Climate Fast Forward Conference

Track 1: Energy Generation

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The Challenge and the Question

Overarching questions:

- What are the best **short-term strategies** for Wisconsin to reduce greenhouse gas emissions by increasing renewable energy generation in the state?
- What are the best **long-term strategies** for Wisconsin to reduce greenhouse gas emissions by increasing renewable energy generation in the state?
- What are best steps to take to achieve goals by 2030? By 2050?

Challenges:

Managing energy demand is strongly tied to increasing renewable energy generation. It is expected that impacts of climate change (e.g. extreme heat) will increase energy demand. If we pursue policy such as "electrify everything" (e.g. electric vehicles, electrify appliances, electrify heating and cooling), then electricity demand will increase. We must have a clean grid to pursue these "electrify everything" policy goals. Meanwhile, we must be prepared to work across groups to address such linkages.

Distributed energy resources – new technology and services with demand flexibility and energy storage – will allow for a new supply and demand paradigm. These demand management tools must be tied to grid modernization, new local rooftop solar deployment, and community land use redesign.

How to balance the energy numbers game of just installing utility-scale solar in rural areas and necessary energy system re-design and change?

The Big Challenges/Areas in need of solutions:

A. Energy Storage – Helping the economic transition, maximizing FERC order 841, and getting over, or around, technical limitations.
B. Electrifying Heating and Cooling – A tough but critical nut to crack, getting the right economic incentives developed and in place.
C. Solar Siting Issues – Developing the state's role in managing the solar farm big bang phenomenon and harnessing the sextuple bottom-line benefits.
D. Distributed Resources – Integrating new technology to create smart grids, deploy micro-grids and harness distributed resources in the most effective way.
E. Ensuring Clean Energy Equity/Justice – What are the best strategies for getting solar and storage on multi-family units, affordable housing, and low-income single family homes in both urban and rural communities?
F. Other Zero Carbon Emission Technologies – Is there a role for nuclear power or carbon capture and storage in Wisconsin?

Additional background/discussion

The amount of renewable generation in the MISO interconnection queue is remarkable: solar: 6,000 MW (compared to 95 MW today, although another 500+ MW is also under construction); wind: 1,196 MW (748 MW today); and battery storage: 421.5 MW (0 MW today). What does this mean for renewable energy development in Wisconsin; what issues does it raise?

Wisconsin had just over 3,000 people employed in the solar industry in 2018, up 3% from the year before. While that's a lot of jobs and the number is growing, Wisconsin ranks 24th in the nation for solar jobs and we lag behind most of our neighboring states, certainly well behind Illinois and Minnesota. A lack of strong solar policies in Wisconsin is a big part of that difference. Yet, if you talk to solar companies, one of the biggest obstacles to increasing solar development is a lack of laborers. If you go to a job posting website, such as Indeed, you'll likely find a hundred or more positions open with solar companies.

To take advantage of this clean energy economic opportunity, Wisconsin should consider strategies that fortify building blocks for the growth of its sensors and controls industry: workforce development, access to capital, the innovation ecosystem, value chain build-out, and local market growth. Through the sensors and controls manufacturing industry, Wisconsin can leverage its numerous strengths to take advantage of expanding opportunities, such as:

- **Capitalizing on increasing technology demand.** The sensors and controls industry is projected to grow almost 7 percent annually through 2022.[i]
- **Growing the manufacturing industry.** At least 209 companies manufacture sensors and controls for advanced energy systems.[ii]
- **Bolstering the energy economy.** By deploying Wisconsin-made sensors and controls for safer and more efficient technologies in the state, increased local generation will divert some of the estimated $14 billion spent on imported energy into Wisconsin communities.[iii]
- **Leveraging university research expertise.** Wisconsin universities have unique research partnerships dedicated to sensing and control technologies and their end-use applications, ranging from bioenergy to grid technologies.[iv]

What are the Big Hairy Audacious Goals that would make a big difference in the next decade?

1. **Establish Community Choice Aggregation in Wisconsin:** Empower local communities to determine their energy future by giving them legal authority to choose the type of energy power they use and the energy system they control. Letting local communities make these decisions increases the likelihood of addressing environmental racism and environmental justice.
2. **Establish Regulatory Reform:** This can mean a lot of things, but at a minimum it should include performance-based ratemaking that rewards features such as efficiency, affordability, emission reductions, economic growth and building resiliency and security. Create measurable and quantifiable greenhouse gas reductions and pay utilities to achieve them or make payments to society for failing to achieve the goals. The PSC is the key player and must lead any effort on regulatory reform. How can stakeholders support the new leadership to develop performance-based regulatory structures?
3. **Require Advanced Distribution Planning:** Require utilities to design and submit plans for changing the distribution system to include demand management and demand flexibility through distributed energy resource integration, including storage and microgrids.

