



ORP CRITICAL BUILDINGS TASK GROUP

Critical Buildings Task Group

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ORP CRITICAL BUILDINGS TASK GROUP

CRITICAL/ESSENTIAL BUILDINGS:

- **Hospitals (60 facilities)**
- **Police/Fire Stations (109 police, 595 fire)**
- **Emergency Operations Centers (82)**
- **K-12 Schools (2,377 facilities)**
- **Emergency Sheltering Facilities**
- **Community Retail Centers and Banks**
- **Single Family Residential (960,000 est.)**
- **URM and Non Ductile Conc. Bldgs (40,000+ est.)**
- **Critical Government Facilities**



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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
Healthcare Facilities	Coast	3 years
Police and Fire Stations	Valley	2 to 4 months
Police and Fire Stations	Coast	3 years +
Schools	Valley	18 months
Schools	Coast	18 months
Housing	Valley	3 days**
Housing	Coast	1 month **
Retail and Banking	Coast	2 to 4 months

** Underestimates recovery for older construction



ORP CRITICAL BUILDINGS TASK GROUP **RECOMMENDATIONS**

Establish a State Resilience Office

- **Establish a lead agency for implementing and coordinating statewide seismic resilience policy. (Need a quarterback!)**
- **Advocacy and education**
- **Assist other state agencies**
- **Oversee research**
- **Develop administrative rules and standards**



ORP CRITICAL BUILDINGS TASK GROUP **RECOMMENDATIONS**

Prioritize Education of the Public

- **Public awareness and public relations**
- **Education in schools**
- **Contractor education**
- **Education for business, facility and property managers**



ORP CRITICAL BUILDINGS TASK GROUP **RECOMMENDATIONS**

Complete an Inventory of Critical Buildings

- Initial screening based on the FEMA 154 methodology—similar to the 2007 Statewide Structural Needs Assessment
- Update 2007 SSNA reports and provide engineering reviews
- Complete more detailed evaluations of the worst buildings.



ORP CRITICAL BUILDINGS TASK GROUP **RECOMMENDATIONS**

Include Post-EQ Inspection in Emergency Response

- **Maintain an updated database of ATC-20 certified post-earthquake inspectors**
- **Incorporate protocols and procedures in emergency response plans to engage these inspectors following an earthquake**
- **Strengthen Good Samaritan laws to protect volunteer inspectors**



ORP CRITICAL BUILDINGS TASK GROUP **RECOMMENDATIONS**

Prioritize and Upgrade Essential Facilities

- **Upgrade Hospitals within 15 years**
- **Upgrade URM and Non-ductile Concrete Buildings**
 - Essential Facilities within 20 years
 - All others within 30 years
- **EOC, Police, Fire within 30 years (non URM)**
- **Upgrade non-structural components**



ORP CRITICAL BUILDINGS TASK GROUP **RECOMMENDATIONS**

Fully Fund the Seismic Retrofit **of K-12 Schools**

- **Expand seismic rehabilitation grant program**
- **Prioritize replacement of worst structures (URM's, non-ductile concrete, etc.)**
- **Require ASCE-31 seismic engineering assessments**
- **Update database of school seismic assessments**



ORP CRITICAL BUILDINGS TASK GROUP **RECOMMENDATIONS**

Encourage Upgrade of Private Sector Buildings

- **Expand the Passive Trigger Seismic Strengthening Program**
- **Accelerate the retirement or full upgrade of Vulnerable Buildings**
- **Improve plan review and construction oversight**
- **Introduce a voluntary earthquake performance rating system (similar to LEED)**



ORP CRITICAL BUILDINGS TASK GROUP **RECOMMENDATIONS**

Encourage Upgrade of Private Sector Buildings

- **Adopt incentives to encourage building to higher performance standards than “code minimum”**
- **Encourage seismic retrofit of existing homes**



ORP CRITICAL BUILDINGS TASK GROUP **THE RISK OF NOT ACTING NOW**





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ORP CRITICAL BUILDINGS TASK GROUP **THE RISK OF NOT ACTING NOW**





ORP CRITICAL BUILDINGS TASK GROUP

THANK YOU!

(QUESTIONS?)



