



Request for Proposals for Research Projects Year 4
Pacific Southwest Region 9 University Transportation Center

RFP Issued: 01/31/2020

Proposals Due: 02/28/2020



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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 include the following partners: California State University, Long Beach, Northern Arizona University, Pima Community College, University of California, Davis, University of California, Irvine, University of California, Los Angeles, and University of Hawaii. 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 4, and it will allocate our remaining Year 3 research funding for USC and CSULB. Funding available under this RFP is approximately \$1,000,000 for US DOT projects and \$1,200,000 for Caltrans projects. 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. 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 both USC and CSULB. Submission instructions and a proposal template are also provided.

Eligibility

Full-time tenure track and research faculty members eligible to serve as Principal Investigators at any of the partner universities are eligible to serve as Principal Investigators on PSR UTC grants. 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.

Research Program Themes and Topic Areas

Our research program is organized around four themes: technology for improved mobility, improving mobility for disadvantaged populations, improving resilience and protecting the environment, and managing mobility in high growth cities and regions.

Theme 1: Technology for improved mobility

We are on the threshold of a largely unforeseen technological and social transformation in connectivity, automation, and the sharing economy that promises to revolutionize travel in our Region and beyond. This theme explores technology solutions for improving mobility for both passengers and freight. Our Theme 1 research program is organized around three topic areas.

Topic 1-1: Technology and mobility:

This topic examines emerging technologies and their potential for improving passenger and freight mobility. Innovation is rapid across both passenger and freight modes. Examples include smart parking, dynamic routing, delivery consolidations, and integrated transit fare systems, in addition to the well-known transportation network companies (TNCs). This topic examines the potential of these innovations to solve the transport problems of Region 9.

Topic 1-2: Smart infrastructure and vehicles:

Technology for connected and autonomous vehicles (CAVs) is advancing rapidly. This topic examines AVs and CAVs. Examples of research include: 1) development of models and algorithms for managing shared CAVs; 2) impacts on travel behavior; 3) impacts on traffic flow and management in mixed fleets; and 4) truck platoons. This topic also examines the potential long-term impacts of AVs and CAVs on travel behavior, location choices of households and firms, and metropolitan spatial structure.

Topic 1-3: Public policy and implementation:

This topic explores the role of government in technology implementation and regulation. Research is needed on the role of government in this changing environment. A second issue is cooperation. A future of vehicles managed at the system level requires cooperation of public and private entities involved, yet there are many barriers to such cooperation. Finally, there are questions about the viability of CAVs.

Theme 2: Improving mobility for disadvantaged populations

This theme addresses mobility and accessibility problems of disadvantaged populations.

Topic 2-1: Novel modes for improved mobility and accessibility:

This topic explores the potential of novel modes, new models of public transport, and new models of private vehicle access to address mobility problems. Research may include challenges to implementation and strategies to overcome them.

Topic 2-2: Land use, accessibility, mobility:

Addressing the needs of the disadvantaged includes studying relationships between land use and transport with respect to minority and disadvantaged populations. This topic examines the impacts of limited accessibility and mobility both in urban and rural areas. It also explores the role of land use policies in reducing access barriers for underrepresented groups.

Theme 3: Improving resilience and protecting the environment

Resilience, or the ability to absorb shocks, recover quickly, and adapt to changing social, economic, and environmental conditions is essential to ensuring well-functioning and sustainable communities. Sustainability also requires reducing environmental problems. This theme addresses all aspects of environmental protection.

Topic 3-1: Analyzing alternative resilience strategies:

More effective resilience strategies can reduce the damages of natural disasters, accidents, or terrorist events. There is a need for research on frameworks to analyze resilience strategies at different geographic scales. Effectiveness of resilience strategies is often analyzed via economic impact models. In the case of transportation, these models could be linked with transportation network models to quantify the cost-effectiveness of different strategies. Methods to examine distributional impacts of disruptions and resilience across socioeconomic groups is also needed.

Topic 3-2: Smart technologies:

Smart technologies can improve system monitoring. Smart sensing systems, including those powered through solar or power harvesting, can provide the necessary information to monitor the health of systems so that proactive repair and replacement can be dealt with through normal crew duties.

