INSIDE VIEW OF ITS AT A METROPOLITAN PLANNING ORGANIZATION
by Andrew J. Meese
Senior Transportation Engineer
Metropolitan Washington Council of Governments

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METROPOLITAN WASHINGTON CONTEXT

The Metropolitan Washington Council of Governments (COG) is the designated regional planning agency for the District of Columbia and 17 surrounding jurisdictions in the states of Maryland and Virginia. A board associated with COG, the National Capital Region Transportation Planning Board (TPB), is the officially designated Metropolitan Planning Organization (MPO) under federal transportation planning regulations. TPB's planning area encompasses about 4,000 square miles, and has a population of just under 4 million. Figure 1 shows a map of the metropolitan area. COG analysis estimates over 12 million daily vehicle trips in the region, and over 100 million daily vehicle miles of travel. Metropolitan Washington has been classified as a "nonattainment" area in the "serious" category for air quality (failure to attain national ambient air quality standards).

Metropolitan Washington has one of the highest levels of traffic congestion among the major metropolitan areas. It has been one of the fastest growing metropolitan areas in the country since the 1960's, and this growth is forecast to continue. Figure 2 shows the crux of the transportation issue faced by the region: there will be significant increases in the number of households, jobs, vehicles, trips, and, especially, a 78% increase in daily vehicle miles of travel in 2020 over 1990 levels, but only 23% more lane-miles to be added by 2020 over the 1990 roadway lane-mileage[1]. This has heightened awareness of the need for alternatives to highway capacity expansions, including better management of the existing transportation system through Intelligent Transportation Systems (ITS).

The MPO is responsible for three major regional transportation "products". TPB approves the region's Transportation Improvement Program (TIP), a near-term (six-year) listing of specific projects and the specific funding sources, usually federal funds, to be used for those highway and transit projects. TPB also is responsible for the region's Long-Range Plan (LRP) for transportation, which lists projects anticipated to be built within a twenty-year or more time frame, currently to the year 2020. Federal requirements state that a metropolitan area's LRP must be financially feasible;

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[1]Figures are for the "modeled area" of the Washington region, which differs slightly from the actual member jurisdictional area; also, local streets and minor roads are excluded. Source: *Air Quality Conformity Determination of the Constrained Long-Range Plan and the FY98-2003 Transportation Improvement Program for the Washington Metropolitan Area,* Metropolitan Washington Council of Governments National Capital Region Transportation Planning Board, Washington, DC, July 16, 1997.

that is, contain only projects for which there are proven funding sources. To address ideas beyond the few projects affordable with those financial constraints, the TPB also has undertaken a transportation Vision process. As the third major MPO product, the Vision looks at needs and actions beyond the year 2020, and beyond existing financial constraints. A draft transportation Vision was published by the TPB in November 1997, and has been circulated for public and agency review and comment, with finalization anticipated in mid-1998. The draft Vision includes policies and general action areas, but does not include specific project listings at specific locations. ITS elements described below have been incorporated into the Vision.

WHAT SPURRED MPO INTEREST IN ITS?

Metropolitan Washington has a history of emphasizing alternatives to highway-building, particularly "traffic mitigation" to reduce travel demand. Notably, COG has coordinated a regional rideshare matching program, now called Commuter Connections, since 1974, and has expanded the program to include promotion of transit, carpools, vanpools, telework (telecommuting), and bicycling. Also notable in the region is the Shirley Highway (I-95/I-395) in Northern Virginia, which was among the country's first high-occupancy vehicle (HOV) facilities. Additionally, much of the Interstate highway construction planned for the District of Columbia was stopped, and funds devoted to the construction of the Metro heavy rail transit system (to be 103 miles upon completion in the early 2000's). Overall, a number of the region's projects and programs have focused on getting people out of their single-occupant vehicles and into transit and ridesharing.

The Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991 furthered this trend in the region, with an emphasis on managing rather than expanding the transportation system. In addition to demand-oriented strategies long considered and implemented in the Washington region, ISTEA and its associated federal regulations required the consideration of "supply side" transportation management strategies, including ITS, traffic operations improvements, and a host of other measures. The availability of federal funds targeted toward ITS planning and development also spurred interest. ISTEA, moreover, seemed to increase acceptance in the region that capital construction projects long discussed were not going to be built, or, even if built, would not solve the region's congestion problems; alternatives were needed.

