Overview of the Metropolitan Transportation Planning Process and Summary of Key Issues

A Briefing Notebook for Metropolitan Planning Organization Board Members Participating in the Metropolitan Transportation Planning Process

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PART I: INTRODUCTION

A transportation system is a very important contributor to a metropolitan area's economic health and quality of life. Not only does the transportation system provide opportunities for the mobility of people and goods, but over time it influences patterns of growth and the level of economic activity through the accessibility it provides to land. The performance of this system also relates to such public policy concerns as air quality, environmental resource consumption, societal equity, smart growth, and economic development. Because of this critical linkage between transportation and other societal goals, a formal process of transportation planning has been undertaken in metropolitan areas for many decades. This planning process includes not only the technical approaches for analyzing and evaluating alternative improvement strategies, but also the consideration of ever changing policy issues that come onto the local agenda.

The purpose of this notebook is to provide local officials an overview of key concepts in transportation planning that they will most likely encounter during their participation in the transportation planning process. The second section discusses transportation planning and its relationship to decision making. The third section presents short descriptions of important policy and planning topics that might be of interest to local officials. It is not the intent of this notebook to provide details of every aspect of each policy issue. Rather, this notebook will provide local officials a basic understanding of the key concepts associated with each issue, along with references if additional information is desired. Because the concerns addressed by the transportation planning process often change to reflect new problems and issues that come from a variety of different sources, this Notebook is designed to allow for easy addition of material.

Those interested in additional information on transportation planning should contact:

Office of Metropolitan Planning
Federal Highway Administration
U.S Department of Transportation
www.fhwa.dot.gov/environment/planning>

or

Office of Planning
Federal Transit Administration
U.S. Department of Transportation
www.fta.dot.gov/office/planning

PART II: OVERVIEW OF METROPOLITAN TRANSPORTATION PLANNING

The purpose of the metropolitan transportation planning process is to provide the information needed for decision makers to choose among alternative strategies for improving transportation system performance. To be successful, transportation planning should reflect a vision and the goals/objectives that have been established as desirable "futures" for the community. In addition, such planning includes a comprehensive consideration of a variety of alternative strategies; an evaluation process that encompasses a diverse set of concerns; collaborative participation of numerous transportation-related agencies and organizations; and an open, timely, and meaningful involvement of the public.

How does the metropolitan transportation planning process work?

- Transportation planning in metropolitan areas is intended to be a collaborative process, led by the metropolitan planning organization (MPO) but inclusive of other key stakeholders in the regional transportation system.
- The process is designed to foster involvement by the public and interested parties such as the business community, community groups, and environmental organizations.
- The planning process includes a number of steps including: forecasting future population and employment growth; assessing the projected land uses in the region; identifying major growth corridors and analyzing, through detailed planning studies, various transportation investments that may be needed; developing alternative investment scenarios that will ensure mobility for people and goods; estimating the impacts of the transportation system on air quality within the region; and developing a financial plan to implement the investments identified through the planning process.
- The planning process should take into account all of the modes of transportation that impact the surface transportation system such as airports and ports, and the impacts that those modes will have on the road and transit networks.

What are the products of the metropolitan planning process?

- Metropolitan transportation planning as a process includes a large number of
 activities designed to produce information for decision making. One of the ways this
 information is produced is through the development of documents that indicate
 planning directions and priorities in program/project implementation. The most
 important documents produced by the transportation planning process are:
 - Unified Planning Work Program (UPWP): The UPWP is the management plan for the planning program. Its intent is to coordinate the planning activities of all participants in the planning process. Because the UPWP reflects local priorities,

the content will likely differ from one metropolitan area to another. The UPWP will usually:

- describe the planning tasks and studies that will be conducted by planning participants over a one- to two-year period.
- include all federally funded studies,
- identify funding sources,
- provide a schedule of activities, and
- identify responsible agencies.
- > Transportation Plan: The transportation plan is an important statement of the directions the region will be taking with regard to investment in the transportation system. The plan shall "include both long range and short range strategies/actions that lead to the development of an integrated intermodal transportation system that facilitates the efficient movement of people and goods." Common characteristics of the plan include:
 - □ Focusing at the systems level, that is, including roadways, transit, non-motorized transportation, and intermodal connections.
 - Demonstrating preservation of existing facilities and efficient use of the existing system.
 - Reflecting regional land use, development, housing, and employment goals and plans.
 - Identifying projected demand for transportation services.
 - Identifying policies, strategies, and projects to address future needs.

Opportunities should be provided for active participation of interested parties in the development of the plan. In addition, the plan needs to be financially constrained (see Part III section on financial planning) and in cases where a metropolitan area is designated as a non-attainment or maintenance area, the plan must conform to the State Implementation Plan (see Part III sections on air quality and conformity).

- > Transportation Improvement Program (TIP): The TIP is a three-year program of transportation projects and strategies that are drawn from the metropolitan transportation plan. As such, it is the region's means of allocating limited transportation resources to projects and programs, and in the process of establishing a clear set of short-term transportation priorities. Characteristics of the TIP include:
 - ☐ It must cover three years of investment,
 - Be updated at least every two years,
 - Be financially constrained,
 - □ Conform with the State Implementation Plan (SIP) if the region is designated a non-attainment or maintenance area, and

- □ Be incorporated into the transportation improvement program for the State (known as the STIP).
- The metropolitan planning process should have a proactive strategy for providing outreach and opportunities for input from a wide-ranging set of planning participants. Public involvement opportunities occur throughout the process, and in particular are associated with the development of the plan and TIP. Special consideration should be given to involving segments of the region's population that are underrepresented or have been underserved with respect to transportation investment (see Part III section on environmental justice).
- A metropolitan area's designation as an air quality non-attainment or maintenance area places additional requirements on the transportation planning process. Most importantly, transportation plans, programs, and projects must be shown to conform with the state's air quality plan, known as the state implementation plan (SIP).
- Areas over 200,000 population known as transportation management areas (TMAs),
 must have a congestion management system (CMS) as part of the planning process
 that provides information on transportation system performance and that identifies
 actions/strategies to alleviate congestion and enhance mobility. In nonattainment
 areas, single occupant vehicle projects that significantly increase capacity must be
 shown to come from the CMS process.
- The transportation planning process should be based on effective interagency coordination and collaboration. This is particularly important with respect to the relationship between state transportation planning and the planning that occurs in a state's metropolitan areas.

