



FORWARD IN ENERGY

Who we are

At the Wisconsin Energy Institute (WEI), we envision a world powered by sustainable and reliable energy that is affordable and accessible to everyone. As the home of collaborative energy research at the University of Wisconsin–Madison, we strive to solve one of the world’s greatest challenges: developing sustainable alternatives to meet society’s ever-growing need for power, fuels, and chemicals.

Our scientists, engineers, and staff:

- generate the knowledge and technologies needed to accelerate progress toward a clean and equitable energy future
- train students to lead society’s transition to renewable energy systems
- provide a community space to learn about and discuss energy challenges



Learn more

Learn more about our research, education, and upcoming events by visiting us online at energy.wisc.edu

UW–Madison has a legacy of solving large-scale societal challenges. WEI is committed to a clean and just energy transition that creates jobs and equitable economic prosperity, while making energy sustainable, affordable, and accessible for all communities. Through leadership and collaboration, we are helping move Wisconsin and the world **forward in energy**.

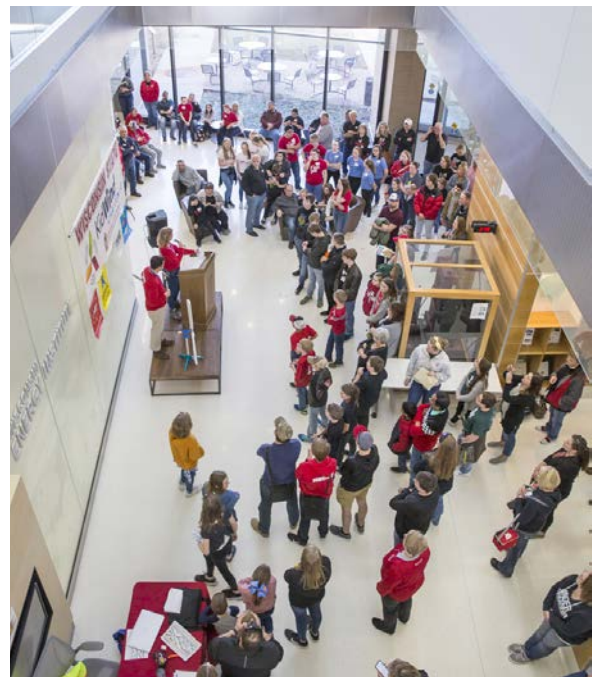
Clean energy, resilient society

At WEI, we combine the power of natural systems and human ingenuity to develop creative solutions to society’s clean technology-related challenges. WEI researchers work in cross-disciplinary teams to discover and apply the foundational insights and technological advances that will form the basis of cost-effective, sustainable energy systems.

WEI research is organized around three research areas needed to build a circular bioeconomy and strengthen a sustainable and prosperous society:

- Power
- Fuels
- Chemicals

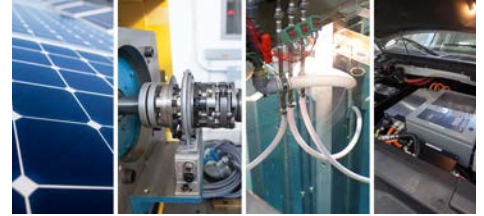
We believe innovation in these areas will have community-focused impacts by building community economic opportunity, improving environmental quality, strengthening energy security and resilience, and minimizing energy costs. Our work is transforming how we as a society think about and use energy.



TECHNOLOGY RESEARCH AREAS

Power

To ensure a reliable supply of electricity for our homes, businesses, and industries, WEI engineers and scientists are working to enhance and adapt the grid to increase storage capacity, build resilience, and integrate renewable energy sources such as solar and wind. These advances are emerging from advanced microgrid technologies, low- and zero-emissions technologies, and next-generation turbines.

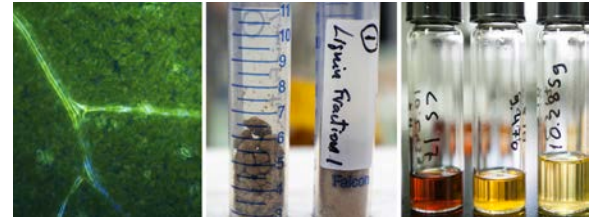


Fuels

WEI is driving toward cleaner, more efficient vehicles and transportation systems by generating the knowledge to make sustainable, inexpensive biofuels for gasoline, diesel, and other engines from non-food plants like switchgrass grown on marginal lands.

Chemicals

WEI researchers are using biomass to produce many chemicals and products currently made from fossil fuels, such as plastics and pharmaceuticals, as well as novel molecules that surpass the limitations of crude oil production. Energy-efficient production strategies will reduce chemical waste and manufacturing emissions.



COMMUNITY-FOCUSED IMPACTS

Economic opportunity

The heart of UW–Madison’s mission is the Wisconsin Idea, a mandate to ensure that discoveries reach the people of the state and beyond. In partnership with the Wisconsin Alumni Research Foundation, WEI is moving innovations out of the lab and into the marketplace where they can generate products, jobs, and economic benefits close to home. The potential economic impacts of our research include:

- Local, renewable resource utilization such as biomass, solar, wind, and energy storage
- New products, industries, and competitive advantages
- New uses and marketplaces for renewable energy and materials, and
- Utilization of waste streams for fuels and products.

Sustainability

WEI investigators and affiliates cultivate energy solutions that create economic benefit for Wisconsin and beyond while sustaining the state’s human and environmental resources, with a focus on enhancing:

- Bioenergy landscapes
- Food-energy-water systems
- Ecosystem services, and
- Circular materials and product lifecycles.



Security, resilience, and efficiency

Power outages, grid failures, and disruptions to fuels, chemicals, medicines, and other essential services have huge economic and social impacts on our state and nation. The U.S. needs a distributed and sustainable supply chain that is more secure, more resilient to periodic interruption, and more able to respond to the ever-growing needs of its citizens, and WEI research is helping to make that a reality. Our research explores:

- Distributed sources of power, fuels, and chemicals
- Power resilience using cost-effective microgrids
- Optimized local energy capture, storage, and distribution, and
- Data-driven technologies.