



METRANS Transportation Center

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Request for Proposals for Research Projects 2
National Center for Sustainable Transportation Year 2
METRANS Tier 1 UTC Caltrans Projects
FY 2015 - 2016

RFP Issued: March 24, 2015

Proposals Due: April 27, 2015

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Introduction

The METRANS Transportation Center includes the METRANS University Transportation Center (UTC), MetroFreight, and the National Center for Sustainable Transportation (NCST). The METRANS UTC is a United States Department of Transportation (USDOT) Tier 1 University Transportation Center. It is a partnership of the University of Southern California (USC) and California State University, Long Beach (CSULB). MetroFreight is a Volvo Research and Education Foundation Center of Excellence. METRANS is a partner in NCST, a National UTC led by University of California, Davis. METRANS emphasizes research directed at solving significant metropolitan transportation problems while contributing to knowledge. We expect that METRANS funded research will result in scholarly publications and will serve as seed funding that generates larger grants from other sources.

This RFP

METRANS is issuing this RFP to allocate Year 2 NCST and additional METRANS Year 2 Tier 1 research funding. For NCST, proposals are requested that address the thematic areas of the Center. Tier 1 proposals are requested for *specific Caltrans research projects only*. Funding available under this RFP is approximately \$400,000 for METRANS NCST Projects and \$300,000 for METRANS Tier 1 Projects. The amount awarded under this RFP will be determined by the quality and relevance of proposals received. Given the anticipated competition for these funds, prospective applicants should carefully consider their expertise relative to the thematic areas of NCST and the Caltrans topics. We anticipate that projects funded under this RFP will begin in the summer or fall of 2015.

Those who have submitted proposals to METRANS in response to previous RFPs are advised to read this RFP carefully, as several changes have been made regarding topic areas, eligibility, and evaluation criteria.

The remainder of this RFP describes eligibility requirements, research topics, selection criteria, funding guidelines and restrictions, project requirements, and proposal instructions as well as budget instructions and sample budget sheets for both USC and CSULB. Submission instructions and a METRANS cover page are also provided.

Eligibility

Full-time tenure track and research faculty members eligible to serve as Principal Investigators at USC or CSULB are eligible to serve as Principal Investigators on METRANS UTC grants. Proposals may include multiple investigators. Proposals may also include research faculty and non-tenure track faculty from USC and CSULB as Co-Principal Investigators.

Research Program Themes and Topic Areas

1. National Center for Sustainable Transportation

The goal of the NCST is to produce research that directly supports the efforts of policy makers and professionals to improve the sustainability of the transportation system. Proposed research may be in any discipline and multidisciplinary topics are encouraged when appropriate. The NCST Leadership Council has encouraged the Center to support research in the area of climate change adaptation and system resiliency and proposals that address the economic and/or equity implications of environmental sustainability strategies.

The primary METRANS focus area for NCST research is improving efficiency and sustainability in urban freight. Improvements may be achieved through technology, operational efficiencies, or policy incentives. All modes of surface freight transport are of interest. Possible topics include: 1) system management strategies to facilitate truck movements, 2) consolidation or other load management strategies, 3) more efficient fuels, vehicles, or modes.

Proposals addressing other sustainability topics that fall within the mission of METRANS – solving transportation problems in large metropolitan areas – are also encouraged. Proposals may address passenger or freight transport. Possible topic areas include: 1) spatial patterns and the sustainability of passenger and freight transport, 2) public transit management and productivity, 3) resiliency of urban transportation systems.

Funding for the NCST is from both the US Department of Transportation and by Caltrans. Submission of proposals consistent with *both* the mission of METRANS and the mission of Caltrans and its research needs for the NCST is encouraged. NCST Caltrans topics are described in Appendix A.

White Papers

NCST encourages proposals for white papers that offer a synthesis of the literature on a specific sustainability topic of critical policy interest. The white papers should summarize the state of knowledge and identify research gaps. White papers are aimed at a broad audience of professionals and policy-makers. The white papers are typically funded at \$10,000 - \$12,000.

