

# **The Oregon Resilience Plan** **ORP Task Force Recommendation** for **2014 CIFA Conference**

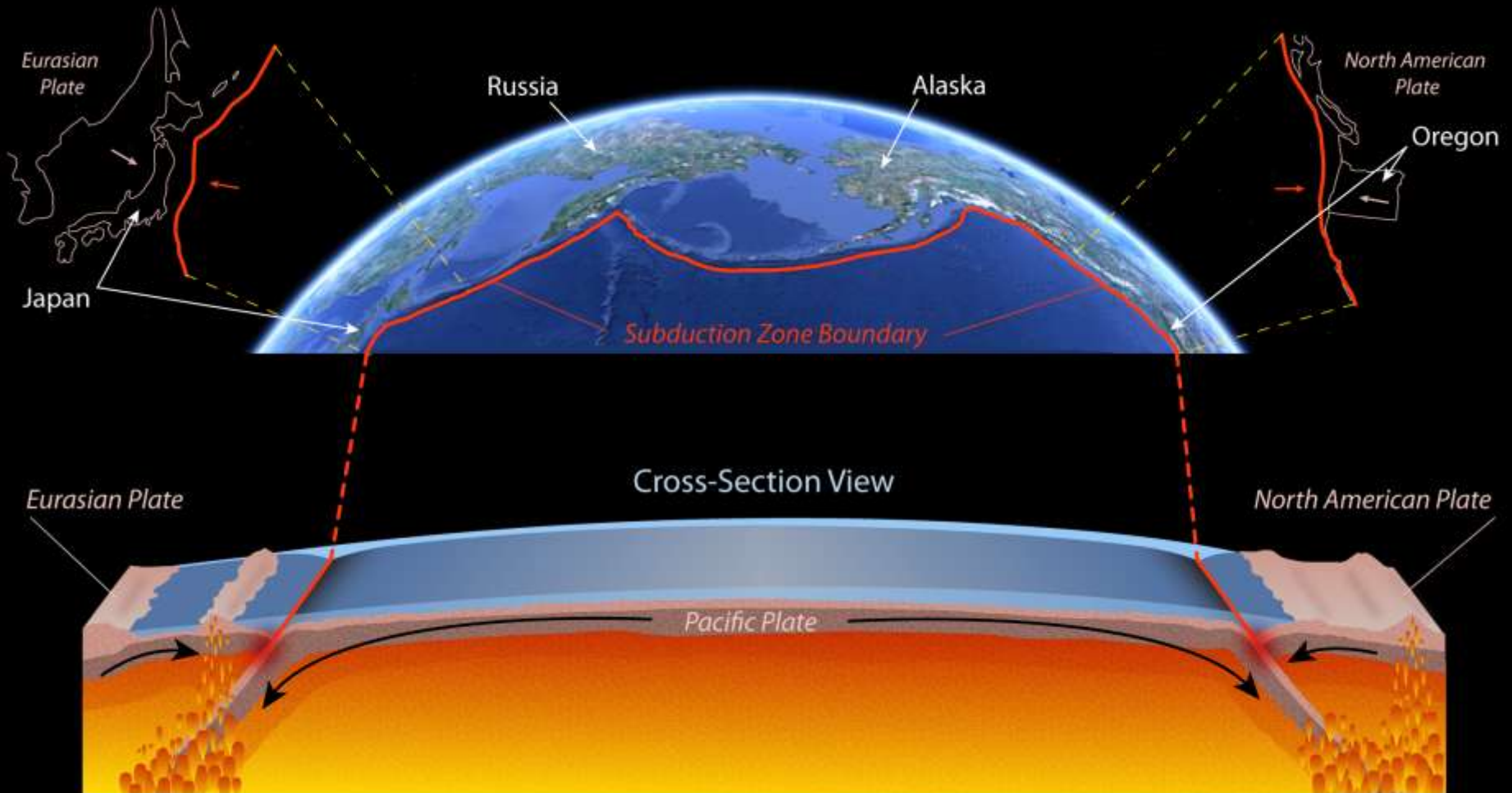
Kent Yu, PhD, SE



