



STATE OF OREGON

INITIAL AFTER-ACTION REVIEW (AAR) OF THE JUNE 2021 EXCESSIVE HEAT EVENT

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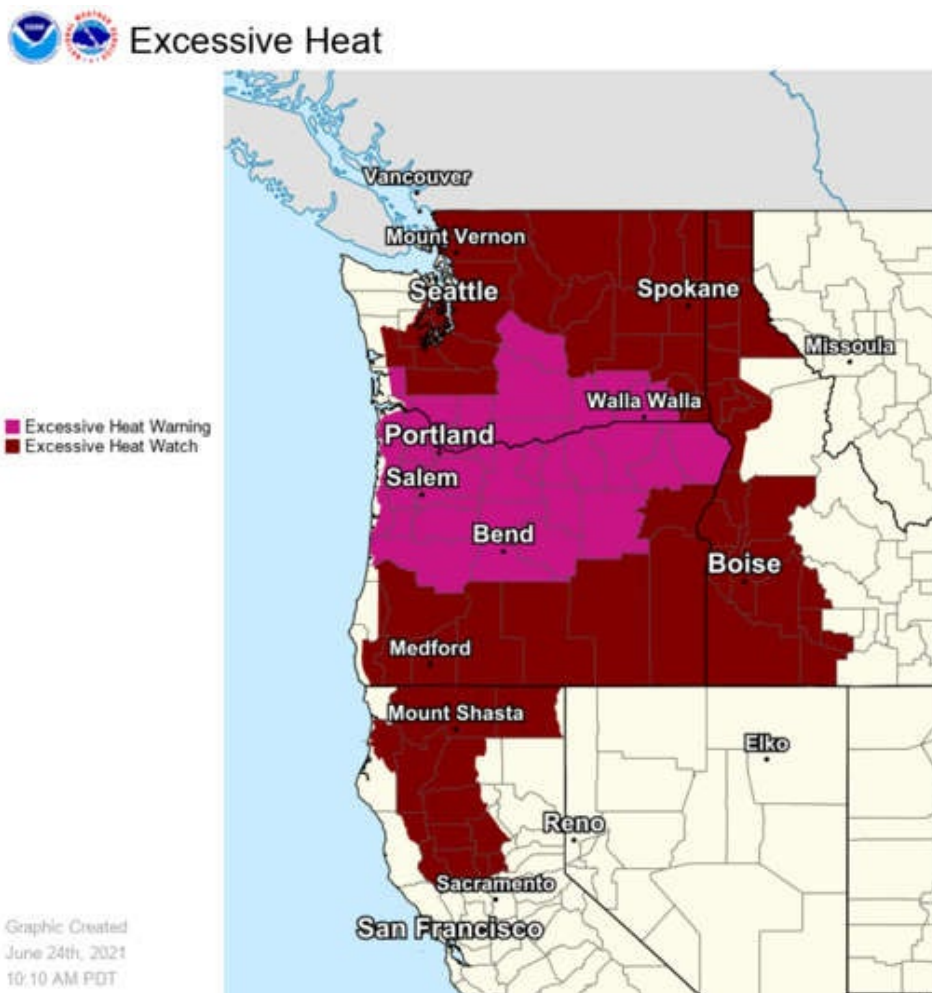
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Executive Summary

This after-action review (AAR) focuses on efforts by the State of Oregon to respond to the historic excessive heat that occurred region-wide from June 25 to June 30, 2021. When a heat dome lodged over the Pacific Northwest, it brought three consecutive days of triple digit temperatures reaching 106 to 117 degrees to multiple counties across the state.

The National Weather Service issued Excessive Heat Watches and Warnings statewide, except for some coastal areas, to alert Oregonians of expected extreme daytime high temperatures with little overnight cooling.





Governor Kate Brown directed the Oregon Office of Emergency Management (OEM), the state's lead agency for the coordination of government efforts to prevent and prepare for events like extreme weather, to lead an expedited statewide review of this historic event. This review includes preparedness efforts leading up to the heat wave, response actions during the event and recommendations to leverage what worked well and where improvements are needed.

This AAR has been undertaken as an initial assessment. As the heat event occurred in early summer, we know that our hottest months lie ahead. The priority objective of this report is to identify and implement immediate recommendations to bridge gaps and leverage opportunities while highlighting any long-term needs to be addressed at the policy level.