What is the role of the MPO?

- The designation of metropolitan planning organizations (MPOs) as the forum of cooperative transportation decision making for principal elected officials was first required in 1975 as part of transportation planning regulations issued jointly by the Urban Mass Transportation Administration (predecessor to the Federal Transit Administration) and the Federal Highway Administration. These regulations made the MPO, along with the State, responsible for carrying out the urban transportation planning process.
- In a study of the role of MPOs in guiding the transportation planning process, the Advisory Commission on Intergovernmental Relations (ACIR) found that MPOs often have five core functions:
 - > Establish and manage a level playing field for effective multimodal, intergovernmental decision making in the metropolitan area.
 - Develop, adopt and update a long-range multimodal transportation performance plan for the metropolitan area that focuses on three types of performance: mobility and access for people and goods, system operation and preservation, and quality of life.

- > Develop and continuously pursue an appropriate analytical program to evaluate transportation alternatives and support metropolitan decision making, scaled to the size and complexity of the region and to the nature of its transportation issues and the realistically available options.
- > Develop and systematically pursue a multi-faceted implementation program designed to reach all the metropolitan transportation plan goals using a mix of spending, regulating, operating, management, and revenue enhancement tools.
- Develop and pursue an inclusive and proactive public involvement program designed to give the general public and all the significantly affected sub-groups access to and important roles in the four essential functions listed above [ACIR, 1997].
- In many cases, MPOs have additional responsibilities under state law. For example, California state law requires MPOs to allocate some non-federal transportation funds in their region, while other states give MPOs limited growth management and land use planning roles.
- According to Federal planning regulations, the MPO's primary responsibility is "...in cooperation with the State and with operators of publicly owned transit services...to carry out the metropolitan transportation planning process." The MPO approves the transportation plan. With the governor, the MPO approves the TIP. In non-attainment or maintenance areas, the MPO is responsible for coordinating the development of the transportation plan with the SIP and is legally obligated to make a conformity finding.
- Most MPOs are not the actual implementing agencies for projects but provide an overall coordination role in the planning for and programming of funding for projects.
- The MPO must ensure that other stakeholders in the transportation system, in addition to implementing agencies, are afforded an opportunity to participate in the planning process. These include airport authorities, maritime operators, rail-freight operators, port operators, and others within the MPO region.
- It is especially important to encourage public participation in planning, particularly to
 include those persons who have been traditionally under served by the transportation
 system and services in the region.

What are the relationships between the MPO and other agencies involved in transportation planning and project implementation?

 Transportation planning should be conducted in a cooperative manner because no single agency has responsibility for the construction, operation, or maintenance of the entire transportation system. For example, some facilities are part of the Interstate Highway System and subject to certain standards; others are county arterials or city streets designed, operated and maintained by counties or local municipalities. Transit systems are often built, operated and maintained by a separate entity. The MPO is responsible for coordinating the transportation planning process. This
means that it should be actively seeking the participation of relevant agencies and
stakeholders in the planning process.

How are Federal transportation funds allocated?

(to be developed)

The previous sections have focused on basic concepts in transportation planning and on the products of the planning process, with special attention given to the requirements of Federal regulations. Part III will provide additional detail on several important issues facing MPOs as they undertake transportation planning for their region.

PART III: MAJOR POLICY/PLANNING ISSUES

Although the transportation planning process is concerned primarily with the problems facing a particular metropolitan area, there are many issues that are common from one part of the country to another. In addition, some metropolitan areas might be actively involved with a planning concept (e.g., Land Use/Smart Growth) that is only just beginning to be considered by other regions. Understanding the basic components of such a concept can help in such situations.

The following sections provide short descriptions of important policy and planning issues that are being considered by many MPOs. The intent is to provide a basic understanding of the issue, discuss the role of the MPO, answer other related questions pertaining to the specifics of its consideration in the transportation planning process, and provide references for further information.

The issues found in the following sections include:

Air quality

Asset management (in development)

Congestion Mitigation & Air Quality Improvement Program (CMAQ)

Conformity

Economic Development

Environmental justice

Financial planning and programming

Freight movement

Intelligent transportation system (ITS) strategies

Intermodal connectivity

Land use/smart growth

Models and their use (in development)

Performance measures

Safety (in development)

System management (in development)

Transportation demand management (TDM)

AIR QUALITY

What is the relationship between transportation and air quality?

- Air pollution is caused by a number of factors including topography and weather, and sources created by human interactions with the environment. These include manufacturing, use of petroleum-based products like gasoline, and even bakeries and dry cleaners.
- The sources of air pollution are often referred to as either stationary, area, or mobile sources.
 - > Stationary sources include relatively large, fixed facilities such as power plants, chemical process industries, and petroleum refineries.
 - > Area sources are small, stationary and non-transportation sources that collectively contribute to air pollution and include dry cleaners and bakeries.
 - Mobile sources include on-road vehicles such as cars, trucks and buses; and offroad sources such as trains, ships, airplanes, boats, lawnmowers, and construction equipment.
- The key transportation-related pollutants are ozone, carbon monoxide, and fine particulates.
- Because transportation sources contribute to air pollution, the Clean Air Act (CAA)
 of 1990 identifies actions to be taken by States and MPOs to reduce emissions from
 on-road mobile sources.
- The CAA also requires that transportation and air quality planning be integrated in areas designated by the U.S. Environmental Protection Agency (EPA) as air quality nonattainment or maintenance areas.
- The CAA and the Transportation Equity Act for the 21st Century (TEA-21) both require that integrated transportation and air quality planning precede the allocation of federal funding for transportation projects

What is the role of the MPO in air quality issues?

- MPOs are responsible for deciding what transportation investments the State and/or MPOs will make in metropolitan areas and how the state will attain the Federal air quality standards (National Ambient Air Quality Standards (NAAQS)) for various pollutants.
- Because cars, trucks and buses contribute to air pollution, investments that include building new transportation facilities and providing transportation services cannot: create new violations of the air quality standards, increase the frequency or severity of existing violations of the standards, or delay attainment of the standards.
- The MPO is also required to ensure that transportation and air quality planning are coordinated and to identify programs and projects that will help reduce emissions

from on-road mobile sources of pollution. The *transportation conformity*¹ process establishes the major connection between transportation planning and emission reductions from on-road mobile sources and includes a number of requirements that MPOs must meet (see section on conformity).

