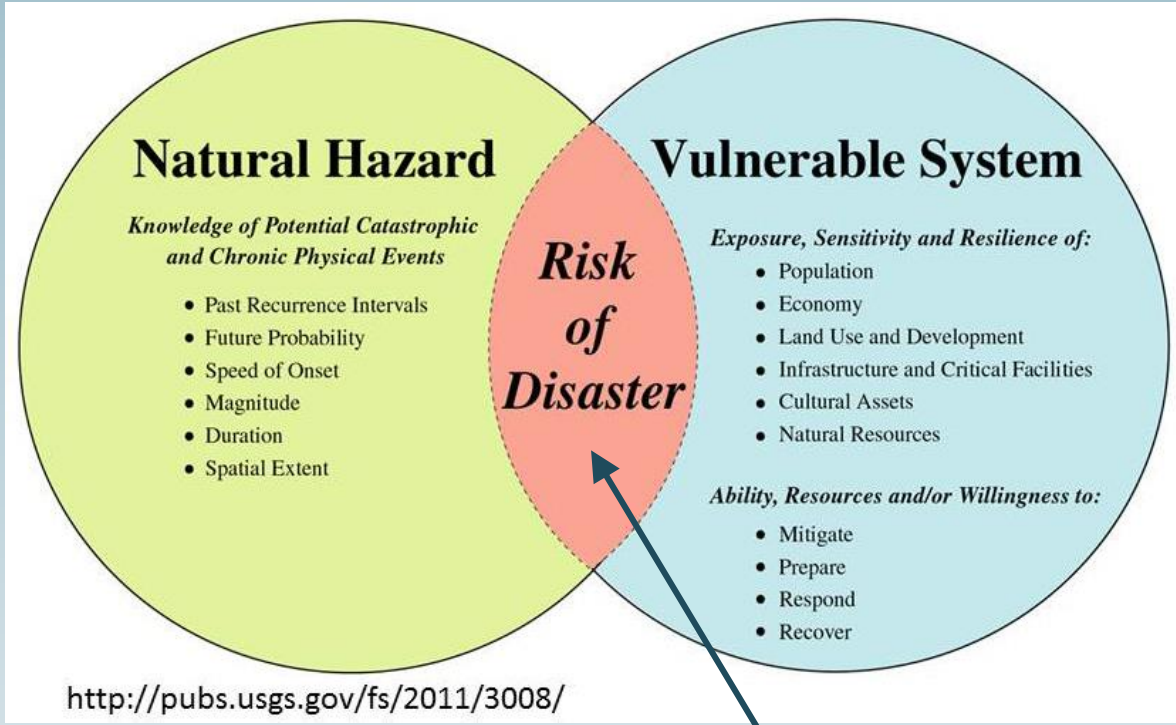
What Is Resilience?

The ability to withstand and/or recover quickly from difficult conditions.

What Makes a Hazard a Disaster?

