The Travel Model Improvement Program (TMIP)

TMIP is a multi-year, multi-agency initiative focused on advancing the state-of-the-practice and state-of-the-art in travel modeling and planning analysis. In June 2002, TMIP updated its 5-year strategic plan. The plan represents a continuation of activities that had been the foundation of the program since its inception in 1994, namely; training, technical assistance, information sharing and research. The plan also calls for a significant expansion of program activities beyond travel modeling. The focus widens to "planning analysis" and "travel analysis," encompassing other tools and techniques to support the transportation planning and decision making process, including system-wide safety analysis, geographic information systems, data collection methods, and land use forecasting, among others.

With this expansion of activity and focus, the 5-year plan requires a broader goal structure and an updated program mission.

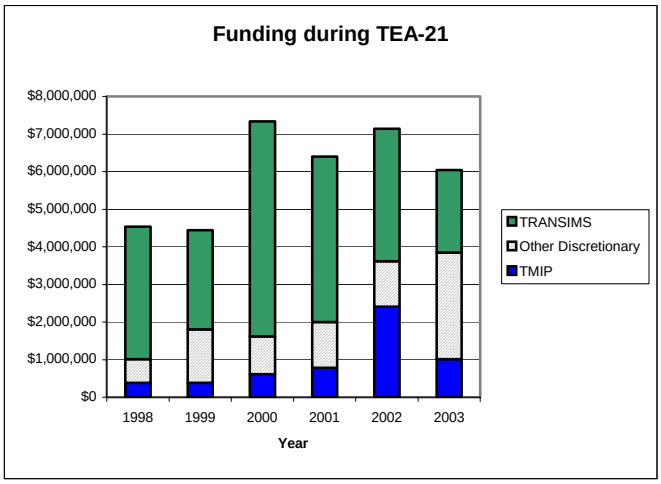
> Mission
>
> TMIP will support and empower planning agencies, through leadership, innovation and support of travel analysis improvements, to better meet current and future mobility, environmental, safety and security goals.

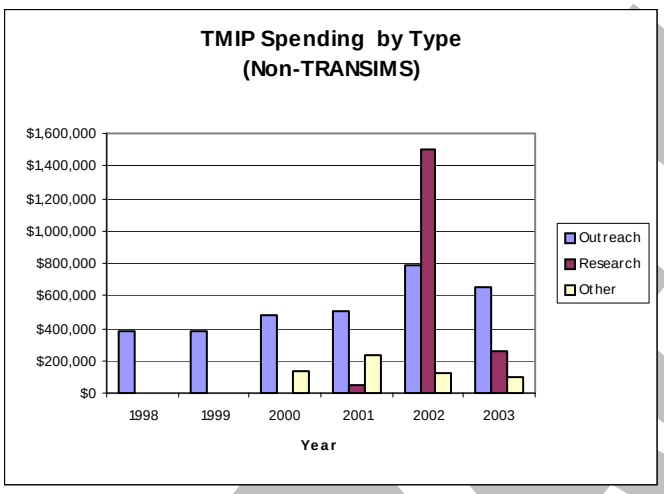
The TMIP goals focus on training and outreach to planning agencies, needs-driven research and development, and travel analysis quality assurance. Specifically stated, the goals are:

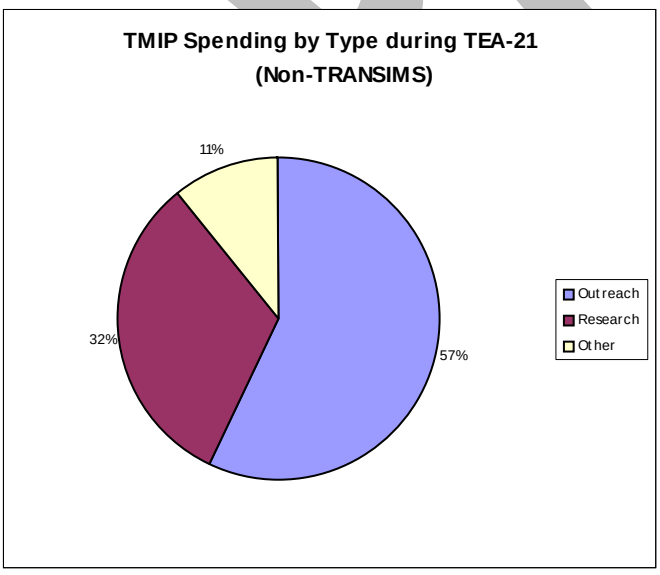
- Training and Outreach:
  To help planning agencies build their institutional capacity to perform travel related technical analyses
- Research and Development
  To develop analytical methods that respond to the needs of planning and environmental decision making processes
- Quality Assurance
  To support mechanisms to ensure the quality of technical analysis used to meet local, state and federal program requirements

Funding Retrospective

Since its inception in 1994, funding for TMIP has been drawn primarily from discretionary research funds allocated to the planning offices within Federal Highway Administration (FHWA) and Federal Transit Administration (FTA). Over the course of the Transportation Equity Act for the 21st Century (TEA-21), FHWA has provided the primary funding for TMIP via allocations of discretionary Research and Technology (R&T) funds, and for the Transportation Analysis and Simulation System (TRANSIMS) via a line item in TEA-21. TEA-21's passage in 1998 drastically changed the funding of FHWA's R&T programs, severely curtailing TMIP activities the first few years of the Act.







Given the initially austere R&T funding environment of TEA-21, TMIP discretionary spending focused on maintaining core outreach services and key product development efforts, such as the Census Transportation Planning Package (CTPP) technical support.

With new changes in the TEA-21 R&T funding provisions and the advent of the Metropolitan Capacity Building Program (now the Transportation Planning Capacity Building program) in 2001, TMIP research spending peaked in FY 2002. The addition of the Metropolitan Capacity Building Program within the same R&T budget that funded TMIP allowed more discretionary funds to be directed to research spending, supporting over $1,000,000 in basic research and $400,000 in applications research for FY 2002.

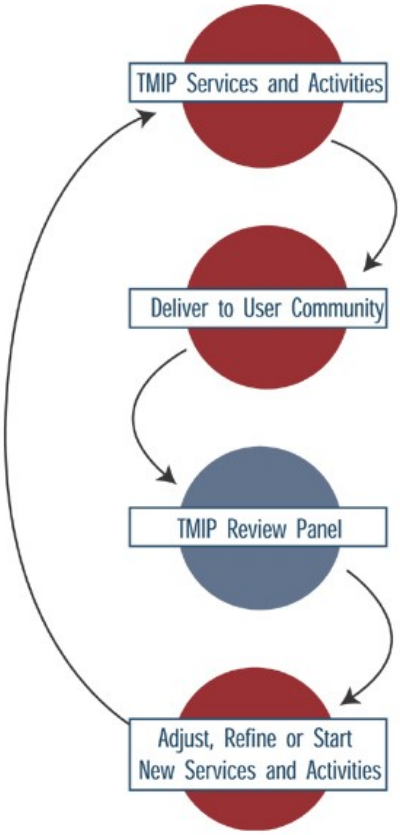
In 2003, spending levels were curtailed by, not only internal reorganization, but also, the Federal reauthorization process, with the focus returning to maintenance of core training and outreach efforts. Other spending related to research and development and quality assurance took place in relatively modest amounts.

