



## FY 2016 Research Problem Statement

ODOT Research Section  
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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. Please contact Linda Perkins at [Linda.Perkins@odot.state.or.us](mailto:Linda.Perkins@odot.state.or.us) with your contact information and a brief description of the research topic.

**Start Early** – problem statements that are well thought-out and put together have a better chance of being selected.

**Review Research's Strategic Priorities** – for each general topic of research, such as planning or traffic safety, annual research priorities are set ([http://www.oregon.gov/ODOT/TD/TP\\_RES/Pages/Step8.aspx](http://www.oregon.gov/ODOT/TD/TP_RES/Pages/Step8.aspx)). Reviewing these is a good way to generally determine how your idea aligns with current priorities.

**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

### I. TITLE

[Provide a unique title that represents the research idea]

A good title will:

1. Be as short as possible
2. Describes the research problem
3. Distinguishes the problem from related issues
4. Avoids jargon unless jargon is the focus of the problem
5. Catches the reader's attention and interest

## II. PROBLEM

[Describe the issue or problem and its relationship to ODOT's needs. Use past research or other information sources to help define the problem (a list of information resources is provided at: [http://www.oregon.gov/ODOT/TD/TP\\_RES/Guidelines\\_ProblemStatement.shtml](http://www.oregon.gov/ODOT/TD/TP_RES/Guidelines_ProblemStatement.shtml)). Describe the goal of the research in relation to the defined problem.]

Please try to make sure the problem is research. The problem 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 Research (Examples)	When it is NOT Research (Examples)
<b>Research</b> is novel. <input type="checkbox"/> It increases our knowledge of the subject. <input type="checkbox"/> It hasn't been done before.	No one has ever done it before.  You are testing pavement samples as part of a research project to find out the effects of a new maintenance process.  You are testing a new method of including the public in the transportation planning process.	You would like to do something that 49 other states do.  You are using an established practice to test pavement samples to identify if they meet industry standards.  You are developing a transportation plan using established methods in a community that has never had a plan.
<b>Research</b> creates solutions useful to others. <input type="checkbox"/> Others might benefit from the findings. <input type="checkbox"/> The findings can be generalized to other situations and locations.	You are measuring trends in human behavior and proving that these trends have an effect on driver safety.  You are testing a pavement on your highways that is currently used only at airports. Other states will want the results.	You would like to do something that 49 other states do.  You are using an established practice to test pavement samples to identify if they meet industry standards.  You are developing a transportation plan using established methods in a community that has never had a plan.
The outcome of <b>Research</b> is uncertain. <input type="checkbox"/> The solution isn't obvious to an expert in that field.	Finding out the answer may change how you do your work.  Your research involves monitoring streams to determine whether a new culvert design is affecting the population of a particular type of fish.	You know the answer you need to get from the research  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.)

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.

## III. PROPOSED RESEARCH, DEVELOPMENT, OR TECHNICAL TRANSFER ACTIVITY

[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 should be an overview of the research and does not need to include specific details of the research tasks.]

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” ([http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp\\_rpt\\_727.pdf](http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_727.pdf))

#### IV. POTENTIAL BENEFITS

[Articulate 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.]

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)

#### V. IMPLEMENTATION

[Identify the product the research will produce (e.g. guidelines, procedures, model, prototype). Describe how the results will be used and who in ODOT would be involved in implementation. Confirm that the agents of implementation support the project.]

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 an existing guidelines, policies, or specifications, please identify who has authority to change the document.

Please indicate any commitments of support you have received for the project, and complete Section VII of the problem statement.

#### VI. LIST OF REFERENCES *(optional)*

[List the references you identified when you searched for completed and current research.]

**Search the Internet for Relevant Resources** – a quick search on the internet will likely yield some relevant information on your research topic and help to strengthen your problem statement:

Name	Link
ODOT Research Section Publications	<a href="http://www.oregon.gov/ODOT/TD/TP_RES/ResearchReports.shtml">http://www.oregon.gov/ODOT/TD/TP_RES/ResearchReports.shtml</a>
Transportation Research Search (TRiS)	<a href="http://ntlsearch.bts.gov/tris/searchinput.do">http://ntlsearch.bts.gov/tris/searchinput.do</a> <i>TRIS is an online database of transportation research reports, books, conference proceedings and journal articles. Users may search the database by subject, keyword, author, title, etc. The search results include a list of publications sorted by year or relevance. The title of each publication is linked to additional information, including an abstract and a link to the document (if available).</i>
Research In Progress (RIP)	<a href="http://rip.trb.org/search/advanced_search.asp">http://rip.trb.org/search/advanced_search.asp</a> <i>RIP is an online database of ongoing research projects. The database includes descriptions of the projects as well as the project start and end date, and the contact information of people involved.</i>
ODOT Library	Website: <a href="http://www.oregon.gov/ODOT/TD/TP_RES/Pages/ODOTLibrary.aspx">http://www.oregon.gov/ODOT/TD/TP_RES/Pages/ODOTLibrary.aspx</a> Online catalog: <a href="http://69.63.217.28/O10019/OPAC/Index.aspx">http://69.63.217.28/O10019/OPAC/Index.aspx</a>
ODOT Specifications	<a href="http://www.oregon.gov/ODOT/HWY/SPECS/index.shtml">http://www.oregon.gov/ODOT/HWY/SPECS/index.shtml</a>

If you intend to submit a problem statement, please consider the following conditions.

1. 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.
2. 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.
3. 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.

#### **Person Responsible for Implementation:**

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.

#### **VII. CONTACT INFORMATION**

**Your name:** \_\_\_\_\_  
**Affiliation:** \_\_\_\_\_  
**Telephone:** \_\_\_\_\_  
**Email:** \_\_\_\_\_

**Person Responsible for Implementation:** \_\_\_\_\_  
**Affiliation:** \_\_\_\_\_  
**Telephone:** \_\_\_\_\_  
**Email:** \_\_\_\_\_

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