



**NATIONAL CENTER FOR METROPOLITAN
TRANSPORTATION RESEARCH**

**ANNUAL REPORT
FISCAL YEAR ENDING JUNE 30, 2007**

Corporate Style Report

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MESSAGE FROM THE DIRECTOR

We are pleased to present this 2006-07 report of our accomplishments. The major event of this year was the national competition for Tier 1 University Transportation Centers. We are very proud to have been selected as one of the ten winning centers. The competition was strong. Our success reflects the excellence and hard work of METRANS faculty, staff and students since the Center was established in 1998. Designation as a Tier 1 UTC required development of a new Strategic Plan which was submitted to USDOT in May 2007 and approved in October 2007. The presence of METRANS at University of Southern California and California State University, Long Beach has resulted in the hiring of new transportation faculty, expansion of transportation-related education programs, and greatly increased service to the professional community. We look forward to further expanding our activities over the next three years.



Genevieve Giuliano
METRANS Director

A. CENTER THEME

The theme of this Center is, “transportation within large metropolitan areas.” METRANS will develop and examine solutions to the transportation problems of major metropolitan areas using a multidisciplinary approach that blends engineering and the social sciences. METRANS will also become a national resource for information on solutions to metropolitan transportation problems.

Metropolitan transportation problems are particularly challenging. Large metropolitan areas – especially fast growing ones – suffer from extreme congestion across all modes, aging infrastructure, environmental degradation, large transit dependent populations, and, increasingly, vulnerability to natural and man-made disasters. Large metropolitan areas are also the focus of burgeoning international trade and its impacts. Funding shortages and fragmented governance structures add to the difficulties of problem solving. Developing innovative solutions requires excellent research that draws on many different disciplines and is informed by practice. Implementing innovative solutions requires effective communication of research to practitioners, as well as a broadly skilled and informed transportation workforce.

A.1 Our theme is a common focus for center activities

Our theme defines all aspects of the METRANS program. We conduct research in four topical areas: goods movement and international trade, urban mobility, infrastructure, and safety and security. These areas are further discussed below. All are oriented specifically to metropolitan transportation problems. We address many modes: highway (freight and passenger), rail (freight and passenger), bus transit, and non-motorized (pedestrian and bike). We also address surface transportation linkages with ports, airports, and inter-modal facilities. We often use the Los Angeles Region as our laboratory, and our education programs reflect an urban perspective in approach and subject matter. METRANS outreach and tech transfer is informed by our research agenda and is distinctly urban in orientation.

METRANS focus areas

Metropolitan transportation problems are numerous, and achieving national and international leadership requires focus. We focus on the substantive areas in which we have particular strength: 1) goods movement and international trade; 2) mobility of urban populations; 3) transportation infrastructure and finance; 4) safety and security.

i) Goods movement and international trade

This area is concerned with how crowded and congested cities can efficiently move goods and provide transportation infrastructure to support economic growth. Growing international trade and changes in manufacturing, warehousing and distribution have major impacts on metropolitan areas. Productivity issues associated with international goods movement are of particular interest. Research focuses on improving productivity and sustainability of ports, inter-modal facilities, and ground transportation. It includes topics such as developing models, technologies or policies for more efficient movement of cargo. Productivity can be studied in a variety of ways, such as new technologies that improve cargo handling, information technology to optimize the allocation of resources, and policies that will promote efficient goods movements. We also include

environmental issues of goods movement, including impacts on vulnerable populations. Reducing environmental impacts of goods movement may include fuel and propulsion technologies, regulatory approaches, compatible land use planning, and alternative institutional arrangements.

ii) Urban mobility

Mobility of urban population addresses congestion, alternative modes, and mobility/accessibility of population segments within diverse metropolitan areas. Metropolitan areas are highly segmented, with different land use patterns, transportation supply, employment mix, and population characteristics. Solving congestion and mobility problems requires solutions that are sensitive to the neighborhood or community environment. Research topics include relationships between travel patterns and urban form; comparative research across location (cities vs suburbs) or population groups (aging, children, transport disadvantaged, race/ethnic minorities). This area emphasizes accessibility and mobility for disadvantaged populations. Given the key role of pedestrian movement in urban travel, non-motorized travel is of particular interest.

This area also addresses strategies to improve the operation, quality and patronage of public transport, and to maximize the efficiency of large public transit infrastructure investments. Research topics include advanced technology applications, bus and route optimization, rapid bus, flexible fare structures, supportive land use policies, service delivery alternatives, and public transit organizational and funding structures.

iii) Transportation infrastructure and finance

Transportation infrastructure is concerned with ensuring and improving the supply of transportation services delivered in metropolitan areas, with an emphasis on providing self-sustaining, environmentally compatible transportation infrastructure that is durable and efficient and that requires fewer human, economic, and environmental resources to produce, operate, and maintain. This area includes research on materials, infrastructure components, systems, and policies. Topics include monitoring, maintenance, rapid repair, rehabilitation, renewal, retrofit, and life extension of transportation infrastructure; including procedures, standards, technologies, and materials.

A second area of transportation infrastructure is financing requirements and techniques, including new pricing options. Constraints on conventional funding sources and rapidly improving information/communications technology are facilitating new approaches to financing: public/private partnerships, user pricing, design/build/operate, bond financing, infrastructure banks, etc. Innovative financing brings new stakeholders into the infrastructure investment process and requires skills that the traditional public sector employee typically does not have. In keeping with our theme, the emphasis will be on large urban infrastructure projects – inter-modal facilities, freeway expansions, etc.

iv) Safety, security, vulnerability

This area is concerned with safety and security issues of large metropolitan areas. There are three sub-areas: 1) personal safety and security, 2) security and vulnerability of major infrastructure, and 3) safety and risk mitigation. Congestion and the concentration of modal traffic impose risks on pedestrians, drivers, and transit passengers. Research areas include personal safety and security on public facilities (pedestrian ways, public transit), and reduction of crash risk (particularly train/car, car/pedestrian crash risk).

Large population concentrations and the presence of major transport facilities (ports, airports, major highway links) make large metropolitan areas particularly vulnerable to both natural and man-made disasters. Our focus is on major facilities: ports, transit centers, subways, airports, and inter-modal centers. Research includes vulnerability assessment, detection and surveillance methods and technologies, and security policies for the transport labor force. Research on safety and risk mitigation includes methods for “hardening” obvious targets, analysis of seismic and other natural risks of infrastructure components, structures and networks, and risk mitigation for vulnerable human populations.

A.2 Our theme and the national strategy for surface transportation research

The METRANS theme is fully consistent with the USDOT Strategic Plan, the USDOT Research and Innovative Technology Administration’s Transportation Research Development and Technology Strategic Plan, and the Federal Transit Administration’s Strategic Plan. The RITA strategic plan is organized around the USDOT strategic goals. Table 1 gives USDOT strategic goals and sub-goals, RITA RD&T Strategies related to METRANS, emerging research priorities related to METRANS, and some examples of related METRANS research projects.

Table 2 provides similar information for the FTA Strategic Research Plan goals and objectives. We list the strategic objectives related to METRANS research, and provide some illustrative examples of research projects. It can be seen that the METRANS research program is supportive of USDOT, RITA and FTA research priorities. The METRANS theme is also relevant to several federal modal agencies: FHWA, FMCSA, FRA, FTA, MARAD, and NHTSA.

Table 1: Relationship of USDOT Strategic Goals, RD&T Strategies, Emerging Research Priorities to METRANS theme

USDOT Strategic Goal	RD&T Strategies related to METRANS	Emerging research priorities related to METRANS	Examples
Safety Transportation-related deaths and injuries	Causal factors and risk Mitigation New technology	Enhanced safety data	Urban train-car collisions; schoolchildren pedestrian safety
Reduced congestion Urban congestion Capacity & PPPs Advanced technology Freight Air transport Accessibility Infrastructure	Reduce passenger and freight congestion Next generation technologies Planning, operations, management Underserved areas and populations Transportation research capability	Policy research and technologies Global logistics	Efficient cargo vehicle routing; sensor technologies for truck monitoring; traffic mitigation fees
Global connectivity Reduced trade barriers Int'l supply chain efficiency Int'l leadership, standards Equal opportunity	Support leadership for transportation providers		Computable general equilibrium model of Southern California economy
Environmental stewardship Reduced environmental impacts Streamlined review	Mitigate impacts	Energy efficiency and alternative fuels	Emissions profiles of locomotives; impact of new diesel fuels on subsurface
Security, preparedness and response Intelligence Preparedness Response	Reduce vulnerability; preparedness and recovery		Strategies for mitigating port disruptions; cargo security early warning system
Organizational excellence Human capital Financial, budget performance E-gov't			METRANS education and outreach programs

Source: USDOT Strategic Plan, 2006-2011; USDOT Research and Innovative Technology Administration Transportation Research, Development and Technology Strategic Plan, 2006.

Table 2: METRANS theme and FTA Strategic Research Goals

FTA Strategic Research Goals	Strategic objectives related to METRANS	Examples
Research leadership	Research supports national goals	
Transit use	Best practices and technologies Targeted populations	Efficient transit routing; transit use among immigrant populations; mobility of homeless
Capital and operating efficiencies	Transit efficiency	Electoral support for transit funding
Safety and emergency preparedness	Transit safety	LRT safety for drivers and pedestrians
Environment and energy independence	Energy efficiency and emissions	Engine efficiency

Source: FTA Strategic Research Plan, 2005

B. SUMMARY OF ACCOMPLISHMENTS

This Annual Report covers the ninth year of METRANS. Here are some highlights of our 2006-07 accomplishments.

Research:

- In response to the 2006-07 RFP, 15 projects were approved with total funding of about \$1.9 million. Principal and Co-Principal Investigators represented 13 different academic departments, reflecting the multi-disciplinary strength of the METRANS research program.
- Monitoring the Ports, our applied research program designed to foster transportation research at CSULB, continued to attract new faculty, with 4 projects funded for 2006-07.

Events:

- The Ninth Annual Center for International Trade and Transportation (CITT) State of the Trade and Transportation Industry Town Hall Meeting was held in February 2007. Titled *Port Security: Guarding America's Front Door*, the Town Hall considered port security changes since the 9/11 terrorist attacks.
- METRANS joined with USC's Future Fuels and Energy Initiative to sponsor a conference, *The Future of the Automobile*, in May 2007. The conference examined alternative energy futures for the world vehicle fleet.

