

## CLIMATE ADAPTATION & RESILIENCE ROADMAP: EXECUTIVE SUMMARY

Oregon's best available climate change projections indicate that average annual temperatures will increase 5°F by the 2050s and 8.2°F by the 2080s. The frequency, duration, and intensity of extreme heat events is also expected to increase over time.<sup>1</sup> Drier and hotter conditions will exacerbate wildfire risk; fires will be more frequent, large, and destructive. Floods will be more frequent and severe, and their "footprint" will expand in and beyond areas currently affected. The winter weather conditions and atmospheric river events that cause safety concerns and contribute to transportation delays and closures (i.e., "winter events") are expected to become more intense, increasingly variable, and harder to predict.<sup>2</sup> These changes directly expose infrastructure, employees, and the public to more frequent and intense hazard events.

### **In Oregon, primary climate stressors and their transportation impacts include:**

- *Increased Frequency / Magnitude of Inland Flooding*  
Transportation impacts include: damage and road closures resulting from concentrated runoff and scour, flooding, landslides and rock-fall.
- *Higher Sea Levels/coastal storms*  
Transportation impacts include: damage and road closures from increased wave heights, flooding, storm surge, and coastal erosion.
- *Extreme Heat*  
Transportation impacts include: damage and road closures due to heat and wildfires. Health and safety concerns for personnel.

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1 Dalton, M., and E. Fleishman, editors. 2021. Fifth Oregon Climate Assessment. Oregon Climate Change Research Institute, Oregon State University, Corvallis, Oregon. <https://blogs.oregonstate.edu/occri/oregon-climate-assessments/>.

2 Mote, P.W., J. Abatzoglou, K.D. Dello, K. Hegewisch, and D.E. Rupp, 2019: Fourth Oregon Climate Assessment Report. Oregon Climate Change Research Institute. [ocri.net/ocar4](http://ocri.net/ocar4)

## **An Ounce of Prevention is Worth a Pound of Cure**

Investing in upgrades that reduce or avoid damage saves lives, protects infrastructure, helps economies recover faster and lowers recovery costs. The 2019 federal Multi-Hazard Mitigation Council report on the cost and benefits of preventing infrastructure damage from climate hazard events **estimates returns of four to six times an initial investment.**<sup>3</sup>

## **The Business Case for Proactive Adaptation**

Frequent delays and closures impact the movement of freight, and influence where people choose to live or work. These challenges also impact the economy as a whole but can be difficult to quantify.

ODOT's Statewide Integrated Model helps the agency estimate economic losses from transportation interruptions due to hazard events. The agency is already using the model as part of strategies for maximizing resilience funding. The model is currently being applied to several high-risk locations across the state highway system. The results will help the agency gain a better understanding of potential outcomes of intentional investment and disinvestment. The model results will also be used to inform development of potential funding scenarios and resilience investment business cases.

