Wisconsin Energy Institute
UNIVERSITY OF WISCONSIN–MADISON

October 2026



FORWARD IN ENERGY

Who we are

At the Wisconsin Energy Institute (WEI), we envision a world powered by reliable, affordable, and sustainable energy. 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 new sustainable technologies to meet society's ever-growing need for power, fuels, chemicals, and materials.

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

Our scientists, engineers, and staff:

- Generate the knowledge and technologies needed to accelerate progress toward a plentiful, resilient, and affordable energy future.
- Train the next generation of scientists and engineers for America's energy workforce.
- Partner with industry, government, and communities to spur innovation and create new industries and economic opportunities.
- Build shared understanding of energy technologies through public engagement, education, and events.



UW–Madison has a legacy of solving large-scale challenges. Guided by the Wisconsin Idea, WEI serves as a hub that connects campus researchers with industry, government, and community partners across the state, the nation, and the world. Through leadership and collaboration, we are helping move Wisconsin and the world forward in energy.

Cross-disciplinary research, real-world impact

WEI brings together experts from across campus and beyond in cross-disciplinary teams that tackle energy challenges from every angle. Their discoveries and technological advances form the basis of cost-effective, resilient systems to capture and conserve energy, and generate products for society.

WEI research is organized around three research areas that can help create a circular bioeconomy and make society more prosperous, sustainable, and secure:

- Chemicals and Materials
- Fuels
- Power

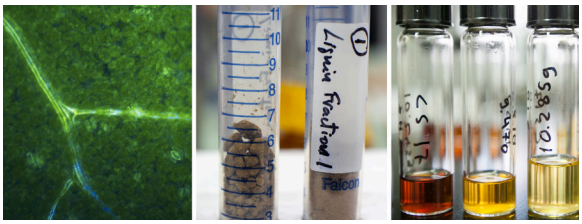
Advances in these areas will build community economic opportunity, improve environmental quality, strengthen energy security and resilience, and minimize energy costs. Our work is transforming how we think about and use energy.



TECHNOLOGY RESEARCH AREAS

Chemicals and Materials

WEI researchers are using biomass to produce chemicals and products, such as plastics and pharmaceuticals, as well as novel molecules that surpass the limitations of crude oil production. They are also developing cost- and energy-efficient ways to turn abundant biomass and organic residues into a suite of valuable chemicals and materials, reducing waste and manufacturing emissions.



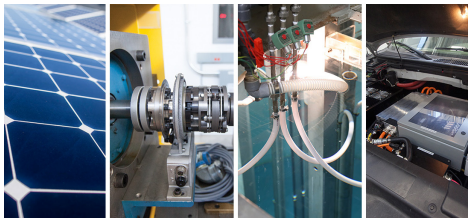


Fuels

WEI researchers are generating the knowledge needed to make affordable, sustainable bio-based fuels for automotive, diesel, aviation, natural gas, and other engines. These fuels can come from non-food crops like switchgrass grown on land unsuitable for food production as well as from crop and dairy residues.

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 intermittent sources such as solar and wind. These advances are emerging from energy storage research, advanced microgrid technologies, and next-generation turbines.



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:

- Use of local, renewable resources such as biomass, residues, solar, and wind;
- New sources of fuels, chemicals, and materials;
- New uses and marketplaces for renewable energy and materials; and
- Conversion of residue streams into revenue.



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:

- Responsible use of bio-based technologies;
- Connections between food, energy, and 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;
- Local energy capture, storage, and distribution; and
- Data- and AI-driven technologies.