Awards:

METRANS programs, faculty and students continue to win awards. Some of the most prestigious include:

- *2007 Outstanding Program Award*: The GLS program received the 2007 Outstanding Program Award from the University Continuing Education Association.
- *Faculty Awards*:
 - Robert Friis (CSULB) Fellow, Royal Institute of Health
 - Genevieve Giuliano (USC), Transportation Research Board 2007 Deen Lectureship
 - Petros Ioannou (USC) Fellow, International Federation of Automatic Control
 - James Moore, II (USC) Chillingar Medal, Russian Academy of Natural Sciences
- *Student Awards*:
 - Sylvia He (USC), National Academies Summer Fellowship
 - Kenneth Husing (USC), Emmy Award

New Faculty and Staff:

- *Lisa Schweitzer* joined the USC School of Policy, Planning and Development as a tenure track assistant professor. Her research areas include goods movement (particularly hazardous materials) and environmental justice.
- *Victoria Valentine* was appointed METRANS Administrator. She is responsible for general administration of the Center.

C. DESCRIPTION OF MANAGEMENT STRUCTURE

University of Southern California holds the prime grants that fund METRANS from the US DOT and CALTRANS. Center administration is the responsibility of the USC Principal Investigator, but all policy matters are jointly decided by USC and CSULB through the METRANS Executive Committee. A full-time staff member serves as METRANS Administrator. Staffing for CSULB activities is allocated on a task specific basis. A 25% time research program coordinator position promotes and manages transportation research on the CSULB campus.

Executive Committee

The Executive Committee is responsible for all METRANS project selections (research, education, and technology transfer) and for setting METRANS policies. Mike Mahoney, Dean of the College of Engineering, CSULB, was appointed Provost and Vice President of California State University, East Bay, effective fall 2006. His replacement is Prof. Mahyar Amouzegar, Associate Dean of Research, College of Engineering, CSULB. Current membership is:

- **Mahyar Amouzegar**, Associate Dean for Research, School of Engineering, CSULB
- **Anastasios Chassiakos**, Professor of Electrical Engineering, Acting Associate Dean for Research and Administration, School of Engineering, CSULB
- **Maged Dessouky**, Professor of Industrial & Systems Design, School of Engineering, USC
- **Genevieve Giuliano**, Professor of Policy, Planning, and Development, and Senior Associate Dean, Research and Technology, School of Policy Planning and Development, USC
- **Petros Ioannou**, Professor of Electrical Engineering-Systems and Director, Center for Advanced Transportation Technologies, USC
- **Joe Magaddino**, Professor of Economics and Chair, Department of Economics, CSULB
- **James E. Moore II**, Professor of Industrial and Systems Engineering, and Public Policy and Management and Chair, Department of Industrial and Systems Engineering, USC
- **Marianne Venieris**, Executive Director, Center for International Trade and Transportation, CSULB

Executive committee membership is a voluntary (unpaid) service activity. The level of leadership, expertise and dedication of the METRANS Executive committee is exemplary. Not only are these faculty leaders in their respective fields of research, all have significant administrative responsibilities at their respective universities.

Director

Genevieve Giuliano, Professor and Senior Associate Dean of Research and Technology in the School of Policy, Planning, and Development (SPPD) is Director of METRANS. The Director is responsible for the overall management of METRANS, including reporting, matching fund solicitation, outreach, publications, education, supervision of the METRANS Administrator and other staff, project management and development of the center research agenda, and requests for proposals/qualifications. The center director is responsible for chairing meetings of the Executive Committee (joint USC/CSULB) and the Advisory Committee.

Deputy Director

Marianne Venieris serves as METRANS Deputy Director. Ms. Venieris has been responsible for the CSULB technology transfer activities since METRANS' inception. She is an experienced manager and the leading force behind METRANS' goods movement outreach activities. Ms. Venieris is Executive Director of CITT.

The Deputy Director is responsible for collecting performance statistics related to CSULB activities, distributing information to CSULB faculty and students and overseeing the METRANS technology transfer program. The Deputy Director works under the direction of the METRANS Director.

Associate Director of Research

Petros Ioannou has been appointed Associate Director of Research. He is responsible for the Los Angeles testbed research effort and the research proposal review process. The Associate Director of Research works under the direction of the METRANS Director.

Center Administrator

METRANS administrative tasks are divided between two positions. The METRANS Administrator, **Victoria Valentine**, is responsible for all Center administration except budgeting and accounting. The METRANS Account Coordinator, Lucia Kung, handles all budgeting and accounting responsibilities. The Account Coordinator is part of the SPPD Business Office and reports to the SPPD Business Office Manager. Ms. Valentine is assisted by a part-time student assistant who serves as liaison for all student-related activities and coordinates the METRANS Seminar Series.

CSULB Administrator

Alix Traver serves as CSULB Administrator. The position is responsible for the collection of performance data at CSULB, and for communicating METRANS information to CSULB faculty, staff, and students. The position is also responsible for assisting with the METRANS Annual Conference, with the publication of METRANS

News, and for developing center promotions. The CSULB Administrator works under the guidance of the Deputy Director and the Center Administrator.

Applied Research Program Manager

Dr. Thomas O'Brien serves as Applied Research Program Manager. In addition to performing research, this 25% position is responsible for the day-to-day operation of the Monitoring the Ports applied research program. This includes outreach to faculty, coordination with goods movement stakeholders, assisting with the proposal review process, and reporting requirements. The Program Manager is also involved in the development and implementation of professional training programs coordinated through CSULB.

Promotion Manager

Marianne Venieris, METRANS Deputy Director and Executive Director of the CITT at CSULB, has served as the Promotion Manager. This position is responsible for developing outreach materials and managing the development of the website.

Webmaster

The website is hosted by Urban Insights, the firm that redesigned the website. Our administrative staff has capability to update the website, making changes and updates in an efficient and timely manner.

Advisory Board

The Director has formed an Advisory Board composed of representatives from agencies and companies that participate in center activities. The Advisory Board is used to solicit suggestions for research, to assist in student job placements, and to assist in outreach and technology transfer activities. The Advisory Board meets annually. Table 3 lists Advisory Board Membership as of June 2007.

Faculty Members

METRANS has funded a total of 66 faculty at USC and CSULB, 62 of which are faculty affiliates of the METRANS Center (the remaining 4 are no longer at USC or CSULB, due to retirement or move). This number includes faculty receiving funds either through the regular research program or the applied research program. Keeping to the METRANS interdisciplinary theme, faculty are drawn from four branches of engineering (civil, electrical, industrial, and mechanical), computer science, as well as the social sciences, business, health sciences, public policy, planning, and public administration. These faculty serve as principal investigators on METRANS-funded projects, and have responsibility for overseeing individual research projects. METRANS affiliated faculty are listed in Table 4.

Table 3. METRANS Advisory Board

<u>Name</u>	<u>Title</u>	<u>Organization</u>
Dan Beal	Manager, Public Policy and Programs	Auto Club of Southern California
Susan Collette	Supervising Transportation Planner	Los Angeles World Airport
Doug Failing	Director, District 7	California Department of Transportation
John Ficker	President	National Industrial Transportation League
Richard Hollingsworth	President and CEO	Gateway Cities Partnership, Inc.
Fran Inman	Sr. Vice President	Majestic Realty
Randell Iwasaki	Chief Deputy Director	California Department of Transportation
Gloria Jeff	Director	Los Angeles Dept. of Transportation
Geraldine Knatz	Executive Director	Port of Long Beach
Stephen Lantz	Director, Communication and Development	Metrolink (Southern California Regional Rail Authority)
Jack Levis	Portfolio Project Manager	United Parcel Service
Domenick Miretti	ILWU Senior Liaison	Ports of Long Beach and Los Angeles
Eugene Pentimonti	Vice President, Government Affairs	Maersk Sealand
Mark Pisano	Executive Director	Southern California Association of Governments
Richard Powers	Executive Director	Gateway Cities COG
Cindy Quon	Director, District 12	California Department of Transportation
Roger Snoble	Chief Executive Director	Los Angeles County Metropolitan Transportation Authority
Barry Wallerstein	Executive Officer	South Coast Air Quality Management District

Table 4: METRANS Affiliated Research Faculty

<u>Name</u>	<u>Department</u>	<u>University</u>
Tridib Banerjee	Policy, Planning, and Development	USC
Tracy Bradley Maples	Computer Engineering & Science	CSULB
Satish Bukkapatnam	Industrial & Systems Engineering	USC
Anastasios Chassiakos	Electrical Engineering	CSULB
Robert Chi	Business Administration	CSULB
Maged Dessouky	Industrial & Systems Engineering	USC
Burkhard Englert	Computer Engineering & Science	CSULB
Mohammed Forouzes	Health Science	CSULB
Robert Friis	Health Science	CSULB
Genevieve Giuliano	Policy, Planning, and Development	USC
Darin Goldstein	Computer Engineering and Science	CSULB
Peter Gordon	Policy, Planning, and Development	USC
Lisa Grobar	Economics	CSULB
Karl H. Grote	Mechanical and Aerospace Engineering	CSULB
Martin Gundersen	Electrical Engineering & Electrophysics	USC
Randolph Hall	Industrial and Systems Engineering	USC
Le Dam Hanh	Civil Engineering	USC
John Heidemann	Information Sciences Institute	USC
Petros Ioannou	Electrical Engineering Systems	USC
Clara Irazabal	Policy, Planning, and Development	USC
Kenneth James	Electrical Engineering	CSULB
Christine Jocoy	Geography	CSULB
Erik Johnson	Civil Engineering	USC
Tim Jordanides	Electrical Engineering	CSULB
Behrokh Khoshnevis	Industrial & Systems Engineering	USC
Melody Kiang	Business Administration	CSULB
Ilias Kosmatopoulos	Electrical Engineering Systems	USC

<u>Name</u>	<u>Department</u>	<u>University</u>
Shui Lam	Computer Engineering and Science	CSULB
Robert Leachman	Industrial Engineering & Operations Research	UC Berkeley
Christopher Lee	Geography	CSULB
Bei Lu	Mechanical & Aerospace Engineering	CSULB
Joe Magaddino	Economics	CSULB
Wade Martin	Economics	CSULB
Najmedin Meshkati	Civil Engineering	USC
Kristen Monaco	Economics	CSULB
James E. Moore II	Industrial and Systems Engineering and Policy, Planning, and Development	USC
Dowell Myers	Policy, Planning, and Development	USC
Tom O'Brien	CITT	CSULB
Fernando Ordonez	Industrial and Systems Engineering	USC
Kurt Palmer	Industrial and Systems Engineering	USC
Emily Parentela	Civil Engineering	CSULB
Alice Parker	Electrical Engineering	USC
Cheryl Pruitt	Computer Engineering and Science	CSULB
Hamid Rahai	Mechanical Engineering	CSULB
Mansour Rahimi	Industrial and Systems Engineering	USC
Christian Redfearn	Policy, Planning, and Development	USC
Harry Richardson	Policy, Planning, and Development	USC
Paul Ronney	Mechanical Engineering	USC
Antonella Sciortino	Civil Engineering	CSULB
Jeffrey Sellers	Political Science	USC
Tariq Shehab	Civil Engineering	CSULB
Seiji Steimetz	Economics	CSULB
Maria Todorovska	Civil Engineering	USC
Reza Toossi	Mechanical Engineering	CSULB
Jalal Torabzadeh	Mechanical and Aerospace Engineering	CSULB

