

# A Stronger Square: Climate Resiliency for Pioneer Courthouse Square

## **FINAL REPORT & RECOMMENDATIONS**

June 2024

Master of Urban and Regional Planning Workshop Project

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## ABOUT THE TEAM: MHA PLANNING

MHA Planning is a team of students in Portland State University's Master of Urban and Regional Planning program who believe in the power of place to build community. Our team is dedicated to leading with compassion and generosity. We take a collaborative approach to our work, seeing partnerships and relationship building as critical components of planning, placemaking and fostering community. We aim to provide comprehensive and authentic insights to our client while understanding that there is always more to learn and different perspectives to include.



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# EXECUTIVE SUMMARY

About the Square

A Stronger Square

Recommended Climate Resiliency Initiatives

Conclusion and Next Steps

## ABOUT THE SQUARE

Pioneer Courthouse Square (“The Square”) is a block-sized hardscaped urban plaza in downtown Portland, Oregon. It is owned by the City of Portland and managed and operated by Pioneer Courthouse Square Inc. (“PCSI”). Serving as “Portland’s Living Room” since 1984, The Square is intended to be a public gathering space that fosters community interaction and civic pride. The Square typically hosts over 300 events a year, and a significant amount of PCSI’s revenue is generated from events, festivals, and on-site businesses. However, periods of extreme heat, wildfire smoke, excessive rain, and other extreme conditions are adversely affecting the ability for the public to gather at The Square and the ability for PCSI to manage the space. For The Square to remain a viable community asset, it is crucial that a better understanding of these climate-related impacts is generated and that climate resiliency initiatives for continued use of this vital open space in Portland’s Central City are provided.

## A STRONGER SQUARE

A Stronger Square: Climate Resiliency for Pioneer Courthouse Square (“A Stronger Square”) provides a more

comprehensive understanding of the impacts that climate change will have on The Square over the next 20 years and what initiatives should be pursued to mitigate those impacts, while also contributing to a more equitable and resilient public open space. This plan was developed by PCSI and MHA Planning (a team of five students in Portland State University’s Master of Urban and Regional Planning program) from January 2024 to June 2024. During the process, the project team assessed existing conditions and future climate change impacts, engaged with key stakeholders and subject matter experts, and researched and evaluated different climate resiliency initiatives.

## RECOMMENDED CLIMATE RESILIENCY INITIATIVES

MHA Planning compiled an initial list of climate resiliency initiatives, then evaluated these initiatives based on if they would:

- Mitigate climate change impacts
- Benefit stakeholders of The Square
- Be easy to implement
- Be easy to maintain

The following recommended climate resiliency initiatives were selected for further analysis based on their

cumulative ability to meet the above evaluation criteria.

## Operational changes

**Adopt programming and event scheduling practices that align with climate conditions.** PCSI can minimize the need for physical interventions by “working with” Portland’s changing climate, creating its programming schedule with an eye toward when weather conditions are likely to be most favorable.

**Create a policy around response to climate change impacts.** PCSI should adapt to Portland’s “new normal” of hotter summer temperatures and more frequent wildfire smoke events by creating an internal plan tailored to these conditions to guide decisions on programming by PCSI and its partners.

## Temporary physical interventions

**Shade canopies.** Temporary shade canopies are a rapidly implementable and potentially cost-efficient intervention for increased heat at The Square. A variety of lower-cost options, such as commercial shade sails, can provide an “off-the-shelf” solution that allows for flexibility of coverage that is able to be deployed or rearranged throughout the season if needed.

**Water misters.** Purchase or rental of temporary water misters will allow visitors to cool off during visits and events in hot summer months.

**Temporary ground cover.** To mitigate for an excessively hot brick surface during extreme heat events, without making significant alterations to the bricks, PSCI should consider deploying a durable temporary ground covering during the hottest periods, in order to reduce heat absorption and radiation from the brick surface.

## Permanent physical interventions

### Update HVAC systems for tenants in order to improve air filtration

Existing HVAC systems are not adequately designed to handle the high summer temperatures and smoke that Portland now routinely sees, and investments in upgrades to tenant HVAC systems may deliver more comfortable temperatures and increased air filtration for The Square's tenants.

**Plant new trees to increase greenery on The Square.** Additional trees on The Square would provide more shade and evaporative cooling, and would collect water during excessive rain events to some extent. Trees could be added even without altering the pavement by using planters or raised beds.

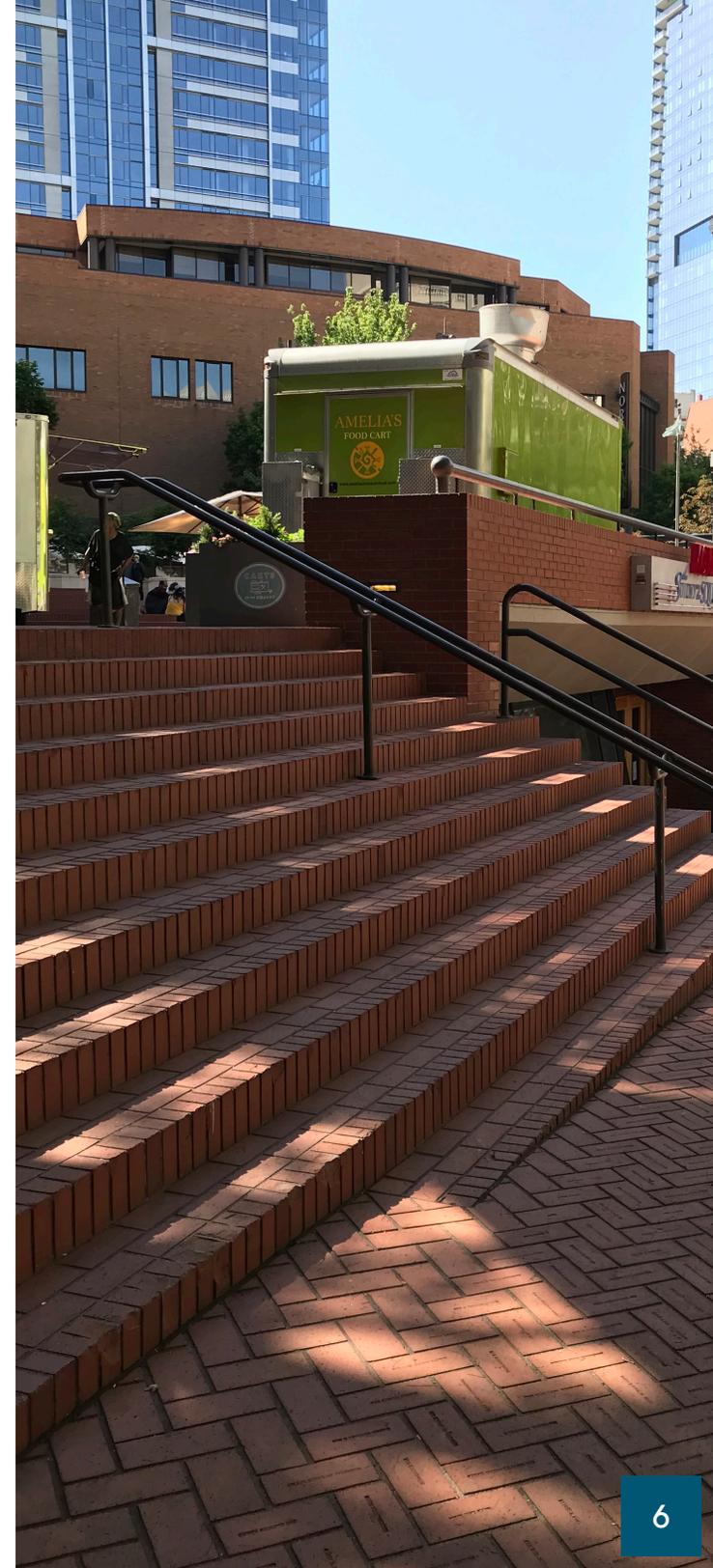
## NEXT STEPS

Through this process, the following key conclusions were drawn:

- Initiatives that address heat impacts are most needed and most effective.
- The Square faces non-climate-change challenges too.
- Flexibility, gather-ability, and durability of The Square are essential.
- This is an opportunity for PCSI and The Square to be a leader in the community.

In addition to the recommended climate resiliency initiatives, MHA Planning developed a set of next steps for PCSI to successfully build off the work of this project:

- Comprehensively address challenges at and plan for the future of The Square.
- Conduct community engagement with Equity Priority Groups.
- Continue outreach to food cart operators, tenants, downtown advocates, caretakers, and event organizers and attendees.
- Coordinate efforts at The Square with the larger Portland parks system and Central City/downtown Portland efforts.
- Search for additional funding opportunities.



# INTRODUCTION

Background

Project Purpose

Problem Statement

Project Process

## BACKGROUND

A Stronger Square is an initiative by PCSI, a nonprofit organization that manages and operates The Square, in collaboration with and supported by a group of five graduate students from Portland State University's Master of Urban and Regional Planning program. This project is an effort to provide a more comprehensive understanding of the impacts that climate change will have on The Square over the next 20 years and what initiatives should be pursued to mitigate those impacts, while also contributing to a more equitable and resilient public open space. The findings and recommendations within this report are based on physical as well as behavioral science and offer solutions that draw on historical examples together with regional, affordable, and achievable applications.

The Square is an urban public plaza in downtown Portland that is intended to serve as Portland's "living room," a public gathering space for the benefit of Portland's community members and visitors. Ideally, everyone feels welcome in public spaces, but in reality, there's much work to be done. Historically, inequitable investment in public spaces have led to a lack of public outdoor spaces in communities of color compared to White, affluent

communities, and the spaces that have been designed are often not reflective of the communities they serve. Furthermore, people with low incomes (who have contributed the least to global emissions) are the first and the most affected by the negative impacts of climate change. With an intentional focus, public spaces (in this case, The Square) can work against these inequities by becoming places that are intentionally inclusive, community driven, and anti-racist and by mitigating the impacts of climate change particularly for people with low incomes. While A Stronger Square focused involvement on stakeholders

such as event organizers and attendees, current tenants and food cart operators, and downtown advocates rather than on Equity Priority Groups (Figure 1), future efforts need to focus involving these groups to understand how climate change impacts them and what initiatives could be undertaken to mitigate those impacts. Ultimately, any initiatives undertaken at The Square should aim to help Portland's "living room" become a more accessible and inclusive space for all Portlanders, now and in the future.

Creating A Stronger Square has involved extensive engagement with subject matter experts – people with no direct connection to The Square (including planners within the region and professors in various fields at Portland State University) – and engagement with stakeholders – people who will be impacted by potential Climate Resiliency Initiatives at The Square (including event/program attendees and presenters and operators at The Square).

Figure 1: Equity Priority Groups

- Black communities
- Indigenous communities
- Communities of color
- People with low income
- People with disabilities
- Additional populations that are, have been, and may continue to be disproportionately and negatively impacted by climate change and/or excluded (e.g., physically, socially, economically excluded) from public spaces.

## PROJECT PURPOSE

The purpose of A Stronger Square is to provide an inventory of Climate Resiliency Initiatives that may be applied to mitigate the effects of extreme weather events such as heat, wildfire smoke and prolonged and excessive periods of rain. The project

aims to better understand how climate change might impact Portland and The Square specifically. For The Square to remain a viable community asset, it is crucial that a better understanding of these impacts is generated and climate mitigation initiatives for continued use of this vital open space in Portland's Central City are provided.

The Square typically hosts over 300 events a year and the majority of its revenue is generated from events, festivals and on-site businesses. In order to maintain the feasibility and usability of The Square, a climate impact study and a menu of Climate Resiliency Initiatives, and a final recommendation of select initiatives from this menu, will not only ensure a more equitable space, but will also help to ensure that necessary revenue is generated well into the future, allowing PCSI and The Square to continue serving its mission.

## PROBLEM STATEMENT

The Square is universally recognized as the “heart” of Portland's Central City and the region as a whole. Throughout The Square's history, the land on which it sits has demonstrated an ability to adapt to changing needs of Portlanders, serving as the location of Portland's first school, then a hotel, and a parking structure in support of Portland's bustling downtown commercial core, before finally transitioning to a public

plaza as Portland's “living room”. The Covid-19 pandemic, housing crisis, and behavioral health crisis have had a significant impact on Portland's Central City, yet The Square remained a welcoming public space that adapted to the challenges of this era to continue serving Portlanders when usable open spaces were vital to the wellbeing of all, furthering exemplifying The Square's nimbleness in adapting to Portland's needs. This report highlights the impacts that climate change is expected to bring to Portland, presenting new challenges to the city and its goal of providing plentiful and usable parks and open spaces throughout Portland. **As temperatures increase and weather becomes more unpredictable, public open spaces and plazas such as The Square must consider deviations from their traditional design in order to continue to serve their intent and purpose of remaining accessible to all, while mitigating the worst effects of climate change through strategies focused on their built environment and programming.**

## PROJECT PROCESS

A Stronger Square and the findings, recommendations, and analysis detailed through this report spanned approximately six months, beginning in January 2024 and concluding in June

2024. As with most planning projects, the first step involved a comprehensive understanding of The Square's existing conditions, including its history and context in Portland's Central City, and the demographics of the people The Square serves, as well as those that live and work in close proximity. MHA Planning's Existing Conditions Report is included as **Appendix A**, and covered topics such as the site's history and varied uses before it became The Square, a demographic analysis, The Square's physical environment and accessibility, its current tenants, uses, and programming, and the relevant planning policy that guides its programming and design. In tandem with the existing conditions, MHA Planning also prepared a Climate Change Impact Assessment, included as **Appendix B**, which sought to assess and synthesize the future impacts of climate change on the Portland region with a focus on The Square. Together, the Existing Conditions Report and the Climate Change Impact Assessment sought to inform the ultimate recommendations for Climate Resiliency Initiatives outlined in this report.

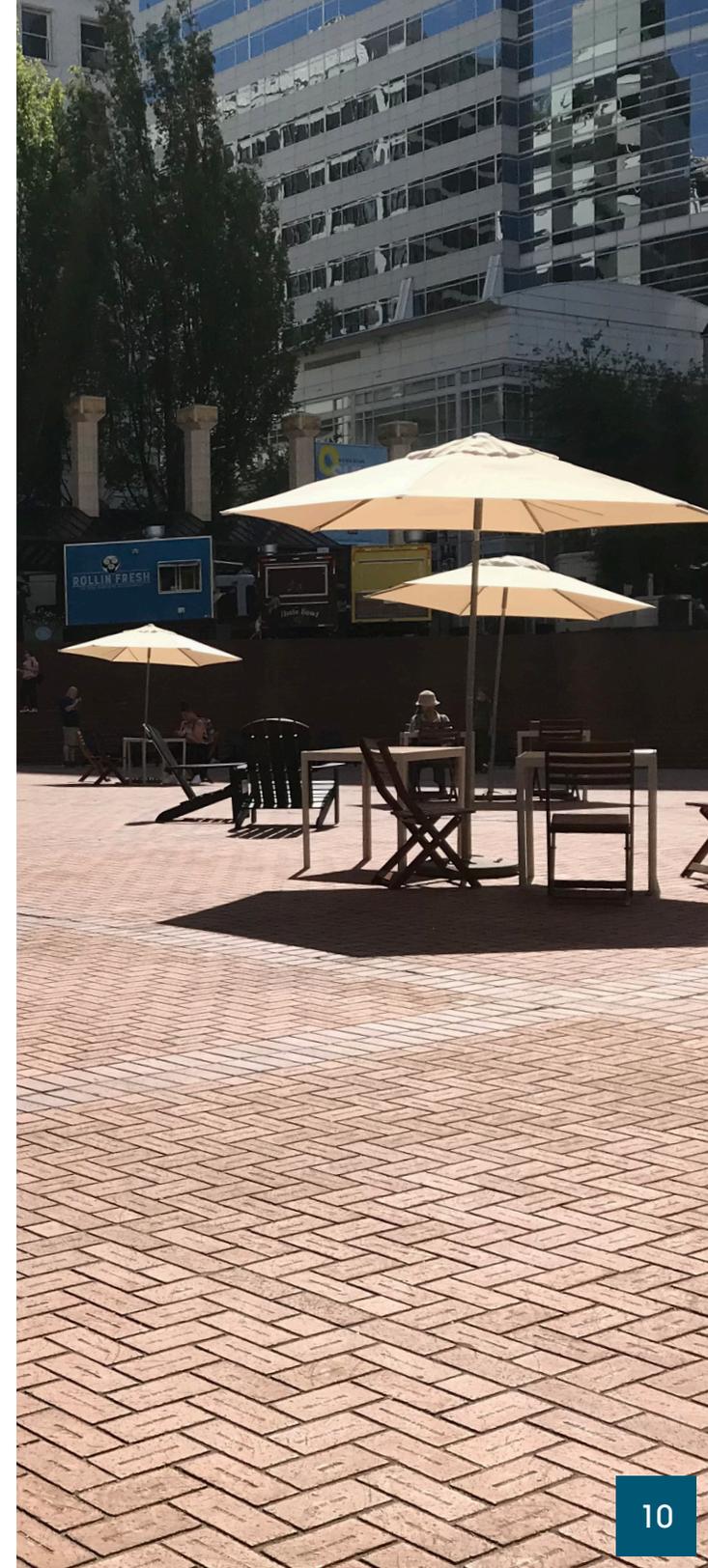
A Stronger Square also conducted a robust and extensive stakeholder involvement process, which occurred between March 2024 and May 2024. Due to the condensed time frame of A Stronger Square, outreach focused on key stakeholders, both directly

and indirectly related to The Square, who could be impacted by potential Climate Resiliency Initiatives at The Square. The broad purpose of the engagement was to build connections and foster stronger relationships between identified stakeholders and PCSI, better understand the impacts that extreme weather events and climate change have had on The Square's users, tenants and operators, and to produce a menu of potential Climate Resiliency Initiatives that can support the needs and aspirations of the identified stakeholders. The stakeholder involvement process is discussed more thoroughly in Section 4 of this report, with the final Stakeholder Involvement Report attached as **Appendix C**, and the stakeholder involvement materials are included as **Appendix D**.

Through the Existing Conditions Report, Climate Change Impact Assessment, and extensive stakeholder involvement, MHA Planning and PSCI worked to create and distill down an Options Menu for potential Climate Resiliency Initiatives that can be implemented at The Square. As discussed in more detail within this report, an evaluation framework was created in order to identify final recommendations for Climate Resiliency Initiatives, which included their ability to mitigate an identified climate change impact, benefit identified stakeholders, ease of implementation, and assumed

maintenance requirements. The Climate Resiliency Initiatives ultimately recommended are detailed in this report, with the complete Options Menu included as **Appendix E**.

Finally, this report includes a list of recommended Next Steps that PCSI may utilize going forward, which are outlined in this report. A Stronger Square and this report represent an initial first phase of The Square's future, and its expected that continued extensive public involvement and further analysis will help to inform future decisions on The Square's design and programming going forward.



# EXISTING CONDITIONS

Study Area

Demographics and Visitors

History

Features and Design

Relevant Planning and Policy

NORDSTROM

STARBUCK

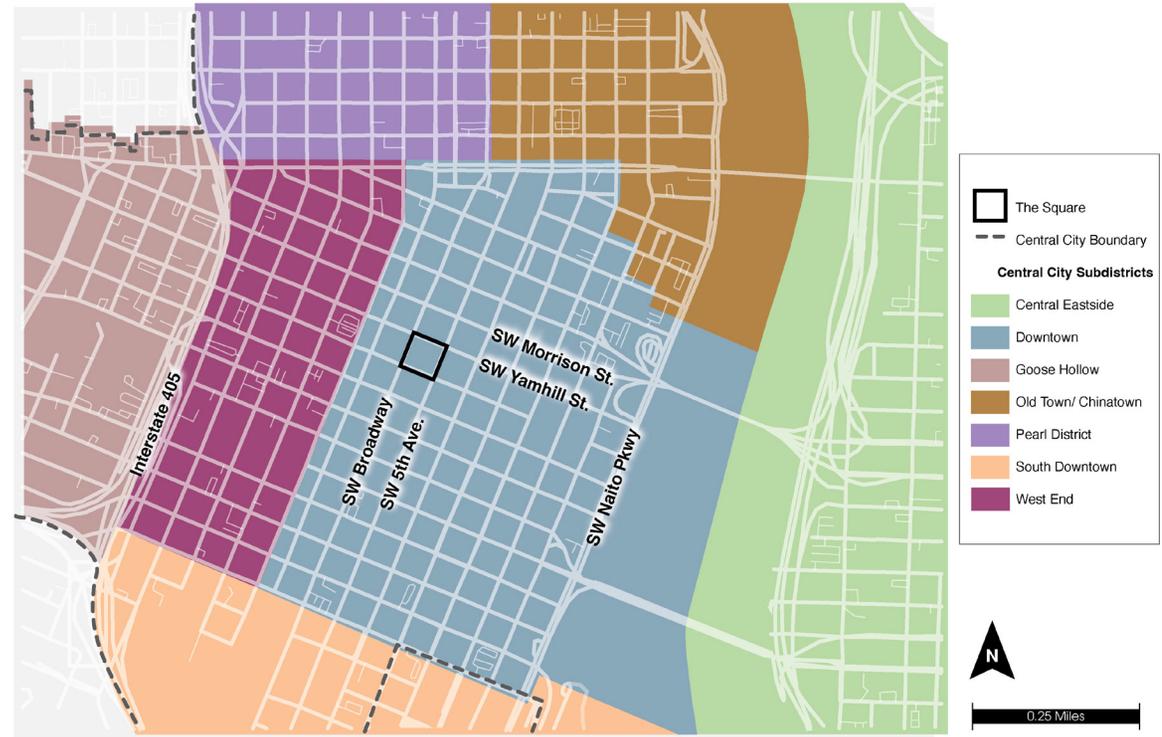
## KEY FINDINGS

MHA's Existing Conditions Report, included as Appendix A, emphasizes The Square's criticality to Portland's social fabric due to its historical significance and communal value. Centrally located in downtown Portland, The Square is an accessible and necessary public open space within close proximity of Portland's commercial and business core. The Square's rich historical narrative and varied uses over time reflect its capacity to adapt to the changing needs of the community. This adaptability is crucial as The Square continues to serve as a communal hub, even through increasing extreme and unpredictable weather conditions.

## STUDY AREA

A Stronger Square's study area is focused on Pioneer Courthouse Square, which is a little under one acre in size and occupies a full city block in downtown Portland. The Square is bounded by public streets on all four sides and is well served by public transit, including TriMet's MAX line, and various bus lines. This makes The Square accessible to areas throughout the Portland region. Its location in downtown, accessibility, and general

Figure 2: The Square within the Central City, Downtown Subdistrict



Source: Metro RLIS, City of Portland

prominence in Portland has led to it being affectionately referred to as Portland's "living room". Additionally, its proximity to downtown Portland's central business district and Portland State University, and adjacency to other public parks and plazas including Director Park, Tom McCall Waterfront Park and Darcelle XV Plaza, results in The Square serving as a hub for festivals, cultural events, and programming that attracts a wide variety of users.

The Square is zoned Open Space ("OS") and is also subject to the Design ("d") overlay. Given its location within downtown, The Square is also within Portland's Central City Plan District ("CCPD"), Downtown Subdistrict. The Square's zoning designation, in conjunction with the CCPD, governs the types of uses and development that can occur within it, and helps to ensure its continued use as an accessible public plaza.

# DEMOGRAPHICS AND VISITORS

The Square attracts and serves a diverse population, reflecting both the demographic characteristics of Portland and unique aspects of local populations that call the Central City home. It not only serves local residents, but also attracts visitors from throughout the Portland metropolitan area for events and various programming, resulting in a melting pot of different needs and interactions. Figure 3 provides a snapshot of the people and population within a half-mile of The Square in comparison to the Portland metropolitan statistical area (“MSA”). As shown, nearby residents of The Square are disproportionately older, experience higher rates of poverty and disability, are more rent burdened, and are slightly more racially diverse. Relevantly, they are also more likely to use public transit for transportation to work, meaning they may regularly utilize the light rail stations hosted by The Square. The use of The Square by diverse population groups highlights its importance to many segments of the community, and the importance that The Square remains accessible to these diverse population groups, which should be reflected in future resiliency initiatives implemented at The Square.

Figure 3: Selected Population Characteristics of Residents within 0.5 mile radius of The Square, compared to the Portland MSA

	Within 0.5 mile radius of The Square	Portland MSA
<b>Population and Households</b>		
Total Population	14,342	19.4%
Compound Annual Population Growth Rate 2020-2023	2,583,167	16.6%
Population 65+	3.8%	2.1%
Population under 15	0.9%	14.7%
<b>Income and Poverty</b>		
Median Household Income	\$43,614	\$87,932
Households below poverty line	32.9%	9.7%
Severely Rent Burdened Households (rent 50%+ of household income)	31.6%	23.3%
<b>Race</b>		
White	68.5%	70.3%
Two or more races	11.6%	11.1%
Asian	8.2%	7.3%
Black	6.3%	3.1%
Other race	3.5%	6.4%
American Indian/ Alaska native	1.6%	1.1%
Native Hawaiian/ Pacific Islander	0.2%	0.6%
<b>Other characteristics</b>		
Percent Household with 1+ Person with a Disability	36.0%	24.0%
2021 Workers used Public Transit to Commute	23.5%	5.0%

Source: 2023 and 2021 ACS data via ArcGIS Business Analyst

While the Covid-19 pandemic drastically reduced the number of The Square’s visitors, Figure 4 shows that The Square use has gradually recovered and is likely to continue to recover. As of 2023, The Square saw approximately 882k visits at a frequency of approximately 2.07 visits per person annually, which represents an 38.5% increase over 2022 and an 85.3% increase from 2020, when the Covid-19 Pandemic was at its peak.

This increase in both visits and visitors, highlights The Square’s popularity and importance as a communal space. The data indicates not only recovery but also its role in the post-Pandemic social and economic development of Portland as a whole. The influx of visitors has economic implications, contributing to local businesses and the overall economy of Downtown Portland.

## HISTORY

The Square was developed in 1984, and prior to this had a rich and varied history, which demonstrates the space’s ability to adapt to the changing needs of Portlanders. Like the entirety of the Portland area, The Square sits on the historic lands of Indigenous Nations, who were this area’s original stewards, and whose history should be acknowledged, honored, and reflected in its use and design. After western contact and prior to 1984, The Square provided space for a number of uses, including:

Figure 4: Visitors to the Square, 2020-2023

Year	Visits (rounded to the hundred)	Visitors (rounded to the hundred)	Average visits per visitor	Change in visits compared to 2020 levels
2020	476,200	226,400	2.1	N/A
2021	533,500	270,300	2.0	24.8%
2022	626,900	322,600	2.0	28.8%
2023	882,300	427,200	2.1	85.3%

Source: Placer AI report c/o PCSI

- The location of Portland’s first public school, the Central School, which was constructed and opened in 1858 with around 200 students.
- The historic Portland Hotel, which opened in 1890, and consisted of eight floors and over 300 guest rooms. While the Portland Hotel was demolished in 1951, its basalt masonry foundation remained extensively underneath, which continues to support The Square and adjacent sidewalks today.
- The planned location of a structured car parking facility to support the flagship location of the Meier & Frank department store.

The parking facility never came to be, as Portlanders had other plans. Through extensive public investment, public

outreach, and a competitive design process, the City of Portland eventually selected a plaza design from a group of Portlanders led by Willard K. Martin and landscape architect Douglas Macy, who painted their plan on the surface of the existing parking structure to demonstrate how the space could be used. While The Square has had some modifications in recent years, its current configuration and use remains faithful to the intent of the original design.

In recent history, The Square has served as an important location for social and political demonstrations. In 2020, The Square served as a gathering place for protesters and activists in the wake of the murders of Geroge Floyd and Brianna Taylor.

## FEATURES AND DESIGN

The Square's most iconic features are its red brick surface and built-in amphitheataters. The plaza ascends by planes and consists of an underground-level, ground-level, and upper-level along SW Broadway. The Square's underground level contains operational space, equipment storage, power facilities, TriMet's public service office, KGW 8's Studio on The Square, as well as a public restroom. ADA-accessible ramps provide access to The Square's various levels and from adjacent public sidewalks. An ADA ramp is built into the larger amphitheater, which provides an accessible route between the main-level and the upper-level of The Square along SW Broadway.

The Square hosts a number of tenants and local businesses in addition to TriMet and KGW (Figure 5), including tenants of the food cart pod located along SW Yamhill Street between SW Broadway, and the Starbucks retail store located at the corner of SW Broadway and SW Morrison.

The Square contains a number of public art installations, such as The Weather Machine, and also incorporates elements from its past uses, including an original gate from the Portland Hotel. Public amenities on the Square include seating, bubblers, shade, and the restrooms (Figure 6).

Figure 5: Current Tenants

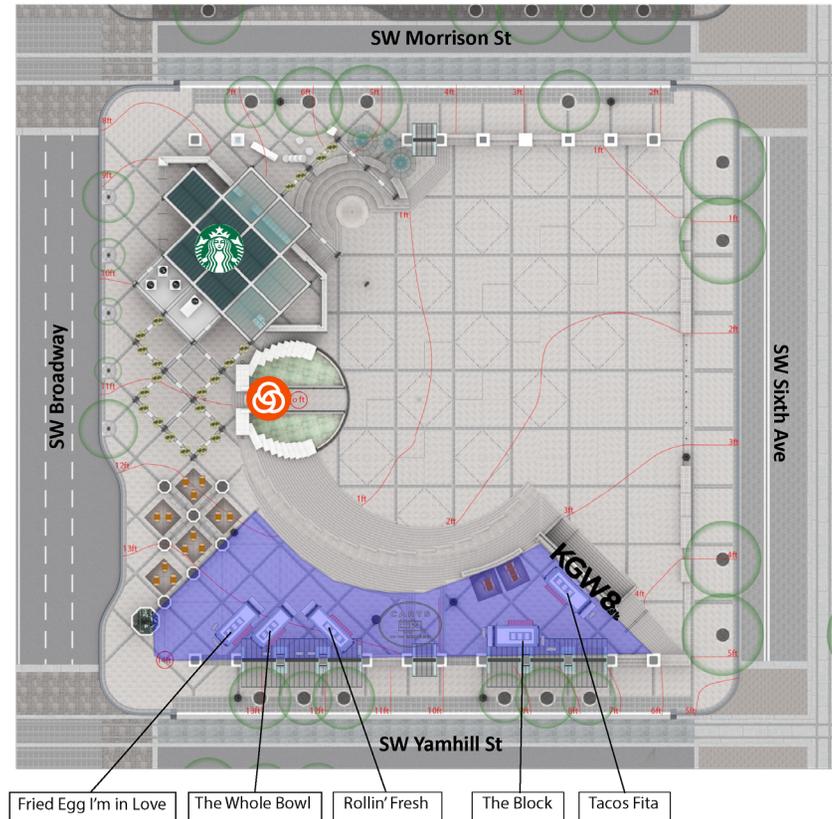


Figure 6: Public Amenities at the Square



*Credit: MHA Planning*

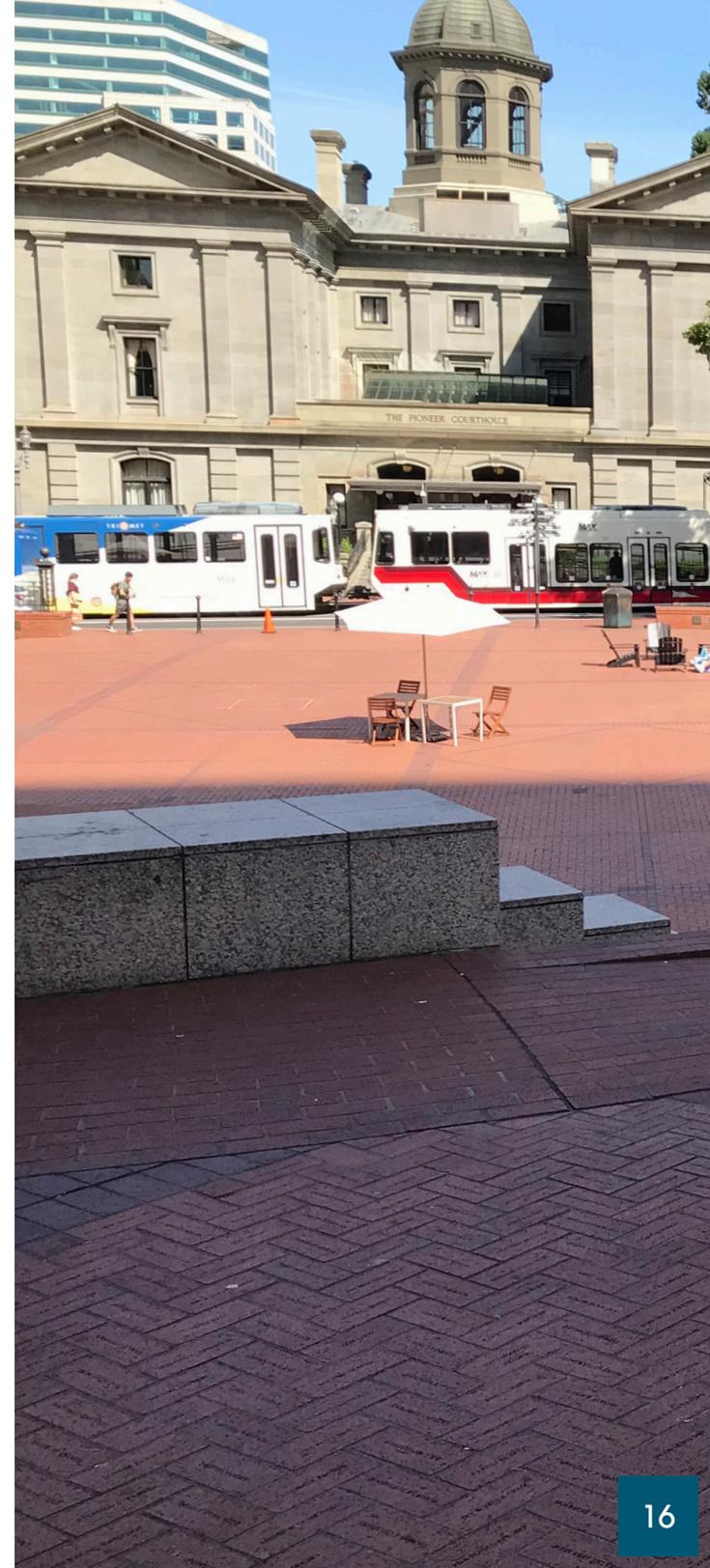
## RELEVANT PLANNING AND POLICY

Several planning documents and policies guide the development and use of The Square, including:

- The Portland Plan, a city-wide strategic plan adopted by the City in 2012. Importantly, The Portland Plan establishes equity as one of the City's four core priorities and supports making public spaces and plazas more resilient and accessible.
- 2035 Comprehensive Plan, the City's plan for land development and infrastructure projects. The 2035 Comprehensive Plan was adopted in 2016 and most recently updated in May 2023, and serves as the guide for how Portland should grow and evolve over a 20-year period.
- Central City 2035 Plan, a component of the 2035 Comprehensive Plan, serves as the primary guiding policy document for the Central City, where The Square is located. The Central City 2035 Plan identifies that downtown and the Central City should serve as a resilient center that can best serve Portland's residents in the face of climate change and extreme weather events.
- Central City Recovery Plan, which aims to ensure the cultural center

and economic engine of Portland can be a safe and welcoming place for all people to live, work and visit as the City recovers from the Covid-19 Pandemic.

Together, these plans emphasize environmental health, equity, and resiliency, which support A Stronger Square's identified goal of creating a more resilient Square.



# CLIMATE CHANGE IMPACT ASSESSMENT

Heat

Wildfires and Smoke

Precipitation

Financial Impacts

## KEY FINDINGS

Three primary climate change impacts were found to have significant for The Square's future operations: heat, excessive rain, and wildfire smoke. Of these, heat and smoke were found to be the greatest priorities for climate resiliency upgrades to The Square. Impacts include physical impacts on the built environment, health impacts for visitors to The Square, and financial impacts.

## HEAT

Increased high-temperature days and extreme heat are the greatest hazards that the Portland area will face as a result of climate change, and have the most concerning implications for The Square. Any resiliency upgrades to The Square should prioritize mitigation of high summer temperatures and extreme heat events, and should consider in particular the public health implications of these impacts on visitors to The Square.