2. METRANS TIER 1 UTC

This RFP seeks proposals on the following METRANS Tier 1 Caltrans topics only:

- Identification of Warehousing and Distribution Centers in California
- Freight Mobility Patterns of Key California Industries
- Methods for Assessing Project Benefits and Costs across Modes
- Rail Operating and Capacity Model Assessment

These topics are further described in Appendix B.

Selection Criteria

Transportation researchers and practitioners will evaluate proposals. Proposals will be selected on the basis of their evaluations along with programmatic priorities. Proposals will compete both within topics and across topics. METRANS does not guarantee that proposals will be funded in all topic areas, or that any proposal will be funded.

Reviewers will evaluate proposals according to the following selection criteria:

- Demonstrated relevance to the above research program themes (a requirement)
- Quality and research significance
- Student involvement
- Reasonableness of budget and cost-effectiveness
- Qualifications to perform work and likelihood of successful completion
- Match funding and potential for attracting larger grant funding
- Prior performance on METRANS grants (if applicable)

Proposals that involve collaboration between CSULB and USC, interdisciplinary proposals that cross school boundaries as well as participation from outside organizations are encouraged.

Proposers are encouraged to communicate with members of the METRANS Executive Committee or other outside organizations in the development of research proposals. A list of Executive Committee members can be found in the directory page of www.metrans.org. Commitments of participation (for example data sharing or match funding) from outside of METRANS will be a consideration in making awards. *Any project that involves data collection, access to facilities, or cooperation of a private or public entity must include a letter of participation from the entity.*

Proposers are encouraged to include undergraduate students in the research project if appropriate. There are potential funding opportunities through various university programs that could support students working on METRANS projects, for example the USC Viterbi School of Engineering Merit Research Program, or the USC McNair Scholars Programs. Proposers are strongly encouraged but not required by this RFP to explore such opportunities with their schools and universities.

Match Funding

The USDOT University Transportation Center program requires a non-federal match as a condition of the federal funds. Caltrans provides only a portion of the required match. Thus METRANS encourages proposals that include match funding from non-federal sources. Proposals that include at least a 10% hard match (e.g. contribution to direct costs from external source) will receive priority consideration. For additional information, contact METRANS Assistant Director Victoria Valentine Deguzman at VictoriV@usc.edu.

Project Selection

The METRANS Executive Committee will make final project selections, taking into account reviewer evaluations, programmatic priorities, and prior project performance. For Caltrans funded projects, Caltrans will approve selected projects. Executive Committee members are allowed to submit proposals, but are not allowed to be present during deliberations and voting related to their proposals.

Funding Guidelines and Restrictions

Budgets should be conservative and cost-effective. Funding should be directed at new and original work. In some cases, METRANS will consider continuations of prior METRANS projects that have achieved significant results and have a high potential for deployment, scholarly products or large grants. PIs may submit multiple proposals, though it is unlikely that any PI will be awarded more than one grant. PIs with current METRANS grants are eligible to apply. However, grants will not be awarded to PIs with outstanding deliverables (draft or final report; research brief) on prior METRANS grants.

Funds should be spent in a manner that provides publishable results, especially in refereed journals. In general, faculty salary (summer or academic year), student support, and tuition/fee reimbursement are allowed expenses. Proposers are encouraged to budget travel to one domestic conference to present project results. Funding for students is expected in all projects, including research assistant salary and any additional costs for student presentations at conferences. Overhead and fringe benefits should also be included in the budget. A limited amount of travel for data collection purposes, materials, and supplies may be included, provided that they are a direct expense related to completing the work. International

travel is not permitted.

Proposers are discouraged from budgeting for computers, equipment, support staff, outside consultants, or any salary that goes beyond normal academic or summer compensation. These may only be included if specific justification is provided as to why the work cannot be completed without the expense. In no case shall CSULB or USC employees be hired on a consulting basis.

METRANS funded proposals will be set up as satellite accounts in the proposers' departments at USC and as extramural accounts from the CSULB Foundation at CSULB. PIs *will not* have individual contracts or grants from the funding agencies (Caltrans and USDOT).