<u>Name</u>	<u>Department</u>	<u>University</u>
Suzanne Wechsler	Geography	CSULB
Hung Leung Wong	Civil Engineering	USC
Maria Yang	Industrial and Systems Engineering	USC
Henry Yeh	Electrical Engineering	CSULB
Hsien-Yang Yeh	Mechanical and Aerospace Engineering	CSULB

D. DESCRIPTION OF RESEARCH PROGRAMS

Table 5 gives the chronology of all completed research rounds through June 30, 2007. The RFP for FY 2006-07 was issued April 3, 2006. Proposals were due May 30, 2006. METRANS received 25 proposals from 35 faculty requesting a total of \$3,117,709. Proposals were reviewed by academics, practitioners, and government agency representatives from throughout the United States. The METRANS Executive Committee met in August 2006 to evaluate and prioritize proposals. Fifteen projects were selected and sent to Caltrans for approval. These projects were from faculty representing 13 departments. Total funding is \$1,894,376. Projects began September 1 or later. We continue to attract new faculty, and 6 of the awards are to faculty who have not previously been awarded research projects. The large number of awards made reflects the drawdown of surplus funds that were held in reserve through the reauthorization and competition period.

Table 5: Timing of METRANS Requests for Proposals and Project Selection

FY	RFP Issued	Due Date	Selections	Start Date
98/99	3/19/99	4/28/99	6/1/99	7/99 – 9/99
99/00	7/7/99	8/11/99	9/27/99	1/1/00
00/01	2/11/00	3/17/00	5/8/00	8/00
01/02	12/12/00	2/23/01	4/24/01	8/15/01
02/03	8/16/02	10/15/02	1/12/02	7/1/03
03/04	9/5/03	10/15/03	12/27/03	1/5/04
04/05	8/24/04	10/15/04	12/17/04	2/1/05 – 6/1/05
05/06	8/25/05	10/17/05	1/10/06	2/1/06 – 7/1/06
06/07	4/3/06	5/30/06	8/23/06	9/1/06

METRANS' goal has been to make selections within three months after the RFP is issued. This allows about 5 weeks for proposal preparation, 4 weeks for peer review, and 3 weeks for compilation of results and communication with the METRANS Executive Committee. METRANS conducts a rigorous and comprehensive review process. In order to assure that proposal evaluation is as neutral as possible, academic peer reviewers are drawn from outside USC and CSULB. In addition we solicit reviews from USDOT, Caltrans, and practitioners.

Table 6 provides a summary of proposals submitted by thematic area. Goods movement and international trade continues to be the largest area, followed by urban mobility. In recent years the number of safety proposals has increased slightly, while the number of infrastructure proposals has slightly decreased.

Table 6: Summary of Proposals Submitted to METRANS

FY	Proposals	Requested	Number of Proposals by Focus Area				
			Goods	Mobility	Infra-structure	Safety	Multiple
98/99	15	\$808,497	6	8	0	0	1
99/00	12	451,335	6	5	0	0	1
00/01	17	906,370	10	6	1	0	0
01/02	16	882,261	7	2	5	0	2
02/03	29	2,696,136	10	8	6	5	0
03/04	18	1,440,565	7	4	1	6	0
04/05	20	1,579,336	7	5	5	3	0
05/06	18	1,530,368	7	3	2	5	1
06/07	25	3,117,709	10	7	3	4	1
Total	170	\$13,412,577	70	48	23	23	60

The selection process was somewhat less competitive than in previous years due to the large amount of funds available. The Executive Committee selected 15 projects for funding in the 2006-7 fiscal year, a selection rate of 60%. A total of \$ 1,894,376 was awarded.

Funded projects for the past nine years are summarized in Table 7. We have now funded a total of 84 projects totaling about \$6.6 million. As of June 30, 2007, we had 30 projects in progress, representing about \$3.2 million

The awards retain the center's strength in goods movement and freight (10 awards). Two awards were made in Mobility and two in Infrastructure. One safety project was awarded. Our priority is to fund the best projects, rather than to achieve balance across our thematic areas. Selections are made based on the outside peer reviews. Five projects were awarded to CSULB, eight were awarded to USC and two joint projects were awarded.

Table 7: Summary of Proposals Awarded by METRANS

FY	Awards	Amount	Number of Awards by Area				
			Goods	Mobility	Infra-structure	Safety	Multiple
98/99	6	\$294,299	3	2	0	0	1
99/00	7	324,898	4	3	0	0	0
00/01	11	580,882	5	6	0	0	0
01/02	7	446,602	3	1	1	0	2
02/03	12	1,079,721	5	4	3	0	0
03/04	9	667,271	4	3	0	2	0
04/05	9	798,077	6	1	0	2	
05/06	8	540,174	5	2	1	0	0
06/07	15	1,894,376	10	2	2	1	0
Total	84	\$6,626,300	45	24	7	5	3

METRANS has the goal of supporting cooperative research that involves transportation agencies and meets the transportation needs of metropolitan agencies. Nearly all projects have received financial support from Caltrans, and many others have cooperated with local and regional agencies. Cooperative relationships or matching funds are listed in the project descriptions on the METRANS website. METRANS also has the goal of conducting research that supports the USDOT Strategic Research Goals and RD&T priorities. Table 8 is a simplified version of Table 1. The last column lists the 2006-07 research projects according to the Strategic Research Goals.

Table 8: Relationship of USDOT Strategic Goals, to METRANS 2006-07 research projects

USDOT Strategic Goal	Project
<u>Safety</u> Transportation-related deaths and injuries	07-21 – Pedestrian Safety of School Children: Toward Improving Walkability of Inner City Neighborhoods 07-24 – Selection of Comprehensive Design Criteria for Highway Bridges in the Vicinity of and Crossing Active Faults
<u>Reduced congestion</u> Urban congestion Capacity & PPPs Advanced technology Freight Air transport Accessibility Infrastructure	07-01 – Integrating Inland Ports into the Intermodal Goods Movement System for Ports 07-02 – Inter-county Spillovers and Ports and Road Infrastructure Investment 07-03 - Efficiency Improvements by Passive Control and Optimization of the Combustion Process and Engine Cooling 07-04 - Sensornets for Remote Vehicle Classification (SRVC) 07-09 - Solving Metropolitan Transportation Problems Using Autonomous Ground Vehicles with Computer Vision 07-11 - Strategies for Effective Rail Track Capacity Usage 07-12 - On Sequencing of Container Deliveries to the Over-the Road Trucks from Yeark Stacks 07-13 - Dual Use of Electric Utility Rights of Way by Integration of an Urban Maglev Container Corridor and Gas Insulated Transmission Lines 07-17 - Impact of Immigration and Assimilation on Public Transit Ridership and Single-Vehicle Commuting to Work 07-19 - Adding a Freight Network to an Interstate Input - Output Model: Implications for California
<u>Global connectivity</u> Reduced trade barriers Int’l supply chain efficiency Int’l leadership, standards Equal opportunity	
<u>Environmental stewardship</u> Reduced environmental impacts Streamlined review	07-08 - Impact of Streamlined Chassis Movements and Extended Hours of Operation on Terminal Capacity and Source-Specific Emissions Reduction 07-14 - Reconfiguration Strategies for Mitigating the Impacts of Port Disruptions 07-20 - Transient Plasma Ignition for Clean, Fuel-Efficient Transportation Vehicle Engines
<u>Security, preparedness and response</u> Intelligence Preparedness Response	07-24 - Selection of Comprehensive Design Criteria for Highway Bridges in the Vicinity of and Crossing Active Faults
<u>Organizational excellence</u> Human capital Financial, budget performance E-gov’t	07-14 - Reconfiguration Strategies for Mitigating the Impacts of Port Disruptions

Selection Process

METRANS follows a peer-reviewed proposal selection process in which each proposal is submitted to a minimum of five people for review, drawn from the following groups:

- University expert (usually two people in category)
- Local transportation agency expert or private practitioner expert
- Caltrans expert
- US DOT expert

In the most recent RFP (06/07), the following DOT employees (or their designated representatives) reviewed proposals:

- *Cynthia Burbank, FHWA*
- *Steven Chase, FHWA*
- *Dennis Judycki, FHWA*
- *Anthony Furst, FHWA*
- *Barbara Sisson, FTA*

These DOT representatives were selected because of their expertise and leadership in goods movement, transit, policy, advanced technology, safety or infrastructure.

We use an outside review process in order to assure neutral evaluation of all proposals; with few exceptions, academic reviewers were from outside USC or CSULB. We also used a mix of public and private sector local experts. The outside review process is more time consuming, but we feel it is worth the effort. Summarized results of the evaluations are presented to the METRANS Executive Committee, which makes final selections.

Research Results

Forty-eight research projects have been completed (nine this year) and five are in the peer review/revision process. Thirty projects are in progress (including the fifteen new 2006-07 projects). The Research Project Status Report is available in Part B of this report.

Applied Research Program

In 2003, we launched an applied research program under a new initiative, Monitoring the Ports. Its main purpose is to increase the participation of CSULB faculty and students in METRANS research. It also seeks to fund research in support of METRANS technology transfer activities, and develop an information base of seaport operations and goods movement that will contribute to our research program.

Applied research projects are relatively small scale (up to \$40,000), must be completed within one year, and are oriented to data gathering, description, and documentation. The proposal submission requires a short preliminary proposal. The most promising and relevant pre-proposals are selected; Principal Investigators are then asked to submit a full proposal. Proposals are reviewed and approved by the METRANS Executive Committee.

The day-to-day operation of the Monitoring the Ports program is the responsibility of the METRANS Applied Research Program Coordinator.

The applied research program is intended to generate more CSULB faculty participation in the regular METRANS research program; and we have met that goal. Five of the eight projects funded as part of the 2005-06 METRANS RFP were submitted by CSULB faculty, two of whom had previously received Applied Research grants. In 2006-07, six of the 15 funded projects involved CSULB faculty, three of whom have also been funded as part of the Applied Research Program.