Key findings related to increased heat include:

- Over the past 30 years, the Portland region has experienced consistent increases in daytime high temperatures, of approximately 2.5

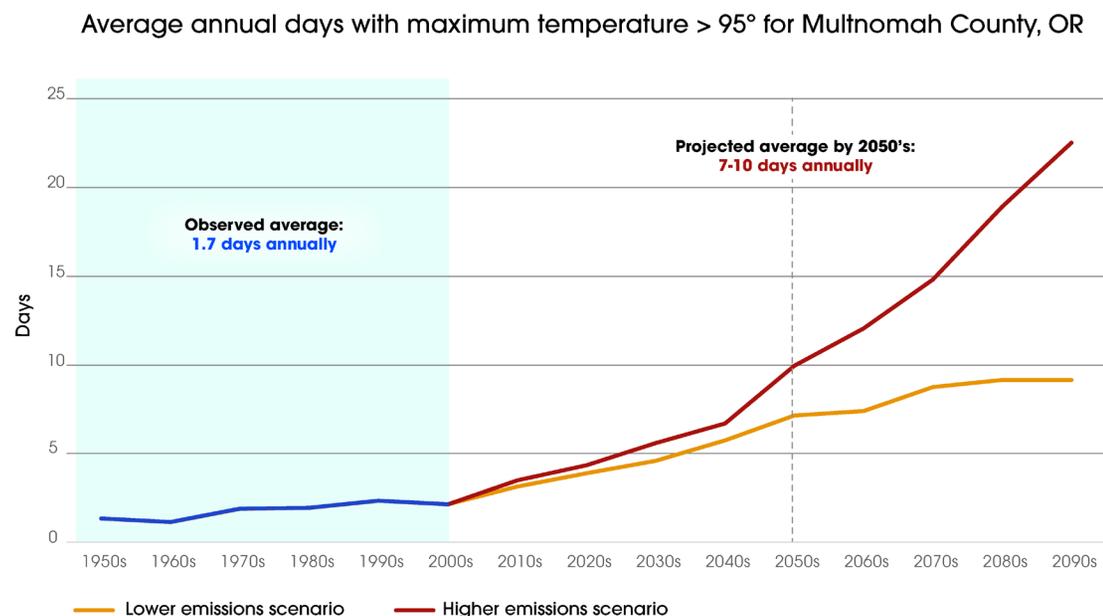
to 3°F since 1994, and 1.3 to 1.6 °F over the past 10 years.

- Projections indicate that by 2050, Portland will see an average of around 23 days per year with temperatures exceeding 90.9°F, and 7 to 10 days annually above 95°F (Figure 7).
- By 2080, average annual temperatures are expected to rise by 8.2°F, with summer temperatures increasing by 10.2°F.
- While the probability of the 2021 heat dome event in the Northwest was 1 in 100,000 when it occurred,

the probability of such an event occurring in a given year could be as much as 1 in 6 by the century's end.

- High temperatures can cause physiological effects for young and healthy people beyond a certain threshold (around 105°F to 110°F), but can also exacerbate underlying health conditions for sensitive populations at more moderate temperatures.
- Extreme and prolonged heat events may be felt particularly strongly at The Square due to its brick surface.

Figure 7



Data Source: U.S. Climate Resilience Toolkit

# WILDFIRES AND SMOKE

Climate change contributes to the increasing frequency and intensity of wildfires through hotter temperatures, drier conditions, and changing precipitation patterns. Wildfire smoke has significant impact on public health, at times making outdoor events during smoke events inadvisable.

Wildfire smoke has recently, and will continue to, impact the Portland area and The Square’s operations. The frequency of smoke events and subsequent unhealthy air quality are projected to increase due to prolonged and increased summer heat that extends the typical wildfire season. The increasing frequency of smoke events will necessitate significant adaptations in urban planning, emergency response, and public health infrastructure to protect public health and maintain the functionality of spaces like The Square.

Key findings related to wildfire smoke include:

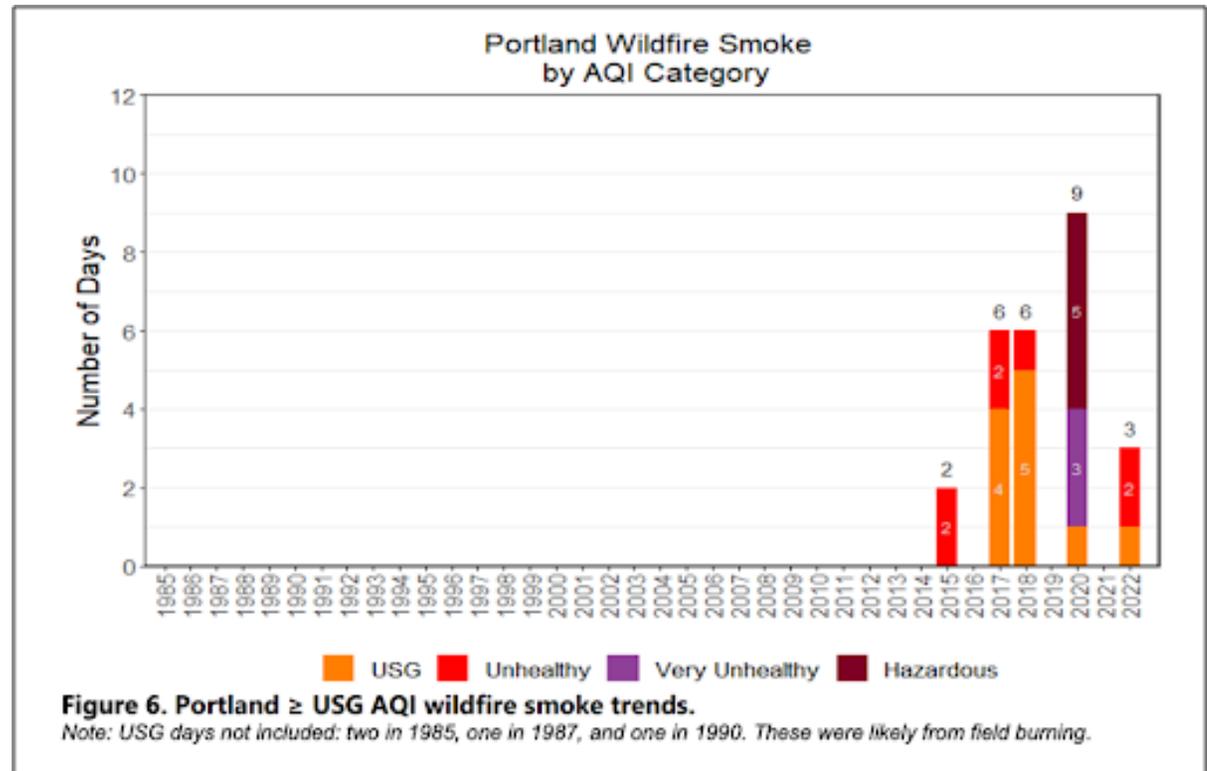
- Climate models project an increase in the frequency and severity of wildfires in the Pacific Northwest, leading to longer periods of unhealthy air quality in Portland.
- The smoke from recent wildfires in Portland caused widespread health issues, reduced visibility, and led to economic losses due to halted

outdoor activities and reduced tourism.

- The built environment has suffered during recent wildfires, with buildings and public spaces like The Square requiring cleanup and maintenance to deal with ash fallout and air filtration issues.
- While Portland had no recorded instances of severely unhealthy air

quality before 2004, trends since indicate that regular occurrences of unhealthy AQI from wildfires may represent a “new normal” in the region (Figure 8).

Figure 8: Portland Wildfire Smoke by AQI Category



Source: Oregon Department of Environmental Quality. (Note: “USG” = Unhealthy for Sensitive Groups)

## PRECIPITATION

The Climate Change Impact Assessment (“CCIA”) also examined the potential for increased storm and rain events, as well as winter freezes. In Portland, freeze events are only expected to become less common in the coming years, and climate change is not anticipated to increase the severity of rain events. Statistically significant changes in the frequency and severity of rain events have not been identified, but it is possible that more warming in the future will lead to minor changes, with “heavier” rain events potentially becoming marginally heavier, although these changes have not been observed so far. Heat and smoke impacts and potential mitigations were thus prioritized in the evaluation and selection of proposed Climate Resiliency Initiatives.

## FINANCIAL IMPACTS

In a warmer future, the financial sustainability of The Square is at stake in addition to the wellbeing of its visitors. Climate change impacts have and will continue to translate into financial impacts when they yield cancellations of events and programming. As of the 2021-2022 fiscal year, \$2.8 million in generated income for PCSI came from events and programming. This income is essential to The Square’s continued operations.

## LOCAL EXPERTISE

The CCIA included interviews with local subject matter experts in regional and local impacts of climate change, public space, and equity whose keen insights informed final recommendations for climate resiliency upgrades at The Square.

### Subject matter experts

Dr. Paul Loikith, Assistant Professor of Geography, Portland State University

Dr. C.N.E. Corbin, Assistant Professor of Urban Studies & Planning, Portland State University

Jason Franklin, Director, Portland State University Campus Planning Office

Dr. Vivek Shandas, Professor of Geography, Portland State University

David Lentzner, Emergency Management Planner, Multnomah County Office of Emergency Management

### Selected quotes

*“Locally, heat is the big thing that we see already changing, and we know it is going to continue to change into the future” - Dr. Paul Loikith*

*“When you are exposed [to heat], you’re sensitive to it, and you don’t have coping capacity, you’re in trouble. And, generally speaking, that that often happens in a public space, like Pioneer Courthouse Square, where that exposure piece becomes particularly important.” - Dr. Vivek Shandas*

*“I think for the time being [PCSI] need to plan that at least once and maybe multiple times every summer they’re going to have to make tough decisions about cancelling events [due to smoke]” - David Lentzner.*

# STAKEHOLDER INVOLVEMENT

Process

Key Findings from Stakeholder Interviews

Key Findings from Survey

## PROCESS

A Stronger Square’s stakeholder involvement process, conducted between March 2024 and May 2024, played a critical role in shaping the Climate Resiliency Initiatives proposed for The Square and described within this report. Given the project’s timeline, the outreach strategy was designed to engage key stakeholders – Owners, Operators, Presenters, Audience, Downtown Advocates, and Architects & Urban Planners – whose daily operations, relationships, and activities could be directly or indirectly impacted by changes to The Square.

One of the goals of stakeholder involvement was to cultivate trust and foster robust partnerships between PCSI and their stakeholders. This process was essential not only in understanding the varied perspectives and needs of identified stakeholders, but also in gauging buy-in for the possible changes to The Square. By focusing on these relationships, the stakeholder involvement process aimed to ensure that the potential interventions are not only technically sound but also contextually appropriate for The Square.

The Stakeholder Involvement process was split into two distinct phases: interviews and focus groups (Phase 1) and a survey (Phase 2). Phase 1 of the engagement process involved

a series of 14 targeted interviews with 20 individuals that provided in-depth insights into the unique experiences and concerns of each stakeholder group. Phase 1 included conversations with staff at the City of Portland (Parks and Recreation and the Bureau of Planning and Sustainability), past event organizers (PDX Live, the Winter Light Festival, and cultural associations who put on events), TriMet management and employees at The Square, downtown advocates including the Downtown Development Group, local architects, PCSI’s employees, and food cart operators. These interviews were structured to capture a wide array of viewpoints, from the operational challenges faced by tenants to the experiential aspects highlighted by presenters. Additionally, several small focus group discussions were held in order to foster dialogue between stakeholders with overlapping interests and to identify common ground and potential areas of collaboration. Stakeholders interviewed for this portion of the engagement process are summarized in Figure 9.

Phase 2 of the engagement strategy included the distribution of a survey, included with Appendix D, to PCSI’s email list, referred to as Friends and Followers of The Square. This survey was designed to extend the reach of the stakeholder involvement process,

capturing insights from a broader segment of the community who use or are affected by The Square. The survey aimed to gather quantitative and qualitative data to further inform the development of Climate Resiliency Initiatives. It focused on broader community preferences, concerns, and ideas regarding the future of The Square.

The survey was distributed via email to The Square’s list of people interested in receiving information on general updates and events at the plaza. The survey consisted of 20 questions (some multiple choice and some open-ended) on behaviors, preferences, and opinions related to climate impacts at the Square. It was active from May 9 to May 20, during which time 255 individual responses were submitted.

To maintain and build upon engagement momentum, MHA proposed an open house template, included with Appendix D, as a core component of their future stakeholder engagement strategy. The template serves as a guide for PCSI to adapt and utilize for various phases of this project.

The final Stakeholder Involvement Report is included as Appendix C and the stakeholder involvement materials are included as Appendix D.

Figure 9: Phase 1 Stakeholders

Stakeholder Group	Organization
Owner/ caretaker	City of Portland, Parks and Recreation, Asset & Development Division
Owner	City of Portland, Bureau of Planning and Sustainability
Caretaker	City of Portland, Parks and Recreation, Facilities Maintenance
Caretaker	Security - Pacific Patrol Services
Operator - Tenant	TriMet
Operator - Tenant	KGW 8
Operator - Food Cart	The Block
Presenter	India Cultural Association
Presenter	Winter Light Festival
Presenter	True West (PDX Live organizers)
Downtown Advocate	Pioneer Place Mall
Downtown Advocate	Travel Portland
Downtown Advocate	Downtown Development Group
Presenter	Artist/ Performer
Historic Landmark Experts	Hennebery/Eddy Architects
Historic Landmark Experts	City of Portland, Development Services
Architects and City Planners	ZGF Alumni
Architects and City Planners	Mayer/Reed Landscape Architecture
Architects and City Planners	TriMet

## KEY FINDINGS FROM STAKEHOLDER INTERVIEWS

- **Greenspace and cooling features are desirable:** Reflecting a widespread desire for more sustainable and comfortable environments, stakeholders advocated for an increase in green space, shade structures, and water features to combat increased heat.
- **Infrastructure resilience is a concern:** Stakeholders expressed concerns about the existing infrastructure's ability to withstand extreme weather conditions, prompting discussions on upgrades like heat-resistant materials and more efficient HVAC systems for tenant spaces.
- **Rainfall is not a priority:** Stakeholders from the event programmer group indicated that increased rainfall does not significantly deter event attendance at The Square, suggesting that while addressing other climate impacts is crucial, existing infrastructure (drainage systems) and the community's willingness to engage in outdoor activities even in wet conditions, means that less emphasis needs to be placed on mitigating rainfall compared to other impacts.

### Here's some of what we heard:

*"What we have done to mitigate some of the effects are, like, water down the bricks during the day— Not a great long term solution. Just running water all day on bricks to keep it cooler, but that did work to keep the ambient temperature down"* - Presenter

*"There's no shade. So the square is pretty empty on [hot] days like that, and we have folks trying to cool down by coming in our lobby, standing over the vents sleeping in our hallway."* - Operator- Tenant

*"Covering the [brick] surface is gonna go a longer way than changing the surface. The visual warmth of the brick is important in other times of year. Maybe there's a way of working with the climate change and preventing heating of the surface in landscaping, or with temporary structures."* - Architect

*"When events are clustered together, like all the events in a series in a three day period, it's cheaper to assemble and shut down. But if it's during that crazy hot week, there'll be five concerts that are affected, whereas if it were spread out maybe less events would be affected. It's less likely that we'll see 103° heat on five separate occasions."* - Operator - Food Cart

*"[During extreme heat] We have to close, and thus lose money, and thus our staff takes a hit on their paycheck, and the business takes a hit on our bottom line"* - Operator - Food Cart

*"For HVAC, there's a temperature that gets factored into the design based on the average temperature throughout the year for a particular region. The square was built for highs in the mid 80s, and that design temp is not adequate to support the different weather that we have nowadays."* - Caretaker

## KEY FINDINGS FROM SURVEY

- **5 Initiatives were favored by 50% or more of all respondents:** Shade, covered areas, free drinking water, misters, and greenery. Shade was the top preferred initiative regardless of relationship to The Square or the activities people did there.
- The top preferred initiative for smoke was air quality monitoring (36%), but overall, **respondents indicated that smoke-related initiatives would not make them more likely to visit when there is smoke.**
- **Respondents had complicated feelings about increasing greenery at The Square.** 85% said they would like to see 50% or less of The Square devoted to greenery. Open response comments both endorsed greenery (4 responses) and cautioned against adding too much greenery, citing that it would limit use of The Square or detract from its distinctive character (11 responses).
- **There is a tension between the importance of the bricks and their role in exacerbating heat.** Seven respondents expressed that they wanted to keep their bricks at The Square, while two respondents noted that the bricks made heat at The Square worse.

### Here's some of what we heard:

"I had tickets to a concert last summer and it hit 100 degrees. The show was supposed to open at 6:00 and I was shocked it wasn't canceled and refunded. They announced there was no place to fill water bottles, and of course no shade. Now, I won't purchase tix in advance, knowing there's such a risk."

"In general if I buy something here I eat it at Director Park as it has shade"

"I would not want green space to sacrifice the flow and openness of the Square as it is now, though more life would be nice."

"I stopped volunteering for certain summer events - just too hot on the bricks and won't stay as long as planned in smoke and heat"

"I like [the Square] as it is now, and I don't see the need [for] a major remodel, even if included more green space. Maybe if I saw the plans for what a 75% green space square looks like, I would be able to get on board."

"I have bought bricks for several family members. I sure hope you aren't going to take them away."

"I love the Square, but I wish there were shaded areas."

# CRITERIA FOR CLIMATE RESILIENCY INITIATIVES

Evaluation Framework

Options Menu

MHA Planning compiled an initial list of Climate Resiliency Initiatives based on input from PCSI, stakeholder involvement and subject matter expert interviews, as well as examples from other similar public spaces that could be utilized at The Square. The initial initiatives that were compiled for additional exploration and evaluation met the following criteria:

- Potential to address one or more climate change impacts (extreme heat, increased rain, and/or wildfire smoke).
- Can be applied to an urban plaza.
- Advances the vision for The Square to be a public gathering space that fosters community interaction and civic pride, “an urban public space that helps downtown thrive”. For instance, turning it into another use entirely, like housing, wetlands, or a fully forested park, is not an initiative included in the options menu or was considered for evaluation.
- Are initiatives that PCSI can undertake on their own, or undertake through partnerships.

## EVALUATION FRAMEWORK

MHA Planning developed an evaluation

framework to understand how effective each initiative would be at The Square and to identify recommended initiatives. The criteria used to evaluate the initiatives included:

### Mitigate Climate Change Impacts

Initiatives that best mitigated extreme heat were prioritized, followed by wildfire smoke and increased rain.

- High mitigation of extreme heat (highest priority)
- High mitigation of wildfire smoke (medium priority)
- High mitigation of increased rain (lower priority)

### Benefit Stakeholders of The Square

Initiatives that would benefit greater numbers of stakeholder groups were prioritized. Identified stakeholder groups include:

- Event organizers
- Event attendees
- Tenants
- Food carts
- Downtown users (workers, residents, students, businesses, transit

patrons)

- Visitors (local and overnight)

### Ease of Implementation

Initiatives that would have low monetary costs and short timelines for implementation were prioritized.

- Low monetary cost to implement.
- Short implementation timeline (regulatory barriers, project timeline, and coordination).

### Ease of Maintenance

Initiatives that would have low monetary costs and relatively straightforward maintenance were prioritized.

- Low monetary maintenance costs.
- Low maintenance effort (time and number of people).

Initiatives that best met the above criteria were selected for recommendation.

## OPTIONS MENU FOR CLIMATE RESILIENCY INITIATIVES

In order to create an initial list of Climate Resiliency Initiatives, MHA Planning developed an “options menu” of potential initiatives in collaboration

with PCSI. The complete Options Menu is included as **Appendix E**, and the initiatives included in the options menu were selected based on feedback acquired through the stakeholder involvement process, subject matter expert interviews, as well as examples from other similar public spaces that could be utilized at The Square. For example, during initial conversations between MHA Planning and PCSI, large permanent shade structures, misters, and providing free water were mentioned. During interviews conducted as a part of Phase 1 of the stakeholder involvement process, more temporary and artistic shading measures, enhanced water features, and cooling stations were also mentioned. Adding more greenery and changing the surface material of The Square were also discussed, but with some nuance as people acknowledged that the bricks contribute to the heating of The Square while also being critically important to the purpose of The Square and the community's connection to this space.. Thus, MHA Planning included initiatives such as these and more in the Options Menu to more fully explore the potential costs and benefits of each.

Additionally, MHA Planning's Existing Conditions Report (**Appendix A**) provided insight into The Square's context, history, surrounding demographics and built environment, which assisted in identifying Climate

Resiliency Initiatives that are reflective of The Square's historical context in Portland and the people it serves. Finally, MHA Planning's Climate Change Impact Assessment ("CCIA") (**Appendix B**) provided a more detailed understanding of how climate change could reshape the environmental and operational landscape of The Square so that identified Climate Resiliency Initiatives are reflective of potential future challenges and anticipated shifts in public use patterns.

The Options Menu is designed to address three primary climate impacts identified through the CCIA as likely to have an impact on The Square's operations and usability: heat, excessive rain, and wildfire smoke. Climate Resiliency Initiatives are provided for each of these three climate impacts. In addition, a fourth category provided Climate Resiliency Initiatives that do not address a specific impact, but rather focus on communication and connection to build resiliency more broadly. The initiative options for each category, and the impacts they're intended to mitigate, are described below:

- **Extreme Heat:** These initiative options are intended to mitigate the impacts of heat at The Square and increase usability during extreme heat events. These initiative options generally provide increased cooling, more shade, and assist

PCSI's ability to track, monitor, and respond to heat impacts in order to inform decision making related to programming and events at The Square.

- **Excessive Rain:** These initiatives are intended to increase rain and weather protection during storm events and also expand The Square's stormwater management infrastructure so that standing water and flooding impacts to The Square's programming and events are minimized.
- **Smoke:** These initiatives are intended to mitigate the worst effects of smoke during wildfire events, allowing The Square to continue operations to a certain extent.
- **Communication and Connection:** These initiatives are intended to create internal policy for PCSI regarding response to climate impacts and extreme weather emergencies.

Climate Resiliency Initiatives were assessed based on the evaluation framework criteria previously described above. The recommended Climate Resiliency Initiatives, described in the subsequent sections, were selected for further analysis based on their cumulative ability to meet the evaluation criteria.

# RECOMMENDATIONS

Area 1: Operational Changes

Area 2: Temporary Physical Interventions

Area 3: Permanent Physical Interventions

# Area 1: Operational Changes

# RECOMMENDATION 1.1: ADOPT EVENT SCHEDULING PRACTICES THAT ALIGN WITH CLIMATE CONDITIONS

PCSI can minimize the need for physical interventions by “working with” Portland’s changing climate, creating its programming schedule with an eye toward when weather conditions are likely to be most favorable. Direct costs for this intervention are near-zero, it can be implemented immediately and adjusted as needed, and may lessen the need for other, more cost- and time-intensive mitigation measures.

## Action Items

- Item 1: Schedule events earlier in the morning or later in the evening during mid- to late- summer months. Where possible, scheduling events approximately before 11 am or after 7 pm will minimize the chance that they overlap with high mid-day temperatures during the hottest days.
- Item 2: Avoid scheduling major events during periods with the historically highest average temperatures.
- Item 3: Avoid scheduling major events close together during the period when unhealthy air quality is more likely, approximately late July to early September. Spacing events out during this season will reduce the possibility of having multiple major events occur during a period of acute smoke impacts.
- Item 4: Regularly re-evaluate scheduling practices to identify ways that they can be fine-tuned to minimize impacts of weather events.

Impact	Heat, smoke
Effectiveness	High
Who it benefits	Event organizers Event attendees Visitors
Start-up cost	\$
Start-up timeline	🕒
Maintenance cost	\$
Maintenance effort	🔨

## Considerations

It should be noted that on the hottest days, heat may persist well into the night, making this strategy more effective for “typical” summer weather rather than for abnormal events such as heat waves or “heat domes”. Nighttime events may also pose safety concerns for some attendees. PCSI and its partners should identify ways to address these concerns wherever possible, including by drawing on the experiences and practices of successful nighttime events that have already occurred at The Square, such as the Winter Light Festival.

PCSI should be aware that it may be difficult for event organizers to schedule food vendors for half-day or late-night events, which might result from pursuing this strategy. PCSI should consider working with event organizers, vendors, and other partners to design creative solutions to these challenges.

Expanded programming during nighttime hours could be enhanced through temporary or permanent features that make The Square more inviting after dark and increase a sense of safety, including decorative lights. PCSI should consider investing in temporary or permanent features that will make the plaza more attractive as a venue for nighttime events if this practice proves successful.

## Actors

Lead: PCSI

Partners: Event organizers, vendors, Portland Parks and Recreation

### Example: Paris “Cooling Initiative”



Parc des Buttes Chaumont at night

*Source: Joséphine Brueder/City of Paris*

Since 2015, the city of Paris, France has opened a portion of its city parks for extended evening hours (until midnight or all night) from early July to early September as a part of the city’s “cooling initiative”. This simple approach has allowed city-dwellers more time to enjoy their public spaces during the period when daytime temperatures can preclude comfortable enjoyment of local parks, and this initiative has been recognized by many experts as a best practice for warming U.S. cities as well. Paris has provided additional park security at night to ensure that visitors feel safe in parks after dark. This is now a regular part of the city’s summer operations, and has proven popular with Parisians. PCSI should look to this simple, low-cost example of public space adaptation to increasing heat as a model for The Square, and draw from Paris’ lessons learned and best practices.

# RECOMMENDATION 1.2: CREATE A POLICY AROUND RESPONSE TO CLIMATE CHANGE IMPACTS

PCSI should adapt to Portland’s “new normal” of hotter summer temperatures and more frequent wildfire smoke events by creating an internal plan tailored to these conditions to guide decisions on programming by PCSI and its partners. While many measures can be taken to make the plaza more comfortable for visitors during climate-related weather events, some extreme events will necessitate modifications for the sake of public health. In these circumstances, having clarity and coordination on acceptable levels of risk for attendees and standardized operating procedures in the face of extreme weather will help PCSI and its partners to act nimbly, be proactive, and steward the health of its visitors. This policy should include a plan for when to increase on-site health and safety precautions, as well as any necessary upgrades to plans for on-site emergency services.

## Action Items

- Item 1: Establish benchmarks for delaying, modifying, or canceling events in the event of extreme weather, informed by public health standards used by local officials. Look to the Environmental Protection Agency and Oregon Occupational Safety and Health for best practices and standards.
- Item 2: Create a standard procedure or framework for decisions about delaying, modifying, or canceling events in the event of high temperatures and poor air quality
- Item 3: Create a plan for monitoring weather conditions and events and communicating changes to programming to event organizers and the public
- Item 4: Review on-site health and safety practices in light of potential health impacts of climate conditions. Confirm that on-site preparations for identifying and responding to heat- or smoke-related illness are adequate.
- Item 5: Explore a plan for adding additional precautions against heat-related illness to events on high-heat days. Providing free bottled water should be a top precaution, especially given its popularity among respondents to the survey

## Considerations

PCSI should seek guidance from local public health professionals where possible, and adopt standards used by Multnomah County Health Department, the City of Portland, and other local institutions. Seeking feedback on its response plan from relevant contacts, especially at Portland Parks and Recreation, may prove desirable.

Impact	Heat, smoke, rain
Effectiveness	High
Who it benefits	Attendees Organizers Food Carts Downtown users Visitors Tenants
Start-up cost	\$
Start-up timeline	🕒 - 🕒🕒
Maintenance cost	\$ - \$\$
Maintenance effort	🛠️

## Actors

Lead: PCSI

Partners: Multnomah County Health Department, Portland Parks and Recreation

### Example: The Central Park Climate Lab



Central Park

*Source: Getty Images*

The Yale School of Environment and the Natural Areas Conservancy of Central Park in New York City have created a Climate Lab to study climate change and residency initiatives in park settings. The ultimate goal of this exploratory research is to best understand how to prepare and mitigate climate change at a park scale. This includes studying cooling initiatives, analyzing park specific data and behaviors and ultimately providing the initial work for large scale public park policy. As weather events continue to impact parks across the country, The Climate Lab has taken the first step to gather data and begin to inform best practices for management. PCSI might consider a smaller, but similar idea to create their own climate policy.

## **Area 2: Temporary Physical Interventions**

## RECOMMENDATION 2.1: SHADE CANOPIES

Shade canopies are a potentially cost-efficient intervention for increased heat at The Square, and temporary shade canopies would be particularly quick to implement. A variety of lower-cost options, such as commercial shade sails, can provide an “off-the-shelf” solution that allows for flexibility of coverage, and may be deployed or rearranged throughout the season if needed. PCSI may opt for full coverage of the center of The Square, which receives the most sun during the summer, or for strategic shading of a portion of The Square, to provide visitors the option of additional shaded areas.

### Action Items

- Identify needs and constraints for constructing shade structures, including the desired area to be covered, storage capacity (assuming that canopies will not be used year-round), and options for anchoring shade canopies along The Square.

### Considerations

Event organizers shared concerns with the possibility of shade structures obscuring views, which should be a key consideration for PCSI in selecting a shade structure design. A centrally-located shade structure on The Square will need to be elevated significantly to avoid interfering with operations of events.

It’s unclear how limitations of the space could lengthen the timeline for designing and constructing such an intervention. Attendant features such as a central support in the Christmas tree stand may need to be designed and installed, which could complicate this project and potentially increase costs.

Shade canopies can be purely utilitarian, or may double as decorative features that beautify the space and serve as an attraction for visitors. PCSI should consider whether more decorative options would be desirable for The Square and for event organizers. PCSI could even consider working with local artists to design unique shade canopies that bring local character to the space and draw public interest.

### Actors

Lead: PCSI

Partners: None

Impact	Heat
Effectiveness	High
Who it benefits	Attendees Organizers Food Carts Downtown users Visitors Tenants
Start-up cost	\$\$ - \$\$\$
Start-up timeline	🕒🕒
Maintenance cost	\$\$
Maintenance effort	🔨🔨

## Examples: Temporary Shade Canopies in Public Spaces



Several local Portland-area services for temporary shade canopies target large spaces and venues like music festivals, and could provide services to The Square as well. The temporary shade canopy pictured was created for the Pickathon Music Festival in Happy Valley, OR.

◀ Decorative shade canopy at Pickathon music festival

*Source: Brianna Brey/ The Source Weekly*

Some shade canopy designs may necessitate that accessory features like anchors or posts be installed on a more permanent basis, such as the posts that anchor the sails pictured. Given the variety of shade canopy designs that could be created, The Square should carefully consider how any permanent accessory features would impact use or aesthetics of The Square. Installation of such features could allow for greater coverage of the exposed central area of The Square than would be possible if canopies were anchored only to existing structures at The Square.

Shade sails at the University of West Georgia public plaza ▶

*Source: Archdaily*



Shade canopies may be structural or decorative, such as the artistic shade structures in Mexico City's "Art Walk" pedestrian corridor, shown here. This creates opportunities for placemaking and public art at the Square, and could complement the existing public art pieces on site. Bringing local artists into the design process could also highlight Portland's local talent and artistic spirit. Though the structures pictured are installed on a permanent basis, The Square could emulate this general strategy with a more temporary structure.

◀ Art Walk in Mexico City

*Source: Ketan Membranas Arquitectónicas.*

## RECOMMENDATION 2.2: WATER MISTERS

Purchase or rental of water misters will allow visitors to cool off during visits and events during the hot summer months. Temporary installation of these misters in peripheral locations along The Square will allow visitors to regulate their physiology during visits, and extend the time they can comfortably enjoy their use of The Square. Additionally, this can create evaporative cooling in the immediate surroundings, as water evaporates from the ground and surfaces surrounding the misters.

### Action Items

- Identify needs and constraints for use and siting misters during summer events, considering accessibility to the public, maintenance needs, and impact on event set-up

### Considerations

Keeping misters operational and on-site throughout the summer will likely prove impractical, so PCSI should consider how best to target their deployment. For example, this intervention could be tied into weather response planning as a modification for events scheduled during higher-temperature days. If misters prove to be particularly impactful and practical, PCSI may want to consider incorporating a permanent misting system into The Square, perhaps similar to a patio hookup system (see “examples” below).

PCSI should also be aware of the potential that some visitors may attempt to tamper with or use the misters inappropriately, and consider ways that they can be installed or located to reduce this possibility.

### Actors

Lead: PCSI

Partners: None

Impact	Heat
Effectiveness	High
Who it benefits	Attendees Organizers Food Carts Downtown users Visitors Tenants
Start-up cost	\$\$
Start-up timeline	 
Maintenance cost	\$\$
Maintenance effort	  -   

## Examples: Temporary Misters



Temporary misting systems like this inflatable arch can be rented hourly or daily for events from many local businesses such as event production companies or party equipment rental companies.

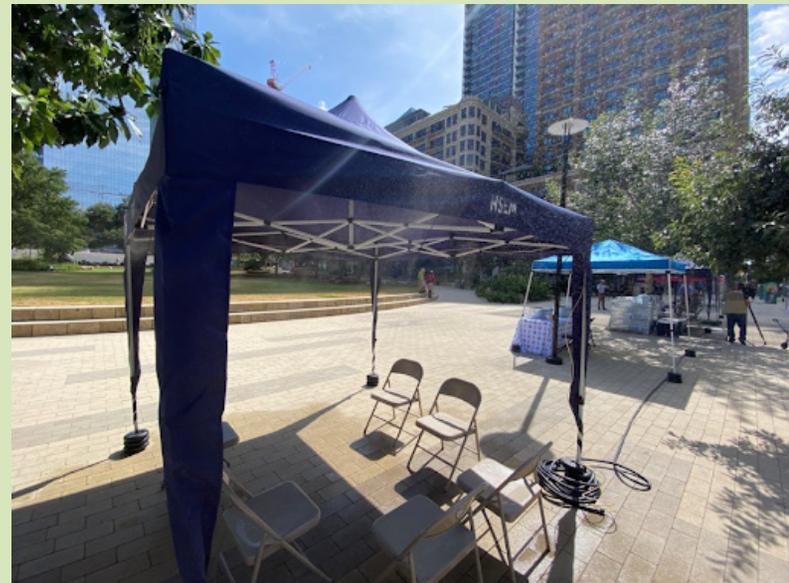
◀ Inflatable misting arch

*Source: Mistingcooling.com*

Other types of misting systems may also provide shade, meeting two purposes at once. Designs like the misting tent pictured combine shade and misting to help visitors cool off, and can be rented for events and set up quickly. This may be particularly desirable for events that require heat adaptations on short notice, due to unforeseen weather conditions.

Misting Tents in downtown Austin, Texas ▶

*Source: Melanie Torre*



## RECOMMENDATION 2.3: TEMPORARY GROUND COVER

The results of the existing conditions report, options menu, and expert interviews highlighted the role of The Square’s distinctive brick fabric in exacerbating high temperatures. To mitigate this effect during extreme heat without making significant alterations to the bricks, PSCI should consider deploying a durable temporary ground covering during the hottest periods, in order to reduce heat absorption and radiation from The Square’s brick surface. This should have a lighter-colored and/ or reflective surface to reduce heat on The Square and lower air temperatures.

### Action Items

- Identify needs and constraints for a temporary ground cover, including those related to maintenance, installation, storage, costs, and impact on event design

### Considerations

In order to serve all visitors equally, this intervention should be undertaken with special consideration of the needs of people with mobility impairments, especially those who use mobility devices or may be more prone to falls. An overly slick material or unsecured edges could pose limitations for these users. Like a shade canopy, this intervention creates possibilities for place-making and public art.

### Actors

Lead: PCSI

Partners: None

Impact	Heat
Effectiveness	High
Who it benefits	Attendees Organizers Food Carts Downtown users Visitors Tenants
Start-up cost	\$\$\$
Start-up timeline	🕒 - 🕒 🕒
Maintenance cost	\$
Maintenance effort	🔨 🔨

### Example: Perforated Tiles



Perforated tiles make an excellent and easy-to-assemble temporary ground cover. These flexible interlocking tiles can adjust to any ground ratio. A light-colored option will reflect heat, and they provide a waterproof and cushioned ground shell that can be laid over top of the surface of the plaza without permanently altering it.

