

METRANS NEWS

USC University of Southern California

CALIFORNIA STATE UNIVERSITY LONG BEACH

Dedicated to solving metropolitan transportation problems through research, education, and outreach.

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Inside this issue

- John Gunnar Carlsson Recognized in *Popular Science* 2
- Lisa Schweitzer Receives Margarita McCoy Award 2
- TRB Diversity Webinar 3
- METRANS UTC, NCST Awards 4
- MetroFreight Research Moves to Pre-Implementation 5
- MetroFreight Urban Freight Conference in Gothenburg 5
- METRANS Students Attend California Transportation Symposium 6
- METRANS 2016 Industry Outlook 6
- Port of Long Beach Launches Long Beach Cabrillo Academy 6
- METRANS Associates Program Partner Spotlight 7
- SWTWC to Lead New \$1.25 Million National Career Pathway Initiative 7



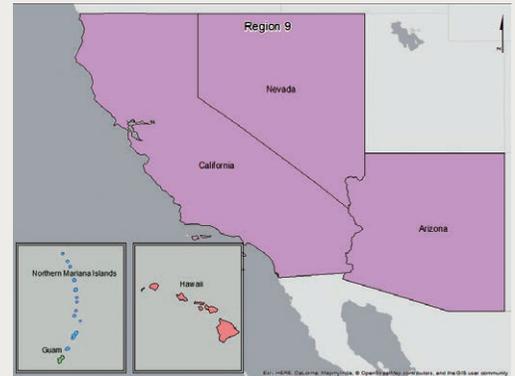
METRANS, a partnership of the University of Southern California and California State University, Long Beach, is a US Department of Transportation designated University Transportation Center. Its mission is to solve transportation problems of large metropolitan areas through research, education, and outreach.

METRANS Selected as Region 9 UTC by USDOT

The U.S. Department of Transportation (USDOT) recently selected METRANS as the Region 9 University Transportation Center (UTC). The newest METRANS center will be called the Pacific Southwest Region UTC and will be housed at the University of Southern California.

Under the most recent federal highway bill, the FAST Act, one regional center is selected for each of the nation's ten Standard Federal Regions. Region 9 includes the states of California, Arizona, Nevada, Hawaii and the Pacific Island territories. Per the FAST Act, the UTCs are funded for a period of five years. The USDOT grant for the center in the first year is approximately \$2.5 million, and over the five-year period will be about \$12 million.

Along with the University of Southern California and California State University, Long Beach, the Pacific Southwest Region UTC partners include: University of California, Davis; University of California, Irvine; University of California, Los Angeles; University of Hawaii at Manoa; Northern Arizona University; and Pima Community College in Tucson, AZ.



continued on Page 2

METRANS RESEARCH

METRANS Tracks Evolving Chassis Management Practices

Chronic port congestion triggered by chassis shortages made national headlines in 2014. Those challenges were further compounded by capacity constraints associated with new mega container ships and ocean carrier alliances and bankruptcies. These issues have underscored that chassis management is a complex issue that is affected by a multitude of external stakeholders and other environmental factors.

Dr. Thomas O'Brien, Associate Director of METRANS Programs at California State University, Long Beach, has been studying the evolution of chassis management for the past decade. Working with

Dr. Hanh Dam Le Griffin, a professor from the USC Viterbi School of Engineering, Dr. O'Brien released a report in 2007 that looked at the effects of implementing a chassis pool at the ports of Los Angeles and Long Beach; a chassis pool is a collection of chassis at a location which allows inter- and intra-terminal chassis interoperability. Dr. O'Brien expanded that research in February 2016 with a report that explored the evolution of a more recent chassis management model, called the pool of pools. The pool of pools model allows inter-terminal operations of chassis regardless of which leasing company or terminal controls the equipment.

continued on Page 3

METRANS RESEARCH

John Gunnar Carlsson Recognized in *Popular Science* “Brilliant 10 of 2016”



John Gunnar Carlsson

METRANS researcher Dr. John Gunnar Carlsson was recently named to the “Brilliant 10 of 2016” list by *Popular Science*. Carlsson is assistant professor at the University of Southern California in the Epstein Department of Industrial and Systems Engineering.

