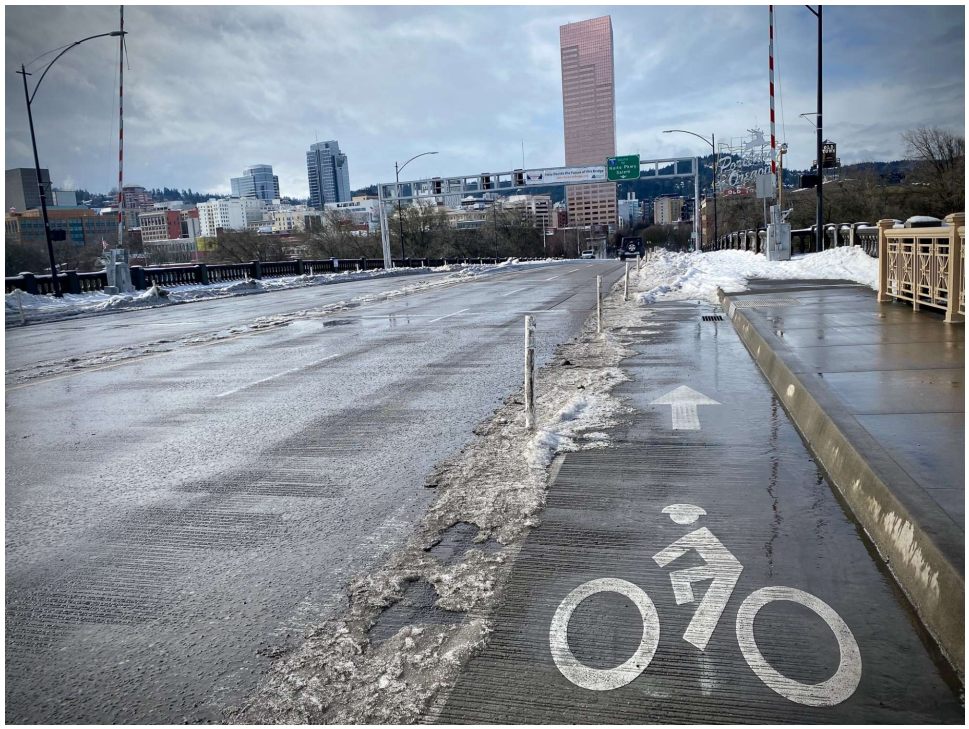
Portland Mitigation Action Plan

Jonna Papaefthimiou
Chief Resilience Officer
Portland Bureau of Emergency Management

Beth Gilden
Associate Director for Regional
Partnerships and Projects
Institute for Sustainable Solutions,
Portland State University

November 9, 2022



Institute for Sustainable Solutions
PORTLAND STATE UNIVERSITY

CITY OF PORTLAND OREGON 1851

PBEM

PBEM – ISS partnership

Institute for Sustainable Solutions matches the passion and expertise of PSU faculty and students with the experience and needs of community to build a more sustainable and resilient region. ISS focuses on collaboration as a foundation of their work.

ISS has worked for many years with the City on issues related to climate change and resilience. ISS leverages academic resources, including grant funding, applied research, internships, and class engagements to augment and inform City efforts.

Institute for Sustainable Solutions
PORTLAND STATE UNIVERSITY

PBEM

Steering Committee

Bureau of Emergency Management: Jonna Papaefthimiou, Chief Resilience Officer; Aaron Fox, Operations Specialist

Bureau of Environmental Services: Nishant Parulekar, Resilience Team Lead; Kate Carone, Environmental Program Coordinator

Parks and Recreation: Chris Silkie, Asset Management Program Manager; Laura Lehman, Senior Environmental Planner

Bureau of Planning and Sustainability: Sallie Edmonds, Environmental Planning Manager; Mindy Brooks, Environmental Planner

Office of Equity and Human Rights: Nickole Cheron, ADA Title II & Disability Equity Manager

Police Bureau: Edina Na Songkhla, Operations Specialist

Water Bureau: Kim Anderson, Emergency Manager

Bureau of Transportation: Emily Tritsch, Asset Manager; Courtney Duke, Senior Transportation Planner

Bureau of Development Services: Ericka Koss, Geotechnical Engineer; Anne Castleton, Emergency Management Project Manager

Portland Fire: Kim Kosmas, Senior Public Education Officer; Louisa Jones, Emergency Management Liaison; Steve Bregman, Emergency Operations Chief

Clackamas County: Jay Wilson, Resilience Coordinator

Multnomah County: David Lentzner, Senior Emergency Management Analyst

Institute for Sustainable Solutions
PORTLAND STATE UNIVERSITY

CITY OF PORTLAND OREGON 1851

PBEM

Presentation Overview

- Purpose of the plan
- Hazard summary
- Planning process
- Mitigation project highlights
- Next steps

