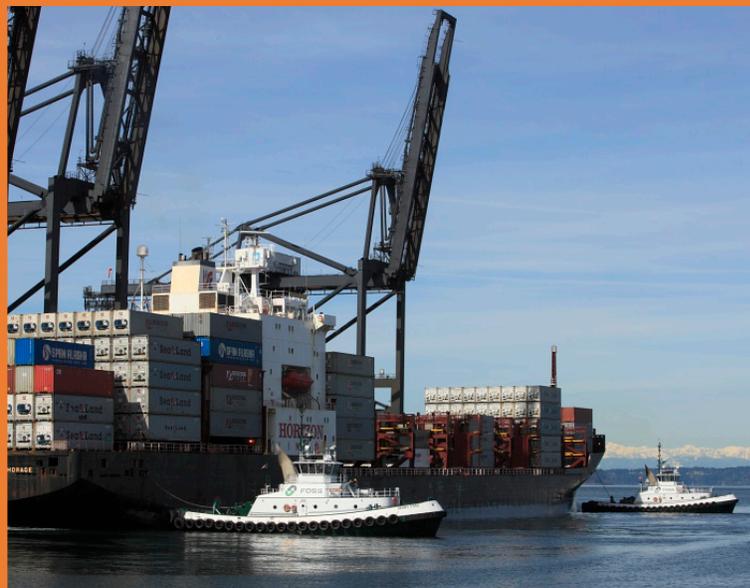




Puget Sound Regional Maritime Transportation Disaster Recovery Exercise Program

Final Report May 30, 2014





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The Puget Sound Maritime Transportation Recovery Team (PSMRT)



Dynamis, Management & Exercise Innovation, Design, and Control



The Beckett Group, Maritime Operations



Pacific Northwest Economic Region (PNWER), Stakeholder Engagement & Exercise Facilitation



Simudyne, Live Action Simulation



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EXECUTIVE SUMMARY

The Puget Sound ports – Port of Everett, Port of Olympia, Port of Seattle, and Port of Tacoma – collectively represent the third largest port load center in the nation, with Washington State being one of the most trade dependent states in the United States. These ports are vital to the local, regional, and interstate economies and are critically dependent on electricity, fuel, rail, road transportation assets, and other critical infrastructures that facilitate the movement of passengers and cargo.

The Puget Sound Region experiences significant impacts from natural hazards including floods, storms, fires, earthquakes, tsunamis, and volcanoes. There are also numerous technological hazards, including industrial hazardous materials, military hazardous materials, and vulnerable Critical Infrastructure and Key Resources (CIKR). These hazards are further complicated by human-driven factors such as the potential for terrorist and criminal activity. It is anticipated that given the importance of trade to our economy, a major incident such as an event or terrorist attack in the Pacific Northwest would have a large effect on the flow of commerce. This is based upon the findings published in the 2009 Washington State Hazard Identification and Vulnerability Assessment (HIVA), and given the important role the ports play in our region, state and nationally. It is expected that commerce in the region and throughout the state would likely grind to a halt following a major incident or event involving an earthquake on one of the Northwest's major fault systems or a terrorist attack against a single point target or multiple targets of critical infrastructure.



1: Joe Huden, PNWER, leads the Port of Everett in discussion during Phase 1.

Acknowledging this dependency on freight, it was determined that more planning needed to be completed to prepare for such events. Thus, considerable effort and expense went into the development of an eight county Puget Sound Regional Catastrophic Disaster Transportation Recovery Plan, adopted in February 2011. A major component of that plan is planning for transportation disruptions that may result from a major earthquake in the Central Puget Sound. One element of that regional planning effort included using port facilities and the Puget Sound waterway system as a means for moving goods within the region until the road and rail

transportation sectors can return to full operations. Prior to the Puget Sound Regional Maritime Transportation Disaster Recovery Exercise Program, the Regional Catastrophic Disaster Transportation Recovery Plan had not been exercised by the maritime community.

Given the level of risk identified in the HIVA, and the untested nature of the region's plans, the Port of Tacoma took a leadership role in obtaining funding and organizing a regional effort to exercise the Puget Sound Regional Catastrophic Disaster Transportation Recovery Plan. The port wanted to enhance the exercise experience and the residual value of the exercise program by integrating interactive modeling and both qualitative and quantitative measures into the exercises. The port was interested in identifying the interdependencies between CIKR elements within individual ports, between ports and their surrounding communities, and within the Puget Sound Region as a whole. In order to ensure that the nature of these interdependencies was clearly defined, the exercise program focused on the potential financial impact on the ports given disruption of their business lines, and the regional economic impacts in terms of reduced economic activity and job loss. With this information, the Port of Tacoma and the region would be able to analyze and understand the integral roles the ports play in supporting the regional economy and the critical nature of their rapid recovery following a significant disaster.