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FINDINGS

Table 1 – 2007 SSNA

EOC, Police & Fire Stations

Table 1. Target States of Recovery For Oregon's Buildings Based on 2007 DOGAMI SSNA and Independent Structural Engineering Review									
Infrastructure Cluster Facilities	Event Occurs	Phase 1 (hours)			Phase 2 (Days)		Phase 3 (Months)		
		4	24	72	30	60	4	18	36+
Emergency Operations Centers (Coastal)								X	
Emergency Operations Centers (Valley)							X		
Emergency Operations Centers (Eastern)					X				
Police Stations (Coastal)									X
Police Stations (Valley)							X		
Police Stations (Eastern)					X				
Fire Stations (Coastal)									X
Fire Stations (Valley)						X			
Fire Stations (Eastern)				X					



Target State

X Estimated Current State



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FINDINGS

Table 1 – 2007 SSNA

Healthcare Facilities

Table 1. Target States of Recovery For Oregon's Buildings									
Based on 2007 DOGAMI SSNA and Independent Structural Engineering Review									
Infrastructure Cluster Facilities	Event Occurs	Phase 1 (hours)			Phase 2 (Days)		Phase 3 (Months)		
		4	24	72	30	60	4	18	36+
Healthcare Facilities (Coastal)								X	
Healthcare Facilities (Valley)							X		
Healthcare Facilities (Eastern)				X					
Healthcare Facilities ¹ (Coastal)									X
Healthcare Facilities ¹ (Valley)								X	
Healthcare Facilities ¹ (Eastern)					X				

¹ Analysis includes consideration of non-structural components



Target State

X Estimated Current State



ORP CRITICAL BUILDINGS TASK GROUP **FINDINGS**

Table 1 – 2007 SSNA

Schools and Emergency Sheltering

Table 1. Target States of Recovery For Oregon's Buildings Based on 2007 DOGAMI SSNA and Independent Structural Engineering Review									
Infrastructure Cluster Facilities	Event Occurs	Phase 1 (hours)			Phase 2 (Days)		Phase 3 (Months)		
		4	24	72	30	60	4	18	36+
Primary/ K-8 (Coastal)						²		X	
Primary/ K-8 Centers (Valley)						²		X	
Primary/ K-8 (Eastern)					X	²			
Secondary/High School (Coastal)						²		X	
Secondary/High School (Valley)						²		X	
Secondary/High School (Eastern)					X	²			
Emergency Sheltering (Coastal)								X	
Emergency Sheltering (Valley)								X	
Emergency Sheltering (Eastern)					X				

¹ Analysis includes consideration of non-structural components

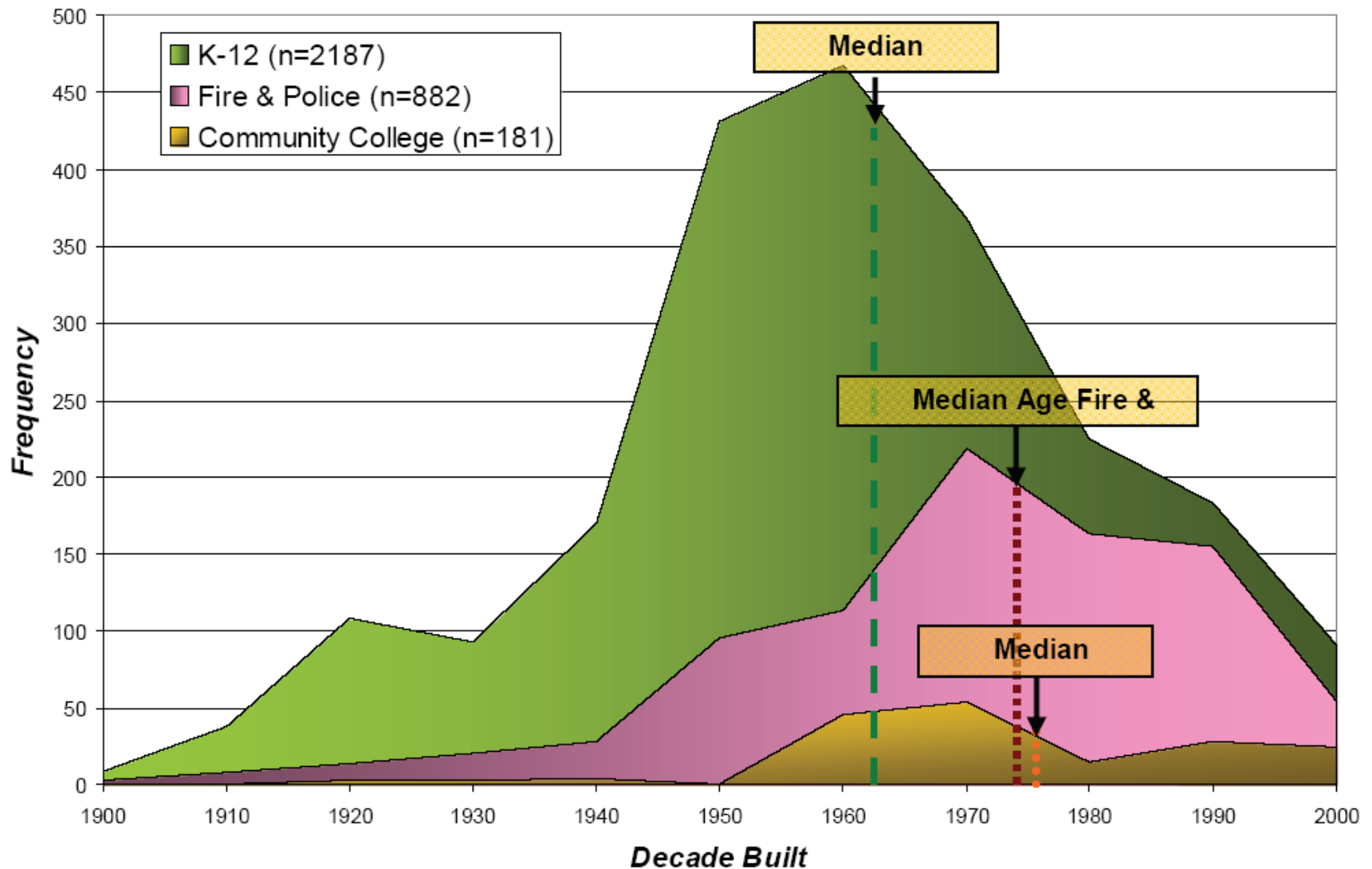
² Range recognizes preference for shorter time frame, but acknowledges a longer period can be tolerable.



