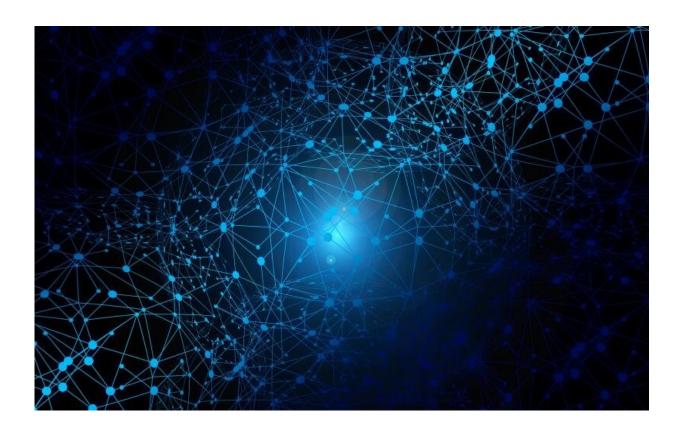# New insights into the everyday operation of the nation's power grid

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An open-source code developed by an ORNL-led team could provide new insights into the everyday operation of the nation's power grid. Credit: Pixabay

Oak Ridge National Laboratory, University of Tennessee and University of Central Florida researchers released a new high-performance computing code designed to more efficiently examine power systems

and identify electrical grid disruptions, such as power outages.

The Resilient Adaptive Parallel sImulator for griD, or RAPID, relies on a novel parallel in time, or "parareal," algorithm that divides calculations into smaller time intervals, then completes them simulataneously on different processors to streamline traditionally time-consuming simulations.

RAPID also uses adaptive model reduction, which reduces computational demand by focusing only on areas near a disruption. The code is compatible with various architectures and could eventually help predict grid dynamics and assess algorithms for the integrated transmission and distribution network as fast as or faster than real time.

"The goal is to run these simulations as fast as possible and provide information to grid operators about how to address problems," said ORNL's Srdjan Simunovic.

Provided by Oak Ridge National Laboratory