

## Wisconsin lags far behind other states in supporting Non-Wire Alternatives (NWAs) and Grid Modernization

*"An invisible resource is working quietly behind the scenes to provide American families and businesses with the power necessary to live and work. This resource lowers harmful pollution, creates US jobs, reduces energy burdens for those most in need, and strengthens community resilience. It also improves the bottom line for business, returns at least double its investment, and saves American households hundreds of dollars a year. Energy efficiency has become the nation's third-largest electricity resource. With increased support it could become the largest—and one of the world's core strategies to tackle climate change."*<sup>i</sup>

Three features of our centralized electric grid system contribute to its overall cost-*ineffectiveness* and preponderance to get bigger:

- 1) Utilities are over-incentivized to build new infrastructure. That is, utility infrastructure investments are often driven less by a real need for electricity and/or system enhancements and more by guaranteed rates of return for infrastructure projects.
- 2) The centralized grid is built for peak usage, which means: (a) most of the time the grid is underutilized<sup>ii</sup> and (b) substantially increasing the grid's peak rating is a futile exercise and very costly.
- 3) In states like Wisconsin, regulatory frameworks for examining viable and cost-efficient alternatives to transmission expansion are not in place, and no comprehensive energy planning is conducted.

In recognition of these factors, some states have shifted new investment to more cost and environmentally effective end user improvements called Non-Wire Alternatives (NWAs).<sup>iii</sup> Because Wisconsin has been ignoring the cost inefficiency of centralized power, we are not in the forefront of this trend. Instead, Wisconsin is poised to follow the old path of centralized transmission expansion, the economic and environmental costs of which will be borne by electric consumers for decades.

Wisconsin lags far behind many states in the adoption of energy efficiency (EE), demand response, distributed energy resources (DERs)<sup>iv</sup>, energy storage, micro-grids, and other Non-Wire Alternatives (NWAs) that constitute important components of Grid Modernization. Wisconsin ranks 34th in its per-capita electric efficiency program spending and 24th overall in the ACEEE's<sup>v</sup> *2017 State Energy Efficiency Scorecard*.<sup>vi</sup> WI rebates for energy efficiency savings are only 1/3 of those available to electric customers in Iowa, for example. Wisconsin's 2017 ranking will be even lower because rebate amounts aimed at reducing electricity and gas use were lowered by lawmakers despite considerable public protest.

According to *The 50 States of Grid Modernization*, published by the NC Clean Energy Technology Center, Wisconsin has had no recent legislative or regulatory actions pertaining to the deployment of advanced grid technologies and non-wire alternatives, including energy storage, DERs, microgrids, and demand response.<sup>vii</sup>

The 2017 ACEEE *State Energy Efficiency Scorecard* and *The 50 States of Grid Modernization* offer a glimpse of a few recent state legislative and regulatory initiatives that help mitigate the need for costly transmission expansion and that promote alternative clean and local energy generation and distribution options. We offer these in the hopes of encouraging electric customers in Wisconsin to ask for similar measures for our State.

**Massachusetts (1st in EE scorecard):** High energy savings targets and the 2008 Green Communities Act encourage and give priority to energy efficiency over increases in supply capacity. HB 2687 extends commercial property assessed clean energy (PACE) to microgrids.

**California (2nd in EE scorecard):** The state conducts energy efficiency research, maintains energy-efficient fleets and buildings, and promotes energy savings performance contracts. SB 338 passed in 2017 requires that utilities examine the role of DERs and energy storage to relieve congestion during peak demand.



Despite keen public interest, Wisconsin rebates to help electric customers afford more efficient appliances and needed home-business energy improvements rank near the bottom measured per person<sup>(xii)</sup>. Energy savings are \$3-4 per dollar invested<sup>(xi)</sup>.

**Rhode Island (3rd in EE scorecard):** State-led initiatives include energy efficiency incentives, an ongoing PACE program, efficient public buildings, benchmarking energy use, and promoting energy savings and performance contracts. A 2017 Report to the Rhode Island Public Utilities Commission,<sup>viii</sup> among other things, provides the PUC with a benefit-cost framework for assessing DERs.

**Vermont (4th in EE):** The state is a leader in energy savings, reporting savings of 2.5% or higher in 2016. The state also maintains an all cost-effective efficiency requirement and a renewable energy standard which utilities can meet using energy efficiency. HB 501 requires the Department of Public Service to promote energy storage capacity in the state through the development of policy recommendations and targets.