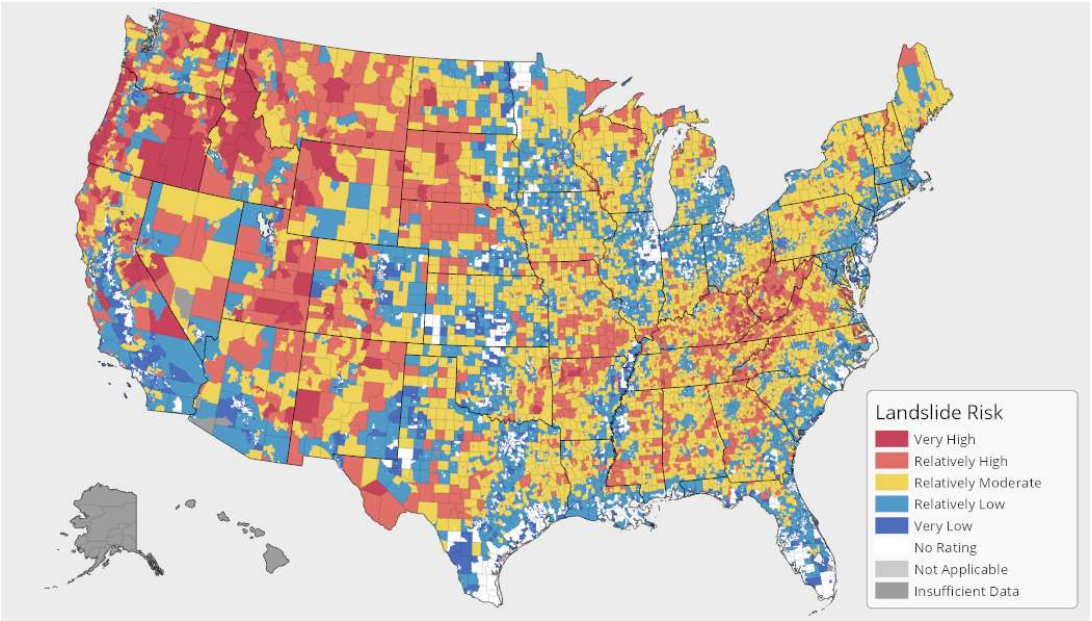
Institute for Sustainable Solutions
PORTLAND STATE UNIVERSITY

CITY OF PORTLAND OREGON 1851

PBEM

Purpose of the plan

- Systematic assessment of risk
- Strategy to reduce exposure
- Address disparate impacts
- Get money from FEMA



Institute for Sustainable Solutions
PORTLAND STATE UNIVERSITY

CITY OF PORTLAND OREGON 1851

PBEM

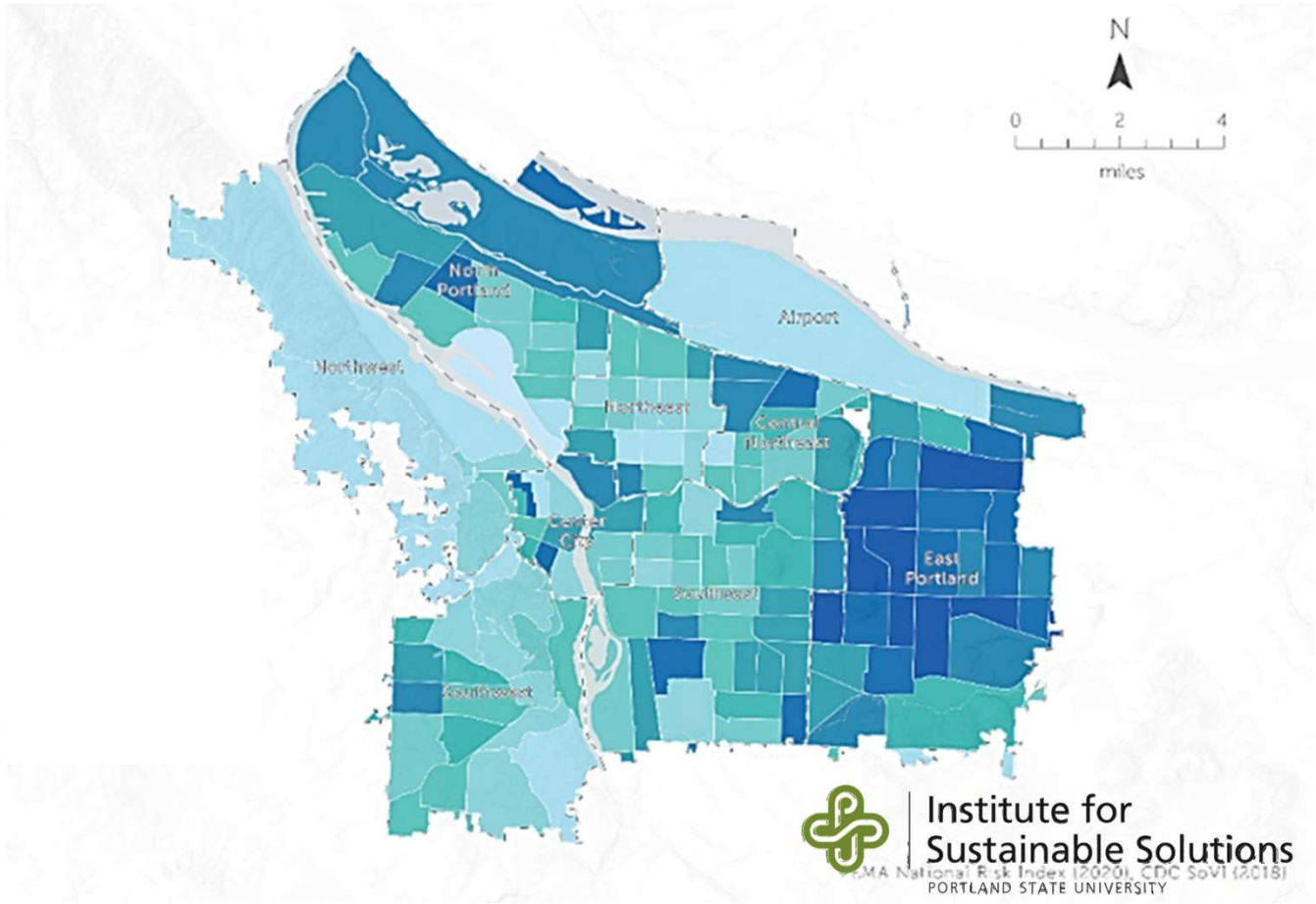
Disparate Impacts of Disasters

- Disasters worsen economic inequalities.
- Use US Dept. of Health and Human Services Social Vulnerability index (SoVI):
  - Socioeconomic status (below poverty, unemployed, no high school diploma)
  - Household composition & disability (aged 65 or older, aged 17 or younger, older than age 5 with a disability, single-parent households)
  - Minority status & language (minority, speak English “less than well”)
  - Housing type & transportation (multi-unit structures, mobile homes, crowding, no vehicle, group quarters)

