



ASSOCIATION OF
METROPOLITAN
PLANNING
ORGANIZATIONS

Transportation Planning Capacity Building Program Planning for a Better Tomorrow: Assisting transportation officials and staff to resolve increasingly complex issues related to transportation needs in their communities.

The Transportation Planning Capacity Building (TPCB) Program is about increasing your knowledge and understanding of transportation planning and how it relates to communities large and small. It is not about building bigger highways to carry more cars. Look at our logo—we're about more than highways. We're about people, the places we all live, and the variety of means used to move about and between these places—all the things you consider in planning for your community.



Transportation
Planning Capacity
Building Program logo

Specifically, the Transportation Planning Capacity Building (TPCB) Program is a collaborative effort of the Federal Transit Administration (FTA) and the Federal Highway Administration (FHWA) with various public and private organizations including AMPO. The Program was created to help State, local, regional, and tribal governments, transit operators, and community leaders—you find ways to resolve the complex issues you face daily when addressing transportation needs in your communities. It's true, we are from the Federal government and we really are here to help.

On a practical level, the TPCB Program provides publications, resource materials, training, workshops, and other technical assistance to help you create plans and programs that respond to the needs of your local transportation system and its users. We are a central transportation planning information and referral resource. We generate our own publications and materials and share yours. We want to learn from you – your needs as well as lessons you've learned that we can share with others.

Our Program goals are multi-faceted. We want to provide you the background information needed to enhance your understanding of the transportation planning process, your role within the process, and its relationship to community and societal goals. We also want to help you strengthen your skills in consensus building, planning policy guidance, and technical job elements through training and peer-to-peer programs.

TPCB Program Priorities

- Easy to find answers to transportation planning questions
- Responsive to practitioner needs
- Flexible approaches
- Peer-to-peer networking
- Commitment to continued learning

To accomplish our goals, TPCB Program staff gather and share examples of effective transportation planning practices, create training programs and support peer-to-peer information exchanges, and provide information, training, and technical assistance to meet your needs.

The TPCB staff promote "SMaRT Transportation Planning" for the Statewide, Metropolitan, Rural and small communities, and Tribal transportation planning settings. We hold stakeholder outreach meetings to learn from our partners the needs of their constituents. We ask for and act upon feedback provided to us to ensure that you get the information you need.

Technical Assistance & Resources

The TPCB Program provides transportation planning information and resources in a number of cross-cutting topic areas. Beginning with existing planning resources previously available through the FHWA and FTA we have expanded to include a more diverse resource base for you. Part of our commitment is to provide information through a variety of media to reach different professional and decision-making audiences. These media include print and electronic media as well as materials that support dialogue opportunities at TPCB Program and partner organization events.

Through the National Highway Institute (NHI - www.nhi.fhwa.dot.gov/default.asp) and National Transit Institute (NTI - www.ntionline.com), training courses and workshops are being revised or created to meet your changing needs. Some of the course areas being added to enhance transportation planning are: Metropolitan Transportation Planning, Public Involvement, Linking Planning and NEPA, Integrating Freight into the Transportation Planning Process, and Statewide Planning. These courses provide formal two to four day training sessions on various planning topics. These instructor-led, classroom-based courses provide the fundamentals for successful transportation planning.

Forthcoming resource materials include reports on land use and transportation planning, financial planning, transit supportive land use development, operations and planning support, and land use and public health, among others. These materials provide the results of applied research or showcase effective practices from across the nation. On hand are case studies for new MPOs, public involvement evaluation, and flexible funding for transit operators.

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Linking Travel Modeling and
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DeLania Hardy Named New
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Membership Section

Member Spotlight

The TPCB website www.planning.dot.gov is the 24-hour face of the program. Through revisions made to serve the needs of our



stakeholders, we are increasing available resources and subjects. Site visitors will find brief introductions to the four main planning settings which are enhanced by information that categorized into subject areas, resources, publications, and programs specific to each planning setting. The site goes even further by providing information and links to resources of interest for transportation planning practitioners. Resource areas include:

- Funding Issues,
- Communities
- Community Design,
- Community Impact Assessment,
- Job Access,
- Public Involvement,
- Title VI/Environmental Justice,
- Natural and Cultural Resources,
- Operations, ITS, Planning Processes,
- Land Use and Transportation, Smart Growth, and
- GIS and Modeling Tools.

The list continues to grow and expand as our stakeholders and partners share their needs. What do you want to learn about? Let us know!

