

National Infrastructure Advisory Council (NIAC)



Regional Resilience Working Group

October 16, 2012 – Report #2

Constance H. Lau

*President and Chief Executive Officer,
Hawaiian Electric Industries, Inc.
Co-Chair*

Dr. Beverly Scott

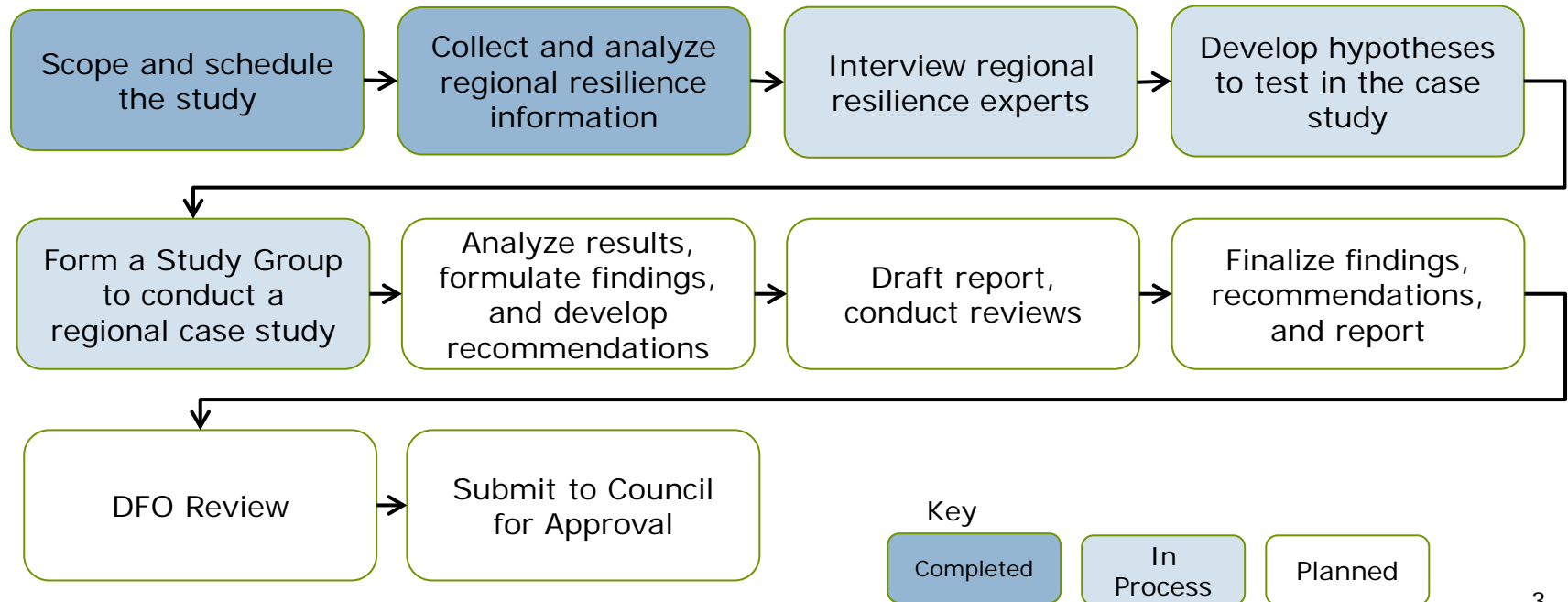
*General Manager/CEO
Metropolitan Atlanta Rapid Transit Authority
Co-Chair*

Agenda

- Regional Resilience Study Update
 - Background
 - Recap of July 2012 QBM
 - Status Update
 - Initial Study Observations
 - Initial Study Themes and Hypotheses
 - Next Steps
 - *Public Comment*
 - *Discussion*
- Update on Executive-Level Engagement in the Electricity Sector
 - Interim Recommendation to Council to Reaffirm Recommendation on Executive-Level Engagement in the Lifeline Sectors
 - *Public Comment*
 - *Discussion & Deliberation*

Background

- ❑ The Council launched the Regional Resilience Study at the April 2012 Quarterly Business Meeting and formed an 8-member Working Group to conduct the study.
- ❑ The study seeks to identify ways regions can become more resilient and the steps the Federal Government can take to help regions accomplish resilience goals.



Study Objectives

- 1. Best Practices:** Identify the characteristics that make a region resilient and the steps that can be taken to improve resilience within a region.
- 2. Process Improvements:** Determine how public and private critical infrastructure partners can work together to improve regional resilience.
- 3. Federal Role:** Recommend how Federal Government capabilities and resources can help accomplish resilience goals and address any gaps that can help regions become more resilient.

