Request for Proposals for Research Projects – Year 3

Pacific Southwest Region 9 University Transportation Center

RFP Issued: February 3, 2025

Proposals Due: March 10, 2025

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Introduction

The Pacific Southwest Region University Transportation Center (PSR) is the Regional UTC for US Region 9 (California, Arizona, Nevada, Hawaii, and the Pacific Islands). PSR is led by the METRANS Transportation Center, University of Southern California and includes the following partners: California State University, Long Beach, Northern Arizona University, Pima Community College, University of California, Berkeley, University of California, Davis, University of California, Irvine, University of California, Los Angeles, University of Hawaii, and University of Nevada, Las Vegas. PSR-funded research is expected to result in scholarly publications and contribute to generating larger grants from other sources.

Funding for this RFP

This is an RFP for Year 3, and it will allocate our Year 3 research funding for select PSR partners. USC will manage the federal PSR review for two partners who elected to have USC manage their federal RFP. Research funding is contingent on PSR executing a master contract with Caltrans and on both Caltrans and federal funding availability. In addition, Caltrans is expected to contribute funding, pending executing a master contract and on both Caltrans and federal funding availability. Caltrans funds are available only for partner universities in California.

The amount awarded under this RFP will be determined by the quality and relevance of proposals received. Each university has been informed about their allocations, and prospective principal investigators (PI's) are advised to check with the representative of the PSR executive committee at their university for more details about funding levels. Given the anticipated competition for these funds, prospective applicants should carefully consider their expertise relative to the thematic areas and topics.

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. Applicants from other universities are encouraged to use budget sheets that correspond to budget practices at their university. Submission instructions and a proposal template are also provided.

Eligibility

To be eligible to serve as a principal investigator on PSR research funded through this call, full-time tenure track faculty and research staff must be eligible to serve as a principal investigator at their home university. Proposals may include multiple investigators. Proposals may also include research faculty and non-tenure track faculty from the partner universities as Co-Principal Investigators. A small amount of funding has been reserved for university researchers within Region 9 but outside the consortium. The same eligibility requirements apply. Proposers must be eligible to serve as a PI at their university and, for the Caltrans funds, eligibility is restricted to persons who can serve as PI's at a California PSR partner university.

In this round, we will accept proposals from PSR partner universities with smaller funding shares – Pima Community College, Northern Arizona University, University of Hawaii, and University of Nevada Las Vegas – for proposals that can be funded out of the USC US DOT (federal) funding allocation. Those proposals must follow all requirements listed below and will compete against proposals from USC. The intent is to allow, when appropriate, opportunities for additional research at PSR partner universities in ways that expand the research capacity throughout the consortium.

Proposals that partner with USC researchers as part of this program will be prioritized. The eligibility requirements for PI's will be the same as described above, and proposals should be capped at the same levels as for other proposals (see "Funding Guidelines", pp. 7-8). If a proposal partners with a USC researcher and a partner outside of USC for access to the USC funding pool, and the funding limits on pp. 7-8 will not be sufficient, contact PSR director Marlon Boarnet and METRANS assistant director Jennifer Hong to request an exception to the funding limit in advance of submitting a proposal. In general, PI's from PSR partner universities but outside USC who seek to submit proposals to the USC pool should communicate with PSR director Marlon Boarnet and METRANS assistant director of administration Jennifer Hong in advance of the March 10 submission deadline.

Research Program Themes and Topic Areas

Our research program is organized around two themes, Accessibility and Mobility for All and Sustainable and Resilient Supply Chains, and a topic that cuts across both themes: Access to Opportunity Through Strategic Workforce Development.

Research Theme 1: Accessibility and Mobility for All: Too often, the transportation system creates and perpetuates inequities. At the same time, advances in technology and a renewed focus on multi-modal transportation bring a promise of transformative change that can reduce inequities and link previously isolated communities to opportunities. The objective of this research theme is to generate knowledge that will close access gaps and reduce inequities. There are three topics within this theme.

Topic 1.1, Accessibility for Underserved and Isolated Communities: This topic focuses on creating knowledge that helps close access gaps across underserved locations and populations throughout Region 9. That can be through a focus on technology, systems, planning, or policy, with a common thread that research on this topic will help close access gaps and increase transportation equity. Research in this topic area can include work on policies, practices, technologies, and infrastructure related to: equity and accessibility characteristics of platform or web-based systems, transportation access in remote locations, the ability of online services to substitute for or complement access among underserved populations, multi-modal transport, shared mobility (e.g. car-sharing, ride-sharing, bicycle sharing), and safety (particularly in underserved locations or among underserved populations.) This topic also includes research on preserving and strengthening access in locations where climate change poses increased risks to the infrastructure and systems that provide everyday and lifeline connections. Given the pace of technological change in this topic area, the examples listed above are not exhaustive.

Topic 1.2: Improving the Efficiency of the Mobility System: This topic will generate knowledge that will improve the efficiency of the transportation system. Examples can include research on near-term technology solutions like smart parking, car sharing or delivery consolidations, as well as long-term solutions such as the development of models and algorithms for managing shared connected and autonomous vehicles, impacts on travel behavior, and impacts on traffic flow and management in mixed fleets, and truck platoons. Resource questions, such as declines in transit ridership and financial or management models that support transit or transportation system efficiency and equity, are also appropriate for this topic.

Topic 1.3: Broadening Access to Low/Zero Carbon Transport: This topic explores policies and strategies for broadening the market for clean vehicles, with a focus on broadening access among under-resourced places or populations. This would include research that advances understanding of approaches for zero-emission passenger vehicle markets, include markets for second-hand vehicles,

subsidy policies, and charging networks. Studies that incorporate the role of income, household tenure status (homeowner vs. renter), and race/ethnicity are welcomed. Studies that examine the role of other zero- or low-emission options, such as e-bikes or non-motorized modes, or new technologies that promise low/zero carbon transport, are also welcomed.

Research Theme 2: Sustainable and Resilient Supply Chains: Supply chains and the freight system that supports them are essential to the economy and society and are lifelines during emergencies. Goods movement is also a major source of environmental harm. Research in this theme will create knowledge that will promote a more resilient, sustainable, and equitable goods movement system.

