

Summary Report on the Coastal Hospital Special Leadership Event

by Yumei Wang, DOGAMI, and Kathryn Richer, Susan Lamb and Beth DePew, Regional Healthcare Liaisons, and Akiko Saito, Oregon Health Authority

Introduction

The Oregon Health Authority (OHA) hosted the Coastal Hospital Special Leadership Event on March 20 and 21, 2018 in Newport, Oregon. This Leadership Event was organized by OHA, Healthcare Preparedness Liaisons from Regions 1, 2 and 3, and the Oregon Department of Geology and Mineral Industries (DOGAMI), and was co-supported by the Cascadia Region Earthquake Workgroup (CREW.org).

This by-invitation-only event was the first time that coastal hospital executives and their partners from Regions 1, 2 and 3 have been brought together. Invitations were extended to selected persons representing:

- Hospitals
- Healthcare partners
- Public health
- County emergency managers
- Elected officials
- Speakers

The overall event purpose was:

- Elevate understanding of the impact of a Cascadia Subduction Zone Earthquake and Tsunami
- Encourage progressive ways to prepare to be able to serve coastal community post-disaster
- Explore launching a coastal hospital-driven collaborative network

The event was a success. It was attended by hospital executives from the eleven hospitals along the coast. Hospital emergency managers and facility managers also participated. All but one coastal county emergency managers participated, which is important because they and hospitals have a partnership role in planning for Cascadia disasters. Other key partners were also present.

At the event, published information by DOGAMI was distributed about the science and impacts of Cascadia earthquakes and tsunamis. CREW fact sheets on how to prepare employees, how to

prepare for non-structural damage, how to prepare for business continuity, and lessons to businesses from past earthquakes were shared. A resource table had information on preparing hospitals for earthquakes, including for structural integrity and non-structural components, as well as planning for emergency water and emergency power. Resilience planning maps for several hospitals with tsunami hazards were displayed.

The program struck a balance between sharing information and engaging the participants. Speakers provided information on why coastal hospitals should accelerate Cascadia preparedness and how a coastwide collaborative learning network could help. Hospital executives and partners, including the Oregon Association of Hospitals and Healthcare Systems (OAHHS), agreed to accelerate resilience activities and form a network. Based on the discussions during this event, it is likely that in the future, all coastal hospitals will be better prepared for a Cascadia earthquake and tsunami.

This report provides a record of the event, and includes:

- Introduction
- Example of Invitation Letter
- Agenda
- Participant List
- Flipchart Notes
- Leadership Event Photos
- Cascadia Region Earthquake Workgroup (CREW) Fact Sheets
 - Employee preparedness
 - Non-structural damage
 - Emergency and continuity planning
 - Learning from experience
- Example of Resilience Planning Maps
- Presentations
 - Welcome, Mike Harryman, State Resilience Officer, Office of Governor Kate Brown
 - Coastal hospital projects summary, Yumei Wang, DOGAMI
 - Tsunami planning, Dan Cox, Oregon State University
 - Disaster power planning, Yumei Wang
 - State of Oregon fuel action plan, Deanna Henry, Oregon Department of Energy
 - Disaster water planning, Yumei Wang
 - Federal response to disasters, John Smart, U.S. Health and Human Services
- Feedback Forms
- Follow up Correspondence

Example of Invitation Letter



PUBLIC HEALTH DIVISION
Health Security Preparedness and Response

Kate Brown, Governor

Oregon
Health
Authority

800 NE Oregon Street Suite 465B
Portland OR 97232
Phone: 971-673-1363
Fax: 971-673-1309

<https://public.health.oregon.gov/Preparedness/Pages/index.aspx>

January 17, 2018

Invitation for the All Coastal Hospitals Special Leadership Event

What: All Coastal Hospitals Special Leadership Event
When: March 20th 12 noon to 7 pm and March 21st, 2018 from 8 am to 1 pm
Where: Pacific Maritime & Heritage Center, 333 SE Bay Blvd on Newport's Bayfront

Dear Columbia Memorial Executive team,

It is my pleasure to invite you to a gathering of Oregon's eleven coastal hospitals' executive leadership and Hospital Preparedness Program (HPP) Partners. The main event purpose is to elevate the understanding of Cascadia impacts, as well as encourage progressive ways to prepare. The Oregon Health Authority's (OHA) ultimate goal is to explore interest in establishing and supporting a new Coastal Hospital Cascadia Preparedness Network in order to be best prepared for a catastrophic event.

In partnership with the OHA Hospital Preparedness Program (HPP), Columbia Memorial already dedicates efforts toward emergency preparedness. OHA aims to improve and accelerate Cascadia earthquake and tsunami preparedness so that all hospitals will be able to provide medical services during a time of great need.

All of the coastal hospitals share similar planning challenges such as, extreme earthquake and tsunami damage creating a surge of casualties; widespread power and water outages and impassable highways. OHA and the Oregon Department of Geology and Mineral Industries (DOGAMI), believe that Cascadia preparedness would be best improved with a coastal hospitals collaborative network. OHA's hope is that this meeting will serve as the beginning of a coastal hospital-driven collaborative network.

Please note that this is a "by invitation" event. In addition to each coastal hospitals' executive leadership, additional HPP partners will be selected. I strongly urge you to participate. Please contact me with questions or comments you may have at akiko.saito@state.or.us or (971) 673-1363. For planning purposes, I would appreciate if you would confirm your participation via email to me by February 9th. Soon afterwards, we will follow up with hotel recommendations, a detailed agenda and more information. We look forward to seeing you there!

Sincerely,

A handwritten signature in black ink, appearing to read "Akiko Saito".

Akiko Saito, MPH, MPA
Director of Emergency Operations
Public Health Division, Health Security Preparedness and Response
akiko.saito@state.or.us
(971) 673-1363 office

Agenda



Coastal Hospitals Special Leadership Event **Tuesday, March 20, 2018**
Pacific Maritime Heritage Center **12:00-5:00pm**
333 SE Bay Boulevard **5:00-7:00pm Get Ready for Cascadia Networking**
Newport, OR 97365

Overall Event Purpose:

- ♦ Elevate understanding of the impact of a Cascadia Subduction Zone Earthquake and Tsunami.
- ♦ Encourage progressive ways to prepare to be able to serve coastal communities post-disaster.
- ♦ Explore launching a coastal hospital-driven collaborative network.

Quick Glance Agenda:

Lunch Meet & Greet	12:00-1:00pm	Hospital Technical Assistance Results	3:00-3:45pm
Welcome & Agenda Review	1:00-1:45pm	Coastal Hospital Learning Network	3:45-4:30pm
Introductions	1:45-2:10pm	New Innovations for Tsunami Safety	4:30-4:50pm
Coastal Hospital Project Results	2:10-2:40pm	Meeting Close	4:50-5:00pm
Break	2:40-3:00pm	Get Ready for Cascadia Networking	5:00-7:00pm

Full Participant Agenda

Topic	Desired Outcome	Lead	Time
Lunch Meet & Greet	<ul style="list-style-type: none"> ♦ Provide a welcoming environment for participant connection and nourishment 	ALL	12:00-1:00pm
Welcome, Event Purpose, Agenda Review	<ul style="list-style-type: none"> ♦ Welcome participants and acknowledge their time commitment to the event ♦ Understand the purpose of the Coastal Hospitals Special Leadership Event ♦ Knowledge of the importance of coastal resilience 	Akiko Saito , Director of Emergency Operations Oregon Health Authority/ Public Health Division/ Health, Security, Preparedness & Response Program	1:00-1:15pm
		Andy Van Pelt , Executive Vice President, Oregon Association of Hospitals & Health Systems	1:15-1:30pm
		Mike Harryman , State Resilience Officer, Governor's Office	1:30-1:45pm
Introductions	<ul style="list-style-type: none"> ♦ Build group familiarity to contribute to working relationships 	Kathryn Richer, (Moderator) Region 1 Hospital Preparedness Program Liaison	1:45-2:10pm
Coastal Hospital Project Results	<ul style="list-style-type: none"> ♦ Understand DOGAMI's learnings from working directly with hospitals 	Yumei Wang , Geotechnical Engineer, Oregon Department of Geology and Mineral Industries (DOGAMI)	2:10-2:40pm

Full Participant Agenda

Topic	Desired Outcome	Lead	Time
Break	♦ Refresh, renew, mingle	ALL	2:40-3:00pm
Hospital Technical Assistance Results	<ul style="list-style-type: none"> ♦ Awareness of progress made in understanding Cascadia Subduction Zone/Tsunami preparedness, and current concerns <ul style="list-style-type: none"> • What are hospitals' greatest strengths/ best practices in preparing for a CSZ Earthquake and Tsunami? (e.g. seismic strength of building including non-structural components; seismically-certified emergency power system; water plans for sheltering and post-earthquake operations; business continuity plans during surge, other plans) • How could a Coastal Hospital Learning Network support you in reaching your CSZ Earthquake/Tsunami preparedness goals? • What impacts have DOGAMI and Oregon Department of Energy's work had on your hospital's planning? <ul style="list-style-type: none"> ◦ What have been the most eye-opening learnings from their data and advice? 	Beth DePew, (Moderator) Region 3 Hospital Preparedness Program Liaison Hospital Emergency Management Personnel	3:00-3:45

Full Participant Agenda

Topic	Desired Outcome	Lead	Time
Coastal Hospital Learning Network	<ul style="list-style-type: none"> ♦ Explore the need/desire of Hospital Leadership for establishing a Coastal Hospital Learning Network <ul style="list-style-type: none"> • Identify benefits • Identify top preparedness concerns to address 	Akiko Saito (Moderator) Hospital Leadership	3:45-4:30pm
New Innovations for Tsunami Safety	<ul style="list-style-type: none"> ♦ Awareness of innovative actions that can be taken by communities, including hospitals, to prepare for Tsunamis ♦ Learn about Oregon State University's Hatfield Tsunami Vertical Evacuation building plans ♦ Knowledge of OSU's conducting research with utilities on Cascadia resilience 	Yumei Wang (Moderator) Dr. Dan Cox , Director, O.H. Hinsdale Wave Research Laboratory, Oregon State University	4:30-4:50pm
Remarks on Day 1 Sessions	<ul style="list-style-type: none"> ♦ Acknowledge accomplishments of Day 1 ♦ Understand goals of Day 2 ♦ Awareness of "Get Ready for Cascadia Networking" for North, Central, and South coast discussions on a new Coastal Hospital Learning Network 	Akiko Saito	4:50-5:00pm

Get Ready for Cascadia Networking (snacks and no host bar available)

5:00-7:00pm



Coastal Hospitals Special Leadership Event
Pacific Maritime Heritage Center
333 SE Bay Boulevard
Newport, OR 97365

Wednesday, March 21, 2018
8:00am-1:00pm

Overall Event Purpose:

- ♦ Elevate understanding of the impact of a Cascadia Subduction Zone Earthquake and Tsunami.
- ♦ Encourage progressive ways to prepare to be able to serve coastal communities post-disaster.
- ♦ Explore launching a coastal hospital-driven collaborative network.

Quick Glance Agenda:

Welcome & Today's Goals	8:00-8:15am	Region 2 Hospital CSZ/Tsunami Preparedness Activities	10:00-10:30am
Cascadia Subduction Zone: Impacts and Mass Care Policies	8:15-8:40am	Recent Hurricane Hospital Impacts	10:30-11:00am
Cascadia Emergency Power Planning	8:40-9:10am	Coastal Hospital Learning Network	11:00am-12:00pm
Cascadia Emergency Water Planning	9:10-9:40am	Closing Comments & Working Lunch	12:00-1:00pm
Break	9:40-10:00am		

Full Participant Agenda

Topic	Desired Outcome	Lead	Time
Welcome & Today's Goals	♦ Refresh understanding of the overarching event purpose	Yumei Wang , Oregon Department of Geology and Mineral Industries	8:00-8:15am
Cascadia Subduction Zone: Impacts and Mass Care Policies	♦ Knowledge of Cascadia Subduction Zone impacts to coastal communities and the importance of medical services provision ♦ Awareness of OSSPAC's efforts to develop mass care policies as part of 2017 Senate Bill 850	Yumei Wang (Moderator) Jay Raskin , Oregon Seismic Safety Policy Advisory Commission (OSSPAC), Chair	8:15-8:40am
Cascadia Emergency Power Planning	♦ Understand the Oregon Department of Energy's fuel allocation planning ♦ Understand county emergency managers' and hospitals' need to plan together to obtain fuel ♦ Understand hospitals' need to have robust emergency power systems and 3 weeks of locally available fuel	Yumei Wang (Moderator) Deanna Henry , Emergency Preparedness Manager, Oregon Department of Energy (ODOE)	8:40-9:10am
Cascadia Emergency Water Planning	♦ Understand hospitals' need to have robust water systems and 3 weeks locally available water ♦ Understand water system vulnerabilities and ways for hospitals to improve emergency water planning ♦ Understand the need for water districts, county emergency management, and hospitals to plan together	Yumei Wang	9:10-9:40am

Full Participant Agenda

Topic	Desired Outcome	Lead	Time
Break	<ul style="list-style-type: none"> ◆ Refresh, renew, mingle 	ALL	9:40-10:00am
Region 2 Hospital Cascadia Subduction Zone/Tsunami Preparedness Activities	<ul style="list-style-type: none"> ◆ Knowledge of local preparedness activities to date <ul style="list-style-type: none"> • Ericka Mason, Emergency Management Coordinator, Samaritan North Lincoln and Samaritan Pacific Communities, Newport 	Sue Lamb, (Moderator) Region 2 Hospital Preparedness Program Liaison	10:00-10:30am
Recent Hurricane Hospital Impacts	<ul style="list-style-type: none"> ◆ Knowledge of how recent hurricanes impacted hospitals ◆ Awareness of lessons learned; implications for Cascadia earthquakes and coastal hospitals 	U.S. Health & Human Services, Regional Emergency Coordinator	10:30-11:00am
Coastal Hospital Learning Network	<ul style="list-style-type: none"> ◆ Hear input from all participants on the need/desire of Hospital Leadership and partners for establishing a Coastal Hospital Learning Network <ul style="list-style-type: none"> • Public Health • County Emergency Management • Elected Officials • Other Hospital Representatives ◆ Agree if there is consensus ◆ Determine next steps 	Akiko Saito, (Moderator) Director of Emergency Operations, Oregon Health Authority/Public Health Division/Health, Security, Preparedness & Response Program	11:00am -12:00pm
Closing Comments	<ul style="list-style-type: none"> ◆ Closing remarks 	Akiko Saito and Yumei Wang	12:00-12:15pm
Working Lunch	<ul style="list-style-type: none"> ◆ Encourage informal discussions on how to launch a successful Network ◆ Identify collective actions that can be taken to improve hospitals' and coastal communities' resiliency for a CSZ event. 	ALL	12:15-1:00pm

Adjourn

Participant List

Coastal Hospital Resiliency Workshop - Newport, OR - 3/20/2018 - 3/21/2018		
Last Name	First Name	Organization
Aikman	Valarie	Bay Area Hospital
Allan	Jon	DOGAMI
Alvarez-Rojas	Wayne	Tillamook Regional Medical Center
Austen	Rebecca	Lincoln County
Barbosa	Andre	Oregon State University
Brown	Tiffany	Clatsop County
Bruce	Rob	Tillamook Health Department
Buckley	Samantha	Coos Health and Wellness
Butler	David	Tillamook Regional Hospital
Cox	Dan	Oregon State University
Demaris	Jenny	Lincoln County
Depew	Beth	HSPR
Dumire	Jeremy	Curry County
Escobar-Sinn	Maria	HSPR
Files	Bill	Bay Area Hospital
Goettl	Micah	Samaritan (all)
Gomberg	David	Oregon House of Representatives
Grigoraitis	Billie	Providence Seaside Hospital
Hansen	Kris	HSPR
Harris	Katie	OAHHS
Harryman	Mike	Governors Office
Hatcher	Dewayne	HSPR
Heath	Luke	PCS Structural Solutions
Heiberg	Holly	OSPHD
Henry	Deanna	Oregon Department of Energy
Jurgenson	Edie	So. Coos Hospital
Jurgenson	Dennis	So. Coos Hospital
Kamofski	Jarrod	Columbia Memorial
Kaup	Doug	Columbia Memorial
Kirby	Pat	Peace Harbor Hospital
Lamb	Sue	HSPR
Lang	Jeff	Coquille Valley
Leslie	Haleigh	HSPR
Lindstrom	Matthew	Columbia Memorial
Marr	Donald	Lower Umpqua Hospital
Mason	Erica	Samaritan Pacific & Samaritan North Lincoln
McCraw	Gordon	Tillamook County
Miller	Karla	Curry General Hospital
Murphy	Mike	Coos County
Mutschler	Teresa	Douglas Public Health Network
Ogden	Lesley	Samaritan North Lincoln Hospital & Samaritan Pacific Communities Hospital
Phair	Brian	PCS Structural Solutions
Raskin	Jay	OSSPAC
Richer	Kathryn	Multnomah County
Riffle	Virginia	Samaritan North Lincoln Hospital
Saito	Akiko	HSPR
Sanford	David	Curry General Hospital
Smart	John	ASPR
Stinson	Wayne	Douglas County
Swanson	Eric	Tillamook Regional Medical Center
Thorsen	Erk	Columbia Memorial
Tittle	JoDee	Southern Coos Hospital and Health Center
Van Pelt	Andy	OAHHA
Wang	Yumei	Oregon Department of Geology and Mineral Industries
Ward	Sherri	Curry County
Williams	Nicole	Columbia Memorial
Zauner	Janiece	Providence Seaside

Flipchart Notes

Coastal Hospitals Special Leadership Event

Pacific Maritime Heritage Center

March 20-21, 2018

Discussion Notes

STRENGTHS/WHAT WORKS

- Administration support of preparedness and allocation of resources to promote planning
- Resources gained through collaboration, far and wide **and** in your area.
- Cross-bracing
- Where and how structures are built
- Emergency Preparedness Committee identified specialty skills
- ICS training to support response roles
- SBAR for decision making/reporting (Situation, Background, Assessment Recommendation technique)

OPPORTUNITIES CASCADIA SUBDUCTION ZONE PLANNING PROVIDES

- Strengthening locally while also convening entire coast (e.g. mass care needs assessments and associated resources)
- Engagement with CMS EP Rule-impacted, healthcare facilities (LTCFs, SNFs, etc.); especially re employee preparedness

BARRIERS

- Community partners' level of preparedness

DOGAMI – EYE OPENERS

- Mapping – S, M, L, XL impacts and associated timing
- Knowledge of little things that are do-able
- Cardlock fuel systems in Tsunami Zone
- Water system vulnerability
- The need for partnering with water providers

CONCERNS/WHAT WOULD BE HELPFUL:

- Water

- Transport and accessibility
- Power/Fuel/ for the long-term
- Staffing
- Communications: Hospital to Hospital; Hospital to County
- Create catastrophic medical services plan (with a whole community approach)
- Determine how to promote/grow MRCs and SERV-OR, and offer ICS training to these groups
- Know where we stand in priority re receipt of assets
- Share Exercise/Drill approaches
- Resiliency Planning
- Strategize how hospitals can self-support
- Knowing communities' capabilities to communicate
- Develop strategies for funding CSZ planning

COASTAL HOSPITAL NETWORK: LEADERSHIP INPUT

- We can get everything right if we get Cascadia Subduction Zone planning right
- A network is critical
- A network helps to get us out of our geographical boundaries

WHAT WOULD A NETWORK LOOK LIKE?

- Retreats
- Hospital leadership meet regularly
- Utilize existing conferences to merge healthcare and emergency management
- OR Prepared – A Friday healthcare focus
- Utilize gatherings and organizations e.g., OAHHS and Office of Rural Health

WHAT ARE PRIORITY TOPICS FOR THE NETWORK? (Day Two)

HOSPITAL INFRASTRUCTURE:

- Water
- Power
- Transportation
- Communications

OTHER:

- Community Collaboration
- Policy/funding opportunities to build coastal resiliency
- How can we impact regulatory authorities' requirements?

Leadership Event Photos

(all photos by Sue Lamb, OHA, unless otherwise indicated)



(above photo by Yumei Wang, DOGAMI)





Cascadia Region Earthquake Workgroup (CREW) Fact Sheets

The following fact sheets were provided to each participant:



Employee Preparedness



• Nonstructural Damage



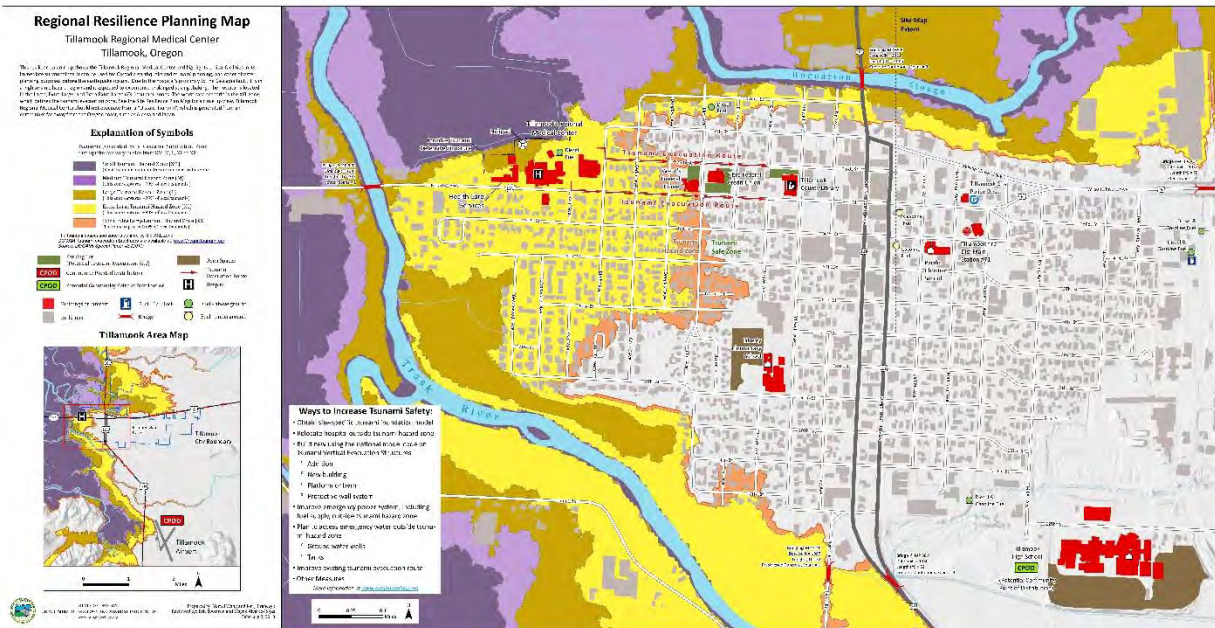
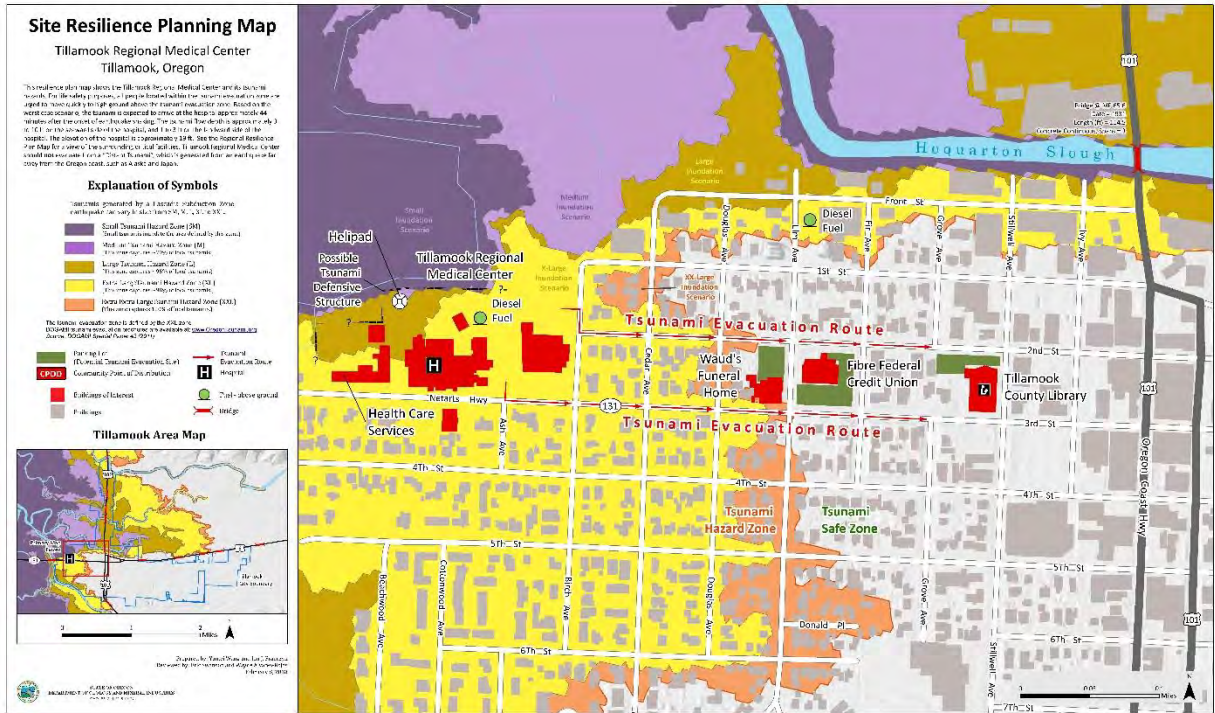
• Emergency and Continuity Planning



• Learning from Experience

Example of Resilience Planning Maps

Resilience planning maps for three hospitals with tsunami hazards were displayed. Below is an example of the Site Resilience Planning Map and the Regional Resilience Planning Map for Tillamook Regional Medical Center.



Presentations

The presentations are provided in the order that they were presented as follows:

1. Welcome by State Resilience Officer, Mike Harryman, Office of Governor Kate Brown
2. Coastal hospital projects summary, Yumei Wang, DOGAMI
3. Tsunami planning, Dan Cox, Oregon State University
4. Disaster power planning, Yumei Wang
5. State of Oregon fuel action plan, Deanna Henry, Oregon Dept of Energy
6. Disaster water planning, Yumei Wang
7. Federal response to disasters, John Smart, U.S. Health and Human Services

Coastal Hospital Special Leadership Event

Mike Harryman, MA
State Resilience Officer
March 2018



GOVERNOR KATE BROWN



“The State of Oregon’s goal is for all coastal hospitals to be operable to provide emergency medical services after a Cascadia earthquake and for communities to have a speedy recovery”

“As leaders of your community you have the opportunity to help achieve community resilience”

“Preparing coastal hospitals to serve after earthquake disasters will provide value not just to the coast but to the entire State”

Leadership – leading from the front...

- *Make preparing for the Cascadia Subduction Zone a priority*
- *Dedicate more resources to hospital preparedness, get the right person(s) who has the drive to lead from the front*
- *Have your executive team (COO/CFO) help each of the sections on preparedness: facilities, finance, safety, operations*

Collaborate with critical systems/community organizations

Energy Providers

Public Works

Public Health (Pharmacy MOU)

County Emergency Management

Water Provider

Port Authorities

First Responders

Elected Officials

Collaborate with each other organizations

Questions and Contact information –

Mike Harryman, M.A.

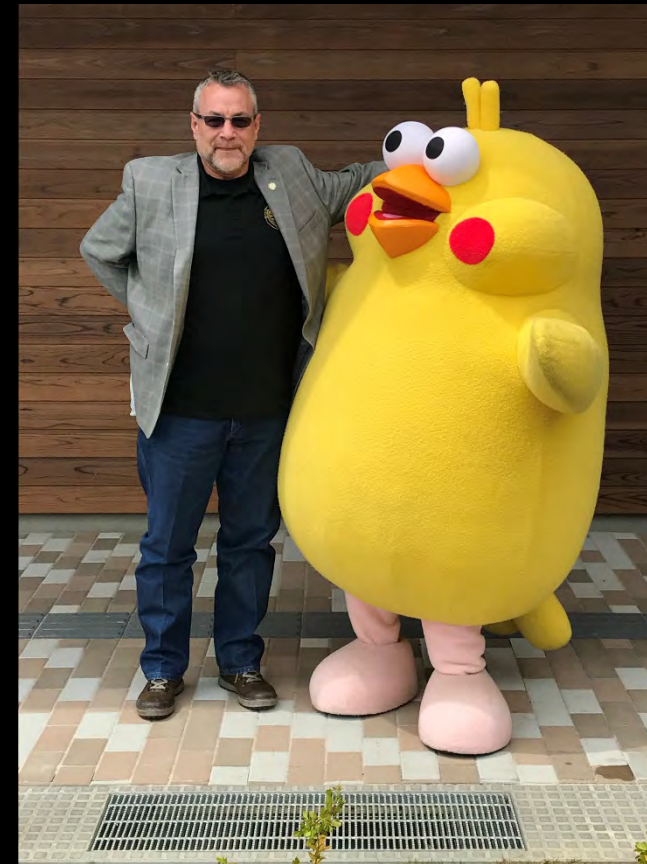
Office of Governor Kate Brown

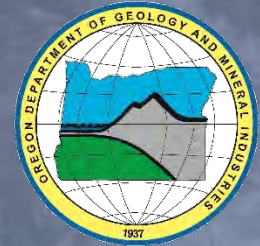
State Resilience Officer

mike.k.harryman@oregon.gov

503.975.1911 (M)

971-673-1541 (O)



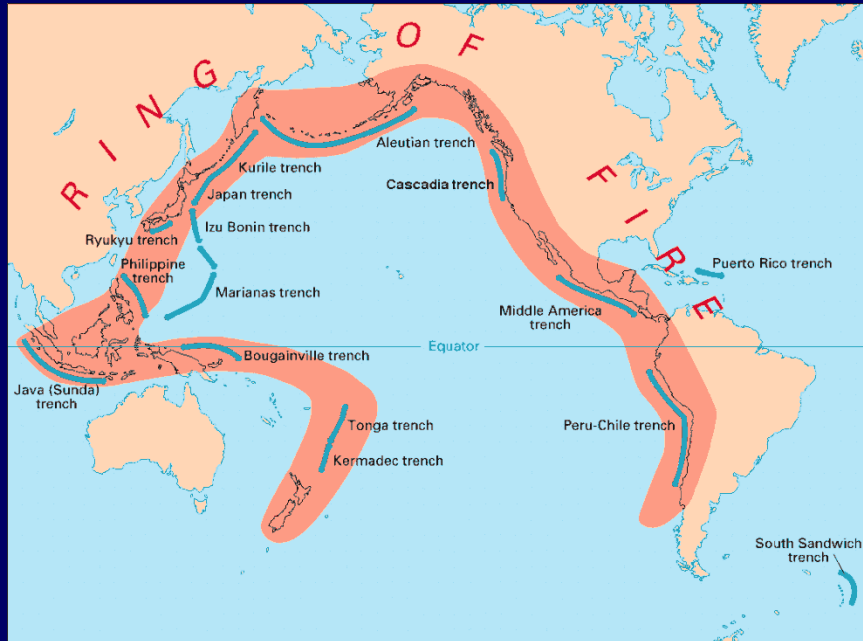


CASCADIA

Coastal Hospital Project Results

YUMEI WANG, OREGON DEPARTMENT OF GEOLOGY AND MINERAL INDUSTRIES March
20-21, 2018 Coastal Hospital Special Leadership Event

