TRANSPORTATION RESILIENCE STUDY

NATIONAL INFRASTRUCTURE ADVISORY COUNCIL
QUARTERLY BUSINESS MEETING

JUNE 30, 2015

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AGENDA

1. Study Overview
2. Findings
3. Recommendations
4. Moving Forward
5. Questions

STUDY OVERVIEW

WORKING GROUP MEMBERS

- **Dr. Beverly Scott,** *CEO,* Beverly Scott Associates, LLC (Co-Chair)
- **Glenn S. Gerstell**, *Partner,* Milbank, Tweed, Hadley, & McCloy LLP (Co-chair)
- **Jack Baylis**, *President and CEO,* The Baylis Group, LLC (Co-chair)
- **Margaret Grayson**, *President*, MTN Government Services
- **Constance H. Lau,** *President and Chief Executive Officer,* Hawaiian Electric Industries, Inc.
- **James Nicholson**, *President and Chief Executive Officer***,** PVS Chemicals, Inc.

STUDY CHARGE

Apply the NIAC-recommended framework for establishing resilience goals[1] to the Transportation Sector in order to:

- Test and validate the usefulness of the framework in another lifeline sector
- Uncover key transportation resilience issues
- Identify potential opportunities to address them

[1] *Developed in the 2010 NIAC study of the electricity and nuclear sectors*

INFORMATION AND DATA SOURCES

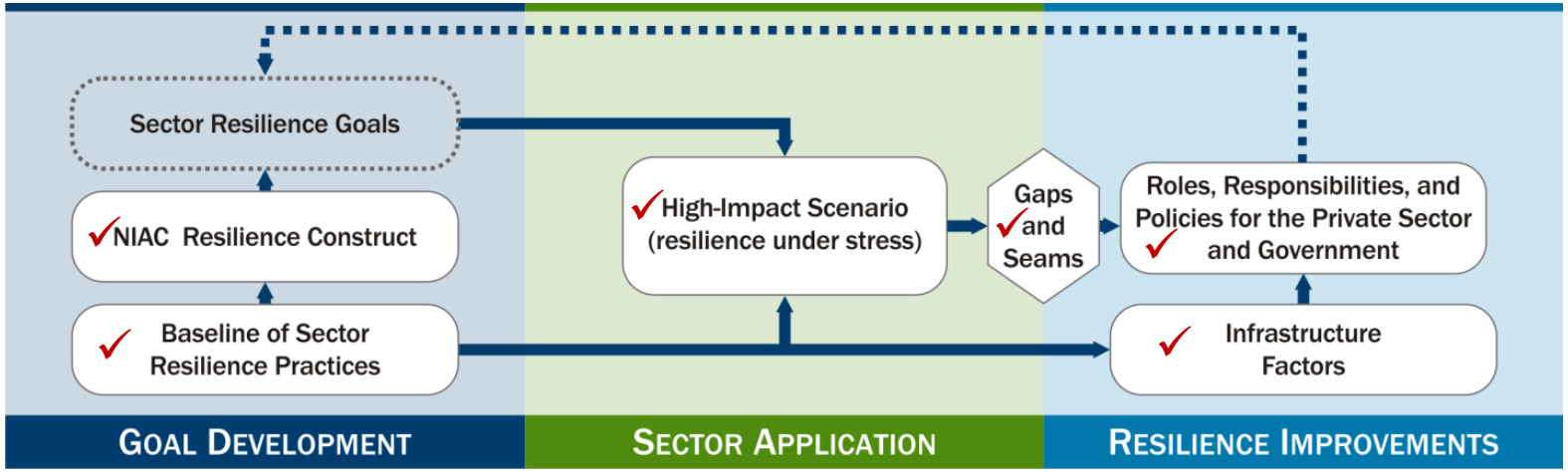
- 44 interviews with infrastructure owners and operators, national leaders, state and local government representatives, and Federal agencies.
- Research and analysis of more than 320 sources (reports, studies, videos, news articles, testimonies, and policy directives)
- Findings and conclusions from the Study Group and the Case Study of the Ports of Los Angeles and Long Beach disruption scenarios
- Three rounds of public sector briefings
- Council member experience and expertise

FINDINGS

AMERICA'S TRANSPORTATION INFRASTRUCTURE: A COMPLEX SYSTEM OF SYSTEMS

- 4.1 million miles of **highways**, 139,000 miles of **railroads**, 12,000+ miles of inland and intercoastal **waterways**, 2.6 million miles of **pipelines**, more than 5,000 public-use **airports**, 8,000 commercial **waterway and lock facilities**, more than 170 **maritime ports**, and more than 3,100 **transit stations**.
- Transportation sector ownership, operation, and governance is extremely complex, with significant variation by mode and locale
- **U.S. transportation assets exceeded $7 trillion in 2010**. 50% is owned by the public sector; 31% is privately owned; and 19% is consumer-owned vehicles.
- In 2011, **transportation accounted for nearly 9% of total U.S. gross domestic product of $13.3 trillion**.
- The **U.S. freight system moved about 17.6 billion tons of goods valued at $16.8 trillion in 2011**.
- *Yet, one in nine U.S. bridges is structurally deficient, road congestion costs American drivers $101 billion annually, deficient and deteriorating transit systems cost the U.S. economy $90 billion, and airport delays are a $22 billion drag on the economy.*

FRAMEWORK FOR ESTABLISHING RESILIENCE GOALS



- The Working Group completed each step of NIAC's 2010 framework but used different methods to accomplish them.
- The diversity and complexity of the transportation sector made it difficult to generalize results across all modes and regions.
- Despite these differences, **the Working Group concludes that the general framework is valid for use in other lifeline sectors.**

THREE OVERARCHING FINDINGS

1. **Transportation risks are not well understood** across modes, regions, and critical interdependent sectors, creating uncertainty about national-level risks resulting from a major system disruption.

