Integrating Air Quality and Transportation Planning

A Compendium of Workshop Summaries for Regional Councils and Metropolitan Planning Organizations

2001-2005
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Executive Summary
Integrating Air Quality and Transportation Planning

Introduction: Air Quality and Transportation Planning
Federal legislation—specifically, the air quality provisions of the Clean Air Act, as amended and the transportation planning provisions of Title 23 and Title 49 of the United States Code (ISTEA and TEA-21, respectively)—require the integration of transportation and air quality planning in areas that are designated by U.S. EPA as nonattainment. In other words, areas that do not achieve the National Ambient Air Quality Standards (NAAQS) for ozone are required by federal law to maintain a balance between transportation investments and strategies and their impact on air quality.

This legislation has, in turn, created numerous challenges for those agencies involved in transportation planning or air quality monitoring, such as Councils of Government and Metropolitan Planning Organizations, State Departments of Transportation, local transit agencies, as well as state and local air quality agencies. Further, the challenges these organizations must confront range from the basics of understanding the federal legislation and its subsequent compliance issues, as well as the more exacting details involved with implementing conformity strategies to achieve air quality standards, while, at the same time, targeting transportation investments. As such, large and small organizations must have the capacity, data and resources to manage pressing transportation needs, while maintaining federal air quality standards in designated nonattainment areas.

The Workshops: Integrating Air Quality and Transportation Planning
The National Association of Regional Councils (NARC), the U.S. Department of Transportation (DOT), and the U.S. Environmental Protection Agency (EPA) as part of a cooperative agreement, conducted a series of eight workshops over a four-year period from 2001 through 2004. Designed primarily for board members, executive directors, and staff of Regional Councils and Metropolitan Planning Organizations, the ten workshops addressed the most pressing challenges that these organizations must tackle when attempting to balance healthy air with transportation investments.

An advisory group, comprised of representatives from Regional Councils that regularly deal with conformity issues, joined representatives from the American Association of State Highway Transportation Officials (AASHTO), American Public Transit Association (APTA), and the State and Territorial Air Pollution Program Administrators/Association of Local Air Pollution Control Officials (STAPPA/ALAPCO) to develop the workshop topics. The workshops’ primary purpose is to benefit both metro areas and rural regions that are dealing with nonattainment designation, or, for the first time, confronting nonattainment under the 8-hour ozone standard.

Over the past twelve years, NARC has advocated at the national level for and represented the interests of Councils of Government, Planning Commissions, Development Districts and Metropolitan Planning Organizations on issues related to air quality and transportation planning. As part of these efforts, NARC has collected and published the information and expertise shared throughout these ten workshops. We are pleased to provide this information to agencies and organizations responsible for achieving the NAAQS for ozone.

## Workshops

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## Acknowledgment

NARC appreciates the collaboration and guidance of two federal agency project officers: Kathy Daniel with the Department of Transportation’s Federal Highway Administration and Mark Simons with the U.S. Environmental Protection Agency. The advisory committee provided valuable input and time to plan the workshops. They identified, worked with and followed-up with panelists to assure high-profile, quality presentations. We extend a special thank you to the workshop participants and you, the reader.

**NARC Staff:** Peggy Tadej, Project Manager; Ella Rusinko, Communications; Maria Polis, Intern; Ben Steinberg, Research; Shana Kemp, Communications; Tanya Higbee-Cerny, Research; Christina Leone, Research; Tara Goddard, Intern
Workshop 1: Integrating Air Quality and Transportation Planning

What is “conformity”? How does the federal government review conformity? What is required of MPOs and COGs in achieving conformity? What are the States’ DOT roles in conformity? How can MPOs and regional councils handle the threat of conformity litigation?

Workshop 1: Integrating Air Quality and Transportation attempts to answer these basic questions through a variety of federal, state and local perspectives. The primary goal of this workshop is to provide, from the angles of both air quality and transportation planning, state and local agencies with basic information, best practices and other resources necessary to understand and achieve conformity. Also, with the growing number of lawsuits surrounding conformity issues and, at the time of this workshop, an anticipated Supreme Court ruling on the issue of conformity, several presenters discussed the regional mobility ramifications of these legal rulings.

Workshop Topics and Presenters:

1.1 Ozone Air Quality Standards: A Federal Update on Attainment and Nonattainment
   Tom Helms, U.S. EPA

1.2 Smart Growth And Innovation SIP: Opportunities and Challenges of a New Strategy
   Diane Franks, MD DEQ

1.3 Local Air Quality Planning Challenges: A Regional Planning Agency/MPO Perspective
   Lindy Bauer, MAG

1.4 Look at Transportation Conformity From A Federal Perspective
   Daniel Wheeler, FHWA

1.5 Transportation Conformity: A State DOT Perspective
   Paul Silva, RI DOT

1.6 Examining Potential Effects of Transportation Conformity Litigation on Regional Mobility
   Lilly Wells, H-GAC

1.7 The Legal Ramifications of Litigation: An MPO Perspective
   Chick Krautler, ARC

1.8 Gaps Between Air Quality & Transportation Planning: A COG Perspective
   Michael Morris, NTCOG
Presentation Focus
This presentation covered a wide array of issues dealing with ozone air quality standards. It specifically focused on the health effects of ozone, clarified the history and process for setting EPA’s National Ambient Air Quality Standards (NAAQS), and provided current information on the status of nonattainment and attainment of these NAAQS. While examining nonattainment or unhealthy air standards, the purpose and application of corrective State Implementation Plan (SIP) were also reviewed.

