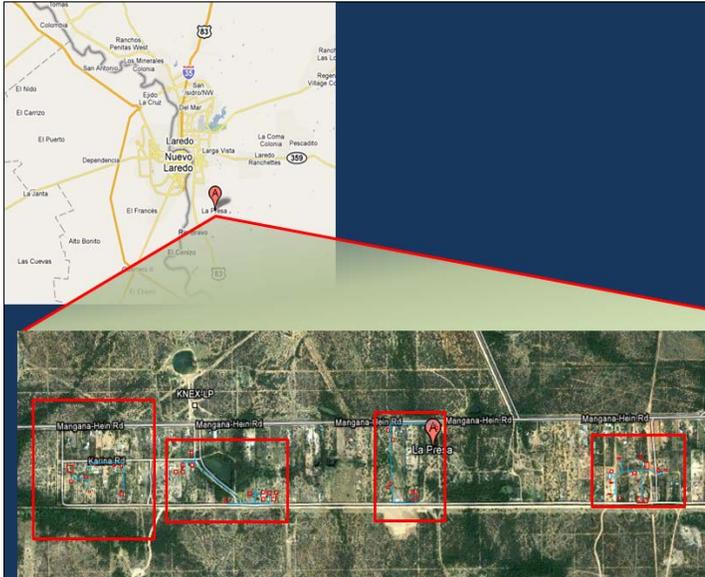


# Temporary Power Border Colonias through Hybrid Mobile Micro-Grid On-demand Power



Disadvantaged communities along the Texas/Mexico border have a great need for infrastructure improvements that will help not only improve the quality of life, but also increase security and increase residents' education levels. The Texas A&M University System is involved in these improvements through projects with the Texas A&M University College of Architecture's Center for Housing and Urban Development (CHUD), Texas A&M International University (TAMIU), and TCAT. These projects have exposed the need for off-grid generation of power that would significantly improve the quality of life for border area residents at a low enough cost to make economic sense, especially for residents living in poverty or near poverty situations.

To address the off-grid power needs of border Colonias residents, TCAT, with funding from the Texas State Energy Conservation Office (SECO) and the U.S. Department of Energy (DOE), worked with Xtreme Power, Inc., to develop, install, and test a hybrid generation system using multiple renewable energy sources and a high efficiency energy storage system to provide temporary electrical power to residents. The use of energy storage systems and renewable energy sources significantly reduced fuel requirements and can reduce the overall costs of stand-alone generators by half while producing 24 hour availability. These systems can also be used in emergency response and disaster recovery applications.

TCAT's assessment of system operation proved

- Reliable operation in extreme environments
- Ability to provide 24 electric service to non-grid served residents

## TEXAS CENTER FOR APPLIED TECHNOLOGY

There are many problems that require the careful and proper integration of applied technologies to find solutions. The Texas Center for Applied Technology (TCAT) was created to focus on these specific problems and to develop effective and efficient solutions. TCAT's core competency is the innovative application of existing technologies and advanced research to solve complex real-world problems.

TCAT's primary objective is to apply and test technologies to address targeted problems and engage basic research as required. TCAT has employees in a variety of locations with the ability to perform research that cuts across multiple technologies, disciplines, and cultures. The Center's employees are knowledgeable regarding customers' requirements and are ready to respond effectively to provide the best value for the customers' needs including expertise in technology insertion, technology assessments, and test and evaluation.

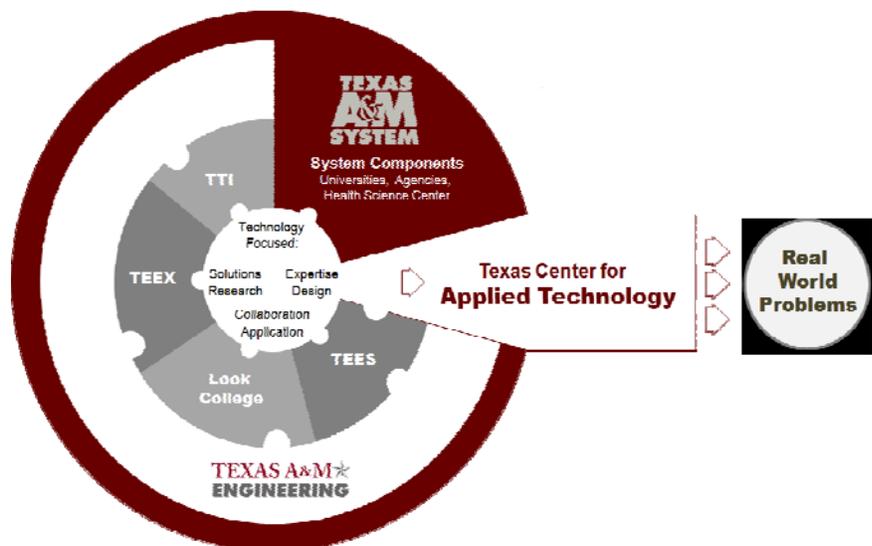
TCAT is part of the Texas A&M Engineering Experiment Station (TEES), a member of The Texas A&M University System. The A&M System is one of the largest and most comprehensive systems of higher education in the United States. Through a statewide network of eleven university campuses, seven state agencies, and a comprehensive health science center, the A&M System educates more than 120,000 students on its university campuses, conducts more than \$780 million in research, and reaches another 22 million people through service each year. TEES is an engineering research agency for the state of Texas and conducts over \$147 million in research annually. Because of the Center's position within the Texas A&M Engineering program, TCAT's expertise can easily be extended by rounding out its team with world class faculty researchers, as appropriate. TCAT is in an excellent position for collaboration not only with The Texas A&M University System components and their customers but with other universities, institutions, centers, and industry.

## TCAT'S CORE COMPETENCIES

Energy Sustainability ★ Environmental Sustainability  
Manufacturing & Systems Engineering ★ Information Technology ★ Modeling & Simulation  
Technology Insertion ★ Test & Evaluation

## TEXAS A&M ENGINEERING

Texas A&M Engineering consists of the Dwight Look College of Engineering, and three engineering agencies, including TEES: Texas A&M Transportation Institute (TTI) conducts research and professional education in all modes of transportation. The Texas A&M Engineering Extension Service (TEEX) works to develop a highly skilled and educated workforce and enhances public safety through training, continuing education, and technical assistance.



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