

Real-Time Simulation of Power Grid Disruptions

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Technology Summary

Government agencies have identified the key power grid problem needing exascale computing is coupling of real-time data streams (1-2 TB per hour) as the streams are ingested to dynamic models. These models would then identify predicted disruptions in time (2-4 seconds) to trigger the smart grid's self healing functions. We will establish the feasibility, we will define the scientific issues, and we will demonstrate the solutions to important smart grid simulation problems only addressable within an exascale scientific computing application. The enduring capability will 1) establish and demonstrate the network as a national resource; 2) develop data processing and simulation metrics to design a national capability justifying exascale applications; 3) demonstrate running dynamic models to design few second self-healing is feasible.

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