METRANS Celebrates Tier 1 Grant

METRANS will receive six million dollars over the next three years, as a result of the newly announced U.S. Department of Transportation University Transportation Centers (UTC) program. Half the total will be federal funds, and the matching half will come from the California Department of Transportation.

A total of 36 universities applied for ten Tier 1 UTC grants. “The competition was completely open and included many universities with longstanding transportation research programs,” said Director Genevieve Giuliano. “Any university, including those that were part of regional consortium UTCs and therefore had received USDOT funding for many years, could apply.

“This constitutes national recognition of our center; we are definitely in the top 20 of transportation research programs,” she continued. “There are at least 80 transportation research centers at universities around the U.S.”

In explaining METRANS’ success, Prof. James Moore, chair of the USC Viterbi School’s Daniel J. Epstein Department of Industrial and Systems Engineering and a member of the METRANS Executive Committee, cited Giuliano’s leadership as a major contributor.

METRANS Partnership. Giuliano attributed the award partly to the unique partnership of USC and California State University, Long Beach (CSULB). “We have created an exceptionally successful partnership of two very different universities and of many diverse disciplines.”

CSULB Economics Department Chair and METRANS Executive Committee Member Joe Magaddino agrees. “The Tier 1 status is recognition of the strong performance of the USC-CSULB partnership,” he said.

Strong Research. Between the two universities, 60 faculty members have produced METRANS-funded research, totaling nearly $5 million since its founding in 1998.

Said Moore, “Our work is not merely urban, but metropolitan—that is, relevant to an urbanized region. We focus on systems and populations—fleets, networks, freight, people and the rules that tie them all together.”

METRANS’ research increasingly spotlights freight. “When METRANS was formed, very little attention was being paid to goods movement,” noted Magaddino. “Faculty research as well as presentations have made members of the community, especially those interested in public policy and those outside the region, aware of the challenges involved in the region’s ability to facilitate international trade.”

CSULB also strengthens METRANS’ capabilities in...
professional training and industry outreach. Said Deputy Director Marianne Venieris, “Part of our role is to get the research into practice through outreach. That includes our Annual Town Halls which address port-related issues, training, and the successful National Urban Freight Conference, scheduled again for December 2007.”

**Enhancing Education.** Since its inception, METRANS has been a catalyst for transportation education. Said Giuliano, “In 1998, USC awarded just one Ph.D. with a specialization in transportation; last year, 14 students earned Ph.D.s with a transportation specialization.”

At CSULB, College of Engineering Dean Michael Mahoney is pleased with METRANS’ support of research for junior faculty, whose careers can be profoundly impacted by early research. “Being associated with METRANS has also increased our reputation and fits our vision of a teaching-intensive, research-driven College,” he said.

“METRANS had a very direct impact on the Economics Department at Long Beach,” said Department Chair Joe Magaddino. “We have hired two transportation economists. Most Economics Departments do not have one transportation economist—let alone two! With faculty expertise, the ability to develop academic programs to meet the needs of regional employers is facilitated. This certainly was the case for our M.A. program in Global Logistics.” The grant requires strategic planning for new directions.

Organizers of the 2006 Summer Conference of the Transportation Research Board (TRB) invited METRANS to create a special poster session at the July event in nearby La Jolla.

According to Tom O’Brien, METRANS Applied Research Coordinator, the unexpected opportunity was a unique honor, since no other research organizations were invited to display posters. Anastasios Chassiakos coordinated the session. All posters can be found at www.metrans.org.