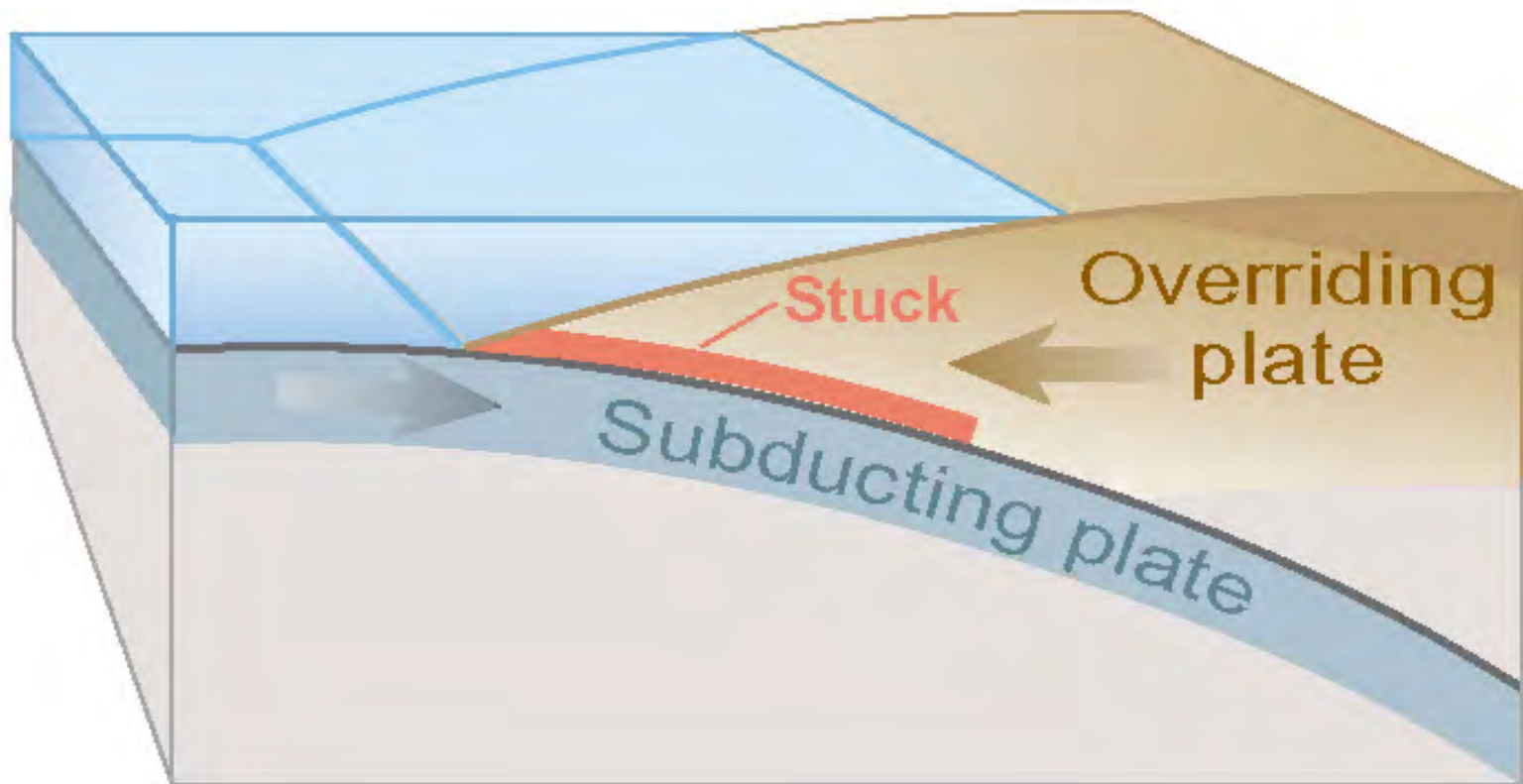
Late 1980s, Cascadia Fault “discovered”



http://celebrating200years.noaa.gov/magazine/dart_buoys/ring_of_fire.html



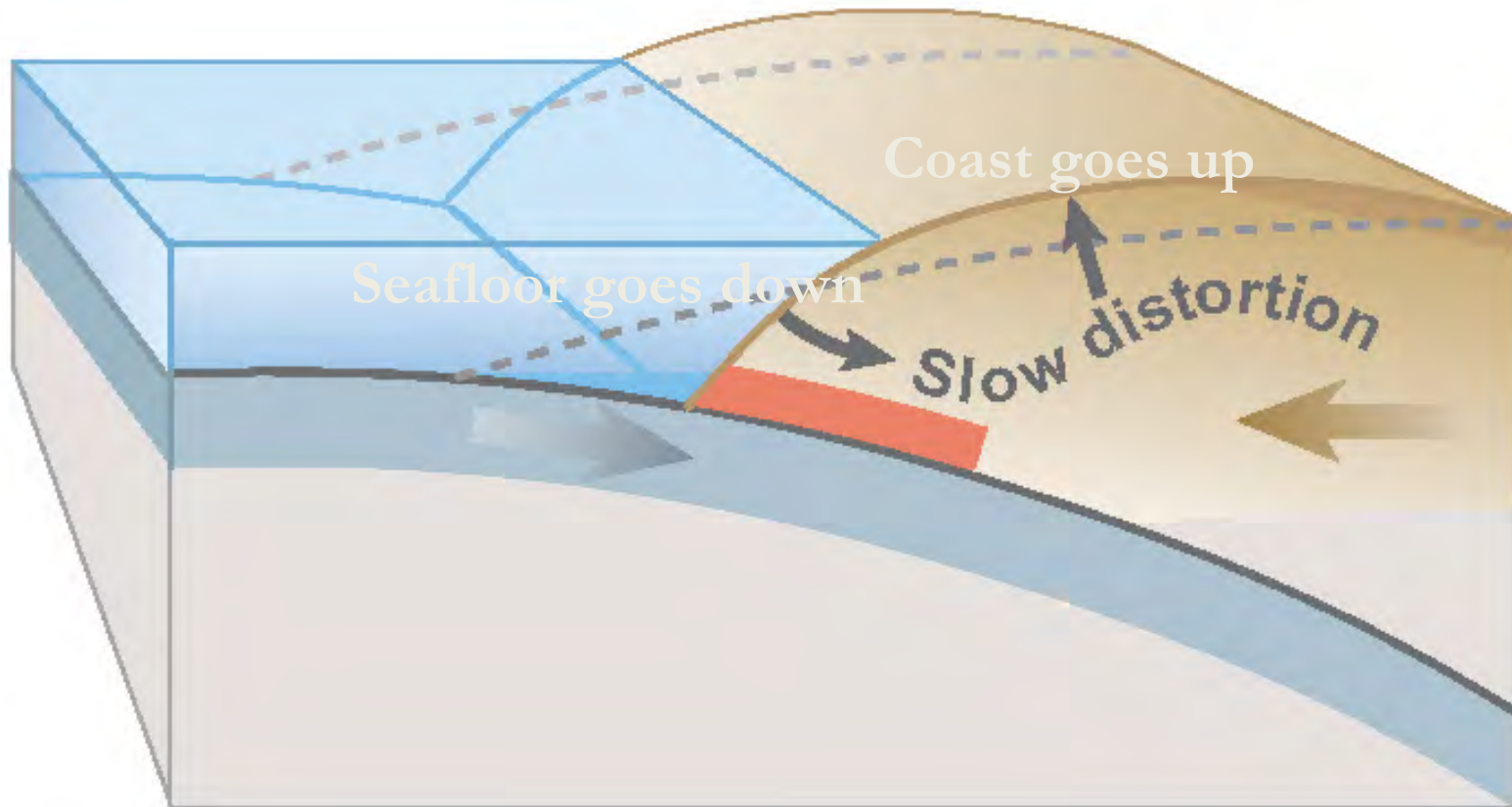
Vertical Slice through Cascadia Fault



From Atwater et al., 1999



Between Earthquakes



From Atwater et al., 1999



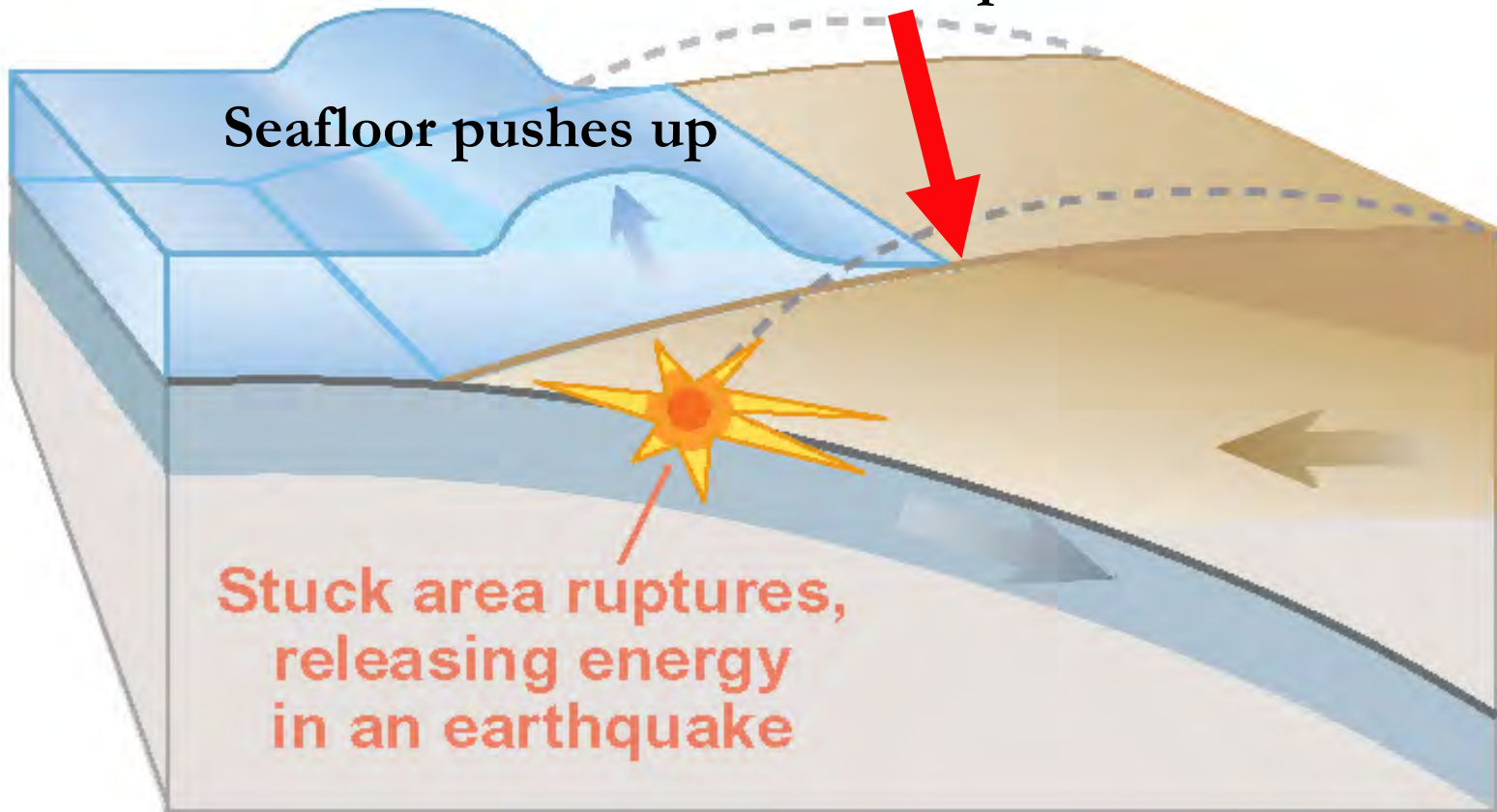
During an Earthquake

Earthquake starts tsunami

Coast drops down

Seafloor pushes up

Stuck area ruptures,
releasing energy
in an earthquake



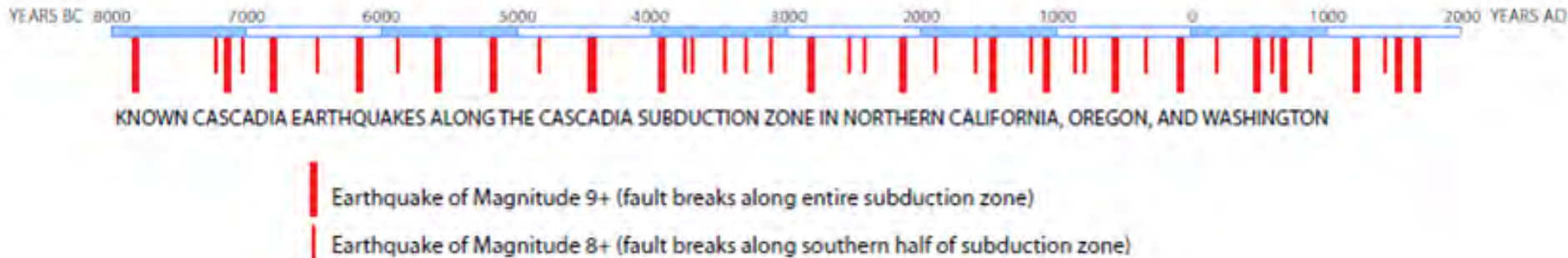
From Atwater et al., 1999



When, Where, How Big?

100%, but don't know exactly when...

Cascadia Earthquake Timeline



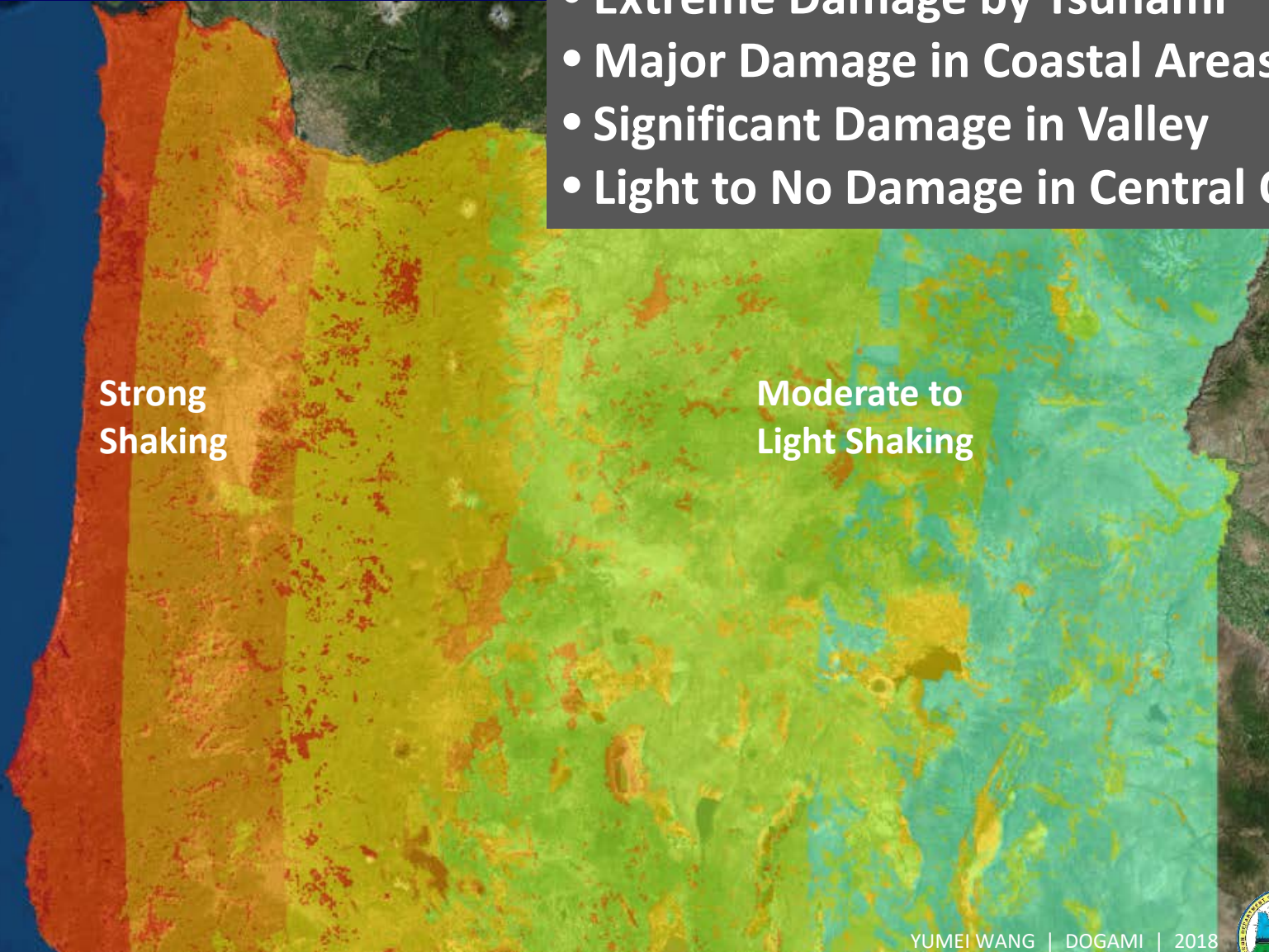
(Goldfinger et al, 2012; Image: DOGAMI Cascadia, 2010)

- Magnitude 9 on Jan 26, 1700 (318 yrs ago)
- ~45 > magnitude 8 in 10,000 year record



Shaking (~5 min) & Tsunami (~15 min)

- Extreme Damage by Tsunami
- Major Damage in Coastal Areas
- Significant Damage in Valley
- Light to No Damage in Central OR



Strong
Shaking

Moderate to
Light Shaking



“A Cascadia Subduction Zone (CSZ) event will have farther reaching impacts than that of Katrina and Sandy combined”

- KEN MURPHY, FORMER FEMA REGION X ADMINISTRATOR

	Cascadia	Japan Tsunami	Sandy	Katrina	Cascadia multiplier (of Sandy + Katrina)
Fatalities	12,000+	16,000	162	1,833	6x
People Needing Short-term Shelter	933,000	470,000	174,000	273,000	2x
Housing Units Damaged	961,000	>1,000,000	305,000	215,000	2x

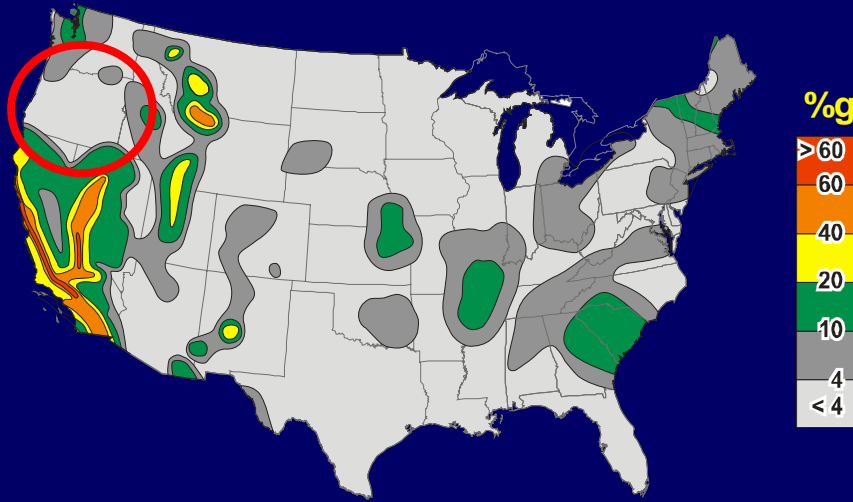
SOURCE: KEN MURPHY



Oregon's Seismic Building Code Gap (until mid-1990s)

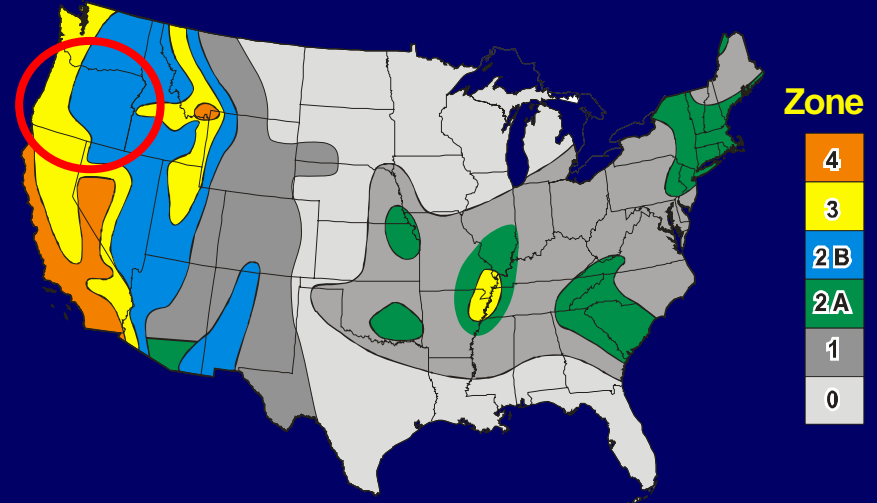
1976

(10% PE in 50 yrs)



SOURCE: ALGERMISSEN AND PERKINS

1994



SOURCE: USGS

Also, we build in the tsunami zone without protecting ourselves



Earthquake Shaking Building Performance

Newer Wood versus Older Brick



2013 Oregon Resilience Plan

The Oregon Resilience Plan

Reducing Risk and Improving Recovery for the Next Cascadia Earthquake and Tsunami



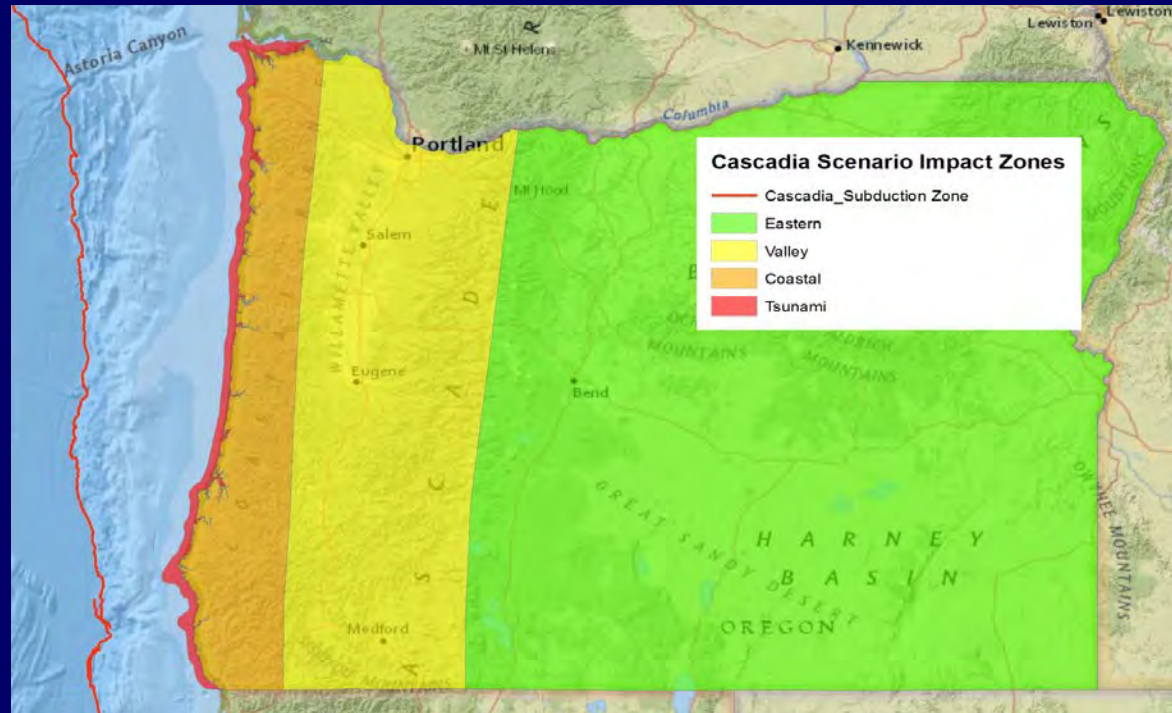
Report to the 77th Legislative Assembly

from

Oregon Seismic Safety Policy Advisory Commission

Salem, Oregon

February 2013



Three OHA-DOGAMI Projects

1. **2014 Pilot Study: 2 hospitals -- Coast and Valley** (*online report O-17-1*)
2. **2017 Coastal Hospitals Technical Assistance Project**
 - Exchanged info on Cascadia Earthquake and Tsunami (EQT)
 - **Ready for storms; Not Ready for Cascadia EQT**
 - 4 recommendations in DOGAMI report (*online report O-18-3*)
3. **2018 Coastal Hospitals Resilience Project** (*in progress*)
 - ✓ **Ask coastal hospitals to create a collaborative *network***
 - Guidance on emergency power and water
 - Conduct on-site consultative visits

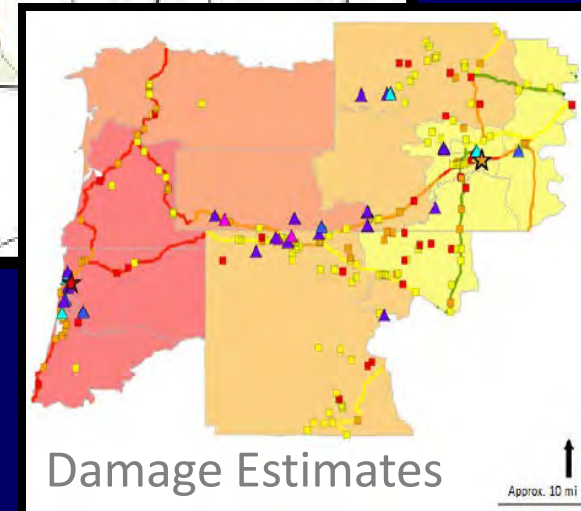
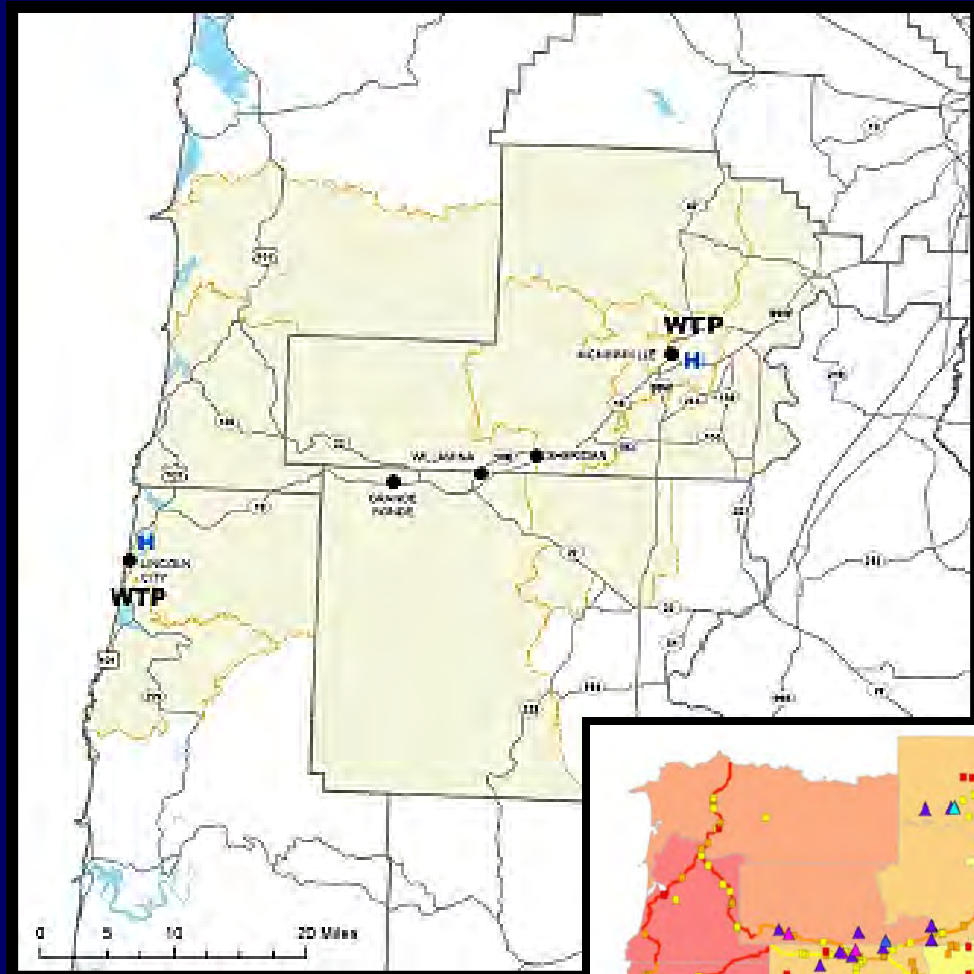


2014 Pilot Study

➤ Key Conclusion: Coastal Hospitals Isolated

- Coast to Valley
Lincoln City to McMinnville
- 2 hospitals
- 2 water districts
- Connecting highways

DOGAMI report O-17-01
www.oregongeology.org/pubs/ofr/O-17-01.pdf

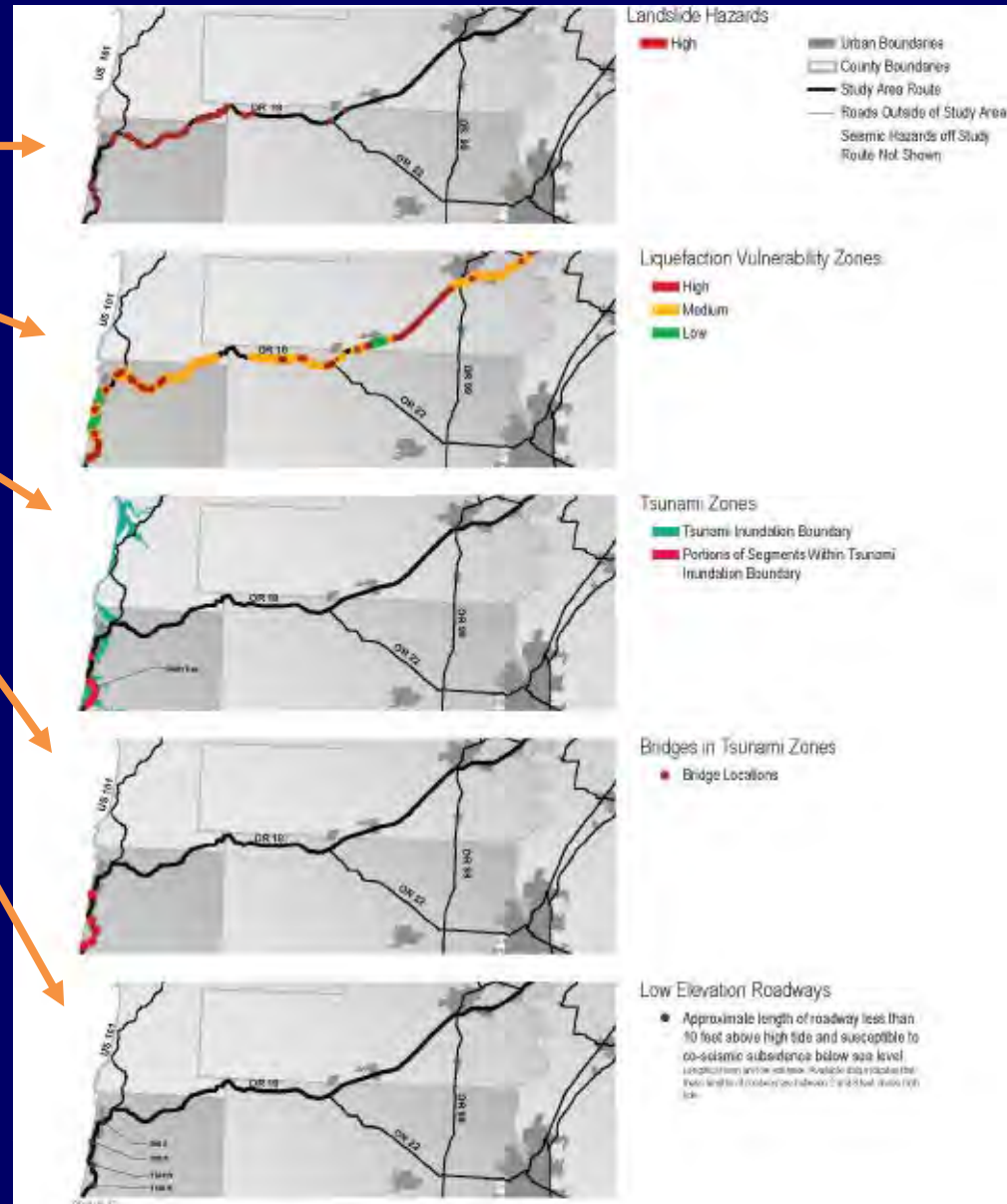


Connecting Highways: Hwy 101 and Hwy 18

Geologic Hazards

1. Landslides
2. Liquefaction
3. Tsunami
4. Bridges/Tsunamis
5. Roads/Tsunamis

Analyzed bridges and highways for earthquake shaking, liquefaction, and landslides



2017 Coastal Hospitals Technical Assistance Project

- Exchanged Information on Cascadia Preparedness
- Hospital Self-Assessments of Expected Performance

	Number of Hospitals by Expected Performance Level				
	Very Low	Low	Moderate	High	Very High
Building Structure	0	4	5	0	1
Non-Structural Components	0	5	4	1	0
Generator(s)	1	3	2	4	0
Emergency Fuel	1	3	3	3	0
Water for Sheltering	4	3	1	2	0
Water for Hospital Functions	4	5	0	1	0



2017 Technical Assistance Project Conclusions and Recommendations

➤ Ready for Winter Storms

➤ Not Ready for Cascadia Earthquakes

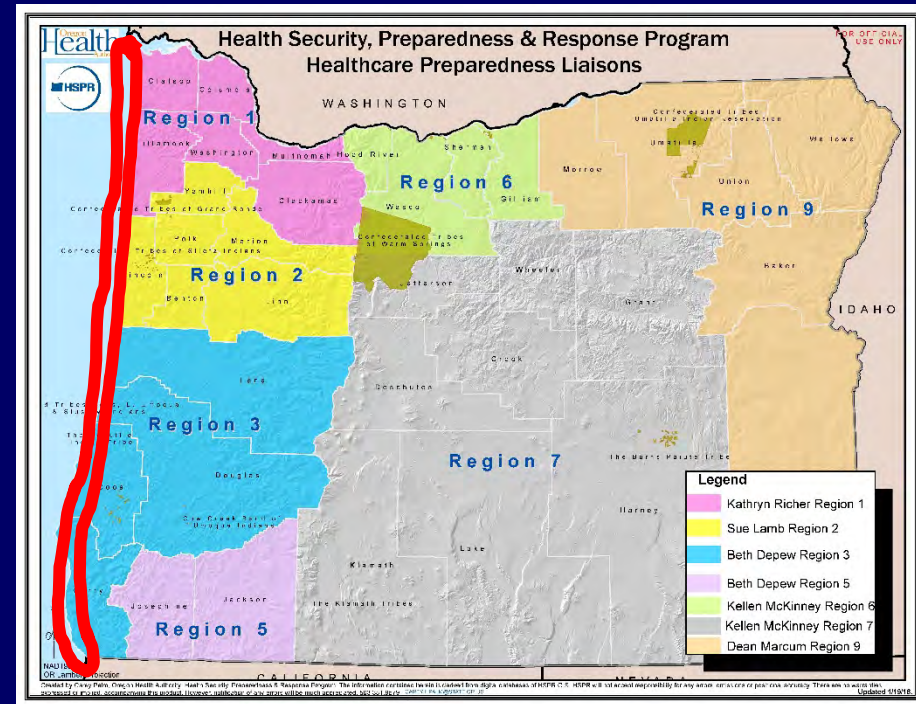
1. Create *Coastal Hospital Resilience Network* to Accelerate Cascadia Preparedness
2. Conduct On-Site Consultative Visits
3. Clarify and Improve Existing Hospital Requirements on Earthquake Preparedness
4. Encourage Emergency Fuel and Water Planning



2018 Coastal Hospitals Resilience Project

Rec #1: Create Coastal Hospital Resilience Network

- Coastal hospitals are separated across 3 Regions
- Connect Regions 1, 2 & 3 to focus on coastal challenges
 - Strongest shaking
 - Tsunami casualties
 - Geographic isolated
 - Longest response times



Why a Resilience Network?

