Oregon Department of Transportation

Oregon Resilient Plan 2013
Transportation: Critical Mobility for Rescue and Recovery

Joint Committee on Veterans and Emergency Preparedness - Jun 6, 2013 - Bruce Johnson, ODOT

Broad Participation – Transportation

- Ports: Portland, Astoria, Coos Bay
- Federal Agency: USCG
- Universities: OSU, PSU
- Consultants: Ch2M Hill, HDR, KPFF, Quincy, OBEC
- Local Governments: AOC, LOC, Western Cities and Counties
- State Agencies: Transportation, Aviation, Forestry

Resilient Oregon Plan Concepts

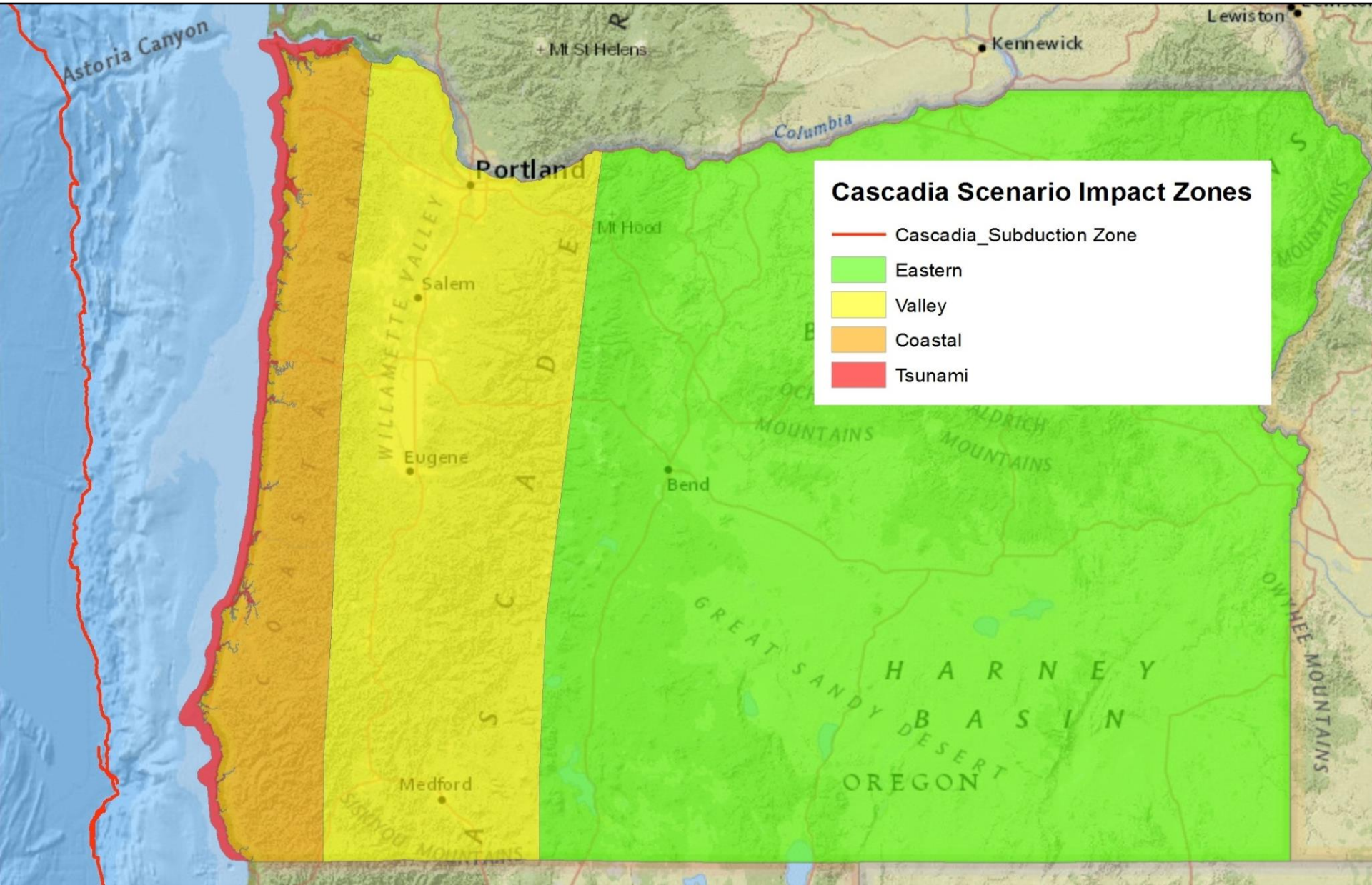
- Retrofit increases resiliency if done incrementally and strategically
- Secondary loss of life and long term economic losses can be significantly reduced
- Strategic planning is critical to success and will require widespread consensus