In the September 2016 online publication of the magazine, the “Brilliant 10 of 2016” list showcased individuals from the fields of health science, technology, and evolutionary biology. Carlsson’s featured work related to his use of geometry in solving logistics-related operations. Examples of this research included devising a solution for re-routing over 1,000 delivery trucks as well as the distribution of aircraft parts in the most efficient manner. Carlsson devised what *Popular Science* called “an elegant new approach,” which involved approaching logistics

related questions from a geometric standpoint rather than a conceptual one. Asking questions like “What shapes should a delivery area be divided into?” or “What should the perimeters be?” helped Carlsson come up with a strategy to make logistical operations perform more efficiently.

Carlsson received a Ph.D. in Computation and Mathematical Engineering from Stanford University. His research has been funded by the Defense Advanced Research Project Agency (DARPA), Office of Naval Research, National Science Foundation, and METRANS. His use of algorithms in solving optimization problems with a geographic element have also served him well in his related work as a consultant addressing logistical operational challenges.

To read the *Popular Science* article, go to www.popsoci.com/man-who-reroutes-world-with-geometry.

METRANS EDUCATION

METRANS Selected as Region 9 UTC by USDOT *continued from Page 1*

The goal of the Pacific Southwest Region UTC is to address regional needs and serve as the center of knowledge generation and sharing throughout the region. The research priority area of the center is to improve the mobility of people and goods. The center will focus on the following research themes:

1. Technology to address transportation problems and improve mobility;
2. Improving mobility for vulnerable populations;
3. Improving resilience and protecting the environment; and
4. Managing mobility in high growth areas.

“As always, METRANS research will be highly integrative – addressing passenger and freight across all surface transportation modes,” said METRANS Director Genevieve Giuliano. “We are both excited and honored to have won the distinction of being awarded a Regional UTC. Our success is the result of years of excellent research by our faculty, development of innovative degree and professional programs, support from our core schools – USC Sol Price School of Public Policy, USC Viterbi School of Engineering, CSULB College of Continuing and Professional Education – and support from our many sponsors, donors, Board members, and alumni. On behalf of the entire METRANS team, thanks to all for making this award possible.”

METRANS RESEARCH

USC Professor Lisa Schweitzer Receives ACSP’s 2016 Margarita McCoy Award



Lisa Schweitzer

Dr. Lisa Schweitzer, Associate Professor at USC’s Sol Price School of Public Policy, was recently awarded the Association of Collegiate Schools of Planning (ACSP) 2016 Margarita McCoy Award for her significant impact on gender issues and exceptional contribution toward the advancement of women in the arena of planning. The award honors the legacy of Margarita Piel McCoy who served as an

administrator and professor at USC. Dr. Schweitzer was nominated by her colleagues for her meaningful research and continued efforts toward innovation in urban planning.

Dr. Schweitzer’s research focuses on urban studies as they relate to social justice, the environment, and transportation.

Read more from Dr. Schweitzer here: <https://lisaschweitzer.com/>.

METRANS OUTREACH

SWTWC Partners with TRB Leadership for October 13 Diversity Webinar

The Southwest Transportation Workforce Center (SWTWC) collaborated with members of the TRB Standing Committee on Education and Training to produce a webinar titled "Diversity in the Transportation Industry." SWTWC, in partnership with the National Network for the Transportation Workforce (NNTW) and the American Public Transportation Association (APTA), convened an impressive roster of leaders in various transportation sectors to discuss the definition of diversity and explore a range of topics, including careers and opportunities, serving underrepresented populations, and organizational transformations. "Recruiting and retaining a workforce that is reflective of the rich diversity of twenty-first century American demographics is a top priority for leaders across all transportation sectors," said CITT Director of Research Tyler Reeb, who serves as a member of the TRB Education and Training Committee. "This webinar presents a range of valuable insights on ways transportation employers can create work cultures that promote this essential standard of diversity."

Panelists provided insights about diversity through their experiences and expertise. Those panelists included:

- Todd Macalady, Director, Mountain West Region Tribal Technical Assistance Program;
- Leticia Barajas, Vice Present of Academic Affairs and Workforce, Los Angeles Trade Technical College;
- Grailing Jones, Development Director, Schneider Employment Network; and
- Lydia Grose, Director, Engineering and Design Civil Engineering, Southeastern Pennsylvania Transportation Authority (SEPTA).

SWTWC, which is based at CITT, is one of the five regional centers that form NNTW and provides a more strategic and efficient approach to transportation workforce development.