During TEA-21 Research and Development and Quality Assurance efforts were funded, however the lion's share went for Training and Outreach. Until Federal Highway's reauthorization is complete, funding uncertainties will prevail.

Program Feedback

TMIP has several mechanisms in place for program feedback. One is the TMIP Review Panel, the panel consists of transportation planning practitioners, managers and researchers from across the country. They represent planning agencies at both state and regional levels, universities, transit operators, environmental organizations and air quality agencies. The Panel supplies TMIP with input, feedback and direction.

Another body is the TRANSIMS Working Group (TWG). TWG is a review team that is tracking the Portland implementation of TRANSIMS discussed below in the Research and Development goal. The TWG consists of practitioners and researchers who have been tracking the Portland TRANSIMS work since the fall of 2002, discussing the issues and opportunities with the Portland-TRANSIMS team, and offering guidance for the continuing work on this project.



Need for Performance Measurement

In the process of updating the TMIP strategic plan, we recognized that a critical component of implementation would be measuring program performance, thus ensuring that the program will be accountable for products and services it promises to deliver. We have written this performance report to detail accomplishments for each program goal and objective.

For this TMIP Performance Report quantitative performance measures are used where possible and appropriate, and qualitative measures and activity summaries are used where more context is required, or as a substitute for quantitative measures in areas where no data are available. In several areas where data was needed but not collected, procedures for gathering necessary data have been identified and implemented, enabling the program to measure progress in coming years.

The following report details the accomplishments of the TMIP program in 2003.

Training and Outreach

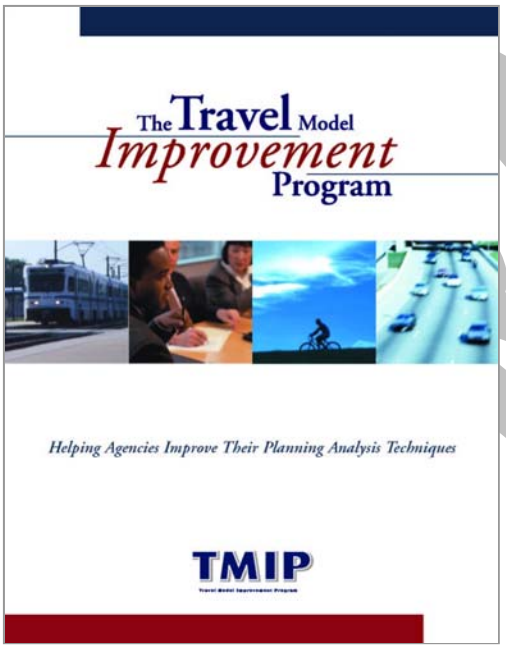
To help planning agencies build their institutional capacity to perform travel related technical analyses

The Travel Model Improvement Program recognizes the shared missions of Federal, State and Local governments in delivering mobility, environmental excellence and a high quality of life to our citizenry. Through the following six objectives, TMIP works to build the institutional capacities of all planning agencies in achieving these outcomes through creating partnerships, conveying practical skills and knowledge throughout the U.S., and promoting the value of travel forecasting.

Objective 1.1 Provide information to transportation decision-makers, non-technical professionals, and other stakeholders on the value, role, useful applications, and limitations of travel forecasting.

Program Document

To inform non-technical transportation stakeholders about TMIP, a full-color 12-page Program Document was conceived, designed, produced and printed for distribution. The document states the program mission and describes the program goals. It also includes testimonials to the value of travel forecasting and having resources dedicated to the promotion of travel forecasting, an overview of the program's feedback mechanism and a description of the program partnerships.



The Program Document has been distributed to each state Department of Transportation (DOT) and to all Metropolitan Planning Organizations (MPOs) in the US. It has been distributed at conferences including the American Planning Association (APA) Annual Conference, The Association of Metropolitan Planning Organizations' (AMPO) annual conference, and Transportation Research Board (TRB) Annual Meeting and Application of Transportation Planning Methods Conference, among others. The document is available through the TMIP clearinghouse, on the Web site and will be distributed at future conferences.

Presenting TMIP

FHWA Planning Office Director Jill Hochman presented "TMIP at Ten" to the American Association of State Highway and Transportation Officials Standing Committee on Planning (AASHTO SCOP) at their 2003 annual meeting in Duck Key, FL. The presentation gave the SCOP a retrospective overview of TMIP and indicated our direction for the future. In March 2003, TMIP Review Panel Chairman Neil Pedersen and panel member Ron Kirby briefed FHWA Associate Administrator Cynthia Burbank on

the program, helping to bring TMIP and the importance of travel analysis activities to the attention of FHWA senior management.

Objective 1.2 Develop and cultivate collaborative partnerships with other organizations concerned with improving travel analysis techniques

Through these activities, TMIP gains a generous amount of perspective and direction from our stakeholder organizations and agencies, along with notable exposure to those organizations' memberships and agencies' staff. The TMIP team seeks opportunities to actively participate in relevant meetings, conferences and symposia on an ongoing basis.

AMPO, TRB, NARC, APA

Over the past year, TMIP has supported the formation and maintenance of the AMPO Travel Modeling Subcommittee. FHWA provided initial funding for the subcommittee in FY 2002, and staff has continued to stay involved in the committee's activities. In addition, in October 2003, TMIP sponsored and participated in the AMPO annual conference. Our participation consisted of staffing a booth and distributing marketing materials to attendees, and participating/presenting during the "Tools for Transportation" panel session, where Fred Ducca presented on the "Travel Forecasting Certification Checklist," described in detail under the Quality Assurance goal in Objective 3.2.

TMIP is at various stages of contract negotiation to staff exhibits at 2004 TRB annual meeting and 2004 APA annual meeting both in Washington DC in January and April respectively. We anticipate financially supporting the National Association of Regional Council's (NARC) annual conference, scheduled to take place in Chicago in June 2004, at a level consistent with our sponsorship of the AMPO conference, and we will submit to present there as well.

Members of TMIP staff are active members of several TRB committees including Transportation Planning Applications, Passenger Travel Demand Forecasting, Transportation and Land Development, as well as several subcommittees.

