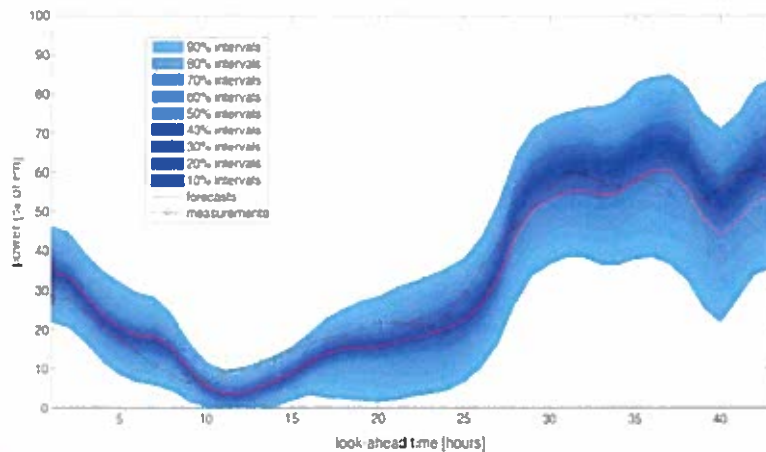


Figure 2: Example of 2 day-ahead forecasts of wind power for a region in the Northern part of Denmark. These forecasts give both the expected power production and the probability distribution of power production for each look-ahead time.



Technical University of Denmark

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Ability to predict and store energy



Ludington pumped storage facility



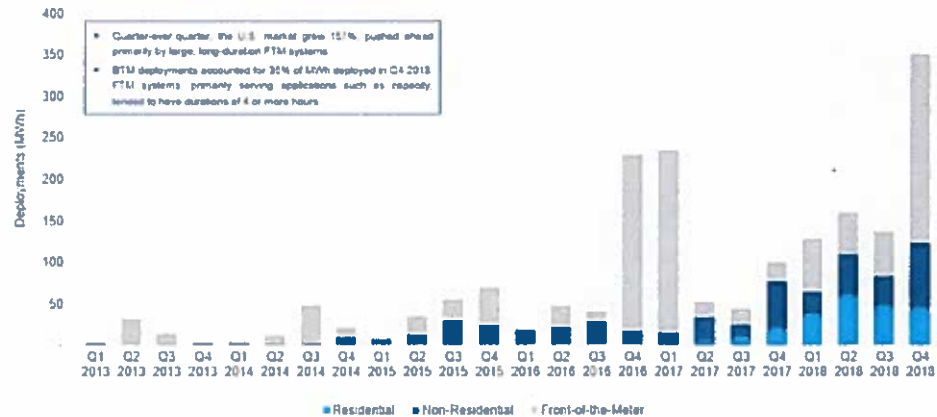
Ability to predict and store energy

Wood Mackenzie P&R / ESA | U.S. energy storage monitor 2018 YTR and Q1 2019

woodmac.com

777 MWh of storage deployed in the U.S. in 2018, growing 80% from 2017

Q4 2018 surpassed previous MWh record by 50%



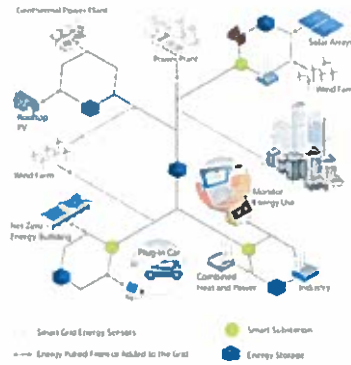
Source: Wood Mackenzie Power & Renewables

U.S. Energy System

Past



Present and Future



Don't predict the future, enable it.

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