Topic 2.1: Addressing Environmental Justice Problems in the Goods Movement System: Research in this topic area will include studies that help reduce environmental justice (EJ) gaps and impacts associated with growing and restructuring distribution chains, demand for warehousing, and truck travel associated with the goods movement system. This can include research focused on EJ problems associated with the surface transportation aspects of ports, airports, other large intermodal facilities, large warehouse clusters, and the corridors connecting goods to consumer markets. Research on safety, emissions and exposure, noise, crash risk, health, and other disparate impacts of the goods movement system are also appropriate in this topic.

Topic 2.2: Goods Movement System Efficiencies and Resilience: Research in this topic area will include technologies, systems, policies, plans, and practices that increase the efficiency of the US goods movement system. This can include models and methods for coordination of freight demand across modes and firms, generation and management of freight data, better management of freight pickups and deliveries, and methods to increase supply chain flexibility and resilience. Research that examines and brings solutions to shocks that occur in interdependent and high-velocity supply chains, from disruptions natural or human-made, are welcome.

Topic 2.3: Decarbonizing the Goods Movement System: This topic will research alternative fuels, examining the advantages and disadvantages of battery electric and hydrogen fuel cell fleets, as well as the costs and benefits zero emission surface transportation goods movement technologies and the costs and benefits of hybrid power trains as a bridge technology. Research in this topic can include technologies for low- or zero-emission goods movement vehicles, as well as plans, policies, and practices to implement new technologies in either pilots or at scale. Research in this topic can include life cycle models that compare upstream and downstream costs and benefits and impacts on firms, independent truck operators, and consumers from transitions to low- or zero-emission. Research that informs national guidelines for heavy-duty vehicle decarbonization is welcomed in this topic area.

Cross Cutting Topic (Topic CC): Access to Opportunity Through Strategic Workforce Development: Research in this topic can apply to either Theme 1 or Theme 2, by examining workforce issues related to either the US passenger or freight transportation systems, or both. Research in this topic area will include studies of the changing nature of work in transportation. That can include research on

the workforce impacts of automation, the shift to new fuels, green jobs in transportation, the growth of new modes, or more broadly changes in the use of different transportation modes and assessments of the workforce impacts of transportation policies, investments, and technologies. Research with an emphasis on opportunities in lower income, under-resourced or environmental justice communities is welcomed. Research in this topic area can evaluate the effectiveness of workforce training programs, including but

not limited to programs pursued by PSR universities or partners.

Funding for PSR is from both the US Department of Transportation and the California Department of Transportation (Caltrans). Submission of proposals consistent with the missions of Caltrans and its research needs related to PSR (for California universities) and with the mission of METRANS (for USC and CSULB proposers) is encouraged.

Proposers are also encouraged to review the US DOT Research, Development, and Technology Strategic Plan, available here, and articulate how their research will advance objectives in that plan while creating transformative impacts. You will be asked in the proposal AirTable submission form (described later in this RFP) to indicate how your proposal links to the US DOT strategic goals of equity, climate sustainability, and/or economic strength and global competitiveness, and you should articulate in your proposal text how your research contributes to one or more of those goals and how it supports the US DOT Research, Development, and Technology Strategic Plan.

Types of Projects: This RFP, broadly, solicits two kinds of projects: (1) Faculty initiated research proposals that are consistent with at least one of the topical areas described above, and community partnered projects (which also must be consistent with the topical areas above.) Faculty initiated proposals can compete either for US DOT or (for California partners) Caltrans funding, and for Caltrans funding proposals that respond directly to a Caltrans research question will be prioritized. (2) PSR will also fund a small number of community-partnered projects, described below. The key difference between faculty initiated and community-partnered projects is that the community-partnered projects will have a community stakeholder identified at the RFP stage.

Community-Partnered Projects

Community-partnered projects are intended to increase the research focus on community needs and to accelerate technology transfer by working with communities and practice from the earliest stages of research conceptualization. Those projects will have a community stakeholder identified from the beginning that would be part of the collaboration. Those projects could be a local government and agency, a nonprofit, or community group. The proposal should clearly identify the community partner, with a letter of participation from that partner, and the proposal should describe the way in which the research will inform and benefit practice. Note that if your research requires funding for a community partner, that should be built into the budget.

Caltrans Topics

Proposers with PI status at California universities are eligible to propose research that will be funded by the Caltrans funds described on p. 2 of this RFP. For proposals for Caltrans funds, proposers are referred to Caltrans priority research topics, presented in Appendix A: Caltrans Research Priorities. Proposers can submit investigator-initiated research for Caltrans funding, on topics that are not in the list presented in Appendix A. Proposals on topics in Appendix A will get priority consideration in the review process when competing for the Caltrans funding. Because proposal reviewers will be asked to comment on how all proposals support the US DOT Research, Development, and Technology (RD&T) Strategic Plan, proposers for Caltrans funding should also articulate how their research will support the US DOT RD&T Strategic Plan.

Selection Criteria for All Proposals

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. PSR 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:

1. Demonstrated relevance to the above research program themes (a requirement)
2. Quality and research significance, including the potential for transformative impact
3. Student involvement
4. Reasonableness of budget and cost-effectiveness
5. Qualifications to perform work and likelihood of successful completion
6. Match funding and potential for attracting larger grant funding
7. Potential to advance US DOT Research, Development, and Technology strategic plan goals
8. Prior performance on grants (as applicable)

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

Proposers are encouraged to communicate with members of the PSR Executive Committee in the development of research proposals. The PSR Executive Committee includes the lead faculty for each partner institution. The list may be found in the directory page on the PSR website: https://www.metrans.org/PSR_UTC_key_personnel. Commitments of participation (for example data sharing or match funding) from outside of PSR 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 in the proposal.*** *Without such verification of participation, the proposal will not be considered for funding.*

Proposers are encouraged to include undergraduate students in the research project if appropriate. Proposers are strongly encouraged but not required 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, and only to PSR partners in California (USC, Cal State Long Beach, and UC Berkeley, Davis, Irvine, and Los Angeles). Thus, PSR encourages proposals that include match funding from non-federal sources. Proposals that include at least a 30% hard match (e.g. contribution to direct costs from external source) will receive priority consideration. Regional pool fund proposals (i.e., from proposers who are not at a PSR university but who have PI status at a university within the US DOT Region 9) must include 100% match as part of the proposal. For additional information, contact PSR Associate Director of Administration Jennifer Hong at jenc@usc.edu.