**Oregon (5th in EE):** Efficiency administrators like The Energy Trust of Oregon have helped Oregon achieve high levels of energy savings. SB 978 requires Oregon's Public Utility Commission to research the increasing presence, cost, and effectiveness of DERs. With the help of NWAs, Bonneville Power Administration cancelled its I-5 Corridor Reinforcement Project, an 80-mile high-voltage transmission line.<sup>ix</sup>

**Connecticut (6th in EE):** Successful state energy efficiency policies include building codes, appliance standards, utility targets, and lead-by-example programs. The Department of Energy and Environmental Protection's 2017 draft *Comprehensive Energy Strategy* recommends that the Public Utilities Regulator Authority hold proceedings on Grid Modernization, including non-wire alternatives and energy storage.

**Washington (7th in EE, tied with NY):** Energy-efficient public buildings and fleets, benchmarking energy use, and the promotion of energy savings performance contracts are among the state's lead-by-example energy savings measures. A 2017 report to the Washington State Utilities and Transportation Commission policy amends the state's integrated resource planning rules to now require utilities to fully evaluate energy storage as a resource option.<sup>x</sup>

**New York (7th):** NY was among the first states to adopt NWAs. Its Con Edison Brooklyn-Queens program demonstrates the significant savings NWAs can bring about. Proposed in 2014, the program allows Con Ed to spend up to \$200 million on NWAs, thus eliminating the need to build a \$1 billion substation. NY Green Bank is addressing market and financial barriers to foster and encourage renewable energy and energy efficiency. SB 4490 promotes microgrids through a New York State Energy Research and Development Authority grant program. AB 7480 would set up a Smart Grid Advisory Council to examine the feasibility of a statewide smart grid system, which would promote DERs, among other things.

**Minnesota (9th in EE):** While ranked 9th overall for energy efficiency, the state received a perfect score for its state government initiatives, which include energy efficiency loan and investment programs, such as its PACE financing program.

**Maryland (10th in EE):** Utility commission targets requiring savings of 2% per year by 2020 have been codified in 2017 state legislation. HB 773 passed in 2017 calls for a study of regulatory reforms and market incentives related to the increase of energy storage usage.

#### Notes:

- I) *The Greatest Energy Story You Haven't Heard*, p. 2, <http://aceee.org/sites/default/files/publications/researchreports/u1604.pdf>
- II) *Grid Modernization in Rhode Island: Small State, Big Vision*, <https://microgridknowledge.com/grid-modernization-microgrid-2017/>
- III) Getting the Signals Straight: Modeling, Planning, and Implementing Non-Transmission Alternatives Study, p. iv <https://pubs.naruc.org/pub.cfm?id=536EF440-2354-D714-51CE-C1F37F9B3530>
- IV) DER's or Distributed Energy Resources are small-scale power generation sources and storage situated close to where electricity is used. In conjunction with energy efficiency and load management, they can be a less expensive alternative to the construction of large, central power plants and high-voltage transmission lines.
- V) ACEEE stands for American Council for an Energy Efficient Economy
- VI) ACEEE State and Local Policy Database, <https://database.aceee.org/state-scorecard-rank>
- VII) *50 States of Grid Modernization* Q3 2017, p. 10 [https://nccleantech.ncsu.edu/wp-content/uploads/GridMod\\_Q32017\\_Final.pdf](https://nccleantech.ncsu.edu/wp-content/uploads/GridMod_Q32017_Final.pdf)
- VIII) Docket 4600, Stakeholder Working Group Process. *Report to the Rhode Island Public Utilities Commission*, p. 6, <http://www.raabassociates.org/Articles/RI%204600%20Final%20WG%20Report%204-5-17.pdf>
- IX) *BPA Cancels Controversial Transmission Line in SW Washington* <https://www.opb.org/news/article/bpa-cancels-controversial-transmission-line-in-sw-washington/>
- X) *50 States of Grid Modernization*, p. 38 [https://nccleantech.ncsu.edu/wp-content/uploads/GridMod\\_Q32017\\_Final.pdf](https://nccleantech.ncsu.edu/wp-content/uploads/GridMod_Q32017_Final.pdf)
- XI) Focus on Energy *Calendar Year 2016 Evaluation Report*, Volume I, p.51, <https://focusonenergy.com/sites/default/files/Evaluation%20Report%20-%202016%20Volume%20I.pdf#page=51>
- XII) The 2017 State Energy Efficiency Scorecard, ACEEE, Research Report U1710 <http://aceee.org/research-report/u1710>