Bridge Span Collapse

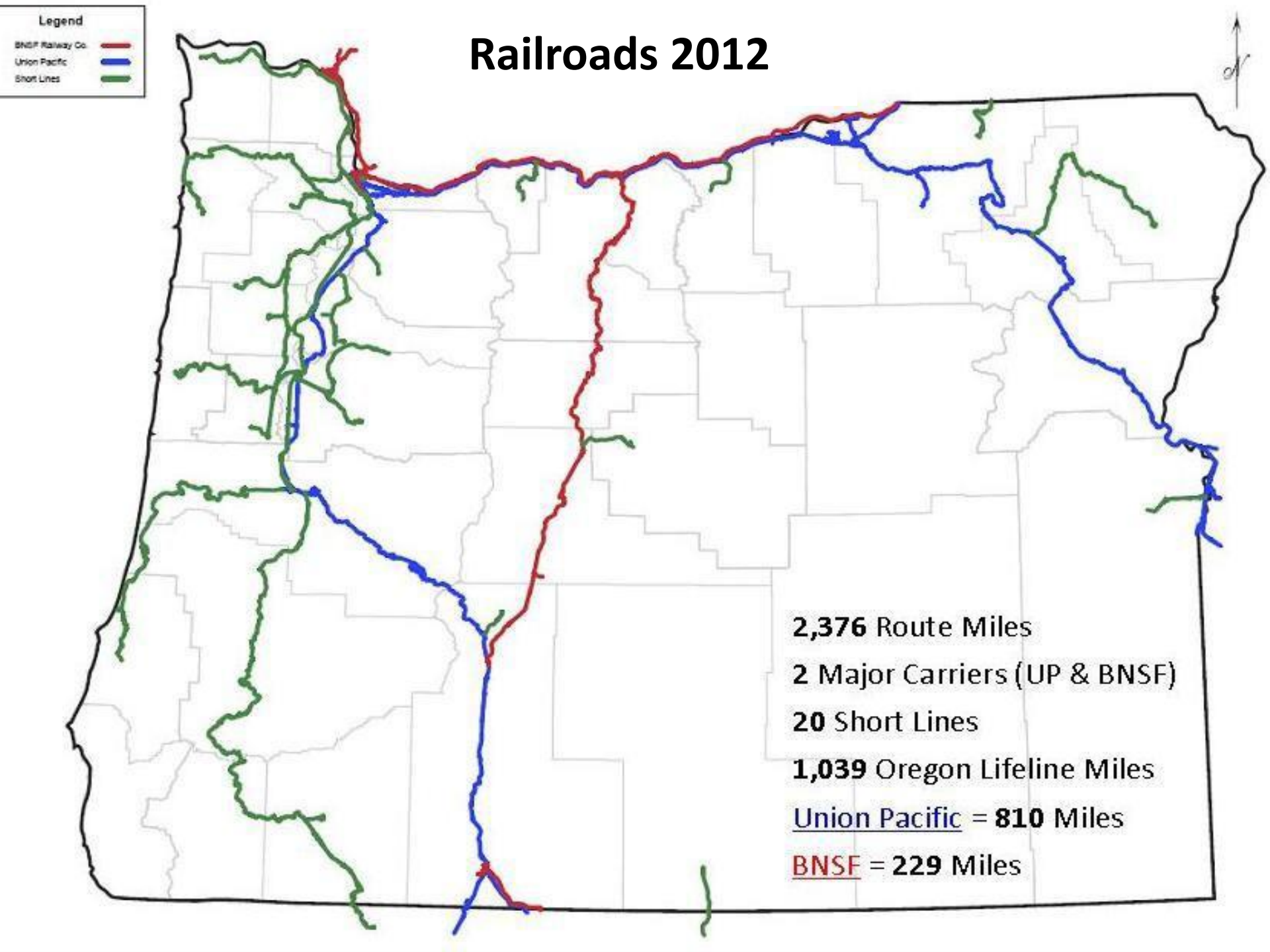
Bridge Bent Failure

Landslide

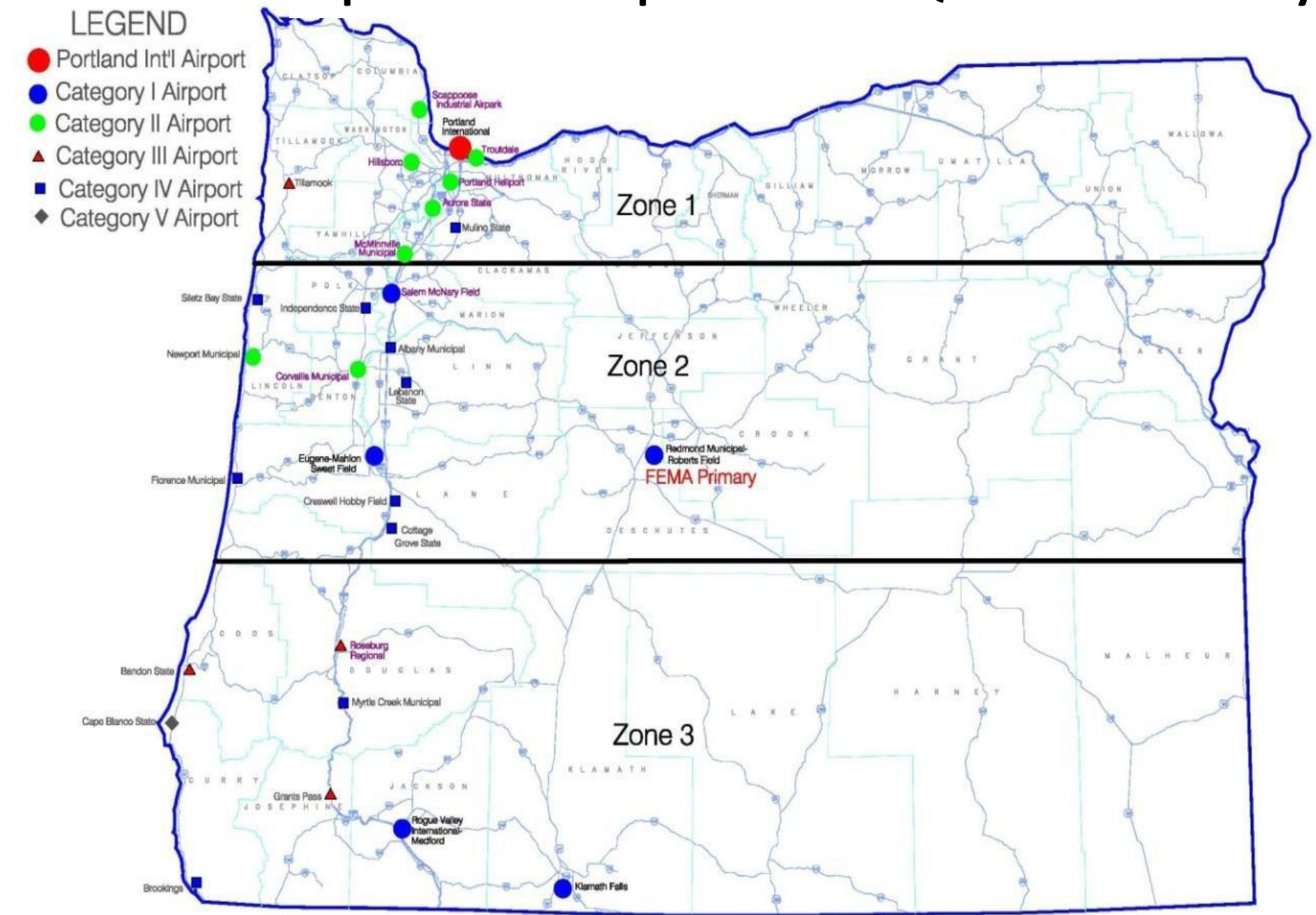
Four Study Zones



Railroads 2012

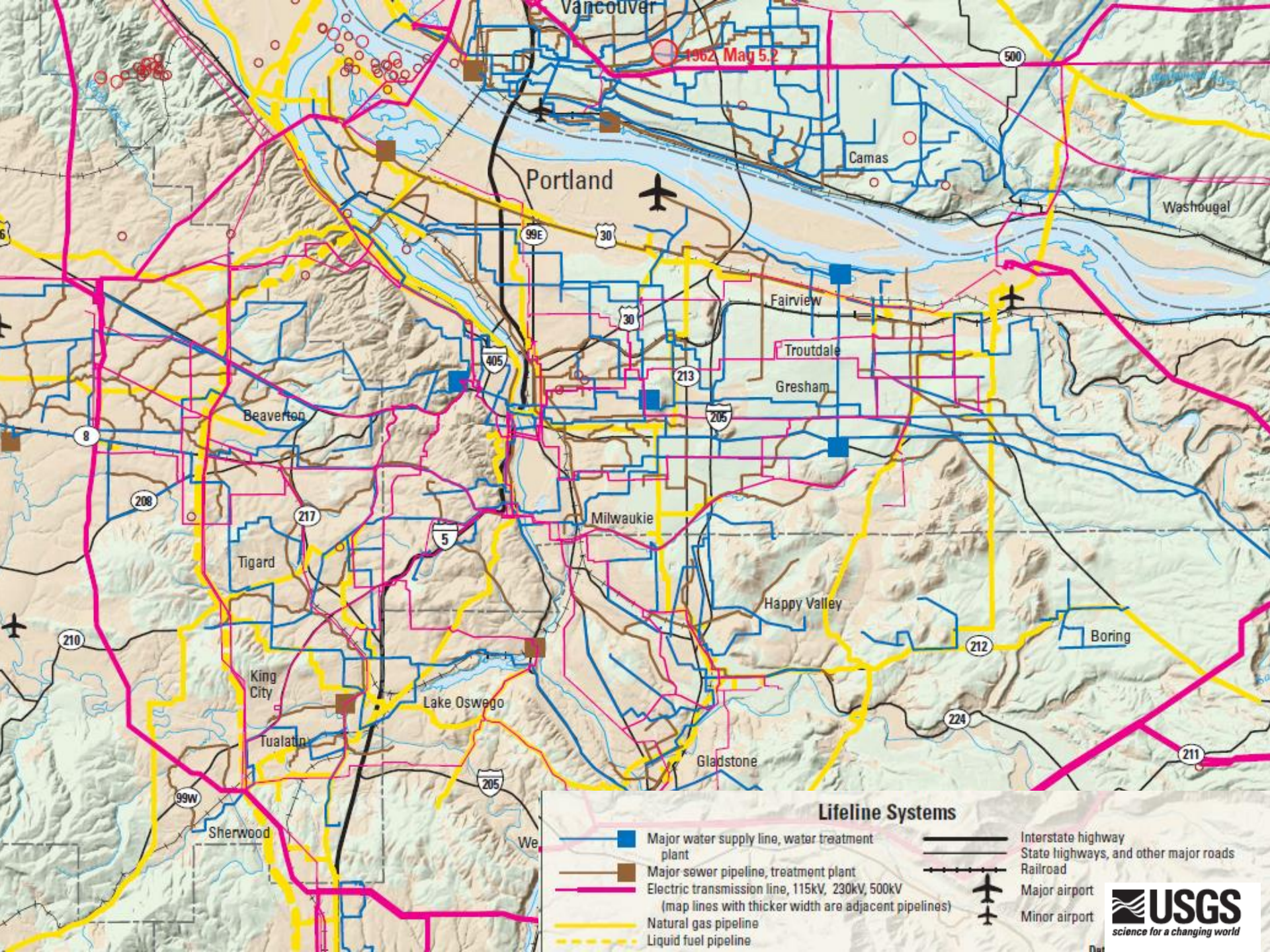


Operational Airports After EQ-Tsunami – Valley



Columbia River Ports

Port of Portland Facilities