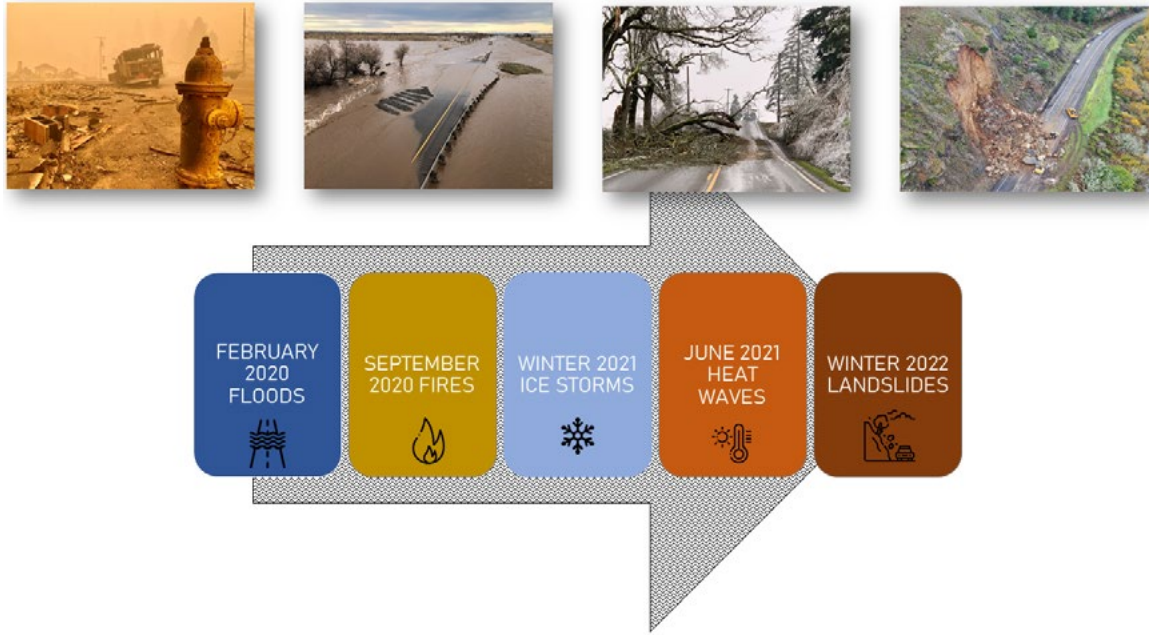
## **PURPOSE OF THIS DOCUMENT**

The purpose of the Climate Adaptation and Resilience Roadmap is to set the agency's strategic vision and framework for building resilience to climate change. The roadmap presents a statewide climate risk assessment and outlines the adaptation strategies and actions the agency will take to increase transportation system resilience.

Oregon is already experiencing extreme weather events and consequences that are projected to become more widespread and severe in the coming decades. To reduce risk and address changes as they evolve, ODOT needs to account for climate change in design, operations, maintenance and project planning. Climate adaptation and resilience planning is not just about abstract or uncertain future events. Adaptation is also about preparing for and adapting to impacts that are already occurring today, while considering how the events might change or increase in magnitude and frequency going forward.

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3 Council, M. H. M. (2019). Natural Hazard Mitigation Saves: 2019 Report. Accessed 12/04/22 at <https://www.nibs.org/projects/natural-hazard-mitigation-saves-2019-report>



*Extreme events with severe transportation system safety and reliability consequences since 2020.*

Failure to adapt through inaction will increase risks of damage to transportation systems, with negative impacts on people, the economy and more. ODOT can strategically build system resilience by assessing risks and responding with targeted and agency-relevant decisions that support prevention, preparedness, response, and recovery.

## NEXT STEPS

Over the next several months, ODOT’s Climate Office Adaptation Team will work with a cross-functional implementation team made up of subject matter experts across ODOT divisions. Teams will operationalize resilience strategies and develop a centralized governance and reporting structure. Effective implementation will require cross-functional coordination internally, as well as with federal, state and local agency partners, Tribes and Indigenous groups, and community members. The goal is to find collaborative approaches and solutions, connect with impacted stakeholders, and learn best practices.

### **Some of the Actions ODOT will take during Year One Implementation:**

- » Update agency policy plans to integrate climate risk considerations.
- » Establish consistent agency resilience goals, talking points, and language.
- » Integrate climate risk data into decision-making processes, starting with high-impact decisions.
- » Develop agency-wide metrics for tracking impacts of climate stressors.
- » Expand participation in and advancement of research activities.
- » Publish a centralized hub for all ODOT relevant climate data, education resources, and tools.

- » Identify federal, state, and local funding sources that can be used for resilience investments.
- » Use in-house modeling and economic analysis to inform cost benefit analysis and funding needs.
- » Use adaptation index to cultivate competitive resilience projects for potential funding opportunities.
- » Adopt Climate Hazard Risk Maps as agency tool to identify and prioritize investments on resilience corridors.
- » Pilot use and application of climate data and resilience best practices for hazard-prone infrastructure on resilience corridors.
- » Evaluate routine, maintenance schedules to ensure resilience corridors areas are prioritized.

Adopting this roadmap marks the beginning of documenting and expanding on ODOT's portfolio of climate adaptation and resilience efforts, including internal efforts to significantly improve how we capture impacts of climate change on agency budgets, resources, and operations. As the agency undertakes operational planning and implementation of these strategies, we are committed to remaining nimble and responsive to the fiscal landscape and constrained resources of the agency. Reducing the burden that climate hazards and impacts place on ODOT budgets, staff, and other limited resources is at the heart of adaptation and resilience work.