Portland METRO

TMIP has established a cooperative agreement with Portland METRO for the implementation of TRANSIMS. Under this agreement METRO has acquired a computer system capable of running TRANSIMS, has coded TRANSIMS networks and has begun the development of a travel forecasting model using the TRANSIMS capability. METRO is supported in this effort by the Los Alamos National Laboratory, the AECOM and PB consulting firms, and IBM. METRO will develop the model, perform tests with the model and plans to use it for travel forecasting when complete.

Third Oregon Symposium on Integrating Land Use and Transport Models

TMIP supported the Third Oregon Symposium on Integrating Land Use and Transport Models in July 2002. The conference serves as a forum for travel and land use modelers from around the world to provide feedback on the large research and application effort ongoing as part of the Oregon Model Improvement Program. Funds have already been provided to Oregon for the next symposium in July 2004.

Objective 1.3 Promote organizational structures which support quality travel analysis activities

Peer Review Program

Peer reviews have previously recommended organizational improvements in support of travel modeling, such as establishing a technical committee to oversee planning agency modeling and data collection activities. Our Peer Review Program, described in Objective 1.4, promotes organizational improvements that foster better travel analysis.

Checklist for Travel Forecasting Methods

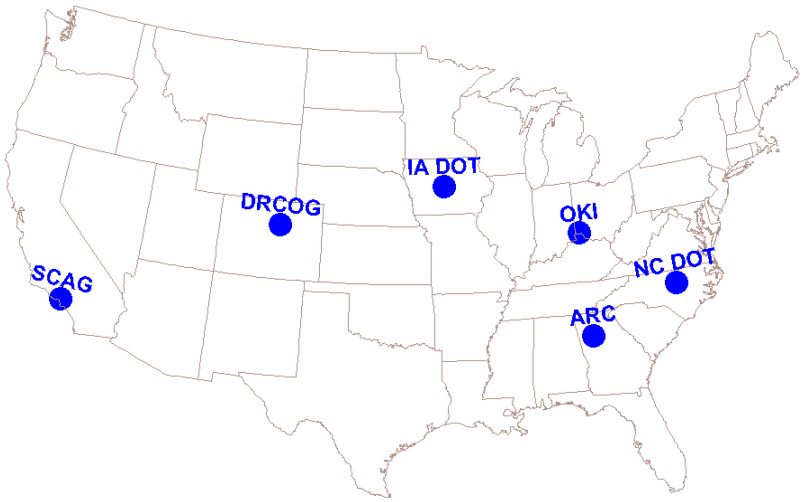
FHWA's Office of Planning has prepared a draft "Checklist for Travel Forecasting Methods" that can be used by FHWA and FTA field planners as part of the triennial certification review of MPOs serving Transportation Management Areas (TMAs). The Checklist looks at the level of organizational support for models, among other things. The Checklist is described in greater detail in the Quality Assurance Goal, under Objective 3.2.

Objective 1.4 Identify and communicate the state of the practice in technical analysis and data collection and associated resource requirements

Peer Review Program

TMIP initiated its Peer Review Program in April 2003. The program provides funding for planning agencies to conduct peer reviews of their technical processes. TMIP has awarded funding to a total of six agencies for peer reviews:

- Ohio-Kentucky-Indiana Regional Council of Governments (OKI);
- Atlanta Regional Commission (ARC);
- Southern California Association of Governments (SCAG);
- North Carolina Department of Transportation (NC DOT);
- Denver Regional Council of Governments (DRCOG); and
- Iowa Department of Transportation (IA DOT).



Three reviews have been conducted, with the rest scheduled between December 2003 and March 2004. The peer review program supports agencies with demonstrated commitment to improving the modeling process. The application specifically states that selection preference will be given to agencies who address planning agency commitment to model improvement (including plans and provisions in work program).

Peer reviews identify strengths and weaknesses in modeling processes and make recommendations for improvements to models where appropriate. Also, summaries of peer review findings give insight to agencies regarding the state of the practice in travel modeling

Characteristics of Urban Travel Models

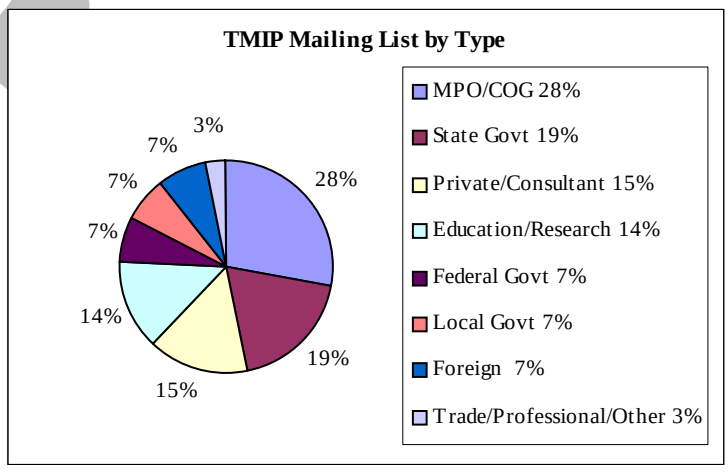
In September 2003, TMIP began work on a new effort to gather information about the state of the practice in travel forecasting, summarize this information and create case studies of planning agencies doing exemplary work. The project, entitled "Characteristics of Urban Travel Models" is anticipated to be continuous, adding new areas to the database when available, and revising current information when needed. This project, while just beginning, promises to be the center of activity for this objective, providing practitioners with information about modeling practice around the country.

Objective 1.5 Deliver and communicate technical products and services to travel model users

Print Media

In addition to the Program Document, TMIP has produced two brochures, one detailing TMIP services, the other describing available training courses in travel analysis. In 2003, the brochures were distributed by mail to all State DOTs and MPOs. The brochures are also distributed at all TMIP and National Highway Institute (NHI) courses and seminars, and wherever TMIP exhibits or presents. TMIP has been working jointly with Transportation Planning Capacity Building Program (TPCB) on various initiatives, and their team distributes our brochure at conferences, courses, and symposia as well.

In 2003 we produced four issues of the TMIP newsletter, *TMIP Connection*. Our newsletter contains the most current information on upcoming courses and conferences of interest to the modeling community. While the newsletter is produced by TMIP, we solicit articles from our readership; members of the modeling community. We are using the newsletter as a first step towards gathering data for the Planning Analysis Case Studies project, we ask the users to write their models up as a case study for publication.



