Renewable Electric Energy Systems

Solar Energy

Harnessing the sun to power our cities—enough energy hits the Earth every hour to meet world power demand for a year. How can we capture it?

Smart Electrical Grids

Imagine a future where every home collects solar and wind power, feeding any excess back into the grid. How can we prepare for that reality?

Hydroelectric Power

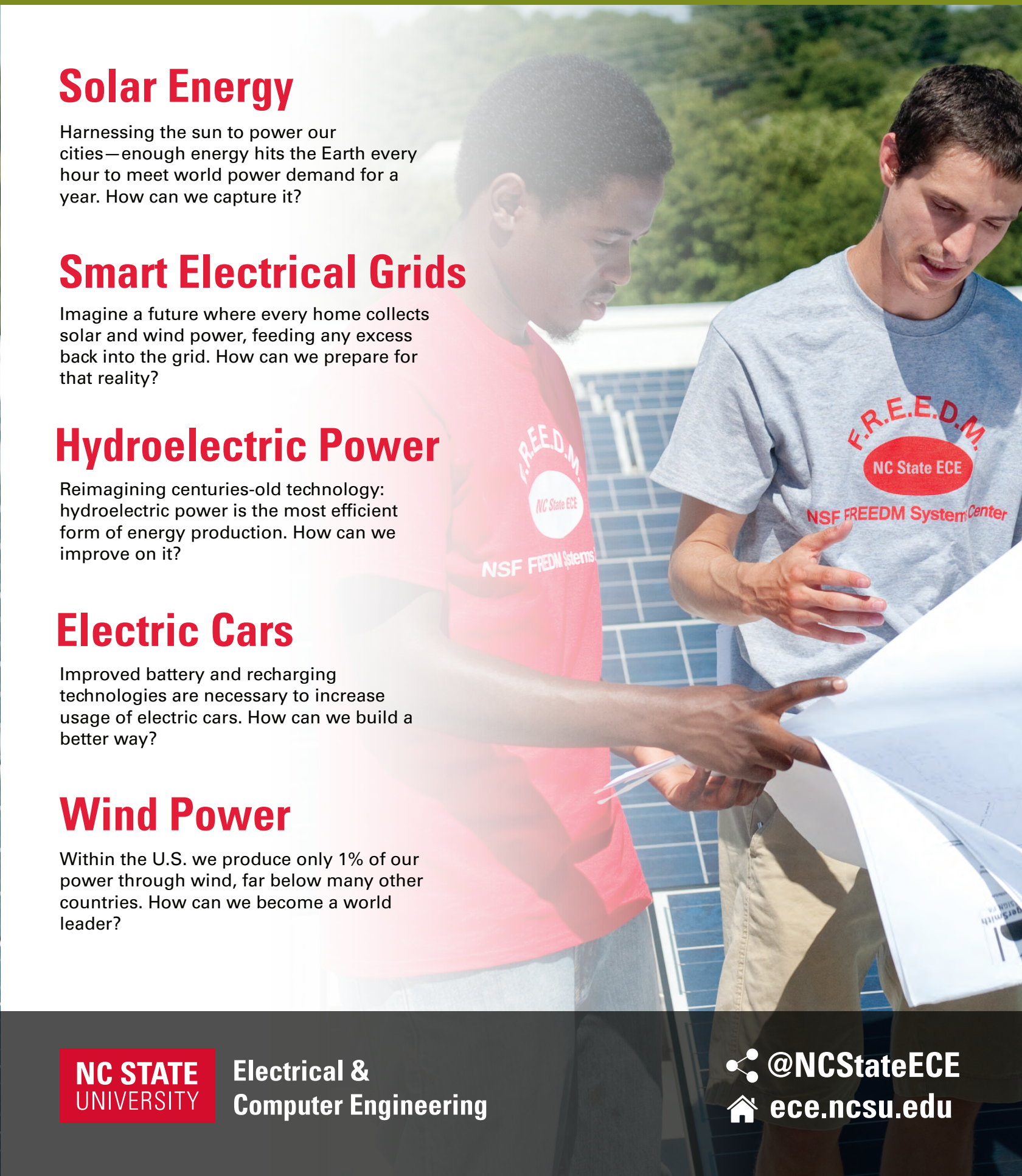
Reimagining centuries-old technology: hydroelectric power is the most efficient form of energy production. How can we improve on it?

Electric Cars

Improved battery and recharging technologies are necessary to increase usage of electric cars. How can we build a better way?

Wind Power

Within the U.S. we produce only 1% of our power through wind, far below many other countries. How can we become a world leader?



NC STATE UNIVERSITY
Electrical & Computer Engineering
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Creating the technologies to **Power Tomorrow.**

Undergraduate Concentration

A concentration in Renewable Electric Energy Systems (REES) within the Bachelor of Science in Electrical Engineering degree program addresses the need to develop technologies that can efficiently harvest geographically-distributed renewable energy, such as solar and wind. In addition, it focuses on the need to create a national power system capable of integrating these sources; and the need for advanced storage systems to facilitate the distribution of these resources for consumer usage, such as in electric vehicles.