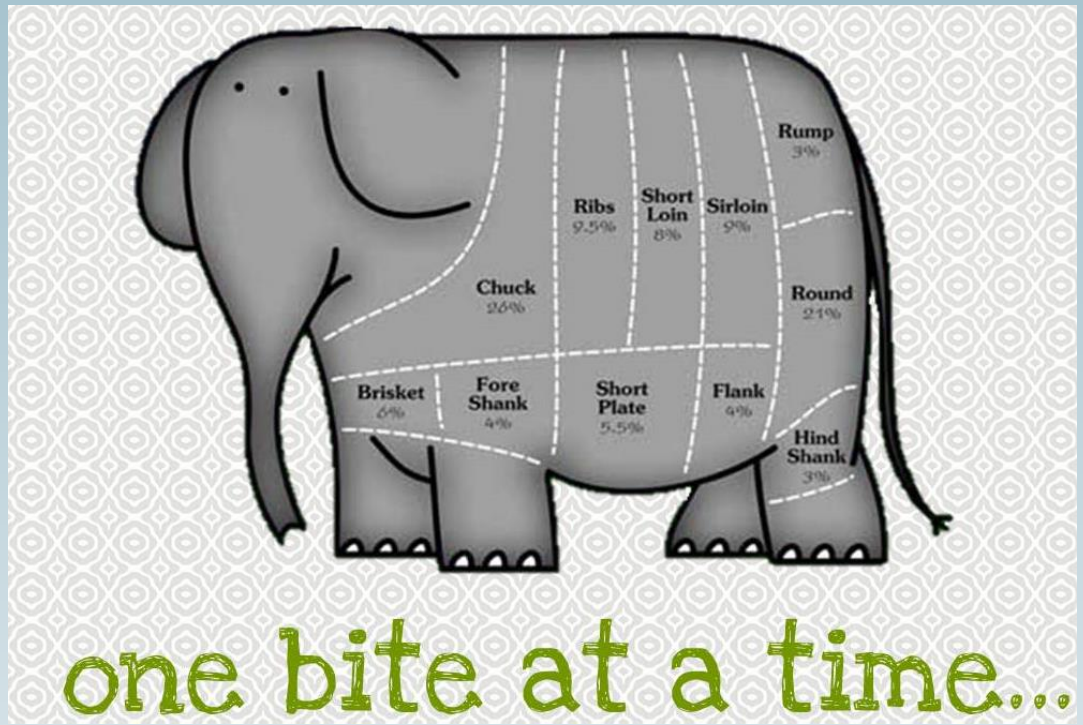


Unprepared = Disaster

Pacific Northwest

- 1994 – Oregon Building Code w/Seismic Design Provisions
- Inherited community infrastructure at-risk

Overwhelming Problem

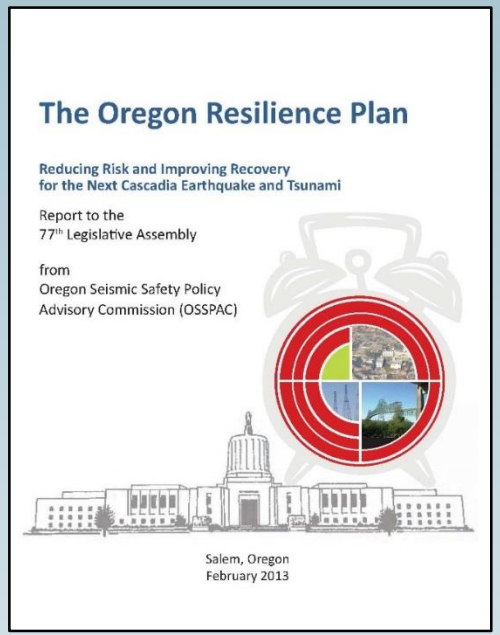


Resilience Planning - Overall Goal

Mitigate Hazards and Reduce Risks to Decrease Response and Recovery Times

Salus RESILIENCE

Oregon Resilience Plan



- 50 Year Plan for State
- Assessment of Current State
    - Coastal Communities
    - Business
    - Critical Buildings
    - Transportation
    - Energy
    - Communications
    - Water/Wastewater
- Months to Years of Recovery
- 1/5 of Oregon GDP Lost
- 10,000's Displaced

Oregon Resilience Plan

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

Resilience Planning

- Define Hazard
- Define Timelines
- Assess Risks
- Develop Cost/Benefit Analysis
- Prioritize
- Develop a Plan
- Incorporate Plan into Long Term Plans and Budgets