Special Topic Resource Areas

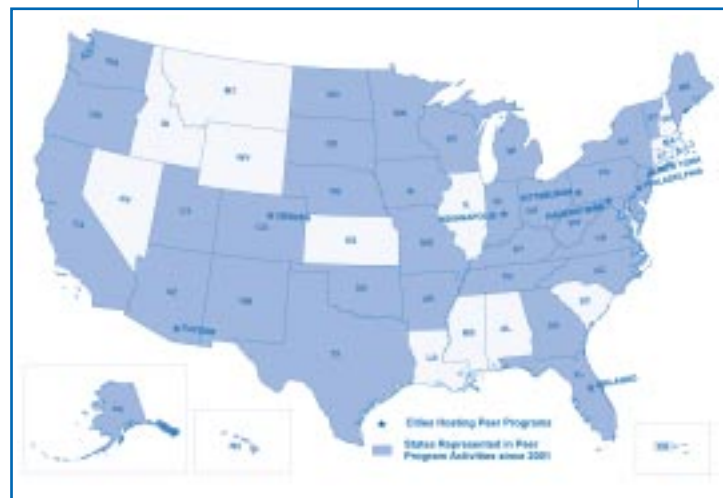
- Asset Management
- Cost Estimation
- CSS/CSD
- Economic Development
- Financial Planning
- Freight
- Human & Natural Environment
- Institutional Roles
- Intermodal
- Land Use
- Travel Demand Forecasting
- New MPOs/ Boundaries
- Operations
- Performance Measures
- Programming Process
- Public Involvement
- Safety
- Security
- Smart Growth
- State Consultation
- Systems Planning

We are using innovative means to reach out to enhance your knowledge. One of the newer venues is the Talking Freight Series (www.fhwa.dot.gov/freightplanning/index.htm). This series is a partnership between the FHWA Office of Freight Management and Operations and Office of Planning in cooperation with other public and private organizations. The Talking Freight seminars provide expert presenters on freight planning topics and are available through the internet and telephone. They provide a convenient and no-cost way to broaden your knowledge about freight issues. The goal is to provide you new skills and resources about this topic. Feel free to enroll for as many seminars as you like. If you missed any, they are archived and available through the above web site.

TPCB Peer Program

The Peer Program provides a forum for you to share ideas and noteworthy practices that will strengthen local transportation planning practices. The Peer Program activities bring you together with colleagues from other MPOs throughout the country, academics and other experts to focus on a particular planning topic. These exchanges are documented and posted on the TPCB web site so others with similar concerns may benefit. The Peer Program was created as an integral part of the TPCB Program. It is designed to meet the specific needs of a region, State, or locality so transportation planners can build relationships and reinforce inter-agency cooperation.

Peer Exchanges are designed to respond to your expressed needs. Exchanges involve a small-group dis-



ussion about a specific issue. Generally, you contact the FHWA Division or FTA Region office (<http://www.planning.dot.gov/Contacts.asp>) who represents you to request technical assistance on an institutional or policy planning issue. You select one or more peers based on their good practices in the area about you want to learn more. A one-to-one site visit takes place focusing on the identified issue or problem at a location of mutual agreement.

Peer Roundtables are designed as a one-day program where recognized national experts and practitioners are invited to participate in an expert peer panel or "roundtable" discussion to share solution-based and noteworthy practices in topic areas of transportation planning. This kind of activity could take place at national workshops, conferences, and forums and will typically be part of an overall program agenda where the participants will gain knowledge from peers as well as invited experts. A Peer Roundtable was held at the last AMPO annual conference.

Peer Workshops are designed as an instructional learning tool to help you learn how to apply specific planning tools based upon other peer experiences. Here, peer experts instruct each other in a workshop format on specific transportation planning techniques and tools. These events take place at national workshops, symposia, conferences, or as a stand-alone activity.

In 2003, we conducted peer exchanges, roundtables, and workshops on the following topics for State DOTs, MPOs, RPOs, and national partner organizations:

- Financial planning, management and operations,
- Land use and transportation models,
- Public transportation in the planning process,
- Rural transportation planning,
- Context sensitive solutions/context sensitive design in large central cities,
- Transportation and land use,
- Freight in the planning process,
- Community impact assessment,
- MPO regional coordination,
- Performance measurement, and
- Safety and security in the planning process.

What are you interested in learning about? To apply, talk with staff planners at your FHWA Division and FTA Regional Office. Applications and instructions are located on the Peer Program page at www.planning.dot.gov/peer.asp.

Outreach

We are promoting the TPCB Program by participating at national and regional meetings of organizations such as AMPO, AASHTO (American Association of State Highway Transportation Officials), APTA (American Public Transportation Association), TRB (Transportation Research Board), and NACo (National Association of Counties). You may have also seen us at conferences such as Rail-Volution and New Partners for Smart Growth. The list is expanding so we can better share the wealth of knowledge that's available in the transportation planning arena. Look for the TPCB tradeshow display at your next conference! There you will find a variety of publications and resource materials. Information is available on the web site (<http://www.planning.dot.gov/Events.asp>) for upcoming activities and events in which TPCB staff are participating, or which may be of interest to you. While you're there, check out the growing list of related sites (http://www.planning.dot.gov/Related_Sites.asp) including links to government agencies, academic institutions, non-government organizations, transportation, data resources, and legislative and regulatory resources. Do you know a web resource we should list? Let us know!

The TPCB Program – What's Next?

The TPCB Program will continue to expand both in the range of planning topics for which assistance is provided and in the planning partners assisted. Technical Assistance, especially the Peer Programs, remains a high

priority and one of the most valuable aspects of the program.

