City of Seattle
Recommendations for an Unreinforced Masonry Policy

Background

The city of Seattle's Department of Construction and Inspections (SDCI) is considering a mandate for all unreinforced masonry (URM) buildings to undergo a seismic retrofit to reduce the risk of injury and loss of life in the case of an earthquake. Unreinforced masonry buildings are typically multiple-story, red-brick structures found in many of the city's oldest neighborhoods and commercial centers. URM buildings are known to be unsafe in the case of an earthquake as they are built without steel reinforcement or sufficient structural connections between the building's walls and other structural elements. A seismic retrofit can significantly reduce a URM building's risk of collapse in the event of an earthquake. Collapsed buildings can endanger the lives of the building's occupants and nearby pedestrians, block public rights-of-way for emergency response, and delay overall recovery from the earthquake.

Why is a URM policy necessary?

The primary reason the city of Seattle is pursuing a URM retrofit policy is public safety. Earthquakes in 1949 and 1965 significantly damaged URM buildings in Seattle. The 2001 Nisqually earthquake again underscored the vulnerability of URM buildings, as two-thirds of the buildings the City determined unsafe after the earthquake were URM buildings. Seattle is the only city in the country to have experienced URM building damage from 3 different earthquakes in 73 years.

Experts believe the chance of a damaging earthquake in the Puget Sound region in the next thirty years is significant. In addition to a repeat of damaging deep earthquakes such as those experienced in 1949, 1965, and 2001, Seattle potentially faces much stronger shaking from shallow earthquakes originating from the Seattle Fault or longer duration earthquakes originating from the Cascadia Subduction Zone. Damage from these ground motions could be considerably greater than deep earthquakes and could disproportionately affect seismically-weak structures, such as unreinforced masonry buildings.

Another objective of the URM policy is to preserve the historic and cultural character and the economic vitality of many of the City's most vibrant neighborhoods. Without proper protection, many of the historic buildings and landmarks that define a neighborhood or community are susceptible to damage from an earthquake. Additionally, initial inferences are that URMs are located in many neighborhoods where communities of color live and work, where languages other than English are spoken, and where local businesses serve these communities. A neighborhood's economic recovery may be delayed by the cleanup of debris from earthquake-damaged buildings.

Status of Seattle's URM Buildings

There are more than 1,100 URM structures within the city limits, used for a variety of purposes from commercial real estate and warehouses to multi-family apartment buildings and single-story residential housing. Although many buildings have been seismically retrofitted to improve safety to some degree, many buildings will require some level of structural improvements under the proposed policy. A list of existing URM buildings and their addresses can be found on the URM Policy website. The list will be periodically updated to add any URM buildings not included by the City's inventory, and remove buildings where engineers have demonstrated they are not URMs.

Previous URM Policy Efforts

Unreinforced masonry buildings are not a new issue for Seattle. In the 1970s, the Seattle City Council passed several ordinances requiring all URM buildings to achieve a given structural standard. The ordinances were eventually repealed when talks between the City and building owners met an impasse due to the cost of implementing the upgrades. SDCI resumed efforts at creating a citywide policy by forming URM policy and technical committees in 2008. The technical committee ultimately recommended adopting a modification of the Bolts Plus retrofit standard commonly used in California. The technical committee recommended the modification (described below) to better address life safety concerns. Policy Committee discussions ultimately were unable to move forward to generate a recommendation primarily due to the cost of retrofits. At the time, the estimate for a retrofit ranged from $5-40 per square foot.

Current City Retrofit Policy

Currently, the Seattle Building Code requires unbraced parapets on URM buildings to be abated or braced. This requirement is enforced when SDCI receives an application for a building permit for any work in the building. If a developer or owner chooses to construct a major addition or alteration to their building, or if a building sustains major damage in an event, the City building code requires a seismic report to be submitted along with the building permit. If the report indicates the building is substantially out of compliance with current engineering standards for existing buildings, seismic retrofit will be required. There is currently no policy in place that requires a major seismic retrofit of URM buildings that are not undergoing a major improvement or alteration.

URM Retrofit Standard

The 2008 Technical Advisory Committee, comprised of engineers, architects, and building owners, worked closely with the Structural Engineers Association of Washington (SEAW) to produce a recommended technical standard for a future URM retrofit policy. The proposed standard – referred to as the URM Retrofit Standard in this document – is a modification of the Bolts Plus retrofit for qualifying URMs. It requires that:

- parapets be braced;
- floors and roofs be structurally connected to URM walls;
- framing be interconnected to strengthen floors and roofs;
- weak interior and exterior bearing walls be strengthened.

The technical committee recognized that the URM Retrofit Standard is not appropriate for all building configurations. Qualifying buildings[1] would require a minimum amount of retrofit work to connect a building's walls to the floors and roof**.** URMs that do not qualify for the modified Bolts Plus standard would be required to meet a more rigorous standard with an engineered design. The standard is not stringent enough to prevent all URM buildings from being damaged or becoming uninhabitable due to a large earthquake, but is proposed as the least intrusive method for retrofitting qualified URM buildings to improve life safety in smaller, more frequent earthquakes.

2012 URM Policy Committee Process

Current Policy Committee

In 2011 at the request of City Councilmember Richard Conlin, SDCI convened a new URM Policy Committee to recommend elements of a city-wide URM policy. The committee brought together URM property owners, geological and seismology experts, structural engineers, architects, housing and real estate development representatives, and historic preservation professionals. The committee's charge was clear: given that a mandatory seismic retrofit policy would be enacted by the City, develop recommendations that would contribute to the most effective policy possible. City staff will consider the recommendations after the Committee work is complete, and draft a URM retrofit policy for Mayoral and Council review.