At NC State University, we recognize a growing need for talented engineers with an education grounded in renewable energy concepts and technology.

The concentration aims to create a new generation of engineers who employ a broader range of interdisciplinary knowledge in a team-based environment for the renewable energy-based electric power systems field.

Students enrolled in the REES undergraduate concentration receive training in the following areas: Renewable Electric Energy Systems, Power System Analysis, Power Electronics, and Design of Electromechanical Systems.

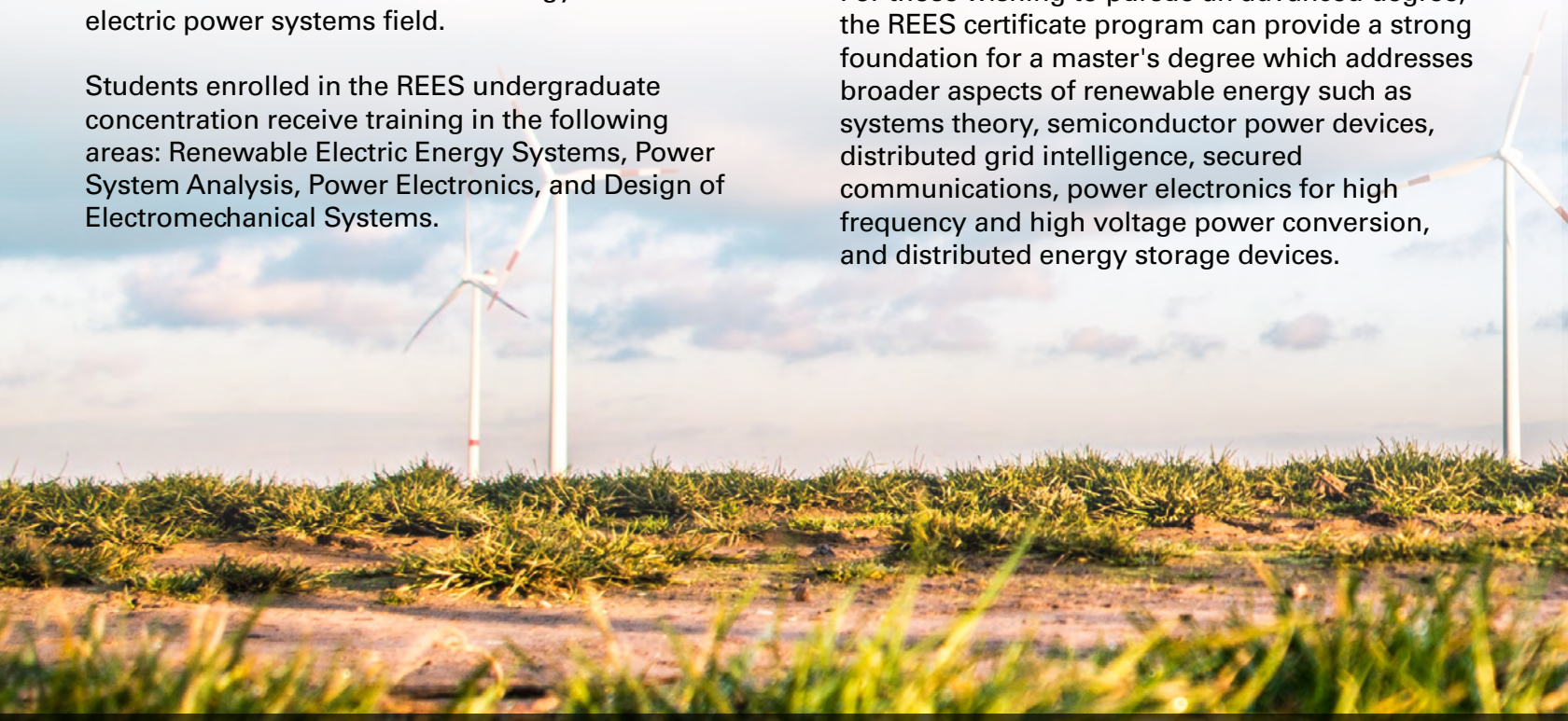
Graduate Certificate Program

Working in conjunction with the Future Renewable Electric Energy Delivery and Management (FREEDM) Systems Center, the Graduate Certificate in REES helps students to develop expertise in renewable electric energy systems and advanced power grid technology in addition to their major area of study.

The certificate entails 12 credit hours on topics including:

- Power Electronics
- Advanced Power Plants
- Power System Protection
- Solar Thermal
- Power System Stability
- Electric Vehicle Systems
- Electromechanical Systems Design

For those wishing to pursue an advanced degree, the REES certificate program can provide a strong foundation for a master's degree which addresses broader aspects of renewable energy such as systems theory, semiconductor power devices, distributed grid intelligence, secured communications, power electronics for high frequency and high voltage power conversion, and distributed energy storage devices.



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