Funding Guidelines:

- Research project awards have a maximum of \$100,000 per year.
- The typical project duration is one year.
- NCST white paper proposals are targeted at \$10,000 - \$12,000. White paper budgets in excess of this amount require justification of any additional costs.
- **Note that conservative and cost-effective budgets are strongly encouraged.** METRANS reserves the right to reduce the budgets of submitted proposals. Projects should be budgeted to begin on July 1, 2015 and end by June 30, 2016.

Research Initiation Awards

Research initiation awards from both NCST and METRANS Tier One Center are available to tenure track Assistant Professors, with preference for faculty who have not been previously funded for research in transportation. These awards are limited to \$35,000 for one year. These awards will receive priority consideration over regular awards. Research initiation proposals are subject to the same selection criteria and peer review process as regular proposals.

Project Requirements:

All research projects have the following requirements (guidelines and templates may be found at <http://www.metrans.org/research.htm>)

- Semi-annual progress reports conforming to METRANS guidelines.
- A Draft Final Report, conforming to METRANS guidelines, which must be delivered 30 days prior to the completion date of the project. The Draft Final Report is subject to peer review. The Draft Final Report should include an executive summary, document the research project, and be complete, original, well organized and accurate.
- A Final Report that complies with the review comments and requirements must be delivered within 30 days after the review of the Draft Report. Draft Final and Final Reports are distributed via the METRANS website, and are submitted to METRANS sponsors and to various publications databases.
- A separate statement listing publications, presentations and inventions resulting from research; names of students supported along with their degree status; and a summary of project results. This statement is to be submitted with the Draft Final Report.
- A 2 to 4 page Research Brief suitable for a general audience that summarizes the main findings of the research and its contribution to practice or policy. This brief is to be submitted with the Draft Final Report

- A brief Biographical Sketch for each of the project's investigators to be submitted with the Draft Final Report. A template for the biographical sketch will be provided with the notification of award. The biographical sketch is to be submitted with the Draft Final Report
- At least one presentation of the funded project's research at a thematic conference organized by METRANS, and located in the Los Angeles region.
- Timely reporting of all information requested for the METRANS Annual Report.
- Copies of all papers submitted to journals or conferences that are based on the project's research. Copies should be provided to the METRANS Administrator.
- Acknowledge METRANS support in all work that results from METRANS funding, including peer-reviewed publications and conference presentations.

White paper projects have the following requirements:

- Semi-annual progress reports conforming to METRANS guidelines if the project exceeds 6 months duration.
- A Draft White Paper submitted 30 days prior to the completion date of the project. The Draft White Paper is subject to peer review.
- A Final White Paper that responds to the review comments must be delivered within 30 days after the review of the Draft white paper has been received by the author. The white papers are distributed by NCST and METRANS, and are submitted to METRANS and NCST sponsors and to various publications databases.
- A brief Biographical Sketch for each of the project's investigators to be submitted with the Draft white paper. A template for the biographical sketch will be provided with the notification of award. The biographical sketch is to be submitted with the Draft Final Report
- Timely reporting of all information requested for the METRANS Annual Report.

Projects funded by Caltrans have additional reporting and budget requirements. Authors of proposals selected for Caltrans funding will be informed of these requirements.

Proposal Instructions

Research Proposal Instructions

Research proposals should be succinct and clearly written for a mixed technical and non-technical audience. Proposals are limited to no more than 8 pages in sections 3 – 7. Budget and other forms are included in Appendix C. Each proposal must include the following sections:

1. Cover page (use the form provided in Appendix C)
2. Project objective and project abstract (see research page at www.metrans.org for examples; no more than one page)
3. Background and motivation for the topic to be addressed (problem to be addressed, what has been done previously, why it is important, and relevance to selected research areas)
4. Methodology (the methodology by which project objectives will be accomplished)
5. Tasks, Schedule and Deliverable (steps that will be followed in executing the methodology, and when they will be completed)
6. Description of the expected research product and contribution to practice (e.g. peer-reviewed publication)
7. Qualifications (the research team's relevant skills and experience that will help ensure success)
8. Budget justification (strong justification should be provided for unusual expenses, e.g.,