Topic 3-3: Reducing environmental impacts:

The challenge for Region 9 is to reduce environmental impacts while meeting the mobility needs of society, fostering healthy communities, and supporting economic growth. Research is needed to address this challenge along three fronts: 1) *Infrastructure and operations*: lifecycle use of materials and practices in roadway construction, maintenance, and operation; assessment of environmental implications of Intelligent Transportation System (ITS) strategies; 2) *Travel demand*: effectiveness of strategies for shifting driving to transit, walking, and bicycling; implications of automated cars for land development patterns; role of new mobility services in daily household travel; and 3) *Vehicle and fuel technologies*: assessment of new-generation fuel and vehicle technologies, including battery, plug-in hybrid, roadway-powered, and fuel cell electric vehicles, with respect to lifecycle emissions, private and social costs, consumer behavior, and regulatory and market policies.

Theme 4: Managing mobility in high growth cities and regions

This theme addresses the transportation problems of regions and metro areas experiencing rapid population and employment growth are expecting to continue to grow.

Topic 4-1: Managing passenger demand:

This topic explores meeting human needs while lessening travel required. The emphasis is on “accessibility” rather than “mobility.” Well-being is enhanced when people are able to acquire goods and services, employment and education, but not necessarily by increasing travel volume. There is increasing emphasis on combining land use planning with transportation capital investments to achieve efficient movement patterns.

Topic 4-2: Managing freight demand and its impacts:

This topic addresses the challenges of managing freight, both last mile and regional. For example, the rise of e-commerce has brought about changes to global and local supply chains and greatly increased urban freight deliveries. The revitalization of our urban cores adds another increase in demand that translates into additional trips made by trucks and delivery vans. Research is needed to examine the impacts of e-commerce and other changes on local and regional mobility, economic activity, and employment patterns, such as passenger-freight conflicts, dynamics of shifts and their local impacts, and effective strategies for managing trade-related traffic, including better balancing demand across time intervals, routes, and modes.

Funding for PSR is from both the US Department of Transportation and the California Department of Transportation (Caltrans). Submission of proposals consistent with both the mission of METRANS and the mission of Caltrans and its research needs for PSR is encouraged.

Caltrans Topics

Proposers are referred to Caltrans priority research topics, presented in [Appendix A](#). Researchers who are interested in Caltrans topics should also complete the optional [Expression of Interest form](#).

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
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. 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 or other outside organizations 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 the PSR website: <https://www.mettrans.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. There are potential funding opportunities through various university programs that could support students working on PSR projects. Proposers are strongly encouraged but not required by this RFP to explore such opportunities with their schools and universities.

Match Funding

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

Project Selection

The PSR Executive Committee will make final project selections, taking into account reviewer evaluations, programmatic priorities, prior project performance, and partner recommendations. 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 (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. Proposers are encouraged to budget travel to one domestic conference to present project results. However, 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 subcontract 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 \$100,000 per year, 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. Projects should be budgeted to begin on August 16, 2020 and end by August 15, 2021.

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 a maximum of \$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.

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. White papers are aimed at a broad audience of professionals and policy-makers.

Research Project Requirements

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 DOT.** More here: https://www.mettrans.org/PSR_UTC_research
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 for are included in [Appendix B](#) for USC and [Appendix C](#) for CSULB.

Use the PSR Proposal Template to write your proposal:

https://www.metrans.org/assets/upload/PSR_Proposal_Template.pdf

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 and contribution to practice (e.g. peer-reviewed publication)
7. Description of how the PI will comply with the PSR Data Management Plan (DMP). The DMP is available at https://www.metrans.org/assets/upload/PSR_DMP.pdf.
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.) Use the form provided in [Appendix B](#) for USC and [Appendix C](#) for CSULB. For partner universities, use the budget that is used for the clearance process. Assume a start date of 8/16/20.
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 and [Appendix C](#) for CSULB)

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

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

Budget Instructions

For USC: Please use your School guidelines in preparing your budget. For the Price School, contact James Wang at jamestwa@price.usc.edu for budget assistance. For VSOE, 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, and the difference from the audited rate is to be shown as a cost share. Caltrans has additional budget rules; Principal Investigators of proposals selected for Caltrans funding will be informed of these requirements.