Project Selection

The PSR Executive Committee will make final project selections, taking into account reviewer evaluations, programmatic priorities, prior project performance, and PSR partner recommendations.

PSR partner universities will have the option to review proposals from their campuses and make recommendations to the PSR executive committee. 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, PSR will consider continuations of prior PSR 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 PSR grants are eligible to apply. However, grants will not be awarded to PIs with outstanding deliverables (including, but not limited to draft or final report; research brief; data management plan compliance) on prior PSR 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. For proposers at public universities, non-resident tuition and fees are allowed expenses, provided that it is the university's practice to compensate student under Federal awards.

Proposers are allowed to budget travel to one domestic conference to present project results. Caltrans will not fund travel to TRB conferences. 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 PSR partner university employees be hired on a consulting basis.

PSR-funded proposals will be set up as satellite accounts in the proposers' departments at USC. At the partner universities, accounts will be set up within the partner's existing subcontract or as task orders that are also subcontracts, per each partner's policies. PIs *will not* have individual contracts or grants from the funding agencies (Caltrans and USDOT).

Funding Guidelines

1. Research project awards have a maximum of $110,000, inclusive of indirect costs.
2. The typical project duration is one year.
3. **Note that conservative and cost-effective budgets are strongly encouraged.** PSR reserves the right to reduce the budgets of submitted proposals.
4. **Start Date:** Research Projects that are federally funded should begin in the first six months of the academic year at the PI's university. Research projects that are Caltrans funded should be budgeted to begin between January 1, 2026 and the end of the 2025-2026 academic year at the PI's university. Caltrans start dates often have delays, and so PI's can if they wish choose a start date as late as the beginning of summer term, 2026. In all cases, research projects should be budgeted for one year. Specify your desired start and end date in your proposal. Note that those

start dates might change based on the review process and setting up contracting and task order documents.
5. Funding levels for community-partnered projects can be up to $150,000.

Research Initiation Awards
Research initiation awards are available to tenure track Assistant Professors or, by permission of the proposer's university's PSR Executive Committee representative, research staff in positions analogous to assistant professors. If you are a research staff member (not tenure-track faculty) who is interested in pursuing a research initiative award, please discuss with and obtain approval from the PSR Executive Committee representative at your university. The research initiation awards will be available with preference for faculty and researchers who have not been previously funded for research in transportation. These awards are limited to a maximum of $40,000 in total cost. 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.

White Papers

White paper proposals are funded to synthesize existing evidence and identify research gaps for critical policy questions, for a maximum of $25,000 total cost. White papers are aimed at a broad audience of professionals and policy-makers.

Research Project Requirements (applicable to all projects other than white papers)
All research projects have the following requirements:
1. Semi-annual progress reports conforming to PSR guidelines (Quarterly for Caltrans projects)
2. A Draft Final Report, conforming to PSR 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, data management plan (DMP) compliance explanation, and documentation of the research project. It should be complete, original, well organized and accurate; and comply with report content and format guidelines (posted to the PSR website).
3. 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 PSR websites, and are submitted to PSR sponsors and to various publications databases.
4. 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.
5. A two-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 Final Report.
6. 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. At least one presentation of the funded project's research at a thematic conference or seminar organized by PSR.
7. Timely reporting of all information requested for the PSR Annual Report.
8. Copies of all papers submitted to journals or conferences that are based on the project's research. Copies should be provided to the PSR Administrator.
9. Acknowledgement of PSR support in all work that results from PSR funding, including peer-reviewed publications and conference presentations.
10. **PSR projects require conformance to new data management requirements imposed by**

USDOT. More here: https://www.metrans.org/psr_utc_research_overview.

11. **PI ORCID number.** PIs are directed to obtain and provide this number to the center administrator within 30-days of notification of project selection. Numbers can be obtained at https://orcid.org/register.

White paper projects have the following requirements:

1. Semi-annual progress reports conforming to METRANS guidelines if the project exceeds 6-months duration.
2. A Draft White Paper submitted 30 days prior to the completion date of the project. The Draft White Paper is subject to peer review.
3. 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 PSR and METRANS and are submitted to METRANS and PSR sponsors and to various publications databases.
4. 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.
5. Timely reporting of all information requested for the METRANS Annual Report.

Projects funded by Caltrans have additional reporting and budget requirements. Principal Investigators 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. The budget forms are included in Appendix B for USC. Applicants from other universities are encouraged to use budget sheets that correspond to budget practices at their university

Use the PSR Proposal Template to write your proposal.

Each proposal must include the following sections:

1. Project title and basic info
2. Project abstract
3. Description of proposed research, including project purpose, and relevance to PSR themes
4. Methodology and scope of work
5. Tasks, Schedule and Deliverables (steps that will be followed in executing the methodology, and when they will be completed)
6. Description of the expected research product(s) and contribution to practice (e.g. peer-reviewed publication)
7. Description of how the PI will comply with the PSR Data Management Plan (DMP).
8. Qualifications (the research team's relevant skills and experience that will help ensure success)
9. Budget justification (strong justification should be provided for unusual expenses, e.g., equipment). The extent of student involvement should be clearly stated
10. Reference list

11. Budget (1 page.) Proposers from USC must use the form provided in Appendix B for USC. Proposers from other universities should use the budget that is used for the clearance process at their university, showing detail that is similar to the form in Appendix B. Assume a start date of August 15, 2025 for federally funded projects and January 1, 2026 for Caltrans funded projects.
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
2. One- to two-page description of the proposed topic
3. One-page bio that includes recent relevant publications
4. Budget. (Budget and other forms are included in Appendix B for USC). Proposers from other universities should use the budget form that is used for the clearance process at their university, showing detail that is similar to the form in Appendix B.

