

NEVADA DEPARTMENT OF TRANSPORTATION

RESEARCH FULL PROPOSALS

Proposals should not exceed 10 pages (font size 12)

Page limit does NOT include cover page, CVs, resumes and budget

1. **TITLE (Required)**: State the title of the research study that highlights the focus of the proposed research in response to the corresponding problem statement.
2. **PRINCIPAL INVESTIGATOR (Required)**: Provide the name and title of the Principal Investigator (PI). Include an address, email and telephone number for the PI. Additional investigators' details may also be included.
3. **PROBLEM DESCRIPTION (5 Points)**: Define the specific problem the proposed research will address. Describe why the DEPARTMENT needs to research the proposed problem (i.e., how the existing research nationally and internationally does not fully solve the problem for the DEPARTMENT).
4. **BACKGROUND SUMMARY (15 Points)**: Include background information on the research topic using the following outline:
 - Summarize the DEPARTMENT's current practice related to the problem described above.
 - Summarize the finding of a preliminary literature search and describe how the proposed study is leveraging and not duplicating prior research.
 - Address why the proposed new research is needed by the DEPARTMENT beyond the existing research.
5. **PROPOSED RESEARCH (20 Points)**: Provide a detailed research plan including the methodologies and the justification for the selected methodology.

The research plan should have a list of specific tasks and provide details on the research activities and should list the deliverables for each task.

- Define the technical objectives.
- Describe the research methodology in detail:
 - Specify a set of tasks and describe how these tasks will directly address the identified problem.
 - **A separate task to produce a final report should be included in all proposals.**
- **Identify clearly the DEPARTMENT's staffing and equipment resources that will be needed to accomplish the proposed research.**

Comprehensive details should also be provided regarding data collection plans, data

sample sizes, statistical analysis methods, use of existing models or development of new models, expected survey techniques, etc.

List all of the deliverables for each task of the proposed research project including the following:

- a. Interim reports, synthesis documents and final report.
- b. Any programming codes, databases, and other tools to be developed.
- c. Models to be developed using proprietary and other programs

6. **URGENCY AND ANTICIPATED BENEFITS (10 Points each, Total of 20 points):** Include a statement on the importance of this particular research in this fiscal year rather than subsequent years.

Quantify the potential payoff from successful achievement of the project objectives.

- Provide a preliminary analysis of specific benefits anticipated as a result of this research:
- Provide the cost of implementation of the research results and the operations and maintenance when implemented.
- Include an estimate of the savings in terms of time, money, increased safety, improved service, or improved processes for the DEPARTMENT.

7. **IMPLEMENTATION PLAN (15 Points):** Identify at what stage of the research deployment (Five Stages of Research Deployment in pages 4 and 5 of this document) the proposed research is and clearly identify if the proposed research will result in deliverables that are ready for implementation. Any institutional, political, or socio-economic barriers to implementation of the anticipated research results/products should also be identified.

Address the following in this section:

- a. Identify all of the tasks and stages (include an estimate of costs beyond the proposed research) needed for full implementation of research results.
- b. Include an accurate estimate of the cost of research for implementation.
- c. If the proposed research will result in deliverables that are ready for implementation, **please include a task to develop a detailed implementation plan for the DEPARTMENT.**

8. **PROJECT SCHEDULE (5 Points):** Provide a detailed project schedule. Please consider the seasonal effects on data collection and other tasks in determining the overall schedule. Please suggest a starting date between Oct. 1, 2018 and Dec. 31, 2018. Please identify proposed timelines for completing the deliverables.

9. **FACILITIES AND EXPERTISE (5 Points)**: Describe the research team’s expertise and the facilities available to accomplish the research.

Indicate whether the equipment which is necessary for completion of the research is already available for the proposing entity. Specify any equipment which is necessary but not currently on-hand. Below is a definition of equipment according to the Nevada State Administrative Manual.

“Equipment” is defined as any item that must have an anticipated useful life extending beyond one year, must not be consumed in use, must not be attached permanently as a non-movable fixture, and must cost \$5000 or more.

Explain how the expertise of the proposers will aid the proposed research and include CVs and resumes as needed.

10. **BUDGET (10 Points)**: Include an estimate of the budget for each phase proposed (if more than one). The budget for the proposed research should be in the attached format (page 5 of this document, **the format has changed recently**).