The heat dome was unprecedented. Many state, tribal, local agencies, private organizations and members of the public mobilized to help vulnerable people, but it wasn't enough to protect every Oregonian. As of July 26, 2021, a confirmed 83 Oregonians ranging in age from 37 to 97 had tragically lost their lives to hyperthermia, or elevated body temperature; most lived alone in homes with no working air conditioning or fans. Many of these deaths were preventable, and it was devastating to learn people were unable to access help despite advance planning, coordination and outreach efforts.

The state Emergency Coordination Center (ECC), already activated for a region-wide chlorine shortage, expanded operations to support and coordinate local and state response efforts to the heat event. Among the actions taken, Governor Brown, the Oregon Health Authority (OHA) and OHA's Public Health Division, the Oregon Dept. of Human Services (ODHS) and OEM actively and frequently communicated the dangers of excessive heat and available resources to mitigate heat impacts. Coordinating with health, community, and emergency management partners, these agencies also collaborated to identify potential needs and resource gaps.

It should be noted that the June heat wave exacerbated a statewide drought and early and active wildfire season. These events are not anomalies, they're indicators of the types of disasters Oregon will face in the future. Summers in the Pacific Northwest are about three degrees warmer today than 50 years ago. Climate scientists predict excessive heat will become a more common occurrence, making for more frequent, more severe and longer lasting heat events. While efforts must continue to slow and stop the factors contributing to climate change, we must also develop immediate and long-term strategies to adapt to today's changing climate. These efforts must also be incorporated into emergency and disaster preparedness and mitigation plans. These events will continue to negatively impact our environment, our economy and our health and cost lives.

This review provides 16 recommendations. Eight of those recommendations are for immediate implementation and eight recommendations are intended to reduce long-term risk from future events. The immediate recommendations include:



- Increased and earlier health information-sharing with state leadership to drive a more proactive state response in support of local governments and to allow for increased risk communication and recommended protective actions based on actual impacts of the event.
- Ensure 211 is resourced to provide 24-hour/day coverage to respond to inquiries and requests for assistance.
- Elimination of fares for mass transit during extreme weather events when cooling or heating centers are established.
- Continue to communicate the importance of individuals checking on neighbors, relatives, co-workers or others in their networks who may be more vulnerable to the impacts of extreme weather events.

Using available data and inputs from local, state and federal governments and non-profit partners, this expedited review identifies areas of success and opportunities for improvement for future extreme weather events in Oregon.

Many local governments and state and federal agencies are also undertaking efforts to review their preparedness and response operations associated with this event. These additional reviews are expected to be more comprehensive and detailed than this report. As more data is made available and assessed, and additional reports and recommendations are compiled, OEM will expand current strategies to prevent and respond to excessive heat events. These strategies will help empower communities to adapt to our changing climate, reduce future risk, stay safe and save lives.

Methodology

The information collected for this report – an evaluation of systems and coordination effectiveness – was derived from individuals and organizations identified as stakeholders through the Governor’s Office, OEM, OHA and ODHS. The information was gathered through a coordinated operations review, and virtual and in-person interviews (one-on-one or in small groups). Documentation reviewed included meeting attendee notes, after-action reports, news articles, ECC notes, and other records related to the response and initial recovery operations.

(Placeholder) County Statistics Breakdown

To ensure equitable representation of all Oregon communities, OEM is actively collecting data points from affected counties to better inform the statewide preparedness and response effort. This information will be provided as an amendment to this document.



Timeline

TUESDAY - JUNE 22

- NWS issues Excessive Heat Watch from Fri-Tue ●●●
- OEM uses social media to message about excessive heat

WEDNESDAY - JUNE 23

- State ECC expands chlorine coordination calls w/local jurisdictions to include excessive heat discussion ●●●

THURSDAY - JUNE 24

- NWS issues Excessive Heat Warning from Sat-Tues ●●●
- OHA & ODHS issue bulletin for extreme caution ●●●
- DCBS issues release w/heat illness prevention tips ●●●
- 211 shares info on shelter, potable water, cooling centers ●●●
- State ECC continues coordination calls w/local and state jurisdictions ●●●
- OEM shares cooling center information, OHA tips to reduce heat-illness and NWS heat watch/heat warning posts
- City of Marion Co Public Works opens EOC for heat wave response
- Lane Co opens emergency cooling and heat respite center
- State agencies coordinate heat messaging, resources on RDPO calls daily through June 28

