



Creating Energy Alternatives

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Great Lakes
Institute for
Energy Innovation

Creating clean, sustainable energy is unlike any challenge our society has ever faced. The ramifications reach into every aspect of our lives and our world, from international relations and economic development to ecological wellness.



It impacts not only our prosperity, but our very survival.

To meet the challenge, we need innovative approaches to engineering research across a broad range of engineering and science disciplines. A collaborative, translational research model that more rapidly filters innovative ideas and integrates them into the marketplace is needed.

This model is being fostered by the Case School of Engineering and its new Great Lakes Institute for Energy Innovation.

Ohio as an Energy Laboratory

In many ways, Ohio is a microcosm of the world's energy crisis. Its industrial sector ranks fourth for energy consumption after Texas, Louisiana, and California. It has the second-highest refining capacity in the Midwest, after Illinois. Coal fuels approximately 90 percent of its net electricity generation, contributing to its position as the highest emitter of sulfur dioxide, the second-highest emitter of nitrogen dioxide and the second-largest emitter of carbon dioxide in the country. In August 2003, a transmission failure in the state led to the largest blackout in North American history, affecting more than 50 million people.

As a large energy consumer and producer as well as a linchpin in the power grid, Ohio can serve as a proving ground for new technology.

Case's forward-looking energy research initiative coupled with Ohio's advanced manufacturing infrastructure and ready, skilled labor force can position the state to emerge as a national leader in sustainable energy research, technology development, and industry.

We will educate the next generation of engineers and scientists to better manage existing and emerging energy resources.



The Case Advantage

OUR MISSION IS TO EVOLVE SOLUTIONS FOR TODAY'S ENERGY DEMANDS, WHILE DEVELOPING FAR-SIGHTED ENERGY RESEARCH AND ENERGY-USE STRATEGIES FOR TOMORROW'S APPLICATIONS.

The Case School of Engineering traces its work in energy advancement to the 1930s, when it became an acclaimed leader in electrochemistry research for fuel cells. Today it serves as the lead institution for the Wright Fuel Cell Group, a state-wide consortium of Ohio universities and industry collaborators dedicated to accelerating innovation and commercialization in the fuel cell industry.

The school has broadened its interests to develop strengths in many essential energy-related disciplines: advanced materials; wind energy, power informatics and control; and energy conversion and storage.

Case Western Reserve University has grown to be Ohio's leader in technology transfer and commercialization. It ranks in the top 10 percent of universities nationally with greater than \$250 million in annual research.

Building on this history and expertise in collaborative research, Case has formed the Great Lakes Institute for Energy Innovation as a resource for academia, industry, government, and educators.

The Great Lakes Institute for Energy Innovation

Created with a \$3.6 million grant from The Cleveland Foundation, the Institute is a multi-disciplinary center that is led by researchers at the Case School of Engineering and utilizes the rich resources and expertise of all of the graduate and professional schools at Case Western Reserve University.

The Institute builds on three primary areas of activity: **Research and Development**, **Economic Development**, and **Education** (including K-12 science, technology, engineering and math programs, and community college initiatives). The collaborative base of the Institute is founded on strategic partnerships and alliances with industry, government laboratories, and other universities across the state and nation. Together, we are exploring economic development and technology transfer in emerging energy fields such as renewable power, storage, and efficiency.

research and development
economic development
education

For more information about energy initiatives at the Case School of Engineering, contact:

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These three areas will allow us to do more than develop alternative energy but also create energy alternatives. We will educate the next generation of engineers and scientists to better manage existing *and emerging* energy resources. Our mission is to evolve solutions for today's energy demands, while developing far-sighted energy research and energy-use strategies for tomorrow's applications.

The Institute's unique, over-arching approach with short-and long-term solutions will help provide a competitive edge to Ohio. The state will be in a strong position to play a transformational role with today's industries, while attracting new opportunities for industrial leadership and meeting its own energy needs.

