



## ***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**



## ***ORP CRITICAL BUILDINGS TASK GROUP***

### **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



## IMMEDIATE ACTIONS

# ***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**



## **IMMEDIATE ACTIONS**

# ***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**

### **IMMEDIATE ACTIONS**

### **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.



## IMMEDIATE ACTIONS

# ***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**

## **SUSTAINED ACTIONS**

### **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**





## SUSTAINED ACTIONS

# ***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**



## **SUSTAINED ACTIONS**

# ***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)**



## SUSTAINED ACTIONS

# ***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**





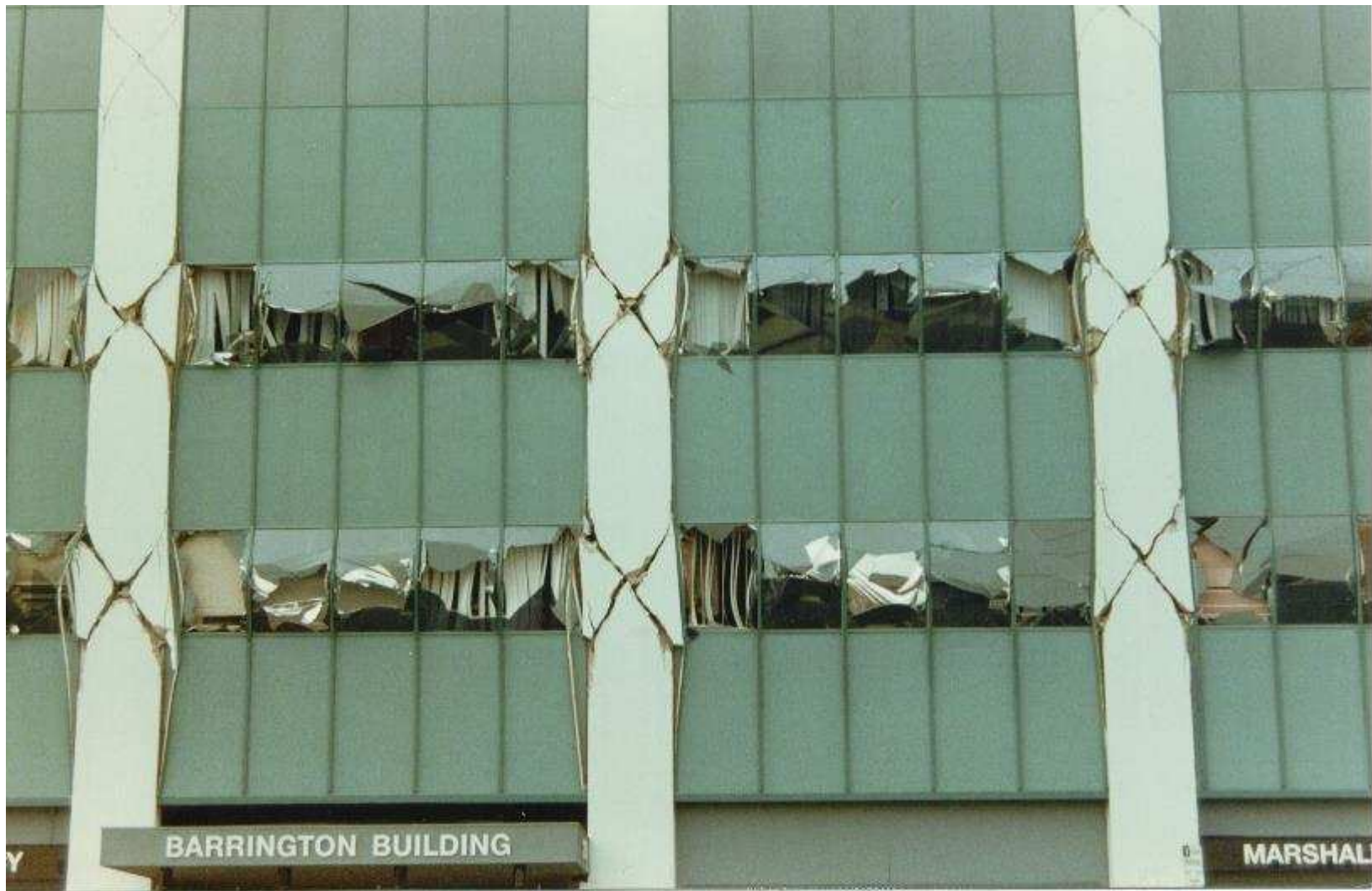
# *ORP CRITICAL BUILDINGS TASK GROUP* **THE RISK OF NOT ACTING NOW**







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





## ***ORP CRITICAL BUILDINGS TASK GROUP***

**THANK YOU!**

**(QUESTIONS?)**





# ORP CRITICAL BUILDINGS TASK GROUP

## 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



# ORP CRITICAL BUILDINGS TASK GROUP

## 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 <sup>1</sup> (Coastal)									X
Healthcare Facilities <sup>1</sup> (Valley)								X	
Healthcare Facilities <sup>1</sup> (Eastern)					X				