Background
Ozone related health effects are of significant concern. Ozone is created when volatile organic compounds (VOC) and nitrogen oxides (NOx) are mixed in the atmosphere. “Bad ozone” causes or aggravates a series of respiratory difficulties including trouble breathing, shortness of breath, chest pain, asthma, as well as bronchitis and emphysema. Growing evidence suggests associations with premature death. Children, outdoor workers, and individuals with respiratory disease are the most vulnerable. To address the issue of ozone, the EPA has promulgated and enforced strict 1-hour and 8-hour NAAQS to protect human health.

EPA’s air quality standards for ozone started in April 1971 with a photochemical oxidant standard of 1-hour per year not to exceed more than 0.08 parts per million (ppm). In February 1979, standards were revised and based on three consecutive years of air quality data, ozone standards were implemented. Levels were expected not to exceed 0.12 ppm for a 1-hour period. EPA most recently revised ozone NAAQS in July 1997, setting the primary standard at 0.08 ppm over an 8-hour period and calculated as the average of the fourth highest measurements across 3-year period.

Overview
The EPA’s process for setting a NAAQS undergoes lengthy review process comprising a three layer review with nine steps involved. The process to reset standards can be overturned at any point during the nine step process. An analysis of the scientific studies on the health and environmental effects of ozone start the review followed by a scientific peer review of published studies. The EPA develops a “criteria document” — an extensive assessment of the scientific studies. Throughout the entire effort, EPA and the public perform ongoing reviews of the data. Federal rulemaking to promulgate the NAAQS is subsequently completed after the proposed new standards are discussed at a public hearing with time allowed for a public comment period.

After years of challenges and court hearings on NAAQS, on February 27, 2001, the Supreme Court upheld the constitutionality of the Clean Air Act (CAA), affirming EPA’s authority to set revised ozone standards. The Court also reaffirmed EPA’s long-standing position that the CAA requires EPA to set NAAQS at levels necessary to protect public health and welfare without taking into consideration the economic costs associated with implementing the standards. Although the EPA has the authority to implement a revised ozone standard, the Court requested that EPA reconsider its approach for transitioning to the new 8-hour standard. As a result,
EPA is conducting formal rulemaking to resolve the key issues that resulted from the litigation.

The CAA requires EPA to designate an area as nonattainment if it does not meet or contribute to improved ambient air quality for ozone. The EPA previously designated 1-hour nonattainment areas in November of 1991 and plans to designate 8-hour nonattainment areas in April 2004. Specific control measures and attainment dates are tied to an area’s classification. A nonattainment designation informs the public of ozone-related health problems. It also initiates an air quality planning process for the area, which results in the preparation of a State Implementation Plan (SIP). The SIP is a blueprint for achieving clean air in the nonattainment area and must control measures for volatile organic compounds (VOCs) and nitrogen oxides (NOx). Other programs are also required in nonattainment area SIPs—transportation conformity and the pre-construction review of new or modified stationary sources. The SIP is built on an emissions inventory and control strategy. It defines an emission budget and allocates emission reductions among sectors such as highway and non-highway sources. The CAA requires that federally supported activities “conform” to the requirements of the SIP. Conformity, in relation to the SIP, means no new violations, no degradation of existing violations, and no delay in the timely attainment of NAAQS. A control agency can conform to the specifics of the SIP in numerous ways; for example, by funding transportation control measures (TCM) and adopting additional measures to meet the emissions reductions required in the state plan. In most cases, the conformity requirement enforces the SIP budget as an emissions ceiling. The SIP process is mandated under Title I of the CAA. A state can also decide to revise its own SIP at any time. Once a state drafts a plan or revision, it is subjected to a public hearing. After any needed revisions, if adopted, the state submits the plan to its EPA regional office for review. If it passes EPA’s review, it appears in the Code of Federal Regulations (CFR) for public comment. Only after considering the public’s comments, will EPA approve or disapprove the plan. When approved, the control measures in the plan become federally enforceable.

Outcomes
EPA has to plan a smooth transition from the 1-hour standard to the 8-hour standard, which will involve working closely with its state and local partners and consulting with stakeholders to develop a framework for notice-and-comment on the rulemaking. EPA continues to work toward the resolution of comprehensive guideline for the implementation of the 8-hour standard, including: Reconciling CAA, subparts I and II; Establishing geographic coverage (i.e., existing 1-hour nonattainment areas versus the larger 8-hour nonattainment areas); Deciding on classifications (i.e., whether or how to classify; role of mandatory measures under the CAA, subpart II); Reviewing the timing of the designations, attainment dates, SIP submissions and attainment demonstrations and its relation to transport; and Examining Conformity Requirements, New Source Review requirements in transport cases, early reductions and PM2.5 and Regional Haze (RH) activity. (For additional resources, see the following websites: www.epa.gov/airprogram/oar/oaqps.ozonetech/index.htm and www.epa.gov/tin/rto/areas/aqdata.htm.)
1.2 Smart Growth and Innovative SIP: Opportunities and Challenges of a New Strategy

Organization: Maryland Department of Environment
Location: Baltimore, MD
Contact: Diane Franks Phone: 410-537-3250
e-mail: dfranks@mde.state.md.us
Website: http://www.mde.state.md.us/index.asp

Presentation Focus
This presentation gave a state agency air quality perspective by providing workshop participants with a background on innovative land use and transportation programs that are integrated into Maryland’s proposed SIP, and described the challenges faced by state and local agencies in creating Maryland’s proposed Smart Growth and Innovative SIP.