◀ Perforated tiles cover outdoor patio area  
*Source: Greatmats.com*

## **Area 3: Permanent Physical Interventions**

# RECOMMENDATION 3.1: UPDATE HVAC SYSTEMS FOR TENANTS TO INCLUDE IMPROVED AIR FILTRATION

When The Square was designed and built in the 1980s, designs for its buildings assumed a different set of climate conditions than those that are emerging as a result of climate change. Existing HVAC systems are not adequately designed to handle the high summer temperatures that Portland now routinely sees, and investments in upgrades to tenant HVAC systems may deliver more comfortable temperatures for The Square’s tenants. If such an upgrade is undertaken, it would pose an opportunity to make concurrent improvements to air filtration systems, in order to reduce air pollutants inside buildings during wildfires and smoke events. This could be done by upgrading filters to a MERV rating of 13 or greater, or by adding other types of air purification products (Note: “MERV” stands for “minimum efficiency reporting value”, which is a rating system created by the American Society of Heating, Refrigerating and Air-Condition Engineers, that signifies an air filter’s effectiveness at decreasing airborne particles and pollutants, determined by the smallest particle its capable of trapping.)

Impact	Heat, smoke
Effectiveness	High
Who it benefits	Tenants Visitors Downtown users
Start-up cost	\$\$\$
Start-up timeline	🕒🕒
Maintenance cost	\$\$\$
Maintenance effort	🔨🔨

## Action Items

- Item 1: Conduct an assessment of needed upgrades to existing HVAC systems on The Square
- Item 2: Identify opportunities to improve air filtration systems

## Considerations

This intervention, while impactful, is likely to prove quite expensive. PCSI should consider prioritizing lower-cost options and evaluating whether they could reduce the need for HVAC upgrades.

Such an investment may have co-benefits to PCSI and its tenants, including improved energy efficiency, and reduced maintenance costs and needs. Depending on the facilities’ needs, PCSI may consider installing an all-electric heat pump system for maximum energy efficiency and savings in energy costs.

## Actors

Lead: PCSI

Partners: None

# RECOMMENDATION 3.2: PLANT NEW TREES TO INCREASE GREENERY ON THE SQUARE

Additional trees on The Square could provide more shade and evaporative cooling, and would collect water during excessive rain events to some extent. Trees could be added even without altering the pavement by using planters or raised planter beds. Though trees planted in containers would necessarily be limited in size, they may still prove useful in providing shade or cooling.

## Action Items

- Item 1: Explore possibilities for filling existing empty tree pits on or near The Square
- Item 2: Identify needs and constraints for design of greenery, including impact on use of The Square, event design, location, and desired shading

## Considerations

In addition to raised planters, PCSI should evaluate whether trees can be added to any existing and empty tree wells adjacent to The Square, such as the empty tree well on SW 6th Avenue. This may require collaboration with Portland Parks and Recreation or other City Bureaus.

## Actors

Lead: PCSI

Partners: Portland Parks and Recreation

Impact	Heat, rain
Effectiveness	High
Who it benefits	Attendees Organizers Food Carts Downtown users Visitors Tenants
Start-up cost	\$ \$
Start-up timeline	🕒 🕒
Maintenance cost	\$ - \$ \$
Maintenance effort	🔨 🔨

## Example: Raised and Moveable Planters



Concrete planters like those shown at left could prevent visitors from tampering with or moving planters, but would be more difficult to relocate if needed to accomodate events.

◀ Courtyard planters  
*Source: Gardening Know How*

Larger planters that elevate their contents several feet above the ground, like those shown at right, could be useful for gaining maximal shade from smaller trees. Additionally, these would lessen the amount that foliage interferes with sight lines to some degree.



Green tree boxes at Luxembourg Gardens in Paris ▶  
*Source: Jake Parillo*

# CONCLUSION AND NEXT STEPS

Serving as Portland’s “Living Room” since 1984, The Square is intended to be a public gathering space that fosters community interaction and civic pride. However, periods of extreme heat, wildfire smoke, excessive rain, and other extreme conditions are adversely affecting the ability for The Square to serve this purpose. A Stronger Square has been the first step in helping PCSI to understand and address these issues and in helping The Square continue to be a viable community asset.

Through this process, the following key conclusions were drawn:

- **Initiatives that address heat impacts are most needed and most effective.** Freeze events are only expected to become less common in the coming years in Portland, and climate change is also not anticipated to increase the severity of rain events in Portland. The Square will likely experience increasing heat and smoke impacts over the next 20 years. However, initiatives that were explored to address smoke were not very effective at mitigating impacts, and in stakeholder involvement work, there was a theme that there were not any initiatives that would increase people’s likelihood of visiting The Square when there is wildfire smoke. Thus, climate resiliency initiatives at The Square should focus on

addressing heat, since these initiatives are most needed and effective.

- **The Square faces non-climate-change challenges too.** While climate resiliency initiatives should focus on addressing heat impacts, storm, rain, and extreme-cold events currently and will continue to negatively impact The Square. There are also challenges at The Square related to perceptions of safety downtown and both sustained and sudden wear-and-tear of assets. Looking ahead, there may be changes in demographics and needs in the community over the next 20 years to which The Square would need to adapt its design and programming. Initiatives to address these impacts are still relevant more broadly, and a more comprehensive assessment of the strengths and opportunities at The Square could be helpful in identifying these initiatives.
- **Flexibility, gather-ability, and durability of The Square are essential.** The Square intended to be a hardscaped public gathering space that fosters community interaction and civic pride. It is an attraction for both locals and visitors, both day-to-day and on occasion. The ability for The Square to host a variety and large number of events and users is central to its purpose,

and any changes to The Square need to maintain this flexibility, gather-ability, and durability.

- **This is an opportunity for PCSI and The Square to be a leader in the community.** The City of Portland, TriMet, and other downtown advocates have not yet or are only just starting to consider climate change impacts from a resiliency standpoint, rather than/in addition to an emergency management standpoint. The processes and outcomes at The Square around climate resilience can be an example for other local organizations and public spaces in Portland, and elsewhere as climate change impacts people and places across the globe. There was general support and interest in discussing The Square and potential improvements, and this can be leveraged to keep building positive relationships with key stakeholders and the community more broadly.

In addition to the recommended Climate Resiliency Initiatives, MHA Planning developed a set of next steps for PCSI to successfully build off the work of this project:

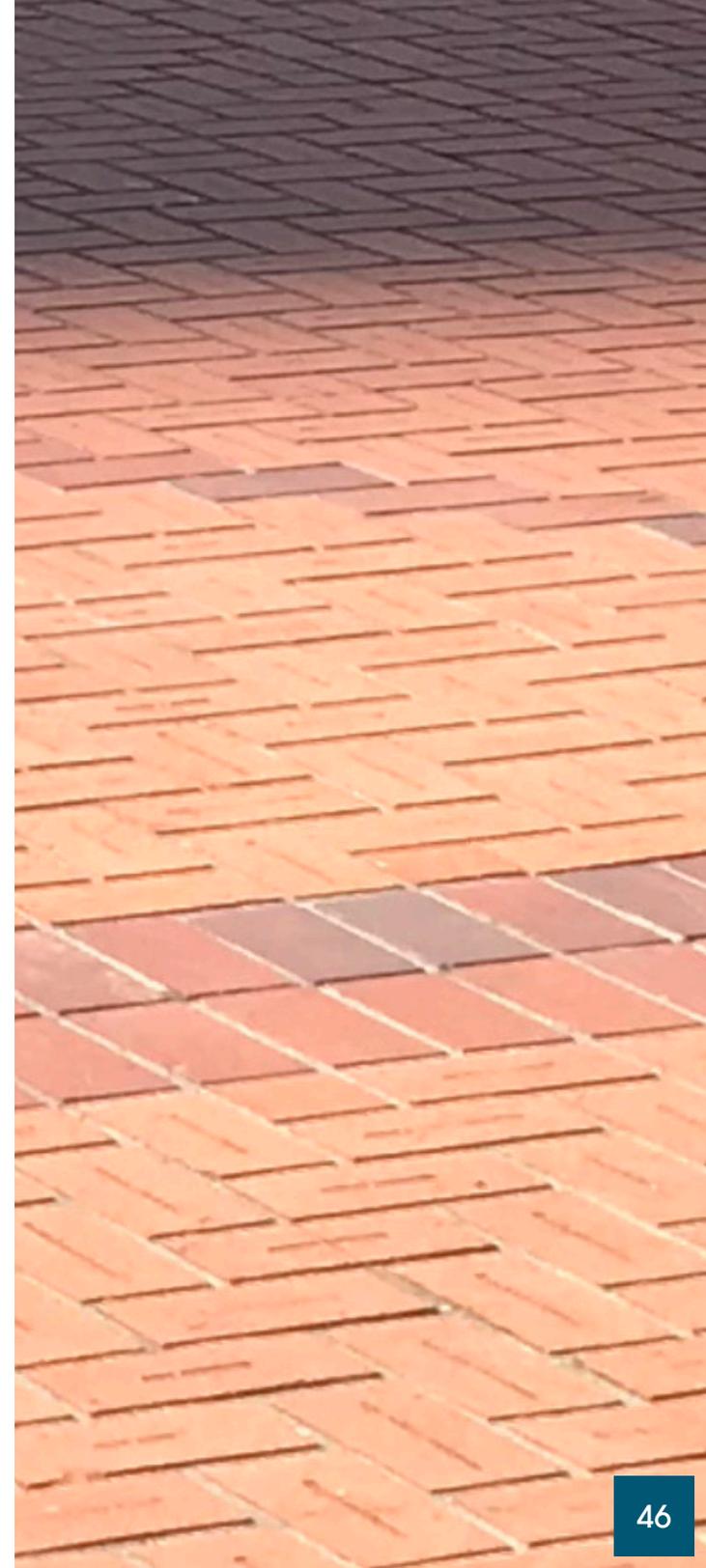
- **Comprehensively address challenges at and plan for the future of The Square.** The impact of climate change appears to be one of the challenges that The

Square faces and will face over the next 20 years in fulfilling its role as a public gathering space that fosters community interaction and civic pride. Some initiatives may not address climate change impacts but would benefit stakeholders of The Square.

- **Conduct community engagement with Equity Priority Groups.** This project did not use engagement methods that were tailored to particular Equity Priority Groups and ended up primarily hearing from White people who currently do not have a disability (see Appendix D, Phase 2 summary). To better ensure equitable processes and outcomes in planning for The Square, it will be critical to tailor engagement methods to Equity Priority Groups. By doing so, additional climate change impacts could be identified and how different initiatives impact these groups could be determined.
- **Continue outreach to food cart operators, tenants, downtown advocates, caretakers, and event organizers and attendees.** This project was able to incorporate feedback from a significant number of stakeholder groups, and these groups should continue to be involved in the process to understand the challenges they face and preferences for initiatives at The

Square.

- **Coordinate efforts at The Square with the larger Portland parks system and Central City/downtown Portland efforts.** The success of The Square and how the community can benefit from it is connected to what happens with other parks in Portland and to what happens in the downtown area. Particularly with these two groups, efforts should be coordinated to maximize investments and avoid duplication.
- **Search for additional funding opportunities.** PCSI is currently working to see if funding from the Portland Clean Energy Fund can support some of this work. More funding will likely be needed to continue planning efforts and carry out recommendations.



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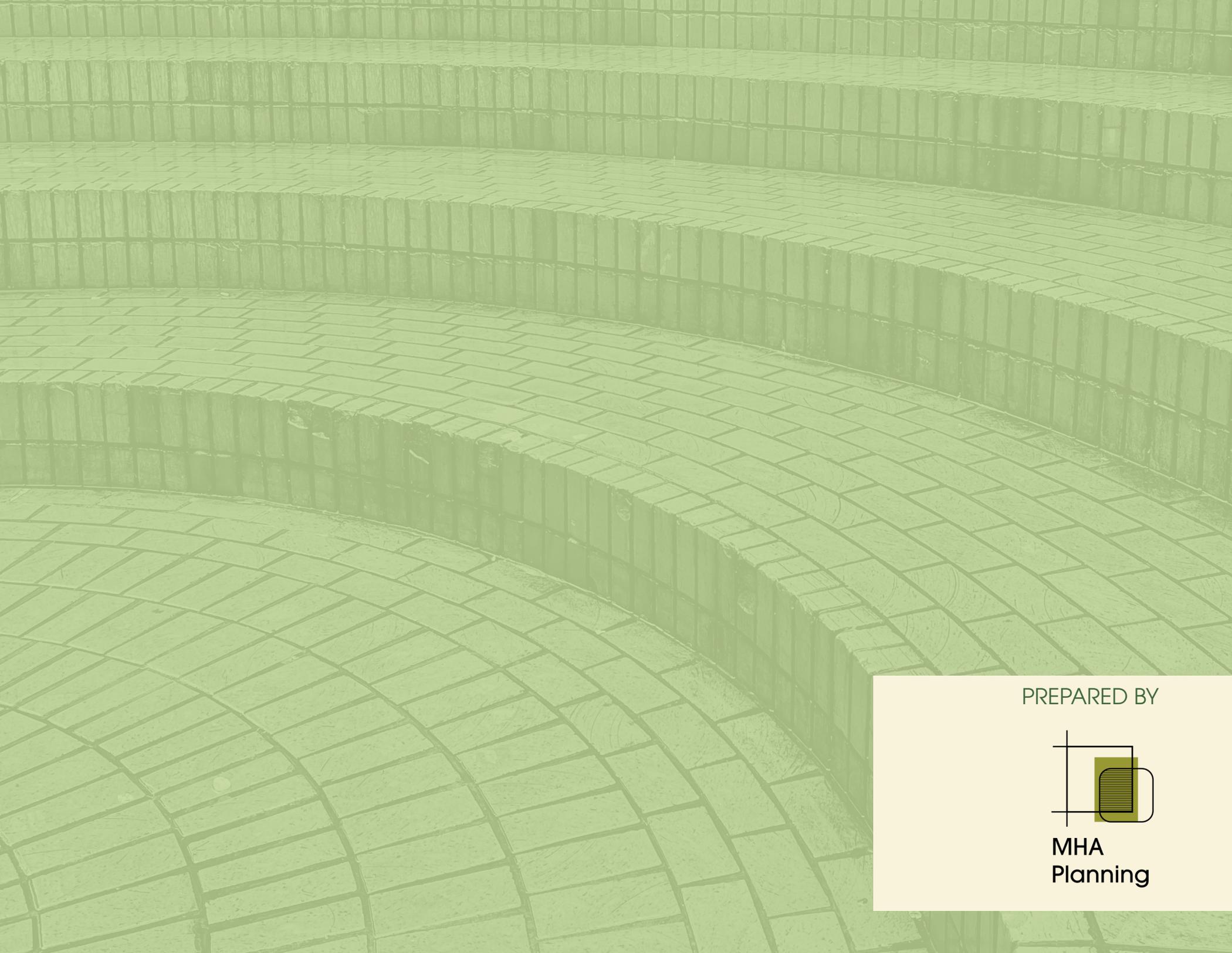
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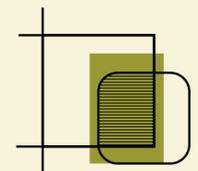
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# APPENDICES

# **Appendix A: Existing Conditions Report**



A Stronger Square

# EXISTING CONDITIONS REPORT

April 2024

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## EXECUTIVE SUMMARY

Given the importance of The Square to Portland’s social fabric and its key location in Downtown, an analysis of its existing conditions is necessary in order to inform future climate resiliency initiatives so that they are reflective of its location and context, history, surrounding demographics, built environment, and accessibility. The preparation of this existing conditions report has identified the following key takeaways:

- The Square’s location is central to Downtown, and it provides an accessible and much needed public open space in close proximity to Downtown’s central business and retail core, while also being readily accessible to a number of transit options;
- The Square serves a wide variety of populations and any future planning at The Square should consider the differences between residents of the immediate surrounding area, daytime visitors of the area, and visitors of The Square. The Square’s usage by a diverse range of populations highlights its importance to many segments of the community.
- Like the entire Portland area, The Square sits on the historic lands of Indigenous Nations, who served as this area’s stewards, and who’s history should be acknowledged, honored, and reflected.
- The Square’s varied uses over its history, including as a school, hotel, parking, and public open space demonstrate the space’s ability to adapt to the changing needs of Portlanders. The Square has also served as a gathering place for a number of historical social movements.
- The Square is a valuable public resource which provides amenities and hosts functions that serve a variety of needs and users. Decisions on future resilience initiatives should be informed by an analysis of their likely impact on the psychological sense of safety and inclusivity that users may experience.
- Throughout its history and even today, The Square has hosted a number of tenants and local businesses. These current tenants, as key stakeholders, should be considered with future planning.
- The Square remains faithful to its original design and intent, and to the extent possible, future planning should remain faithful to this design as well.
- A number of key planning documents guide current and future planning of Downtown and The Square. The City of Portland sees The Square as an opportunity and tool for activating and reinvigorating the Central City and Downtown area with programming and events, which must be considered with future planning.

## PURPOSE

A Stronger Square: Climate Resiliency for Pioneer Courthouse Square (“A Stronger Square”) is an effort to provide a more comprehensive understanding of the impacts that climate change will have on Pioneer Courthouse Square (“The Square”) over the next 20 years and what initiatives should be pursued to mitigate those impacts while also contributing to a more equitable and resilient Square. The findings will be based on physical as well as behavioral science and offer solutions that draw on historical examples together with regional, affordable, and achievable applications.

A Stronger Square aims to advance equity by proposing initiatives for The Square that decrease climate change impacts and increase access to and inclusion at The Square, particularly for people who are a part of one (or more) Equity Priority Groups (Figure 1). The climate resiliency initiatives identified will help Portland’s living room become a more accessible and inclusive space, particularly for the groups identified in Figure 1 above, now and in the future.

The Square is a City of Portland

owned public space managed and operated by Pioneer Courthouse Square Inc. (“PCSI”). The Square’s location and context in Downtown Portland, its history, built environment, and accessibility have resulted in it becoming a cherished public asset that is used by thousands of Portlanders and tourists alike every day. As extreme weather-related events continue due to climate change, it is important that The Square’s existing conditions are evaluated so that proposed climate resiliency initiatives are reflective of The Square’s past and present and allow The Square to continue being an accessible public space for all.

Figure 1: Equity Priority Groups

- Black communities
- Indigenous communities
- Communities of color
- People with low income
- People with disabilities
- Additional populations (to be identified during the Existing Conditions phase) that are, have been, and may continue to be disproportionately and negatively impacted by climate change and/or excluded (e.g., physically, socially, economically excluded) from public spaces.

## STUDY AREA

The project site area for A Stronger Square is centered on Pioneer Courthouse Square (“The Square”), which occupies a full city block, approximately 40,000 square feet or a little under one acre, in Downtown Portland. The Square is bounded by SW Broadway on its west, SW 6th Avenue on its east, SW Morrison Street on its north and SW Yamhill Street on its south. The Square’s central location in Downtown, along with its general accessibility and prominence in Portland’s history, has led to it being affectionately known as “Portland’s Living Room”. The Square’s location in downtown Portland and the broader Central City is shown in Figure 1.

The Square is adjacent to and surrounded by numerous prominent and historic Portland landmarks and buildings, including Portland’s first Nordstrom’s Department store directly across SW Broadway, the federal Pioneer Courthouse across SW 6th Avenue, the historic American Bank Building across SW Morrison Street and the historic Jackson Tower across SW Yamhill Street. The Square is also just a

short walk from other Downtown public spaces including Director Park, Tom McCall Waterfront Park and Darcelle XV Plaza (formerly O’Bryant Square). Additionally, The Square is also at the center of downtown’s central business district office and retail core and within a half-mile of Portland State University. The Square itself is also home to a number of businesses and operators,

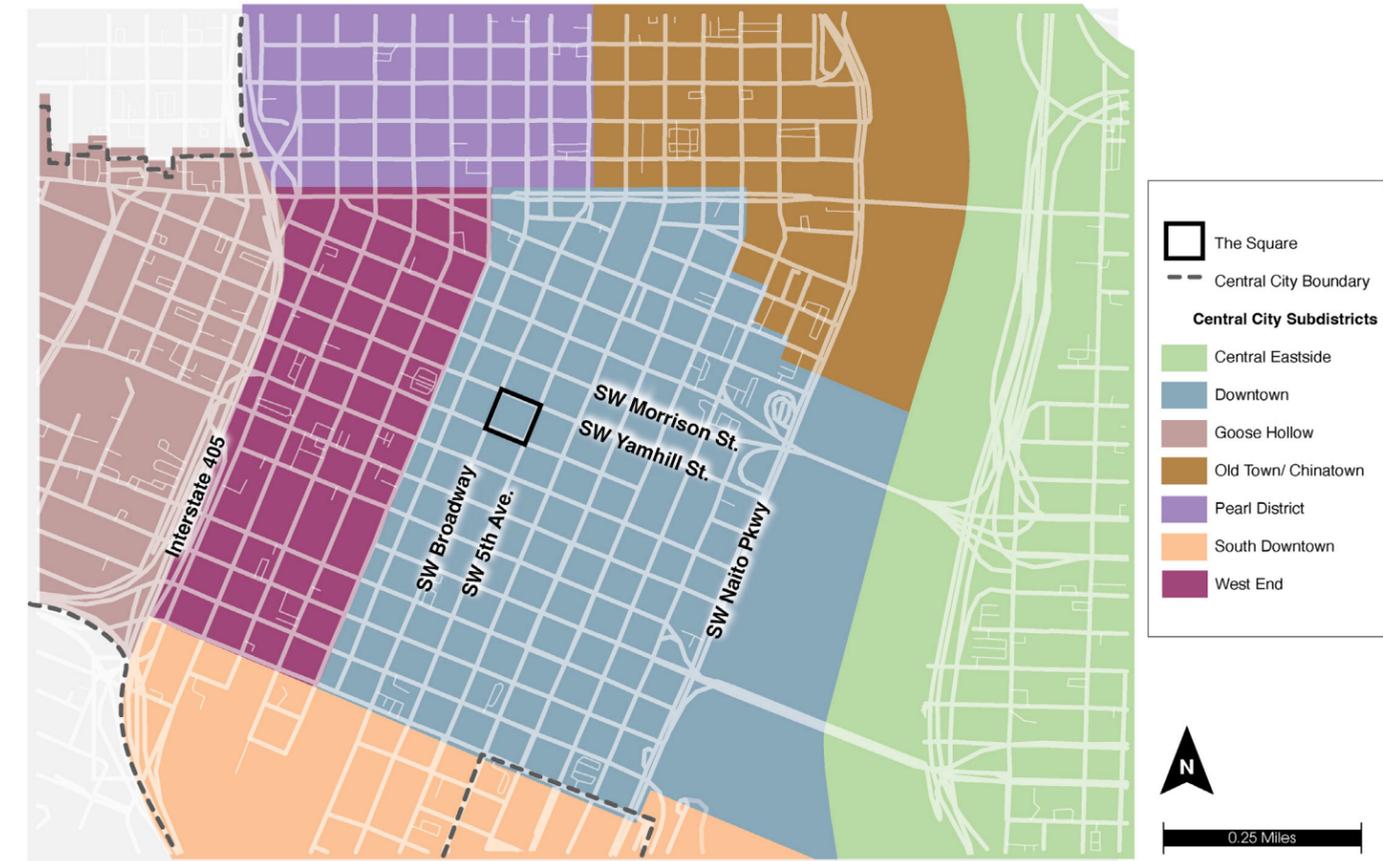
and hosts numerous events and other programming year-round, which are discussed further in subsequent sections of this report.

The Square is also well served by public transit, being bounded by Trimet’s Red, Yellow, Green and Blue MAX lines, as well various Trimet and C-Tran bus lines. Together, these transit services

provide direct connections to numerous Portland neighborhoods as well as its suburbs.

The Square is currently zoned Open Space (“OS”) on Portland’s zoning map and is also subject to the Design (“d”) overlay zone. Given its location within Downtown, The Square is also subject to Portland’s Central City Plan

Figure 1: The Square within the Central City, Downtown Subdistrict



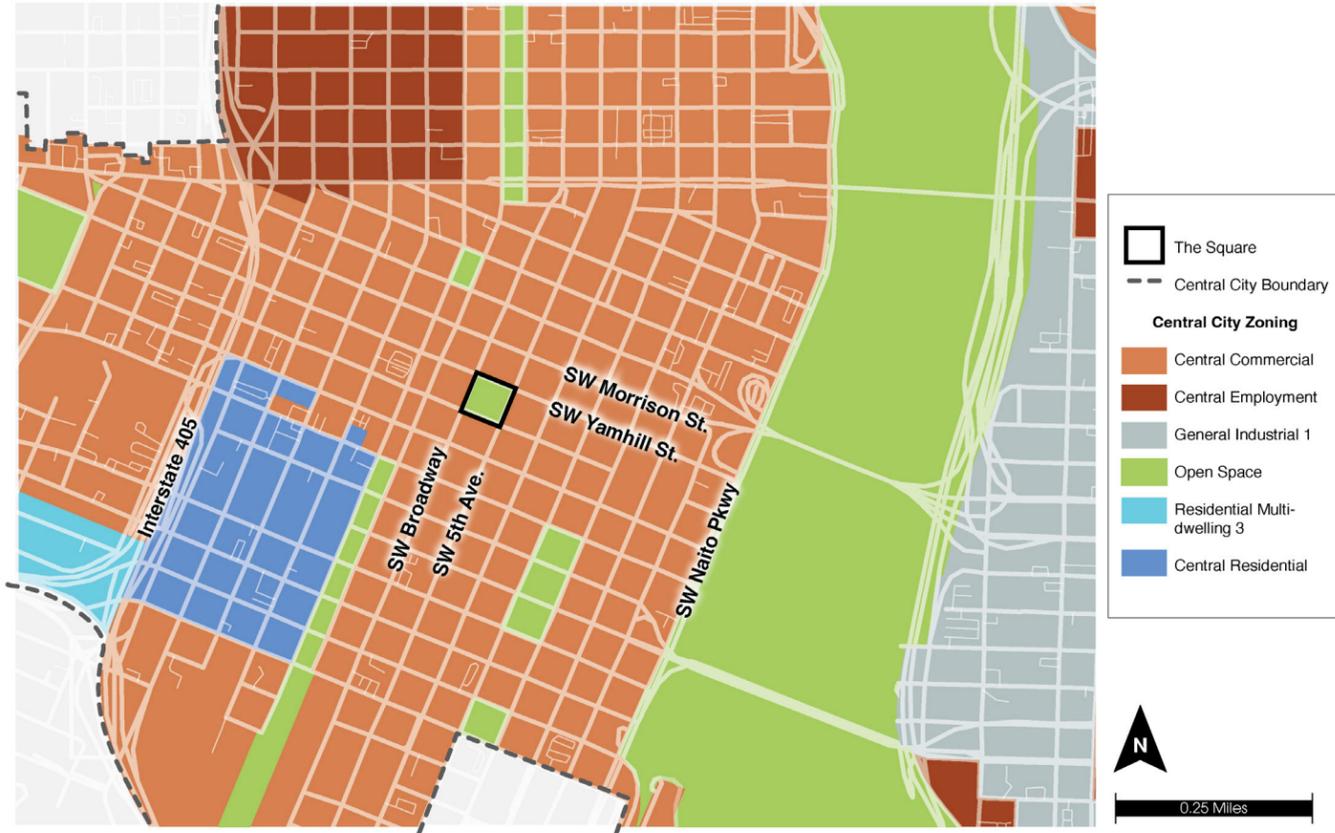
Source: Metro  
RLIS, City of  
Portland

District (“CCPD”) and is within the Downtown Subdistrict.

The Square’s zoning designation, in conjunction with the CCPD, largely govern the types of uses and development that occur within it, which is codified through Title 33 (Planning and Zoning) of the Portland City Code. The Square’s use and operations are also guided by a variety of planning documents and policies administered by the City of Portland and other regional governments, which are discussed further in a subsequent section of this report. A zoning map showing The Square’s zoning, as well as zoning of adjacent parcels, is shown in Figure 2.

While The Square is the focal point of this existing conditions report, it is important to acknowledge The Square’s location in Downtown Portland and the influence Downtown has on its use, those The Square serves, its history, accessibility and programming. Downtown Portland has helped shape The Square into the cherished public space it is today and The Square continues to draw thousands to Downtown yearly.

Figure 2: The Square within the Central City, Downtown Subdistrict



Source: Metro RLIS, City of Portland

## DEMOGRAPHIC ANALYSIS

### Key Implications

- The Square serves a wide variety of populations. While demographics of existing visitors are generally similar to average demographic characteristics for the Portland metropolitan statistical area (“MSA”) as a whole, any future planning efforts should take into consideration the differences between residents of the immediately surrounding area, daytime visitors to the area, and visitors of The Square.
- Use of The Square by a diverse range of populations highlights its importance to many segments of the community, as well as its accessibility.
- Different populations may have different needs and values for The Square and the amenities it includes. Some of these populations may have presently-unmet needs which could be incorporated into any future resiliency initiatives.
- Of particular importance is the relatively higher shares of nearby residents with factors indicating greater vulnerability to extreme weather events including disabilities, seniors, households experiencing poverty. Resiliency initiatives in use for day-to-day operations may be considered for their ability to make The Square better function as a local resource for these residents.

### Nearby Residents

The immediately surrounding population of The Square, defined here as residents within a 0.5 mile radius, has grown faster than the Portland MSA over the period 2020-2023 (Table 1). With regards to populations who may have particular needs and/ or greater

vulnerability to extreme weather, these residents are different from the general Portland MSA population on a few key dimensions. Nearby residents of The Square are disproportionately older, experience higher rates of poverty, disability, and rent burden, and are slightly more racially diverse. Relevantly,

they are also more likely to use public transit for transportation to work, meaning that many may regularly utilize the light rail transit stations hosted by The Square.

Table 1: Selected Population Characteristics of Residents within 0.5 mile radius of The Square, compared to the Portland MSA

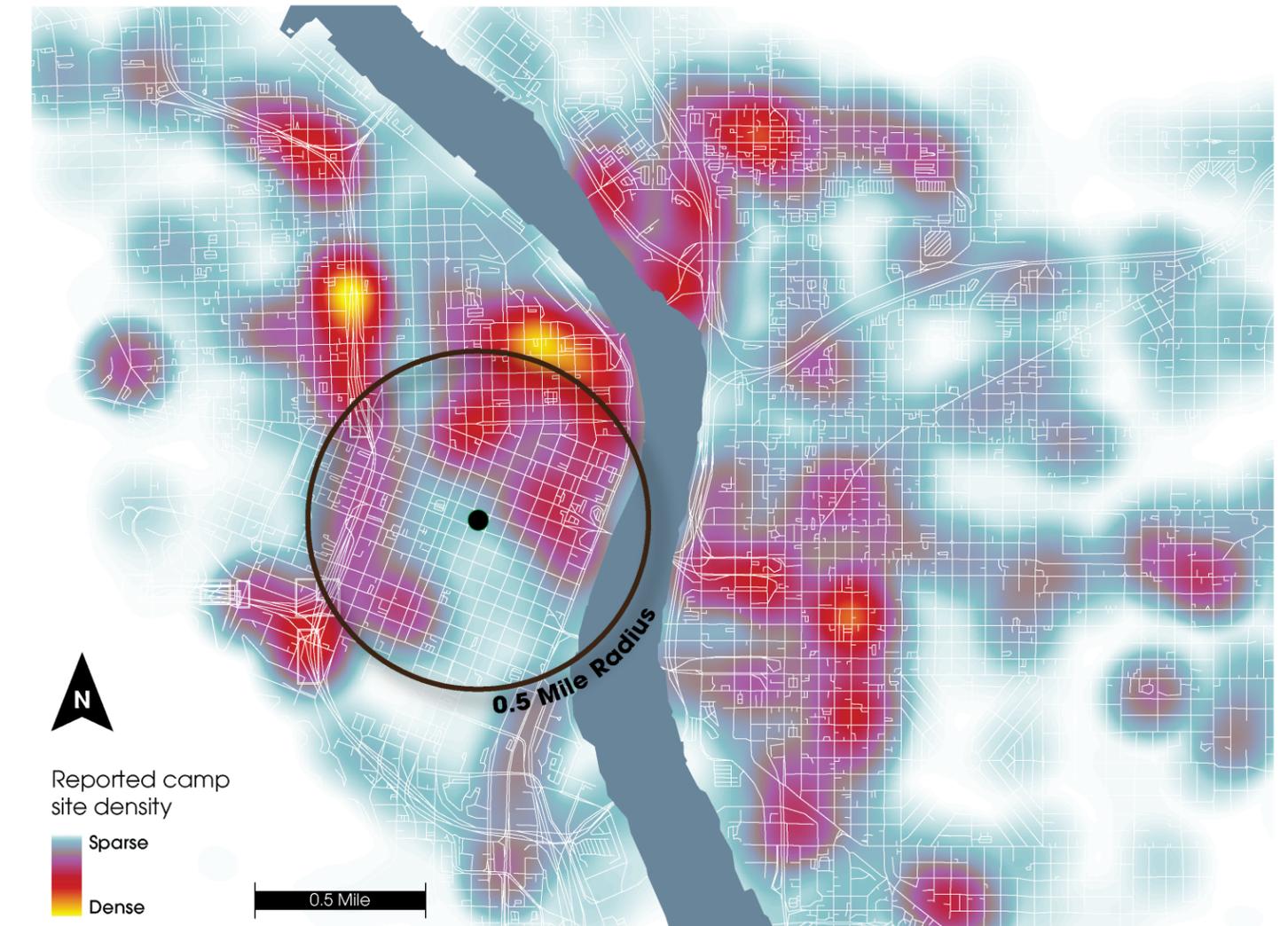
	Within 0.5 mile radius of The Square	Portland MSA
<b>Population and Households</b>		
Total Population	14,342	19.4%
Compound Annual Population Growth Rate 2020-2023	2,583,167	16.6%
Population 65+	3.8%	2.1%
Population under 15	0.9%	14.7%
<b>Income and Poverty</b>		
Median Household Income	\$43,614	\$87,932
Households below poverty line	32.9%	9.7%
Severely Rent Burdened Households (rent 50%+ of household income)	31.6%	23.3%
<b>Race</b>		
White	68.5%	70.3%
Two or more races	11.6%	11.1%
Asian	8.2%	7.3%
Black	6.3%	3.1%
Other race	3.5%	6.4%
American Indian/ Alaska native	1.6%	1.1%
Native Hawaiian/ Pacific Islander	0.2%	0.6%
<b>Other characteristics</b>		
Percent Household with 1+ Person with a Disability	36.0%	24.0%
2021 Workers used Public Transit to Commute	23.5%	5.0%

Source: 2023 and 2021 ACS data via ArcGIS Business Analyst

In addition to official residents, many unhoused people take shelter downtown on a transient basis, as shown in Figure 3 of reported camp sites. This is underscored by results of the most recent Point in Time Count, which showed that on a given day in January, the highest percentage of unsheltered homeless people surveyed (20.9%) had spent the previous night in Downtown, Old Town, or the Pearl District<sup>1</sup>.

<sup>1</sup> Multnomah County, 2022 "2022 Point-In-Time Count." Access April, 2024. <https://multco-web7-psh-files-usw2.s3-us-west-2.amazonaws.com/s3fs-public/2022%20Point%20In%20Time%20Report%20-%20Full.pdf>

Figure 3: Reported campsites in central city Portland in relation to Pioneer Courthouse Square (February 2023-2024)



Oregon Metro, Oregon State Parks, State of Oregon GEO, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/ NASA, USGS, Bureau of Land Management, EPA, NPS, US Census Bureau, USDA, USFWS

Source: City of Portland, Impact Reduction Program

## Nearby Workers and Visitors

The area immediately surrounding The Square (within a 0.5 mile radius) had a daytime population of 73,561 in 2023, representing 2.8% of the total daytime population of the Portland MSA. While some nearby residents are also employed within a 0.5 mile radius of The Square, this area is primarily visited by employees of local businesses commuting from elsewhere. These employees may represent a different demographic than nearby residents, indicated by their higher salaries. Additionally, these daytime visitors likely have different day-to-day use of and value for The Square than either event attendees or nearby residents.

Table 2: Selected Characteristics Related to Daytime Population of the Area Surrounding The Square (within 0.5 mile radius), 2023-2021 and 2019

Variable	Post Covid (2021-2023)	2019
Daytime Population	73,561	N/A
Percent of Daytime Population that are Workers	90.3%	N/A
People Employed within 0.5 Mile Radius	67,072	79,875
Percent of Employees Residing within Same Area	1.3%	1.5%
Worker Age	29 or younger: 16.0% 30-54: 63.7% 55 or older: 20.3%	29 or younger: 20.0% 30-54: 60.8% 55 or older: 19.2%
Worker Income	<\$1,250/ month: 7.5% \$1,251 – \$3,333/ month: 16.0% > \$3,333/ month: 76.5%	<\$1,250/ month: 11.7% \$1,251 – \$3,333/ month: 22.3% > \$3,333/ month: 65.9%
Top Worker Industries	Professional, scientific, and technical services: 27.6% Finance and insurance: 12.6%	Professional, Scientific, and Technical Services: 23.5% Finance and Insurance: 12.2%

Source: U.S. Census Bureau data via Census on the Map and ArcGIS Business Analyst

## Visitors to The Square

The Square saw 882,300 visits in 2023, at an average of 2.07 visits per person, representing a 38.5% increase from one year before. Available demographics of visitors are generally similar to those for the Portland MSA as a whole.