Topic areas for Peer Program are driven by the requests we receive from you. We are supporting innovative applied research in a wide variety of transportation planning areas, and will continue to identify flexible ways to reach our audience with the products and services you need. In addition to meeting with stakeholders throughout the year to understand their needs and refine the list of key subject areas, we will provide support at regional and national conferences and participate in panels, round-tables, and other sessions to provide information on the transportation planning process.

Training opportunities will increase significantly in 2004. Several new and revised courses under development will become available for delivery, including: Financial Planning in Transportation, Integrating Freight in the Transportation Planning Process, Freight Forecasting, Statewide Planning, Linking Planning and NEPA, and Safety-Conscious Planning. Other new courses will begin development in 2004. These courses will complement the existing transportation planning courses, such as Metropolitan Transportation Planning, Public Involvement, and Fundamentals of Environmental Justice.

We are identifying opportunities to work with State Departments of Transportation, Metropolitan Planning



Organizations, public transportation providers, tribal governments, and you to identify your key areas of interest. Let us know what you need!

The TPCB Program continues to grow and develop based on the needs of our customers and the expanding nature of issues addressed in transportation planning. In 2004 we are striving to move the planning community ever closer to the vision of the TPCB Program—effective transportation planning in statewide, metropolitan, rural and small community, and tribal settings. U.S. Department of Transportation

Federal Highway Administration -
Federal Transit Administration
For more information, contact:
www.planning.dot.gov
or
Rob Ritter at 202.493.2139
(robert.ritter@fhwa.dot.gov)
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(charles.goodman@fta.dot.gov).

Linking Travel Modeling and Land Use: AMPO's Travel Modeling Subcommittee Meets to Share Expertise

By Rich Denbow, Denbow Associates

"MPOs are the right forum for this type of discussion." Those were the opening words from Michael Morris, Transportation Director for the North Central Texas Council of Governments (NCTCOG) in Arlington, Texas, as he welcomed participants at AMPO's Travel Modeling Subcommittee meeting. The Subcommittee met on September 29-30 at the NCTCOG offices to address travel modeling and land use planning relationships and issues.

Mr. Morris went on to say that MPOs are only as strong as their weakest link. These meetings are essential because they transfer knowledge across the MPO community. In fact, AMPO established the Travel Modeling Subcommittee, and a related Air Quality Subcommittee, to bring together MPO technical staff and our federal partners to provide a forum for MPOs to share practices and identify solutions to the transportation planning challenges they face.

At the September meeting, staff from the Environmental Protection Agency and the US Department of Transportation joined modelers from more than thirty MPOs to discuss practices and ideas about peer reviews, integrating land use into transportation planning, certification requirements, and a nationwide state of the practice analysis for modeling.

Project Analysis.

The meeting opened with a discussion of procedures used when analyzing a new transportation project. Federal planning regulations are essentially silent regarding the requirements for integrating transportation and land use. When an MPO analyzes a build scenario that contains a major project that is not in the no build scenario, should the land use data be different? Some would say yes. Others would say no, because the conformity process is meant to look at emissions changes due to modifications to the transportation system only.

In the case where development of a major transportation project is dependent on changes to the land use surrounding the project, it makes sense to analyze a scenario with the project and the land use changes, and a scenario with no project and no land use changes. However, changing the land use can and often does raise charges of bias toward or against the project. While there is no clear guidance, there are many opinions.

After much discussion and experience sharing the Subcommittee concurred that given the uncertainties of a land use plan and the range of future scenarios, it is useful to look at a range of alternative futures. However, that is not possible in the conformity process since the process analyzes one future scenario. The participants agreed that it is important to have all the stakeholders come to the table, debate the options, and make a decision.

Modeling Practices.

The Subcommittee heard from metropolitan areas about the issues they face regarding land use and travel modeling and methods and tools used to address the issues.

Kazem Oryani, a modeler with URS Corporation, gave a presentation on a Staten Island Expressway MIS that used a land use model, a travel model, and microsimulation to determine land use effects of transportation improvements. Kevin Tilbury from the Renaissance Planning Group discussed the use of CorPlan, or the Community Oriented Planning Tool, to forecast and evaluate land use scenarios.

Andy Gunning from the Pima Association of Governments discussed an MPO peer exchange that was held in Tucson in March 2003 to address land use models used in transportation modeling. He discussed the numerous findings and recommendations produced at that meeting.

Keith Lawton detailed the application of microsimula-

tion modeling in the Portland, Oregon area. He eloquently described the problems inherent in the 4-step models, and expressed his view that microsimulation is important. It is clear that much work remains to be done before microsimulation gains widespread acceptance and use.

Chris Forinash of the US Environmental Protection Agency presented details about a project with MPOs in Boston, Charlotte, and Denver that is looking at the effects of infill development on regional VMT and emissions in comparison to greenfield development. Preliminary data show that vehicle travel can be reduced by concentrating future development in brownfield and infill areas and by coordinating land use concentration with good transit service.

FHWA Initiatives

FHWA sponsors the Travel Modeling and Air Quality Subcommittees, and as such is looking to them to identify crucial transportation planning issues that should guide FHWA research and resources to provide support to MPOs.