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

Selection Criteria	**Most Relevant Section(s) for this Criterion**
Relevance to research theme areas	Background/Objective
Quality and research significance / transformative impact	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
Potential to advance US DOT RD&T strategic plan goals	Background/Objective
Prior performance	Prior project accomplishments

Budget Instructions

For USC: Please use your School guidelines in preparing your budget. For the Price School, contact Jenny Tam at jennytam@usc.edu for budget assistance. For the Viterbi School of Engineering, contact your department grants administrators. Note that tuition cost share is limited to PhD students. Please show the cost share in your budget. Tuition charges are not subject to indirect costs. The indirect cost rate is 50% for USDOT-funded projects at USC, and the difference from the audited rate at USC is to be shown as a cost share. At other partner universities, use the indirect cost rate and any cost share practices approved by your university.

Caltrans has additional budget rules; Principal Investigators of proposals selected for Caltrans funding will be informed of these requirements. When preparing Caltrans budgets, use an indirect cost rate of 35% unless you receive other information from PSR. Caltrans projects will use approved Caltrans indirect cost rates, to be confirmed later. For budget purposes, use an indirect cost rate of 35% for Caltrans projects, with an understanding that once the Caltrans indirect cost rate has been confirmed,

projects might need to be rebudgeted to reflect the approved Caltrans indirect cost rate before project initiation.

Please note that all proposals must include a budget; proposals submitted without a budget will be determined to be incomplete and will not move forward in the review process.

Submission Instructions

Please use the PSR Proposal Template to write your proposal. Templates can be found on the PSR Research page: https://www.metrans.org/psr_utc_research_overview.

Proposals responding to this RFP are due no later than Monday, March 10, 2025, at 5:00 p.m. PT. Proposal materials must be submitted via Airtable application form. Please title your PDF file as LastNameofPI_campus_2025_Proposal.pdf. For example: Boarnet_USC_2025_Proposal.pdf.

Note to PIs: Please do not submit more than one proposal per form. If more than one proposal is to be submitted, please send each in separate forms. If you are submitting more than one proposal, include the first two words of your pre-proposal title in the filename. For example, if a proposal title is "Slow Streets and Dockless Travel: Using a Natural Experiment for Insight into the Role of Supportive Infrastructure," the filename would be: Boarnet_USC_2025_Proposal_Slow Streets.pdf. 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 Associate 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.

PSR 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, PSR Director Marlon Boarnet can be reached at (213) 740-3696 or boarnet@usc.edu. In addition, check https://www.metrans.org/psr_utc for center organization and links to outside agencies. Proposers are encouraged to contact PSR executive committee members at their university for clarification on university-specific policies (see https://www.metrans.org/PSR_UTC_key_personnel). For further information regarding program rules and procedures contact PSR Administrator Jennifer Hong at jenc@usc.edu.

For up-to-date information on the IRB process at USC, please visit the website of the USC Office for the Protection of Research Subjects: https://oprs.usc.edu/

Appendix A: Caltrans Research Priorities

Revised February 11, 2025

Many of the following Caltrans research needs statements are cross-cutting. It is recommended that applicants review all of the following research needs statements, which are sorted alphabetically and not by priority. Direct questions about these statements, including about the research need requestor's contact information, Jennifer Hong at jenc@usc.edu.

One source of funds for this RFP to which PIs may apply is the California Department of Transportation (Caltrans). Priority for the use of those funds will be given to projects that help to implement and/or inform future activities associated with the priority research topics listed below.

Advanced Air Mobility GIS Vertiport Siting – Phase II

Research Need:

Land use planning and the placement of vertiports is an emerging and rapidly changing topic of study. This research will build upon previous work and will incorporate newly articulated parameters of consideration such as aircraft operations, safety, access and other needs. This research will provide replicable tools and knowledge to land use planning and policy making entities.

Research Description:

This project is an extension, or Phase II, of an applied research project which was a case study to identify vertiport locations across the San Francisco Bay Area for Advanced Air Mobility (AAM) operations based on constraint mapping using Geographic Information Systems (GIS). The Phase I project, completed in May 2023, was focused on groundside planning and land use analysis for passenger air taxis. The aim of this Phase II research is to provide guidance for Advanced Air Mobility vertiport site selection through the lens of aircraft operational characteristics (noise, downwash, etc.), safety, access, and equity by assessing the status, identify the barriers, and make recommendations on deployment of Advanced Air Mobility (AAM) in California, especially leveraging General Aviation (GA) airports for AAM operations.

Similar to previous work, the outcomes from this research will replicable methods to use GIS constraint mapping to identify appropriate potential locations for vertiport sites. GIS tools are readily available to land use policy and decisions making entities. These entities typically have staff skilled in the use of GIS tools and planning methods. These processes could also be used by community-based organizations (CBO) and other entities. With robust dissemination it is likely to generate strong interest and deployment.

Calexico East Land Port of Entry (POE) Commercial Vehicle Appointment System (CVAS)

Research Need:

The Commercial Vehicle Appointment System (CVAS) seeks to address critical challenges faced by California's binational communities. In 2016, delays at the California-Baja California land Ports of Entry (POEs) led to a $3.4 billion loss in economic output for both countries. These delays also exacerbate air pollution and increase greenhouse gas emissions. By implementing an Intelligent Transportation System (ITS) that provides real-time border, incident information, appointment

windows, this proposed project aims to alleviate congestion, improve the reliability of cross-border travel for commercial vehicles, and support climate change mitigation efforts. Additionally, enhancing access to commercial vehicles will strengthen California's global competitiveness by optimizing multimodal supply chains connected to land ports, seaports, and rail lines.

Research Description:

The proposed Concept of Operations (CONOPS) introduces the first appointment system for commercial vehicles at a land POE, with the potential to expand to passenger vehicles in the future. This innovative system will allow commercial users to schedule appointments for designated time slots based on current border conditions. If successful, this pilot project could serve as a model for other POEs along both the northern and southern U.S. borders, utilizing proven technologies currently employed at the nation's seaports.