- **Network would accelerate Cascadia preparedness**
- **Coastwide “learning community”**
 - Training opportunities
 - Share best practices
- **Collaboration: good ROI**
 - Cost effective, high efficiency
 - Leverage investments
 - Planning and prioritization
- **Discussions can stretch our minds**
 - Clarity on shared goals and values
 - Can inspire an alternative future
 - Set a new direction for transformation
- **Collectively, A Stronger Voice**



Source: en.wikipedia.org/wiki/Mesh_networking#/media/File:NetworkTopology-Mesh.svg



Options for a Resilience Network

Bi-Annual Retreats

- Alternate hospital host
- Updates from Leaders
- Recognition Awards
- Focus topics
 - Mitigation grants, water planning, etc



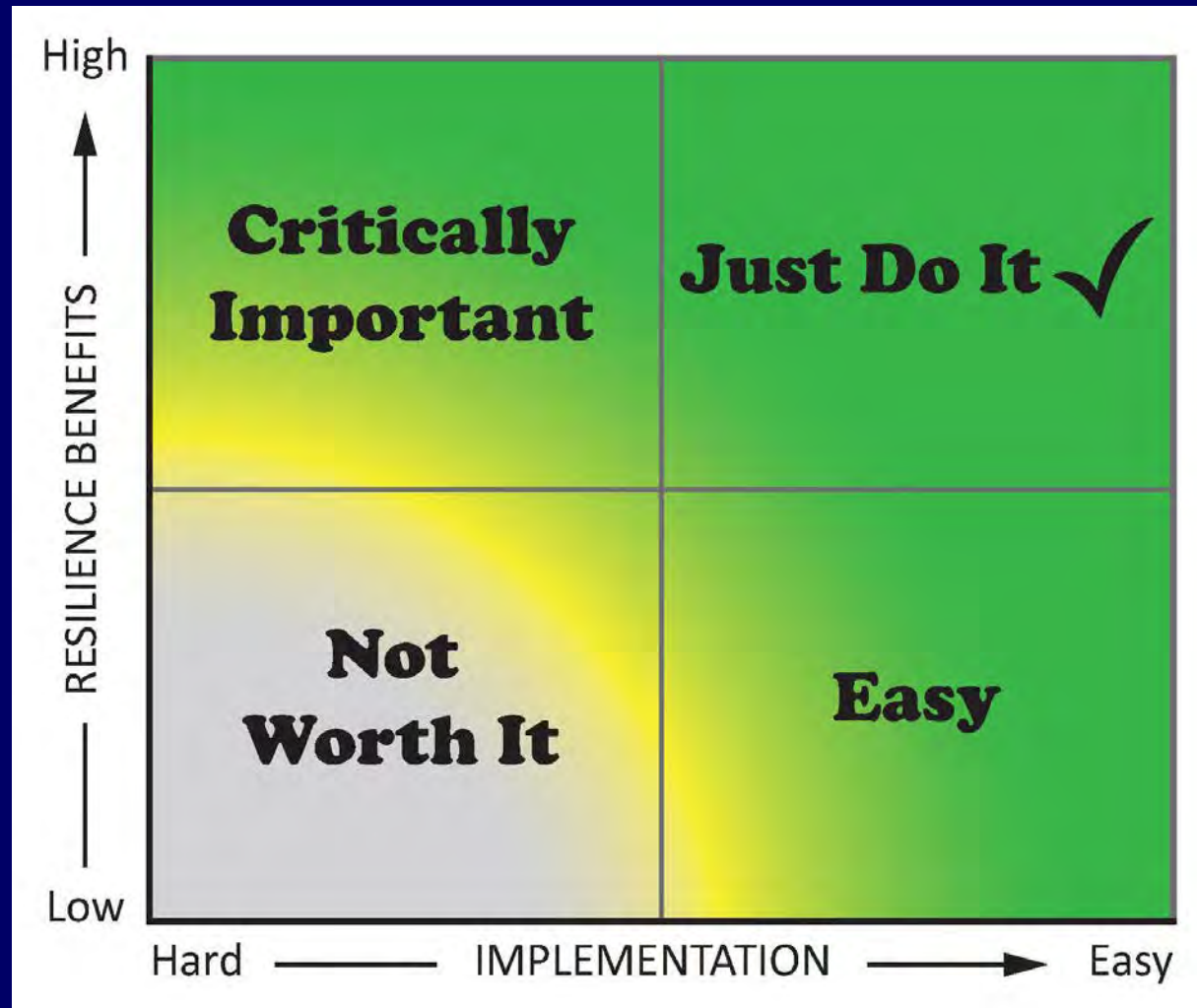
Source: DOGAMI

Y.Wang, DOGAMI, 2018



Resilience Action Plans

Strategic – Prioritize – Incremental



Site Consultative Visits: Tillamook Regional Example



3/21/2018

Y. Wang

Photo taken 12/9/2015
Permission from: Jordan Phillips



Site Resilience Plan Map






Site Resilience Plan Map

Tillamook Regional Medical Center
Tillamook, Oregon

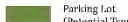
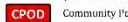


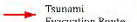
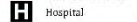
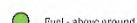
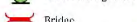
This resilience plan map shows the Tillamook Regional Medical Center and its tsunami hazards. For life safety purposes, all people located within the tsunami evacuation zone are urged to move quickly to high ground above the tsunami evacuation zone. Based on the worst case scenario, the tsunami is expected to arrive at the hospital approximately 44 minutes after the onset of earthquake shaking. The tsunami flow depth is approximately 3 to 10 ft on the seaward side of the hospital, and 1 to 3 ft on the landward side of the hospital. The elevation of the hospital is approximately 19 ft. See the Regional Resilience Plan Map for a view of the surrounding critical facilities. Tillamook Regional Medical Center should not evacuate from a "Distant Tsunami", which is generated from an earthquake far away from the Oregon coast, such as Alaska and Japan.

Explanation of Symbols

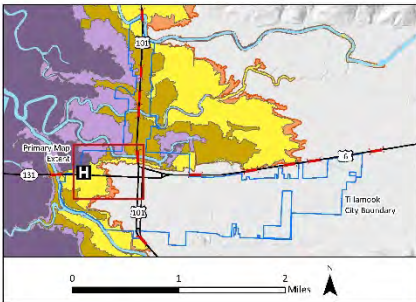
Tsunamis generated by a Cascadia Subduction Zone earthquake can vary in size from SM, M, L, XL, to XXL.

-  Small Tsunami Hazard Zone (SM)
(Small tsunamis inundate the area defined by this zone.)
-  Medium Tsunami Hazard Zone (M)
(This zone captures ~79% of local tsunamis.)
-  Large Tsunami Hazard Zone (L)
(This zone captures ~95% of local tsunamis.)
-  Extra Large Tsunami Hazard Zone (XL)
(This zone captures ~96% of local tsunamis.)
-  Extra Extra Large Tsunami Hazard Zone (XXL)
(This zone captures 100% of local tsunamis.)

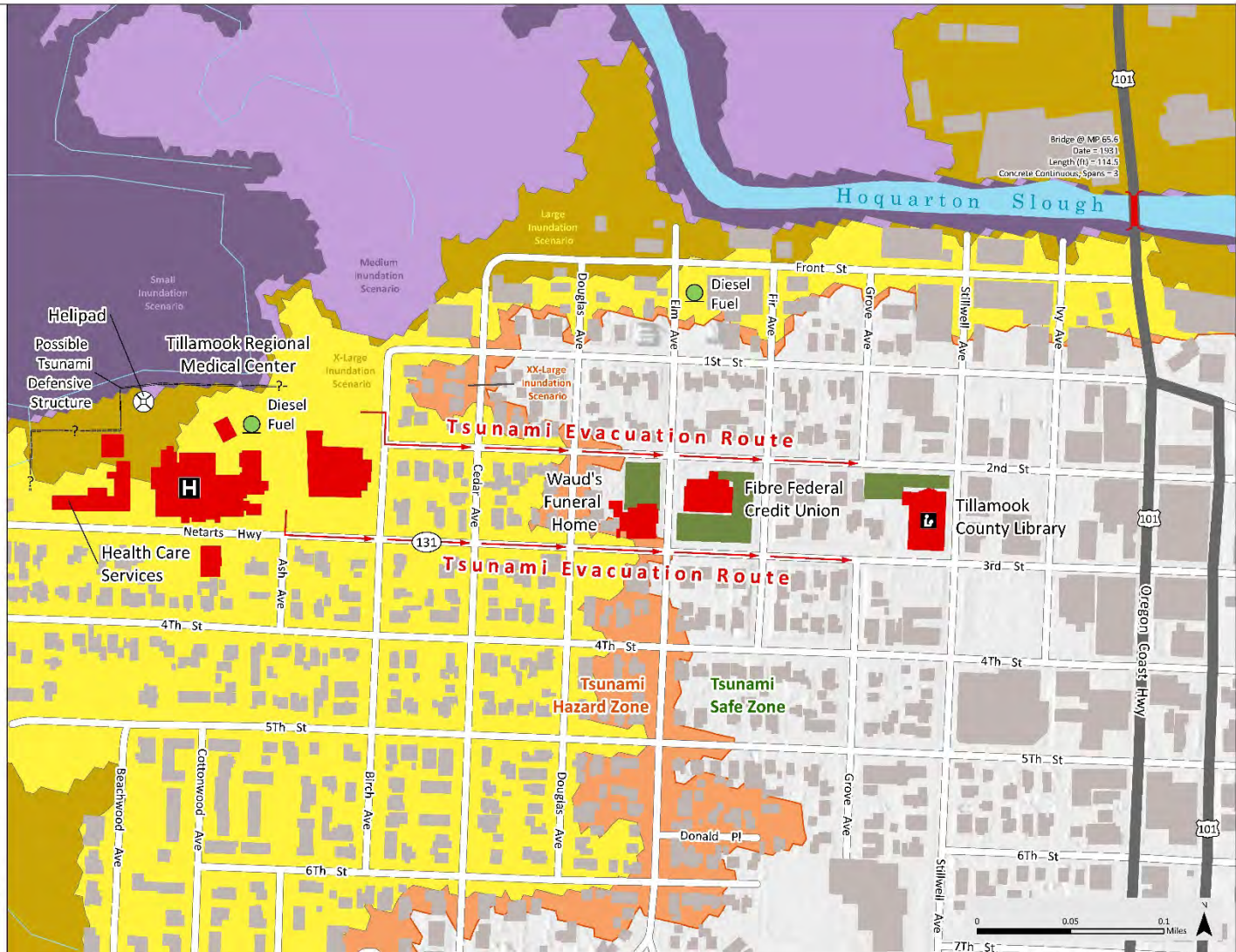
The tsunami evacuation zone is defined by the XXL zone. DOGAMI tsunami evacuation brochures are available at www.OregonTsunami.org. Source: DOGAMI Special Paper 43 (2011)

-  Parking Lot (Potential Tsunami Evacuation Site)
-  CPDOD Community Point of Distribution
-  Buildings of Interest
-  Buildings
-  Tsunami Evacuation Route
-  Hospital
-  Fuel - above ground
-  Bridge

Tillamook Area Map

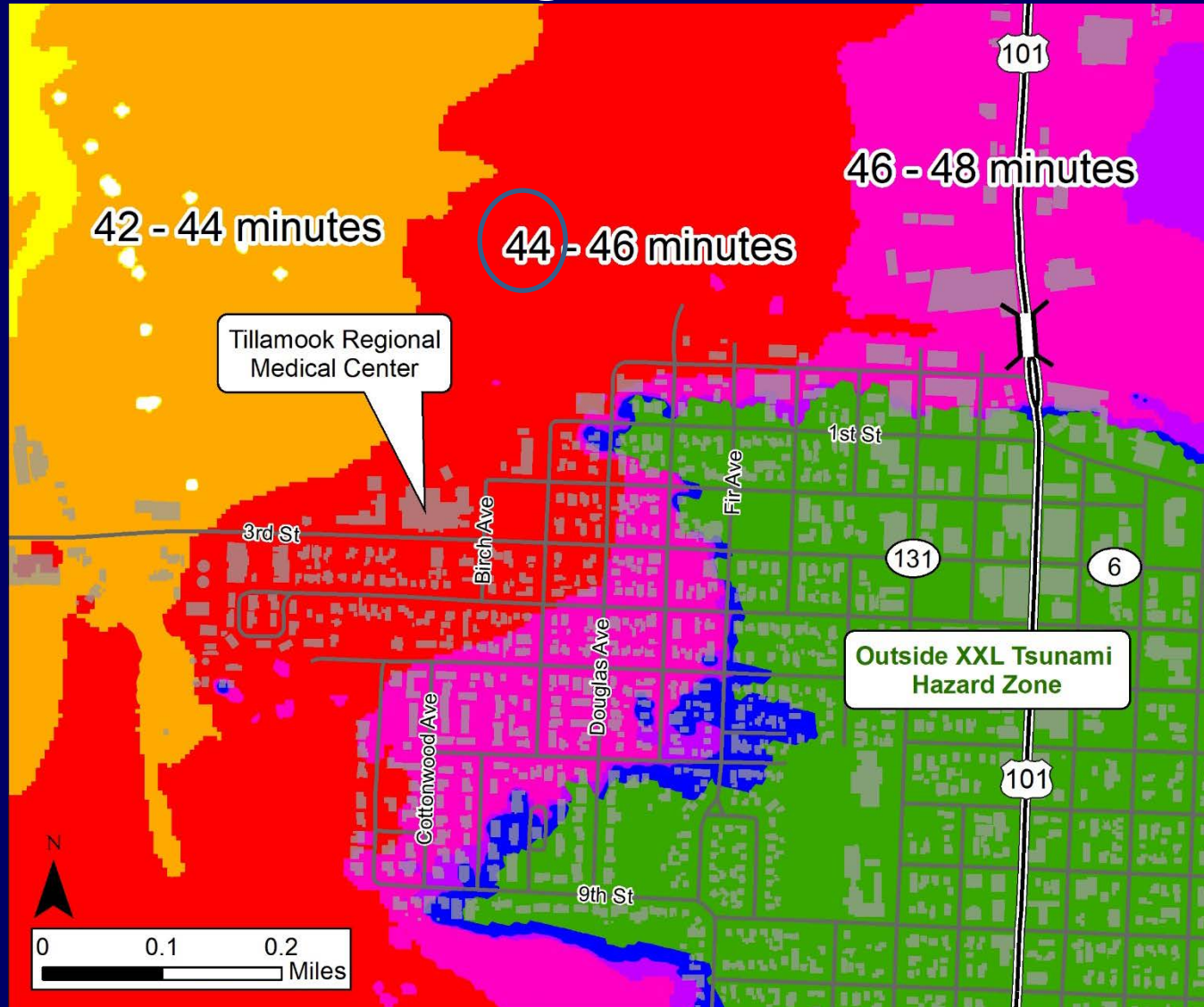


Prepared by: Yawei Wang and Jan J. Franzoisk
Reviewed by: Eric Swanson and Wayne Ahrens-Ross
February 8, 2018



Tillamook Regional XXL Tsunami Arrival Time

44 minutes starting from onset of shaking



Regional Resilience Plan Map

Regional Resilience Plan Map

Tillamook Regional Medical Center
Tillamook, Oregon

This resilience plan map shows the Tillamook Regional Medical Center and highlights critical facilities. It is intended for use in conjunction with the Tillamook Regional Medical Center and highlights critical facilities. It can be used for evacuation route planning and other disaster planning purposes before the earthquake occurs. Due to the hospital's proximity to the Cascadia fault, it is in a high seismic hazard region and is expected to experience prolonged strong shaking. The hospital is located in the Large, Extra Large, and Extra Extra Large (XLL) tsunami zones. The worst case scenario is the XLL zone, which defines the tsunami evacuation route. See the Site Visit and Plan Maps for a closer up view. Tillamook Regional Medical Center should not be evacuated from a "Distant Tsunami", which is generated from an earthquake far away from the Oregon coast, such as Alaska and Japan.

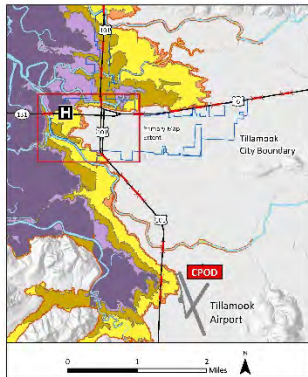
Explanation of Symbols

- Damage potential by 2. Escoria's building in four earthquake can vary in size from SM, M, L, XL to XLL.
- Small Tsunami Hazard Zone (SM)
 - Medium Tsunami Hazard Zone (M)
 - Large Tsunami Hazard Zone (L)
 - Extra Large Tsunami Hazard Zone (XL)
 - Extra Extra Large Tsunami Hazard Zone (XLL)

The tsunami evacuation zone is defined by the XLL zone. CPDAM has several locations available at: www.cocopcpo.gov. Source: DGS&M, Version Page 27 (2016)

- Parking Lot
- CPDAM Community Point of Distribution
- Potential Community Point of Distribution
- Buildings of Interest
- Buildings
- Open Spaces
- Tsunami Evacuation Route
- Hospital
- Fuel - Cardlock
- Bridge
- Fuel - above ground
- Fuel - underground

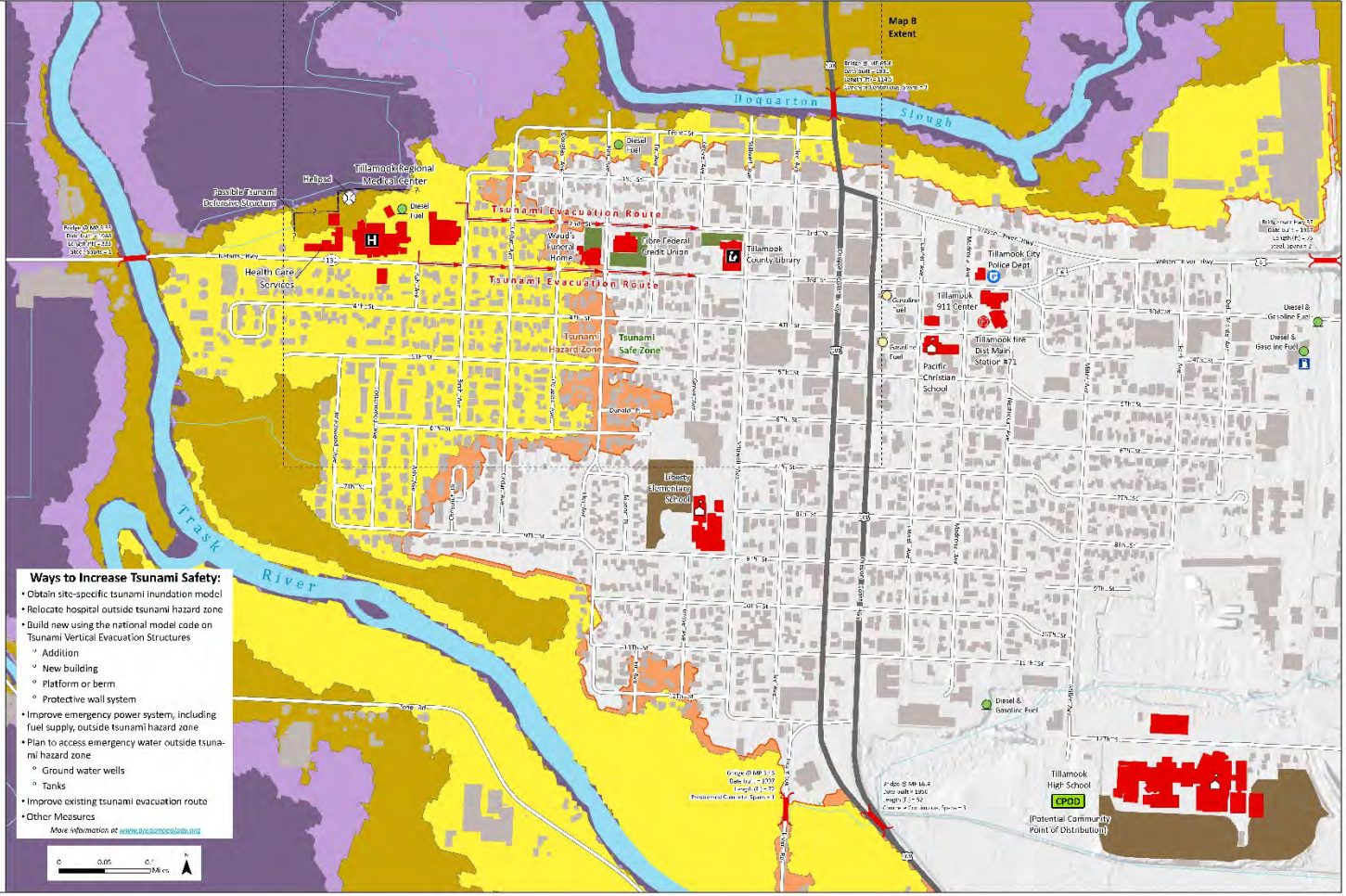
Tillamook Area Map



Ways to Increase Tsunami Safety:

- Obtain site-specific tsunami inundation model
- Relocate hospital outside tsunami hazard zone
- Build new using the national model code on Tsunami Vertical Evacuation Structures
 - Addition
 - New building
 - Platform or berm
 - Protective wall system
- Improve emergency power system, including fuel supply, outside tsunami hazard zone
- Plan to access emergency water outside tsunami hazard zone
 - Ground water wells
 - Tanks
- Improve existing tsunami evacuation route
- Other Measures

More information at www.cocopcpo.gov



Questions?

www.oregongeology.org



Oshiokuri Hato Tsusen no Zu (Fast Cargo Boat Battling The Waves) 1805
<http://thesoundsinsidemymyhead.blogspot.com/2008/05/hokusais-great-wave.html>

Preparing for the “Really Big One”: Resilient Hospitals in Coastal Oregon

Daniel Cox

*Professor, Coastal Engineering
Oregon State University*

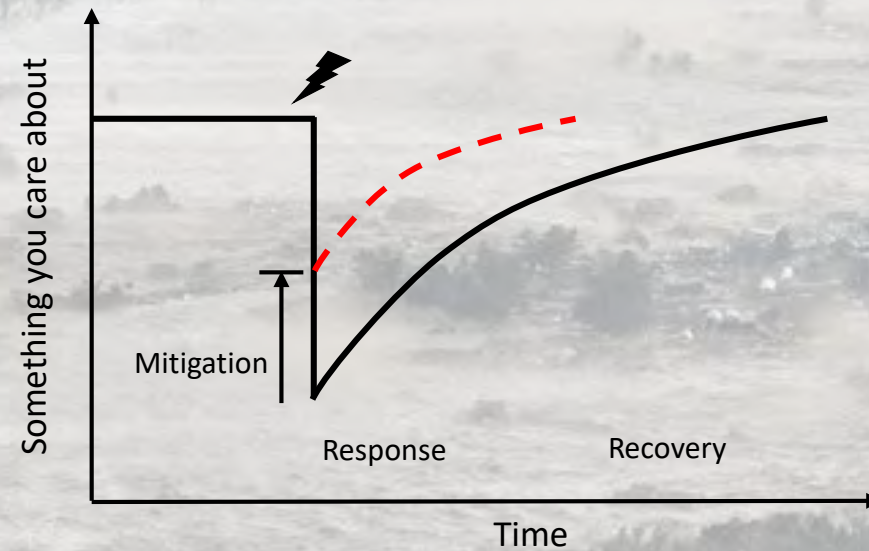
- Member, Am. Soc. Civil Engineers, Tsunami Codes and Standards subcommittee
- Assoc. Director, NIST Center of Excellence for Risk-Based Community Resilience Planning
- Director, Cascadia Lifelines Program
- Lead, 2011 Tohoku Tsunami Disaster Investigations

Collaborators: Shafiq Alam, Andre Barbosa, Lori Cramer, John van de Lindt (CSU), Alireza Mostafizi, Hyounghsu Park, Haizhong Wang



Resilience

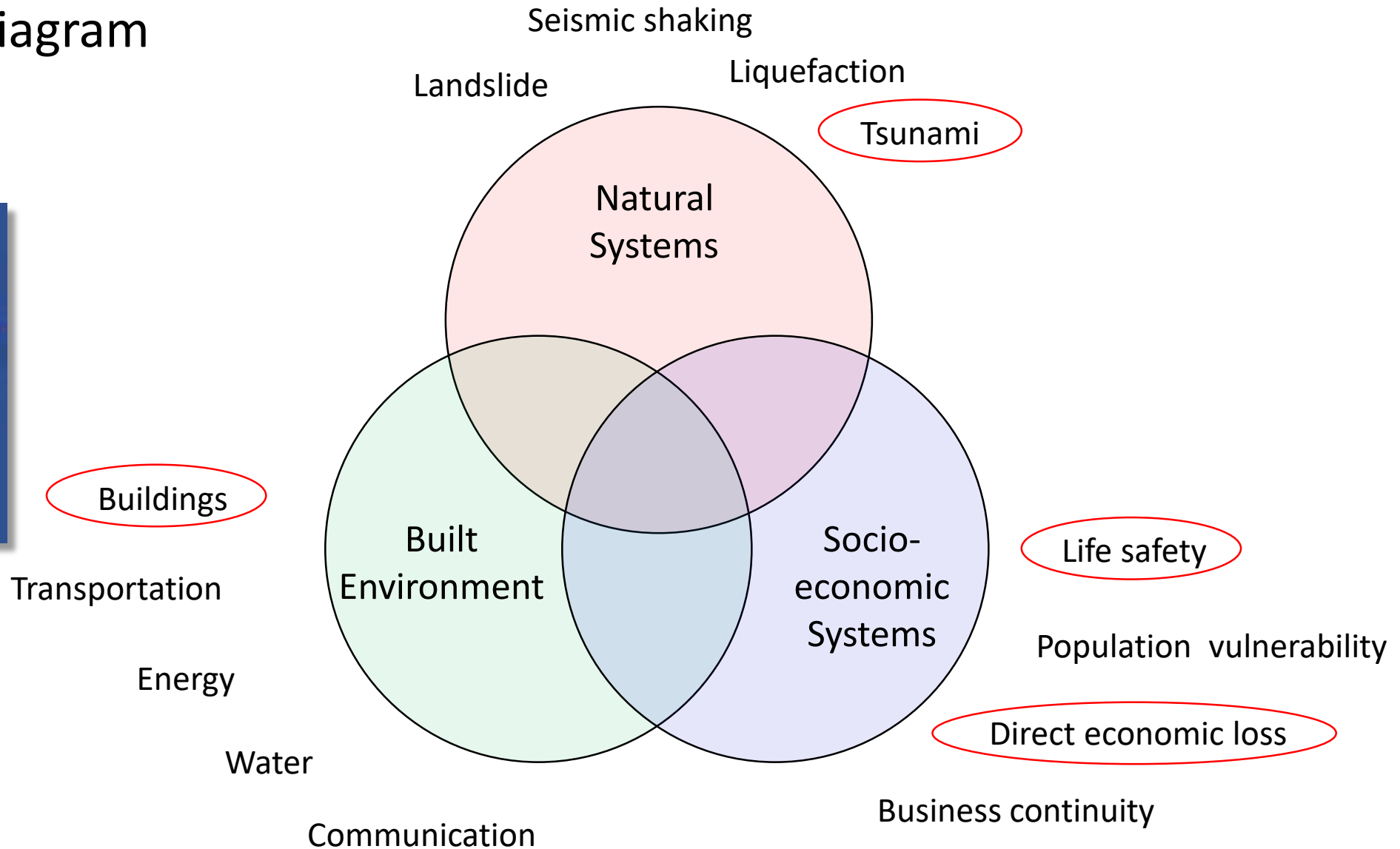
“Ability to resist, absorb and recover from a sudden stress”





This combination of three photos taken over a six month period shows the March 11 tsunami and its aftermath at Sendai Airport in Sendai, Miyagi prefecture, northern Japan. The top photo taken March 11, 2011 shows the tsunami engulfing the airport immediately after an earthquake. The middle photo, taken June 3, 2011 and the bottom photo, taken Sept. 6, 2011 show the restored and reopened airport. **AP / Kyodo News**

Disaster Diagram



What does ASCE 7-16 provide to engineers and designers for tsunami?

- Site-specific Probabilistic Tsunami Hazard Analysis (PTHA)
- Consistent Design Procedures (seismic, wind, snow/ice)
- Hydrostatic and hydrodynamic load procedures (water forces)
- Debris Impact Loads (cars, logs, boats, containers)
- Foundation Designs (erosion, scour)
- Structural Countermeasures
 - ✓ Open Structures
 - ✓ Tsunami Barriers
- Vertical Evacuation Structures



Office building in
Concepcion, Chile
built to be tsunami-
ready

Photo: W. Mooney USGS



Countermeasures: Open Structures



Countermeasures: Open Structures

Proposal for new city hall,
Cannon Beach OR



Image: J. Raskin

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Examples of testing the effectiveness of tsunami walls

This is one of the first works to study the possible protection afforded by low-lying seawalls from tsunami attack. New hydraulic model experiments were conducted in the NEES Tsunami Facility. The bathymetry had a mild slope constant in the cross-shore direction and was followed by a flat section raised above the mean water line. The tsunami forces, pressure, and run-up were measured on an instrumented specimen located on the flat section, and a seawall was placed between the specimen and the shoreline. The incident wave conditions, seawall positions, and seawall heights were varied systematically to quantify the reduction of the maximum and average forces relative to the baseline conditions without a seawall. In total, 121 trials were conducted with seawalls, and 81 trials in the absence of seawalls (baseline conditions). Two simple empirical formulas were derived to predict the reduction factors for the maximum and average forces using inputs of the incident (unbroken) tsunami height, the bore height at the seawall (in the absence of the wall), the seawall height, and the position of the seawall relative to the shoreline and design structure. The equations were used to predict two other laboratory data sets: one conducted in the same

facility under
a column-s

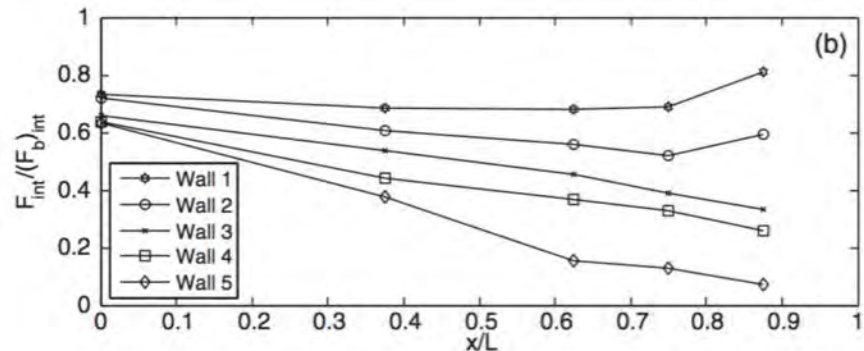


Fig. 10. Measured reduction factor for (a) maximum and (b) average force relative to baseline condition using $ERF = 7$ s as input

What does ASCE 7-16 provide to engineers and designers for tsunami?

