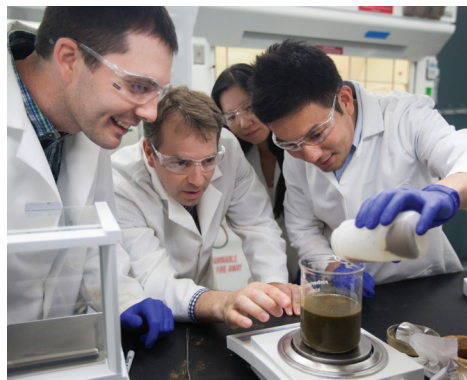




WHO WE ARE

As the home of collaborative energy research at the University of Wisconsin–Madison, the Wisconsin Energy Institute (WEI) is helping 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 and engineers are generating the knowledge and clean technologies that will accelerate the world’s transition to sustainable, resilient, and affordable energy systems. We are committed to turning innovative ideas into transformative, low-cost solutions that open new markets, create jobs, and generate new economic opportunities for communities nationwide, all while reducing the environmental impacts of producing power, fuels, and chemicals.



Guided by UW–Madison’s legacy of solving large-scale societal challenges, WEI acts as a nexus among researchers, scholars, policymakers, and industry to drive multidisciplinary energy research and train future energy leaders. Through leadership and collaboration, WEI is helping to 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

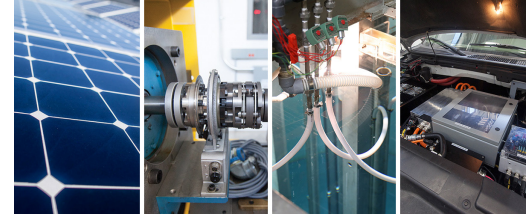
We believe innovation in these areas will have community-focused impacts by building community economic opportunity, improving environmental quality, strengthening energy security and resilience, and minimizing energy costs. Our work is transforming how we as a society think about and use energy.



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.

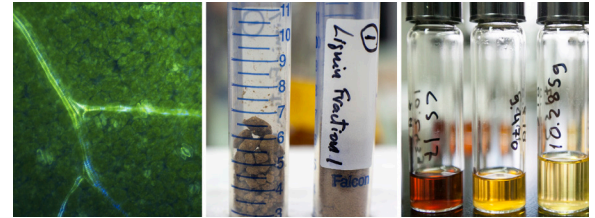


FUELS

WEI is driving toward cleaner, more efficient vehicles and transportation systems by generating the knowledge to make inexpensive, next-generation biofuels for gasoline, diesel, and other engines, integrating new technologies into existing systems and processes, and improving engine efficiency.

CHEMICALS

WEI researchers are using biomass to produce many chemicals and products currently made from fossil fuels, such as plastics, industrial chemicals, 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.