2. **Gaps in leadership, coordination, and workforce capabilities** in the transportation sector have made it difficult for organizations to effectively incorporate resilience as an embedded function of good operating practice.

3. **Chronic underinvestment in transportation infrastructure and the inability to monetize resilience** for investment decisions has prevented resilience from being integrated into the built infrastructure.

1. UNDERSTANDING SYSTEMIC RISKS

- **Owners and operators in the transportation sector have limited visibility of risks across adjoining systems, jurisdictions, modes and critical dependent infrastructures**. In particular, emerging risks related to cyber disruptions, extreme weather, rising sea levels, aging assets, and workforce changes are not well understood across modes and regions.
- **Current transportation data, modeling tools, and exercises are not sufficiently robust** to effectively evaluate transportation system risks and their regional and national implications.

2. OPERATIONALIZING RESILIENCE

- **Although national resilience policies are well-established, they have not yet been integrated into comprehensive national transportation plans and strategies** that coordinate decision making and risk management across modes at the local, state, regional, and national levels.
- **There is no structured senior-level engagement between public and private sector partners**, and among transport modes and interdependent sectors, to address national-level transportation risks.
- **Responsibility for promoting and ensuring resilience is split among several key Federal organizations** (Department of Transportation, US Coast Guard, Transportation Security Agency, US Army Corps of Engineers), and there is currently no unified strategy or plan.

3. INVESTING IN RESILIENT INFRASTRUCTURE

- **There is no national consensus on the need for investment in resilient transportation infrastructure** due in part to a limited understanding among the public, political leaders, and industry leaders about the role and value of resilience.
- **Federal government legal authorities and funding streams are widely distributed across agencies,** often resulting in siloed and uncoordinated transportation investments. There is also limited Federal coordination regarding transportation investments made at the local level.
- **Uncertainty over the likelihood, costs, and consequences of emerging risks** makes it difficult for owners and operators in the transportation sector to invest in long-term resilience.

RECOMMENDATIONS

THREE CORE RECOMMENDATIONS

1. Conduct a quadrennial review of transportation infrastructure to baseline current risks and establish a comprehensive and persuasive Federal vision for transportation resilience.

2. Develop the analytic tools, models, and exercises to better understand and plan for emerging risks and interdependencies affecting the nation's transportation infrastructure.

3. Operationalize resilience in the transportation sector by increasing infrastructure funding and implementing effective Federal practices, procedures, and procurement processes.

RECOMMENDATION 1. CONDUCT A QUADRENNIAL REVIEW OF TRANSPORTATION INFRASTRUCTURE

The President should direct the Secretary of Transportation and the Domestic Policy Council, working with the Secretary of Homeland Security, to **conduct a quadrennial review (QR) within 18 months that assesses risks and prioritizes a path forward for the national transportation infrastructure**, similar in scope to the Quadrennial Energy Review conducted by the Department of Energy and the Domestic Policy Council.

The QR should **establish a comprehensive and persuasive Federal vision and related goals for achieving resilient transportation systems**, consistent with the policies and strategic imperatives contained in PPD-21, *Presidential Policy Directive–Critical Infrastructure Security and Resilience*.

The QR should **include quantitative estimates of the likelihood and magnitude of different types of risk**, drawing upon the best scientific, intelligence, and actuarial data available—enabling stakeholders to build a business case for investment and develop new design standards and best practices.

RECOMMENDATION 2. DEVELOP TOOLS, MODELS, AND STANDARDS TO MITIGATE RISKS

To support the Quadrennial Review and its updates, the President should direct the Secretary of Transportation, in coordination with the Secretary of Homeland Security, to **fund the development of regional, national, and cross-modal transportation system models, using the best available data sets, to simulate transportation disruption scenarios** that help to further identify modal, intermodal, and cross-sector risks and evaluate mitigation options.

In parallel, the White House should lead an effort to **heighten awareness and promote the development and implementation of Federal standards and mitigation measures** to address emerging physical and cyber risks in the transportation sector.

RECOMMENDATION 3. OPERATIONALIZE RESILIENCE

The President should direct the Secretary of Transportation, working with the White House and Secretary of Homeland Security, to **"operationalize" national resilience policies** throughout all Department programs and activities **by translating them into its guidance, programmatic practices and procedures, funding criteria, and procurement processes to help cultivate a culture of resilience**.

The Department should **incorporate resilience as a high-level performance factor** into all aspects of transportation systems programs, including research and development, training and exercises, and major capital investment projects.

MOVING FORWARD: AN URGENT CASE FOR ACTION

THE PATH FORWARD

- **Urgent action is needed now** to provide the necessary public funding to rebuild our transportation infrastructure that has suffered from decades of neglect.
- **Achieving transportation resilience will require a long-term, systematic approach** that must be embedded into transportation assets, structures, and operating cultures.
- **Support is needed at the highest levels of government (all levels), the private sector, and the general public to build and sustain the will to act** to implement a policy of resilience and back it with sufficient resources for the transportation sector.

QUESTIONS