- Transportation conformity is a way to ensure that Federal funding and approval are
 given to those transportation activities that are consistent with air quality goals. As
 part of each MPO approval or update to the long range transportation plan and the
 transportation improvement program (TIP), the MPO must formally determine that
 these plans and programs comply with the transportation conformity requirements.
- Officials need to be aware of the options and the trade-offs available to them so they
 can balance the need for transportation investment with the need to achieve healthful
 air.
- In addition, though not required, many MPOs have developed public education and communications programs to inform the public of the connections between transportation and air quality in their respective regions and to encourage the public to make travel choices that will benefit air quality.

What are the basic air quality requirements that apply to MPOs?

- The Clean Air Act (CAA) requires that each State environmental agency develop a
 plan called a State Implementation Plan (SIP). The SIP shows how the State will
 meet the National Ambient Air Quality Standards (NAAQS) for each type of air
 pollutant, according to the schedules included in the CAA.
- The air quality standards are usually expressed in terms of parts of pollutant per million (ppm) of ambient air and vary by type of pollutant. For each source category (e.g., stationary, area, mobile) the SIP assigns emission reduction targets. For on-road mobile sources, the emission reduction target is further refined into a regulatory limit on emissions, referred to as a "motor vehicle emissions budget".
- Emission reduction targets for mobile sources can be achieved through programs that address vehicle emissions (e.g., the use of reformulated gasoline, implementation of Inspection and Maintenance (I&M) programs); by changing how we travel (e.g., ridesharing or use of transit); or from transportation investments to reduce congestion (e.g., signal synchronization programs).
- It is the job of the MPO and State to decide on a combination of transit and highway
 investments that, in combination with SIP control measures such as I&M programs or
 reformulated gasoline, will result in emissions that do not exceed the motor vehicle
 emissions budget and that enable the State and each nonattainment area to attain the
 air quality standards.

¹U.S. Environmental Protection Agency, Criteria and Procedures for Determining Conformity to State or Federal Implementation Plans of Transportation Plans, Programs, and Projects Funded or Approved Under Title 23 U.S.C. or the Federal Transit Act, Title 40 C.F.R., Parts 51 and 93, November 24, 1993, as amended in August 1995, November 1995, and August 1997.

- According to the CAA, transportation plans, transportation improvement programs (TIPs) and projects cannot:
 - > create new violations of the NAAQS;
 - > increase the frequency or severity of existing violations of the standards; or,
 - > delay attainment of the standards.

What funding is available for air quality improvement programs and projects?

- The Federal Transit Administration provides funding for public transit projects including fixed rail transit, rail modernization, buses and bus facilities, including the purchase of alternatively fueled buses, and other public transit-related projects.
- Another key Federal funding source is the Congestion Mitigation and Air Quality Improvement Program (CMAQ) under TEA-21. Under the CMAQ program, areas are provided funding based upon the severity of pollution and the population of each nonattainment and maintenance area. Each State receives the CMAQ funding and then allocates it within the State to the air quality nonattainment and maintenance areas.
- The Surface Transportation Program (STP) in TEA-21 allows States to "flex" funds to a variety of projects, including transit, transportation demand management and other strategies that will help to reduce emissions.
- Other sources of funding include programs administered by the EPA, the U.S. Department of Energy and, in many areas, State and local funding programs are in place.

- 1. <www.fhwa.dot.gov/environment/conform.htm>
- 2. <www.epa.gov/otag>
- 3. <www.fhwa.dot.gov/environment/cmaq.htm>
- 4. <www.fhwa.dot.gov/environment/fundprog.htm>
- 5. <www.energy.gov/transportation/index.html>

CONFORMITY

What is transportation conformity and why do we need It?

- The purpose of the transportation conformity process is to integrate transportation and air quality planning in areas designated by the U.S. Environmental Protection Agency (EPA) as air quality nonattainment or maintenance areas. Transportation conformity ensures that transportation investments by States and MPOs help their areas attain the National Ambient Air Quality Standards (NAAQS).
- The conformity process includes several major components including: interagency consultation, regional emissions analysis, and project level analysis. If transportation control measures (TCMs) are part of the State Implementation Plan (SIP) for attainment, an assurance must be made that TCMs are being implemented on schedule.
- The Clean Air Act (CAA) of 1990 strengthened the requirements for transportation conformity because many areas throughout the United States were continuing to violate air quality standards. Congress determined that without closer coordination between transportation and air quality planning, violations of the public health-based standards would continue.

What is the role of the MPO in transportation conformity?

- The MPO is responsible for making a finding that the regional transportation plan and transportation improvement program (TIP) meet the conformity requirements and that the proposed transportation investments will not create new violations of the air quality standards, increase the frequency or severity of existing violations, or delay attainment of the standards.
- While the MPO has the responsibility to make this finding, the success of the conformity process depends upon Federal, State and local transportation and air quality agencies working together to meet the transportation conformity requirements.

What is a conformity determination and how frequently must a determination be made?

- A conformity determination is the finding by the MPO policy board, and subsequently the U.S. DOT(FHWA/FTA), that the transportation plan and TIP meet the conformity requirements. This includes a demonstration that the regional emissions from all proposed projects will not exceed the limitation on motor vehicle emissions included in the State Implementation Plan (SIP) for each pollutant for which the region violates the air quality standards.
- A formal procedure to ensure interagency consultation on critical issues is also required as well as an opportunity for public participation in transportation and air quality planning.
- In addition, under the metropolitan planning requirements of TEA-21, projects cannot be approved, funded, advanced through the planning process, or implemented unless those projects are included in a conforming transportation plan and a TIP that is fiscally constrained. This means that the funding necessary to implement the

- transportation plan is reasonably expected to be available over the 20-year plan period and that the funding for TIP projects is identified and committed.
- A conformity determination must be made each time the MPO updates its transportation plan (no less than every three years), each time the MPO updates its TIP (except for minor amendments), and not more than 18 months after a SIP is revised. Attachment A shows the steps in the transportation conformity process.

What happens if the MPO cannot make a conformity determination?

