National Institute for Congestion Reduction Year 1 Projects

February 17, 2020 | cutr.usf.edu/nicr
NICR Mission

The National Institute for Congestion Reduction (NICR) will emerge as a national leader in providing multimodal congestion reduction strategies through real-world deployments that leverage advances in technology, big data science and innovative transportation options to optimize the efficiency and reliability of the transportation system for all users. Our efficient and effective delivery of an integrated research, education, workforce development and technology transfer program will be a model for the nation.

Effective Date July 1, 2019
End Date September 30, 2023
100% Match Required
Proposed Research Projects

Pillar 1 Urban and Rural Traffic Management in the Age of Big Data

*Relieving recurring congestion that plagues urban settings on a daily basis, and the incident-induced congestion that results in excessive delays in rural areas.*

- Project 1-1: Demand-Side Management of Auto Traffic
- Project 1-2: Supply-Side Management of Auto Traffic
- Project 1-3: System Monitoring of Auto Traffic
- Project 1-4: Transit Priority
- Project 1-5: Multimodal Integration
- Project 1-6: Assessing Impacts of Proposed Strategies & Disseminating Findings

Pillar 2 Battling Congestion Using Innovative Mobility Platforms

*Alternative travel modes can reduce congestion if they motivate travelers to shift from their cars in large numbers*

- Project 2-1: Generalizing the Current Modeling Framework
- Project 2-2: Formulating Innovative Mobility Policies to Reduce Congestion
- Project 2-3: Enhancing Equity and Access
- Project 2-4: On-Demand Ride Services with Connected or Automated Fleets
- Project 2-5: Disseminating Findings

Pillar 3 Incentivizing Transit in the Face of Innovative Alternatives

*The third pillar focuses on large urban settings, where public transit is an important means of combatting congestion.*

- Project 3-1: Influencing Travel Behavior via an Open Source Platform
- Project 3-2: Financial Incentives to Reduce Vehicle Miles Traveled
- Project 3-3: Targeting Transit Incentives to Congestion Sources

Pillar 4 Battling Congestion on Freeway Corridors

*Shifts attention away from surface streets, to focus instead on freeways and the parallel routes that form urban and rural corridors.*

- Project 4-1: Pricing Mechanisms for Managed Lanes
- Project 4-2: Proactive Congestion Management
- Project 4-3: Corridor-Wide Surveillance Using Unmanned Aircraft Systems
# Year 1 Projects

<table>
<thead>
<tr>
<th>Project</th>
<th>Lead</th>
<th>Collaborator</th>
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<tbody>
<tr>
<td><strong>Pillar 1 Urban and Rural Traffic Management in the Age of Big Data</strong></td>
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<tr>
<td>1-1 Demand-Side Management of Auto Traffic</td>
<td>Walker &amp; Hansen UCB</td>
<td>Lin &amp; Z. Wang USF</td>
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<td>Cassidy &amp; Shen UCB</td>
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<td>1-4 Transit Priority</td>
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<td>Daganzo UCB</td>
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<td>Shaheen &amp; Frick UCB</td>
<td>Sener TAMU/TTI</td>
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<td>Turner TAMU/TTI</td>
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<td>3-3 Targeting Transit Incentives to Congestion Sources</td>
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<td>P. Chen &amp; Winters USF</td>
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<td><strong>Pillar 4 Battling Congestion on Freeway Corridors</strong></td>
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<td>4-1 Pricing Mechanisms for Managed Lanes</td>
<td>Burris TAMU/TTI</td>
<td>Figueroa UPRM</td>
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<td>4-2 Proactive Congestion Management</td>
<td>Concas &amp; Perk USF</td>
<td>Kuhn TAMU/TTI</td>
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<tr>
<td>4-3 Corridor-Wide Surveillance Using Unmanned Aircraft Systems</td>
<td>Colucci UPRM</td>
<td>Zhang &amp; Kourtellis USF</td>
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</table>
See brief project descriptions in proposal.
Single Project in RiP

- https://rip.trb.org
- Title
- Abstract
- Keywords
- Start/Completion Dates
- Status
- Funding Amount
- Organizations

Identical on both Work Plans

Single Project items 1-4
Year 1 Research Project “Process”

Agree Upon Single Abstract + Keywords for RiP

Campus 1 Work Plan + Budget

Campus 2 Work Plan + Budget

Quick Peer Review of Work Plans

Work Begins

Campus Sponsored Research Submit to USF Sponsored Research

Email Takara Waller waller1@usf.edu and cc rraturi@cutr.usf.edu and rbertini@usf.edu

Campus PIs discuss/concur on tasks and collaboration plans
Year 1 Project Work Plan 2019 – 2020
Award Period: January 1, 2020 – December 31, 2020
Submit Work Plan (.docx) and Budget (.xlsx) by email to bartinl@usf.edu and raturin@cutr.usf.edu
Instructions: Please insert your text input in Arial 11 pt single spaced format.

