

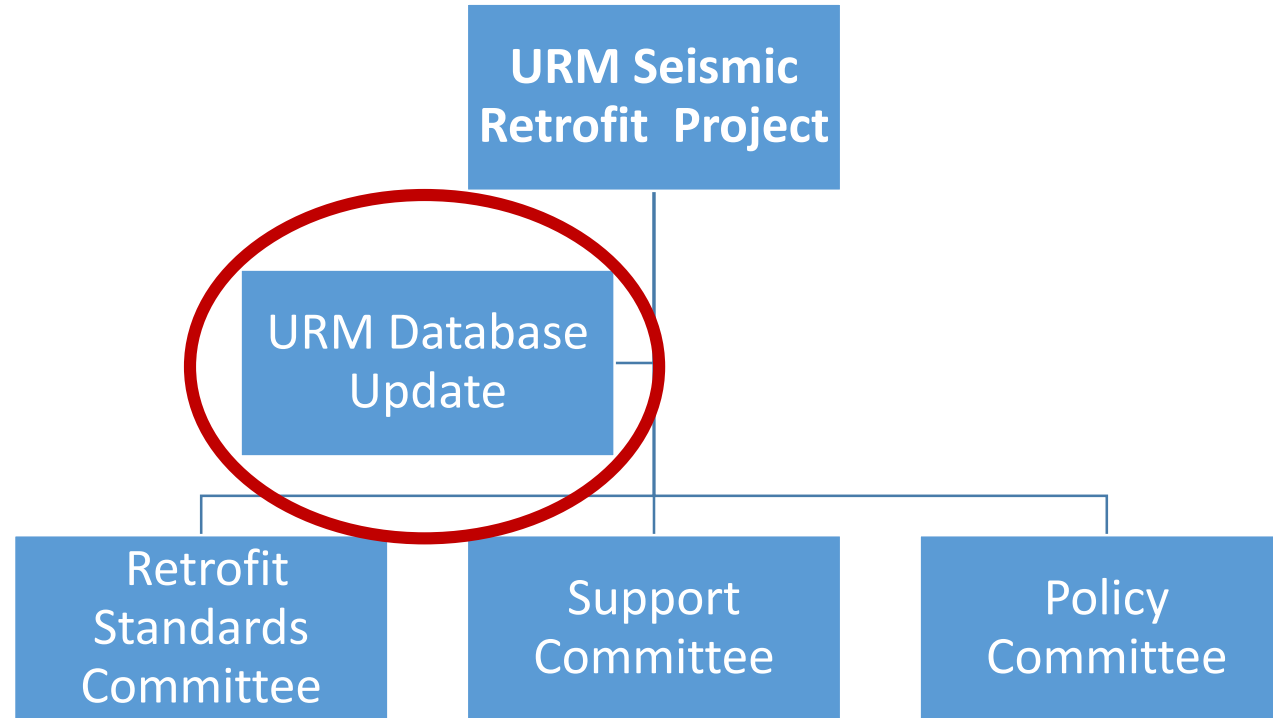


**Unreinforced Masonry (URM) Retrofit Project
MEETING OF DRAC , FEBRUARY 16 , 2017 DRAC**

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>	URM Class 1	Critical buildings (Risk category ¹ IV buildings, power generating stations serving critical facilities, water facilities, and other public utilities)	Structure will remain Operational after a Design Level Earthquake	(10)
	URM Class 2	A. All school buildings and B. Risk category ¹ III buildings	Between Life Safety and Operational performance level for a Design Level Earthquake	(88) 46- schools 36- churches 6- community centers/theatres
	URM Class 3	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	(1357)
	URM Class 4	1 and 2-story buildings with 0-10 occupants	Parapet bracing, wall tie in and wall bracing	(203) 1 and 2-story buildings with 0-10 occupants

Timeline for Seismic Upgrades

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

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>