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Eastern Power Outage Unfortunate but Entirely Predictable Aug. 14 Event Offers Wake-Up Call for U.S. Energy Policymakers

OLD SNOWMASS, Aug. 14—Officials with Rocky Mountain Institute, one of the world’s leading energy think tanks, today called on U.S. energy policymakers to take note of events in the Eastern United States and fundamentally change how the United States designs its electricity system so that it is more reliable and more resilient.

Calling the massive August 14 power outages in the Northeastern United States “a wake-up call to decision makers,” officials at the twenty-one-year-old Institute said Americans should look to distributed, diverse, and resilient clean technologies to power their industries, homes, and communities. America’s existing system—based on a hundred years’ worth of heavily centralized generation and distribution policies—can trigger a cascading series of errors that leaves us vulnerable and should be corrected.

“This is the fourth catastrophic failure of the central power grid within the last decade,” said Kyle Datta, Managing Director of RMI’s consulting practice, “and yet decision makers are not learning the right lessons from these crises.”

In 1996, western United States lost power because a power line heated up, sagged, and shorted out. In 1998, there were two noteworthy power failures: ice storms knocked out power systems in eastern Canada and the United States, and the city of Auckland, New Zealand lost power for over two months due to a transmission line failure. Thursday’s power loss appears to be from a strike of lightning.

RMI has warned of the weakness of the grid for years, notably via the Institute’s founders’ 1982 book *Brittle Power: Energy Strategy for National Security* (www.rmi.org/sitepages/art7095.php), which describes the vulnerability of the North American electric grid to attack, accident, and natural disaster. “The United States has for decades been undermining the foundations of its own strength,” the authors wrote. “It has gradually built up an energy system prone to sudden massive failures with catastrophic consequences.”

RMI’s Datta said the reason the New York system failure cascaded to New England, the Midwest, and Canada was because all the systems were heavily loaded and near capacity. When a problem starts in one part of a heavily loaded system, it can spread quickly

through the rest of the system, he explained.

Mr. Datta said that the centralized architecture of the large interconnected power systems in the United States is one of this nation's biggest vulnerabilities. Today's power system consists of relatively few and large units of generation and transmission, sparsely interconnected and heavily dependent on a few critical nodes (many of which are nearing capacity).

Additionally, the failure to invest in energy efficiency and demand response efforts has led to a situation in which power demand is so high there is little surplus capacity left in the system—regularly placing our electricity system in a precarious position. Even a weather-induced surge of electricity or a failure of a major power plant or transmission line can cascade through the system and cause massive technical, social, public health, and national security problems—as they did on Aug. 14. Our electrical system, as we predicted over twenty years ago, is and remains extremely brittle.

Learning the Right Lessons

Datta said the traditional response is to call for more and larger power plants and extensive expansion of the transmission system. While such solutions will provide temporary relief, they do not address the cause of the problem. The solution, he said, is distributed generation architecture; placing smaller, modular, diverse, and redundant electrical devices across the grid close to the loads they serve. Energy sources such as fuel cells, combined heat and power systems, solar panels, and micro-turbines can provide power at lower cost and greater reliability than the centralized power grid.

RMI's 2002 publication, *Small Is Profitable* (www.smallisprofitable.org) found that the benefits of distributed resources make them more economic than centralized power plants. It also finds that distributed architecture makes the system far more resilient than today's grid.

“The interesting challenge is not understanding why the centralized system failed once again,” said Datta, “but to understand which elements of the system are able to maintain electricity supply in the face of overall system failure. Our prediction is that the distributed generation components of the system continued to provide reliable power.”

Datta likened our current grid to a centralized mainframe with limited access points. The worldwide web, on the other hand, distributes computing power, and by its dispersed nature means information is at much less risk, he said.

“The web is a very good model of what we should be doing with electricity. The grid should exist, but it should complement electricity storing and generating devices in our offices, homes, and ultimately, in our fuel-cell-powered automobiles. Putting all our eggs in one basket is a predictable catastrophe waiting to happen.”

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