Recap of July 2012 QBM

- Items discussed:
 - Summary of Working Group progress
 - Federal Government interest in the impact of the June Derecho
 - Possible value of the results of Regional Focus Groups
- Key takeaways from dialogue with Federal officials:
 - Commitment to an all-of-nation, whole-of-community approach
 - Desire to build resilient structures at the lowest level
 - The need to share capabilities across jurisdictional and geographic boundaries
- Security priorities for the Federal Government
 - Interdependencies between physical infrastructure and cyber vulnerabilities
 - Power surety and restoration
 - Aging infrastructure, including people resources

Status Update

- ❑ Working Group follow-up from the July QBM
 - Examined cascading impacts resulting from the power outages from the Midwest/Mid-Atlantic Derecho storm
 - Reviewed results of Regional Focus Groups
 - Focused on the importance of the lifeline sectors, particularly electricity
 - Increased focus on cyber vulnerabilities affecting physical infrastructure
- ❑ Continuing research and data collection
 - Completed examination of existing Federal authorities for response and recovery efforts
 - Prepared Research Compendium (Version 1) summarizing state-of-the-art regional resilience studies, guides, and measurement frameworks
 - Conducted 4 interviews with leading practitioners to understand effectiveness of regional resilience frameworks and barriers to their implementation and developed hypotheses to be tested in the Case Study
- ❑ Currently forming the Philadelphia Case Study Group to pressure test lifeline infrastructures and examine cascading impacts to other infrastructures in the Philadelphia-to-DC region

Study Observations:

Regional Focus Groups

- ❑ Regional Focus Groups indicate that existing DHS IP tools to help regions improve resilience are not widely known or consistently used by critical infrastructure owners and operators across regions
 - Though engagement varies, owners and operators do widely rely on Protective Security Advisors for information during disasters
- ❑ Regions are more aware of available IP tools where there are strong public-private partnerships, which serve as a delivery mechanism and force multiplier for available tools

Study Observations: Regional Resilience

Guides and Frameworks

- ❑ Comprehensive how-to guides for strengthening community resilience exist and are being piloted by community organizations.
- ❑ Successful regional resilience efforts engage all stakeholders: State and local leaders, non-profit community groups, utilities, and private businesses. Public-private regional coalitions for resilience are essential to drive the process but full participation has many hurdles.
- ❑ Resilience improvements can require significant capital, yet few mechanisms exist to pool shared resources for regional partnerships or organizations, or for owners and operators.

Study Observations: Regional Resilience

Guides and Frameworks

- Building the business case for pre-disaster investment in resilience improvements, or performing adequate cost-benefit analyses of improvements, is difficult
 - Regions do not have good tools to measure resilience and perform a cost-benefit analysis for needed improvements.
 - Good economic data—such as data from past disasters—is often unavailable.
- There is no standard way to evaluate regional resilience, though researchers have devised frameworks to identify the characteristics that make a community resilient
 - Regions would benefit from having a consistent, agreed upon set of resilience measures to determine their status and identify areas for improvement

Study Observations: Philadelphia Metro Area Preparedness

- Philadelphia conducted a comprehensive Emergency Preparedness Review in 2006
 - Review did not focus on impacts beyond the Philadelphia metro area.
 - Proposes an ongoing forum for the region's highest elected officials and private sector leaders to develop coordinated regional resilience approaches.
 - Recommends that the city increase existing regional planning and resource sharing.
 - Following review, the city increased engagement in the Southeastern PA Regional Task Force and conducted regional emergency planning and citywide electricity/gas disruption exercises
- The 2012 Natural Hazard Mitigation Plan prioritizes mitigation actions but notes that not all may be feasible
- Planned NIAC Philadelphia Case Study will examine infrastructure failures beyond the Philadelphia metro area and will examine cyber vulnerabilities

Study Observations: Federal Authorities

- ❑ The Stafford Act provides response and recovery for the public sector for physical disasters, with little focus on cyber events or prevention. It is not designed to help entire sectors recover in a large-scale disaster.
 - Only individual private organizations are eligible for limited Small Business Administration loans under the Stafford Act.
- ❑ Current Federal Government disaster planning reflects an all-of-nation, whole-of-community approach and a prioritization of resilience.
 - The 2008 National Response Framework and National Incident Management System provide an interoperable structure that can facilitate Federal, State, local, and private sector coordination to disaster response.
 - The five new National Planning Frameworks required under PPD-8 will further expand the national structure for disaster *response* coordination (originally established in the NRF) to other components of *resilience*: prevention, protection, mitigation, and recovery.

