

# SR 520 Catastrophic Failure Tabletop Exercise Report

*Final Draft*

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**Held November 29, 2007  
at the Shoreline Conference Center, Seattle, WA**

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*Pacific NorthWest  
Economic Region*

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## Executive Summary

The Washington State Department of Transportation (WSDOT) hosted a tabletop exercise with Seattle area local jurisdictions, businesses and other key stakeholder organizations on November 29, 2006 to examine preparedness, response, and longer-term recovery issues associated with a catastrophic failure of the SR 520 Bridge. WSDOT was assisted in the development and conduct of the exercise by the Pacific NorthWest Economic Region, a state-chartered, cross-border consortium and facilitating organization for the Puget Sound Partnership for Regional Infrastructure Security.

The goal of the exercise was to

- raise awareness of vulnerabilities and risks to the bridge
- identify response and longer-term restoration needs if the bridge failed,
- develop lessons learned that could be incorporated into plans and activities
- obtain information from participants that could be used to develop a communication and transportation management plan to be implemented while the bridge is being repaired or replaced.

The exercise scenario was developed by representatives of regional jurisdictions and organizations with WSDOT. The day-long tabletop exercise focused on **emergency management, communications, and transportation management** before and after failure of the floating bridge in a major windstorm. The exercise also focused on longer-term consequences and challenges involved in the resilience of the regional **economy, moving people, and freight**. Exercise participants agreed at the conclusion of the exercise to meet in a follow-on Action Strategy Workshop to discuss and prioritize future transportation management activities based on the findings and recommendations from the exercise and how WSDOT and regional stakeholder can move forward to implement these activities.

## Summary of Recommendations

Findings and recommendations were based on comments and evaluations of participants, independent evaluators. Findings and recommendations for the phases of the tabletop exercise were categorized under the topics listed above. The complete findings are detailed in the body of the exercise report. The recommendations are summarized below as follows:

### Emergency Management and Longer-Term Restoration

- Develop SR 520 Bridge Response Plan Coordination Workshop and Website.
- Creation of a Regional Transportation Resilience Working Group within the public-private Puget Sound Partnership for Regional Infrastructure Security.
- Creation of Emergency Communication Subgroup as a part of the broader Regional Transportation Resilience Working Group of stakeholders, including WSDOT.
- Development of SR 520 bridge Failure Communications Resilience and Interoperability Capabilities.

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- Develop a SR 520 Bridge Failure Federal Assistance Resource Inventory.
  - Develop an Emergency Response Training Program.
  - Develop a SR 520 Bridge Failure Regional Incident Command System/Multi-Agency Response Plan.
  - Develop a SR 520 Bridge Business Continuity Planning Initiative.
  - Sustainability of the Regional Transportation Management planning process and the SR 520 Bridge Business Continuity Planning Initiative.

### **Communications**

- Incorporation of selected SR 520 bridge failure exercise results into WSDOT and regional stakeholder SR 520 bridge failure plans.
- Public Outreach and Education Initiative.
- Continuing refinement and enhancement of the SR 520 bridge and Regional Communications Strategies and Plans.

### **Transportation Management**

- Creation of Emergency Transportation Management Planning Subgroup as a part of the broader Regional Transportation Resilience Working Group of stakeholders, including WSDOT.
- Conduct a Regional Emergency Transportation Management Annual Forum.
- Regional Emergency Transportation Management Plan.
- Conduct a SR 520 Bridge Replacement Transportation Options Study.
- SR 520 Bridge Loss Impacts Study.
- Regional Transportation Management Risk Assessment System and Mitigation.

### **Next Steps**

Next steps include translating the findings and recommendations laid out in this report into a prioritized transportation management plan for the SR 520 Bridge. Ideally, this plan could be used for other major regional transportation disruption challenges. The tabletop exercise was a significant step in building a cohesive base of regional stakeholders that can be involved in developing this plan.

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## SR 520 Catastrophic Failure Tabletop Exercise *Draft Report*

More than 100 representatives local jurisdictions, utilities, and private sector organizations in the Seattle area convened on November 29, 2006 at the Shoreline Conference Center to participate in a unique, day-long tabletop exercise designed to examine preparedness, response, and longer-term recovery issues associated with a failure of the SR 520 bridge.<sup>1</sup> The exercise was sponsored and hosted by the Washington State Department of Transportation (WSDOT) as a key element of an intensive and comprehensive effort to develop a regional plan in response to a potential catastrophic failure of the SR 520 bridge. WSDOT was assisted in the development and conduct of the exercise by the Pacific NorthWest Economic Region (PNWER).<sup>2</sup>

The exercise produced a large number of significant findings and recommendations, which are outlined in the following report. The recommendations will be prioritized and will help aide the development of a catastrophic plan that addresses transportation and communication strategies by WSDOT in collaboration with stakeholder organizations that are either responsible for response and replacement of the bridge or have operations or business continuity that would be significantly impacted by loss and/ or replacement of the bridge.

Moving forward with bridge replacement is particularly important because the Puget Sound area is susceptible to strong and destructive storms. In 2006, the floating bridge closed three times during wind storms and closed another time to repair damage caused by a windstorm. The windstorm of December 2006 caused extensive damage to property and critical Infrastructures. Seattle City Light suffered its most extensive outages in the utility's history, with more than 49 percent of customers losing power. One-hundred seventy-eight traffic signals and signs were damaged or tangled and 150 traffic signals were out. Bellevue received sustained winds of approximately 50 mph, with gusts approaching 70 mph. Fallen trees, flooding, and downed power lines closed numerous

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<sup>1</sup> WSDOT's comprehensive regional response plan includes emergency response staff on-call at all times, traffic management procedures for a complete SR 520 shutdown, including detours and traveler information and traffic management through WSDOT's traffic management center in Shoreline, which operates 24 hours per day, 7 days per week. In the event of an emergency WSDOT also has procedures to notify emergency and communications personnel, other agencies, and agency executives, as well as procedures to activate the emergency operations center, also located in Shoreline. Other WSDOT preparedness activities include ongoing emergency response training for staff, and coordination with other agencies. In addition, WSDOT continuously monitors the bridge structure and closes it to traffic when high wind and waves threaten the structural integrity of the bridge. WSDOT staff, through the use of electronic sensors, track conditions around the clock and alert on-call crews when necessary.

<sup>2</sup> PNWER is a non-profit, state-chartered consortium comprised of Washington, Oregon, Idaho, Montana, and Alaska. British Columbia, Alberta and The Yukon Territory. For the past six years PNWER has been facilitating the activities of the public-private Puget Sound Partnership for Regional Infrastructure Security that has included four regional tabletop exercises known collectively as the Blue Cascades Series.

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arterials and neighborhood streets. At times, traffic congestion made it difficult for emergency personnel, including power crews, to get to incident locations. During the peak of the storm, an estimated 90 percent of Bellevue residents lost electrical power. Many Bellevue residents were without power for four to five days.

Areas power failures left a majority of intersections without working traffic signals. In Bellevue, all water reservoirs and pump stations and all wastewater pump stations also lost power or had to rely on emergency backup power. Most businesses were also without power and closed. Puget Sound Energy (PSE) reported that an unprecedented 40% of their transmission lines were damaged, and nearly half of their substations went offline. The SR 520 Bridge was closed for nearly eight hours. The damage to the bridge included three center-lock hooks on the drawspan shearing off and falling into the pontoon cells. Additionally, the catwalk on the end of the draw pontoon was damaged, and a portion of the wave deflector on the south side of the pontoons was damaged.

While WSDOT has been working on a replacement plan for the bridge, it has also been addressing the challenge of keeping it safe and functioning under all conditions. WSDOT has been reviewing and enhancing its current response, communications and transportation management plans. A main focus has been on coordinating more closely with all potentially affected jurisdictions and agencies in the event of an emergency.<sup>3</sup> As part of this effort, WSDOT has been examining scenarios that range from a partial to a full closure of the bridge.