Table 3: Characteristics of 2023 visitors to The Square

Variable	Square Visitors	Residents within 0.5 miles of The Square	Portland MSA
2023 Total Population	427,200	14,342	2,583,167
2023 Median Household Income	\$78,500	\$43,614	\$87,932
2023 Median Age	36	37	39
2023 Population with Bachelor's Degree or Higher	49.0%	27.6%	27.8%
% White	64.8%	68.5%	70.3%

Source: Placer AI report c/o PCSI, ESRI 2023 population data via ArcGIS Business Analyst

Table 4: Characteristics of 2018-2019 visitors to The Square

Variable	Square Visitors	Residents within 0.5 miles of The Square, 2019	Portland MSA, 2019
Total Population	436,900	13,049	2,493,221
Median Household Income	\$79,500	N/A	\$78,439
Median Age	36.4	N/A	38.4
Population with Bachelor's Degree or Higher	48.5%	N/A	40.3%
% White	65.3%	N/A	80.3%

Source: Placer AI report % PCSI, ACS 2019 1 year estimates via ArcGIS Business Analyst and U.S. Census Bureau. \*\*Figures for The Square are based on an area that captures 70% of visits.

## HISTORY OF THE SQUARE

### Key Implications

- Like the entire Portland area, The Square sits on the historic lands of Indigenous Nations, who served as this area's stewards, and who's history should be acknowledged, honored, and reflected.
- The Square has a rich and varied history, only becoming The Square we know today in 1984.
- The Square's varied uses over its history, including as a school, hotel, parking, and public open space demonstrate the space's ability to adapt to the changing needs of Portlanders.
- In 2020, The Square continued this tradition of adaptation by offering Portlanders a place to gather in a socially distanced manner.
- The Square has also served as a gathering place for social movements and protests, including 2020 when The Square served in this role in the wake of the killings of George Floyd and Brianna Taylor.
- Today, The Square continues to serve as Portland's Living Room and remains faithful to its original design and intent. The Square's ability to adapt to current needs is crucial now and in the future. A Stronger Square aims to honor its history by identifying climate resiliency initiatives that are reflective of The Square's past and purpose.

### Early History

Prior to western contact, the Portland region and the land The Square sits on was first inhabited by Chinookan peoples including the Multnomah, Kathlamet, Clackamas, Tumwater, Watalala Chinook, Tualatin Kalapuya,

and other Indigenous nations<sup>2</sup>. The confluence of the Columbia and Willamette Rivers, and the region's

<sup>2</sup> Oregon History Project, 2014 "Commerce, Climate, and Community: A History of Portland and its People". Accessed March 2024. <https://www.oregonhistoryproject.org/narratives/commerce-climate-and-community-a-history-of-portland-and-its-people/introduction-3/first-peoples-in-the-portland-basin/>

lush forests and fertile valleys provided these Indigenous nations with plentiful resources, and these natural areas were stewarded by the Indigenous peoples that inhabited the area. As European migration to the region intensified with the Oregon Trail, and the eventual passage of the Oregon Donation Land Law in 1850, white settlers

progressively pushed out and removed the Indigenous inhabitants, and areas such as Downtown Portland were progressively cleared for farming and other development<sup>3</sup>.

On January 4, 1851, Portland formally became a city when the Oregon Country territorial legislature granted it a charter<sup>4</sup>. At the time, Portland was just over 2 square miles in size and located only on the west side of the Willamette River. Early on, Portland's public open spaces were limited to just Lownsdale and Chapman Squares in Downtown, and it would be nearly 100 years before Pioneer Courthouse Square would be created.

### Prior Uses

The block bounded by SW Broadway, SW Morrison Street, SW Yamhill Street and SW 6th Avenue was first purchased in 1849 by Elijah Hill, a shoemaker, who paid only \$24 (and a pair of shoes)

<sup>3</sup> Oregon Department of Education, n.d. "Oregon Donation Land Claim Act". Accessed March 2023. Oregon Donation Land Act

<sup>4</sup> Oregon History Project, 2014 "Commerce, Climate, and Community: A History of Portland and its People". Accessed March 2024. <https://www.oregonhistoryproject.org/narratives/commerce-climate-and-community-a-history-of-portland-and-its-people/introduction-3/first-peoples-in-the-portland-basin/>

for the property<sup>5</sup>. The block first came under public ownership in 1856, when the newly chartered City of Portland

<sup>5</sup> The Oregonian, 2013 "The History of Pioneer Courthouse Square in Photos". Accessed March 2024. [https://www.oregonlive.com/multi-media/2013/10/the\\_history\\_of\\_pioneer\\_courtho.html](https://www.oregonlive.com/multi-media/2013/10/the_history_of_pioneer_courtho.html)

purchased it and established Central School, Portland's first public school. The school was built and opened two years later in 1858 with around 200 students and three teachers (Figure 4).

Figure 4: The Central School (1858)



Credit: Oregon Historical Society

In 1883, the entire block was purchased by the Northern Pacific Terminal Company for \$75,000, and Portland's Central School was moved to SW Park and Alder, the current location of the Selling Building. The Northern Pacific Terminal Company, a railroad company

that was later known as the Portland Terminal Railroad Company and is today affiliated with Union Pacific Railroad, hoped to build a hotel on the site of The Square. While a recession delayed the hotel's opening, the Portland Hotel

finally opened in 1890<sup>6</sup> (Figure 5).

<sup>6</sup> Oregon Encyclopedia, n.d. "Pioneer Courthouse Square". Accessed March 2024. Oregon Encyclopedia, n.d. "Pioneer Courthouse Square". Accessed March 2024. [https://www.oregonencyclopedia.org/articles/pioneer\\_courthouse\\_square/#:~:text=Pioneer%20Courthouse%20Square%20was%20dedicated,and%20Southwest%20Sixth%20and%20](https://www.oregonencyclopedia.org/articles/pioneer_courthouse_square/#:~:text=Pioneer%20Courthouse%20Square%20was%20dedicated,and%20Southwest%20Sixth%20and%20)

Figure 5: The Portland Hotel (1910)



Credit: Oregon Historical Society

Comprising eight floors and 326 opulent guest rooms, the Portland Hotel's design was influenced by Queen Anne and Chateausque architecture and directly faced the federal Pioneer Courthouse, which had opened in 1869<sup>7</sup>. By 1913, other nearby hotels, such as the Multnomah and Benson Hotels, had outstripped the Portland Hotel in elegance, and by 1940 the hotel had fallen into disrepair<sup>8</sup>. In 1944, the Meier & Frank department store company purchased the site and demolished the hotel in 1951. While the hotel itself was demolished, the hotel's basalt masonry foundation remained extensively, which continues to support Pioneer Courthouse Square today and adjacent sidewalks along abutting streets.

In support of its adjacent flagship department store located at SW 6th and Alder, Meier & Frank constructed a two story structured parking lot on the site (Figure 6) in 1951, which remained until the eventual construction of The Square.

Broadway

<sup>7</sup> Oregon History Project, 2022 "Portland Hotel, 1890". Accessed March 2024. <https://www.oregonhistoryproject.org/articles/historical-records/portland-hotel-1890/>

<sup>8</sup> Oregon Encyclopedia, n.d. "Portland Hotel". Accessed March 2024. [https://www.oregonencyclopedia.org/articles/portland\\_hotel/](https://www.oregonencyclopedia.org/articles/portland_hotel/)

Figure 6: Meier & Frank Parking Structure (1973)



Credit: Oregon Historical Society

## The Square is Born

In 1970, Meier & Frank submitted a permit request to construct a larger, 12 story parking structure. The scale and size of the parking structure in such a central location within Downtown did not find favor with Portland's City Council or Planning Commission, who tabled the request in order to consider it in the context of reinvigorating the entire downtown area<sup>9</sup>. In 1972, Portland adopted the Portland Downtown Plan, which created guidelines, policies and goals for future development within Downtown Portland<sup>10</sup>. This plan also called for the block owned by Meier & Frank to be used for public open space, beginning a lengthy negotiation process in order for the City to acquire the land, spearheaded by then mayor (and eventual Oregon Governor), Neil Goldschmidt. Meier & Frank was hesitant to sell without a solution to their parking needs, and through a lengthy selection process, the City of Portland

<sup>9</sup> Oregon Encyclopedia, n.d. "Pioneer Courthouse Square". Accessed March 2024. [https://www.oregonencyclopedia.org/articles/pioneer\\_courthouse\\_square/#:~:text=Pioneer%20Courthouse%20Square%20was%20dedicated,and%20Southwest%20Sixth%20and%20Broadway](https://www.oregonencyclopedia.org/articles/pioneer_courthouse_square/#:~:text=Pioneer%20Courthouse%20Square%20was%20dedicated,and%20Southwest%20Sixth%20and%20Broadway)

<sup>10</sup> City of Portland, Bureau of Planning, 1972 "Planning Guidelines: Portland Downtown Plan". Accessed March 2024. [https://pdxscholar.library.pdx.edu/cgi/viewcontent.cgi?article=1108&context=oscdl\\_cityarchives](https://pdxscholar.library.pdx.edu/cgi/viewcontent.cgi?article=1108&context=oscdl_cityarchives)

identified a site and constructed a parking structure, which eventually opened between SW 3rd and 4th Avenues and SW Morrison Street, and Meier & Frank agreed to sell their land to the city for use as a public park<sup>11</sup>.

Beginning in 1980, the Portland Design

<sup>11</sup> Enrest Bonner and Gregg Kantor Bonner, 1980 "References and video script" Ernie Bonner Collection. 305. Accessed March 2024. [https://pdxscholar.library.pdx.edu/oscdl\\_bonner/305/](https://pdxscholar.library.pdx.edu/oscdl_bonner/305/)

Commission conducted a national design competition for The Square, and 162 submissions were received from across the country. In July 1980, the selection committee recommended the Portland Design Commission accept and proceed with a design submitted by a group of Portlanders led by Willard K. Martin and landscape architect Douglas Macy. Martin's group created support for their design by painting it onto the surface parking lot (Figure 7) to demonstrate to Portlanders how the

space could be designed and used as a public plaza.

While the design was criticized by the downtown office and business community for being open-air and too accessible, it was generally well received by Portlanders. After a lengthy process in order to secure necessary funding for its construction, The Square officially opened on April 6, 1984 with an inaugural celebration that attracted nearly 10,000 people to Downtown Portland for the occasion<sup>12</sup>.

## The Square: 1984 to Today

Since The Square's completion and opening in 1984, some changes have occurred, but The Square has largely remained faithful to the original design by Martin and Macy. In 1984, shortly after The Square opened, TriMet opened its Customer Assistance Center, which continues to operate today<sup>13</sup>. In 1989, Starbucks opened their first store in the Portland region, and its 40th store overall, at The Square's northwest

<sup>12</sup> The Oregonian, 2013 "The History of Pioneer Courthouse Square in Photos". Accessed March 2024. [https://www.oregonlive.com/multimedia/2013/10/the\\_history\\_of\\_pioneer\\_courtho.html](https://www.oregonlive.com/multimedia/2013/10/the_history_of_pioneer_courtho.html)

<sup>13</sup> Pioneer Courthouse Square Inc, 2019 "Starbucks Celebrates its 30th Anniversary in The Square". Accessed March 2024. <https://www.thesquarepdx.org/2019/10/starbucks-celebrates-its-30th-anniversary-in-the-square/>

corner at SW Broadway and SW Morrison Street, which also continues to operate today. In 2014, Portland voters approved Parks Replacement Bond, which raised up to \$68 million for park improvements across Portland, including for The Square<sup>14</sup>. Using funds from the 2014 Parks Replacement Bond, the city initiated design and facilitation of improvements to The Square, with construction beginning in 2017. This work included improvements to necessary structures and infrastructure at The Square, including<sup>15</sup>:

- Replacing the leaking waterproof membrane under the bricks on the upper tier of The Square along SW Broadway and a section of SW Yamhill Streets;
- Replacing deteriorated bricks in the upper tier of The Square;
- Repairing The Square's iconic Stoa terra cotta columns on SW Yamhill Street;
- Renovating restrooms to install all-

<sup>14</sup> Portland Parks & Recreation, 2014 "Voters Overwhelmingly Approve Portland Parks Replacement Bond". Accessed March 2024. <https://www.portland.gov/parks/news/2014/11/5/voters-overwhelmingly-approve-portland-parks-replacement-bond>

<sup>15</sup> Portland Parks & Recreation, 2017 "Pioneer Courthouse Square Renovations Begin January 30". Accessed March 2024. <https://www.portland.gov/parks/news/2017/1/26/pioneer-courthouse-square-renovations-begin-january-30>

user bathroom facilities;

- Repairing the HVAC system and improving structural reinforcement in the HVAC/Mechanical Room; and
- Replacing five trees along SW Broadway.

These improvements were completed by 2018, and allow The Square to continue operating and serving Portlanders and tourists well into the future.

In 2020, with the onset of the Covid-19 pandemic, social distancing forced many Portlanders to avoid social gatherings. Continuing the tradition of serving as Portland's Living Room, The Square participated in Polka Dot Downtown (Figure 8), which sought to activate Downtown parks, plazas and open spaces through art and performance in a socially distanced manner<sup>16</sup>).

In June of 2020, The Square also became a Portland focal point for protests against police killings in the wake of the deaths and murders of George Floyd and Brianna Taylor. The Square became a gathering place for protestors and activists to tell stories and speak about racial discrimination (Figure 9). While the majority of

<sup>16</sup> Pioneer Courthouse Square Inc, 2020 "Polka Dot Courthouse Square". Accessed March 2024. <https://www.thesquarepdx.org/2020/08/polka-dot-courthouse-square-2/>

Figure 7: Pioneer Courthouse Square Painted Design (1980)

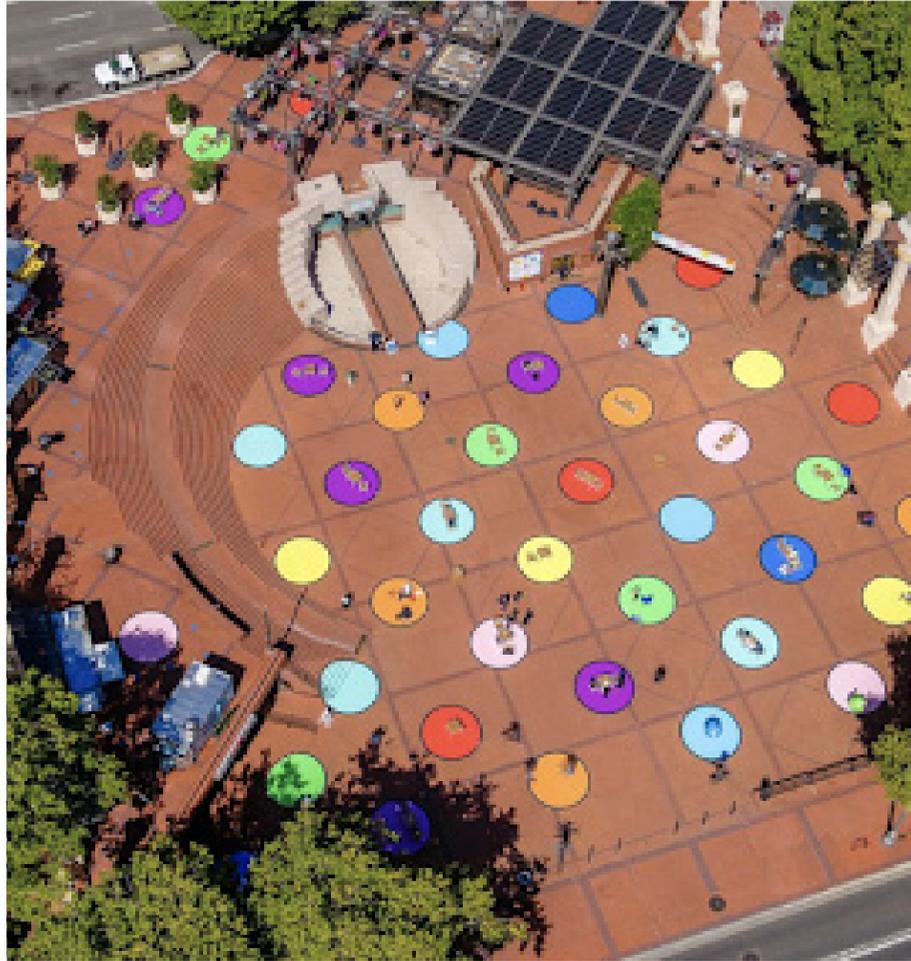


Credit: Pioneer Courthouse Square Inc.

Portland protests were peaceful, numerous instances of arson, looting and vandalism occurred throughout Downtown, and The Square was not immune to damage<sup>17</sup>.

Today, The Square continues to serve as Portland's Living Room and remains faithful to its original design and intent, offering Portlanders and tourists hundreds of events, performances, and other programming throughout the year, including the annual Christmas Tree lighting ceremony (Figure 10). The Square continues to provide space for local business and tenants, and its history of varied uses demonstrates The Square's ability to adapt to current times in order to meet Portland's need for an accessible open space area that can serve all. A Stronger Square aims to remain faithful to The Square's history in identifying possible climate resiliency initiatives, and identifying The Square's history, context and existing conditions is an integral part of this process.

Figure 8: Polka Dot Downtown at The Square (2020)



*Credit: Pioneer Courthouse Square Inc.*

Figure 9: 2020 Protests at The Square (2020)



*Credit: Nathan Howard/Zuma via Newscom*

Figure 10: Christmas Tree Lighting Ceremony (2023)



*Credit: Pioneer Courthouse Square Inc.*

<sup>17</sup> Willamette Week, 2020 "Enormous Crowds Converge in Pioneer Courthouse Square as Portland Protests Enter Sixth Night". Accessed March 2024. <https://www.wweek.com/news/2020/06/02/enormous-crowds-converge-in-pioneer-courthouse-square-as-portland-protests-enter-sixth-night/>

## ACCESSIBILITY OF THE SQUARE

### Key Implications

- The Square is a valuable public resource which provides amenities and hosts functions that serve a variety of needs and users. Decisions on future resilience initiatives should be informed by an analysis of their likely impact on the psychological sense of safety and inclusivity that users may experience.
- As a public space which provides free amenities, The Square serves both formal and informal functions for many users. The likely uses and needs for resilience initiatives during day-to-day operations should be considered during the selection process.

### Social Accessibility

The Square provides access to a public restroom, one of few available in the surrounding downtown area. This bathroom's extremely high average monthly visitor count of 23,282 demonstrates that it provides an important public amenity for users of The Square, and potentially for unhoused people in Downtown.

The Square also hosts transit stops for the MAX Blue, Red, Yellow and Green lines, which function as transfer stations to the MAX Red, Yellow, Blue and Green lines. These transit routes

are crucial for daily transportation for many Portlanders. The Square provides a clean, safe, and accessible place, as well as public amenities for these transit users as they wait at and access transit stops.

Other public amenities including bubblers, shade features, and seating serve to make The Square a functional and, at times, vital and free public third space (Figure 11). These amenities are not only open to all, but may be used to meet basic needs, particularly for unhoused people.

During day-to-day operations (when

no special events are taking place) a mix of uses, including amenities as described above, paid amenities such as Starbucks and food carts, and TriMet offices maintain a diverse flow of users through The Square. This may foster an environment which is inclusive of people with different income levels, races, and other characteristics which may be informally excluded from public spaces when they are tailored for use by, and primarily patronized by, members of dominant identity groups. This flow of diverse users, as well as the security services provided on-site contribute to "eyes on the street" throughout the day,

creating a greater sense of security for vulnerable members of our community or any other groups who may have safety concerns in isolated public areas.

The Square's use for special events, both formal and informal, highlights its importance as an inclusive and all-accessible community resource. Many events are free, removing barriers to participation for lower-income community members, and attracting and bringing together attendees with a variety of characteristics. Use of The Square for cultural and community events highlights its importance as a resource and accessible gathering place for Portlanders of many identities and backgrounds.

### Physical (ADA) Accessibility

While The Square is separated into different levels, it remains generally accessible for people with disabilities. ADA-compliant ramps provide accessible access to the square and are located at each of The Square's four corners, providing access to The Square's upper and lower areas. Each of these corner ADA ramps are located at signalized intersections with striped crosswalks, connecting to ADA ramps on the opposite side of the street. Additionally, an accessible ramp connecting the upper and lower levels is built into the main amphitheater. However, because the surface of the

floor of The Square is paved with its original, and sometimes 'uneven' brick overlay, The Square can be limiting for sight impaired individuals or anyone who uses a walking device given the uneven brick surface. As per the recent adoption of ADA Title II Public Right of Way Plan<sup>18</sup>, the City of Portland hopes to provide better general accessibility across the whole city and is likely to consider accessibility improvements around The Square as well.

<sup>18</sup> City of Portland, Bureau of Transportation Planning, 2021 "ADA Title II Public Right-of-Way Transition Update". Accessed March 2024. <https://www.portland.gov/transportation/planning/adatransitionplan/documents/ada-title-ii-public-right-way-transition-plan-0/download>

Figure 11: Public Amenities at the Square



Credit: MHA Planning

## CURRENT TENANTS

The Square's current tenants are identified below.

- TriMet
- Starbucks
- KGW Studio
- Verizon(node on Starbuck's roof)
- Bank of America ATM
- Fried Egg I'm in Love
- Rollin' Fresh
- The Block
- The Whole Bowl
- Tacos Fita
- Square Production Office

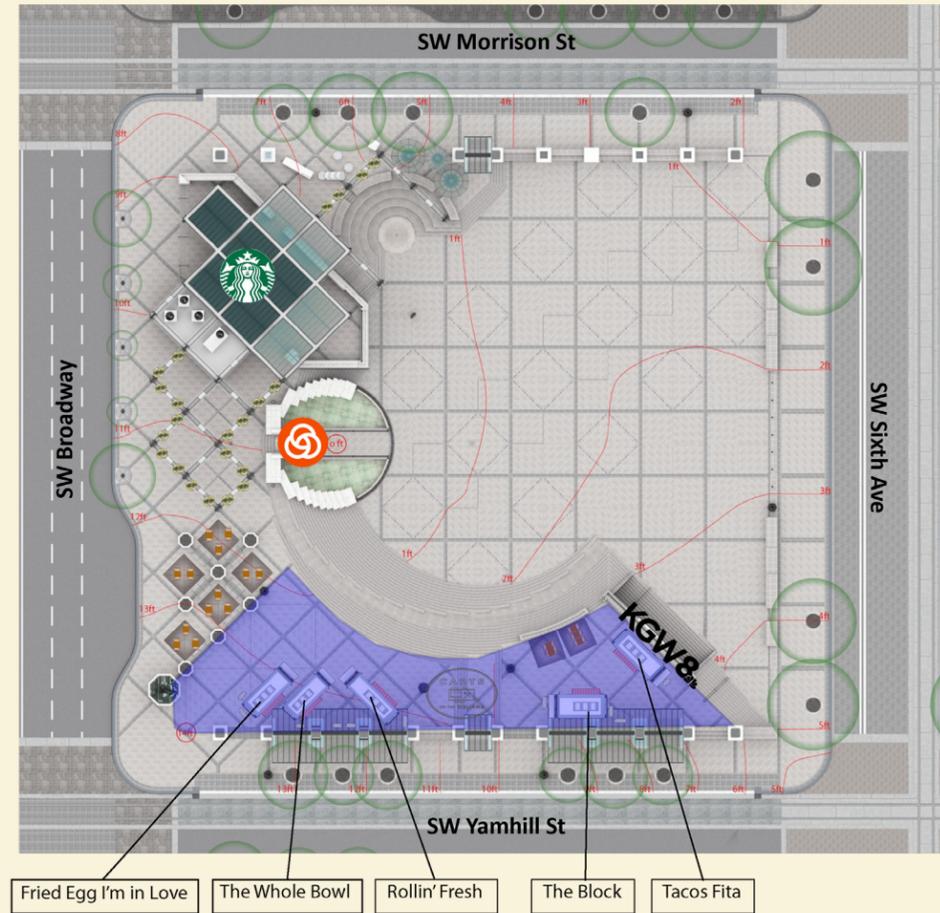


Figure 12: Current Tenants

## USES AND EVENTS

The Square typically hosts over 300 events a year and these events range in size and scale. While some events occur yearly, the general programming of The Square varies year to year. Since the onset Covid-19 pandemic in early

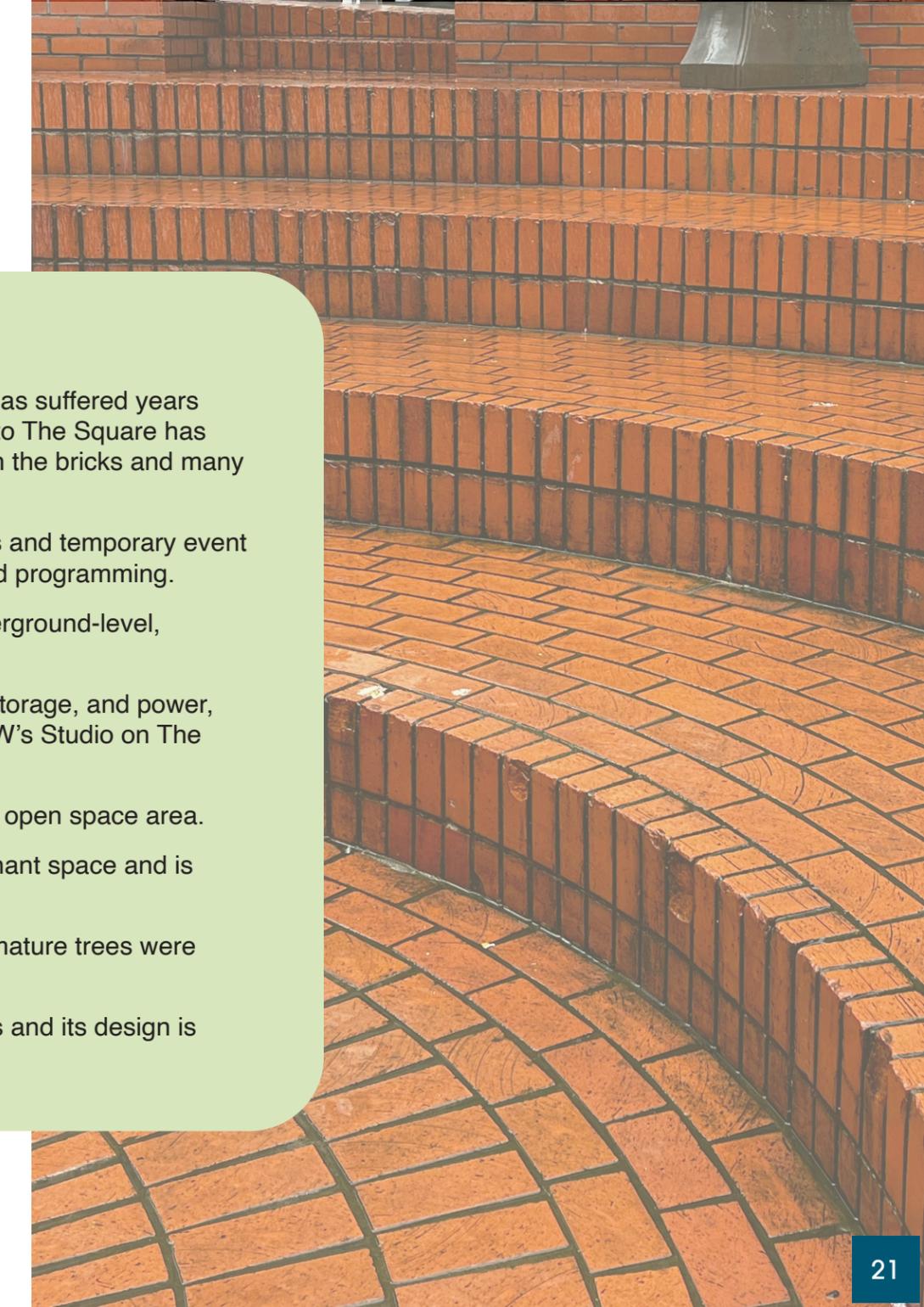
2020, The Square's programming and events has been reduced compared to pre-Covid, with additional programming capacity remaining available. Per data provided by PSCI, there were 249 events in the 2019 calendar year, and only 184 events in the 2023 calendar year. Part of the drive of A Stronger

Square is to increase programming and to reactivate and invigorate the neighborhood. When The Square can safely host events, the net benefits extend to the surrounding community, and with an active and participating neighborhood park comes lots of benefits.

## PHYSICAL FEATURES AND DESIGN

### Key Implications

- The Square is characterized by a brick surface, which has suffered years of wear and weather damage. Recent renovation work to The Square has replaced the porous waterproof membranes underneath the bricks and many bricks are replaced yearly.
- The Square is organized with two built-in amphitheaters and temporary event equipment, like a stage, that can be used for events and programming.
- The Square ascends by planes and consists of an underground-level, ground-level (main), upper level.
- The Square's underground level contains operational, storage, and power, alarm panel, TriMet offices, a public bathroom, and KGW's Studio on The Square
- The Square's ground level provides the main plaza and open space area.
- The Square's upper level is street-side and provides tenant space and is lined by street trees.
- The Square has minimal tree canopy, and some more mature trees were replaced with the 2017 renovation project.
- The Square contains a number of public art installations and its design is faithful to the original design.



## The Square as a Public Space

The Square is first and foremost a public park owned by the City of Portland, which means that it is a public facing land available for general public use. The Square also serves as a transit center for TriMet and is a central node in Downtown Portland, drawing thousands to and through The Square yearly. The Square also provides space for businesses as previously discussed, including Starbucks, TriMet, KGW and a number of food carts. Beyond The Square's general publicly available areas, its underground level houses fairly extensive operational infrastructure, including HVAC and other mechanical equipment, with its foundations supported by the remnants of the Portland Hotel's original basalt masonry foundation walls. While this underground infrastructure is mostly out-of-sight for everyday users of The Square, these areas are crucial to The Square's daily operations and programming, allowing the space to host a number of events and festivals throughout the year to the public's benefit.

## The Bricks

On the surface, The Square is approximately 40,000 square feet, or a little under one acre and is paved with

bricks. Initially, The Square's bricks and their sale served as an early funding source for The Square, and these bricks were inscribed with supporter's names, their loved ones' names or any other text of special meaning to the purchaser (Figure 12). The bricks extend through the entire plaza, and are sealed with grout and the bricks on the upper tier, that serve as the roof for the interior building below, have a porous waterproof membrane underneath them for weather protection. Occasionally, the bricks are patched or replaced with cement to reduce tripping hazards. The bricks were a specific design choice to tie in with its downtown neighborhood and have operated, and continue to operate, as a centering ethos to The Square.

Figure 12: Bricks at the Square



## Tree Canopy Coverage

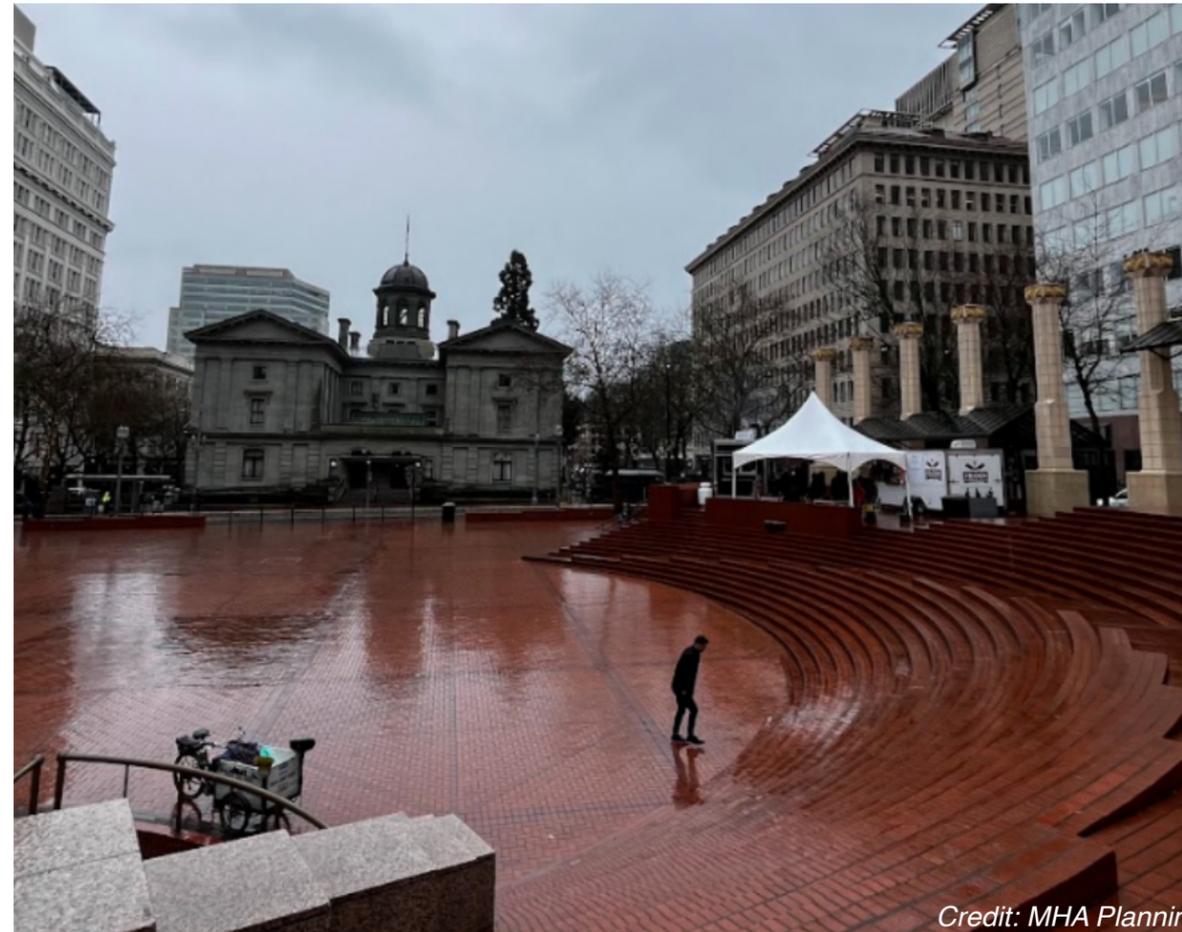
The tree canopy of The Square is mostly mature and limited to its periphery, with trees placed within protective grates. Some of the larger trees have had their grates removed for various reasons, creating an occupational hazard. Several trees were removed along SW 6th Avenue to open The Square to the federal Pioneer Courthouse across to the east. The urban tree canopy is limited around The Square and questions around the health and long term viability remain. Several trees were replaced in 2017, but a long-term plan is still needed to address urban heat. While not a permanent contribution to the urban canopy, The Square also hosts Portland's annual Christmas Tree, which is temporarily installed within a six foot deep anchor in the middle of The Square, which remains covered except when in-use during the holiday season.

## The Square's Amphitheaters

There are two "amphitheaters" on The Square, both built-in structurally through the use of built-in stairs (Figure 13). One is a large amphitheater on the south west side of the property and contains a built-in and dated lectern, the other is

a "small" amphitheater on the northeast side of the plaza with a special acoustic center. For many of the festivals, 'day of' stages are brought in and are generally placed in the northeast corner of The Square.

Figure 13: Main Amphitheater



## The Square's Design

The Square's design is largely centered around its various ascending 'planes', which includes the underground level (TriMet offices, KGW studio and operational facilities), the ground level (the main public plaza and event space), and the various levels ascending toward the upper level along SW Broadway.

The upper level has a significant built in canopy that extends around The Square's northwest corner and through the Starbucks, much of it a clear glass sky-light. Recently, new LED lights were installed above the canopy to provide extra night time security and contribute to The Square's sense of safety for visitors. The upper level contains most of The Square's outdoor seating, including tables, chairs and umbrellas for visits, which are intended to provide open-air seating for visitors and customers to the various tenants. Various planters and trash cans are also provided, as well as cooling vents for The Square's HVAC system.

