

2. Situation and Planning Assumptions

Assumptions

This section of the EOP builds on the scope of discussion by profiling the County's risk environment, identifying specific planning considerations, and describing the predicate assumptions underlying this plan. This section ensures that, while taking an all-hazards approach to emergency management, the plan is tailored to the unique risks faced by the County.

2.1 Situation

Clackamas County is exposed to many hazards that have the potential to disrupt the community, cause damage, and create casualties. Natural hazards to which the County may be exposed include droughts, floods, wildfires, winter storms, heatwaves, earthquakes, and volcanoes. The threat of technological and human-caused chemical, biological, radiological, nuclear, or explosive incidents is present as well. Other disaster situations could develop from hazardous material accidents, health-related incidents, conflagrations, major transportation accidents, or acts of terrorism.

2.2 Community Profile

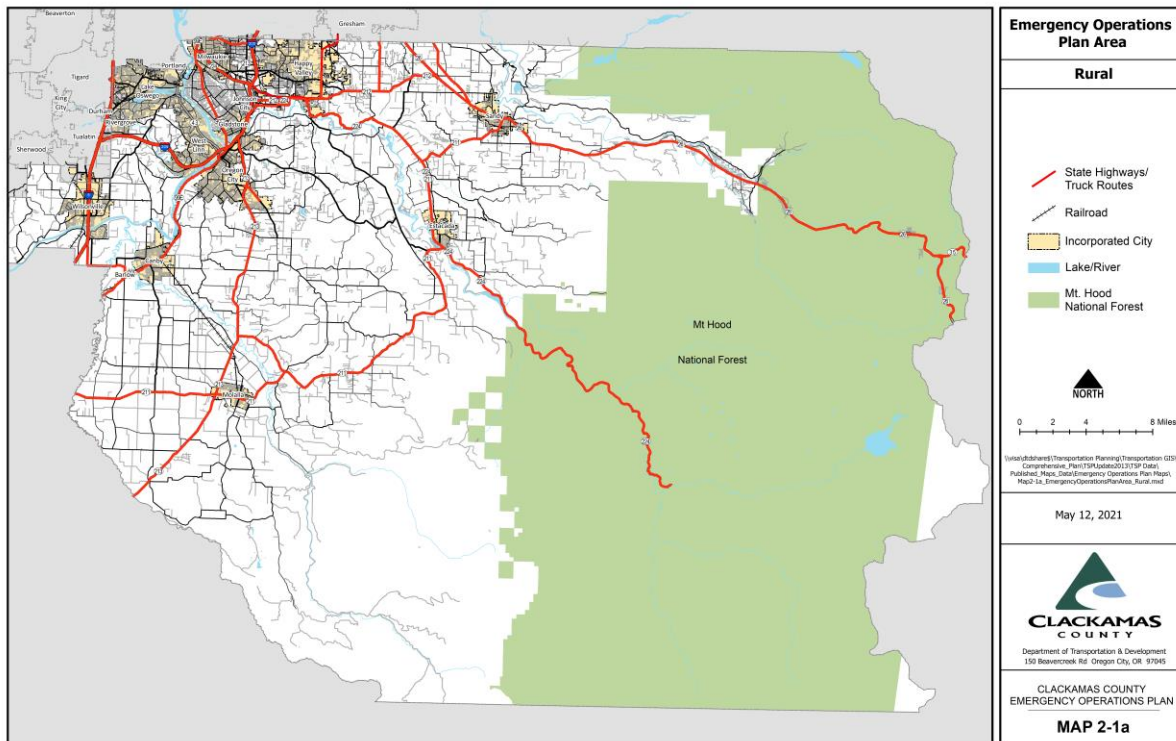
Clackamas County is one of the most rapidly growing counties in the state with an estimated population of 426,000 as of 2020¹. It is the third most populous county in Oregon, following Multnomah and Washington Counties, both of which border Clackamas County. A demographic profile of Clackamas County identifies the following characteristics of the population:

The County encompasses an area of 1,879 square miles, with one-eighth of the land area incorporated and the remainder unincorporated or publicly owned. Elevations range from a low of 55 feet on the shores of the Willamette River in Oregon City to a high of 11,235 feet at the peak of Mt. Hood. Major rivers include the Willamette, Clackamas, and Sandy. The developed areas are on the north and west side of the County. The south and east sides of the County are very low population rural areas in the mountains including areas of Mt. Hood National Forest. The primary use of these areas is timber. Approximately one-half of the County's population lives in unincorporated areas, with the other half residing in the 15 incorporated communities of Barlow, Canby, Estacada, Gladstone, Happy Valley, Johnson City, Lake Oswego, Milwaukie, Molalla, Oregon City, Rivergrove, Sandy, Tualatin, West Linn, and Wilsonville. There are also a number of unincorporated communities, including Beaver Creek, Boring, Brightwood, Clackamas, Colton, Eagle Creek, Firwood, Marquam, Mulino, Oak Grove, Welches, and Zig Zag.