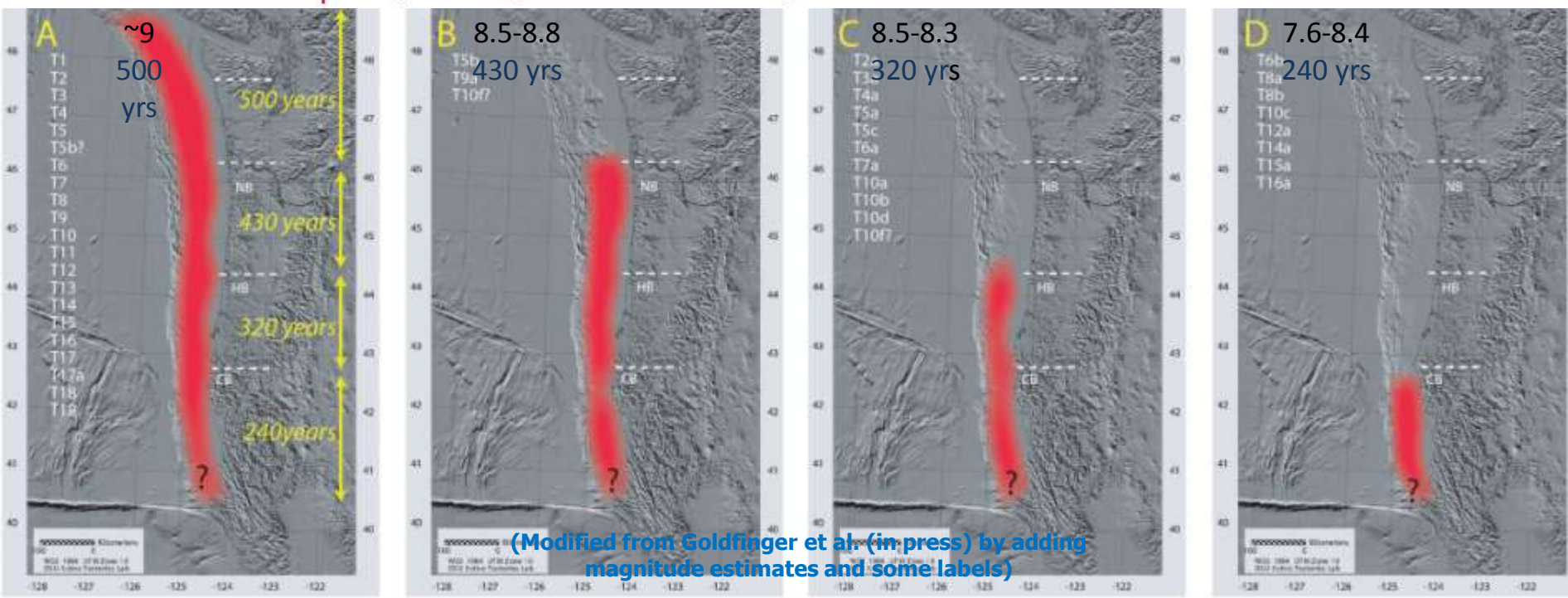
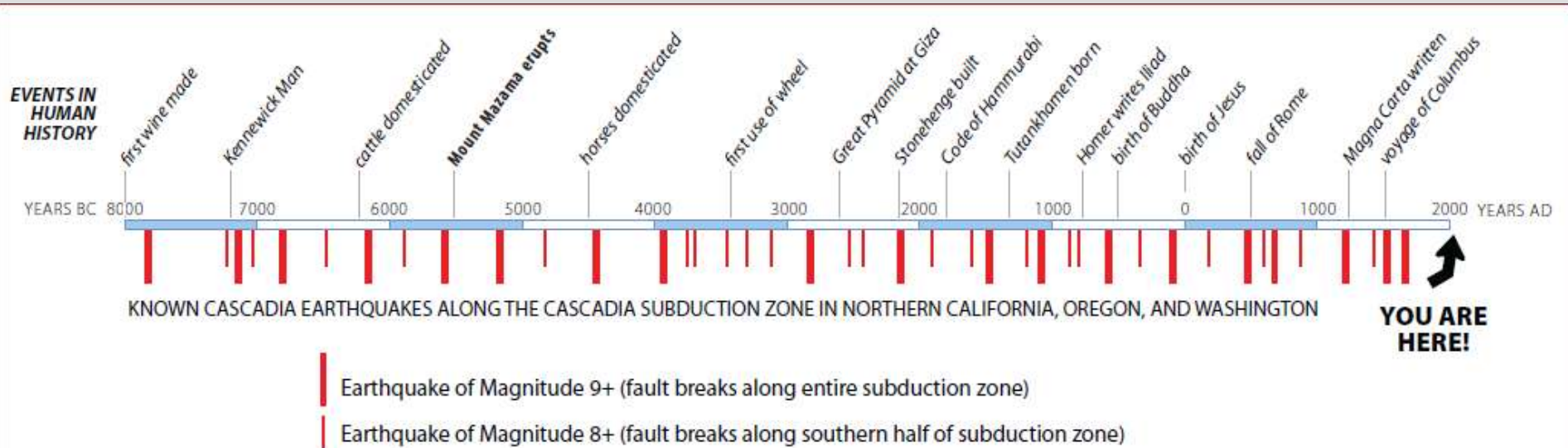
Principal, SEFT Consulting Group LLC  
Oregon Seismic Safety Policy Advisory Commission