The involvement of more CSULB faculty in the regular research program has resulted in a shift in the start date for the Applied Research proposal process. The due date for pre-proposals is timed so that it comes after the announcement of awards for the regular METRANS RFP. This allows CSULB faculty to attempt to secure regular grant funding first; it also allows the METRANS Executive Committee to recommend the Monitoring the Ports program for certain projects where an applied research grant is more appropriate.

Applied Research Selection Process

Table 9 shows the schedule for the applied research RFP process. The RFP was issued on January 11, 2007. It was posted on the METRANS website and circulated by e-mail to faculty who either previously submitted proposals to METRANS or expressed an interest in doing so. We also circulated the RFP through Deans and Department Chairs and the CSULB Office of University Research (OUR). The e-mail invited interested faculty to attend a class on “Introduction to the Supply Chain” as a means of gathering useful background information for the development of pre-proposals. The class is part of the Global Logistics Specialist program and is taught by the METRANS Applied Research Coordinator.

Table 9: Timing of METRANS Requests for Proposals and Project Selection, Applied Research Program

Fiscal Year	Issue RFP	Pre-proposal Due	Selection	Full Proposal Due	Start Date
2003-04	5/15/03	7/1/03	7/30/03	9/19/03	10/15/03
2004-05	12/2/04	1/28/05	2/14/05	3/18/05	6/1/05-7/1/05
2005-06	1/13/06	2/10/06	3/15/06	4/14/06	7/1/06
2006-07	1/11/07	2/09/07	3/14/07	4/20/07	7/1/07

Table 10 shows proposals submitted and awarded for the applied research program. Twenty pre-proposals were received on February 9. This was the largest number received in the four years of the Monitoring the Ports program. Five were selected by the METRANS Executive Committee to submit complete proposals. This decision was made based on the quality of the pre-proposals as well as available funding. Four of the five pre-proposals were ultimately deemed acceptable by the METRANS Executive Committee for funding. Total funding this year is \$159,995. The applied research projects are included in the list of projects as a separate section; they are not included in the performance indicators of this annual report, as they are not fully peer-reviewed.

Table 10: Applied Research Proposals and Awards

Fiscal Year	Pre-proposals Submitted	Number of Awards	Amount
2003-04	7	2	\$ 69,338
2004-05	9	6*	\$ 239,836
2005-06	15	6	\$ 239,995
2006-07	20	4	\$ 159,995

* Includes one project solicited outside of the RFP

Other Research Activities

National Urban Freight Conference: In response to the need to better understand the impacts of goods movement on metropolitan areas, METRANS organized the first National Urban Freight Conference in Long Beach in February 2006. Selected papers from the conference were included in a special forthcoming issue of Transportation Research Part E: Logistics and Transportation Review. METRANS Director Genevieve Giuliano and Executive Committee members Maged Dessouky and James Moore are guest editors of the special issue.

In order to avoid conflicts with other transportation related conferences in the early part of the year, including the annual meeting of the Transportation Research Board, METRANS decided to shift the date for the second National Urban Freight Conference to December. The Conference will be held on December 5-7, once again in Long Beach.

The Conference is designed to attract researchers from throughout the US and other parts of the world where maritime ports, airports, and rail hubs are located. These facilities all contribute to the economic vitality of larger metropolitan regions but also add to the congestion on an already stressed network of roads and railroads.

The National Urban Freight Conference organizes presentations into one of seven different tracks: (1) Models for transportation, port, air, intermodal operations, impact

analysis; (2) Port operations, productivity; (3) Trucking, air, rail economics, productivity, labor issues; (4) Local and regional environmental externalities: congestion, air quality, etc.; (5) Policy and institutional issues in urban goods movement; (6) Security/vulnerability of goods movement infrastructure; (7) Best Practices and lessons learned. More than 60 papers and presentations have been submitted for review for the 2007 conference. The best papers will once again be considered for inclusion in a special journal issue.

The papers reflect the wide range of issues confronting metropolitan areas as they address the increase in freight flows. They also reflect the multi-disciplinary nature of goods movement research which draws upon engineering, economics, systems analysis, health, planning, and public policy among others. The Conference offers a unique opportunity to bridge the gap between these often disparate research areas.

Future of the Automobile Conference: METRANS partnered with the USC Future Fuels and Energy Initiative to organize this invited conference, held in May 2007 at the USC Davidson Conference Center. The conference featured four invited papers, each presenting an energy/fuel alternative for the passenger vehicle fleet, and each written by an eminent scientist engaged in energy/fuels research. These papers formed the basis of panel discussions that included a technology specialist, economist, and policy analyst. Each alternative was considered not only with respect to scientific merit, but to economic costs and political feasibility. The conference also included a keynote paper from David Greene, Oak Ridge National Laboratory.

Conference attendance was limited to 80 persons in order to assure lively discussion. The Conference was a resounding success, bringing together researchers from highly diverse disciplines around a common set of problems.

Publications and Presentations:

An important measure of the quality of the METRANS research program is the number of peer-reviewed publications generated. As more research projects are completed, academic publications follow. This year 24 of our METRANS faculty have 67 peer reviewed articles, books or chapters published or forthcoming.

Faculty Awards and Promotions

The quality and reputation of METRANS research faculty continue to be demonstrated by awards and promotions.

- **Robert Friis** (CSULB) was elected Fellow of the Royal Institute of Public Health, and was elected president of the Southern California Public Health Association (SCPHA).
- **Genevieve Giuliano**, METRANS Director (USC), was honored with the 2007 Deen Lectureship at the Annual Transportation Research Board Meeting, and was

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- appointed founding Chair of the California Transportation Research and Technology Advisory Panel.
- **Petros Ioannou**, METRANS Associate Director of Research (USC) was elected Fellow of the International Federation of Automatic Control, and was appointed to the Board of Directors of IEEE Intelligent Transportation Systems Society
 - **James Moore, II** (USC) was awarded the Chillingar Medal by the Russian Academy of Natural Sciences.
 - **Dowell Myers** (USC) received the Haynes Foundation Research Impact Award
 - **Thomas O'Brien**, Applied Research Coordinator, METRANS (CSULB) received the fall 2006 George Marshall Instructor Award for the Global Logistics Specialist Program.
 - **Antonella Sciortino**, Assistant Professor, Civil Engineering, CSULB was elected 2006 faculty of the year by the CSULB Associated Engineering Student Body.
 - **Suzanne Wechsler**, Associate Professor, Geography, CSULB, received first place from the American Society for Photogrammetry and Remote Sensing for her publication, received the ESRI 2007 award for best scientific paper in GIS and was awarded a Faculty Scholarly and Creative Activity Award from CSULB.

E. DESCRIPTION OF EDUCATION ACCOMPLISHMENTS

The METRANS education program emphasizes student involvement in research projects. METRANS continues to make graduate student involvement an explicit criterion in making research awards in our RFP. Involvement of undergraduate students in METRANS funded research is encouraged. As a result, all projects have had significant student participation (some undergraduate, some graduate, and some both). Investigators are strongly encouraged to budget for student presentations at conferences, such as the Transportation Research Board annual meeting.

National Student Competitions

In 2006, METRANS again participated in the USDOT UTC “Outstanding Student Award” program. The METRANS student of the 2006-07 academic year is **Jiyoung Park**, Urban Planning Ph.D. student in the School of Policy, Planning, and Development at USC. Mr. Park has already authored several refereed publications and book chapters. His research includes development of a national interstate economic model. Mr. Park received his award at the Transportation Research Board Annual meeting in Washington, D.C. in January 2007. He is now a post doctoral research associate and instructor at the Center for Risk and Economic Analysis of Terrorist Events, USC.

Sylvia He was awarded a National Academies Summer Fellowship. She spent the 2007 summer working at the Transportation Research Board on two policy studies. Ms. He is a PhD student in urban planning at USC.

Ken Husting, Master of Public Administration 2005 and CSULB BS in Engineering, won an Emmy award for production of a Public Service Announcement on bicycle safety entitled, “Laws of Physics”. Mr. Husting is Senior Transportation Engineer at the Los Angeles Department of Transportation.

Internal and External Awards

Additional awards were received by the following students:

- **Ajay Agarwal**, PhD Candidate in urban planning, was awarded a Lusk Center for Real Estate summer grant for his dissertation research, the WCTR conference fellowship to participate in the 2007 World Congress of Transportation Research, and was awarded the ACSP Conference Fellowship.
- **Sylvia He**, PhD student in urban planning, won the WTS Orange County chapter graduate student scholarship.
- **Lingqian (Ivy) Hu**, PhD Candidate in Urban Planning, received an SPPD departmental dissertation fellowship.
- **Erika Humphries**, and **Lexi Shiovitz**, undergraduate students in Public Policy, Management and Planning and Sociology, respectively, were accepted and

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- sponsored to attend the 2006 California Transportation Foundation Transportation Education Symposium.
- **Cary Kadlecek**, Master of Planning, received top honors for his transportation and land use comprehensive exam.
 - **Damien Orsini**, doctoral student from Paris, France, conducted goods movement related research under the guidance of METRANS Associate Director of Research, Petros Ioannou, with funding from Cal Trans.
 - **Kelly Pilarski**, undergraduate in civil and environmental engineering, received the WTS Los Angeles chapter undergraduate student scholarship.
 - **Luca Quadrifoglio**, PhD in industrial and systems engineering, 200X, now assistant professor at Texas A & M University, received third place honors for the IIE Pritsker Doctoral Dissertation Award.
 - **Iris Shen**, PhD student in industrial and systems engineering, was awarded a merit fellowship from the Women in Science and Engineering Program.

The following CSULB students received awards:

- **Tristina Kirsten** and **Pam Den Hartog**, GLS students, each received a Harbor Transportation Club Scholarship Award for the spring of 2007.
- **Dustin Maldonado**, GLS student, received the Harbor Transportation Club Scholarship Award for the fall of 2006. The HTC donates all scholarship proceeds to the GLS program.
- **Ray Menchavez**, a GLS student, was awarded the Mary Blemining Scholarship from the Long Beach Chamber of Commerce International Business Association.
- **Paul Merritt**, Master of Arts in Global Logistics student, and **Andrea Bigi**, GLS student, were awarded scholarships from the Port of Long Beach.

The METRANS Administrator compiles opportunities for student competitions and advertises them both by email to identified students and by advertisement on the METRANS web site.

Student Conference Participation

California Transportation Foundation's Transportation Education Symposium.