Dynamis, a company known for its innovative solutions, was selected to spearhead this innovative approach to recovery exercises and to develop an economic recovery exercise based on an economic model. Dynamis understood the need to include firms on its team that were experts in economic modeling, maritime operations, and the technology to make the economic modeling come to life. Dynamis assembled the Puget Sound Maritime Recovery Team (PSMRT) to meet this goal by bringing in the Beckett Group for maritime operations; the Pacific Northwest Economic Region (PNWER) for stakeholder engagement and exercise facilitation; BERK Consulting for financial and economic analysis; and Simudyne for live action simulation.

In Phase I, PSMRT developed four independent tabletop exercises. These exercises were tailored to each of the four ports invited by the Port of Tacoma to participate in the program (Tacoma, Seattle, Olympia, and Everett). Each exercise was designed to focus on Continuity of Operations concerns and the transition from restoration of function to recovery following a terrorist attack on local CIKR. Each of the four scenarios focused on an individual port's unique plans, procedures, and CIKR.

The Phase I exercises provided each of the ports with the opportunity to strengthen their recovery planning and working relationships with their immediate neighbors and business partners. Each port exercise was very well attended and received. The port attendees expressed concern over a perceived lack of understanding by senior port leadership of how important it is to have an up-to-date business continuity plan.



2: Gerry Fiola, Security Manager, Port of Tacoma, Ed Madura, Security Director, Port of Everett, and Jim Knight, Acting Director, Marine Terminal, Port of Olympia, shared lessons learned from the Phase I exercises during the Phase II kickoff seminar.

To further address the Port of Tacoma’s interest in an analytically driven exercise supported by realistic simulation, the PSMRT used the results of the Phase I exercises to design and develop an interactive simulation of the economic interdependencies within the regional maritime transportation community. This technology was used as the foundation for the design, development, conduct, and evaluation of a regional discussion-based exercise for Phase II of the exercise program. This exercise was the first of its kind, incorporating regional players with the economic models that focused on the recovery phase of incident management. Integrating advanced modeling and simulation technology into the discussions provided the framework to achieve a common understanding of the need for a sustainable regional recovery program between Puget Sound’s public and private sectors.

The Phase II regional exercise focused on port-wide risk management, mitigation, continuity of operations, and resumption of trade after an earthquake. The exercise used an earthquake scenario that impacted maritime commerce and engaged the private sector, local, state, tribal, and federal governments. The Regional Catastrophic Transportation Disaster Recovery Plan was also exercised with a focus on the identification of interdependencies between industries that centered specifically on disaster recovery, beginning at day 31 post-disaster and continuing out to year five.



3: John Himmel, WSDOT, and Dave Ochs, USDOT/FAA, discuss the role of state and federal government in restoration decision making after an earthquake, during the Phase II exercise.



4: Jim Amador, Port of Olympia, gives a report to all Phase II exercise attendees on decisions made during the morning breakout discussion.

Both Phase I and Phase II of the exercise program were very well attended, with representatives from the local, state, tribal, and federal levels of government, along with numerous private sector entities, and port employees.

In the Phase II regional exercise, the participants were split into breakout groups to focus on the geographic region surrounding a specific port. An additional breakout group for representatives of State and Federal entities created an opportunity for discussion of individual department and agency priorities at that level as well as providing a single point of reference for any questions or concerns generated by the local breakouts. In these smaller groups, each port was able to use feedback from the regional simulation to inform their tactical and strategic decisions on specific recovery investments. This allowed the groups to see how their decisions directly affected their port's financial recovery in near real-time during the exercise. Plenary sessions were used to report out the group work and to view the projected effect each port's decision made on the region's economic recovery.

During this phase, the team integrated both the qualitative and quantitative elements. These tools were used to inform the facilitated discussion. With the help of the simulation tools, the participants were able to experience the potential physical, economic, and financial impacts of a catastrophic earthquake and view the results of their recovery planning in a new way. This allowed the participants of the region to expand their knowledge of the potential impacts. These tools also help the participants observe the level of effort that will be required to recover from such a large scale event or disaster. The exercise provided a forum for the ports and the regional stakeholders to build a broader joint understanding of the economic impact of such an event.

Several regional strengths and areas for improvement were identified:

▪ **Strengths**

- Participants exhibited amazing momentum and desire to work rapidly to identify key problems that need to be solved. They were eager to develop a timeline to identify issues and set expectations for when problems would be solved, especially from external partners.
- Interdependencies, port-to-port agreements to provide cooperation, and opportunities for partnerships were identified and explored between the participating ports, stakeholders, and government entities.
- Participating ports were willing to prioritize regional recovery over individual short-term business recovery, with the recognition that each port must restart their individual revenue-based activities quickly to enable their financial survival.

▪ **Areas for Improvement**

- Few, if any, mutual aid agreements currently exist to support recovery planning and operations between ports, government entities, and the private sector.
- Regional maritime business continuity and continuity of operations plans are not regularly updated due to limited resources.
- There is no clear way for ports and stakeholders to collectively communicate their transportation infrastructure requirements to State and Federal authorities following a disaster.