FRIDAY - JUNE 25

- State ECC continues facilitation calls with local jurisdictions ●●●
- ODF issues press release: Hot, dry weekend ahead, fire season in full effect ●●●
- ODHS shares tips on who to follow on social media for excessive heat resources ●●●
- Governor Brown holds a press conference: high temps, drink extra water, avoid outdoor activity & check on neighbors ●●●
- National media begins reporting on the heat wave
- City of Portland requests OERS number for excessive heat-related response
- OHA shares signs of heat-related illness
- Oregon State Parks offers safety reminders for hot weather

SATURDAY - JUNE 26

- OEM Director Phelps does interview with FOX News ●●●
- State ECC continues facilitation calls with local jurisdictions

SUNDAY - JUNE 27

- Portland reaches 112 F, breaking the all-time temperature record ●●●

MONDAY - JUNE 28

- OHA & ODHS issue a bulletin to stay safe while seeking relief from the heat ●●●
- Salem records a high temperature of 117 F ●●●
- ECC continues facilitation calls with local jurisdictions

TUESDAY - JUNE 29

- OHA, ODHS issue bulletin urging people to seek primary care services for non-urgent heat illnesses, use hospitals only when necessary ●●●
- Multnomah County officials informed of heat-related deaths

WEDNESDAY - JUNE 30

- Governor Brown's office informed of heat-related deaths ●●●

SUNDAY - JULY 4

- Governor Brown goes on Face the Nation, says record heat wave "a harbinger of things to come"

TUESDAY - JULY 6

- Governor Brown directs OSHA to enact emergency rules to protect workers from high & extreme heat ●●●

MONDAY - JULY 12

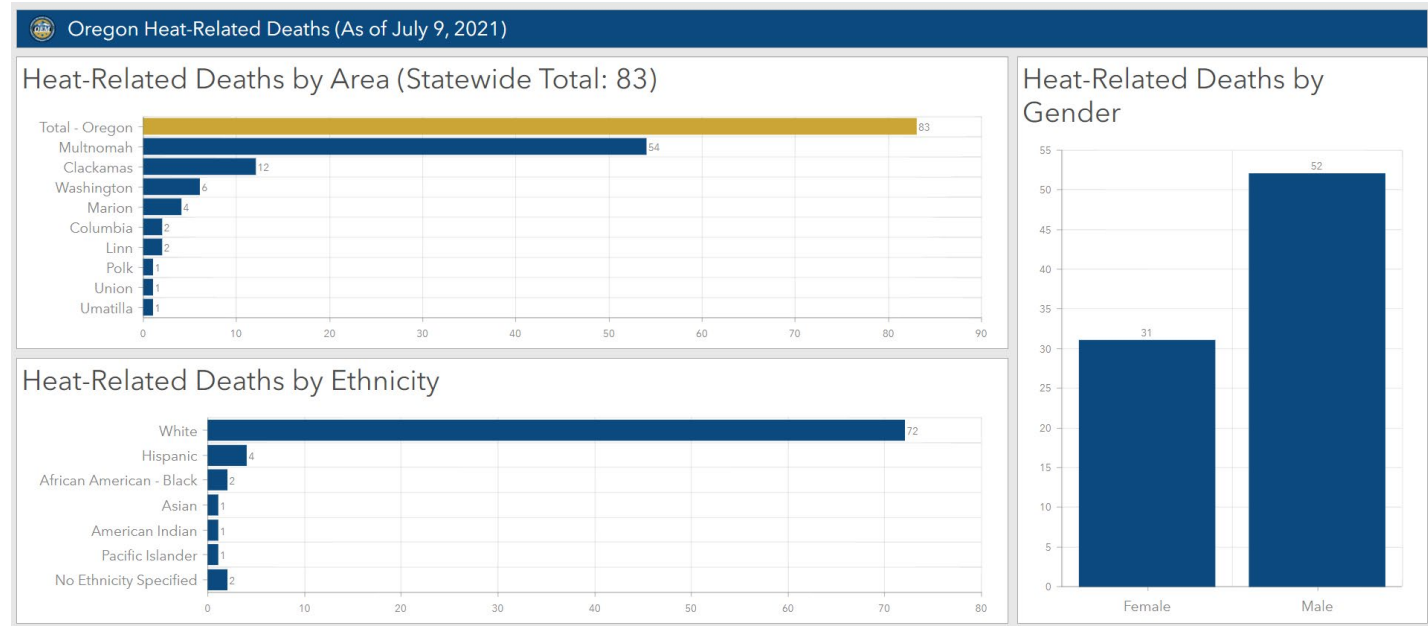
- Excessive Heat Media Avail held with OEM, OHA, ODHS

