

Bellevue Climate Vulnerability Assessment

October 11, 2023



Purpose

- This presentation is for information only



2017 flooding event in Bellevue

Agenda

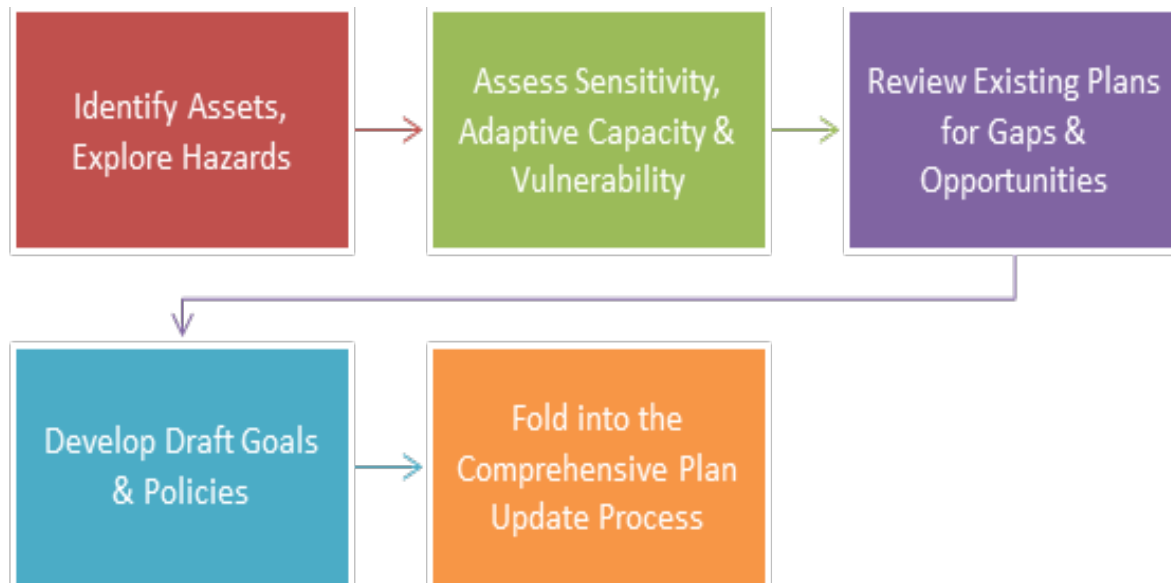
- Background
- Evaluating Vulnerability
 - Vulnerable Populations
 - Climate Vulnerability Index
- Climate Impacts
- Findings
- Adaptive Capacity
- Next Steps
- Questions



Sunrise over Bellevue during smoke event in August 2018

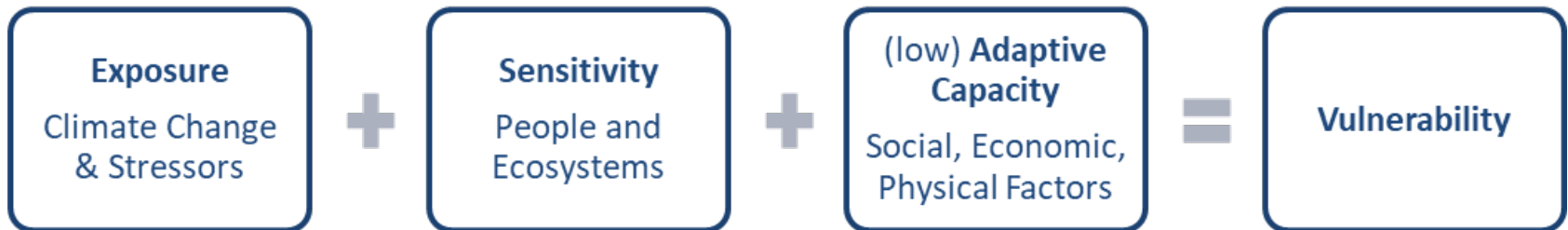
Background

- Policy context
 - Comprehensive Plan
 - Environmental Stewardship Plan
 - State Legislation
- CVA draft policy recommendations considered as part of CPPU



