Smarter grid is a smart investment

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For thousands of years, nocturnal light was an expensive luxury. Today we can't imagine life without cheap round-the-clock light. This is just one example of how the U.S. electrical grid is responsible for facilitating so much of the economic progress and improvement of quality of life in the past century.

But as recent major storms have demonstrated all too well, our electrical infrastructure is in a perilous state: It is aging, inefficient, congested and incapable of meeting the future energy needs of our information economy and manufacturing base.

The grid powers nearly all of the critical infrastructure elements upon which we all rely every day, such as fuel pumps, traffic signals, the air traffic control system, and radio and cell phone towers. The grid is also an essential element of the interdependent transportation, communication, water and other services upon which our economy relies.

Yet since 1982, the growth in peak demand for electricity -- driven by population growth, bigger houses, bigger TVs, more air conditioners and more computers -- has exceeded transmission growth by almost 25 percent every year, leaving little capacity to spare.

Meanwhile, the likelihood of the national power grid being disrupted by adverse events is rising. According to the Department of Energy, of the five massive U.S. blackouts over the past 40 years, three of them occurred in the past nine years. The average outage from 1996 to 2000 affected 409,854 people, a 15 percent increase over the previous five-year period.

This is in large part because today's threats can stem from physical decay of our decades-old infrastructure, as well as increasing per-person power consumption in crowded cities and increased electrical consumption in rural areas that were once scarcely inhabited.

The economic costs of power disruptions can be quite severe: A rolling blackout across Silicon Valley generated $75 million in losses; in 2000, the one-hour outage that hit the Chicago Board of Trade resulted in the delay of $20 trillion in trades. Sun Microsystems estimates that a blackout costs its company $1 million every minute, and the Northeast blackout of 2003 resulted in a $6 billion loss to the region.

It is the right time for a smarter grid -- one in which the growing costs of relying on an oft-disrupted electrical supply are ameliorated through smart investments that allow real-time awareness of power grid operations and better tracking of energy demand, delivery and usage patterns. Other

improvements include interchangeable parts for major capital equipment and multibillion-dollar investments in everything from refreshed generation capacity and new power plants to redundant distribution networks using new, modular parts, to smart meters that can help identify and isolate disruptions and anomalies.

Despite the growing risks, there is not yet sufficient political awareness to support investments to ensure reliable access to electrical power for the coming decades. But in fact, we will pay for it, one way or the other. We can either pay to improve the system now, or we can deal with the expenses when unpredictable future outages result from the lack of improvement. Both paths are costly, but the former one offers greater control and predictability. In other words, it is the smart choice.

This must change, or we will all end up paying the price, one way or the other.

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