



TEXAS TECH UNIVERSITY

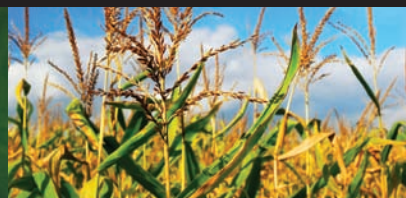
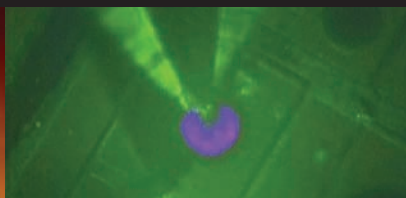
# Edward E. Whitacre Jr. College of Engineering™

## Energy Positioning Statement Texas Tech University Whitacre College of Engineering

The **Whitacre College of Engineering** is dedicated to discovering solutions to the nation's challenge in accessing sufficient and sustainable energy sources to power its future. The college is committed to conducting cutting edge research and providing educational programs related to traditional and unconventional energy production, storage, integration and infrastructure. Current expertise in oil and gas production, wind energy, biofuels, energetics, and vehicle technologies will be complemented with investments to grow research expertise in solar energy production, smart grids, energy storage, alternative fuels, and nuclear energy. Through this commitment to build a breadth and depth of research and workforce preparation programs related to energy, the college will become known as one of our nation's energy colleges, a critical player in charting the energy future of our nation.

Texas Tech University is located in a unique region of the nation, one with a confluence of natural resources and a deep commitment to the production of energy from sources as diverse as oil and gas to nuclear power. The college accepts its responsibility to provide the technical and workforce energy solutions that will serve our region, while also propelling us as a national leader in energy research. Characteristics of our region include:

- Texas Tech is located on the edge of the Permian Basin, one of our nation's largest sources of oil and gas;
- Texas lead the nation in 2008 with 8 GW of installed wind generation capacity, with most wind energy generation concentrated in West Texas. Texas has the potential of producing about 380 GW of wind energy according to the Pacific Northwest Laboratory study;
- The sun shines 262 days per year on average in West Texas, an area ideally suited for solar energy;
- West Texas and Eastern New Mexico have a long-term commitment to nuclear fuel enrichment and nuclear waste storage;
- As an agricultural region, West Texas is deeply committed to biofuels production as a regional strength;
- Our remote location with highly varied sources of electricity introduces the greatest challenges facing electric grids.





TEXAS TECH UNIVERSITY

# Edward E. Whitacre Jr. College of Engineering™

As one of the nation's largest engineering colleges with a unique regional alignment in energy, the college has distinctive capability to provide technical and workforce solutions to secure our nation's energy future. The college is expanding its nationally recognized programs related to energy including:

- **Oil and gas:** The Bob L. Herd Petroleum Engineering program, one of the nation's largest petroleum engineering programs, is committed to finding solutions to enhance oil and gas production in geologic formations similar to the Permian Basin;
- **Wind Power:** The Wind Science and Engineering Center brings world-class expertise in atmospheric sciences, structural integrity, and wind turbine technology to address critical application challenges. The center offers unique undergraduate and graduate programs related to wind energy;
- **Energetics:** Harnessing and studying explosive power from the macro to the nano-scale is contributing solutions to critical challenges facing our nation's defense and energy production;
- **Biofuels:** The feasibility of biofuels as a significant energy source will only occur when cellulosic biological materials can effectively be utilized, the area of study of our researchers; and
- **Advanced Vehicle Technologies:** Our engineering students have competed for more than two decades with a select set of universities in Department of Energy competitions around advanced vehicle technologies.
- new areas of expansion
- **Solar:** The Donovan Maddox Distinguished Engineering Chair, a \$7 million chair, will be dedicated to attracting a world-class faculty researcher and associated team in solar energy, finding solutions to tap into the world's most plentiful source of energy;
- **Smart Grids:** Integrating variable power sources such as wind and solar generated electricity and addressing power losses currently present in widely distributed remote grids is an area of growth, building on our strong background in power electronics;
- **Nuclear:** The Don Kay Clay Cash Foundation Chair will attract a leader to establish a nuclear engineering graduate program to focus on the challenges facing our nation in both nuclear workforce preparation and the nuclear fuel cycle; and
- **Storage:** The college will invest to build research capabilities at Texas Tech related to energy storage.

As a national leader in energy, the college is committed to:

1. Develop extensive research and educational relationships with appropriate government agencies and industries resulting in at least \$10 million in externally funded energy-related research annually;
2. Produce the expert workforce of the future through highly integrated research and educational programs that serve students and working professionals;
3. Conduct multidisciplinary state-of-the-art research with distinctive research facilities related to the production, storage, integration and infrastructure security of energy, while also considering factors such as sustainability, efficiency, and conservation;
4. Serve as the regional focal point on policy-related energy issues affecting the State of Texas;
5. Become one of the national centers of energy information exchange through sponsoring of conferences, public lectures, and other similar interactions; and
6. Be recognized by the private and public sectors as a major contributor to the solution of our nation's energy challenges.



**ENERGY**  
Production Utilization Storage Distribution