## 2. Overview

A key goal of WSDOT's efforts has been to test plans and procedures in conjunction with area stakeholder organizations through a tabletop exercise, including communication and command protocols, and to incorporate improvements into them. An additional goal was to illuminate the post-response, longer term recovery impacts of the bridge loss on regional businesses, hospitals, utilities, and other organizations—specifically how the movement of people and freight and other goods and services and how the regional economy would be affected. Based on these goals, WSDOT collaborated with PNWER to assist in bringing together key stakeholders to participate in a tabletop exercise that focused on preparedness for and response to a catastrophic failure of the SR 520 Bridge due to a wind storm and short and long-term restoration challenges.<sup>3</sup> The first part of the exercise focused on examining regional transportation, communications and emergency response procedures, vulnerabilities and other issues during the immediate response phase of a potential catastrophic failure. The second half of the exercise covered a range of private, government and other stakeholders sharing information and discussing

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<sup>3</sup> **Although the bridge is vulnerable to earthquakes, the tabletop exercise did not evaluate participant's ability to respond to and recover from a seismic failure. A catastrophic seismic failure would likely include several structures throughout the region. Such a scenario would be very complex and is beyond the scope of this exercise, although the recommendations of this report can also apply to seismic failure. The exercise recommendations, while focused on a windstorm scenario, can be applied to any event that results in failure of the bridge.**

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potential economic and other impacts of the bridge loss to their organization's operations or business interests. A particular focus was on possible recovery measures that could be implemented, including new ideas for transportation management, communication and cross-jurisdiction cooperation.

## 2.1. Purpose, Goal and Objectives

As noted, the overall goal of the exercise was to address response and recovery from a catastrophic failure of the SR 520 Bridge with the specific aim to:

- Raise awareness of vulnerabilities and risks;
- Establish a collaborative, cost-effective effort for transportation management during the time the bridge is being repaired or replaced.

Objectives were to:

1. Test WSDOT's, the Washington State Patrol, and other key jurisdiction's emergency response procedures both before and after the bridge closure with focus on:

- Command and control
- Short-term transportation management
- Public/media communications and coordination
- Jurisdictional communications and coordination
- Transition to Recovery

2. Collectively Explore:

- Recovery and restoration challenges associated with long-term closure
- Regional transportation management issues—WSDOT, affected communities, businesses, other organizations
- Social and economic impacts
- Public/media communications and coordination
- Jurisdictional communications and coordination

## 2.2. Exercise Development

The scenario for the exercise was developed by PNWER aided by a core planning group and broader scenario design team that comprised of key stakeholder organizations. The core planning group and scenario design team, through conference calls and planning meetings over a several week period, developed the scenario and associated discussion questions. To ensure the scenario was as realistic as possible and that it reflected key stakeholder needs, scenario design team members submitted "injects" (progressive, hypothetical events in the scenario) of particular interests to their organization for inclusion and accompanying questions. Organizations participating on the scenario design team and on the core planning group included:

**Scenario Team Member Organizations\***  
*(\*Member of Core Planning Group)*

Seattle Department of Transportation*	Bellevue Police Department
Seattle City Light*	Seattle Fire Department
Seattle Police Department *	The Boeing Company
City of Bellevue Emergency Management*	Port of Seattle
Bellevue Department of Transportation	King County Regional Medical Resource Center
U.S. Postal Service	Washington State Patrol*
King County Department of Transportation	Washington Military Department
U.S. Coast Guard	Washington Emergency Management Division
Microsoft	Washington Trucking Association
National Weather Service	Washington State Department of Transportation*
Safeway	Pacific Northwest Economic Region*

*For a listing of the names of the scenario design team members, please see Appendix A*

### 2.2.1. Focus and Scope

As noted, the exercise involved key stakeholders from those communities and businesses within the region that would be significantly affected by physical damage or closure of the SR 520 Bridge and other transportation disruptions caused by a major windstorm. Particular attention was paid to impacts to emergency services and other first responders from transportation infrastructure disruptions, and on the effectiveness of current WSDOT and other local and state plans comprehensively to address damage to the SR 520 Bridge. There also was focus on interdependency-related factors that would have an impact on the regional transportation infrastructure, such as extensive and prolonged power outages and communications disruptions.

### 2.2.2. Scenario Overview

The scenario began on Friday December 7, 2007 with the National Weather Service forecasting a strong windstorm that could impact western Washington by early Monday morning. The storm unexpectedly intensified throughout Sunday, hitting the region as Qwest Field was emptying after a Seahawks game. The state, King County, and other jurisdictions and larger companies had activated their emergency operations and command centers earlier in the day.

The storm downed trees, power lines and microwave towers with widespread outages and traffic accidents. The SR 520 Bridge, which was filled with vehicles, several buses, large trucks and tankers, was being subjected to sustained winds and waves. A decision was made to close the bridge and directed vehicles off it from both sides. Accidents and a mechanical failure slowed down the closure process and some individuals in the vehicles on the bridge panicked. Shortly after 9:00 p.m., the bridge's anchor cables snapped and it broke apart, with part of it drifting north toward Kirkland with vehicles aboard. Another part of the bridge sunk, leaving dozens of vehicles and around two hundred people in the wind-whipped waters. WSDOT and local law enforcement and emergency responders arrive at the disaster site. The Coast Guard was contacted to assist, while good

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Samaritans and onlookers rushed to the scene along with local and national media. Emergency vehicles and first responders were in short supply as resources necessary to address the bridge catastrophe are dealing with emergencies caused by the storm throughout the region. The response continued as WSDOT transportation managers modified bridge closure traffic management procedures to cope with the bridge collapse. On Monday morning at 1:00 a.m., the governor proclaimed a state of emergency. Meanwhile, the media was airing views of pundits on the reason for the failure of the bridge and laying blame. WSDOT traffic management staff was working closely with local officials to recover bodies and vehicles, come up with innovative and effective ways to manage traffic around the failed bridge, and counter the impacts of the loss of the bridge on regional traffic.

One month later, on January 11, 2008, the region still has not recovered from the loss of the bridge. An estimated 115,000 vehicles and 160,000 people were forced to take alternate routes across the lake on a daily basis. Adding more buses and bus routes has not helped appreciably to alleviate severely congested corridors. Congestion on some highways has caused people to search for bypass routes on city streets while the north end of the lake was extremely congested. Businesses were suffering from lost revenue, people and emergency responders were having trouble getting to hospitals, and there were public complaints about bus shortages. There were three related significant transportation challenges, (1) assuring the movement of people, (2) assuring movement of goods and services, and (3) assuring overall business and regional economic continuity/vitality. Meanwhile, WSDOT transportation management staff was working with area jurisdictions to alleviate congestion. Particularly hard-hit were those organizations with employees who utilize the public transportation regularly to commute to and from work.

Six months later, on June 8, 2008, the situation has significantly improved. WSDOT has implemented a detailed short-term traffic management plan developed with input from communities adjacent to the bridge and there have been a number of different procedures instituted. Loss of revenue and staff for area businesses, particularly small businesses, continues, as does economic hardship and long commutes for many individuals, particularly those who rely on public transit.

A year later on December 5, 2008, the greater Seattle – Bellevue metropolitan area has adjusted to the loss of the bridge. There are coordination mechanisms operating to enable communities and key stakeholder organizations to exchange information and orchestrate agreed modifications to traffic patterns and traffic management procedures. There is a network of interested and involved organizations that are working with WSDOT to facilitate the bridge replacement and develop, fine-tune and implement an optimal regional transportation management plan and supporting communication strategy.