The project aims to enhance safety, reliability, resiliency, equity, and climate initiatives, providing significant regional and international benefits. By reducing supply chain bottlenecks, saving time and money for binational companies, and offering equitable travel solutions, the project will alleviate congestion and decrease pollution at the California-Baja California POEs.

The development of a Concept of Operations (CONOPS) will serve as the foundation for the project, detailing the technical framework for the following areas:

- Proposed Technological Architecture
- Systematic Concepts
- System Integration
- Operational & Support Environment
- Operational Scenarios

Complete streets and change of travel behavior of people in vicinity

Research Need:

More information is needed about the impact of complete streets elements on travel behavior in order to improve project prioritization and identification of potential improvements in the planning phase.

Research Description:

Complete streets are designed to provide safe and accessible transportation options for all users—pedestrians, cyclists, public transit riders, and motorists. When communities implement complete streets, several changes in travel behavior can be observed among people in the vicinity:

- Increased Walking and Biking
- Reduced Car Dependency
- Changes in Transit Use
- Enhanced Community Interaction
- Health Benefits

The goal of this research is understanding the most important factors that make complete streets attractive for travelers. Case studies and surveys can present which attribute within the complete street can change their travel mobility mode and behavior. Improved information can be incorporated into complete streets guidance and criteria for funding programs.

~~***Creation of a roadway asset prioritization method for state facilities in areas with high wildfire risk***~~

~~**Research Need:**~~

~~California's rural transportation agencies recognize increased wildfire risk across the state and the need to improve the state highway system to facilitate evacuation and improve the resilience of other state assets to the threat of wildfire. With limited available funds for this purpose, Caltrans has a need for an objective prioritization methodology both for route redundancy and asset hardening on key state facilities.~~

~~**Research Description:**~~

~~The research methodology should consider defined local evacuation plans and established risk indices to identify locations of highest need for investment focused on wildfire risk reduction. Additionally, redundant routes available for ingress and egress should be considered along with the population of the various communities.~~

Economic Effects of Toll Roads and Managed Lanes on Commuter Behavior

Research Need:

Current toll road usage data is reported individually, typically including vehicle counts at a monthly cadence along with revenues collected. Since 2023, Caltrans has procured access to two Big Data Platforms that allow employees to gain insights into traveler trends and metrics. However, the data insights that these platforms provide often cover the whole roadway with limited options for specific managed lanes, analyses and depending on the platform, may not include carpooling rates, transit usage or customer spending in all metrics, leaving the full picture incomplete. There is a need to identify, validate and analyze these sources together to provide greater insights to California's growing toll roads and managed lanes commuter behavior.

Research Description:

The research would explore the economic effects of toll roads and managed lanes on commuter behavior in California. By analyzing tolling data, traffic patterns, and consumer spending, the research could determine how tolls influence driving habits, carpooling rates, and public transit usage. The goal is to understand whether toll roads and managed lanes can effectively manage traffic congestion and generate economic benefits, such as reduced travel times and lower vehicle operating costs. This research provides Caltrans with the insight and framework to continuously evaluate the State's transportation network. By leveraging data collected from this research with the Big Data platforms that Caltrans has access to, Caltrans can assess trends at a statewide level, allowing for more data driven decisions

Exploring the Feasibility of Developing a Low-Cost Automated Wireless Connectivity Measurement and Mapping System for Public Transit Vehicles

Research Need:

Connectivity is the lifeblood of modern public transit information systems. It is crucial for enabling digital payments and providing General Transit Feed Specification (GTFS) Realtime information such as Trip Updates, Service Alerts, and Vehicle Positions. Knowledge of and access to connectivity data, based on real measurements, empower state transportation departments to plan proactively and manage public transit agencies' expectations effectively.

Due to the high cost of obtaining reliable measurement-based data, connectivity may sometimes be presumed or inferred from predicted coverage maps. If a state transportation department has funds to hire a consulting firm to conduct fieldwork, more reliable connectivity data can be obtained. However, this data will eventually become outdated due to the rapid pace of evolution in the wireless communications landscape. Additionally, changes in transit service routes – such as shifts or expansions – can create unexpected connectivity issues.

Research Description:

Instead of relying on a combination of predicted coverage maps (low cost, low reliability) and limited-time value field surveys (high cost, high reliability), this research proposal aims to explore the feasibility of developing a continuously updated, automated, low-cost, high-reliability connectivity measurement and mapping solution. This research will also estimate the total cost of each method identified that satisfies the minimum viable solution requirements outlined below.

1. The measuring unit or device shall be permanently or indefinitely installed inside public transit vehicles including, but not limited to buses, light rails, or trains.
2. Components outside the vehicle, such as antennas and cables, shall be weatherproof.
3. The device shall draw power from the vehicle's onboard supply when vehicle power is turned on. When vehicle power is turned off, the device shall use a temporary source of power (e.g., uninterruptible power supply) to save measured data to local storage, enter a low-power or suspend mode, and eventually shut down as needed.
4. The device shall automatically wake up and resume normal operation when vehicle power is restored.
5. The device shall autonomously collect connectivity data without requiring any transit vehicle operator intervention.
6. The device shall support secure remote management, including over-the-air firmware and software updates.
7. The device shall automatically transmit measured data to a cloud-based server when there is data connectivity. At times when connectivity is not available, the device shall have sufficient storage capacity to temporarily store the measured data to prevent data loss. It shall also automatically transmit the stored data to a cloud-based server when connectivity is restored.
8. The measurement system shall use dynamic data sampling to balance data resolution and storage requirements. For example, the sampling rate will decrease when the transit vehicle is stationary or moving slowly, compared to when it is moving faster.
9. A geographic information system (GIS) mapping application shall access the data from the cloud-based server to automatically generate or update the connectivity map.
10. The application shall support both scheduled and manual saving of the connectivity map, along with the system timestamp, to enable historical archiving and future retrieval.
11. The application shall assign system-generated unique names to automatically saved maps and allow users to enter custom names for manually saved maps. Users shall also be able to modify map names as needed.