For CSULB: Budget guidelines for CSULB faculty are contained in [Appendix C](#). Proposals submitted by CSULB faculty must be approved via the University's internal clearance process prior to submission. Early budget consultation with Office of Research and Sponsored Programs is essential. Once the budget is finalized, internal clearance will be initiated by the Office of Research and Sponsored Programs (ORSP). Caltrans has additional budget rules; Principal Investigators of proposals selected for Caltrans funding will be informed of these requirements.

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

Submission Instructions

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

Email a PDF copy (max 10 MB) of each proposal to PSR Associate Director of Administration Cort Brinkerhoff at mcbrinke@price.usc.edu **before 5:00 pm on February 28, 2020**. 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_USC. A second submission would be SmithJ_USC2.

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 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. For CSULB proposals, include with your proposal the budget that is used for the clearance process.

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 Genevieve Giuliano can be reached at (213) 740-3956 or giuliano@usc.edu. In addition, check https://www.metrans.org/psr_utc for center organization and links to outside agencies. For further information regarding program rules and procedures contact PSR Associate Director Cort Brinkerhoff at (213) 740-4297 or mcbrinke@price.usc.edu.

Appendix A: Caltrans Research Priorities

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. Use the following link to read more about each specific topic: <https://drive.google.com/drive/folders/1O2JF-1o97UnWKjg2JGS0wHEmBIY8Mzq-?usp=sharing>

Researchers who are interested in Caltrans priority topics should also complete the optional [Expression of Interest form](#).

Caltrans Priority Research Topics

- Advanced Parking Management Systems and Integrated Corridor Management with Transit Component
- Assisting ADA customers with innovative technology
- Best practices and innovations in VMT fee application
- Broadband as a VMT mitigation strategy
- Case studies in Public-Private VMT Reduction Projects
- Effectiveness of Affordable Housing Subsidy as a VMT Mitigation
- Effectiveness of Transportation Demand Management strategies in different place types
- Establishing nexus/additionality for transportation projects used as mitigation
- GIS methods for CEQA Project Screening based on site, project context, and impact on the State Highway System
- History of Caltrans Freeway Decisions, Placement, Construction, and their Racial Consequences
- Intersection Movement Assist
- Leveraging pedal signal correction to reduce fuel use and charge times
- Lifecycle Cost Assessment for VMT reduction strategies
- Mitigating local VMT impacts for capacity-enhancing highway projects
- Modeling autonomous vehicle effects in rural and small urban settings
- Monitoring VMT reduction claims in Local Development Review
- Network Integration: Post-Journey Phases
- Network Integration: Trip Planning, Transactions, and Journeys
- Opportunities and barriers of various congestion pricing strategies that have the potential to equitably reduce VMT
- Parking on Shoulders
- Repurposing LOS-based fee structures for VMT reduction
- State-supported local bikeshare programs
- State-supported tools for promoting ride share at primary and secondary schools
- Vehicle Turning Right in Front of Bus Warning
- Vulnerable Road User in Signalized Crosswalk
- Zero-Emissions Vehicles Technology Feasibility Study for Intercity Passenger Rail

Caltrans Research Themes

- Critical societal and technological trends for consideration in the California Transportation Plan and subsidiary Caltrans modal plans, including (not limited to):
 - Impacts of shared mobility on vehicle miles traveled (VMT)
 - Transportation-related cybersecurity risk
 - Meeting transportation needs in the midst of changing California demographics
- Implementation of the statewide freight plan and emerging sustainable freight trends, including but not limited to:
 - Methods for determining freight origin and destination
 - Truck parking innovations
 - Modal shifts from trucks to rail or barge
 - Intelligent transportation systems for freight
- Meeting transportation system performance measurement requirements of the FAST Act and California Senate Bill 1, including but not limited to:
 - Data collection needs for new performance metrics in the Caltrans Strategic Management Plan including prosperity, accessibility, livability, and resiliency
 - Best practices in performance-based transportation planning in the U.S.
 - How to use GPS data for mode and activity deduction and investigate how other DOTs are using big data
 - How to use Big Data platform for integrating land use planning and transportation planning
 - How to incorporate contingency planning into corridor planning (Shared mobility (TNCs), AV/CV deployment, Climate Change, economic uncertainty, etc.); how to incorporate health and accessibility scores into corridor planning
 - How to identify data sources and develop parameters for qualitatively ranking critical corridors and optimal projects
 - Improved active transportation safety, mobility, and equity aimed at fostering healthy and sustainable communities, including but not limited to:
 - Access to needed safety data to effectively evaluate overall system or specific location safety issues
 - Analysis of benefits and costs of bicycle and pedestrian safety infrastructure projects
 - Estimating greenhouse gas reduction potential of active transportation facilities
 - Bicycle and pedestrian trip data collection methodology and forecasting
- Tools for assessing lifecycle GHG emissions and costs for highway and other projects, as per Executive Order B-30-15
- Tools for the prediction and mapping of mudslides as a result of the environmental effects of wildfires
- Case studies in transportation equity.
- Racial history and impacts of transportation decisions in the state of California and at Caltrans