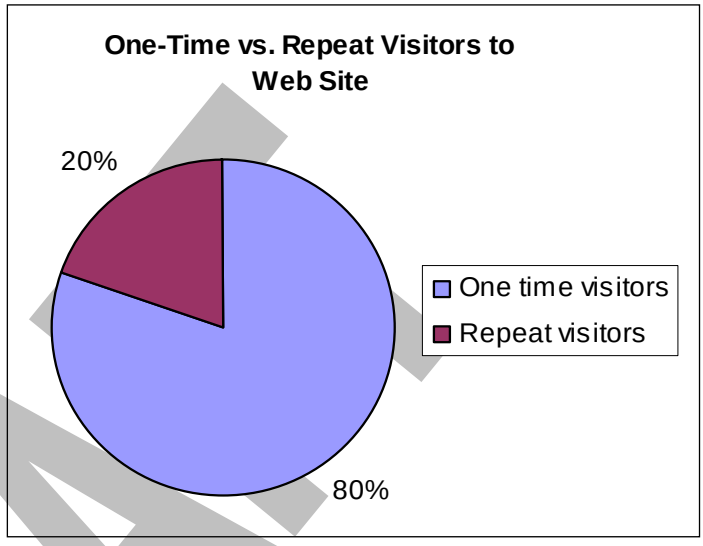
TMIP maintains a mailing list with 1139 names at present. Recipients of TMIP mailings are

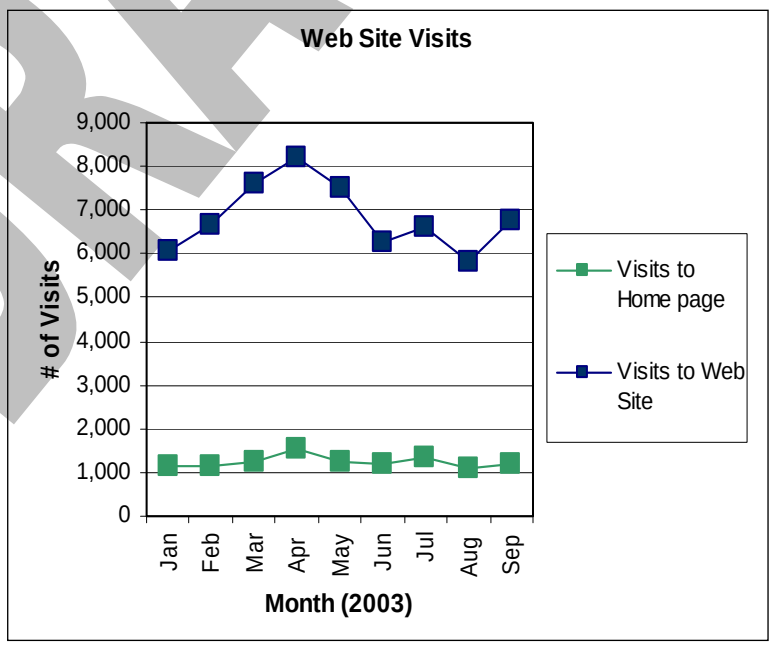
predominantly government workers with regional, state, local, and federal government addressees comprising 61% of the total list.

Electronic Media

TMIP maintains a Web site designed to deliver information to users. The Web site contains the latest information in the TMIP world, highlighting new documents and data, and archiving historical information. From the TMIP Web site, a user can access the latest information on relevant conferences and courses, the national MPO database, the TMIP clearinghouse, information on TRANSIMS, or one may subscribe to the e-mail list.

In 2003 the TMIP Web site received 208,108 page views during 33,000 unique visits. The site saw 6,495 return visits; an average of 226 visits per day with an average visit lasting 11.5 minutes. A spike in traffic during April, 2003 could be attributed to TMIP participation in the APA annual conference From March 29 to April 2, 2003. The most requested pages were the clearinghouse (discussed below) portal, the conferences and courses information page, the TRANSIMS page and the links.





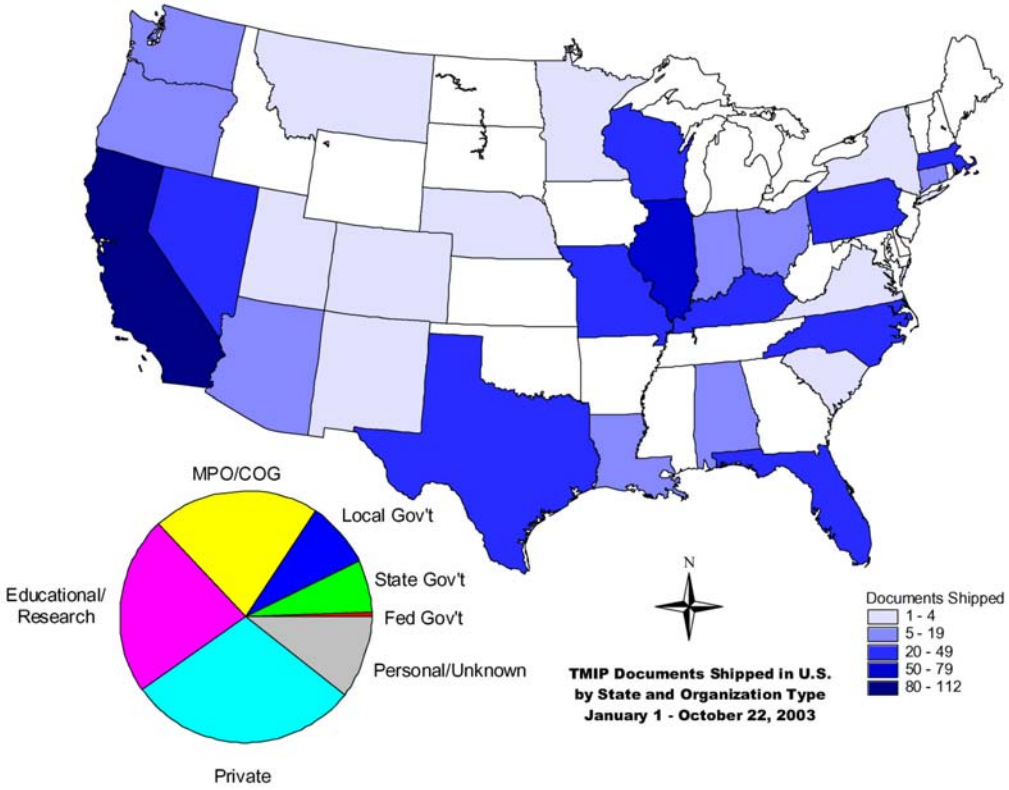
The TMIP e-mail list is a vital tool that connects the modeling community. Subscribed to by nearly 800 members of the profession, it is a forum for modeling issues as the practice evolves. The e-mail list is used by practitioners at all levels to query their peers on technical issues, seek existing research and stay abreast of developments in modeling. The e-mail list had 338 messages posted to it in 2003. In a Texas Transportation Institute poll, using a one to five scale, the list was rated 4 in professional relevance and 3.9 in keeping users informed of developments in the profession and activities of the profession.