Portland Oregon  
November 12, 2014

# Cascadia Subduction Earthquake



# Cascadia Subduction Zone Earthquakes



# House Resolution 3



76th OREGON LEGISLATIVE ASSEMBLY--2011 Regular Session

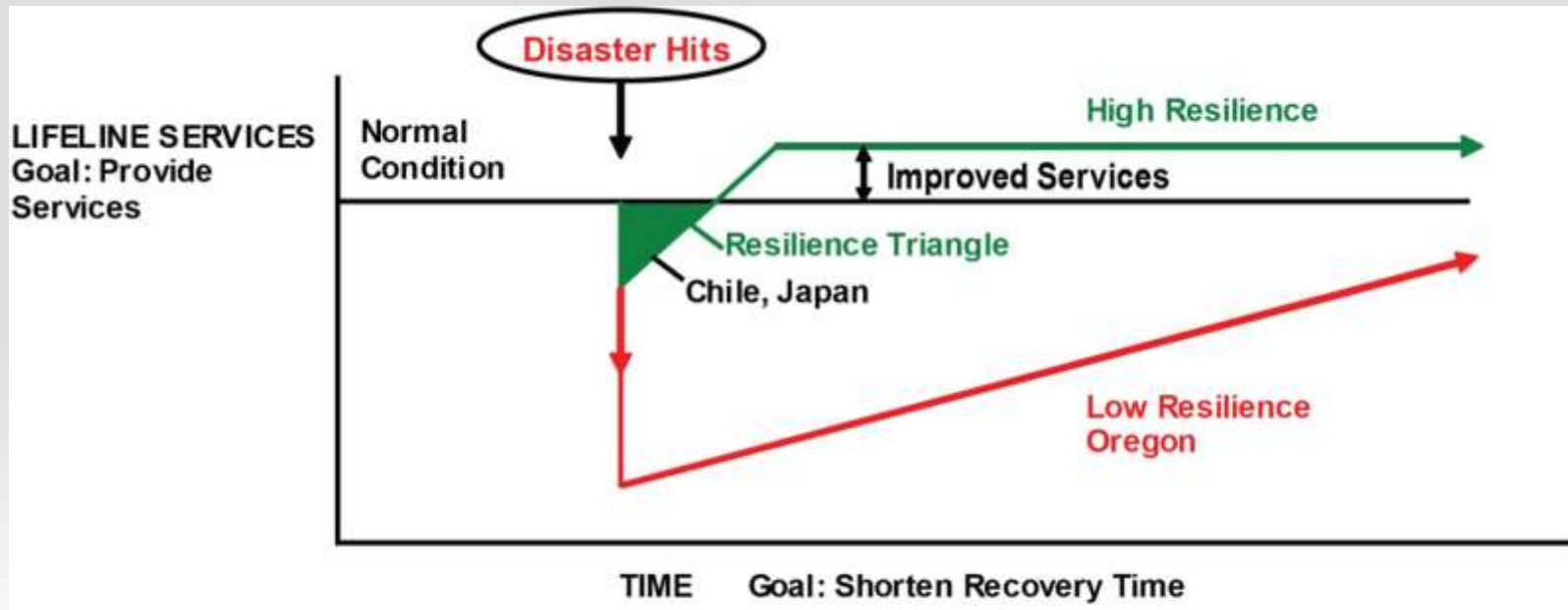
**Enrolled**

## **House Resolution 3**

Sponsored by Representative BOONE; Representatives COWAN, KRIEGER, ROBLAN, WITT, Senators COURTNEY, JOHNSON, KRUSE, VERGER, WHITSETT

- Directs Oregon Seismic Safety Policy Advisory Commission (OSSPAC) to “lead and coordinate preparation of an Oregon Resilience Plan that . . . makes recommendations on policy direction to protect lives and keep commerce flowing during and after a Cascadia (megathrust) earthquake and tsunami.”
- Focuses on physical infrastructure

# Shift From Life-Safety to Resilience



(Yumei Wang)

- **Resilience:** Save lives, Reduce Losses, Speed Recovery, & Rebuild Better
- Direct Damage vs Indirect Economic Loss
- Sustainability without **Resilience** is NOT sustainable!
- Resilience enhances sustainability

# Key Endorsement

NATIONAL SECURITY STAFF  
WASHINGTON, D.C. 20504

December 7, 2011



Kent Yu, PhD  
Chairman, Oregon Seismic Safety Policy Advisory Commission  
P.O.Box 14370  
Salem, OR  
97309 5062

Dr. Yu:

On Tuesday, November 8, 2011 I had the pleasure of spending time with the working session of the National Earthquake Hazard Reduction Program (NEHRP) Advisory Committee. There, I was honored to meet Deborah Boone, Oregon State Representative