Figure 14: KGW Studio



Credit: MHA Planning

The Square’s underground level contains operational facilities that support The Square’s many events and programming, including vital storage facilities for the various equipment and materials that allow The Square to operate year-round. Offices for the facility and maintenance staff, as well as storage and refrigerator space for the food carts, and a public all-user bathroom are also located underground. The newly renovated public bathroom sees approximately 23,282 users a month during the off-season and upwards of 43,000 users a month during the summer season. TriMet’s customer service office and KGW’s Studio on The Square (Figure 14), as well as various conference rooms and office space, are also located on this level.

Figure 15: The Weather Machine



Credit: Travel Portland

The Square officially opened as a public park in early April 1984 and to this day is a remnant of that early design and material aesthetic. Public art is provided throughout the plaza and is effectively integrated into The Square’s: cartoonish faces of the then Portland City Commissioners, as well as the Weather Machine, are two examples (Figure 15).

Figure 16: Original Portland Hotel Gate



Credit: MHA Planning

Along SW Morrison Street is the “fallen” column, a purposefully toppled pantheon column that has a built-in checkerboard and chess game. The rest of the columns line The Square along SW Yamhill and SW Morrison Streets. The Square’s southeast corner also contains a time capsule, which was opened during The Square’s 30th anniversary and marks the passing of time for The Square. Additionally, the old gate to the original Portland Hotel stands across the street from the federal Pioneer Courthouse and delineates a change of space and serves as a gateway to The Square (Figure 16).

## RELEVANT PLANNING AND POLICY

### Key Implications

- The City of Portland and PCSI intend for The Square to be an outdoor urban public gathering space in the heart of Portland and an attraction for both locals and visitors.
- The City, PCSI, and other groups (such as the Central City Task Force) see The Square as an opportunity and tool for activating the Central City and Downtown area with programming and events.
- The City would likely be supportive of initiatives at The Square that make the space and the people it serves more resilient to climate change.
- The City would likely be supportive of initiatives at The Square that center the needs and desires of communities of color, low-income households, and people with disabilities.

### The Portland Plan

The Portland Plan is the citywide strategic plan adopted by the City in 2012. While it doesn’t include goals or policies that are location-specific or specific to The Square, it establishes equity as one of the City’s four core priorities and includes policies that support making infrastructure, public gathering spaces, and parks more resilient and accessible. It states

that “Portland must become more resilient in a variety of ways and at a variety of levels” and that Portland needs “well-designed, flexible and strong infrastructure (physical, social, ecological and economic) to adapt to an uncertain future” (emphasis added).

### 2035 Comprehensive Plan

The Portland Plan informed the creation

of the 2035 Comprehensive Plan, the City’s plan for land development and infrastructure projects. The plan was adopted in 2016 and most recently updated in May 2023. The following are some of the “Guiding Principles” of this plan:

**Environmental health** - Discussion of this principle indicates support for green infrastructure, which is infrastructure that “helps minimize risks from flooding and landslides, helps to cool the city

— reducing impacts from the urban heat island effect — and creates an overall healthier and more pleasant environment for people.”

**Equity** - This principle recognizes that “often, it is low-income households and Portlanders of color who have inadequate services,” including parks and open space. It calls for investments and infrastructure that reduce disparities and advance equity and that under-served and under-represented populations be included in decisions that affect them.

**Resiliency** - This principle is centered around improving the ability of natural and built environments to withstand, recover from, and adapt to changes from climate change. It also notes that parks “can play a role in emergency response—as locations for cooling centers, emergency shelters and communication centers.”

These principles support the work of A Stronger Square, and the goals and policies within the plan were established to advance the vision and guiding principles.

## Central City

The 2035 Comprehensive Plan includes an Urban Design Framework to show the desired future form of the city as a

reflection of the plan’s vision and guiding principles. The Square is located in the Central City “Center”<sup>19</sup> and Central City “Pattern Area”<sup>20</sup>.

Centers are intended to include government services, arts and culture, green infrastructure, and housing and be compact, safe, attractive, and accessible places for people of all ages and abilities. The plan also includes policies that call for protecting and enhancing historic resources, public art, and active gathering places in centers. The plan highlights The Square as an attraction in the Central City. Specifically, the plan aims for the Central City Center to:

- Have places of business and social activity and gathering for the people of its districts and the broader region;
- Have the highest concentrations of housing and with a diversity of

<sup>19</sup> Per the 2035 Comprehensive Plan, “Centers” are Places with concentrations of commercial and community services, housing, gathering places, and transit connections. Centers provide services to surrounding neighborhoods and are intended to be enhanced as places because they are a focus of housing and job growth.

<sup>20</sup> Per the 2035 Comprehensive Plan, “Pattern Areas” are the five primary geographies in Portland that have differing physical characteristics, needs, and assets. Each of these areas has unique topographies and natural features, patterns and types of development, streets, and other infrastructure characteristics, and histories that have shaped their urban form.

housing options and services;

- Be the region’s premier center for jobs, services, and civic and cultural institutions that support the entire city and region;
- Be the region’s unique center for innovation and exchange through commerce, employment, arts, culture, entertainment, tourism, education, and government; and
- Be the region’s multimodal transportation hub.

The Central City Pattern Area then establishes design priorities around the Central City’s district identities, river orientation, and pedestrian and bicycle system to “enhance its role as the region’s center of innovation and exchange.”

## Park and Open Space

The Square is designated Open Space on the City’s comprehensive land use map. This designation is intended for lands that serve a recreational, public open space, or ecological function, or provide visual relief. The Square functions as a park, and the 2035 Comprehensive Plan views parks as essential assets that “give life and beauty to the city” and “connect people to place, self, and others.” The plan

highlights the need for parks to enhance the city’s resiliency and advance equity. Additionally, the plan includes policies that state the need for urban trees as green infrastructure, for public-private partnerships in the development and operation of parks, and for the creation and implementation of park master plans, management plans, and strategies.

## Central City 2035 Plan

The Central City 2035 Plan is a component of the 2035 Comprehensive Plan and similarly helps implement The Portland Plan. It was adopted in 2018 and replaced the 1988 Central City Plan as the primary guiding policy document for the Central City. The plan frames the Central City as the heart of Portland, and The Square is located within the Downtown Subdistrict of the Central City.

## A Cultural Center

One of the plan’s six “big ideas” is to Celebrate Portland’s Civic and Cultural Life, which explicitly states that “this plan embraces existing institutions and attractions such as Pioneer Square.” Many actions in the plan are related to this big idea including:

- Expanding recreation opportunities and public event programming for a broad range of Portlanders;
- Accommodating food carts; and
- Supporting public art.

Additionally, The Square is called out “as an important ‘first stop’ for tourist information,” and the plan aims to maintain this.

## A Resilient Center

Another big idea in the Central City 2035 Plan is to increase the resilience of the Central City. This concept aims to ensure that the Central City remains a great place for current and future generations through infrastructure and resources that allow it to recover from natural disasters and economic downturns. Further, there are policies specific to climate change resilience as it relates to flooding and urban heat islands and how green infrastructure can serve multiple functions. Green infrastructure examples provided in the plan include separated storm systems, ecoroofs, impervious surface retrofits, flood capacity improvements, and flood-friendly building design. The plan encourages tree planting and tree diversity to also mitigate climate change and its impacts.

## A Live-Work-Play Center

This plan aims to continue the shift of the Downtown Subdistrict from a workplace to a live-work-play place. Policies encourage more housing Downtown. While The Square will likely not be developed for housing, more residents Downtown potentially means more and different users of The Square. Another policy encourages greater evening and weekend activity, to which The Square already contributes.

Generally, the plan’s policies support enhancements to existing open spaces. In the Downtown Subdistrict specifically, the plan intends for there to be “safe and accessible urban spaces for large public gatherings including festivals, parades, concerts, sports events and other assemblies.” Policies also highlight the desire for more small-scale, frequent events in addition to large-scale episodic events.

## Level of Service Guidance for Developed Parks and Natural Areas

Portland Parks & Recreation has Level of Service Guidance for Developed Parks and Natural Areas that lays out a plan for how to best meet the parks and recreation needs of all Portlanders by providing both near- and long-

term guidance. This guidance was established in 2022. It considers The Square a “plaza,” a hardscaped public gathering space that fosters community interaction and civic pride. Compared to other types of parks and natural areas, the City anticipates that people will travel farther to plazas, stay longer at plazas, and visit plazas less frequently. The guidance notes that plazas tend to have long life cycles.

There do not appear to be any planned changes for The Square’s general function as a plaza. Additionally, the guidance highlights the public-private management of The Square (i.e., the partnership between PCSI and the City) as an example of a successful model for developing and maintaining plazas.

## Site-Specific Plans and Policies

While the City does not currently have any master plans or site-specific studies or reports for The Square, the PCSI website states that the vision is for The Square to be “an urban public space that helps downtown thrive.” The website describes The Square as “Portland’s Living Room,” “where Portland comes together,” “a diverse, living canvas for Portlanders’ creativity and generosity,” and the “home to many of Portland’s favorite community

traditions.” PCSI’s goals include that The Square is “clean, safe, and accessible to all” and that it activates the city. The Square was created to both bring people downtown and to create a civic space in a central location.

## Development Regulations

The Square’s zoning designation, in conjunction with the Central City Plan District, largely governs the types of uses and development that occur within it, which is codified through Title 33 (Planning and Zoning) of the Portland City Code. The Square is currently zoned Open Space (OS) on Portland’s zoning map and is within the Design (“d”) overlay zone. The Square is situated in the Downtown Subdistrict of Portland’s Central City Plan District (CCPD). The site of The Square is also designated as a Documented Resource in Portland’s Historic Resource Inventory.

### Open Space Base Zoning

This zoning “is intended to preserve and enhance public and private open, natural and improved park and recreational areas.” Park and Open Areas uses are allowed by right, with some conditional uses and limited uses that are intended to compliment primary uses.

## Design Overlay Zone

This overlay zone helps ensure “that Portland is both a city designed for people and a city in harmony with nature.” However, as long as any changes at The Square do not require a conditional use review, The Square is exempt from Design overlay zone requirements because development associated with a Parks and Open Areas use is exempt.

### Central City Plan District, Downtown Subdistrict

This district “implements the Central City Plan and other plans applicable to the Central City area.” The regulations of this district allow Retail Sales and Service uses at The Square, but limit them to 2,500 total square feet. On the northern half of the site, the base maximum building height is 400’ while on the southern half the base maximum building height is 380’. Maximum floor area ratio (FAR) is 12:1, and there is no minimum FAR.

### Documented Historic Resource

The Documented Resource at The Square is the Central School, which used to occupy the site from approximately 1858 to 1883. “A Documented Resource is a historic resource that has been documented by the City but has not been formally

designated as a Landmark or District or determined to be a Significant Resource....Unlike the other historic resource types included in the City’s Historic Resources Inventory, Documented Resources are not subject to historic preservation land use regulations.”

## Central City Recovery Plan

As Portland continues to recover from the Covid-19 pandemic, the City has developed the Central City Recovery Plan, which aims to ensure the cultural center and economic engine of the City and state can be a safe and welcoming place for all people to live, work, and visit. The Central City Recovery Plan includes immediate and more longer term impact actions. More immediate impact actions include initiatives such as encouraging and improving, transforming and reinventing the Central City into a place that has more housing within walkable and sustainable neighborhoods that are rich with arts, culture, and entertainment.

The Square will play an integral role in both short and long term actions by encouraging activation of Downtown through frequent events and programming as well as continuing to contribute to Downtown’s arts, culture and entertainment. A Stronger

Square will help to identify ways that The Square can help to achieve the City’s recovery initiatives even as climate change continues to cause unpredictable and extreme weather events.

## RECENT IMPACT OF EXTREME WEATHER

### Key Implications

- In recent years, increased temperatures and excessive amounts of rain have impacted the ways in which the community engages with The Square. Additionally, extreme weather events have exposed the inadequacies of the structural environment, and these weather events can be costly and prevent equitable space making.
- Extreme heat increased risks for event attendees and performers.
- Extreme heat has made tenant operations more difficult, or forced tenants to stop operations temporarily.
- Excessive rain caused leaks and flooding in tenant spaces, threatening equipment and operations.
- 

### Extreme Heat

Extreme heat brought about by climate change has increased risks for performers and attendees during events at The Square. One prime example of this was on August 15, 2023 during PDX Live, a series of concerts held at The Square over the summer. On this particular day, temperatures at The Square reached 104 degrees fahrenheit while hundreds of attendees gathered for a concert. To prevent heat-related illness, event organizers added misters and shade canopies, passed out free

water, and allowed attendees to bring in additional water bottles.<sup>21 22</sup>

<sup>21</sup> Jones, Joelle. KOIN 6, 2022 Jul 29. "Pacific Northwest heat wave leads to cancelled summer festivities." Accessed April 2024. <https://www.koin.com/weather/heat-wave-july-2022/pacific-northwest-heat-wave-leads-to-cancelled-summer-festivities/>

<sup>22</sup> Bhatt, Prakruti. Oregon Public Broadcasting, 2023 Aug 16. "Patti Smith brings poetry and music to Portland's 'Living Room.'" Accessed April 2024. [https://www.koin.com/weather/heat-](https://www.koin.com/weather/heat-wave-july-2022/pacific-northwest-heat-)

Extreme heat also affects tenants at The Square. In recent years, Starbucks – a key anchor tenant who generates revenue that is vital to keeping the management of The Square functioning – has faced repeated overheating issues that have required closure of the store during peak summer periods. While Starbucks has added window tinting to the glass roof, the structure it is housed in was not initially intended to be an

[wave-leads-to-cancelled-summer-festivities/](https://www.koin.com/weather/heat-wave-july-2022/pacific-northwest-heat-festivities/)

enclosed, climate-controlled structure. Because of this, there are structural issues that make it difficult to heat and cool the space properly and make the space prone to major air and water leaks.

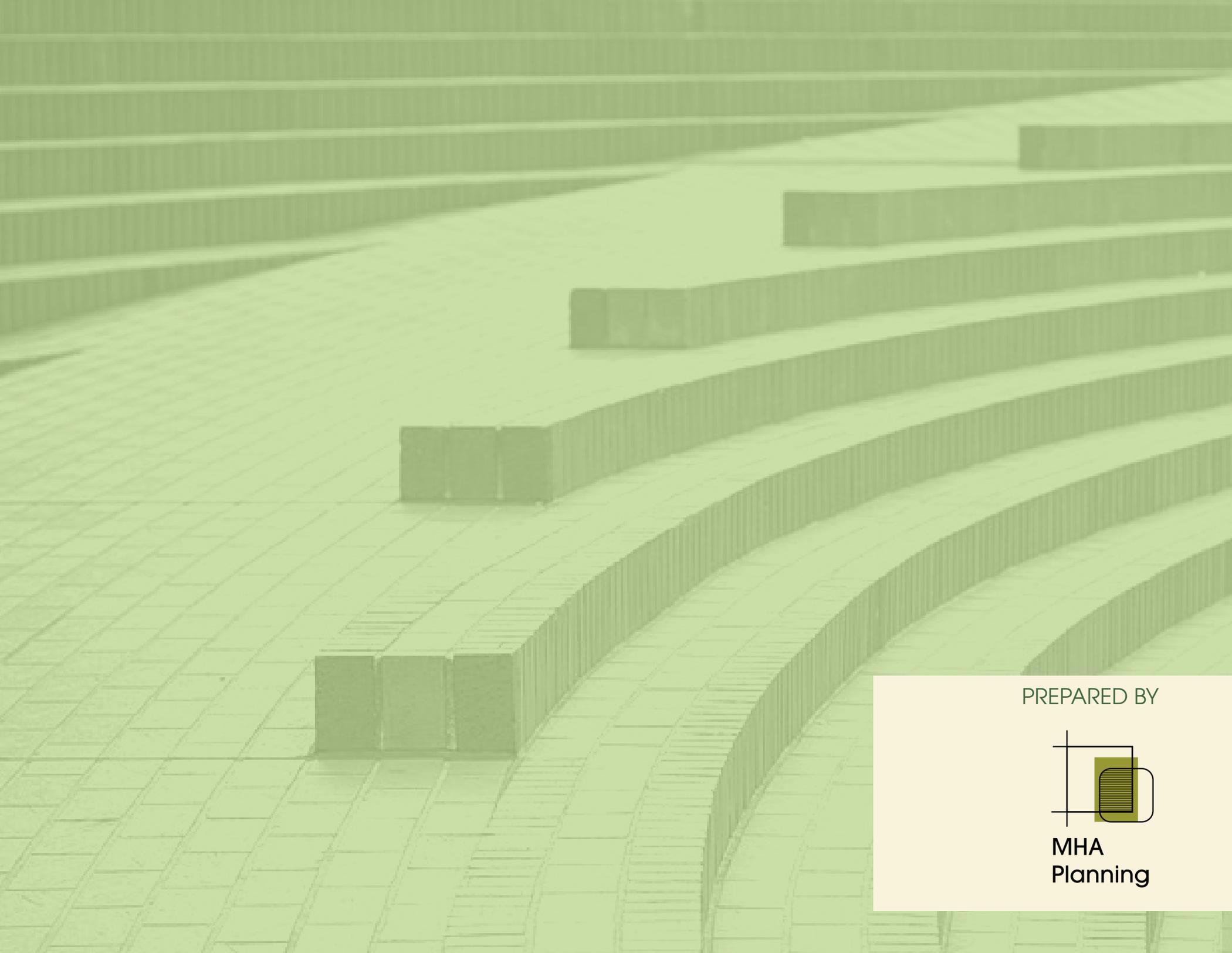
### Excessive Rain

Starbucks has also faced challenges during periods of excessive and prolonged rain. Water ends up penetrating the structure when too much rain falls too quickly, not allowing adequate time for water runoff to safely reach drains. These and other drains at The Square have to be maintained and cleaned regularly.

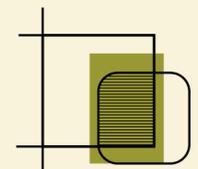
The Square's mechanical operations have also been adversely affected by excessive rain. Standing water accumulates in the mechanical room where HVAC units and other crucial mechanical equipment are located. This portion of The Square that frequently experiences rainwater-related issues is also adjacent to TriMet's customer service center and transit system substation at The Square, threatening to impact TriMet's entire regional transportation system. Temporary migration efforts have been made over the years to protect the vital infrastructure of the space, and as part of the 2016 bond, Portland Parks and

Rec dug the drains outside TriMet's doors deeper, helping to accommodate excess stormwater.

This 2016 bond also helped with water that was leaking into The Square's indoor spaces. Part of this leakage can be attributed to an underground creek that intersects with The Square, but other leakages are connected to weather events. For example, a snow storm in January 2024 caused a leak in the TriMet offices a few days after the storm. Water intrusion on the floor inside the KGW8 studio is also common, and there are leaks in the "tunnel," which Portland Parks and Rec helps address. The Square faces many water-related issues, and oftentimes it is difficult to identify where leaks are coming from. Longer and heavier rains will likely only exacerbate these issues at The Square.



PREPARED BY



**MHA**  
Planning

# **Appendix B: Climate Change Impact Assessment**



# Memorandum

To Pioneer Courthouse Square Inc.  
Jennifer Polver and Tad Savinar

From MHA Planning: Aarin Young, Anna Reusink, Hannah Johnston, Matthew Robinson, Meredith Herbst

Date June 2, 2024

**RE A Stronger Square - Climate Change Impact Assessment  
(Task 2)**

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## Executive Summary & Purpose

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This Climate Change Impact Assessment (“CCIA”) aims to assess the future impacts of climate change on the Portland region, with a focus on Pioneer Courthouse Square (“The Square”). This analysis aims to inform critical recommendations for Tasks 4 (Options Menu) and 5 (Final Report) of *A Stronger Square: Climate Resiliency for Pioneer Courthouse Square* (“A Stronger Square”), addressing only those climate change effects with immediate on-site implications for operations and public use behaviors at The Square. MHA Planning’s research methodology encompasses a thorough review of current literature and data on the subject, supplemented by insights from subject matter experts from Portland State University (“PSU”) and other agencies. Downtown Portland serves as the economic, cultural, and entertainment hub for a region of over 2 million people, and The Square supports Downtown in this effort by providing tenant space to local businesses, as well as TriMet, KGW News, and Starbucks. The Square also typically hosts over 300 events in a given year, including festivals, concerts, and cultural gatherings, which are critical not only for The Square’s revenue, allowing it to continue operations and provide a much needed and accessible open space in Downtown, but also for The Square’s mission of serving as Portland’s “Living Room”.

The CCIA tentatively covers the impacts of rain and storm events, extreme heat events, and wildfires and smoke. This executive summary synthesizes MHA Planning’s findings from an in-depth analysis of these key climate-related concerns, spotlighting the urgent

need for robust mitigation and adaptation strategies to protect The Square and its users. The following key findings have been established through the CCIA:

- Extreme heat events are expected to continue to escalate and impact the Portland region. The re-emission of heat from urban infrastructure and impervious surfaces, such as The Square’s brick surface, markedly raises urban temperatures and retains heat into the evening. Adequately addressing and mitigating extreme heat requires the consideration of climate-resilient infrastructure and public health enhancements. Given the number of events at The Square that occur during the summer, extreme heat poses a significant risk to continued operations and programming in a safe manner, which could significantly impact The Square’s revenue if events need to be canceled due to heat. Further, extreme heat and its impacts inordinately impact marginalized communities who may lack access to air conditioning or other methods of keeping cool.
- With increased temperatures comes longer wildfire seasons and public health impacts from smoke. Increased wildfire smoke has been at the forefront of Portland’s summers in recent years, and has shown to have a significant impact on air quality and public health. As with extreme heat, wildfire smoke poses a significant health hazard that can limit The Square’s ability to host events throughout the summer in an accessible and safe way, which could directly impact continued operations and revenue.
- Portland routinely experiences frequent, and sometimes severe, rain and storm events. Nonetheless, there is no indication that Portland will see more severe or more frequent rain and storm events due to climate change over the next 20 years. It is possible that increased warming could result in minimal changes in the intensity of rain events, but observations have not identified these changes yet. It is likely that more of the Portland area’s annual rainfall will occur in the winter, with less rain in the summer months under future warming.
- Winter freezes within the Portland area are anticipated to become less frequent as temperatures increase<sup>1</sup>. Given the likelihood that freeze events are not expected to become more frequent, MHA Planning did not analyze the impact of freezing weather or ice on The Square due to the minimal impact it will have on The Square’s use and operations in the future.

MHA Planning’s analysis highlights the urgent need for strategic adaptation and resilience in addressing the looming challenges posed by climate change. For Pioneer Courthouse Square Inc. (“PCSI”) and its stakeholders, it is crucial to prioritize adaptive infrastructure that underscores climate resilience as a cornerstone of urban planning,

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<sup>1</sup> United States EPA, n.d. “Freeze-Thaw Conditions”. Accessed May 2024. [Link](#).

which will be vital to The Square’s continued operations as climate change impacts increase in scope and scale. Comprehensive emergency preparedness plans, community engagement, and educational initiatives fostering environmental stewardship and adaptation are essential. Through strategic planning and infrastructural adaptation, The Square can navigate the uncertainties of climate change, emerging as a beacon of sustainability and resilience for Downtown and the broader Portland region, and ensuring that The Square continues to serve as a vibrant, welcoming space for the community amid changing climate conditions.

## **Programming and Operations at Stake**

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The climate change impacts discussed within the CCIA have the potential to disrupt continued operations and reduce The Square’s yearly revenue, and it’s important to assess these potential impacts in order to best inform The Square’s future planning. This section identifies what is truly at stake for The Square by briefly summarizing The Square’s programming, events, and finances in the 2020-2021 and 2021-2022 fiscal years.

Programming and community events at The Square in recent years have become increasingly important as Portland works to stabilize and strengthen its Central City and Downtown core, and The Square will play an increasingly important role in this effort, even in the face of climate change and more unpredictable weather patterns. The following key data points, provided from The Square’s most recent Biennial Report (Fiscal Years 2021-21 & 2021-22) highlight the size and scope of the programming at The Square and underscore the importance of this programming in activating Portland’s Central City:

- In 2020, The Square hosted Polka Dot Downtown, which featured 940 musicians, dancers, and artists over 300 events. Polka Dot Downtown paid out over \$200k in stipends to performers when other venues were closed due to Covid-19.
- In 2022, The Square launched the “Welcome Dome”, which featured 50 arts programs over 75 days and provided \$100k in grants for BIPOC artists.
- In the summer of 2022, The Square hosted the PDX Live Concert Series, which drew 40k attendees to 17 concerts.
- 2022 was the 28<sup>th</sup> year of India Festival, which drew 7,000 attendees and 100 performers from across Oregon.
- The 2021 and 2022 Christmas Tree Lighting ceremonies drew over 20k attendees, with other holiday events such as the Great Figgy Pudding Caroling Contest, Tuba Christmas Concert, and the Portland Bazaar drawing a further 10k

attendees and spotlighting local artists, performers, vendors, and local businesses.

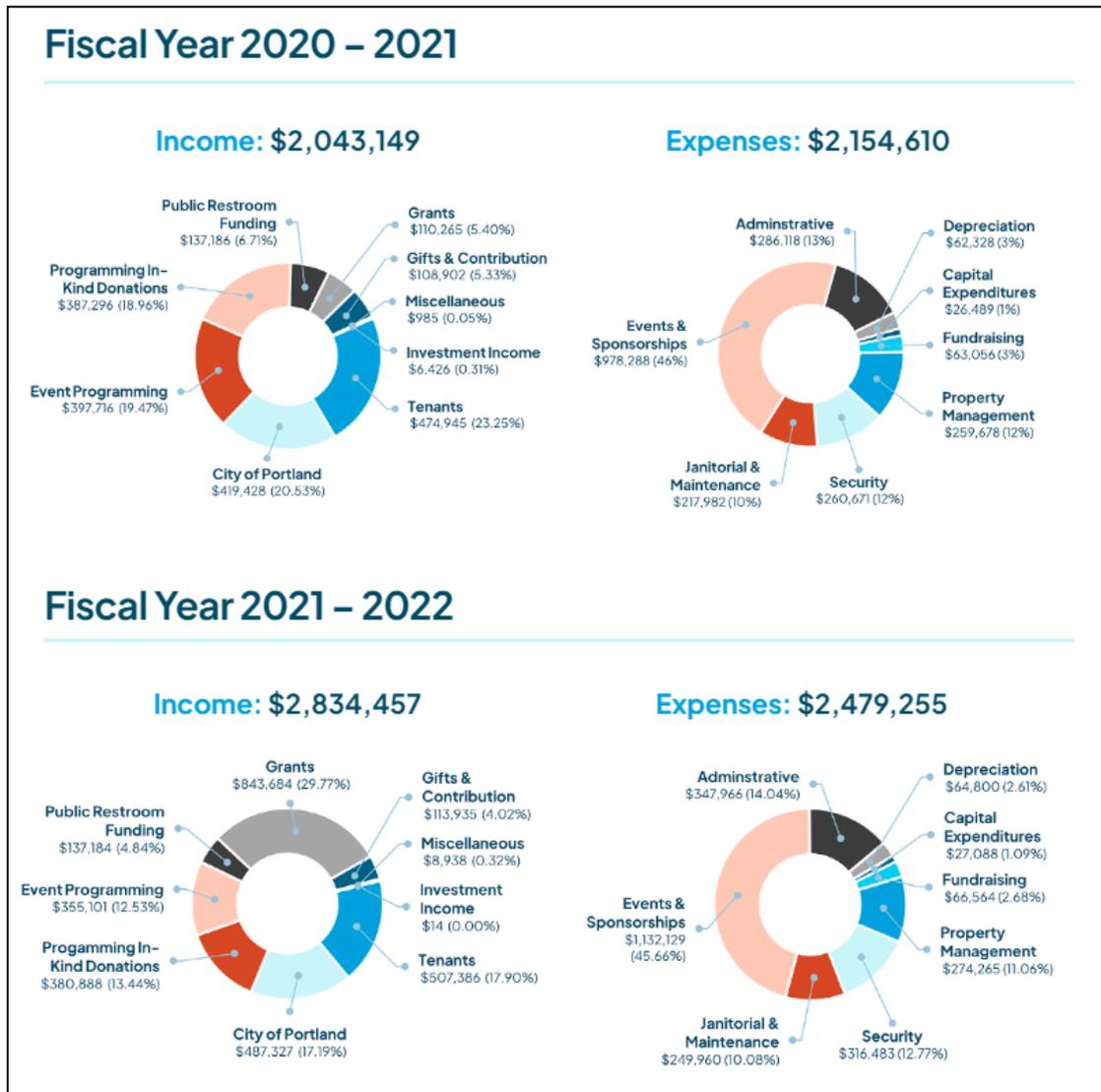
- The Square also serves as one of the central anchors of the Portland Winter Light Festival, which has consistently drawn over 20,000 attendees per year since it was first held in 2016.

In the fiscal year 2020-2021, The Square took in approximately \$2 million in revenue, less than its approximately \$2.1 million in expenses. In the fiscal year 2021-2022, The Square took in approximately \$2.8 million in revenue, with expenses totaling approximately \$2.5 million<sup>2</sup>, which highlights the importance of maintaining and strengthening The Square's revenue streams given the tight margins in covering yearly expenses. The income and expenses for these two fiscal years are broken down in greater detail in Figure 1 below.

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<sup>2</sup> The Square's Biennial Report, 2020-2022

**Figure 1: FY 2020-2021 & 2021-2022 Income and Expenses at The Square**



Source: Pioneer Courthouse Square Inc.

The Covid-19 impact on The Square’s programming and operations is evident through its fiscal year 2020-2021 income and expenses, during which time The Square was unable to break even. This exemplifies the importance of robust programming at The Square to ensure that its expenses are covered so that The Square can continue to function as a vital and necessary public open space in the Central City. While it’s hard to estimate the impacts that climate change and extreme weather events may have on The Square’s operations and finances going forward, the fiscal year 2020-2021 income and expenses provides insight into how general cancellation and cessation of events and programming can drastically affect its revenue streams. Extreme heat and wildfire smoke is especially problematic, given that many events and programming, such as the PDX Live Concert Series and India Festival, occur during the summer months and could be drastically impacted by increased temperatures and dangerously hot

conditions going forward. As described previously, both of these events draw thousands of attendees and are vital to The Square's income.

While the information provided in this section is only a snapshot of the events typically held at The Square in a given year, it nonetheless provides insight into The Square's revenue and expenses and the importance of consistent programming to continued efficient operations.

## **Climate Change Impacts in the Portland Region**

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### *Extreme Heat Events*

Extreme heat is increasing across the world. Heat waves and rising temperatures are appearing out of season and are lasting longer than historical averages<sup>3</sup>. Additionally, Urban Heat Island ("UHI") effects continue to impact urban areas with extensive impervious areas, allowing heat to be retained into the evening even as temperatures cool.<sup>4</sup> UHIs are especially noticeable during evenings with clear skies and minimal winds, but are less impactful during the daytime when temperatures are already hot.<sup>5</sup>

### Historic Trends

Historically, Portland has seen an annual rise in temperature. Over the past 30 years, the Portland region has experienced consistent increases in daytime high temperatures, of approximately 2.5 to 3 degrees Fahrenheit since 1994, and 1.3 to 1.6 degrees over the past 10 years<sup>6</sup> (Figure 2). Since 1900, the United States has seen an average temperature rise of 1.8°F<sup>7</sup>. This confirms the planet is warming, and the addition of greenhouse gasses, mostly due to human activity, has indeed accelerated climate change and also the prevalence of the urban heat island effect. The new normal seems to be paralyzing extreme heat events that can cause loss of life, shut down critical services, and limit recreational activity. This poses a unique threat to The Square, given the extent of the programming that occurs during the summer months, such as the PDX Live Concert Series and India Festival.

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<sup>3</sup> American Planning Association, 2022 "Planning for Urban Heat Resilience". Accessed April 2024. [Link](#)

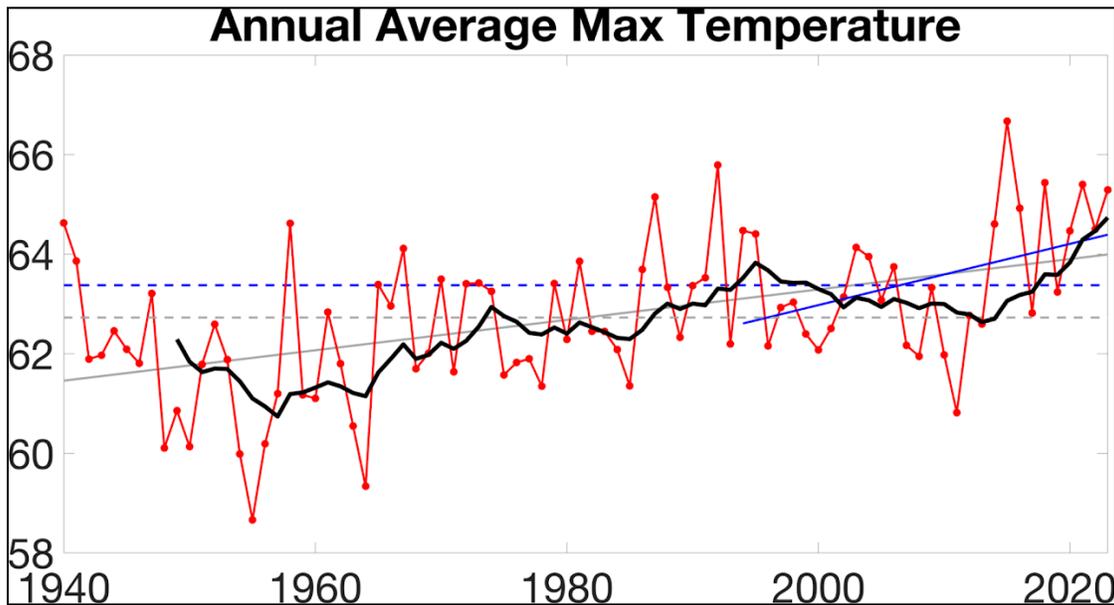
<sup>4</sup> American Planning Association, 2022 "Planning for Urban Heat Resilience". Accessed April 2024. [Link](#)

<sup>5</sup> Interview with Paul Loikith

<sup>6</sup> Interview with Vivek Shandas

<sup>7</sup> American Planning Association, 2022 "Planning for Urban Heat Resilience". Accessed April 2024. [Link](#)

**Figure 2: Average Annual Max Temperature in Portland, OR (1940-2020)**



Source: Portland State University Climate Science Lab

### Impacts in Portland

Climate change is increasing not just day-to-day temperatures in Portland, but frequency of weather anomalies, including extreme weather events that defy historic norms<sup>8</sup>. Portland has seen a few recent extreme heat events, including most recently in 2022, when an extended heat wave killed 5 people<sup>9</sup>. In 2021, Portland and the Northwest also experienced an extreme heat wave driven by a heat dome, which is a hot mass of air trapped beneath a strong high pressure system<sup>10</sup>. It paralyzed the city, shut down transportation systems, hampered the power grid all while burdening social services across the state. The hottest temperature recorded in Portland during this heat dome was 116°F on June 29, 2021<sup>11</sup>, which was approximately 25°F warmer than historic temperatures recorded around the same time of year in Portland<sup>12</sup>. The increasing trapped heat is both atmospheric, associated with greenhouse gas emissions, as well as trapped in urban corridors and exacerbates the risk for those most vulnerable and creates a significant public health hazard.

<sup>8</sup> Interview with Vivek Shandas

<sup>9</sup> KGW 8 News, 2023 “What We’re Now Learning About the People who Died in Portland’s Heat Wave Last Year”. Accessed March 2024. [Link](#)

<sup>10</sup> Oregon Encyclopedia, n.d. “ The 2021 Pacific Northwest Heatwave”. Accessed March 2024. [Link](#)

<sup>11</sup> Oregon Encyclopedia, n.d. “ The 2021 Pacific Northwest Heatwave”. Accessed March 2024. [Link](#)

<sup>12</sup> Interview with Vivek Shandas

## Projections

Impacts of increasing heat promises to be the most significant changes the Portland region will experience as a result of climate change<sup>13</sup>. While the probability of the 2021 heat dome event in the Northwest was 1 in 100,000 when it occurred, the probability of such an event occurring in a given year could be as much as 1 in 6 by the century's end<sup>14</sup>. Beyond heat domes, increasing heat means that even less extreme weather features will be able to get dangerously hot more frequently<sup>15</sup>. At its current trajectory, Oregon's average annual temperatures will rise by 5°F by around 2050 and 8.2°F by the 2080s. Summer temperatures in particular are projected to increase by 6.3°F by around 2050 and 10.2°F by around 2080<sup>16</sup>. By 2050, experts predict that Portland will see an average of around 23 days per year where temperatures rise to over 90.9°F<sup>17</sup>, with around 7 to 10 days annually above 95°F (Figure 3). Unless cities take a proactive approach to mitigate some of the effects of heat waves and UHI, more deaths and structural damage will likely occur. The expected projection is increasing temperature, more heat risk, and longer events, which could significantly limit outdoor recreation and usability of outdoor public parks and open spaces, such as The Square.