Mixed Media

The TMIP clearinghouse is a resource for planning analysis research, case studies and best practices documentation generated both within and outside of the TMIP program. The clearinghouse site also highlights new documents of interest, making it an excellent resource for keeping abreast of developments in the field. There are 208 electronic and printed reports available and shipped free of charge or downloadable from our Web site.

In 2003, TMIP shipped 767 clearinghouse publications to 111 customers. Data are not available for frequency of downloads.

In November 2002, TMIP staff completed work on a briefing book of ongoing TMIP projects. The book, originally intended for the TMIP Review Panel, was recognized as useful to other audiences. A web version was created for general consumption. The project descriptions and periodically updated progress reports help communicate TMIP activities and products more effectively.

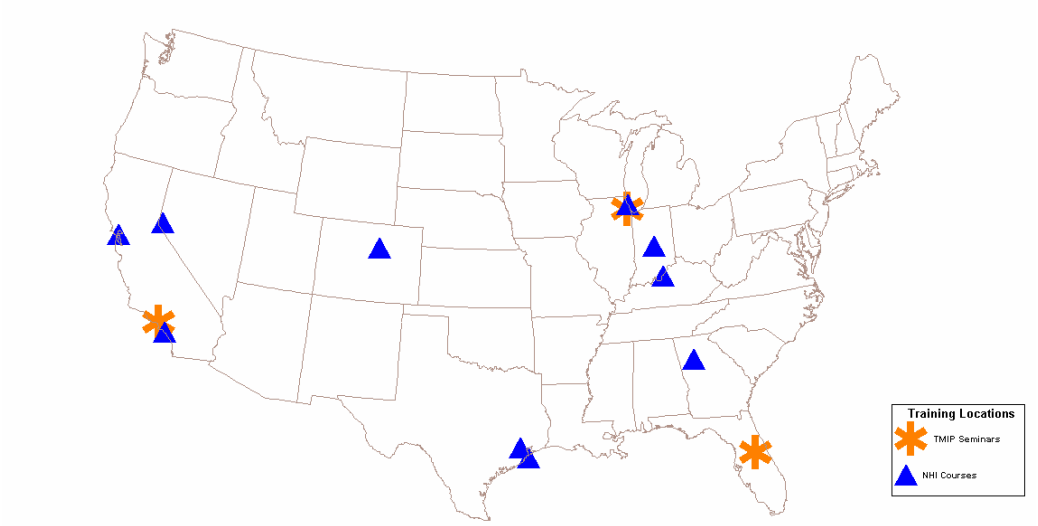


Training

TMIP coordinates, facilitates and delivers the transportation planning analysis training program, which includes four NHI courses and two TMIP seminars. The program represents a "curriculum" of training for technical staff at planning agencies, and addresses a variety of topics relevant to travel and land use forecasters, and air

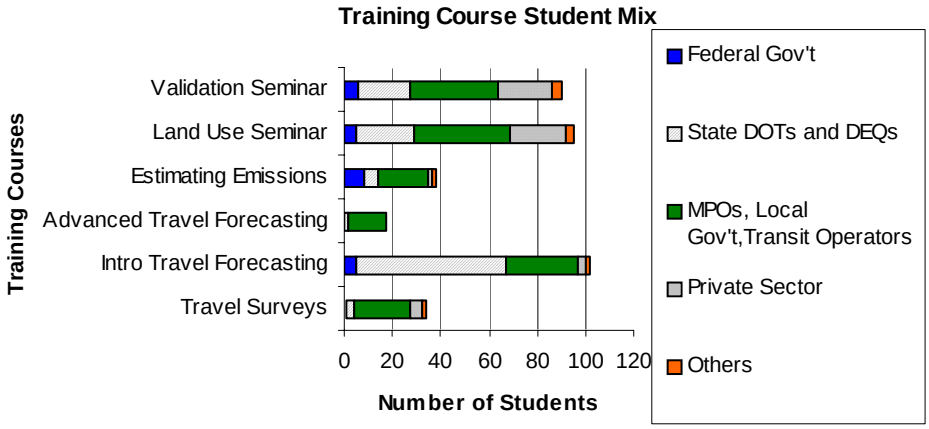
quality analysts. The courses and seminars are delivered across the country, hosted by State DOTs, MPOs, and by the TMIP program itself (discussed below).

The geographic locations of courses and seminars, along with the number of 2003 deliveries and total students per course are as follows:

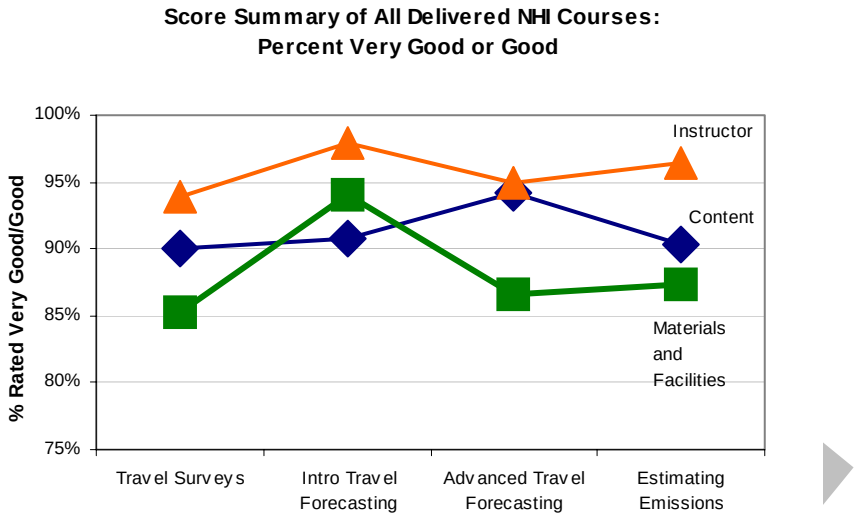


Course or Seminar	*2003 Deliveries*	*2003 Students*
Development and Implementation of Travel Surveys (NHI 151034A)	1	34
Introduction to Urban Travel Demand Forecasting (NHI 152054A)	5	102
Advanced Travel Demand Forecasting (NHI 152060A)	1	17
Estimating Regional Mobile Source Emissions (NHI 152071A)	3	38
Forecasting Land Use Activities (TMIP Seminar)	3	95
Model Validation and Calibration (TMIP Seminar)	3	90

Consistent with past years, the introductory travel forecasting course is the most delivered, due in part to extensive turnover at planning agencies among technical staff. For example, the California DOT (Cal Trans) has set up frequent offerings of the introductory course to train new planning hires on the basics of travel forecasting. Also, the TMIP seminars were in high demand in 2003, in some cases the program had to turn as many students away as attended the seminars. Travel analysis students span the practice with diversity in age, experience and employment.