USC civil engineering and urban planning undergraduates consistently participate in the California Transportation Foundation's (CTF) annual Transportation Education Symposium. The symposium gives upper-division undergraduates a unique opportunity to collaborate with senior industry and agency professionals as they prepare competing team responses to a mock request for project proposals. The CTF makes this experience available to outstanding student participants at no cost to these students. USC transportation students **Erika Humphries** and **Lexi Shiovitz** attended the November 2006 Symposium at the Asilomar Conference Center in Monterey, California. METRANS provides the travel funding for symposium attendance.

Ninth Annual Town Hall Meeting Five USC and CSULB students attended the Ninth Annual Town Hall Meeting, held on February 7, 2007 at the Carpenter Performing Arts Center on the CSULB campus.

University of California Transportation Research Conference. Seventeen USC graduate students attended the UCTC Conference held at UCLA from February 15 - 17, 2007. USC students presented two papers, one from EE-Systems (Integrated Roadway Controller and its Evaluations by Microscopic Simulator VISSIM - Chang, Wang, Zhang & Ioannou) and the other from ISE (Robust Optimization Approach for the Capacitated Vehicle Routing Problem and Demand Uncertainty - Sungar, Ordonez and Dessouky). USC SPPD doctoral student, Jiyoung Park, also presented a poster.

USDOT Secretary Mary Peters Reception and Address. Thirty-four USC students attended USDOT Secretary Mary Peters reception and address held at the Biltmore Hotel on February 20, 2007 and sponsored by the Los Angeles Chapter of WTS.

Future Fuels and Energy Initiative/METRANS Conference. Twenty-nine USC students attended the Future Fuels and Energy Initiative/METRANS Conference, "Alternative Futures for the Automobile" held on May 23-24, 2007 at the Davidson Conference Center on the USC campus.

Other Student Activities

Student Participation in Research

METRANS is committed to student involvement in research. It is the best way for students to acquire research skills, and it is an important source of student support. Students are often attracted to transportation as a result of working on a research project.

Student involvement in transportation research projects is difficult to compare across years. The number of students supported on METRANS research projects reflects year-to-year differences in the number of ongoing projects. METRANS student involvement also includes research projects funded from other sources and reflects the variability of university-wide extramural funding levels. The general trend is toward increased student support, as total research funding in transportation has significantly increased at USC.

The current METRANS projects (all projects in progress at any time during 2006-07) together are supporting 87 graduate students, METRANS projects account for only part of the funded research support of graduate students. At USC, the School of Policy, Planning and Development and the Viterbi School of Engineering provide match funding for tuition. In addition, funding from the National Science Foundation, federal, state and local government, and foundations and industry support a wide spectrum of transportation research beyond that funded by METRANS.

Internships

Students have many opportunities for paid internships to gain professional experience before graduation. The USC MPL program requires 400 hours of professional experience; the USC MSCE program encourages such experience. USC students have interned at the Los Angeles County Metropolitan Transportation Authority, Southern California Association of Government, cities of Los Angeles, Pasadena, and Long Beach, the Ports of Los Angeles and Long Beach, and several major consulting firms.

Institute for Transportation Engineers Student Division

Professor Emelinda Parentela continues to serve as the advisor to the Southern California Chapter (District 6) of ITE (Institute of Transportation Engineers). Three students attended the CTF symposium held in November 2005.

Mesa Program

METRANS has partnered with the Gateway Cities Partnership, Inc. (GCPI), Paramount Unified School District, and CSULB's College of Engineering Math, Engineering and Science Achievement (MESA) program in an effort to attract more young disadvantaged students into engineering professions, with a particular emphasis on infrastructure-related engineering. MESA's programs are for students in grades 6-12 and include five Saturday mornings at CSULB College of Engineering, three site visits to organizations with a large engineering staff, and weekly meetings with an advisor/instructor at the school site. Students are eligible to take part in the program over a three-year period. The program concludes each year with an engineering competition among MESA participants from different school districts.

During the 2006-07 academic year, there were 277 students enrolled in the Gateway Cities MESA Project; 95 of these were returning students. This was an increase from the 222 enrolled in 2005-06. MESA Day Final winners from the Paramount Unified School District included three from Jefferson School, two from Roosevelt School, four from Tanner School, and two from Paramount High School – West. Participants from Paramount are largely Latino and underprivileged; but student retention within the Paramount School district is high. This success is the result of the outreach efforts GCPI provides which includes three information meetings for parents.

To further enhance MESA's successes in Paramount, the Gateway Cities Paramount Education Partnership (PEP) program is setting up a 15 computer math and science tutoring lab to provide supplemental instruction to MESA participants in Paramount. Supplementary education programs will be provided to MESA students throughout the academic year.

Degree Programs, Courses, and Seminars

Student involvement in transportation education and research continues to be strong at both USC and CSULB. There were no changes in degree programs or courses this year.

USC Transportation Students

In the USC School of Policy, Planning, and Development (SPPD), five students completed the comprehensive examination in the Master of Planning “Transportation and Land Use” field specialization in 2006-07. There are currently about 15 Master of Planning students in the transportation field concentration in SPPD. Approximately nine urban planning students are pursuing transportation-related Ph.D. degrees.

In the USC School of Engineering, five students received the MSCE- Transportation Engineering degree. Four students completed the Ph.D. in Industrial and Systems Engineering with an emphasis in transportation. One student received the Graduate Certificate in Transportation Systems.

Seven new USC doctoral dissertations in transportation were either defended or filed by spring 2007. Ph.D.’s were granted in Urban Planning and Industrial and Systems Engineering. Dissertation titles are listed below, together with their current positions.

“A Multi-Regional Computable General Equilibrium Model in the Heritage of A. Anas and I. Kim.” **Sungbin Cho**, Ph.D. in Planning. **Sungbin Cho** is now employed at ImageCat, an engineering consulting firm in Long Beach, California.

“Models and Solution Approaches for Facility Location of Medical Supplies for Large-Scale Emergencies,” **Bill (Hongzhong) Jia**, Ph.D. in Industrial and Systems Engineering. **Bill (Hongzhong) Jia** is a Staff Researcher at Microsoft Corporation.

“Discounted Robust Stochastic Games and Applications to Homeland Security and Flow Control.” **Erim Kardes**, Ph.D. in Industrial and Systems Engineering **Erim Kardes** is now a Postdoctoral Researcher with the Center for Risk and Economic Analysis of Terrorist Events.

“Essays on Economic Modeling: Spatial-Temporal Extensions and Verification.” **Jiyoung Park**, Ph.D. in Planning. **Jiyoung Park** is now a Postdoctoral Researcher and Instructor with the Center for Risk and Economic Analysis of Terrorist Events.

“The Robust Vehicle Routing Problem,” **Ilgaz Sungar**, Ph.D. in Industrial and Systems Engineering

“Essays in the Study of Institutions and Development.” **Lanlan Wang**, Ph.D. in Planning. **Lanlan Wang** is now an assistant professor at the Central University of Finance and Economics, School of Public Finance and Public Policy, Beijing.

“Models and Algorithms for Energy Efficient Wireless Sensor Networks.”
Wei Ye, Ph.D. in Industrial and Systems Engineering. **Wei Ye** is now a Project Manager/System Engineer at Bravo Tech Inc.

CSULB Students

In 2006-07, 12 students completed the MSCE program. CSULB’s Master of Arts in Global Logistics (MAGL) debuted in spring 2002 with the first cohort. In 2005, the admission of new cohorts occurred in the fall, in line with CSULB admission practices. 11 students graduated from Cohort IV in the spring of 2007. 13 students are currently enrolled in the fifth cohort. This includes 3 remaining from previous years. Cohort VI will start in the fall of 2007 with 19 students enrolled. This past year, the MAGL degree was approved by the California State University to be moved from pilot to regular status.

The MAGL degree is interdisciplinary, combining the analytical skills of a traditional MBA with a strong emphasis on logistics in a global setting. It is a 30-unit accelerated graduate program that can be completed in less than two years (21 months). The program prepares professionals to deal with the complexities of supplier relations/selection, purchasing negotiations, operations, e-commerce and many other dimensions of supply chain management. Graduates hold positions in various senior management positions and are employed by companies as diverse as Sony Logistics, Toyota Motor Sales, Boeing and the LA Unified School District. This year, the Port of Long Beach awarded a \$5,000 scholarship to MAGL student, Paul Merritt.

In 2006-07, 61 students completed the CITT certificate program in either the on-ground or on-line format, leading to the Professional Designation as a Global Logistics Specialist. This is a professional training program. See details in Section E.

Transportation and Location Research Seminar

This seminar series serves to 1) provide speaking experience for advanced graduate students, 2) remind faculty of interdisciplinary transportation research opportunities, 3) provide a focus for transportation teaching and research, 4) provide a speaking forum for external visitors, and 5) increase the visibility of transportation research at USC and CSULB. The seminars are typically scheduled on Wednesdays throughout the academic year. In some cases external visitors are jointly sponsored with other groups in order to provide wider opportunities for seminar participation. USC and CSULB faculty and graduate students, local alumni, and local agency representatives are invited to the seminar. As a practical matter, the distance between USC and CSULB has proven to be a significant barrier to participation from CSULB. In an effort to remedy this situation, METRANS repeated one of the seminars at the Long Beach campus. Response was favorable; 22 different faculty members and goods movement stakeholders attended the April 13, 2007 session on earnings and truck financing among port truck drivers. We will look to schedule other seminars in Long Beach in the future. The 2006-07 seminars are listed in Table 11 below.