### **2.2.3. Exercise Process**

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The exercise was roughly six hours in duration and involved a high degree of participant interaction and education. The format was interactive with “injects” followed by questions to raise significant issues, highlight challenges and preparedness gaps, and encourage the sharing of information and knowledge. Participants were asked to actively participate and provide any knowledge and past lessons learned from their experiences. They were also requested to keep in mind the “rules of the game” during the exercise—to remember that the scenario was hypothetical, remain focused on the bigger picture, share their experiences and thoughts freely and avoid getting bogged down in small details.

**Exercise agenda.** Participants were also provided a detailed agenda of the day’s events and the exercise process, which began with a plenary session outlining the purpose, goals and objectives of the exercise, an overview of the scenario and a briefing by WSDOT on the SR 520 Bridge vulnerabilities. They then moved to one of three breakout groups to which they were assigned based on their area of responsibility or functional area of interest for the morning sessions. These sessions included:

- Emergency management
- Communications
- Transportation management

Attendees participated in facilitated discussions on the response-related portions of the scenario and discussed their respective plans and procedures, using issues questions provided for this purpose. Large SR 520 corridor maps were posted on the conference room walls by WSDOT to serve as reference for attendees during their discussions. In each room there were individuals assigned to capture the discussion, including independent and volunteer evaluators from participating organizations, including several WSDOT emergency response, communications, and traffic management experts. Participants also were provided evaluation forms to record their views, as well as note cards to write down their comments and suggestions. At the end of the morning session, participants discussed lessons learned as part of a short debrief on the exercise results, “*hot wash*”, during the working lunch aided by the recorders and evaluators.

**Move from response to recovery.** The morning session transitioned from response and testing plans to recovery and longer-term restoration and raising awareness on economic impacts and potential actions to manage transportation and assure movement of people and goods and services. There were another three breakout groups that focused on major issues:

- Moving people
- Regional business-economic continuity
- Moving freight and products

Participants were mixed up from their earlier breakout sessions so that emergency management, communications, and transportation planners were represented in each group.

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As before, experienced independent and volunteer evaluators from participating organizations recorded their observations using a detailed set of criteria provided in an evaluation template. Participants were asked to use their evaluation form to provide their written inputs and note cards for additional thoughts. The breakout session culminated in a short “hot wash” as earlier.

The exercise concluded with next steps that include developing the exercise report of findings and recommendations that would be followed by a regional action strategy.

### 3. Findings and Recommendations

The following findings and recommendations were compiled using a wealth of information collected during the exercise proceedings by the independent and volunteer evaluators and by participants through their evaluations and comments/suggestions on the note cards. This information was supplemented by post-exercise comments from participants submitted either electronically, by phone, or in person.

#### 3.1. Evaluation Considerations

The findings and recommendations were based on criteria developed by WSDOT and PNWER with the exercise Scenario Design Team that were designed to evaluate the respective breakout session discussions and overall exercise. Evaluators used these criteria during the exercise to assess the results of the proceedings and to categorize and structure their observations.

***Pre-event and emergency response breakout session criteria:***

- Effectiveness of response operations— rescue, loss of life/injury assessment, emergency response access and mobility (fire, hospitals, other), roadway operations, transportation demand management and transit issues (bus operations, labor and financial issues, infrastructure issues)
- Level of cooperation and coordination among organizations
- Command and control issues
- Decision-making process—which agencies are involved, on what issues, and how effective is this process
- Communications interoperability issues
- Extent of information sharing and two-way situational awareness
- Ability to appreciate, anticipate and work around impacts caused by infrastructure interdependencies and related vulnerabilities
- Ability to improvise to accommodate changing circumstances
- Availability of, and ability to secure resources—personnel, equipment, etc., for response and recovery
- Public information—how well are travelers, businesses, jurisdictions informed
- Dealing with the media as a first responder and communicator to the public
- Other transit-related policy and issues associated with emergency operations and bridge recovery plans.

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***Recovery and longer-term restoration breakout session criteria:***

- Magnitude of economic and social impacts of bridge failure on mobility of workers and consumers to resume normal activities, including affect on critical infrastructure workforces
- Consequences of the bridge failure for supply chains and movement of goods and products, including the level of regional freight resilience in the short and longer term
- Mitigation measures by local government, utilities and commercial enterprises to assure availability of personnel and essential services and supplies for operational and business continuity
- Transportation management challenges (issues involving detour routes, signing, signal timing, infrastructure improvements, etc.)
- Environmental considerations
- Other factors that influence or drive transportation and transit management decisions
  - Coordination and cooperation issues
  - Public information challenges
  - Social and political considerations (impact on area businesses, particularly small enterprises, and work force; on travel patterns, local jurisdictions, people who are traditionally underrepresented):

## **3.2. Pre-Event/Response**

**General observations.** There was a good deal of discussion about bridge closure procedures and what information would be conveyed, to what agencies, organizations, and the general public; at what time; and through what mechanisms. The need for information sharing on plans and procedures, coordination, and close communication was a theme throughout much of this initial portion of the exercise.

### **3.2.1. Communications findings and recommendations**

***Findings:***

1. Each local jurisdiction is in charge of its own public information. During a pre-event period, it was not apparent how public information would be coordinated or which agency would be in-charge.
2. It was noted that it might take about 15-20 minutes for information to be disseminated to the public on a bridge closure, and that a more proactive approach might be to alert the news media.
3. WSDOT coordinates closely with the Washington State Patrol in the event of bridge closure. It was not clear from the discussion which other local agencies or organizations would be contacted. Some participants suggested that there should be a way to inform those attending the Seahawks game of a possible bridge closure, with one possibility to notify Qwest Field officials.

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4. WSDOT officials outlined their current procedures for bridge closure notifications. From the exercise discussions, it was apparent that many participants were not knowledgeable on what these procedures are or how information would be communicated and to which organizations.
  5. There was a fair amount of discussion on regional information coordination during a major regional emergency. It appeared that WSDOT would likely have a liaison at the regional Joint Information Center during a significant emergency event depending on the situation and staff available. However, it was not clear how this coordination role would work. A WSDOT participant commented, it is a “high priority that all organizations are on the same page.” Another participant observed that there was a need to start developing a “real SOP” (standard operating procedure.)
  6. A significant issue was discussed on how information on missing persons would be handled. WSDOT has a policy to refer all inquiries regarding injuries and missing persons to the lead emergency response agency (likely Washington State Patrol). It was observed that this would be a major media issue. It was suggested by some participants that a dedicated “hotline” for people to call in to receive information on missing loved ones should be established. The Red Cross noted it has a notification plan for families along these lines.
  7. Some larger businesses, such as Microsoft, have ways to communicate with their employees on disasters that impact business operations. Most businesses and other service organizations do not.
  8. Participants were interested in learning more about National Weather Service situation status levels, specifically what constituted “watch, warning, and alert levels.” It was pointed out that the National Weather Service outlooks, watches, and provides a warning terminology that is officially used nationwide. NWS Seattle has posted a helpful terminology link on their weather site that includes color coding, which can be found at <http://www.wrh.noaa.gov/sew/wawarn.php>.
  9. The National Weather Service usually initiates and hosts on on-line webinar weather briefing conference call a day or two prior to the likelihood of a significant area weather and/or flood event as a part of pre-disaster preparedness and planning activities. Key stakeholders such as WSDOT, state, county and local emergency managers, utilities, and transit are among those invited to participate via email.
  10. There is a need for a “yellow pages” of key stakeholder representatives that would be involved in a potential bridge failure event.
  11. There is a need to find ways to assure, as one city government official expressed, “direct communication” among WSDOT, cities, and communities in the region during emergencies.

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12. There is a need to work with neighborhood groups and to meet with stakeholders in the small business communities.
  13. Mechanisms should be leveraged or developed to enable alert and warning on traffic issues to the public. Possible avenues are a mass cell-phone text message (which could cause legal challenges for cellular phone companies), and early warning system by WSDOT through the broadcast media, using the NWWARN system currently being upgraded by the Puget Sound Partnership for Regional Infrastructure Security in conjunction with the Washington state information fusion center (WAJAC), a dedicated web-site, or a “hot line” call-in center.