## Notes (Towards reducing CO2 emissions)

- i Data compiled from MISO filing of estimated CO2 impacts on Badger-Coulee PSCW docket, pages 19, 20  
<http://soulwisconsin.org/Resources/FootnoteHarbour.pdf#page=19>
- ii A variety of methods end users can make to control use during high use periods and lower demand placed on distribution and transmission line infrastructure.
- iii Energy generation and storage systems located close to the point of use.
- iv See references and maps on pages 6 & 7, CUB and CLEAN 2011 request to PSCW to restore aspects of Integrated Resource Planning PSC REF#:172038 [http://bit.ly/CUB\\_2011\\_Restore\\_IRP\\_Request\\_PSCW](http://bit.ly/CUB_2011_Restore_IRP_Request_PSCW)
- v 2016 STATE OF THE MARKET REPORT FOR THE MISO ELECTRICITY MARKET, page 12,  
[https://www.potomaceconomics.com/wp-content/uploads/2017/07/2016-SOM-Appendix\\_Final\\_7-17-17\\_final.pdf#page=12](https://www.potomaceconomics.com/wp-content/uploads/2017/07/2016-SOM-Appendix_Final_7-17-17_final.pdf#page=12)  
  
2011 STATE OF THE MARKET REPORT FOR THE MISO ELECTRICITY MARKET, page 48,  
<https://www.potomaceconomics.com/wp-content/uploads/2017/02/2011-State-of-the-Market-Report.pdf#page=48>
- vi See calculation of state percentage on page 4 here:  
[https://www.dropbox.com/s/26ha80d2ijcy6j1/EPIC\\_CHC\\_EIS\\_Update\\_ATC\\_Planning\\_20170322\\_v03.pdf?dl=0](https://www.dropbox.com/s/26ha80d2ijcy6j1/EPIC_CHC_EIS_Update_ATC_Planning_20170322_v03.pdf?dl=0)  
  
Data sourced from, 2013 ATC Economic Planning, p.9.  
[http://www.atc10yearplan.com/wp-content/uploads/2014/01/2\\_2013-Year-in-Review\\_2014-02-07\\_r1.pdf#page=9](http://www.atc10yearplan.com/wp-content/uploads/2014/01/2_2013-Year-in-Review_2014-02-07_r1.pdf#page=9)
- vii 2016 STATE OF THE MARKET REPORT FOR THE MISO ELECTRICITY MARKET, page 12,  
[https://www.potomaceconomics.com/wp-content/uploads/2017/07/2016-SOM-Appendix\\_Final\\_7-17-17\\_final.pdf#page=12](https://www.potomaceconomics.com/wp-content/uploads/2017/07/2016-SOM-Appendix_Final_7-17-17_final.pdf#page=12)
- viii See declining use of electricity market at an Indiana MISO hub, [http://bit.ly/ElectricMarkHUB\\_Prices\\_Volume](http://bit.ly/ElectricMarkHUB_Prices_Volume)  
Data from EIA-supplied Wholesale Electricity Market records: <https://www.eia.gov/electricity/wholesale/>
- ix Data compiled from MISO filing of estimated CO2 impacts on Badger-Coulee PSCW docket, pages 19, 20  
<http://soulwisconsin.org/Resources/FootnoteHarbour.pdf#page=19>
- x “The Greatest Energy Story You Haven’t Heard,” ACEEE, p. 7,  
<http://aceee.org/sites/default/files/publications/researchreports/u1604.pdf>
- xi Correspondence with Vernon Electric Coop, a Dairyland Distribution Cooperative, indicates their load management practices realize load reductions of 5-7% in the summer and about 10-12% in winter. Descriptions of the load management programs: : <http://www.vernonelectric.org/content/dual-fuel> and <http://www.vernonelectric.org/content/storage-heat> . Realtime monitoring of load management resources: [http://xso.dairylandpower.coop/lm/LCstatus\\_xres.html](http://xso.dairylandpower.coop/lm/LCstatus_xres.html)
- xii Dairyland Power Cooperative, November, 2016 Press Release  
<http://www.dairylandpower.com/dcontent/article/DPCannouncesadditionalsolarcontracts.pdf> facilities built with map: <http://ruralsolarstories.org/story/dairyland-power-cooperative/dpc-solar-map-600w-2016/>
- viii Sample solar agreement with Richland Electric Coop,  
<http://www.rec.coop/sites/rec/files/PDF/Solar%20Agreement.pdf>
- xiv See chart, page 7 with estimates for three energy investment paths based on \$13,000 per month actual electric bill. Assumptions used provided below the chart: [http://bit.ly/GrantCoBoardPacket\\_20171219](http://bit.ly/GrantCoBoardPacket_20171219)