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Define Goals

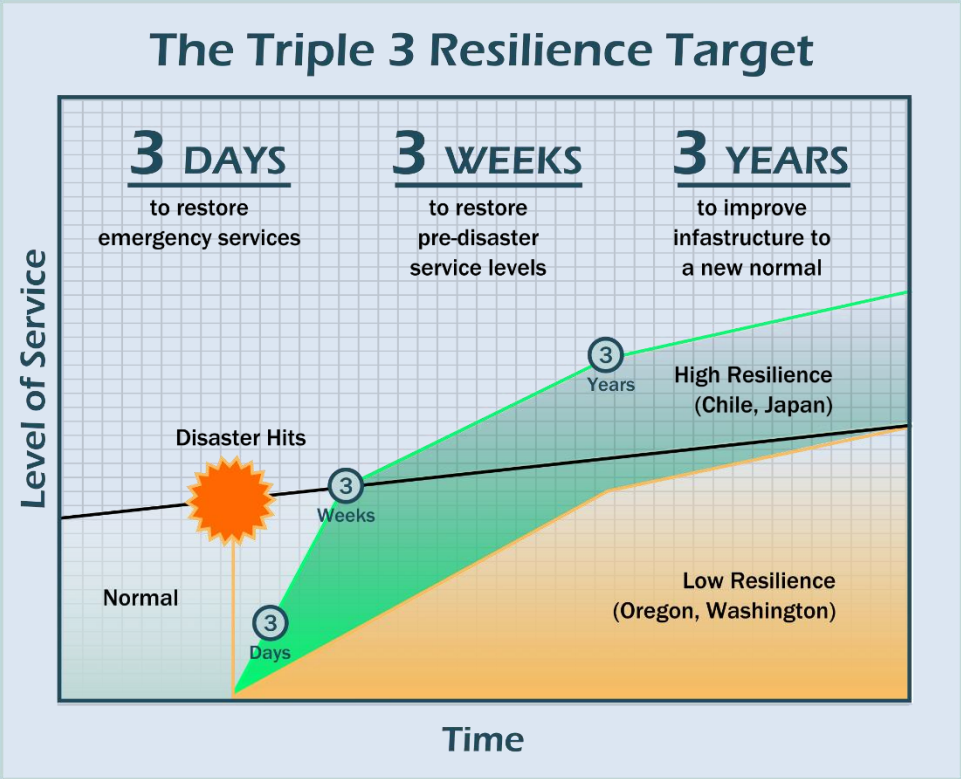
Define the Hazard(s) of Concern

- Return Interval and Likelihood

Develop Ideal Timeline for Recovery