Participants exhibited impressive momentum and desire to work rapidly to identify key problems that need to be solved and commitment to a timeline to solve the issues and problems. Attendees agreed the exercises were beneficial and the content addressed would assist the ports with reducing future disaster recovery times. Stakeholders agreed they were reminded of the importance of listening to one another and highlighted the value of building relationships. By engaging a broad spectrum of government and private sector participants from across the ports in this exercise program, regional recovery strategies and plans were initiated. As the contract comes to a close, the participants, the ports, the cities, and the region have all benefited from the recovery exercises by identifying areas for improvements, recognizing their strengths, strengthening their relationships, and gaining a better understanding of options and challenges for port and regional recovery following a significant disaster.

BACKGROUND

The Puget Sound Regional Maritime Transportation Disaster Recovery Exercise Program enabled the members of the Puget Sound maritime transportation community to advance their capabilities to reinstate their respective organizations quickly after an emergency or disaster. The program involved the Ports of Tacoma, Seattle, Olympia, and Everett, and focused on the following key elements:

1. Engaging a diverse and sustainable community of interest for maritime transportation disaster recovery in the Puget Sound region, building from exercise design teams comprised of public and private stakeholders from and around each of the four participating ports;
2. Examining the regional financial and economic impacts of the exercise scenarios, as well as the decisions made and actions to be taken by the exercise participants as they direct recovery efforts; and
3. Presenting the recovery efforts and associated economic impact through a visual simulation to provide a common operating picture across all participating stakeholders.

Funding Source

The Port of Tacoma received funding from the federal Port Security Grant Program.

PSMRT Make-Up

The Puget Sound Maritime Resiliency Team is primed by **Dynamis, Inc.**, a small business built around community-recognized leaders in private and public sector preparedness and resilience, process and technology innovation, and human and institutional capacity development. Dynamis, who has conducted more than a dozen projects of similar size and complexity to this one, served as program management for this project. Dynamis spent two years to design the exercises and provided exercise control for the port exercises and the regional exercise. Dynamis’s experience in designing and executing exercises provided the team with a unique grasp of the critical interdependencies that exist between public, private, and nongovernmental entities in order to support community preparedness and resilience.



The Pacific Northwest Economic Region Center for Regional Disaster Resilience was launched by the Pacific Northwest Economic Region (PNWER) with the goal of improving the Pacific Northwest's ability to withstand, recover, and protect its critical infrastructures from all-hazards disasters. PNWER is the only public-private regional planning and facilitation organization set up in statute to focus on developing a resilient regional economy. This unique structure has allowed PNWER to bring hundreds of regional stakeholders together to discuss sensitive information within a trusted environment and examine cascading impacts of disasters to the Pacific Northwest region's economic infrastructure and made PNWER the obvious choice for identifying and engaging stakeholders to participate in the planning and execution of the exercises.

BERK Consulting is an interdisciplinary consultancy integrating financial and economic analysis with strategy, planning, and policy development. The BERK team is dedicated to working in the public interest and helping public and nonprofit agencies address complex challenges to position themselves for success. BERK provided economic analysis of the participating ports and the region and strategic planning for the exercise.

The Beckett Group is a certified woman-owned business enterprise (WBE) and provides an encyclopedic understanding of port operations, intermodal facility development, and road and rail access. The Beckett Group brought a deep understanding of maritime operations, financial impacts, and extensive knowledge in all aspects of national and regional freight and passenger mobility to the table.

Simudyne, Inc. builds real-world visual simulation models to help organizations formulate strategic plans, optimize key processes and supply chains, plan disaster responses, train and manage people, plan capital budgets, and model customer behavior. Simudyne was responsible for creating and running the economic modeling simulation with actual figures from financial data for the participating ports and cities.

PROGRAM OVERVIEW

Structure

	2013											2014				
	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J
Phase 0: Engagement	Stakeholder Engagement & Regional Coordination															
Phase I: Local Exercises	Design			Conduct						Evaluation						
Phase II: Regional Exercise	Design & Simulation Development											Conduct			Evaluation	
Phase III: Reporting	Stakeholder Advisory Group Workshop ● Regional After Action Report ● Maritime Transportation Disaster Recovery Framework ● Updated Regional Catastrophic Transportation Recovery Plan ●															

The exercise program involved four interrelated phases:

- **Phase 0** was developed by identifying, recruiting, and engaged engaging stakeholders to support the exercise program. The stakeholders played a central role in the socialization of the exercise program within the Puget Sound Region, as well as the design and development of the specific exercises themselves.
- **Phase I** included the design, conduct, and evaluation of four port-level discussion-based exercises, tailored for each of the four ports. The exercises focused on local concerns for each of the participating ports, their customers, and the surrounding communities.
- **Phase II** centered on the design, conduct, and evaluation of a regional exercise that engaged the ports in the United States Coast Guard Sector Puget Sound, their customers/operators, their surrounding communities, and regional stakeholders to examine the larger regional interdependencies for recovery.
- **Phase III** ensured that lessons learned were captured and communities of interest were established for the sustained benefit of the region. This work was built on an analysis of the After Action Reports for Phase I and Phase II exercises and an improvement planning strategy was developed. The findings identified in the After Action Reports were then used to develop recommendations for updates to the Puget Sound Regional Catastrophic Disaster Coordination Plan as well an outline for a focused Maritime Transportation Recovery Framework.

