

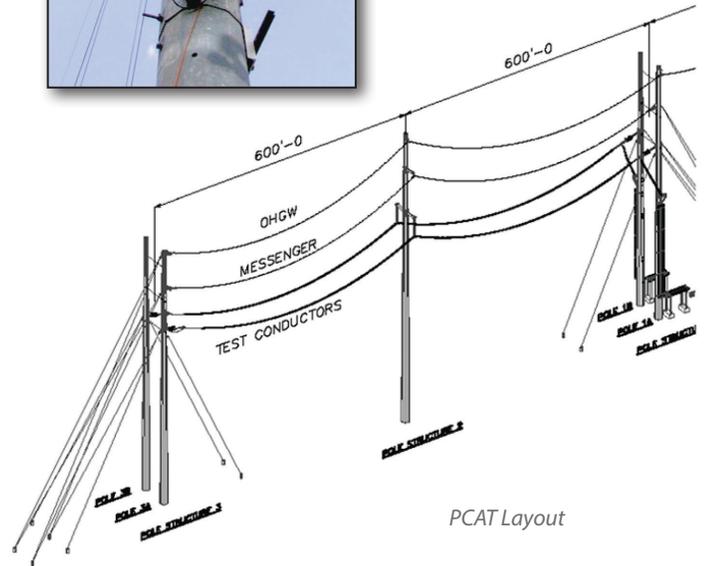
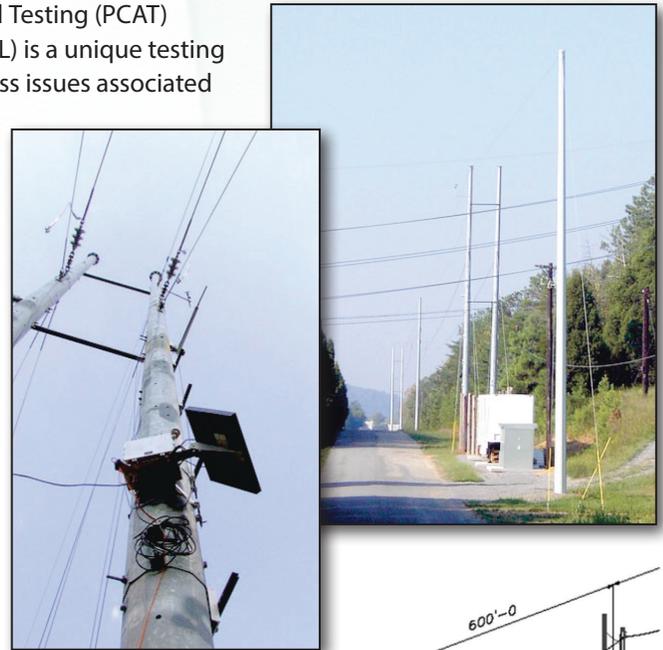
Outdoor Powerline Conductor Accelerated Testing (PCAT)

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The outdoor Powerline Conductor Accelerated Testing (PCAT) facility at Oak Ridge National Laboratory (ORNL) is a unique testing center that supports the urgent need to address issues associated with electricity transmission reliability and security in the United States.

PCAT, sponsored by ORNL, the U.S. Department of Energy (DOE), and the Tennessee Valley Authority (TVA), is part of a DOE effort to address the growing demands for power at a time when the amount of electricity that can be carried currently over power lines is slipping. The PCAT facility tests and evaluates advanced power transmission technologies with the potential to increase the capacity and the reliability of the U.S. transmission and distribution network. The technologies being characterized include new and conventional conductors, advanced sensors and controls, and power electronics.

The PCAT facility, which began operation in late 2002, is located within a mile of the main ORNL campus. It consists of a closed loop capable of testing approximately 2400 feet of power cable mounted on fiberglass poles. A 2-MW dc power supply fed by a transformer provides current up to 5000Adc for the site. TVA helped design the line structure at the PCAT site and install poles, hardware, and other accessories.



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The highly instrumented PCAT facility can be utilized to yield important data about the performance of new conductor technologies and the other components under both high temperatures and high current and varying environmental conditions. The results of these tests can help fill a gap in testing and help encourage electric utilities to take greater interest in replacing their existing lines with new cables. Widespread usage of the composite conductor has the potential to increase the efficiency of energy transmission and provide one answer to the problems of growing energy demand and transmission bottlenecks.

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Long-term plans for the PCAT facility include testing of other new conductor designs and performance testing of existing conductors.

