

Research Stage 1 Problem Statement

Use this form to propose new ODOT research. Research projects start with the identification of a specific problem affecting Oregon's transportation system. This form should be limited **seven pages** at 12 pt font for ADA purposes. At this stage, we are looking to identify the topic and do not need a detailed project proposal. (Given the agency workload the expectation is that **this form should take any one individual a couple of hours to complete**, extensive pre submittal collaboration is not required.)

PLEASE READ THE [RESEARCH PROBLEM STATEMENT GUIDANCE](#) ONLINE BEFORE STARTING THIS FORM.

INTERIM TITLE: DEVELOPMENT OF BETTER EFFICACY MODELS FOR WILDLIFE CROSSING STRUCTURES ON US-97 FOR HB 2834 COMPLIANCE

1. Concisely describe the transportation issue (including problems, improvements, or untested solutions) that Oregon needs to research.

HB 2834 (2019) required ODOT to establish a program by Dec. 31, 2023, to reduce wildlife-vehicle collisions in areas where wildlife corridors identified in ODFW's Corridor Action Plan (Plan) intersect with public roads. After implementation of the Plan, ORS 366.162 required ODOT to report to the legislature every two years on the number and types of wildlife passage projects and their effect on wildlife-vehicle collisions.

Two reporting requirements are laid out in ORS 192.245:

- Information concerning the number and types of wildlife corridor infrastructure projects established or planned
- The realized or expected effect of established or planned wildlife corridor infrastructure projects on the number of wildlife vehicle collisions

The Human and Ecosystem Resilience and Sustainability Lab, in partnership with the Oregon Department of Transportation, Oregon Department of Fish and Wildlife, and Central Oregon LandWatch implemented a one and a half year effectiveness monitoring study of five wildlife crossing structures (WCS) and associated mitigation infrastructure (MI) (exclusion fencing, ungulate guards, and escape ramps) on U.S. South Highway 97 (US-97) between mileposts 145-185 in central Oregon. Additionally, this project included a seventeen-year analysis of deer-vehicle collisions associated with the highway reach.

Findings indicate that the combined passage rate at the five undercrossings was >70% for both ungulate species. However, exclusion fencing was limited in its utility to reduce deer-vehicle collisions. Deer vehicle collision data exhibit significant interannual variability, as does carcass count at fence ends. An additional caveat to both our reported passage rate and passage rates reported in previous studies is the extent to which individual ungulates captured by cameras are actually the same individual habitually using a crossing structure. A robust and consistent monitoring protocol is needed to determine buffer distances of fence ends and reporting of wildlife-vehicle collisions.

2. What final product or information needs to be produced to enable this research to be implemented?

The five wildlife crossing structures on US-97, while variable in their efficacy, allow for safe ungulate passage across the highway corridor. However, future work should center on the number of actual

individuals using the structures versus total counts of individuals to enhance metrics of success. Additionally, models that incorporate population estimates should also be considered, as they would allow for more comprehensive understanding of structure use on a population level. In addition, a better understanding of how variability in deer vehicle collision data and carcass count at fence ends contributes to overall expected effect of wildlife passage projects. Both are needed to ensure accurate reporting to the Oregon legislature, as required.

3. (Optional) Are there any individuals in Oregon who will be instrumental to the success of implementing any solution that is identified by this research? If so, please list them below.

Name	Title	Email	Phone

4. Decision making lenses

Please complete the following three sections. Your answers to these questions will be applied on a programmatic basis to support agency decisions. Answering yes to the questions below is not required. Resolving a narrowly focused technical research problem may meet agency needs without answering yes to any of the following questions. The ODOT Research Section will seek a balanced portfolio some projects will answer yes to one of the three categories below (e.g. climate, equity, and/ or safety) and other projects in a different category.

We are looking for an overall program balance and no one project is expected to balance all categories. Generally, a research problem statement is expected to be able to answer yes with clear and verifiable information in only one of the three categories below, some projects may be able to answer yes in two or even three categories. Some projects (i.e. needs focused on specific elements of infrastructure design), may have no yes answers but may still be high value research need.

Climate

Oregon recognizes the climate crisis and makes systemic changes to reduce emissions caused by travel. Every mile driven in Oregon is powered by a clean source of fuel. We seek research that supports construction and maintenance operations are carbon neutral and investments in mobility that support travel by low and no emission modes. While every research project may not result in a reduction in emissions, transportation investments overall support emission reductions to achieve state goals. Oregon envisions a transportation system that is resilient in the face of seismic and climate events and impacts to the degradation of the natural environment are reduced. Our vision includes a transportation infrastructure is built in a way that avoids impacts on key habitat and results in better environmental conditions for wildlife and native vegetation. For definitions and details please review the equity vision, goals, and objectives of the [ODOT Strategic Action Plan](#) and [Oregon Transportation Plan](#).

4f. Will addressing the **transportation issue** identified as a need in Question 1 develop, or validate methods for the estimation, measurement, or monitoring of transportation generated greenhouse gasses (GHG)?