TMIP Courses and seminars are highly regarded by the users. On a scale of one to five, the Land Use seminars were rated an average of 4.0 for meeting the students needs and 4.1 overall, while the Model Calibration Seminar received 4.3 on both meeting needs and overall. Below is a summary of rankings collected for all courses not including seminars. This information is collected by NHI.



Planning agencies host NHI courses. In some cases, it is difficult for agencies to host or access training. Too few offerings, or a lack of a "critical mass" necessary for planning agencies to justify hosting courses, often means planners must travel too far or at the wrong times to attend training. To help facilitate the delivery of planning analysis training courses, TMIP delivered two open-enrollment NHI courses in 2003, providing all logistics and registration services. In addition, TMIP provided the same services for the six TMIP seminars in 2003.

In 2003, TMIP created a brochure, "Training Courses in Transportation Planning Analysis", which highlights the training program courses and seminars discussed above, in addition to the National Transit Institute course "Multimodal Travel Forecasting". The Course descriptions, costs, and latest dates and sites are included.

In addition to completing the development of the "Estimating Regional Mobile Source Emissions" course, we began work on a new TMIP Seminar, "Activity and Tour-Based Modeling," to be completed in summer of 2004. Through the Virginia Polytechnic Institute we are developing a course on TRANSIMS. We held the first pilot of this course in May of 2003. Attendees were primarily USDOT staff. A second pilot will be held in the early spring of 2004. Additionally, FHWA is working on a freight forecasting course, TMIP staff is involved in that development process.

Through the clearinghouse and in conjunction with NHI, TMIP distributes course materials on demand. Lately, requests have been filled for the Northwestern University Library, University of Southern California, AMTRAK, Iowa State University, University of Wisconsin, Tennessee University at Knoxville – Center for Transportation Research, and Floyd County, GA.

Peer Exchange

In October 2002, TMIP sponsored a peer exchange titled "The Use of Expert Panels in Developing Land Use Forecasts." The exchange included planners from various agencies across the country discussing their experiences with expert panels. Topics included useful techniques, potential pitfalls and lessons learned. The results have been synthesized in a report and posted on the TMIP Web site.

Objective 1.6 Promote planning technical analysis as a profession

The program has had limited activity on this objective over the past year.

Partnerships with Academic Institutions

TMIP partnered with Virginia Polytechnic University to develop the "Introduction to TRANSIMS" course. This effort helped support 10 graduate students; five students have graduated completing their Master's theses on TRANSIMS. Currently three Ph.D. dissertations and two Master's theses are using TRANSIMS as a key element. Publications related to TRANSIMS include three journal articles and several conference presentations. Two faculty members are directly involved with the TRANSIMS effort. To date 48 graduate students have taken the TRANSIMS course through the University. In addition, an estimated 250 graduate and undergraduate students have been introduced to TRANSIMS through campus presentations, including those provided by TMIP staff.

The TELUS project, to develop an information database for managing Statewide Transportation Improvement Programs (STIP) and Transportation Improvement Programs (TIP), has supported three graduate students per year since 1998 at the New Jersey Institute of Technology. In addition, TELUS also provides for the development of a user-friendly land use model based on DRAM and EMPAL. The land use model development has provided support to two Masters Degree and five Ph.D. students.

TMIP has sponsored work with the University of Tennessee on transportation planning safety analysis. This work led to the publishing of several research papers, partial funding of 3 graduate students, and helped the University secure additional funding to further work on crash prediction models.

TMIP has generated a toolbox of training materials and identified the first round recipients as the University Transportation Centers and members of Association of College Schools of Planning. The materials are accumulated at our clearinghouse and X packs have gone to the identified recipients.

Research and Development

To develop analytical methods that respond to the needs of planning and environmental decision making processes

The Travel Model Improvement Program conducts research on issues important to both the federal-aid process and the transportation planning practice. These research efforts include projects that address issues of immediate interest as well as long-term, high-risk projects. From its inception, TMIP has worked towards practical products with the principle that research results that get used in practice are the ones that really matter.

Objective 2.1 Identify current and emerging analytical needs

Research Needs Assessment

Ten years ago, two documents - *Short Term Model Improvements* and *TRANSIMS Model Design Criteria as Derived from Federal Legislation* - provided TMIP's initial research focus. Today, the issues outlined in these documents have been either addressed through research efforts or supplanted by more current policy and technical issues. The new Research Needs Assessment project will document current and emerging planning analysis needs, identify existing research gaps, and recommend research actions to address these gaps. In addition, the project will develop tools to support program planning and management.

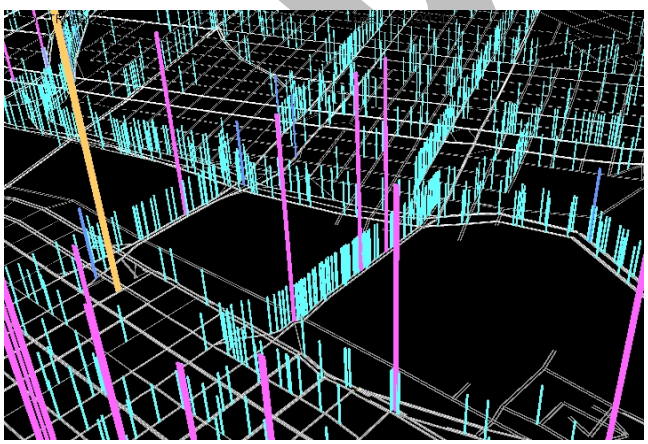
This project is moving out of the planning stage and the initial need assessment task is underway. Outreach for comment on the initial assessment, identification of priority issues, and a review of related research will commence in the spring of 2004.

Objective 2.2 Develop tools, techniques, procedures to meet analytical needs

As the Research Needs Assessment is just underway, analytical needs for this performance report are defined at the project level. A program-level needs analysis is anticipated for future performance reports.

TRANSIMS Core Technology

Recognizing the shortcomings of current travel forecasting methods, the TRANSIMS core technology is a set of modeling tools designed to advance the state of travel demand modeling and respond to changing transportation and air quality analytic requirements. Incorporating models of individual travelers and choices with large scale simulation technologies, TRANSIMS breaks ground for the next-generation travel forecasting capability.



Example of TRANSIMS Visualizer Output

Research and development work on the core technology software was completed this year while work on application guidance continues. In addition, methods developed for TRANSIMS, most notably the

population synthesizer, are being applied in practice by planning agencies. Currently unresolved issues include: software maintenance; improvements; and long-term licensing and intellectual property rights.