Evaluating Vulnerability

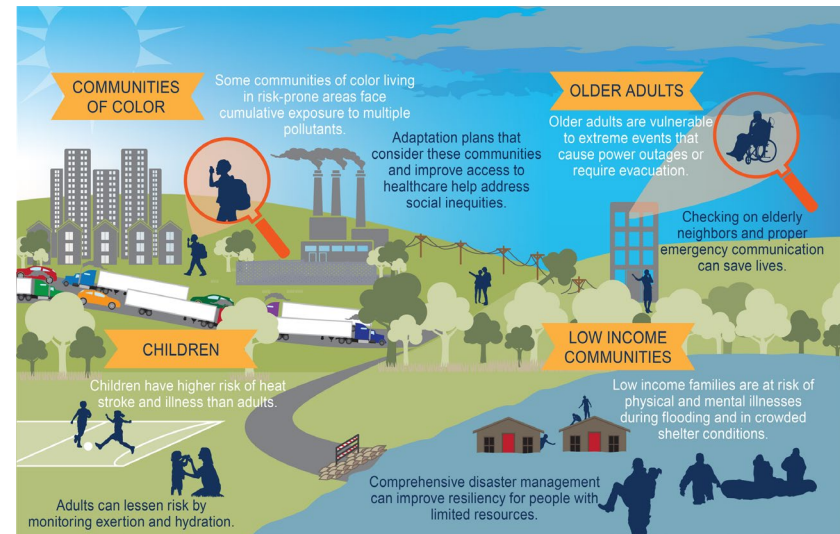
- **Exposure:** Type of and proximity to impact
- **Sensitivity:** How affected by impact
- **Adaptive Capacity:** Ability to cope with impact



SOURCE: BERK 2023

Sensitivity is Socially Determined

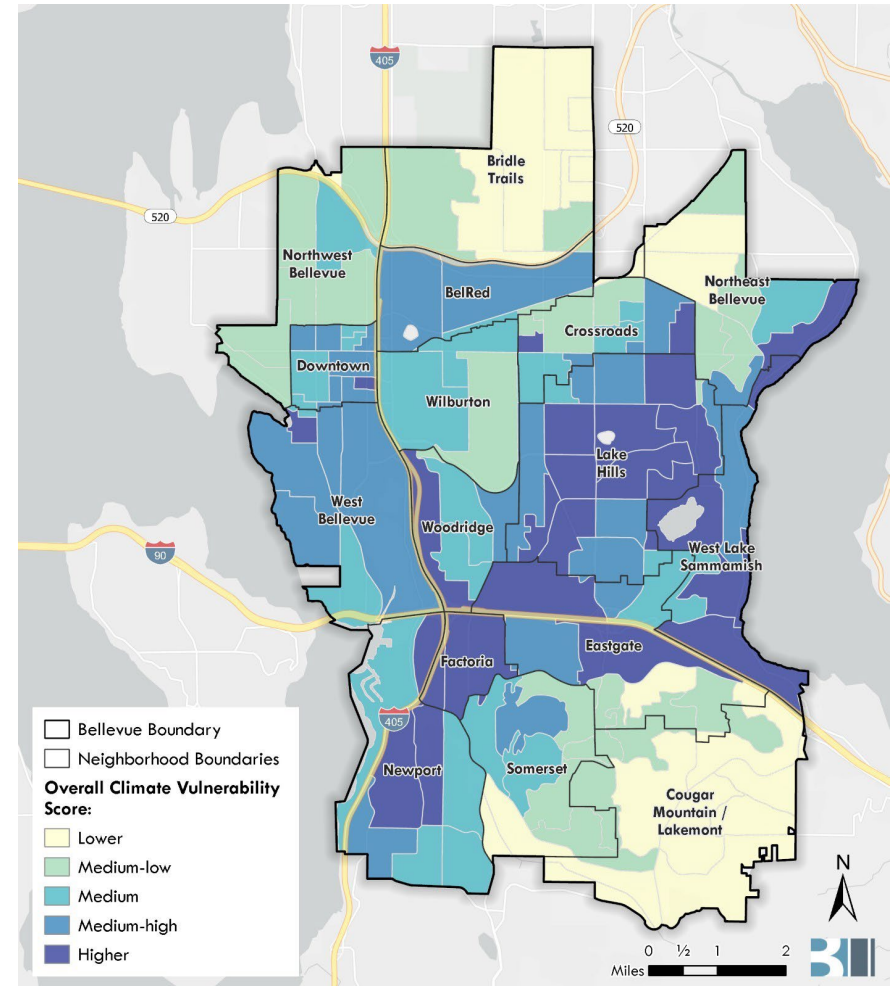
- Climate impacts interact with other social factors
 - (e.g. urban heat island effect)
- Vulnerable groups include:
 - Older people
 - Children
 - Low-income families
 - Immigrant communities
 - (BIPOC) individuals



SOURCE: EPA 2018






Climate Vulnerability Index

- Uses 30+ indicators of exposure, sensitivity and adaptive capacity
- Takes into account social determinants of vulnerability
- Compares different areas in Bellevue to each other



SOURCE: BERK 2023

Primary Climate Impacts

	<p>Air Temperature/ Extreme Heat</p>	<p>+6.3°F average summer temperature increase +21.1 days extreme heat annually</p>
	<p>Extreme Precipitation/ Flooding</p>	<p>+13% change in the magnitude of 25-Year Storm</p>
	<p>Drought</p>	<p>25% chance that a year in the 2040-2069 period will have summer precipitation at or below 75% of normal</p>
	<p>Stream Changes</p>	<p>Historic lows and highs in streamflow Increases in water temperatures</p>
	<p>Wildfire and wildfire smoke</p>	<p>+10 fire danger days annually</p>