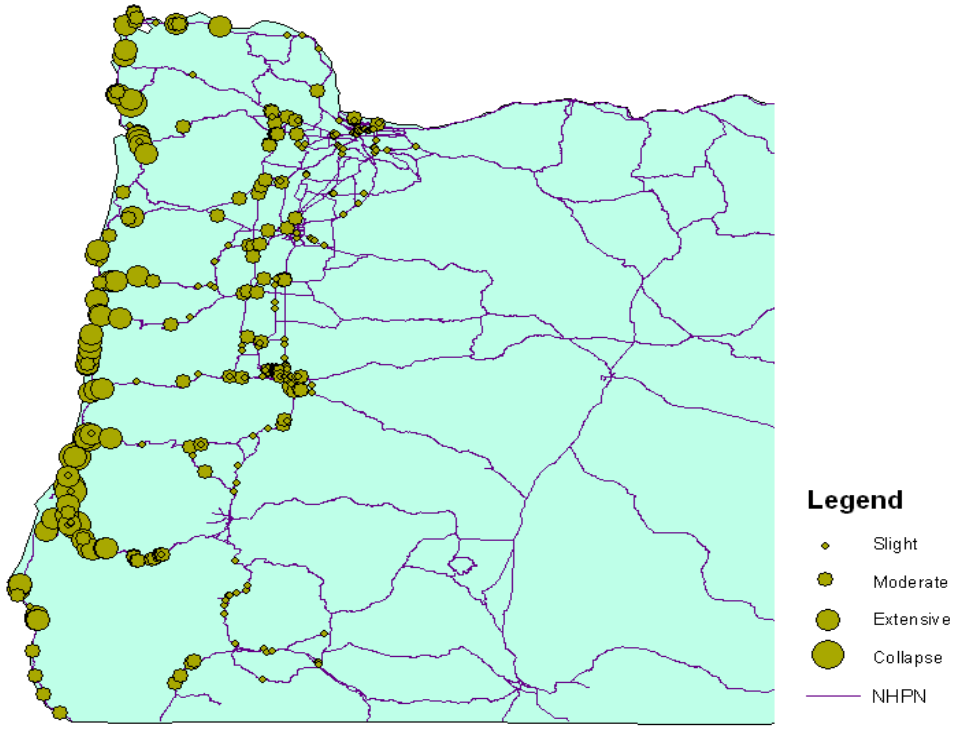

Vancouver
1962, Mag 5.2
Portland
Camas
Washougal
Fairview
Troutdale
Gresham
Beaverton
Milwaukie
Tigard
Happy Valley
Boring
King City
Lake Oswego
Tualatin
Gladstone
Sherwood
500
99E
30
405
213
205
8
208
217
5
210
212
224
211
99W
Lifeline Systems
Major water supply line, water treatment plant
Major sewer pipeline, treatment plant
Electric transmission line, 115kV, 230kV, 500kV
(map lines with thicker width are adjacent pipelines)
Natural gas pipeline
Liquid fuel pipeline
Interstate highway
State highways, and other major roads
Railroad
Major airport
Minor airport
USGS
science for a changing world

Cascadia Subduction Zone Earthquake (Magnitude 9.0)

6 complete collapses
64 extensive
106 major
164 slight

Estimates Loss:

- **$1,080** million for bridge repair and replacement
- **Significant Economic losses** (travel time related losses)