Bruce Spear from FHWA discussed a USDOT effort to develop an MPO Certification Checklist for FHWA field reviewers and MPOs to examine how well the travel forecasting process is being conducted. The checklist focuses on three topics: key indicators of risk that the modeling process should consider, the health of the organization, and adequate documentation. The checklist would alert MPOs and field staff to issues that merit attention and may need correction. The Subcommittee endorsed the concept of the checklist while emphasizing that the needs and considerations of small, medium, and large MPOs are not identical.

Bruce also discussed the development of a state of the practice report for travel modeling. Everyone at the meeting agreed there is a definite need for such a document. The Subcommittee believes that TRB is the right organization to develop the report because TRB's committee and review structure ensures development of an objective report. The Subcommittee asked to help in identification of the study's areas of focus and prior-



ities and suggested that the report be developed on a topic-by-topic basis to allow for updates as the state of practice changes. Once again, the Subcommittee emphasized that practices and requirements are different for MPOs of different sizes.

Data, Data, Data.

During a lengthy open discussion, the Subcommittee addressed numerous modeling issues. One issue in particular – data – was discussed in detail. While our travel models rely extensively on employment data to make forecasts, many metropolitan areas do not have employment data by job type, which is pertinent to good forecasting. The MPOs also agreed that it is difficult for anyone to forecast mid- to long-term employment trends. A key example is the explosion of the knowledge industry in Southern California, which did not even exist 25 years ago. Utility companies have good data that they use to forecast demand for their services, and some MPOs are working with them to use that data.

The MPOs acknowledged that we can improve the analysis of where people make trips. This is critical because the transportation/land use connection boils down to trip generation. Because the transportation models we use are based largely on population and employment they do not adequately address other trip types, which account for up to 80% of trips.

The overall sentiment was that the models need good data, but we don't always have that data. MPOs do a good job of incorporating available data and developing new data, and they recognize the need to continue to find ways to get better data.

DeLania Hardy Named New AMPO Executive Director

The Association of Metropolitan Planning Organizations (AMPO) Board of Directors met on January 14, 2004 and named Ms. DeLania Hardy Executive Director. She replaces G. Alexander Taft, who retired after nearly thirty years of service to the transportation field.

Ms. Hardy has worked side by side with Mr. Taft for the past four years most recently as AMPO's Policy Director. Ms. Hardy has been personally responsible for successfully advocating on behalf of MPOs in the development of the legislation that will reauthorize TEA-21. She has also been a key member of the AMPO staff team, and fully understands all of the work of the association. Her appointment provides continuity for AMPO's advocacy efforts. As Executive Director, Ms. Hardy will continue to fulfill policy obligations as well as handle Administration and Finance.

Prior to joining AMPO, Ms. Hardy worked as a Transportation Planner and Project Manager for the Northern Virginia Transportation Commission where she assisted the executive director with advocating for public transportation and managed transportation projects in Northern VA. Prior to this, Ms. Hardy worked for the Metropolitan Washington Council of Governments in Washington, DC as an environmental planner.

Ms. Hardy holds her B.A. in International Studies from Virginia Wesleyan College, Norfolk, VA (1994) and her M.A. in Environmental Politics from George Washington University's Graduate School of Political Management, Washington, DC (1996).



Multimodal Corridor Solutions: Planning in Advance of Funding

Chris Fox, Media Relations Specialist, Carter-Burgess

Local U.S. transportation officials, including planners, managers and engineers, are essential players in finding ways to keep both vehicles and commerce moving, especially in high-volume urban corridors. However, strained budgets are already spread across a widening range of needs, often leaving too little for construction projects.

In fact, just catching up on project backlogs would require far more funding than the federal government is likely to provide. Meanwhile, the cars keep coming, congestion worsens, and citizens demand action.

Rather than simply waiting for something to happen, local transportation officials are commissioning long-range corridor planning studies to assess their needs so they will be ready when funds materialize. This approach affords the opportunity to identify the best mix of mobility modes — highway upgrades, HOV lanes, light rail, commuter rail, buses and bike/pedestrian — and to determine how to integrate them into existing neighborhoods.

Carter & Burgess Division Manager for Transportation Programs Kevin Nelson sees the wisdom of this "seize the day" approach. "You're looking at three to five years just to conduct the studies required by the National Environmental Policy Act (NEPA) and decide what improvements are needed," he says. "Then come reviews, permit applications and other prerequisites to design and construction. Completing most or all of the planning ahead of time positions localities to act when funding becomes available."

But without coordinated planning and implementation, these efforts may be wasted, as corridor studies are inherently complex, regardless of size or location. Urban areas have varied existing and planned land uses; constituencies with differing opinions; issues related to remediation of hazardous materials; and cumulative air quality, noise and traffic issues. In rural areas, the focus is on effects on landowners, cultural resources and the environment.

An understanding of NEPA requirements and processes is likewise essential. Otherwise, Nelson warns, the resulting Environmental Impact Statement (EIS) may be incomplete or may become a flashpoint for controversy and delays. For example, right-of-way acquisition for one alignment may have cultural or hazmat considerations, but alternative steps may exacerbate an environmental issue.

