Climate Fast Forward Conference

Track 3: Resilience

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The Challenge and the Question

As our Wisconsin climate continues to change, we are experiencing more extreme weather conditions and consequent effects on our urban, agricultural, and natural landscapes, our waters, and the communities that live here, be they fish, trees, birds or people. Based on climate projections, winter months are predicted to be warmer with more precipitation occurring as rain instead of snow, which can result in problems for above-ground power lines, transportation, and other infrastructure. Large rainstorms (greater than two inches of rainfall in a day) are anticipated to increase by 25% and occur predominantly in the spring and fall. These increases can result in catastrophic floods that destroy homes, crops, roads and other infrastructure.

The quantity and quality of water has changed following regional droughts or flooding, leading to changes in agricultural productivity, groundwater use and availability, nutrient and soil loss, and blue-green algae blooms in lakes. Farmers may experience increased losses attributable to flooding or drought—or both in the same year. The distribution and phenology of native species are shifting in response to climate warming. Agriculture is facing threats from the spread of invasive pest species. And human health is threatened when people cannot cope with extreme heat or are subjected to new pathogens that may thrive in our changed environment.

We may have the ability to anticipate hazardous events, disturbances, or changing trends related to climate and to prepare and respond to them. This may be referred to as climate *resilience*—the capacity to recover quickly from difficulties associated with changes in climate, or even the ability to be resistant to such changes. Improving climate resilience involves assessing how climate change will create new or alter current climate-related risks and taking steps to better cope with these risks.[i]

A challenge in addressing climate change and building climate resilience is that we are not starting with a consensus among the public that the threat is real or critical. Perhaps we see melting glaciers in Montana, heatwaves in Europe, or coastal flooding in Florida, and we see major flood events here. But some ascribe these occurrences to natural variability or to a changing climate but not a change of our doing. How do we gain the public support necessary to address the complex and daunting problems of climate change and build the capacity of resilience? How do we create and implement policies and practices that result in shifting the needle from accelerating climate change to proactively addressing it? How can we create this all without compromising jobs, business and farm productivity, and the environment?

The changes occurring can also be subtle and not observable to the untrained eye. A decreasing trend in ice cover on Wisconsin lakes, even though our most recent winter was brutally cold. Warming of stream temperatures when averaged over weeks or months, not because our hottest days have been hotter but

because our nights are not cooling as they used to. Or the northward drift of temperate growing zones, again despite a cold winter. Are we adequately framing all aspects of the climate change problem?
How can we engage a diverse public to support efforts to build climate resilience? Can building climate resilience benefit our communities and protect our natural resources across multiple time scales, independent of whether the worst impacts of climate change come tomorrow or in a hundred years?

The question for the conference is:

How do we rapidly develop the strategies and steps that will build Wisconsin's capacity for community and ecological resilience and adaptation to climate change? This track will focus on the key elements of ways to develop and implement a proactive "game plan" for building and implementing climate resilience that goes beyond survival and emergency response.

What is the big audacious goal that would make a big difference in the next decade?

Wisconsin must identify, frame, and strategize approaches to building and implementing resilience to climate change, focusing on anticipation and prevention, and not just disaster recovery, that can be applied across communities in Wisconsin.

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

Developing this approach will require multiple actions. Some examples include:

- Establish an office of climate resilience to coordinate state and local resilience planning[ii]
- Implement watershed & sub-watershed planning across the state that anticipates climate change impacts – building on potential models such as Ontario's 2018 guidance on climate change strategies in water planning[ii]
- Provide resources and technical support for local governments for planning, prevention, emergency response and recovery[ii]
- Protect and rehabilitate coldwater stream resources in Wisconsin so that anglers 100 years from now will have trout fisheries as good as or better than what we have now. There are actions we can take to progress toward this goal. This may involve protecting and rehabilitating vulnerable landscapes to buffer streams and improve groundwater resources; reestablishing natural processes to heal streams and judiciously repairing stream habitat "by hand" where necessary to protect and enhance viable wild trout fisheries; and recruiting more people to care for and utilize these resources whether providing a source of local, healthy food or natural places for a respite from everyday life in a rapidly urbanizing world.