- Site-specific Probabilistic Tsunami Hazard Analysis (PTHA)
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- Foundation Designs (erosion, scour)
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 - ✓ Open Structures
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- Vertical Evacuation Structures



Standards for Tsunami Vertical Evacuation Structures

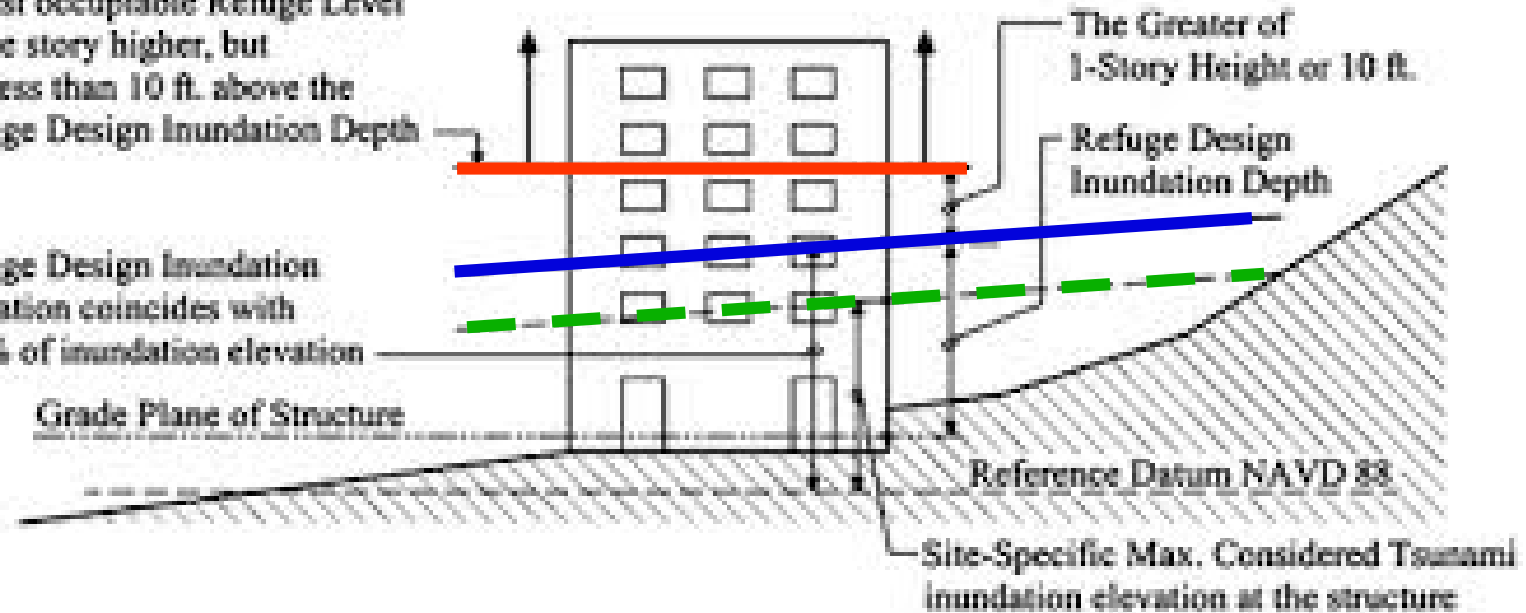
Including vertical evacuation structures



The minimum elevation of the lowest occupiable Refuge Level is one story higher, but not less than 10 ft. above the Refuge Design Inundation Depth

Refuge Design Inundation Elevation coincides with 130% of inundation elevation

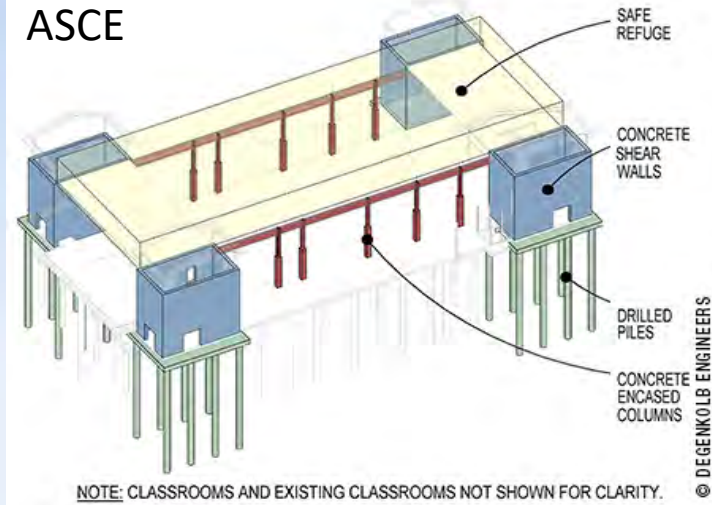
Grade Plane of Structure





Vertical Evacuation Structure

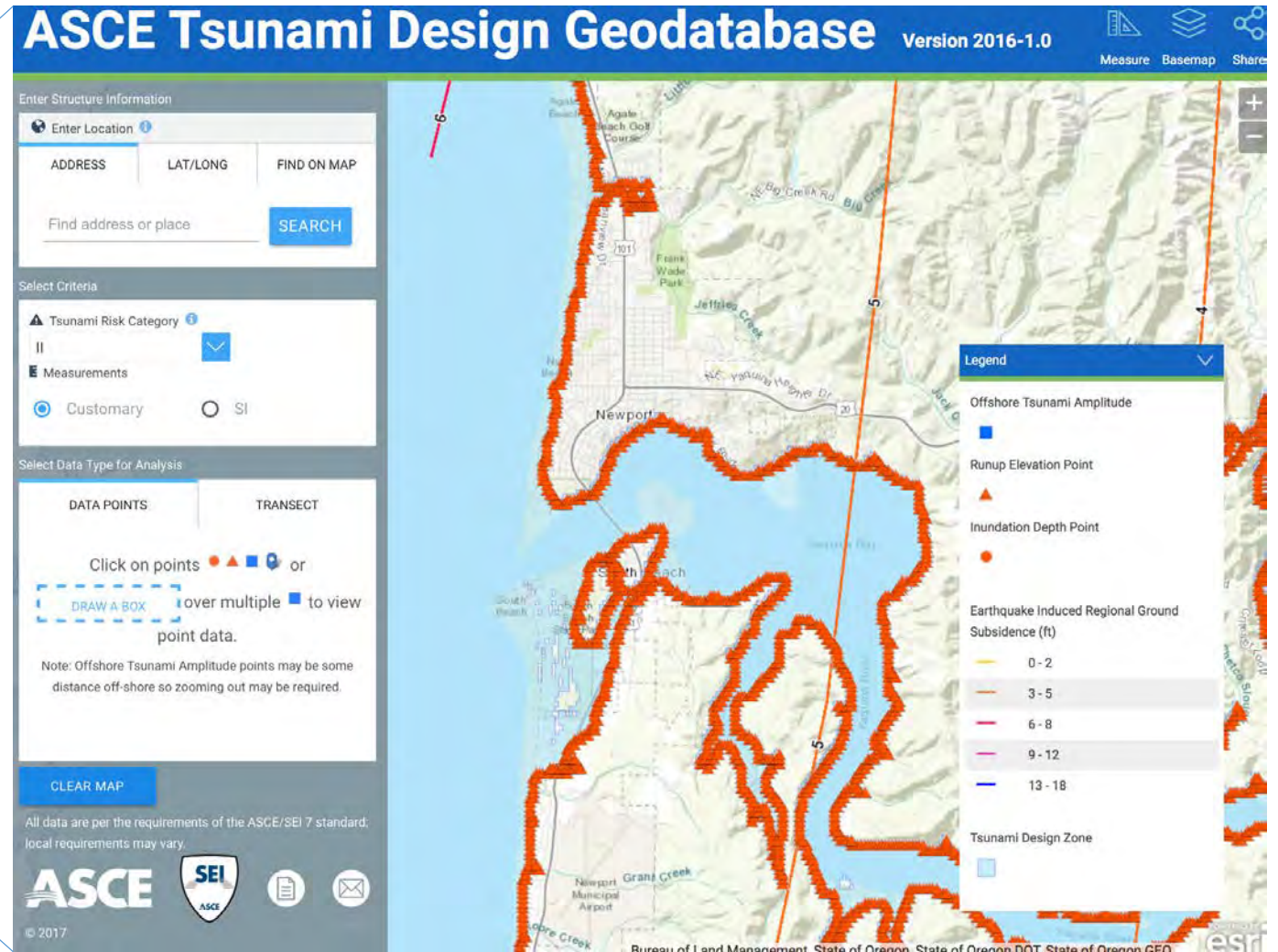
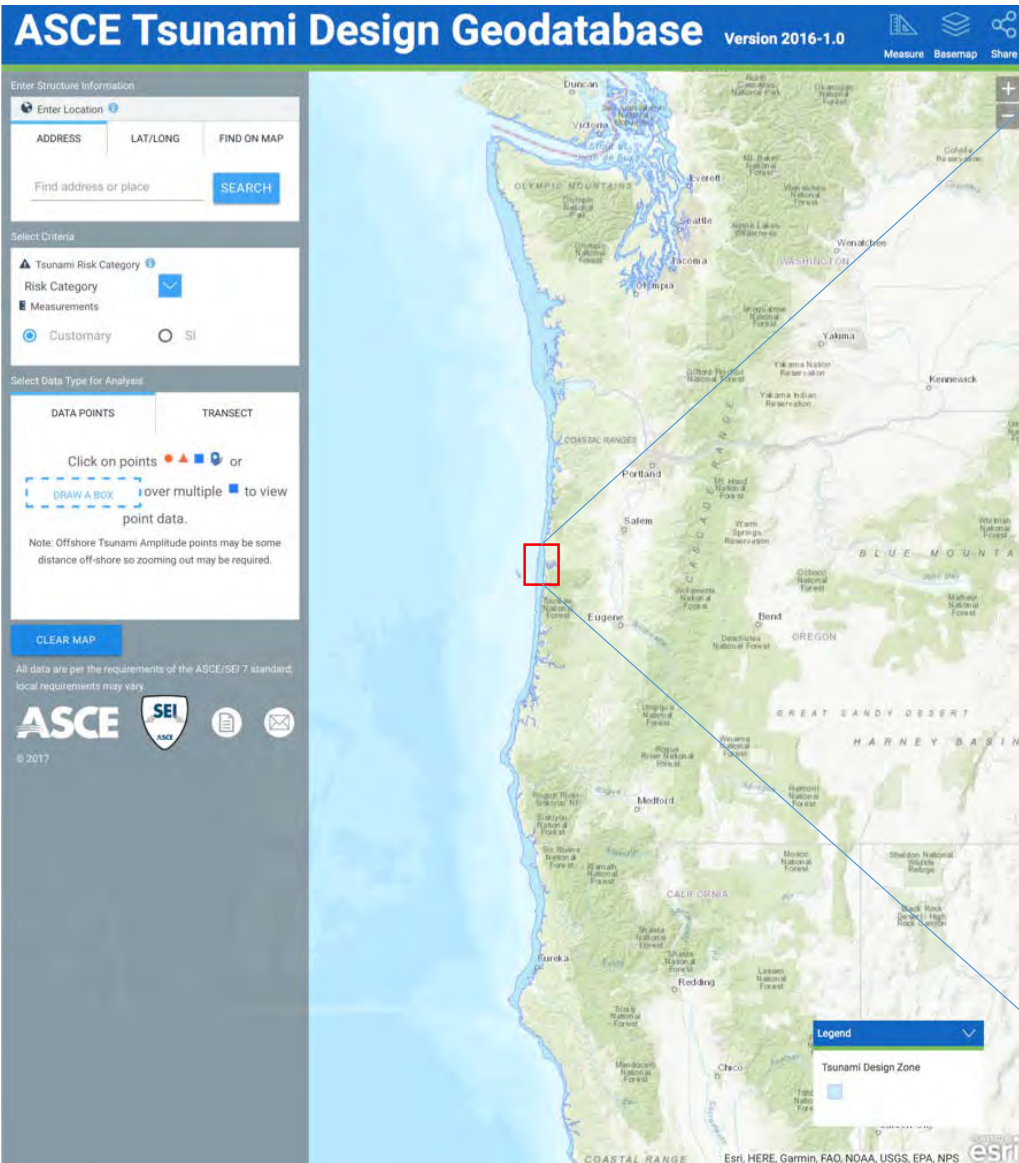
Ocosta Elementary School, WA



What does ASCE 7-16 provide to engineers and designers for tsunami?

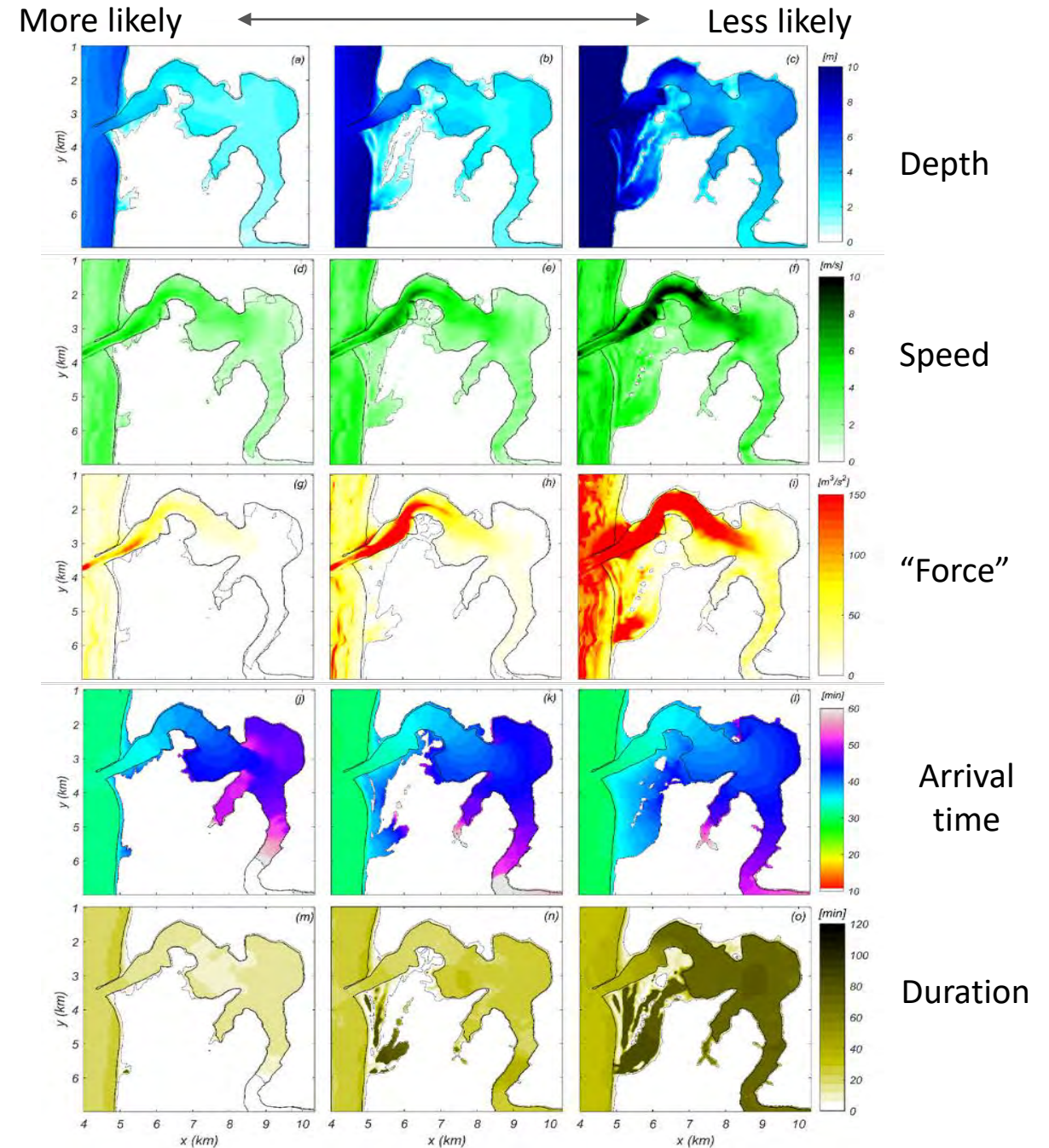


- Site-specific Probabilistic Tsunami Hazard Analysis (PTHA)
- Consistent Design Procedures (seismic, wind, snow/ice)
- Hydrostatic and hydrodynamic load procedures (water forces)
- Debris Impact Loads (cars, logs, boats, containers)
- Foundation Designs (erosion, scour)
- Structural Countermeasures
 - ✓ Open Structures
 - ✓ Tsunami Barriers
- Vertical Evacuation Structures



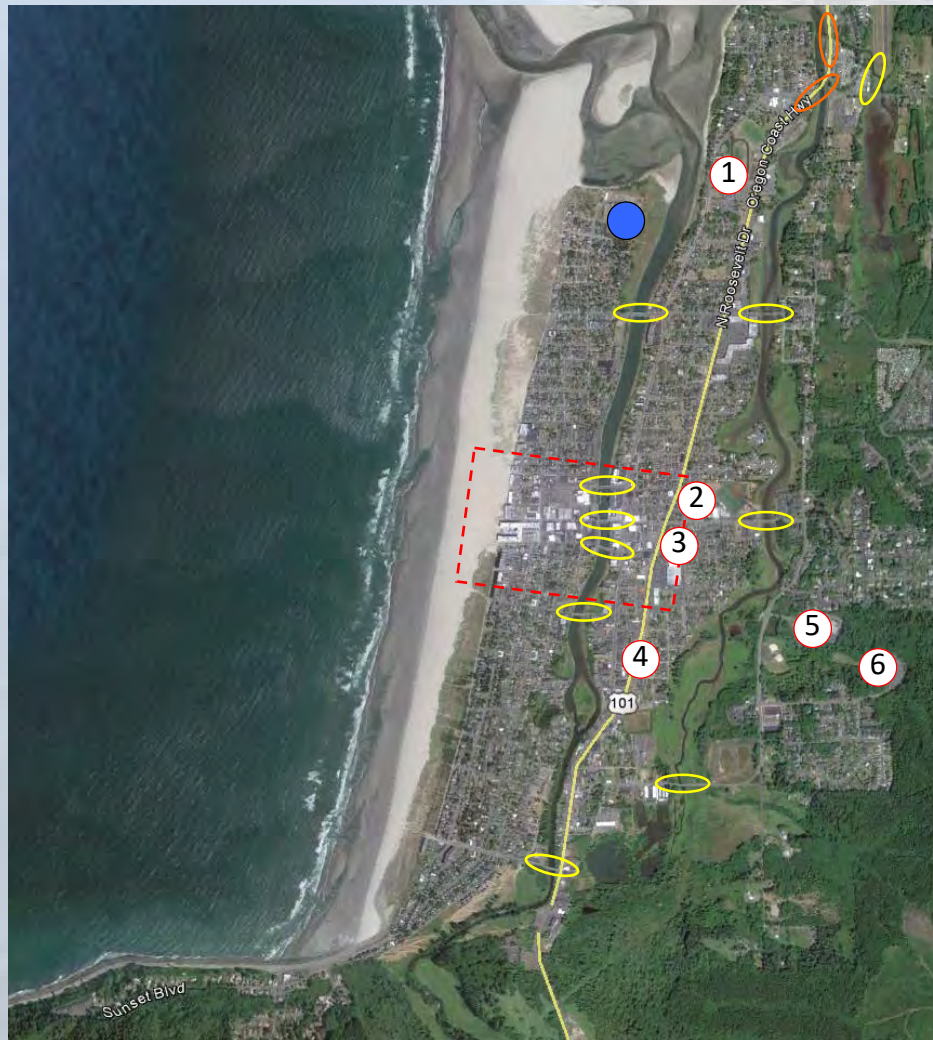
Future PTHA

1. How likely is a given scenario?
2. What is the hazard *within* the zone?



Community Scale Damage and Loss









Point 10 – 15 (★)
(local public facilities)

Point	Facilities	Ele. (m)
①	High School	3.6
②	Middle School	2.4
③	Fire Station	3.7
④	Police Department	3.0
⑤	Hospital	13.6
⑥	Elementary School	19.3

Datum is MHW.

-  State bridges (2)
-  City bridges (10)
-  Wastewater Treatment Facility
-  Central business district

4,679 buildings

Rapid Visual Screening

Google Street View

Tax Lot Database

Rapid Visual Screening of Buildings for Potential Seismic Hazards
 FEMA P-154 Data Collection Form
 Level 1
 VERY HIGH Seismicity

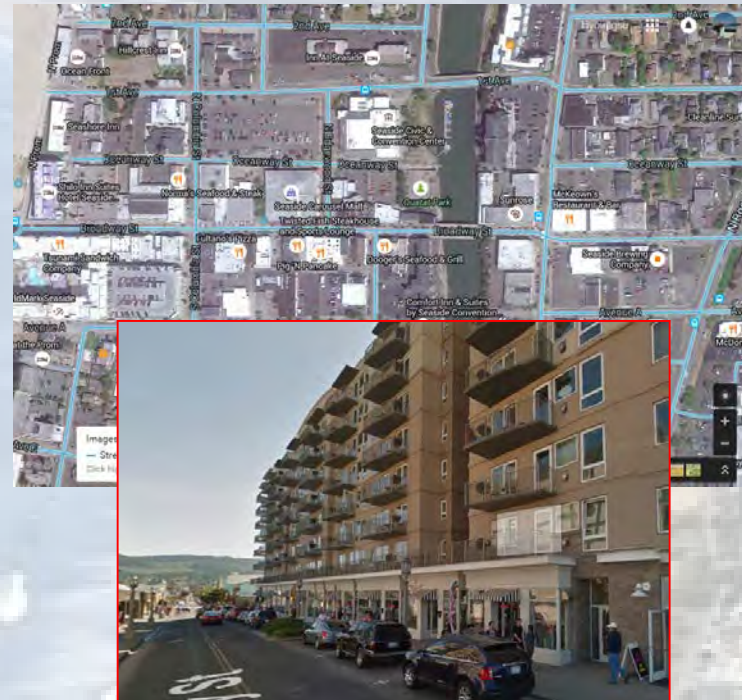
Address: 26 Pine St
 Other Identifiers: 06
 Starting Name: WES STAYNE SQUARE
 Use: MIXED USE HIGH RISE BUILDINGS
 Latitude: 45.5229 Longitude: -122.6792
 No. Stories: Above Grade: 10 Below Grade: 0 Year Built: 2007
 Code Year: 532.264
 Occupancy: Assembly
 Soil Type: S1
 Geologic Hazard: Landslide
 Exterior Falling Hazards: None
 COMMENTS: Multiple adjacent building. Construction point not visible. Ground floor is used for commercial purpose.

FEMA BUILDING TYPE	W1	W2	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16	C17	C18	C19	C20
Basic Block	0.1	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3
Steel Moment Resisting Frame	0.1	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3
Concrete Moment Resisting Frame	0.1	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3
Steel Frame (I-beam)	0.1	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3
Steel Frame (C-channel)	0.1	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3
Masonry	0.1	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3

FINAL LEVEL 1 SCORE: 2.0 Use: 2.0

EXTENT OF REVIEW: Exterior: Partial All None Other
 Drawings Reviewed: Yes No
 Soil Type Source: Geologic Hazard Sources: Seismicity: Other:

LEVEL 2 SCREENING PERFORMED? Yes No



- 4-4.3 Multi-Use
 - 4-4.4 Department
 - 4-4.5 Row Store/Neighborhood/Regional Center
 - 4-4.6 Market/Supermarket
 - 4-4.7 Merchandising Center/Discount Store
 - 4-4.8 Beauty/Barber
 - 4-4.9 Laundromat
 - 4-5.0 OFFICE AND MEDICAL OFFICE
 - 4-5.1 Office
 - 4-5.2 Dental Office
 - 4-5.3 Optometric Office
 - 4-5.4 Medical Clinic
 - 4-5.5 Veterinary Office
 - 4-6.0 FINANCIAL BUILDINGS
 - 4-6.1 Central Bank
 - 4-6.2 Branch Bank
 - 4-6.3 Drive-Up Bank
 - 4-6.4 ATM-Automated Teller Machine
 - 4-7.0 WAREHOUSE AND UTILITY BUILDINGS
 - 4-7.1 Storage Warehouse
 - 4-7.2 Mini-Storage Warehouse
 - 4-7.3 Transit Warehouse
 - 4-7.4 Distribution Warehouse
 - 4-7.5 Commercial Shops
 - 4-7.6 Utility/Shed Buildings
 - 4-7.7 Hangars
 - 4-8.0 AUTOMOTIVE BUILDINGS
 - 4-8.1 Service Station
 - 4-8.2 Service Garage/Service Center
 - 4-8.3 Dealership/Automotive Center
 - 4-8.4 Car Wash
 - 4-8.5 Parking Structure/Garage
 - 4-9.0 MISCELLANEOUS COMMERCIAL
 - 4-9.1 Post Office
 - 4-9.2 Theater
 - 4-9.3 Skating Rink
 - 4-9.4 Golf Course
 - 4-9.5 Bowling Alley
 - 4-9.6 Mortuary/Funeral Home
 - 4-9.7 Health/Sporting Clubs
 - 4-9.8 Parking Lots
- Date
 - Use
 - \$ Value



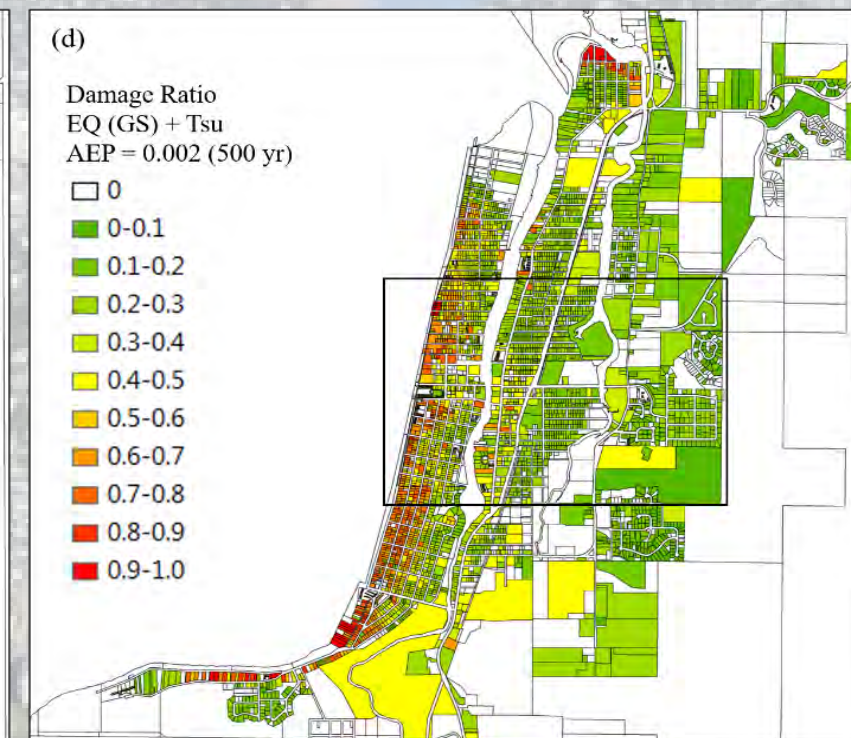
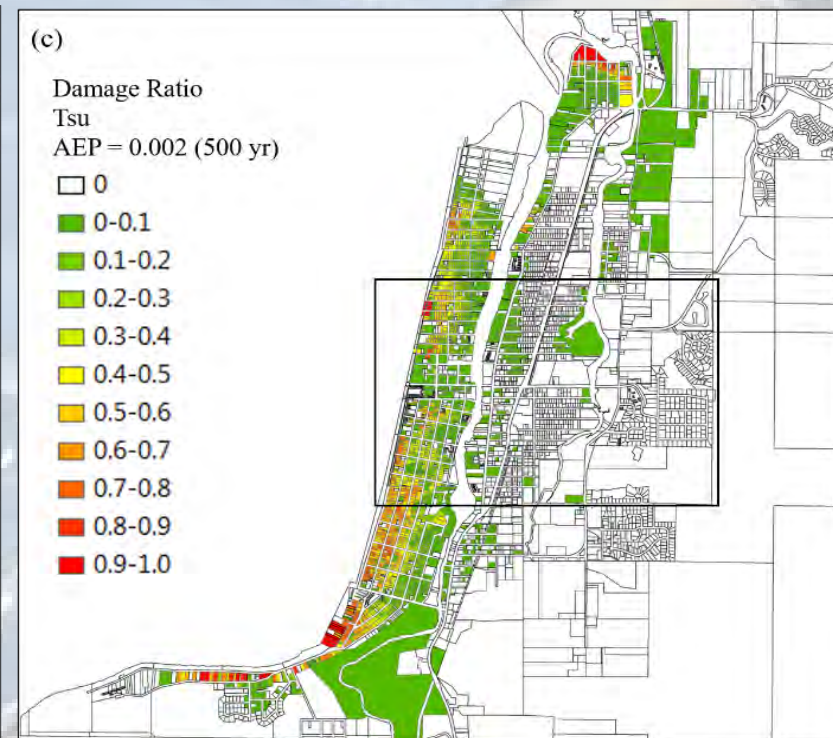
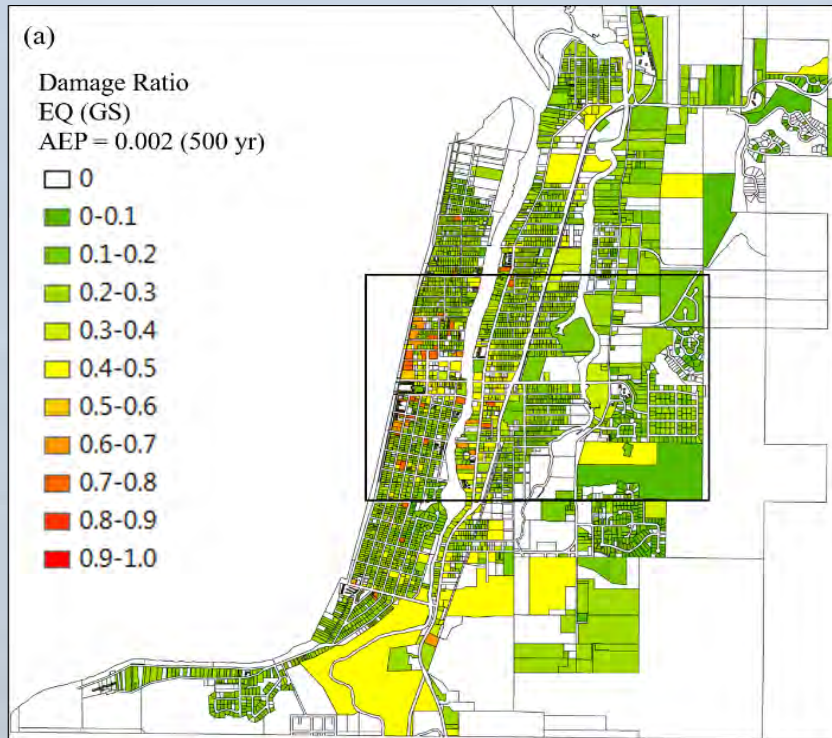
- Building type: W1, W2, C1
- No. of floors
- Seismic code level

Multi-Hazard Building Damage Estimates for Seaside, OR (500 yr Return Period)