CVA Scope

- The CVA evaluates the expected impacts, adaptive capacity, and overall vulnerability of:
 - Buildings and Energy
 - Cultural Resources and Practices
 - Economic Development
 - Ecosystems
 - Emergency Management
 - Human Health
 - Land Use and Development
 - Transportation
 - Utilities (Solid Waste, Wastewater, and Stormwater)
 - Water Resources



Findings: Overview

- Overall, the city is of moderate-high vulnerability to climate change
- Disadvantaged communities most impacted
- Every sector is vulnerable to extreme heat and extreme precipitation
- Some areas of Bellevue are more vulnerable to certain impacts



2018 Sherwood Forest storm damage

Findings: Buildings & Energy

- Risks:
 - Energy supply (extreme heat events)
 - Energy infrastructure (extreme precipitation events)
 - Hydroelectric systems (drought)
 - Solar energy generation (wildfire)



Bellevue in 2017

Findings: Land Use & Development

- Risks:
 - Infrastructure (extreme heat; extreme precipitation)
 - Increased cooling demand (extreme heat)
 - Green infrastructure, including tree canopy (drought)
 - Displacement (wildfire smoke)



Bellevue in 2017

Findings: Transportation

- Risks:
 - Infrastructure (extreme heat, extreme precipitation)
 - Service disruptions (extreme precipitation)



2017 flooding event in Bellevue

Findings: Ecosystems

- This sector is highly vulnerable
- Risks:
 - Mortality and species distribution changes (extreme heat, stream temperature)
 - Physical damage (extreme precipitation)
 - Water stress (drought)
 - Ecosystem composition (wildfire and smoke)



Sockeye salmon

Increasing Adaptive Capacity

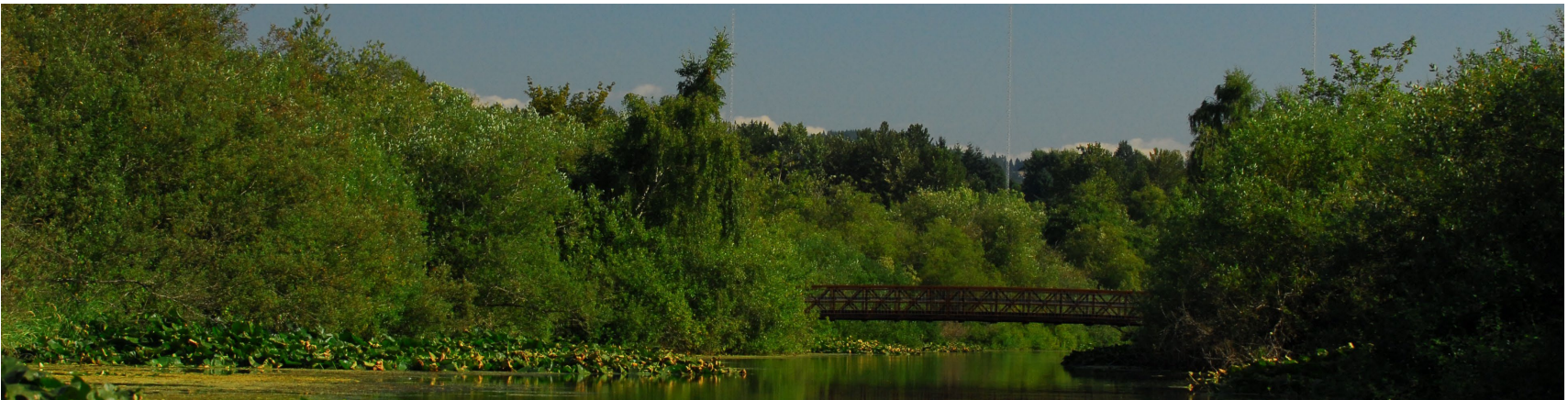
- Climate-smart development
- Green stormwater infrastructure
- Increasing tree canopy
- Access to cooling
- Support for most vulnerable residents



Green roof on City Hall in 2016

Next Steps

- Complete draft policies for review by Planning Commission
- Review suggested strategies and identify priority actions for implementation
- Incorporate CVA findings into Hazard Mitigation Plan & ESI Sustainable Bellevue Plan updates
- Conduct a Climate Risk and Resilience Assessment for City-owned buildings and facilities



Mercer Slough

Discussion



An aerial photograph of Bellevue, Washington, showing a dense urban area with several high-rise buildings in the center. The city is surrounded by lush green forests. In the background, the snow-capped peak of Mount Rainier is visible under a clear blue sky. The lighting suggests it's either early morning or late afternoon, with a warm glow on the buildings and the mountain.

Thank you!

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