Notable in the Washington region has been the influence of champions of ITS, as well as skeptics and outright opponents. A few key officials in the federal and state governments have been instrumental in promoting ITS in the region. Skeptics and opponents, on the other hand, were concerned that ITS strategies might abet automobile use to the detriment of neighborhoods and the environment, or, perhaps, wished to see the limited available funding devoted to competing interests, such as transit, bicycle and pedestrian facilities, or travel demand reduction measures. Others did not want ITS to be used as an excuse to avoid building some long-advocated highways. Acceptance of ITS and action occurred in large part because these ITS champions offered to elected officials affordable potential responses to specific incidents or situations at specific locations in the region.

A series of highly-publicized crashes involving trucks on the Capital Beltway in August 1993 raised a call to action from some of the region's elected officials. The state departments of transportation of Maryland, Virginia, and the District of Columbia issued a number of potential initiatives in response, and formed a Capital Beltway Safety Team in 1994. It should be noted that this was not an MPO nor a planning-oriented initiative; rather, operations personnel of the departments of transportation were asked to report short-term operational solutions to congestion-related safety problems. The Capital Beltway Safety Team offered a number of recommendations, many of which focused on ITS.

Following from recommendations of the Capital Beltway Safety Team, a team of the region's transportation agencies, including MPO staff, oversaw a consultant-produced *National Capital Area Umbrella ITS Early Deployment Study[2]*, which identified institutional and policy-related issues in ITS deployment. The Umbrella Study was notable for bringing to the same interjurisdictional table both operations personnel and planning personnel.[3] The Study recommended a continued regional dialogue among operations and planning, hosted by the MPO, on ITS coordination and deployment.

THE WASHINGTON REGION ITS TASK FORCE

At the request of the state departments of transportation of Maryland, Virginia, and the District of Columbia, the TPB formed the Washington Region ITS Task Force in January 1997. Since then, the ITS Task Force has provided a regional forum for advice and information sharing on ITS projects and issues. The Task Force reports directly to the MPO board, and advises the MPO board on ITS matters. The Task Force meets every other month, and has formed a number of subcommittees on focus areas of interest.

Over 30 transportation and public safety agencies from around the Washington region participate on the ITS Task Force. The Task Force is one of the most functionally diverse of the MPO's committees, including both operations and planning personnel; traffic and transit agencies; personnel concerned with safety and incident management; systems, computer, and communications engineers; a variety of consultants; and national experts in the ITS field. Participation includes local, regional, state, and federal agencies, as well as significant representation from the private sector.

The Task Force has had a number of accomplishments to date. It advised the MPO board's transportation Vision process. The MPO board adapted materials produced by Task Force members and staff into a technology-related policy goal for the draft regional Vision, shown in Table 1. The Task Force advised the *Partners In Motion* traveler information service undertaken by a public

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[2]Produced by Apogee Research, Inc., with Castle Rock Consultants and DBH Consulting, April 1997.

[3]In contrast to the metropolitan-wide Umbrella Study of institutional issues, ITS deployment technical studies have been or are being undertaken separately by the District of Columbia, Maryland, and Northern Virginia.

agency/private sector consortium.[4] It has hosted presentations on emerging technologies from national experts in the ITS field, and has identified priority focus areas for further study.

PRIORITY FOCUS AREAS

The ITS Task Force in 1997 identified five priority focus areas that the Task Force and its subcommittees or working groups will address. These were: electronic payment systems, database development to support traveler and tourist information systems, traffic operations and traffic signal coordination, ITS considerations in Major Investment Studies,[5] and using ITS as a data resource for planning. The Task Force formed *ad hoc* subcommittees on these focus areas (with the exception of the traveler/tourist database, which is pending the letting of a major contract by the Metro transit system for major improvements to the regional transit information database).

Transit and traffic agencies around the Washington region independently have studied and pursued electronic payment systems for fares, tolls, and fees. The formation of the Task Force's Electronic Payment subcommittee created a forum where ideas can be exchanged, and cooperative ventures identified. Seamless payment systems also are an expressed goal of the MPO board in its draft 1997 transportation Vision document. The subcommittee has discussed the possibility of a regional electronic payment feasibility study if and when funding for such an effort becomes available.

The MPO in the Washington region has not been a traditional venue for discussions among traffic operations and signals personnel, perhaps because of the contrast between the planning focus on the long-term and the operations focus on the immediate. The Task Force's Traffic Operations and Signals subcommittee has been a success in bringing together key persons from around the region, especially due to the influence of a few key champions of such a dialogue on operations. A strength of this subcommittee is that it provides a forum for traffic operations and signals personnel to exchange ideas and experiences, and provides an opportunity for these personnel to give feedback to the planning process.