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<sup>13</sup> Interview with Paul Loikith

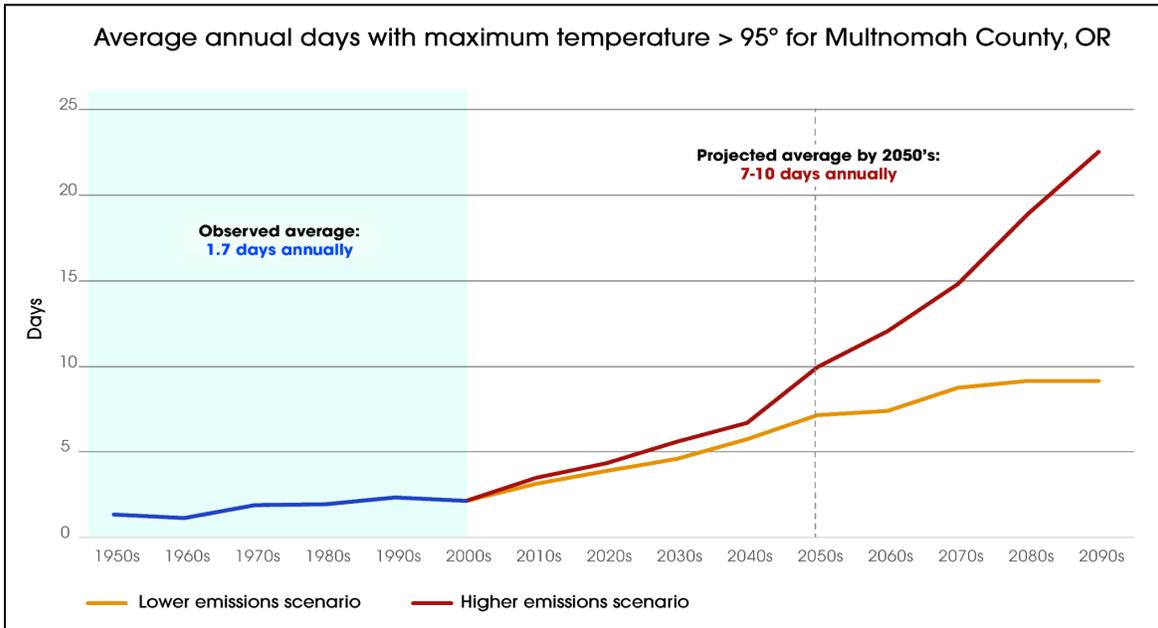
<sup>14</sup> Interview with Paul Loikith

<sup>15</sup> Interview with Paul Loikith

<sup>16</sup> Oregon Department of Energy, 2023 "OCCRI's Sixth Climate Assessment Outlines Climate Change Effects on Oregon". Accessed March 2024. [Link](#)

<sup>17</sup> Climate Check, n.d. "Climate Change Hazard Ratings for Portland, OR". Accessed April 2024. [Link](#)

**Figure 3: Average Annual Days with Maximum Temp. >95° for Multnomah Co, OR**



*Data Source: U.S. Climate Resilience Toolkit*

### Significance

Increased heat and extreme heat events are the most significant climate change related threats to human wellbeing in urban areas, and by far the most significant climate-related threat to the Portland area<sup>18</sup>. High temperatures can cause physiological effects for young and healthy people beyond a certain threshold (around 105° to 110°), but can also exacerbate underlying health conditions for sensitive populations at more moderate temperatures<sup>19</sup>. For this reason, extreme heat events disproportionately impact medically vulnerable populations, such as seniors, as well as marginalized communities, including those lower-income or homeless individuals who don't have access to air conditioned spaces. Biking and using non-vehicular modes of transportation might also become less viable, with people avoiding time outdoors, further increasing the burden on the power grid. Psychologically, and from a public health perspective, heat can be extremely dangerous on the body. All of these are reasons to design infrastructure and public spaces that are more climate resilient and can remain comfortable during hot temperatures.

These conditions are especially relevant for The Square to consider in designing climate resiliency adaptations, as people frequently get caught at the intersection of vulnerabilities for heat impacts – heat exposure, sensitivity, and lack of capacity to cool off – while in public spaces<sup>20</sup>. Additionally, its immediate urban environment consists

<sup>18</sup> Interview with Vivek Shandas

<sup>19</sup> Interview with Vivek Shandas

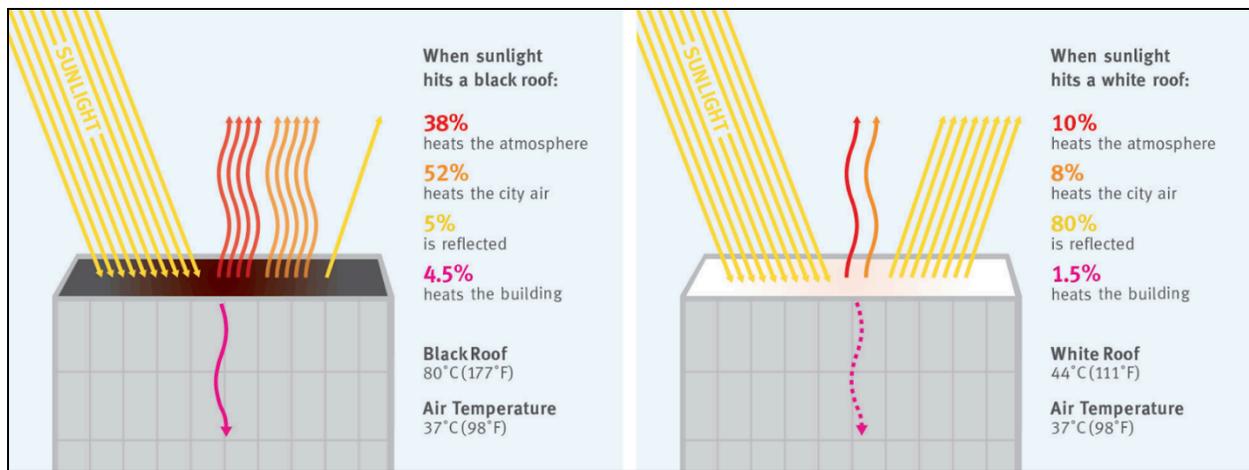
<sup>20</sup> Interview with Vivek Shandas

mainly of heat-amplifying materials such as concrete and asphalt, which prolong high temperatures well into evening after ambient temperatures have begun to cool<sup>21</sup>.

### Heat and Brick Paving

Surfaces paved with bricks play a significant role in urban heat patterns and heat island effects. Bricks possess a high thermal mass, which refers to their ability to absorb and store heat energy. When exposed to direct sunlight, their darker color absorbs a large portion of the incoming solar radiation, converting it into thermal energy (Figure 4). This process is facilitated by the low albedo (reflectivity) of brick surfaces, which typically ranges between 0.2 and 0.4, meaning they reflect only 20-40% of the incident sunlight while absorbing the remaining 60-80%.<sup>22</sup>

**Figure 4: Heat Reflectivity Comparison for Dark and Light Surfaces**



Source: David Sailor via Oregon Public Broadcasting

As the day progresses and the bricks continue to absorb solar radiation, their temperature can rise well above the ambient air temperature.<sup>23</sup> This stored heat is gradually released back into the surrounding environment through conduction and convection, contributing to elevated air temperatures in urban areas well into the evening.<sup>24</sup> Notably, the high specific heat capacity of bricks allows them to retain this heat energy for extended periods, prolonging elevated temperatures into the night.<sup>25</sup>

The dense and impervious nature of bricks limits evaporative cooling, a natural process that helps dissipate heat energy through the evaporation of water from surfaces or

<sup>21</sup> Interview with Vivek Shandas

<sup>22</sup> Hood College, n.d. "Surface Temperature Fact Sheet". Accessed April 2024. [Link](#)

<sup>23</sup> McMaster University, 1995 "Temperature Measurements on Brick Veneer". Accessed March 2024. [Link](#)

<sup>24</sup> United States EPA, n.d. "Reducing Urban Heat Islands: Compendium of Strategies". Accessed April 2024. [Link](#)

<sup>25</sup> GreenSpec, n.d. "Building Design and Thermal Mass". Accessed April 2024. [Link](#)

vegetation.<sup>26</sup> Without this cooling mechanism, the heat absorbed and stored by brick surfaces remains trapped within the immediate environment. Additionally, the extensive use of bricks in buildings and paved surfaces creates a continuous heat-absorbing surface, amplifying the overall warming effect.<sup>27</sup> This phenomenon is further exacerbated by the “urban canyon” effect, where narrow streets and tall buildings made of hard, dry materials absorb and reflect solar radiation, limiting air circulation and heat dissipation.<sup>28</sup> This can be especially impactful to The Square’s evening programming, where heat is retained during the day and slowly released in the evening, meaning evening events continue to be impacted by high daytime temperatures.

The iconic brick design of The Square may pose significant challenges in coping with the warming climate, and especially with maintaining normal operations during high heat events. Strategies that reduce heat absorption or promote cooling will mitigate these effects, including those that increase albedo (reflectivity) of surfaces, lower thermal mass, or provide shading and evaporative cooling.

## *Wildfires and Smoke*

Wildfires and their resultant smoke have increasingly become significant concerns for urban areas, particularly in regions like Portland. Wildfires are uncontrolled fires that burn in natural areas such as forests, grasslands, and prairies. Smoke from these fires can travel vast distances, affecting air quality and public health far from the fire source. The threshold for unhealthy air quality due to wildfire smoke is often measured by the Air Quality Index (“AQI”), with levels above 100 considered unhealthy for sensitive groups, and levels above 150 considered unhealthy for the general public. This phenomenon is exacerbated by climate change, which contributes to the increasing frequency and intensity of wildfires through hotter temperatures, drier conditions, and changing precipitation patterns<sup>29</sup>.

### Historic Trends

Historically, the Pacific Northwest has experienced wildfires as a natural part of its ecological cycle. However, the frequency, intensity, and destructive capacity of these fires have escalated. Data visualization of wildfire occurrences over the past decades shows a clear upward trend in both the number of fires and the acreage burned. While there is no record of Portland having reached severely unhealthy particulate matter

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<sup>26</sup> United States EPA, n.d. “Reducing Urban Heat Islands: Compendium of Strategies”. Accessed April 2024. [Link](#)

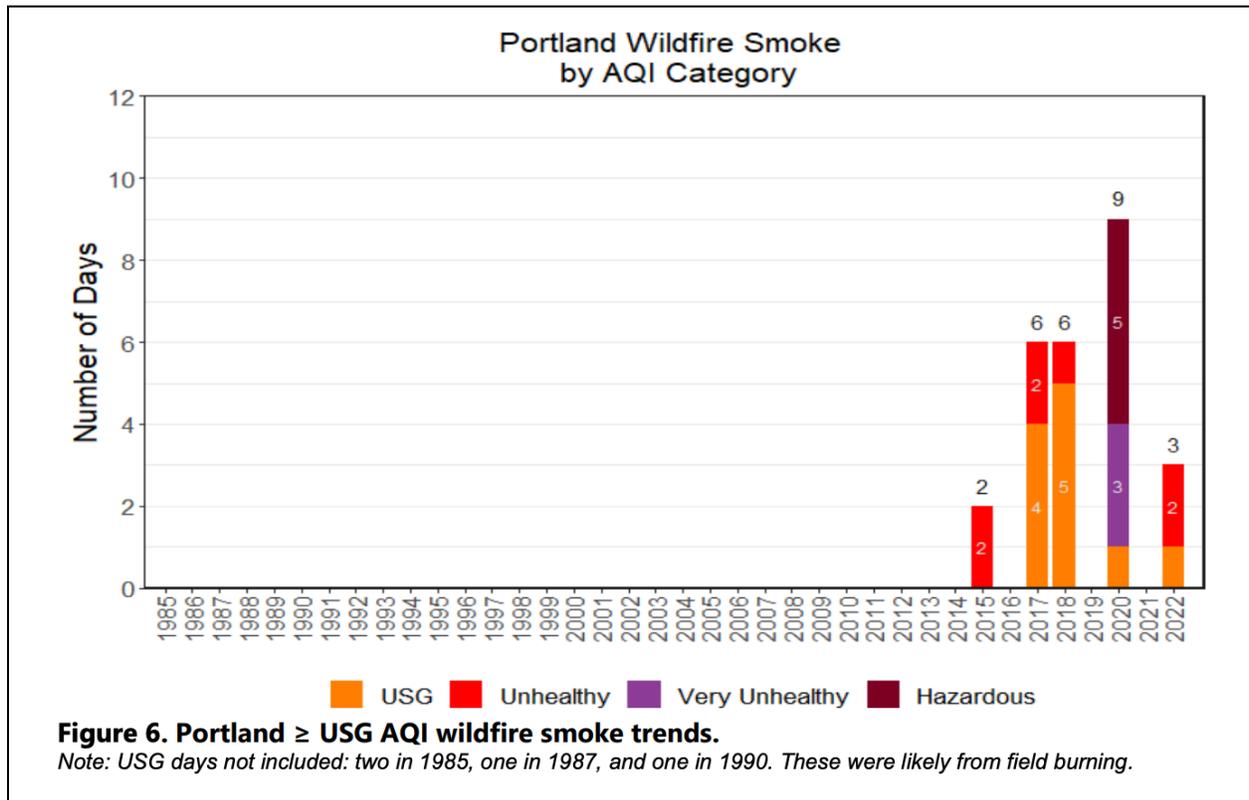
<sup>27</sup> Solar Energy, 2021 “Experimental Investigation of the Impact of Urban Fabric on Canyon Albedo using a 1:10 Scaled Physical Model”. Accessed March 2024. [Link](#)

<sup>28</sup> Solar Energy, 2021 “Experimental Investigation of the Impact of Urban Fabric on Canyon Albedo using a 1:10 Scaled Physical Model”. Accessed March 2024. [Link](#)

<sup>29</sup> My Oregon News, 2021 “Oregon DEQ Releases Wildfire Smoke Trends for 2020”. Accessed March 2024. [Link](#)

levels prior to 2004, these severely unhealthy levels occurred five times since 2018<sup>30</sup> (Figure 5). Since the early 2000s, these trends have become the "new normal," with significant implications for ecosystems, urban areas, and air quality in the region<sup>31</sup>.

**Figure 5: Portland Wildfire Smoke by AQI Category**



*Source: Oregon Department of Environmental Quality. (Note: "USG" = Unhealthy for Sensitive Groups)*

### Impacts in Portland

Portland has witnessed several notable episodes of extreme wildfire smoke, particularly in recent years. For example, the Eagle Creek Fire of 2017 and the Oregon wildfires of 2020 significantly impacted Portland's air quality (Figure 6), making it one of the cities with the worst air quality in the world during these events. The smoke from these fires caused widespread health issues, reduced visibility, and led to economic losses due to halted outdoor activities and reduced tourism. The built environment also suffered, with buildings and public spaces like The Square requiring cleanup and maintenance to deal with ash fallout and air filtration issues<sup>32</sup>.

<sup>30</sup> Interview with David Lentzner

<sup>31</sup> Oregon Department of Forestry, 2022 "Fire History 2000-2022". Accessed April 2024. [Link](#)

<sup>32</sup> U.S. Forest Service, n.d. "Eagle Creek Fire Story & Data". Accessed March 2024. [Link](#)

**Figure 6: Portland During the 2020 Wildfire Season**

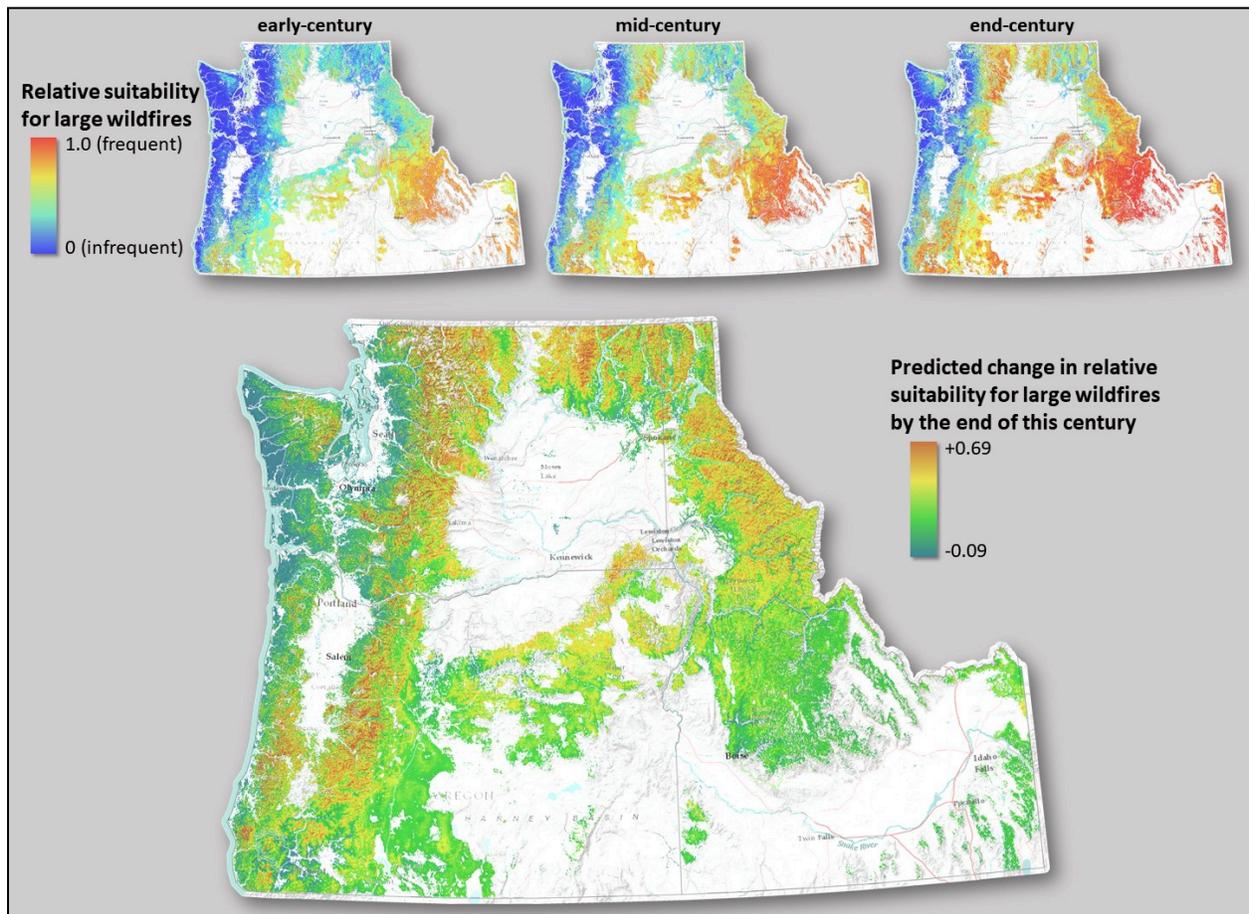


*Source: Portland Monthly*

### Projections

Climate models project an increase in the frequency and severity of wildfires in the Pacific Northwest due to ongoing climate change. These projections suggest that Portland will experience more frequent and intense smoke events, leading to longer periods of unhealthy air quality (Figure 7). This will have compounding effects on public health, especially for vulnerable populations, and necessitate significant adaptations in urban planning, emergency response, and public health infrastructure.

**Figure 7: Predicted Change in Relative Suitability for Large Wildfires by the End of this Century**



*Source: USDA Climate Hubs*

### Significance

The increasing impact of wildfires and smoke on Portland, including The Square, underscores the urgency of addressing climate change and its effects. Beyond the immediate health and environmental concerns, these events highlight broader social and equity issues. Vulnerable populations, including the elderly, children, and those with pre-existing health conditions, are disproportionately affected by poor air quality<sup>33</sup>. Addressing these challenges requires comprehensive strategies that encompass emergency preparedness, public health initiatives, and efforts to mitigate climate change at the source.

The escalating threat of wildfires and their associated smoke represents a critical challenge for Portland and the broader Pacific Northwest region. Understanding the historic trends, current impacts, and future projections of this issue is essential for

<sup>33</sup> Multnomah County, 2023 “2012-2022 Regional Climate and Health Monitoring Report”. Accessed March 2024. [Link](#)

developing effective responses. As climate change continues to influence the frequency and intensity of wildfires, cities like Portland must adapt to protect public health, the built environment, and the natural ecosystems that define the region's identity. Addressing these challenges will require concerted efforts across multiple sectors and disciplines, highlighting the importance of climate change mitigation and adaptation strategies in urban planning and public policy.

## *Rain and Storm Events*

Portland is accustomed to frequent rain and occasionally severe storms, including atmospheric rivers that can, at times, result in high volumes of rainfall in a short span of time. While rain and storm events, and changes that could occur as a result of climate change impacts within the Portland region, were assessed as a part of the CCIA, review of current data and discussions with subject matter experts identified that climate change is unlikely to increase the severity or frequency of rain and storm events substantially in the region over the next 20 years. It is possible that increased warming could result in minimal changes in the intensity of rain events, but current climate models have not identified these changes yet. While impacts from rain and storm events on The Square are not expected to become more severe as compared to current conditions, these weather events do impact The Square's ability to function and operate efficiently, and PCSI has indicated their desire to review and explore potential strategies that mitigate the worst effects of rain and storm events and allow The Square to remain usable during this type of weather. Given the extent of The Square's impervious surfaces, it is important that excess rain and flooding is considered with future planning, regardless of whether rain events increase in frequency or severity due to climate change.

### *Historic Trends*

Portland is historically a rainy city, where winters are typically cool and wet, and summers are much drier and sunnier, but rainfall into June is not uncommon. Nearly 90 percent of Portland's annual rainfall occurs between mid-October and mid-May, with only 3 percent of rain occurring in the peak summer months of July and August<sup>34</sup>. Within Portland itself, the amount of rain received varies across the region, with Portland's west hills receiving approximately 60 inches of rain per year, with Portland International Airport receiving approximately 35 to 27 inches annually<sup>35</sup>. Snow accumulation is less frequent, with an average of only four days a year receiving measurable snowfall, and accumulation rarely surpassing two inches. As climate change has an increased impact on Oregon, the region's wet and dry seasons are expected to become more distinct, with increased rainfall in the winter months and decreased rainfall in the summer months<sup>36</sup>. However, as discussed further in the

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<sup>34</sup> National Weather Service, n.d. "Climate of Portland". Accessed April 2024. [Link](#).

<sup>35</sup> National Weather Service, n.d. "Climate of Portland". Accessed April 2024. [Link](#).

<sup>36</sup> Oregon State University, 2023 "Sixth Oregon Climate Assessment". Accessed April 2024. [Link](#)

projections section, climate change is not expected to have a noticeable impact on the severity or intensity of rain events in the next 20 years.

### Impacts in Portland

While rain events aren't uncommon in Portland, strong winter storms and resulting deluges of rain can have a noticeable impact on urban areas. In December 2023, atmospheric rivers in the early and latter parts of the month delivered record daily rainfalls and warm temperatures<sup>37</sup>. Due to the warm weather, most of this moisture fell as rain in the Cascades, causing recent snowfall to melt, swelling the region's streams, rivers and lakes, which exacerbated flood risks, with at least two people in the Portland region being swept away and ultimately drowning due to rapidly rising water levels in creeks<sup>38</sup>. The resulting flood events resulted in the closure of dozens of the region's roads, which can pose issues for emergency response (Figure 8). Further, increased mud and rock slides were observed, largely due to the soil's inability to hold the increased rainfall, causing damage to homes, business, and infrastructure, including the temporary closure of Amtrak train service between Portland and Seattle. For The Square specifically, stronger winter storms and torrential downpours pose a threat to winter programming, such as the Winter Light Festival.

While the use of the term "atmospheric river" has increased in frequency in recent years, it's important to note that atmospheric rivers are common, and not all atmospheric rivers result in hazardous rain events. The term atmospheric river is specific to water vapor moving through the atmosphere, it is not specific to causing rain, although nearly all heavy rain events in Portland result from atmospheric rivers. Heavy precipitation from atmospheric river events are relatively common historically, and while warming may increase their size and moisture content, there is no evidence that currently suggests climate change will increase the frequency of these events over the next 20 years within the Portland region<sup>39</sup>.

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<sup>37</sup> NASA Earth Observatory, 2023 "Atmospheric River Flows into the Pacific Northwest". Accessed March 2024. [Link](#)

<sup>38</sup> CNN, 2023 "2 People are Dead as an Atmospheric River Pummels the Northwest with more than 9 inches of Rain". Accessed March 2024. [Link](#)

<sup>39</sup> Interview with Paul Lokith

**Figure 8: Flooded Highway in the Portland Area During 2023 Atmospheric River**



*Credit: Oregon Public Broadcasting*

### Projections

As discussed previously, through review of current research and discussions with subject matter experts, climate change is not expected to have a noticeable impact on the severity or intensity of rain events in the next 20 years. While some statistically significant increases in heavy precipitation have been documented in Oregon, the relatively small sample sizes and substantial variability in intense precipitation makes it difficult to detect long-term observed trends<sup>40</sup>. As noted previously, precipitation is expected to increase during the winter and decrease during the summer in the Portland region, but this is not anticipated to impact the intensity of rain events. Further, due to warming, more moisture will fall in the Cascade Range as rain rather than snow during the winter, ultimately leading to reduced snowpacks and lower rivers, lakes and streams during the summer. Generally, over the next 20 years, a change in the frequency or intensity of winter rain events is not expected; however, with increased warming, an in the intensity of extreme rainfall events may occur<sup>41</sup>.

### Significance

While an increase in the frequency and intensity of rain events is not expected in the Portland region over the next 20 years, intense rain events and downpours already occur and can have a significant impact on the built environment. Stormwater

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<sup>40</sup> Oregon State University, 2023 “Sixth Oregon Climate Assessment”. Accessed April 2024. [Link](#)

<sup>41</sup> Oregon State University, 2023 “Sixth Oregon Climate Assessment”. Accessed April 2024. [Link](#)

management systems can become overburdened and unable to handle rainfall, leading to road closures from flooding and preventing efficient emergency response, as well as damage to homes, business and other infrastructure, and possible loss of life. In conjunction with increased temperatures, it's anticipated that rain will more commonly result in precipitation falling as rain rather than snowfall in the Cascades, reducing snowpack and ultimately causing dryer summers, which can in turn increase the likelihood of wildfires due to dryer soils and vegetation. Given rainfall and storm events are anticipated to continue, it's important that this is considered with comprehensive planning and development, so that infrastructure is designed to handle the rainfall in order to limit damage to homes and businesses and reduce loss of life from these events. For these reasons, The Square should continue to assess its stormwater management infrastructure so that physical improvements can be preserved and damage can be minimized.

## **Implications for The Square**

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As Portland navigates the complexities of climate change, understanding its implications on urban spaces like The Square is crucial for proactive planning and adaptation. This initial draft outlines the potential impacts on use and operations of The Square over the next two decades, with the acknowledgment that insights from subject matter expert interviews will further refine our understanding and strategies.

### *Impact on Use and Operations*

The Square, as a focal point of community and cultural activities in Portland, may face operational disruptions and changes in use patterns due to the increasing frequency of extreme weather events. Extreme heat events could significantly alter the comfort levels in outdoor spaces, potentially reducing visitor numbers during peak summer months. This necessitates the integration of climate-resilient infrastructure such as shaded areas, cooling stations, and green spaces to maintain its appeal as a public gathering space.

Increased incidences of wildfires and the resultant smoke pose a significant threat to air quality, impacting public health and the ability to host outdoor events. Implementing air quality monitoring and emergency response protocols will be essential to safeguard visitors and staff. Additionally, adapting the Square's landscape and materials to mitigate fire risks and incorporating air filtration systems in surrounding buildings could become necessary.

While rain and storm events are not expected to become worse, upgrading stormwater management systems to handle extreme precipitation and ensuring the Square's infrastructure is resilient to water-related damages will be critical for uninterrupted operations.

## *Anticipated Threats Over the Next 20 Years*

Over the next two decades, the compounded effects of climate change are expected to pose significant challenges to The Square's environment and operations. The increasing severity of extreme heat events could transform The Square into a less hospitable space during the warmer months without significant adaptive measures. Wildfires and associated smoke events are likely to become more frequent and intense, posing health risks and necessitating closures or cancellations of outdoor activities. Some planners believe there will be an increase of “climate refugees” who will relocate to urban centers, such as Portland, trying to escape hotter climates. The gradual shift in climate patterns may also lead to longer and more unpredictable transitional seasons, affecting scheduling and planning of events and activities. As more people continue to migrate to the Pacific Northwest, it is important that The Square is prepared for these changes, and the influx of people that will continue to rely on public open spaces such as The Square.

## *Moving Forward*

This document underscores the imperative of incorporating climate resilience into the planning and management of The Square. Future insights from subject matter expert interviews will be invaluable in tailoring specific adaptation strategies and operational changes. By anticipating these challenges and engaging with experts and the community, The Square can evolve into a model of urban resilience, ensuring its continued role as a vibrant center for Portland's public life amidst changing climatic conditions.

## **Takeaways**

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In this analysis of climate change impacts on The Square, our findings draw attention to several critical areas where action and foresight are paramount. Amidst the looming challenges posed by climate change, there emerge opportunities for strategic adaptation and resilience, particularly for PSCI and its stakeholders. The dialogue surrounding climate change and The Square navigates through the complexities of wildfire smoke, extreme weather events, and the oscillating patterns of urban climate phenomena.

The encroaching threat of wildfires, magnified by climate change, necessitates a series of air quality and visibility concerns for The Square. To mitigate these risks, a holistic approach encompassing air filtration systems, the establishment of clean air shelters, and smoke-specific emergency response protocols is indispensable. This strategy underscores the importance of safeguarding public health while ensuring the Square's continuous engagement and vibrancy.

Extreme heat events introduces another layer of complexity, prompting the necessity for shaded areas, water features, and heat-resistant landscaping. These measures collectively aim to mitigate the worst impacts of extreme heat while enhancing the comfort and safety of The Square's users during heatwaves.

Addressing these challenges, PCSII's strategic focus should pivot towards adaptive infrastructure, emphasizing climate resilience as a cornerstone of urban planning. The formulation of comprehensive emergency preparedness plans further underscores the need for a nuanced understanding of public health and safety in the context of climate change. Engaging the community through educational initiatives not only fosters awareness but also cultivates a collective ethos of environmental stewardship and adaptation.

Through this analysis it becomes evident that the journey towards climate resilience for The Square is both a challenge and an opportunity. Through strategic planning, community engagement, and infrastructural adaptation, The Square can navigate the uncertainties of climate change, emerging as a beacon of sustainability and resilience in the urban landscape.

# **Appendix C: Stakeholder Involvement Report**



# Memorandum

To Pioneer Courthouse Square Inc.  
Jennifer Polver and Tad Savinar

From MHA Planning: Aarin Young, Anna Reusink, Hannah Johnston, Matthew Robinson, Meredith Herbst

Date June 15, 2024

**RE A Stronger Square Final Report  
Appendix C – Stakeholder Involvement Report**

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MHA Planning’s stakeholder involvement process was split into two distinct phases: Interviews & Focus Groups (Phase 1) and a Survey (Phase 2) and was conducted between March 2024 and May 2024. This document is an appendix to the final report for *A Stronger Square: Climate Resiliency for Pioneer Courthouse Square* (“*A Stronger Square*”), and summarizes the stakeholder involvement process and findings for both phases. The materials used for both phases of the stakeholder involvement process are documented separately in Appendix D of the final report. Additionally, in order to maintain engagement momentum, MHA Planning proposed an open house template, included with Appendix D, as a core component of Pioneer Courthouse Square Inc’s (“PCSI”) future stakeholder engagement strategy, which serves as a guide for PCSI to adapt and utilize for various phases of this continuing project.

## **Summary of Phase 1 Stakeholder Involvement**

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Phase 1 of MHA Planning’s stakeholder involvement process was conducted over several weeks and consisted of 13 separate interviews and one focus group. Interviews were conducted with a number of identified stakeholders, including TriMet personnel, owners of food carts operating at The Square, and caretakers of The Square (Table 1). The depth of these interviews provided insight into the problems and issues regularly faced at The Square, which community groups could be partnered with for future success, and provided potential solutions for future climate resiliency at The Square.

**Table 1: Stakeholders Interviewed in Phase 1**

Stakeholder Group	Organization
Owner/ caretaker	City of Portland, Parks and Recreation, Asset & Development Division
Owner	City of Portland, Bureau of Planning and Sustainability
Caretaker	City of Portland, Parks and Recreation, Facilities Maintenance
Caretaker	Security - Pacific Patrol Services
Operator - Tenant	TriMet
Operator - Tenant	KGW 8
Operator - Food Cart	The Block
Presenter	India Cultural Association
Presenter	Winter Light Festival
Presenter	True West (PDX Live organizers)
Downtown Advocate	Pioneer Place Mall
Downtown Advocate	Travel Portland
Downtown Advocate	Downtown Development Group
Presenter	Artist/ Performer
Historic Landmark Experts	Hennebery/Eddy Architects
Historic Landmark Experts	City of Portland, Development Services
Architects and City Planners	ZGF Alumni
Architects and City Planners	Mayer/Reed Landscape Architecture
Architects and City Planners	TriMet

## *Consensus on Weather Specific Alterations*

Through the stakeholder involvement interviews and focus groups conducted as a part of Phase 1, there was consensus on a number of weather-specific alterations which are identified below.

**Stormwater Management:** Stormwater management infrastructure upgrades are needed, such as bioswales and other more innovative methods for capturing and detaining stormwater runoff at The Square.

**Smoke:** Upgrades to the HVAC systems within The Square's existing buildings and tenant spaces are needed in order to adequately filter out smoke during wildfire events. Newer HVAC systems are available that can more adequately filter fine particles associated with smoke; however, upgrades to HVAC systems are costly. Many stakeholders also noted that distributing masks at The Square that can filter out smoke may be beneficial during smoke events.

**Prolonged and Excessive Heat:** Generally, stakeholders identified a need for more shade and water at The Square, whether these are temporary features in the summer or more permanent features.

**Cold Weather and Ice:** Stakeholders generally acknowledged that ice storms are infrequent and have a limited impact on operations or use of The Square. Impacts from cold weather and ice can be easily mitigated with temporary measures, such as portable heaters.

Generally, all stakeholders agreed that increased shade and more water features (such as water fountains or misters during the summer months), in either a temporary or permanent fashion, would be beneficial to The Square's use and operations. Additionally, stakeholders identified a desire for more greenery and tree canopy coverage.

### Key Quote

*"We thought about having swamp coolers out there at the Square, but because of the cost and the location of the swamp coolers, we decided against it. But know we have thought about all those measures many times"* – Jaisen Mody, Event Permittee, India Cultural Association

## *Layers of Programming*

PCSI serves as the caretaker of The Square and cultivates a space that allows visitors, tenants, and various types of programming to generate income for its continued operation and use. The success of The Square is directly linked to the success of its partners, as well as the success of the broader downtown community. To increase mutually beneficial relationships and advance climate resiliency, it is important to think

of where PCSI's responsibilities begin and end. For example, PCSI isn't necessarily responsible for a food cart's equipment remaining operable on a hot day, but they can provide shade to increase foot traffic around the food carts. This level of programming generates business for The Square and assists the food carts in their operations, which in turn advances The Square's climate resiliency. All of MHA Planning's interviews suggested specific and thoughtful solutions that will create micro and macro level changes to fortify The Square's ability to generate income and cover its operating expenses.

### *Timeline Dynamics*

One of the most important aspects of climate resiliency will be considering the timeline. Multiple stakeholders presented long term solutions like alternative surfaces, solar panels, or even creating green walls and eco roofs at The Square, such as on top of the existing Starbucks. Several interviewees suggested short term solutions targeted for specific events, such as temporary tree planters, more drinking water fountains and temporary splash pads. The dynamics of "short-term" versus "long-term" will ultimately be decided by funding sources and PCSI's vision for the future. The Options Menu (included as Appendix C of the final report) offers suggestions with approximate projections of their implementation timeline.