- equipment). The extent of student involvement should be clearly stated
9. Reference List (no limit)
 10. Budget (1 page.) For USC proposals, use the form provided in Appendix B. For CSULB proposals, include with your proposal the budget that is used for the clearance process.
 11. Prior Project Accomplishments (1 page maximum. List publications, students who have received support from prior METRANS funding, and other grants received as a result of METRANS funding. Provide information on any policies, technologies, or products implemented as a result of the research).
 12. Letters of participation, or match funding commitment (attached, any number and length) *Letters of participation are required for any project that involves data collection from private or public entities, access to private or public facilities, or cooperation of private or public entities.*
 13. Short bios for all investigators and a list of recent (past 5 years or less) publications and funded research projects (2 page maximum).

White Paper Proposal Instructions

White paper proposals must include the following: 1) Cover page (use the form provided in Appendix C); 2) 1-2 page description of the proposed topic; 3) 1 page bio that includes recent relevant publications; 4) budget. Budget and other forms are included in Appendix C.

Proposals should demonstrate their responsiveness to METRANS selection criteria, according to the following guidelines:

| <u>Selection Criteria</u> | <u>Most Relevant Section(s)</u> |
|---|---|
| Relevance to research theme areas | Background/Objective |
| Quality and research significance | Methodology/Tasks |
| Student involvement | Budget justification |
| Reasonableness of budget and cost-effectiveness | Budget justification |
| Qualifications | Qualifications |
| Match funding & potential for other grant funding | Budget justification, Methodology/Tasks |
| Prior performance | Prior project accomplishments |

Budget Instructions

For USC: Please use your School guidelines in preparing your budget. For Price, see http://www.usc.edu/schools/price/intranet/research_admin.html for proposal and budget instructions. Contact Elizabeth Gatchalian (egatchal@usc.edu) for budget assistance. For VSOE, contact your department grants administrators. Note, tuition cost share is limited to PhD students. Please show the cost share in your budget. Tuition charges are not subject to overhead. The indirect cost rate is 50%, and the difference from the audited rate is to be shown as a cost share.

For CSULB: Budget guidelines for CSULB faculty are contained in Appendix C. Proposals submitted by CSULB faculty must be approved via the University's internal clearance process prior to submission. Early budget consultation with Office of Research and Sponsored Programs is essential. Once the budget is finalized, internal clearance will be initiated by the Office of Research and Sponsored Programs (ORSP).

CSULB faculty should begin the process by submitting a Notice of Intent at

<http://www.csulb.edu/divisions/aa/research/our/information/forms/intent/>. If you have any questions, please contact ORSP Pre-Award Specialists David Smith (562 985-5330, David.Smith@csulb.edu) or Nora Momoli (562 985-1567, Nora.Momoli@csulb.edu).

Please note that all proposals must include a budget; proposals submitted without budget will be determined to be incomplete and rejected.

Submission Instructions

Email a pdf copy (max 10 MB) of each proposal to METRANS Assistant Director Victoria Valentine Deguzman at VictoriV@usc.edu on or before 5:00 pm on April 27, 2015. Please title your PDF file as last name, first initial, university, and a number if more than one is being submitted. For example, a first or single submission would be SmithJ_CSULB. A second submission would be SmithJ_CSULB2.

NOTE to PIs: Please do not submit more than one proposal per email. If more than one proposal is to be submitted, please send each in separate emails, noting the number of the subsequent proposal in the subject line of each email (for example, Second Proposal, Third Proposal, etc.). Proposals received later than the deadline will be rejected. **It is the responsibility of the PI to deliver the proposal by the deadline and to confirm receipt.**

One copy of the proposal will be retained in the Assistant Director's office, and must contain all information on the budget form. A second budget form may omit information that can be used to determine faculty salaries (e.g., months of effort). This budget will be included when the proposal is sent for review. If you submit a proposal with salary information omitted, be sure to provide one electronic copy of EACH budget. For CSULB proposals, include with your proposal the budget that is used for the clearance process. Please note that all proposals must include a budget; proposals submitted without budgets will be determined to be incomplete and rejected.