Methodology

Engagement and Exercise Design

The regional maritime recovery project was a stakeholder-driven process that involved recruiting participants and designing the activities and exercises from the ground up. Outreach involved many individual meetings to ensure stakeholders had a clear understanding of the importance of the regional exercises to their organization. The engagement and exercise design strategy can be broken down into three phases: Phase 0 Initial Planning, Phase I Planning, and Phase II Planning.

Initial Planning (Phase 0)

During this phase, the planning team reached out to each port as well as key sector representatives to brief them on the project and get their input on the overall project.

- **Initial project overview meetings with the ports** – Meetings with key port leaders at each of the four ports took place to understand their needs and explain the project. These meetings helped identify potential exercise planning team members and potential exercise participants.
- **Development of draft exercise planning team lists** – The ports and exercise planners developed a coordinated initial contact list of stakeholders to invite to the planning meetings and began to develop a larger exercise invitation list for each port to consider. The port lead worked internally with port staff to finalize the planning team list, sent invitations for the first planning meeting, and provided background information regarding the project.
- **Initial meetings with other key stakeholders** – Exercise planners set up individual meetings with key stakeholders identified with by the ports to discuss the project and answer questions; these meetings included local, state, and federal maritime and critical infrastructure stakeholders.
- **Project updates and promotion** – Updates were provided to relevant regional committees and working groups on a regular basis. Exercise planners participated in the following committees as active members: Area Maritime Security Committee, Regional Catastrophic Preparedness Team, Washington Homeland Security Region 6 Critical Infrastructure Protection Working Group, and Regional Social Media Advisory Committee (First2See). Planners also looked for opportunities to provide formal briefings to these and other relevant committees and used committee contacts to send invitations via email.

Phase I

The exercise planning team worked with each port design team to identify a draft list of exercise participants to invite to their respective exercises. Exercise planners met with the port leads to finalize the list and coordinate the distribution of invitations via email. Port leads extended initial invitations and exercise planners followed up with additional emails and phone calls. The planning team worked with the ports to collect RSVP's and follow up individually with invited stakeholders to ensure they are aware of the meetings and to answer questions.

The Phase I exercises were designed to facilitate an examination of Continuity of Operations and short-term recovery requirements for the maritime transportation community. Terrorist scenarios were selected based on a need for a security-focus exercise to meet grant requirements and to

mitigate projected participant requirements for a response exercise. The challenge was to trigger extended recovery requirements that could be used to keep participants focused on recovery versus response.



5: Lawrence Eichorn, Seattle Department of Transportation, discusses the transportation impacts of a major earthquake during the Phase II Exercise Planning Team meeting

Phase II

Regional Project Coordination Team (RPCT): The lead exercise planners for each port as well as the project consulting team and Pierce County Emergency Management made up the RPCT. This small core group helped provide guidance regarding project direction and input on the development of the stakeholder advisory group and the phase two activities. The RPCT were engaged through email and periodic phone calls.

Stakeholder Advisory Group (SAG) / Phase II Design Team: The stakeholder advisory group was pulled together by including key members of the Phase I exercise planning teams with input from the RPCT. Members included key representatives from critical service providers, government, and the private sector from across the multi-county region. The SAG was used to develop and plan the Phase II exercise as well as serve as a broad advisory group throughout the process. Periodic email updates were provided and several in person meetings and conference calls were arranged to plan the Phase II activities and exercise. The SAG assisted in promoting the phase II events and recruiting specific participants from their respective port areas. Marketing materials were provided to the SAG to assist in this process.

Based on input from the SAG and other regional leaders, a broad contact list was produced for invitations to the Phase II event. This group received periodic emails regarding the project and invitations to the kick-off meeting, exercise, and follow on meetings, and other materials and reports.

