Earthquake Hazard and Unreinforced Masonry Building Vulnerability

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JANUARY 15, 2025

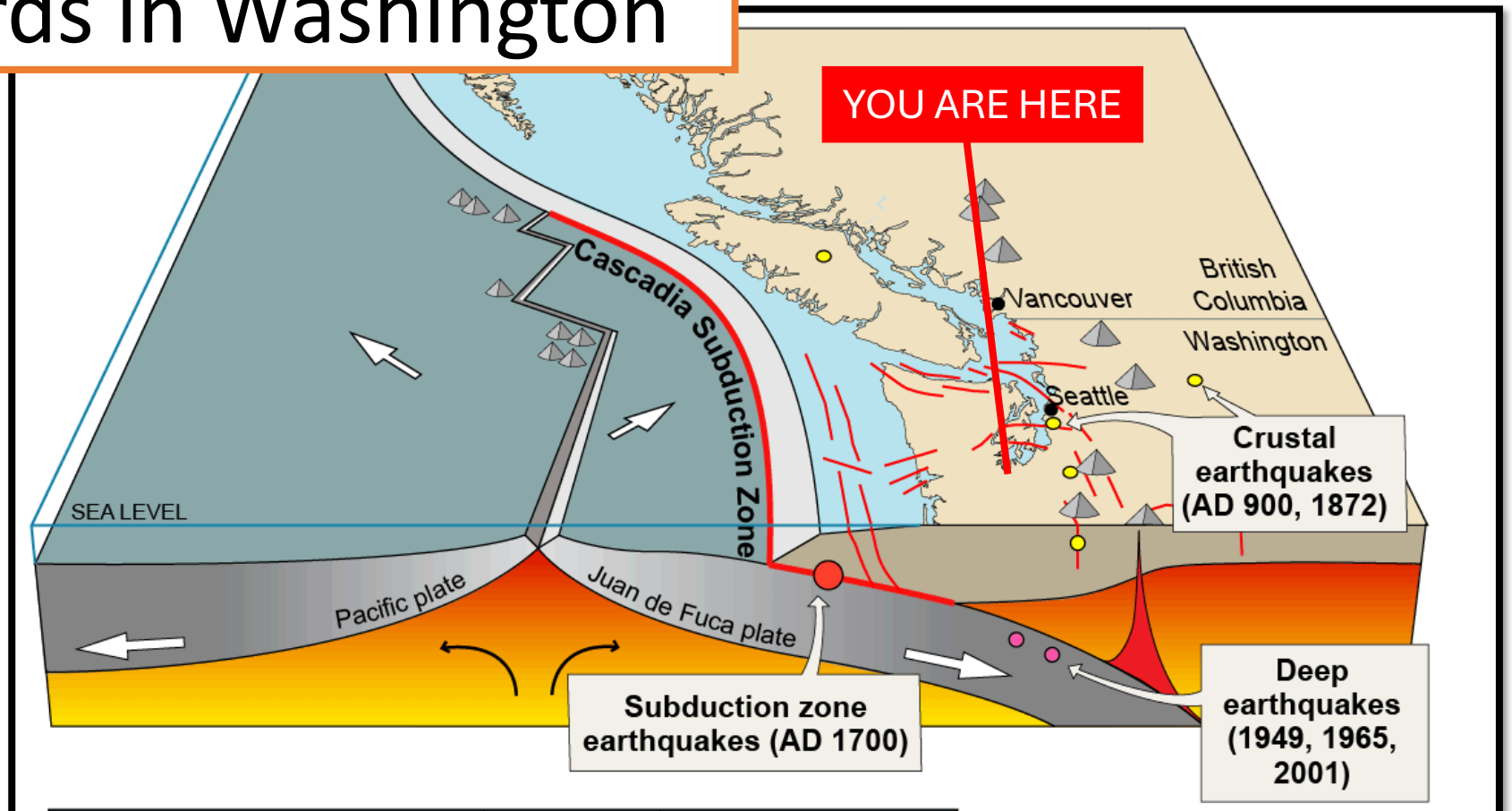
Washington State Department of Commerce

Washington State Military Department, Emergency Management Division

v1.5

Earthquake Hazards in Washington

WA has
the 2nd highest earthquake risk in the US



Source	Max. Size	Recurrence
Subduction zone	M 9+	200–600 years
Deep Juan de Fuca plate	M 7+	30–50 years
Crustal faults	M 7+	Hundreds of years?

Volcano

Active crustal fault

Active plate boundary fault

*figure modified from USGS Cascadia earthquake graphics at http://geomaps.wr.usgs.gov/pacnw/pacnweq/index.html

"The Big One"