METRANS will reject proposals that: (1) are received after the deadline, (2) do not conform to eligibility requirements, (3) are incomplete, or (4) do not conform to thematic requirements.

Further Information

For further information, METRANS Director Genevieve Giuliano can be reached at (213) 740-3956 or giuliano@usc.edu. In addition, check www.metrans.org for information on current projects, center organization, and links to outside agencies.

For further information regarding program rules and procedures contact METRANS Assistant Director, Vicki Valentine Deguzman at (213) 821-1025 or VictoriV@usc.edu.

Appendices

Appendix A

**Caltrans Suggested Research Topics
METRANS NCST Research**

Appendix B

**Caltrans Suggested Research Topics
METRANS Tier 1 Research**

Appendix C

Budget Information and Forms

Appendix A

Caltrans Suggested Research Topics, METRANS NCST Research

Caltrans requests proposals that fall within one or more of the following areas:

- Low-impact infrastructure and efficient system operation
- Low-impact travel and sustainable land use
- Governance and institutional change

In addition, Caltrans has identified the following topics (addressed in white papers in the NCST's Year 1 program) as high priority areas for research projects:

- Managing Roadways Systems to Reduce GHG Emissions and Improve Energy Efficiency
- Reduction of Lifecycle GHG Emissions from Road Construction and Maintenance
- Future of Freight Travel Demand in the United States
- Effectiveness of Land Use and Demand Strategies in Reducing Vehicles-Miles-Traveled and GHG Emissions for Passenger Travel
- Working toward a Policy Framework for Reducing GHG Emissions in the Transportation Sector
- Assessing Transportation Financing Options from a GHG Perspective
- Climate Change Adaptation for State, Regional, and Local Agencies

Appendix B

Caltrans Suggested Research Topics, METRANS Tier 1 Research RFP 2

CALTRANS DIVISION OF TRANSPORTATION PLANNING FREIGHT PLANNING BRANCH RESEARCH TOPICS

- **Identification of Warehousing and Distribution Centers in CA** – This research would identify the distribution of warehousing and distribution activities in California, and trace historical patterns. The purpose of the research is to understand the dynamics of warehouse and distribution location and predict likely future patterns.
- **Freight Mobility Patterns of Key CA Industries** – The purpose of this research is to develop a basic understanding of industry location patterns within California. Goods movement demand is driven by the location of freight suppliers (manufacturing, agriculture, trade) and demanders (retailers, exporters, consumers). Industry location therefore is an important factor in predicting goods movement on the highway and rail systems. Where are the state's top 15 – 20 industries located? Where are the state's major industry clusters? Where are new firms locating, and why? What are the state's emerging industries, and where are they locating?

CALTRANS DIVISION OF RAIL AND MASS TRANSPORTATION RAIL PLANNING BRANCH – RESEARCH TOPICS

- **Methods for Assessing Project Benefits and Costs across Modes** – This research would identify and evaluate methodologies for comparing project proposals from different modes. This multi-mode analysis could have many applications. Specifically, Caltrans is interested in using a multi-mode analysis to develop priorities for project proposals under the Interregional Transportation Improvement Program (ITIP). Possible methods could include cost/benefit analysis, cost-effectiveness analysis, multi-criteria methods, etc. Evaluation would consider advantages and disadvantages, including considerations such as appropriateness, applicability across potential types of projects, data requirements, and feasibility of implementation.
- **Rail Operating and Capacity Model Assessment** – This project would conduct a survey of existing passenger rail operations/scheduling modeling tools and capacity modeling tools (both simulation models and static planning models). The survey would identify existing models, provide a description of the models, their purpose, their relative strengths and weaknesses – including data intensiveness, cost to run and expertise necessary to run, their ownership and whether Caltrans could access the models for use (e.g., can licenses be purchased, are they hosted by a public agency, are they proprietary, etc.). Examples of models that Caltrans is aware of include:
 - Rail capacity simulation: RTC, Rail Ops (Aecom), RailEval (DecisionTec), RailSys, RailPlan, Open Track and Vision
 - Rail operations: Viriato (SMA), VoyagerPlan, and OmniTimes