In 2012, the Policy Committee prepared a set of draft recommendations for the URM retrofit policy. At this time, the committee also requested the City provide a benefit cost analysis for the seismic retrofit of URM buildings in Seattle, so they could better understand the cost of the policy. Following the completion of this work, the Policy Committee met in early 2014 to confirm or revise their recommendations. In April 2014, the committee asked the City to provide a more detailed inventory of URM buildings before they finalized their recommendations. This inventory would provide a clearer estimate of the number of buildings in each risk category as well as further refine the overall estimated cost of retrofits in the city, and would allow the Policy Committee to make recommendations on whether a retrofit policy should be mandatory for all eligible buildings. The URM Validation Report was completed in 2016, and the Policy Committee resumed meeting to finalize their recommendations.

Policy Committee Members

The table below includes members who served on the Policy Committee at any point between its formation in 2012 and its conclusion in 2017.

URM Policy Committee Members		
Name	**Organization**	**Area of Expertise**
Bob Born	Bellwether Housing	Residential building owner
Lynda Carey	Bellwether Housing (formerly)	Residential building owner

[1] Qualifying buildings meet certain criteria and are eligible to use the modified Bolts Plus standard, as defined by the URM Technical committee final report, 2010.

Manish Chalana	University of Washington	Urban design and historic preservation
Mark Chubb	ManitouNW LLC	Christchurch, NZ recovery
Bob Freitag	University of Washington	Urban and Hazard Mitigation Planning
David Gonzalez	Degenkolb Engineers	Structural engineering
Mark Huppert	Preservation Green Lab (formerly)	Historic buildings and financing
Edlira Kuka	Solid Ground	Rental housing
Terry Lundeen	Coughlin Porter Lundeen	Structural engineering
Paul Mar	Seattle Chinatown International District Preservation and Development Authority	Real estate development
Sean Martin	Rental Housing Association	Rental housing
Rachel Minnery	Environmental Works (formerly)	Architect
Steve Moddemeyer	Collins Woerman	Sustainable development
Mark Pierepiekarz	MRP Engineering	Structural engineering
Tom Pittsford	University of Washington	Structural engineering
Mike Powe	Preservation Green Lab	Historic buildings and community development
Michale Robinson	A.I.D. Development Group	Developer
Lara Simmons	Structural Engineer	Structural engineering
Ryan Smith	Martin Smith Inc	Commercial building owner
Craig Weaver	U.S. Geological Survey	Geophysics
Eugenia Woo	Historic Seattle	Historic buildings

Meeting Schedule

The URM Policy Committee was formed in February 2012, and met a total of 15 times between 2012 and 2017. All meetings were open to the public, with meeting agendas and materials posted on the Policy Committee website. Community members were able to ask questions and provide feedback at each meeting as well as provide comments on the Committee's recommendations through the program's contact email: SCI_URM_Policy_Committee_Comments@seattle.gov.

Finance Sub-Committee

The Policy Committee elected to form a sub-committee to engage in a more detailed discussion of the financing options for URM retrofits. Several Policy Committee members were nominated for the sub-committee, along with relevant City staff and private financing professionals. The sub-committee met twice and developed a series of funding recommendations that were presented to the Policy Committee for consideration.

URM Finance Sub-Committee Members	
Name	**Organization**
Bob Freitag	University of Washington

John Gibson	Gibson Economics
Mark Huppert	Preservation Green Lab (formerly)
Erika Lund	City of Seattle, Office of Emergency Management
Steve Moddemeyer	Collins Woerman
Michale Robinson	A.I.D. Development Group
Ken Takahashi	City of Seattle, Office of Economic Development

Benefit Cost Analysis

The Policy Committee considered the results and information derived from several benefit cost analyses when making recommendations. These analyses used computer models to compare the relative costs and benefits of proposed building retrofits in different earthquake scenarios. However, the models are not able to provide exact predictions of actual damages, nor provide exact estimates of benefits. Given the limitations of all benefit cost analyses, the Policy Committee's recommendations were not based on any one study, or any one model. The Committee understood that all models have strengths and weaknesses, and that the committee's role was to make their policy recommendations based on all available information.

URM List Validation Report

In 2016, the City prepared an updated list of URM buildings in Seattle. This updated list was developed through visual observations during walking tours, examination of permit records and architectural drawings, and removed any duplicate listing of buildings. SDCI found 1,154 URM buildings in Seattle (excluding single family residences and duplexes), comprising 26.2 million square feet of gross floor area. More information on the list of URM buildings in Seattle can be found in Appendix A.

URM Policy Goals and Objectives

The city of Seattle identified a primary policy goal for the URM retrofit program to improve life safety by reducing the risk of injury from collapse of URMs in the event of an earthquake. Seismic retrofits for Seattle's URM buildings would enhance the safety of the structures and reduce the threat of injury or death in the case of an earthquake.

The City's secondary goals for the program include:

- Preserving Seattle's historic and culturally significant landmarks and structures
- Preventing the collapse of buildings deemed important to a neighborhood and the surrounding community to help preserve a neighborhood's historic character
- Improving Seattle's resiliency to earthquake events, allowing for a quick recovery and cleanup and thereby benefiting both the City and community
- Minimizing an outcome that results in demolished or vacant buildings in response to passage of a retrofit ordinance

To achieve these goals identified by the City, the Policy Committee is recommending a URM program that will support several objectives. These include:

- Creating a program that is easy for building owners to understand and implement
- Reducing the cost of retrofits to building owners by providing options for financial support
- Encouraging early participation in the retrofit program
- Encouraging building owners to retrofit beyond the program's minimum requirements in order to enhance the probability that the URM building will remain standing in the event of an earthquake
- Building broad-based support for the program

Policy Committee Recommendations

The 2012 URM Policy Committee was tasked with developing a series of policy recommendations to SDCI on a mandatory URM seismic retrofit program. Based on the work of the 2008 URM Technical Committee, the Committee assumed retrofits would be based on the URM Retrofit Standard. More information on the URM Technical Committee report can be found on the City's website.

Should the retrofit policy be mandatory?