Institute for Sustainable Solutions
PORTLAND STATE UNIVERSITY

PBEM

Portland Social Vulnerability Map



Legend

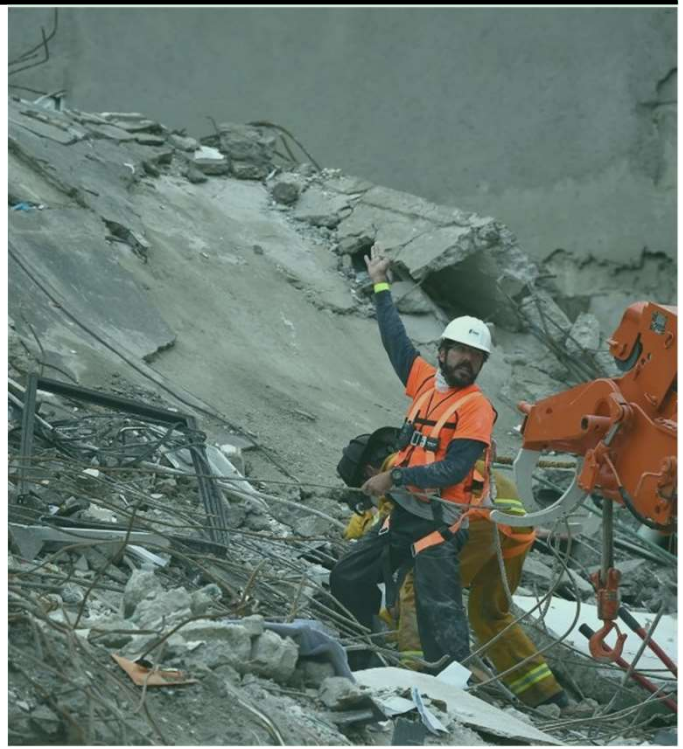
Social Vulnerability

- Low
- Medium
- High

Hazard profiles

Earthquake

- Earthquake > M 8.0 is 16-22% likely in the next 50 years
- Will severely damage physical environment and economy:
  - Buildings, transportation systems, and utilities damaged or destroyed
  - $26 – $39 Trillion in losses
  - Estimated 2,500 - 15,000 injuries
- Citywide impacts, with special risks in liquefaction areas.
- Mitigation strategies:
  - Seismic retrofits of buildings and infrastructure
  - Implement earthquake early warning