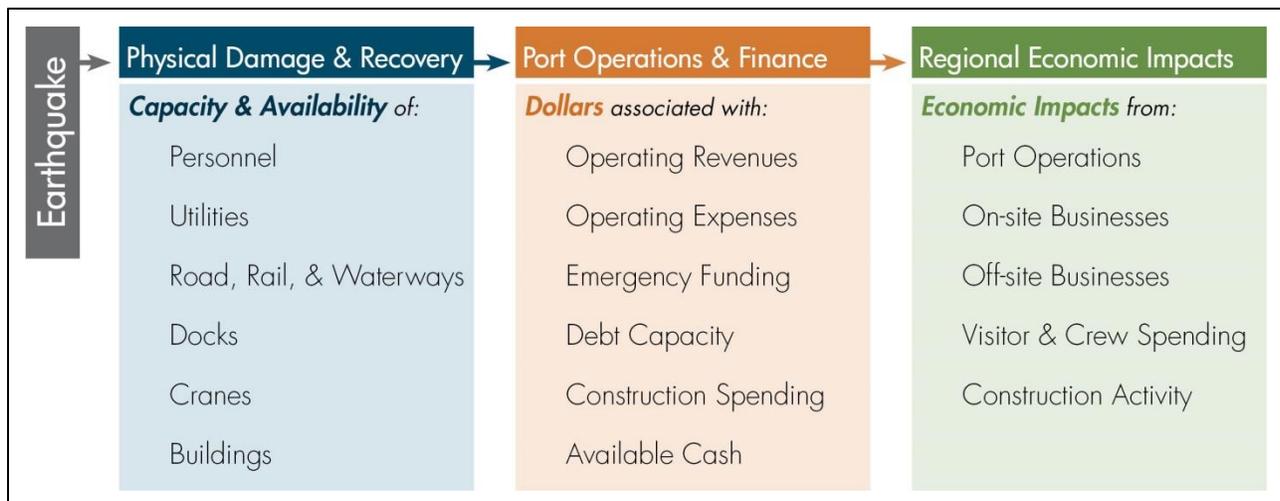
The Phase II exercise was designed to facilitate an examination of the Puget Sound Regional Catastrophic Disaster Transportation Recovery Plan. The scenario was based on an earthquake. Earthquakes are high risk, high impact events that are a priority for the Puget Sound region. The

scenario needed to have significant direct (property damage) and indirect (supply chain/transportation infrastructure disruption) consequences for the ports that would require an extended effort for recovery. The earthquake scenario also allowed us to use the consequence/damage models that had already been developed by the State of Washington and accepted as realistic by the local stakeholders. The use of those data sets allowed the focus to be more on the recovery aspects of the exercise design instead of using resources to develop and validate new consequence models.

Modeling and Simulation

The economic/financial modeling and simulation primarily supported the Phase II exercise by helping exercise participants, including port staff and other stakeholders, understand how their decisions impacted the ports’ business recovery and the region’s economic recovery following a disaster.

The model was comprised of three components, as shown in the graphic below.



The **Physical Damage and Recovery** component of the model tracked the physical damage caused by the earthquake to the port and to the region, including damage to roadways on and off the port, railways on and off the port, cranes, docks, buildings, waterways, and utilities. It also tracked the availability of personnel to work at the port to provide recovery efforts and port operations.

The **Port Operations and Finance** component of the model tracked the health of the ports’ lines of business, including revenues, expenses, and comparisons to pre-disaster operating capacity.

The **Regional Economic Impact** component of the model estimated how the changes to the ports’ operations and finances during and after the disaster resulted in economic impacts to Washington State, in terms of direct, indirect, and induced wages, jobs, and output, as well as tax impacts to local and state jurisdictions.

The model logic as well as the data used in the model was developed with direct participation from port operations and finance personnel. In addition, each port provided a “model champion”

to work directly with the model prior to the Phase II exercise. The methodology and approach for each of these components is described in [Error! Reference source not found.](#)

Integration

The model was integrated into the exercises to provide participants an innovative, interactive experience that used hard science to provide a realistic exercise environment. The modeling and simulation technology allowed the exercise to link player action to economic results in a repeatable, defensible, near-real time way.

Participants

Phase I

	Participants by Type		
Exercise	Port	State and Local Government	Private Sector
Port of Tacoma	25	4	1
Port of Olympia	6	14	1
Port of Everett	22	8	2
Port of Seattle	11	17	15

Participating Organizations	
Alaska Marine Lines	Seattle Police Department
AT&T	Snohomish County
BECU	Snohomish County Department of Emergency Management
Bonneville Power Administration	Starbucks Coffee Company
Brotherhood of Locomotive Engineers & Trainmen	Tacoma Power
BSNF Railway Company	Tacoma Rail
City of Everett	The Boeing Company
City of Olympia	Thurston County
Everett Office of Emergency Management	Thurston County Public Works
FEMA	Thurston Regional Planning Council
Freight Transportation Planner - Economist	TRUSYS
Gleaves Consulting	United States Army 833d SDDC
King County Wastewater Treatment	United States Army Corps of Engineers
Local 23	United States Coast Guard
Lynden	United States Coast Guard - Security Specialist Port Recovery
Moffatt & Nichol	United States Customs and Border Protection
Pierce County Department of Emergency Management	Victoria Clipper
Port of Everett	Washington State Department of Ecology
Port of Olympia	Washington State Department of Natural Resources
Port of Seattle	Washington State Department of Transportation
Port of Seattle Police	Washington State Emergency Management Division
Port of Tacoma	Washington State Ferries
Regional Catastrophic Preparedness Grant Program	Washington State Fusion Center
Seattle Department of Transportation	Weyerhaeuser
Seattle Office of Emergency Management	

Phase II

Participants by Type	
Tribal	1
Port	41
State and Local Government	66
Private Sector	27