TRANSIMS Portland, OR Case Study and Application Guidance

TRANSIMS provides a flexible framework for modeling transportation systems and travelers. It represents a radical departure from modeling approaches currently in practice. Practical implementation guidance needs to be developed and demonstrated to support further deployment of the technology.

FHWA has partnered with Portland METRO to apply TRANSIMS to typical scenarios in a public agency setting. This effort is funded by FHWA and supported by Los Alamos National Laboratories, PBConsult, AECOM and IBM. To date, METRO provided staff, procured the computing resources, developed data resources, and has begun model development.

Two products are expected from this effort. First, guidance will be developed for applying the TRANSIMS router and microsimulator with data from current practice models to simulate regional networks. Second, guidance will be developed for applying the entire TRANSIMS framework to model travel demand and simulate regional transport networks.

TRANSIMS and Estimating Mobile Source Emissions

The regulation of emissions analysis and the level of effort involved in constructing an all streets network pose two challenges for MPOs implementing TRANSIMS. To address these challenges, we have initiated a project to lay the groundwork for developing guidance for the application of TRANSIMS in conjunction with existing travel forecasting networks and mobile source emissions models.

Aggregating simulation results is the primary issue addressed by this effort. TRANSIMS produces second by second vehicle speeds in 30 meter road segments. For emissions analyses in TRANSIMS these are grouped into 15 minute increments. The most disaggregate level of analysis available from traditional models, using Mobile6, is hourly speeds on a link basis. A comparison will be made using varying aggregations of TRANSIMS results as input to Mobile6. There will also be a comparison of the results with the TRANSIMS emissions model and a sensitivity test will be done on the impact of changes in traffic operations on emissions.

The final products of this project will be:

- A methodology to use aggregate networks with TRANSIMS microsimulation procedures, and
- A methodology to reconcile the TRANSIMS emissions module with Mobile6 to examine the impact of traffic operations changes on emissions.

TRANSIMS Commercialization

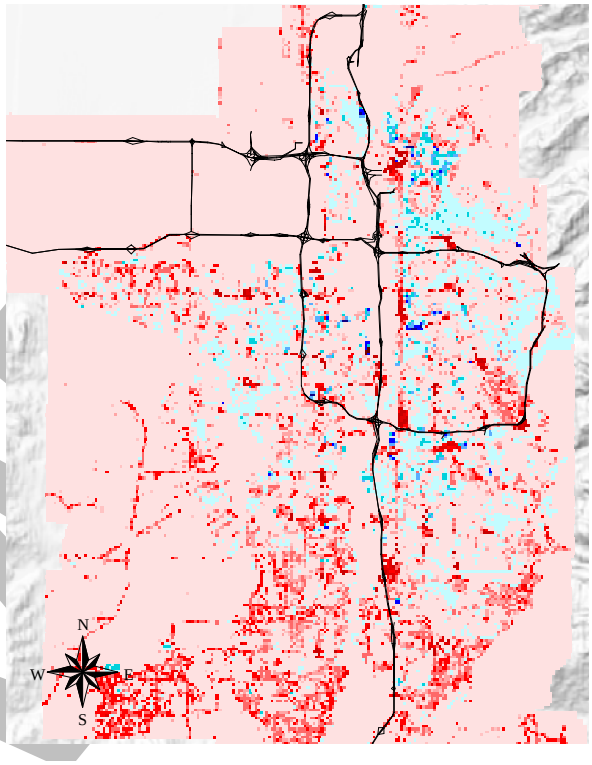
The TRANSIMS commercialization effort is intended to provide a support framework for transportation applications of the TRANSIMS core technology. The commercialization effort is responsible for developing a user-friendly software package based on the core technology. Drawing on experiences in developing and deploying similar technologies (UTMS, CORSIM, et al), a market incubation approach is expected

to provide support for early deployment and facilitate transitioning to broader market support of the technology.

Currently, holders of commercial software licenses include USDOT, Portland METRO, AECOM/PBConsult, Virginia Polytechnic University, and the University of Idaho. It is anticipated that the number of licensees will remain small until application guidance materials and training resources become available. Also, in response to the complexity of the computing resources currently required to apply TRANSIMS to large problems, a remote hosting capability is being tested.

UrbanSim

UrbanSim is a new integrated transportation and land use model developed by Paul Waddell at the University of Washington. Although it has been tested in a few urban areas, the Salt Lake City MPO, the Wasatch Front Regional Council (WFRC), has been working with the model for several years. As a result of legal action against WFRC and Utah DOT, WFRC has accelerated model testing for their area, with the possibility of using the model to support planning functions if UrbanSim is found to be suitable for WFRC. TMIP has supported this innovative application effort financially, and is also pursuing a set of comprehensive documentation of the testing and application process so other areas can learn from WFRC's experiences.



Example of UrbanSim Output for Salt Lake City, UT

Transportation Economic and Land Use System (TELUS)

The TELUS project has developed a data base management system to assist state DOTs and MPOs in developing their Statewide Transportation Improvement Programs (STIP) and Transportation Improvement Programs (TIP). As part of the TELUS project we have developed T E Land Use M (TELUM), a user-friendly land use model.

TELUM is based on the DRAM and EMPAL models developed at the University of Pennsylvania. TELUM uses a series of input screens to direct the analyst on data preparation, calibration and application. Among other items, the screens contain guidance on the number of zones needed, the statistical validity of calibration parameters and the reasonableness of forecasts.

The first version of the software has been completed. It is now in pre-release testing. We anticipate release to Beta testers in January of 2004.

Objective 2.3 Conduct basic research to meet analytical needs

Accounting for Commercial Vehicles in Urban Transportation Models

A significant number of trips in a metropolitan area are made by commercial vehicles, including service and package delivery, taxi, emergency service, etc., which are not fully addressed by household-based travel models. Accounting for Commercial Vehicles in Urban Transportation Models is a basic research study to identify and classify commercial vehicle travel, to determine the magnitude that commercial vehicles have on traffic congestion, emissions and other transportation impacts, and to develop efficient methods for measuring commercial vehicle impacts in travel demand forecasts.

This project is nearing completion. The following deliverables have been submitted:

- A literature review of past research on commercial vehicles was completed in January 2003, and a final report was posted on the TMIP website.
- A draft report on the magnitude and distribution of various commercial vehicle categories as percentages of total regional highway traffic was delivered in July 2003, and is currently being revised.

The American Community Survey Testing Project

The American Community Survey (ACS) testing project is evaluating transportation planning issues and opportunities related to replacing the decennial census "point-in-time" data with data collected using a continuous sample.