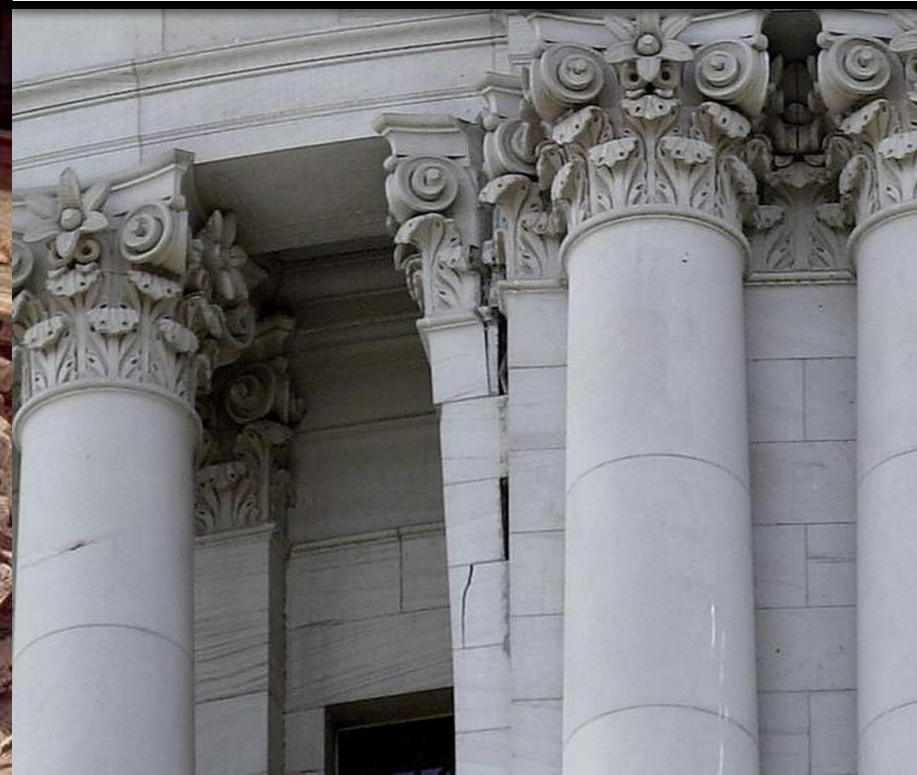
Nisqually, 2001

Seattle & Tacoma Faults

2001 Nisqually Earthquake



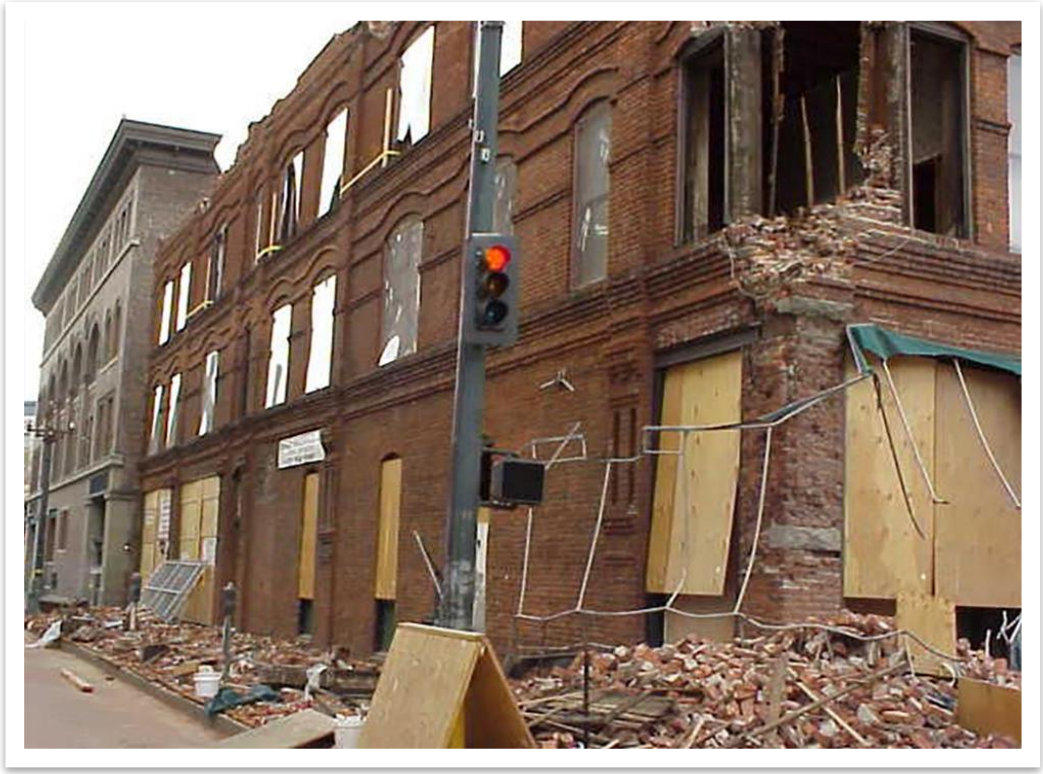




Unreinforced Masonry (URM) buildings

- Vulnerable to collapsing and experiencing severe damage during an earthquake.

- Risks include:
  - Falling exterior structures and ornamentation
  - Collapsing walls



Seattle 2001, Nisqually Earthquake

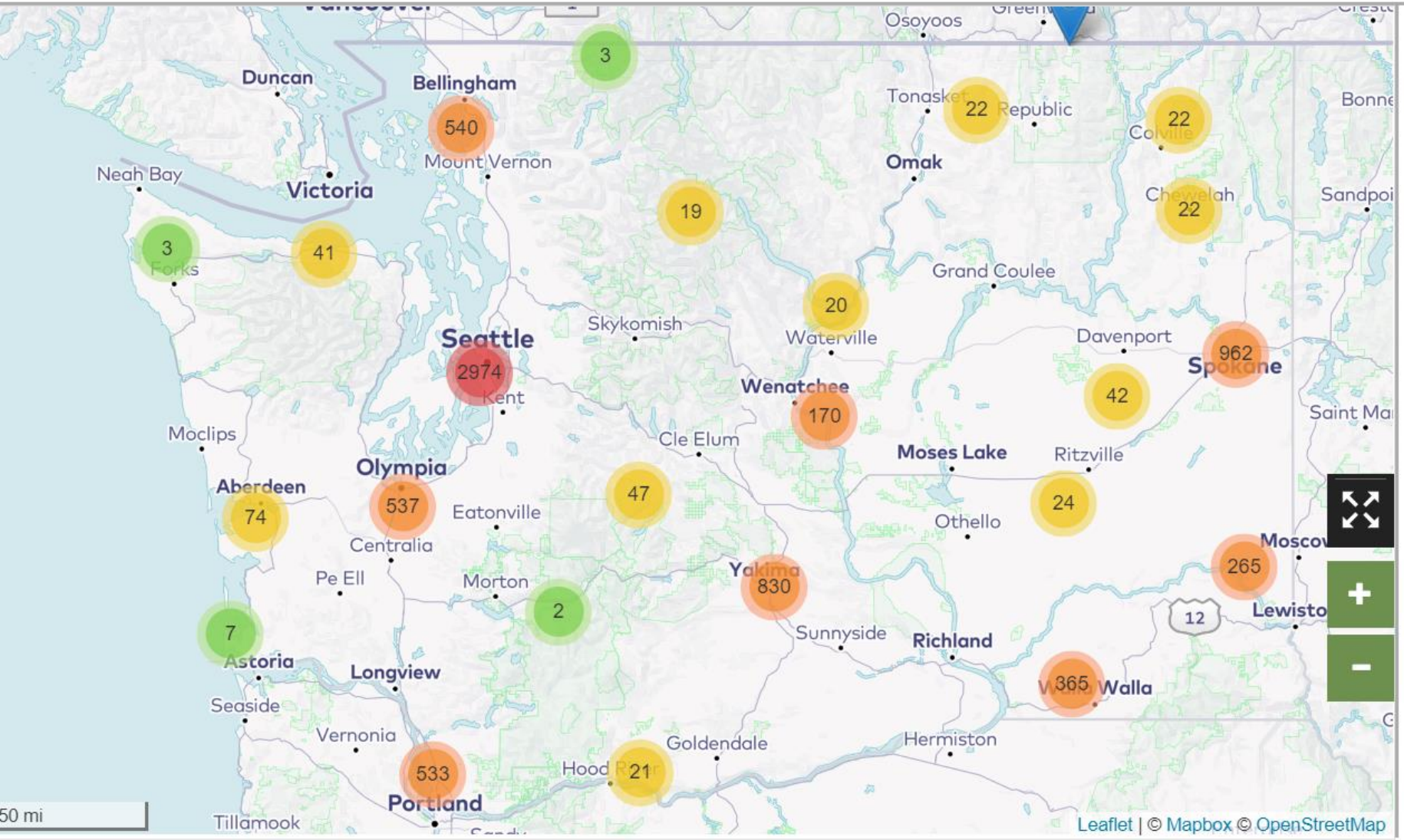
Commerce's 2018 URM inventory

- Operating budget proviso - $200,000 appropriation
- Directed to use existing data sources
- Commerce contracted with Architectural Resources Group
- Project evaluated 15,200 buildings