Appendix C
Budget Information and Forms

USC Budget Form

| Category | Monthly Salary | x | % of Time on Program | x | Number of Months | = | Budget (\$) |
|---------------------------------|-------------------|-------|-------------------------|-------|---------------------|---|-------------|
| Faculty Salary | _____ | x | _____ | x | _____ | = | _____ |
| Faculty Salary1 | _____ | x | _____ | x | _____ | = | _____ |
| Student Support | _____ | x | _____ | x | _____ | = | _____ |
| Type of Student | _____ | | | | | | |
| Student Support* | _____ | x | _____ | x | _____ | = | _____ |
| Type of Student | _____ | | | | | | |
| Fringe Benefits | Rate | _____ | | | Total | | _____ |
| Tuition | Units | _____ | Rate | _____ | Total | | _____ |
| Conference Travel | _____ | | | | | | |
| Conference Name/Date | _____ | | | | | | |
| Other Travel | _____ | | | | | | |
| Materials and Supplies | _____ | | | | | | |
| Equipment (list) | _____ | | | | | | |
| | _____ | | | | | | |
| Other Direct Expenses (itemize) | _____ | | | | | | |
| | _____ | | | | | | |
| Tuition cost share | Units | _____ | Rate | _____ | Total | | _____ |
| Overhead (50%) | _____ | | | | | | |
| TOTAL FUNDS REQUESTED | _____ | | | | | | |

* Use additional faculty and student lines only if more than one professor or student.

CSULB Budget Instructions

Proposals and the proposal budgets submitted by CSULB faculty must be approved via the CSULB Office of Research and Special Program's (ORSP) internal clearance process prior to submission.

CSULB faculty should begin the process by submitting a Notice of Intent at <http://www.csulb.edu/divisions/aa/research/forms/> and completing all of the applicable documents, including the budget form and applicable details, e.g., fringe rates and F&A.

For CSULB proposals, include with your proposal the budget that is used for the clearance process. Please note that all proposals must include a budget; proposals submitted without budgets will be determined to be incomplete and rejected.

If you have any questions on clearance, please contact ORSP Pre-Award Specialists Mr. David Smith (562 985-5330, David.Smith@csulb.edu) or Ms. Nora Momoli (562 985-1567, Nora.Momoli@csulb.edu).

METRANS Cover Page

Title _____

Tier 1 Theme _____

Tier 1 Topic Area _____

Caltrans Topic (if applicable) _____

Principal Investigator _____

Mailing Address _____

E-mail _____

Phone _____

Fax _____

Co-Principal Investigator _____

Are you submitting this proposal elsewhere, or are you currently receiving funding in the same area of research? Yes _____ No _____

If yes, please describe circumstances and funding source

METRANS Center Proposal Evaluation Form

(Provided for information only; form will be used by evaluators)

Proposal Title:

Area:

Principal Investigator:

Referee Number:

Evaluation Criteria:

Please rate proposals in each of the categories below, using the following rating scale:

- 1 = Well below expectations
- 2 = Below expectations
- 3 = Meets expectations
- 4 = Exceeds expectations
- 5 = Well above expectations

| CATEGORY | RATING |
|--|--------|
| Demonstrated relevance to themes of RFP (a requirement) | |
| Quality and research significance | |
| Student involvement | |
| Reasonableness of budget and cost-effectiveness | |
| Qualifications to perform work/likelihood of completion | |
| Match funding and potential for attracting grant funding | |
| Prior performance on METRANS grants (if applicable) | |

Referee’s Funding Recommendation (Place an X on the line by your choice)

Highly recommended _____

Recommended _____

Not recommended _____

Referee Comments (add additional pages as needed):