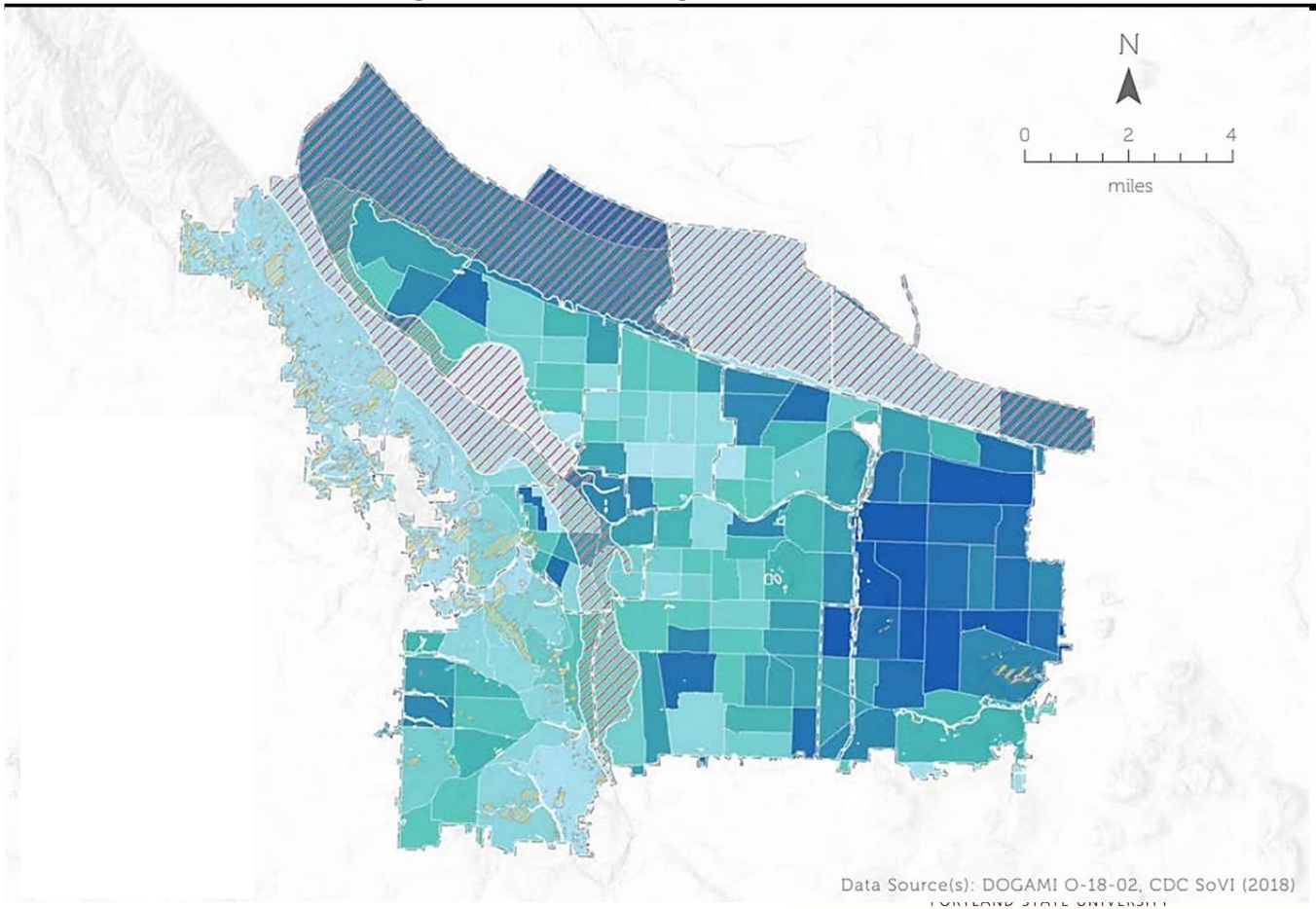


Institute for Sustainable Solutions
PORTLAND STATE UNIVERSITY

CITY OF PORTLAND OREGON 1851

PBEM

SoVI + Earthquake Liquefaction Risk



Legend

- City of Portland
- Risk Reporting Areas

Liquefaction Potential

- High
- Moderate

Social Vulnerability

- Low
- Medium
- High

PBEM

Flood

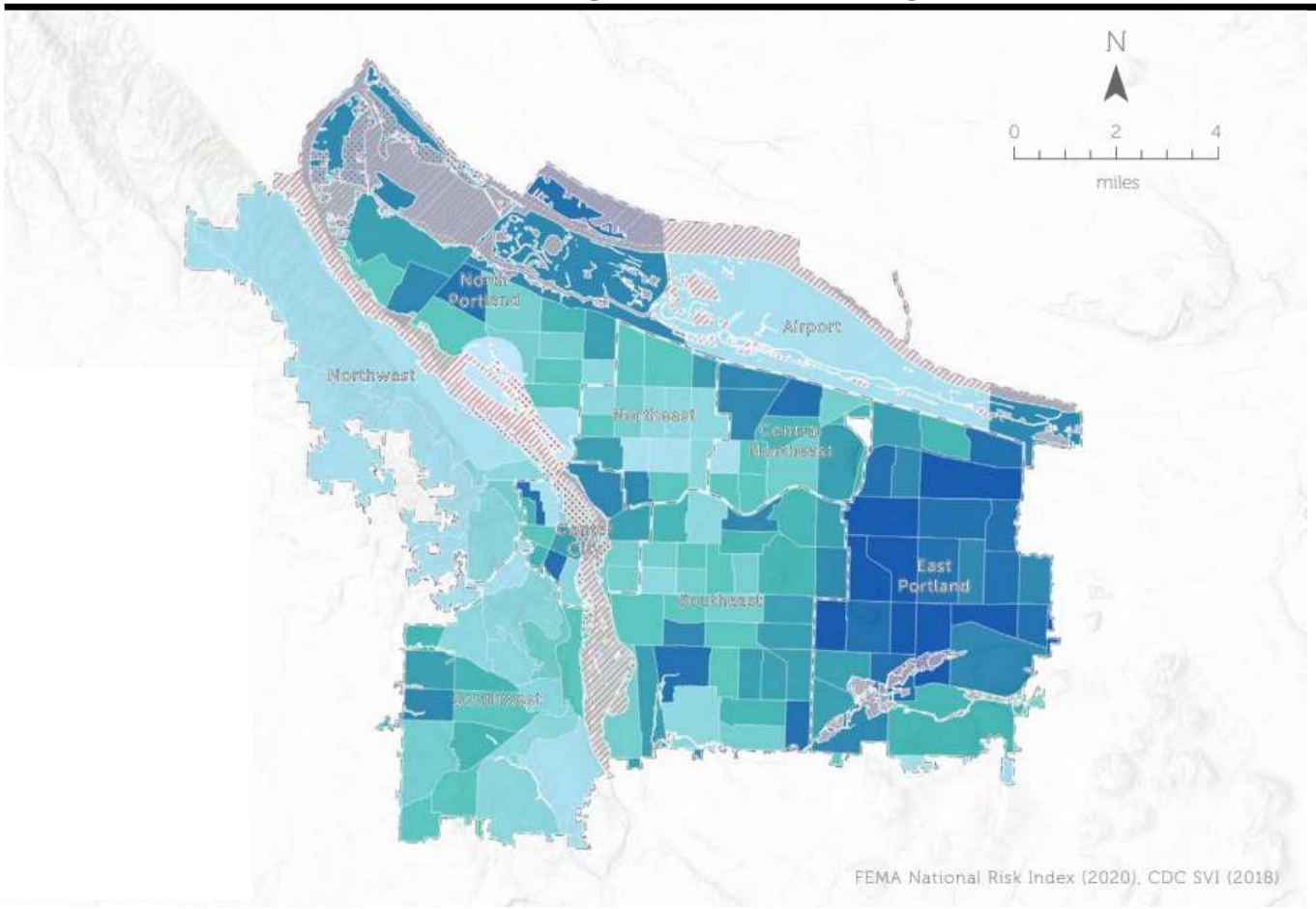
- 1.3% of Portland's buildings are in floodplains
- Floods are predictable; fatalities are rare.
- Property and economic damage are high; jobs displaced.
- Floods will increase due to climate change.
- 27 levees along the Columbia River are inadequate per US Army Corps of Engineers.
- Mitigation strategies:
  - restore floodplains
  - strengthen levees
  - harden pumps in flood areas
  - strengthen flood control infrastructure