Study Observations: The Derecho and Importance of the Lifeline Sectors

- ❑ The Working Group examined impacts from the Midwest/Mid-Atlantic Derecho
 - 4.2 million customers lost electric power in 11 states and DC, outages lasted as long as 11 days
 - 22 killed, widespread economic damage
 - Electricity disruptions cascaded to other critical infrastructures
 - Derecho highlighted interdependencies, exposed gaps in disaster preparedness
- ❑ Research and Working Group discussions reinforced the importance of electricity and other lifeline sectors to critical infrastructures

Critical Infrastructure Disruptions due to the June 2012 Derecho*

Electricity

- 4,226,962 customers loss power across 11 states and the District of Columbia
- Largest number of outages in Virginia, Maryland, Ohio, and West Virginia
- ESF 12: FEMA National Response, FEMA Region III (Philadelphia), FEMA Region V (Chicago), and WV EOC activated
- More than 24,000 workers from Appalachian Power, Allegheny Power, Pepco, Dominion, and BGE worked on restoration, including workers from other states and Canada.

Transportation

- 184 state roads closed in MD, more than 400 lights out in Montgomery County; 20 primary roads and 201 secondary roads closed in Virginia, about 120 traffic lights out in Fairfax County alone MTA: knocked out power to Mobility Call center and disrupted Light Rail service

Oil and Natural Gas

- Service stations lose power and ability to pump gas, creating long lines of cars

IT

- Amazon Data center knocked offline in VA for 6 hours, cutting off Netflix, Pinterest, Heroku, and Instagram

Government Facilities

- Option for unscheduled leave or telework on July 2

Commercial Facilities

- Many commercial office buildings without power
- People flock to hotels and malls for power and to charge electronics

Emergency Services

- 911 Centers out of service in Fairfax and Prince William Counties and Manassas and Manassas Park—not fully reliable until July 3 (3 days).
- 911 calls in Fairfax increase 415% over the 3.5 hours following the storm, Fire and Rescue dispatched increasing by 2,400%
- Police and fire stations on emergency generators
- Public safety officials needed to direct traffic at dark intersections

Healthcare and Public Health

- 80 crew members and 46 bucket trucks needed to restore power to four Montgomery Co. nursing homes
- Larger lines supplying power to substations had to be repaired before hospitals and 911 centers

Food and Agriculture

- Restaurants report losing up to \$60,000 worth of food
- 70 of Giant's 173 stores lost power, many have backup
- Other supermarkets lost backup power; Chevy Chase Supermarket had losses over \$100,000 from 5 days without power

Water

- Load curtailment in PJM electric grid on 6/29, reducing water production
- 50 WSSC facilities without power
- Fairfax County loses power to 40 of 63 wastewater pumping stations; all 63 lose SCADA communications
- Larger lines supplying power to substations had to be repaired before pumping stations
- Several WSSC pump stations rely on generator power for a week or more
- Low water pressure, discolored water, mandatory conservation
- Falls Church Water Utility issued a boil water advisory.

Telecom

- Verizon: 156 downed utility poles and 897 downed copper or fiber cables
- Cell calls and data downloads strain wireless capacity, causing service disruptions
- T-Mobile: 25% of cell sites down for short periods
- Many cell towers on backup generators: 450 Verizon cell towers

* Derived from published news reports, congressional testimony, and government reports.