### ***Recommendations:***

1. WSDOT should explore innovative ways to educate public and private organizations on its messaging system and bridge closure procedures.
2. WSDOT should work with local jurisdictions and stakeholders to create a “toolkit” of activities and actions that local agencies and other stakeholders can use to inform their constituencies during a transportation-related emergency.
3. Setting up a reliable single site with redundancy, e.g., the ARPIN.org site, to provide one-stop-shopping location for information related to a bridge failure, and publicize this site is available to the general public. This site would need to be linked with the King County EOC.
4. WSDOT should explore additional avenues for providing current traffic management information to the public. For example, requesting a mass text messaging by cellular companies, Internet, existing emergency communications mechanisms, the broadcast media, and the NWWARN system. Ensure that the methods chosen deliver the same information.
5. Media should be brought into the transportation management planning process in order to educate them and help manage public expectations in the event of a bridge failure.
6. WSDOT, along with regional stakeholder organizations should develop a regional, coordinated communications mechanism that can provide a single communication point-of-contact for informing media.
7. Immediate notification to agencies involved and/or impacted (especially those are required to act i.e. Police & Fire vs Mayor).
8. Explore systems and procedures to handle inquiries from people about missing relatives and loved ones.

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9. Explore means to reach the public with immediate information of the bridge failure; for example, targeted reverse 911 systems and other media tools.

### **3.2.2. Emergency Management findings and recommendations**

#### **General observations:**

Participant discussion focused primarily on weather-related warning levels; pre-event interagency roles and responsibilities; WSDOT bridge shutdown policy, procedures, and processes; area EOC activations; joint incident command structure alternatives; communications interoperability challenges; response timelines and assignments; initial catastrophic failure regional impacts; and media interfacing. Also discussed were joint agency command and operations topics, such as response assets availability (people and equipment); mobile field command and control set-ups; post-event response and rescue; medical support issues; short-term/long-term recovery & restoration response; regional traffic re-routing challenges; capability and public/private organization interoperability gaps; incident command challenges; and potential government agency coordination issues.

#### ***Findings:***

1. There was a substantial discussion on WSDOT bridge closure decisions and procedures and how these were made and communicated. For WSDOT, determining when to close the bridge due to weather-related issues is challenging at times. Utilities, transit, and other participants expressed the need for early notification, at least 30 minutes in advance of a weather-related bridge closure. However, a NOAA representative pointed out that it was difficult at times to predict wind velocity or storm intensity. WSDOT officials also stated that the problem they faced was that “most of our storms are right around the 40 mph zone, which makes it hard to determine if the bridge should be closed or not.” It was noted that “it is important to keep traffic moving for as long as possible.”
2. Several participants wanted more information on the National Weather Service alert and warning system. Some pointed out that the watch; warning and advisory categories with their respective confidence levels were unnecessarily complex and confusing.
3. WSDOT could use its website and SR 520 listserv to provide media with information during and after the bridge emergency response, including press releases. However, private sector organizations are not currently on the listserv.
4. According to WSDOT officials, when the bridge is closed and cars are stopped at the drawspan it takes at least 20 minutes to turn around vehicles to clear the bridge. There are certain vehicles like semi-tractor trailer trucks and busses that are impossible to turn around.
5. Some local jurisdictions have windstorm response plans but not specific plans that address failure of the SR 520 Bridge.

6. There was a substantial discussion on which organization(s) would be in-charge of the response effort and on the creation of a joint commands—whether there should be command posts on either side of the bridge, how these separate efforts would be coordinated, how the overall bridge response would be coordinated with King County, Washington State, local jurisdiction emergency operations centers; and what would be the flow of information among these entities.
7. There are currently no officially-designated field operations command post areas for land and water operations and command sites in the event of a bridge failure. It was noted that on the Westside of Lake Washington the command post would likely be in the Husky Stadium parking lot, in the vicinity of the Waterfront Activities Center. On the Eastside participants debated the merits of different sites. The City of Medina boat launch, located on the south end of Evergreen Point, was suggested as a possible location. Other participants saw the eastside field operations center as likely being located at the old SR 520 Toll Plaza,
8. While WSDOT and local jurisdictions have staff that are prepared to respond to a lengthy emergency, the widespread nature of the windstorm and other related regional emergency situations will mean that there would be limited staff and other recourses available to respond.
9. There was a discussion on where rescue operations would be staged particularly on the eastside to provide emergency care for in-water rescues. It was pointed out by a city first responder that this may depend on the situation of the incident (where the incident occurs, weather conditions, etc.) and that vessels may need to direct land-based units to a suitable location where patients could be safely off-loaded.
10. There was a discussion of the immediate need for additional marine and air rescue operations to augment local responder capabilities. Although such resources have been called upon to assist in response to previous major storms (e.g., additional water rescue craft, response agencies, helicopters, traffic management,) it was unclear how they would participate in the bridge disaster scenario.
11. Participants lacked information on what and when Federal resources, such as, FHWA, FEMA, and FTA, would be available and how these would factor into the bridge loss also was not addressed by participants.
12. There were conflicting perceptions among participants on the effectiveness of existing response plans to address a bridge failure. Several participants expressed confidence that current plans and adherence by local jurisdictions to a Joint Command System would be sufficient. They maintained that development on a regional emergency response plan with cross-jurisdiction command, control, and other procedures. At the same time, other participants have expressed their interests and needs for further planning, including development of a regional incident management plan. One fire department official noted that “the region doesn’t have as cohesive a plan as we need”.

13. The discussion focused on what should be in local plans. It was clear from the comments and questions that there was, as one participant noted, “No discernable chain of command,” and that there were different perceptions among participants on the role and authorities, and not much understanding of how the response would be effectively coordinated and carried out. While there was a general consensus on how a multi-agency unified command structure would be required for the incident described in the exercise scenario, the question on how this would be established was still unclear.
14. There was recognition that the Puget Sound region needs a coordinated regional incident action plan to address the loss of the SR 520 Bridge. A police department official observed that there was a need for “regional contingency planning for disaster related events.” At the same time, there were participants that did not see developing a regional plan as necessary. Rather, some first responders voiced that this was unneeded based on the fact that each incident was different. They believed their understanding of the incident command system and their organizational plans and capabilities were sufficient to mount an effective response.
15. There was a fair amount of discussion about the limited resources and staffing due to the traffic gridlock that would occur with the bridge failure. The moving nature of the event would make responding to victims on the water in a timely manner very difficult.
16. Particular attention was paid to the lack of large boats that could be used for rescue on the east side of the bridge and the time it would take to secure U.S. Coast Guard maritime and air rescue assistance. There will be a need for backup personnel to ensure critical operations are staffed.
17. The response and recovery from the bridge failure will overlap and could take days to a few weeks considering the time to retrieve submerged vehicles and victims. Commercial divers able to go 200 feet deep would require special equipment. Continued response activities in the vicinity of the bridge would add to traffic management challenges.
18. At the end of the breakout session, it remained unclear which agency would be heading the incident commands. As one transit official noted, there was a need for “clarity on the coordinated emergency response—who is in-charge.” Some participants believed this issue would be addressed by ICS in training personnel that would be involved in the response effort.
19. Some participants remarked that there was a need to study additional lessons learned from previous events and disasters to better understand interdependencies impacts.
20. Several participants from different agencies and infrastructures raised the issues of assuring communications capabilities through alternative communications methods when phone, cell phone and internet service may be disrupted by prolonged power outages, physical infrastructure damage, or congestion caused by too many users. A few participants commented that any alternative communications used should be tested for

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interoperability. Another participant noted that this currently is being addressed with established amateur radio group and that some agencies also have satellite phones for emergency communications.