Participating Organizations	
Amtrak	Port of Bellingham
APM Terminals	Port of Everett
Aronson Security Group	Port of Olympia
Aronson Security Group Inc. (ASG)	Port of Seattle
AT&T	Port of Seattle Police Department
BECU	Port of Tacoma
Boeing	Port of Tacoma Patrol/Security
Bureau of Alcohol, Tobacco, Firearms and Explosives	Puget Sound Energy
Cascadia Academy	Puget Sound Pilots
CBRE: Group Health & MultiCare	Puyallup Tribe of Indians
Center of Excellence Homeland Security Emergency Management	Seattle Auxiliary Communications Service
Centers for Disease Control Seattle Quarantine Station	Seattle Department of Transportation
Citizen Corps Council of Island County	Seattle Department of Transportation
City of Everett	Seattle Fire Department
City of Seattle	Seattle Police Department
City of Tacoma	Seattle Public Utilities
Contractor for BAE Systems	SHELL OIL US Puget Sound Refinery
Department of Homeland Security	Snohomish County Department of Emergency Management

Participating Organizations	
Everett Emergency Management	Starbucks Coffee Company
Everett Office of Emergency Management	Tacoma Power
FEMA Region 10	Tacoma Rail
FWARC.org	Takouba
ILWU Local 23	Target
Key Bank	The ABEL Group
King County - Wastewater Treatment Division	The Boeing Company
King County Office of Emergency Management	Thurston County Public Works
LeanPM, LLC	Totem Ocean Trailer Express
Macys	Transportation Security Administration
Marine Exchange of Puget Sound	United States Army 593d Sustainment Command (Expeditionary)
Marine Maintenance, Port of Seattle	United States Coast Guard
Moffatt & Nichol	United States Department of Transportation Federal Aviation Administration
Northwest Healthcare Response Network	United States Geological Survey
Pacific Northwest Detachment	UPS
Peace Winds America	Virginia Mason Medical Center
Pierce County Department of Emergency Management	Washington State Department of Transportation
Pierce County Economic Development Department	Washington State Emergency Management Division
Port Metro Vancouver	Washington State Fusion Center

Point of Contact

Sponsor – Port of Tacoma

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Exercise Design Teams

The following individuals contributed greatly to the design of the Phase I and Phase II exercises.

Phase I

Port of Everett	
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Steve Hager, Port of Everett	Lynn VanderStoep, Everett Emergency management
Heather Kelly, Boeing	Brandon Whitaker, Port of Everett
Maija Lampinen, Port of Everett	Lisa Lefeber, Port of Everett
Jeff Lindhout, Port of Everett	Les Reardanz, Port of Everett
Dave Madill, Port of Everett	Mark Brooks, Naval Station Everett
Robert Marion, Port of Everett	Ed Madura, Port of Everett
Grant Moen, City of Everett	Liz Olson, Port of Everett

Port of Olympia	
Jim Amador, Port of Olympia	Sandy Johnson, Thurston County Emergency Management
Conley Booth, Port of Olympia	Kim Kawada, Port of Olympia
Dan Bowden, Pacific Lumber and Shipping	Andrew Kinney, Thurston County
Jailyn Brown, Thurston Regional Planning Contact	Jim Knight, Port of Olympia
Mike Crawford, Port of Olympia	Tim Lupher, Security Specialist (Port Recovery) - USCG
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Tim Flood, Tacoma Rail	Jon Seifert, Weyerhaeuser
Wayne Harner, Tacoma Rail	Kyle Wilting, Terminal Manager - BNSF
John Himmel, WSDOT	Greg Wright, City of Olympia Emergency Manager,
David Icenhower, Thurston County Public Works	

Port of Seattle	
Scott Bates, USCG	Rachel Knutson, WSDOT
Mark Burris, Tesoro	Jerry Koenig, Seattle City Light
Terry Egan, Planning, Exercise & Training Unit Manager	Tim Lupher, Security Specialist (Port Recovery) - USCG
Lawerence Eichhorn, Seattle DOT	Diane Newman, Seattle Office of Emergency Management
Kelly Garber, Eagle Marine (APL) - Safety, SE Health	Russ Read, Port of Seattle
Arif Ghouse, Director - Security & Emergency Preparedness	Ed Sencenbaugh , BNSF
Jay Hansen, Deputy Chief - Seattle Fire	Mike Southards, WA Trucking Association
John Himmel, Emergency and Security Manager - WSDOT	Eric Von Brandenfels, Puget Sound Pilots
Mike Inman, Holland America	Jonathan Ward, Puget Sound Pilots

Port of Tacoma	
Darren Arakaki, Port of Tacoma	Roy McClendon, Port of Tacoma
Casey Broom, Pierce County Emergency Management	Lou Paulson, Port of Tacoma
Kyle Bustard, Pierce County Emergency Management	Jen Radcliff, Port of Tacoma
Louis Cooper, Port of Tacoma	Joe Rempe, Tacoma Power
Gerry Fiola, Port of Tacoma	Marci Scott, Pierce County Emergency Management
Rod Koon, Port of Tacoma	Agnes Tootoo, Port of Tacoma
Scott Mason, ILWU 23 (Tacoma)	Kevin Zinski, Port of Tacoma