METRANS RESEARCH

METRANS Tracks Evolving Chassis Management Practices *continued from Page 1*

In his report, Dr. O'Brien states that chassis management has the potential to change intra-metropolitan freight flows, create demand for infrastructure, and reduce vehicle miles travelled and emissions. The first report, 07-8: Impact of Stream-Lined Chassis Movements and Extended Hours of Operation on Terminal Capacity and Source-Specific Emissions Reductions, and the second report, CSULB: 2-2: Mitigating Urban Freight through Effective Management of Truck Chassis, can both be found on the METRANS website. These two reports build upon previous METRANS-funded research done on chassis management at Southern California ports.

Historically, truck chassis have been owned by ocean carriers. However, in 2011, ocean carrier Maersk divested its chassis division to reduce costs by establishing a new subsidiary, Chassis Link (DCLI). This move by the biggest ocean carrier started a general shift toward chassis divestiture by other ocean carriers, which were trying to maintain profitability in response to declining shipping rates. This move by the carriers, along with the formation of carrier alliances, was happening at the same time as labor disputes at the port. After the negotiations, there was a focus on finding ways to increase efficiency at the port, with reliable chassis availability being part of the solution.

The focus on chassis led to the creation of the Container Chassis Operations Group, which consisted of ocean carriers, terminal operators, beneficial cargo owners, trucking companies, railroads and the International Longshore and Warehouse Union. Their collaboration led to the development of chassis pools and eventually the pool of pools.

The current view is that the pool of pools is a "short and medium-range solution," and that further research is necessary to find a long-term solution. The future of the pool of pools is influenced by several different stakeholders, such as carriers, shippers and railroads. Other external

factors involve short-term issues, such as the attempt to implement a chassis fee at the ports and the effects of the recent bankruptcy of another carrier, Hanjin, on port efficiency. Long-term issues such as PierPass, a program which offers incentives for off-peak cargo movement, and the role of the union's (ILWU) jurisdiction, are also factors that affect chassis use. These different issues and stakeholders play a major role in the future of ownership and storage of chassis and ultimately finding a long-term solution to chassis management.

Dr. O'Brien recently delivered two talks on chassis management practices as part of the METRANS seminar series. With regard to the future of chassis research, he said that "the future of chassis management will continue to evolve as the role of different supply chain partners changes over the next few years."



Photo credit: Port of Long Beach

METRANS UTC, NCST fund 8 New Research Projects

The METRANS Tier One University Transportation Center (UTC) recently funded seven new research projects totaling approximately \$622,000. The National Center for Sustainable Transportation (NCST) also recently funded a research project totaling \$100,000. Awards were selected from proposals submitted in response to March, 2016 requests for proposals (RFP). METRANS UTC projects are intended to increase U.S. economic competitiveness by improving transportation system performance in large metropolitan areas. The METRANS UTC RFP specifically called for projects that sought to provide solutions to metropolitan transportation programs through development of improved technology, policies, operations, or management practices. NCST projects are intended to advance a research program that targets “high-priority transportation issues for government, industry, and community leaders” in four topic areas: low-carbon infrastructure and efficient system operation, low-impact travel and sustainable land use, toward zero-emission vehicle and fuel technologies, and institutional change. The projects are as follows:

METRANS Expresses Appreciation to Reviewers

METRANS follows a rigorous peer review process in evaluating and selecting proposals for funding. The peer review process depends on reviewers from around the world. We would like to express our sincere appreciation to the reviewers who contributed proposal reviews. For a full list of the reviewers, go to: <https://www.metrans.org/news/metrans-expresses-appreciation-reviewers-0>

Topic	Project	Department	PI/Co-PI	Funding Amount
Integrated Management across users and Modes	16-02: A Cost Allocation Model for Horizontal Supply Chains (Caltrans)	USC Viterbi School of Engineering, Daniel J. Epstein Department of Industrial & Systems Engineering	John Gunnar Carlsson Maged Dessouky	\$100,000
	16-05: Evaluating Economic Mobility and Resilience of Multimodal Freight Operations in a Connected Vehicle Environment (Caltrans)	CSULB College of Engineering, Department of Civil Engineering and Construction Engineering Management	Shailesh Chandra	\$34,663
	16-16: A Computational Framework for Data-Driven Distributed Resilient Control of Traffic Corridors (USDOT)	USC Viterbi School of Engineering, Sonny Astani Department of Civil and Environmental Engineering	Ketan Savla	\$99,957
Policies for More Efficient Urban Transportation	16-07: Sustainable and Affordable Housing Near Rail Transit: Refining and Expanding a Scenario Planning Tool (Caltrans)	USC Sol Price School of Public Policy	Raphael Bostic Marlon Boarnet	\$100,000
	16-08: Innovating on Job Accessibility with General Transit Feed Specification (GTFS) Data (USDOT)	USC Sol Price School of Public Policy	Gary Painter Marlon Boarnet	\$100,000
Achieving System Efficiencies	16-06: Trajectory Data Mining for Performance Measurement of Public Transportation Systems (Caltrans)	USC Viterbi School of Engineering, Department of Electrical Engineering	Ugur Demiryurek Cyrus Shahabi	\$100,000
Understanding Passenger-Freight Interaction	16-13: Fine Grained ‘Automatic Vehicle Classification’ System Development for Accurately Measuring Passenger-Freight Interactions (Caltrans)	CSULB College of Engineering, Department of Electrical Engineering	Mohammad Mozumdar	\$87,703
Sustainable Urban Freight	16-01: Intelligent Parking Assist for Trucks with Prediction (USDOT)	USC Viterbi School of Engineering, Hseih Department of Electrical Engineering	Petros Ioannou	\$100,000

