



RESILIENCE OF CRITICAL INFRASTRUCTURE: *Wider Economic Benefits & Impacts*

Critical infrastructure ensures the supply of essential goods and services. Our communities are highly dependent on interconnected systems of linked energy, communications and transport infrastructure, to minimize loss in the event of facility or network failures. EDR Group, combined with our global affiliate, EBP, offers experience spanning a wide range of critical infrastructure types, and capabilities to assess benefits of investing in infrastructure resilience. This includes capabilities to assess how the entire economy can be affected by critical infrastructure failures and challenges, such as the increasingly distributed electric generation and distribution networks, as well as air and marine ports.

The Economic Impact of Failure to Invest in Upgrading Electricity Infrastructure. For the American Society of Civil Engineers, EDR Group assessed the long-term adequacy of US electricity infrastructure and the wider economic costs of failure to adequately reinvest in it. The study covered electricity generation, transmission and distribution systems within regions of the US. It considered the expected future adequacy of infrastructure given system capacity and facility age factors, as well as shifts towards renewable and distributed energy technologies. The study team estimated the gap between needs and investment levels and the macroeconomic consequences of failure to close that gap, in terms of effects of blackout, brownouts and capacity constraints on US economic competitiveness and household income.

Consequences of Power Outages on Critical Infrastructures. For the Germany Office of Technology Assessment, our affiliate EBP analyzed how a power supply disruption over a period of six weeks would affect several German regions. The project team examined the consequences for transportation, financial and information & communication infrastructures. All activities were coordinated with the federal offices of Civil Protection & Disaster Assistance, and Information Security.

Transportation System Congestion and Disaster Resiliency. For the Portland Business Alliance and Port of Portland, EDR Group assessed the wider regional and statewide economic impacts of transportation system disruptions. This includes disruptions caused by congestion incidents, lack of investment in key corridors serving freight-dependent industries, and natural disasters that could potentially result in long-term failure of key elements of the state's transportation infrastructure.

Resilience Measures for Road Infrastructure. For the German Federal Highway Research Institute (BASt), our affiliate EBP studied best ways to increase the resilience of critical road infrastructures such as bridges and tunnels, and best ways to assess their cost effectiveness given budget constraints. The study examined ways to measure the full benefits and costs of investment in road infrastructures. It also included international case studies of how these issues are approached in other countries.

Geotargeting Evaluation. For the Vermont Dept. of Public Service, Mike Sherman of EDR Group evaluated the development and implementation of an innovative set of geographically targeted energy efficiency residential and commercial initiatives, which were designed to delay or avoid expensive transmission & distribution investments in constrained areas, a strategy now employed in rural and dense urban environments.