☐ Yes

☒ No

☐ Unsure

4g. If climate or GHG is not the focus of this **transportation issue** identified in this problem statement, will the research apply a GHG analysis to transportation infrastructure, planning, operations, maintenance, or materials?

☐ Yes

☒ No

☐ Unsure

4h. Will the addressing the **transportation issue** include development or testing of construction practices, methods, or materials to establish potential reductions in greenhouse gas emissions?

☐ Yes

☒ No

☐ Unsure

4i. Will the solving the **transportation issue** in question 1 study or support the reduction of vehicle miles traveled and single occupancy vehicle travel or support transition to electric vehicles (or other types of zero emission vehicles) or low-carbon alternative fuels?

☐ Yes

☒ No

☐ Unsure

4j. Will the solving the **transportation issue** in question 1 lead to work that will support, measure, monitor, transportation system resilience in response to expected climate events, effects, or natural disasters in general?

☒ Yes

☐ No

☐ Unsure

4k. Will the solving the **transportation issue** in question 1 lead to work that may result in better environmental conditions for wildlife and native vegetation ?

☒ Yes

☐ No

☐ Unsure

4l. If you answered yes to any of the climate questions above or can provide alternative details related to climate, please provide additional information:

Wildlife passage monitoring is crucial for adapting to climate change, as it helps identify and maintain habitat connectivity, allowing animals to migrate to new areas in response to changing conditions. By strategically placing and designing crossing structures with climate change in mind, ODOT can support wildlife movement, reduce wildlife-vehicle collisions, and increase ecosystem resilience to climate impacts like increased flooding, droughts, and wildfires. This requires integrating future climate projections into transportation and land-use planning and combining data from monitoring technologies like camera traps and deer vehicle collision data with landscape modeling.

Equity

Equity can have many dimensions and impacts relating to communities, and transportation. It is important that problem statement proposals clearly explain in what capacities are equity dimensions or impacts being examined within problem statements. It is a goal of the OTP to “Improve access to safe and affordable transportation for all, recognizing the unmet mobility needs of people who have been systemically excluded and underserved. Create an equitable and transparent engagement and communications decision-making structure that builds public trust”. Proposed research may have the intent of studying elements of this goal or apply analysis to specific transportation topics to ensure the resulting research recommendations is consistent with our equity goals. For definitions and details please review the equity vision, goals, and objectives of the [ODOT Strategic Action Plan](#) and [Oregon Transportation Plan](#).

4a Is the **transportation issue** identified as a need in Question 1 specifically focused on transportation equity?

☐ Yes☒ No☐ Unsure

4b If the **transportation issue** is not focused on transportation equity, will the primary topic be assessed for equity benefits or impacts within the research project?

☐ Yes☒ No☐ Unsure

4c Is the implementation of potential findings from this research likely to directly involve participation from an identified group that would benefit from an equitable process or outcome?

☐ Yes☒ No☐ Unsure

4d Is the intended final product or information expected to support ODOT's equity efforts (Including but not limited to supporting one of the equity related objectives of the [ODOT's Strategic Action Plan](#) or [Oregon Transportation Plan](#)) ?

☐ Yes☒ No☐ Unsure

4e If you answered yes to any of the equity questions above or can provide alternative details related to equity, please provide additional information:

Safety

4m. Will solving the **transportation issue** in question 1 support improving **safety culture** for either transportation workers or the traveling public?

☐ Yes☒ No☐ Unsure

4n. Will the solving the **transportation issue** support improving safety through **healthy and livable communities**?

☐ Yes☒ No☐ Unsure

4o. Will solving the **transportation issue** support improving safety through using **best available technologies**?

☐ Yes☒ No☐ Unsure

4p. Will solving the **transportation issue** support improving safety through **communication and collaboration**?

☐ Yes☒ No☐ Unsure

4q. Will the solving the **transportation issue** support improving safety through **investing strategically**?

☒ Yes☐ No☐ Unsure

4r. If you answered yes to any of the safety questions above or can provide alternative details related to safety, please provide additional information:

The Wildlife Crossing Structure Effectiveness Study measured rates of ungulate use to describe the capacity to provide habitat connectivity and limit deer-vehicle collisions. Findings indicate that the combined passage rate at the five undercrossings was >70% for both ungulate species. However, exclusion fencing was limited in its utility to reduce deer-vehicle collisions. Critically, monitoring

identified specific features requiring adaptive management strategies due to complications resulting from existing WCS and MI design. Insights from this work provide context and recommendations for future projects aimed at prioritizing safe passage for ungulates and increasing driver safety statewide.

5. Other comments:

6. Corresponding Submitter's Contact Information:

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This form is not a grant application or contract document. Please do not include proprietary information on this form. Once this form is received ODOT may revise and publish the problem statement. If selected, ODOT will assign investigator(s) of the department's choosing to conduct research.