The Policy Committee agrees that a retrofit policy is important to improve life safety by reducing the risk of collapse by URM buildings in the event of an earthquake. The committee recommends that the retrofit policy be mandatory for all URM buildings, but that the policy should include an appeal process to account for specific circumstances.

What buildings are subject to the retrofit requirement?

The Policy Committee recommends that the URM retrofit program apply to all buildings that have unreinforced masonry bearing walls, including residential buildings with three or more units. Brick veneer and concrete masonry buildings have been excluded from the URM retrofit program. The three-unit threshold is consistent with SDCI's classification for multi-family structures. Single-family and two-unit residences are excluded from retrofit requirements, in part because many single - and double-unit residences are not URM buildings, and because these building generally have fewer occupants than multi-family structures.

How is building vulnerability described?

The Policy Committee recommends that buildings be classified into three categories according to the building vulnerability with regard to life safety impacts. Those categories are:

- Critical vulnerability: schools and critical facilities (hospitals, fire stations, etc.). This category includes 77 buildings in Seattle.
- High vulnerability: buildings greater than 3 stories on poor soil or buildings with more than 100 occupants. This category includes 183 buildings in Seattle.
- Medium vulnerability: all other URM buildings. This category includes 902 buildings in Seattle.

To inform this recommendation, the Policy Committee reviewed vulnerability categories used in several California jurisdictions. The committee's discussion on vulnerability categories centered on the number of occupants each building is likely to hold, the use of the building, and whether the building sits in an

area with soft soils, such as a liquefaction-prone area.

Critical vulnerability: Several committee members advocated for hospitals, first responders, and shelters to be within the critical vulnerability category because the city would be hindering its own recovery without these essential buildings. Educational facilities (housing children) were also determined to be critical vulnerability buildings because of the age of the occupants.

High vulnerability: A number of URM buildings rest on soil that is prone to liquefaction in the event of an earthquake, greatly increasing the risk of and likely extent of damage. Likewise, taller buildings are more susceptible to collapse. With this in mind, the committee decided to include in the high vulnerability category any building with more than three stories in areas of poor soil condition or buildings that hold 100 or more occupants (regardless of underlying soil conditions).

Medium vulnerability: All other URM buildings with three or more units are classified as medium vulnerability.

The Policy Committee did not identify a low vulnerability category because all URMs are at risk during seismic events.

What are the steps in completing a retrofit?

The Policy Committee recommends a retrofit program that includes the following steps.

1. **Notification**. The retrofit process should begin with SDCI providing formal written notification to all owners of URM buildings preliminarily identified by SDCI. This formal notification will state that their property is subject to the URM program, and should include a description of the URM program, information about the program's purpose and goals, an outline of the timeline for compliance and enforcement measures, and a description of funding sources and incentive programs. This formal notification will also include SDCI's preliminary assignment of a vulnerability category for the building and a corresponding timeline for complying with the URM policy.

2. **Assessment**. Following the notification, building owners will be responsible for commissioning a seismic assessment of the building. If the assessment confirms that the structure is a URM, it should note any seismic vulnerabilities of the building and identify what upgrades are necessary for the building. If the assessment indicates that SDCI has erroneously assigned a building to a vulnerability category, the building will be re-categorized and given a new timeline for compliance. Additionally, buildings determined by the assessment to not be unreinforced masonry will be removed from the City's Confirmed URM list.

   The committee emphasizes the importance of the seismic assessment to the overall success of the retrofit program. It is recommended that SDCI develop standard guidance for completing a building assessment to ensure consistent standards are met during this phase. Consistent standards will be beneficial to both building owners and the City in ensuring quality and setting clear expectations.

3. **Apply for permit**. Using information gained from the seismic assessment, building owners identify which deficiencies will be addressed to comply with minimum requirements of the URM Retrofit Standard and apply for a permit to complete the work. While this is an interim step in the overall retrofit process, it is important for building owners and SDCI to have sufficient time to identify additional information needs, discuss questions, and/or make changes to the application.

4. **Approve permit**. After the SDCI has reviewed the permit application, an approved permit for the retrofit work is granted. Building owners can begin the work to complete the retrofit under the permit.

5. **Retrofit completion**. Building owners complete the seismic retrofit and enhance the seismic safety of the building.

What is the timeline for completing a URM retrofit?

The Policy Committee recommends that the overall time allowed for a building retrofit range from 7 to 13 years, based on the assigned vulnerability category of the building. The committee discussed both shorter and longer timeframes, with some committee members suggesting that retrofits should happen as quickly as possible given the impact on life safety and unpredictability of earthquake events. However, other committee members cautioned that property owners could better fund retrofits if the policy timeline was in line with tenant turnover and real estate cycles (that is, the approximately 15 year up and down cycle of the real estate market and rental prices). This was deemed to be an important consideration.

The Policy Committee recommends the following compliance timeline:

Timeline for URM Policy Compliance			
	Critical vulnerability URMs	High vulnerability URMs	Medium vulnerability URMs
Notification	year 0	year 0	year 0
Assessment	+1 year	+2 years	+3 years
Apply for permit	+1 year	+2 years	+2 years
Approve permit	+1 year	+1 year	+1 year
Retrofit completion	+4 years	+ 5 years	+ 7 years
Total time allowed (notification to retrofit completion)	**7 years**	**10 years**	**13 years**

In this table, Year 0 is the date the program takes effect and owners are notified. Each subsequent retrofit milestone is shown with the number of years to accomplish that milestone after the previous milestone has been met. For example, if the program takes effect in 2018, assessments for medium vulnerability URM buildings must be completed by 2021, permit applications submitted by 2023,

permits approved by 2024 and retrofits completed by 2031. The total time shown is the sum of the times for all the milestones.

This timeline is fixed, regardless of whether building owners reach milestones in the process more quickly. For example, even if a building owner completes an assessment in less than three years, the clock for the permit application will not begin until three years have passed. Conversely, if the building owner is late in reaching a milestone, the total time to complete the retrofit does not change.