Background
In 1997, the Maryland legislature passed the land use initiative, “Smart Growth and Neighborhood Conservation Act” and in 1999/2000, it enacted the Commuter Benefits Act, a transportation initiative. Other innovative programs established by the state to ease ozone concerns have included the Commute Smart Program (1999) and the Ozone Forecasting and Voluntary Action program (1996). All of these efforts were intended to positively impact land use and air quality issues within the state.

Overview
When the City of Baltimore was designated a severe ozone nonattainment area, state and local agencies involved with developing the SIP made use of the initiatives and programs as described above. Executing smart
growth projects and applying transportation control measures assisted these agencies in addressing some very challenging and difficult conformity issues, which were emerging from the approval of the SIP in 1999. Maryland’s focus on land use and transportation was made possible by EPA guidance, helping pave the way for the state to gain credit for innovative emission reduction programs, ultimately creating Maryland’s Smart Growth and Innovations SIP. As a result, the SIP bundles smart growth projects with a variety of transportation control measures in order to generate air quality benefits in the Baltimore area.

Some examples of projects that illustrate the use of smart growth principles and transportation control measures include: the Digital Harbor project, a brownfield commercial and mixed use redevelopment project; and the Owings Mills project, a link to subway and buses and an access for bicycles and pedestrians to redeveloped areas. Other projects are the Can Company project (a brownfield mixed use redevelopment site) as well as the Montgomery Park project (a “green building” restoration project).

The Maryland Smart Growth and Innovations SIP is not a regulatory program; rather, it builds on guidance by EPA, introducing flexibility into the conformity process. This approach specifically concentrates on emission targets (and not actual reductions), focuses on commitment to prove that the targets are met, and allows for flexibility within the bundle of smart growth and transportation projects, enabling state and local agencies to make changes more easily when implementing the SIP.

The SIP sets emission reduction targets for future dates in 2005 and 2025. These are measured from an established baseline. (A mid-course review of reduction targets is set for 2003.) The emission reduction targets will be implemented using an approach similar to stationary source “cap and trade” or “budget” concepts. Emission reduction targets are also analyzed according to future alternatives, i.e., anticipated growth based on different land use patterns.

Outcomes
Developing the SIP included many challenges, such as: the coordination and consensus of many stakeholders, including local governments and environmental agencies; the disconnection between a short-term time frame in the development of SIP and the more long-term time frame in land use initiatives and conformity; the ability to capture and quantify non-air quality benefits; and interagency cooperation in capturing significant and nontraditional data.

The following experiences on the integration of air quality and transportation planning were shared with workshop participants:

• Integrating smart growth and transportation initiatives have made it possible for state and local agencies to address demanding conformity issues in Maryland’s SIP;
• Making use of new EPA guidance allows for a flexible conformity process, enabling the implementing agencies to focus on and commit to emission targets not emission reductions and to make changes in the SIP process as needed; and
• Coordinating with State and local agencies, as well as other stakeholders, is necessary for successful implementation of the SIP and pose many challenges.
1.3 Local Air Quality Planning Challenges: A Regional Planning Agency /MPO Perspective

Contact: Lindy Bauer
Organization: Maricopa Association of Governments
Location: Phoenix, AZ
Email: mag@mag.maricopa.gov Website: www.mag.maricopa.gov/display.cms

Presentation Focus
This presentation gave a local air quality planning perspective and illustrated the air quality issues challenging the Maricopa Association of Governments (MAG). It detailed both the plan to reach attainment and the risks associated with nonconformity. It described the importance of performing your own conformity tests as well as your own air quality models.

Background
MAG serves as the regional agency for the metropolitan Phoenix area, and conducts regional planning for the Maricopa County area, which is approximately 9,000 square miles. In 2000, the population was 3.1 million, with record population growth expected in excess of three percent annually. In 2000, MAG estimated the average weekday vehicle miles traveled (VMT) at 69.8 million.

Designated as the Phoenix area’s Metropolitan Planning Organization, MAG plays an important role in regional transportation and air quality planning and is responsible for achieving transportation conformity requirements on regional transportation plans.

Since 1996, major achievements have been made in air quality, with no violations of the carbon monoxide standard or the 1-hour ozone standard occurring.

In executing its air quality planning functions, MAG emphasizes its own capability and tools to perform local air quality models, as well as its own ability to perform conformity tests. In fact, technical modeling is one of the most important functions at MAG, providing the necessary information for policy development in air quality planning.

Overview
MAG works closely with other air quality planning agencies through an Air Quality Memorandum of Agreement (MOA). The MOA is a signed agreement between the different agencies providing a framework for coordinated decision making in planning, implementation, and enforcement of air quality actions. The parties involved in the MOA include MAG, Arizona Department of Environmental Quality, Arizona Department of Transportation, and the Maricopa County Environmental Services Department.

Within MAG, state of the art regional modeling tools are used to develop socioeconomic, land use, transportation, and air quality simulations. MAG also develops data used as input into the travel demand model, including land use forecasts and population and employment projections. In addition, air quality emission factor models are used by MAG to analyze the air quality impacts of transportation projects and Urban Airshed Models (UAM) are used to project emissions for use in regional air quality plans. The expertise in
transportation and air quality modeling enables MAG to quickly respond to its member agencies on regional plan analyses.