- Define Specific Goals
- Response vs. Recovery

Specific Resilience Goals

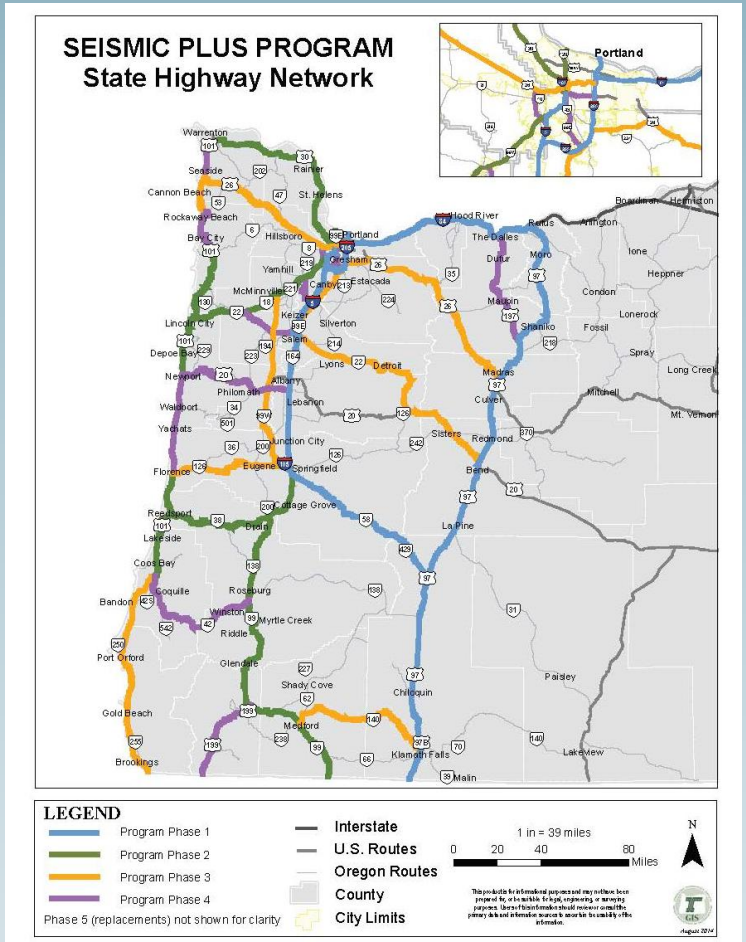


Prioritize

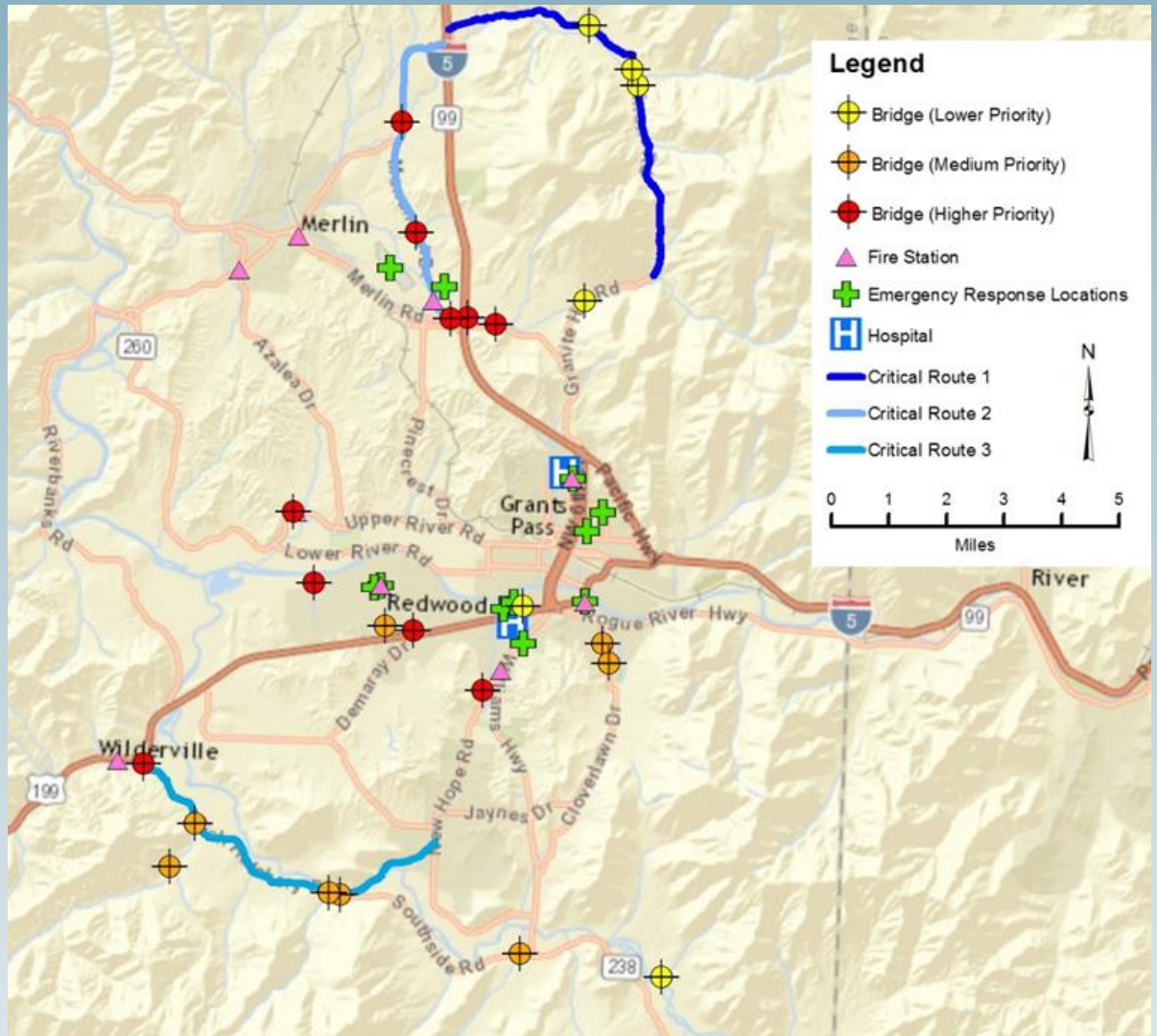
- Critical Facilities
- Personnel Resources
- Service Loads