Washington URM Dashboard

TOOLS | CITIES | COUNTIES | LEGISLATIVE DISTRICTS | STATEWIDE | MAP LAYERS | RESET



Construction Materials

- [ ] Masonry
- [ ] CMU
- [ ] Masonry - Brick
- [ ] Other
- [ ] Masonry - Clay Tile
- [ ] Unknown
- [ ] Masonry - Stone

URM Status

- [ ] Identified URM
- [ ] Not URM
- [ ] Suspected URM
- [ ] Unknown

Historic Status

- [ ] NRHP/WHR
- [ ] WHR
- [ ] NRHP/WHR District
- [ ] WHR District

Findings

4,493 buildings classified as suspected or identified URMs

- 1,176 identified URMs
- 3,317 suspected URMs:
  - Constructed before 1958
  - One or more masonry bearing walls that provide the primary support for vertical loads from floors or roofs
  - Was not constructed as a single-family residence



Findings (continued)

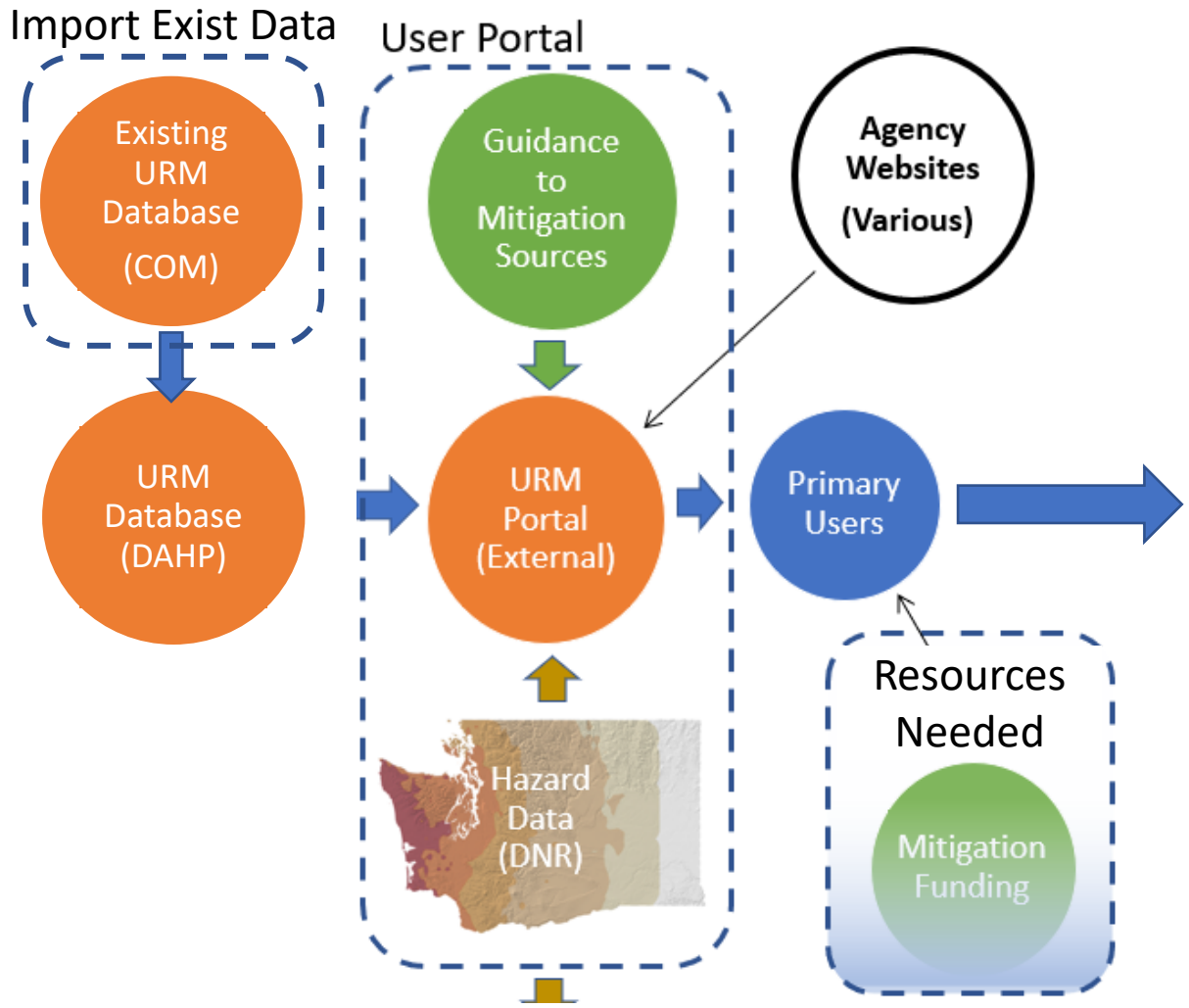
4,493 buildings classified as suspected or identified URMs

- 219 schools
- 395 publicly owned
- 170 emergency facilities
- 874 vacant or underutilized



- 748 listed on the National Register of Historic Places or the Washington Heritage Register