<sup>1</sup> 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)						<sup>2</sup>		X	
Primary/ K-8 Centers (Valley)						<sup>2</sup>		X	
Primary/ K-8 (Eastern)					X	<sup>2</sup>			
Secondary/High School (Coastal)						<sup>2</sup>		X	
Secondary/High School (Valley)						<sup>2</sup>		X	
Secondary/High School (Eastern)					X	<sup>2</sup>			
Emergency Sheltering (Coastal)								X	
Emergency Sheltering (Valley)								X	
Emergency Sheltering (Eastern)					X				

<sup>1</sup> Analysis includes consideration of non-structural components

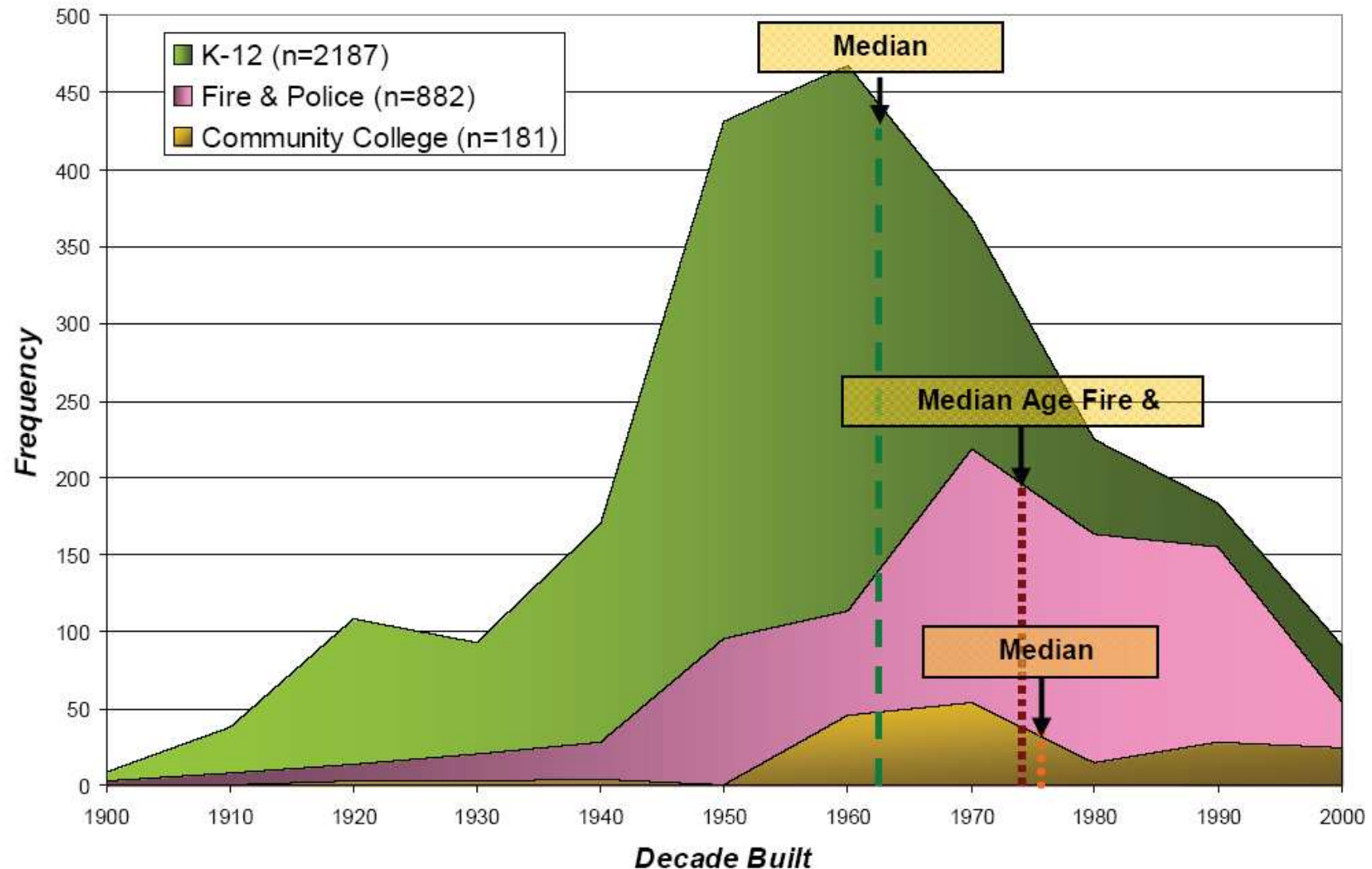
<sup>2</sup> Range recognizes preference for shorter time frame, but acknowledges a longer period can be tolerable.



Target State

X Estimated Current State

# Oregon Education & Emergency Facilities





# ORP CRITICAL BUILDINGS TASK GROUP **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)					X <sup>2</sup>				
Residential Housing (Valley)				X <sup>2</sup>					
Residential Housing (Eastern)	X								
Vulnerable Buildings (Coastal)									X
Vulnerable Buildings (Valley)								X	
Vulnerable Buildings (Eastern)					X				

<sup>1</sup> See section 4.3.5 for a definition of this building type.

<sup>2</sup> 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) <sup>1</sup>							X		
Critical Government Facilities (Valley) <sup>1</sup>					X				
Critical Government Facilities (Eastern) <sup>1</sup>	X								

<sup>1</sup> See section 4.3.5 for a definition of this building type.



Target State

X Estimated Current State