Eight METRANS research projects were featured in the colorful poster display, including the following:

- “Container Movement by Trucks in Metropolitan Networks with Time-Windows at Customer Locations,” by Hossein Jula, Maged Dessouky, Petros Ioannou, and Anastasios Chassiakos.
- “Short Sea Shipping (SSS) in the Southern California Region: An Analysis of Operations and Impacts,” by Hanh D. Le-Griffin and James E. Moore II.
- “Empty Container Reuse,” by Hwan Chang, Hossein Jula, Petros Ioannou, and Anastasios Chassiakos.
- “The Wages and Working Conditions of Drivers at the Port of Long Beach,” by Kristen Monaco.
- “Development of an Exposure Model for Diesel Locomotive Emissions Near the Alameda Corridor,” by Hamid R. Rahai.
Fifteen new transportation research projects and six applied research projects were awarded in the latest round of METRANS funding. See the full list below and at the website, www.metrans.org. “Our strength in goods movement research is very evident in the wide variety of freight-related research,” said Director Genevieve Giuliano, “but we were pleased to have several with a strong environmental component, also.” The environmental emphasis is particularly strong among the applied projects, awarded at CSULB under the Monitoring the Ports program.

<table>
<thead>
<tr>
<th>Project Number</th>
<th>Project Title</th>
<th>Principal Investigator(s)</th>
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<tbody>
<tr>
<td>07-01</td>
<td>Integrating Inland Ports into the Intermodal Goods Movement System for Ports of Los Angeles and Long Beach</td>
<td>Mansour Rahimi, USC</td>
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<tr>
<td>07-02</td>
<td>Inter-county Spillovers and Ports and Roads Infrastructure Investment</td>
<td>Kristen Monaco, CSULB</td>
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<tr>
<td>07-03</td>
<td>Efficiency Improvements by Passive Control and Optimization of the Combustion Process and Engine Cooling</td>
<td>Reza Toossi, CSULB</td>
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<td>07-04</td>
<td>Sensornets for Remote Vehicle Classification (SRVC)</td>
<td>John Heidemann, USC</td>
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<td>07-08</td>
<td>Impact of Streamlined Chassis Movements and Extended Hours of Operation on Terminal Capacity and Source-Specific Emissions Reduction</td>
<td>Hanh Dam Le-Griffin, USC, and Tom O'Brien, CSULB</td>
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<tr>
<td>07-09</td>
<td>Solving Metropolitan Transportation Problems Using Autonomous Ground Vehicles with Computer Vision</td>
<td>Alice Parker, USC</td>
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<td>07-11</td>
<td>Strategies for Effective Rail Track Capacity Usage</td>
<td>Maged Dessouky and Fernando Ordonez, USC, with Robert Leachman, UC Berkeley</td>
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<tr>
<td>07-12</td>
<td>On Sequencing of Container Deliveries to Over-the-Road Trucks from Yard Stacks</td>
<td>Shui Lam, CSULB</td>
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<td>07-13</td>
<td>Dual Use of Electric Utility Rights of Way by Integration of an Urban MagLev Container Corridor and Gas Insulated Transmission Lines</td>
<td>Kenneth James, CSULB</td>
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<td>07-14</td>
<td>Reconfiguration Strategies for Mitigating the Impacts of Port Disruptions</td>
<td>Petros Ioannou, USC, and Anastasios Chassiakos, CSULB</td>
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<td>07-17</td>
<td>Impact of Immigration and Assimilation on Public Transit Ridership and Single-Vehicle Commuting to Work</td>
<td>Dowell Myers, USC</td>
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<td>07-19</td>
<td>Adding a Freight Network to an Interstate Input - Output Model: Implications for California</td>
<td>Harry Richardson, USC</td>
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<tr>
<td>07-20</td>
<td>Transient Plasma Ignition for Clean, Fuel-Efficient Transportation Vehicle Engines</td>
<td>Paul Ronney and Martin Gundersen, USC</td>
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<tr>
<td>07-21</td>
<td>Pedestrian Safety of School Children: Toward Improving Walkability of Inner City Neighborhoods</td>
<td>Tridib Banerjee, USC</td>
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<tr>
<td>07-24</td>
<td>Selection of Comprehensive Design Criteria for Highway Bridges in the Vicinity of and Crossing Active Faults</td>
<td>Maria Todorovska and Mihailo Trifunac, USC</td>
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**Applied Research - Monitoring the Ports (CSULB)**