URM Risk Reduction Efforts So Far…



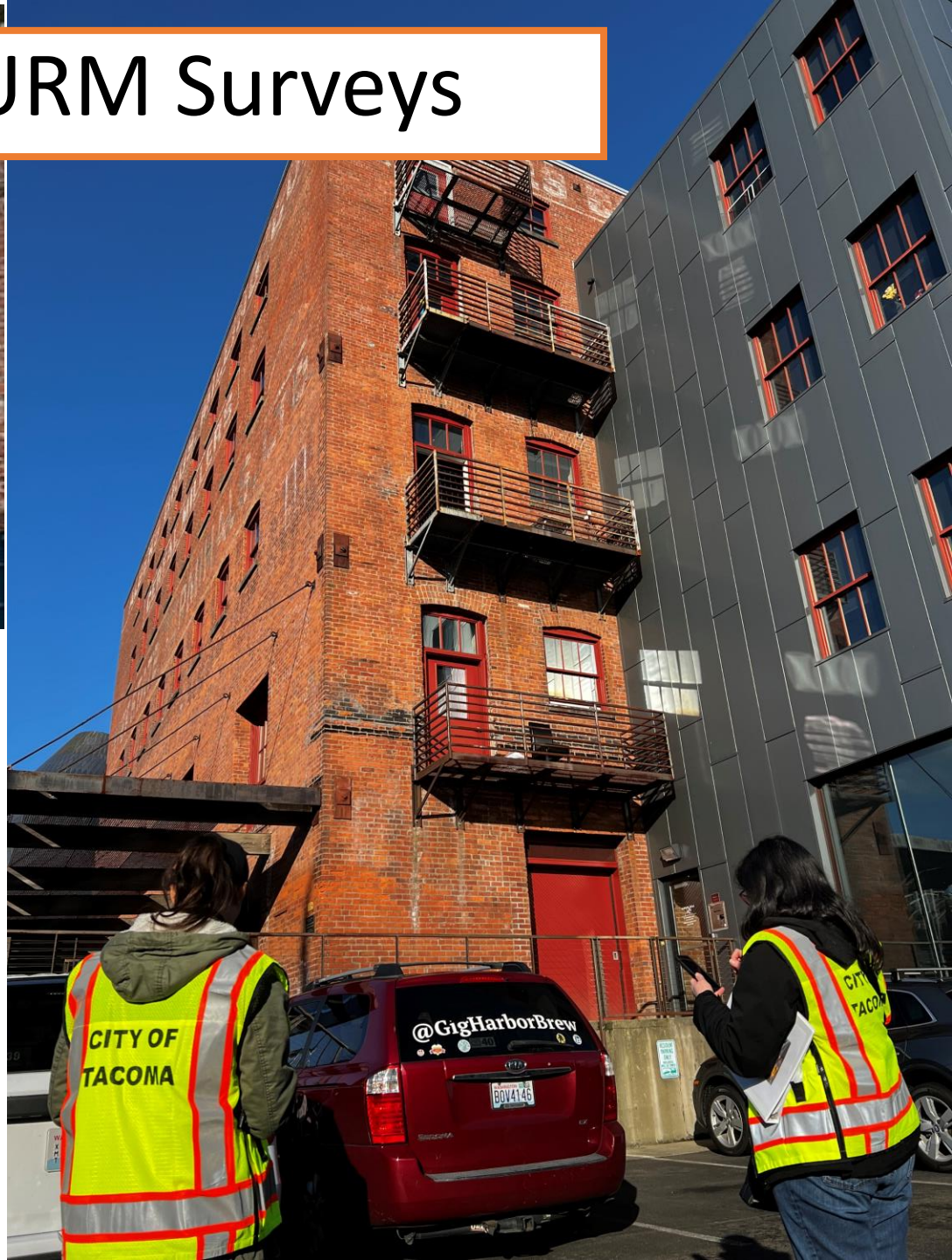
Priority Tasks

- **Modify URM database** (funded)
- **Create URM user portal** (funded)
  - Building information, risk assessment, and mitigation funding guidance
- **Complete survey of URMs** (ongoing, additional funding needed)
- **Resources to reduce/mitigate URM risk** (unfunded)

Everett and Tacoma URM Surveys







Everett

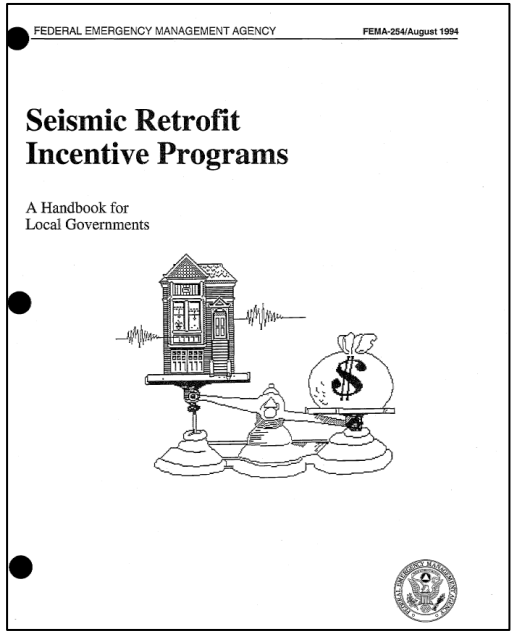
- 30+ Volunteers
- 131 URMs surveyed

Tacoma

- 60+ Participants
- 300+ URMs surveyed

Seismic Safety Sub-Committee Recommendations for Tax Incentive Study

- Modifications to State Special Valuation Tax
- Current Use Taxation
- Property Tax
- Sales Tax
- Business & Occupation Tax
- Valuation Assessment Zones
- Tax Exempt Entities


FEDERAL EMERGENCY MANAGEMENT AGENCY FEMA-254/August 1994

Seismic Retrofit Incentive Programs

A Handbook for Local Governments


23-05 FINAL REPORT:
2023 TAX PREFERENCE PERFORMANCE REVIEWS

Rehabilitated Historic Properties

LEGISLATIVE AUDITOR'S CONCLUSION:

Property owners saved $56.8 million over the past 10 years, primarily in King County and for commercial properties. While preference use has declined, use increased 6% between 2020 and 2022.

November 2023

Executive Summary

Tax exemption for rehabilitated historic properties

The 1985 Legislature enacted a special property tax valuation for rehabilitated historic properties. Owners of qualifying properties may deduct rehabilitation[1] costs from the taxable value of the property for ten years if the costs are at least 25% of the assessed structure's value. The preference applies to both state and local property taxes.

The 2020 Legislature enacted two seven-year extensions of the special valuation. Extensions are available only in cities with populations under 20,000 that are located in distressed counties[2].

Estimated Biennial Beneficiary Savings
$22.7 million (2025-27 biennium)
Tax Type
Property Tax
RCW 84.26.070

The preference achieves the stated public policy objective

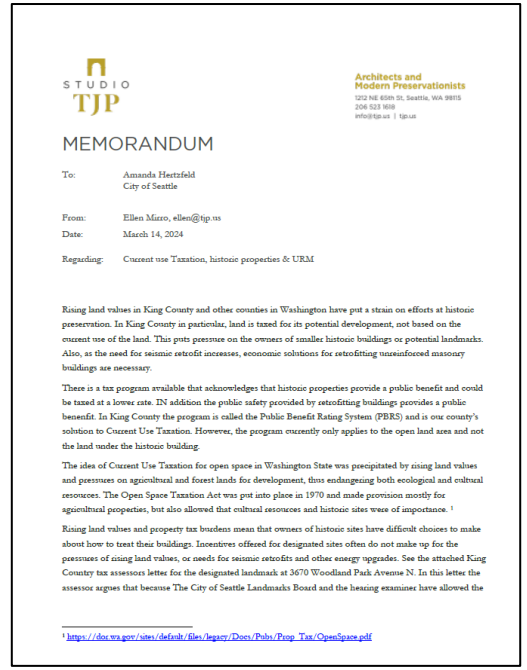
In 2020, the Legislature stated the preference was intended to promote historic property revitalization and set a January 1, 2031, expiration date for new applicants. It indicated its intent to extend the expiration date if the number of taxpayers claiming the preference increases.

Objectives (stated)	Results
To promote historic property revitalization.	**Met.** Property owners in 19 counties used the preference and rehabilitated 1,046 historic properties from 2013 to 2022.

Recommendations

[1]Repairing or altering a property so that it preserves significant architectural or cultural features.
[2]Counties with three-year average unemployment rates at least 20% above the state average.