1. Title / Campus / Investigator Role [pull down boxes to select responses]
   Title: Demand-Side Management of Auto Traffic
   Campus: University of South Florida
   Role: Lead

2. Principal Investigators [include for each project investigator on your campus]
   Name
   Email

3. Abstract [250 words; abstract must exactly match on lead and collaborator work plans]
   Text

4. Keywords
   Text

5. Research Objectives [A few sentences, measurable if possible]
   Text

6. Specific Tasks, Time Schedule and Deliverables [Describe tasks, provide schedule, and deliverables as applicable]
   Task 1 Title (Months A – B)
   Text describing Task
   Deliverable: (if applicable)
   Task 2 Title (Months C – D)
   Text describing Task
   Deliverable: (if applicable)
   ...
   Task Z Title (Months Y – Z)
   Text describing Task
   Deliverable: Draft Final and Final Report

7. Potential Benefits [A few sentences, measurable if possible]
   Text

8. Total Cost [prepare separate budget in .xlsx format using NICR template]
   $ Federal
   $ Match
   $ Total

9. Matching Funds Discussion [1-2 sentences describing state DOT, private, university, local government matching funds and collaboration]

V2.6 February 16, 2020

Match is not necessarily “project by project”

Campus specific items 5-14
APPENDIX 1 Project Requirements

- A single final report (peer reviewed) for each project is required. Your draft final report will be due two months before the grant end date.
- Work closely and cooperatively with NICR staff who will be asking for semi-annual progress reports and project performance measures for submission to U.S. DOT.
- Final report must include this disclaimer:
  *The contents of this report reflect the views of the authors, who are responsible for the facts and the accuracy of the information presented herein. This document is disseminated under the sponsorship of the U.S. Department of Transportation’s University Transportation Centers Program, in the interest of information exchange. The U.S. Government assumes no liability for the contents or use thereof.*
- All reports, presentations and other project materials must include the NICR logo and the following acknowledgment:
  *This work was supported by the National Institute for Congestion Reduction (NICR) and funded by the U.S. Department of Transportation Office of the Assistant Secretary for Research and Technology University Transportation Centers Program under Grant No. 69A3551947136.*
- Each project should include student support.
- As part of NICR’s dissemination efforts PIs are encouraged to submit papers to the Transportation Research Board Annual Meeting and other relevant venues.
- Please work cooperatively with NICR staff who will prepare a project webpage, Policy Brief and arrange a project webinar as part of NICR’s dissemination efforts.
- A travel allocation of $XXX will be established [TBD].
APPENDIX 2 Project Data Management Plan
The NICR Data Management Plan (DMP) discusses handling, storage, dissemination, and sharing of research results via Scholar Commons. NICR’s data policies include:
- Data used/generated will be available in open access format and will be openly shared.
- Metadata and data dictionaries will be used so that others may understand our data.
- Data to be archived with disaster recovery procedures so that data will remain openly available and recoverable.
To satisfy project DMP, please include any (very) brief relevant information below:

Data Description
1. Project data to be collected or used, and any details of the data-producing program.
2. Description of project data that will be generated, including nature and scale.
3. Methods and procedures for creating the data.
4. Time period over which data will be collected, and update frequency.
5. Relationship between data collected and existing/previously collected data.
6. Potential data users.
8. Rationale for limiting public access (in limited cases, as applicable)
9. Party responsible for managing data at project level.

Standards Used
1. Open data formats to be used (justify use of proprietary data format).
2. Data version control.
3. Metadata or data dictionary to make the data understandable by other researchers, and management/storage of same.
4. Tools or software required to read or view the data.
5. Data quality control measures.

Access
1. What data will be publicly shared and how it will be accessed.
2. Plans to follow campus IRB/HRPP policies, methods for protecting PII, confidentiality and security.
3. Justify any restrictions on data access.
4. Any additional steps beyond campus IRB and HRPP policies to protect privacy and confidentiality.