The Maricopa County area is classified as a serious nonattainment area for three pollutants—Carbon Monoxide, Ozone, and PM-10. Of the three pollutants, PM-10 is the most difficult pollutant to control. In February 2000, the Revised MAG 1999 Serious Area Particulate Plan for PM-10 was submitted to EPA. The Plan includes stringent measures to curb particulate pollution, fugitive dust and mobile dust sources. It also includes a modeling attainment demonstration to be achieved no later than December 31, 2006, as well as a request to extend the attainment date from 2001 to 2006.

The Revised MAG 1999 Serious Area Particulate Plan contains 77 control measures. The control measures that are expected to have the largest percent reduction emissions in an average day in 2006 include the following:

* Strengthening and Better Enforcement of Fugitive Dust Control Rules (19.1 percent);
* Strengthening and Better Enforcement of Fugitive Dust Control Rules for Track-out and Paved Road Dust (9.7 percent);
* Reducing Particulate Emissions from Unpaved Roads and Alleys (5.8 percent);
* Reducing Particulate Emissions from Unpaved Parking Lots (1.8 percent);
* Reducing Particulate Emissions from Vacant Disturbed Lots (0.9 percent);
* PM-10 Efficient Street Sweepers (0.5 percent);
* Curbing, Paving, or Stabilizing Shoulders on Paved Roads (0.5 percent); and
* Paving, Vegetating, and Chemically Stabilizing Unpaved Access Points onto Paved Roads (0.2 percent).

The MAG PM-10 Plan estimates that with these committed control measures in place, the 2006 regional PM-10 emissions from paved road dust; unpaved road dust and on road vehicle exhaust are expected to be 31 percent, 12 percent, and two percent, respectively. The motor vehicle emissions budget established in the PM-10 Plan for transportation conformity purposes is 59.7 metric tons per day. Future air quality activities planned at MAG are Carbon Monoxide Maintenance Plan; Ozone Maintenance Plan for 1-hour standard; Ozone Plan for 8-hour standard; and Conformity Analyses.

Outcomes

In a rapidly growing region such as the metropolitan Phoenix area, determining how to reach conformity can be difficult. As stipulated in the Clean Air Act, transportation plans, programs and projects must not cause or contribute to a violation, must not increase the frequency or severity of any existing violation, or delay the timely attainment of the standard. Another challenge is to stay current with new federal conformity rules and regulations, particularly following court rulings. For example, the decision involving the 1997 Conformity Amendments in a March 2, 1999, Environmental Defense Fund vs. EPA case had a ripple effect on transportation planning.

The following experiences were shared by MAG on the integration of air quality and transportation planning:

• Implementing funding for transportation control measures beyond those assumed in air quality plans allows for additional emission reduction credits to be applied, if needed, during conformity analysis;

• Consulting with appropriate interagency partners—local, state and federal—on planning issues is
an important piece to success, which should not be overlooked;

- Working with federal agency staff is very helpful in resolving complex issues related to conformity; and

Possessing its own modeling expertise has allowed MAG to view the “big picture,” enabling the agency to respond quickly to needs throughout the region.

When all the pieces fall into place, a transportation plan and improvement program, with no conformity lapses, results in a region with cleaner air.

1.4 Looking at Transportation Conformity Issues from the Federal Perspective

Organization: Federal Highway Administration
Website: http://www.fhwa.dot.gov/environment/index.htm

Presentation Focus
This presentation looked at transportation conformity issues from the federal perspective, as well as the resources available to MPOs in dealing with conformity requirements. Issues related to transportation and air quality planning also were discussed.

Background
From the federal perspective, conformity issues are multiple and complex especially because air quality varies from one MPO to another. Important issues include NAAQS, nonattainment status as well as how the federal government and public are supposed to involve themselves in the air quality conformity process.

Overview
An MPO or COG facing nonattainment is charged with the responsibility for determining how its geographic area can achieve conformity. Determining how an area achieves conformity is compounded by resolving which air quality standards are applicable to its region. Although the conformity process is complicated, it has initiated a more integrative transportation and air quality planning process.

A recent FHWA brochure recommended for MPOs seeking assistance with conformity determination can be found by visiting the FHWA’s website at: http://www.fhwa.dot.gov/environment.

The same website contains Congestion Mitigation and Air Quality Improvement Program (CMAQ) background and resource information, as well as includes information about application procedures and eligible projects. FHWA also has a published brochure on using CMAQ funds.

Outcomes
MPOs are given the task of determining what air pollutants are affecting their area and how they are going to achieve conformity.
1.5 Transportation Conformity: A State Department of Transportation Perspective

Organization: Rhode Island Department of Transportation  
Contact: Paul J. Silva  
Principal Air Quality Specialist  
Phone: 401-222-6949  
Email: psilva@dot.state.ri.us  
Website: http://www.dot.state.ri.us or http://www.planning.ri.gov/

Presentation Focus  
This presentation discussed transportation conformity from a state DOT perspective, providing an overview of the Rhode Island Department of Transportation methods for demonstrating and achieving conformity.

Background  
Rhode Island has a unique way of achieving conformity. Instead of having a couple of transportation improvement plans (TIPs), they combine their plans into one, referred to as the Statewide Transportation Improvement Plan or STIP. The Rhode Island MPO, housed within the state DOT, is the lead organization in developing the STIP. In order to reach air quality conformity, the state took an aggressive stance in setting goals and seeking funding for a cooperative planning effort that included the MPO as well as the Air Resource Agency. The state’s conformity goals include reducing emissions, establishing strong interagency working relationships, ensuring continued transportation funding, fostering teamwork between stakeholders and making use of the State Implementation Plan (SIP) periodic inventory to assure the use of accurate planning assumptions.