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</thead>
<tbody>
<tr>
<td>AR 06-01</td>
<td>Evaluating and Improving the Security of RFID Tags in Shipping Containers</td>
<td>Burkhard Englert, Computer Engineering &amp; Computer Science</td>
</tr>
<tr>
<td>AR 06-02</td>
<td>Assessing Near Dock Rail Loading and Offloading Procedures at the Port of LA/LB for Application to a Container Conveyor to Intermodal Container Transfer Facilities</td>
<td>Kenneth James, Electrical Engineering</td>
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(Continued on page 4)
METRANS Outreach and Education

PARAMOUNT SALUTES METRANS’ WORK WITH YOUNG STUDENTS

METRANS has begun to address the lack of engineers in U.S. colleges by reaching out to high schools and middle schools.

The City of Paramount recently awarded METRANS a certificate recognizing their support of the ongoing Math, Engineering and Science Achievement (MESA) Schools Program at Paramount schools. MESA works nationwide to increase the number of underserved populations who go on to college.

The Paramount program is funded by a partnership of METRANS and the Gateway Cities Partnership, Inc. (GCPI), a community development organization. The Paramount students in grades 6-12 receive weekly tutoring and advising at school. They are bused five Saturday mornings to sessions at the CSULB College of Engineering, and they make site visits to see engineers at work. The final project involves building a model bridge, vehicle, or other competitive engineering project.

Visits to Raytheon and Jet Propulsion Lab were some of last year’s program highlights, according to Arturo Rodriguez, Development Manager at Gateway Cities Partnership, Inc.

“To get the sense they actually belong in a university,” said Richard Hollingsworth, GCPI President, “they are transported to the CSULB campus on Saturdays.” He recalls one 10-year-old who said, when he sat down in a CSULB classroom, “Oh, this is my university.”

Commented Rodriguez, “The experiment they do is very hands-on.” Examples for the competition include building a bridge of Popsicle sticks and constructing a “MTV” or mousetrap vehicle. Each grade has specific projects geared for that skill level.

Marianne Venieris, METRANS Deputy Director, explained that “METRANS joined with the Gateway Cities Partnership, Inc., Paramount Unified School District, and the MESA Schools program of CSULB’s College of Engineering to attract more young underserved students into engineering professions, with particular emphasis on infrastructure-related engineering.

“The demand for Civil Engineers is growing, while the supply of experienced engineers is diminishing as a result of the retirement of the Baby Boom generation,” she explained. “U.S. engineering schools are not attracting sufficient students to fill the void.”

Results indicate the Paramount program may have a positive effect on the students’ desire to do well in school. Said Hollingsworth, the Paramount student retention rate in the MESA Program is higher than those in other districts participating in the MESA Schools Program. “One option to keep the students’ interest is to establish an Engineering Club,” said Venieris.

Clubs may be the next addition to the program to increase student retention.

METRANS New Transportation Research Projects, cont.

(Continued from page 3)

| AR 06-03 | A Cargo Security Early Warning System - The Application of Neural Networks to Detect Cargoes with Potential Security Fraud |
| Co-Principal Investigators: Melody Kiang and Robert Chi, Information Systems |

| AR 06-04 | Impact of New Diesel Fuels Used in Port Operations on Subsurface Quality |
| Principal Investigator: Antonella Sciortino, Civil Engineering and Construction Engineering Management |

| AR 06-05 | A Universal Communication Device for Improving Interoperability |
| Principal Investigator: Henry Yeh, Electrical Engineering, and Hsien-Yang Yeh, Mechanical and Aerospace Engineering |

| AR 06-06 | Loading and Unloading Containers: Examining the Efficiency of Goods Movement |
| Principal Investigator: Hsien-Yang Yeh, Mechanical and Aerospace Engineering, and Henry Yeh, Electrical Engineering |
**METRANS Education**

**MARIA YANG WINS NSF FACULTY EARLY CAREER DEVELOPMENT AWARD**

USC’s Maria Yang, Assistant Professor of Industrial and Systems Engineering, was awarded the prestigious National Science Foundation (NSF) Faculty Early Career Development (CAREER) Award in July.