23-05 Final Report | Rehabilitated Historic Properties 1


STUDIO TJP

Architects and Modern Preservationists
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MEMORANDUM

To: Amanda Hertzfeld
City of Seattle

From: Ellen Mirro, ellen@tjp.us
Date: March 14, 2024

Regarding: Current use Taxation, historic properties & URM

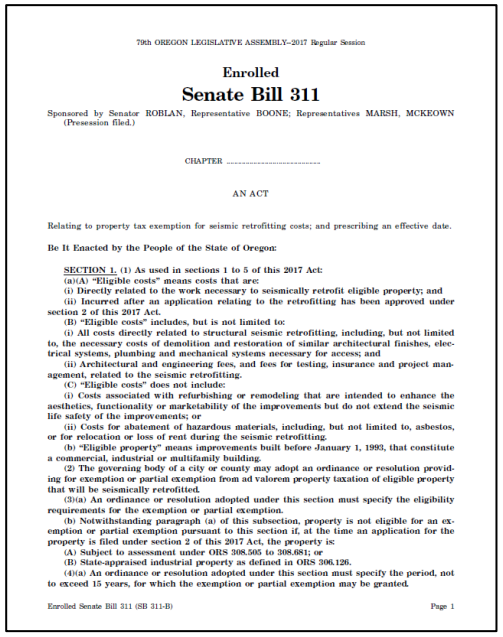
Rising land values in King County and other counties in Washington have put a strain on efforts at historic preservation. In King County in particular, land is taxed for its potential development, not based on the current use of the land. This puts pressure on the owners of smaller historic buildings or potential landmarks. Also, as the need for seismic retrofit increases, economic solutions for retrofitting unreinforced masonry buildings are necessary.

There is a tax program available that acknowledges that historic properties provide a public benefit and could be taxed at a lower rate. IN addition the public safety provided by retrofitting buildings provides a public benenfit. In King County the program is called the Public Benefit Rating System (PBRS) and is our county's solution to Current Use Taxation. However, the program currently only applies to the open land area and not the land under the historic building.

The idea of Current Use Taxation for open space in Washington State was precipitated by rising land values and pressures on agricultural and forest lands for development, thus endangering both ecological and cultural resources. The Open Space Taxation Act was put into place in 1970 and made provision mostly for agricultural properties, but also allowed that cultural resources and historic sites were of importance. [1]

Rising land values and property tax burdens mean that owners of historic sites have difficult choices to make about how to treat their buildings. Incentives offered for designated sites often do not make up for the pressures of rising land values, or needs for seismic retrofits and other energy upgrades. See the attached King County tax assessors letter for the designated landmark at 3670 Woodland Park Avenue N. In this letter the assessor argues that because The City of Seattle Landmarks Board and the hearing examiner have allowed the

[1] https://dor.wa.gov/sites/default/files/legacy/Docs/Pubs/Prop_Tax/OpenSpace.pdf


79th OREGON LEGISLATIVE ASSEMBLY–2017 Regular Session

Enrolled
Senate Bill 311

Sponsored by Senator ROBLAN, Representative BOONE; Representatives MARSH, MCKEOWN (Presession filed.)

CHAPTER .....

AN ACT

Relating to property tax exemption for seismic retrofitting costs; and prescribing an effective date.

Be It Enacted by the People of the State of Oregon:

SECTION 1. (1) As used in sections 1 to 5 of this 2017 Act:
(a)(A) "Eligible costs" means costs that are:
(i) Directly related to the work necessary to seismically retrofit eligible property; and
(ii) Incurred after an application relating to the retrofitting has been approved under section 2 of this 2017 Act.
(B) "Eligible costs" includes, but is not limited to:
(i) All costs directly related to structural seismic retrofitting, including, but not limited to, the necessary costs of demolition and restoration of similar architectural finishes, electrical systems, plumbing and mechanical systems necessary for access; and
(ii) Architectural and engineering fees, and fees for testing, insurance and project management, related to the seismic retrofitting.
(C) "Eligible costs" does not include:
(i) Costs associated with refurbishing or remodeling that are intended to enhance the aesthetics, functionality or marketability of the improvements but do not extend the seismic life safety of the improvements; or
(ii) Costs for abatement of hazardous materials, including, but not limited to, asbestos, or for relocation or loss of rent during the seismic retrofitting.
(b) "Eligible property" means improvements built before January 1, 1993, that constitute a commercial, industrial or multifamily building.
(2) The governing body of a city or county may adopt an ordinance or resolution providing for exemption or partial exemption from ad valorem property taxation of eligible property that will be seismically retrofitted.
(3)(a) An ordinance or resolution adopted under this section must specify the eligibility requirements for the exemption or partial exemption.
(b) Notwithstanding paragraph (a) of this subsection, property is not eligible for an exemption or partial exemption pursuant to this section if, at the time an application for the property is filed under section 2 of this 2017 Act, the property is:
(A) Subject to assessment under ORS 308.505 to 308.681; or
(B) State-appraised industrial property as defined in ORS 306.126.
(4)(a) An ordinance or resolution adopted under this section must specify the period, not to exceed 15 years, for which the exemption or partial exemption may be granted.

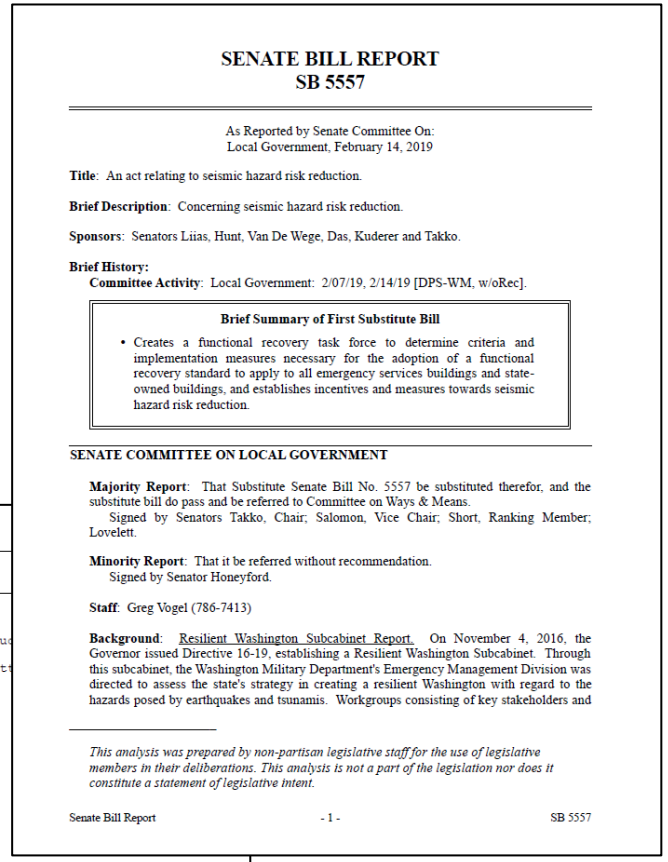
Enrolled Senate Bill 311 (SB 311-B) Page 1





Lessons Learned from SB 5557 (2019)

- Proposed Functional Recovery Task Force
  - RETAINED
- Local Authority to enact seismic retrofit incentives
  - RETAINED
- Proposed state grant program for URM retrofits
  - RETAINED
- Proposed Tax Exemption for Functional Recovery-based retrofits or new construction
  - REMOVED
  - Involvement from county assessors and private sector investment stakeholders is key to success.
  - Analysis of impacts to varying sizes of counties is needed.
  - **Senate Bill Report recommends a study.**



SENATE BILL REPORT
SB 5557

As Reported by Senate Committee On:
Local Government, February 14, 2019

Title: An act relating to seismic hazard risk reduction.