Planning and transportation agencies should always consider space issues when developing corridor studies. If light rail is to be integrated with highway improvements, for example, there should be planning for adequate right-of-way for tracks, stations and parking facilities. New highway interchanges are almost sure to be hubs for development, so surrounding land uses should be planned accordingly.

A collaborative approach to multimodal corridor projects is particularly important when a step-by-step process is required and budgets are tight. In such cases, elements that fit with the overall plan can still be funded, providing short-term relief.

An example of inter-agency collaboration is underway in West Valley City, Utah, the state's second-largest municipality. Bordering a segment of the Lincoln Highway, one of the nation's first designated coast-to-coast routes, the city has developed around what is called the 3500 South Corridor.

By addressing 3500 South's woes, city officials saw the opportunity to go a step further and create a context-sensitive solution that would provide a long-needed community focal point. Previous planning had lacked cohesiveness, resulting in mobility and land-use issues.

The 3500 South project became more than simply

moving vehicles through an area. Issues involving mobility, walkability, transit, roadway and developing a sense of place arose; challenges that could be addressed only through a collaborative approach.

The participation of the city government, which shapes zoning and land use ordinances, was needed to address issues of land-use that were of particular concern to citizens. For the transit component of the project, the Utah Transit Authority got involved. And to ensure the corridor's future would fit with the region's long-range plans, the metropolitan planning organization was included in the decision-making process. The result was a sponsor team that used its mutual strengths to find holistic solutions to the 3500 South challenges.

Another element in the success of 3500 South was public involvement. All involved parties understood the value of building citizen buy-in and consensus during the EIS. Along with producing a better result, public participation reduced the risk of a protest or problem that could have delayed the project.

One of the most valuable outcomes of this public outreach effort was that the community was invited to help identify the needs — needs that differed depending on what mile of the project was being discussed. Momentum for finding the best answers for the 3500 South Corridor has grown to involve Envision Utah, a public-private partnership charged with developing workable strategies for the region's long-term growth.

Through the proactive planning efforts of local transportation officials, transportation projects can keep moving forward, even if funds are not immediately on hand. When the financial resources do become available, the collaboration and planning that has already taken place among multiple agencies and the community helps to clarify project priorities. Advance planning allows transportation officials to identify the best mix of mobility modes and how to integrate them into neighborhoods so the whole community wins.

AMPO Survey Results: Coordinated Human Services Transportation

Michael Montag, Association of Metropolitan Planning Organizations

This Fall AMPO collaborated with the Community Transportation Association of America (CTAA) and the Federal Transit Administration (FTA) to conduct a survey examining the role MPOs are playing in efforts to coordinate human services transportation. The results illuminate many MPOs actively working to create a fully coordinated human services transportation network in their area, but also reveal that their successes are not universal. In fact, many MPOs lack the resources necessary to play a major role in providing adequate services to transportation disadvantaged populations.

Florida, state law designates the MPO as the official planning agency for transportation disadvantaged groups, and funds the activity through an annual grant from the Florida Commission for the Transportation Disadvantaged.

The survey also gathered specific information on MPO participation in transportation coordination for seniors, job access/reverse commute programs, and persons with disabilities, and found MPOs have similar needs among the types of service.

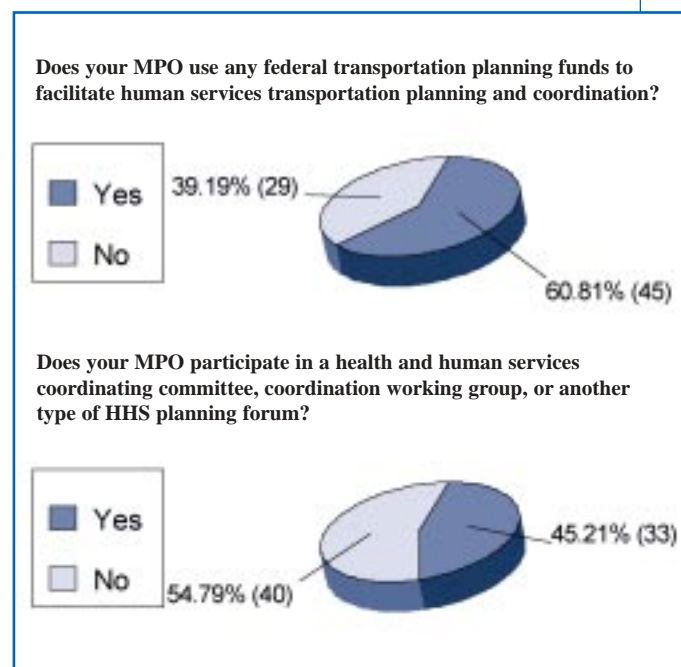
Although 81 percent of responding MPOs are coordinating with their local transit agency, and nearly 60 percent are coordinating with their area agency on aging and state DOT, to improve transportation services for seniors, only 9 percent have produced a distinct senior transportation plan. Two-thirds of respondents say they lack the funding to properly address senior mobility, and 41 percent cite inadequate data and professional development, respectively, as major impediments.