If a property changes ownership during the retrofit completion, the committee recommends that the overall timeline does not change. A new owner would be required to complete any remaining steps in the process in the overall time remaining.

The City should make every effort to notify building owners at the beginning of the URM program. However, if a URM building is not included on the City's list, the building is still subject to the URM program and the owner is obligated to comply with the program requirements and timeline.

What tools will make the policy more effective?

The Policy Committee identified a number of tools that could be used to make the URM policy more effective. These tools will make it easier for building owners to understand and comply with the URM policy and will help meet objectives of the policy, including:

- **Creating a policy that is easy for building owners to understand and implement.** The committee suggests tools that will make the policy easy to understand, easy to implement, and create clear expectations for building owners.
- **Encouraging building owners to retrofit beyond the policy's minimum requirements to enhance the probability that the URM building will remain operational in the event of an earthquake.** Taking a building's seismic retrofit beyond the mandated URM Retrofit Standard may strengthen the building to a level that not only increases life safety but may reduce the likelihood of damage or collapse in the case of a moderate earthquake.
- **Encouraging early participation in the retrofit policy.** The committee understands that retrofits should be completed as quickly as possible and recommends several tools to encourage building owners to move quickly through the program.
- **Building broad-based support for the policy.** The committee recognizes that there will be some opposition to the URM policy, and recommends several measures to generate support during policy review and enactment.
- **Reducing the cost of retrofits to building owners by providing options for financial support.** The committee recognizes that the greatest barrier for building owners is the cost of the retrofits, and that financial support must be provided for the policy to be successful.

Policy objective	Tool
Easy for building owners to understand and implement	• Create a SDCI liaison position or a URM-focused department at the City to work with individual building owners to navigate the retrofit policy and process • Issue a master permit with an extended expiration date that would allow retrofits to be progressively implemented over an extended period of time as tenants move out of units within a building • Provide clear guidelines and standards for permit reviewers and inspectors, and limit the scope of what building inspectors are looking for • Develop a standardized assessment protocol • Post a vetted list of assessment consultants and contractors on the City's website • Create a catalog of best practices for URM retrofits for owners to reference during the design and permitting process • Ensure a predictable and timely permit process • Provide two city-funded hours of permit pre-submittal coaching to help building owners navigate the technical aspects of permit submittal and retrofit requirements, and include information on modernization and energy efficiency assistance • Provide an interdepartmental and inter-agency permit facilitator to coordinate construction permit review and expedite historic landmark or Section 106[2] reviews • Decouple seismic retrofits from other code upgrades that may be necessary in a building • Provide a clear definition of the policy and the URM Retrofit Standard (Client Assistance Memo) that includes: (1) a description of how the URM Retrofit Standard applies to buildings, (2) the cost and benefits of the URM Retrofit Standard, and (3) a description of probable maximum loss (PML) and its correlation to potential loans
Encouraging retrofits beyond the policy's minimum requirements	• Capitalize on potential reduced insurance costs that may result from the building's increased seismic safety • Leverage increased future revenue if retrofits allow the building to be re-opened more quickly following an earthquake • Leverage FEMA's P-58 toolkit to assess URMs and encourage retrofits • Provide an opportunity to change the use and zoning requirements of buildings that have undergone a retrofit beyond the URM Retrofit Standard • Implement a rebate program modeled on the City's energy-efficiency partnership program (Community Power Works[3])

[2] Section 106 of the National Historic Preservation Act of 1966 mandates that federal agencies must review and assess the effects of their actions on any historic resources or properties. In the case of the URM policy, the recommended incentive would only apply to buildings that are part of a federal undertaking or receiving federal funds, such as low-income housing that is receiving federal tax credits.

[3] Community Power Works, in partnership with the City of Seattle, is a rebate program geared towards increasing the energy efficiency of residential, commercial, and institutional buildings. The program is funded through federal

Encouraging early participation	• Subsidize permitting fees associated with early participation in the program • Waive Americans with Disabilities Act (ADA) • Waive new parking requirements for URM buildings with completed retrofits • Place an expiration date on certain funding sources or tools, such as waiving permit fees or parking requirements
Building broad-based support	• Conduct an economic impact analysis to understand the effect of the policy on private sector business, including benefits to life safety and increased resiliency to earthquakes. The City Council provided funding for an analysis in 2013.[4] • Organize workshops to educate building owners about retrofit strategies, goals and results • Provide a clear definition of the policy's scope, cost, and life safety benefits • Provide comprehensive information about the policy on City's website specifically directed at industry and trade association members • Conduct an education and outreach campaign to URM owners and neighborhood representatives about the policy and its requirements • Publicly post information about buildings that have been successfully retrofitted
Minimizing the cost of retrofits	• Provide funding support options that property owners can access (see funding options recommendations on page 13)

How will the policy be enforced?

With each step in the retrofit program timeline, the Policy Committee recommends an enforcement mechanism to ensure compliance. In general, the committee recommends using SDCI's standard enforcement procedure, with a notice of violation given to non-compliant owners, followed by a series of fines. The idea of using non-compliance fines to help fund the City's incentives and financing options was proposed but ultimately decided against as it could create a conflict of interest for SDCI. For the policy, each step of compliance – assessment, permit application, permit approval, work completion – will have its own enforcement structure.

The Committee discussed the nature and quantity of fines to be levied, and discussed that fines may not be effective if lack of funding is the reason a building owner is not complying with the policy. To mitigate this, the committee suggests the creation of a SDCI liaison who will work with building owners to navigate the policy and identify any unique financial hardship. The Committee also recommends that any fines levied against a building owner be earmarked to support retrofit efforts on that building in the

stimulus funds and offers direct cost-savings to building owners, including a reduced-cost energy assessment and low-interest loans.

