Critical Infrastructure: The Intersection of Technology and Public Policy

Richard M. Krieg
Editor, Journal of Critical Infrastructure Policy
Texas State University

Mary D. Lasky
Chair, InfraGard National Disaster Resilience Council
Johns Hopkins University Applied Physics Laboratory

Introduction

Recent events, including cybersecurity breaches affecting large swathes of the American public, Hurricane Maria's impact on Puerto Rico, the Argentine regional electrical outage, election cyberattacks by foreign governments, and claims regarding the infiltration of Russian power grid by the United States, have brought the criticality of national infrastructure into public consciousness.

In industrialized nations as well as urban centers within non-industrialized countries, citizens are dependent on reliable electrical power. If electricity is not available for weeks, months or longer, the cascading impacts would degrade multiple critical infrastructures: water supply and wastewater treatment; telecommunications; food production and delivery; fuel extraction, refining, and distribution; financial systems; transportation; emergency services; hospitals and healthcare; multiple supply chains; and other critical societal processes. Depending on the nature and scope of the event, loss of life could be catastrophic.

For example, the lack of water causes the degradation of hospital functions more quickly than any other sector, with 67 percent to 99 percent impairment after 2 hours (*Water Resilience: Final Report and Recommendations*, National Infrastructure Advisory Council, 2016). Most local water systems have a 1-day supply of water absent electric power, since filling overhead water tanks require electric pumps.

Aside from the loss of electricity, critical infrastructure sectors are independently vulnerable to a variety of threats from both human and natural sources. In addition to the sectors listed above, critical infrastructure also includes nuclear reactors, materials and waste; the chemical industry; dams; the defense industrial base; government facilities; commercial processes; and critical manufacturing.

While technical solutions exist to resolve infrastructure vulnerabilities, their implementation is often dependent on policy development and implementation in both the public and corporate domains. Increasing infrastructure resiliency in the United States requires

sustained attention at the Federal, State and local policy levels. Building resiliency is compounded by the fact that a large proportion of American critical infrastructure is owned and operated by private entities. The perception of costs, benefits and risks of alternative strategies may differ depending on whether one's primary audience is shareholders or society-at-large.

Presentation

The speakers will present the emerging field of critical infrastructure protection, its importance as a national priority and how it relates to overall community resiliency. The framework will be a discussion of two new publications intended to impact policy decision-making related to critical infrastructure.

Mary Lasky will present the Second Edition of *Powering Through: Building Critical Infrastructure Resilience*, published by the InfraGard National Disaster Resilience Council in late-2019. She will describe the broad topic of infrastructure resilience in relation to a long-term electrical power outage across sectors. Cross-sectoral relationships will be emphasized. The threats faced and major steps that can be taken to achieve resiliency will be discussed.

Richard Krieg, who authored the book's "Healthcare and Public Health Sector Chapter," will delve more deeply into specific vulnerabilities confronting that sector, the societal consequences of inaction and solutions proposed to mitigate these vulnerabilities.

Finally, he will discuss the new *Journal of Critical Infrastructure Policy*, published by the Policy Studies Organization, the niche that it is intended to fill in the professional literature and the types of articles that it seeks.