What are the barriers or challenges to pursuing solutions?

- There is currently no regulatory framework designed specifically to advance and support resilience in the face of climate impact in Wisconsin, and capacities and authorities to address climate-related impacts cut across many divisions or departments in federal and state government and across multiple jurisdictions from local and county government to federal agencies. A successful approach would require clear communications across agencies and coordinating mechanisms between them.
- Floodplain maps and flood risk estimates are out-of-date.
- Protecting coldwater fisheries will require community support, hard-working people who care about fish and the environs in which they live, financial resources, and a leadership structure to coordinate and make it happen. Many more details are necessary to develop and strategize this audacious goal.

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

- The longer we take to act, the greater the risks are likely to be for vulnerable populations of people and species.
- Emergencies and disasters from flooding and extreme weather will always need immediate response, but we also need investments in planning, community infrastructure, and agency coordination to prevent and reduce the scale of disasters. Both will need funding and technical capacities to address the challenge.
- The pace and scale of a changing climate will likely outpace our capacity for traditional approaches and timelines in public decision-making. This presents a challenge in shaping transparent and nimble government strategies that can get ahead of the curve in resilience and adaptation actions, while also supporting meaningful citizen engagement and government accountability.

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

Planning, prevention, and protection strategies will all be stronger if they engage a full array of stakeholders, identify local needs and risk, and consider the unique challenges in particular communities or watersheds. Better planning and disaster-prevention strategies, will, over time, reduce impacts such as financial losses and disrupted lives from climate-related disasters on vulnerable communities and reduce the burden of recovery costs for local governments.

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

Currently the costs of weather-related disasters are falling on the public (through government response), property-owners, farmers, affected residents and insurance companies. Those without flood insurance (or inadequate insurance) can be faced with the burden of bearing the costs of loss and recovery largely on their own. As the source WisContext reports,

> Between 2012 and 2018, communities in northwest Wisconsin racked up more than $50 million in damage to public infrastructure from repeated historic storms and floods. The damage was in large part a result of inadequate infrastructure — particularly undersized culverts — that engineers designed based on climate records from the mid-20th century.
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> Parallel scenarios have played out in southern Wisconsin: a single storm system in August 2018 dumped precipitation so extreme on parts of Dane County that it wrought more than $150 million in damage to public and private property. Indeed, one year later, the problem of undersized culverts — likewise designed and built for smaller and less frequent storms — is factoring into local planning and fears of worse flooding in the future, reported the *Wisconsin State Journal*.[iii]

If we can take actions to reduce the frequency and scale of intense rain events, there will be significant economic benefits in reducing the costs to taxpayers, and to those in flood prone areas.

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

New coordination mechanisms are likely to be needed, and a lead agency will need to be identified.[iv]

Likely small group discussion topics:

Participants in this track will work in small groups to discuss specific topics in the context of climate resilience. **Topics may include flooding, human health and public safety, resilient agriculture, and at-risk species and habitat.** Other topics may be included depending on the interest and expertise of participants. At the end, we will coalesce the ideas generated by track participants to share and integrate with the other tracks to move Wisconsin fast forward on addressing climate change.

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[i] Definition from the Center For Climate And Energy Solutions, 2019

[ii] Recommendation from the Wisconsin Academy's "Beyond Sandbags" leadership meeting, 8/29/19

[iii] WisContext Series: Extreme Precipitation And Wisconsin's Climate; The Costs Of Extreme Storms Come Into Focus Across Wisconsin, US Communities Around The Nation Are Confronted By The Price Tag Of Repeat Disasters; Will Cushman; Aug. 21, 2019 | 11 a.m. https://www.wiscontext.org/costs-extreme-storms-come-focus-across-wisconsin-us, accessed on October 2, 2019

[iv] Recommendation from the Wisconsin Academy's "Beyond Sandbags" leadership meeting, 8/29/19