Of the 65 percent of MPOs who say their community has been the recipient of a Job Access Reverse Commute (JARC) grant, only a quarter have themselves been the recipient. Again, two-thirds of respondents say they need additional funding to properly plan/implement job access programs, and nearly 40 percent are in need of additional data and professional development.

MPOs are suffering the same resource deficiencies in providing transportation services to persons with disabilities — again, though most are coordinating with local transit agencies and their state DOT (as well as healthcare providers and non-profits), the majority is in need of funding, data, and professional development to properly address the transportation needs of persons with disabilities.

This AMPO survey shows that though MPOs currently recognize coordinating human services transportation as an important issue in their region, many are without sufficient resources to properly facilitate the coordination process.

To read more from MPOs about their coordination activities, view the full results to this survey at http://www.ampo.org/survey_results.html.



Of the 74 responding MPOs, 61 percent report using federal planning funds to facilitate human services transportation planning and coordination, but only 45 percent participate in a health and human services coordinating committee, coordination working group, or another type of HHS planning forum. Most do, however, report coordinating to some degree with local transit agencies and their state DOT on human services transportation.

Some MPOs cite state laws mandating formation of a coordinating group; for example, California law requires that transportation agencies establish a social services transportation advisory council to address the needs of transportation disadvantaged groups. In

Diesel and the Environment - Contributing to America's Clean Air Progress

Kristen Gifford, Diesel Technology Forum

America's metropolitan areas rely on diesel for its power, versatility, cost-effectiveness and range of applications. Clean diesel plays a vital role in America's economy, quality of life and national security. But that's not all that diesel offers. Diesel is getting cleaner, and can be part of the solution for future clean air plans.

Technology developed for new engines makes them extremely clean and eight times lower in emissions than ones built just a dozen years ago. However diesel engines are renowned for their durability and can last hundreds of thousands of miles so existing diesel vehicles will be in service for many more years. Diesel engines, when properly maintained and treated well, generally last well over 500,000 miles, often exceeding a million miles!

In the meantime, some of this new technology can be applied to existing engines on a voluntary basis and reduce emissions much more quickly. There are five main options for upgrading diesel engines. The term "retrofit" has evolved to take on a much broader view which encompasses the modernization and upgrading of equipment. There are five "R" activities which fall under the full array of clean diesel solutions:

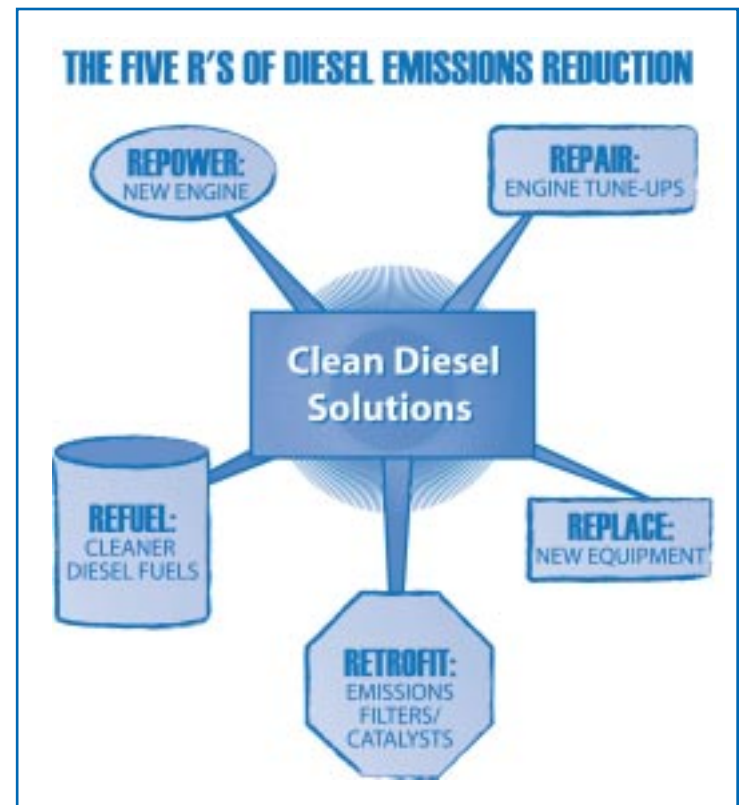
- Repowering - adding new lower-emitting engines to existing vehicles
- Rebuilding - taking existing engines and upgrading them
- Refueling - using fuel additives or improved low sulfur fuels
- Retirement - replacing old equipment with new vehicles
- Retrofitting - applying emissions filters and cata

lysts to existing vehicles and equipment. Reaching cleaner diesel solutions through a variety of means - that is the direction of retrofit in the 21st century.