Freight

Modeling Truck/Bus Created Fugitive Dust on Highway Roadsides with Narrow or Absent Shoulders

Research Need: Most of the existing fugitive dust studies found on a search of the literature investigated dust created by traffic on the paved highway surface. A study completed by the University of Nevada and the San Joaquin Valley Unified Air Pollution Control District in 2011,

reports the first empirical estimate of particle emissions from unpaved shoulders of paved roads (H. Moosmüller, J. A. Gillies, C. F. Rogers, D. W. DuBois, J. C. Chow, J. G. Watson & R. Langston (1998) Particulate Emission Rates for Unpaved Shoulders along a Paved Road, Journal of the Air & Waste Management Association, 48:5, 398-407, OI:10.1080/10473289.1998.10463694). This study confirms the theory that large vehicles with poor aerodynamics traveling at high speed result in significant dust entrainment. While not the source of the highest fugitive dust emissions for the basin, depending on conditions, shoulder generated dust could have significant effect on local air quality.

Research Description: The objective of the proposed study would be to model dust plumes to determine extent and volume of dust plume under expected climate change conditions (warmer, drier for longer periods) at different shoulder widths to determine optimal widths of paving necessary to alleviate the additional dust created by an ever-increasing number of large vehicles.

Customer representative: Lynn O'Connor - (209) 948-3975/ Lynn.oconnor@dot.ca.gov

Assessing the role of Indian Reservation Roads in Freight movement

Research Need: The Indian Reservation Roads (IRR) program, established in 1928, funds maintenance, construction, and improvement of IRR routes that do not receive state funding through federal-aid funding (CA IRR Tech Report). Currently, FHWA is assigned oversight of the Tribal Transportation Program (formerly the IRR program) and is responsible for determining available funding to allocate to the Bureau of Indian Affairs (BIA) for projects on the National Tribal Transportation Facility Inventory (NTTFI), formerly the IRR system (CA IRR Tech Report). Many of California's Tribal lands are accessed from or served directly by the SHS, including routes identified within the State Highway Freight Network. Future study is needed to determine what role the NTTFI (formerly the IRR system) plays in the movement of freight to and from the Tribal lands of California.

Research Description: The objective of the proposed study would be to analyze California's NTTFI designated roads to identify which Tribal Transportation Program (TTP) routes (or portions of routes) are already on California State Freight Highway Network, to collect goods movement data on the IRR system, and to determine how the NTTFI system supports freight movement within the California as a whole

Customer representative: Jesus (Jesse) Garcia - (916) 653-2271/ Jesus.Garcia@dot.ca.gov

Environmental impact avoidance in freight corridors

Research Need: While California sees significant economic benefit (such as jobs, sales tax) by serving as the nation's global gateway, there is an associated cost exerted by the significant pass-through freight moving by truck and train. Research is needed to explore methods to reduce or eliminate negative externalities from freight movement, especially air quality effects.

Research Description: A white paper or small research project reviewing best practices or case studies around freight-related impact mitigation. Another potential product is a list of strategies with an assessment of their effectiveness in certain situations.

Customer representative: Caltrans Office of Freight Planning

Economic and environmental impacts of expanded short rail service

Research Need: To shippers, the ability to use short line railroads means lower transportation costs, more flexible local service options, and a greatly expanded market reach for local products through their

Class I railroad partners. In order to promote smart investments in short line rail service, it is important to understand and quantify the potential benefits of short line rail versus the cost of expansion.

