



METRANS UTC
Tier 1 University Transportation Center
www.metrans.org

Request for Proposals for Research Projects
FY 2015 - 2016

RFP Issued: Tuesday, December 9, 2014
Proposals Due: Wednesday, February 11, 2015

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Introduction

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). METRANS UTC is funded by the USDOT and the California State Department of Transportation (Caltrans) to perform research on transportation problems critical to large metropolitan regions. 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.

METRANS UTC is issuing this RFP to allocate Year 2 research funding. We anticipate that projects funded under this RFP will begin in Summer 2015. Projects typically have a duration of 12 months. Proposals are requested that address the thematic areas of the Center and provide solutions to metropolitan transportation problems through development of improved technology, policies, operations, or management practices. Funding available under this RFP is approximately \$1,000,000. 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 the Tier 1 UTC.

METRANS is also part of the National Center for Sustainable Transportation (NCST), a USDOT National University Transportation Center led by University of California, Davis. A separate RFP will be issued for NCST Year 2 projects.

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 USC and budget instructions for 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

Our research program is organized around two multimodal themes: 1) understanding passenger/freight interactions; and 2) achieving system efficiencies. Prospective applicants are referred to <http://www.mettrans.org/research-projects/mettrans-utc> for examples of projects that were funded in Year 1.

Theme 1: Understanding Passenger-Freight Interactions

Research in Theme 1 will contribute to our understanding of passenger and freight interactions by examining the basic forces underlying supply and demand, developing more comprehensive data for analysis, and better methods for monitoring the performance of the urban transportation system.

Topic 1-1: Relationships between Spatial Patterns and Transportation

The spatial distribution of population and economic activities drives the pattern of transportation demand and flows within metropolitan areas. Metropolitan spatial patterns are changing. The overall trend is decentralization, yet downtowns are being revitalized, employment centers continue to grow, and in growing cities population density is increasing. On the freight side, warehousing and distribution is decentralizing, in part due to increasing scale economies in these industries, congestion in metropolitan cores, and rising land values. Topic 1-1 examines changing spatial patterns and their implications for freight and passenger flows. Examples of possible topics include transit-oriented development and travel behavior; impacts of inventory practices and replenishment on truck traffic patterns.

Topic 1-2: Characteristics of Freight and Passenger Demand

This topic examines the role of price, travel time, and reliability in freight and passenger demand. We have a basic understanding of passenger behavior with respect to price and value of time (VOT), but know little about travel time reliability. Our understanding of shipper behavior is more limited. Understanding differences between freight and passenger demand characteristics is important for developing appropriate strategies and incentives for better managing shared systems. Examples of possible topics include shipper responses to travel time unreliability, VOT across industry segments, and effects of travel time unreliability on mode choice.

Topic 1-3: Better Data for Analysis of Passenger-Freight Interactions

Numerous studies have identified the lack of data on truck and freight moves as a significant barrier to developing better models of urban freight flows and developing better policies to manage the impacts of freight on metropolitan areas. There is a need for experimentation with mobile devices for more efficient data collection, and with data mining methods to derive truck data from secondary sources. In addition, there is a need to develop methods of estimating critical data elements when actual data are limited or not available. The data collected will help to build a comprehensive freight and passenger data base.

Theme 2: Achieving System Efficiencies

Research in Theme 2 develops efficiency strategies by exploring the potential for efficiencies within and across modes and user classes and identifying policy strategies that facilitate and promote these efficiencies.

Topic 2-1: Integrated Management across Users and Modes

This topic examines the potential for efficiency improvements from better system integration. This topic seeks to identify interdependencies between the various transport subsystems and examine the potential benefits of incorporating them in system management. Issues such as resiliency and sustainability and cyber physical aspects are also of interest. Examples include integrated corridor management, integration of freight and passenger rail scheduling, and scheduling of pickup and deliveries outside of peak passenger demand periods.