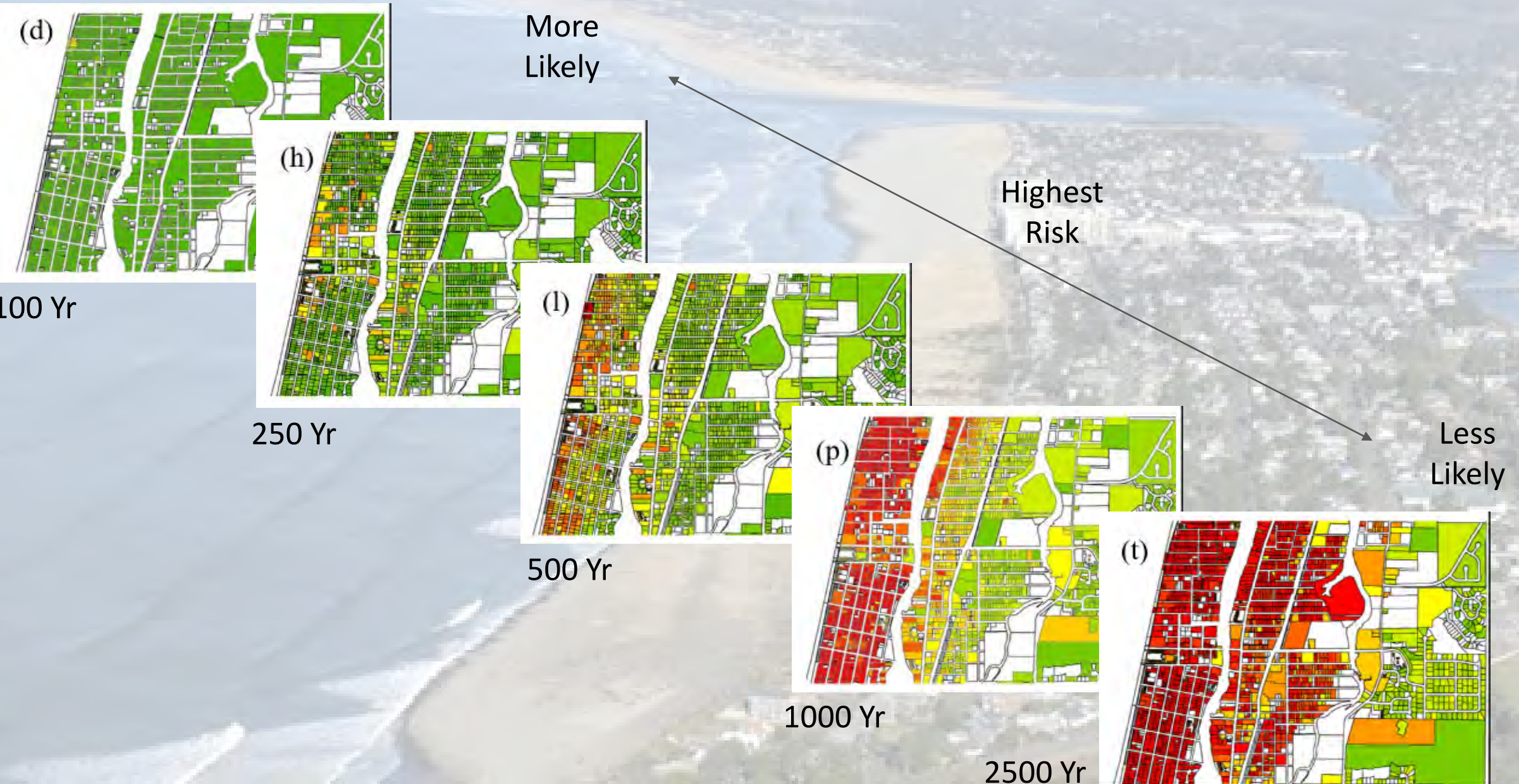
Earthquake Only

Tsunami Only

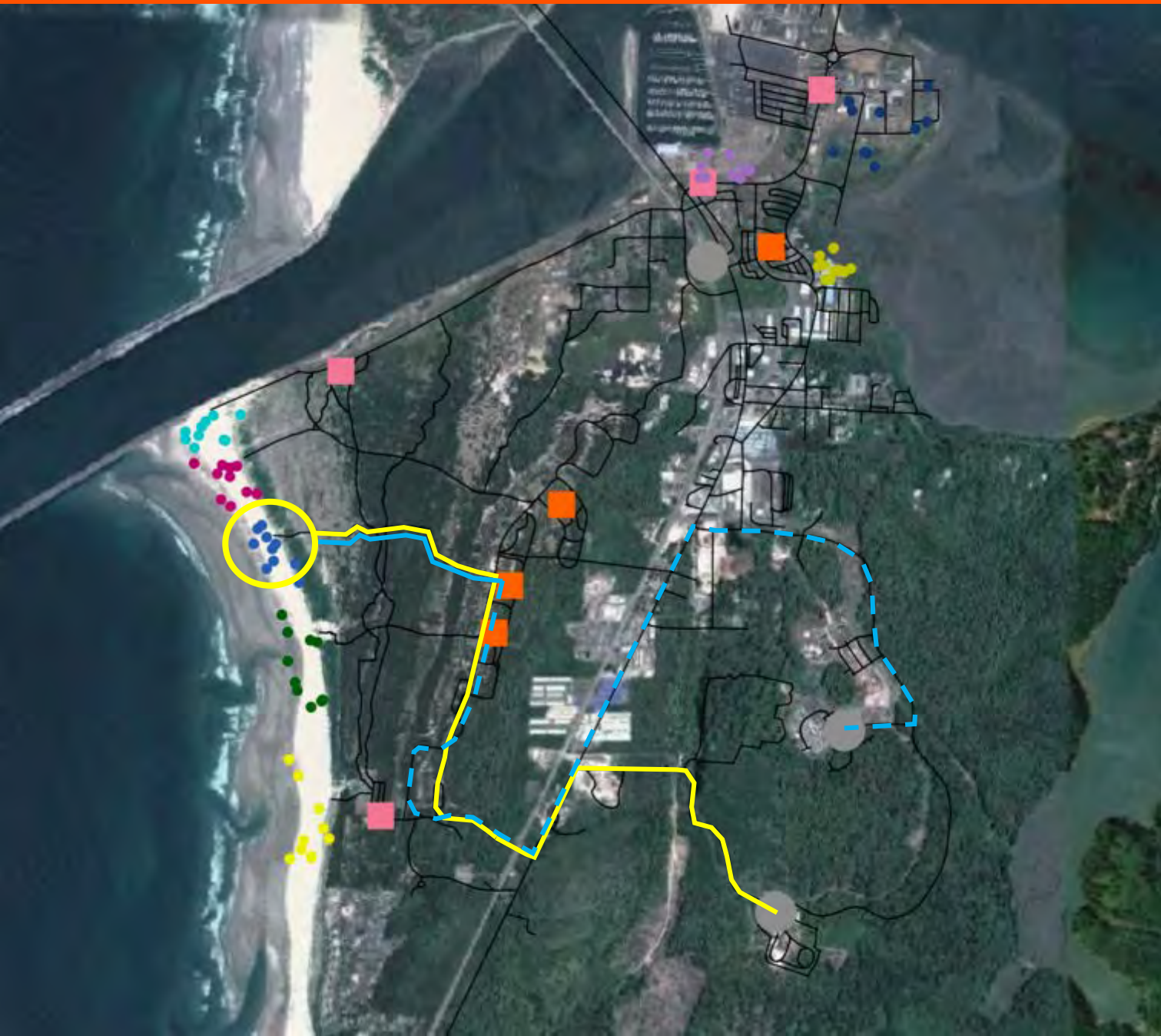
Earthquake and Tsunami



Multi-Hazard Building Damage Estimates for Seaside, OR





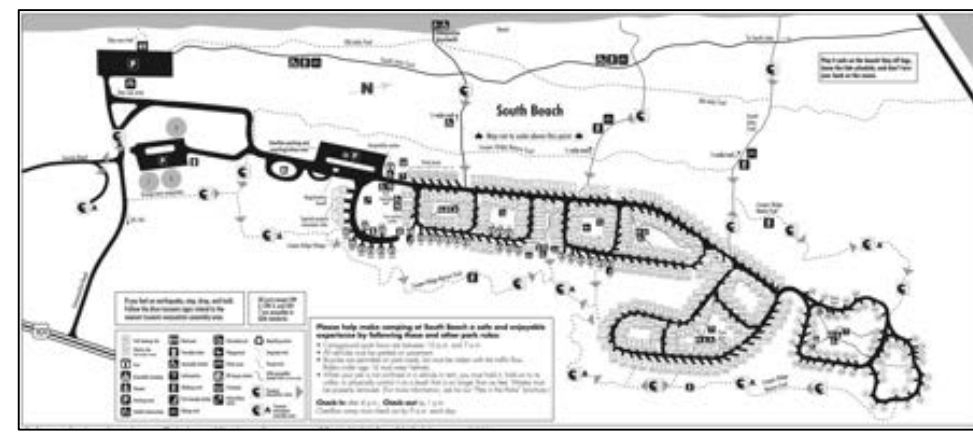


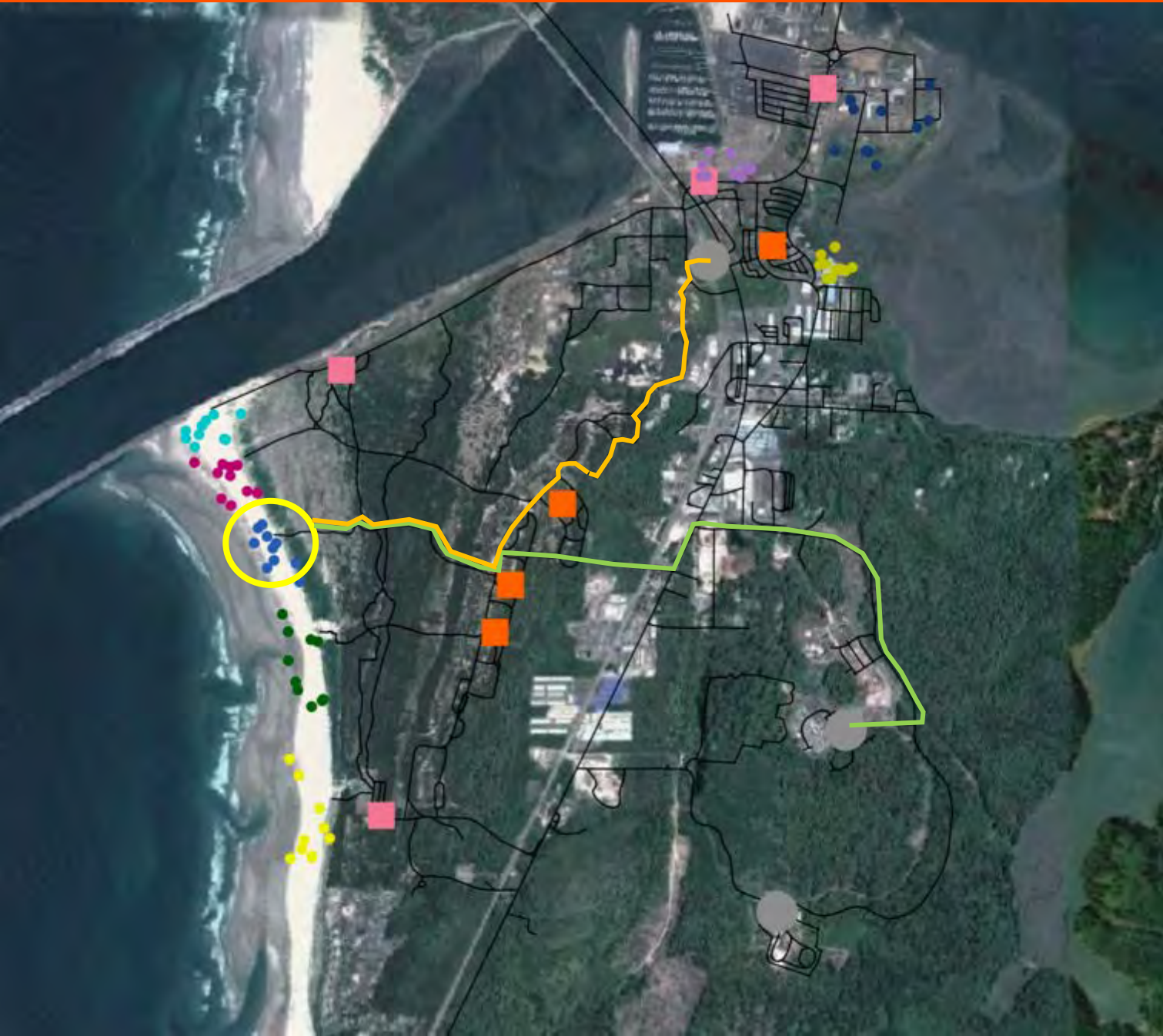
What are my best options?

- Which route is the best?
- Which mode is the best (foot, car)?
- How long do I have?

Group 1: Only on foot, goes out the park entrance (yellow line)

Group 2: Start on foot, goes to car, then out the park entrance (blue line)



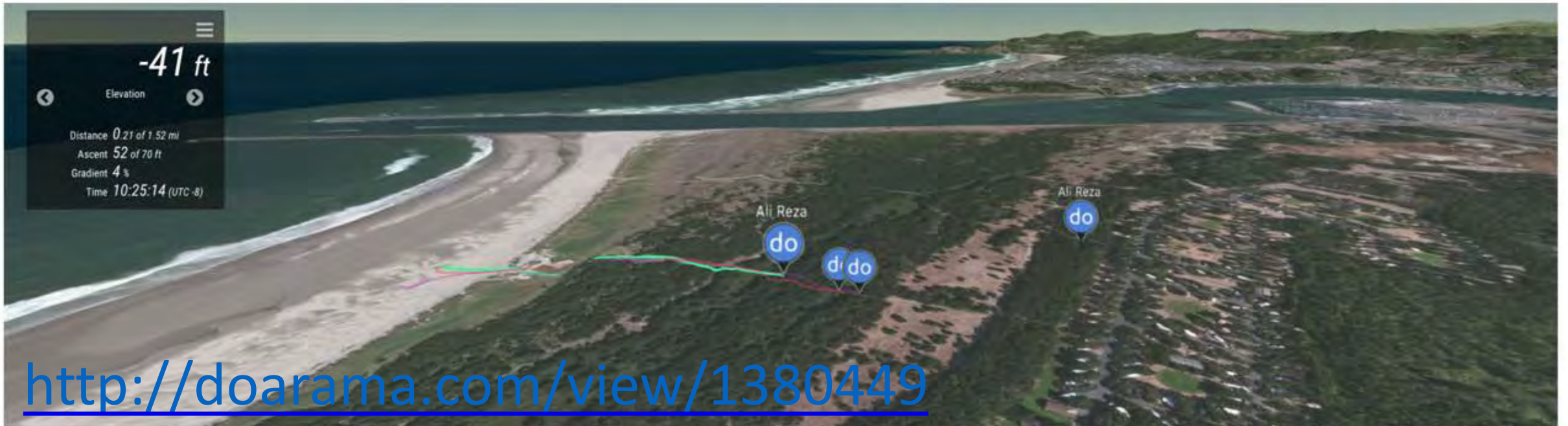


What are my best options?

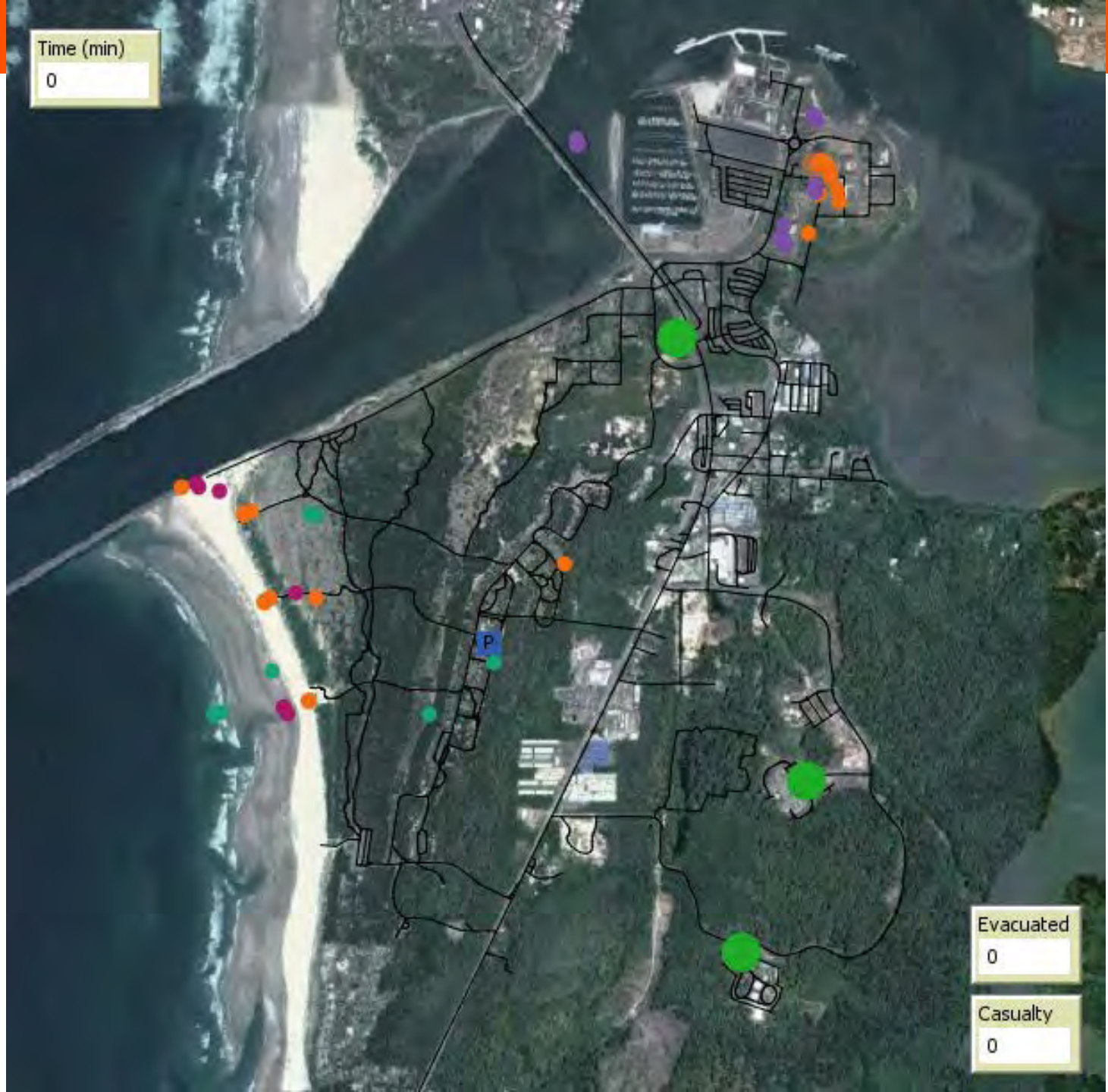
- Which route is the best?
- Which mode is the best (foot, car)?
- How long do I have?

Group 3: New destination (OCCC),
and new trail (green)

Group 4: New destination (SHH),
and new trail (orange)



<http://doarama.com/view/1380449>



Time (min)
0

Evacuated
0

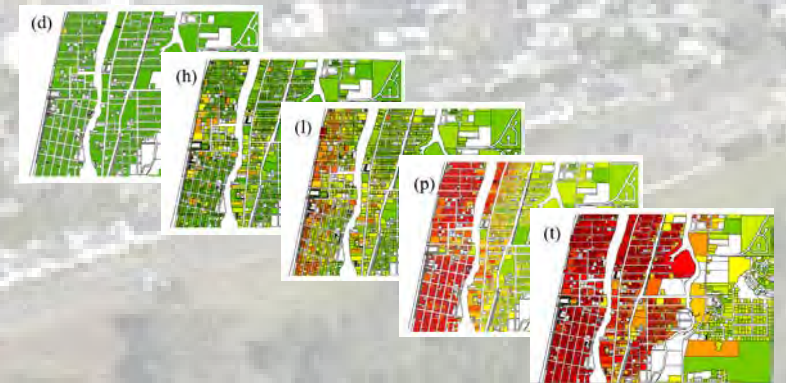
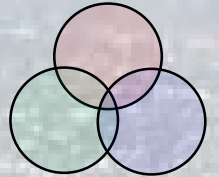
Casualty
0

Summary of 2017 evacuation drills in south Newport area

Date	N	Who	Purpose
2.18.17	13	OSU grad students	Pilot test, logistics of working remotely
5.11.17	52	OSU, Oregon Parks, Teen CERT, HMSC, volunteers	Collect travel trajectory, user surveys, debrief
6.16.17	11	HMSC employees and students	Add OCCC destination
6.29.17	28	OSU undergrads (SURF)	Add scenario, role playing. No maps or cell phone.
7.13.17	19	HMSC REU students	Night drill (HMSC-SHH)
8.10.17	50	HMSC REU, OMSI camp	Night drill, role playing
Total	173		

Summary

- Disaster Resilience → Hazard Science + Engineering + Socio-economic science
- New ASCE Tsunami Codes
 - ✓ Consistent with other hazards
 - ✓ Extensive peer review
 - ✓ Structural Countermeasures
 - ✓ Tsunami Vertical Evacuation
- Risk-informed Decision Making
 - ✓ Probabilistic Tsunami Hazard Analysis
 - ✓ Community Scale Damage and Loss Assessment
 - ✓ Interconnected Lifelines → Building functionality,



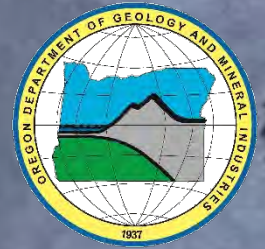
Thank you!

Dan Cox

dan.cox@oregonstate.edu



Oregon State
University

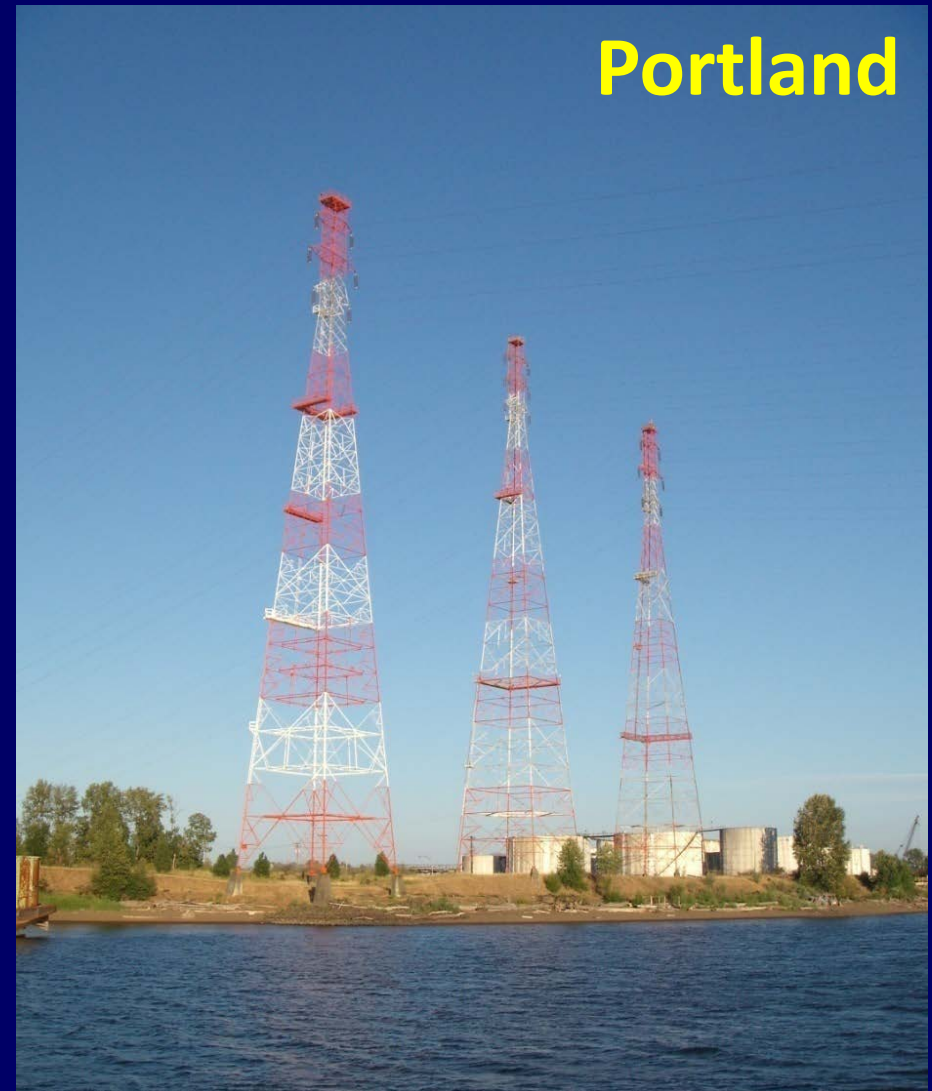


POWER for Coastal Hospitals

YUMEI WANG, OREGON DEPARTMENT OF GEOLOGY AND MINERAL INDUSTRIES March
20-21, 2018 Coastal Hospital Special Leadership Event

Expect Prolonged Electrical Outage

BPA estimates
up to 25 ft movement
towards river



3 Stages of Fuel Disaster Planning

Stage 1: On-Site

- **Seismically certified generator/emergency power systems**
- Fuel supply
- *FEMA 1019 reference (display copy)*

Stage 2: Local supplies

- Hospitals work with local supplier/distributor and County
- Non-retail “card lock” facilities, gas stations, other
- Viable transportation route for delivery

Stage 3: **3 weeks** until State’s post-disaster delivery

- Hospitals work w/ County
- County work w/ State



Need Uninterrupted Fuel Supply

CSZ
EQT



3 weeks



Stage 1: On-Site Fuel

Stage 2: Local Fuel Options
(e.g., Card Lock Facility)

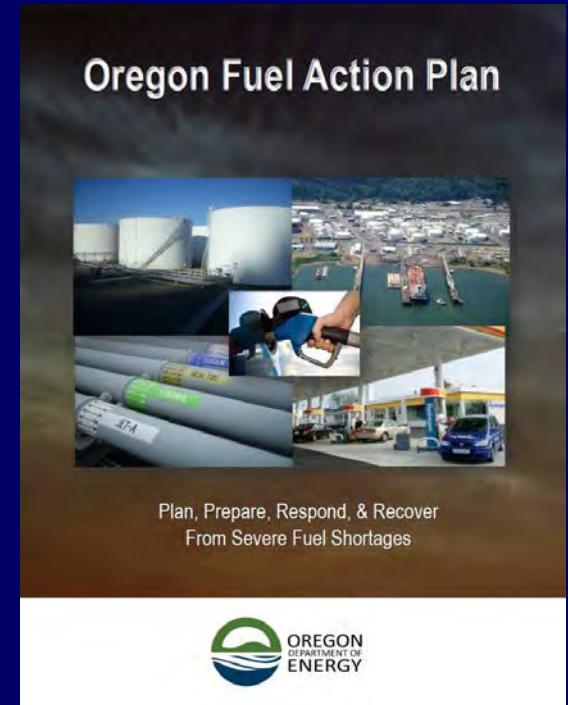
Stage 3: State Delivers
to County



Source: DOGAMI



Source: DOGAMI



Stage 1: On-Site Generation



Flexible Connections



Source: DOGAMI



Strapped Batteries



Anchored for earthquake shaking



Seismically Certified Generator!



On-Site Fuel Tank (5,000 gal)

Flexible
Connections



Source: DOGAMI



Source: DOGAMI



Fuel Disaster Planning

Stage 1: On-Site emergency power system

Stage 2: Local fuel supply

Stage 3: Post-disaster delivery by State in 3 weeks

➤ ***Future Stage: Resilient local power source & microgrid***

- ***Operating hospitals with generators is challenging***
- ***Initial discussions with Tillamook PUD***
- ***ODOE is co-developing local energy resilience guidance***



Oregon Fuel Action Plan

Presentation to Coastal
Hospitals' Leadership

Deanna Henry
Emergency Preparedness
Manager

March 21, 2018



State Declared Emergency – Management of Resources (ORS 401.188)

- ✓ Control, restrict, and regulate the use of food, feed, **fuel**, clothing, and other commodities, materials, goods, and services

Oregon Department of Energy (ODOE) Authority – (ORS 176.750-785)

- ✓ Develop and maintain a statewide contingency plan in response to petroleum shortages that impact Oregon
- ✓ Provide adequate fuel supplies to maintain emergency services, transportation, and the operation of the economy to ensure the health, safety, and welfare of the residents of the State of Oregon while an emergency exists

Fuel Executive Order

- ✓ Authorizes ODOE to implement the strategies in the Oregon Fuel Action Plan in response to a Cascadia Subduction Zone Earthquake and Tsunami

Federal State Structure

EMERGENCY SUPPORT FUNCTIONS (ESFs)

ESF	SECTOR	PRIMARY STATE AGENCY
1	Transportation	Oregon Department of Transportation
2	Communications	Oregon Public Utility Commission Oregon Department of Administrative Services
3	Public Works	Oregon Department of Transportation
4	Firefighting	Oregon State Fire Marshal Oregon Department of Forestry
5	Information and Planning	Oregon Emergency Management
6	Mass Care	Oregon Department of Human Services
7	Resource Support	Oregon Department of Administrative Services
8	Health and Medical	Oregon Health Authority
9	Search and Rescue	Oregon Emergency Management Oregon State Fire Marshal
10	Hazardous Materials	Oregon State Fire Marshal Oregon Department of Environmental Quality
11	Food and Water	Oregon Department of Human Services
12	Energy	Oregon Department of Energy (nuclear-petroleum-LNG) Oregon Public Utility Commission (<i>electricity-natural gas</i>)
13	Military Support	Oregon Military Department
14	Public Information	Oregon Emergency Management
15	Volunteers and Donations	Oregon Emergency Management
16	Law Enforcement	Oregon State Police
17	Agriculture and Animal Protection	Oregon Department of Agriculture
18	Business and Industry	Oregon Emergency Management

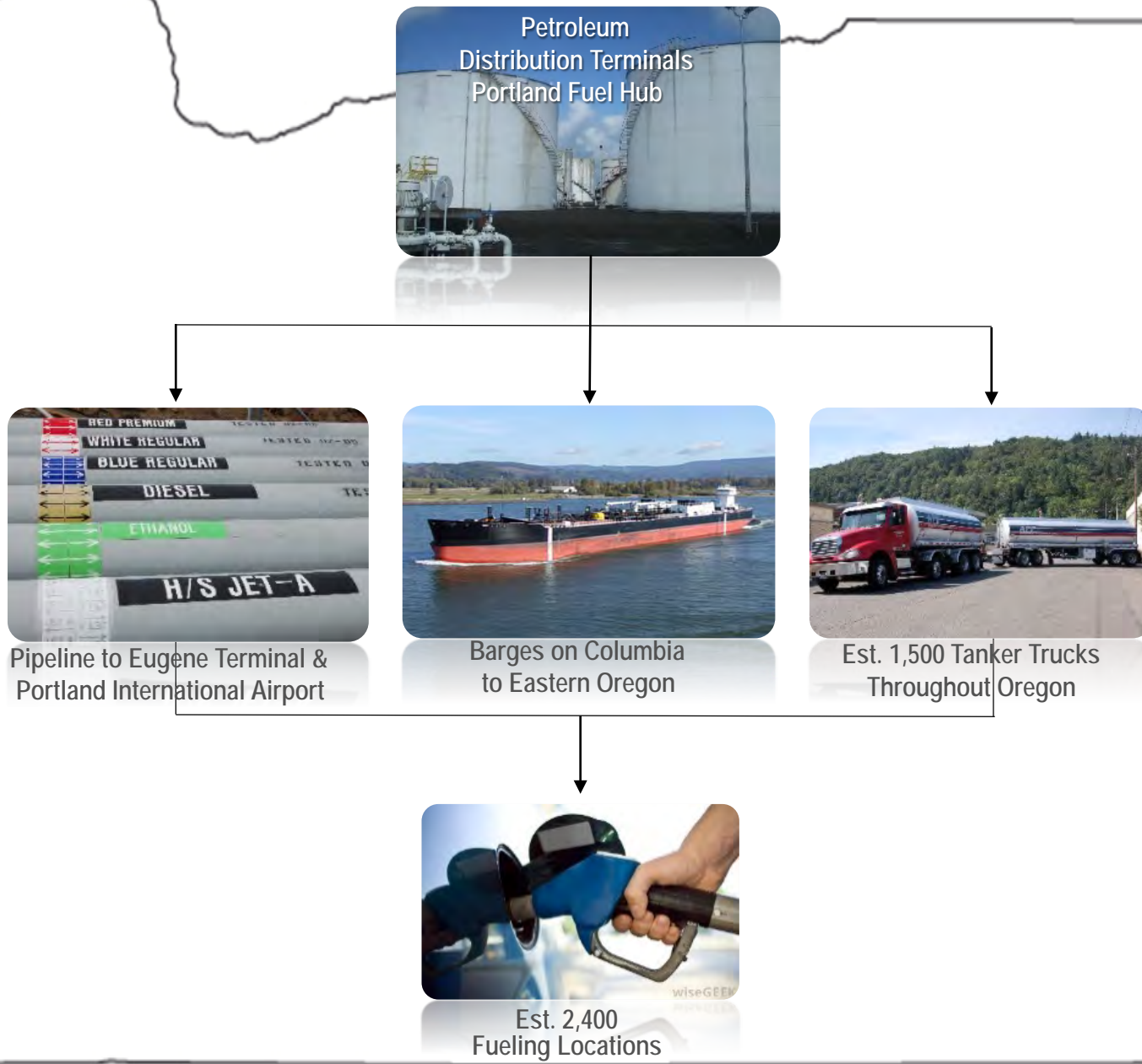
- Designated lead state and federal agency for each ESF sector
- ESF 12 federal lead is U.S. Department of Energy
- Structure for states to request and receive federal and military resources in response to emergencies