The data connectivity map shall be created with tools and processes that utilize open standards whenever possible, be accessible to authorized users, and feature an intuitive user interface.

EV/Low emission vehicles impact on VMT increase/induced traffic

Research Need:

California's strategy for reducing transportation emissions relies both on converting the vehicle fleet to electric vehicles (ZEVs) and reducing vehicle miles traveled (VMT); however, there is a risk that over-emphasis on the ZEV conversion component of the plan will hamper VMT reduction efforts, rendering overall emissions goals out of reach:

- Environmentally conscious people who own EVs may be less hesitant to drive when other options are available or make life choices that lead to more driving, even though EVs place increase demand on a power grid still dependent on fossil fuels and produce emissions directly through brake and tire wear.
- Elected officials and environmental organizations may focus less on investment in lower-impact modes like public transit and active transportation. Companies that produce electric vehicles may compound this problem by overstating the environmental benefits of their product or organizing against projects and initiatives they see as competition. In addition to the environmental implications, this could compromise transportation access, safety, and equity.
- Transit agencies may be forced to comply with ZEV mandates, for example CARB's Innovative Clean Transit rule, even though ZEV conversion of transit has a relatively small environmental benefit given its already-minimal emissions compared to private cars. Because ZEV technology is less advanced for large buses than smaller vehicles, such mandates could also increase transit operating costs – especially in rural or hilly environments – and lead to service cuts.

Research Description:

In the past 5 years the percentage of EVs and low emission vehicles (hybrids and Plug-in hybrid vehicles) have been rising annually in the California. Studies show that this trend will continue with the advent of EVs having longer range with one charge. The aim of this study is to understand how users of EVs are tempted to drive more and generate more VMT considering their lower payments for mobility. Understanding the travel behavior of such users can assist in understanding future VMT and calibrating the travel demand models.

The research would require the following data and analysis:

- Surveying people who have shifted from using Internal Combustion Engines (ICE) vehicles to EVs or low emission vehicles.
- The change of daily VMT (if any).
- The average cost of mobility before and after the transition to EV or low emission vehicles, including individual expenses and transit agency operating costs/service levels.
- Use of other modes of travel, such as transit and active transportation, before and after purchasing an EV.
- Relationship between EV use and funding levels for roads, transit, and active transportation
- Forecasting potential future travel behavior (if data is reliable).

How do People Receive Information about Public Transit?

Research Need:

Public transit systems face challenges in effectively communicating accurate, timely information to riders and non-riders. Transit information is accessed through various channels—websites, apps, physical signage, or word-of-mouth—but these methods can be inconsistent, unreliable, or inaccessible for different groups. Riders may struggle with outdated or incomplete information, leading to confusion or missed trips, while non-riders may avoid using transit due to unclear or insufficient service details. Transit agencies may also be unsure about how riders best receive information causing them to make potentially inefficient investments in rider information platforms that don't meet the needs of riders and fail to motivate non-riders into becoming riders.

Research Description:

This research aims to explore how both transit riders and non-riders access public transit information for the purpose of planning and taking trips on transit. The research will focus on identifying key sources, preferences, and barriers. By surveying a diverse sample of individuals, the study will investigate the methods people use to obtain transit information, including agency websites, brochures, commercial trip planners using GTFS data, signage at stops, and even informal sources such as word-of-mouth. The survey will capture the "who, what, where, when, why, and how" of information access: Who relies on which sources? What information is most sought after? Where do people access it (e.g., at home, on the go)? When do they seek it (e.g., before trips or during disruptions)? Why do they trust or distrust specific channels? How could agencies improv communication?

Findings will provide transit agencies, regional planners, and statewide entities with insights into the most effective communication strategies for different demographic groups. This could lead to tailored approaches for disseminating information, such as improving real-time updates, ensuring clarity in schedules, or enhancing stop signage. Ultimately, the research will help transit agencies make more informed decisions on how to meet the informational needs of current and potential riders, thus improving the overall public transit rider experience.

The research methodology will involve designing and distributing a comprehensive survey targeting transit riders and non-riders across California to understand how individuals access public transit information. The survey will collect quantitative and qualitative data, including demographic details, sources of transit information used, and barriers faced in obtaining accurate information. Once responses are collected, the data will undergo analysis to identify trends, preferences, and gaps in information dissemination. Statistical techniques and geospatial analysis will be employed to examine variations across geographic regions and transit agency sizes. The findings will provide actionable insights into improving communication strategies, fostering equity, and enhancing overall transit accessibility.

Impacts of Liability Judgements on Transportation Finance and Operations

Research Need:

Transportation tort cases in the United States have been increasing over time. This is due to a number of factors, including the growing size of claims, the willingness of insurance companies to settle, and the perceived ability of public agencies to pay economic damages in lawsuits through joint and several liability, regardless of the degree to which public agencies are at fault. More information is needed on the number and size of claims in dangerous condition of public property cases against government entities and its impact on the availability of funds for strategic transportation investment.

Research Description:

The research should (i) Investigate the dramatic rise of jury verdicts on dangerous condition of public property cases against government entities, and related increase in settlements. This should include in the evaluation an assessment of whether/how the number of cases filed and amounts paid on settlement and judgments has increased over time and by how much. (ii) investigate how this impacts public entities in California, and (iii) Investigate how other states limit liability.

Investigating the Feasibility and Viability of Using a Wireless Low Power Wide Area Network (LPWAN) as an Alternative Connectivity Method for Narrowband Public Transit Applications in Unserved and Underserved Communities

Research Need:

Data connectivity is the lifeblood of modern public transit information systems. General Transit Feed Specification (GTFS) Realtime information, such as Trip Updates, Service Alerts, and Vehicle Positions, is typically delivered via cellular networks or, when unavailable, through satellite internet service. However, cellular service is typically lacking in rural areas due to the high cost of infrastructure and the relatively low number of customers in those areas. While satellite internet may indeed be available, the higher initial hardware cost and monthly subscription rates make it less affordable for small transit operators.