Initial Study Themes and Hypotheses

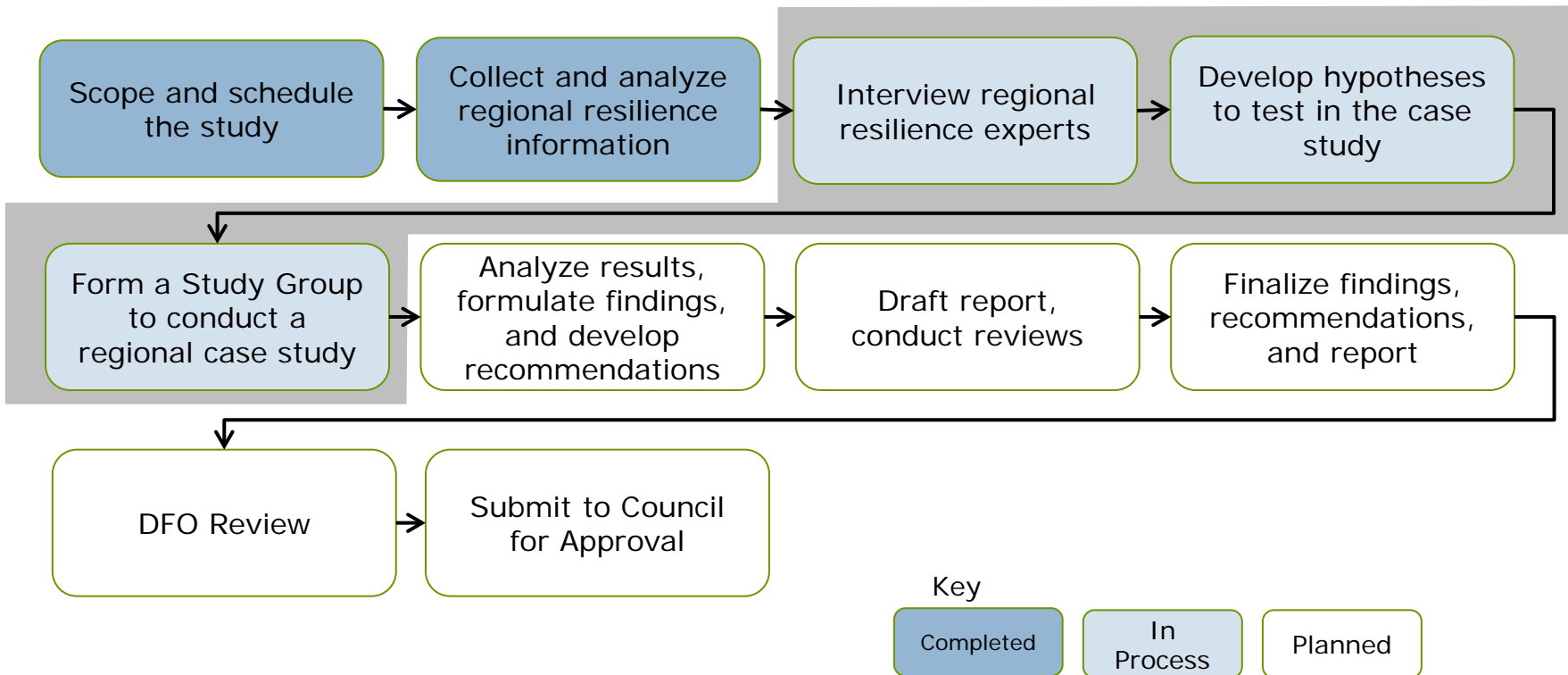
- ❑ Processes and expertise that enable regions to evaluate and improve their resilience posture are available and being used, although their effectiveness is varied.
- ❑ Regions would benefit from having a consistent, agreed upon set of resilience measures to determine their status and identify areas for improvement
- ❑ Increasing interdependence and interconnections among critical infrastructures within a region create risks that are not well understood by business and government and can cause cascading impacts across sectors and communities.
- ❑ The increasing integration of cyber systems in critical infrastructures is changing the risk profile of sectors and regions, especially in the lifeline sectors.
- ❑ It is often difficult to make the business case for improving regional resilience and making the needed investments. Regional resilience should not be just about loss avoidance; it should also be about growth opportunities.
- ❑ Trust, leadership, and partnership are the fundamental building blocks of effective regional resilience efforts.

Discussion Today on Initial Study Themes & Hypotheses

- ❑ Are the initial study focus areas (e.g., interdependencies, cyber/physical interface, making a business case, trust, leadership, and partnership) consistent with the interests of the Federal Government and the Nation? Are there other key areas that should be incorporated into the study?
- ❑ While the study will focus on regional disruption regardless of cause, should emphasis be placed on cyber disruption because the issue is so unique? Are there particular aspects of cyber vulnerabilities that would affect how a region responds?
- ❑ Are all components of resilience equally important (i.e., prevention, protection, mitigation, response and recovery) or should we focus more heavily on certain components?

Next Steps

□ Complete “in process” steps



Public Comment

Discussion Today on Initial Study Themes & Hypotheses

- ❑ Are the initial study focus areas (e.g., interdependencies, cyber/physical interface, making a business case, trust, leadership, and partnership) consistent with the interests of the Federal Government and the Nation? Are there other key areas that should be incorporated into the study?
- ❑ While the study will focus on regional disruption regardless of cause, should emphasis be placed on cyber disruption because the issue is so unique? Are there particular aspects of cyber vulnerabilities that would affect how a region responds?
- ❑ Are all components of resilience equally important (i.e., prevention, protection, mitigation, response and recovery) or should we focus more heavily on certain components?