Oregon Imports 100 Percent of the State's Refined Petroleum Products

- Washington refineries supply more than 90 percent
 - ✓ About 75 percent by Olympic Pipeline to Oregon
 - ✓ Remaining product by tanker ships to Oregon
 - ✓ Portland Fuel Hub – located on liquefiable soils
anticipate significant fuel supply loss
- Utah refineries supply less than 5 percent to eastern Oregon communities
- California refineries supply less than 5 percent to southern Oregon communities

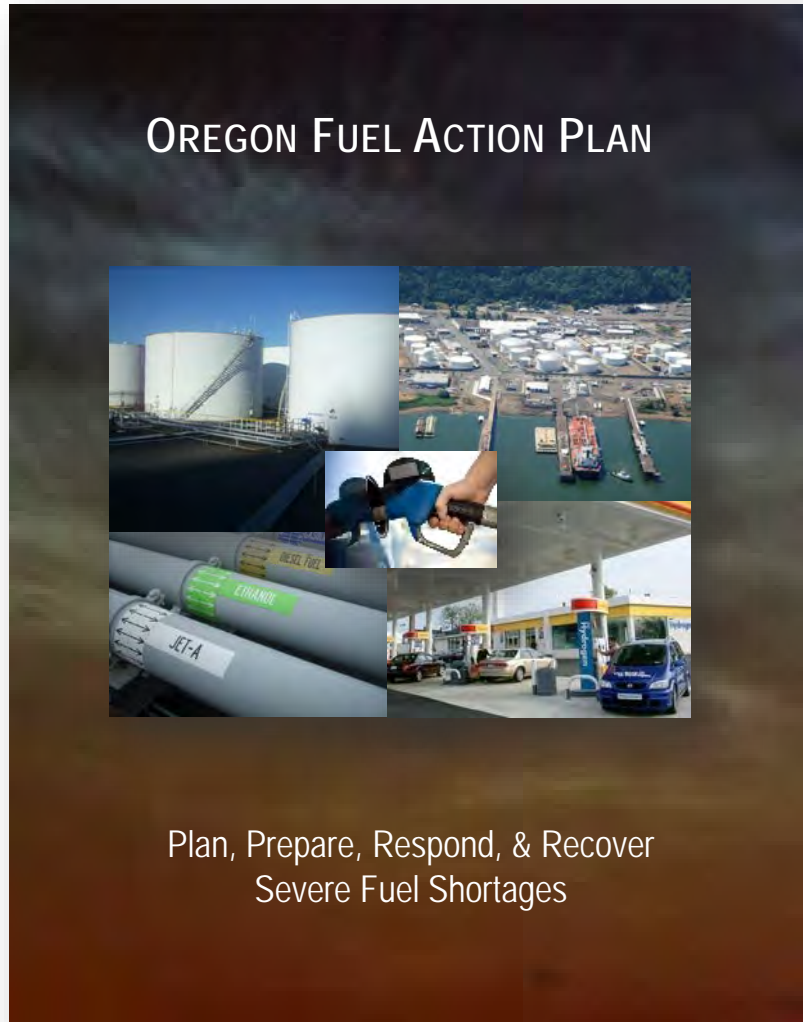


Oregon Fuel Supply & Distribution System



- Annual fuel imports estimated at three billion gallons
- Six day fuel delivery cycle
- Product delivered throughout Oregon by pipeline, barges, and tanker trucks

Oregon Fuel Action Plan



- Identifies ODOE authority and responsibilities to control and direct the state's overall response to petroleum emergencies
- Provides structure for federal, state, county, tribal, and industry coordination
- Provides structure for fuel allocation that identifies pre-approved priority users of fuel and user responsibilities
- Identifies state and county priority lifeline routes to support fuel deliveries
- Pre-designates Fuel Points of Distribution (FPOD) for receiving emergency fuel

Oregon Fuel Action Plan: 9 Priority Actions



Action 1	Action 2	Action 3	Action 4	Action 5	Action 6	Action 7	Action 8	Actions 9
Notification Activation and Authorities	Public Information	Damage Assessment	Assess Fuel Needs & Determine Priorities	Outside Assistance: Fuel Supply	Fuel Conservation Measures	Temporary Waivers	Fuel Allocation	Recovery
<ul style="list-style-type: none"> - Initial Notifications - Activate ODOE AOC - Succession & Authorities 	<ul style="list-style-type: none"> - ODOE Fuel Emergency Outlook Web Page - Public Information Campaign – social media - News conferences - Telephone Information Center 	<ul style="list-style-type: none"> - Assess impacts to petroleum infrastructure - Estimate timeline for repairs - Provide fuel sector info & status updates 	<ul style="list-style-type: none"> - Assess fuel availability in Oregon - Assess 18 state ESFs, counties, and tribal fuel needs - Determine state & regional fuel priorities - Governor's Disaster Cabinet 	<ul style="list-style-type: none"> - Identify & obtain fuel source - Identify viable fuel delivery options into Oregon - Identify viable options for dispensing fuel 	<ul style="list-style-type: none"> - Issue voluntary fuel conservation measures - Issue mandatory fuel conservation measures 	<ul style="list-style-type: none"> - Obtain temporary environmental operational, and safety waivers as needed to ensure the timely delivery of fuel 	<ul style="list-style-type: none"> - Review & approve/deny fuel requests <i>(ESF Primary State Agencies, counties & tribes)</i> - Allocate fuel to approved state agencies, counties & tribes - Odd/Even Fuel Allocation - Fuel Request Form Provided 	<ul style="list-style-type: none"> - Allocate fuel to support recovery activities - State Recovery Coordinating Team - SRF 6 - Governor's Recovery Cabinet - Terminate fuel recovery activities as appropriate

Fuel Allocation: Saving Lives, Restoring Critical Lifelines & Services



Challenge – Allocating fuel to emergency and essential service providers in the state involves 120 state agencies, 36 counties, 240 cities, and 9 federally-recognized tribes

Standardized Structure – Identifies three categories of priority fuel users:

- 18 ESF Primary State Agencies
- 36 Counties
- 9 Federally-Recognized Tribes



Priority Fuel Users: Responsibilities

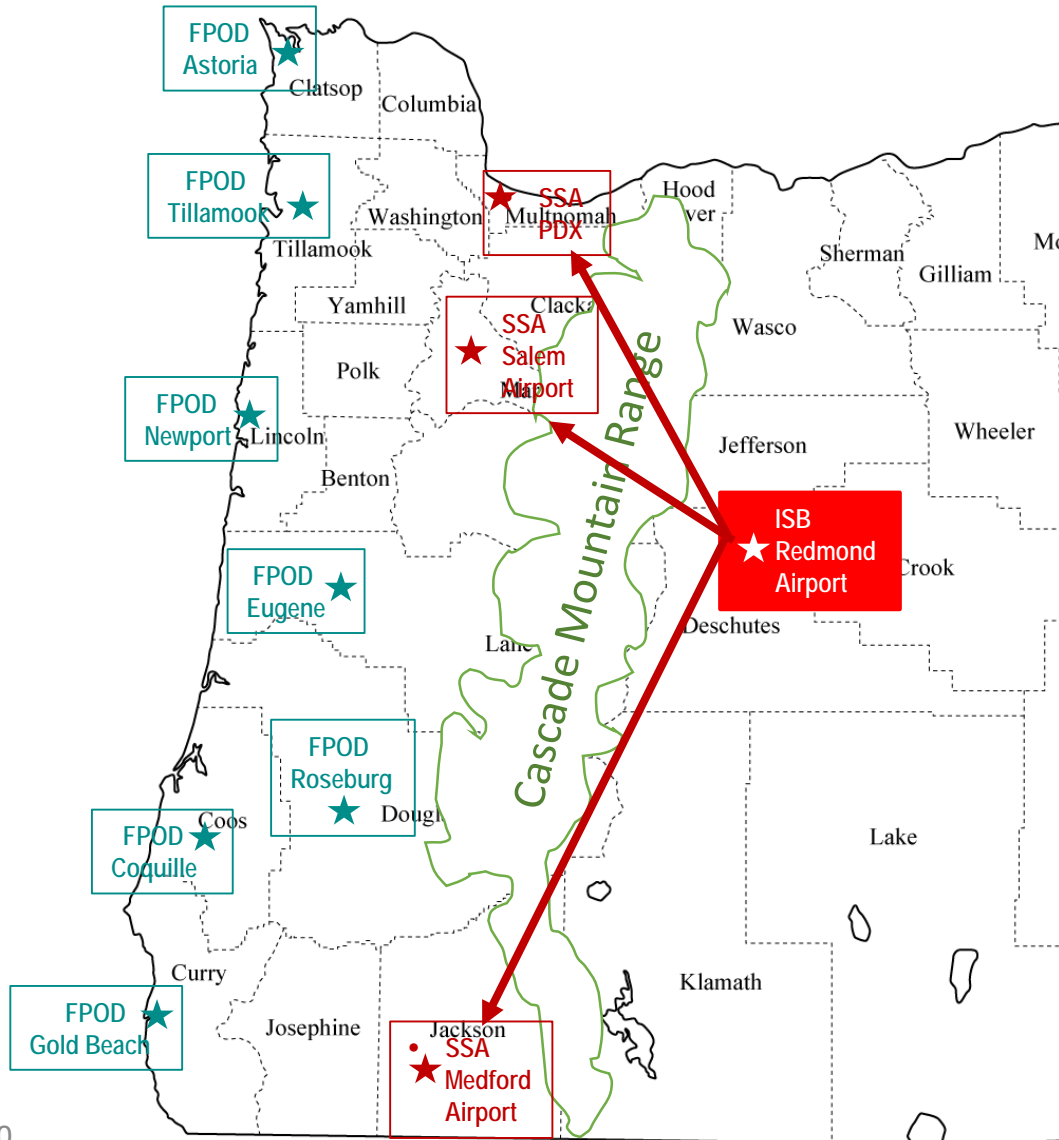


County	City	Name	Address	State	Zip	Capacity (gallons)	Fuel Type	Above Below	Backup Power	Longitude	Latitude
Wheeler	Fossil	Faa	Kinzua Rd	OR	97830	1,000-4,999	Diesel	Above		0.0000000	0.0000000
Wheeler	Fossil	Fossil Fill-Up, Llc	609 W Main St	OR	97830	2000	Gasoline	Underground		-120.2138429	44.9991949
Wheeler	Fossil	Fossil Fill-Up, Llc	609 W Main St	OR	97830	2000	Diesel	Underground		-120.2138429	44.9991949
Wheeler	Fossil	Fossil Fuel Inc	750 6Th St	OR	97830	10,000-49,999	Petroleum Distillates	Above		0.0000000	0.0000000
Wheeler	Fossil	Fossil Fuel Inc	750 6Th St	OR	97830	5,000-9,999	Petroleum Distillates	Above		0.0000000	0.0000000
Wheeler	Fossil	Fossil Fuel Inc	750 6Th St	OR	97830	10,000-49,999	Petroleum Distillates	Above		0.0000000	0.0000000
Wheeler	Fossil	Fossil Fuel Inc	750 6Th St	OR	97830	5,000-9,999	Diesel Fuel High Sulfur	Above		0.0000000	0.0000000
Wheeler	Fossil	Fossil Fuel Inc	750 6Th St	OR	97830	10,000-49,999	Diesel Fuel Low Sulfur	Above		0.0000000	0.0000000
Wheeler	Fossil	Fossil Fuel Inc	750 6Th St	OR	97830	10,000-49,999	Gasoline Unleaded	Above		0.0000000	0.0000000
Wheeler	Fossil	Wheeler County	115 1St St	OR	97830	500-999	Gasoline	Above		-120.2188156	44.9998682
Wheeler	Fossil	Wheeler County	115 1St St	OR	97830	500-999	Diesel Fuel	Above		-120.2188156	44.9998682
Wheeler	Kimberly	Faa	Se 1/4 Section 3	OR	97848	1,000-4,999	Diesel	Above		0.0000000	0.0000000
Wheeler	Mitchell	Fossil Fuel Inc	101 Main St	OR	97750	1,000-4,999	Petroleum Distillates	Above		-120.1543244	44.5667935
Wheeler	Mitchell	Fossil Fuel Inc	101 Main St	OR	97750	1,000-4,999	Petroleum Distillates	Above		-120.1543244	44.5667935
Wheeler	Mitchell	Fossil Fuel Inc	101 Main St	OR	97750	1,000-4,999	Petroleum Distillates	Above		-120.1543244	44.5667935
Wheeler	Mitchell	Fossil Fuel Inc	101 Main St	OR	97750	1,000-4,999	Diesel Fuel Low Sulfur	Above		-120.1543244	44.5667935
Wheeler	Mitchell	Fossil Fuel Inc	101 Main St	OR	97750	1,000-4,999	Gasoline Unleaded	Above		-120.1543244	44.5667935
Wheeler	Mitchell	Fossil Fuel Inc	101 Main St	OR	97750	1,000-4,999	Diesel Fuel High Sulfur	Above		-120.1543244	44.5667935
Wheeler	Mitchell	Wheeler County	500 Ww 26	OR	97750	500-999	Gasoline	Above		-120.1593730	44.5685329
Wheeler	Mitchell	Wheeler County	500 Ww 26	OR	97750	500-999	Diesel Fuel	Above		-120.1593730	44.5685329
Wheeler	Spray	Lazy Wolf Resort Llc	607 Willow Hwy 19	OR	97874	10,000-49,999	Gasoline Unleaded	Above		-119.7936725	44.8331353
Wheeler	Spray	Lazy Wolf Resort Llc	607 Willow Hwy 19	OR	97874	1,000-4,999	Diesel Fuel Low Sulfur	Above		-119.7936725	44.8331353
Wheeler	Spray	Lone Elk Market Llc	800 Willow St	OR	97874	1000	Gasoline	Underground		-119.7941967	44.8349497
Wheeler	Spray	Lone Elk Market Llc	800 Willow St	OR	97874	1000	Diesel	Underground		-119.7941967	44.8349497
Wheeler	Spray	Spray School District 1	E Pine & Hwy 19	OR	97874	500-999	Diesel	Above		0.0000000	0.0000000
Wheeler	Spray	Wheeler County	917 Willow St	OR	97874	500-999	Gasoline	Above		-119.7950611	44.8368651
Wheeler	Spray	Wheeler County	917 Willow St	OR	97874	500-999	Diesel Fuel	Above		-119.7950611	44.8368651

Prior to an Emergency

- Identify and assess fuel needs for critical missions for sector or jurisdiction of responsibility
- Identify all fueling locations in the county – Initial fuel source for life safety missions
- **Estimated 3 weeks** before bulk fuel supplies can be brought into some communities

Fuel Strategy: Air Response



INITIAL AIR RESPONSE ACTIVITIES

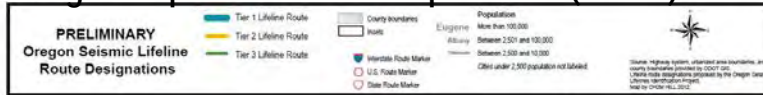
Required Support: Federal, Military, and Industry

Bulk Fuel Source – Outside Region

- Bulk fuel “pushed” into the federal Incident Support Base - Redmond Municipal Airport
- Initial daily bulk fuel push
 - Unleaded gasoline – est. 75,000 gallons
 - Diesel – est. 400,000 gallons
- ODOE directs movement of bulk fuel from federal ISB to State Staging Areas and to the pre-designated fuel points in the impacted communities

Fuel Strategy: State & Local Lifeline Routes

Oregon Department of Transportation (ODOT)



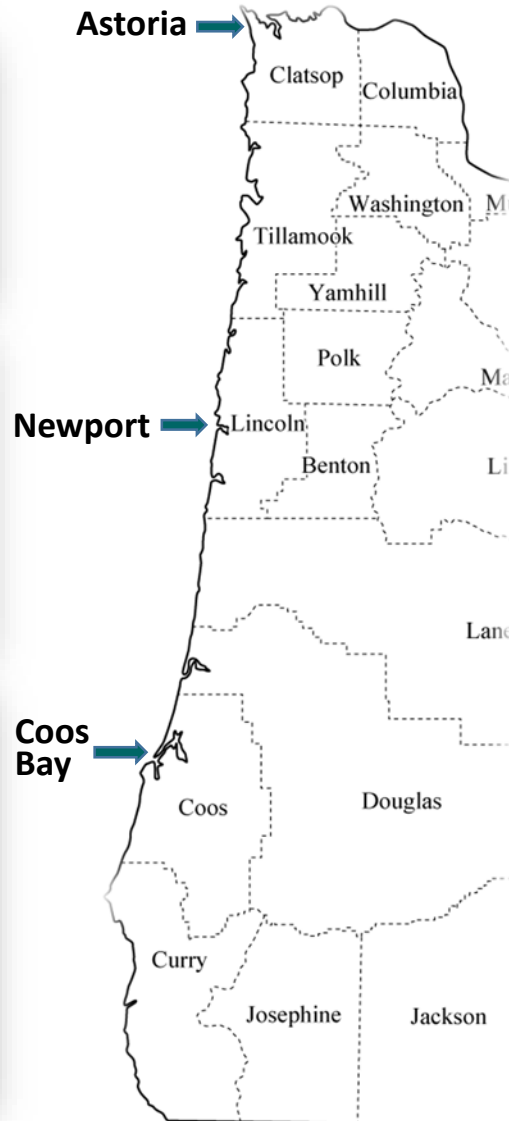
- **State Lifeline Routes** – Guide initial repairs on the transportation, power, and communication systems to support the delivery of fuel to the impacted communities
- **County Lifeline Routes** – Counties to identify local priority routes that connect to state lifeline routes
- **Fuel Points of Distribution (FPOD)** – Pre-designate FPODs to receive emergency fuel supplies



- **Marion County Example:**
 - Identified Tier 1 priority routes connecting to state lifeline routes
 - Pre-designated 9 FPODs to receive emergency bulk fuel supplies

ODOE has fuel data from 24 of 36 counties

Fuel Strategy: Oregon Coast



U.S. MARITIME ADMINISTRATION (MARAD) ASSETS

Fuel Source: Outside Region

Maritime Assets – Deliver bulk fuel and operate portable fueling points along the Oregon Coast

- Ready Reserve Force ships out 7 – 10 days of notification
- Larger MARAD vessels ship out within 30 days of notification

Foreign Vessels – Lift Jones Act to allow foreign vessels to deliver bulk fuel to Oregon ports

- Superstorm Sandy – Foreign vessels shipped 115 million gallons of fuel to ports in New York and New Jersey

Fuel Strategy: Central & Eastern Oregon



VIABLE CRITICAL INFRASTRUCTURE

Working Transportation, Power & Communications Systems

Fuel Source: Pasco Distribution Terminal-Petroleum Industry

- Reliant on petroleum industry to meet fuel demands
- Implement voluntary & mandatory fuel conservation measures if needed
- Implement Odd/Even Fuel Allocation Program if needed
- Implement Public Information Campaign to reduce fuel consumption



Oregon Fuel Action Plan: Next Steps



11 Coastal Hospitals – Ensure properly installed seismically certified generators with adequate fuel stored onsite

Emergency Managers – Ensure county fuel distribution plans include method to deliver fuel to coastal hospitals:

Clatsop: Tiffany Brown

Tillamook: Gordan McCraw

Lincoln: Jenny Demaris

Lane: Linda Cook

Douglas: Wayne Stinson

Coos: Mike Murphy

Curry: Jeremy Dumire

Coast Fuel Exercise – Work with Lincoln County to conduct an exercise to test federal, military, state, and local plans for implementing a fuel management system for coastal communities

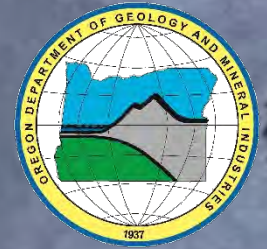
Partnerships

Oregon Fuel Action Plan



Deanna Henry
Emergency Preparedness
Manager
503-932-4428 Mobile
deanna.henry@oregon.gov





WATER for Coastal Hospitals

YUMEI WANG, OREGON DEPARTMENT OF GEOLOGY AND MINERAL INDUSTRIES March
20-21, 2018 Coastal Hospital Special Leadership Event

Hospitals Use a Lot of Water!

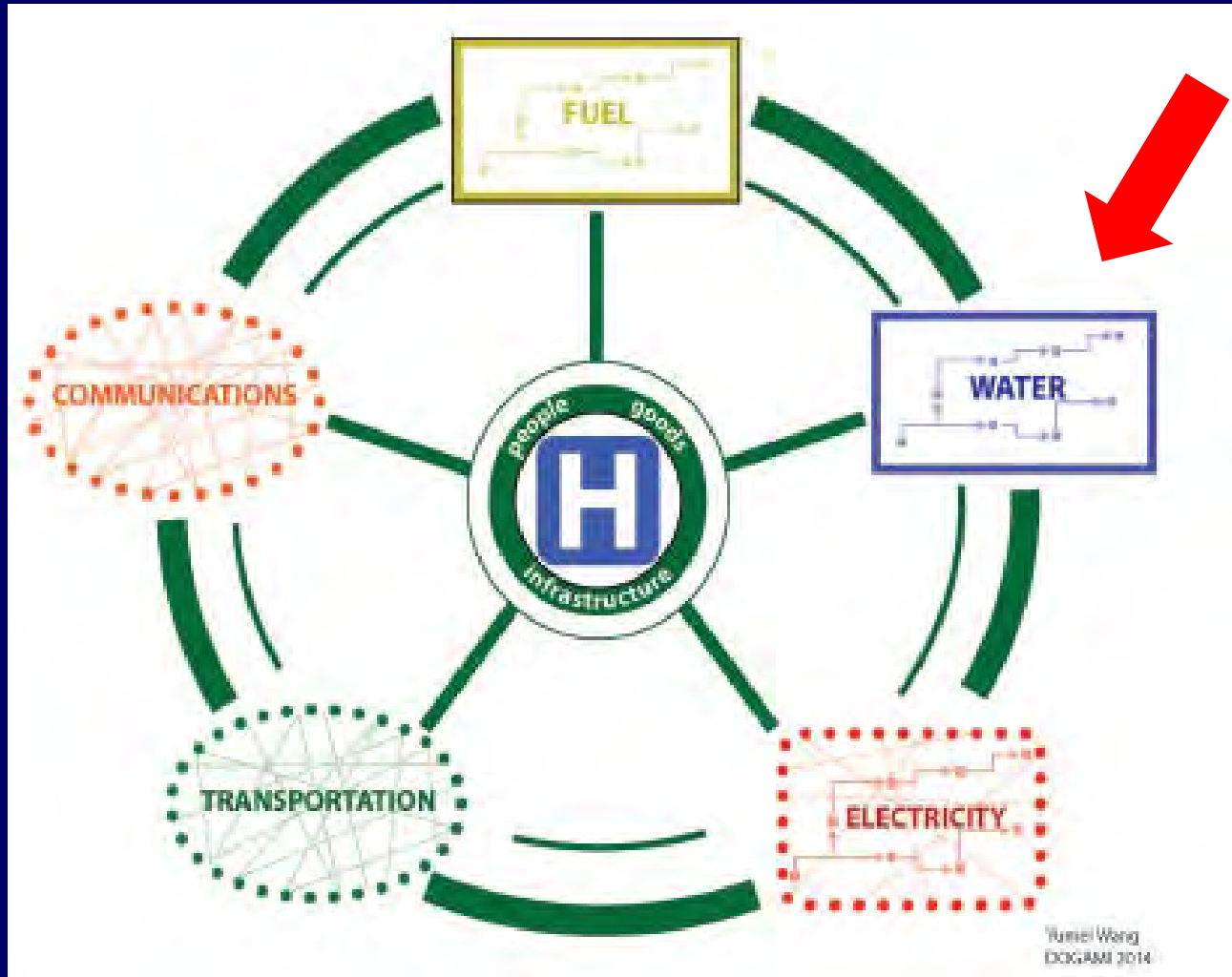
- ✓ Operating water system equipment
- ✓ Uninterrupted water supply

- Hospital Lifeline System Dependencies
- Water System Vulnerabilities
- Hospital Water Disaster Planning