Brief Description: Concerning seismic hazard risk reduction.

Sponsors: Senators Liias, Hunt, Van De Wege, Das, Kuderer and Takko.

Brief History:
Committee Activity: Local Government: 2/07/19, 2/14/19 [DPS-WM, w/oRec].

Brief Summary of First Substitute Bill

- Creates a functional recovery task force to determine criteria and implementation measures necessary for the adoption of a functional recovery standard to apply to all emergency services buildings and state-owned buildings, and establishes incentives and measures towards seismic hazard risk reduction.

SENATE COMMITTEE ON LOCAL GOVERNMENT

Majority Report: That Substitute Senate Bill No. 5557 be substituted therefor, and the substitute bill do pass and be referred to Committee on Ways & Means.
Signed by Senators Takko, Chair; Salomon, Vice Chair; Short, Ranking Member; Lovelett.

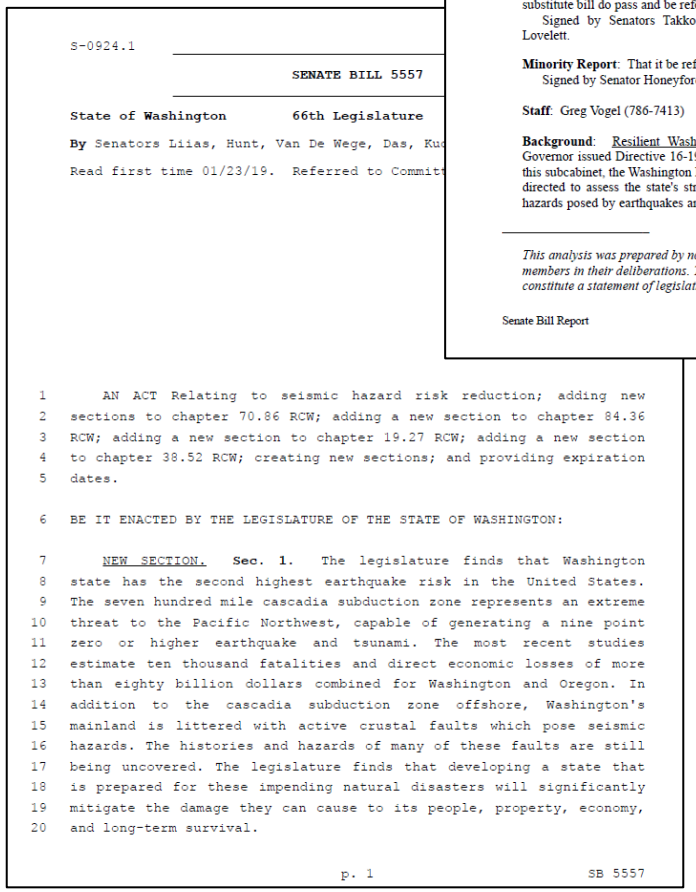
Minority Report: That it be referred without recommendation.
Signed by Senator Honeyford.

Staff: Greg Vogel (786-7413)

Background: Resilient Washington Subcabinet Report. On November 4, 2016, the Governor issued Directive 16-19, establishing a Resilient Washington Subcabinet. Through this subcabinet, the Washington Military Department's Emergency Management Division was directed to assess the state's strategy in creating a resilient Washington with regard to the hazards posed by earthquakes and tsunamis. Workgroups consisting of key stakeholders and

This analysis was prepared by non-partisan legislative staff for the use of legislative members in their deliberations. This analysis is not a part of the legislation nor does it constitute a statement of legislative intent.

Senate Bill Report - 1 - SB 5557



S-0924.1

SENATE BILL 5557

State of Washington 66th Legislature

By Senators Liias, Hunt, Van De Wege, Das, Ku

Read first time 01/23/19. Referred to Commit

AN ACT Relating to seismic hazard risk reduction; adding new sections to chapter 70.86 RCW; adding a new section to chapter 84.36 RCW; adding a new section to chapter 19.27 RCW; adding a new section to chapter 38.52 RCW; creating new sections; and providing expiration dates.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF WASHINGTON:

NEW SECTION. **Sec. 1.** The legislature finds that Washington state has the second highest earthquake risk in the United States. The seven hundred mile cascadia subduction zone represents an extreme threat to the Pacific Northwest, capable of generating a nine point zero or higher earthquake and tsunami. The most recent studies estimate ten thousand fatalities and direct economic losses of more than eighty billion dollars combined for Washington and Oregon. In addition to the cascadia subduction zone offshore, Washington's mainland is littered with active crustal faults which pose seismic hazards. The histories and hazards of many of these faults are still being uncovered. The legislature finds that developing a state that is prepared for these impending natural disasters will significantly mitigate the damage they can cause to its people, property, economy, and long-term survival.

p. 1 SB 5557



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BOMA Greater Seattle

- Building Owners and Managers Association of Greater Seattle for Western Washington
- 30 years BOMA President; 10 years Space Needle, Director of Property Management
- BOMA Seattle is the predominate commercial real estate trade association since 1912
- Representing 2,000 BOMA members (275 companies) who own or manage some 75% of office buildings and other types of commercial real estate or provide goods and services to owners and tenants in the Puget Sound area.

With few exceptions, **URM Retrofits are not economically viable without tax incentives** and retrofit requirement considerations.

$100–150 SF = Today's market value of a URM (Loan default sales driving lower values, in 2025).

$45 SF = The cost to retrofit using a reduced retrofit standard
(not including moving expenses and cost of lost revenue during retrofit construction).

$156 SF = Full code compliant retrofit (not including moving expenses and cost of lost revenue during retrofit construction).