and sponsor of Oregon House Resolution 3, which directs the creation of an Oregon Resilience Plan to prepare for the statewide impacts of a Cascadia earthquake and tsunami. I would like to wholeheartedly applaud Representative Boone, yourself, and the rest of the Oregon Seismic Safety Policy Advisory Commission on this initiative..

President Obama's top priority is the safety and security of the American people. I thank you for your leadership and your ongoing contribution to our Nation's resilience.

Sincerely,

Richard Reed  
Special Assistant to the President for  
National Security Affairs and  
Senior Director for Resilience

From White House



JOHN A. KITZHABER, MD  
Governor



January 4, 2012

Kent Yu, Ph.D, Chair  
Oregon Seismic Safety Policy Advisory Commission  
P.O. Box 14370  
Salem, OR 97309

Dear Dr. Yu,

The Oregon Seismic Safety Policy Advisory Commission (OSSPAC) has a challenging mission to educate the public about our seismic risks and inform diverse policy decisions. Through OSSPAC's dedicated efforts, though, the State of Oregon and its citizens have become increasingly aware that we live in an earthquake-prone region.

This month will mark the 312<sup>th</sup> anniversary of the last major earthquake and resulting tsunami from the Cascadia Subduction Zone that sits off Oregon's coast. Throughout this year, OSSPAC will be drafting an Oregon Resilience Plan to help us better prepare for the next major earthquake and tsunami.