21. Participants were reminded that there are government phones and wireless emergency priority systems (GETS and WPS) to which they should subscribe.
22. It was noted that there is currently no emergency back-up power for traffic management signs and cameras.
23. Need comprehensive regional plan for hospitals and ambulance service response—need their own operation command to handle logistics, supplies.

### ***Recommendations:***

1. WSDOT should explore with local governments and relevant private sector and other key stakeholder organizations developing a regional ICS/multi-agency response plan to address a potential failure of the SR 520 Bridge. This plan would cover emergency preparedness/management, communications, and transportation management and would be linked to the King County emergency plans. Such a plan should have an air, marine and ground rescue component. The plan would address response through longer-term restoration of the bridge. The plan would be one element of a broader regional transportation resilience strategy to deal with any type of multi-jurisdiction disaster. Several first responder participants suggested using a Multi-agency Unified Area Command structure in the Incident Command Post (ICP) for this type of “moving event”, and that ICP leadership changes will occur over the moving event’s life cycle to direct the evolving restoration needs of the area.
2. WSDOT, responding EOCs, and other regional stakeholders should work with the DHS Federal Emergency Management Administration, Federal Highway Administration, US Coast Guard, and other federal agencies, and the Washington Military Department’s State Emergency Management EOC to identify what search and rescue and other essential resources would be available to assist with response and recovery from the bridge failure, how to access these resources, and how long it would take for federal agencies to provide them.
3. WSDOT should consider posting possible closure warnings and advising people to monitor their local broadcast station closely in the event of a decision to close the SR 520 Bridge.
4. WSDOT should review its bridge closure procedures, including communications protocols, mechanisms (media, variable message signs, highway advisory radio, etc.), and information recipients, and revise as necessary with input from local government agencies and other key stakeholders organizations.

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5. Procedures should be developed to notify affected agencies of potential bridge closures with regular updates.
  6. Create an educational slide show that addresses warning terminology that would be posted on the NWS Seattle web site to help the community better understand the terminology including its lead time and level of certainty. Publicize the availability of the web site to stakeholder organizations and the general public.
  7. WSDOT should consider stationing flotation devices along the bridge.
  8. Participants were receptive to the idea of extending training opportunities in the Incident Command System, ICS, to relevant stakeholder organizations, especially non-government entities.
  9. In developing a regional bridge failure preparedness plan, WSDOT and stakeholders should consider making pre-event designation of a command post or posts for a bridge failure.
  10. WSDOT and regional stakeholder organizations should post emergency response and continuity plans on a secure web-site and hold a coordination workshop to describe their plan and to exchange information on best practices.
  11. Creation of a Regional Transportation Resilience Working Group within the public-private Puget Sound partnership for Regional Infrastructure Security should be considered to enable the engagement of the broad range of diverse organizations that need to be included for further identification of needs and solutions.
  12. Regional stakeholders, including WSDOT, should create a targeted subgroup for SR 520 as a part of the broader Regional Transportation Resilience Working Group to address communications and information interoperability and systems redundancy needs that include emergency communications during a major regional disaster.
  13. WSDOT should seek resources to ensure emergency power back-up for traffic management signs and cameras where necessary.
  14. Station radio communications capabilities at locations where command posts will likely be located.
  15. Conduct combined ICS training for WSDOT and City Public Works.
  16. Provide training to qualify emergency responders in water rescue so that each command post in a bridge failure situation would have an individual trained in marine recovery.

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17. Identify the lead emergency responder agency during the response phase of the event. Identify the lead for land, air, and water based operations. Develop an agreement to define the roles and responsibilities among the emergency responder agencies.

### **3.2.3. Transportation findings and recommendations**

#### **General Observations:**

Significant work and coordination among jurisdictions is underway on transportation management planning in the greater Seattle region that can be applied to a bridge failure scenario.

#### ***Findings:***

1. WSDOT has had close interaction with the City of Seattle on traffic management issues and has developed a protocol for coordination and communication with the City. This has not been the case with other jurisdictions, where WSDOT coordinated directly with the Washington State Patrol. Several participants pointed out the problem with transit of large vehicles on the bridge that are unable to turn around at the designated turn-around areas; they are suggesting that such vehicles could be prohibited from using the bridge if weather condition requires bridge closure.
2. Better planning is required to ensure that medical services can be provided and that patients can be transported to medical facilities.
3. Several participants raised the issue of temporary bridge replacement options while others noted that there are no reasonable or feasible options.
4. There are no local jurisdiction traffic management signs on the eastside of the bridge that could be used to alert motorists to route changes or provide other transportation-related guidance.
5. It was not clear how local jurisdictions and agencies would participate in the bridge failure response and be integrated into the decision-making process.
6. The issue was raised of how prioritization, suspension, or cancellation of scheduled transportation construction projects would be coordinated, and the need to explore the legal and financial ramifications. One participant inquired if improvement projects in the transportation management could be completed sooner.

#### ***Recommendations:***

1. Local and regional transit agencies and WSDOT should investigate developing medium and longer-term transit options.

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2. A subgroup should be created within the Regional Transportation Planning Group to focus on finding effective ways to get patients and staff to and from hospitals.
  3. WSDOT, in cooperation with local agencies, should investigate and develop integrated corridor management plans on state highways that could be implemented in advance of a failure. Identify existing planned and programmed projects for early implementation.
  4. Local agencies should investigate and develop integrated corridor management plans on local street networks to provide coordinated traffic management strategies in the event of a failure.
  5. WSDOT and regional stakeholder organizations should develop specific traffic congestion and traffic demand management solutions to normalize transportation as much as possible after a bridge failure and to provide public awareness.
  6. Further consideration should be given to feasible bridge replacement options that would expedite the replacement process as WSDOT is attempting to implement with the Early Pontoon Construction Project.
  7. A workshop should be held to bring WSDOT and transportation managers and planners together to further brainstorm and identify mutually and complementary strategies before a regional Action Strategy is finalized.
  8. WSDOT and local jurisdiction transportation managers should improve their coordination efforts by conducting a yearly meeting in advance of the fall windstorm season to update plans and share information and contacts.

### **3.3. Findings and Recommendations - Recovery and Restoration**

**General Observations:** This portion of the exercise centered on gaining a better understanding of, and finding solutions to the regional economic impacts in the event of SR 520 Bridge failure, specifically the far-reaching consequences for businesses and communities stemming from impediments to the movement of people and goods and services.

#### **3.3.1. Economic findings and recommendations**

***Findings:***

1. Impact of the bridge failure on the local economy will be extensive and will also affect the broad Puget Sound Region and beyond. Many small businesses in particular may not survive, because of lost customer base, staff, or inability to readily re-stock merchandise or provide services to customers.

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2. It is difficult to predict the economic affects of different transportation management decisions and mitigation options due to the limited capability of current analytic tools.
  3. Participants acknowledge that replacing the bridge could take a long time, including the decision-making, funding and construction. It would be necessary to clearly inform the public in a positive way about the long term nature of the bridge replacement and the potential economic and transportation impacts.
  4. WSDOT and local jurisdictions must closely coordinate transportation and transit management decisions and planning and implementation, including transportation construction projects in collaboration with transit providers and commercial enterprises.
  5. Many businesses regardless of their sizes depend on the SR 520 Bridge as a major transportation route for their employees and to receive and provide goods and services.
  6. Public transit is particularly important for many companies. For example, Safeco noted that 85 percent of its employees in the Seattle area are currently using the public transit.
  7. Some companies have well-developed continuity plans that include flex hours for employees, provisions to move some business operations to downtown Seattle or remote locations, and offer telecommuting to a large numbers of employees.
  8. The Port of Seattle will likely loose container business if there are long-term scheduling and freight delivery problems that persist for a length of time. Exercise participants were told that Port customers would either adjust or take their business elsewhere in 30-45 days.
  9. Most private sector organizations with the exception of large companies such as Microsoft and Boeing do not have long-term contingency plans for loss of the bridge.
  10. Small businesses may experience a hard hit due to lack of staff and supply issues, which they may be forced to close or relocate out of the area.
  11. In the short-term, there will likely be shortages in stores, hospitals, and other service providers because of supply chain issues caused by the bridge loss. A Safeway representative noted that perishable good would be a particular concern.
  12. There is limited knowledge sharing about the continuity plans of interdependent key stakeholder organizations (utilities, hospitals, government agencies, etc.), that would be impacted during the longer-term recovery from the bridge failure.
  13. Local jurisdictions need to determine how to coordinate message content and disseminations on traffic management decisions and actions.