#### Key Quote

*"Small steps, if enough people are taking them, could have a larger impact"* – Jessica Curtis, General Manager at Pioneer Place Mall

### *Partners*

If The Square will continue to serve as Portland's Living Room, is the City of Portland willing to support more long-term and impactful changes to The Square's design, such as eco roofs, addition of bioswales around The Square, and increase the availability of water drinking fountains in order to create a more resilient public space? Most of the interviewees were excited and intrigued by *A Stronger Square's* work, which speaks to a wider interest and buy-in to climate resiliency work. However, many long term improvements to The Square that promote climate resilience are only possible through partnerships.

### *Neighborhood Cohesion*

The Square should aim to follow the "existing DNA" of surrounding buildings, fabric of the downtown neighborhood, and traceability between spaces. The Square's viability is going to require a larger bounce back from downtown as a whole.

## Key Quote

*“I think the other thing we want to be mindful of is Director Park, and Pioneer Square and at the time, O'Brien Square, were programmed to complement one another. Director Park and Pioneer Square (are) only a block apart. I think both spaces should be looked at together” – Architects and City Planners*

## Bricks

The Square's brick surface is an integral component of its design and that is cherished by many Portlanders. Interviewees were divided on if the bricks should ultimately stay or be replaced with a different type of surface. A change to The Square's surface could reduce heat retention into the evening during the summer months, and also could also allow for the incorporation of innovative and effective stormwater management solutions. However, a change to The Square's surface is a costly option that would likely require multiple layers of permitting and land use approvals. While The Square is not a designated historic landmark, the cultural importance of The Square's brick surface to Portlanders may make changing its surface difficult.

## Economic Impacts in Quotes

Below are a few accounts of the climate's economic impact on some of the Square's tenets and/or partnering organizations:

*“We have to close, and thus lose money, and thus our staff takes a hit on their paycheck, and the business takes a hit on our bottom line” – Operator - Food Cart*

*“(Event) Attendance drops dramatically when it's too hot, especially between 1pm and 4pm. If it's cloudy or cooler, attendance increases a lot” – Presenter*

*“What we have done to mitigate some of the effects are water down the bricks during the day. Not a real great long term solution. Just running water all day on bricks to keep it cooler, but that did work to keep the ambient temperature down” – Presenter*

*“There's no shade. So the square is pretty empty on days like that, and we have folks trying to cool down by coming in our lobby, standing over the vents sleeping in our hallway.” – Architects and City Planners*

## Conclusion

Phase 1 of the stakeholder involvement process revealed a community that has a strong interest in climate resiliency for both The Square and the City of Portland itself, and that people have various ideas about what this could be like for The Square's future. As identified, there was large consensus surrounding The Square's need for

more shade and water availability options. Additionally, there was division about the importance of The Square's brick surface, and whether or not this should remain in the future given increasing heat during the summer.

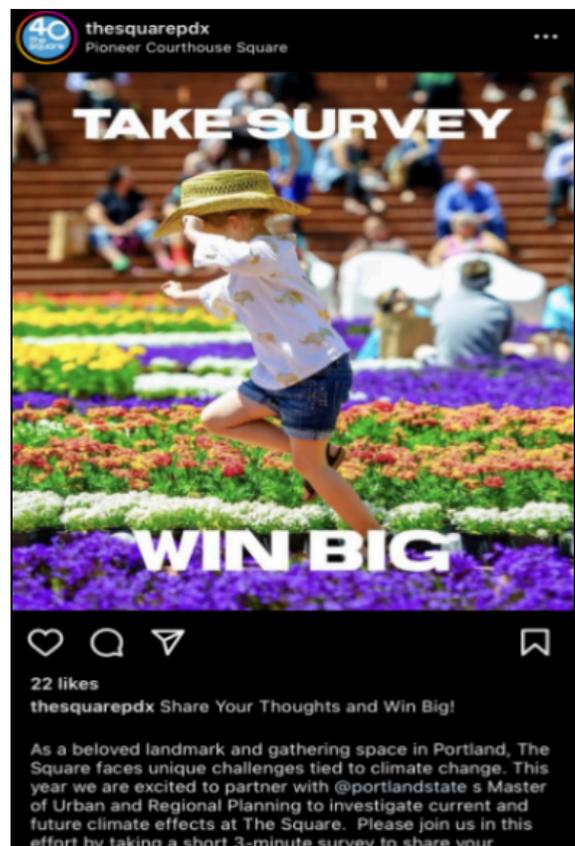
## Summary of Phase 2 Stakeholder Involvement

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Phase 2 of the stakeholder involvement process was focused on engaging with broader stakeholder groups, such as PCSI's "Friends and Followers" and event attendees. To do this, MHA Planning and PCSI worked together to develop a 20-question/3-minute, online survey, which was distributed via PCSI's email list and social media.

MailChimp was used for the survey's distribution as PCSI already uses this platform. This helped to meet goal five of the Stakeholder Involvement Plan (SIP) – build connection and trust – by conducting engagement through The Square so that participants would connect with PCSI, rather than through a platform specific to this project or to MHA Planning. The content of the survey was as follows:

1. **Introductory paragraph** that provided context to the project.
2. **Opening questions** about participants' relationship to The Square, which helped us understand how well this survey met goal two of the SIP – involve those regularly connected to The Square.
3. **Climate resiliency questions** that asked participants to identify their relationship to extreme conditions at The Square and preferences for the different climate resiliency initiatives in the options menu. This was the main purpose of the survey and helped us meet goal three of the SIP – consult with those who care about The Square.
4. **Open-ended question** that asked for participants' questions, comments, and ideas, which helped us to meet goal four of the SIP – listen to understand.
5. **Demographic questions** to collect demographic data, which helped us understand how well this survey met goal one of the SIP – intentionally involve Equity Priority Groups.



*PCSI's Instagram Post Promoting the Survey*

6. **Survey incentive.** Participants could also provide their email address if they were interested in entering to win two PDX Live tickets and a \$100 Carts on The Square gift card, which were offered as an incentive to take the survey.

All questions on the survey were optional. The timeline for the survey and its promotion was as follows:

- **Thursday, May 9:** Survey becomes active. PCSI distributes via their Friends and Followers regular weekly email.
- **Friday, May 10:** PCSI distributes the survey via a Facebook post (17k followers) and an Instagram post (17.5k followers) (see image above).
- **Monday, May 13:** The survey is distributed via email to a portion of the City of Portland Parks and Recreation team.
- **Thursday, May 16:** PCSI sends a survey reminder via their Friends and Followers regular weekly email.
- **Monday, May 20:** Survey closes.

## Key Themes

### Who Took the Survey?

A total of **255 individual survey responses** were submitted. 259 responses were received in total, but 4 responses were associated with duplicate email addresses; the most recent survey submission for each duplicate email response was used.

**Most respondents visited less than once a month in the last year.** In the last 12 months, 53% visited “on a few occasions” and 24% visited “1-2 times a month” (Table 2).

**Table 2: Visits of Respondents to The Square Over the Past 12 Months**

Frequency	Count	%
More than once a week	33	13%
Once a week	12	5%
Once or twice a month	60	24%
On a few occasions	134	53%
Never	16	6%

**Most were residents. Many work in the area or visit occasionally.** 74% listed their relationship to The Square as “Resident of Portland”, 32% said “occasional visitor” and 36% said “employee in the area” (Table 3).

**Table 3: Relationship to The Square**

	Count	% of respondents*
Resident of Portland	188	74%
Business owner	5	2%
Employee in area	91	36%
Occasional visitor	81	32%

\*Participants could select multiple answers for this question, so percentages do not add up to 100%.

Top activities at The Square **were visiting food carts/beverages/coffee (64%), attending events (64%), and taking transit (43%)** (Table 4).

**Table 4: Activities at the Square**

Activity	Count	% of respondents*
Food carts/beverages/coffee	162	64%
Attended event	164	64%
Held event	11	4%
TriMet/MAX	109	43%
Hang out	97	38%
Restroom use	30	12%

\*Participants could select multiple answers for this question, so percentages do not add up to 100%.

**Most respondents were both white (alone) and did not currently have a disability (62%).** 206 of the 255 respondents said they were white (alone or with another race) (Table 5). 74% of respondents were white (alone) regardless of ability, and 82% were not currently disabled regardless of race (Table 5).

**Table 5: Tally of Responses by Race**

Race	Count	% of respondents
American Indian/ AK Native	6	2%
Asian	19	7%
Black/ African American	4	2%
Hispanic/ Latino	15	6%
Native Hawaiian/ Other Pac Islander	4	2%
White	206	81%
Prefer not to say	17	7%

*\*Participants could select multiple answers for this question, so percentages do not add up to 100%.*

**Table 6: Disability Status of Respondents**

	Count	%
Yes	33	13%
No	208	82%
Prefer not to Disclose or blank	14	5%

What Did Respondents Think About Extreme Conditions at The Square?

**44% had experienced extreme heat at The Square**, 22% experienced excessive rain/ flooding, and 20% experienced smoke (Table 7).

**Table 7: Extreme Condition Experiences**

	Count	% of respondents*
Have experienced extreme heat	112	44%
Have experienced smoke	50	20%
Have experienced excessive rain/ flooding	56	22%

*\*Each row was its own question, so percentages do not add up to 100%.*

**Most would not visit The Square at 90°F or above.** 52% said 90°F was their cutoff point. 29% said 100°F or more would keep them from visiting (Table 8).

**Table 8: Temperature at Which Respondent Would Not Visit The Square**

Temperature	Count	%
70°F +	4	2%
80°F +	39	15%
90°F +	132	52%
100°F +	73	29%
No answer	7	3%

**Most would be unlikely to visit during excessive rain.** 80% said “unlikely” or “very unlikely” (Table 9).

**Table 9: How Likely to Visit During Excessive Rain**

Likelihood	Count	%
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Very unlikely	90	35%
Unlikely	115	45%
Likely	42	16%
Very likely	7	3%
No answer	1	<1%

**Most would not visit during “Orange” or “Yellow” AQI levels (55%).** 17% said they would not visit if the AQI level was Yellow or worse. 38% said Orange or worse (Table 10).

**Table 10: AQI at Which Respondent Would Not Visit The Square**

AQI	Count	%
Yellow +	43	17%
Orange +	96	38%
Red +	81	32%
Purple +	25	10%
Maroon +	8	3%
No answer	2	1%

### What Did Respondents Think About Climate Resilience Interventions?

The top five preferred interventions for **heat** were as follows: **Shade, drinking water, misters, greenery, events held later in the day** (Table 11).

**Table 11: Heat Interventions Ranked by Response Frequency**

Initiative	Count	%*	Rank
Shade	209	82%	1
Free drinking water	153	60%	2
Misters	151	59%	3
Greenery	134	53%	4
Events later	114	45%	5
Less heat from surface	97	38%	6
Air circulation	83	33%	7
Events earlier	73	29%	8
Cooling center	72	28%	9

Lighter colored floor	18	7%	10
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*\*Each row was its own tally, so percentages do not add up to 100%.*

77% of respondents **said covered areas would make them more likely to visit during excessive rain events** (Table 12).

**Table 12: Rain Interventions and Frequency**

Initiative	Count	%
Covered areas	196	77%
Drainage	109	43%

*\*Each row was its own tally, so percentages do not add up to 100%.*

The top preferred intervention for smoke was air quality monitoring (36%) (Table 13), but **overall, smoke interventions weren’t likely to make people more likely to visit during smoky days** (25 written-in responses).

**Table 13: Smoke Interventions and Frequency**

Initiative	Count	%
N-95 Distribution	70	27%
Air quality monitoring	89	35%
Air filtration	78	31%

Five interventions were favored by 50% or more of all respondents: **Shade, covered areas, free drinking water, misters, and greenery** (Table 14).

**Table 14. Interventions Favored by 50% of Respondents or <ore**

Rank	Intervention	Percent favoring
1	Shade	82%
2	Covered areas	77%
3	Free drinking water	60%
4	Misters	59%
5	Greenery	53%

**Shade was the top preferred intervention and covered areas were the second preferred intervention for all “relationship groups”** (Table 15) and **“activity groups”** (Table 16) Except for those who had held an event at The Square. Note that this group had an n of 12.

**Table 15: Top Favored Interventions by Relationship Group**

Rank	Portland Residents	Business owners*	Employees	Occasional visitors
1	Shade	(1) Shade	Shade	Shade
2	Covered areas	(1) Covered areas	Covered areas	Covered areas
3	Free drinking water	(1) Improve drainage	Misters	Free drinking water
4	Misters	(4) Misters	Free drinking water	Misters
5	Greenery	(4) Free drinking water	Greenery	Greenery
6	Events later	(4) Less heat from surface	Events later	Events later
7	(7) Less heat from surface	(4) Events later	Less heat from surface	Drainage
8	(7) Improve drainage	(8) Greenery	Improve drainage	Less heat from surface
9	Air quality monitoring	(8) Air circulation	Cooling center	N-95 distribution
10	Air circulation		(10) Events earlier (10) N-95 distribution (10) Air quality monitoring	(10) Events earlier (10) Cooling center (10) Air quality monitoring

\*Business owners n=5, “(#)” indicates a tie for that rank

**Table 16: Top Favored Interventions by Activity Group**

Rank	Food carts	Held event*	TriMet	Hang out	Restroom	Attend event
1	Shade	(1) Covered areas	Shade	Covered areas	Shade	Shade
2	Covered areas	(1) Greenery	Covered areas	Shade	Covered areas	Covered areas
3	Misters	(3) Shade	Misters	Free drinking water	Free drinking water	Free drinking water
4	Free drinking water	(3) Misters	Free drinking water	Misters	Events later	Misters
5	Greenery	(3) Free drinking water	Events later	Events later	Greenery	Greenery
6	Drainage	(3) Events later	Drainage	Greenery	(6) Misters	Events later
7	Events later	(3) Air quality monitoring	Air quality monitoring	Drainage	(6) Air quality monitoring	Drainage
8	Less heat from surface	Drainage	Less heat from surface	Air quality monitoring	(6) Less heat from surface	Air quality monitoring
9	Air circulation	(9) Less heat from surface	(9) Air circulation	Air circulation	(9) Drainage	Less heat from surface
10	Air quality monitoring	(9) Air circulation	(9) Air filtration	Less heat from surface	(9) Air circulation	Air circulation

\*“Held event” n=12, “(#)” indicates a tie for that rank

**Respondents had complicated feelings about increasing greenery at The Square.** 85% said they would like to see 50% or less of The Square devoted to greenery (Table 17). Open response comments both endorsed greenery (4 responses) and cautioned against adding too much greenery, citing that it would limit use of The Square or detract from its distinctive character (11 responses) (Table 18).

**Table 17: How Much Green Space Preferred at The Square**

Greenery	Count	%
> 75%	18	7%
75%	20	8%
50%	99	39%
25%	84	33%
< 25%	29	13%
No answer	5	2%

**Respondents do not want their bricks removed, even if it makes The Square hotter.** Seven respondents wrote in that they did not want climate resilience interventions that would necessitate removing the bricks, while two respondents noted that the bricks exacerbated heat on The Square (Table 18).

**Respondents would like resilience upgrades to The Square to meet other needs, too.** They mentioned considerations like more seating (5), bike parking (2), and ADA accessibility (2) (Table 18).

**Any climate resilience interventions should account for how visitor safety will be impacted.** Many write-in responses voiced concerns about safety at The Square or in downtown generally (13 responses) (Table 18).

**Table 18: Open Response Themes**

Mentions	Count
Safety concerns	6
Systemic/ "Downtown" issues	7
"Don't remove the bricks!"	7
"The bricks are hot"	2
More green would be great	4
Don't add too much green	11

Want more seating	5
Want more shade	15
Concern for how interventions would impact views	3
Specific design ideas/ feedback	19
ADA Accessibility	2
Bike parking	2

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### Selected Quotes from Write-in Responses

- “I had tickets to a concert last summer and it hit 100 degrees. The show was supposed to open at 6:00 and I was shocked it wasn’t canceled and refunded. They announced there was no place to fill water bottles, and of course no shade. Now, I won’t purchase tix in advance, knowing there’s such a risk.”
- “In general if I buy something here I eat it at Director Park as it has shade.”
- “Stopped volunteering for certain summer events - just too hot on the bricks and won't stay as long as planned in smoke and heat”
- “I have bought bricks for several family members. I sure hope you aren’t going to take them away.”
- “I would not want green space to sacrifice the flow and openness of the Square as it is now, though more life would be nice.”
- “I like the [square] as it is now, and I don't see the need [for] a major remodel, even if included more green space. Maybe if I saw the plans for what a 75% green space square looks like, I would be able to get on board.”
- “I love the Square, but I wish there were shaded areas.”

### *Implications*

#### Climate Resiliency Initiatives

The responses in the survey about **people’s thresholds for different conditions can help inform PCSI’s policies and procedures around when to take certain measures**. For example, as noted in the climate change impact assessment, by 2050 there will be approx. 23 days above 90°F and 7 to 10 days above 95°F. Given that most respondents said they would not visit The Square at 90°F or above, additional temporary initiatives could be taken when the daily temperature is expected to reach 90°F or above to help make the space more welcoming and safer for users.

Initiatives that will cause drastic, large scale change to The Square could be contentious. **Initiatives that can make small to medium adjustments while still effectively mitigating extreme conditions are preferable.**

Initiatives that can **mitigate brick-related heat without removing the bricks entirely** are preferable to those that would permanently cover/remove the bricks.

Recommendations should incorporate and provide details on **shade, covered areas, free drinking water, misters, and greenery.**

## Future Engagement

**Keep engaging the public on design options.** People are curious and excited about design changes. The top theme for write-in responses was specific suggestions for designs (19 responses)

**Do more engagement with Black communities, Indigenous communities, and people of color.** 74% of respondents to this survey were white (alone). Black people were particularly underrepresented in this sample (1%).

## *Limitations*

While many people participated in the survey, there were still some limitations to this method.

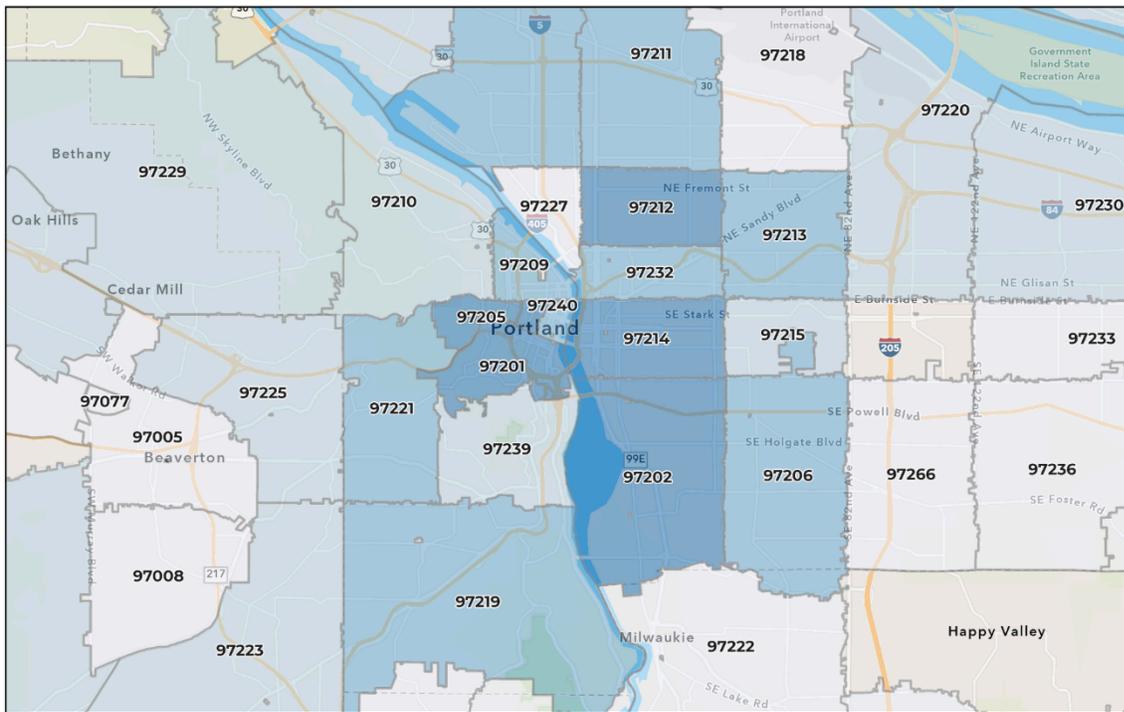
- The survey was not offered in languages other than English, so people who cannot read English but may be impacted by changes at The Square or by climate change were not included. The survey also did not collect data on language preferences.
- The survey was only offered online and not offered as a paper survey, so people with limited or no access to the internet would not have had the opportunity to participate.
- The survey was only distributed to those who are already connected to or aware of The Square and PCSI's work. People who are not currently engaged with The Square but could be in the future were not captured.
- The survey did not collect data on household income. Thus, we are not able to know how well we reached individuals with low-incomes – an Equity Priority Group.
- The survey did not include informative images or detailed descriptions of the different initiatives, so there may have been confusion about what different initiatives entailed. For example, there are many possible strategies for providing more shade at The Square that range in size, aesthetics, and permanence and there are different ways a “cooling center” could be set up.

# Additional Frequency Tables

## Zip Codes with 10 Responses or More

Zip Code	Count	%
97201	16	6%
97212	13	5%
97205	12	5%
97214	12	5%
97202	11	4%
97211	10	4%

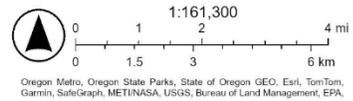
60 unique zip codes



5/27/2024

Number of Survey Responses

	> 2 – 5		> 10 – 16
	1 – 2		> 5 – 10



### Age Group

Age Group	Count	%
Under 18	0	0%
18 - 24	3	1%
25 - 34	29	11%
35 - 44	50	20%
45 - 54	59	23%
55 - 64	50	20%
65+	53	21%
blank	11	4%

## **Appendix D: Stakeholder Involvement Materials**



# Memorandum

To Pioneer Courthouse Square Inc.  
Jennifer Polver and Tad Savinar

From MHA Planning: Aarin Young, Anna Reusink, Hannah Johnston, Matthew Robinson, Meredith Herbst

Date May 19, 2024

**RE A Stronger Square Final Report  
Appendix D – Stakeholder Involvement Materials**

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## Phase One Templates

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### Caretakers of The Square - Focus Group

Name of facilitator(s)	
Names of participants	
Date/time of conversation	
Location (or note virtual platform)	

### Introduction

[Greeting]

Before we get started on the questions, I wanted to provide you with some context for this conversation. Periods of extreme heat, wildfire smoke-filled environments, prolonged and excessive periods of rain, and other extreme conditions are adversely affecting the ability for the public to gather at The Square. For The Square to remain a viable community asset, it is crucial that a better understanding of how to adapt to these climate-related impacts is established.

As you may be aware, we are working with Pioneer Courthouse Square Inc., the nonprofit who manages The Square, in order to gain a more comprehensive understanding of the specific impacts that climate-related risks have on this public space (The Square) and what initiatives to mitigate those risks should be pursued. Climate resilience is about making The Square able to better handle challenges posed by weather impacts. This means preparing for and bouncing back from extreme weather events, like storms or heat waves, and adapting to changing climate conditions to keep The Square a safe and enjoyable place for everyone.

*A Stronger Square* aims to do this by identifying potential climate resiliency initiatives that would ensure The Square's ability to continue to serve the community for years to come.

*Our project* is an effort to provide a more comprehensive understanding of the impacts that climate change will have on The Square over the next 20 years and what initiatives should be pursued to lessen those impacts. Importantly, *this project* will provide a menu of *potential* climate resiliency initiatives for The Square; it will *not* propose a final design for The Square, as any changes to The Square would be decided in future efforts and involve additional public engagement.

This is purposefully broad in order for us to explore a full range of possible solutions or initiatives derived from what we capture through these interviews.

We wanted to talk to you because \_\_\_\_\_ and work closely with The Square because you might have unique insight and knowledge about the specific challenges that they face. So that is the background. In terms of this interview process, I have a series of questions touching on different topics, do you have any questions up front?

Okay... Let's start with an easy question:

- Can you give us a *brief* overview of your organization in your own words – how are you connected to PCSI?

### **Topic 1: Climate Related Issues**

- What specific climate-related challenges or concerns do you observe or anticipate within The Square?
- Are there any existing programming or initiatives related to climate resiliency or sustainability in The Square that your organization is engaged in or aware of?
  - How effective do you perceive these programs to be in addressing climate-related issues?
- In your opinion, what are the most pressing extreme weather events that could impact The Square in the future?
  - Are there any climate-related events or patterns that have already affected activities, events, or usage within The Square?

### **Topic 2: Interventions**

- What interventions or strategies do you believe could be pursued to mitigate the effects of climate-related events on The Square?
  - Are there any specific measures or approaches you think would be particularly effective or feasible for implementation? Have you had to use any intervention in the past, and if so, what was it?
- Do you see any partnerships or out of the box thinking you think could be explored to enhance climate resiliency or sustainability in The Square?
  - How do you envision the role of technology or community engagement in implementing these interventions?

## **Wrap-Up**

- Are there any individuals or organizations with expertise in climate resiliency or sustainability that you recommend we connect with for further insights?
- Would you be interested in reviewing our findings and recommendations later in the process to provide feedback or help refine our conclusions (expected in April?)
- Please feel free to share any additional thoughts or information, and don't hesitate to reach out if you have any questions or further input.

## Operators: Food Carts - Focus Group

Name of facilitator(s)	
Names of participants	
Date/time of conversation	
Location (or note virtual platform)	

### Introduction

[Greeting]

To give some context, we are responding to the growing need to address climate change as it pertains to The Square. There has been an increase in climate-related issues here at The Square. Myself and other students are trying to figure out ways to make this public space more climate resilient moving forward. We'll be giving our recommendations to Pioneer Courthouse Square Inc., the nonprofit that manages The Square, and this conversation will inform our recommendations.

We wanted to talk to you specifically because you are here on a daily basis and have valuable insight about the general public's attitude and behaviors while at The Square. So that is the background. In terms of this interview process, I have a series of questions touching on different topics, do you have any questions up front?

We have a couple questions prepared relating to personal experiences at The Square, here are a few quick ones to get us started.

- Can you provide an overview of your role and responsibilities at The Square?
  - How long have you been working at The Square, and what changes have you observed during your time?
- What are some of the main challenges you face in your role, particularly as it relates to maintaining The Square's functionality and appeal?
  - Have you encountered any specific issues or challenges related to the climate? Can you give us a brief idea of what it looks like as a cart owner in the summer vs. winter?
  - When dealing with climate-related issues, what temporary solutions have been utilized, if any?

### Topic 1:

- From your perspective, how vulnerable do you think The Square is to climate-related challenges?
- What measures (could be temporary) or strategies do you believe could be implemented to enhance the climate resiliency of The Square?
  - Are there any barriers or limitations you foresee in implementing these measures?

- What do you see the general public do to adapt to climate-related issues when they come to The Square?

### **Wrap-Up**

- Are there any individuals or organizations with expertise in climate resiliency or sustainability that you recommend we connect with for further insights?
- Would you be interested in reviewing our findings and recommendations later in the process to provide feedback or help refine our conclusions (expected in April?)
- Please feel free to share any additional thoughts or information, and don't hesitate to reach out if you have any questions or further input.

## Presenters - Focus Group

Name of facilitator(s)	
Names of participants	
Date/time of conversation	
Location (or note virtual platform)	

### Introduction

[Greeting]

Before we get started on the questions, I wanted to provide you with some context for this conversation. As you may be aware, we are working with Pioneer Courthouse Square Incorporated in order to gain a more comprehensive understanding of the specific impacts that climate-related risks have on this public space, (The Square), and what initiatives to mitigate those risks should be pursued.

This is purposefully broad in order for us to explore a full range of possible solutions or initiatives derived from what we capture through these interviews.

We wanted to talk to you all specifically because your experiences as event programmers and cultural representatives provide you with a unique perspective on The Square's challenges. So that is the background. In terms of this interview process, I have a series of questions touching on different topics, do you have any questions up front?

We have a couple questions prepared relating to personal experiences at The Square, here are a few quick ones to get us started.

- Can you provide a brief overview of your organization and describe your connection to Pioneer Courthouse Square Incorporated?

### Topic 1:

- Can you describe any past events that were directly impacted by weather conditions? How did these conditions affect the event's execution, attendance, or overall success?
- What strategies or contingency plans have you developed in order to adapt to unpredictable weather or climate conditions during your events (here at The Square or anywhere)? How effective were those strategies in mitigating impacts?
- How could the design/ procedures at the square better supported your event in re: weather?
- Reflecting on past events, what lessons have you learned about preparing for and responding to weather events? How have these lessons informed planning for future events?
- Are there any innovative or creative solutions you've considered or implemented to address climate challenges during your events? How have these solutions been received by participants and stakeholders?

**Topic 2:**

- Have extreme weather events (such as extreme heat, rain, or air quality concerns) forced you to alter the logistics, timing, or location of any events (here at The Square or anywhere)? Could you share how you navigated these changes?
- How do you communicate with your attendees about potential weather events or disruptions to your events? What channels or methods have proven most effective?

**Wrap-Up**

- Are there any individuals or organizations with expertise in climate resiliency or sustainability that you recommend we connect with for further insights?
- Would you be interested in reviewing our findings and recommendations later in the process to provide feedback or help refine our conclusions (expected in April?)
- Please feel free to share any additional thoughts or information, and don't hesitate to reach out if you have any questions or further input.

## Operators: Tenants - Focus Group

Name of facilitator(s)	
Names of participants	
Date/time of conversation	
Location (or note virtual platform)	

### Introduction

[Greeting]

To give some context, we are responding to the growing need to address climate change as it pertains to The Square. There has been an increase in climate-related issues here at The Square. Myself and other students are trying to figure out ways to make this public space more climate resilient moving forward. We'll be giving our recommendations to Pioneer Courthouse Square Incorporated and this conversation will inform our recommendations.

We wanted to talk to you specifically because you are here on a daily basis and have valuable insight about the general public's attitude and behaviors while at The Square as well as personal experience with extreme weather events. So that is the background. In terms of this interview process, I have a series of questions touching on different topics, do you have any questions up front?

We have a couple questions prepared relating to personal experiences at The Square, here are a few quick ones to get us started.

- Can you provide a brief overview of your organization and describe your connection to Pioneer Courthouse Square Incorporated?

### Topic 1:

- Can you share any significant challenges your business or organization has faced due to extreme weather events while located at The Square?
  - How have those challenges affected your daily operations, customer flow, or service delivery? What adaptations or changes have you implemented in response?
- Have you experienced any infrastructure-related issues (e.g. flooding, heat damage) due to extreme weather? How have those issues been addressed, and what improvements would you recommend?
- What sustainability practices or initiatives have you implemented within your own space to mitigate environmental impacts?
  - Are there any additional practices your business is considering?

## Topic 2:

- In your opinion, what actions or improvements could be made at The Square to enhance its climate resiliency?
  - *How could tenants like yourself contribute to these efforts?*
- What kind of support, resources, or information would be most helpful to you in making your operations more climate resilient?
- Looking ahead, what are your biggest concerns regarding the climate on your operations here at The Square? Conversely, what opportunities do you see for innovation or improvement in this area?

## Wrap-Up

- Are there any individuals or organizations with expertise in climate resiliency or sustainability that you recommend we connect with for further insights?
- Would you be interested in reviewing our findings and recommendations later in the process to provide feedback or help refine our conclusions (expected in April?)
- Please feel free to share any additional thoughts or information, and don't hesitate to reach out if you have any questions or further input.

## Downtown Advocates - Interviews

Name of interviewer(s)	
Name of interviewee(s)	
Date/time of conversation	
Location (or note virtual platform)	

### Introduction

[Greeting],

Before we get started on the questions, I wanted to provide you with some context for this conversation. Periods of extreme heat, wildfire smoke-filled environments, prolonged and excessive periods of rain, and other extreme conditions are adversely affecting the ability for the public to gather at The Square. For The Square to remain a viable community asset, it is crucial that a better understanding of how to adapt to ever-increasing climate change impacts is established.

As you may be aware, we are working with Pioneer Courthouse Square Inc., the nonprofit that manages The Square, in order to gain a more comprehensive understanding of the specific impacts that climate-related risks have on this public space (The Square) and what initiatives to mitigate those risks should be pursued. Climate resilience is about making The Square strong to handle challenges posed by weather impacts. This means preparing for and bouncing back from extreme weather events, like storms or heat waves, and adapting to changing climate conditions to keep The Square a safe and enjoyable place for everyone.

A *Stronger Square* aims to do this by identifying potential climate resiliency initiatives that would ensure The Square's ability to continue to serve the community for years to come.

*Our project* is an effort to provide a more comprehensive understanding of the impacts that climate change will have on Pioneer Courthouse Square over the next 20 years and what initiatives should be pursued to lessen those impacts. Importantly, *this project* will provide a menu of *potential* climate resiliency initiatives for The Square; it will *not* propose a final design for The Square, as any changes to The Square would be decided in future efforts and involve additional public engagement.

This is purposefully broad in order for us to explore a full range of possible solutions or initiatives derived from what we capture through these interviews.

We wanted to talk to you because it is important to understand the strategic direction and integration of climate resilience citywide and work closely with The Square because you might have unique insight and knowledge about the specific challenges that they face. Your insights are crucial for aligning project goals with citywide initiatives and ensuring that actions taken are both impactful and sustainable over the long term. So that is the background. In terms of this interview process, I have a series of questions touching on different topics, do you have any questions up front?

Okay... Let's start with an easy question:

- Can you give us a *brief* overview of your organization in your own words – how are you connected to PCSI?

#### **Topic 1:**

- From your perspective, what are the primary climate-related challenges facing The Square and the broader downtown area?
- How do you believe extreme weather events have impacted or could impact the economic and social vibrancy of The Square?
- Are there any existing initiatives or programs your organization is involved in that address climate resilience within the downtown area?
  - How would these initiatives impact The Square?

#### **Topic 2:**

- How does enhancing climate resilience at The Square align with your organization's broader goals for the downtown area's development?
- What opportunities do you see for mitigating climate challenges and enhancing resilience at The Square?
  - How can these efforts contribute to the overall appeal and functionality of the downtown area?

#### **Topic 3:**

- Based on your experience and insights, what recommendations would you make for integrating climate resilience into the planning and development of The Square?
- How can collaboration between your organization, other downtown advocates, and The Square enhance efforts towards climate resilience?
  - Are there any specific partnerships you envision as particularly effective?

#### **Wrap-Up**

- Are there any individuals or organizations with expertise in climate resiliency or sustainability that you recommend we connect with for further insights?
- Would you be interested in reviewing our findings and recommendations later in the process to provide feedback or help refine our conclusions (expected in April?)
- Please feel free to share any additional thoughts or information, and don't hesitate to reach out if you have any questions or further input.

## Owners/Caretakers - Interviews

Name of interviewer(s)	
Name of interviewee(s)	
Date/time of conversation	
Location (or note virtual platform)	

### Introduction

[Greeting],

Before we get started on the questions, I wanted to provide you with some context for this conversation. Periods of extreme heat, wildfire smoke-filled environments, prolonged and excessive periods of rain, and other extreme conditions are adversely affecting the ability for the public to gather at The Square. For The Square to remain a viable community asset, it is crucial that a better understanding of how to adapt to ever-increasing climate change impacts is established.

As you may be aware, we are working with Pioneer Courthouse Square Inc., the nonprofit that manages The Square, in order to gain a more comprehensive understanding of the specific impacts that climate-related risks have on this public space (The Square) and what initiatives to mitigate those risks should be pursued. Climate resilience is about making The Square strong to handle challenges posed by weather impacts. This means preparing for and bouncing back from extreme weather events, like storms or heat waves, and adapting to changing climate conditions to keep The Square a safe and enjoyable place for everyone.

A *Stronger Square* aims to do this by identifying potential climate resiliency initiatives that would ensure The Square's ability to continue to serve the community for years to come.

*Our project* is an effort to provide a more comprehensive understanding of the impacts that climate change will have on Pioneer Courthouse Square over the next 20 years and what initiatives should be pursued to lessen those impacts. Importantly, *this project* will provide a menu of *potential* climate resiliency initiatives for The Square; it will *not* propose a final design for The Square, as any changes to The Square would be decided in future efforts and involve additional public engagement.

This is purposefully broad in order for us to explore a full range of possible solutions or initiatives derived from what we capture through these interviews.