- If an MPO cannot meet the transportation conformity requirements, then only certain types of projects may proceed until the requirements can be met.
- Options available to the MPO include changing the mix of projects in the transportation plan and/or TIP so that the requirements can be met or requesting a SIP revision to adjust the limitation on emissions from on-road mobile sources.

Who needs to be involved in transportation conformity?

- An interagency consultation process must be in place and the public must have an opportunity to comment on the MPO conformity determination.
- MPOs are required to inform the public of their intention to make a conformity determination, to make all relevant documentation reasonably available to interested parties, and to give interested parties adequate time to review documentation and supporting materials.

What actions are subject to transportation conformity requirements?

- The MPO's 20-year transportation plan and TIP are subject to the conformity requirements. This includes all projects that are expected to be funded or that will require any type of approval by the Federal Highway Administration (FHWA) or Federal Transit Administration (FTA) over the life of the plan or TIP.
- In addition, any regionally significant projects (as defined by the conformity rule) that
 are not Federally funded or approved must be included in the regional emissions
 analysis of the transportation plan and TIP. This must happen so that the entire set of
 planned transportation investments can be taken into account in the emissions
 analysis.
- Finally, project level analysis is required on certain projects to assess expected concentration levels of carbon monoxide and fine particulates.

What are motor vehicle emissions budgets and can they be changed?

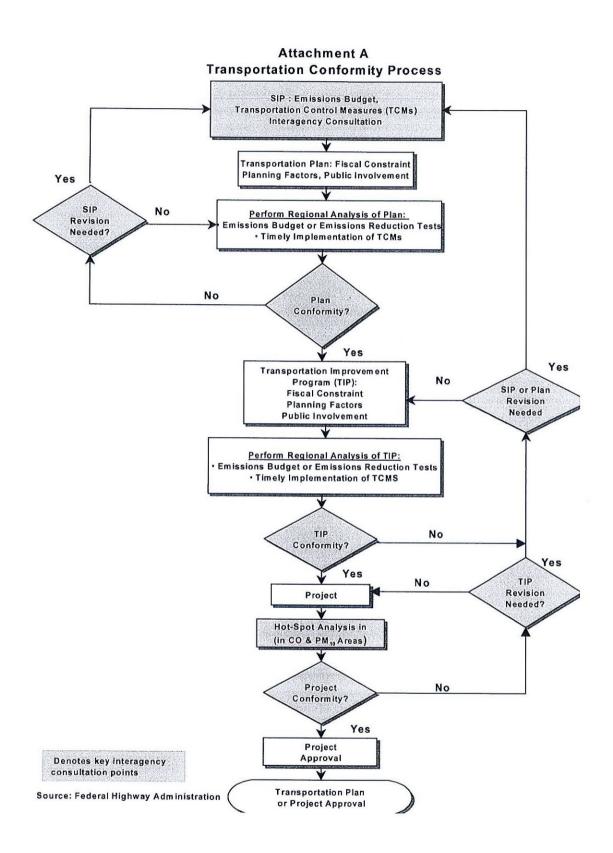
 Motor vehicle emissions budgets are the targeted levels of on-road mobile emissions that are included in the SIP. These budgets essentially "cap" the emissions allowed from all of the projects in the transportation plan and TIP and from other, nonfederally funded or approved projects that are regionally significant.

- As the nonattainment area gets closer to its attainment date (e.g., 2002, 2006, 2010) the emissions budget should decrease, indicating that the region is demonstrating attainment.
- Motor vehicle emissions budgets can be reduced; however, such an action requires revising the SIP. This means that the required emission reductions no longer coming from mobile emissions must come from some other source and that there is a commitment to making these reductions.
- Revising the SIP is a complicated and lengthy process and can impact the MPO's
 ability to proceed with desired transportation investments. So long as a conformity
 determination cannot be made, the MPO is unable to proceed with all but a limited set
 of projects (e.g., safety improvements).

What are transportation control measures and how are they developed?

- Transportation control measures (TCMs) refer to strategies that reduce emissions
 from motor vehicles. These are the major transportation means available to MPO's to
 reduce motor vehicle emissions. Other strategies that can help such as Inspection and
 Maintenance programs and reformulated gasoline are not considered TCMs and are
 not directly under the control of the MPO.
- The CAA includes a specific list of sixteen strategies that are considered TCMs. They
 include offering travel options such as transit, bicycling and telecommuting and
 strategies to manage travel demand by, for example, charging for parking or use of
 roads during certain hours.
- TCMs included in a SIP means they are legally enforceable actions and must be implemented on the schedule called for in the SIP.
- If the MPO wants to revise a TCM, they must request a SIP revision, which can be a lengthy process. Alternatively, TCMs can be included in the transportation plan and TIP and implemented along with other projects. Such an approach offers more flexibility to the MPO and transportation providers.
- Examples of why TCMs might need to be revised include terminating a transit service due to inadequate ridership; lack of adequate participation in a telecommuting project; and schedule or other issues associated with building a new high-occupancy vehicle (HOV) lane.

- 1. <www.fhwa.dot.gov/environment/conform.htm>
- 2. <www.epa.gov/otag>



CONGESTION MITIGATION AND AIR QUALITY IMPROVEMENT (CMAQ) PROGRAM

What is the CMAQ Program?

- The Congestion Mitigation and Air Quality Improvement (CMAQ) program was
 established by the Intermodal Surface Transportation Efficiency Act of 1991
 (ISTEA). It was designed to be an innovative and flexible funding source to States
 and MPOs for transportation projects and programs that help meet the requirements
 of the Clean Air Act (CAA).
- The CMAQ program was continued in the TEA-21 and Congress authorized a total funding level of \$8.1 billion over 6 years.

How much money does the MPO receive each year in CMAQ funding?

- Funding under the CMAQ program is available to areas that do not meet the National Ambient Air Quality Standards (NAAQS) (nonattainment areas), as well as areas that were formerly nonattainment areas, but that are now in compliance with the NAAQS (maintenance areas).
- Funds are distributed to States based on a formula that considers population by county and the severity of air quality problems within nonattainment and maintenance areas. Greater weight is given to areas that violate both the ozone standard and the carbon monoxide standard.
- Each year the amount of funding any individual MPO will receive varies depending on the above factors. The FHWA posts the annual population numbers in each nonattainment and maintenance area and the weighting formula for the apportionments of CMAQ funding on its website:
 <www.fhwa.dot.gov/environment/cmag.htm.>

What types of projects are funded with CMAQ funding?