APPENDIX 3 Project Technology Transfer Plan
The NICR Technology Transfer (T2) Plan outlines the people and organizations involved in the T2 process, their roles, activities, and desired outcomes. NICR is committed to implementing our research results in real settings. NICR will implement a holistic, proactive T2 program through the lifetime of this grant. To satisfy project T2 Plan requirements, please include any (very) brief relevant information below related to your project:

1. Identify stakeholder-identified needs assessment and problem statement.
2. Identify stakeholder-identified expected outcomes.
3. Identify tangible project products, including reports, software, and instructional material.
4. Describe how results will be incorporated in teaching, training, and learning.
5. Describe how project will develop/leverage partnerships beyond the life of this research activity.
6. Your recommendation for transferring findings to other researchers, professionals and practitioners.
7. Describe any commercialization opportunities.
8. Do you anticipate needing patent support.
9. Identify your project on the Technology Readiness Level (TRL) scale (1-9).
- Separate for each campus
- Use IDC rates from proposal
- Avoid foreign travel and equipment
- Travel integral to project
- [Travel allocation TBD]
- Campus match commitment (not necessarily project by project)
- Matching project “follow federal rules”
- Careful with catering/food and administrative costs
Other Points

- U.S. DOT highly interested in pricing
- Deputy Assistant Secretary Furchtgott-Roth interested in producing “book” (congestion toolkit for agencies)
- Discussing partnership with New York City – congestion pricing
- Expecting year 2 funding October 2020
NICR Performance Measures

Research Activity Performance Metrics
- Number of students participating in research
- Number of research projects
- Total dollar value of research projects
- Number of NICR research reports published and their downloads.
- Number of peer reviewed journal publications and their citations.
- Number of products, technologies & other research products used by stakeholders.

Leadership Performance Metrics
- Transportation student success factors (numbers of students in leadership positions in transportation student organizations, and the numbers receiving awards, fellowships, scholarships, and internships)
- Early career faculty success factors (numbers of early career faculty in leadership positions in transportation organizations, committees, and panels and their awards)
- Faculty leadership indicators (numbers of faculty and their roles on committees, panels, editorial/policy/advisory boards, and their keynote/plenary lectures, professional certifications, awards, and briefings to public officials)

Education and Workforce Development Performance Metrics
- Number of courses
- Number of advanced degree programs
- Number of students supported
- Number of degrees awarded
- Degree-granting success factors: numbers of students participating in student groups, conferences, and internships
- Working professional success factors: numbers of transportation professionals served via NICR-sponsored seminars, workshops, and other education/outreach events, and participant satisfaction survey responses
- New entrant success factors: numbers of K12 and community college activities and participants

Collaboration Performance Metrics
- Number of projects that include more than one PI, discipline, mode and/or campus.
- Number of transportation agencies and organizations involved in NICR projects through matching funds, in-kind support, data provision or oversight.
- Number of organizations and associations (e.g. TRB, AASHTO, APTA, ITE, ITS America, etc.) connected to NICR projects and activities.

Diversity Performance Metrics
- Number of faculty, staff and graduates from identified groups (tribal, minority, low-income, first-generation college, female, rural, persons with disabilities)
- Number of education and workforce development activities and events aimed at attracting diverse students, and attendance.
- Number of events co-sponsored with WTS, COMTO and other diverse organizations, and attendance.
UTC Grant Deliverables and Reporting Requirements


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<tr>
<th>LAST</th>
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# NICR Advisory Board

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<tr>
<th>Category</th>
<th>Individual (* = invited)</th>
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<tbody>
<tr>
<td>Technical Advisors</td>
<td>U.S. DOT Federal Highway Administration/Turner-Fairbank Highway Research Center</td>
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<tr>
<td></td>
<td>U.S. DOT Federal Transit Administration</td>
</tr>
<tr>
<td>State</td>
<td>Coco Briseno, California Department of Transportation; Tom Byron, Florida Department of Transportation; Darrin Jensen, Texas Department of Transportation</td>
</tr>
<tr>
<td>Regional</td>
<td>Andrew Fremier, Metropolitan Transportation Commission; Dan Rudge, Bryan College Station MPO; Beth Alden, Executive Director of the Hillsborough MPO</td>
</tr>
<tr>
<td>City</td>
<td>Jean Duncan, City of Tampa; Jen Duthie, City of Austin; Tilly Chang, City/County of San Francisco</td>
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<tr>
<td>Transit</td>
<td>Nathaniel Ford, Jacksonville Transportation Authority; Nikki Folletta, BART; Carla Williams, HART / COMTO</td>
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<tr>
<td>Industry</td>
<td>Jon Martz, Enterprise Holdings; Jon Peterson, Uber; Rick Schuman, INRIX; Miguel Torres Díaz, Louis Berger; José M. Izquierdo Encarnación, Porticus CSP; Gonzalo Alcalde Rodríguez, Metropistas Puerto Rico LLC; Kelley Coyner, Stantec</td>
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<tr>
<td>Interest Grp</td>
<td>Art Guzzetti, APTA; David Yang,* AAA; David Azevedo,* AARP California</td>
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<tr>
<td>UTC</td>
<td>Lily Elefteriadou,* University of Florida</td>
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<tr>
<td>Elected Official</td>
<td>Andrew Pearlman,* U.S. Congressional Staff</td>
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<td>Florida State Senator Jeff Brandes</td>
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<tr>
<td>Students</td>
<td>NICR Student Council</td>
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