

The project is one step by UC Riverside to meet the University of California's President's Initiative to make the University of California carbon neutral by 2025:

University of California President's Initiative:
The First Research University to Achieve Carbon Neutrality

The University of California is a national leader in sustainability and effective actions to reduce greenhouse gases to mitigate climate change. The University galvanized its position for environmental stewardship in 2007 when all ten Chancellors became signatories to the American College & Universities Presidents' Climate Commitment. To reach our next goal, which is to bring the University to carbon neutrality in its operations by 2025, we will need to take bold efforts to change the fundamental profile of our energy sources.



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California Energy Commission

UCR UCOP

Sustainable Integrated Grid Initiative

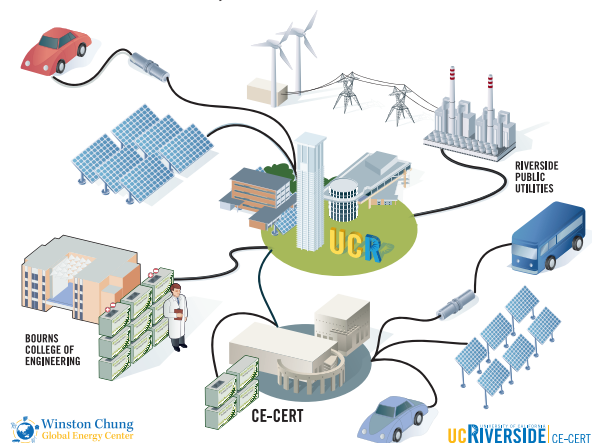
Research Towards a Sustainable Future

Integrating solar electricity generation, smart distribution, commercial-scale energy storage, and electric transportation

UC-Riverside has recently launched the Sustainable Integrated Grid Initiative (SIGI), one of the largest renewable energy project of its kind in the state. This initiative has been developed specifically to research the integration of intermittent renewable energy, energy storage, and all types of electric and hybrid electric vehicles.

The Sustainable Integrated Grid Initiative will:

- Provides a unique research platform for scientists and utility companies to identify and solve potential energy problems at scale, accelerating successful integration of renewable generation technologies with energy storage and grid-connected vehicles, thereby saving untold future dollars.
- Exemplifies the long-standing collaboration between academia, industry and the regulatory community. The project brings together UC researchers with major international and local industries such as Bourns, Inc., SolarMAX and Winston Battery, and public partners including the City of Riverside, Riverside Transit Agency, Riverside Public Utilities and the South Coast Air Quality Management District.
- Demonstrates the University of California's commitment to become carbon neutral by 2025 through research and implementation of novel renewable energy systems. The project will demonstrate the viability and potential efficiencies of integrated "smart" energy systems.
- Fulfills the university's and center's mission to educate by providing hands-on research opportunities for hundreds of undergraduate and graduate students.



The system is providing UC Riverside with renewable energy while serving as a platform to learn about how new technologies can be applied in the real world. Our research goals are to:

1. Evaluate the ability of smart grid protocols and energy storage to mitigate the impact of electric vehicle charging demand and intermittent generation on the grid.
2. Demonstrate efficiency and performance of various forms of electric and hybrid electric transportation and renewable generation operating in the Riverside community.

On average California derives two-thirds of its electricity from fossil fuels such as coal and natural gas, and the vast majority of our vehicles are powered from imported oil. Introducing renewable electricity generation and electric vehicle technologies such as plug-in hybrids are two key priorities in California's strategy to move toward domestic energy diversity and to meet our air quality and greenhouse gas goals. To meet these priorities utility providers need to ensure that bringing a significant number of fast-charging electric vehicles onto the existing grid system will not impact the local electricity demand and reliability. A key component of the UC Riverside project is to demonstrate that electric vehicles can be seamlessly introduced into the existing grid system through "smart integration" of renewable energy, storage and advanced dispatch controls.

Key Project Features:

- Four megawatts of solar photovoltaic panels
- Two megawatt-hours of battery energy storage
- Twenty-seven electric vehicle charging stations
- An electric-powered trolley service
- Energy monitoring and smart dispatch
- Open architecture designed for expansion