CMAQ funding is focused on air quality improvement and provides funds for projects
that expand or initiate transportation services with air quality benefits. Typical
projects include: transit improvements, shared-ride services, traffic flow
improvements, pedestrian and bicycle programs, construction of high-occupancy
vehicle (HOV) lanes, inspection and maintenance programs, and transportation
demand management strategies.

Who makes decisions on which projects to implement with CMAQ funding?

- CMAQ project decisions must be coordinated through the MPO planning process and are made collaboratively by the MPO and State, subject to Federal eligibility guidelines.
- The Federal guidelines on CMAQ are flexible in order to promote innovative and non-traditional projects such as vehicle inspection and maintenance programs and bicycle and pedestrian programs.

 Many MPOs have established broad-based outreach programs to encourage and attract new partners in the provision of innovative programs to reduce emissions. Projects funded through these partnerships include purchase or conversion of vehicles to alternative fuels and the implementation of public education programs on the linkages between transportation and air quality.

How can an MPO assess the impacts of CMAQ projects on air quality?

 A variety of tools can be used to analyze the projected impacts of projects funded through the CMAQ program. The FHWA recently published a report on a variety of techniques to estimate the impacts of CMAQ projects and transportation control measures on emissions. See:_<www.fhwa.dot.gov/environment/tcm.htm>.

How do we know whether a project is cost-effective in terms of emission reductions?

• Information on the cost effectiveness of transportation control measures (TCMs) can be found at: <www.fhwa.dot.gov/environment/cmaq.htm.>

Additional sources of information:

\(\sum \) www.fhwa.dot.gov/environment/cmaq.htm\(\sim \)

ECONOMIC DEVELOPMENT

What is the impact of transportation on economic development?

- Transportation's basic purpose is moving people and goods from one place to another. Yet the interface between transportation investment and economic development has broad implications which go beyond the physical impacts of transportation facilities and services.
- An efficient transportation system can improve the productivity of the economy and can shape development patterns as well as impact the human and natural environments.

What can MPOs do to ensure that transportation investments help retain and attract businesses and foster economic development in communities?

While much remains to be learned about direct linkages between transportation and
economic development, better planning tools are increasingly available to assist
MPOs better understand the interactions. Examples include using land use inputs in
transportation models, use of geographic information systems (GIS) to understand
how transportation facilities impact specific parts of a region or community, and use
of travel demand and emissions models to better understand the impacts of
transportation facilities on air quality.

What questions should MPO policy makers ask about these connections?

- Policy makers should use analysis provided by staff to ask what the projected impacts
 of proposed investments might be on additional economic development and on the
 transportation needs that will result from future growth. These questions are more
 complex than in the past because the nation's surface transportation system has
 largely been built and the issues which policy makers must tackle go beyond where to
 build more highways or airports, as examples.
- Possible questions include:
 - > What mode of transportation is most cost-effective in meeting a region's transportation needs?
 - > How should an MPO prioritize its available funding to maximize economic growth?
 - > What is the trade-off between additional growth in an urban area and the cost of expanding
 - > transportation systems to accommodate greater growth?
 - > What effect does the expansion of transportation systems have on the need to invest in other types of infrastructure?

What are the key factors that policy makers should consider in understanding the relationship between transportation and economic development?

• There are at least four key factors that should be considered: (a) relevant types of transportation investment, (b) data necessary to analyze the economic effect of the

investment, (c) appropriate methodology to analyze the economic effect, and (d) the proper dissemination of the results and education of professionals as to the economic effects of transportation investment.

ENVIRONMENTAL JUSTICE

What is environmental justice?

 Environmental justice is the examination in the planning process of possible disproportionately high and adverse effects on minority or low-income populations.
 These types of impacts should be considered along with other community impacts when evaluating plans, programs, and projects.

What is the role of the MPO in considering environmental justice issues in transportation planning?

- As the agency responsible for coordinating the regional transportation planning process, the MPO should make sure that all segments of the population have been involved with the planning process.
- The impacts of proposed transportation investments on underserved and underrepresented population groups should be part of the evaluation process. In particular, the following questions are important in addressing environmental justice issues in the planning process:
 - (1) How will the public participation process reach low income and minority communities, including:
 - --how and where will information be disseminated?
 - --what information will being disseminated?
 - --where and when will public meetings be held?
 - --what is the timing of the meetings relative to the planning process?
 - --how will the process elicit issues of particular concern to low income and minority communities?
 - --what are other avenues for reaching minority/low-income communities, e.g., contacts with community leadership, community advisory boards, focus groups, surveys?
 - (2) What data are being collected relating to minority/low-income communities, including
 - --evaluating what information is already being collected?
 - --identifying what further information can and should be collected?
 - (3) How is information and data incorporated into decision making?
 - -- How is this information considered in creating the transportation plan?
 - --How is information relating to environmental justice issues relayed to the Board?
 - --Is additional information needed for the Board to adequately consider the impacts of transportation decisions on low-income and minority communities?

What are the planning requirements concerning environmental justice?

 Title VI of the Civil Rights Act of 1964, which prohibited discrimination in any program receiving federal assistance, is the legal foundation for environmental justice considerations.

- The 1969 National Environmental Policy Act (NEPA) section 109(h) also requires that the "human condition" be considered when contemplating any action having federal support.
- Executive Order 12898 signed in 1994 entitled Federal Actions to Address
 Environmental Justice in Minority Populations and Low-Income Populations that
 reaffirmed the importance of environmental justice as a key topic in federally-aided
 programs and established a process for assuring that such issues were considered by
 federal agencies.
- Both the Federal Highway Administration and the Federal Transit Administration have issued policy guidance on how environmental justice concerns can be incorporated into metropolitan transportation planning.

Additional sources of information:

1. <www.fhwa.dot.gov/////environment//guidebook/chapters/v2ch16>

FINANCIAL PLANNING AND PROGRAMMING

What is the difference between financial planning and programming?