¹ [BlueprintClackamas.com](https://blueprintclackamas.com/); American Community Survey

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Figure 2-1 Clackamas County Vicinity Map



2.2.1 Climate Considerations

Clackamas County experiences annual rainy and wet weather during winter months, and dry conditions during the summer months from July through September. Climate change forecasts have predicted more extreme precipitation, when it does occur, alongside periods of extreme drought. Climate models for Oregon suggest future extreme regional climate changes including temperature increases by 5 degrees on average by the 2050s, with the greatest increases during summer months. Precipitation is projected to increase during winter and decrease during summer, with the proportion of precipitation falling as rain rather than snow at lower to intermediate elevations in the Cascade Range in the future. Snowpack throughout Oregon, especially on the west slope of the Cascade Range, is accumulating more slowly, reaching lower peak values, and melting earlier. These trends are likely to continue and may accelerate as temperature increases.²

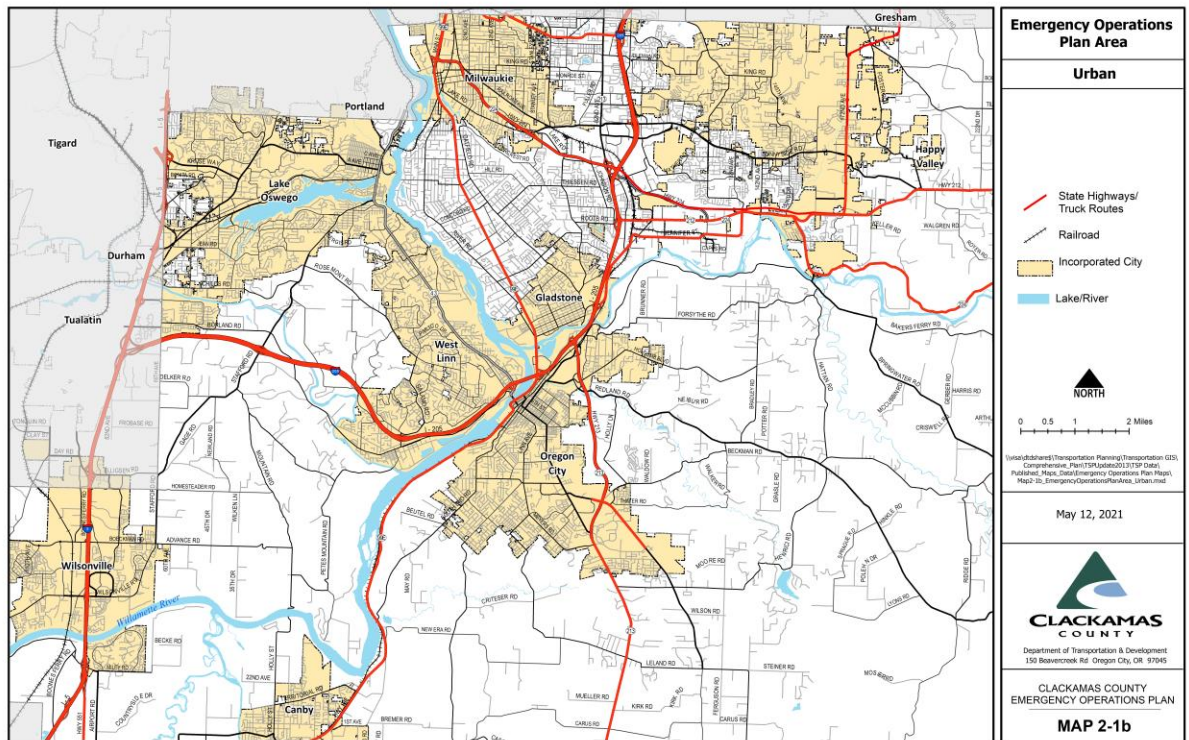
Climate change is likely to stress Clackamas County’s infrastructure and social systems, as the frequency and intensity of weather events increase. Various climate factors contribute to natural hazards including extreme heat waves, wildfires, flooding, and landslides. The environmental and economic consequences of hazards can be

² Oregon Climate Change Research Institute (OCCRI), 5th Oregon climate Assessment Report (January 2021)

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significant. Historically, natural, technological, and human-caused disasters have exacerbated racial and economic disparities in health outcomes and prolonged recovery time among people of color, populations living in underinvested communities, and in low-income communities.

