

**NATIONAL INFRASTRUCTURE ADVISORY COUNCIL**  
**Previously Proposed Study Topics (Still Outstanding)**  
**[Council Discussions in 2009 and 2011]**

**Topic I: Market Incentives and Preparing for High-Impact/Low-Probability Occurrences:**

This topic addresses market measures and investing in preparation for low probability, high impact events. Specifically, there are circumstances where an individual company does not feel able to shoulder the responsibility and cost of preparing for rare events, but the occurrence of such events would nevertheless have systemic consequences. When an infrastructure owner considers a scenario too unlikely to occur to be relevant, or when they do not feel capable of shouldering the responsibility, how should the government or other stakeholders respond?

The topic would examine preparations for extremely low probability events that do not normally meet the threshold for action according to risk assessment models utilized in private industry. Is there a possible case for investment and operational expenses, in excess of the normal risk in formal business practices, as well as a role for insurance or risk pooling at the sector level. Additionally, is there a role for consortium agreements to share equipment or to establish inventories of spare parts to mitigate the consequences of events affecting capital-intensive industries. What is the appropriate role for the government in such rare events vis-à-vis critical infrastructure sectors, particularly policy related to the short-term delivery of those critical infrastructure services in the event of an emergency and the financial viability of a privately-owned infrastructure facing increased security standards designed to meet low-probability threats?

This might be a multi-sector study with a potential geographic/regional concentration. Such a study could look at low probability, geographically focused occurrences, thereby elucidating the regional vulnerabilities of critical infrastructure.

**Status:** This topic led to the NIAC delivery of two studies in 2010, *A Framework for Establishing Critical Infrastructure Resilience Goals (for Electric and Nuclear Sectors)*; and *Optimization of Resources for Mitigating Infrastructure Disruptions*. The Council also agreed to perform similar “resilience goals” studies for Water, Oil and Gas and Transportation Sectors, as more members became available to carry the workload. The current study on Regional Resilience also was derived from this topic as requested by Federal Government officials in a NIAC business meeting in 2011.

**Topic II: Sector-Level Action Models for Critical Infrastructure:**

This topic addressed a study on sector-level action models for critical infrastructures and the role and appropriateness of self-governance. The topic would include addressing governance difficulties, as well as strategies to optimize governance whenever possible. The topic focuses on whether or not there is a reason to go beyond government policy in organizing how members of a sector act cooperatively to ensure continuity of operations. In addition, what

should be the criteria that the government should use in deciding how and when to intervene in market affairs to effect national security. A 2004 NIAC study examined best practices for government intervention, and identified as important questions such as: how will market forces work over time; can regulation be evenly and successfully applied in a sector; and do security concerns affect consumer choice—thereby affecting competitiveness. The proposed topics for study are whether the sectors are acting adequately on their own accord, and whether their guidelines are helpful for determining when the government intervention is necessary and desirable.

The Council recognized that this topic entailed some controversy, as stakeholders need to acknowledge when an industry cannot maintain sufficient levels of infrastructure security and resilience on its own, and the government must anticipate the externalities involved in becoming involved in the market. Many industries resist regulation, preferring the view that the industry can self-regulate; however, a model—developed with government assistance—can inform critical infrastructure practices and assist each sector in better developing criteria for resilience issues. Ensuring that each sector has knowledge of what the other sectors are accomplishing and possibly a model could better serve sectors that are tightly integrated and interdependent. This topic focuses on when government help or regulation becomes necessary, and how best to implement such assistance.

**Status:** This topic was not approved for study. The previous study, *Best Practices for Government to Enhance the Security of National Critical Infrastructures*, on this topic delivered by the NIAC was highly regarded and often referred to by Congressional staff, private industry and government agencies as thorough, insightful and useful.

### **Topic III: Addressing Linkages Between and Amongst Sectors**

This topic studies improving resilience by addressing cross-sector dependencies and exploring the linkages between critical infrastructure sectors and systems. This study might examine cross-sector dependencies among critical infrastructure sectors and possible measures that sectors could apply to improve the resilience of those dependent sectors. Key issues include firms' focus on their internal affairs rather than on participating in a sector level approach, which is natural given their incentives. However, the NIAC observed in several studies that vulnerabilities due to dependencies between infrastructure sectors may benefit from external channels to facilitate communication and coordination on important issues of security. For example, a previously completed NIAC study found that the communication of risk between sectors is often contingent on overcoming language barriers, deciphering terminology across industries, and creating linkages between key individuals in each sector.

**Status:** This topic was not selected for study due to guidance from Federal government officials in the NIAC Business meetings to focus on the first topic above.

### **Topic IV: Prioritizing Response and Recovery Efforts**

This topic addresses prioritizing agendas for sector response and recovery based upon the

immediacy and magnitude of the impact. This study would examine whether certain sectors need different types or levels of support, due to the immediacy with which the loss of their services is felt, and how government and policy should address these circumstances. The Council discussed that the loss of any infrastructures to a community is a critical matter. The elapsed time from the loss of infrastructure functionality to the impact of that loss, however, varies within and across infrastructure sectors. The *Frameworks Study* identified the Electric, Communications and Financial Services Sectors as having the quickest impact resulting from loss of services, followed closely by Water. Without these services, every other sector quickly loses normal functionality, and members of the public are—of course—directly impacted. A new study could better define and describe this “time to effect of loss” to support the development of policy, and examine policy options to strengthen the robustness of these sectors. A key question would be how should the government allocate scarce consequence management resources in the event of a major disruption?

**Status:** This topic was not selected for study due to request by the Federal government officials providing guidance in NIAC Business meetings to focus on the first topic above.