A focused resiliency effort can better prepare us for catastrophic disasters as well as help us weather our more common emergencies like storms, floods and fires. OSSPAC has had wide participation from state agencies, local governments, businesses and non-profits and I encourage their continued engagement on this critical effort.

Thank you for all of OSSPAC's efforts to date and for continuing to be a powerful voice for a more prepared and resilient Oregon.

Sincerely,

John A. Kitzhaber, M.D.  
Governor

JAK:Sup

From Governor of Oregon

# The Oregon Resilience Plan

## The Oregon Resilience Plan

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

Report to the  
77<sup>th</sup> Legislative Assembly

from  
Oregon Seismic Safety Policy  
Advisory Commission (OSSPAC)



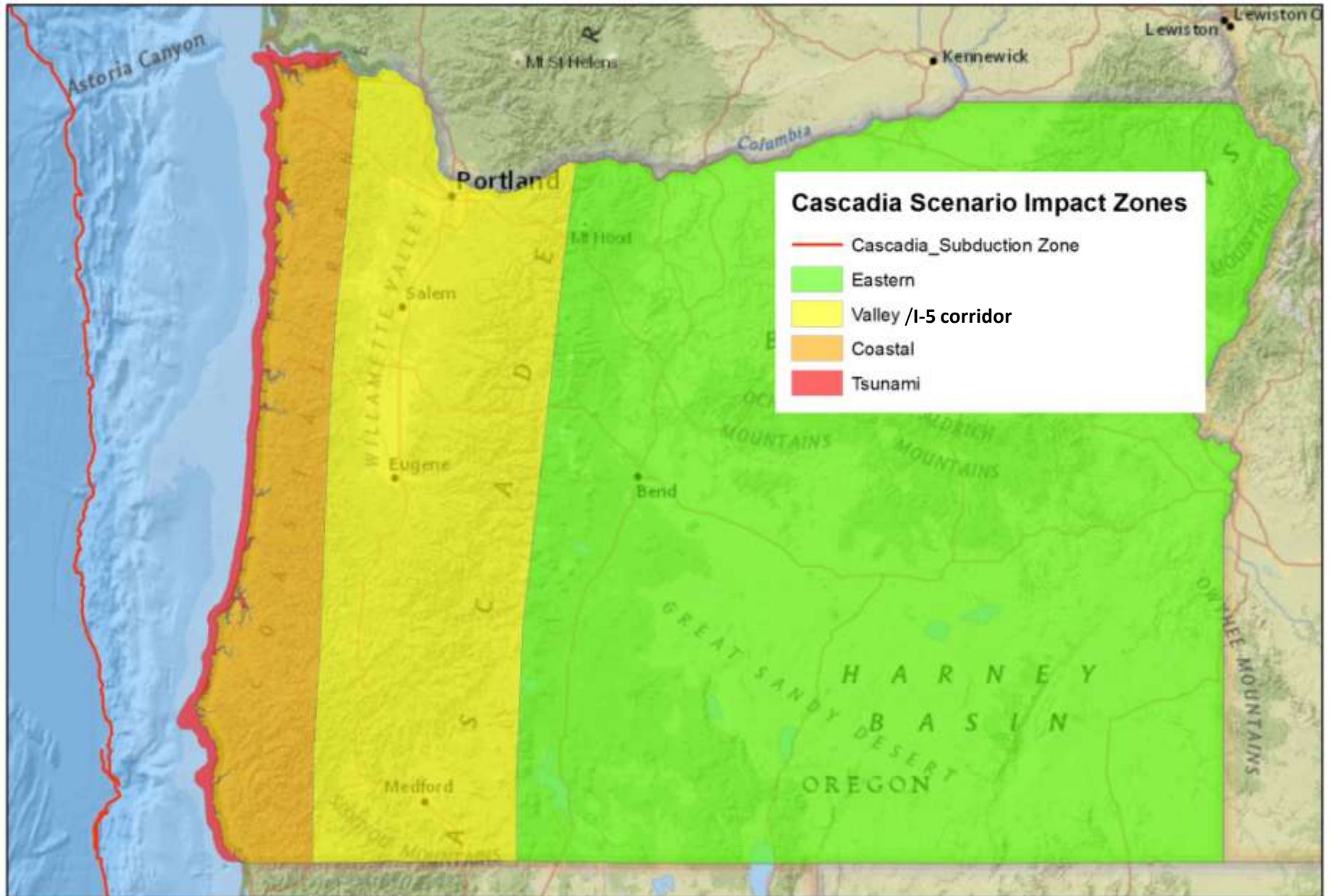
Salem, Oregon  
February 2013

## 50-year Comprehensive Plan

- Cascadia Earthquake Scenario
- Business/Workforce Continuity
- Coastal Communities
- Critical & Essential Buildings
- Transportation
- Energy
- Information and Communication
- Water & Wastewater

- Save Lives, protect our economy, and preserve our communities;
- 169 Expert Volunteers;
- \$ Millions in donation of professional services over a year