14. There is a need for ways to communicate to transit system passengers the changes in schedules and routes.
15. Law enforcement officials will not be able to cover all major traffic problems, particularly on congested, alternate route side streets. This will be especially a problem in the first week after the bridge loss.

### ***Recommendations:***

1. A study of the economic consequences of the loss of the bridge should be considered that develops the analytic and decision making tools to meet this objective.
2. WSDOT should develop strategies, as a part of a regional communications plan, to inform the public and media about the bridge replacement, projected completion date, and potential complicating factors.
3. A Business Continuity Planning Workshop involving WSDOT and regional public and private stakeholders should be conducted that includes presentations on their respective continuity plans, activities, and resources that could be leveraged for response and longer-term restoration.
4. Businesses should explore existing and innovative approaches (flex hours, re-locating business operations, remote operations and telecommuting, and sharing functions and services).
5. Local and state governments should consider providing tax incentives to small businesses that can demonstrate they have emergency response and business continuity plans.

### **3.3.2. Freight findings and recommendations**

#### ***Findings:***

1. SR 520 is not a major regional freight route. Traffic impacts resulting from the bridge failure would come primarily through indirect affects of congestion on other routes. Impacts on the transportation and delivery of goods and services could potentially be significant because the traffic that shifts from SR 520 would be detoured onto the major freight routes. The added traffic to the detour route could disrupt schedules affecting staff resources for freight companies and other commercial enterprises in the region that are dependent on just-in-time delivery, regular re-supply or inventory replacement. For example, Safeway would be depleted in 12 hours and some perishable items would not be stocked. All sectors will be affected including the Port of Seattle, and local grocery stores, and other suppliers of essential services.

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2. There needs to be further planning on how to mitigate impediments to timely delivery of goods and services caused not just by the bridge loss but also from other major transportation emergencies. A state infrastructure protection official noted that an incident involving the ports throughout the Puget Sound region could close down transportation for a period of time.
  3. Participants offered a number of measures and solutions to address freight-related challenges. Among them were creating a central two-way communication resource for freight carriers to receive and provide information; limiting movement of certain types of freight to off-peak hours; using the media to distribute information and notifications to truckers; creating of a travel time Mapquest function on the Internet; determining alternate routes; making certain streets one-way at certain times of the day; suspending local jurisdiction noise ordinances to enable trucks to use certain roadways or undertake deliveries at night; lifting weight restrictions for trucks temporarily; creating additional HOV lanes; having HOV-only in all lanes within a certain time of day; banning parking on streets and putting in a special use lane for transit and freight; offering incentives by the State to trucking interests to not travel at certain times; improving signal timing; and working with local jurisdictions to optimize use of arterials and to designate one-way streets.
  4. The Postal Service would continue to deliver the mail despite transportation challenges in the event of SR 520 Bridge failure.
  5. The impacts of the bridge loss on freight rail movement were not addressed in any detail during the exercise.
  6. A requirement for additional buses and drivers could potentially move vehicles from the general purpose lane to the HOV lane. This would provide more capacity in the GP lane for freight transport.
  7. Businesses that rely on delivery services would need additional trucks.
  8. Participants agreed that the regional Incident Command with different organizations and representatives involved would remain in place to handle restoration activities for an unspecified amount of time.
  9. WSDOT is undertaking a project modeling freight and supply chains that could be used to assess bridge loss impacts.
  10. Truckers would require specific information on detours and other information. This information would need to be provided in languages other than English to accommodate non-English speakers.

***Recommendations:***

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1. WSDOT and regional stakeholders should develop a flexible regional strategy that includes a broad range of measures and other solutions that aide in normalizing the flow of traffic and freight after bridge failure. A “Collaborative Regional Transportation Plan” would have short, medium, and long-term phases. This is achieved through a Regional Transportation Management Planning Group. The groups should have representations from the freight and trucking industries.
  2. WSDOT and regional stakeholders, through the Regional Transportation Management Planning Group will also ensure that media receive a coordinated, single message from the state and local jurisdictions about traffic management decisions, construction activities, and bridge replacement information.
  3. WSDOT and regional stakeholders should consider street intersections at potential and existing freight routes where on-street parking exists. This will improve the ability for trucks to make turns.
  4. Explore the following solutions:
    - Creating a central two-way communication resource for freight carriers
    - Limiting movement of certain types of freight to off-peak hours
    - Using the media to distribute information and notifications to truckers
    - Creating of a travel time Mapquest function on the Internet
    - Determining alternate routes
    - Making certain streets one-way at certain times of the day
    - Suspending local jurisdiction noise ordinances to enable trucks to use certain roadways or undertake deliveries at night and lifting weight restrictions for trucks temporarily
    - Creating additional HOV lanes; having HOV-only in all lanes within a certain time of day; banning parking on streets and putting in a special use lane for transit and freight;
    - Offering incentives by the State to trucking interests to not travel at certain times
    - Improving signal timing
    - Working with local jurisdictions to optimize use of arterials and to designate one-way streets.
    - Providing information at the point of entry or way station for the truck drivers.
    - Ensuring that non-English speakers are accommodated.

### 3.3.3. Moving people findings and recommendations

#### *Findings:*

1. There is a need for coordinated planning to design a regional transportation management strategy to address movement of people. As one WSDOT participant noted, it is unclear which agency would be making decisions on transportation priorities and procedures and how they would be enforced.

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2. Public transportation will be significantly affected. Additional buses and changed routes will be necessary. Union issues and other legal constraints may pose difficulties in contracting for additional services.
  3. Traffic management plans will need to take into account impact on residential communities of additional traffic spilling over into arterial streets.
  4. Traffic managers should work with utilities, medical emergency response, and hospitals to develop ways to ensure that maintenance and emergency vehicles have expedited access to deal with incidents.
  5. There is a need for public outreach and education through disseminating information and soliciting public views. A city government official observed that this is particularly important for political and business leaders to build interest and investment in solutions to manage traffic. Another local government official noted that leaders should be prepared to make unpopular decisions.
  6. Public information and communications should be issued in different languages to accommodate non-English speaking individuals. (WSDOT already has a newspaper email list for papers that publish in another language.)
  7. It is assumed that media and public attention will wane as post-bridge failure period lengthens.
  8. It is important to involve both employers and employees in developing transit options and to look beyond mass transit in moving people such as carpools, vanpools, flex schedules, telecommute, etc.
  9. It was suggested that public meetings be held to generate support and ideas for traffic management before a major disaster happens.
  10. There is a great deal of willingness among the exercise participants to collaborate on solutions but not clear what agency would be responsible in coordinating, planning, and implementation of strategies.
  11. A dedicated transportation emergency phone “hot line” and WSDOT website that is regularly updated could be established for the public.
  12. Several participants mentioned the idea of creating a ferry service across Lake Washington, but recognized the challenges to implement this.

### ***Recommendations:***

1. WSDOT should work with utilities, medical emergency responders and hospitals to create or build upon existing agreements to provide for expedited access to emergency locations. For example, an agreement could be a memorandum that is

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signed between Washington State and Puget Sound Energy, PSE, to provide for HOV lane exemptions for PSE crews in the event of an emergency that affects electrical and natural gas infrastructure.