The award includes $400,000 for research support over a five-year period.

Her research focus is on determining models and measures for the formulation phase of engineering design.

“Decisions that are made at the very early stages, when a product is still just an idea, will have a strong impact on the later phases of design,” Yang said.

She grew up in Indiana, the heart of America’s industrial Midwest. Says Yang, “Ever since I was child, I’ve always been interested in the process of how products and systems get designed and made.” The CAREER award gives Yang the opportunity to explore her lifelong fascination.

In her future research, Yang will study a wide range of design processes in areas such as aerospace, automotive, and consumer electronics industries. She will study product sketches, text, and prototypes to glean clues to later design outcomes. Yang will then use those clues to develop models and process measures, in the hopes of helping designers be more innovative.

Yang has been almost a protégé of NSF since her days as a graduate student at Stanford. Both her masters and doctoral studies in Mechanical Engineering were subsidized by NSF fellowships. She received her Bachelors Degree in Mechanical Engineering from the Massachusetts Institute for Technology.

“Long term, I hope this research will enable designers and engineers to be able to generate better designs more efficiently,” says Yang. She also shares her findings in her classes on process design and management of engineering teams.

**NEW USC DISSERTATIONS EXPLORE FRONTIERS OF TRANSPORTATION**

The study of metropolitan transportation systems is a focus of USC graduate students across many disciplines.

Recently approved dissertations in these fields include the following:


*Travel Patterns, Land-Use and the Elderly*, by His-Hwa Hu, Ph.D. in Planning.

*Vehicle Routing with Time Windows and Driver Learning*, by Boontariga Kasemsontitum, Ph.D. in Industrial and Systems Engineering


*Emerging Urban Spatial Structure and Commuting in U.S. Metropolitan Areas*, by Bumsoo Lee, Ph.D. in Planning.


**METRANS ADMINISTRATOR REMEMBERED**

The late Jacquette Givens passed away July 2, 2006, just weeks short of her fiftieth birthday. Her sudden death has been a great loss to the METRANS staff, as well as her family and a multitude of friends.

Givens was METRANS Administrator since 1999, maintaining all research and project accounts, administering the research proposal process, fulfilling all federal and state reporting requirements, processing all research reports and other publications, overseeing the METRANS website, arranging meetings, conferences and workshops, and providing support for the Director.

She was the METRANS “go to” person for countless individuals both on campus and many miles beyond.

Her family includes her husband, Robert, and two children, Robert, Jr., and Stephanie. Despite having a young family, Givens enrolled in the Public Administration program at USC and graduated in 1988. She will be missed by many in all our communities.
METRANS Outreach and Education

ANNUAL TOWN HALL TACKLES SECURITY AT THE PORTS

Port security is the subject for the next Ninth Annual Town Hall, sponsored by the Center for International Trade and Transportation (CITT) and supported by METRANS. The event will be held the evening of February 7, 2007. Parking and admission are free. (See more information at right.)

The annual event, hosted on CSULB’s campus, promises to draw at least a thousand attendees from the waterfront industries in the Los Angeles-Long Beach area as well as from nearby communities.

Security issues have been a major concern among those who work the docks daily, especially as the Department of Homeland Security approaches the implementation of its controversial Transportation Worker Identification Credential (TWIC).

Marianne Venieris, METRANS Deputy Director and Executive Director of CITT, explained that the original purpose of the Town Halls was to be sure that labor had a role in the discussions concerning port growth. It has grown since. “Today many stakeholders are very concerned about security,” she said, “yet no one has a higher stake in security than the union members who spend a significant portion of their lives so near our docks, our country’s front door.”

As before, the Town Hall will include a specially produced video documenting the latest security measures at the two local ports. In addition, a number of experts will serve as panelists in an open forum, allowing a dialogue with members of the audience.