**Benjamin Miller**

MetroFreight researcher Benjamin Miller is working to deploy an innovative pneumatic tube technology that could achieve substantial reductions in urban truck congestion, greenhouse gas emissions, and long-term costs.

Miller, a Senior Research Fellow, Freight Programs, University Transportation Research Center in New York and his ClosedLoops sustainability partners have moved their pneumatic waste collection research into a pre-implementation

planning phase for a project proposed for the High Line Park and adjacent buildings in New York City (NYC). ClosedLoops is an infrastructure planning and development firm that was formed to help communities meet environmental targets by – among other techniques – repurposing existing infrastructure to improve the first- and last-mile transport of wastes and other freight.

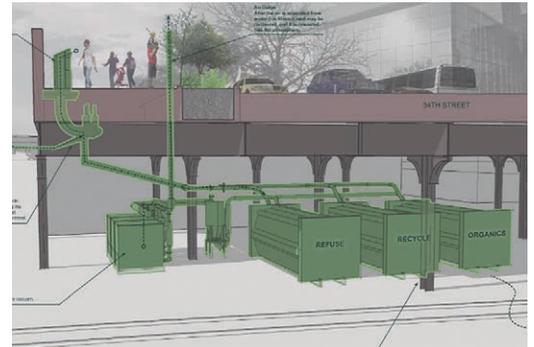
“I am attempting to move this research from the feasibility/cost-benefit analysis stage to actual implementation – i.e., building a pneumatic tube network along the High Line Corridor and using direct tube-to-rail transfer to revive a disused urban freight railroad,” said Miller, whose research “Trucks, Trains, Tugs, and Tubes: A Model for More-Efficient Collection and Transfer of Solid Waste, the Predominant Form of First-Mile Urban Freight” focuses on this proposed waste-collection system.

Current refuse collection methods require that waste materials be stored and staged in buildings, the High Line Park, and on the street in bags and bins, trash cans and large containers. Using this method means that refuse materials are handled multiple times by building and park staff and other waste collection workers and then transported by heavy compactor trucks. Miller seeks to streamline this process using his pneumatic tube technology.

Instead of using conventional methods for collecting refuse, recyclables, and organics, Miller’s project would collect and transport these separate

materials automatically, via a vacuum flow of air through a pipe, to a central transfer-terminal. Inlets for these various types of wastes would be installed in the park and in adjacent buildings. The three waste fractions would be pulsed through a common trunk pipe, strapped to the outside of the former railroad viaduct that now supports a park, at different time intervals. At the terminal, the materials would be compacted into separate pneumatically sealed shipping containers for each waste fraction, then transported by rail to processing and disposal facilities.

An online publication that is dedicated to defining and enriching the “culture of

*Proposed pneumatic tube system at the High Line Park, New York*

citymaking,” called Urban Omnibus, published an article that highlighted this technology’s economic, environmental, and social benefits compared to standard garbage collection. The article goes into detail about how technology used for pneumatic tube systems is a cost-effective alternative to conventional garbage pick-up by using a network of sustainable plastic pipes that require less energy to move waste.

“I am thrilled that Ben Miller is moving one step closer to implementing this promising technology” said METRANS Director Genevieve Giuliano. Pneumatic waste technology is already being used in Europe, Asia, and the Middle East. However, Miller’s project is the only one in the world that would avoid the need for tunneling by using existing transport infrastructure as an armature for suspending a pneumatic system, with direct transfer to rail to eliminate the use of trucks. This project is now officially in the books– in NYC’s 80x50 Plan, whose objective is to reduce greenhouse gas emissions by 80% by 2050 to address long-term climate-change challenges – as representing a path toward the fulfillment of NYC core policy objectives.