- MPOs must understand their funding needs over the 20-year period of the transportation plan and develop and execute a plan in order to pay for needed investments including the maintenance and operation of the existing transportation system. Financial planning takes a long-term look at how transportation investments will likely be funded and the possible sources of funds.
- Programming of funds refers to the short term commitment of funds to specific
 projects that are included in the transportation improvement program (TIP) and
 notifying the Federal Highway Administration (FHWA) and Federal Transit
 Administration (FTA) of the sources of the funds the MPO intends to use to
 support each project.

What is the financial plan element of the transportation plan?

- The 20-year transportation plan must include a financial element that spells out how
 much funding is needed over the life of the plan, and how the MPO expects to fund
 the projects included in the plan.
- A financial plan might include anticipated revenues from the FHWA and FTA, State
 government, regional or local sources, the private sector, and from user charges. The
 bottom line is that the financial plan must be reasonable and a strategy must be in
 place to ensure that needed revenues will in fact be available over the 20-year period.
- As an example, a financial plan could assume that the amount of Federal funds remains constant over the first five years of the plan, and then escalate at a rate equal to inflation or the Consumer Price Index (CPI). The financial element could also assume that State gasoline taxes dedicated to transportation are increased every five years by a certain amount based upon past trends. Further, the transportation plan might assume a new revenue source from a local sales tax within an MPO region, so long as the case can be made that this is a reasonable assumption.

How do funds get programmed?

- Each State must submit a State Transportation Improvement Program (STIP this is
 the programming document for the State) to the FHWA/FTA every two years. The
 STIP includes all of the funds expected from the FHWA and FTA for the upcoming
 three years and includes each MPO's TIP and all of the projects included in the first
 three years of that TIP.
- The STIP must be fiscally constrained, which means that the STIP must identify the source of funding for proposed projects while ensuring the continued operation and maintenance of the existing transportation system.
- Amendments to the STIP are common given the uncertainty related to the
 development of plans and specifications, environmental issues, contracting issues,
 project readiness, and other factors that necessitate the need to adjust project
 schedules and budgets from time to time. If an MPO wants to amend a project in the
 STIP, it first must amend its TIP.

 The FHWA and FTA rely upon the STIP to know which projects are proceeding and what, if any, actions they must take to ensure that projects move ahead on schedule.

What is the process by which projects included in a TIP get programmed for funding?

- The TIP must be consistent with the transportation plan.
- In the TIP, the MPO indicates which projects will be advanced in each of the years of the TIP. The MPO must identify which combination of sources of funds (Federal, State, local) will be used for each project and, in air quality nonattainment and maintenance areas, must show that enough funds will be available for all of the projects included in the first two years of the TIP. Some projects are multi-year in nature and that will be indicated in the TIP.
- The MPO-approved TIP is then submitted to the State for inclusion in the STIP, which is then submitted to the FHWA/FTA. In air quality nonattainment and maintenance areas, the TIP must also be shown to meet transportation conformity requirements.

How do MPOs know how much money is going to be available?

• TEA-21 requires that revenue forecasts be cooperatively developed by the MPO, the State, and local agencies including public transit agencies, in order to help MPOs know how much funding is likely to be available for transportation projects in their area. This provision is intended to improve financial planning capability and to enable a longer term view of financial needs.

What are the sources of transportation funds?

- Transportation funds come from a number of sources including tolls, bonds, and State, local, and federal excise taxes on various fuels to name just a few sources. The source of transportation funds construct a particular project can vary greatly from one area to another because each area can decide which mix of funds is best suited to meet local needs.
- The funds are allocated into various programs before being redirected to the State. These include the Interstate System/Interstate Maintenance Program, the Bridge Replacement and Rehabilitation program, the Surface Transportation Program (STP) (which includes Enhancements funding and Safety funding), the Federal Lands Highway Program, and the Congestion Mitigation and Air Quality Improvement program.
- Each of these programs has certain eligibility requirements although there is quite
 a bit of flexibility in TEA-21 that allows the shifting of funds between some of
 these programs. For example, STP funding can be used for transit buses and
 Interstate Program funds can be shifted to other programs so long as it can be
 demonstrated that Interstate Highway Program investment needs are being fully
 addressed.
- The FTA oversees the allocation of transit funds, which generally fall into two major categories: formula capital grants for transit operators, and Capital

Investment Grants, which include new rail starts funds, rail modernization funds, and funds for bus and bus-related facilities.

• TEA-21 also provides planning funds that are allocated to States and MPOs. Called State Planning and Research funds (SP&R) and planning funds (PL) respectively, PL funds generally comprise a large portion of the MPO budget for conducting necessary studies and for developing their transportation plans and TIPs.

- 1. http://www.fhwa.dot.gov/programs.html
- 2. http://www.fta.dot.gov

FREIGHT MOVEMENT

What is the role of freight movement in transportation?

- The movement of freight can be a very important part of a metropolitan area's transportation system, especially as it relates to a region's economic success.
- The efficient movement of goods within and through a region can be critical to manufacturing and service industries, to companies in the international trade business, and to terminal operators. This becomes particularly important in metropolitan areas having ports, air cargo airports, intermodal freight yards, and large trucking terminals.

What is the role of the MPO in freight transportation planning?

- As the forum for cooperative transportation planning and decision making, the MPO
 has an important responsibility to make sure that freight movement is considered as
 part of the transportation planning process.
- Many MPOs have systematically incorporated a concern for freight movement into their planning activities. Actions have included:
- > Defining a "freight network" that emphasizes those elements of a metropolitan area's transportation system that are critical for efficient movement of freight.
- > Identifying system performance measures that focus on freight movement.
- Developing freight-oriented data collection and modeling activities that can be used to identify problems and potential solutions.
- > Developing a "freight or goods movement" advisory committee that can help identify important bottlenecks in the freight network.
- Different types of strategies that might be considered in the context of transportation planning include:

Truck Restrictions

- --peak period bans
- -- freeway section bans
- --route diversions
- --designated access routing
- --hazardous materials route restrictions
- --local truck and noise ordinances

Road pricing

- -- peak period permits
- -- freeway permits
- -- peak period tolls
- --peak/off peak rate differentials

Road design and construction

- -- capacity and safety improvements
- --improved entry/exit ramps/merges
- --continuous merge lanes
- -- exclusive truck facilities
- --peak HOV only/off peak truck lanes

Fleet management

- --voluntary off peak operations
- --automatic vehicle location/routing
- --driver training and management

Traffic engineering

- --lane designations and restrictions
- --wider lanes
- --continuous merge lanes
- --variable message signs
- --sign placement
- --truck advisory signs
- --speed restrictions

Inspection/enforcement

- -- automated surveillance
- --urban truck inspections/enforcement

Shipper/receiver actions

- --voluntary off peak operations
- --mandatory off peak operations

Incident management

- --automated detection
- --site and area surveillance/communications
- --organizational changes

Information management

- --highway advisory radio
- -- traffic information

What requirements apply to the MPO?