ENO TRANSPORTATION FOUNDATION INVITES METRANS TO FORUM

Over the summer, METRANS Director Genevieve Giuliano and Deputy Director Marianne Venieris participated in an important national discussion to begin identifying professional capacity and educational needs for goods movement professionals.

The two were invited by the Eno Transportation Foundation to participate in the first-ever nationwide forum to examine education and training needs for the logistics field. The Foundation is a nonprofit organization dedicated to improving all modes of transportation.

The sessions were led by Michael Meyer, Georgia Tech professor of civil engineering and chairman of the Transportation Research Board.

Almost 40 people contributed to the discussion, including industry, government and academic leaders. The lively discussion was held in Atlanta and sponsored by Georgia Tech, the Federal Highway Administration, and the U.S. Department of Transportation’s Policy Office.

“I was impressed with the unanimity among people from across the country,” commented Venieris. “It’s intriguing to watch a national movement toward professionalization gather momentum.”

“It’s gratifying to realize that our programs are on the leading edge, too,” said Giuliano. “Our unique combination of research and practical training with a heavy emphasis on goods movement gives our graduates satisfaction that they’re truly going to be at the leading edge in their field.”

Mark Pisano, Executive Director of the Southern California Association of Governments, also participated. He voiced the notion that logistics professionals must be equipped with a wide range of skills and knowledge, from project finance, environmental standards and community impacts, price elasticity, and performance standards for decision-making.

According to the discussions, people in the logistics field particularly need to learn the increasing impacts of intermodalism and the ability to make decisions, at the same time taking into account multiple points of view.

“We were very impressed with the caliber of the discussions,” said Giuliano, “and I fully expect this to be a watershed in the history of the logistics field.”

“From now on, logistics programs and degrees will undoubtedly proliferate,” she continued. “We are grateful that Eno’s leadership recognized the need for such a forum and made it happen.”

NEW TRANSPORTATION DISSERTATIONS, cont.

*(Continued from page 5)*


Algorithms for Solving the Train Dispatching Problem for General Networks, by Worawon Suteewong, Ph.D. in Industrial and Systems Engineering.


METRANS Executive Committee

Genevieve Giuliano, Director
Associate Dean, Research and Technology, School of Policy, Planning & Development, USC

Marianne Venieris, Deputy Director
Executive Director, Center for International Trade & Transportation, CSULB

Anastasios G. Chassiakos, Executive Director of Assessment, College of Engineering, CSULB

Maged Dessouky, Professor, Daniel J. Epstein Department of Industrial & Systems Design, USC

Petros Ioannou, Professor, Electrical Engineering, USC

Joseph Magaddino, Chairman, Dept. of Economics, CSULB

Michael Mahoney, Dean, College of Engineering, CSULB

James E. Moore II, Chairman, Industrial & Systems Engineering; Prof, Civil Engineering and Public Policy & Management, USC

Vicki Valentine, Administrator, USC (Victoria.valentine@usc.edu)
Alix Traver, Coordinator, CSULB (atraver@uces.csulb.edu)
M.E. Barton, Ph.D., METRANS News Editor (mebarton@aol.com)

Information on transportation research, publications, education, training & technology transfer can be found at the METRANS website: www.METRANS.org. The site also lists faculty, news, links to other relevant sites, and information on USC & CSULB transportation education programs.

METRANS Faculty

METRANS has funded 60 faculty at USC and CSULB who are now members of the METRANS Center. Consistent with METRANS’ interdisciplinary theme, they come from six branches of engineering (aerospace, civil, computer, electrical, mechanical and industrial & systems), as well as business, economics, geography, information sciences, public policy, planning and public administration. These faculty serve as principal investigators on METRANS-funded projects. They also come together periodically to share insights at coordination meetings and conferences.