2. WSDOT and local agencies should coordinate traffic management signage and develop a traffic management "tip sheet" that can be used to provide a consistent public message.
3. Devise ways to keep media and public attention until a new bridge is constructed.
4. Develop procedures as part of a broader transportation management strategy for disseminating information to employers.
5. Organizations should involve employees to develop ways to incorporate alternate transit modes for essential personnel and how to communicate this information to employees.
6. WSDOT should hold town hall meetings in conjunction with local governments to explain traffic management plans and challenges, and solicit community feedback; also develop a web-based survey to gain understanding why people use the bridge and of their expectations for traffic management.
7. Develop a Transportation Management Task Force to deal with emergency situations. Meet daily at first, then decrease the frequency of meetings as time goes on and as issues lessen (include City Public Works Directors, Metro, Police, WSP, WSDOT).
8. Work with King County Metro on ferries across the lake as a part of their on-going plan for ferry service on Lake Washington.
9. Metro, Sound Transit, and Community Transit should consider developing an action plan to respond to catastrophic bridge failure.

#### **4. Exercise Utility**

The exercise was well-received by participants. More than 70 percent evaluated it as very good or excellent overall and 91 percent thought the delivery of the exercise was very organized. In addition, more than three-quarters of the participants rated the quality of discussion highly.

Comments from attendees positively pointed out the open discussion, involvement of the private sector, and ability to interface with many individuals from organizations with whom they coordinate for their work. A hospital/healthcare official welcomed findings of other organizations as well. One participant saw particular value in getting a list of "communications players and contact information to the local emergency operations centers." A local government participant remarked on the "innovative ideas for managing traffic" and "refreshing willingness to discuss drastic measures" to address the

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exercise scenario. A transit official noted he was very encouraged by the value placed on transit by other agencies and jurisdictions, especially WSDOT. A utilities representative simply stated, “This was a good exercise”, while another participant proclaimed the “exercise was fun” citing the opportunity to network, and another noted the opportunity to learn who the decision-makers were. One of the evaluators commented that the exercise was particularly useful in that its results could also be used to assess the potential impacts of a terrorist attack on the bridge structure. Another thought the focus on regional infrastructure interdependencies valuable. A city government official saw gaining a greater understanding of the vulnerability of the region’s tax base and economy as his most valuable “take-away” from the exercise whereas an emergency management official saw gaining an understanding of the long-term recovery impacts as especially helpful.

A few participants felt the exercise breakout groups were too large for in-depth discussion of the issues, however. One suggested that small groups would have been better to address issues more concretely, then holding a larger group to address a particular problem would be ideal. In addition, a few of the participants wanted more information on WSDOT plans and procedures, including their capabilities. Some thought a reception after the event would have been useful to further network and exchange information.

Reaching out to stakeholders was the key objective of the exercise. Participants were also asked on their evaluation forms to indicate which stakeholder organizations they would like to be involved as well. Some notable organizations were King County emergency management and public information officials; the Washington State Truckers Association; associations that represent small and medium size businesses; community and cultural organizations that would be affected by loss of the bridge; the Port of Seattle; Washington State Ferries; private transportation interests (including tour companies and travel agencies, AAA and medical transportation companies; also Mapquest representatives).

## 5. Next Steps

Exercise participants were informed at the end of the proceedings that a draft exercise report would be produced, reviewed by the Scenario Design Team, revised and then sent to them for their review and comment. The recommendations in the report would be incorporated in an Action Strategy of short and longer-term activities to help develop a regional transportation management plan to address a potential emergency affecting the SR 520 Bridge and its eventual replacement. An Action Strategy Workshop will be held on March 10<sup>th</sup> in which participants will review and prioritize the activities in the Action Strategy and create a collaborative process and mechanisms for implementation.

**A major milestone and planning tool.** The SR 520 Bridge Catastrophic Failure Tabletop Exercise marked a major milestone and contribution in the development of a regional transportation management plan to improve disaster resilience for the region as a whole, the communities located within it, and the infrastructures and organizations that serve it. The exercise produced hundreds of suggestions to address the wide range of

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issues discussed and to mitigate many of the challenges posed by loss of the SR 520 Bridge. One of the most important recommendations is the need for the creation of a task force—a Regional Transportation Management Catastrophic Failure Planning Group of agencies, private sectors, and other organizations to work together in focusing on the preparedness gaps and needs identified in the exercise, and to implement solutions.

The ideas, observations, and comments generated from the exercise provides a wealth of material for stakeholders to collectively begin in developing and implementing a viable, flexible, coordinated regional transportation management strategy and plan that cover emergency response, restoration and bridge replacement. The exercise is a significant milestone to building the base of regional stakeholders that will be involved in developing this strategy and plan. While the focus was on the SR 520 Bridge failure the exercise findings and recommendations are also relevant to any major regional disaster that impacts transportation.

Therefore, it is wise to consider the findings and recommendations in the Tabletop Exercise and to actualize the plan. As a representative of a major food chain emphasized, the goal is to “stop talking and start doing things now.”

## 6. Appendices

### Appendix A. Scenario Design Team Members

**Allison Schletzbaum**, Project Manager, King County Regional Medical Resource Center  
**Ara Swanson**, Communications Team, SR 520 Project Team  
**Archie Allen**, Bridge Superintendent, WSDOT Northwest Region  
**Brandon Hardenbrook**, Deputy Director, PNWER  
**Brian Johnson**, Sergeant, Traffic, Seattle Police Department  
**Clifford Bates**, Chief, Contingency Planning, U.S. Coast Guard, Seattle Sector  
**Dave Schneider**, Seattle Department of Transportation  
**Denise Reubens**, Director, Microsoft  
**Donald Smith**, Sergeant, Traffic, Seattle Police Department  
**Eric Widstrand**, Manager, Traffic Operations, Seattle Department of Transportation  
**Gene Blahato**, Loss Prevention, Safeway  
**Gordon MacDonald**, P.E., SR 520 Project Team  
**Jeff Parsons**, Program Manager, Emergency Management Division  
**Jim Tutton**, Vice President, Washington Trucking Association  
**Joe Fewel**, Detective, Seattle Police Department, Emergency Preparedness Bureau  
**Joe Fletcher**, Engineer, The Boeing Company  
**Julie Carpenter**, Management Policy Advisor, Bellevue Depart. of Transportation  
**Laurel Nelson**, Community Mitigation and Business Outreach Coordinator, City of Seattle, Police Department, Office of Emergency Management  
**Mark Crandall**, Sergeant, Washington State PolicePatrol  
**Matt Morrison**, Executive Director, PNWER  
**Michael Johnson**, Captain, Bellevue Police Department  
**Mike Katzer**, Assistant Maintenance Superintendent, WSDOT  
**Morgan Balogh**, Washington State Department of Transportation  
**Pat Spak**, Lieutenant, Bellevue Police Department  
**Patsy Evans**, Emergency Preparedness, U.S. Postal Service, Western Washington  
**Paula Scalingi**, Director, Center for Regional Disaster Resilience PNWER,  
**Richard Lucero**, Assistant Superintendent, WSDOT  
**Rob Olsen**, Lieutenant, Seattle Fire, Seattle Fire Department  
**Rod Hilden**, Chief Security Officer, Port of Seattle  
**Roger Serra**, Director of Security and Emergency Management, Seattle City Light  
**Scott Heinze**, Governor's Executive Policy Advisor for Homeland Security/General Government Issues  
**Stan Suchan**, Communications Manager, WSDOT Northwest Region  
**Steve Burns**, District 2 Commander, Washington State Patrol  
**Steve Thomas**, Battalion Chief /Emergency Preparedness Manager, Bellevue Emergency Management  
**Ted Buehner**, National Weather Service  
**Terry Simmonds**, SR 520 Project Team, Emergency Management Advisor  
**Tom Lentz**, Traffic Engineer, PB

