



MEMORANDUM

To: Planning Commission

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Subject: Redmond 2050 - Climate Vulnerability Assessment Briefing

PURPOSE

Staff and the consultant team will brief the Commission on the status of the Climate Vulnerability Assessment, including a look at some of the initial findings.

BACKGROUND

In fall 2020, the Redmond City Council adopted the [Environmental Sustainability Action Plan](#) (ESAP) and a Climate Emergency Declaration. A key strategy in that document included conducting a communitywide climate vulnerability assessment to identify and implement resilience-building actions. The vulnerability assessment is intended to:

- Identify climate change impacts and risks in the Redmond area,
- Analyze climate change effects on the City and community,
- Prioritize Redmond's vulnerabilities, and
- Identify strategies to create a more climate resilient community.

There are two key products of the climate vulnerability assessment:

- 1) A report addressing risks, vulnerabilities and strategies to the City and community, and

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- 2) A geographic information system (GIS) mapping tool with a climate index that the City can update periodically.

For the Assessment, Redmond retained the services of an environmental consulting team that is working with on the Redmond 2050 Environmental Impact Statement (BERK Consulting, Perteet, and The Watershed Company) as well as the experts with the University of Washington Climate Impacts Group.

HOW IS CLIMATE CHANGING?

The ESAP identified that greenhouse gas emissions produced by Redmond and other communities contribute to damaging climate change impacts. Regional climate change models project that the King County area will see:

- Warmer air temperatures.
- Shifts in seasonal precipitation patterns with a decrease in summer precipitation.
- Increases in the intensity of heavy rainfall and extreme storm events.
- Increases in the exposure to droughts and wildfires.

Information provided by the University of Washington Climate Impacts Group (UWCIG) for the Redmond Climate Vulnerability Assessment continues to show these same trends.

Study Years: Information for the Vulnerability Assessment has been gathered for the years 2030, 2050, and 2080.

The year 2050 matches the upcoming Comprehensive Plan horizon year, and the City can use the Vulnerability Assessment to help shape growth scenarios. The year 2030 is a near term horizon to plan more active strategies. The year 2080 will provide a worst-case trend without intervention.

WHAT IS CLIMATE VULNERABILITY?

For the purposes of the study, vulnerability is defined as the combination of exposure to the climate change stressor (e.g., extreme heat or precipitation), the sensitivity of the population or environment to the stressor, and the ability of the community to adapt to the disturbance.¹

Vulnerability = Exposure + Sensitivity + Capacity to Adapt

The climate index will focus on heat and flooding. Other climate stressors like wildfire and smoke will be addressed qualitatively in the assessment. Sensitivity and capacity to adapt include a number of population and environmental characteristics.

WHO IS VULNERABLE IN REDMOND?

Literature studying climate vulnerability has linked susceptibility of various groups to harm. The Vulnerability Assessment considers population sensitivity and adaptive capacity as shown in the following table.

¹ Definitions based on [UKAID, Defining Disaster Resilience, 2011](#), and [Schneider et al. Assessing key vulnerabilities and the risk from climate change, 2007](#).

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POPULATION WITH VULNERABILITIES TO CLIMATE CHANGE EFFECTS

Population	Heat	Flood	Smoke
Children, <5 years old	X	X	X
Older Adults, > 64 years old	X	X	X
Communities of Color	X	X	X
Low-Income Communities	X	X	
Living Alone	X	X	
Linguistic Isolation		X	
Unemployment	X	X	
Outdoor workers	X		X
Educational Attainment (low)	X	X	X
Persons with pre-existing or chronic medical conditions	X	X	X

Redmond’s population has several vulnerabilities to climate stressors that have the potential to complicate emergency and health responses to climate events such as extreme heat and flooding. This includes Persons of Color with a proportion that are linguistically isolated according to the American Community Survey (ACS), 2019.

REDMOND RACE AND LANGUAGE CHARACTERISTICS 2019

- Non-White individuals ~ 44.9 percent
- Foreign born ~41.3 percent
- Speak a language other than English at home ~ 45.6 percent
 - Speak English < very well~ 30 percent

Some census blocks have concentrations of persons aged over 64 years or under 5 years. Some census blocks have a greater share of persons who live alone. The climate index will consider these concentrations relative to climate event exposure (e.g., flooding or heat islands).

WHAT SYSTEMS WILL BE STUDIED?

The Vulnerability Assessment will study the vulnerability of a range of systems in Redmond - built infrastructure, natural environment, social systems, and economic systems.

- **Infrastructure and Built Environment**
 - Transportation
 - Water
 - Wastewater
 - Stormwater
 - Buildings
- Energy
- Communications
- **Natural Environment**
 - Surface and Groundwater
 - Green Space and Urban Forest
 - Critical Areas

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- Fish and Wildlife
- **Social and Community Systems**
 - Public Health
 - Air Quality
 - Emergency Response
 - Social Services
 - Neighborhoods and Accessibility
- **Economic Systems**
 - Redmond Businesses
 - Future Development and Planned Growth
 - Local and Regional Employment Centers

A focus is on Redmond-provided services and infrastructure, but other systems that affect the community will also be addressed (e.g., communications).

HOW WILL THE FINDINGS BE USED?

Vulnerability Assessment results will be folded into Redmond 2050 efforts, such as:

- Informing growth scenarios. As the City identifies different ways population and employment growth could be concentrated (e.g., in Downtown or Overlake), the Vulnerability Assessment can identify areas of greater or lesser concern for the resiliency of neighborhoods and systems.
- Supporting Comprehensive Plan policy and Municipal Code amendments. The City is preparing updated Comprehensive Plan elements and eventually municipal code changes to meet its local needs and Growth Management Act (GMA) provisions. The Vulnerability Assessment can inform policies and actions to increase community resiliency, e.g., capital facility planning.
- Supporting the EIS for Redmond 2050. The findings of the Vulnerability Assessment and associated climate index can be folded into the EIS description of the affected environment, the evaluation of EIS alternatives, and mitigation measures.

The Vulnerability Assessment can also inform City infrastructure or service plans by:

- Anticipating areas of risk and vulnerability in Redmond and needed services or partnerships
- Identifying potential resource needs or capital investments
- Addressing changes in standards, e.g., materials (e.g., parks, stormwater, roads)
- Increasing coordination with other agency partners, e.g., WSDOT, Seattle & King County Public Health

NEXT STEPS

To date, early work has been shared with regional technical experts and interdepartmental staff. Briefings with the Environmental Sustainability Advisory Committee and Planning Commission are both scheduled for late October 2021. A draft report and index will be shared with the Redmond community later this fall and will be completed in January 2022.

FIGURE 3. SCHEDULE FLOW CHART