Phase II

Joint Design Team	
Jim Amador, Port of Olympia	Tim Lupher, USCG
Scott Bates, U.S. Coast Guard District 13	Ed Madura, Port of Everett
Jaon Biermann, Snohomish County DEM	Roy McClendon, Port of Tacoma
Casey Broom, Pierce County DEM	Diane Newman, Seattle Office of Emergency Management
Adelmo DelaCruz, BPA	George Nixon, Navy
Lawrence Eichhorn, Seattle DOT	Rick Norris, Totem Ocean Trailer Express
Gerry Fiola, Port of Tacoma	Robert Penner, 593d Sustainment Command (Expeditionary)
Arif Ghouse, Port of Seattle	Cosmo Perrone, Cosmo Perrone & Associates
Kurt Hardin, Washington Military Department	Lorna Proctor, Starbucks
Wayne Harner, Tacoma Rail	Russ Read, Port of Seattle
David Holcomb, U.S. Dep. of Homeland Security	Claudia Roberts, Totem Ocean Trailer Express
Andrew Kinney, Thurston County Emergency Services	Marci Scott, Pierce County DEM

PROGRAM PURPOSE

Ports and maritime transportation are very important to the Puget Sound regional economy. With more than one in four Washington State jobs dependent on international trade, moving people and goods efficiently and effectively is an economic priority. Goods are shipped into, out of, and around Washington by truck, rail, air, pipeline, and water. Manufacturers and agricultural producers require an effectively networked system to get Washington-made products to local customers and major national and international markets. Local economies would be destabilized at best and devastated at worst if the ports cannot recover from disruption in an expeditious manner.

Due to the strong competitive nature of the maritime transportation industry, the ports tend to function largely in isolation from one another, and from their local and regional peers and partners. Port staff are busy and tend to focus on day-to-day operations, rather than preparing for potential disasters or building collaborative relationships with other ports (too often seen as competitors) or the private sector (too often viewed simply as the customer). Although their business models primarily depend on customer and provider relationships with the private sector, ports do not always engage those private and non-profit entities in pre-event recovery planning. This broader stakeholder involvement is needed to ensure that relationships, communication channels, plans, etc. are in place to make an integrated and therefore effective approach to recovery.

Several counties and the state have begun to take steps to create disaster recovery plans. However, for the most part, these planning efforts do not adequately address the Maritime Sector and the regional economic impacts that would result if the ports are damaged and cannot rapidly recover. The hard reality is that the Puget Sound Region has been lucky. Within our lifetime, there is a 10-14% chance of a subduction zone earthquake and a 20% chance of a quake of a magnitude of 7.0 or higher.



6: Howard Park, Simudyne, presents the modeling program at kickoff.

The Regional Catastrophic Planning Team, consisting of eight counties in the region, led the effort to develop a transportation recovery plan, but was unable to spend adequate time on the maritime sector and the interdependent supply chains. Likewise, the United States Coast Guard has worked to develop the Area Maritime Security Committee. While many security officials participate in these meetings, they are solely focused on “security” and not necessarily on building resilience. The Maritime Transportation Sector Recovery Unit has been developed by the United States Coast Guard, yet very few people outside of the maritime sector understand its organization, and function, and/or how it would help with the recovery of their operations. These disparate initiatives have produced pockets of security staff well versed in the issues and often trained extensively, but the business managers and executives have not, for the most part, participated in any planning efforts or training. This lack of participation may result from a perception that there is no appreciable return on the investment in the associated time and resources. As demonstrated in other regions around the nation and the globe, an inadequate level of preparation may leave the Puget Sound ports even more vulnerable than if they had no maritime disaster recovery preparedness at all.

Testing recovery strategies and contingency plans through exercises that engage staff, customers, and core stakeholders as a group of interdependent parties is essential. Doing so provides the broader community the opportunity to learn to work together to identify, recognize, and meet known and unknown challenges. Gaps can be acknowledged and plans can be updated to include new findings as well as new contingency options. These can then be integrated into individual port plans and broader regional plans such as the Transportation Annex to the Puget Sound Catastrophic Disaster Coordination Plan.

CHALLENGES

Interdependencies

The flow of goods, the workforce, and the economy cannot recover from a disaster without cooperative efforts. The Puget Sound region has interdependencies with the region, Washington State, United States, and even across the border, into Canada. Entities should take a collaborative approach to preparation efforts, establishing recovery plans, and recognizing the impacts on the whole community.

People

If the Puget Sound region adopted the whole community approach, they would collectively have a shared understanding of the community needs and capabilities, have a greater empowerment and integration of resources, have stronger social infrastructure, have established relationships that would facilitate more effective emergency management, and have greater resiliency. Incorporating the whole community philosophy before a disaster will ease recovery efforts through existing resources and processes with people who are available to be part of the team.

Utilities

With six utility systems including potable water, wastewater, natural gas, crude and refined oil, electric power, and communications, the regional inventory includes over 177,000 miles of pipeline. Access to those utilities is a critical component of effective recovery. However, it remains one of the greatest challenges. The utility's level of preparedness can mean the difference between temporary inconveniences and devastating loss of life, serious health issues, and environmental consequences.

