



Wisconsin Energy Institute
UNIVERSITY OF WISCONSIN-MADISON



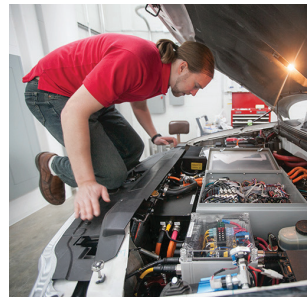
WHO WE ARE

The Wisconsin Energy Institute (WEI) is the collaborative home of energy research and education located at the heart of the University of Wisconsin–Madison campus. Together, we can move the state, nation, and world forward in energy.

WEI is tackling one of the most critical challenges of our time – the transition to new clean energy systems and solutions.

WEI is led by scientists and engineers committed to crossing traditional research boundaries and making major breakthroughs. A leader in clean energy research and a resource to the people of Wisconsin. WEI works closely with industry leaders to ensure that its technologies strengthen Wisconsin’s economy, create jobs, and improve the health and wellbeing of its citizens.

WEI also provides a place for the exchange of forward-looking



ideas. We create a public forum in which to learn about and discuss energy challenges, and help prepare students and community members for leadership in the energy sector.

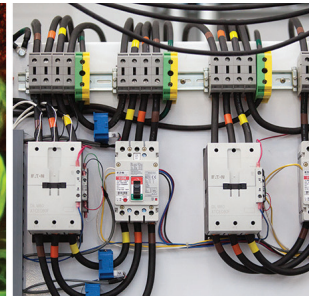
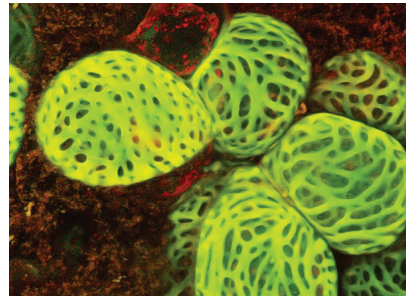
Unlocking the power of advanced biofuels. Rethinking the electric grid. Bringing together critical stakeholders. WEI is proud to contribute to UW–Madison’s legacy of solving society’s most pressing challenges.

RESEARCH

Energy powers everything – our homes, our cars, our food systems, our economy, and our wellbeing. And yet our current reliance on fossil fuels carries high costs and risks for our economy, our health, and our environment. Fortunately, the task of transitioning our neighborhoods, highways, and markets to cleaner, more efficient energy systems is already underway.

Every day, new technologies, solutions, and policies are creating more resilient, reliable, and sustainable systems of energy. When we invest in energy research, we strengthen our local economies, improve our energy security, and protect the health and environment of future generations.

At WEI, our work is part of the solution. We have two primary areas of technology research expertise – electricity systems and transportation and fuels – that together account for more than



two thirds of the United States’ total energy use. A third area of research, sustainability and society, focuses on the political, social, environmental, and economic contexts of our energy systems.

By crossing traditional research boundaries and creating valuable partnerships, we are transforming the way we think about energy and the way we use it.

TRANSPORTATION & FUELS

To protect the health of our communities and economies and to reduce our greenhouse gas emissions, we need more efficient and sustainable fuels, as well as smarter, cleaner transportation systems.

At WEI, we are working to address that need by performing research on fuels and chemical production processes, fuel characterization and use, fuel chemicals, and transportation systems.

In our research on cellulosic biofuels – i.e., fuels derived from non-food, or cellulosic biomass – we are developing sustainably produced advanced biofuels that are suitable for use in today's engines. Our biofuels research areas include cellulosic



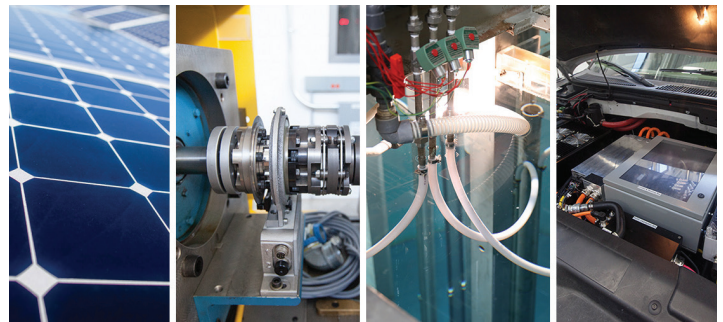
feedstocks; plant deconstruction; bio-chemicals and other bio-products; biodiversity; and sustainability.

WEI experts also focus on critical issues such as energy policy and regulation, techno-economic analysis, and the impacts of transportation systems on human health.

ELECTRICITY SYSTEMS

To reduce global greenhouse gas emissions while continuing to power our everyday lives, we need to transition to a cleaner, more reliable, and more resilient electricity system. At WEI, we bring together some of the nation's best scientists and engineers to develop renewable energy systems and architectures that will support a smarter energy grid. In electricity systems, our researchers focus on:

- Electricity sources and generation, including solar thermal and photovoltaics, concentrating solar power, advanced nuclear, wind generation, advanced power conversion systems;
- Heating and cooling;
- Energy storage systems; and
- Electricity distribution architectures.



WEI researchers also advance sustainability issues, positive health impacts of electricity generation, and access to electricity in developing countries.

SUSTAINABILITY & SOCIETY

The challenge of transitioning the world to clean energy systems is one of the biggest and most complicated of our time. Although it is a critical component of that transition, technological innovation alone is not enough to transform our systems, our policies, or our ways of thinking. That's why WEI experts are committed to understanding the political, social, and economic contexts in which energy is used, and in which new technologies are deployed.

Our cross-disciplinary research on sustainability and society brings together diverse areas of inquiry, including environmental studies, water issues, sustainable agriculture, economics, and policy and regulation. Our researchers also develop carbon sequestration technologies and explore the impacts of their implementation.



WEI experts measure the impact of new energy policies on human health and wellbeing, study the ways in which people interpret scientific information on energy, develop techno-economic models that help make clean energy sources more affordable and efficient, and provide policy recommendations to state and federal lawmakers.