Overview  
The Clean Air Act requires that state and local agencies develop a periodic emissions inventory for ozone nonattainment areas classified as marginal or worse. The periodic emissions inventory is a tool used to monitor a nonattainment area’s progress in attaining the National Ambient Air Quality Standards (NAAQS). A periodic emissions inventory for ozone nonattainment area is required to contain emissions of ozone percussor pollutants (specifically VOC, NOx, and CO) from point sources, area sources, on-road mobile sources, non-road mobile sources, and biogenic sources. A periodic emissions inventory is to be compiled every three years until attainment of the ozone NAAQS.

The MPO took the lead in collecting demographic data, as well as spearheading the extensive public participation process, that was employed in the overall TIP update process. This relationship worked especially well when undertaking a major recomputing of the Transportation Demand Model using Census 2000 data.

Outcomes  
There were high levels of public participation and year-round attention to the improvement of the procedures and products characterized by the state in their efforts to demonstrate conformity and produce an affective STIP. This also required a proactive investment of effort and resources by participating stakeholders.
Participating in the conformity process enabled the responsible parties to share information and resources, leading to intense arguments but at the same time fostering real accomplishments. Communicating information and a common understanding enabled stakeholders to coordinate and commit to the investment and resources necessary to be successful.

1.6 Examining Potential Effects of Transportation Conformity Litigation on Regional Mobility

Organization: Houston-Galveston Area Council
Location: Houston, TX
Contact: Lilly Wells, Air Quality Program Coordinator
Phone: 713-627-3200 email: lwells@hgac.cog.tx.us
Website: www.h-gac.com/HGAC/home/Default.htm

Presentation Focus
This presentation given by the Houston-Galveston Area Council addressed transportation conformity issues from a regional perspective. It discussed the potential consequences of litigation on regional mobility due to the growing number of lawsuits brought against Councils of Government and Metropolitan Planning Organizations across the country.

Background
The ozone nonattainment area for the Houston-Galveston Area Council (H-GAC) includes eight counties. The H-GAC region is growing in population, employment, as well as weekly transit trips and vehicle miles traveled (VMT). Today the regional population equals approximately 5 million but by 2025 it is projected to reach a total of 7.6 million people. All of these challenges, compounded with increasing congestion, make it difficult for planning purposes. The threat of litigation prevents H-GAC from solving their congestion problems because time and money have diverted attention from planning to lawsuits.

Overview
In August of 2000, Environmental Defense sued the EPA. The case was brought on because they claimed that Houston’s motor vehicle emissions budget (MVEB) was too high. The MVEB represents the maximum amount of emissions allowed from all cars, trucks, and other on road vehicles in a nonattainment area. The budget is used to demonstrate that future road projects will not increase road capacity in a manner that interferes with attainment of the ozone standard. Demonstration must occur at least every three years. If no demonstration occurs, federal funding for new road construction is cut off. Houston’s last budget allowed up to 283 tons of NOx per day (tpd). The pending conformity budget would allow 195 tpd. Due to Environmental Defense litigation, the revised budget recommendations were 125 tons of NOx per day.

The proposed settlement terms included a 156.6 tpd budget, which is their “rate of progress”, was to be met by the attainment year in 2007, including the development of a lower budget requiring additional transportation control measures. Additionally, H-GAC was to discontinue projects inconsistent with 151 tpd. EPA eventually approved this revised emissions budget.

The goals of Environmental Defense were successful. They were able to use the lawsuit as leverage to negotiate further emissions reductions from mobile sources, adopt additional alternative projects, such as light rail segments, bike trails, and to curtail certain “perimeter” road projects (Grand Parkway, I-10 Katy Freeway, Westpark Toll Road, Fort Bend Parkway Toll Road).
Outcomes
H-GAC confronted many problems in dealing with this litigation:

1) No local entity was a defendant in the lawsuit;
2) Conformity lapsed, halting road and highway construction; and
3) Settlements provided plaintiff organizations with the ability to dictate which projects could be built or not built. It also encouraged them to continue to go after planning organizations.

To gain a better perspective of their own experience, H-GAC also evaluated a number of litigation experiences in other regions and observed the various responses.

1.7 The Legal Ramifications of Litigation: An MPO Perspective

Organization: Atlanta Regional Commission
Location: Atlanta, GA
Contact: Charles Krautler, Executive Director
Phone: 404-463-3100
Website: http://www.altreg.com/

Presentation Focus
This presentation by the Atlanta Regional Commission (ARC) focused on the ramifications in dealing with a series of legal actions resulting from nonattainment status. This overview has been revised by ARC to reflect recent legal updates.

Background
The Atlanta Regional Commission (ARC) is the MPO for the Atlanta region covering a 10 county, 64-city population. The Atlanta region has been involved with various litigation over the last five years in dealing with conformity. Litigation in general has been a serious problem for MPOs that represent nonattainment areas. The Clean Air Act Amendments (CAAA) include a citizen suit provision, allowing groups or individuals to file suit in federal court on concerns over transportation and air quality. Therefore, under the CAAA, the plaintiff can be reimbursed for their legal expenses if they prevail. Due to this clause, numerous organizations have filed suits against MPOs, state and federal regulatory agencies to overturn or modify decisions relating to SIPs, TIPs and regional transportation plans.