TUESDAY - JULY 13

- OEM hosts heat wave operations review w/counties, tribes, state partners & key community organizations ●●●



Demographics of Fatalities





Media Summary

In mid-July news media began reporting heat wave impacts focusing on drought and wildfires. The record-breaking heat wave prompted officials to suspend COVID capacity limits and set up cooling centers throughout the state. Residents were urged to prevent heat-related illness, check on vulnerable populations and conserve power. Some residents faced water and power outages during the heat wave. The record heat was linked to hospitalizations and drownings, as well as power outages. Hospitals were filling to capacity and vulnerable populations didn't seek help from cooling shelters. The heat-related death toll rose as medical examiner reports were released. Emergency managers urged Oregonians to be safe during hot weather and recreation this summer.

80 Heat Related Articles from June 15 to July 2, 2021

<u>Weather & Temps</u> : 20	<u>Cooling Centers</u> : 15	<u>Readiness & Outreach</u> : 15
<u>Heat Illness Prevention</u> : 3	<u>Emergencies & Hospitalizations</u> : 3	<u>Heat Fatalities</u> : 14
<u>Outdoor Workers & OSHA</u> : 2	<u>Water Shortages & Power Outages</u> : 5	<u>Drought & Wildfire Impacts</u> : 3

Emergency Management Systems & Structures

Cities, counties and tribes are responsible for and know the needs and resources of their communities best. As such, these entities develop, maintain and implement local preparedness and response plans and systems. In accordance with ORS 401 and aligned with the state Emergency Operations Plan (EOP), OEM is authorized to support and coordinate needs and resources statewide. Each disaster or emergency is unique, as are the applicable response mechanisms available to ensure resources are provided to meet the needs.



The Emergency Operations Plan

The state Emergency Operations Plan has multiple annexes specific to disasters and emergencies ranging from drought, earthquake and flood to tsunami, wildland fire and terrorism. Unlike these identified hazards, excessive heat is not something Oregon has a history of experiencing to the magnitude of the June excessive heat. Events without a specific annex are managed with an all-hazards response and recovery structure. This approach was utilized for this excessive heat event.

The Response

The National Weather Service forecasted an extensive period of hot weather on June 22. At that time, the state ECC and the state Joint Information Center (JIC) were already activated to support coordination of a region-wide chlorine shortage. Initial discussions regarding anticipated heat-related needs, concerns and preparedness were incorporated into ongoing coordination calls and response efforts with local governments, tribes and state agencies. Agencies and partners, including OEM, OHA, ODHS, NWS, American Red Cross and counties, began sharing heat-related messages through press releases, media interviews and multiple social media platforms to alert Oregonians of the pending heat-related risks and encourage them to take steps to prevent heat-related illnesses.

Areas of Strength

➤ Accurate and Timely Weather Forecast

Early identification of the heat threat (June 22) and subsequent Excessive Heat Watches and Warnings from the National Weather Service, assessment of potential heat risk, and communication to state and local partners enabled statewide emergency management systems to initiate critical messaging and lean into the response.

➤ COVID-19 Restrictions Lifted

In response to forecasts of dangerous and excessive temperatures, OHA suspended COVID-19-related capacity limits at cooling centers, public transit, swimming pools, movie theaters and shopping malls.



➤ **Connectivity With Partners**

State agencies maintained connectivity with partners before, during and after the heat wave to identify and bridge gaps. Cities, counties and non-profit organizations worked to meet local needs as they were identified, including establishing approximately 220 cooling centers statewide, assisting with transportation to and from these cooling centers, checking on vulnerable populations and distributing water.

➤ **Joint Information Center**

State Joint Information Center operations began within 24 hours of incident onset using OEM staff. Regular communication and coordination with the Governor's Office and key stakeholders were established. Personnel coordinated proactive and responsive messaging to inform the public of steps to take to reduce risk and stay safe.

➤ **Media Engagement**

Numerous state agencies and local jurisdictions distributed press releases in multiple languages, provided media interviews and engaged to proactively amplify safety messaging.