Figure 2-2 Clackamas County Vicinity Map, Urban Area



2.3 Hazard Analysis Overview

Table 2-1 presents the hazard analysis matrix for Clackamas County. The hazards are listed in rank order from high to low. The table shows that each of the four categories combined influences hazard scores. Categories include past historical events, the probability or likelihood of a hazard event occurring, the vulnerability to the community, and the maximum threat or worst-case scenario. These considerations indicate that the top ranking hazards (top tier) facing Clackamas County are the Cascadia Subduction Zone earthquake, crustal earthquakes, wildfires, and winter storms. Droughts, floods, and windstorm event rank in the middle (middle tier). Landslides, volcanic events, and extreme heat events comprise the lowest ranked hazards in the County (bottom tier).

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Table 2-1 Hazard and Vulnerability Assessment Matrix

Hazard	History	Vulnerability	Maximum Threat	Probability	Total Threat Score	Hazard Rank	Hazard Tiers
Earthquake-Cascadia	4	45	100	49	198	#1	Top Tier
Earthquake-Crustal	6	50	100	21	177	#2	
Wildfire	12	25	70	56	163	#3	
Winter Storm	10	30	70	49	159	#4	
Drought	10	15	50	56	131	#5	Middle Tier
Flood	16	20	30	56	122	#6	
Windstorm	14	15	50	42	121	#7	
Landslide	14	15	20	63	112	#8	Bottom Tier
Volcanic Event	2	35	50	14	101	#9	
Extreme Heat	2	20	40	14	76	#10	

Source: Clackamas County Natural Hazard Mitigation Plan, 2018

Table 2-2 presents an overall list of threats and hazards facing Clackamas County. In the 2021 update, added threats and hazards include Ice Storm, Pipeline Rupture, and Civil Disturbance.

Table 2-2 Threats and Hazards Facing the County

Natural	Technological	Human Caused
<ul style="list-style-type: none"> • Earthquake • Animal disease • Drought • Flood • Heat • Invasive species • Pandemic – Human • Severe Storm/high Winds • Sinkhole/landslide/expansive Soils • Smoke • Tornado • Tsunami • Volcanic eruption • Wildfire • Winter storm/ice storm 	<ul style="list-style-type: none"> • Dam failure • Levee failure • Fuel shortage • Hazmat release – Chemical • Hazmat release – Radiological • Transportation accident (major regional impact, e.g., airport or highway damaged) • Pipeline rupture • Urban conflagration • Utility interruption • Water contamination 	<ul style="list-style-type: none"> • Explosive devices (Multiple Improvised Explosive Device Attack) • Cyber attack • Active shooter • Biological attack • Civil disturbance • Food/water contamination

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Significant emergencies that have actually taken place and elicited an emergency management response from the County include the following:

Table 2-3 EOC Activations in Clackamas County, 2011-2021

• 99E/South End Rd Brush Fire (July 2021)	• Labor Day Wildfires (Sept 2020)
• Extreme Heat (June 2021)	• COVID-19 Pandemic (Feb 2020)
• Chlorine Shortage (June 2021)	• Oregon City Landslide (Dec 2015)
• Ice Storm (Feb 2021)	• 36 Pit Fire (Sept 2014)
• Neibur Rd. Brush Fire (May 2021)	• Sandy River Flood (Jan 2011)

2.4 At-Risk Populations

Low-income, underserved communities with multiple socioeconomic challenges, often communities of color, are more likely to bear the disproportionate risk of physical harm caused by weather events. Many communities are more likely to face challenges in accessing the resources necessary to adequately prepare for these events and to recover physically, mentally and economically after the event. Clackamas County is committed to achieving and fostering a whole community disaster management system that is fully inclusive of at-risk populations, including individuals with disabilities and those with access and functional needs. Through the integration of community- and faith-based organizations, service providers, government programs, and at-risk populations into the planning process, meaningful partnerships have been developed and leveraged that enable the County to create, support, and sustain an inclusive disaster management system.

Equity-based approaches to disaster planning can help ensure that all residents, regardless of socioeconomic factors, can prepare for and recover from disasters. During the County's response to the 2020 COVID-19 Pandemic, Clackamas County embedded the equity-based roles and practices within the local Incident Command Structure (ICS) and Emergency Operations Center (EOC). This role took the form of Equity Officer, positioned in Command, which advises coordination with community-based organizations on response and recovery operations.