Institute for Sustainable Solutions
PORTLAND STATE UNIVERSITY

CITY OF PORTLAND OREGON 1851

PBEM

SoVI and 100/500 year floodplains



Legend

- City of Portland
- Risk Reporting Areas
- Waterbodies
- 100-year Floodplain
- 500-year Floodplain

Social Vulnerability

- Low
- Medium
- High

PBEM

Severe Heat

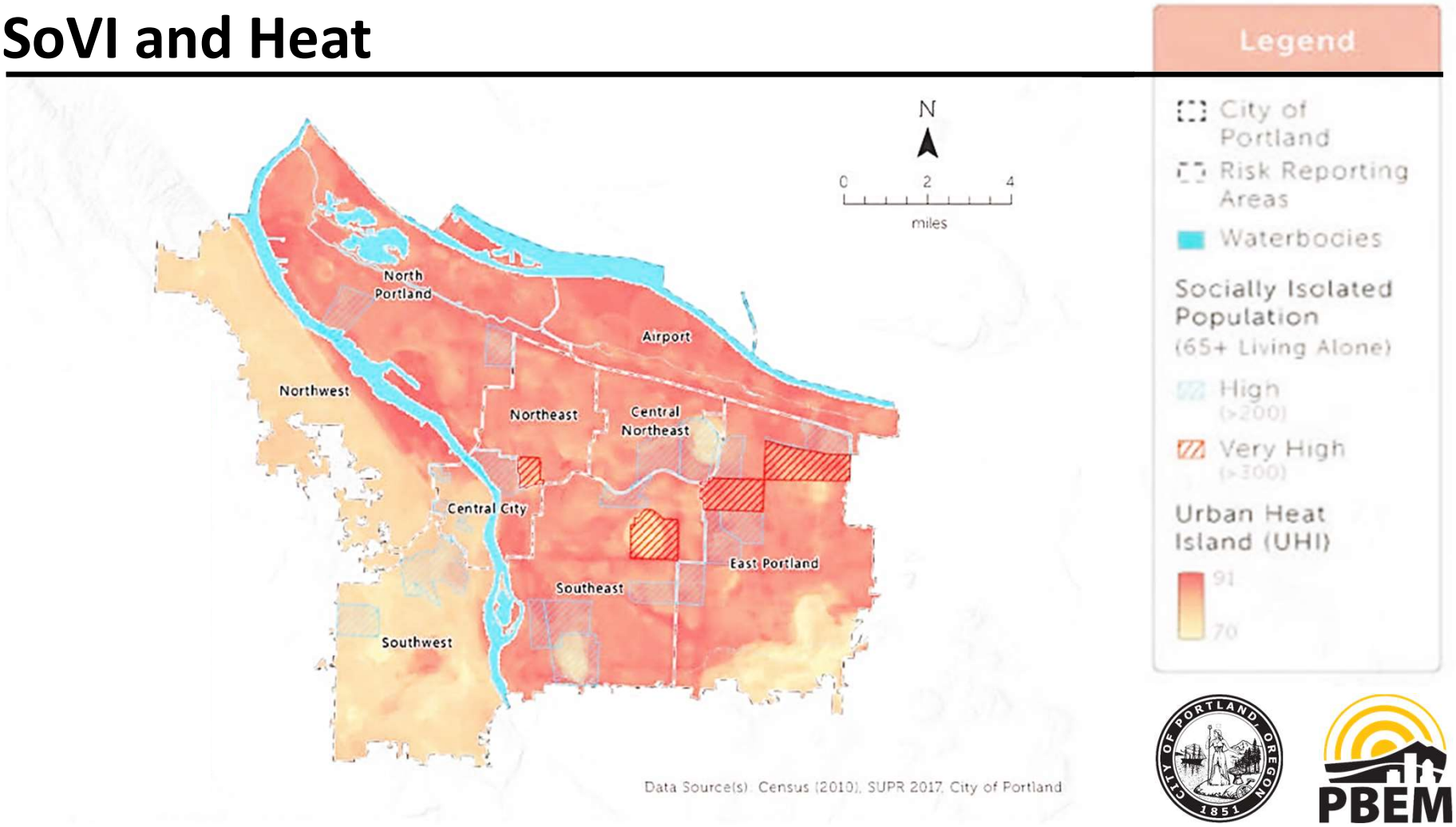
- Heat is the deadliest natural hazard.
- Elders, children, and people with disabilities have higher risks. Socially isolated people without a/c are most likely to perish.
- Heat disrupts business and puts workers at risk.
- Extreme heat is increasing due to climate change.
- The “urban heat island” (UHI) causes a disparity of up to 17°F in air temperature.
- Mitigation strategies:
  - tree planting
  - increase number of residences with a/c
  - require landlords to ensure cool rooms
  - increase public locations with a/c
  - all-hazards strategies to improve public communication and strengthen social safety nets.