[4] A detailed economic impact analysis has not been conducted on the costs associated with an earthquake occurring prior to the implementation of a retrofit policy.

future. Overall, the committee recommends a tiered fine system that will help underscore the importance of the policy.

Policy Step	Incentive and Enforcement
Assessment	**Tools to support compliance** • SDCI liaison position to work with individual building owners to navigate the retrofit policy and process • Reference to vetted list of assessment contractors on the City's website and access to catalog of best practices • Standardized assessment protocol • Funding resources (see page 13) **Enforcement for non-compliance** • Notice of violation to owner with fine of $500/quarter • Public posting of non-compliance on the City online database • Block on any new permits for the building • City contracts with a third party to conduct assessment and bills property owner for assessment fees and associated administrative costs
Permit Application	**Tools to support compliance** • SDCI liaison position to work with individual building owners to navigate the retrofit policy and process • Two city-funded hours of pre-submittal coaching to help owners through technical aspects of the permit submittal process • Reference to vetted list of retrofit design engineers on the City's website and access to catalog of best practices • Permit fees waived • Interdepartmental and inter-agency permit facilitator **Enforcement for non-compliance** • Notice of violation to owner with fine of $1,000/quarter • Public posting of non-compliance on the City online database
Permit Approval	**Tools to support compliance** • Interdepartmental and inter-agency permit facilitator **Enforcement for non-compliance** • Notice of violation to owner with fine of $1,000/quarter • Public posting of non-compliance at property • Sunsetting of incentives, and permit fees are reinstated
Completed retrofit	**Tools to support compliance** • Public disclosure of buildings that have been retrofitted

	• Reference to vetted list of construction contractors on the City's website and access to catalog of best practices • Available funding sources for retrofits **Enforcement for non-compliance**[5] • Notice of violation to owner with copy to tenants, with civil penalty of $45,000/quarter • Lien on property based on outstanding fines • Public posting of non-compliance on-site • Block on any new permits for the building • Abatement of the property by the City, and/or designation as a dangerous building

How will retrofits be funded?

From the beginning of the Policy Committee's discussions, it was clear that the greatest barrier to a successful URM policy is the cost of completing a seismic retrofit. Current data suggests that retrofitting all URM buildings in the city of Seattle to the Bolts Plus standard would cost up to $1 billion. The Policy Committee, along with considerable contributions from the finance sub-committee, generated an extensive list of potential funding sources to consider. This list was evaluated against a number of criteria, including:

- Is this a legal funding source?
- Does it provide a significant level of funding?
- Is this a new source of funding or does it instead redirect funds from another source?
- Is this easy for property owners to use?
- Is this easy for the City to administer (if applicable)?
- Do all building owners have equal access to this funding source?
- Are there factors to consider that will increase or decrease the impact of this funding source (e.g., is this dependent on tax revenue or subject to federal government funding cuts)?

The committee was also cognizant of the need to present funding options that are, at least in part, currently available instead of relying too heavily on funding sources that *could* be developed in the future. For example, committee members discussed the possibility of low-interest loans from local banking institutions to building owners. Several suggested that once banks realize the market need, they might provide the capital necessary for the required retrofits. Others suggested that there may be opportunities to partner with developers to generate funding for building retrofits. While these options may be viable in the future, they are not currently in place as funding sources.

In the end, the committee recommends a short list of funding options for buildings owned by public or non-profit entities, and a list of funding options for buildings in private ownership. The committee recognized that funding options may be more readily available for the public/non-profit sector. All

[5] Enforcement measures may not all be applied at the same time.

options have had a cursory vetting with the City's Attorney's Office and are legal, but have varying levels of ease for implementation. Some options would require changes to state law or local land use codes.

URM Funding Options	
Public/Non-Profit Ownership	**Private Ownership**
Federal grants	
General obligation bonds	
Levy	
10% Federal rehabilitation tax credit	10% Federal rehabilitation tax credit
Tax abatement	Tax abatement
Revolving loan fund	Revolving loan fund
Local Improvement Districts (LIDs)	Local Improvement Districts (LIDs)
Transfers of Development Rights	Transfers of Development Rights
Architecture and Engineering grants & resources	Architecture and Engineering grants & resources
Building owner contribution	Building owner contribution
Funding to educate building owners	Funding to educate building owners

The following three funding options are only available for public and non-profit property owners:

Federal grants – Grants that can be used for the seismic retrofit of public and non-profit owned buildings are periodically available from the Federal Emergency Management Agency (FEMA), the Community Development Block Grant (CDBG) program through the U.S Department of Housing and Urban Development, or provided as part of the Community Reinvestment Act. Grant funding for privately-owned buildings may be available under special circumstances. For example, the City received a one-time FEMA grant to fund the seismic strengthening of single-family, low- to moderate-income homes.

General obligation bonds – Unlimited tax general obligation bonds are voter-approved municipal bonds secured with the obligation of the City to use available resources, including tax revenue, to repay the debt. General obligation bonds could be used to fund a city-administered retrofit funding program. General obligation bonds must be approved by 60% of voters.

Levy – A levy consists of a voter-approved increase in the money collected annually from each property owner. The levy is based on a percentage of the value of home and privately-owned land, and only affects properties inside the city limits. Funds raised through a levy could be used for a city-administered retrofit funding program. A levy must be approved by 50% of voters.

The following funding options are available to all types of property owners:

Tax abatement – Tax abatement consists of the reduction or elimination of property taxes for a designated period of time. For the URM policy, URM buildings would be granted short-term property tax

abatement and property owners could use those monies to help fund a seismic retrofit. This change would require a change in State law.

Revolving loan fund – A revolving loan fund creates a central fund through which multiple loans are made to borrowers. Through regular repayments of the original loan, borrowers replenish the central fund. A URM revolving loan fund could initially be funded through an endowment or through a partnership with lending institutions.

Local improvement districts (LIDs) – By forming a local improvement district, a group of property owners can share in the cost of infrastructure improvements. LIDs could be used to finance retrofits, but would need to comply with City regulations for LID formation, assessment and administration.