- The Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991 was the first federal legislation that placed emphasis on the consideration of freight movement in transportation planning.
- TEA-21 reinforced this emphasis by stating that the transportation planning process should "support the economic vitality of the metropolitan area (or State), especially by enabling global competitiveness, productivity and efficiency; increase the accessibility and mobility options available to people and for freight; and enhance the integration and connectivity of the transportation system, across and between modes, for people and freight."

What funding is available for freight planning and project implementation?

- Freight planning is an eligible activity under the metropolitan planning program. The
 funding of projects, however, is more constrained due primarily to statutory eligibility
 constraints.
- Projects that provide improved access to terminals or ports can be included in the federally funded transportation improvement program.
- In those cases where direct linkage can be made to reductions in pollutant emissions, Congestion Mitigation and Air Quality (CMAQ) funds can also be used to support freight investment projects.

- 1. <www.fhwa.dot.gov/freightplanning/index>
- 2. <www.ops.fhwa.dot.gov/freight/freight_finance_report> especially for funding

INTELLIGENT TRANSPORTATION SYSTEM (ITS) STRATEGIES

What are ITS strategies?

- Intelligent transportation systems (ITS) are defined as "the application of advanced sensor, computer, electronics, and communications technologies and management strategies—in an integrated manner—to increase the safety and efficiency of the surface transportation system."
- Whereas historically, transportation plans might have focused solely on the addition
 of new roads and transit facilities, ITS technologies now permit improved system
 management through better surveillance and information dissemination to travelers.
- Typical types of ITS strategies might include: traffic management centers, coordinated traffic signal systems, real-time traveler information systems, automated vehicle location devices, emergency response centers, automated fare/smart cards, and advance vehicle control/monitoring systems.

What is the role of the MPO in considering ITS strategies in metropolitan transportation planning?

- Proposed federal planning regulations require that metropolitan areas adopt a strategy
 to integrate an appropriate ITS program into the established planning and
 implementation process. This integration strategy could be defined as "a systematic
 approach for coordinating and implementing intelligent transportation system
 investments funded with federal highway trust funds to achieve an integrated regional
 system."
- The MPO is to be responsible for developing the integration strategy, which should
 include the development of a systems "operations concept", an assessment of existing
 and future ITS systems, identification of strategies that promote regional integration
 of system operations, and identification of resource commitments and the staging of
 projects over time.
- Important in this integration strategy is the development of what is called a "regional
 architecture," which is the framework within which all the different ITS components
 work.
- Given the many different operating agencies that have responsibilities for transportation in a typical metropolitan area, the MPO can play a very important role in coordinating interagency action in developing regionally based system operations strategies.

What are the planning requirements for ITS consideration in metropolitan transportation planning?

 Pending federal planning regulations will require the development of a regional ITS integration strategy. Such a strategy must be closely linked to the transportation plan.

- 1. Institute of Transportation Engineers. 1997. A Toolbox for Alleviating Traffic Congestion and Enhancing Mobility. Washington D.C.
- 2. <http://www.its.dot.gov>
- 3. <http://www.itsa.org>

INTERMODAL CONNECTIVITY

What is intermodal connectivity?

- The performance of the transportation system, as perceived by system users, can be
 related to the ease with which an individual trip (passenger or goods movement) can
 occur from an origin to a destination with acceptable levels of service, regardless of
 the modes used.
- Intermodal connections—for example, transfer points, terminals, and stations where
 movements occur between modes—are critical components of an effective
 multimodal transportation system.
- Intermodal connectivity is providing in the transportation system the capability of transferring from one mode to another, while experiencing acceptable levels of service.

What is the role of the MPO in considering intermodal connectivity in the planning process?

- The MPO coordinates the transportation planning process and is responsible for developing and approving the regional transportation plan. The plan is usually focussed on the transportation network, a level of analysis and concern that includes important intermodal connections. The MPO should thus consider intermodal connectivity issues in the planning process.
- The planning process should provide opportunities for the participation of stakeholders, interested organizations and the general public. Transit operators, shippers and freight movers, pedestrian and bicycle groups, and highway agencies have important interests in effective intermodal connections. The MPO should actively seek the participation of these groups in the planning process.

What are the planning requirements for considering intermodal connectivity in the transportation planning process?

There are no specific planning mandates that require intermodal connectivity be part
of a transportation plan. TEA-21, however, included "enhanced system integration
and connectivity" in its list of planning factors that should be considered as part of
the transportation planning process,

LAND USE/SMART GROWTH

What is the relationship between land use and transportation?

- The linkage between land use and transportation is fundamental to understanding transportation system performance. Put simply, trip-making patterns, volumes, and modal distributions are largely a function of the distribution and use of land. Thus, at individual development sites, exercising control over the trip generating characteristics of the land use (e.g., development density) can make the resulting demand consistent with the existing transportation infrastructure and the level of service desired.
- Over the long run, the spatial distribution of land use can greatly influence regional travel patterns, and in turn, this land use distribution can be influenced by the level of accessibility provided by the transportation system.

What is the role of the MPO in land use and transportation?

- The role of the MPO will vary according to State/local legal authority and history on land use decisions. In some cases, MPOs have review responsibility for local land use decisions that will are considered to be of regional significance. In other situations, land use decisions are solely the prerogative of local officials.
- However, no matter what role the MPO has in decision making, the transportation
 planning process should take into account the comprehensive land use plans of the
 region and/or local jurisdictions.

What are the planning requirements for considering land use in the transportation planning process?