METROFREIGHT UPDATE**MetroFreight Researchers Participate in Urban Freight Conference in Gothenburg**

Seven MetroFreight researchers from Los Angeles, New York, and Paris presented research papers at the Volvo Research and Educational Foundations (VREF) Conference, “Urban Freight 2016: Plan for the Future – Sharing Urban Space,” in Gothenburg, Sweden from October 17-19. This was the second international conference organized by the Urban Freight Platform (UFP), an initiative supported by VREF.

“MetroFreight leaders were inspired by the METRANS biennial International Urban Freight conference, and that informed the VREF decision to sponsor the conference in Gothenburg,” said METRANS and MetroFreight Director Genevieve Giuliano. “Having European and U.S. urban freight conferences in alternating years is a big step forward for this critical transportation research area.” To read more coverage on this conference, go to <http://bit.ly/UFCGothenburg>.

METRANS EDUCATION

METRANS Students Attend California Transportation Symposium Event



METRANS sent five students nominated by faculty, based on their academic excellence, to the 22nd Annual California Transportation Foundation (CTF) Symposium event held at the Chaminade Resort Conference Center in Santa Cruz, California on November 3 and 4. Three of the METRANS students in attendance were part of the team that won first place in the RFP competition that was held at the symposium. To read more on this event, go to <http://bit.ly/CTSEvent>.

Eric Shen, USDOT-USC-CTF; Maya Bouchet, USC Price; Fernanda Gusken, USC Epstein; David Roachford USC Price; Annie Nguyen, CSULB; Jose Jimenez, CSULB.

METRANS OUTREACH

METRANS Industry Outlook 2016: Benjamin Conwell Explores E-Commerce Impact on Goods Movement

The 2016 METRANS Industry Outlook on October 4 featured Benjamin D. Conwell, Senior Managing Director, Cushman & Wakefield, on the topic "I Want It Now: E-Commerce, Supply Chains and Transportation." The logistics and transportation world is drastically changing with the explosion of e-commerce. As a result, customers worldwide are changing their expectations and causing substantial disruption in retail, transportation, and international trade.

Conwell, who formerly served as head of logistics real estate at Amazon, offered a unique and practical perspective on a range of critical topics, including last-mile innovations, the coming explosion in cross-border online commerce, demand for warehouse space, and investment capital trends in e-commerce. "Today globally, we are at about \$2 trillion in e-commerce sales," Conwell said.

The presentation focused on the rapid increase of e-commerce and how it is changing the logistics and transportation world, as well as how it affects retail and international trade. Conwell concluded with a discussion of the explosion of cross border e-commerce. "Today, the percentage of what we sell here in the states to other regions of the world is infinitesimal to what it's going to be five to ten years from now. The inverse is also the same. We're going to be buying more goods from overseas."

To watch a recording of the presentation, go to:

<https://www.youtube.com/watch?v=0PFmjJolus&feature=youtu.be>

METRANS EDUCATION

Port of Long Beach Launches Long Beach Cabrillo Academy of Global Logistics

The Port of Long Beach (POLB) launched the Academy of Global Logistics at Juan Rodriguez Cabrillo High School on October 12, 2016. The new Academy was created by the POLB, in partnership with Long Beach Unified School District (LBUSD), and is a four-year global trade and logistics pathway that will bring real-world experiences into the classroom. CSULB's Center for International Trade and Transportation (CITT) is also a partner in the effort.



James Dowding, Academy of Global Logistics, Lead Faculty

"Our goal with the Academy is to inspire students to explore careers in the international trade and goods movement industry right in their backyard," said POLB Board of Harbor Commissioners Vice President Lou Anne Bynum.

The Academy will offer a four-year academic curriculum that is integrated with real-world

experiences through site visits and workshops presented by industry professionals. CITT, for its part, is developing workshops and activities that incorporate concepts across disciplines such as mathematics, social sciences, and humanities while also developing cultural competencies for a global economy. CITT is also partnering with the POLB to hold an annual summer externship teacher-training program for Academy teachers as well as a summer leadership camp for student Ambassadors.

Since the launch of the program, students have participated in a harbor tour, the Port's annual Women in Trade event, and a career planning workshop led by working professionals.