Transfer of development rights (TDRs) – This strategy allows buildings in designated areas to sell the potentially developable "air space" above the building to purchasers who can use the additional floor area to increase the density of their development in another area of the city. TDRs could help building owners generate funding for URM retrofits while maintaining their building's historic character.

Architectural and engineering services grants and resources– The City would provide funding for building owners to access architectural and engineering services in support of a building's retrofit design.

10% Federal rehabilitation tax credit – This existing federal tax credit allows users to write off 10% of eligible construction costs for retrofits. The tax credit applies to any non-residential building built before 1936 and does not require a formal review process if the rehabilitation is for a non-historic building. The right to the tax credit can also be sold by the owner. A similar 20% tax credit is available to certified historic structures that are either listed or eligible for listing on the National Register of Historic Places or a contributing building to a National Register historic district. A certified historic structure may also be considered a Seattle landmark building.

Funding to educate building owners– An educational program directed towards URM building owners and tenants, focused on the importance of a seismic retrofit for public safety, could be funded by the City. The program is intended to provide information on the potential consequences of not retrofitting a URM building and encourage building owner action, perhaps averting additional cleanup and disposal costs associated with a future disaster event.

Building owner contribution – In any retrofit, building owners will likely also use their own sources of capital, including low-interest loans from participating banking institutions, to pay for the cost of a building retrofit.

The committee noted that improving property owner access to affordable financing opportunities will help the City leverage investment by individual building owners as well as investments made by the City. The committee recommends the City consider how it can use public resources, in the form of grants, bonds, and other revenues, to facilitate private lending and overall funding for retrofits.

Demolition

It is the intent of the Policy Committee to minimize the demolition of buildings. While jurisdictions in other states used demolition as a tool to address seismically vulnerable buildings, the Policy Committee does not recommend that demolition be considered a tool for the city of Seattle URM Policy except as a last resort when all other options have been exhausted. The Committee recommends that the policy be coupled with private sector incentives to prevent demolition. In many cases, buildings in historic districts cannot be demolished without approval from the City.

Next steps and things to consider

The Policy Committee spent a great deal of time discussing the financial impact of the URM retrofit policy on building owners. The committee recommends convening a meeting of mortgage holders and insurance companies to help create financial incentives for completing retrofits, similar to a successful effort in San Francisco.

During Policy Committee meetings, concerns were also raised that this policy could be especially onerous for small businesses or small property owners. It was suggested that the policy may result in a significant number of buildings transferring into the hands of developers, possibly leading to an increased rate of demolition and a decrease in local ownership of buildings. The City should carefully consider whether this is a desirable consequence of this policy. The City should also consider how the Tenant Relocation Assistance Ordinance could be adapted to support work on URMs.

All of the committee's work is based on the assumption that the URM buildings would be required to meet the URM Retrofit Standard proposed by the Technical Committee. Where possible, the committee attempted to incentivize retrofits that went beyond the URM Retrofit Standard, but did not go so far as to make any recommendation on the technical standard itself. If the City makes a policy decision to require retrofits to a standard beyond the URM Retrofit Standard, some of the recommendations of the committee will need to be revisited.

Conclusion

The URM Policy Committee recognizes the importance of a seismic retrofit policy to protect human life and preserve the historic character of Seattle neighborhoods. URMs pose a substantial danger to tenants, property owners and the community at large. While there is a considerable financial impact of the policy requirements on building owners, it is important to also consider the value of these URM buildings from a historic and cultural perspective. The committee recognizes the need for a balanced policy that preserves human life and historic culture, while still making the policy fair for private and non-profit building owners. These recommendations attempt to achieve that balance.

Appendix

Additional documents developed by the policy committee, as well as meeting agendas and summaries, can be found on the URM Policy website.

Appendix A: URM List Validation report

Report to URM Policy Committee on URM List Validation

April 2016

Additional Information available at the SDCI URM website
URM List Validation REPORT
Validated URM LIST

Executive Summary

Seattle Department of Construction and Inspections (Seattle DCI—formerly DPD) has been working for many years on developing a program whereby unreinforced masonry (URM) buildings would be required to be seismically upgraded, or demonstrate they meet a proposed standard for seismic resistance.

Unreinforced masonry buildings (URMs) have proven over the years and around the world to be the most vulnerable buildings in an earthquake. Periodically over the past twenty years, Seattle DCI has worked to identify the unreinforced masonry buildings in the city. The purpose of the studies has been to provide information to the department to use to aid recovery in the event of an earthquake. In every large earthquake URMs are severely damaged, and sometimes, cause deaths and injuries. It is important to reduce their vulnerability for a wide variety of reasons:

- **Safety**: Falling bricks from these URMs pose a safety hazard to building occupants, as well as passers-by on the adjacent streets.
- **Economics**: Aside from the direct loss of workplaces and jobs, damaged URMs slow recovery of neighborhoods by blocking off access points.
- **Equity**: Many URMs house low income and immigrant tenants and business owners, so these more vulnerable populations could be disproportionately affected by the loss of these buildings.
- **Environment**: Preserving these buildings would preserve the embodied energy contained in them, as well as reduce the volume of construction materials introduced into the waste stream.
- **Community Character**: Losing these URMs, in many cases, would lead to a loss of historic character in their community, or their potential to serve as an anchor for recovery.