A 2021 CTC Technology & Research study using a CPUC drive test from 2020 identified over 58,000 miles of California state roads unserved by a mobile provider. The Middle Mile Broadband Initiative signed into law in 2021 is building an 8,000+ mile network infrastructure to bring equitable high-speed internet connectivity to homes and other community institutions in California. The telecom industry is seeing satellite and cellular company partnerships developing satellite-direct-to-cellular service. These public and private sector enterprises, and similar others, are expected to eventually improve overall connectivity across the State. However, the timing of when they will be available for on-road public transit applications is not clear.

Research Description:

This research proposal aims to explore the technical feasibility of developing a wireless LPWAN to deliver GTFS Realtime information and potentially support other relatively low-data-rate or narrowband transit applications, expanding California's connectivity solutions toolkit. If applicable, this research will also determine the financial viability of implementing a wireless LPWAN that meets the requirements outlined below.

1. The system must provide wireless connectivity over the desired service area to transmit a transit vehicle's latitude and longitude coordinates to a GTFS Realtime server.

2. An onboard GPS receiver periodically acquires vehicle position and sends the timestamped data to a communication module inside the vehicle where it is transmitted to the LPWAN and ultimately sent to an internet gateway for access by a GTFS Realtime server.
3. The system must be capable of providing Vehicle Positions and Trip Updates to the GTFS Realtime server every 90 seconds or less. It must also be capable of providing Service Alerts to the GTFS Realtime server every 10 minutes or less.
4. The system must track a transit vehicle's position as it travels along its route, which can extend up to approximately 100 miles from origin to destination in some cases.
5. The system must not rely on cellular or satellite connectivity for sending vehicle position updates. Naturally, satellite reception must be available for the onboard GPS receiver to acquire position coordinates in the first place.
6. The estimated total cost of ownership of the system must be competitive to currently available or future anticipated wireless or wired data connectivity methods, such as satellite, cellular, or fiber optic, for use in unserved or underserved communities in California.
7. The system must use the minimum number of fixed nodes to minimize hops, thereby reducing cost and complexity, while ensuring reliable coverage of the service area.
8. The system data routing protocol must be efficient and conserve system resources.
9. The system must be low-power and operate on battery power for at least 3 years without requiring battery replacement.
10. A solar charging system may be used to recharge the battery as needed.
11. The overall footprint of the fixed repeater nodes, including the solar panel and charging system, must be compact and lightweight to streamline the permitting process and approval.
12. Equipment exposed to the elements must be weatherproof (e.g., fixed repeater nodes, vehicle rooftop- mounted antennas, cables).
13. The system must have the capability to be securely and remotely managed over the air.

Mental health and behavioral impacts to Transit Operations and Transit Agency Responses: a case study of Humboldt Transit Authority (HTA). (Working Title to be changed as appropriate)

Research Need:

More than half a million individuals experience a need for shelter every night in the United States, and the pandemic has exacerbated this situation [(1)]. Many people turn to transit vehicles, bus shelters, transit centers and related public spaces for shelter. In addition, a seemingly correlated rise in challenging incidents involving people with behavioral and mental health challenges and involving substance abuse has been observed during and after the pandemic [(2)]. The increased number of incidents, and to a lesser extent the increased presence of houseless, has significantly impacted transit operations, caused perceived safety concerns among riders which has impacted ridership growth efforts, and placed a significant strain on vehicle operators and transit staff. These challenges occur at a time when public transit is tasked with reducing transportation related GHG's and Vehicle Miles Travelled (VMT) while continuing to provide equitable access to opportunities across all communities.

Data is needed to quantify the scope of the problem from relevant stakeholders (police, public health, social services, hospitals, NGO's, riders etc.), compile incidents in public transit environments, conduct stakeholder outreach and surveys, develop recommendations on the role and responsibility of transit agencies in addressing these challenges, and develop and implement a pilot response and collaboration strategy across relevant stakeholders. The response and collaboration strategy should focus on constructive, compassionate, and non-punitive responses where

appropriate.

Research Description:

The desired outcomes of this research would be recommendations for a state policy that provides guidance and support to transit agencies, and other agencies as appropriate, regarding the expectations of transit agencies in addressing these challenges. In addition, clarity and guidance on the costs of implementing the recommendations would be sought, along with guidance and clarity on who will bear these costs.

1. Conduct a literature review, compile case studies, and reach out to transit agencies with related existing policies and implementation plans in place.
2. Investigate and quantify the reported rise in incidents in public transit spaces. Define the different types of incidents (i.e., violence, substance abuse, inappropriate/threatening behavior, unsanitary acts, encampment, etc.)
3. Explore the intersection of the reported rise in incidents with the rise in houselessness.
4. Identify potential responses to the different types of incidents. Identify those incidents under the purview of the transit agency to manage, and those to be managed by other agencies/services through coordination with the transit agency. Define expectations of transit agencies to manage and/or assist partner agencies, organizations, and stakeholders. Identify where punitive responses are recommended. Estimate the operational costs of the potential responses.
5. Develop a collaboration strategy and pilot implementation of this strategy with three different transit agencies who vary significantly in size, staff resources, and operating budget.
6. Based on the pilot implementation, develop recommendations for a statewide policy that defines and/or provides guidance on the expectations of transit agencies in managing these incidents. Quantify the anticipated operational cost to transit agencies for managing these incidents. Develop recommendations for sources of funding for these costs.

Stakeholder Information

Local Stakeholder: Humboldt Transit Authority (HTA) and possibly local PD's, CalPoly Humboldt, City of Arcata, City of Eureka, County DHS (to be determined), as well as a large and medium size transit agency TBD.

Citations

(1) https://housingmatters.urban.org/research-summary/over-half-million-people-experienced-homelessness-2022

(2) Avena NM, Simkus J, Lewandowski A, Gold MS, Potenza MN. Substance Use Disorders and Behavioral Addictions During the COVID-19 Pandemic and COVID-19-Related Restrictions. Front Psychiatry. 2021 Apr 16;12:653674.