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## **Appendix B. Informational Materials**

- SR 520 Bridge Vulnerabilities Fact Sheet**
- SR 520 Bridge Catastrophic Planning Folio**

**For additional in information, please go to**  
**[www.regionalresilience.org/520exercise](http://www.regionalresilience.org/520exercise)**

## Appendix C. Exercise Invitee List

**Rick Rodda, Asst. Supt. Bridge, WSDOT**  
**Victoria Tobin, deputy communications manager, WSDOT**  
**Jim Fosse, Deputy Chief, Seattle Fire Department**  
**Julie Baker, Emergency Management Coordinator, Wa. State Dept. of Transportation**  
**Joel Leisy, transportation manager, Safeway inc**  
**Sara Hayden, , Community Transit**  
**Gene Blahato, Investigator, Safeway Inc.**  
**William Hawe, Manager, WA Assoc. of Sheriffs & Police Chiefs**  
**Jeff Parsons, Program Manager, Washington Emergency Management**  
**DeWayne Sennett, AEC for Eastern King County, Western Washington Medical Services Team**  
**William Zander, Battalion Chief, Seattle Fire Department**  
**John Hill, Fireboat Pilot, Seattle Fire Department**  
**Jim Dare, Street Maint. Director, City of Seattle-SDOT-Street Maintenance**  
**Paul Rodgers, Chief of Service Quality, KC Metro**  
**Robert Olsen, Lieutenant, Seattle Fire Department**  
**Joe Fletcher, Associate Technical Fellow, Boeing**  
**Andrea Myers, Firefighter/Divemaster, Seattle Fire Department**  
**Ed Cunningham, Prog Manager, AT&T**  
**Eric Widstrand, , SDOT**  
**Ross Aitken, Supervisor, SDOT**  
**Lisa Shafer, , King County**  
**Roxanne Thomas, Manager, SDOT**  
**Michael Daily, Battalion Chief, Bellevue Fire**  
**Marybeth Turner, Public Relations Supervisor, SDOT**  
**Jennifer Deas, Transportation Systems Coordinator, Children's Hospital & Regional Medical Center**  
**Aaron Hedrick , Seattle Fire Department**  
**Kevin Haistings, Sergeant, Seattle Police Department**  
**Marc Olson, Lieutenant, Seattle Police Department**  
**Steve Snover, CIPMS Mapping Facilitator, WASPC/PRI**  
**Scott Bates, Commander, US Coast Guard Sector Seattle**  
**Matt Morrison, Executive Director, PNWER**  
**Brandon Hardenbrook, Deputy Director, PNWER**  
**Paula Scalingi, Director, PNW Center for Regional Disaster Resilience**  
**Brian Daly, Emergency Coordinator, Western Washington Medical Services Team**  
**Mike Reilly, Office of Continuity Assurance, WaMu**  
**Al Peffley, Vice President, Excalibur Specialty Services Inc**  
**Andy Haner, Meteorologist, National Weather Service**  
**Ronald Paananen, Project Director, WSDOT/ UCO/ SR 520 Project**  
**Jim Prange, Incident Meteorologist, National Weather Service**  
**Donnie Lowe, Lieutenant, Seattle Police Department**  
**Jim Stonecipher, , WSDOT**

**Timothy Ditch, Maint. Specialist 5, WSDOT**  
**Mark Cornwall, NWR Env. Prg. Mgr./Maintenance, WSDOT**  
**Rick Roberts, King Area Traffic Engineer, WSDOT**  
**Julie Meredith, Deputy Project Director, WA Dept. of Transportation**  
**Pani Saleh, NWR Program Delivery Mgr, WSDOT**  
**Archie Allen, Maintenance and Operations Superintendent, Bridge, WSDOT NWR**  
**David Grant, Public Information Officer, City of Bellevue**  
**Todd Simonton, Major, Bellevue Police Department**  
**John Manning, Captain, Bellevue Police Department**  
**Steve Thomas, Battalion Chief, Bellevue Fire Department**  
**Julie Carpenter, Mgmt Policy Advisor, Bellevue Transportation Department**  
**Pat Evans, Homeland Security Coordinator, U.S. Postal Inspection Service**  
**Trent Cain, Sergeant, WSP**  
**Mark Crandall, Sergeant, WSP**  
**Richard Lucero, Assistant Superintendent, WSDOT**  
**Marla Dalton, Executive Director, TISP**  
**Robert Isaman, Transportation Security Program Manager, Washington Military Department, Emergency Management Division**  
**Kimberley Nelson, VP-Regional Emergency Manager, Bank of America**  
**Kelly Kasper, Workplace Preparedness Manager, American Red Cross**  
**Ara Swanson, Communications, SR 520 Bridge Replacement and HOV Project**  
**Susan Garber-Yonts, development manager, Duwamish TMA**  
**Anne Eskridge, Assistant Director, Transportation Services, University of Washington**  
**David Carr, Assistant Director, Transportation Services, University of Washington**  
**Josh Kavanagh, Director, Transportation Services, University of Washington**  
**Dawn Schellenberg, Strategic Advisor, SDOT**  
**Richard Lewis, Lieutenant, University of Washington Police Department**  
**Steven Charvat, Emergency Mgmt. Director, University of Washington**  
**Stan Suchan, Northwest Region Communications Manager, WSDOT**  
**Joy Johnston, Communications Coordinator, City of Mercer Island**  
**Benjamin Smith, Project Coordinator, Sound Transit**  
**Mark Wesolowski, Emergency Planning Mgr, Puget Sound Energy**  
**Mary Robinson, Manager Operations Continuity, Puget Sound Energy**  
**Johanna Forkner, Regional Emergency Transportation Representative, DOT/FAA**  
**Diane Bonne, Deputy Preparedness Manager, Public Health - Seattle & King Co**  
**Chester Knapp, Program Coordinator, City of Redmond**  
**Barb Graff, Director, Seattle Office of Emergency Management**  
**Alice Fiman, Communications, WSDOT HQ**  
**Mike Katzer, Asst. Maint/Ops Supt., WSDOT**  
**Deby Canfield, , City of Redmond**  
**Melanie Coon, Communications Manager, WSDOT**  
**Daniel Babuca, Project Engineer, WSDOT - SR 520**  
**Siri-Elizabeth McLean, Security Program Manager, Securitas**  
**Debbie Murdock, NW Regional Emergency Management, Washington Mutual Bank**  
**Carol Thompson, Supervisor of Service Planning & Scheduling, Community Transit**  
**Marilyn Vancil, Senior Civil Engineer, City of Seattle**

**Ron Kamps, Director Business Continuity Services, Safeco Insurance**  
**Lauren Penning, CC3, WSDOT**  
**Sidney Stecker, Transportation Planning Manager, Federal Highway Administration**  
**James Thomson, Sr. Program Manager, Microsoft**  
**Denise Reubens, Director, Global Security, Microsoft**  
**Onora Lien, Mass Fatality Response Manager, Public Health - Seattle & King County**  
**Morgan Balogh, Traffic Engineer for Operations, WSDOT**  
**Tom Lentz, Senior Supervising Traffic Engineer, PB**  
**Ted Buehner, Warning Coordination Meteorologist, National Weather Service**  
**Larry Howard, Clerk/Treasurer, Town of Yarrow Point**  
**Terry Simmonds, Retired, WSDOT**  
**Erika Lund, Recovery Coordinator, Seattle Emergency Management**  
**Broch Bender, Public Information Officer, WSDOT**  
**David Schneider, Emergency Preparedness, City of Seattle -- Dept of Transportation**  
**John Hopfauf, Street Manager, City of Kirkland**  
**Carl Brown, Program Manager, Defense Threat Reduction Agency**  
**Gordon MacDonald, CFP Lead, SR 520 Team**