Transportation

Puget Sound Regional Transportation systems include highways, railways, light rail, bus, ports, ferry, and airports, with over 5,900 miles of highways and 4,996 bridges. The economic impact on the region and the State of Washington from such a disaster would primarily depend on how quickly the damaged transportation system is back in service or alternate routes that can handle large volumes of freight and passenger vehicles can be established.

Interstate 5 presents a challenge. I-5 extends 276 miles through Washington, serving as the main route between Portland, Oregon, and Vancouver, British Columbia, and is the only interstate that stretches the whole length of Washington. It is the only north-south primary interstate in Washington and is the busiest road in the state. With approximately 240,000 motorists using the road daily, interruptions would hinder life safety and first responders, supplies coming in and out of the area, and the import and export of goods.

RECOMMENDATIONS

Recommendation 1 – Educate all port departments, management, and stakeholders on recovery planning.

- Realize the benefit and experience recovery coordinators offer.
- Understand the benefits of recovery planning.
- Review FEMA reimbursement policies.

Recommendation 2 – Identify and create and/or evaluate and revise essential plans to include the following for each port:

- Business continuity, continuity of operations, and recovery planning.
 - Ensure essential staff and key personnel, a business priority list, staff redundancies, and critical functions are addressed
 - Establish and define roles and expectations of the ports in relation to the other ports, tenants, boat owners, community partners, and associations
- Maritime commerce recovery plan.
- Fuel management plan.
- Traffic management plan.
- Volunteers plan.
- Boat owner and tenant information plan.
- Communication plans to obtain and disseminate information with:
 - Other ports
 - Customers
 - Labor unions
 - Media
 - Boat owners/tenants/port tenant groups
 - Liaison groups
 - Associations
 - Community partners
 - Private sector
 - Local jurisdictions
 - County
 - State

Recommendation 3 – Establish, review, and update processes that could be simplified during emergencies or disasters, to include finalizing signed memorandums of understanding specific for business continuity, continuity of operations, and recovery; including, but not limited to:

- Critical services and supplies,
 - Include banks for any cash-on-hand issues
 - Power restoration and/or alternative power sources
- Additional staff and security,
- Security policies,
- Resource sharing between ports,
- Fuel, and
- Vendors and service providers.

Recommendation 4 – Encourage the region to adopt a whole-community mindset and approach. Collaborate with others on business recovery and emergency management.

- Include community partners, the private sector, tribal entities, the county, and the state in recovery plans and planning.
- Become involved with tribal agencies, community partners, county, and state recovery planning.
- Build relationships with elected officials, Office of Emergency Management, tribal entities, the United States Coast Guard, local military, the Governor’s office, stakeholders, and other ports.
- Create liaison groups with local agencies, restaurants, businesses, and associations.
- Strive to understand departmental, port-wide, tribal, county, and state goals, objectives, and interdependencies.

Recommendation 5 – Identify ways to allocate additional funds for recovery.

- Investigate the benefits of disaster insurance policies.
- Ensure insurance policies are clearly defined as they relate to disasters and emergencies, including language about natural disasters, man-made disasters, terrorism, etc.
- Diversify revenue sources.

CONCLUSION

The recovery phase of a disaster puts severe financial strain on local and state governments. The effects, outcomes, and costs of recovery are not well understood, therefore recovery is often neglected during planning for disasters and is not widely exercised. The Port of Tacoma, the maritime sector, and Puget Sound region stepped outside of the box by exercising recovery at the ports and for the region and benefited greatly from the Puget Sound Regional Maritime Transportation Disaster Recovery Exercise Program.

During Phase I, the ports successfully exercised recovery planning, affirmed the importance of security and the functioning of Continuity of Operations Planning, and determined interdependencies of critical infrastructure. Phase II incorporated quantitative and qualitative elements, including economic and financial modeling and simulation. The regional tabletop exercise allowed the ports to exercise the Regional Catastrophic Transportation Disaster Recovery Plan, identify interdependencies between industries, and analyze and understand the economic impacts at the ports and for the Puget Sound region. During the Phase II Regional Tabletop Exercise Hotwash, Joan Rave, Federal Disaster Recovery Coordinator for FEMA Region X, stated:

“This is the only time I have been in an exercise that drilled down into economic recovery.”

By taking an innovative approach to the exercise program and incorporating modeling and simulation technologies to enable and enhance the overall experience, the participating ports and the Puget Sound region gained invaluable knowledge regarding the potential cost, in terms of money, time, and effort it could take to recover from an earthquake. Stakeholders realized the importance of port-wide business continuity plans, memorandums of understanding that are specific to recovery, and considered traffic, volunteer management, communication, staffing, and additional recovery planning needs. Attendees understood that after a disaster, the initial focus would initially need to be on the recovery of the Puget Sound region as a whole, and expressed a willingness to collaborate for the benefit of the region. Participants have a better understanding of how a disaster could change the commerce in the region, how planning and relationships made now could help recovery efforts, and how to move forward with the current momentum to strengthen recovery planning.