Table 11: METRANS Speaker Series, 2006-2007

Fall 2006

Date	Speaker	Location	Topic
September 13	Thomas O'Brien Director of Research Center for International Trade and Transportation, California State University Long Beach	RGL 215	Terminal Gate Appointment System at the Ports of Los Angeles / Long Beach: An Assessment
October 18	Maged Dessouky Professor, Industrial and Systems Engineering, University of Southern California	RGL 215	Scheduling freight trains on complex trackage near port facilities and urban centers
November 15	Kostas Goulias Professor of Transportation at the Geography Department, University of California Santa Barbara	RGL 215	Issues of Scale, Time, and Approach to Transportation Modeling and Simulation
December 6	Naj Meshkati Professor, Civil and Environmental Engineering, University of Southern California	RGL 215	Critical Safety Issues in Five Modes of Transportation

Spring 2007

Date	Speaker	Location	Topic
January 10	Robert Brueggemann Professor and Chair of Art History, University of Illinois at Chicago	RGL 215	Sprawl: A Compact History?
February 21	Kristen Monaco, Professor, Department of Economics, Associate Director, Graduate Program in Global Logistics, California State University, Long Beach	RGL 215	Earnings and Truck Financing Among Port Owner Operators
March 28	2007 Graduates JiYoung Park, Ph.D., Urban Planning, University of Southern California; Ilgaz Sungur, Ph.D. candidate, Industrial and Systems Engineering, University of Southern California	RGL 215	Dissertation Presentations by our 2007 Graduates, Park: Essays on Economic Modeling: Spatial- Temporal Extensions and Verification Sungur: The Robust Vehicle Routing Problem
April 13	Kristen Monaco, Professor, Department of Economics, California State University, Long Beach	FDN 204 (CSULB)	Earnings and Truck Financing Among Port Owner Operators
April 25	Samer Madanat Professor, Department of Civil & Environmental Engineering; Director, Institute of Transportation Studies, University of California at Berkeley.	RGL 215	Optimization of Maintenance and Replacement Policies for a System of Heterogeneous Infrastructure Facilities

Continuing Education Programs

These are described in the technology transfer section under professional training.

F. DESCRIPTION OF TECHNOLOGY TRANSFER ACCOMPLISHMENTS

METRANS technology transfer activities are conducted primarily at CSULB through the University College and Extension Services and the Center for International Trade and Transportation, under the direction of Marianne Venieris. The CITT has a Policy and Steering Committee that plans and approves all outreach events. The METRANS Director is a member of the CITT Policy and Steering Committee. The METRANS Executive Committee reviews and approves all major technology transfer activities. Technology transfer at METRANS is more appropriately described as professional training and information dissemination. The topical focus of METRANS technology transfer is goods movement and international trade.

Professional Training

CSULB offers a series of industry driven training programs through the University College and Extension Services and the Center for International Trade and Transportation (CITT).

Global Logistics Specialist

The Global Logistics Specialist (GLS®) professional designation is the foundation of a spectrum of programs to cover the industry's training/education needs. It is designed to set a professional standard for the international trade logistics industry and, as such, is aimed at foreign traders and all stakeholders involved in the movement of cargo around the world. Carefully selected topics have been grouped into six core modules that are offered within a one-year time frame one night class per week. Each module contains up-to-date, practical information delivered through innovative hands-on instruction and site visits, making the program a unique training concept in this industry.

In 2006-2007, a total of 102 students took part in at least one of the various modules. Fifty-two of these students were awarded the Global Logistics Specialist (GLS®) professional designation (35 in the fall and 17 in the spring). Since its inauguration in January 1997, over 1,300 people have attended classes in the program and to date over 750 have earned the GLS® professional designation.

In April, the GLS program was awarded the 2007 Outstanding Program Award by the University Continuing Education Association (UCEA). The award was presented to Marianne Venieris at the Association's 92nd Annual Conference in Vancouver. The GLS program was honored for its excellence in achieving its educational objectives and making an important contribution to the field of continuing education. The Chair of the Awards and Honors Committee commented that the program was successful, replicable, and cost effective; it was also noted that GLS has unprecedented support from the transportation industry in the form of instructor commitment, scholarship commitment, and trade association endorsement.

GLS Online

The online version of the GLS® certificate program makes available throughout the US and in other parts of the world the courses taught by top practitioners from every facet of the industry. The inaugural class started June 9th 2004 and as of July 1, 2007 more than 75 students have enrolled in various modules of the GLS Online.

The online version follows the same format as the regular program; it is organized in five modules plus a module that focuses on the capstone project. The program has seen a significant increase in enrollment over the past year. In the fall of 2006, 21 students were registered for the various modules. 15 were enrolled during the spring of 2007. As of July 2007, 22 students have completed the entire online program. Nine graduated during 2006/07 FY.

The online program continues to extend the reach of the GLS. Students have come from New York, Florida, Montana, Wisconsin, Maryland, North Carolina, Texas, Washington, Arizona, Virginia, Nevada, Oregon and Utah and from the Dominican Republic, Canada, Vietnam, Mexico and India.

Workshop: Air Cargo Seminar for Policy Makers

In December of 2005, METRANS sponsored a half-day session on goods movement for 30 city council members, city managers and planning commissioners from the South Bay Cities Council of Governments in Southern Los Angeles County. This was the first-ever workshop of its type for policymakers in Southern California. Response to the class was very favorable; evaluations indicated the need for a similar workshop on air cargo. The South Bay is located along the coast between LAX and the Ports of LA and Long Beach.

As a result, METRANS sponsored a workshop entitled “Understanding Goods Movement and the Supply Chain Part II – Focus on Air Cargo” on March 8, 2007. The intent of the class was to introduce decision makers to this particular aspect of the supply chain. More specifically, it addressed how the air cargo industry works, how air freight moves from source to destination, and what issues should be considered when decisions are made by cities that affect the movement of goods. The COG had a particular interest in understanding the role of passenger carriers in moving freight, the businesses which support airport operations, and the possibilities of air cargo traffic shifting to locations other than LAX.

The course was four hours long and was held at the Flight Path Learning Center and Museum adjacent to LAX. The instructor has held executive positions in the logistics industry over the last 24 years and teaches in CITT’s Global Logistics Specialist Program. CITT’s Director of Research assisted Mr. Powell in the design of the course curriculum, and a CSULB student research assistant helped compile data and presentation materials focusing on the South Bay.

METRANS and the South Bay Cities Council of Governments shared the cost of developing and implementing the class. There were 35 participants in the workshop representing eight different cities, the Los Angeles County Metropolitan Transportation Authority (Metro), Los Angeles World Airports, Boeing, and consultants who regularly work in the South Bay on transportation matters. The “students” held various job descriptions including planner, council member, planning commissioner and economic development director.

The air cargo class was the first-ever workshop of its kind for policymakers in Southern California. The evaluations indicate that the workshop identified and met an important need to teach policy makers about this important aspect of the supply chain.

Applied Research Program

To both address the continuing challenge of involving CSULB faculty in METRANS research and better support our outreach efforts, in 2003 we launched a program in applied research, Monitoring the Ports. The applied research program is directly linked with our goods movement and international trade outreach activities. See Section C for details.

Outreach Events

The port complex, like other major transportation complexes, generates significant public benefits but also significant localized costs. Increasingly communities bearing these costs are seeking to limit the growth of these transportation complexes. These efforts may limit overall economic growth of the region and the nation.

The region and the industry are deeply divided on how growth can be absorbed over the next several years. The I-710 expansion project, together with some high visibility lawsuits by environmental groups over port expansion projects, have placed increasing pressure on port and international trade interests to broaden their perspective. The Annual State of the Trade and Transportation Industry Town Hall Meetings, sponsored by METRANS over the past eight years, have consequently evolved to focus more on the larger impacts and less on the operational issues of the ports. The challenge for METRANS and CITT is to maintain their role as a neutral forum while fostering education, research and information exchange that positively contribute to resolution of these conflicts.

Town Hall Meeting

The Annual Town Hall meetings offer goods movement stakeholders, particularly longshore labor, an opportunity to discuss the issues most critical to the industry. Five years after the 9/11 attacks, security remains a critical issue for the nation’s trade gateways. The Ports of LA and Long Beach are particularly vulnerable because of their size, the volume of cargo moved and their role as the largest port complex in the US.

Government agencies and the goods movement industry have taken significant steps to secure the supply chain, but concerns remain.

As a result, the Ninth Annual Town Hall addressed "Port Security: Guarding America's Front Door." It was held on February 7, 2007 at the Carpenter Center on the CSULB campus. This year, the Town Hall featured a keynote speaker, the Honorable Michael Jackson, Deputy Secretary of the US Department of Homeland Security. Mr. Jackson stressed the importance of maritime security in general and in the ports of Los Angeles and Long Beach in particular because of the fundamental role the ports play in the U.S economy.

Following Mr. Jackson's speech, a panel of experts addressed questions posed by the Town Hall moderator and the audience. The panel included Todd A. Hoffman, the Port Director of the Los Angeles/Long Beach seaport; Captain Paul Wiedenhoef, Commander, and Captain of the Port, and federal Maritime Security Coordinator for the US Coast Guard Sector Los Angeles-Long Beach; John Schwartz, Assistant Director of the Transportation Worker Identification Credential Program (TWIC); Ethel McGuire, Assistant Special Agent in Charge (ASAC), FBI, Los Angeles; and Kenneth Konigsmark, Senior Manager of Supply Chain Security at the Boeing Company.

As usual, the evening featured a video prepared by CSULB UCES Advanced Media Production. This year's video highlights some of the measures taken to secure both the ports and the supply chain since 9/11. It discusses the partnerships that have been formed to coordinate security responses and underscores those issues that may compromise port security. The video concludes that port security has to become everyone's responsibility, including workers who provide another layer of assessment in securing the port, thus combining the human awareness element with technological solutions.

The Town Hall videos have become popular teaching and training tools at schools and at trade association meetings. They are available for viewing on the METRANS and CITT websites; videos and CDs are available for purchase through CITT.

The 2007 Town Hall attracted more than 800 industry and community stakeholders. In addition to the US Department of Transportation and Caltrans, the event received support and financial sponsorships from the Ports of Los Angeles and Long Beach, International Longshore and Warehouse Union (Locals 13, 63, and 94), Alameda Corridor Transportation Authority, Price Transfer Group, the USC Sea Grant Program the Long Beach City College Office of Economic Resource Development, and the Long Beach Business Journal. The event also received formal endorsement by the board of directors of numerous trade associations. The event was webcast and is available for viewing at <http://www.uces.csulb.edu/citt>.

Town Hall White Paper

A main objective of the annual Town Hall meetings is to share valuable knowledge with the broader community, including those unable to attend the Town Hall itself. In addition

to the Town Hall webcasts, METRANS also prepares event Proceedings as a means of documenting the presentations and the panel discussion. The Proceedings are made available on the METRANS and CITT websites.

METRANS also prepares a White Paper meant to accompany the Town Hall and expand upon the topics to be discussed. This year's White Paper took the form of a security primer. It outlined the roles and responsibilities of various governmental and industry actors in the area of port and supply chain security. It included a timeline of key security-related events since 9/11, including major policy and regulatory actions, as well as a glossary. The timeline and glossary were featured in a convenient pull-out section in the Town Hall program. All of the materials have been posted on the websites.

National Urban Freight Conference

The National Urban Freight Conference is described in Section C.

Other Outreach Activities

Members of the METRANS management team are active in a variety of outreach and professional service activities.