Institute for Sustainable Solutions
PORTLAND STATE UNIVERSITY

CITY OF PORTLAND OREGON 1851

PBEM

SoVI and Heat



Wildfire & Smoke

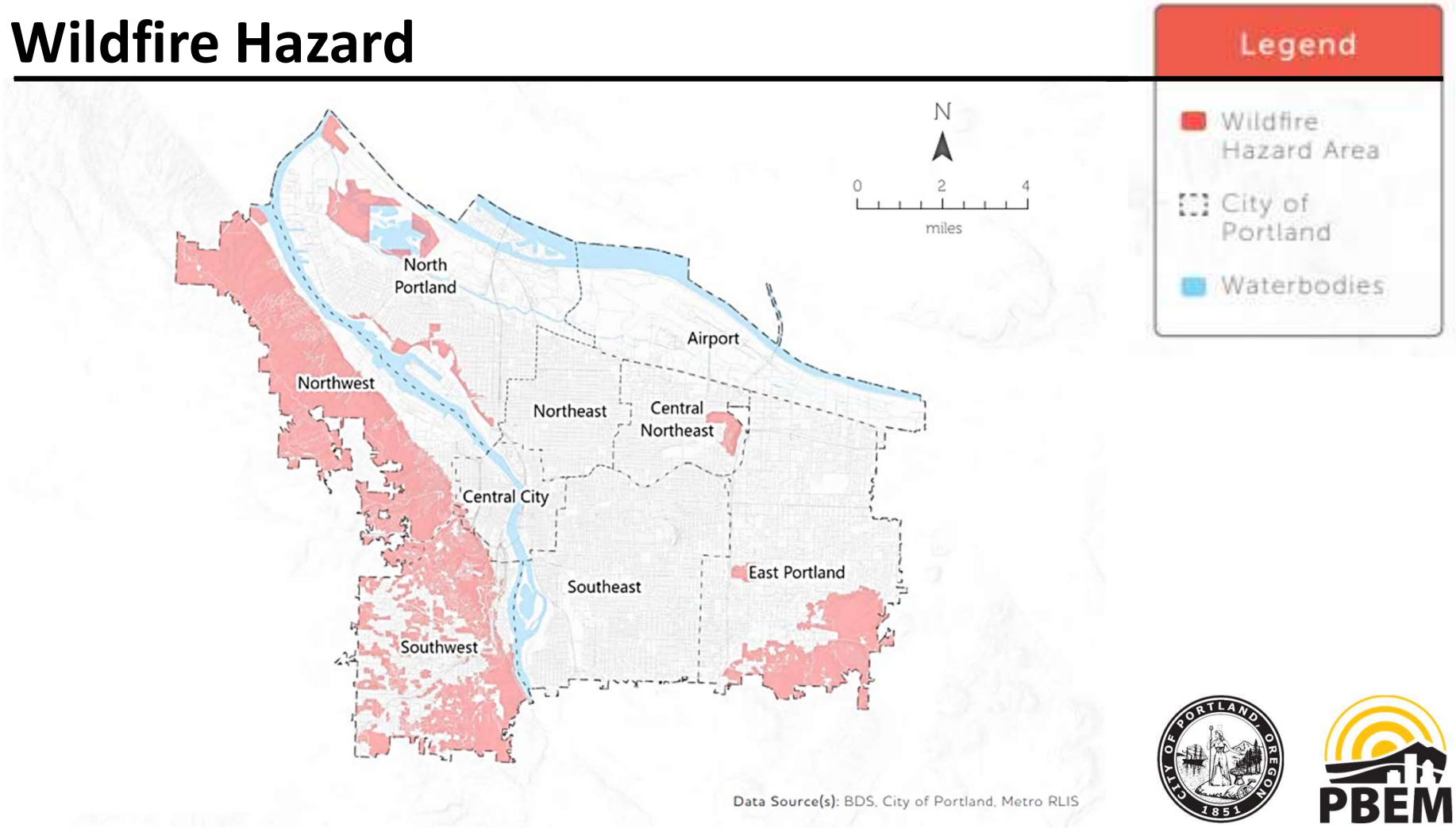
- Many natural areas are considered “fire-prone.”
- More than 8,000 homes and other structures worth more than $2.5 billion are in or close to these areas.
- Climate change creates longer fire seasons and more frequent and intense fires.
- Wildfire smoke from outside the City impacts Portland residents; disproportionately harms elders, youth, and people with underlying conditions.
- Mitigation strategies:
  - natural area maintenance (inclu. controlled burns)
  - fire road maintenance
  - fire-safe landscaping and design of structures
  - improved HVAC systems in public buildings.

Institute for Sustainable Solutions
PORTLAND STATE UNIVERSITY

CITY OF PORTLAND OREGON 1851

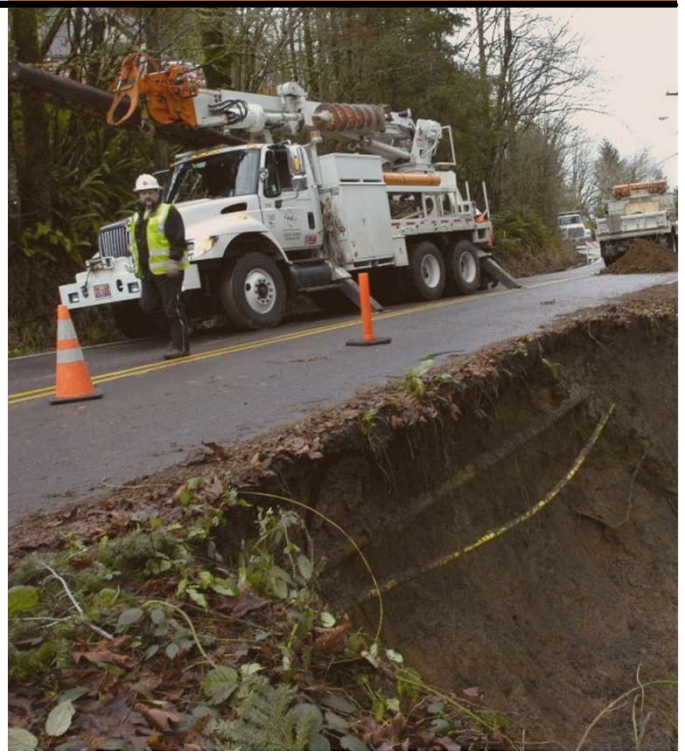
PBEM

Wildfire Hazard



Landslide

- 20+ landslides annually likely cause $1 M+ in private property damage.
- Cost and traffic disruptions can be significant.
- Mitigation strategies:
  - hardening key routes against landslide damage
  - reducing development in areas of high risk
  - Property owner education
  - active stormwater management in areas of known risk.