Research Description: A paper outlining the current state of knowledge around suitable markets for short line rail, potential for modal shift to rail, cost of expansion or other barriers to entry, and expected travel related effects of different short line expansion scenarios.

Customer representative: Caltrans Office of Freight Planning

VMT impacts of e-commerce logistics facilities and warehousing

Research Need: As growth in e-commerce continues, it is critical to understand how the use of logistics facilities and warehouses is changing over time, and what that means in terms of the expected travel to and from those facilities. A warehouse might go from passive use to handling a part of the delivery supply chain for a large online retailer, for instance. How should regional and statewide traffic models adjust to anticipate more transportation-intensive uses in those sites? Are those trips replacing trips that would have previously been assigned to traditional retail?

Research Description: A study outlining the expected impact of e-commerce versus other types of facilities that may have similar location or zoning, either through modeling, case studies, or before and after travel data.

Customer representative: Caltrans Office of Freight Planning

Projecting and mitigating potential job loss from freight sector automation

Research Need: While the use of automation in warehouses, marine terminals, and trucking offers many benefits, their implementation also poses complex planning dilemmas. For example, although automated trucks may address major industry challenges such as the national truck driver shortage, there is also the potential for unintended economic impacts of job loss if these workers are not transitioned into other jobs. What sub-sectors of the freight economy are experiencing or will experience effects of automation, and what are the effects on total productivity, total employment, wages, and other important labor statistics? What are some ways that negative effects can be mitigated?

Research Description: White paper looking at the effects of automation, potential to shift jobs, and common or experimental methods of mitigating any negative effects

Customer representative: Caltrans Office of Freight Planning

Feasibility, and Efficiency benefits, of dedicated truck lanes

Research Need: Separating freight from other traffic may reduce congestion and the chance of traffic incidents related to mixing commercial and non-commercial vehicles. What are factors that have led to successful truck only projects in the past, what are some current barriers in California, and what benefits could be expected from separating truck and non-truck facilities?

Research Description: Study looking at considerations in the planning of truck-only facilities, successful and unsuccessful cases of the past, and the creation of a methodology to accurately assess costs and benefits.

Customer representative: Caltrans Office of Freight Planning

Commodity flow survey for pass-through cargo

Research Need: More information is needed on the composition and volume of pass-through traffic, that with both an origin and destination outside of California, in order to better understand the related costs and benefits.

Research Description: Analysis of commodity flows to more accurately assess multi-modal freight related travel with both an origin and destination outside of California. Also, the study may include an economic analysis of these freight movements, including environmental effects.

Customer representative: Caltrans Office of Freight Planning

Assessment of requirements, costs, and benefits of providing charging facilities for Battery Electric Heavy-Duty Trucks and Buses at Safety Roadside Rest Areas

Research Need: Research is needed to better define possibilities for and barriers to the provision of charging infrastructure for heavy vehicles at roadside rest areas.

Research Description: Potential topics include assessing the load capacity, type of infrastructure needed (charging stations, safety equipment, design of facilities, plug types, etc.), potential rates for electricity, hours needed for charging for a range of heavy duty vehicles.

Customer representative: Eric Fredericks, Caltrans Office of Freight Planning / eric.fredericks@dot.ca.gov

Appendix B: 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.

Appendix C: CSULB Internal Clearance Process Instructions Using Cayuse SP

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 using Cayuse SP.

You can access Cayuse SP through the ORSP website - <http://www.csulb.edu/office-of-research-and-sponsored-programs/cayuse-internal-clearance-and-electronic-proposal>

Your Pre-Award Specialist will still need the PI to send their 700-U or Federal Conflict of Economic Interest form, project summary, budget and budget justification for review. These documents can also be uploaded in to the “Proposal Attachments” section in Cayuse SP.

All templates for the summary, budget, budget justification and Conflict of Interest forms are located on the ORSP Website at - <http://www.csulb.edu/office-of-research-and-sponsored-programs/forms-and-templates>

As the PI, you should have access to Cayuse SP under your single sign-on; if not, please let your Pre-Award Specialist know and they will have ATS add that to your SSO. When contacting your Pre-Award Specialist regarding SSO, please include your employee ID number.

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

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

Appendix D: 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	
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 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):