METRANS Director **Genevieve Giuliano** completed her service on the TRB Executive Committee and as chair of the Sub-Committee on Planning, Programming and Research in January 2007. She is also a member of the Executive Committee of the Council of University Transportation Centers. She is currently participating in a policy study, Global Climate Change and Transportation, jointly sponsored by the Board on Atmospheric Sciences and Climate and the Transportation Research Board, and was appointed Chair of a new TRB policy study on financing freight projects of national significance. At the state level, she was appointed chair of a new panel, the California Transportation Research and Technology Advisory Panel, by the Secretary of Business, Housing and Transportation. Over the past year she has given numerous presentations at conferences, seminars and professional meetings throughout the US.

METRANS Deputy Director **Marianne Venieris** is a member of several local business associations. She serves on the Transportation Research Board (TRB) Education & Training Committee, ABG20, is co-vice chair of the Board of the California Marine and Intermodal Transportation System Advisory Council (CALMITSAC), and on the Board of Directors of the Gateway Cities Partnership, Inc. a regional, nonprofit economic collaborative comprising twenty-seven cities in Los Angeles County. She is a member of the Goods Movement Task Force with Southern California Association of Governments (SCAG), and a member of the Board of the International Business Association of Southern California, and a member of the Harbor Transportation Club.

METRANS Executive Committee member **Maged Dessouky** was appointed a member of the California Transportation Research and Technology Advisory Panel.

METRANS Executive Committee member **James Moore** is a director at large and an active member of the Los Angeles Chapter of WTS (formerly Women's Transportation Seminar).

METRANS Applied Research Coordinator **Thomas O'Brien** currently serves on the National Cooperative Freight Research Program Project Panel on Institutional Strategies in the Freight Transportation System. He also contributes a regular column to the Perspectives section of the *Long Beach Business Journal*, a bi-weekly publication. The column appears on a monthly basis and highlights important issues in goods movement and international trade and features CITT and METRANS activities, including research. The first article appeared in August 2005. Over the past year Thomas O'Brien has been invited to make presentations on the supply chain and goods movement at the annual meeting of ITS California, at the Western Aerosol Information Bureau spring meeting, at the Heavy Vehicle Electronic License Plate (HELP) annual conference, and at the Ingram Micro Logistics Supply Chain Summit.

Publications

Building Bridges

Building Bridges began publication in January 2001. It appears 4 to 6 times per year. The four-page newsletter is a briefing document to inform and promote dialogue within the maritime/logistics industry community. The objectives of Building Bridges are:

- To provide a neutral communications channel on industry issues
- To lead to fruitful and open dialogue
- To encourage closer cooperation among all industry stakeholders

Seventeen hundred fifty hard copies of each issue are printed. One thousand of these are mailed and about four hundred electronic versions of each issue are distributed to ILWU local members, industry leaders, government agencies, and METRANS Advisory Committee Members. In addition, the newsletters are made available at the Town Hall meetings, trade association meetings, to the distribution list of the Marine Exchange of Southern California and via the METRANS and CITT websites. Over the past year, METRANS has reduced the number of printed copies and encouraged readers to download copies from the websites. As of June 2006, 21 issues have been published. Issues were published in September and December of 2006 and in January and April of 2007.

The newsletter is formulated, edited, and distributed by an Editor-in-chief selected by the CITT Engagement Subcommittee with the assistance of the METRANS Administrator at CSULB. An Editorial Board that includes members of the subcommittee and the METRANS Director provides oversight.

METRANS News

The first issue of the *METRANS News* was published in February 2003. This newsletter summarizes METRANS research, education and information dissemination activities. It complements the METRANS website and broadens our exposure to the research community, government, and industry. The newsletter features METRANS researchers, conferences and other events, recent publications, interviews with key individuals involved in METRANS, and other newsworthy activities and events. There are two-to-three 8-page issues published each year. It is distributed electronically to the national research community, federal, state and local leaders, industry leaders, and federal, state and local transportation agencies. 800 printed copies are distributed to the METRANS Advisory Committee, public agency managers, and elected officials. The newsletter is also circulated to the distribution list of the Marine Exchange of Southern California and is available on the METRANS website. As of June 2007, twelve issues have been published. Issues were published in October of 2006 and in February 2007.

Outreach - Website

The METRANS website is the primary source for dissemination of information on METRANS activities. The METRANS Strategic Plan, Annual Reports, and Semi-Annual Reports are available in downloadable form. All research project final reports, conference summaries, and technology transfer reports are also available. The *Building Bridges* newsletter and *METRANS News* are available, as well as information on CSULB's Master of Arts in Global Logistics and the new GLS® Online. An in depth program description including a list of core courses and options of specialization courses is provided. The website also provides links to USC transportation-related degree programs, identifies educational programs in transportation and links to 120 sources of transportation information. In particular, we have sought out organizations that provide funding for transportation research, student internships, student awards and professional organizations, and provided links to their webpages. The UTC search engine locates documents on all other UTC websites by keyword.

The METRANS website was originally developed in 1999 and did not take advantage of recent Internet technologies. A complete overhaul of the website began in the spring of 2005. The goal was to enhance the visual presentation of the site, the ability to find and use METRANS research, and to streamline the process of adding new and upgrading existing content. Additional features include web-based marketing and outreach.

The new website was officially launched in November 2005. The home page features the latest METRANS announcements, news and events; visitors may also opt-in to receive electronic updates and newsletters from this page. The graphic design includes attractive and alternating photographs depicting different transportation modes. Easy-to-navigate drop down menus allow users to access "News and Events" including copies of METRANS News and Building Bridges, information "About the Center," "Research," links to "Education" programs, "Outreach" activities, "Resources," and a multi-site

“Search” engine for the various University Transportation Centers in the US. Researchers can find information by UTC, topic, website, or keyword. The database of METRANS research projects provides access to many years’ worth of studies and reports with a simple click. The Macromedia Contribute software package allows the METRANS administrators to make changes directly.

METRANS website statistics continue to show an impressive level of website traffic. The total number of visits for 2006-07 was 172,087, which is over 14,000 visits per month, an increase of almost 50% from the prior year. Visitors represent numerous countries; and the largest percentage goes directly to the site, i.e. they are not referred from another Internet location. This suggests a prior awareness of the METRANS center. The goal of facilitating access to research appears to have been met. Of the 10 METRANS pages most downloaded, 7 are METRANS-funded research reports.

The METRANS website will be used to coordinate paper submission for the 2007 National Urban Freight Conference. It will also be used to promote the conference and provide up-to-date information on the event. Event and hotel registration, and corporate sponsorships will be coordinated through the website.

In the coming year, METRANS will make available an interactive and searchable timeline of goods-movement related activities on the website.

Project Reports

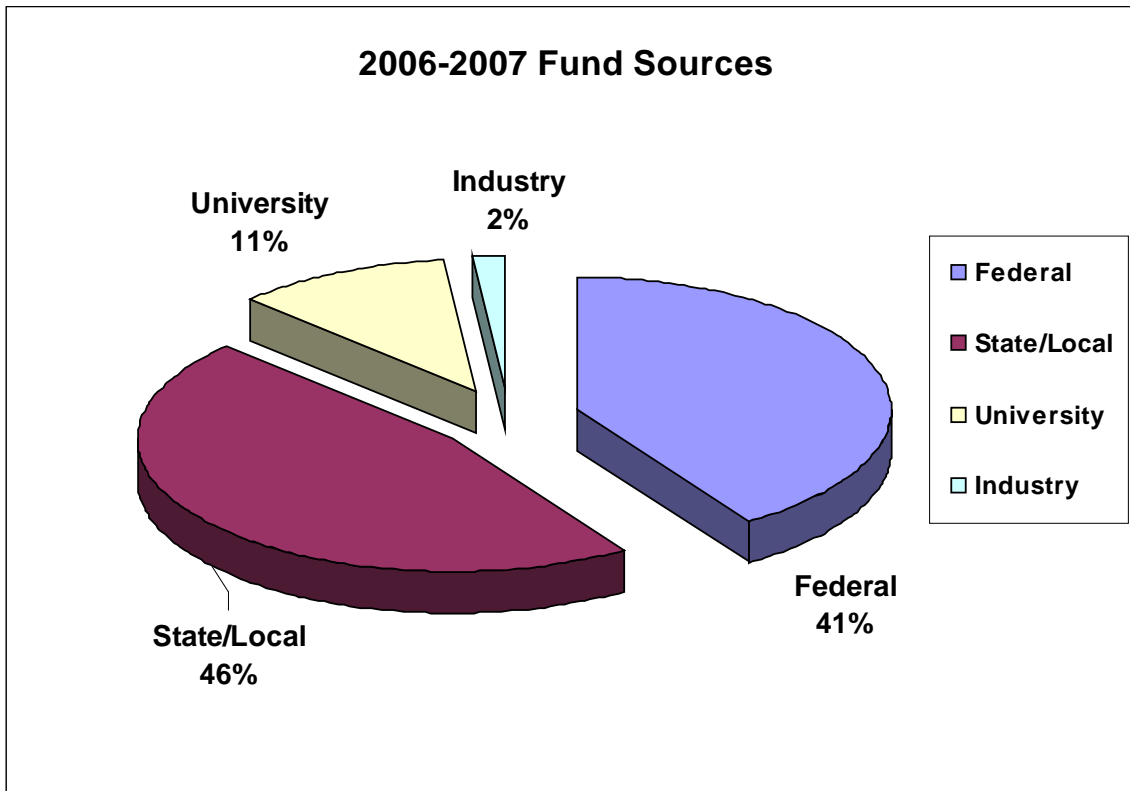
Project reports are distributed through the METRANS website. The Research page of the site provides a convenient mechanism for downloading and viewing reports. All completed reports are available online. All Final Reports completed after May 2003 are available in print form by request.

G. FUNDING SOURCES AND USES

Funding Sources

This section reports on budgeted expenses and income for 2006-07. Figure G.1 below gives fund shares by sources. METRANS received a total of \$2,110,795 from all sources; the USDOT share accounts for 41 percent. The largest share continues to come from state and local sources: the full dollar-for-dollar match from the California Department of Transportation, plus additional contributions from state and local agencies. University matching funds account for 11 percent, with the remainder from private industry and other sources. The ratio of match to USDOT funding for 2006-07 is \$1.69, compared to \$1.41 in 2005-06.