Plan and Prioritize

- Tier 1: Backbone system
  Restored within Hours to 3 Days
- Tier 2: Secondary system
  Restored with Days to Weeks
- Tier 3: Tertiary systems
  Restored with Weeks to Months



Prioritize


Legend
Bridge (Lower Priority)
Bridge (Medium Priority)
Bridge (Higher Priority)
Fire Station
Emergency Response Locations
Hospital
Critical Route 1
Critical Route 2
Critical Route 3
N
0 1 2 3 4 5
Miles
Merlin
Grants Pass
Redwood
Wilderville
Merlin Rd
Azalea Dr
Pinecrest Dr
Granite Hill Rd
Riverbanks Rd
Upper River Rd
Lower River Rd
Pacific Hwy
Rogue River Hwy
Demaray Dr
Williams Hwy
New Hope Rd
Jaynes Dr
Cloverlawn Dr
Southside Rd
River
260
199
238
5
99

Prioritize

Incorporation into Existing Efforts

- Sustainability
- Transportation Planning
- Land Use Planning
- Master Planning
- Capital Improvement Plans
- Long-term budgeting
- Localized and Overall Emergency Plans
- Operations and Maintenance Plans

Better New Structures

- US Resiliency Building Rating System
  - Safety
  - Cost of Repairs
  - Time to regain functionality
- Similar criteria can be adopted for infrastructure

USRC Building Ratings: Dimensions and Definitions

SAFETY: The potential for people in the building to get out after a disaster and avoid bodily injuries or loss of life. A safety rating is required in all building evaluations.

★★★★★	**Injuries and blocking of exit paths unlikely:** Expected performance results in conditions unlikely to cause injuries or to keep people from exiting the building.
★★★★☆	**Serious injuries unlikely:** Expected performance results in conditions that are unlikely to cause serious injuries.
★★★☆☆	**Loss of life unlikely:** Expected performance results in conditions that are unlikely to cause loss of life.
★★☆☆☆	**Loss of life possible in isolated locations:** Expected performance results in conditions associated with partial collapse or falling objects, which have a potential to cause loss of life at some locations within or around the building.
★☆☆☆☆	**Loss of life likely in the building:** Expected performance results in conditions associated with building collapse, which has a high potential to cause death within or around the building.

REPAIR COST: Damage as a percentage of the building's overall replacement cost including structural, architectural, mechanical, electrical and plumbing systems. It does not include damage caused by breaks/leaks in water and gas pipes or contents damage.

★★★★★	**Minimal damage:** Repair Cost likely less than 5% of building replacement cost.
★★★★☆	**Moderate damage:** Repair Cost likely less than 10% of building replacement cost.
★★★☆☆	**Significant damage:** Repair Cost likely less than 20% of building replacement cost.
★★☆☆☆	**Substantial damage:** Repair Cost likely less than 40% of building replacement cost.
★☆☆☆☆	**Severe damage:** Repair Cost likely greater than 40% of building replacement cost.

TIME TO REGAIN BASIC FUNCTION: An estimate of the MINIMUM timeframe to carry out sufficient repairs and to remove major safety hazards and obstacles to regain occupancy and use of the building, but not necessarily restore it to its full intended functions.

★★★★★	**Within hours to days:** The expected performance will likely result in people being able to quickly re-enter and resume use of the building from immediately to a few days, excluding external factors.
★★★★☆	**Within days to weeks:** The expected performance may result in delay of minimum operational use for days to weeks , excluding external factors.
★★★☆☆	**Within weeks to months:** The expected performance may result in delay of minimum operational use for weeks to months, excluding external factors.
★★☆☆☆	**Within months to a year:** Expected performance may result in delay of minimum operational use for months to a year.
★☆☆☆☆	**More than one year:** Expected performance may result in delay of minimum operational use for at least one year or more.

Foster Resilient Culture