Overview
Multiple legal actions have been brought against federal, state and regional entities as a result of: 1) EPA’s “adequacy” finding for new motor vehicle emissions budgets MVEB; 2) EPA approval of a revised attainment demonstration; and 3) EPA approval of a long-range plan in transportation. In 2001, a suit was filed against the U.S. Department of Transportation (DOT), the Georgia Department of Transportation (GaDOT) and the Atlanta Regional Commission, over conformity determination for the area’s 2025 Long Range Transportation Plan and the 2001-2003 Transportation Improvement Program. In this case, the plaintiffs claimed that ARC used inaccurate and outdated data in its models and that the plans were not fiscally constrained. The suit maintained that the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA) did not provide adequate opportunity for public comment before approving the conformity determination. As part of this case, the plaintiffs requested an injunction, which was denied by the court, to stop the 138 road projects identified in the TIP until the case came to a resolution. The Court found in favor of the defendants in late 2002. In 2001, in another instance, the EPA was sued again for failure to move the Atlanta region from serious nonattainment into severe nonattainment classification. This case was also dismissed as moot.

In early 2002, EPA was sued over the “adequacy” finding for motor vehicle emissions budgets, which resulted in a ‘stay’ or status quo of the budgets. This lawsuit also was also eventually dismissed. (The conformity determination for the 2025 regional transportation plan (2002 update) was performed against older budgets and found adequate. EPA’s decision to approve an updated attainment demonstration also was challenged in 2002. EPA eventually requested that the decision to approve the SIP be vacated. The request was granted, with the legal action withdrawn. Atlanta region was reclassified as a severe nonattainment area.

**Outcomes**

ARC believes that Congress should adequately address the issues under the CAAA that appear to negatively affect the regional planning process, including EPA’s ability to issue attainment extensions. Extensions are currently considered on a case-by-case basis in the courts. Further, the requirements for severe nonattainment areas often are either impossible to meet or counterproductive, for example the requirement for reformulated gasoline in the Atlanta region.

Discussions about conformity litigation have taken place in major metro areas, resulting in the emergence of three themes central to litigation process: institutional structure, data collection, and sustainable development. Regional Councils and MPOs must formulate how they will deal with litigation in the future due to the negative lasting effects it has on their regions.

**1.8 Noted Gaps Between Air Quality and Transportation Planning: A COG Perspective**

Organization: North Central Texas Council of Governments
Location: Arlington, TX
Contact: Michael Morris, Transportation Director,
Phone: 817-695-9101 Email:mmorris@dwfinfo.com
Website: http://www.nctcog.org/

**Presentation Focus**

This presentation outlined insights and experiences using Mobile 6, an updated version of the software program used for mobile emissions factor models. The presentation also reported on noted gaps when undertaking air quality and transportation planning.
**Background**
The North Central Texas Council of Government’s Transportation Department is responsible for the overall activities of the region’s program, including the implementation of the Regional Transportation Plan, Mobility 2025, the Transportation Improvement Program (TIP), and the air quality-related Transportation Control Measures of the State Implementation Plan (SIP).

**Overview**
The presenter, Michael Morris, Transportation Director for NCTCOG, identified gaps between air quality and transportation planning:

- Skill and technical tools are different
- Time frames are inconsistent, with planning, often exceeding timeframe
- Software problems, i.e. the “Do-Over Syndrome” on EPA software
- Aggregate tools
- Incentives to build air quality projects and no incentive to plan for SIP
- No effort to conduct ‘Before and After’ studies
- The National Academy Sciences Report puts into context the modeling of mobile source emissions and is a good information source
- Plan for inconsistencies, phasing.

Morris suggested certain strategies to avoid litigation such as:

- Identifying the source of the problem – dissect emission model
- Implementing a strong technical foundation to advocate for your region
- Importance of being comprehensive
- Ensuring aggressive transportation control measures as well as timely implementation of air quality strategies
- Encouraging institutional arrangements-cooperating and sharing between stakeholders and between different regions.

**Outcomes**
To achieve success, the challenge is to ask (and answer) the following questions:

- What data or software is needed to help?
- What will conformity look like in the future?
- What technology is needed for the future?
- What is the difference between those who are being sued and those who are not?
- What are these areas doing about tools, expertise, and planning processes?
- What are some recommendations to deal with particular issues?
Workshop 2: Smart Growth and Alternative Land Use Planning

What are the linkages between land-use strategies, air quality, and transportation planning? How are MPOs and COGs implementing land-use strategies as part of their air quality and transportation planning process? What are some of the elements that ensure the successful implementation of land use strategies in TIPs and SIPs? How does the federal government view alternative smart growth and land-use strategies in achieving healthy air?

Assessing trends in smart growth and alternative land-use strategies can play a key role in planning for transportation investments, while achieving air quality standards. Workshop 2: Smart Growth and Alternative Land-Use Planning, provides valuable insights relating land use projects and policies to air quality and transportation planning processes.

In this workshop, regional organizations and state agencies share different approaches to land use strategies and identify the common elements leading to successful planning. The U.S. EPA and FHWA also discuss how COGs and MPOs can use land use strategies, incentives, and other options to achieve a healthy balance of transportation investments and clean air.