2.4.1 Populations with Disabilities, and Access and Functional Needs

Access to emergency services shall not be denied on the grounds of color, national origin, sex, age, sexual orientation, or functional needs. Populations with Disabilities, and Access and Functional Needs (DAFN), also referred to as Vulnerable Populations and Special Needs Populations, are members of the community who experience physical, mental, or medical care needs and who may require assistance before, during, and after an emergency incident.

Examples of individuals who have access and functional needs include, but are not limited to:

- Individuals who are deaf or hard of hearing

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- Individuals with limited English proficiency
- Children
- Seniors and older adults
- Individuals without vehicles
- Individuals with special dietary needs
- Individuals who experience mobility limitations
- Individuals with cognitive disabilities
- Individuals with medical needs
- Pregnant women

Persons with DAFN within the County have the primary responsibility for minimizing the impact of disasters through personal preparedness activities. To the greatest extent possible, Disaster Management will assist them in carrying out this responsibility by providing preparedness information, emergency public information, and critical public services in an accessible manner.

The County will conduct emergency planning and response in a manner that complies with Title II of the Americans with Disabilities Act (ADA), which states that emergency programs, services, activities, and facilities must be accessible to people with disabilities. In an emergency, people with disabilities may face a variety of challenges in evacuating to safety. A person with a mobility disability may need assistance leaving a building without a working elevator. Individuals who are blind or who have low vision may no longer be able to independently use traditional orientation and navigation methods. A deaf person may be trapped somewhere unable to communicate with anyone because the only available communication device relies on voice. Although it is the policy of the County for all persons to take primary responsibility for minimizing the impact of disaster through personal preparedness, it must be acknowledged that in an emergency it is likely that those with disabilities will have special needs which exceed their abilities. As a result, Clackamas County emergency response agencies should be prepared to render assistance to those with disabilities. Examples of ways that emergency response agencies must be prepared to assist those with disabilities include the following:

- Many traditional emergency notification methods are not accessible or usable by people with disabilities. People who are deaf or hard of hearing cannot hear radio, television, sirens or other audible alerts. Those who are blind or who have low vision may not be aware of visual cues such as flashing lights. Warning methods should be developed to ensure that all residents will have the information necessary to make sound decisions and take appropriate action.
- Individuals with disabilities face a variety of challenges in evacuating. People with a mobility disability may need assistance leaving a building. Those who are blind or low vision may not be able to navigate based on familiar cues because those cues are gone or disturbed. A lack of sufficient accessible vehicles is often a barrier to evacuation of those with disabilities. Procedures should be in place to ensure that people with disabilities can evacuate in a variety of conditions with or without assistance.
- When disasters occur, people are often provided safe refuge in temporary shelters located in schools, government buildings, churches, tents or other areas. Usually such shelters have been prepared in advance, but many shelters have not been made accessible for people with disabilities. Individuals using a wheelchair or other mobility device are able to get to a

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shelter, only to find no accessible entrance, accessible toilet or accessible shelter area. Shelter accessibility is a critical issue that must be addressed by prior planning and investment to ensure that sufficient shelter space is fully accessible to those with disabilities.

- Many shelters have a “no pets” policy and some have mistakenly applied this policy to exclude service animals such as guide dogs for the blind, hearing dogs for those who are deaf, and dogs trained to pull wheelchairs or retrieve dropped objects. Prior to the occurrence of an emergency, policies and procedures should be put in place to ensure that service animals can be accommodated.
- Advanced planning for emergencies and disasters.
- Alerting the public to an emergency.
- Community evacuation and transportation.
- Emergency sheltering programs (<https://www.ada.gov/pcatoolkit/chap7shelterchk.htm>).
- Access to social services, temporary housing, and other benefit programs.
- Repairing and rebuilding government facilities.

2.4.2 Children and Youth in Disasters

Planning and preparing for the unique needs of children and youth is of utmost concern to the County and, whenever possible, the County will consider preparedness, evacuation, shelter operations, and public outreach and education activities that identify issues particular to children and youth.

Individuals with children and youth have the primary responsibility for minimizing the impact of disasters to themselves and their children through personal preparedness activities. To the greatest extent possible, Disaster Management will assist in carrying out this responsibility by providing preparedness information, emergency public information, and critical public services.

Schools are encouraged to prepare for all hazards including sheltering in place for a number of days. Disaster Management may assist with planning and preparedness in the school (K–12) setting.

2.4.3 Animals in Disaster

While the protection of human life is paramount, the need to care for companion animals and/or domestic livestock plays into decisions made by people affected by disasters. Owners are responsible for preparing for the care of their animals during a disaster. However major disasters can impact pets, service animals and livestock as severely as their human owners. Animals that are separated from their owners / care givers can be the source of several issues that impact emergency response.