$12-16 SF/Year = annual operating expenses for an office building

Retrofit costs can be 1/3 or more of the value of the entire property
Retrofit costs can be 6-7 times annual operating costs

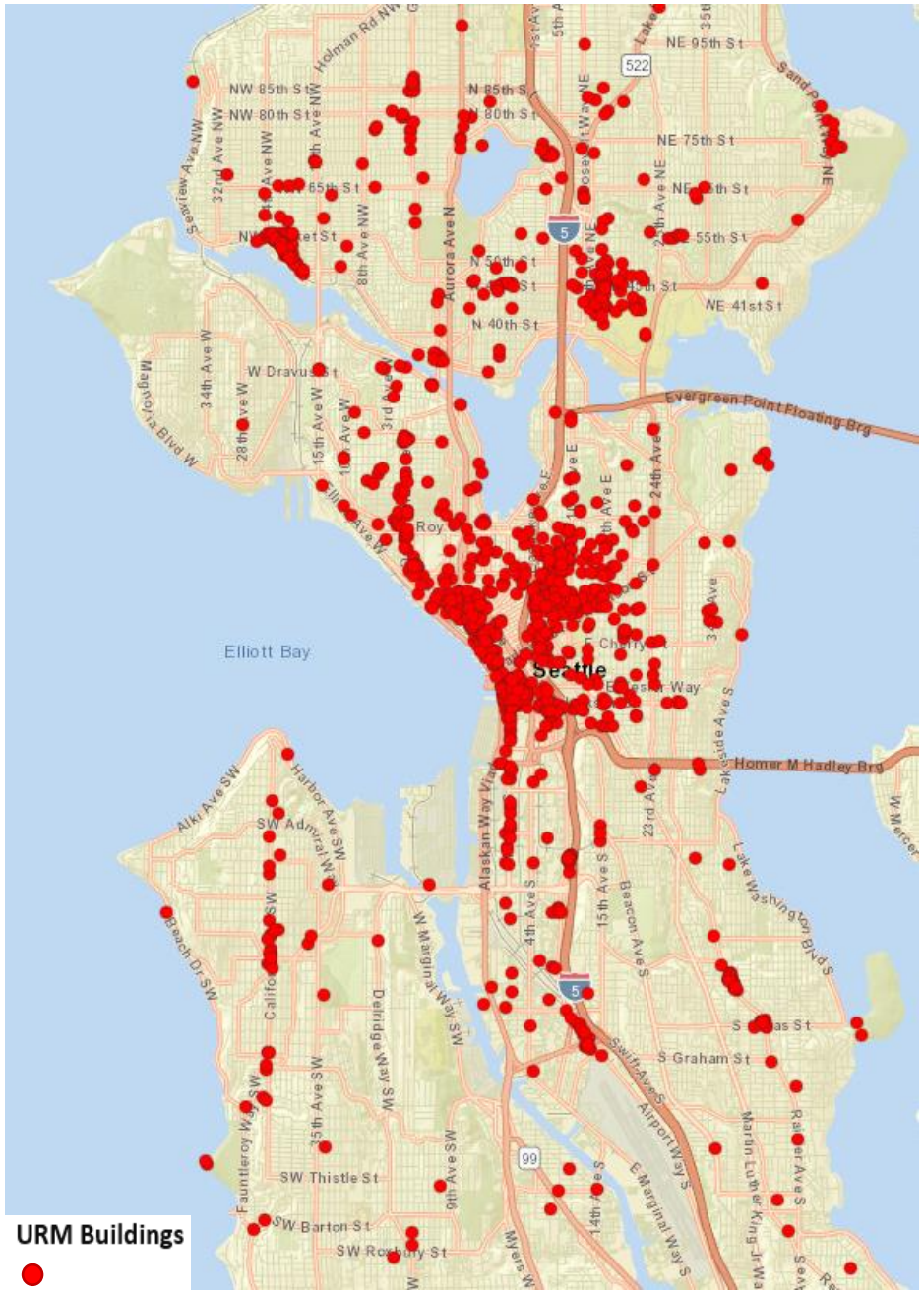
URM Retrofits: Improving Seattle's Earthquake Resilience



Photo by John Skelton

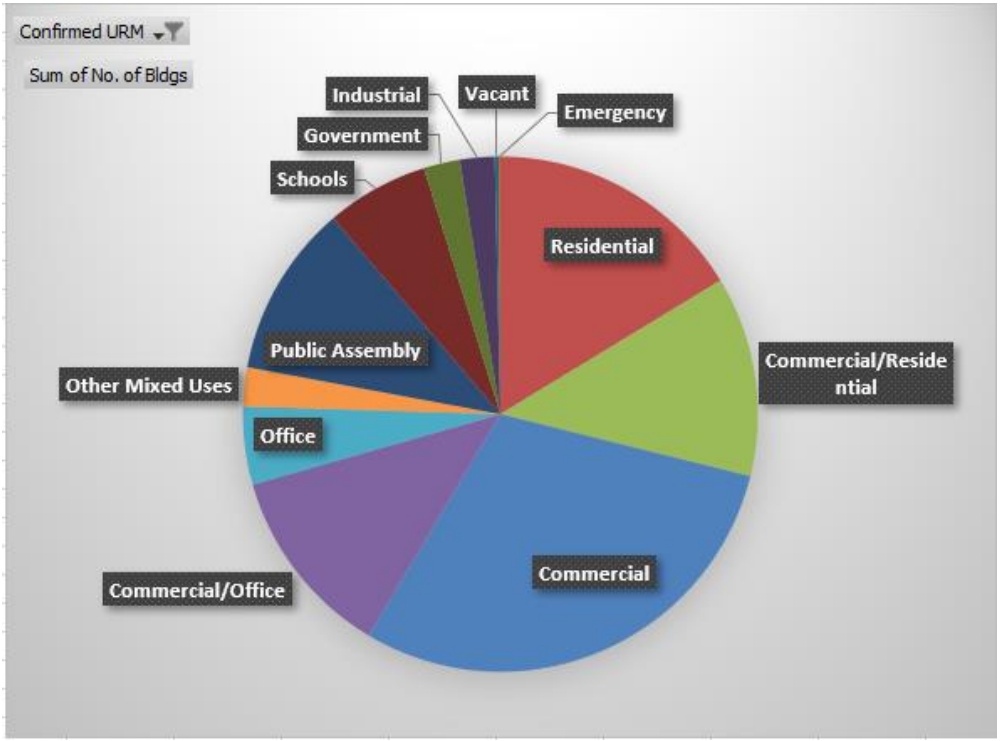
Amanda Hertzfeld
URM Program Manager
Department of Construction & Inspections
City of Seattle

January 15, 2025



Seattle has 1,100 URMs

- Higher density of URMs in underserved communities.
- 22,000 households
- 609 Commercial buildings