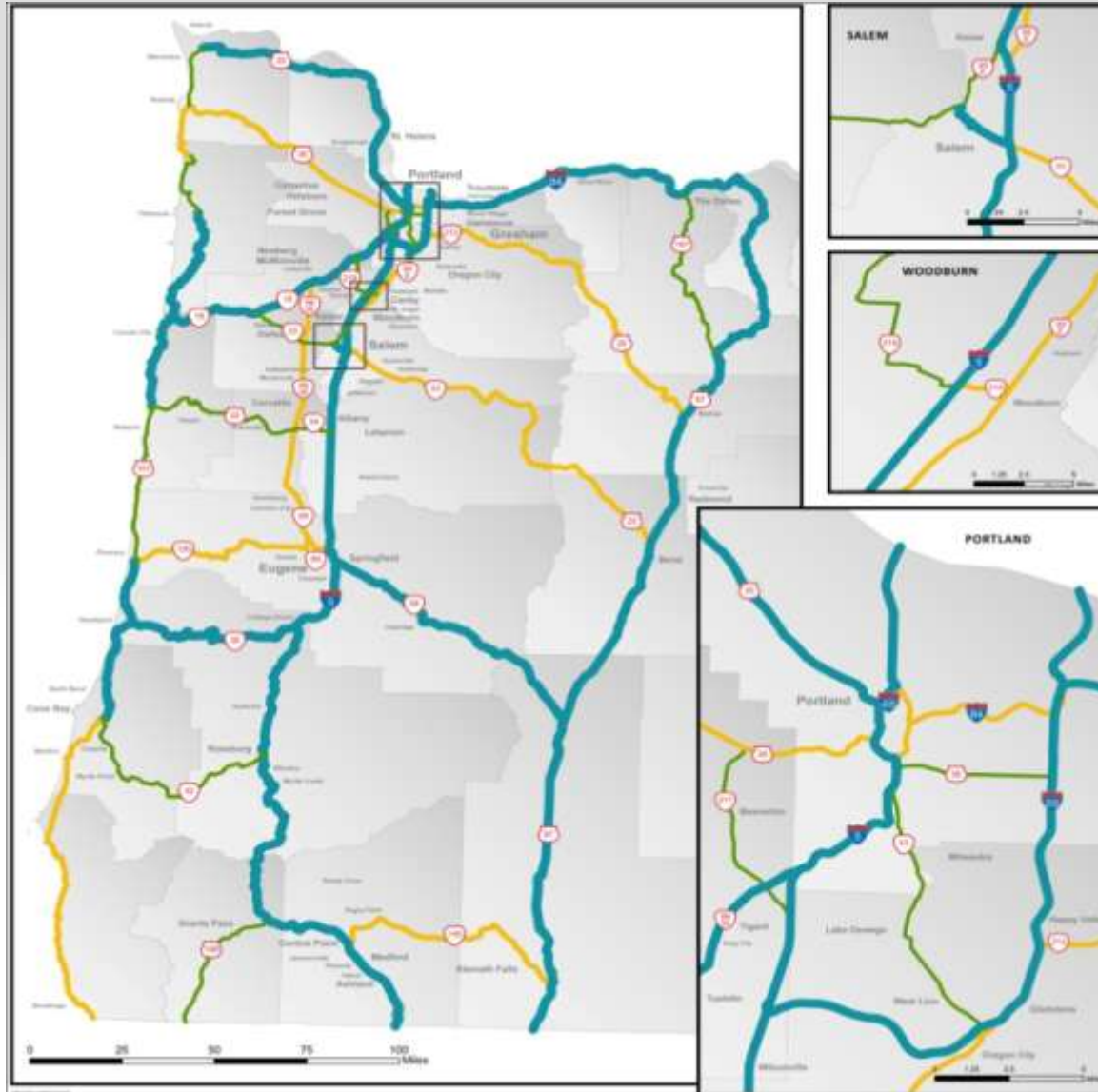
# Four Zones





# State Response/Recover Strategy

1<sup>st</sup> tier  
2<sup>nd</sup> tier  
3<sup>rd</sup> tier



# Performance Goals for M9.0 Earthquake

Phase	Time Frame	Condition of the built environment
I	1 to 3 days	Initial response
II	1 to 4 weeks	Workforce housing restored – ongoing social needs met
III	2 to 36 months	Long term reconstruction

***Lifelines and workforce are the key elements***

# Target States of Recovery for Building & Infrastructure

Phase	Time Frame	Focus of Attention
I	1 to 3 days	Initial response

*EOC's,*

*Hospitals,*

*Police and Fire Stations,*

*Emergency Shelters*

*(Animal Shelters)*

*Lifeline Infrastructure to provide services to this group of buildings*



# Target States of Recovery for Building & Infrastructure

Phase	Time Frame	Focus of Attention
II	1 to 4 weeks	Workforce housing restored – ongoing social needs met

*Essential County/City Services*

*Residential Housing,*

*Schools/Daycare Centers,*

*Community retail centers,*

*Financial and Banks*

*Buildings – “safe and useable during repair”*

*Lifeline infrastructure provide services to this group of buildings*



# Target States of Recovery for Building & Infrastructure

Phase	Time Frame	Focus of Attention
III	2 to 36 months	Long term reconstruction

*Industrial Buildings*

*Commercial buildings*

*Historic buildings*



*Building - "Safe and usable after repair" "Safe but not repairable"*

*Complete 100% reconstruction of lifeline infrastructure within less than 3 years*

# Key Findings

- Oregon is far from resilient to the impact of a great Cascadia earthquake today
  - Casualties (a few thousand to more than 10,000)
  - Economic Loss (at least 20% state GDP)
  - More than one million truck loads of debris
- Liquid Fuel vulnerability



# Current Resilience Gap

- Business can only tolerate two to four weeks of disruption of essential services

Critical Service	Zone	Estimated Time to Restore Service
Electricity	Valley	1 to 3 months
Electricity	Coast	3 to 6 months
Police and fire stations	Valley	2 to 4 months
Drinking water and sewer	Valley	1 month to 1 year
Drinking water and sewer	Coast	1 to 3 years
Top-priority highways (partial restoration)	Valley	6 to 12 months
Healthcare facilities	Valley	18 months
Healthcare facilities	Coast	3 years

# Expected Building Performance

- Falls short in almost every category
- Business can tolerate 2 to 4 week recovery