➤ **Social Media Messaging and Amplification**

Many agencies, counties and cities shared and amplified social media messaging in multiple languages to provide information and resources including cooling center locations, heat illness, heat impacts on vulnerable populations, tips to beat the heat, water safety, 211info, pet safety tips and power infrastructure.

➤ **Cooling Centers**

Oregonians utilized cooling centers statewide; once opened, local governments reported ample capacity to meet the needs and did not require additional resources.

➤ **Mass Care Partnerships**

State, local and tribal officials worked with the American Red Cross, Meals on Wheels, United Way and other non-governmental organizations that stepped up to handle a significant part of mass care operations. This included establishing shelters and cooling centers, checking on vulnerable populations and distributing bottled water.

➤ **Infrastructure Systems**

Although isolated outages did occur, power was generally restored within hours. The system overall was maintained despite increased demand from significant increases in the use of air conditioning and other cooling devices.



➤ **Public Health and Medical Services**

OHA reported hundreds of hospital visits for heat-related illness, indicating many people sought treatment for heat-related symptoms, thereby reducing more serious consequences for those who were able to access medical care.

Areas for Improvement

➤ **Cooling Centers**

Although hundreds of cooling centers were eventually opened, many counties reported difficulty or delay in establishing cooling centers due to staff/volunteer shortages, and/or closed facilities due to COVID-19. Reports also highlighted a number of cooling centers that were not equitably located or easily accessible within their communities. Fatalities were also reported at work sites, indicating some workers were not able to escape the heat or seek refuge at cooling centers. **See Recommendations #3 and # 7.**

➤ **Mass Notification Systems (Alerts)**

There was confusion as to why emergency alerts were not issued via cell phone, television or radio. While a great deal of messaging was sent out via traditional and social media, vulnerable and at-risk populations may not have access to these platforms. **See Recommendation #1.**

➤ **211 Availability**

On June 21, ODHS coordinated with 211 to serve as point for cooling center information statewide. Local jurisdictions were instructed to forward cooling center locations and hours to 211 to inform call takers. Via social media, state and local agencies messaged the public to contact 211 to learn of cooling center resources, water stations and other ways to beat the heat.

It was identified on June 26 that cooling center information was only available through 211 online; people trying to access 211 by phone were not able to talk with a person as the agency was not staffed over the weekend. Immediate modifications were made to the system so that callers could access the information. Still, callers struggled to get rides to cooling centers and others endured long wait times to request a ride. **See Recommendation #2.**



➤ Health-related Data Sharing

State agencies lacked established triggers for sharing heat-related impact information and coordinating associated operations. There are misperceptions around the real-time tracking of deaths, health data and the process involved. It took 5-10 days to get data on deaths properly vetted, confirmed and elevated to state leadership and the general public. **See Recommendations #1 and #5.**

➤ Infrastructure Systems

From buckling roads to a pause in public transit services, extreme heat caused some problems for Oregon's infrastructure. Although quickly restored, power outages did occur in multiple locations. **See Recommendations #14 and #15.**

➤ Transportation

Transportation was a concern for counties as they do not have capacity or ability to offer transportation to rural areas, increasing risk for vulnerable populations. Extreme heat was also challenging to TriMet's MAX Light Rail system, which must suspend service when temperatures reached 110 degrees due to operational safety requirements. **See Recommendations #4 and #6.**

Recommendations

In the past 18 months, we have lost Oregon lives due to severe flooding, historic wildfires, record-setting ice storms and extreme high temperatures beyond anything our state has ever experienced. These events require immediate action and a look toward the types of emergencies we will face over the next 10 years, rather than focusing on those we've faced in previous decades.

These recommendations include efforts to improve our state's ability to respond to future events as well as initiatives to mitigate against the evolving hazard landscape posed by a changing climate. In short, we must address tomorrow's hazards, not yesterday's. We must also understand there is a shared responsibility across our state and among all levels of government to reduce our risk and continue to build a culture of preparedness in Oregon.



Recommendations: Immediate Actions for Implementation

Given the tragic impacts of the June excessive heat event and the likelihood of additional excessive heat in Oregon this summer, the following actions are to be implemented immediately:

1. Thresholds for action

The Oregon Office of Emergency Management has established criteria to shift from a monitoring to a response mode and trigger twice-daily situation reports from key state agencies to assess the immediate impacts of an extreme heat event:

- When the National Weather Service issues an Excessive Heat Watch or Warning within Oregon, OEM will hold, at a minimum, twice-daily briefings with the Oregon Health Authority, Oregon Department of Human Services, Oregon State Police/Office of the State Medical Examiner and other state agencies to assess hospital capacity and heat-related illness reports, increases in medical examiner call-outs to unattended or heat-suspected deaths, impacts to social service programs and other impacts to infrastructure or services.

