



Research Problem Statement Guidance

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GENERAL GUIDANCE:

Because the research budget is limited relatively few of the problem statements submitted will receive funding to become research projects. Developing a problem statement that is well written and contains all the requested information will help improve the chances of it being selected.

The following section includes tips for writing a successful problem statement. There is no guarantee that the problem statement you submit will be selected but following these tips may improve its chances.

In your development of a problem statement, the Research Section highly encourages that do the following:

Work with a Research Section Staff Member – Research Coordinators will assist you in the preparation of a problem statement. Contact information for our research coordinators is available online at:

<https://www.oregon.gov/ODOT/Programs/Pages/Research-Contacts.aspx>

Start Early – problem statements that are well thought-out and put together have a better chance of being selected. That being said, we are aware that agency staff are busy and expect that gathering information for submittal to take around 2 hours, and should not need to exceed 5 hours.

Collaborate – discuss your research idea with colleagues who have experienced similar issues or who might be involved in implementing the research findings. Work together on the problem statement

Number and Title. The proposal number and title will be assigned by ODOT research staff.

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

In this space please focus only on the topic of this proposed research. Explain only **what** needs to be studied.

Please consider:

- a. "Transportation Research" means any study or other analytical undertaking that facilitates any mode of transportation within this state. The term includes, but is not limited to, the research of highway, transit, rail and aviation capital infrastructure, bicycle and pedestrian paths, bridges and ways, and other projects that facilitate the transportation of materials, animals or people.
- b. Please try to make sure the problem is research. The issue should have a significant connection to providing for the transportation of people or goods in Oregon. We are looking for transportation research that is novel, creates useful solutions, and resolves uncertainty. The following table may help you test your problem statement to see if the idea is research.

What makes it Research	When it is ODOT Research (Examples)	When it is NOT ODOT Research (Examples)
<p>Research is novel.</p> <ul style="list-style-type: none"> It increases our knowledge of the subject. It hasn't been done before. 	<p>No one has ever done it before.</p> <p>You are testing pavement samples as part of a research project to find out the effects of a new maintenance process.</p> <p>You are testing a new method of including the public in the transportation planning process.</p>	<p>You would like to do something that 49 other states do.</p> <p>You are using an established practice to test pavement samples to identify if they meet industry standards.</p> <p>You are developing a transportation plan using established methods in a community that has never had a plan.</p>
<p>Research creates solutions useful to others.</p> <ul style="list-style-type: none"> Others might benefit from the findings. The findings can be generalized to other situations and locations. 	<p>You are measuring trends in human behavior and proving that these trends have an effect on driver safety.</p> <p>You are testing a pavement on your highways that is currently used only at airports. Other states will want the results.</p>	<p>You are developing your internal communications plan.</p> <p>You are exploring a highly theoretical nuance of a concept or idea.</p>
<p>The outcome of Research is uncertain.</p> <ul style="list-style-type: none"> The solution isn't obvious to an expert in that field. 	<p>Finding out the answer may change how you do your work.</p> <p>Your research involves monitoring streams to determine whether a new culvert design is affecting the population of a particular type of fish.</p>	<p>You know the answer you need to get from the research</p> <p>You are monitoring streams as part of plan or EIS to implement long-term monitoring for a particular type of fish. (The monitoring plan has already been tested and you are certain of the quality of the plan.)</p>

ODOT focus on selecting transportation research projects that are timely, intellectually robust, and relevant to the ongoing delivery of transportation infrastructure and services in Oregon.

To make sure the Research is novel. Please verify that you have checked key words of your problem statement in the TRID and Research in Progress databases. You may find the solution to your problem has already been documented in existing research.

2. Illustrate how this transportation issue is important to Oregon and ODOT's mission.

Research must be strategically aligned with needs of the state and the mission of the agency. In this space please focus only the importance of this work to ODOT. Explain **why** this work is needed.

Please consider:

- a. Review Research's Strategic Priorities – for each general topic of research priorities may be found online at: <https://www.oregon.gov/odot/programs/pages/research.aspx#step8>.
Reviewing these is a good way to generally determine how your idea aligns with current priorities. Research is also open to emerging issues not detailed in these priority lists.
- b. In this section you may want to document the benefits of the research to ODOT and the state of Oregon. Benefits could be related to safety, access and mobility, durability and service life, the environment, cost savings and cost avoidance, or other factors. This section may also address the impact to ODOT if the research is not done.

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

ODOT Research exists to conduct applied research that, if successful, can be used by our professional transportation staff, field crews, contractors, or other transportation providers. Explain **how** we could apply the results of the proposed research to the work of ODOT or another transportation agency.