Growing from the interest of some members of the ITS Task Force, a subcommittee has begun examination of assumptions for Major Investment Studies or other transportation and travel forecasting studies. Transportation planning studies, by tradition and by regulation, contrast proposed alternative strategies (such as building or widening a roadway) with baseline conditions and forecast conditions in the future (if no additional improvements were made). One shortcoming of this approach is that it does not recognize changes to travelers' characteristics that may occur, even without public sector infrastructure investments, because of "smart cars", global positioning

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[4]The Partners In Motion traveler information service is marketed publicly as *SmarTraveler Washington DC,* and is accessible by telephone (202-863-1313) or at *http://www.smartraveler.com* on the World Wide Web.

[5]Following ISTEA, proposed major transportation improvements in metropolitan areas were required to be subjects of Major Investment Studies, and a variety of transportation modes and management options were to be examined for the corridors in question.

systems, navigation systems, or other technological improvements. This group is studying what study assumptions might be advanced to account for such private sector investments and changes, and how these might impact future traffic operations and flow.

ITS AS A DATA RESOURCE FOR PLANNING

Perhaps of strongest interest for the NATMEC is the *ad hoc* subcommittee focusing on using ITS as a resource for transportation planning data. It is widely recognized that ITS equipment provides a current or potential collection point for transportation systems usage data, but these data are rarely archived, compiled, or shared among agencies. This subject provides challenges to both planners and systems operators. The group has discussed the need to define what data are needed, from where the data are needed, how often and for what periods of time, and related information. Identified issues include communications connections to and from the devices, data storage, and processing of raw data into usable form. Funding is a major issue, since planning funding and operations funding are often functionally separated, and are competitive in an atmosphere of tight budgets. One of the region's jurisdictions (Montgomery County, Maryland) has begun a pilot project for the automated sharing of data from ITS sources (such as computerized traffic signals) to the transportation planning and modeling arm of the County's planning commission.

IDENTIFIED PRIORITIES FOR FUNDING

The TPB and member agencies have looked to the ITS Task Force for ideas and recommendations on project that could improve the safety and performance of the region's transportation systems if and when funding became available. One Task Force member, the Virginia Department of Transportation, spearheaded an effort to define regional ITS funding priorities, submitted in a report to U.S. Representative Frank Wolf of Virginia in February 1997. These priorities parallel the Task Force's focus areas: enhancing traveler and tourist information systems; deploying "smart card" technologies on transit vehicles, at parking facilities, and on toll roads; improving video surveillance and traffic control devices; and enhancing and integrating communications equipment for incident management and emergency response. This study listed expected costs for such efforts, enumerated potential benefits, and served as the basis for the ITS input to the TPB transportation Vision.

ITS IN THE MPO ARENA: OBSERVATIONS

In the Washington region, the MPO's emerging involvement in ITS started in an atmosphere of hesitancy among member agencies to bring operations issues into the regional planning and political arena. Reasons may have included a fear of loss of independence for operations actions, distrust of the political and often "illogical" planning process, and, the fact that, heretofore, operations had the luxury of not yet being a regionwide issue. With this background, the COG and the region have found success with a "bottom-up" approach to integrating ITS into the regional planning process.

Operations personnel have significant experience and expertise in ITS to share. As MPO staff, we have attempted to put this advice in the context and lingo of the regional planning process, and have begun to build an operations-planning dialogue on ITS and related issues as regional priorities.

The TPB has a defined list of regional transportation goals in the adopted Long-Range Plan, and the participants on the ITS Task Force are finding ways to marry those goals as expressed by the region's elected officials with their identified operations, equipment, and personnel needs. Interestingly, the elected officials on the TPB have often seemed more eager for ITS implementation than the planning or technical staffs who serve them, perhaps in part because it is *verboten* for staff to advocate anything that might necessitate increased budgets. On the other hand, caution must be taken not to oversell the potential benefits of ITS: there may be a temptation among some participants in the regional planning process to hear more than what was said or claim more impacts than what can be proved. Nevertheless, the technical staffs of the MPO member agencies can be ready when funding opportunities come: ready with specific proposals for ITS solutions to specific problems at key locations.