Workshop Topics and Presenters:

2.1 Integrating Growth Management into Transportation Plans
   Annette Liebe, Metro

2.2 Land Use, Air Quality and Transportation in North Carolina
   Janet D’Ignazio, NCDOT

2.3 Slow But Smart in Philadelphia: Air, Transportation and Land Use Planning Strategies
   Barry Seymour, DVRPC

2.4 MPO Overcomes Fragmented Land Use Strategies and Achieves a Regional Air Policy
   Don Willard, Mecklinburg County DEP

2.5 The Tools of Effective Planning: Air, Transportation and Land Use Planning
   Dan Reuter, ARC

2.6 Region 2020: Shaping Our Future, Setting the Framework for Smart Growth
   Mike McLaughlin, SANDAG

2.7 EPA’s Voluntary Guidance on Land Use And Air Quality: An Overview
   Alan Powell, U.S. EPA

2.8 Improving Air Quality Through Land Use Activities: Transportation Conformity
   Gary Jensen, FHWA
2.1 Integrating Growth Management into Transportation Plans

Presentation Focus
This presentation highlighted Portland’s Metropolitan Council, Metro’s, smart growth program and how this program is integrated into the State Implementation Plan (SIP), Regional Transportation Plan (RTP), and Transportation Improvement Plan (TIP).

Background
Established in 1979, the Portland, Oregon voters created, Metro, the first elected regional metropolitan council responsible for urban planning in this country. Metro is composed of several committees, including the Joint Policy Committee on Transportation, the Transportation Policy Advisory Committee (TPAC), the Metro Policy Advisory Committee and the Metro Technical Advisory Committee. These committees work together to address growth management strategies within the Portland area. They are critical in maintaining consistency within the SIP, RTPs, and TIPs.

In the early 1990s, Metro reviewed four scenarios on the region’s growth, analyzing each for its effects on land consumption, travel times and distances, open spaces, air quality, and urban landscapes. From this analysis, Metro created the “2040 Growth Concept,” a balanced mix of infill and new urban reserve projects. The Growth Concept document is referred to whenever developing and reviewing the SIP, TIP, and RTP. Included within 2040 Growth Concept are varied land-use decision criteria such as increasing density in cities, creating business centers on major transit routes, protecting natural parks and farmlands, working with neighboring cities, and promoting diverse housing options. Another area of emphasis in Metro’s planning consists of a 20 year blueprint linking transportation and land-use policies within the RTP. The plan, updated every three years, embraces regional goals and guidelines for pedestrian access, bicycles, transit, light rail, freight, and roadways.

Metro has also looked towards Portland’s air quality SIP as a way to integrate growth management, air quality, and transportation planning, introducing proactive thought, flexibility, and collaboration into the SIP process. Metro’s efforts projected future air quality limitations, created balanced growth and emission reduction strategies, established mobile source emission budgets (based on the RTP), identified transportation control measures (TCM), and allowed for TCM substitutions.

<table>
<thead>
<tr>
<th>Oregon’s Land Use Planning Requirements</th>
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<td>1973</td>
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In allowing for transportation control measure substitutions, Portland’s air quality plan requires alternatives to achieve equivalent emission reductions. It order to do this, Metro uses the consultation of the Transportation Policy Advisory Committee (TPAC) and/or the Joint Policy Committee on Transportation (JPACT). TCM substitutions also require public notice, and approval from the Oregon Environmental Quality Commission, as well as EPA concurrence. Substitutions clearly, are not considered as revisions to the SIP. The TCMs were also tied into the “2040 Growth Concept” along with bicycle, transit, and pedestrian improvements, and the state’s Environmental Quality regulatory programs that enhance employee commute options.

Enhanced vehicle inspection and boundary programs have also led to a 30 percent reduction of emissions in the Portland area, while ECO/parking rations, public education, and aerosols, paints and solvents combined have led to a 60 percent reduction. Federal small engine and motorboat rules, as well as industry donations combined have added another 4 percent to emission reductions.

Outcomes
Metro’s comprehensive transportation improvement plan has worked to benefit the Portland region, but it has required a lot of devotion, attention, leadership and coordination by its members and partners. This, in turn, allowed for a TIP that integrates multi-modal projects, geographic equity, “2040 Growth Concept” objectives and air quality tests.

Metro’s strong leadership, knowledgeable public officials, institutional relationships, and sophisticated modeling and planning tools have helped to address the area’s rapid regional growth as well as helped them plan for the future.
2.2 Integrating Land Use with Transportation and Air Quality Planning: A State DOT Perspective
Organization: North Carolina Department of Transportation
Location: Raleigh, NC
Presenter: Janet D'Iganazio
Contact: Lori Cove
Phone: 919-733-2520
Website: www.ncdot.org Email: lcove@dot.state.nc.us

Presentation Focus
This presentation examined the challenges confronted by the North Carolina Department of Transportation (NCDOT) as they integrated air quality and transportation with land use planning.

Background
North Carolina has a strong state-controlled decision-making process. While the state’s air quality and transportation planning has been proactive, its land use decisions have faced numerous challenges. The cause is rooted in 17 MPOs in the region who make policy analysis and change difficult. Particularly in the three areas of Research Triangle Park, Triad, and Metrolina areas, which have been 1-hour ozone nonattainment areas since the early 1990s. The fragmented planning processes, and consequently, the inconsistent planning strategies, became an increasingly important concern for the NC DOT, especially when considering the new 8-hour standard. The agency believed that consolidation of MPOs would lead to a more consistent transportation strategy for air quality conformity.

Overview
The NC DOT focused on four initiatives to emphasize the importance of a more informed and efficient decision-making process that could result from consolidation. The first initiative would provide internal and external education and provide outreach through speeches, community workshops, articles, and sponsored events, like the DOT-created “case for change” that supported consolidation. These education efforts also highlighted the benefits of consolidation in light of the new federal ozone standards.

The second initiative provided technical assistance for long-term planning. Provisions included help with transportation models, multi-modal plans, coordination with downtown redevelopment, GIS, and integrating environmental, economic development and transportation planning.