- Additional impacts from coinciding events (wildfire, smoke, pandemics, drought, etc.) will also be assessed.

- Daily coordination calls will also be held with all Oregon Emergency Response System (OERS) agencies and partners and will include local and tribal governments to share situational awareness and assess impacts and resource shortfalls.

- Based on these assessments, OEM will coordinate statewide efforts to:
 - Mobilize state resources to support local entity efforts to protect their communities. This may include:
 - Providing staffing or resources for cooling centers
 - Providing statewide messaging and information regarding protective actions and health impacts while amplifying messaging and resources from local, tribal and other partners
 - Providing staffing or resources for welfare checks
 - Assist with establishing distribution centers for water, ice, fans and other supplies
 - Engage with non-profit organizations and the private sector to leverage existing touchpoints with vulnerable and at-risk populations. This will



include community care organizations, social service providers and utility providers.

- Increase public messaging and communication, to include:
 - Utilization of OR-Alert for mass notifications. In addition to automatic alerts via cell phone, television and radio, Oregonians should be encouraged to sign up for notifications through the [OR-Alert website](#).
 - Recommended protective actions based on actual impacts of the event
Press conferences and media availability
 - Accessible and culturally appropriate digital messaging through social media and state websites

2. Availability of Community Helplines and Information

ODHS will ensure 211 will provide 24/7 coverage for general 211 service through the wildfire season with the ability to quickly increase hours of operations to 24/7 during extreme weather events

- The organization can leverage existing staff to fill in the additional hours.
- 211 should also do additional training and technical backups with crisis specific language at the top of its phone tree.

3. Worker Protection

The state Occupational Health and Safety (OSHA) officials will enact rules to protect workers from future extreme heat events.

- OSHA will implement new rules to expand requirements for employers to provide shade, rest and cool water for workers during high temperatures. The state will continue to work on adoption of permanent rules protecting worker safety during extreme weather events. The permanent rules are expected to be adopted this fall.

4. Non-Emergency Medical Transportation

OHA will work on having Emergency Medical Services (EMS) transport people to non-emergency locations in coordination with local EMS provider agencies.

5. State Agency Readiness

In advance of forecasted extreme weather events, OEM leadership will provide a briefing to OERS agency directors regarding the weather forecast, potential impacts and reminders to check agency specific emergency communications and the availability of critical staff or resources. Any expected gaps or shortfalls will be communicated to OEM.



OEM will assist with contingency planning through the Emergency Support Function (ESF) structure.

6. Public Transportation Accessibility

Local and regional governments should consider eliminating fares for public transportation during extreme weather events when cooling or heating centers are established. This may make public transportation more accessible for travel to cooling centers and increase the use of public transportation as “mobile” cooling centers. Vouchers for taxi or ride share services for transport to cooling/warming centers should also be considered.

7. Local Volunteer Integration

Local governments should consider utilizing community emergency volunteer organizations like Community Emergency Response Teams (CERT) or Neighborhood Emergency Teams (NET) to conduct welfare checks or establish points of distribution with bottled water, ice and cool packs in communities that are most vulnerable to extreme weather, like mobile home parks, public housing and apartment buildings.

8. Neighbors Helping Neighbors

We know that neighbors checking on neighbors saved lives during the heat emergency. Oregonians should be encouraged to continue to check on their neighbors and reach out to friends, co-workers, and family who may have medical conditions, transportation needs, insufficient housing, inadequate heating or cooling, or other factors that make them more susceptible to extreme weather and a changing climate. This can include in-person visits, telephone calls, or requesting local emergency services conduct a welfare check.

Recommendations: Long-Term Risk Reduction

The state and local governments must consider more comprehensive excessive heat risk reduction strategies that go beyond public information and cooling centers and initial response. Although not all are directly attributed to areas for improvement in this report, the additional recommendations below have emerged to mitigate against future climate-driven events like extreme temperatures and other severe weather:

9. Assisting the Most Vulnerable and At Risk



In most disasters it is clear which homes, neighborhoods or communities are directly impacted: With approximately 4 million people under an excessive heat watch or warning statewide, the identification of our most vulnerable or at-risk population presents more of a challenge. State and local governments must establish additional mechanisms to identify those who may be in need of additional assistance during an emergency but who may not have consistent or reliable access to transportation or information. Engaging private sector entities like medical providers and social service organizations should be included in this effort. This will assist in prioritizing limited resources to support those who need help the most.