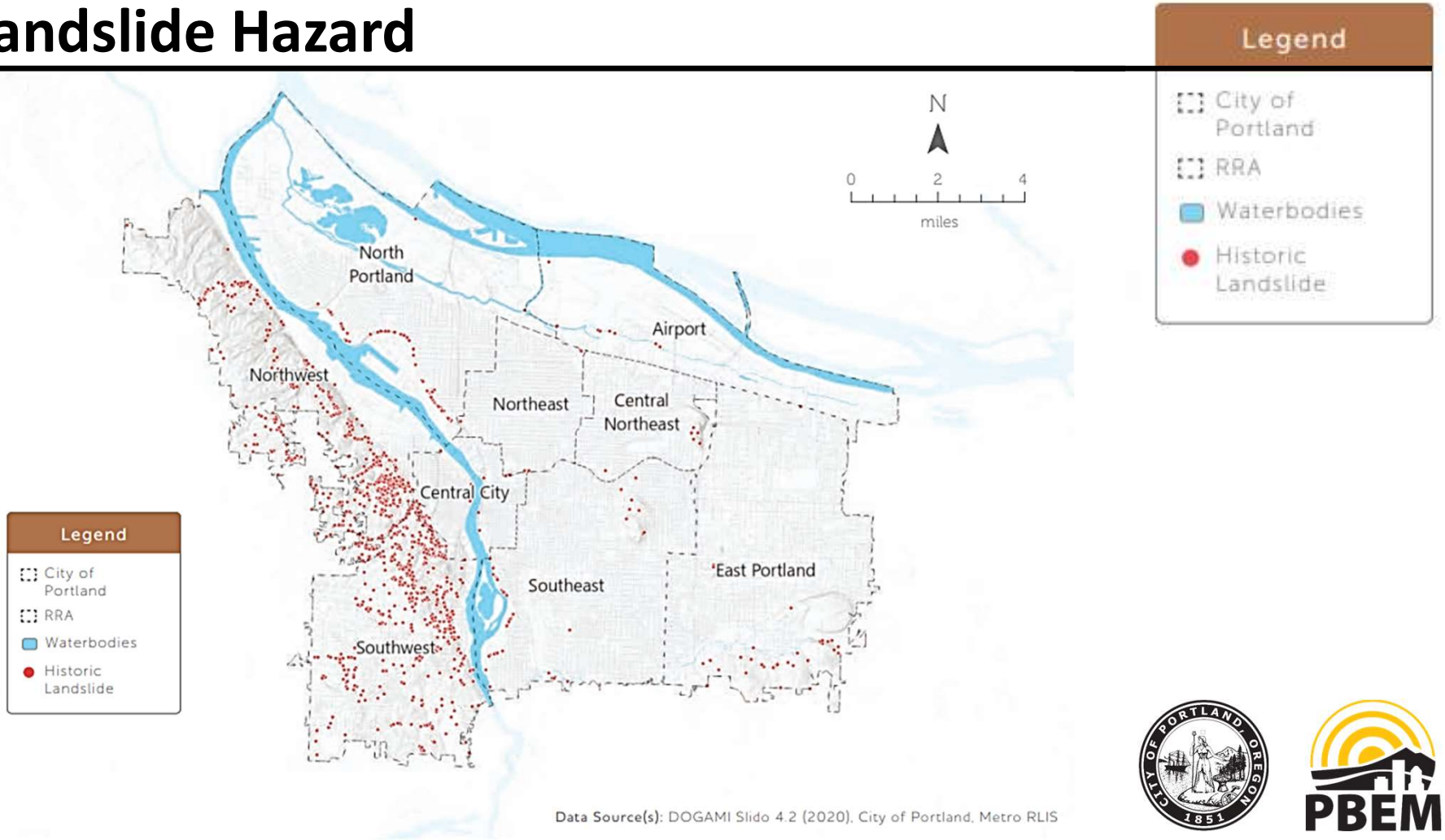


Institute for Sustainable Solutions
PORTLAND STATE UNIVERSITY

CITY OF PORTLAND OREGON 1851

PBEM

Landslide Hazard



PBEM

Winter Storms

- Second-deadliest hazard here; 11+ people have perished from severe cold in the last ten years. All were houseless.
- Ice and snow causes property damage.
- Power outages and slippery conditions close businesses.
- Climate change is likely to reduce severe cold over time.
- Mitigation strategies:
  - all-hazard strategies to improve public communications and social safety nets
  - Increase access to emergency shelters.