"CITT is excited to be a part of this innovative program that exposes students to career pathways in trade and transportation and provides real-world application to concepts learned in the classroom. Over the course of four years, students will begin to discover how their knowledge and individual talents can contribute to this thriving industry," said Angeli Logan, CITT Director of Trade and Transportation Programs.

METRANS OUTREACH

METRANS Associates Program Partner Spotlight: Metrolink

Metrolink recently rejoined the prestigious ranks of the METRANS Associates Program. Metrolink is a public rail transport service governed by the Southern California Regional Rail Authority, a joint-powers authority tasked with reducing highway congestion and improving mobility throughout Southern California.

“Metrolink has been a longstanding supporter and was one of our first Advisory Board Members, said METRANS Director Genevieve Giuliano. “We are thrilled to have Metrolink return as an Associates Program Member.”



METROLINK

Serving six Southern California counties by providing transportation connectivity options for commuters, Metrolink has seven service lines, 59 stations, and 44,000 daily boardings over a 536 route-mile network. Metrolink performs regular health-risk

assessments in an effort to reduce its emissions and ensure the health and safety of the community it serves. It has furthered its efforts in sustainability through numerous environmentally-friendly initiatives, like the Metrolink Industry Carport Project which outfitted the Metrolink Station in the City of Industry with photovoltaic solar panels covering 940 parking spaces. This initiative can provide energy for up to 1,300 homes.

Metrolink recently announced the planned deployment of its Tier 4 locomotives. These railroad vehicles are the cleanest diesel locomotives in the nation, increasing fuel efficiency and providing wide-ranging environmental benefits for the Southern California region. In an effort to maximize safety for its passengers, Tier 4 locomotives are equipped with the newest rail safety technology and will begin operation this winter.

METRANS EDUCATION

SWTWC to Lead New \$1.25 Million National Career Pathway Initiative

The Southwest Transportation Workforce Center (SWTWC) will lead a national career pathway demonstration program as a result of being awarded a \$1.25 million Federal Highway Administration (FHWA) grant entitled, “Transportation Workforce Strategic Initiative” (TWSI).

SWTWC, a METRANS research center based at CSULB, partnered with the four other regional transportation workforce centers in Montana, Wisconsin, Vermont, and Tennessee, which form the National Network for the Transportation Workforce (NNTW).

SWTWC will serve as the administrative headquarters and the program lead for the TWSI. Under the grant, SWTWC will launch a pilot career pathway demonstration program focused on transportation planning. That pilot program will inform the development of subsequent career pathway demonstrations that address critical transportation occupations in planning, engineering, safety, operations, and environment.

The NNTW will establish five Discipline Working Groups by recruiting subject matter experts with the backgrounds and experience necessary to outline the knowledge, skills, and abilities required to accomplish the daily tasks and outcomes expected for each critical occupation. Their expertise in combination with other available labor market and occupational analysis tools available (e.g. O*NET, Burning Glass, etc.) will provide data to assess the competencies required in key occupations within the five disciplines.

Throughout the life of the two-year grant, the NNTW team will work to identify diverse stakeholder needs and then test the viability of pilot-scale efforts that leverage the strengths, resources, and engagement of public- and private-sector employers and leaders in academia.

The project will result in a Transportation Challenge demonstration model to engage technical school, community college, university, and



industry partners in a relatively low-cost but high-reward demonstration program within a short time period. The Transportation Challenge model will serve as a vehicle for developing innovative, real-world, project-based challenge lessons around a central challenge theme, bringing together education, public sector, and industry experts. For the transportation workforce, the Transportation Challenge model will provide an opportunity to engage students in cutting-edge projects that showcase transformational technologies and trends that are developed collaboratively by industry experts and higher education faculty. This process will ensure that project curriculum reflects industry needs as well as education stakeholder expectations, and it is hoped it will result in greater numbers of students being appropriately prepared for and pursuing transportation career pathways.



SWTWC Director Thomas O'Brien

“With multidisciplinary specialists, stakeholders from across the country, and extensive labor market analysis, our national network team is uniquely positioned to carry out the goals of the strategic initiative,” said Dr. Thomas O’Brien, SWTWC Director and METRANS Associate Director of Long Beach Programs. “Our career pathway demonstration programs will prepare future transportation professionals to develop industry competencies and move beyond disciplinary silos to address transportation workforce challenges throughout the nation.”

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METRANS Associates Program

The METRANS Associates Program (MAP) provides the core support for the METRANS Transportation Center. METRANS appreciates and thanks our current partners:

To learn more about MAP and its benefits, see www.metrotrans.org/metrans-associates-program

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