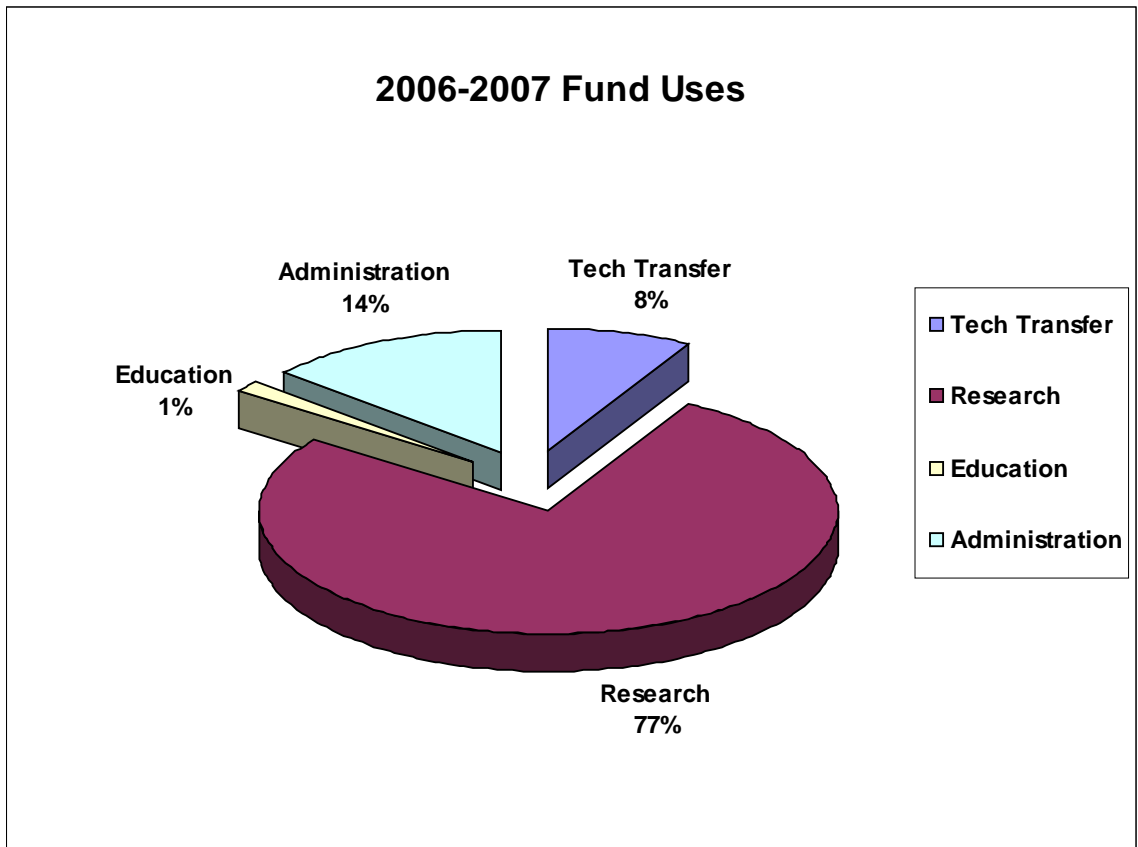
Figure G.1



Funding Uses

Figure G.2 gives METRANS funding by use categories for 2006-07. The chart is based on allocated budget expenditures and includes budgeting of surplus funds from previous years. The total is about \$2.5 million. This year research accounts for 77% of the allocated budget, as all surplus funds were allocated to new research projects. The share of other activities is proportionately smaller, but in actual amount quite consistent with previous years. Education accounts for a small proportion of funds, as METRANS does not have a scholarship program; students are supported on research grants. Roughly $\frac{1}{4}$ of the research budget of a typical project is for student support, not including tuition contributions.

Figure G.2



Description of Funding Sources and Expenses

The 2006-07 fiscal year was the first after the Tier 1 competition. With funding secured for the next three years, we were able to start spending down funds that had been held in reserve in case we were not successful in the competition. These reserve funds were allocated to new research projects, resulting in the single largest amount of research

funding since METRANS was established. No major changes were made in programs or administration.

As is generally the case, the 2006-07 budget submitted to USDOT made assumptions about research projects, as the budget predates the project selection process. In 2005-06, we began an effort to realign the research project cycle by issuing a second RFP in late spring of 2006. The selections for the 2006-07 research round were made in August 2007. This helps to more closely align actual expenses with the approved budget.

The Financial Status Table shows 2006-07 funding status as of June 30, 2007. The first column, “approved budget”, shows the final budget as approved by USDOT based on the total federal share of \$860,000. The second column, “allocated budget”, shows funding as it was allocated after the research selection process and after selection of outreach and training activities. This reflects both a “revised budget” for 2006-07, as well as budgeting of reserve funds to new research projects. The third column, “expenses”, reflects actual expenses as of June 30, 2007. Less than half of the allocated budget had been expended by the end of the fiscal year, reflecting the lag in research project expenditures. The fourth column, “encumbrances”, is the difference between the allocated budget (column 2) and expenses (column 3). The final column “approved budget balance” shows the difference between the original approved budget (column 1) and the allocated budget (column 2).

The total approved budget for 2006-07, including match shares, is \$1,926,692. The allocated budget is \$2,736,935, leaving a negative balance of \$810,244, which reflects reserve funds from previous years. We are in the process of revising and closing out prior year budgets, and will be submitting them as budget revisions for USDOT approval.

The match share includes the Caltrans match and the USC match. Although additional research projects were funded by Caltrans, we are not including these funds in the allocated budget. Additional match sources are listed below the table.

FINANCIAL STATUS

06-07 Funding As of June 30, 2007

Categories	APPROVED BUDGET	ALLOCATED BUDGET	EXPENSE	Encumbrance	APPROVED BUDGET BALANCE
Center Director Salary	193,121	103,319	85,733	17,586	89,802
Faculty Salaries	190,000	349,079	78,529	270,550	(159,079)
Administrative Staff	55,000	78,807	80,420	(1,613)	(23,807)
Other Staff Salaries	0	63,093	32,866	30,227	(63,093)
Student Support (Subject to Fringe)	95,125	157,784	21,695	136,089	(62,659)
Fringe Benefits	170,563	218,699	96,767	121,933	(48,137)
Student Support (Not Subject to Fringe)	136,850	360,885	95,392	265,493	(224,035)
Total Salary & Benefits	840,659	1,331,665	491,402	840,263	(491,007)
Scholarships	50,000	0	0	0	50,000
Permanent Equipment	0	0	0	0	0
Expendable Property and Supplies	153,751	146,654	42,425	104,230	7,097
Domestic Travel	65,000	59,807	8,313	51,494	5,193
Foreign Travel	0	0	0	0	0
Tuition and Student Health Fees	143,488	108,210	16,993	91,217	35,278
Other Direct Costs	86,649	190,680	14,846	175,834	(104,031)
Total Direct Costs	1,339,547	1,837,016	573,978	1,263,038	(497,470)
Indirect Costs	587,145	899,919	319,206	580,712	(312,774)
Total	1,926,692	2,736,935	893,185	1,843,750	(810,244)
Indirect Cost Match	(206,693)	(211,129)	(111,984)	(99,146)	4,436
Total (Less Indirect Cost Match)	1,720,000	2,525,806	781,201	1,744,605	(805,806)

Federal Share	860,000
Matching Share	1,066,692
Total	1,926,692

Matching Sources

USC Director Academic Salary	39,384	(includes associated fringes)
USC Indirect Costs Match	167,308	(includes tuition)
Caltrans	860,000	

Additional match sources, not included in above:

Caltrans – Virtual Weigh and Compliance System research, \$87,950
 Port of Long Beach – MAGL Scholarships, \$10,000
 Port of Long Beach – GLS Scholarship, \$2,500
 Harbor Transportation Club Scholarships, \$7,853
 Long Beach Chamber of Commerce Scholarship, \$1,000

Air Cargo Workshop, \$3,800

FFEI Future of Automobile Conference
 USC Provost, \$30,000
 Clean Air, \$5,000
 Toyota, \$5,000

Town Hall 2007
 Port of Los Angeles, \$10,000
 Port of Long Beach, \$10,000
 ILWU Local 13, \$3,000
 ILWU Local 63, \$3,000
 ILWU Local 94, \$3,000
 Alameda Corridor Transportation Authority, \$1,500
 Long Beach City College, \$2,500
 USC Sea Grant, \$500
 Price Transfer, \$1,500

Total additional match sources:

State/Local	\$120,450
Industry	\$ 33,153
USC	\$ 30,500
Total	\$184,103

APPENDIX

PERFORMANCE INDICATORS

METRANS Reporting Year: 2006-07

Research Selection

Performance Indicator	Number	Amount (Perf. Ind.2)
1. Projects selected for funding	15	\$1,894,376
1.a Basic research projects	2	\$268,624
1.a Advanced research projects	12	\$1,535,776
1.a Applied research projects	1	\$89,976

DEFINITIONS: Basic = fundamental or theoretical research that advances technical, scientific knowledge; Advanced = research that develops innovative solutions or contributes to understanding specific transportation problems; Applied = research that applies existing tools or strategies to specific cases.

Research Performance

Performance Indicator	Number*
3. Transportation reports published	14
4. Papers presented at academic/professional meetings*	21
4.a. Peer-reviewed publications*	71

* 22 faculty reporting

DEFINITIONS: PI 3 = METRANS project reports

Education

Performance Indicator 5:

Cumulative number transportation-related courses added since baseline year:

Total new undergrad transportation-related courses:	0
Total new grad transportation courses:	0

Performance Indicator 6:

Number of students participating in METRANS funded transportation research projects:

	USC	CSULB	Total
Undergraduate	9	15	24
Graduate	81	48	129

Note: Counted as student positions budgeted in ongoing research projects. Data on transportation research not funded by METRANS is not available.

Human Resources

Performance Indicator 7:

Cumulative number of new transportation-related advanced degree programs since baseline:

	USC	CSULB	Total
Masters	0	0	0
PhD*	0	0	0

* California State Universities do not have PhD programs. However, CSULB has a PhD program with Claremont College.

Performance Indicator 8:

Number of students enrolled in transportation-related advanced degree programs:

	USC	CSULB	Total
Masters	408	37	445
PhD	127	0	127

Performance Indicator 9:

Number of transportation-related advanced degrees granted:

	USC	CSULB	Total
Masters	229	12	241
PhD	74	0	74

Performance Indicator 9a:

Number of advanced degrees granted with transportation field concentration:

	USC	CSULB	Total
Masters	14	12	26
PhD	7	0	7

Technology Transfer

10. Tech transfer events	11. Number participants
Global Logistics Specialist Training	102
GLS Training Online	15
Air Cargo Seminar	35
9 th Annual Town Hall Meeting	821
FFEI Conference	80
Total	1053