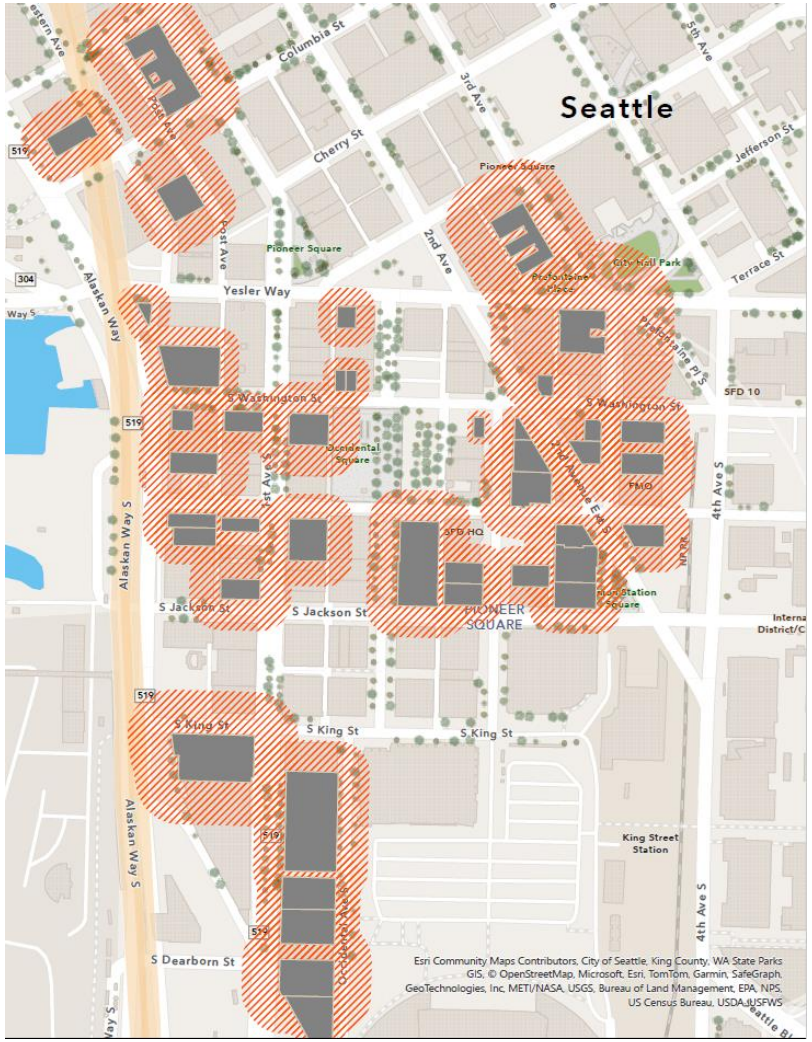








Economic Impacts of Earthquakes

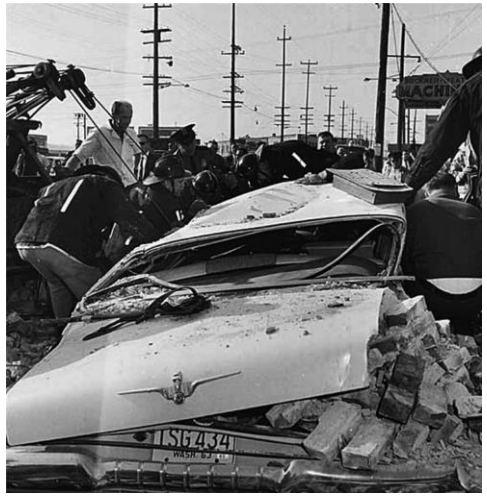






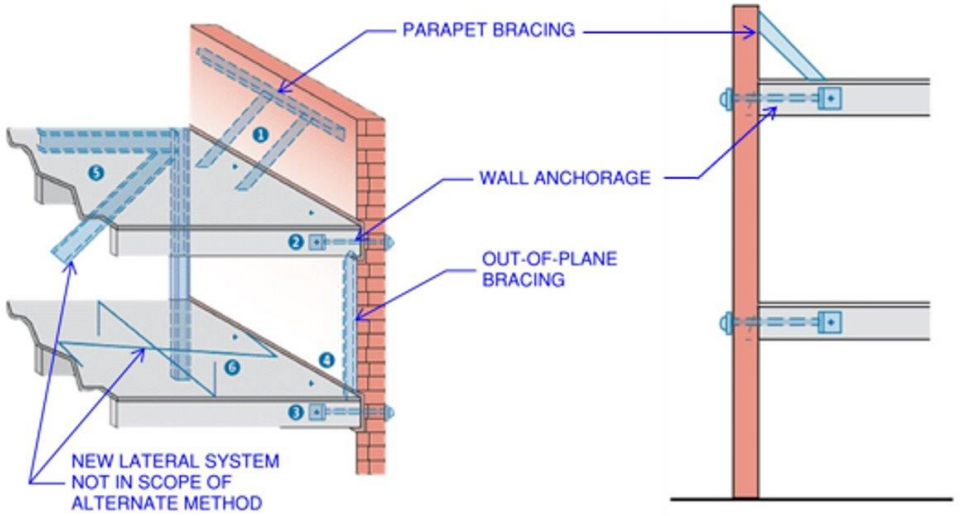


The Burden of URM Retrofit Costs





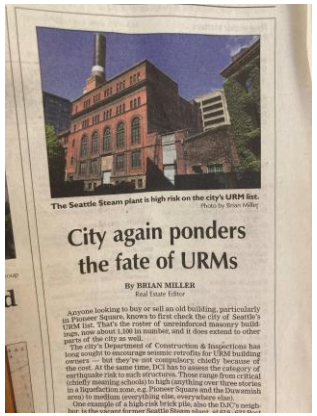
2016





Adopted: 1973

Repealed: 1978



2024

2024 Adopted a Reduced Standard for Retrofit

Intended to minimize costs of design and construction while reducing the risk of collapse.

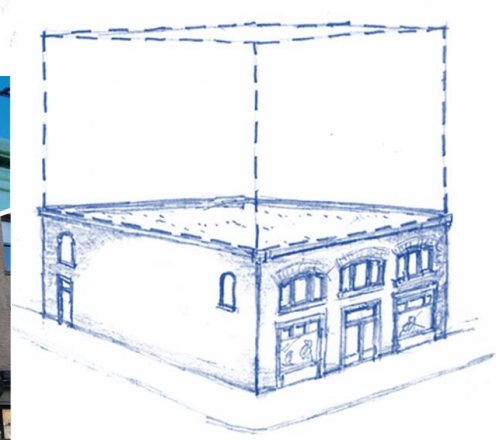
Reducing Retrofit Costs

- Federal grants
  - Individual buildings
  - Retrofit Reimbursement Program
  - Finance Incentive Development
- Transfer of Development Rights
- Tax Incentive Programs









Supporters of a URM retrofit Tax Incentive Study

1. WA Association of Cities
2. WA Association of Counties
3. WA Association of County Officials
4. Building Owners and Managers Association (BOMA)- Greater Seattle
5. WA Association of Building Officials (WABO)
6. City of Seattle
7. City of Tacoma
8. Downtown Tacoma Partnership
9. City of Olympia Emergency Management
10. Downtown Everett Association
11. Ellensburg Downtown Association
12. Kittitas Valley Fire and Rescue
13. Spokane Preservation Associates
14. WA Trust for Historic Preservation
15. Association for Preservation Technology- PNW Chapter
16. Historic Seattle
17. 4Culture
18. Masons of Washington
19. Masonry Institute of WA
20. Bricklayers and Allied Craftworkers Local 1 WA/AK
21. American Institute of Architects (AIA)- WA Chapter
22. Structural Engineers Association of WA (SEAW)
23. WA State Seismic Safety Subcommittee of the Emergency Management Council
24. WA State Emergency Management Association (WSEMA)
25. WA Association of Education Service Districts (AESD)

Thank you!

Questions?