An estimated budget for delivering a final report should be included as a separate line item in the budget.

11. **PROJECT CHAMPION, COORDINATION, AND INVOLVEMENT (OTHER DIVISIONS) (5 Points)**: Briefly describe the efforts made in seeking and utilizing the project champions’ input in developing this full proposal. **Identify all Stakeholders including the DEPARTMENT’s Sections or Divisions.**

Five Stages of Research Deployment

1. Concept Stage

- First steps following Problem Statement and Proposal Development
- Includes detailed literature search
- Involves experimental design, data collection, analysis, and reporting
- Assesses results of research
- Defines barriers to implementation (e.g., policies, specifications, standards)
- Submits a Final Report and outlines a recommended implementation plan
- Includes collaboration with outside agencies or other state DOTs and US DOT (Applies to all Stages of Deployment)

2. Laboratory Prototype Stage

- Develops breadboard circuit or computer system modeling
- Demonstrates operation in laboratory setting
- May incorporate customized or one-of-a kind components
- Assesses results
- Submits Final Report and recommends design of full scale demonstration
- Potential end users are enlisted to support the field pilot stage

3. Controlled Field Demonstration Stage

- Prepares for full scale testing of demonstration project
- Controlled tests at specialized facilities are observed and supported by cooperating agencies, industry, and technical associations
- Potential end users are enlisted to support the field pilot stage
- Assesses results
- Submits Final Report and recommends site/conditions for first application pilot stage

4. First Application (Contract) Field Pilot Stage

- Works with potential end users to select site and to conduct pilot testing under real world operating conditions
- Test specifications and standards are developed
- Research assistance given to assure proper installation and operation
- Problems are corrected and adjustments made, as necessary, to complete pilot testing
- To the extent possible, potential end users operate the project under careful research surveillance
- Assesses results
- Submits Final Report and recommends initial sites for full corporate deployment
- Potential end users are enlisted to support the field pilot stage

5. Specification & Standards with Full Corporate Deployment Stage

- End users select site(s) and deploy the method/process/equipment using resident management, supervision, staff, and contracting forces (where applicable)
- Deployment is without research supervision or direction
- On call assistance is available upon request
- Assesses results

Source: Based on Caltrans Research and Innovation Stages

STANDARD BUDGET ITEMIZATION FOR DEPARTMENT RESEARCH PROJECTS

Project Title:
Project Duration:

Name	Position / Title	% Fringe Benefit	Total Fringe Benefit	Salary or Wage	Monthly % Salary or Hours	Total Monthly Wage	Total Year 1
			\$	\$		\$	\$
			\$	\$		\$	\$
			\$	\$		\$	\$
Year 1 Total			\$	\$		\$	\$
Name	Position / Title	% Fringe Benefit	Total Fringe Benefit	Salary or Wage	Monthly % Salary or Hours	Total Monthly Wage	Total Year 2
			\$	\$		\$	\$
			\$	\$		\$	\$
			\$	\$		\$	\$
Year 2 Total			\$	\$		\$	\$
Name	Position / Title	% Fringe Benefit	Total Fringe Benefit	Salary or Wage	Monthly % Salary or Hours	Total Monthly Wage	Total Year 3
			\$	\$		\$	\$
			\$	\$		\$	\$
			\$	\$		\$	\$
Year 3 Total			\$	\$		\$	\$
					Year 1	Year 2	Year 3
A. Personnel					\$	\$	\$
B. Travel					\$	\$	\$
C. Operating Costs					\$	\$	\$
D. Final Report Preparation and Submission					\$	\$	\$
E. Other Costs					\$	\$	\$
F. Subcontracts (Only the first \$25,000 on which indirect costs are allowed)					\$	\$	\$
G. Subtotal of Direct Costs (sum of A thru F)					\$	\$	\$
H. Total Indirect Cost (% of G at corresponding rate of indirect costs)					\$	\$	\$
I. Student Tuition and Fees					\$	\$	\$
J. Subcontractor (in excess of the first \$25,000)					\$	\$	\$
K. TOTAL PROJECT COSTS PER YEAR (sum of G thru J)					\$	\$	\$
TOTAL PROJECT COST							\$

Notes:

- 1) DEPARTMENT only pays for travel that is essential for the completion of the project and cost are per state rates. Travel costs to professional and other meetings are not allowed. **Out-of-state travel requires DEPARTMENT approval in advance.**