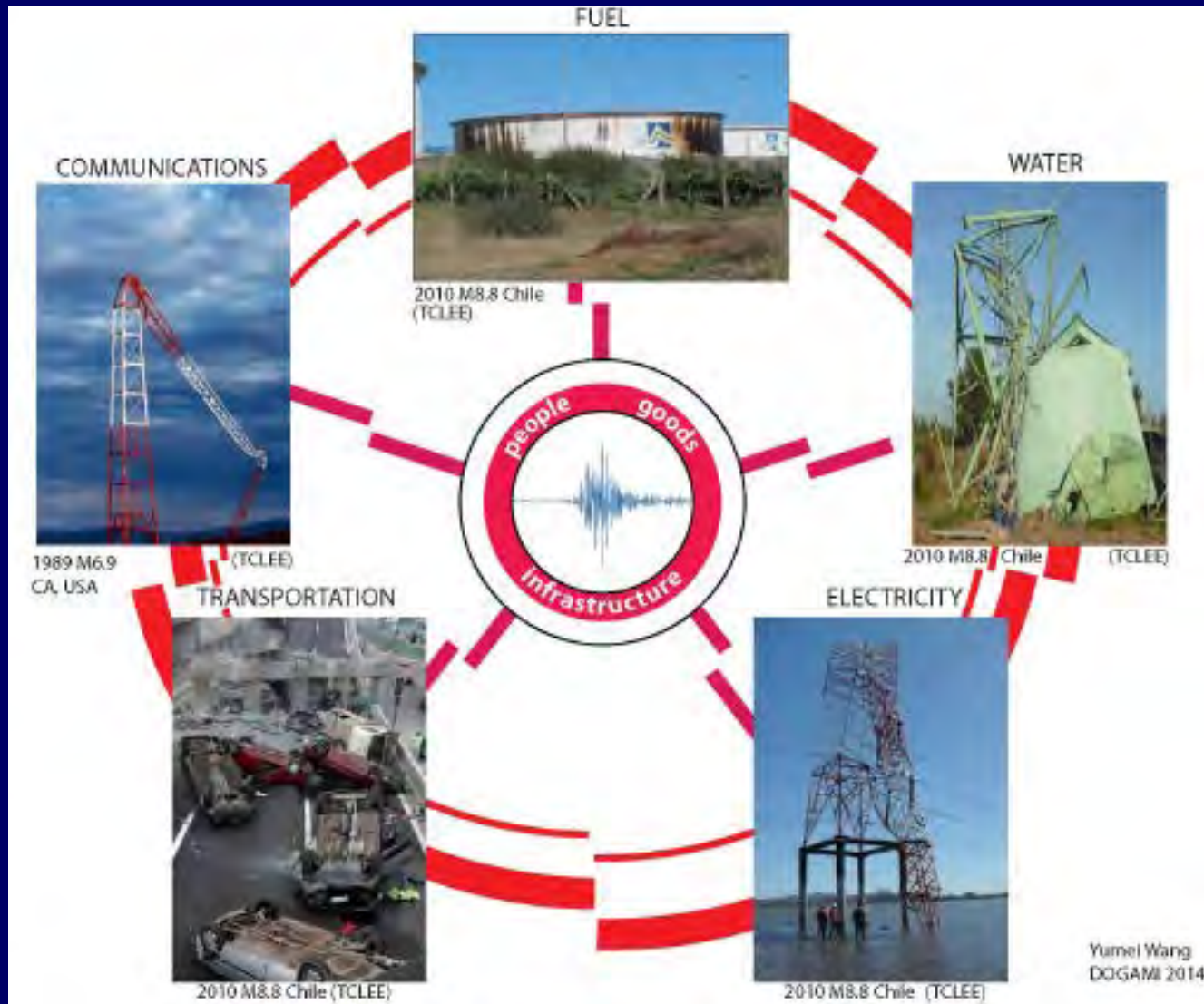
Hospital Lifeline System Dependencies

Normal Conditions

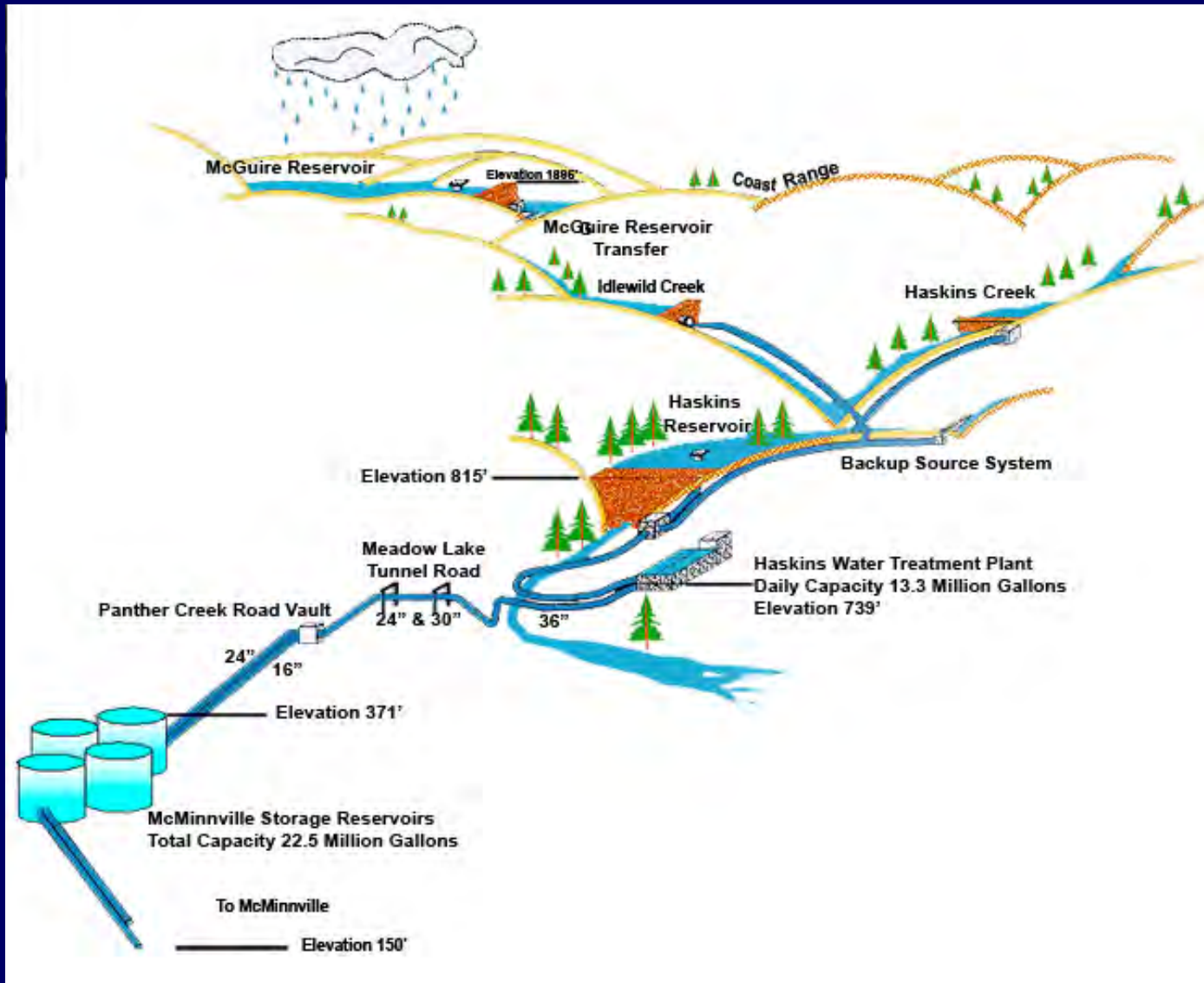


Hospital Lifeline System Dependencies

EARTHQUAKE Disaster Conditions



Typical Features of Water Systems



Liquefaction & Landslide Hazards



8/07 Japan quake



8/07 Japan quake



Liquefaction: Water Bodies & Floodplains



Source: TCLEE member



Source: TCLEE member

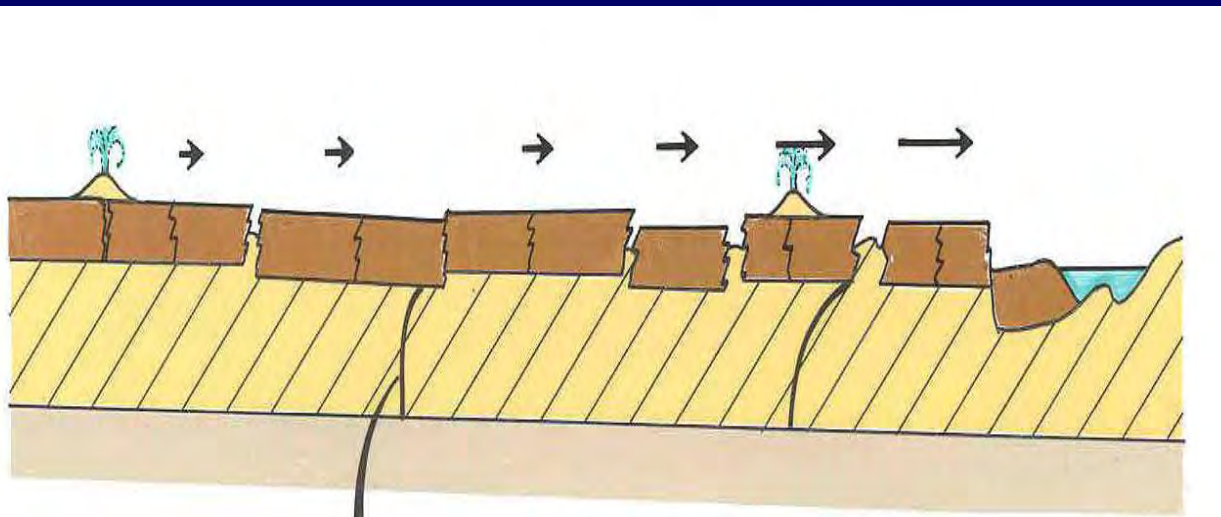


Earthquakes and Water Systems

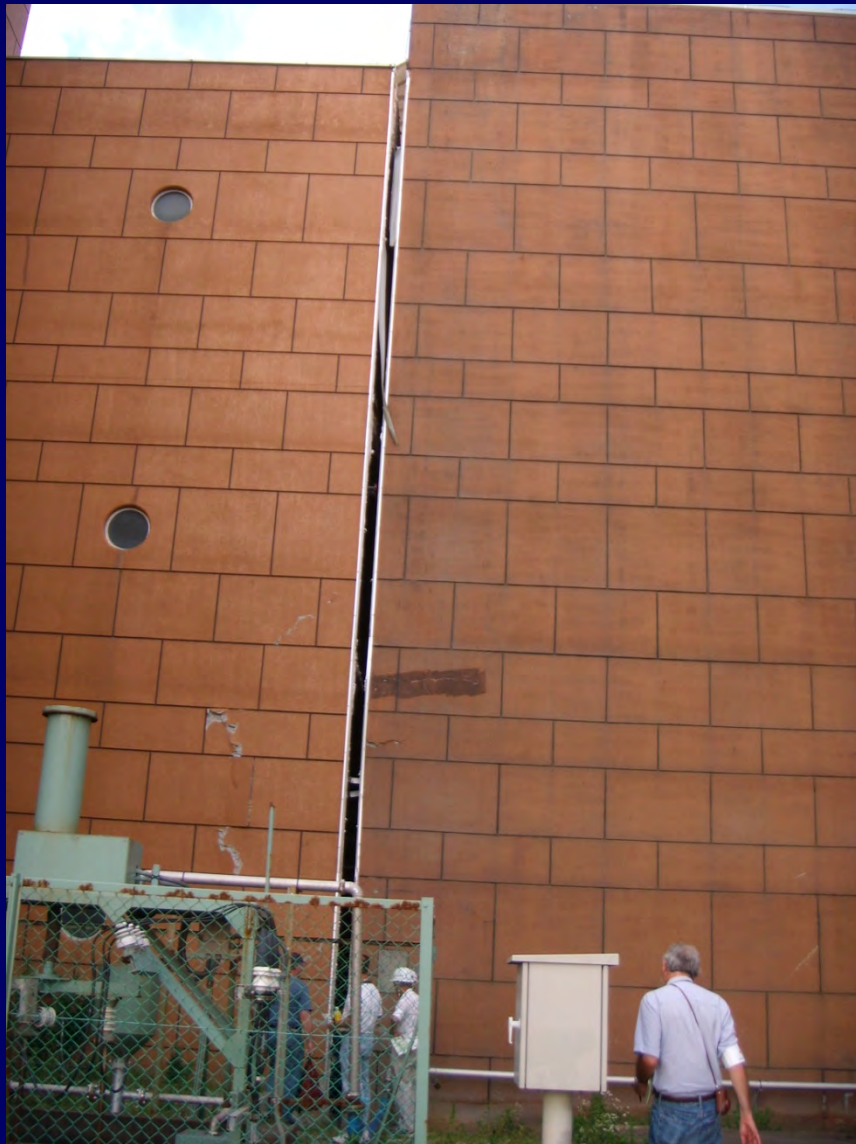
- Damage is commonplace
- Entire water systems can drain
- Protect available supply



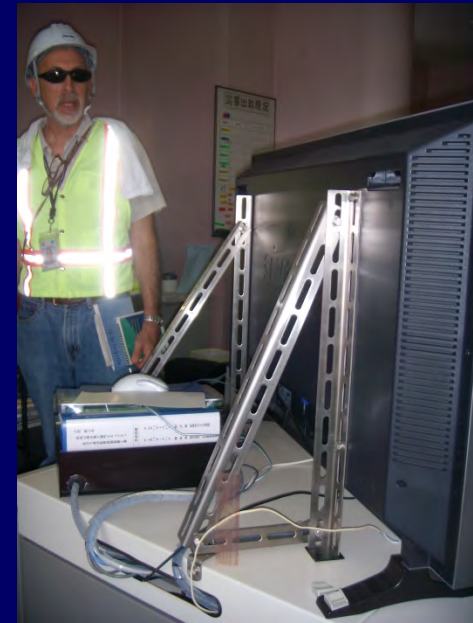
Source: TCLEE member



Water Treatment Plant & Equipment



Source: Yumei Wang



Source: Yumei Wang



Source: Yumei Wang



Water Pipelines Can Fail



Water Tanks Can Fail



Source: TCLEE member



Source: TCLEE member



Why Hospitals Should Work with Water Districts?

Reedsport bridge links Downtown to Uptown carries water transmission main that supplies hospital



Source: City of Reedsport

Hospital Water Disaster Planning

- Purposes: Sheltering and **Operational Capabilities**
- Stage 1: On-site
 - Building system, storage, emergency water purification
- Stage 2: Local supplies
 - **Hospitals plan with water district, city and county**
 - Water stub out
 - Agreements with others (e.g., farm with well water)
- Stage 3: Assistance from the State via County



On-Site: Increase Capabilities

e.g., Water Storage and Purification



Source: DOGAMI



Source: DOGAMI



On-Site: Strengthen Building Systems

California Hospital Components with “Special Seismic Certification”

- Emergency generator systems
- Components w/ hazardous contents
- Elevator equipment
- Smoke control fans
- Exhaust fans
- Switchgear
- Motor control centers
- X-ray machines in fluoroscopy
- CT Scanners
- **Chillers**
- **Cooling towers**
- Transformers
- Electrical substations
- UPS and ACUs
- Distribution panels
- Control panels



Hospitals Plan with Local Water District!

e.g., Emergency Distribution



Source: TCLEE team
3/21/2018

Y. Wang



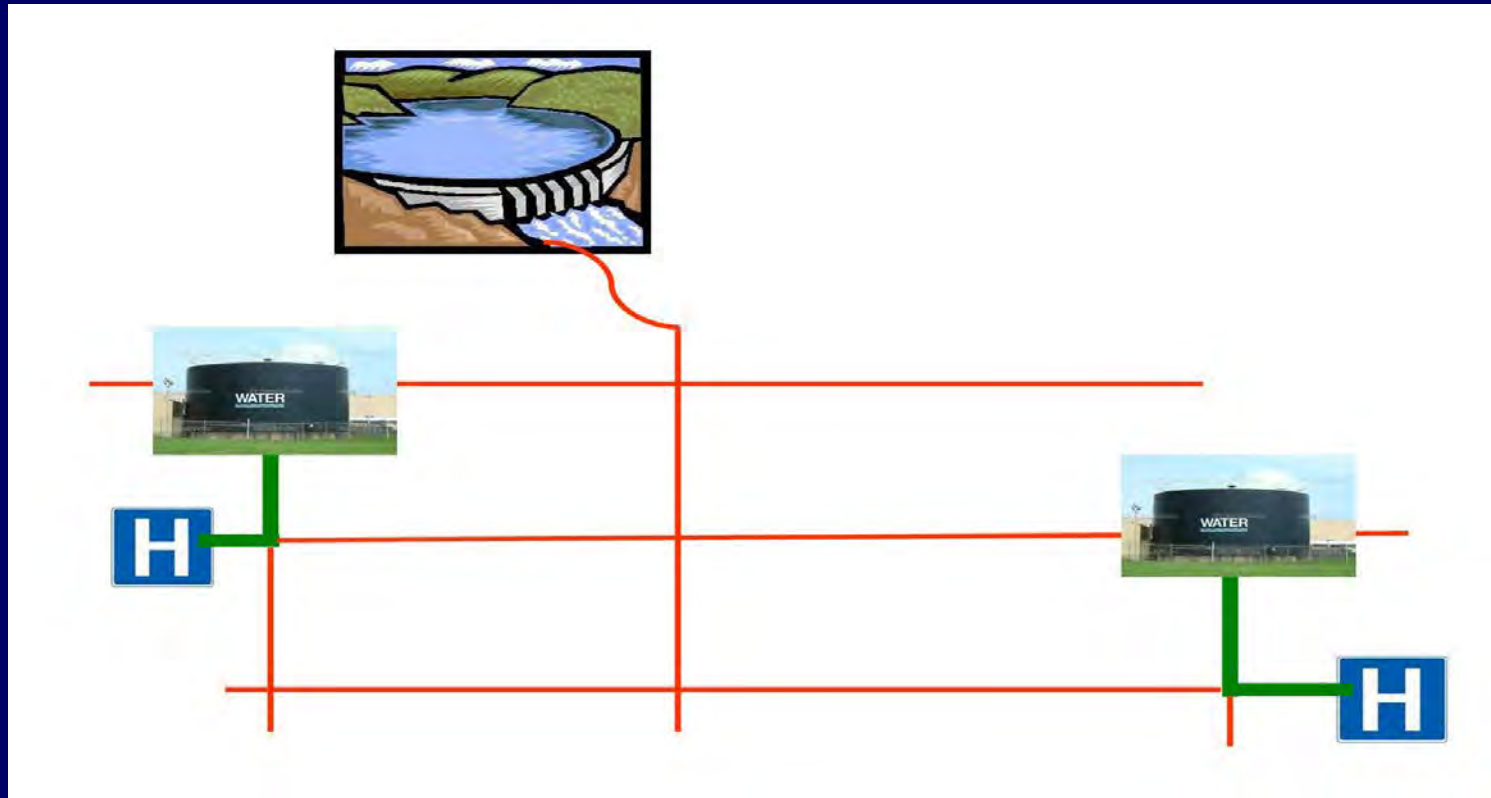
Source: DOGAMI



Hospitals Plan with Local Water District!

Prioritize Hospitals for Seismic Mitigation of Water System

- Strengthen Portion of the Water System: closest Water Tank and Piping to Hospital
- *NEW*: OHA Drinking Water Program requires seismic plans from water districts



Source: Y.Wang, DOGAMI

Seismic Design for Entire Pathway

- Seismically Designed Tank (*AWWA D100*)
- Seismic Shut Off Valve
- Flexible Connection to Tank
- Ductile Water Pipe for Entire Path (esp river crossings)
- (plus a Hospital Stub Out)

**Flexible
Connections to
Tank**



Portland Water Bureau

50 MG Powell Butte Reservoir
City of Portland



Ground-to-Tank Piping Connections

- *Replace rigid connections with flexible*
- *Install seismic shut off valves*

Vulnerable



Source: Portland Water Bureau

Earthquake Damage



Source: TCLEE member

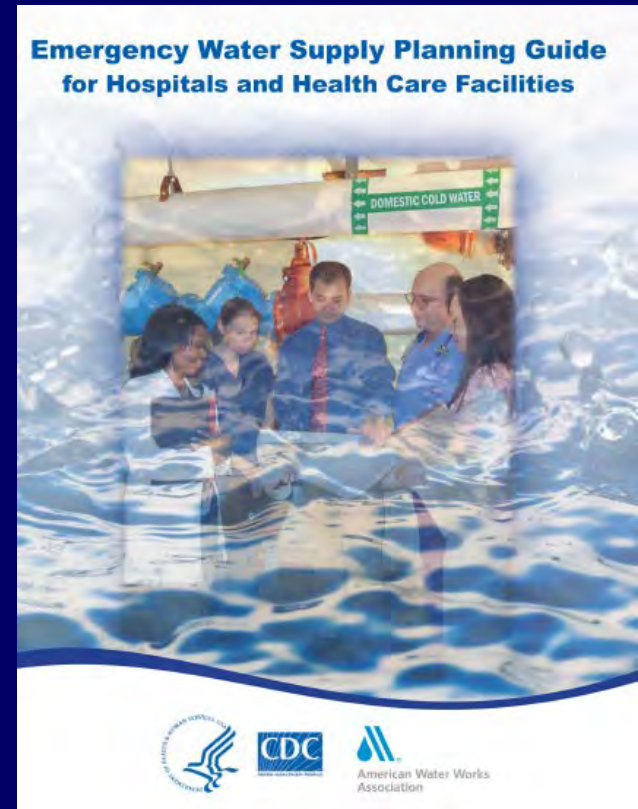


Hospitals Plan with Local Water District and Local Emergency Managers

“Like most hospitals in the Pacific Northwest Salem Hospital has been systematically mitigating the many impacts of a major earthquake since the true earthquake threat was identified just a few decades ago. Today, the **loss of the city’s water supply is the hospital’s single greatest vulnerability to a catastrophic earthquake**, which is why the hospital’s emergency water supply planning team is working with community partners to design a robust, reliable emergency water supply.”

Wayne McFarlin

Salem Health Emergency Preparedness Administrator



Emergency Water Supply Planning Guide for Hospitals and Healthcare Facilities

CDC and American Water Works Association (2012)

www.cdc.gov/healthywater/pdf/emergency/emergency-water-supply-planning-guide.pdf

3/21/2018

Y. Wang



Questions?

www.oregongeology.org



Oshiokuri Hato Tsusen no Zu (Fast Cargo Boat Battling The Waves) 1805
<http://thesoundsinsidemymyhead.blogspot.com/2008/05/hokusais-great-wave.html>





Overview of Catastrophic Response

Oregon Coastal Hospital Special Leadership Conference 2018



HHS Region 10 Regional Emergency Coordinator Program

Content developed by Rick Buell and CAPT John Smart, RECs, HHS Region 10

U.S. DEPARTMENT OF
HEALTH & HUMAN SERVICES



ADM Brett Giroir, MD



The Secretary
Deputy Secretary



Robert Kadlec, MD

Regional Directors

Director, Intergovernmental Affairs, & Secretary's Regional Representatives

Chief of Staff
Executive Secretary

Assistant Secretary for Health

Assistant Secretary, Administration for Children and Families (ACF) ★

Commissioner, Food and Drug Administration (FDA) ★

General Counsel

Assistant Secretary for Administration & Management

Assistant Secretary, Administration on Aging (AoA)

Administrator, Health Resources and Services Administration (HRSA)

Assistant Secretary for Preparedness and Response

Assistant Secretary for Budget, Technology, & Finance

Administrator, Centers for Medicare & Medicaid Services (CMS)

Director, Indian Health Service (IHS)

Director, Center for Faith-Based and Community Initiatives

Assistant Secretary for Planning & Evaluation

Director, Agency for Healthcare Research and Quality (AHRQ)

Director, National Institutes of Health (NIH)

Director, Office for Civil Rights

Assistant Secretary for Legislation

Director, Centers for Disease Control and Prevention (CDC)

Administrator, Substance Abuse and Mental Health Svcs. Administration (SAMHSA)

Inspector General

Assistant Secretary for Public Affairs

Administrator, Agency for Toxic Substances and Disease Registry (ATSDR)

Director, Program Support Center (PSC)

Chair, Departmental Appeals Board

Regional Health Administrators

Surgeon General

Don R. Boyce, JD

Office of Emergency Management



RADM Jerome Adams, MD, MPH

US Public Health Svc Commissioned Corps

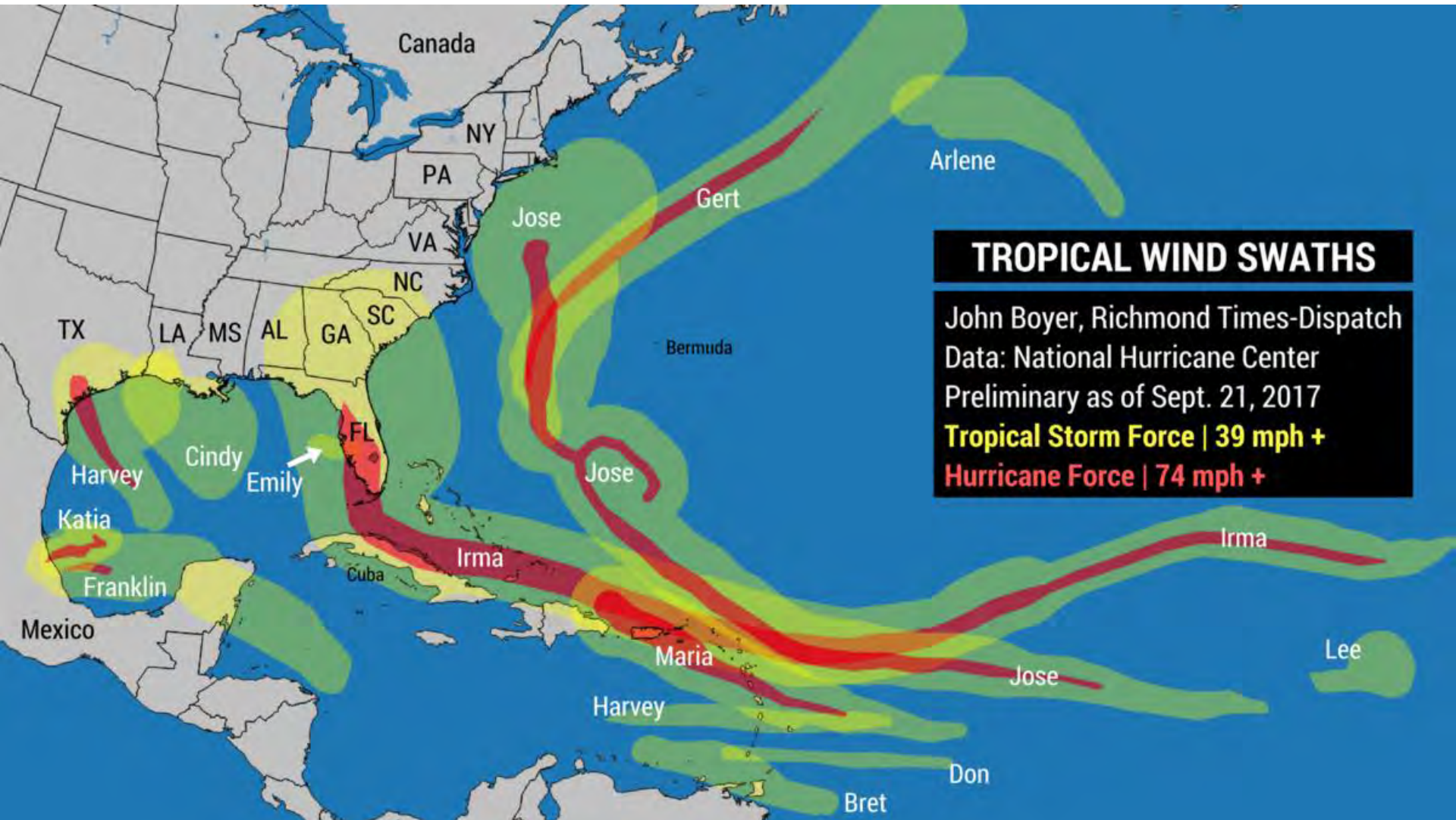


RADM Anne Schuchat, MD

Partner Readiness and Emergency Programs

Regional Emergency Coordinators

★ (Note – ACF and FDA both have regional emergency personnel assigned)

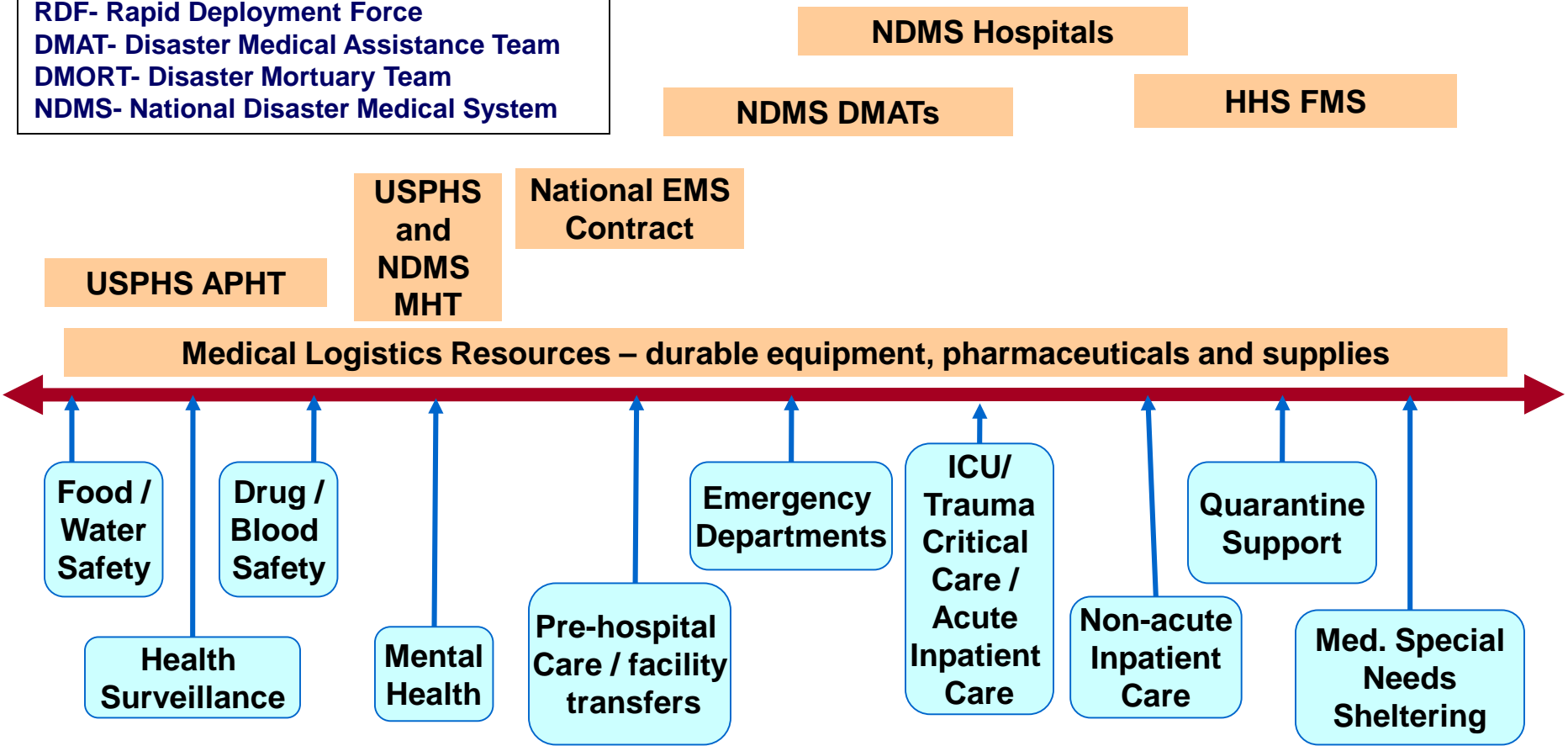




HHS ASPR Continuum of Care



APHT- Applied Public Health Team
MHT- Mental Health Team
RDF- Rapid Deployment Force
DMAT- Disaster Medical Assistance Team
DMORT- Disaster Mortuary Team
NDMS- National Disaster Medical System





HHS ASPR OEM

Resource Availability Summary



Medical Surge

- DMAT
 - Types I, II, III
- MSURT
- RDF
- MHT
- FMS staffed or cache

Fatality Management

- DMORT
- DMORT Assessment

Operational Coordination and Support

- IRCT/LRAT
- RIST
- NIST

Public Health Support

- APHT

Patient Movement

- MAC-T
- SAT
- JPAT

Veterinary Support

- NVRT
- NVRT Assessment



HHS Response

Response and Recovery

from Hurricanes Harvey, Nate Irma and Maria



4,674

Personnel deployed

36,370

Patients assisted

782

Patients evacuated

944

Tons of medical caches moved



DoD HURRICANE MARIA RESPONSE TIMELINE

DEPLOYMENT AND EMPLOYMENT

SUSTAINED RESPONSE

Postured Pre-landfall:

SAR, IAA, ASMC*, CAISE*,
TRANSCOM-Strat Air (C-130/C-17 alert)

* Previously supporting IRMA

T10 Peak #s

T10: 8,116 11 OCT
T10 RW: 55 20 OCT
T10 FW: 19 05 OCT

DoD Support

T10 Total: 3,600
T10 BoG: 99
RW: 19
FW: 10

T10 Total: 2,839
T10 BoG: 564
RW: 14
FW: 5

T10 Total: 3,315
T10 BoG: 1,032
RW: 12
FW: 13

6,501
2,055
48
19

7,781
3,408
55
4

LF VI
19

LF PR
20

19 Sep

20 Sep

21 Sep

22 Sep

25 Sep

28 Sep

29 Sep

02 Oct

05 Oct

20 Oct

Irma response Assets in VI/PR reposition to prep for Maria

Hurricane Maria Makes Landfall

Major Disaster declared for PR
ARG Returns to JOA

APOD Opening USVI, airfields return to service

USMC C2 ashore in PR to increase APOD capacity

Move Federal Law Enforcement Officers to support SAR / Protection

USNS Comfort departs homeport

Commodity distro ongoing

Transport family & responders out of PR by DoD air

Pre-positioned assets conduct initial response

SJU re-open (Lim)
APOD / SPOD Opening PR

3 A/P in PR Open (Mil)

LTG Buchanan deploys to PR

Strengthening Guajataca Dam

POTUS visits PR & USVI

Speaker of House visit PR

KLE with Puerto Rico governor

Deployed Medium Lift Helo / Light Truck Capabilities

105 fuel trucks, w/drivers, arrive in PR

VPOTUS, CODEL visit PR

14th CSH Operational

STT & STX A/P Closed

Hospital Assessments

USNS Comfort begins movement around PR

66 of 67 Hospitals open



UNCLASSIFIED

DoD Hurricane Maria Response

- DSCA from the sea in VIPR + HA/DR
- Overcoming distance & damaged infrastructure
- Transition of lead FCCs
- C2 and liaison structures in PR
- Route clearance and commodity distribution
- HHS and the medical CONOPS for VIPR
- Other Contingencies
- Strategic messaging
- Disaster Area Circulation
- Drawing down the mission



- Communications, Assessment, Situational Awareness



Lessons Observed

- Transportation, Medical Logistics, EMS



Lessons Observed

- Support “wrap around” services, Pt. movement





Lessons Observed



- Business continuity
- Recovery – temp medical facilities
- EMAC – Emergency Management Assistance Compacts

Feedback Forms

Feedback Form

**Coastal Hospital Special Leadership Event
Held on March 20-21, 2018 in Newport, Oregon**

Overall Event purposes:

- Elevate understanding of the impact of a Cascadia Subduction Zone Earthquake and Tsunami
- Encourage progressive ways to prepare to be able to serve coastal communities post disaster
- Explore launching a coastal hospital-driven collaborative network

Please submit your completed form before you leave the Event.

Contact Information (optional):

Name: Jerrod Karnofski
Organization: Columbia Memorial Hospital
Email: jkarnofski@columbiamemorial.org
Phone: 503-338-4519

1. What is your primary profession?

- Hospital executive
- Hospital emergency planner or coordinator
- Medical clinician
- Hospital facilities
- Public health
- Elected official
- Local government
- Other (fill in) _____

2. At what level did the Coastal Hospital Special Leadership Event meet your expectations?

- Did not meet my expectations
- Met my expectations
- Exceeded my expectations

3. Did this Event elevate your understanding of the impact of a Cascadia Subduction Zone Earthquake and Tsunami? (Event Purpose #1)

- Yes
- No
- Some

Comment: Briefly describe your new understanding of the impact

We are working hard to prepare, but we need renewed focus + resources.

4. Did this Event encourage progressive ways for you to prepare to be able to serve coastal communities post disaster? (Event Purpose #2)

- Yes
- No
- Some

Comments: Briefly describe in what ways you feel encouraged

5. Did this Event help explore launching a coastal hospital-driven collaborative network? (Event Purpose #3)
- Yes
 No
 Some

Comments: Briefly describe if you would like to participate in a hospital-driven collaborative network
~~when~~ we need to work collaboratively. Many of our organizations' buildings will not exist.

6. Did you learn anything new that is especially helpful? If yes, what?

We are not prepared to have our generator & fuel tank ready for an earthquake.

7. Meeting others with shared concerns was one of the informal objectives of this event. Did you meet anyone that was especially helpful to meet? If yes, who and why?

Emergency management from Providence Seaside, Tillamook General, & Curry General.

8. Are there any earthquake preparedness actions you plan to take as a result of this Event? If yes, what?

Investigate water preparedness & fuel availability & onsite storage of both.
More drills are needed & more training for staff.

9. What did you especially like about the Event? (goals, sessions, speakers, participant input, etc.). Why?

I liked the multiple disciplines at one event.

10. What did you not like about the Event? (goals, sessions, speakers, participant input, etc.). Why?

I thought introductions could be several minutes shorter & save more time for presentations. Maybe have bios in the packet so we can just read through it?

11. Do you have any other comments?

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- Explore launching a coastal hospital-driven collaborative network

Please submit your completed form before you leave the Event.

Contact Information (optional):

Name: Dan Cox
Organization: Oregon State University
Email: dan.cox@oregonstate.edu
Phone: 541 737 3831

1. What is your primary profession?

- Hospital executive
- Hospital emergency planner or coordinator
- Medical clinician
- Hospital facilities
- Public health
- Elected official
- Local government
- Other (fill in) Academic/researcher-education

2. At what level did the Coastal Hospital Special Leadership Event meet your expectations?

- Did not meet my expectations
- Met my expectations
- Exceeded my expectations

3. Did this Event elevate your understanding of the impact of a Cascadia Subduction Zone Earthquake and Tsunami? (Event Purpose #1)

- Yes
- No
- Some

Comment: Briefly describe your new understanding of the impact

How CSZ impacts hospitals, coastal Oregon, Emergency Management

4. Did this Event encourage progressive ways for you to prepare to be able to serve coastal communities post disaster? (Event Purpose #2)

- Yes
- No
- Some

Comments: Briefly describe in what ways you feel encouraged

Good network of people. CEO's gave strong support of the mission

5. Did this Event help explore launching a coastal hospital-driven collaborative network? (Event Purpose #3)

- Yes
 No
 Some

Comments: Briefly describe if you would like to participate in a hospital-driven collaborative network

Looky at critical life lines water, fuel, power

6. Did you learn anything new that is especially helpful? If yes, what?

What hospitals + committees are already doing

7. Meeting others with shared concerns was one of the informal objectives of this event. Did you meet anyone that was especially helpful to meet? If yes, who and why?

Everyone was great

8. Are there any earthquake preparedness actions you plan to take as a result of this Event? If yes, what?

Personally, no. I've already prepared - lot

9. What did you especially like about the Event? (goals, sessions, speakers, participant input, etc.). Why?

- venue - excellent. "informal" setting, promotes discussion
- knowledge - people in the room had a lot of understanding of CSZ + priorities + what the needs are
- format - generated a lot of discussion

10. What did you not like about the Event? (goals, sessions, speakers, participant input, etc.). Why?

Will a participant list be made available?

