

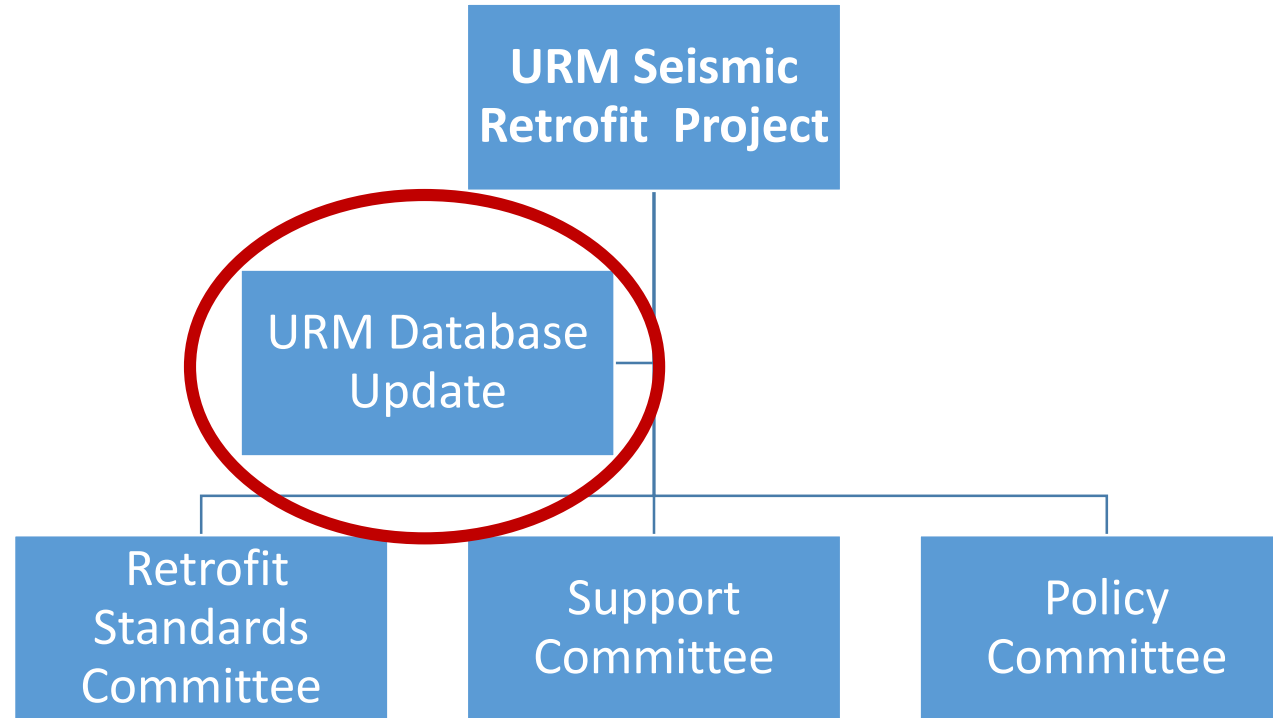


**Unreinforced Masonry (URM) Retrofit Project  
MEETING OF DRAC , FEBRUARY 16 , 2017 DRAC**

# URM Seismic Retrofit Project

- City Council directed staff from PBEM, PDC, and BDS to develop policy recommendations to reduce the risk posed by unreinforced masonry (URM) buildings
- Identify proposed code changes and assistance tools to support implementation of retrofit efforts

# URM Seismic Retrofit Project



## URM Database – Since 1994:

1884 ***Total number*** URM buildings identified

153 ***demolished*** URM buildings (8%)

87 ***fully upgraded*** URM buildings (4.5%)

164 ***partially upgraded*** URM buildings (8.5%)

### **Conclusion:**


Only 21% of the URM buildings have been demolished or upgraded in some fashion

**1644** Number of URM buildings that need total or additional seismic upgrades

# Technical Recommendations under consideration by the Policy committee

- Mandatory URM Retrofits based on URM Class
- Revisions to existing requirements in Title 24.85 to close loopholes.
- Notice to owners, in writing, of URM building status
  - Appeals process
- Enforcement (fines)
- Voluntary placarding of retrofitted URM buildings
- Tenant notification
- Public education campaign

# URM Building Classification and Upgrade Table

Seismic Risk	Classification	Description	Upgrade Level	Approx. # of Bldgs.
<p>Highest Risk</p>  <p>Lowest Risk</p>	<b>URM Class 1</b>	Critical buildings (Risk category <sup>1</sup> IV buildings, power generating stations serving critical facilities, water facilities, and other public utilities)	Structure will remain <b>Operational</b> after a Design Level Earthquake	<b>(10)</b>
	<b>URM Class 2</b>	A. All school buildings and B. Risk category <sup>1</sup> III buildings	<b>Between Life Safety and Operational</b> performance level for a Design Level Earthquake	<b>(88)</b> 46- schools 36- churches 6- community centers/theatres
	<b>URM Class 3</b>	All other URMs not categorized as URM Class 1, 2 or 4	Modified Bolts Plus if the building qualifies otherwise Life Safety under Design Level Earthquake	<b>(1357)</b>
	<b>URM Class 4</b>	1 and 2-story buildings with 0-10 occupants	Parapet bracing, wall tie in and wall bracing	<b>(203)</b> 1 and 2-story buildings with 0-10 occupants

# Timeline for Seismic Upgrades

	<b>STEP 1</b> ASCE 41 Assessment <sup>2</sup>	<b>STEP 2</b> Parapet, cornice and chimney bracing and wall to roof attachment <sup>4,5</sup>	<b>STEP 3</b> All bearing and exterior wall to floor attachments and out-of-plane wall strengthening <sup>4,5</sup>	<b>STEP 4</b> Seismic upgrade completed <sup>4</sup>
<b>URM Class 1</b>	3 years	N/A	N/A	<b>10 years</b>
<b>URM Class 2</b>	3 years	10 years	N/A	<b>20 years</b>
<b>URM Class 3</b>	5 years	10 years	20 years	<b>25 years</b> with up to an additional 5 years with demonstrable hardship
<b>URM Class 4</b>	<b>Not Reqd.</b>	10 years	<b>10 years</b>	-

# Recommended Revisions to Title 24.85

## Roof repair or replacement

Roof replacement – removal of greater than 50% of total roof area within a ~~5~~ 15 year period requires conformance to ASCE-41 standards for:

Wall anchorage for both in plane and out of plane forces and Parapet bracing

### ○ Costs of alterations or repair

- When costs associated with building alterations or repair in a ~~two five~~ year time period ~~or fifteen year time period~~ exceeds , entire building shall be improved to resist seismic forces to meet ASCE 31 41 criteria

### ○ Change in occupancy

Seismic upgrade is required due to a change in occupancy or use when Increase in occupant load by more than ~~149~~ 99 persons



# Review of Support Recommendations

- \$5M Old Town/Chinatown Urban Renewal Area
- Seismic Commercial Property Assessed Clean Energy (C-PACE) Program
- Proposed Property Tax exemption for seismic retrofits ( SB 311)
- Historic properties prioritized for public support to achieve seismic retrofits
- Central City FAR bonus and transfer system for projects that do not trigger inclusionary housing requirements
- Earthquake ombudsman
- Waiver of additional upgrade triggers beyond seismic

# Benefit Cost analysis

Benefit Cost Analysis Report commissioned by City of Portland .

Conducted by Ken Goettel a nationally recognized expert in this type of work.

The study indicated that the life safety benefits outweigh the costs by a factor of 1.5-2.0

A copy of the report is available at PBEM's website.

<https://www.portlandoregon.gov/pbem/article/596311>