NEXT STEPS FOR THE WASHINGTON MPO

The first priority for COG is to continue the hard-won momentum the region now has on ITS planning and interjurisdictional coordination. Our approach is to enable communication though the forum of the Task Force and its subcommittees. Our members reach consensus on actions to be taken, but requirements are not being imposed top-down from the MPO. The Task Force and its subcommittees will continue to work on proposals for feasibility studies or pilot projects within identified focus areas. As noted, a subsequent step is to marry general concepts from the focus areas and from the national ITS architecture to specific issues at specific locations in the region. The region, like all regions, has identified bottlenecks, safety problems, economic opportunities, access concerns, and mobility issues that could be addressed in part by ITS. The ITS Task Force will continue to study the potential to compile data from ITS sources, and will use this information to impact and improve upcoming regional plans and programs. Ultimately, the actions of the MPO board and its subcommittees, including the ITS Task Force, are to further the adopted regional transportation goals; ITS can play a significant role in meeting or furthering these goals.

TABLE 1
TECHNOLOGY GOAL FROM THE DRAFT TRANSPORTATION VISION OF THE
NATIONAL CAPITAL REGION TRANSPORTATION PLANNING BOARD
November 1997

POLICY GOAL #4: The Metropolitan Washington Region will use the best available technology to maximize system effectiveness.

Objectives:

(1) Reduction in regional congestion and congestion-related incidents.

(2) A user-friendly, seamless system.

(3) Provision of on-demand, accurate, timely travel information to users.

(4) Simplified method of payment for transportation services.

(5) Improved management of weather emergencies and major incidents.

(6) Improved reliability and predictability of operating conditions on the region's transportation facilities.

(7) Full utilization of future advancements in transportation technology.

Strategies:

(1) Deploy technologically advanced systems to monitor and manage traffic, and to control and coordinate traffic control devices such as traffic signals.

(2) Improve incident management capabilities in the region through enhanced detection technologies and improved incident response.

(3) Improve highway lighting, lane markings, and other roadway delineation through the use of advanced and emerging technologies.

(4) Establish a unified, technology-based method of payment for all transit fares, public parking fees, and toll roads in the region.

(5) Utilize public-private partnerships to provide travelers with comprehensive, timely, and accurate information on traffic and transit conditions and available alternatives.

(6) Use technology to manage and coordinate snow plowing, road salting operations, and other responses to extreme weather conditions, and to share with the public assessments of road conditions and how much time it will take to clear roadways.

(7) Use advanced communications and real-time scheduling methods to improve timed transfers between transit services.

(8) Develop operating strategies and supporting systems to smooth the flow of traffic and transit vehicles, reduce variances in traffic speed, and balance capacity and demand.

(9) Maintain international leadership in taking advantage of new technologies for transportation, such as automated highway systems and personal rapid transit.
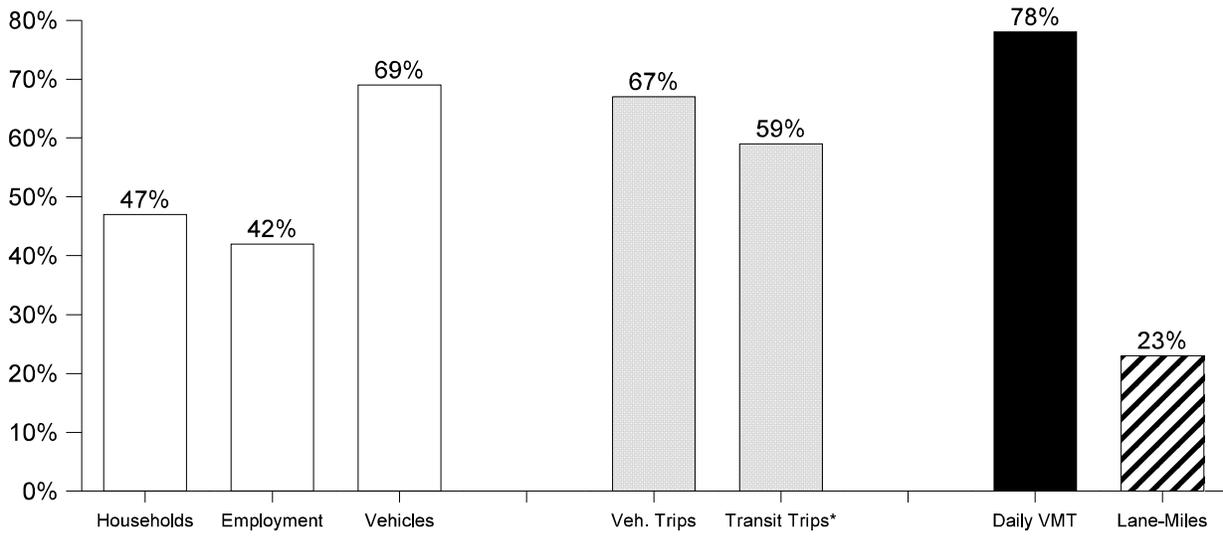
Figure 1