11. Do you have any other comments?

Great meeting! Thank you for organizing it

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- Explore launching a coastal hospital-driven collaborative network

Please submit your completed form before you leave the Event.

Contact Information (optional):

Name: _____
Organization: _____
Email: _____
Phone: _____

1. What is your primary profession?

- Hospital executive
- Hospital emergency planner or coordinator
- Medical clinician
- Hospital facilities
- Public health
- Elected official
- Local government
- Other (fill in) _____

2. At what level did the Coastal Hospital Special Leadership Event meet your expectations?

- Did not meet my expectations
- Met my expectations
- Exceeded my expectations

3. Did this Event elevate your understanding of the impact of a Cascadia Subduction Zone Earthquake and Tsunami? (Event Purpose #1)

- Yes
- No
- Some

Comment: Briefly describe your new understanding of the impact

4. Did this Event encourage progressive ways for you to prepare to be able to serve coastal communities post disaster? (Event Purpose #2)

- Yes
- No
- Some

Comments: Briefly describe in what ways you feel encouraged

5. Did this Event help explore launching a coastal hospital-driven collaborative network? (Event Purpose #3)

Yes

No

Some

Comments: Briefly describe if you would like to participate in a hospital-driven collaborative network

A straw proposal for what this might look like and for people to react to, would have made this more productive

6. Did you learn anything new that is especially helpful? If yes, what?

7. Meeting others with shared concerns was one of the informal objectives of this event. Did you meet anyone that was especially helpful to meet? If yes, who and why?

Yes.

8. Are there any earthquake preparedness actions you plan to take as a result of this Event? If yes, what?

9. What did you especially like about the Event? (goals, sessions, speakers, participant input, etc.). Why?

10. What did you not like about the Event? (goals, sessions, speakers, participant input, etc.). Why?

At times, especially on the first day, most things were too general

11. Do you have any other comments?

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For questions, contact Akiko Saito, Oregon Health Authority (OHA), at Akiko.Saito@state.or.us

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- Explore launching a coastal hospital-driven collaborative network

Please submit your completed form before you leave the Event.

Contact Information (optional):

Name: MICAH T GOETZ
Organization: SHS
Email: mgoetz@samhealth.org
Phone: 541-905-2924

1. What is your primary profession?
- Hospital executive
 - Hospital emergency planner or coordinator
 - Medical clinician
 - Hospital facilities
 - Public health
 - Elected official
 - Local government
 - Other (fill in) _____

2. At what level did the Coastal Hospital Special Leadership Event meet your expectations?
- Did not meet my expectations
 - Met my expectations
 - Exceeded my expectations

3. Did this Event elevate your understanding of the impact of a Cascadia Subduction Zone Earthquake and Tsunami? (Event Purpose #1)
- Yes
 - No
 - Some

Comment: Briefly describe your new understanding of the impact

BETTER UNDERSTANDING
of STATE LEVEL PLANS

4. Did this Event encourage progressive ways for you to prepare to be able to serve coastal communities post disaster? (Event Purpose #2)
- Yes
 - No
 - Some

Comments: Briefly describe in what ways you feel encouraged

NO ONE IS UNDER ANY
ILLUSIONS OF WHAT WE
ARE UP AGAINST

5. Did this Event help explore launching a coastal hospital-driven collaborative network? (Event Purpose #3)

- Yes
 No
 Some

Comments: Briefly describe if you would like to participate in a hospital-driven collaborative network

TO BE USEFUL THERE NEEDS TO BE A TANGIBLE OUTCOME

6. Did you learn anything new that is especially helpful? If yes, what?

YES, SOME NEW IDEAS FROM OTHERS

7. Meeting others with shared concerns was one of the informal objectives of this event. Did you meet anyone that was especially helpful to meet? If yes, who and why?

YES, JOHN SMART, ASPR

8. Are there any earthquake preparedness actions you plan to take as a result of this Event? If yes, what?

MEETING W/ WATER DISTRICTS

9. What did you especially like about the Event? (goals, sessions, speakers, participant input, etc.). Why?

HOSPITAL CEO'S PRESENCE. WE NEED THAT BUY-IN

10. What did you not like about the Event? (goals, sessions, speakers, participant input, etc.). Why?

FACILITIES WERE SEGREGATED BY TYPE/LOCATION. BREAK UP THE GROUPS FOR STIMULATING CONVERSATION.

11. Do you have any other comments?

I WOULD BE INTERESTED IN ANY PLANNING MEETINGS AT STATE LEVEL WHERE HOSPITAL INPUT IS DESIRED.

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- Explore launching a coastal hospital-driven collaborative network

Please submit your completed form before you leave the Event.

Contact Information (optional):

Name: Erica Mason
Organization: Sumneritan Health Services
Email: Emason@Sumhealth.org
Phone: 503-971-8199

1. What is your primary profession?

- Hospital executive
- Hospital emergency planner or coordinator
- Medical clinician
- Hospital facilities
- Public health
- Elected official
- Local government
- Other (fill in) _____

2. At what level did the Coastal Hospital Special Leadership Event meet your expectations?

- Did not meet my expectations
- Met my expectations
- Exceeded my expectations

3. Did this Event elevate your understanding of the impact of a Cascadia Subduction Zone Earthquake and Tsunami? (Event Purpose #1)

- Yes
- No
- Some

Comment: Briefly describe your new understanding of the impact

4. Did this Event encourage progressive ways for you to prepare to be able to serve coastal communities post disaster? (Event Purpose #2)

- Yes
- No
- Some

Comments: Briefly describe in what ways you feel encouraged

looking for more of the "How to" for issues.

5. Did this Event help explore launching a coastal hospital-driven collaborative network? (Event Purpose #3)

- Yes
 No
 Some

Comments: Briefly describe if you would like to participate in a hospital-driven collaborative network

Yes!

6. Did you learn anything new that is especially helpful? If yes, what? ASPR presentation was excellent as it discussed real world issues. Also OSU tsunami simulation was incredible to watch and learn from

7. Meeting others with shared concerns was one of the informal objectives of this event. Did you meet anyone that was especially helpful to meet? If yes, who and why?

Yes. Networking opportunities w/many.

8. Are there any earthquake preparedness actions you plan to take as a result of this Event? If yes, what?

Fatality Planning, Seismic grants (smaller than rehabilitation size)

9. What did you especially like about the Event? (goals, sessions, speakers, participant input, etc.). Why?

I am interested in WAC groups that want to focus on common issues and finding solutions to them. Water, fatality plans, training etc.

10. What did you not like about the Event? (goals, sessions, speakers, participant input, etc.). Why?

11. Do you have any other comments?

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Please submit your completed form before you leave the Event.

Contact Information (optional):

Name: Valerie Aikman, RN, BSN
Organization: Bay Area Hospital
Email: valerieaikman@gmail.com
Phone: 505.577.5023

please put me
on contact list
(VA)

1. What is your primary profession?

- Hospital executive leader; Trauma Program Manager
- Hospital emergency planner or coordinator
- Medical clinician
- Hospital facilities
- Public health
- Elected official
- Local government
- Other (fill in) _____

2. At what level did the Coastal Hospital Special Leadership Event meet your expectations?

- Did not meet my expectations
- Met my expectations
- Exceeded my expectations

3. Did this Event elevate your understanding of the impact of a Cascadia Subduction Zone Earthquake and Tsunami? (Event Purpose #1)

- Yes
- No
- Some

Comment: Briefly describe your new understanding of the impact

Excellent work!

4. Did this Event encourage progressive ways for you to prepare to be able to serve coastal communities post disaster? (Event Purpose #2)

- Yes
- No
- Some

Comments: Briefly describe in what ways you feel encouraged

5. Did this Event help explore launching a coastal hospital-driven collaborative network? (Event Purpose #3)

- Yes
 No
 Some

Comments: Briefly describe if you would like to participate in a hospital-driven collaborative network

Even @ the Grass roots level.

6. Did you learn anything new that is especially helpful? If yes, what?

How much planning? work that has been done all ready. BAAH just needs to be @ that table, to benefit from everything done so far & going forward.

7. Meeting others with shared concerns was one of the informal objectives of this event. Did you meet anyone that was especially helpful to meet? If yes, who and why?

Oh yes David Sanford, Bill Giles, Beth DePen, Yumei Wang, Akiko Saito, Erica, Micah, Dewayne, Mike Murphy AND more. Deanna Henry!

8. Are there any earthquake preparedness actions you plan to take as a result of this Event? If yes, what?

Take this info in a presentation format to our 'C' Suite, Quality, facilities leadership

9. What did you especially like about the Event? (goals, sessions, speakers, participant input, etc.). Why?

These wonderful people in the room.

10. What did you not like about the Event? (goals, sessions, speakers, participant input, etc.). Why?

I can't think of a thing.

11. Do you have any other comments?

Excellent venue; very easy to learn; history in the beautiful environment.
loved the timing; organization of the event.

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- Explore launching a coastal hospital-driven collaborative network

Please submit your completed form before you leave the Event.

Contact Information (optional):

Name: Michael Murphy
Organization: Coos County Emergency Management
Email: M.Murphy@CO.COOS.OR.US
Phone: 541-396-7790

1. What is your primary profession?

- Hospital executive
- Hospital emergency planner or coordinator
- Medical clinician
- Hospital facilities
- Public health
- Elected official
- Local government
- Other (fill in) COUNTY E.M.

2. At what level did the Coastal Hospital Special Leadership Event meet your expectations?

- Did not meet my expectations
- Met my expectations
- Exceeded my expectations

3. Did this Event elevate your understanding of the impact of a Cascadia Subduction Zone Earthquake and Tsunami? (Event Purpose #1)

- Yes
- No
- Some

Comment: Briefly describe your new understanding of the impact From Hospital Perspective

4. Did this Event encourage progressive ways for you to prepare to be able to serve coastal communities post disaster? (Event Purpose #2)

- Yes
- No
- Some

Comments: Briefly describe in what ways you feel encouraged
opened channels for Dialog

5. Did this Event help explore launching a coastal hospital-driven collaborative network? (Event Purpose #3)

Yes

No

Some

Comments: Briefly describe if you would like to participate in a hospital-driven collaborative network

I Hope it works & actually happens

6. Did you learn anything new that is especially helpful? If yes, what?

REINFORCED PRIOR KNOWLEDGE OR CONCERNS

7. Meeting others with shared concerns was one of the informal objectives of this event. Did you meet anyone that was especially helpful to meet? If yes, who and why?

8. Are there any earthquake preparedness actions you plan to take as a result of this Event? If yes, what?

I AM WILLING TO PARTICIPATE WITH HOSPITAL COLLABORATIVE GROUP

9. What did you especially like about the Event? (goals, sessions, speakers, participant input, etc.). Why?

10. What did you not like about the Event? (goals, sessions, speakers, participant input, etc.). Why?

11. Do you have any other comments?

AVOID THE COAST DURING TOURIST SEASON APRIL - OCTOBER

If you would like someone to follow up with you on any of the survey questions, please check the box and fill in your contact info on page 1 (name, phone and email address)

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Please submit your completed form before you leave the Event.

Contact Information (optional):

Name: _____
Organization: _____
Email: _____
Phone: _____

1. What is your primary profession?

- Hospital executive
- Hospital emergency planner or coordinator
- Medical clinician
- Hospital facilities
- Public health
- Elected official
- Local government
- Other (fill in) _____

2. At what level did the Coastal Hospital Special Leadership Event meet your expectations?

- Did not meet my expectations
- Met my expectations
- Exceeded my expectations

3. Did this Event elevate your understanding of the impact of a Cascadia Subduction Zone Earthquake and Tsunami? (Event Purpose #1)

- Yes
- No
- Some

Comment: Briefly describe your new understanding of the impact

4. Did this Event encourage progressive ways for you to prepare to be able to serve coastal communities post disaster? (Event Purpose #2)

- Yes
- No
- Some

Comments: Briefly describe in what ways you feel encouraged

5. Did this Event help explore launching a coastal hospital-driven collaborative network? (Event Purpose #3)

Yes

No

Some

Comments: Briefly describe if you would like to participate in a hospital-driven collaborative network

6. Did you learn anything new that is especially helpful? If yes, what?

7. Meeting others with shared concerns was one of the informal objectives of this event. Did you meet anyone that was especially helpful to meet? If yes, who and why?

8. Are there any earthquake preparedness actions you plan to take as a result of this Event? If yes, what?

9. What did you especially like about the Event? (goals, sessions, speakers, participant input, etc.). Why?

10. What did you not like about the Event? (goals, sessions, speakers, participant input, etc.). Why?

11. Do you have any other comments?

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- Explore launching a coastal hospital-driven collaborative network

Please submit your completed form before you leave the Event.

Contact Information (optional):

Name: Eddie Jurgenson
Organization: Southern Coos Hospital
Email: ediejurgenson@southerncoos.org
Phone: 541 252-1989

1. What is your primary profession?
 - Hospital executive
 - Hospital emergency planner or coordinator
 - Medical clinician
 - Hospital facilities
 - Public health
 - Elected official
 - Local government
 - Other (fill in) _____

2. At what level did the Coastal Hospital Special Leadership Event meet your expectations?
 - Did not meet my expectations
 - Met my expectations
 - Exceeded my expectations

3. Did this Event elevate your understanding of the impact of a Cascadia Subduction Zone Earthquake and Tsunami? (Event Purpose #1)
 - Yes
 - No
 - Some

Comment: Briefly describe your new understanding of the impact

4. Did this Event encourage progressive ways for you to prepare to be able to serve coastal communities post disaster? (Event Purpose #2)
 - Yes
 - No
 - Some

Comments: Briefly describe in what ways you feel encouraged

5. Did this Event help explore launching a coastal hospital-driven collaborative network? (Event Purpose #3)

- Yes
 No
 Some

Comments: Briefly describe if you would like to participate in a hospital-driven collaborative network

6. Did you learn anything new that is especially helpful? If yes, what?

Secondary water source

7. Meeting others with shared concerns was one of the informal objectives of this event. Did you meet anyone that was especially helpful to meet? If yes, who and why?

Beth, Mike Yumei, Akiko

8. Are there any earthquake preparedness actions you plan to take as a result of this Event? If yes, what?

Practice Hospital Wide evaluation

9. What did you especially like about the Event? (goals, sessions, speakers, participant input, etc.). Why?

DAN COX Akiko

10. What did you not like about the Event? (goals, sessions, speakers, participant input, etc.). Why?

11. Do you have any other comments?

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Please submit your completed form before you leave the Event.

Contact Information (optional):

Name: GORDON McCRAW
Organization: TILLAMOOK CO. EMERGENCY MGMT.
Email: gmcraw@co.tillamook.or.us
Phone: 503 842 3412

1. What is your primary profession?

- Hospital executive
- Hospital emergency planner or coordinator
- Medical clinician
- Hospital facilities
- Public health
- Elected official
- Local government
- Other (fill in) _____

2. At what level did the Coastal Hospital Special Leadership Event meet your expectations?

- Did not meet my expectations
- Met my expectations
- Exceeded my expectations

3. Did this Event elevate your understanding of the impact of a Cascadia Subduction Zone Earthquake and Tsunami? (Event Purpose #1)

- Yes
- No
- Some

Comment: Briefly describe your new understanding of the impact

4. Did this Event encourage progressive ways for you to prepare to be able to serve coastal communities post disaster? (Event Purpose #2)

- Yes
- No
- Some

Comments: Briefly describe in what ways you feel encouraged

5. Did this Event help explore launching a coastal hospital-driven collaborative network? (Event Purpose #3)
- Yes
 No
 Some

Comments: Briefly describe if you would like to participate in a hospital-driven collaborative network

6. Did you learn anything new that is especially helpful? If yes, what?

BETTER UNDERSTANDING OF STATE FUEL SUPPLY

7. Meeting others with shared concerns was one of the informal objectives of this event. Did you meet anyone that was especially helpful to meet? If yes, who and why?

KNEW A LOT OF FOLKS ATTENDING ALREADY.

8. Are there any earthquake preparedness actions you plan to take as a result of this Event? If yes, what?

ALREADY IN THE WORKS BECAUSE OF RECENT VISIT BY B YUMED

9. What did you especially like about the Event? (goals, sessions, speakers, participant input, etc.). Why?

GOOD TO GET LIKE DISCIPLINES TOGETHER.

10. What did you not like about the Event? (goals, sessions, speakers, participant input, etc.). Why?

IT WAS ALL GOOD

11. Do you have any other comments?

If you would like someone to follow up with you on any of the survey questions, please check the box and fill in your contact info on page 1 (name, phone and email address)

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- Explore launching a coastal hospital-driven collaborative network

Please submit your completed form before you leave the Event.

Contact Information (optional):

Name: Wayne Alvarez-Rojas
Organization: AHOM / Tillamook Regional Medical Center
Email: wayne.alvarez-rojas@ah.org
Phone: 503-971-303-3373

1. What is your primary profession?

- Hospital executive
- Hospital emergency planner or coordinator
- Medical clinician
- Hospital facilities
- Public health
- Elected official
- Local government
- Other (fill in) _____

2. At what level did the Coastal Hospital Special Leadership Event meet your expectations?

- Did not meet my expectations
- Met my expectations
- Exceeded my expectations

3. Did this Event elevate your understanding of the impact of a Cascadia Subduction Zone Earthquake and Tsunami? (Event Purpose #1)

- Yes
- No
- Some

Comment: Briefly describe your new understanding of the impact

4. Did this Event encourage progressive ways for you to prepare to be able to serve coastal communities post disaster? (Event Purpose #2)

- Yes
- No
- Some

Comments: Briefly describe in what ways you feel encouraged

• ways to prepare were only lightly covered compared to painting a very grim picture of what it will look like.

5. Did this Event help explore launching a coastal hospital-driven collaborative network? (Event Purpose #3)

Yes

No

Some

Comments: Briefly describe if you would like to participate in a hospital-driven collaborative network

6. Did you learn anything new that is especially helpful? If yes, what?

7. Meeting others with shared concerns was one of the informal objectives of this event. Did you meet anyone that was especially helpful to meet? If yes, who and why?

As a facilities person I would have liked to meet more w/ just facilities.

8. Are there any earthquake preparedness actions you plan to take as a result of this Event? If yes, what?

• Review generator seismic certified.

9. What did you especially like about the Event? (goals, sessions, speakers, participant input, etc.). Why?

The Captain's presentation was probably the most important for me.

10. What did you not like about the Event? (goals, sessions, speakers, participant input, etc.). Why?

The venue has great view but too crowded/small.

11. Do you have any other comments?

More breaks even if shorter.

If you would like someone to follow up with you on any of the survey questions, please check the box and fill in your contact info on page 1 (name, phone and email address)

For questions, contact Akiko Saito, Oregon Health Authority (OHA), at Akiko.Saito@state.or.us

Feedback Form

**Coastal Hospital Special Leadership Event
Held on March 20-21, 2018 in Newport, Oregon**

Overall Event purposes:

- Elevate understanding of the impact of a Cascadia Subduction Zone Earthquake and Tsunami
- Encourage progressive ways to prepare to be able to serve coastal communities post disaster
- Explore launching a coastal hospital-driven collaborative network

Please submit your completed form before you leave the Event.

Contact Information (optional):

Name: ERIC SWANSON
Organization: TRMC
Email: ERIC.SWANSON@RN.ORG
Phone: 503.815.2106

1. What is your primary profession?

- Hospital executive
- Hospital emergency planner or coordinator
- Medical clinician
- Hospital facilities
- Public health
- Elected official
- Local government
- Other (fill in) _____

2. At what level did the Coastal Hospital Special Leadership Event meet your expectations?

- Did not meet my expectations
- Met my expectations
- Exceeded my expectations

3. Did this Event elevate your understanding of the impact of a Cascadia Subduction Zone Earthquake and Tsunami? (Event Purpose #1)

- Yes
- No
- Some

Comment: Briefly describe your new understanding of the impact

4. Did this Event encourage progressive ways for you to prepare to be able to serve coastal communities post disaster? (Event Purpose #2)

- Yes
- No
- Some

Comments: Briefly describe in what ways you feel encouraged

5. Did this Event help explore launching a coastal hospital-driven collaborative network? (Event Purpose #3)

- Yes
- No
- Some

Comments: Briefly describe if you would like to participate in a hospital-driven collaborative network

6. Did you learn anything new that is especially helpful? If yes, what?

—

7. Meeting others with shared concerns was one of the informal objectives of this event. Did you meet anyone that was especially helpful to meet? If yes, who and why?

—

8. Are there any earthquake preparedness actions you plan to take as a result of this Event? If yes, what?

—

9. What did you especially like about the Event? (goals, sessions, speakers, participant input, etc.). Why?

10. What did you not like about the Event? (goals, sessions, speakers, participant input, etc.). Why?

The PH LIASION program is non-existent in my community and is frankly over-rated.

11. Do you have any other comments? *We will not rely on that program in an emergency and the assumption that it will be of any benefit in an event is questionable at best.*

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Feedback Form

**Coastal Hospital Special Leadership Event
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- Encourage progressive ways to prepare to be able to serve coastal communities post disaster
- Explore launching a coastal hospital-driven collaborative network

Please submit your completed form before you leave the Event.

Contact Information (optional):

Name: DAVID SANFORD
Organization: CHN
Email: DAVID.SANFORD@CURNYHEALTH.ORG
Phone: 541-373-3084

1. What is your primary profession?

- Hospital executive
- Hospital emergency planner or coordinator
- Medical clinician
- Hospital facilities
- Public health
- Elected official
- Local government
- Other (fill in) _____

2. At what level did the Coastal Hospital Special Leadership Event meet your expectations?

- Did not meet my expectations
- Met my expectations
- Exceeded my expectations

3. Did this Event elevate your understanding of the impact of a Cascadia Subduction Zone Earthquake and Tsunami? (Event Purpose #1)

- Yes
- No
- Some

Comment: Briefly describe your new understanding of the impact

4. Did this Event encourage progressive ways for you to prepare to be able to serve coastal communities post disaster? (Event Purpose #2)

- Yes
- No
- Some

Comments: Briefly describe in what ways you feel encouraged

5. Did this Event help explore launching a coastal hospital-driven collaborative network? (Event Purpose #3)
- Yes
 - No
 - Some

Comments: Briefly describe if you would like to participate in a hospital-driven collaborative network

6. Did you learn anything new that is especially helpful? If yes, what?
7. Meeting others with shared concerns was one of the informal objectives of this event. Did you meet anyone that was especially helpful to meet? If yes, who and why?
8. Are there any earthquake preparedness actions you plan to take as a result of this Event? If yes, what?
9. What did you especially like about the Event? (goals, sessions, speakers, participant input, etc.). Why?
10. What did you not like about the Event? (goals, sessions, speakers, participant input, etc.). Why?
11. Do you have any other comments?

SESSIONS WE WILL HAVE A LOT OF TAKE AWAYS.

Great Platform.

WELL DONE.....

If you would like someone to follow up with you on any of the survey questions, please check the box and fill in your contact info on page 1 (name, phone and email address)

For questions, contact Akiko Saito, Oregon Health Authority (OHA), at Akiko.Saito@state.or.us

Feedback Form

**Coastal Hospital Special Leadership Event
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- Encourage progressive ways to prepare to be able to serve coastal communities post disaster
- Explore launching a coastal hospital-driven collaborative network

Please submit your completed form before you leave the Event.

Contact Information (optional):

Name: Karla Miller
Organization: Curry Health Network
Email: Karla.miller@curryhealth.org
Phone: 541-999-7274

1. What is your primary profession?

- Hospital executive
- Hospital emergency planner or coordinator
- Medical clinician
- Hospital facilities
- Public health
- Elected official
- Local government
- Other (fill in) _____

2. At what level did the Coastal Hospital Special Leadership Event meet your expectations?

- Did not meet my expectations
- Met my expectations
- Exceeded my expectations

3. Did this Event elevate your understanding of the impact of a Cascadia Subduction Zone Earthquake and Tsunami? (Event Purpose #1)

- Yes
- No
- Some

Comment: Briefly describe your new understanding of the impact

Resources available & encouraged
Governmental assistance availability

4. Did this Event encourage progressive ways for you to prepare to be able to serve coastal communities post disaster? (Event Purpose #2)

- Yes
- No
- Some

Comments: Briefly describe in what ways you feel encouraged

Exploring resources to determine existing ideas & methods
both successful & unsuccessful.

5. Did this Event help explore launching a coastal hospital-driven collaborative network? (Event Purpose #3)

- Yes
 No
 Some

Comments: Briefly describe if you would like to participate in a hospital-driven collaborative network

Learning & development. Determining additional assistance available.

6. Did you learn anything new that is especially helpful? If yes, what?

How much information is available from government agencies

7. Meeting others with shared concerns was one of the informal objectives of this event. Did you meet anyone that was especially helpful to meet? If yes, who and why?

Jeremy Dumire ESC, Curry County
Daniel Cox OSU, Coastal & Ocean Engineering

8. Are there any earthquake preparedness actions you plan to take as a result of this Event? If yes, what?

More community networking & (hopefully) planning
Enhanced community, Board of Directors, Admin
Education & participation

9. What did you especially like about the Event? (goals, sessions, speakers, participant input, etc.). Why?

All of it → content, information, format informality,
positive reinforcement.

Terrific group of people!

10. What did you not like about the Event? (goals, sessions, speakers, participant input, etc.). Why?

Space was a little tight for movement, but great for conversing

11. Do you have any other comments?

Thank you!

If you would like someone to follow up with you on any of the survey questions, please check the box and fill in your contact info on page 1 (name, phone and email address)

For questions, contact Akiko Saito, Oregon Health Authority (OHA), at Akiko.Saito@state.or.us

Feedback Form

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- Encourage progressive ways to prepare to be able to serve coastal communities post disaster
- Explore launching a coastal hospital-driven collaborative network

Please submit your completed form before you leave the Event.

Contact Information (optional):

Name: Pat Kirby
Organization: Peace Harbor Medical Center
Email: PKirby@PeaceHealth.org
Phone: 541-902-6710

1. What is your primary profession?

- Hospital executive
- Hospital emergency planner or coordinator
- Medical clinician
- Hospital facilities
- Public health
- Elected official
- Local government
- Other (fill in) _____

2. At what level did the Coastal Hospital Special Leadership Event meet your expectations?

- Did not meet my expectations
- Met my expectations
- Exceeded my expectations

3. Did this Event elevate your understanding of the impact of a Cascadia Subduction Zone Earthquake and Tsunami? (Event Purpose #1)

- Yes
- No
- Some

Comment: Briefly describe your new understanding of the impact

I was pretty elevated to CS event. Always to hear it again elevates the concern.

4. Did this Event encourage progressive ways for you to prepare to be able to serve coastal communities post disaster? (Event Purpose #2)

- Yes
- No
- Some

Comments: Briefly describe in what ways you feel encouraged

Thanks for invited CEO + Board members. Although our CEO was not here, the encouragement that was spoken to them was great.

5. Did this Event help explore launching a coastal hospital-driven collaborative network? (Event Purpose #3)

Yes

No

Some

Comments: Briefly describe if you would like to participate in a hospital-driven collaborative network

the on going efforts for fuel, water, supplies.

6. Did you learn anything new that is especially helpful? If yes, what?

MABS Displacement Negotiator to the State of Oregon.

7. Meeting others with shared concerns was one of the informal objectives of this event. Did you meet anyone that was especially helpful to meet? If yes, who and why?

YES, but can't remember names.

8. Are there any earthquake preparedness actions you plan to take as a result of this Event? If yes, what?

work harder on fuel + water

9. What did you especially like about the Event? (goals, sessions, speakers, participant input, etc.). Why?

The pull to bring the hospitals together

10. What did you not like about the Event? (goals, sessions, speakers, participant input, etc.). Why?

A little bigger room

11. Do you have any other comments?

Thank you very much!

If you would like someone to follow up with you on any of the survey questions, please check the box and fill in your contact info on page 1 (name, phone and email address)

For questions, contact Akiko Saito, Oregon Health Authority (OHA), at Akiko.Saito@state.or.us

Feedback Form

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- Explore launching a coastal hospital-driven collaborative network

Please submit your completed form before you leave the Event.

Contact Information (optional):

Name: Jay Raskin
Organization: OSAPAC
Email: Jay@JayRaskinArchitect.com
Phone: 503-440-0436

1. What is your primary profession?

- Hospital executive
- Hospital emergency planner or coordinator
- Medical clinician
- Hospital facilities
- Public health
- Elected official
- Local government
- Other (fill in) Chair of State Commission

2. At what level did the Coastal Hospital Special Leadership Event meet your expectations?

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- Met my expectations
- Exceeded my expectations

3. Did this Event elevate your understanding of the impact of a Cascadia Subduction Zone Earthquake and Tsunami? (Event Purpose #1)

- Yes
- No
- Some

Comment: Briefly describe your new understanding of the impact

4. Did this Event encourage progressive ways for you to prepare to be able to serve coastal communities post disaster? (Event Purpose #2)

- Yes
- No
- Some

Comments: Briefly describe in what ways you feel encouraged

5. Did this Event help explore launching a coastal hospital-driven collaborative network? (Event Purpose #3)
- Yes
 No
 Some

Comments: Briefly describe if you would like to participate in a hospital-driven collaborative network

help me understand the how and why which will help in developing policy policies to help facilitate them

6. Did you learn anything new that is especially helpful? If yes, what?
yes, learned about ASPR resources
7. Meeting others with shared concerns was one of the informal objectives of this event. Did you meet anyone that was especially helpful to meet? If yes, who and why?
Yes, John Smart
8. Are there any earthquake preparedness actions you plan to take as a result of this Event? If yes, what?
yes - I will be incorporating recommendations & observations into SB ESO report
9. What did you especially like about the Event? (goals, sessions, speakers, participant input, etc.). Why?
how focused, well organized with good speakers
10. What did you not like about the Event? (goals, sessions, speakers, participant input, etc.). Why?
nothing
11. Do you have any other comments?

If you would like someone to follow up with you on any of the survey questions, please check the box and fill in your contact info on page 1 (name, phone and email address)

For questions, contact Akiko Saito, Oregon Health Authority (OHA), at Akiko.Saito@state.or.us

Follow up Correspondence

Good afternoon,

On behalf of OHA, a hearty thanks to you for amazing collaborating on Cascadia earthquake and tsunami preparedness over the past two days! Our conversations about all coastal hospitals being prepared were robust and meaningful due to the enthusiasm and knowledge the group brought together.

Some highlights and identified priorities include:

100% of 11 coastal hospital executive level representation both days

- Rep. David Gombert, a representative of the Coastal Caucus, joined us for the kick off lunch, and other key partners participated
- Welcome from Mike Harryman (Governor's Office) and V.P. Andy Van Pelt from Oregon Association of Hospitals and Health Systems
- Excellent presentations from OSSPAC (Chair), US Health and Human Services, local hospitals, DOGAMI, Dept of Energy, OSU, that spurred productive discussions
- Goal was met to get agreement from hospital executives to build a coastal hospital learning network/ collaborative, and OAHHS agreed to support hospitals
- Priorities were identified: hospital infrastructure (water, power, transportation and communication), community collaboration and policy/ funding opportunities to build coastal resiliency.
- Participant comments such as "this was the most productive meeting" or "this was the best meeting" were made

Below is a list of resources that were discussed and list of attendees is attached. Further contact information can be obtained through your local liaison. A second email containing presentation slides will follow shortly.

We look forward to the formation of a coastal hospital resilience network, and continued collaborations on building Cascadia resilience!

[OHA Health Security, Preparedness & Response Resources for Partners](#)

[Oregon Coastal Hospital Preparing for Cascadia \(DOGAMI technical assistance project report\)](#). Appendix

D include options for a Collaborative Network

[CDC Emergency Water Supply Planning Guide](#)

[FEMA 1019 emergency power guide](#)

[Pharmacy Memorandum of Understanding \(MOU\)](#)

[OMA Crisis Care Guidance](#)

[Oregon Region 1 Trauma Surge Plan](#)

[Oregon Seismic Safety Policy Advisory Commission \(OSSPAC\) main page](#)

[OSSPAC SB 850](#)

[Oregon Resiliency Plan](#)

[DOGAMI pilot study on hospitals, water systems, transportation and interdependencies](#)

[Oregon Fuel Action Plan](#)

[Johns Hopkins A Framework for Healthcare Disaster Resilience: A View to the Future](#) includes 4 groupings of public health disasters, with Cascadia earthquakes in catastrophic group
[Oregon Emergency Management Association](#)

Best regards,

Akiko, Kathryn, Sue, Beth and Yumei

(sent to all participants on 3/22/18 via email from Maria Escobar-Sinn, OHA Administrative Coordinator)