What actions could advance progress toward that goal in the next decade?

Actions	Decision-makers	Implementers
Advanced Distribution Planning	Legislators and Regulators	Public Service Commission
Community Choice Aggregation	State and local government officials	Local Government
Build support for the Equitable and Just National Climate Platform	Governor, Lt. Governor in terms of working with stakeholders, but really diffuse	Everyone in attendance at CFF.
Facilitate a solar siting roundtable discussion (after the CFF conference)	Lt Gov. if they were to lead the discussion	Office of Sustainability and Clean Energy
Increase microgrid deployment	State and local government officials	State and local government officials
Increase distributed energy resources (DERs) deployment	State and local government officials	State and local government officials
Comprehensive Value of solar Analysis	Governor and Lt. Governor	Office of Sustainability and Clean Energy, PSC, DNR, DATCP

What are the barriers/challenges to pursuing solutions?

- Lack of competition in the energy product and service delivery system.
- Lack of energy innovation in the current energy system.
- As designed today with the PSC, the public is shut out of regulatory process.
- Current energy system has carbon lock-in.

What tradeoffs are involved in moving the solutions forward? Who gains, who stands to lose?

- Large utility-scale solar fields versus the need for foodsheds. Smarter land use policy.

How will these actions address equity, inclusivity, transparency, accountability and justice?

- Building support for the Equitable and Just National Climate Platform in Wisconsin can be done in a way to address equity in all of the actions above.
- Community Choice Aggregation, solar with set-asides and targets for low-income neighborhoods.
- Energy data available and transparent to the public.
- Design all low-income housing with rooftop solar and energy storage on-site from day one.

What economic factors, costs, and distribution of costs and benefits will influence the viability of these actions?

- Investments into new energy systems such as grid modernization will have a cost. Using more DERs and Non-Wire Alternatives (NWAs) may save money versus large generation systems and transmission build-outs.

- How can local economic benefits be weighed into decision-making?
- How can quantifiable public health benefits be weighed into decision-making?
- How can environmental racism and environmental justice be weighed into decision-making?

Will the solutions require changes in governing structures or processes to move forward?

All of them could, however, we will focus on what can be accomplished within the current structures.

Best strategies to communicate about this topic to decision-makers and the public.

- Public Forums
- Policy White Papers
- Small-group multi-stakeholder meetings with decision makers
- Policy-maker lobbying
- Participate in the Democracy including during election seasons

Likely small group discussion topics in this track

1. **Ensuring Clean Energy Equity/Justice**
2. **Energy Storage**
3. **Electrifying Heating & Cooling**
4. **Solar Siting**
5. **Distributed Energy Resources (DERs)**
6. **How to balance incremental policy steps or bold system redesign?**
7. **How to give local government real power in energy services and policy?**

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[i] Data from internal analysis.
[ii] Data from internal analysis.
[iii] "Wisconsin Energy Statistics 2013," *Wisconsin State Energy Office*, pg. 140, 2013, accessed November 8, 2017, http://www.stateenergyoffice.wi.gov/docview.asp?docid=27226&locid=160.
[iv] "Energy, Power, and Control," *Wisconsin Economic Development Corporation*, accessed November 5, 2017, http://inwisconsin.com/key-industries/energy-power-and-control/; "Expertise in Water Technology Runs Deep in Wisconsin," *Wisconsin Economic Development Corporation*, pg. 6-7, accessed November 5, 2017, http://inwisconsin.com/wp-content/uploads/2016/04/Water-Technology-Industry-Profile.pdf; Laura Otto, "JCI/UWM partnership fuels the future of energy storage," *University of Wisconsin-Milwaukee Report*, November 2, 2015, accessed November 5, 2017, http://uwm.edu/news/jciuwm-partnership-fuels-the-future-of-energy-storage/; Amanda Maniscalco, "UWM Seeks Leadership in Microgrids," *Urban Milwaukee*, June 5, 2017, accessed November 5, 2017, http://urbanmilwaukee.com/2017/06/05/uwm-seeks-leadership-in-microgrids/.