- 1160 URMs citywide
- 17% are un-retrofitted, 1 story, commercial buildings
- 38% of the buildings (54% of the square footage) retrofitted to some degree
- 9% of the buildings (11% of the square footage) substantially altered
- 16% of the square footage of the URMs in the greater downtown area substantially altered
- Median building is 2 stories

Seattle DCI has compiled a list of potential URM buildings from various surveys performed over the years. The current estimate of potential URM buildings in Seattle is approximately 1,160 URMs scattered around the city and concentrated in historic districts such as the Chinatown/International District (ID) and Pioneer Square. Based on available permit records, 11%, by square footage, of these buildings have received a "substantial alteration" since 2000. Substantial alteration is a permitting term for addressing the majority of the building code deficiencies in a building including seismic upgrades. Most, but not all, substantial alterations result in the building being upgraded to a level that exceeds the proposed technical standard for the URM Policy. We estimate that up to 54% of the building stock square footage (38% of the buildings) has been retrofitted to some extent. However, the retrofit could have been done many years ago and might not meet the current proposed technical standard. The rates of retrofit are higher in the greater downtown area with a 16% substantial alteration rate and approximately 74% retrofitted to some degree.

A Technical Committee developed a proposed seismic retrofit standard for the City of Seattle in 2008-9 similar to California's "Bolts-plus." In 2012 a Policy Committee was convened to develop recommendations for a mandatory retrofit program based on the proposed Technical Standard. Their draft recommendations were prepared early in 2013. Recommendations included what types of buildings would be required to be retrofit, a schedule for compliance, and potential incentives or tools to help owners complete the work. At the last URM Policy Committee meeting in April 2014, the committee asked the department to validate Seattle DCI's existing list of potential URMs in the city to provide more information for their final recommendations.

In spring of 2015 Seattle DCI hired a structural engineer to confirm potential URMs on the list, add newly discovered URMs, remove non-URMs and buildings that have been demolished, and estimate the level of retrofit. The rest of this document provides detail on the URM list and the list validation.

URM List Validation REPORT

Appendix B: Equity Analysis Summary

URM Equity Analysis Summary

March 2017 Draft Equity Analysis

Race and Social Justice Initiative is a Citywide effort to:

- END institutionalized racism in City government;
- CREATE a community that is enriched by its diverse cultures, with full participation by all its residents.

The analysis consists of a set of questions to guide us as we assess how our policies benefit and burden communities. It requires us to:

1. Apply racial equity tools to our programs and projects.
2. Build racial equity into policies and initiatives.
3. Partner across City departments and with other institutions and the community

Outcomes:

The Unreinforced Masonry (URM) retrofit policy is intended to increase public safety during earthquakes for all Seattle residents and visitors in and around URM buildings.

The results of this equity analysis have heightened our awareness of the disproportionate impacts of earthquake damage of un-retrofitted buildings on low income communities and communities of color in the absence of retrofits. Inaction on retrofit can have a devastating impact on these communities.

The analysis seeks to identify impacts and identify potential mitigation to reduce disproportionate impacts of the cost of retrofits and anticipated displacement for low income communities particularly communities of color when implementing a mandatory URM retrofit ordinance.

FINDINGS:

Key benefits and/or burdens for people of color

The URM Policy has the potential to be very beneficial to low income and/or communities of color. Experience with earthquakes in Seattle and other communities have shown that retrofitted URMs are less likely to be damaged in a moderate earthquake and thus have a lower potential for injuries. Retrofit of URMs would contribute to lowering inequities providing more protection during seismic activity similar to occupants in newer buildings that are up to current codes. Financial benefits are likely since retrofitted URMs can be quickly re-inhabited so that tenants can recover more rapidly. There are also potential avoided costs: property owners have recently been successfully sued for negligence in death and injury lawsuits in California. Thus the URM Policy can provide benefits property owners who represent communities of color.

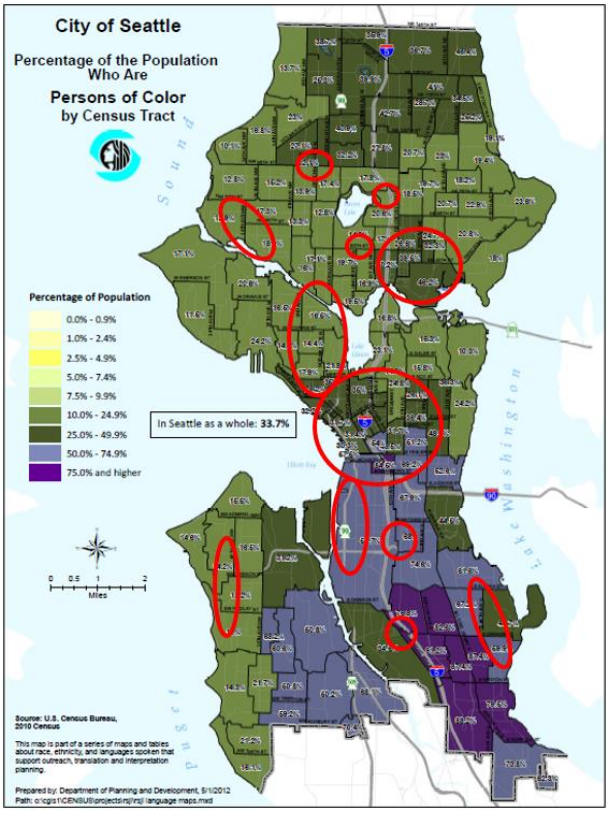
However, there are negative impacts or burdens associated with the policy implementation. While the earthquake itself poses a race and social inequity in who will be adversely impacted by un-retrofitted