Topic 2-2: Policies for More Efficient Urban Transportation

This topic develops and explores strategies that promote more efficient use of transportation resources across multiple modes or user classes. Examples include transit service priority, parking and loading regulations, and pricing policies and their impact on efficiency. We are particularly interested in the institutional conditions under which different policy incentives are feasible, and in new policy mechanisms such as negotiated agreements and self-regulation.

Caltrans Topics:

Caltrans has submitted research topics of interest that fall within the Tier 1 UTC thematic areas. These topics are described in Appendix A. Proposers are encouraged to submit research proposals on these topics.

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 UTC 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.*

Match funding is particularly encouraged; proposals that include matching funds from local public or private sources will receive preference. For additional information, contact METRANS Assistant Director Vicki Valentine Deguzman at VictoriV@usc.edu.

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.

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 UTC will consider continuations of prior METRANS projects that have achieved significant results and have a high potential for deployment, scholarly products or large grants. We will not award more than one project to any PI, though PIs may, if they choose, submit multiple proposals. At any given time, eligible faculty may serve as PI on only one METRANS UTC grant. PIs may serve as Co-PI on no more than one other METRANS UTC grant at a time.

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:

- Project awards have a maximum of \$100,000 per year.
- The typical project duration is one year.

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 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 funded 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 data bases.
- 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.
- Acknowledgment of METRANS support in all work that results from METRANS funding, including peer-reviewed publications and conference presentations.

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

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 B.

Each proposal must include the following sections:

1. Cover page (use the form provided in Appendix B)
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 METRANS UTC 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. Please note that all proposals must include a budget; proposals submitted without budgets will be considered incomplete and rejected.)
 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).

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 METRANS UTC 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 B. 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).

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 Tuesday, January 20, 2014. 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 considered 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

Appendix B

Budget Information and Forms

Appendix A

Caltrans Suggested Research Topics

Caltrans Suggested Research Topics

CALTRANS DIVISION OF TRANSPORTATION PLANNING FREIGHT PLANNING BRANCH RESEARCH TOPICS

- **“Resiliency” of the CA Freight Network** – California ports play a critical role in the state’s economy. How resilient are the ports to interruptions from natural or man-made disasters? What is the state of knowledge regarding the ability of ports to recover from unexpected events? What strategies or policies would improve resilience of the ports?
- **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?
- **Mitigating Freight Impacts to Nearby Communities** – Communities located near major freight generators such as ports and intermodal facilities are exposed to high levels of air pollution, noise, and other environmental hazards. The purpose of this research is to identify creative and innovative strategies for mitigation. The research should include case studies of innovative programs such as the Port of Los Angeles’ Community Mitigation Program.

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

- **Integration of Passenger and Freight Rail Scheduling** – This research would examine how better coordination of passenger and freight rail scheduling and operations in could improve system efficiency. Caltrans is particularly interested in applications to the main rail corridors in California.
- **Guidelines for GHG Impacts of Rail Projects:** This project will conduct a literature review of studies that evaluate the impacts on GHG of intercity passenger rail service initiation or expansion and discrete improvement projects. Any studies that compare the GHG impacts of different modes of travel should also be cited. The review should include studies on discrete intercity rail capital projects, such as track, signal, station, or equipment projects. Also studies that look at operational improvements to rail systems, such as automated ticketing systems, real time information systems, improved transit/auto access to rail stations, etc should be cited. Once the literature review is completed, the study should make preliminary evaluations/recommendations of the methodologies suggested in the studies to assess GHG impacts of intercity passenger rail projects. Given that it is likely that the most comprehensive work in this area has been done on electrified high-speed rail, the study should assess if any of that work could be adapted for use on diesel powered intercity rail. Caltrans has provided some background materials. These materials are available upon request to the METRANS Administrator. **NOTE:** *This project may be funded under the METRANS NCST research.*
- **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 (ie 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 B

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 considered 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):