Target State

X Estimated Current State

Oregon Education & Emergency Facilities





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FINDINGS

Table 2 – FEMA Hazus

Retail Centers, Banking Institutions

Table 2. Target States of Recovery For Oregon's Buildings Based on FEMA HAZUS Loss Estimations									
Infrastructure Cluster Facilities	Event Occurs	Phase 1 (hours)			Phase 2 (Days)		Phase 3 (Months)		
		4	24	72	30	60	4	18	36+
Community Retail Centers (Coastal)							X		
Community Retail Centers (Valley)					X				
Community Retail Centers (Eastern)	X								
Financial/Banking (Coastal)						X			
Financial/Banking (Valley)					X				
Financial/Banking (Eastern)	X								

Target State

X Current State (approx.)



ORP CRITICAL BUILDINGS TASK GROUP **FINDINGS**

Table 2 – FEMA Hazus Residential Housing and Vulnerable Bldgs

Table 2. Target States of Recovery For Oregon's Buildings Based on FEMA HAZUS Loss Estimations									
Infrastructure Cluster Facilities	Event Occurs	Phase 1 (hours)			Phase 2 (Days)		Phase 3 (Months)		
		4	24	72	30	60	4	18	36+
Residential Housing (Coastal)	Y				X ²				
Residential Housing (Valley)	Y			X ²					
Residential Housing (Eastern)	X								
Vulnerable Buildings (Coastal)									X
Vulnerable Buildings (Valley)								X	
Vulnerable Buildings (Eastern)					X				

¹ See section 4.3.5 for a definition of this building type.

² Average underestimates expected performance of older houses, which are vulnerable to several structural deficiencies.



Target State

X Estimated Current State



ORP CRITICAL BUILDINGS TASK GROUP **FINDINGS**

Table 2 – FEMA Hazus

Critical Government Facilities

Table 2. Target States of Recovery For Oregon's Buildings Based on FEMA HAZUS Loss Estimations									
Infrastructure Cluster Facilities	Event Occurs	Phase 1 (hours)			Phase 2 (Days)		Phase 3 (Months)		
		4	24	72	30	60	4	18	36+
Critical Government Facilities (Coastal) ¹							X		
Critical Government Facilities (Valley) ¹					X				
Critical Government Facilities (Eastern) ¹	X								

¹ See section 4.3.5 for a definition of this building type.



Target State

X Estimated Current State