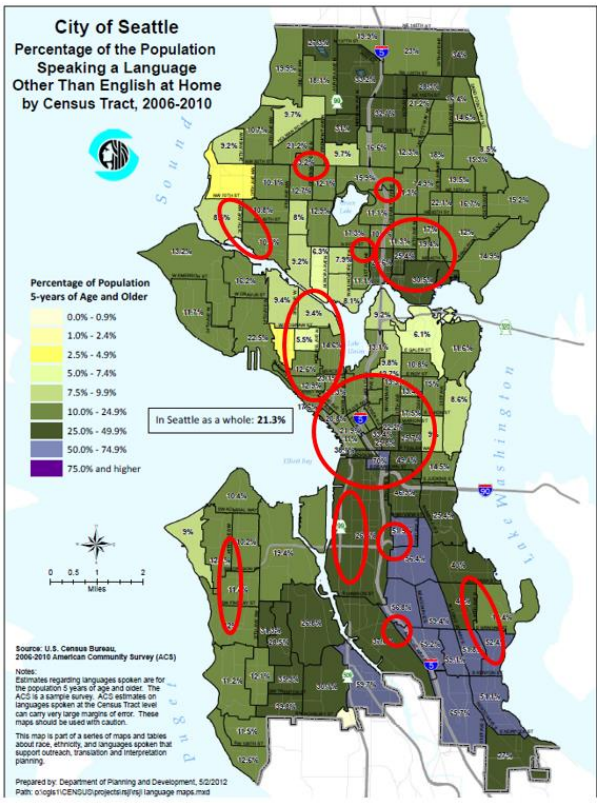
URMs, requiring retrofits is likely to adversely affect the same population in a different way. Retrofits are costly and owners will need to recover costs of the work. The result will likely be higher commercial and residential rent. This rent increase is in turn likely to add to displacement of these tenants and add to the overall gentrification of our neighborhoods.

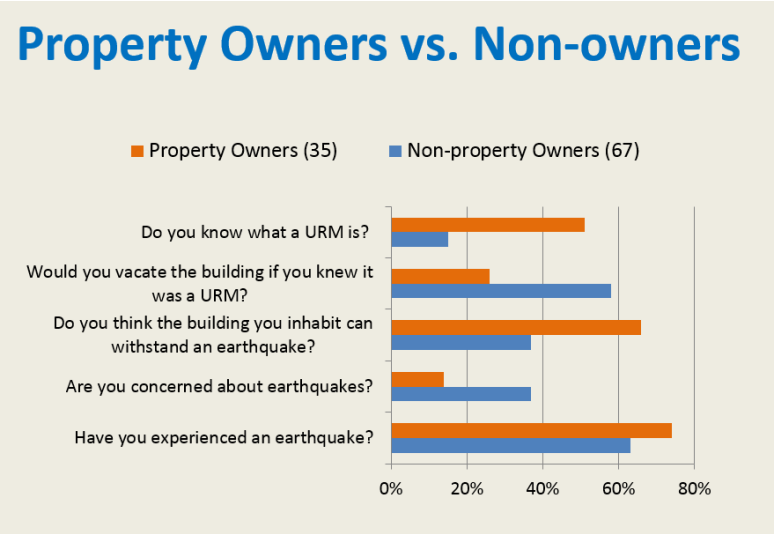
Demographic data and survey responses:

We used City information that, by census district, mapped areas where communities of color live and areas where languages other than English are spoken. We identified 12 areas where URMs are concentrated and overlaid that information on the maps. We've also started to compare databases of URMs with the Arts and Cultural spaces in Seattle. After comparing half the lists, we found that the businesses are local and none are nationally owned. We also found via survey in Columbia City that there was a difference between building owners and tenants in the awareness of URMs, earthquakes, and potential safety issues.

Initial inferences are that URMs are located in many neighborhoods where communities of color live and work, where languages other than English are spoken, and where local business serve these communities.







Stakeholder groups – November 2013 Columbia City Outreach and Education Pilot findings:
Stakeholder outreach and analysis is an important as part of a racial equity analysis to understand impacts to low income communities and communities of color. Information on the neighborhood and effective communication methods were obtained with the Columbia City Pilot. Our lessons learned from that Pilot provide insight into future stakeholder outreach. Some of what we learned:

- Community Liaisons, formerly Planning Outreach and Engagement Liaisons (POELs), are cultural leaders in immigrant and communities of color. Their outreach was most effective in reaching cultural groups
- Technical subjects are difficult for Community Liaisons to understand and explain to their cultural groups; it is best if City technical staff attend meetings with Community Liaisons to address more complex issues.
- The neighborhood survey – walkthrough – was a very effective education and outreach tool; a non-threatening approach
- Working with cultural groups is more time consuming than more traditional outreach. For example, presentations take longer if there is a translator, and accommodating cultural norms such as sharing a meal extends meeting times
- Finding a time when certain cultural groups can meet is a challenge. For example, early evening conflicts with family meals and many do not want to attend a meeting after dark.

POTENTIAL FUTURE ACTIONS:

What additional racial equity issues did this RET reveal? Consider how these unresolved issues present opportunities for structural transformation.

The initial research, maps, and surveys in Columbia City revealed that many low-income communities and communities of color live and work in URMs. Businesses in these URMs appear to serve these communities. Consideration of these issues may lead to changes.

Some Opportunities to explore:

- enhancement of the outreach we do with OEM to include more translators and community leaders,
- designing a permit assistance program that is tailored to communities of color, perhaps meeting them in their communities for permitting or providing a one stop permitting coordinator at the city,

- tracking the impacts to communities of color, the number of retrofits, number of people displaced, number of people benefiting from the retrofits, etc.
- design of an evaluation and communication plan for community members and elected officials.

Things that you will do differently or begin to do which will increase opportunity and/or minimize harm for people of color.

Some Opportunities to explore:

- Consider the demographics and ethnic mix of the people who live and work in URMS when we create the program requirements. Focus on creating mitigation tools for tenants in URMs with an emphasis on commercial tenants.
- The Pilot neighborhood walk-thru and survey were very effective at spreading the word and collecting information. Considering this approach for outreach in other neighborhoods with modified questions based on the Columbia City Pilot outcomes would provide information on what kind of outreach would be most effective in these communities.
- Continue building partnerships with community. Strengthen connections with cultural leaders in communities where outreach is difficult and continue supporting work at the State level to help with financing retrofits.

How is leadership ensuring that changes are implemented?

- Seattle DCI and OEM staff and leadership will continue to engage elected officials in program development to create mitigation for unintended negative consequences of this policy, such as displacement.