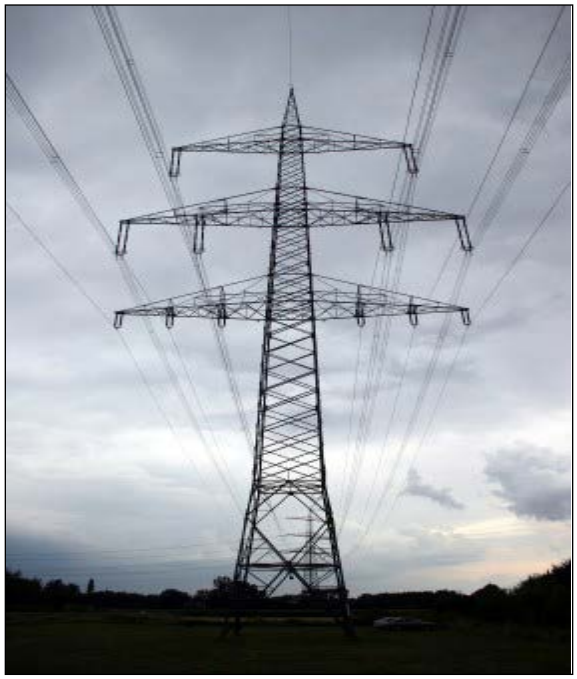
A Portable Community Infrastructure Resiliency System (PCIRS)

Protecting Transformers

Since so many industries depend upon reliable electric power, disruption of our electrical infrastructure by natural or man-made means will seriously affect both the economy and national security. Existing power transformers are susceptible to damage from a number of cataclysmic events including earthquakes, floods, hurricanes, and terrorist attacks. Once electrical power has been lost, cell phone communications follow. Commonly used transformers are very large, hard to transport, and generally require a long lead time to build.



Preserving Electric-Power Infrastructure

By drastically reducing the relative size and weight of traditional transformers, emergency response crews will have the option of air-lifting replacement transformers when surface routes are clogged, or the damaged transformer is in a remote location. Alternatively, smaller, more maneuverable, surface vehicles can be used to move a replacement transformer to a disaster site.

Moving Forward

Western KY University has developed a Portable Community Infrastructure Resiliency System (PCRIS). This system consists of a portable electrical transformer station equipped with a communications hub that can be rapidly deployed in response to a crisis in the nation's electrical-energy infrastructure. The principal element of the station is a compact, lightweight power converter that will provide emergency replacement of large, heavy iron-core transformers used in substation and distribution yards.

The benefits of the PCIRS system are that it reduces down-time during a national crisis, improves overall power quality, and provides increased functionality to responder teams during an emergency. The project team is in current discussions with government agencies and industry leaders for adoption and commercialization of project deliverables. These discussions include additional development collaborations, licensing, and outright purchasing of units to address specific temporary power needs. A start-up company is also being considered to provide rental units for local municipalities or general industry during an emergency situation or to support temporary power requirements for critical industry services.

To learn more about this project, contact: Jay Robinson, Program Manager, at jay.robinson@hq.dhs.gov or Ewell Balltrip, NIHS, CEO at eballtrip@thenihs.org 2015-01.1pager