Methodology Development for an Engagement Criteria Decision Matrix

Research Need:

By Federal and State law, and in demonstration of the State of California's commitment to serving the transportation needs of all Californians, Caltrans focuses on community engagement early in the transportation planning process and continually throughout project implementation. Publication of an updated Public Engagement Plan Template and Guide and development of web-based Caltrans Engagement Portal have provided key guidance for project proponents statewide, but more information is needed to ensure that Project Development Teams

can properly resource engagement on projects. The timing, intensity, and strategic methods of engagement can vary depending on existing practices, project type, community characteristics, and likelihood of success in reaching the intended audience, among other factors. Significantly, Caltrans recently developed the Transportation Equity Index (EQI), a spatial screening tool designed to identify transportation-based priority populations at the census block level. The EQI integrates transportation and socioeconomic indicators into three screens, including transportation-based priority populations, traffic exposure, and access to destinations. Research is needed on what factors should be considered when determining if community engagement should be conducted, scoping public engagement, and how Caltrans can use existing tools such as the EQI or develop new data to inform equitable distribution of community engagement efforts, with the understanding that department engagement resources are limited.

Research Description:

Through an assessment of existing literature and a survey of best practices, the research would develop a method to determine when engagement should be initiated, types of outreach that have the highest chance of success, and estimated resources needed. Findings can be incorporated int guidance for Planning and Project Development Teams seeking to bolster Public Engagement Plans.

Next Steps in the Deployment of Advanced Air Mobility (AAM) in California

Research Need:

Very recent years have seen the release of high-level guidance and work plans for the deployment of AAM in California. There is a need to incorporate technical documents, guidance and plans in a unified path. California has been a global leader in AAM and is poised to move forward.

Research Description:

The aim of this research is to assess the current status and identify the barriers to the deployment of Advanced Air Mobility (AAM) across California. AAM represents a transformative approach to air transportation, offering innovative solutions to urban congestion and new opportunities for regional connectivity. Additionally, California is home to the research and development of several of the major Original Equipment Manufacturers (OEM). However, the successful deployment of AAM faces several challenges, including regulatory, infrastructural, technological, and social barriers. This study will provide a comprehensive analysis of these barriers and propose strategies to overcome them, with a focus on different areas across the state (rural, suburban, and urban). Caltrans has been engaged with this topic through work such as "Advanced Air Mobility Infrastructure Readiness and Three-Year Implementation Plan." This research will provide a critical assessment of the current status and barriers to AAM deployment in California, supported by a literature review, surveys, and structured interviews. The findings will inform the development of targeted strategies to facilitate the successful integration of AAM into the state's transportation ecosystem, considering the unique challenges and opportunities present in rural, suburban, and urban areas. The initial use of this research would be to incorporate findings into the update of the California Airport Land Use Planning Handbook that provides guidance regarding land use planning and oversight in the vicinity of airports. It will also enable forward progress in the deployment of AAM equipment and, the design and building of AAM infrastructure. This research will also engage with other identified entities and endeavors such as economic development, equity building, safety enhancement and climate change adaptation.

Pedestrian Environmental Quality Index (PEQI) for the State Transportation Network

Research Need:

There is not a current or practical way to capture pedestrian environmental conditions on the State Transportation Network (State Highway System). This information is relevant to various Caltrans and State policies, including DP-37, SB 960, the Caltrans Equity Statement, Caltrans Strategic Plan, and CAPTI. Ideally, we would like to be able to provide pedestrian improvements that go above and beyond to create the most walkable facilities possible. Walkability has many external factors, including pedestrians' perceived comfortability and walkability, street design, traffic levels, and surrounding land use information. Caltrans currently looks to provide improvements related to asset conditions and gaps in our network. If we can focus on areas where we could enhance the pedestrian comfort and walkability, this could ideally lead to transformative complete street enhancements leading to major mode shift changes.

Research Description:

This research activity will identify appropriate measures of walkability and pedestrian comfort, and identify an appropriate methodology that indexes pedestrian environmental quality for our State Transportation Network (State facilities). This could be a spreadsheet tool that can be used by Caltrans staff when analyzing project opportunities or during corridor planning efforts. The tool would create an output (score) based on an appropriate methodology for measuring pedestrian comfort at both segment and intersection levels. The outcomes of this effort can lead to successful and proactive complete streets improvements on our State Transportation Network.
The research request is inspired by the PEQI tool created in 2008 by the San Francisco Public Health Department as well as UCLA's Adaptation for Los Angeles. Both are linked here: https://nacto.org/wp-content/uploads/2015/04/Pedestrian-Environmental-Quality-Index-Part-I.pdf.

Public transportation infrastructure to create a network that increases rural transit ridership

Research Need:

Rural counties often struggle to meet unmet transit needs while creating a network that connects diffuse points of interest with relatively low ridership on individual transit lines. Shade structures, lighting, and other complementary infrastructure at transit centers, bus stops/ shelters, park and rides have potential to address barriers to transit use. More information is needed to determine whether design and distribution of complementary system assets can increase transit availability and usage in rural counties.

Research Description:

Research will investigate best practices in the measurement of transit-complementary design, and include a case study that tests the methodology in a transit jurisdiction from a rural part of the state including spatial analysis of asset location and considerations for potential transit demand.

Risk Assessment of Vessel Impact Potential for Major Shipping Channel Bridges

Research need:

With thousands of vessel calls per year at California's marine ports, the potential for a ship to strike critical bridge infrastructure is an ongoing concern. The catastrophic May 2024 collision with the Francis Scott Key Bridge brought this issue into focus, but there is a need for additional information on the risk that large vessels pose to California's bridges.

Research Description:

Research would center on a probabilistic evaluation of threat potential to bridges that cross deep channels. This would not include an assessment of bridge structure integrity, but would focus on risk factors from literature and development of a method to assess vulnerability of California bridges to ship-strike occurrences. This would include assessment of vessel traffic factors and environmental factors that could lead to navigational errors.

Appendix B: USC Budget Form

Category	Monthly Salary	% of Time on Program	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.

Appendix C: PSR 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 / potential for transformative impact	
Student involvement	
Reasonableness of budget and cost-effectiveness	
Qualifications to perform work/likelihood of completion	
Potential to advance US DOT RD&T strategic plan goals	
Prior performance on PSR 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):