OPENING REMARKS

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In the field of transportation there is a standard set of planning methods and models that we call the four-step process or the Urban Transportation Planning System (UTPS for short). This set of models and procedures is used to forecast travel demand for future transportation systems and it plays a central role in the evaluation of alternative transportation plans and policies, especially capital facilities. These methods are venerable and widely used all over the world. We teach them in universities, use them in consulting firms and metropolitan planning organizations and apply them overseas as well as in the United States. We travel on transportation systems that were planned twenty, thirty and forty years ago using these methods, and the techniques are for the most part, with some variations and improvements, what they were then.

We generally attribute some of these methods to the decades of the fifties and sixties, giving credit, for example, to Alan Voorhees for development of the gravity model in the fifties—the trip distribution model that is still widely used. There is an article, however, in *Public Roads* magazine from the 1920s indicating quite clearly that the gravity model was used in 1927 in the Boston transportation study, and that a succession of procedures that look much like the four-step process was already used in the Cleveland regional highway study in 1928. Our methods thus clearly have roots that are even deeper than is realized by many engaged in the practice of transportation planning.

In the seventies the U.S. Department of Transportation mounted a program of research, development, improvement and dissemination of transportation models and data. It made software available to transportation planning agencies and consulting firms, ran courses on how to use that software, published manuals and even had a telephone hot line that modelers could call if they were having problems with applications. That level of support, the most important of which was the ongoing program of research that supported and advanced the state of the practice over time, went away with the federal budget cuts in the early eighties.

Transportation analysis, modeling and forecasting have advanced relatively slowly during the eighties and early nineties; yet there are many new demands being placed on travel demand models, forecasters and policy makers. In addition to the travel demand analysis that has traditionally been done in support of system planning for capital investment, we began to need answers to questions of travel demand management and transportation system management, and the models of the fifties, sixties and seventies were not ideally suited for those purposes, for example, to determine what would happen if car pooling or HOV lanes were introduced. We grew even more aware of the shortcomings of the

techniques in our tool bag when we became increasingly responsible for linking travel demand analysis with air quality analysis, in particular for the development of air quality management plans, implementation plans and conformity analyses required by the Clean Air Act amendments in areas that violate national ambient clean air standards.

Facing new demands and realizing that travel demand analysis was not advancing in accordance with changing needs of transportation policy makers, and realizing that advances in the science of travel analysis were not being reflected in the practice of travel demand modeling, a creative group of transportation officials in the Federal Highway Administration, the Federal Transit Administration, the Office of the Secretary of Transportation and the Environmental Protection Agency got together and decided that it was time for a new initiative to try to update and improve travel demand forecasting. They formed the Travel Model Improvement Program, or TMIP, which has many objectives, all related in one way or another to improving the state of the art and the state of the practice of travel modeling and forecasting. By the state of the art we mean what we are capable of doing - where the "frontier" is in terms of the available models. The state of the practice means what the agencies and consulting firms are actually doing out in the field. Sometimes, of course, there is a gap between those. A large part of the work in the TMIP program is being done under contract because there are few federal officials who are able to devote much of their time and energy to this program.

The TMIP program is divided into four tracks. Track A is devoted to outreach: the dissemination of information, the publication of a newsletter and reports of the research studies that were carried out under all of the tracks, a series of conferences, development of a web site, and preparation of a CD/ROM for the distribution of data sets and forecasting methods. All of these efforts are intended to help modeling and forecasting practitioners sharpen their expertise and promote better practice in the field. Track B is devoted to developing short-term model improvements and changes that can improve the state of the practice currently by adding marginal improvements to existing models and practices. Much of the work in Track B is being done by consulting firms. Information about some of the products of Track B is in documentation available here and in a recent issue of the journal *Transportation* that featured the TMIP program. Track C is aimed at developing a whole new generation of traffic forecasting procedures, and the bulk of funding under Track C is going to Los Alamos National Laboratory where a group of certified mathematical and computer geniuses have been working for several years on development of TRANSIMS, a fundamentally new microsimulation approach that incorporates ideas from activity analysis and insights from research in microsimulation. They are engaging in some demonstrations in large metropolitan areas that include activity analysis, travel forecasting and air quality impact assessment. TRANSIMS is ongoing, and very soon we will be seeing some of its results disseminated to a larger community of interest. Track D involves research and development leading to improvements in data collection and in the databases that transportation planners have available to them to use with their models and forecasting methods.

Among the ongoing changes in transportation planning are two that have brought us to this conference and that must be addressed in all four tracks of the Travel Model Improvement Program. This conference is to consider how travel demand modeling and forecasting can be improved by incorporating some of the changes that are occurring in approaches to urban design, and in the

simultaneous substitution and complementarity occurring between telecommunications and travel. These two areas are related to one another but each is important in its own right.

Many of you are interested in how the physical characteristics of residential neighbor- hoods, commercial centers and downtown areas can be changed to bring about more desirable and more efficient travel patterns. We are increasingly calling for more attention to land use mixes; street patterns that encourage walking, cycling and transit use; the concentration of higher densities of activities in corridors that are well served by public transit; the creation of pedestrian or transit oriented districts, and to traffic calming. We do not know exactly which of these strategies will have deep, lasting and significant effects on travel patterns, in part because we do not have evaluative tools with which to estimate their long-term effects. If you are interested in promoting these approaches to planning it is really important that they be institutionalized and the way they become institutionalized is through devices like travel demand forecasting techniques and data collection techniques that are standardized. If you are interested primarily in tools and techniques as an analyst, forecaster or consultant, it is important that you begin to be seriously concerned about these newer approaches to travel demand management being promoted by so many communities of interest. We are not here to advocate particular changes or to rate some land use approaches as better than others. Rather, we have come here to ask what changes need to be made to our methods of analysis to enable us to ask whether some approaches to urban design in particular contexts might be better than others with respect to efficient patterns of movement in cities and suburbs.

Right alongside the movement to change travel by changing the design of urban places is the realization that telecommunications technologies are interacting with transportation systems and with human activity patterns in new ways. We are connected with one another by telephones, fax machines and the worldwide web, and it is important that we are cognizant of the ways in which those circumstances are changing the ways we work, changing where we live, changing the frequencies and the times at which we travel and changing the spatial patterns of activities as well. Very important is the question of how we can capture these emerging changes in our travel demand modeling tools and techniques. We are asking you all as experts and thoughtful observers to help us come up with concise and useful statements of what we know in answer to these questions about how these things are changing, how that change affects travel patterns, particularly the distribution of travel in time and space. We are asking you to ponder what we already know about the effects of telecommunications and the effects of alternative urban forms and urban designs on travel and what can be disseminated in the near future to metropolitan areas, state departments of transportation and consulting firms in order to improve the quality of their transportation forecasting and policy making. We are also asking for help in identifying ideas for research, development and demonstration that are needed to improve the state of the practice as well as the state of the art with respect to the topics of this conference.