Please consider:

- a. ODOT Research projects are typically considered applied research; therefore, our work is focused on developing new knowledge with a specific practical application of our results. Because of the focus on research application, projects are selected based on the potential to provide a benefit to ODOT and the state of Oregon.

Benefit Type:	Benefit Measures	Benefit Value
Identify the type of benefit (e.g. safety, access and mobility, durability and service life, the environment, cost savings and cost avoidance, or other factors)	Indicate if the benefit can be measured, and what will be used to measure the benefit.	Identify the importance of the benefit. (e.g. if successful the project will increase safety on the state highways)
Identify if the research benefit may be to disprove the perceived benefit of existing practice.	Measures may include: time (years of service), safety (hours of worker exposure or crash rates), Savings (dollars), etc.	Provide a quantitative estimate or the research benefit. (e.g. if successful we will save \$50,000 / year for the agency)

The Implementations of research findings vary from project-to-project. Once ODOT Research has complete a research project, the integration of the findings into the day-to-day work of transportation professionals becomes the responsibility of others. In this section of the problem statement discuss who will use the research results, and identify the best way to share the research results with them.

Examples of implementation may include training videos; revisions to agency guidelines, policies, or specifications; web pages, or other communications. If the implementation will include a revision to existing guidelines, policies, or specifications, please identify who has authority to change the document.

4. (Optional) If able, list the proposed scope of work tasks for this research project. This can include potential research, development, or technical transfer activity(ies) that may develop better understanding of the transportation issue and lead to an improvement in the Oregon’s transportation infrastructure or services.

Use this space to describe the **type** of research that is needed to help solve the problem (e.g. field studies, lab analysis, program testing, etc.). Use past research or other information sources to help define the research direction. This section may be an overview of the research and does not need to include specific details of the research tasks.

If this is not completed, the work will need to be done by the Research Section (in consultation with subject experts) to some extent before the ETG meeting and again if the project advances to Stage 2.

Please consider:

- a. ODOT research projects typically involve the systematic application of a test or series of tests of potential solutions to the research problem. This normally involves the documentation of measurements, comparisons, observations, or other records that demonstrate the effectiveness of the proposed solution. This section is more about what needs to be measured and does not need to describe every step of the research.

The table below provides a general outline of what we are looking for in this section.

1. Identify the potential solution(s) to your problem identified above.	2. Discuss why the available information (previous research, existing policies, manuals, practices) do not solve the problem.	3. Identify what is needed to demonstrate that the potential solution(s) will (or will not) help solve the identified problem.
4. (Optional) Identify potential tests and measures that can be used to support such a demonstration.	5. (Optional) Identify any existing information, data, cases, or other resources that may be tested or measured to support such a demonstration.	6. Identify if you need this research completed by a specific date.

For detailed information regarding the research process see: NCHRP 727 “Effective Experiment Design and Data Analysis in Transportation Research”

https://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_727.pdf)

5. (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.

Please consider:

- a. Discuss the Project with the Person who has the Authority to Implement the Results - ODOT’s research program is designed to find solutions to real transportation problems. It is expected that the results of a research project will be used. Gain the support of the person who has the authority to implement the results by discussing the project with them.
- b. Our form only has space for one submitter. This provides us with a single point of contact for continued development. You may use this space for individuals who contributed to the writing of the problem statement
- c. Selected research will be conducted in consultation with a Technical Advisory Committee of practicing professionals. Use this space to list potential TAC members.

6. Other comments:

Please add any additional information regarding the proposed project not covered in other questions.

Please consider:

- a. ODOT research will assign a project title. You may want to recommend a project title.
- b. Past work is important. You may want to include citations.
- c. Our resources are limited. Please indicate if additional funding is available from outside the ODOT Research program.
- d. Our reviewers have limited time. You do not need to use this space if you were able to clearly document the project using the space provided in other questions.

7. Single Submitter's Contact Information:

Our form only has space for one submitter. This provides us with a single point of contact for continued development. You may use Question 5 to add individuals who contributed to the writing of the problem statement

Please consider:

- a. When a research problem statement is selected and is funded, selection of a principal investigator is an open question. Within the scope of budget considerations and state contracting rules, the ODOT Research Section is responsible for selecting a principal investigator and, if necessary, developing a contract. Whenever a project sponsor is interested in contracting for work related to the project, that individual or organization will be considered, but will not necessarily be awarded a contract.
- b. In no case can a contract be awarded to a private individual or firm without going through the appropriate selection and contract procurement processes governed by statute and agency policy.
- c. Individuals who submit problem statements but do not participate as paid investigators have the option to explore voluntary participation in the research by lending their expertise as a member of the Technical Advisory Committee.