- Although Federal laws and regulations do not mandate specific land use actions,
 Federal planning regulations have reinforced the importance of the linkage between transportation planning and land use.
- For example, the metropolitan transportation planning process should "consider the likely effect of transportation policy decisions on land use and development and the consistency of transportation plans and programs with the provisions of all applicable short- and long-term land use and development plans..."
- The plan itself should "reflect, to the extent that they exist, consideration of the
 area's comprehensive long-range land use plan and metropolitan development
 objectives; national State, and local housing goals and strategies; community
 development and employment plans and strategies; and employment plans and
 strategies...."

What is smart growth?

- Smart growth is "a set of policies and programs design to protect, preserve, and
 economically develop established communities and valuable natural and cultural
 resources." With regard to transportation, smart growth policies link investment in
 the transportation system with desired land use patterns that will result in the more
 efficient utilization of infrastructure and in reduced environmental impacts.
- Smart growth now considers land use strategies as possible solutions to both transportation and environmental problems, and for achieving quality of life goals. Strategies include:
 - Urban limit boundaries and urban development reserves designed to produce compact development in areas where urban services are already available or are scheduled.
 - Mandatory consistency between local land use plans and local and regional transportation plans.
 - > Requirements for the provision of adequate public facilities concurrent with development, or attainment of minimum level of service standards.
 - > Balancing of job growth with housing development, priced and located to match the needs and incomes of the work force.
 - > Minimum as well as maximum development densities and floor area ratios t ensure adequate development for transit to work.
 - > Incentives and bonuses for desired land uses and for developments that provide desired transportation and land use amenities.
 - > Site design planning emphasizing pedestrian access and transit serviceability.

What is the role of the MPO in smart growth?

- Smart growth policies are usually developed and mandated at the state and sometimes
 regional level. The role of the MPO will vary according to the authority and
 influence it has in regional land use matters.
- As the organization that approves the transportation plan, and along with the governor
 the organization that approves the TIP, the MPO can provide an important influence
 on the appropriateness of transportation investments in light of more encompassing
 quality of life and economic development policies.
- The transportation planning process provides critical input into a regional Smart Growth strategy. The transportation plan, in particular, outlines the vision, goals, and overall approach toward transportation investment, and thus can be strongly linked to Smart Growth policies. Typically, this linkage begins with alternative scenarios of urban development and the adoption of a vision that will guide transportation investment. This vision then relates to the types of strategies considered, the emphasis given to targeted investment in selected locations of the metropolitan area, and the timing of this investment.

- 1. Institute of Transportation Engineers. 1997. A Toolbox for Alleviating Traffic Congestion and Enhancing Mobility. Washington D.C.
- 2. _____. 2000. "Smart Growth? Sensible Growth? Sustainable Growth? Balanced Growth?...Responsible Growth—What are the Transportation Needs to Achieve This Growth?" *ITE Journal*. April.
- 3. <www.op.state.md.us/smartgrowth>
- 4. <www.uli.org/indexJS>

PERFORMANCE MEASURES

What are performance measures?

- Performance measures are indicators of how well the transportation system is
 performing with regard to such things as average speed, reliability of travel, and
 accident rates. In addition, many metropolitan areas use performance measures to
 monitor the achievement of societal goals such as the mobility of disadvantaged
 populations, levels of air quality, and the health of the economy.
- Performance measures are used as feedback into the decision making process, that is, is the performance of the transportation system (or economy, air quality, etc.) getting better or worse over time? And importantly, is transportation investment making a difference?
- Some example performance measures as they relate to goals include:

Accessibility

Average travel time from origin to destination

Average trip length

Percent population within "x" minutes of "y" percent of employment sites

Mobility

Mode split

Lost time due to congestion

Transfer time between modes

Percent on-time transit performance

Economic development

Jobs created

Percent of region's unemployed that cite transportation as principal barrier

Economic cost of lost time

Environmental and resource consumption

Tons of pollution generated

Fuel consumption per vehicle mile traveled

Sprawl—difference between change in urban and suburban household densities

Change in acres of wetlands

What is the role of the MPO in defining and using performance measures?

- The MPO can take a leadership role in developing performance measures that provide
 the information desired by regional and local decision makers. Because performance
 measures are strongly linked to the goals and objectives that result from the MPO
 process, their development and on-going support can become part of the
 transportation planning activities of the MPO.
- If performance measures are to be developed, they should be subject to the MPOsponsored public involvement program.

Additional sources of information:

1. Transportation Research Board. 2000. A Guidebook for Performance-Based Transportation Planning. NCHRP Report 446. Washington D.C.

TRANSPORTATION DEMAND MANAGEMENT (TDM)

What is transportation demand management (TDM)?

- In its broadest sense, transportation demand management is any action or set of
 actions intended to influence the intensity, timing, and distribution of transportation
 demand for the purpose of reducing traffic congestion or enhancing mobility
 options.
- Such actions can include offering commuters one or more alternative transportation
 modes and/or services, providing incentives to travel on these modes or at noncongested hours, providing opportunities to better link or "chain" trips together,
 and/or incorporating growth management or traffic impact policies into local
 development decisions.

What is the role of the MPO in encouraging the use of TDM actions?

- Transportation demand management strategies are part of the toolbox of actions available to transportation planners for solving transportation problems. As such, MPOs should make sure that TDM actions are considered as part of the planning process.
- In areas over 200,000 population where congestion management systems are required, TDM actions should be considered as part of the set of strategies to reduce congestion or enhance mobility.

What is the likely impact of TDM actions on transportation system performance?

- Available evidence suggests that well-conceived and aggressively promoted demand reduction programs can decrease peak period traffic at many <u>sites</u> by as much as 10 to 15 percent. In fact, significantly higher demand reduction levels have been achieved at several employment sites.
- Demand reduction efforts, however, unless undertaken on a truly massive scale, can
 have only a <u>local</u> impact. They can relieve spot congestion for example, at
 entrances and exits to large employment centers but they cannot appreciably
 reduce traffic on freeways and major arterials.
- The only exception to this seems to be areawide road pricing schemes that at least from a modeling perspective indicate significant influence on travel demand.
- Studies have shown that strategies of employer support for ridesharing, use of
 financial incentives to shift travel to alternative modes, restricting the number and
 use of parking spaces, and charging higher prices for parking are important
 supporting strategies for changing traveler behavior.

- 1. Institute of Transportation Engineers. 1997. A Toolbox for Alleviating Traffic Congestion and Enhancing Mobility. Washington D.C.
- 2. http://www.vtpi.org/tdm