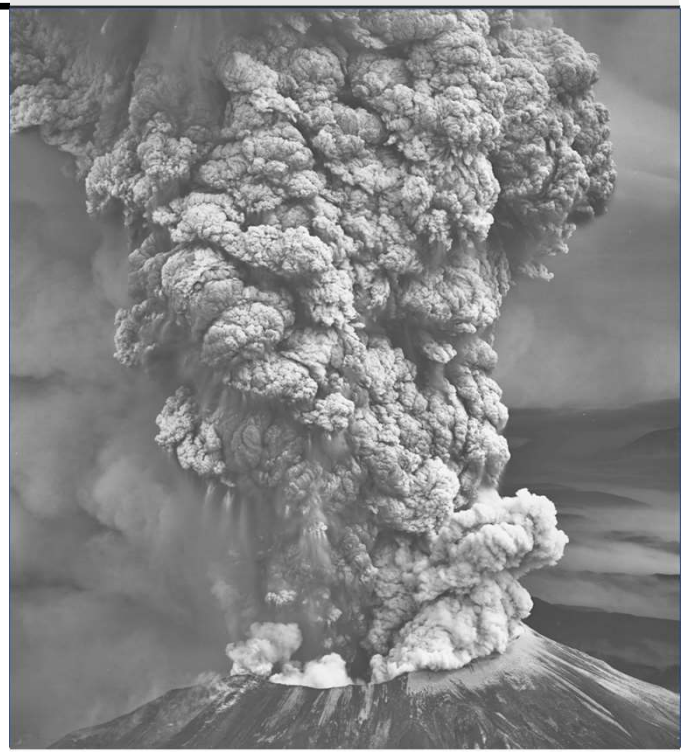
Institute for Sustainable Solutions
PORTLAND STATE UNIVERSITY

CITY OF PORTLAND OREGON 1851

PBEM

Drought, Volcanoes & Windstorms

- Mt Hood and Mt St Helens are “high-threat” volcanoes.
- Drought is increasing due to climate change.
- Extra-tropical cyclones have occasionally reached Portland.
- Drought and volcano are directly harmful to other parts of Oregon.
- Follow-on effects are primarily economic.
- Mitigation strategy:
  - all-hazard strategies to improve public communications and strengthen social safety nets.



Institute for Sustainable Solutions
PORTLAND STATE UNIVERSITY

CITY OF PORTLAND OREGON 1851

PBEM

Planning Process

Institute for Sustainable Solutions
PORTLAND STATE UNIVERSITY

CITY OF PORTLAND OREGON 1851

PBEM

Timeline

- Fall 2020 — Project scoping, contracting, and steering committee invitations
- January 2021 — Steering committee kick-off
- Spring 2021 — Plan development with steering committee, hazard assessments
- Summer 2021 — Community outreach
- Fall 2021 — Mitigation project refinement
- Winter 2021 — Plan completed
- Spring 2022 — Plan submitted to Oregon Emergency Management
- Summer 2022 — Plan submitted to FEMA Region 10
- Fall 2022 — Plan accepted pending adoption

Institute for Sustainable Solutions
PORTLAND STATE UNIVERSITY

CITY OF PORTLAND OREGON 1851

PBEM

Community Engagement

- Incorporated findings from past engagement efforts
  - Black barbershop surveys
  - Focus groups with Voz, APANO, and Latino Network
- Focused interviews with community-based organizations working on pandemic response
- Direct outreach at Summer Lunch and Play Events
- Email and website updates and comment opportunities

Institute for Sustainable Solutions
PORTLAND STATE UNIVERSITY

CITY OF PORTLAND OREGON 1851

PBEM

Community Voice

- Earthquakes, wildfires, and extreme heat are top concerns
- Knowledge, money, and storage space are barriers to preparedness
- Disaster resilience is connected to efforts to reduce the inequities that intensify the impacts of hazards
- Ongoing partnerships are needed to build resilience in communities with disparate risks
- Government can't do it all; desire for information and resources to prepare at home

Institute for Sustainable Solutions
PORTLAND STATE UNIVERSITY

CITY OF PORTLAND OREGON 1851

PBEM

Project overview

115 Projects Total

Bureau	No. projects
BDS	6
BES	21
BPS	15
Multi-bureau	9
PBEM	12
PBOT	3
PF&R	7
Parks	5
Water	37

Type of project	No. projects
Education	10
Plans & regulations	40
Natural systems	10
Infrastructure	55

Institute for Sustainable Solutions
PORTLAND STATE UNIVERSITY

PBEM

Three priority projects:

- **$1 M for tree planting in East Portland**
  - Heat mitigation; climate-driven risk
  - Lead by Parks and Recreation
- **$200K for Fanno Creek slope stabilization plan**
  - Flood mitigation on emergency transportation route; risk increased by climate
  - Lead by Bureau of Transportation
- **$5 M to East Portland Community Center solar + microgrid**
  - Multi-hazard mitigation; risks increased by climate
  - Lead by Parks and Recreation

Institute for Sustainable Solutions
PORTLAND STATE UNIVERSITY

CITY OF PORTLAND OREGON 1851

PBEM

Community Rating System (CRS)

- National Flood Insurance Program provides discounted flood insurance to communities that participate in CRS
- Portland saves homeowners $600,000 annually through CRS; important to low-income homeowners
- The Mitigation Action Plan support CRS
- Accepting reports on implementation of CRS is a requirement of the program

Institute for Sustainable Solutions
PORTLAND STATE UNIVERSITY

CITY OF PORTLAND OREGON 1851

PBEM

Best resilience work

- Collaboration across bureaus and jurisdictions
- Right-sized engagement that centers at-risk communities
- Projects that earn broad support

Institute for Sustainable Solutions
PORTLAND STATE UNIVERSITY

CITY OF PORTLAND OREGON 1851

PBEM

Questions and next steps

- Adopt plan
- Apply for BRIC grants
- Accept CRS reports
- Keep resilience work moving forward

Institute for Sustainable Solutions
PORTLAND STATE UNIVERSITY

CITY OF PORTLAND OREGON 1851

PBEM