Route	Damage States			
	Slight	Moderate	Extensive	Complete
I-5 (MWC)	4	1	0	0
I-5 (MLL)	16	3	1	0
I-5 (DJJ)	27	0	0	0
I-84	13	1	0	0
US-101	7	14	36	5
US-26	7	5	0	0
I-205	8	2	0	0
I-405	7	0	0	0
US-30	4	2	2	0
US-20	5	3	5	0
OR-38	3	2	1	0
OR-42	4	13	13	1
Others	59	60	6	0
Total	164	106	64	6

Retrofitting Progress

First 16 Years Since Vulnerability was Identified

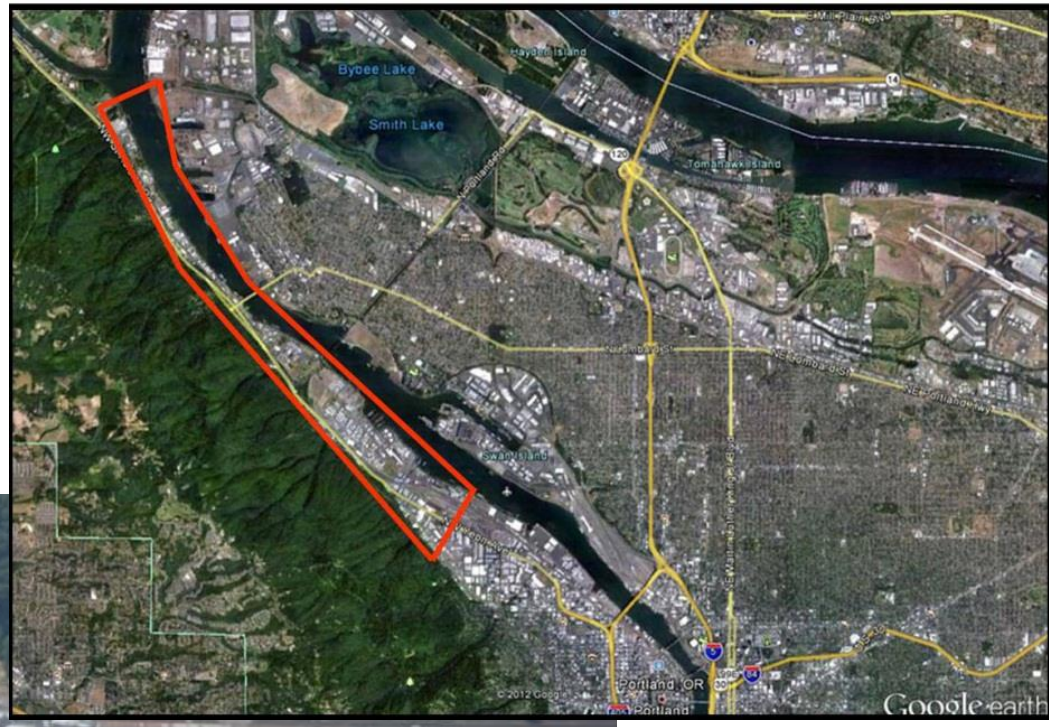
Years	Actions
1994/1997	CH2M Hill prioritization includes all state and local bridges. Priority state bridges 1155
1985-2012	• Phase 1 retrofit added to repair projects 143 Other bridges resolved (replacements or retrofits added to repair/widening contracts in the STIP & OTIA III program) 212 Total number of bridges addressed 355
Future	Bridges still needing retrofitting 800 (About 200 years at average 4 bridges retrofitted per year in the STIP, much longer for Phase 2 and much longer to Pay OTIA III bonds)

Key Findings
Transportation

- Update Transportation Inventory
- Complete Statewide Transportation Resilience Assessment and Gap Analysis
- Statewide Resilience Office

Key Findings

- ***Liquid Fuel vulnerability is a key issue for transportation***



Key Findings
Transportation

- Develop Mitigation Policy and Retrofit Plan
- Identify Key Transportation Links
  - Redmond Municipal Airport (Roberts Field)
  - Coastal and River Ports or heliports
  - The Columbia River

Key Findings

Transportation – Long Term

- Enhanced Design and Maintenance Standards
- Temporary Bridge Policy and Program
- Research on retrofit strategies

Thank you!

Bruce Johnson, State Bridge Engineer
ODOT Bridge Engineering Section