10. Fatality Management Reporting and Planning

The State Medical Examiner's Office will update its fatality management plan.

- The State Medical Examiner will establish tracking criteria for cases reported by county agencies regarding disasters including heat, ice, floods, etc.
- It will close all information loops, so the county and state medical examiners become the central hub for fatality information verification in emergencies.

11. Ensure 24-Hour Watch and Warning for the State Emergency Coordination Center

As approved during the 2021 legislative session, OEM will be resourced to maintain the OERS system 24/7 notification, watch and warning capability beginning in July 2024. This will provide OEM with around-the-clock monitoring and communication capabilities that currently only exist through a rotating on-call duty-officer program.

12. Prepare and Leverage the State's Workforce

The state should assess how best to incorporate Workday, the state's human capital management system, into efforts to:

- Identify state employees who may have special skills or training to assist with emergency response.
- Communicate emergency preparedness and risk reduction information to the state workforce.

13. Better Incorporate Multiple Hazards into Preparedness Messaging and Outreach

A key lesson learned from the region's deadly heat wave is that risk communication needs to reach more people. The state will evaluate methods to achieve this objective.

- OEM oversees the "2 Weeks Ready" campaign, which is designed to communicate the message that families and individuals need to be ready to take



care of themselves for two weeks after a disaster strikes. Although the “2 Weeks Ready” message isn’t intended to focus on a specific hazard, it is most closely associated with the threat of a Cascadia Subduction Zone earthquake and tsunami. Additional emphasis must be placed on other hazards we face in Oregon and the need to be prepared for severe weather, wildfire, infrastructure outages and more frequent events.

14. Ensure Extreme Heat and Climate Change are Addressed in State Plans

Extreme heat has not been prominently featured in the State Natural Hazard Mitigation Plan or Emergency Operations Plan.

- Currently under revision, OEM, DLCDC and other partner agencies will incorporate extreme heat as an identified hazard. OEM will establish within its mitigation section a Climate Change and Adaptation mitigation planner to lead efforts to incorporate climate change and adaptation strategies into the current update of the state’s mitigation plan.
- OEM will work with ESF lead state agencies to develop an Excessive Heat annex to the State Emergency Operations Plan.

15. Develop Projects and Pursue Federal Funds to Reduce Risk from Extreme Heat

OEM’s regional mitigation and recovery coordinators, funded through the governor’s budget and approved in the 2021 legislative session, will assist local and tribal governments with developing excessive heat mitigation and risk reduction projects for consideration under federal mitigation grant programs.

16. Continued Process Improvements

Assess additional after-action reviews and recommendations from reports completed by local governments and state agencies for incorporating into statewide extreme heat risk reduction initiatives.

Areas for Future Study/Analysis

- Placing free or low-cost air conditioners, cooling systems, or alternatives with less of an impact to the environment, in homes of vulnerable and at-risk populations. These assessments should also consider utility subsidies to offset the cost of utilizing these potentially life-saving systems.



- Land use and building code impacts on vulnerable communities during extreme heat events; requirements for green space, tree cover, insulation standards, green roofs, etc., in existing high population/high concrete-built environment areas.

Conclusion

We know actions taken during the June 2021 heat wave saved lives. However, we also know at least 83 Oregonians tragically lost their lives due to inability or reluctance to access resources available to combat the extreme heat. This report and subsequent recommendations will strengthen the state's ability to reduce further loss of life in heat events.

Contributors

Agencies and organizations contributing to this report include representatives from local, state, tribal and federal government and non-profit organizations. OEM would like to thank the following entities for their contributions to the development of this report:

- 211Info
- American Red Cross
- City of Portland
- Clackamas County
- FEMA
- Lane County
- Marion County
- Multnomah County
- National Weather Service
- Oregon Department of Administrative Services/Statewide Interoperability Coordinator
- Oregon Department of Human Services
- Oregon Health Authority/Public Health
- Oregon Occupational Health and Safety
- Oregon State Police/State Medical Examiner
- Public Utilities Commission/Communications and Energy
- Tillamook County
- Union County
- Washington County