We wanted to talk to you because it is important to understand the strategic direction and integration of climate resilience citywide and work closely with The Square because you might have unique insight and knowledge about the specific challenges that they face. Your insights are crucial for aligning project goals with citywide initiatives and ensuring that actions taken are both impactful and sustainable over the long term. So that is the background. In terms of this interview process, I have a series of questions touching on different topics, do you have any questions up front?

Okay... Let's start with an easy question:

- Can you give us a *brief* overview of your organization in your own words – how are you connected to PCSI?

**Topic 1:**

- How does climate resilience fit into the city's strategic vision for The Square, especially considering its historical significance and role as a community gathering space?
- In your opinion, what are the primary challenges and opportunities in enhancing climate resilience at The Square?
- What adaptation strategies do you believe are most critical for addressing the impacts of climate change on The Square's infrastructure?

**Topic 2:**

- How do you envision engaging various stakeholders, including businesses, residents, and advocacy groups, in the process of enhancing climate resilience at The Square?
- From your perspective, what initiatives or projects have been most impactful in promoting resilience within urban spaces, and how can these successes be replicated at The Square?
- Looking ahead, what innovative approaches or technologies do you see as pivotal for advancing resilience at The Square?

**Wrap up:**

- Based on your experience and expertise, what advice or recommendations would you offer for the ongoing efforts to enhance resilience at The Square?
- Are there any individuals or organizations with expertise in climate resiliency or sustainability that you recommend we connect with for further insights?
- Would you be interested in reviewing our findings and recommendations later in the process to provide feedback or help refine our conclusions (expected in April?)
- Please feel free to share any additional thoughts or information, and don't hesitate to reach out if you have any questions or further input.

## Architects and Urban Planners - Interviews

Name of facilitator(s)	
Names of participants	
Date/time of conversation	
Location (or note virtual platform)	

### Introduction

[Greeting]

Before we get started on the questions, I wanted to provide you with some context for this conversation. Periods of extreme heat, wildfire smoke-filled environments, prolonged and excessive periods of rain, and other extreme conditions are adversely affecting the ability for the public to gather at The Square. For The Square to remain a viable community asset, it is crucial that a better understanding of how to adapt to these climate-related impacts is established.

As you may be aware, we are working with Pioneer Courthouse Square Inc., the nonprofit who manages The Square, in order to gain a more comprehensive understanding of the specific impacts that climate-related risks have on this public space (The Square) and what initiatives to mitigate those risks should be pursued. Climate resilience is about making The Square able to better handle challenges posed by weather impacts. This means preparing for and bouncing back from extreme weather events, like storms or heat waves, and adapting to changing climate conditions to keep The Square a safe and enjoyable place for everyone.

A Stronger Square aims to do this by identifying potential climate resiliency initiatives that would ensure The Square's ability to continue to serve the community for years to come.

Our project is an effort to provide a more comprehensive understanding of the impacts that climate change will have on The Square over the next 20 years and what initiatives should be pursued to lessen those impacts. Importantly, this project will provide a menu of potential climate resiliency initiatives for The Square; it will not propose a final design for The Square, as any changes to The Square would be decided in future efforts and involve additional public engagement.

This is purposefully broad in order for us to explore a full range of possible solutions or initiatives derived from what we capture through these interviews.

We wanted to talk to you because \_\_\_\_\_ and work closely with The Square because you might have unique insight and knowledge about the specific challenges that they face. So that is the background. In terms of this interview process, I have a series of questions touching on different topics, do you have any questions up front?

Okay... Let's start with an easy question:

- Can you give us a brief overview of your organization in your own words – how are you connected to PCSI?

### Topic 1: Climate Related Issues

- Has your firm started to create resilient built systems (improvements) and what do these look like?
- What patterns have you witnessed in your field about programming climate resilient spaces? There are firms that have started to tackle this: modular timber, creating human scale, tree canopied streetscapes, is this a trend that is growing/finding traction?
  - How effective do you perceive these programs to be in addressing climate-related issues?
- In your opinion, what are the most pressing extreme weather events that could impact The Square in the future?
  - Are there any climate-related events or patterns that have already affected activities, events, or usage within The Square?

## **Topic 2: Interventions**

- Green Infrastructure and Public Spaces:
  - How can green infrastructure be incorporated into The Square to mitigate climate-related challenges? Could you give examples of specific projects or initiatives?
  - In what ways can the redesign or adaptation of public spaces contribute to climate resiliency at The Square?
- Building Materials and Construction Techniques:
  - Are there any particular building materials or construction techniques that you believe are crucial for future developments at The Square to ensure climate resiliency?
  - How do these materials or techniques compare in terms of cost, sustainability, and effectiveness to traditional methods?
- Water Management Strategies:
  - What water management strategies (e.g., rain gardens, permeable pavements) could be effective at The Square for addressing issues such as flooding?
  - How can these strategies be aesthetically integrated into the urban landscape of The Square?
- Heat Mitigation:
  - What design interventions do you suggest for mitigating the urban heat island effect within The Square, especially during extreme heat events?
  - How can shade structures, vegetation, or material choices play a role in reducing ambient temperatures?
- Adaptive Reuse and Retrofitting:
  - Can you discuss the importance of adaptive reuse or retrofitting existing structures within The Square for enhancing climate resilience?
  - What challenges and opportunities do these practices present from a design perspective?

## **Wrap-Up**

- Are there any individuals or organizations with expertise in climate resiliency or sustainability that you recommend we connect with for further insights?
- Would you be interested in reviewing our findings and recommendations later in the process to provide feedback or help refine our conclusions (expected in April)?

- Please feel free to share any additional thoughts or information, and don't hesitate to reach out if you have any questions or further input.

## Historical Landmark Process - Focus Group

Name of facilitator(s)	
Names of participants	
Date/time of conversation	
Location (or note virtual platform)	

### Introduction

[Greeting]

To give some context, we are responding to the growing need to address climate change as it pertains to The Square. There has been an increase in climate-related issues here at The Square. Myself and other students are trying to figure out ways to make this public space more climate resilient moving forward. We'll be giving our recommendations to Pioneer Courthouse Square Inc., the nonprofit that manages The Square, and this conversation will inform our recommendations.

We wanted to talk to you specifically because you are here on a daily basis and have valuable insight about the general public's attitude and behaviors while at The Square. So that is the background. In terms of this interview process, I have a series of questions touching on different topics, do you have any questions up front?

We have a couple questions prepared relating to personal experiences at The Square, here are a few quick ones to get us started.

- Can you give us a brief overview of your organization in your own words – how are you connected to PCSI?

### Topic 1: Regulatory and Procedural Landscape

- How do current permitting processes and regulations accommodate or challenge the integration of climate resiliency measures in historical landmarks? IE. How much change can \*actually\* happen at the Square? What are the biggest barriers today to altering a historic landmark?
- Are there any specific examples where climate resilience efforts were successfully integrated within the constraints of historical preservation guidelines? How was this achieved?

### Topic 2: Urban Design and Physical Alterations

- Given the increasing threats of wetter conditions, hotter temperatures, and wildfire smoke, what design strategies could be considered to protect historical landmarks while maintaining their integrity?
- Can you discuss any case studies or projects where physical alterations were made to a historical landmark to enhance its climate resilience? What were the outcomes?

## **Wrap-Up**

- Are there any individuals or organizations with expertise in climate resiliency or sustainability that you recommend we connect with for further insights?
- Would you be interested in reviewing our findings and recommendations later in the process to provide feedback or help refine our conclusions (expected in April?)
- Please feel free to share any additional thoughts or information, and don't hesitate to reach out if you have any questions or further input.

## Email Template for Interview/Focus Group Invitation

Subject Line: Climate Resiliency at The Square Interview

[Greeting]

We are a team of Urban and Regional Planning graduate students at Portland State University working with Pioneer Courthouse Square Inc to provide a more comprehensive understanding of the impacts that climate change will have on Pioneer Courthouse Square over the next 20 years and what initiatives should be pursued to mitigate those impacts while also contributing to a more equitable and resilient Square.

If it is possible, we would love to interview you, and get your take on a few issues surrounding The Square (city, neighborhood, built environment, etc).

We prefer in person, but we understand this is not always feasible, so we also can organize a Zoom meeting or just an email interview. We would be incredibly grateful for your help and expertise and hope to hear back from you. These interviews will inform our further outreach and a menu of options that we are developing for Pioneer Courthouse Square Inc. We would really appreciate your time if an interview would be possible.

Please let me know if you have any questions or if you might be interested.

Thank you,

## **Appendix E: Options Menu Table**



5/26/2024

### **Introduction**

The Options Menu for A Stronger Square identifies different climate resiliency initiatives that could be implemented at Pioneer Courthouse Square and includes information about each initiative to help decision-makers evaluate which initiatives could be the best fit for The Square.

The red tab has initiatives to address extreme heat.

The blue tab has initiatives to address excessive rain.

The yellow tab has initiatives to address wildfire smoke.

The purple tab has initiatives that do not address a specific impact, but rather focus on communication and connection to build resiliency more broadly.

Initiatives that are highlighted in green meet preferences of 50% or more of all survey respondents (Preferences were for shade, covered areas, free drinking water, misters, and greenery)

Climate resiliency initiative	Description	Effectiveness of mitigating climate impacts (Low, Medium, High)	Who it benefits	Start-up Requirements: Cost (\$-\$-\$)	Start-up Requirements: Timeline (Short, Medium, Long)	Maintenance/Operations Requirements: Monetary Cost (\$-\$-\$)	Maintenance/Operations Requirements: Effort (Low, Medium, High)	Notes	Sources	Examples
Additional vegetated areas/ features	-Seasonal Garden beds -Rain Gardens - Updated landscaping	Medium	Event organizers, Event attendees, Tenants, Food carts, Downtown users, Visitors	\$	Medium	\$\$ - \$\$\$	High	Add some biophilic design principles. Maintenance requires watering, caretaking. Requires time for vegetation to grow	<a href="#">What is Biophilic Design?   The Sill</a>	1. <a href="#">Exchange Square</a>
Car-less trips	-Incentive non-driving program	Low	Event attendees, Downtown users, Visitors	\$	Short	\$	Medium	Reduces heat sources in environment. Managing/ administering could represent significant man hours. Could be quite costly if it's some kind of financial incentive.		1. <a href="#">Week without Driving campaign</a>
Cool roof	-Cool roof treatments (Light coatings/ treatments)	High	Tenants, Downtown users, Visitors	\$\$ - \$\$\$	Medium	\$\$	Low		<a href="#">Cool Roofs   Department of Energy</a>	1. <a href="#">NYC Cool/ green roofs in parks</a>
Cooling structures	-Features that passively cool air through physical design	Medium	Event organizers, Event attendees, Food carts, Downtown users, Visitors	\$\$\$	Long	\$\$	Medium-High	Creates cooling spaces, ambient air cooling	<a href="#">Passive Evaporate Cooling Wall</a>	1. <a href="#">The "Labyrinth" in Federation Square, AUS,</a> 2. <a href="#">Passive evaporative cooling wall</a>
Fans	-Large box fans	Low - Medium	Event organizers, Event attendees, Tenants, Food carts, Downtown users, Visitors	\$\$	Short	\$\$	Low	Air circulation, air cooling. \$300-1,455 depends on industrial level strength	<a href="#">Recreation Fans - Heavy Duty Fans for Theme Parks, Zoos, and Entertainment Facilities — Patterson Fan Co.</a>	<a href="#">Mist Works: Theme park fans and misters</a>
Fountains/ non-interactive features	-Wall Fountains - Freestanding Visual Fountain	Medium	Event organizers, Event attendees, Tenants, Food carts, Downtown users, Visitors	\$\$\$	Long	\$\$\$	High	Go be similar to Teacher's Fountain at Director Park /semit interactive	<a href="#">How to Incorporate Water in Your Architectural Project</a>	1. <a href="#">City Park Fountain, Beaverton</a>

Climate resiliency initiative	Description	Effectiveness of mitigating climate impacts (Low, Medium, High)	Who it benefits	Start-up Requirements: Cost (\$-\$-\$)	Start-up Requirements: Timeline (Short, Medium, Long)	Maintenance/Operations Requirements: Monetary Cost (\$-\$-\$)	Maintenance/Operations Requirements: Effort (Low, Medium, High)	Notes	Sources	Examples
Green roof	-Planted living roof	High	Tenants, Downtown users, Visitors	\$\$\$	Medium	\$\$ - \$\$\$	High	Also contributes to drainage. Tenants/ occupants of buildings will see improved energy efficiency, cooler temps in summer. Requires consistent watering, tending, pruning, landscaping. \$10-50/sq ft Depends on substrate and waterproof membrane, plant choices, etc. Must allow time for vegetation to grow	<a href="#">NYC Parks Green Roof</a>	1. <a href="#">The Solaire</a>
Holding events later in the evening/earlier in the morning	-Shifting schedule	High	Event attendees, Downtown users, Visitors	\$	Short	\$	Low			1. <a href="#">Paris parks "cooling initiative"</a> , 2. <a href="#">LA County Parks After Dark program</a>
Improve efficiency of cooling systems	-More efficient AC or heat pump system	Medium - High	Tenants, Downtown users, Visitors	\$\$\$	Medium	\$\$\$	Medium	Significant cost to upgrade, long-term payouts, can be bad for the environment, other intermediate steps first	<a href="#">How to Increase AC Airflow to Improve Cooling &amp; Circulation</a>	
Improved weatherization	-Improved ventilation - Solar shading	Low - Medium	Tenants, Food carts, Downtown users, Visitors	\$\$ - \$\$\$	Medium	\$\$\$	Medium	<i>Significant</i> cost to upgrade systems, possible to partner with city partners or companies like PGE, energy grants might be available. Requires routine filter improvement.	<a href="#">Small Business Weatherization: Five Lessons Learned • CET</a>	1. <a href="#">Historic Structures example</a>
Increasing light colored surfaces	-Reflective coatings - Light colored paint -- Wood/timber	Medium - High	Event organizers, Event attendees, Tenants, Food carts, Downtown users, Visitors	\$ - \$\$	Short	\$	Low	Existing tenants could see better energy efficiency/ reduced energy costs in summer, Reflective surfaces-- see "reflective pavement"	<a href="#">Ten significant mass-timber buildings that changed the way we think about wood</a>	1. <a href="#">Forte</a>
Install heat sensor equipment	-Commercial Heat/Smoke Detectors	Low	Event organizers, Event attendees, Tenants, Food carts, Downtown users, Visitors	\$\$	Less	\$	Low-Medium	Can also pair with smoke detector. \$1,000-2000 starting cost	<a href="#">Heat Sensors Program</a>	<a href="#">Fairly cheap easy to mount heat sensor</a>

Climate resiliency initiative	Description	Effectiveness of mitigating climate impacts (Low, Medium, High)	Who it benefits	Start-up Requirements: Cost (\$-\$-\$)	Start-up Requirements: Timeline (Short, Medium, Long)	Maintenance/Operations Requirements: Monetary Cost (\$-\$-\$)	Maintenance/Operations Requirements: Effort (Low, Medium, High)	Notes	Sources	Examples
Interactive water features	-Water pads -Play Fountains	High	Event attendees, Tenants, Food carts, Downtown users, Visitors	\$\$\$	Long	\$\$\$	High	Interviewee Carol noted that interactive water features already present at Director park-- no need to "duplicate"	<a href="#">Things to consider when constructing &amp; operating an interactive fountain</a>	1. <a href="#">Murase Plaza</a>
Large permanent shade structures	-Physical structures - Art Installation	High	Event organizers (not all), Event attendees, Tenants, Food carts, Downtown users, Visitors	\$\$\$	Long	\$\$	Low	Possibility that neighboring uses/buildings will have some windows blocked. built alterations to space (4-6 months). Monetary startup costs range from \$3,000-\$30,000 depending on scale and technicality.	<a href="#">Types of Shade Structures</a>	1) <a href="#">Haram Piazza</a> , 2) <a href="#">Metropol Parasol</a> , 3) <a href="#">London's Serpentine Pavilion</a> , 4) <a href="#">Blanton Museum canopy</a> 5) <a href="#">Proposed design for Jacaranda Ave. in Phoenix</a>
Large temporary shade installments	-Umbrellas -Flags - Sails	Medium	Event organizers, Event attendees, Tenants, Food carts, Downtown users, Visitors	\$\$ - \$\$\$	Medium	\$\$	Medium	Can be themed or coordinated with festivals or events. Maintenance includes adjusting canopy, rips, etc. \$200-1,650 depends on size.		1) <a href="#">Flag canopies in Oaxaca, MX</a>
Lighting features	-Light features - Modular seating/ light features -String lights	Low	Event organizers, Event attendees, Tenants, Food carts, Downtown users, Visitors	\$ - \$\$\$	Medium	\$ - \$\$	Medium	Maintenance/operations requirements include replacement bulbs. Lighting would address climate change indirectly as it would support events/usage of the park when it is dark/at night, when temperatures are cooler.	<a href="#">Tones of the City: creating urban spaces that evoke the senses and energise cities - Arup</a>	1. <a href="#">"The Park", Las Vegas</a> , 2. <a href="#">Lighted seating art piece, South Bend, IN</a>
Misters	-Temporary or Permanent Misters/Misting System	High	Event organizers, Event attendees, Tenants, Food carts, Downtown users, Visitors	\$\$	Medium	\$\$	Medium-High	Can hook up to water green infrastructure or seperate misting fog system. \$400-950 stand alone, \$2,700/average 'misting system'	<a href="#">Italgog Misting Pumps, Nozzles, Fittings, fans and automation systems</a>	1. <a href="#">Restaurant Mister, transferable to park or canopy space</a>

Climate resiliency initiative	Description	Effectiveness of mitigating climate impacts (Low, Medium, High)	Who it benefits	Start-up Requirements: Cost (\$-\$-\$)	Start-up Requirements: Timeline (Short, Medium, Long)	Maintenance/Operations Requirements: Monetary Cost (\$-\$-\$)	Maintenance/Operations Requirements: Effort (Low, Medium, High)	Notes	Sources	Examples
Outdoor water bottle filling stations	- free drinking water permanent installment	High	Event organizers, Event attendees, Tenants, Food carts, Downtown users, Visitors	\$\$	Medium	\$	Medium	Likely a City of Portland investment or partnership. Could combine this with misters. Alternatively, could work to promote existing locations of drinking water stations at The Square (in bathrooms and the Benson Bubblers)	<a href="#">Benson Bubblers   Portland.gov</a>	1. <a href="#">Paris water fountains + misters</a> , <a href="#">Wallace Fountains</a>
Permeable pavement-non-vegetation	-Porous/ Permeable Asphalt -Concrete - Light colored paving blocks	High	Event organizers, Event attendees, Tenants, Food carts, Downtown users, Visitors	\$\$\$	Long	\$\$	Low	Also contributes to drainage. 7- >20 yr service life, may indicate low maintenance needs. \$2- \$10/ sq ft	<a href="#">Porous Pave</a>	1. <a href="#">Philadelphia Water Department</a>
Permeable pavement-vegetation	-Grass pavers with (plastic, metal,concrete) lattices for support	Medium	Food carts, Downtown users, Visitors	\$\$\$	Medium	\$\$	Medium	Also contributes to drainage. >10 yr estimated service life-- low ish maintenance needs. \$1.50-\$5.75/ sq ft.	<a href="#">Reducing Urban Heat Islands: Compendium of Strategies, Cool Pavements</a>	1. <a href="#">Chicago's Green Alleys program</a>
Planting new trees	-Tree boxes -Lots of formally removed trees	High	Event organizers, Event attendees, Tenants, Food carts, Downtown users, Visitors	\$\$	Medium	\$ - \$\$	Medium	Possible to partner with city. \$300 average tree. Tree growth period takes years.	<a href="#">Tree Canopy and Forest Management   Portland.gov</a>	
Provide first aid tents during events	-Tent space for medical	High	Event organizers, Event attendees, Tenants, Food carts, Downtown users, Visitors	\$	More	\$\$	Low	Temporary/ multi-use outdoor tent permit. \$220-250 starting cost		1. <a href="#">Aid Tent ideas</a> 2. <a href="#">Aid tents available at State Fair of Texas concerts</a>
Provide free drinking water during events	-Portable filling station - passing out water bottles -Sustainable water bottles	High	Event organizers, Event attendees, Tenants, Food carts, Downtown users, Visitors	\$	Short	\$\$	Medium	Reusable bottles(maybe with logo) Might partner with City of Portland: Water Event Stations. \$300/a day security deposit to rent WES	<a href="#">Water Event Stations   Portland.gov</a>	1. <a href="#">Custom Logo reusable water bottles</a> 2. <a href="#">Hydration Stations Gresham, Oregon</a>

Climate resiliency initiative	Description	Effectiveness of mitigating climate impacts (Low, Medium, High)	Who it benefits	Start-up Requirements: Cost (\$-\$-\$)	Start-up Requirements: Timeline (Short, Medium, Long)	Maintenance/Operations Requirements: Monetary Cost (\$-\$-\$)	Maintenance/Operations Requirements: Effort (Low, Medium, High)	Notes	Sources	Examples
Reflective pavement	-Reflective coatings and clear/ resin binders	Medium	Event attendees, Downtown users, Visitors	\$\$	Short	\$\$	Low	1) Potential pedestrian/ motorist discomfort from increased glare. 2) Increased heat/ energy load for adjacent buildings (more sunlight reflected through windows/ onto walls). Solar reflectivity of high albedo pavements can decrease by 20% after one year, so maintenance could be regular/ costly. However, could reduce maintenance needs for underlying material. \$1.70 to \$37.75 per m2. Most take 1-2 days to apply, some require proprietary equipment to install	<a href="#">Cool Pavement Interventions</a>	1. <a href="#">LA's "Cool Streets" initiative</a>
Temporary cooling centers	-Tents that provide cooling (fans or AC)	High	Event organizers, Event attendees, Tenants, Food carts, Downtown users, Visitors	\$\$ - \$\$\$	Medium	\$\$ - \$\$\$	Medium	Regulate physiology	<a href="#">How to Turn Facilities into Public Cooling Centers During Extreme Heat</a>	
Temporary ground coverings	-Decorative -Purely utilitarian	High	Event organizers, Event attendees, Food carts, Downtown users, Visitors	\$\$	Short - Medium	\$	Medium	Storage could pose an issue. Could potentially pose some mobility issues for Pw mobility devices	<a href="#">Flying Grass Carpet</a>	1. <a href="#">"Flying grass carpet"</a>
Train staff to respond to heat-related illness	-Provide training on identifying symptoms of heat-related illness and how to respond to this - Current best practices	High	Event organizers, Event attendees, Tenants, Food carts, Downtown users, Visitors	\$	More	\$\$	Medium	Numerous local non-profits offer health training, volunteer opportunities. Pacific Patrol Services (security and bathroom attendant) are already doing something like this. Security and attendant are trained to identify signs of illness and alert medical services if needed/ask the person if they need assistance.		

Climate resiliency initiative	Description	Effectiveness of mitigating climate impacts (Low, Medium, High)	Who it benefits	Start-up Requirements: Cost (\$-\$-\$)	Start-up Requirements: Timeline (Short, Medium, Long)	Maintenance/Operations Requirements: Monetary Cost (\$-\$-\$)	Maintenance/Operations Requirements: Effort (Low, Medium, High)	Notes	Sources	Examples
Update HVAC systems in indoor spaces	-Improved upgrades to HVAC	High	Tenants, Downtown users, Visitors	\$\$\$	Medium	\$\$\$	Medium	Upgrading is very expensive, especially with extensions for filtering smoke filled air, per Darryl Brooks. Requires routine filter improvement.	<a href="#">How to Run Your HVAC System During Wildfire Season - Vanport Mechanical/ 2.</a> Interview with Daryl Brooks	

Climate resiliency initiative	Description	Effectiveness of mitigating climate impacts (Low, Medium, High)	Who it benefits	Start-up Requirements: Cost (\$-\$-\$)	Start-up Requirements: Timeline (Short, Medium, Long)	Maintenance/Operations Requirements: Monetary Cost (\$-\$-\$)	Maintenance/Operations Requirements: Effort (Low, Medium, High)	Notes	Sources	Examples
Permeable pavers	-Porpous/ Permeable Asphalt -Concrete	High	Event organizers, Event attendees, Tenants, Food carts, Downtown users, Visitors	\$\$\$	Long	\$\$	Low - Medium	Offer more effective stormwater drainage off the main plaze, water drains through pavers into permable membrane, might have a gravel layer above or below. Horizontal construction, material variability. \$10-30/sq ft.	<a href="#">What Are Permeable Pavers and How Do They Help with Water?</a>	1. <a href="#">Permeable Paver prototype</a>
Bioswales	-"Built-in" infrastructure	High	Event organizers, Event attendees, Tenants, Food carts, Downtown users, Visitors	\$\$\$	Medium	\$ - \$\$	Low - Medium	Effective at guiding stormwater run-off into green infrastructure (small gardens or landscaping) , creating areas for native plants and bee habitat (Nature based solutions). \$58/sq ft average including vegetation, mulit-layer substrate system, etc	<a href="#">Bioswales   Urban Green-blue Grids</a>	1. <a href="#">Bioswale prototype</a>
Rain Gardens	-Micro vegeated areas - Small landscaped drainage areas	Low - Medium	Event organizers, Event attendees, Tenants, Food carts, Downtown users, Visitors	\$\$	Medium	\$ - \$\$	Low - Medium	Collect rain water runoff from building roofs into a garden, could trace through aquaduct. \$4-35/sq ft.	<a href="#">Soak Up the Rain: Rain Gardens   US EPA</a>	1. <a href="#">Royal Botanic Garden Edinburgh, Large Scale example</a>
Green Roof	-Permeable green living roof	Medium - High	Tenants, Downtown users, Visitors	\$\$\$	Medium - Long	\$\$ - \$\$\$	High	Help absorb rainwater away from "grey" or imperivous surface/surface areas. \$30 sq ft/ average commercial buildings need additional irrigation/tray systems. Must allow time for vegeation to grow. Maintenace requires ending, pruning, landscaping.	<a href="#">Portland Stormwater Management Resources - Soil Water Technologies</a>	<a href="#">Vancouver Convention Center</a>
Louvered Covers	-Attached Awning-- Remote Controlled Covers	Low - Medium	Event organizers, Event attendees, Food carts, Downtown users, Visitors	\$\$\$	Medium - Long	\$\$-\$	Low - Medium	\$55-\$125/ sq ft	<a href="#">Box-framed louvres shade board-marked concrete house in Tel Aviv</a>	1. <a href="#">Louvered Covers prototypes</a>
Umbrellas	-Retractable/Folding large umberalla structures /stand alone umberallas	High	Event organizers, Event attendees, Food carts, Downtown users, Visitors	\$\$\$	Medium - Long	\$\$ - \$\$\$	Medium - High	Can be dramatic and might not fit aesthetic of park. Maintenance costs/effort depending on technical level of devices. High start-up monetary cost for large permanent structures.	<a href="#">Medina Haram Piazza   Architect Magazine</a>	1. <a href="#">Medina Haram Piazza</a>

Climate resiliency initiative	Description	Effectiveness of mitigating climate impacts (Low, Medium, High)	Who it benefits	Start-up Requirements: Cost (\$-\$-\$)	Start-up Requirements: Timeline (Short, Medium, Long)	Maintenance/Operations Requirements: Monetary Cost (\$-\$-\$)	Maintenance/Operations Requirements: Effort (Low, Medium, High)	Notes	Sources	Examples
Waterproofing Materials. Water Resistent Barrier (WRB)	-Laminates - Treatments -Rubbers	Medium-High	Tenants, Food carts	\$\$-\$\$\$	Medium-Long	\$-\$	Low - Medium	Many levels of a building can be coated or can add WRB's	<a href="#">Types of Waterproofing Materials</a>	1. <a href="#">WRB Barrier</a>
Trail Tarps / Foldable Tents	-Pop-Up Coverings/Air tents	High	Event organizers, Event attendees, Food carts, Downtown users, Visitors	\$	Short	\$	Low	Plastic or water proof canvas -Can require outdoor tent permit. \$80-100 start.	<a href="#">Tents &amp; Awnings</a>	1. <a href="#">"Trail Tarps"</a>
Rain Barrels/Cisterns	-Rain Barrel next to buildings/collect runoff from roofs	Low - Medium	Event organizers, Event attendees, Tenants, Food carts, Downtown users, Visitors	\$	Short - Medium	\$	Medium	Collect rain water runoff from building roofs into a cistern/barrel. \$55-300 start	<a href="#">Stormwater Management - Tools for Conservation Design</a>	1. <a href="#">Rain Barrel</a>
Waterproof "tiles" and Mats/Coverings	-Industrial scale ground covers	Low	Event organizers, Event attendees, Food carts, Downtown users, Visitors	\$\$	Short - Medium	\$-\$	Low - Medium	Can be for entries for tenants and also as temporary floor covering during events. Requires replacement tiles. \$20 for set of 6 interlocking tiles. Start-up timeline dependent on scale	<a href="#">Which Flooring Materials Are Most Water Resistant?</a>	1. <a href="#">Polypropylene Patio tiles</a>

Climate resiliency initiative	Description	Effectiveness of mitigating climate impacts (Low, Medium, High)	Who it benefits	Start-up Requirements: Cost (\$-\$-\$)	Start-up Requirements: Timeline (Short, Medium, Long)	Maintenance/Operations Requirements: Monetary Cost (\$-\$-\$)	Maintenance/Operations Requirements: Effort (Low, Medium, High)	Notes	Sources	Examples
Air Quality Monitor	-Air quality monitoring station	Medium	Event organizers, Event attendees, Tenants, Food carts, Downtown users, Visitors	\$\$	Short - Medium	\$\$	Medium	Could be designed in a manner similar to the weather machine. Doesn't necessarily mitigate impacts, but would help in letting people know what the conditions are so that they can make informed choices. \$1,200-2,500 starting cost.		1. <a href="#">Air pollution monitors on the Big Island in Hawaii</a>
Clean Air Centers/Shelters	-Clean air shelters(permanent or temporary)	High	Event organizers, Event attendees, Tenants, Food carts, Downtown users, Visitors	\$\$\$	Long	\$\$ - \$\$\$	Medium - High	Similar to cooling structures, could serve both purposes	<a href="#">Identification of Cleaner Air Shelters/Spaces for Protection from Wildfire Smoke</a>	1. <a href="#">Wildfire Smoke and Clean Air Shelters</a>
Clean Air "Vestibules"/ Airlocks/Air Curtains for Food Carts	-Attachments to food carts	Low	Tenants, Food carts, Downtown users, Visitors	\$\$	Medium - Long	\$\$	Medium	These types of vestibules are common in cold climates, could be retrofitted for food carts so employees are less exposed to elements while working. up to \$10,000 Vestibule \$250-8,000 Air Curtains depends on size, grade, and quality.		1. <a href="#">Vestibule Enclosures</a>
Covered/Enclosed Seating Areas	-Enclosed seating areas with air purification systems-Temporary rolled up structures	High	Event organizers, Event attendees, Tenants, Food carts, Downtown users, Visitors	\$\$\$	Long	\$\$\$	Medium - High	Can also provide cooling and shelter from rain/ Might include "roll up" walls and doors so that could be open air when air quality is at healthy levels.		1. <a href="#">Porch Enclosure Systems</a>
N95 Mask Distribution Stations	-Mask distribution kiosks/stations	Low	Event organizers, Event attendees, Tenants, Food carts, Downtown users, Visitors	\$	Short	-\$-\$	Low - Medium	Not very effective method for mitigating smoke impacts. \$1,099 for whole sale. Maintenance costs dependent on scale.	<a href="#">Governor Hochul Announces One Million N95 Masks to be Made Available to New Yorkers as Effects of Canadian Wildfires Continue to Impact Air Quality in New York State</a>	

Climate resiliency initiative	Description	Effectiveness of mitigating climate impacts (Low, Medium, High)	Who it benefits	Start-up Requirements: Cost (\$-\$-\$)	Start-up Requirements: Timeline (Short, Medium, Long)	Maintenance/Operations Requirements: Monetary Cost (\$-\$-\$)	Maintenance/Operations Requirements: Effort (Low, Medium, High)	Notes	Sources	Examples
Update HVAC systems	-Improved upgrades to HVAC	High	Tenants, Downtown users, Visitors	\$\$\$	Long	\$\$\$	High	Upgrading is very very expensive, but doable, per Darryl Brooks	<a href="#">How to Run Your HVAC System During Wildfire Season - Vanport Mechanical</a>	
Portable air purifiers	-Portable air purifiers	Medium	Tenants, Food carts, Downtown users, Visitors	\$\$	Short - Medium	\$\$-	Low - Medium	Intermediate step to HVAC upgrade. \$300-700 average starting cost. Maintenance costs dependent on scale. Requires routine filter improvement		1. <a href="#">Air purifiers ideas</a>

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Climate-resiliency events and presenters	-Educational speakers Preparedness Workshops	Medium - High	Event organizers, Event attendees, Tenants, Food carts, Downtown users, Visitors	\$	Medium	\$ - \$\$	Low - Medium	Reach out to and partner with organizations (such as the City of Portland's Emergency Management Department) to plan events and programs at The Square that help build climate resilience. Create events that help intentionally build social infrastructure, which is an important part of climate resilience.	<a href="#">Climate Events   United Nations</a>	<a href="#">Climate Week, NYC</a>
Create a policy around climate change impacts	-Internal policies: Determining at what point events need to be delayed, modified, or canceled -Future Vision Document	Medium	Event organizers, Event attendees, Tenants, Food carts, Downtown users, Visitors	\$	Short - Medium	\$ - \$\$	Low	This would help PCSI and the public prepare for and respond to climate change impacts more readily. monitoring climate change impacts (temperature, precipitation, air quality), determining at what point events need to be delayed, modified, or canceled based on these impact indicators, and how to communicate with the public about the conditions and impacts. Start-up costs can be upwards of \$5,000 dependent on consultant.		<a href="#">City of Portland Parks</a>
Install power outlets for public use	- Add outdoor/protected power outlets	Low	Event organizers, Event attendees, Food carts, Downtown users, Visitors	\$\$	Medium	\$	Low	Similar to WiFi, having a power outlet to charge phones or other electronics can help allow people to access information and communicate with others can help them respond to climate change impacts. Also, during extreme weather events, people may lose power and could come to The Square to access power outlets. \$130-300/per outlet	<a href="#">Adding an Outdoor Outlet Part 1 of 2</a>	

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Install signage about climate resiliency	-Information Boards, - "Climate Maps"- Seasonal Banners- Wayfinding	Medium	Downtown users, Visitors	\$\$	Medium	\$ - \$\$	Low	Information about the different initiatives The Square is taking, reminders about actions individuals can take (drinking water, finding shade, etc) to mitigate climate change impacts on themselves, and/or educational information about what climate change and climate resiliency are. These could be temporary, like during a particular event or season, or permanent. \$165-710 average starting cost.		<a href="#">Ohio Department of Natural Resources</a>
Offer the Square as space during climate-related emergencies	-Partner with groups such as Portland's Neighborhood Emergency Team or the city to create public space protocol for emergencies	Low - Medium	Downtown users, Visitors	\$	Short - Medium	\$	Medium	This would help people responding to climate-change emergencies more effectively respond	<a href="#">Plan and design public open spaces incorporating disaster management strategies with sustainable development strategies</a>	
Promote WiFi access at The Square	-Free public Wifi allows people to access information about extreme weather and climate impacts	Low - Medium	Event organizers, Event attendees, Downtown users, Visitors	\$	Medium	\$ - \$\$	Low - Medium	The Square offers free public WiFi, which individuals could use to access information that could help them be more climate resilient-- such as information about cooling/warming centers, air quality, or weather patterns--and/or communicate with people or organizations who can help them respond to different climate impacts. While WiFi is offered, people may not be aware of this amenity at The Square, and PCSI could add signage or emphasize this amenity on the website to help increase awareness of this resource. \$127-273 average router \$5,000 "large/high end" router.	<a href="#">Smart City Wi-Fi Solutions: Enabling Public Access   Blu Wireless</a>	

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Renewable energy infrastructure	-Solar panels, -"Smart" Furniture -Energy Floors	Medium - High	Event organizers, Event attendees, Tenants, Food carts, Downtown users, Visitors	\$\$\$	Long	\$\$\$	High	Eventually the Square could instal solar panels, wind turbines, hydro-turbines, or "smart" furniture or floors that convert human movement into energy. Energy generated could be used on-site or off-site. During power outages caused by extreme weather events, The Square could potentially continue to have power by using onsite energy generation and help people respond to different climate emergencies. Start up cost can vary greatly.	<a href="#">Distributed Energy Planning for Climate Resilience</a>	<a href="#">Singapore, Smart City</a>