As state and local governments and MPOs gear up in 2004 for meeting transportation demands and the more pressing need for real emissions reductions to meet more stringent ozone and particulate air quality requirements, there are several key un-tapped opportunities for gaining air quality credits by reducing emissions from diesel engines and equipment. Clean diesel technology offers a cost-effective approach for emissions reductions and the use of Congestion Mitigation and Air Quality Improvement Funds (CMAQ) funds can spur the upgrading of existing public, private, school bus and transit fleets.

MPOs are in a position, under existing authority, of providing expanded CMAQ support for cost-effective clean diesel projects including:

Directing CMAQ Funds to Diesel Upgrading Programs -- some diesel engines can be cost-effectively upgraded or retrofitted to a lower emissions level through the use emissions filters and traps, or the simple reprogramming of the engine computer. US EPA has launched a voluntary diesel upgrading program (www.epa.gov/otaq/retrofit). While the applicability of retrofit technology is variable based on the type of engine and application, upgrading engines is an increasingly available option that delivers real emissions reductions in a near-term timeframe. Through the direct use of CMAQ funds, MPOs are in a position (under existing



CMAQ authority) to provide key financial support for clean diesel projects.

Launching Diesel Emissions Inspections Programs -- getting gross emitters off the road is a win-win program that results in operators performing maintenance or repairs that will yield greater fuel economy and lower fuel and operating costs, and reductions in emissions. The programs are also endorsed by EPA, cost-effective, mobile, and require only minimal investments for testing equipment. Currently, 18 states have programs.

For more information about the technical or policy aspects of diesel upgrading and retrofit projects, please contact the Diesel Technology Forum at info@dieselforum.org. The Diesel Technology Forum is pleased to work with state and local agencies on any aspects of diesel upgrading or emissions related projects including identifying local partners such as engine dealers, fuel providers, technology feasibility, project promotion and related issues.

STEP2 - Moving from Aggregate Models to Household Microsimulation

Howard Slavin, Caliper Corporation



While aggregate 4-step travel forecasting models are currently being used by nearly all MPOs in the United States, models of microsimulated travel are being used or tested by a few MPOs and may represent the next generation of travel demand models. In a microsimulation model, the individual or household is the basic unit of analysis and all of the processing is done at the household or individual level. There are numerous conceptual advantages to using microsimulation, including being able to tabulate impacts for any subgroup of the population (for example, low income or elderly), which is vital to any sort of equity analysis, and the ability to model realistic travel behavior patterns such as trip chaining or more complex activity patterns.

This article describes STEP2, which is a practical

microsimulation model that has been implemented in TransCAD. STEP2 is based on the STEP model developed by Greig Harvey in the 70s and subsequently refined by him and Elizabeth Deakin. STEP2 uses much the same data that is required for an aggregate 4-step model and uses similar computational resources. Whereas the original STEP model used default equations and coefficients, STEP2 has evolved to use realistic networks and locally estimated model components. STEP2 has been implemented for the Southern Nevada Regional Planning Commission and borrows extensively from an aggregate best practice model that was developed for Las Vegas, in that much of the destination choice, mode choice, time of day, and assignment models and parameters from

the aggregate model are used in STEP2. In this way STEP2 presents a more palatable way for MPOs interested in exploring microsimulation to take a step towards advanced methods without expending significant resources.

While the theoretical advantages of microsimulation are well known, there have been few implementations because the methodology is more complex, and therefore requires more expertise for development. The original STEP model made great strides in making microsimulation a more viable alternative for transportation planning agencies for policy analysis by creating default specifications that could be used and calibrated for different study areas. STEP2 follows in this tradition but adds greater regional detail and flexibility. STEP2 also reflects the significant strides in GIS, data-

bases, and graphics resulting from the PC revolution.

STEP2

There are three major components to the STEP2 model:

1. Population Synthesis Uses PUMS (household level data from the Census) and aggregate zonal data to generate a representative population of specific (but synthetic) individuals and their personal and household characteristics.
2. Household Behavior Simulates travel-related behavior for each individual in the synthetic population.
3. Aggregation, Network Performance, and Analysis Aggregates the individual behavior to generate trip matrices by trip-type and or socio-economic characteristics and assigns these matrices to the transportation network to generate link flows and level of service.

Most of the complexity of the model is in the second stage, which is comprised of a number of behavioral models. These models are of several forms including choice models (logit and nested logit), cross-classification lookup tables, and probability distribution lookup tables. The STEP2 implementation makes heavy use of models from the original STEP program and models developed by PBConsult for an aggregate regional travel demand model. In addition, new models were developed for STEP2 using both PUMS data and the Regional Transportation Commission's 1996 house

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hold survey. The household behavior models predict specific travel patterns as well as other travel-related behavior for each individual in the synthetic population. For example, all of the following are simulated within STEP2 for each person:

- The TAZ in which the person's home is located, which provides the ability to forecast the spatial distribution of households in the urban area based on development plans and transportation level of service.
- Whether the person is a worker or retired
- For workers, the TAZ in which the person's work is located
- Detailed travel patterns for a particular day:
 - _ For workers, whether the person goes to work
 - _ For those who go to work, whether they make a stop on the way to work, on the way home from work, or a mid-workday stop (trip chaining).
 - _ All other trips that are made in the day, including home-based shop trips, home-based other trips, and non-home-based trips
 - _ The location, timing, and mode of each of these trips.