California State University, Long Beach:
Anastasios Chassiakos Electrical Engineering
Robert Chi Information Systems
Burkhard Englert Computer Eng. & Computer Science
Mohammed Forouzesh Health Sciences
Robert Friis Health Sciences
Darin Goldstein Computer Engineering
Lisa Grobar Economics
Karl H. Grote Mechanical, Aerospace Engineering
Ken James Electrical Engineering
Christine Jocoy Geography
Tim Jordanides Electrical Engineering
Melody Kiang Information Systems
Shui Lam Computer Engineering
Christopher Lee Geography
Bei Lu Mechanical & Aerospace Engineering
Ken James Economics
Emily Parentela Civil Engineering
Hamid Rahai Mechanical Engineering
Tariq Shehab Civil Engineering
Seiji Steimetz Economics
Reza Toossi Mechanical & Aerospace Eng
Jalal Torabzadeh Mechanical Engineering
Suzanne Wechsler Geography
Henry Yeh Electrical Engineering
Hsi-Yen-Yang Yeh Mechanical & Aerospace Engineering

University of Southern California:
Tridib Banerjee Policy, Planning & Development
Satish Bukkapatnam Industrial & Systems Engineering
Maged Dessouky Industrial & Systems Engineering
Michael Driver Business Administration
Genevieve Giuliano Policy, Planning & Development
Martin Gunderson Physics & Astronomy
Peter Gordon Civil Engineering
Randolph Hall Industrial & Systems Engineering
John Heideman Information Sciences Institute
Petros Ioannou Electrical Engineering Systems
Claire Irázabal Policy, Planning & Development
Erik Johnson Civil Engineering
Behrokh Khoshnevis Industrial & Systems Engineering
John Kупrenas Civil Engineering
Hanh Dam Le-Griffin Civil Engineering
Naj Meshkati Civil Engineering
James E. Moore II ISE, CE and PPD
Dowell Myers Policy, Planning & Development
Fernando Ordonez Industrial & Systems Engineering
Kurt Palmer Electrical Engineering Systems
Alice Parker Industrial & Systems Engineering
Mansour Rahimi Policy, Planning & Development
Christian Redfearn Policy, Planning & Development
Harry Richardson Mechanical Engineering
Paul Ronney Political Science
Jefferey Sellers Civil Engineering
Maria I. Todorovska Civil Engineering
Mihailo D. Trifunac Policy, Planning & Development
Niraj Verma Geography
Chris Williamson Civil Engineering
Hung Leung Wong Industrial & Systems Engineering
Maria Yang Industrial & Systems Engineering

METRANS Website

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Dear Reader:

We delayed this issue to await the outcome of the Tier 1 University Transportation Center competition, and we are delighted that METRANS is one of the 10 winners. Our success is the result of our accomplishments over the past five years: an interdisciplinary, peer-reviewed research program, our annual Town Hall, a growing portfolio of training and professional development in goods movement, new graduate courses and degree programs, growing numbers of participating faculty and graduate students, and our National Urban Freight Conference. These accomplishments reflect the efforts and dedication of our Executive Committee, and of our entire management team. It is my privilege to work with such an excellent group.

Our competition proposal was written under difficult conditions, given the unexpected loss of our METRANS Administrator, Ms. Jacquette Givens. Special thanks go to Tom O'Brien, who stepped in to provide assistance with every aspect of the proposal. The School of Policy, Planning and Development Business Office took over our METRANS accounts. Thanks are also due to the CSULB staff, who absorbed many administrative duties over the summer. The competition was not the only summer task. We received 25 research proposals at the end of May, and the review process had to be completed in time for the fall semester. Another special thanks goes to Ajay Agarwal, USC Ph.D. candidate, who took over management of the proposal review process. And finally, I thank Yurri Hyun, who has served as Interim METRANS Administrator for the past three months. She proved to be a really quick study, having mastered many aspects of center administration in a very short time. I am truly grateful for all the support.

Now it is time to look forward. We will begin the process of developing our new Strategic Plan in December so that we can have the Plan in place by the July 2007 start date of the new grant. We anticipate new projects and initiatives; watch our website and read the METRANS NEWS to learn more.

Genevieve Giuliano
Director, METRANS Transportation Center