Two small research projects using microdata from the 1999-2001 ACS were conducted at the Census Bureau Research Data Centers (RDC). One, The Seasonality project, examines whether data collected over twelve months, rather than at a single point in time will provide opportunities or difficulties for transportation planning. The other, The Workplace Geocoding project, compares the quality of the Census Bureau's workplace coding to geocoding using locally updated files.

Both projects are nearly complete, pending review by the Census Bureau's Disclosure Review Board.

A research project at the Census Bureau offices in Suitland, MD was established that analyzes three years of ACS test data for selected household and journey-to-work variables. Tract level analyses for several test counties, where the total population exceeds 400,000 are included. This project is nearing completion. A county-level report was prepared and delivered. A tract-level report is due.

Forecasting Person Travel by Time of Day

How congestion effects, such as peak spreading, impact travelers and their choices for timing trips is an unresolved analysis issue for travel modelers. Begun in 2002, TMIP is sponsoring a time of day analysis research effort to evaluate these travel behaviors related to peak spreading and develop methods and forecasting guidance.

This project has completed an assessment of current models and data and is developing methods for demonstration in a case study setting.

Quality Assurance

To support mechanisms to ensure the quality of technical analysis used to meet local, state and federal program requirements

TMIP is committed to improving the quality of travel analysis techniques as applied at planning agencies. Our approach to this multi-faceted issue addresses data quality, model validation and calibration, model documentation quality, peer reviews of analytic processes, and legal challenges of the modeling process. Quality Assurance represents a new goal for TMIP, requiring us to develop new activities, such as conducting modeling reviews as part of the certification review process, encouraging agencies to conduct peer reviews of their modeling processes, and empowering federal field staff with regards to travel modeling issues.

Objective 3.1 Compile and clarify federal requirements related to technical analysis

A general problem faced by all transportation planning agencies is that no minimum standard or documented state-of-the-practice exists for developing or applying travel models. A Travel Model Guidelines or state-of-the-practice document could provide a strong defense against legal challenges and would encourage and guide local transportation agencies to develop improved travel forecasting procedures.

TMIP staff have has raised the issue of need for such a document with FHWA, FTA and OST management. A number of options for proceeding have been identified but as of this date no decisions have been made.

Estimating Regional Mobile Source Emissions Course

As mentioned earlier, TMIP staff initiated and managed the development of a new NHI course, "Estimating Regional Mobile Source Emissions," intended to help agencies understand the technical requirements in developing emission inventories, particularly in new non-attainment areas and small and medium sized planning agencies. The course was developed with the participation and cooperation of EPA, and has been identified by FHWA's Office of Natural and Human Environment as a key component of their air quality planning training program. TMIP is also coordinating with Office of Natural and Human Environment to compile methods for estimating emissions in small urban and rural areas.

Objective 3.2 Provide support for effective federal technical reviews

TMIP staff has created and delivered several workshops on travel demand and land use forecasting, induced demand, and air quality modeling requirements for FHWA, FTA and EPA field staff. These workshops are intended to empower those staff to make more informed decisions regarding modeling issues in the context of conformity, the transportation planning process, and environmental documentation.

Checklist for Travel Forecasting Methods

The "Checklist for Travel Forecasting Methods" mentioned earlier under the Training and Outreach Goal, can be used by FHWA and FTA field planners as part of the triennial certification review of MPOs serving TMAs. The checklist is intended to both raise awareness of the importance of travel models in the planning process among FHWA/FTA field staff and MPO management, and to help identify those MPOs who

may need additional technical assistance with respect to their travel forecasting methods. The checklist focuses on three key indicators: modeling applications, organizational support for travel models, and model documentation. In those cases where responses to the checklist questions raise concerns about the adequacy of an MPO's forecasting methods, the field planners may recommend a peer review or more in-depth evaluation by FHWA/FTA travel model experts. The checklist is currently under review and we expect to begin using it in the spring of 2004.

In addition to the checklist, DOT will work with up to six TMAs, identified during the certification reviews as needing improvement, to upgrade their modeling processes.

Technical Assistance

The TMIP team provides various types of technical assistance to MPOs and State DOTs on travel modeling issues, such as identifying peer agencies using similar modeling software or addressing similar applications, participating on peer review teams, evaluating the merits of modeling issues raised in legal suits, and providing informal recommendations on current modeling practice.

Objective 3.3 Provide an incentives program to encourage and showcase exemplary travel forecasting methods, processes, and professionals in the U.S

The program has had limited activity on this objective over the past year. As a first step, TMIP has begun showcasing analysis methods by highlighting certain agencies in the quarterly "TMIP Connection" newsletter, such as the Sacramento Association of Governments (SACOG) in April 2003, and by initiating a "Planning Analysis Case Studies" page on the website, with each case study highlighting the model development and/or application at a specific planning agency. The first two highlighted are the New York Metropolitan Transportation Council (NYMTC) and the Oregon DOT.


April 2003

TMIP Connection

The Travel Model Improvement Program Newsletter

Developing Land Use and Transportation Models at the Sacramento Area Council of Governments

Gordon R. Garry, *Manager of Research and Analysis, SACOG*

The Sacramento Area Council of Governments (SACOG) is working to improve analysis capabilities in order to meet Metropolitan Planning (MPO) responsibilities

Short-term (2 year) and long (4-5 years) staged strate developed th improve

Conclusion

Slightly more than one year ago, TMIP conducted a strategic review, restructuring and update of the TMIP strategic plan. We conducted this effort in response to panel and other comments that the plan needed to increase emphasis on deployment of research results and the quality of model application. The updated plan continued the research activities that have been the foundation of TMIP, strengthened the Training and Outreach goals and added the Goal of Quality Assurance.

Since the restructuring of the strategic plan, TMIP has taken major steps to translate the goals into action. For Training and Outreach, TMIP has improved the quality of information sent to decision makers, developed collaborative partnerships, supported peer reviews and enhanced our delivery of technical products and services. With respect to Research, TMIP has continued the application of TRANSIMS in Portland, Oregon and has continued with research projects to address travel by time of day and freight and commercial services. TMIP has begun a program to improve quality assurance in the modeling process, including training, to understand technical requirements, and peer reviews to evaluate the quality of models. We have also initiated discussions with DOT management on methods to provide guidelines on the modeling process.

Two objectives of the restructured program have not been fully addressed; "Promote planning technical analysis as a profession," Objective 1.6 under the Training and Outreach goal, and "Provide an incentives program to encourage and showcase exemplary travel forecasting methods and processes," Objective 3.3 under the Quality Assurance goal. Objective 1.6 requires additional funding to Universities to train students and must wait until future funding for TMIP is resolved in FHWA's reauthorization process. For objective 3.3 we have begun to highlight case studies and intend to more fully address an incentives program in the future.

TMIP has made significant progress in implementing the restructured program and looks forward to continued progress in the future.