Critical Building Category	Zone	Estimated Average Recovery Time
Healthcare Facilities	Valley	18 months
Police and Fire Stations	Valley	2 to 4 months
Emergency Operations Centers	Valley	4 months
Schools	Valley	18 months
Housing	Valley	3 days**
Emergency Shelter	Valley	
Retail and Banking	Valley	

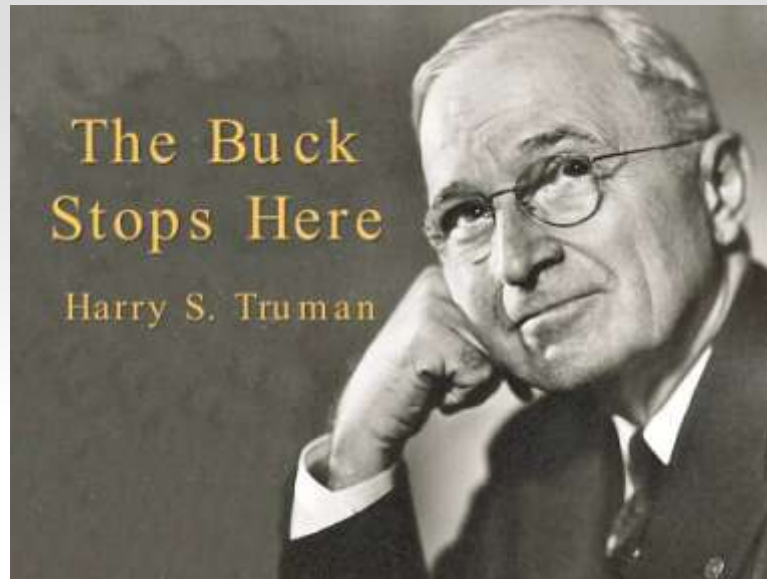


\*\* Underestimates recovery for older construction



# Overarching Recommendations

- Establish a State Resilience Office to provide leadership, resources, advocacy, and expertise in implementing statewide resilience plans



- Undertake comprehensive seismic assessments of the key structures and systems that underpin Oregon's economy;



# Overarching Recommendations

- Launch a sustained program of capital improvement in Oregon's public structures;
- Craft a package of incentives to engage Oregon's private sector to advance seismic resilience;
- Update Oregon's public policies



# SB 33 Task Force on ORP Implementation

## ❖ Oversight

- Resilience Policy Advisor to the Governor
- Long term, statewide resilience oversight

## ❖ Transportation

- Retrofit backbone routes identified in ODOT's Seismic Options
- Thorough inventory and assessment of transit, air/marine port, and rail assets

## ❖ Land Use (Coastal Community)

- Adopt the "L" line from most recent tsunami hazard maps
- \$5M for coastal communities for tsunami resilience planning
- Recovery planning prior to a tsunami

## ❖ Energy

- OPUC require seismic assessment of its regulated facilities
- State establish PPP to mitigate/evaluate diversification of locations for storing liquid fuel, and ID new liquid fuel corridors

# SB 33 Task Force on ORP Implementation

- ❖ Critical Facilities and Seismic Rehabilitation Grant Program (SRGP)
  - \$200 Million every biennium for critical facilities (schools/fire station/EOC/hospitals)
  - \$20 Million for DOGAMI to update statewide inventory and preliminary evaluation of critical facilities
- ❖ Water/Wastewater
  - Water/wastewater providers complete seismic risk assessment and mitigation plan
  - Firefighting agencies, water providers, and EM agencies to establish joint standards for use in planning the firefighting response to seismic event
- ❖ Training and Education
  - Fund OEM to support education and training for public/private/not-for-profit
  - Fund Dept. of Education to support K-12 education on our state's hazard
  - Business Oregon encourages continuity assessment & planning for all businesses
- ❖ Research
  - Establish \$1M research initiative annually for improving OR resilience

# Thank You

if you have any questions, please contact us:

Kent Yu

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(503)702-2065

# NIST Resilience Initiative – Disaster Resilience Framework