Executive-Level Engagement

Concurrent Executive Engagement by the Electricity and Nuclear Sectors

- ❑ Leaders in the Electricity and Nuclear Sectors identified a need for public-private cooperation for catastrophic risk scenarios for the electric grid that had national implications
- ❑ Letters written to the President by electricity and nuclear private sector leadership
 - Edison Electric Institute engaged the leadership of the entire electricity and nuclear sector to coordinate interactions with Federal leaders
- ❑ Initial meeting with the Secretaries of DHS and DOE on July 23, 2012; concrete actions steps agreed to
- ❑ Classified threat briefing to 74 electricity and nuclear sector CEOs conducted on September 14
- ❑ Commitment of the electricity and nuclear sector CEOs; intent to make executive engagement very focused and solutions oriented
- ❑ Approach consistent with prior NIAC recommendations that encouraged executive-level engagement between the private and public sectors (2008, 2010, 2012)

Working Group Interim Recommendation to the Council on Executive-Level Engagement

Working Group recommends that the Council:

- ❑ Commend the White House for this increased dialogue with the electricity and nuclear sectors
- ❑ Reaffirm its recommendation that if other lifeline sectors wish to engage with senior Federal officials to address high-impact infrastructure risks, that these officials place a priority on such executive-level engagement
 - Each sector is encouraged to determine whether the sector has a high-impact infrastructure risk for which executive-level engagement can help improve resilience in the sector within a region
 - The Working Group notes that such dialogue has historically occurred and may currently be occurring in the telecommunications sector
 - The engagement process used by the electricity sector can serve as a model for the other lifeline sectors

Discussion and Deliberation Today on Interim Recommendation to the Council

- ❑ Would disruptions in other lifeline sectors have significant cascading regional impacts that would justify priority engagement?
- ❑ Are other lifeline sectors sufficiently interested and organized to engage? Are they already engaging and, if so, is such engagement adequate and occurring at the right levels?
- ❑ What challenges might be encountered to focused and productive dialogue between public and private sector executives?
- ❑ Would the process used by the electricity and nuclear sectors be appropriate for other sectors?
- ❑ Would Federal officials have the resources to engage at the senior levels?

Public Comment

Discussion and Deliberation Today on Interim Recommendation to the Council

- ❑ Would disruptions in other lifeline sectors have significant cascading regional impacts that would justify priority engagement?
- ❑ Are other lifeline sectors sufficiently interested and organized to engage? Are they already engaging and, if so, is such engagement adequate and occurring at the right levels?
- ❑ What challenges might be encountered to focused and productive dialogue between public and private sector executives?
- ❑ Would the process used by the electricity and nuclear sectors be appropriate for other sectors?
- ❑ Would Federal officials have the resources to engage at the senior levels?

Appendix

Working Group Members

WG Member	Sector Experience
Constance H. Lau , <i>President and Chief Executive Officer, Hawaiian Electric Industries, Inc. (HEI)</i> Co-Chair	Electricity, Financial Services
Beverly Scott , <i>General Manager/CEO Metropolitan Atlanta Rapid Transit Authority (MARTA)</i> , Co-Chair	Transportation
Jack Baylis , <i>Executive Director and Senior Vice President for The Shaw Group</i>	Water
Glenn S. Gerstell , <i>Managing Partner, Milbank, Tweed, Hadley, & McCloy LLP</i>	Water, Telecommunications
David J. Grain , <i>Founder and Managing Partner, Grain Management</i>	Telecommunications
Margaret E. Grayson , <i>President, Grayson Associates</i>	IT, Defense Industrial Base
James A. Reid , <i>President, Eastern Division, CB Richard Ellis</i>	Commercial Facilities
Michael J. Wallace , <i>Former Vice Chairman and COO, Constellation Energy</i>	Electricity, Nuclear

Previous NIAC Recommendations on Executive-Level Engagement

- Intelligence Information Sharing, January 2012
 - “The White House should additionally employ current or new partnership mechanisms for senior executives in the private sector to engage their government counterparts to facilitate a truly national approach that leverages public-private resources for large-scale, persistent threats.”
- A Framework for Establishing Critical Infrastructure Resilience Goals, October 2010
 - “The White House should initiate an executive-level dialogue with electricity and nuclear sector CEOs on the respective roles and responsibilities of the private and public sectors in addressing high-impact infrastructure risks and potential threats, using an established private sector forum for high-level, trusted discussions between industry executives and government leaders.”
- Critical Infrastructure Partnership Strategic Assessment, October 2008
 - “The private sector should initiate a strategic dialogue between industry CEOs and the White House soon after the inauguration to reinforce their commitment to partnership principles, followed by similar dialogues with the Congressional leadership and state governors.”

Lifeline Sectors*

- Energy
- Telecommunications
- Transportation
- Water

* As defined in the NIAC Regional Resilience Study. Some sources also identify Emergency Services and Food as “lifeline” sectors.