

Potential Impacts of climate change on infrastructures

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There is widespread consensus that the effects of climate change will result in higher temperatures and extreme weather incidents. However, there remains tremendous uncertainty associated with climate change and its impacts which poses significant challenges to policy makers who are charged with the regulation of infrastructure within the U.S. (e.g., water, energy, transportation, and financial sector), disaster preparedness and response efforts, and national security. Climate change has the potential to significantly alter the operational and planning assumptions about the nature of hazard events which could then affect our ability to effectively prepare for, protect against, respond to, recover from and mitigate all hazards. Policy makers and system managers rely on these operational and planning assumptions for a variety of mission critical decisions including assessments of risk, resource needs and resource distribution (both geographically and programmatically). The motivation of this paper is to evaluate the vulnerabilities of U.S. infrastructure to climate change. Specifically, we seek to inform policymakers by identifying the potential types of consequences and the likelihood of those consequences, caused by changes in the frequency and magnitude of precipitation events and temperature extremes on U.S. critical infrastructure. We accomplish this by focusing on statistical changes in the magnitude and frequency of extreme weather incidents to: (a) evaluate how those statistical changes will impact the physical environment and the distribution, frequency and magnitude of impacts; (b) identify the potential impact and factors influencing the distribution of impacts on the U.S. population, infrastructure and economy. This scoping study will also identify actions needed to address the identified risks and begin to formulate and compare alternative risk-reduction strategies.