In theory, all of these decisions are inter-related. However, incorporating all of the complex, multidimensional interdependencies makes the problem unmanageable. Therefore, the approach is to simplify the problem by representing it as a sequence of choices in a choice hierarchy. The STEP2 framework uses a choice hierarchy, in which the longer term decisions are on the top of the hierarchy (lifestyle and mobility decisions), and the shorter-term and more flexible daily travel decisions are conditional on the long-term decisions. Furthermore, within the daily decisions, the work trip is higher in the hierarchy and the non-work trips are conditioned in part on work trips.

STEP2 has a trip generation stage, which produces the number of trips by purpose for each person, a trip distribution stage, which produces the TAZ for each non-home and non-work trip end, and mode choice, which assigns a particular mode (drive alone, carpool, transit, etc.) to each trip. STEP2 also includes trip chaining on the work tour as well as a time of day model. Once all of the details of the trips are generated, trips are aggregated into OD matrices by mode, which are then

assigned using an aggregate traffic assignment.

Findings from the STEP2 Implementation

The STEP2 model was implemented for Las Vegas, Nevada and compared with the aggregate 4-step model used in that region. The models performed similarly in terms of computation time and disk space. STEP2 requires the same inputs as the aggregate 4-step model and also requires a PUMS dataset (the US Census 5% sample of household records) in order to generate synthetic households. The models perform similarly in the base case scenario, which is not surprising given that they are calibrated to base conditions. They also perform similarly for the base future scenario – also not surprising since they share many of the underlying behavioral models. Where STEP2 differs is in terms of the outputs and land use modeling component. STEP2 provides additional outputs including the impacts by socio-economic group (and therefore has the ability to address issues of equity) and records of individual person/vehicle movements, which can be fed into a microscopic traffic simulator. STEP2's residential choice component also models shifts in the spatial distribution of households based on development plans and transportation level of service.

STEP2 has been implemented in Caliper's TransCAD travel demand forecasting software, which is used by more than half of the MPOs in the US. As a result, all of TransCAD's GIS and modeling capabilities are available for use in forecasting. TransCAD also facilitates implementation and analysis as well as providing a user friendly interface for running the STEP2 model.

STEP2 illustrates that the shift to microsimulation does not necessarily require substantial investment to obtain its purported benefits and can provide an easy transition for MPOs wishing to explore the use of microsimulation. Perhaps one of the greatest advantages of using microsimulation is that it is a flexible and expandable method that can be modified to include additional sensitivity to demographics and transportation policy variables by incorporating more detailed representation of travel and travel behavior. Further details about the project can be obtained from Dr. Joan Walker or Dr. Howard Slavin at Caliper Corporation, www.caliper.com or 617-527-4700.

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Listed below are the AMPO Members for 2004. We appreciate your continued support. For information about membership or questions regarding your current membership, contact Nicole Waldheim at 202-296-7051 or email, nwaldheim@ampo.org

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MEMBER SPOTLIGHT

Compiled by Rich Denbow, Denbow Associates

The New York Metropolitan Transportation Council (NYMTC) in New York City is sponsoring several "Walkable Community" workshops and pedestrian audits in cooperation with local host communities and agencies. During the workshops, participants suggest solutions to dangerous bicycle and pedestrian situations which allows NYMTC members to improve facilities and reduce the number of pedestrian and bicycle-related fatalities and injuries throughout the region. The workshops also place greater emphasis on the use of alternative travel options.

The Tri-County Regional Planning Commission in Lansing, Michigan created a Regional 2025 Transportation Plan that ties federal funds to a shared vision of smart growth across 78 jurisdictions using an adopted land use policy map, themes and principles. Transportation projects are considered under a framework that addresses safety and identifies performance measures and short and long range investment strategies. The framework applies to all modal users of congested corridors from "building facade to building facade" and considers wide nodes/narrow roads, road diets, traffic calming, ITS and more traditional traffic engineering treatments.

The Chicago Area Transportation Study (CATS) in Chicago, Illinois created an online Regional Highway Atlas. This ArcIMS® Internet application provides the public and planners with current and historical average daily traffic and VMT data for major highways in the area. Prior editions of the Atlas were prepared using ink drawings and hours of manual editing. The new technology reduces production time for the Atlas to months rather than years.

The El Paso, Texas MPO has been busy. They are working with the Instituto Municipal de Investigacion y Planeacion (IMIP), a regional land use and transportation institute located in El Paso's sister city, Cd. Juarez, Chihuahua, Mexico to develop an international travel demand model. The effort will evaluate how best to program transportation funding in this heavily traveled border crossing area. The EPMPO is coordinating with IMIP, UTEP, NMSU, LCMPO, and the cities in the tri-state/bi-national area to develop the first seamless and integrated land use model using the UrbanSim program. To add to the list of credits, the MPO has also completed the "El Paso Transit Corridor Study" after close coordination with Cd. Juarez/IMIP, County of El Paso, and the regional transit provider - Sun Metro.



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