- In a disaster, some people become more concerned about the welfare of their animals than they are for themselves. This can impair their ability to make sensible decisions about their own safety. Concern for the safety of pets and domestic animals can also lead people to reject evacuation, make re-entry attempts before it safe, or enter an unsafe area during active disaster response to attempt to rescue animals.
- Escaped pets and livestock can also be a health hazard to people due to animal bites or diseases transmitted by animals.
- Escaped livestock can also lead to traffic issues for both people that are evacuating the disaster areas and for first responders.

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- Due to the close relationship that exists between some people and their animals the loss of those animals in a disaster can result in mental health issues.

In a disaster, saving human life is the highest priority; however, as the issues identified above show, animals cannot be viewed simply as inanimate property. The County may coordinate with local animal owners, veterinarians, and animal advocacy groups and charities sponsored by private organizations to address animal-related issues that arise during an emergency. If local resources are insufficient to meet the needs of animals during a disaster, the County may request assistance through the regional animal multi-agency coordination group or OEM.

2.5 Protection of Critical Infrastructure and Key Resources

Critical Infrastructure and Key Resources (CIKR) support the delivery of critical and essential services that help ensure the security, health, and economic vitality of the County. CIKR includes the assets, systems, networks, and functions that provide vital services to cities, states, regions, and, sometimes, the nation, disruption to which could significantly impact vital services, produce cascading effects, and result in large-scale human suffering, property destruction, economic loss, and damage to public confidence and morale.

Key facilities that should be considered in infrastructure protection planning include:

- Structures or facilities that produce, use, transport or store highly volatile, flammable, explosive, toxic, and/or water-reactive materials.
- Government facilities, such as departments, agencies, and administrative offices.
- Hospitals, nursing homes, and housing likely to contain occupants who may not be sufficiently mobile to avoid death or injury during a hazard event.
- Police stations, fire stations, vehicle and equipment storage facilities, and EOCs that are needed for disaster response before, during, and after hazard events.
- Public and private utilities and infrastructure that are vital to maintaining or restoring normal services to areas damaged by hazard events
- Transportation facilities such as roads and bridges
- Communications infrastructure (both wired and wireless) and cyber systems, assets, and networks such as secure County servers and fiber optic communications lines.

2.6 Planning Assumptions

This EOP is based on the following assumptions and limitations:

- Essential County services will be maintained if conditions permit.
- A major emergency or disaster will require prompt and effective response and recovery operations by County emergency services, disaster relief, volunteer organizations, and the private sector.
- All emergency response staff are trained and experienced in operating under the NIMS/ICS protocol.
- Each responding County agency will utilize existing directives and procedures in responding to major emergencies and disasters.
- Environmental, technological, and civil emergencies may be of a magnitude and severity that require State and federal assistance.
- All or part of the County may be affected by environmental and technological emergencies.
- Considering shortages of time, space, equipment, supplies, and personnel during a catastrophic disaster, self-sufficiency will be necessary for the first hours or days following the event.

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- Direct communication to business owners in unincorporated areas is limited as at this time there is no business registration in place for unincorporated Clackamas County.
- Local emergency planning efforts focus on accommodating residents while preparing for changes in population trends throughout the year. However, significant increases to the local population may introduce challenges in meeting the needs of non-residents and other travelers during a major emergency or disaster.
- To the extent possible, crisis communication will be adapted to different audiences to make it accessible for all community members and partners.
- Responding agencies will build effective partnerships and proactively reach out to partners prior to disaster impact. However, additional coordination or liaisons may be needed depending on the incident.
- The United States Department of Homeland Security provides information about terrorist threats across the United States and identifies possible targets.
- Outside assistance will be available in most major emergency/disaster situations that affect the County. Although this plan defines procedures for coordinating such assistance, it is essential for the County to be prepared to carry out disaster response and short-term actions on an independent basis.
- Control over County resources will remain at the County level even though the Governor has the legal authority to assume control in a State-declared emergency.
- County communication and work centers may be destroyed or rendered inoperable during a disaster. Normal operations can be disrupted during a general emergency; however, the County can still operate effectively if public officials, first responders, employees, volunteers, schools and residents are:
 - Familiar with established policies and procedures
 - Assigned pre-designated tasks
 - Provided with assembly instructions
 - Formally trained in the duties, roles, and responsibilities required of them during emergency operations.
- County COOP plans provide the framework and necessary information, resources, and tools to enable County departments to prioritize essential functions during disruptions to normal operations.