Planning Area of the National Capital Region Transportation Planning Board
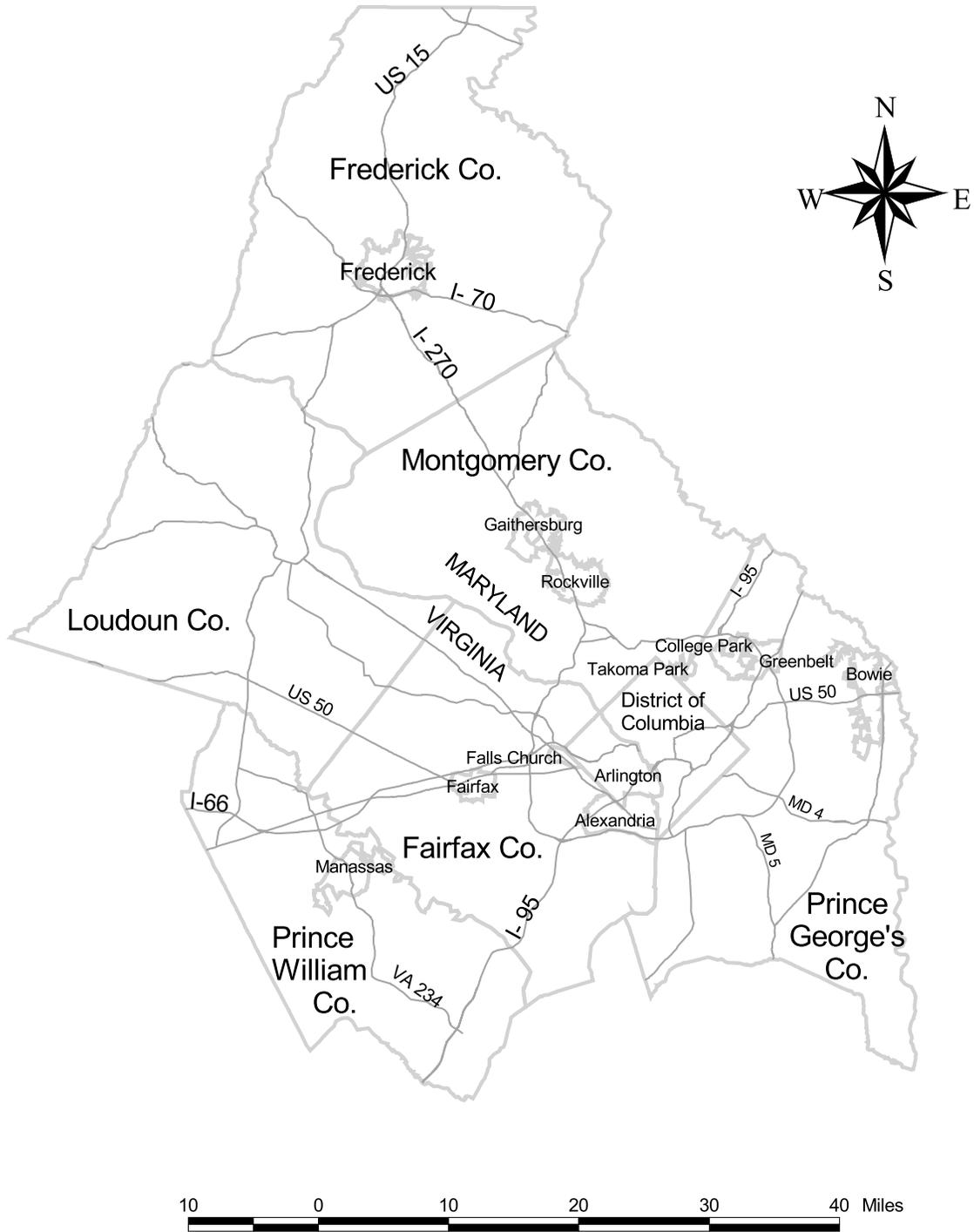
Figure 2

Percent Changes in Demographics and Travel in the Region, 1990-2020

SOURCE: *Air Quality Conformity Determination of the Constrained Long Range Plan and the FY98-2003 Transportation Improvement Program for the Washington Metropolitan Area,* Metropolitan Washington Council of Governments National Capital Region Transportation Planning Board, Washington, DC, July 16, 1997. These figures are for the TPB modeled area only. *Transit trip growth shown is for work (commute) trips only.