The third initiative focused on legislation and created a single conformity strategy. Based on state law, MPOs are required to develop a single transportation strategy that will meet air quality requirements.

The final initiative was NC DOT’s active participation in a statewide smart growth initiative. A commission with broad membership was established and included four committees: transportation, regionalism, downtown revitalization, and farmland preservation. NC DOT provided staffing and technical assistance to the transportation committee. The goals of the transportation committee would be to improve land use and transportation linkages, focus on transportation investments, ensure transportation system connectivity, and emphasize public involvement. The Smart Growth Commission functioned in a manner that encouraged a discussion of environmentally-sensitive policy.

Outcomes
The process of NC DOT undertaking land-use planning produced fragmented and inconsistent strategies for air quality conformity around the state. To overcome these obstacles, a proactive four-prong approach was
developed, involving a strong outreach component throughout the process.

The NCDOT presenter noted her own experiences when undertaking the integration of air quality, transportation, and land use planning: encouraging regional solutions through consolidation ensures consistent and integrated land-use, transportation, and air quality planning, resulting in better communications and targeted planning. Also, developing a single transportation strategy through consistent planning activities will enable local areas to achieve the requirements of air quality conformity in the new 8-hour ozone standard.

2.3 Slow But Smart in Philadelphia: Air, Transportation, and Land Use Planning Strategies

Organization: Delaware Valley Regional Planning Commission
Location: Philadelphia, PA
Contact: Barry Seymour
Phone: (215) 592-9125 email: bseymour@dvrpc.org
Website: http://www.dvrpc.org

Presentation Focus
This presentation looked at smart growth and alternative land use in the greater Philadelphia region, specifically examining strategies that integrate smart growth with air quality issues.

Background
Serving the Greater Philadelphia region for over 30 years, Delaware Valley Regional Planning Commission (DVRPC) works to foster regional cooperation in a nine-county, two-state area. This two-state framework challenges DVRPC to address differing ideologies and planning interpretations, particularly in its major metropolitan area—Philadelphia.

Overview
During recent years, the City of Philadelphia has rapidly decentralized, losing over 500,000 residents and has experienced social and fiscal disparities in the suburbs. DVRPC set a goal for the establishment of a smart growth effort by applying the concepts of new urbanization to a “new regionalism”. This effort was encompassed into a regional plan entitled, “Horizons 2025”. The plan calls for limiting new development to designated growth areas, encouraging infill and urban revitalization, fostering suburban development based on traditional design principles and preserving an interconnected regional open space network.

Furthermore, the regional plan incorporates various forms of smart growth with the region’s transportation needs by integrating transportation improvement planning with environmental and livability considerations. These methods included promoting strong pedestrian and transit orientations, combining a variety of uses and housing types, and creating links to open space preservation. Establishing major public spaces or community facilities also became an important part of this effort that spawned opportunities to retrofit abandoned or under-performing shopping centers into community focal points. Other actions included the promotion of site design standards for parks and greenways, traffic calming techniques, bicycle paths and shared parking lots.

DVRPC, through its participation in the South Jersey Transit Village Design Assistance Study and the Schuylkill Valley Metro (SVM) Corridor Station Area Planning and Zoning Study, tackled land use and open space issues from a cohesive regional perspective by encouraging Transit-Oriented Development (TOD).
Outcomes
When integrating transportation planning with environmental and sustainable living, DVRPC had to address the challenging social and fiscal disparities among its suburban communities. To do so, DVRPC undertook qualitative and quantitative analyses, comparison studies of transportation improvement and regional plans with disadvantaged populations, and the development of outreach and community involvement strategies.

Through smart growth efforts, DVRPC has worked to assimilate transportation, change environmental and livability considerations, create a suburban social infrastructure that reduces community disparities and engages its residents, therefore improving the overall quality of life in the Philadelphia region.

2.4 An MPO Overcomes Fragmented Land Use Strategies And Achieves A Regional Air Policy
Organization: Mecklenburg County Department of Environmental Protection Location: Mecklenburg, N.C.
Contact: Don Willard
Phone: 704.336.5500 Email: willadr@mecklinburg.nc.us
www.charmeck.org/Departments/LUESA/Air+Quality/Home.htm

Presentation Focus
This presentation looked at ways in which the Mecklenburg area overcame fragmented land use planning to move towards a regional clean air policy.

Background
The Charlotte/Mecklenburg region of North Carolina is comprised of one major city, six smaller municipalities and a population of over 600,000 people. The Mecklenburg region is the fastest growing area in North Carolina. Associated with its rapid growth is its unhealthy air. The area is in noncompliance of the 1-hour and 8-hour NAAQS ozone standard. Nitrous oxides are also a great source of pollution in the area. Yet to address this issue on a regional basis is difficult, since separate land use authority is bestowed to each of the small municipalities and major cities that make up the region. This disaggregated planning effort makes transportation and air quality policy very difficult. To address the consequences that the Charlotte/Mecklenburg region of North Carolina would face if its land use and air quality planning remained fragmented and ignored, the MPO implemented an education and awareness program.

Overview
In order to move towards an improved and integrative clean air policy, the Mecklenburg MPO introduced the Breath Initiative, an outreach policy campaign focused on the community and various stakeholders. This twofold process worked toward achieving and maintaining clean healthful air as determined by national, state and local ambient air quality standards, as well as worked to provide benefits to its citizens and to contribute to the economic vitality of the community.

![Pie chart showing NOx Emissions by area source: Highway, Mobile, Non-Road Mobile, Point, Area Source.](Image)
The Mecklenburg area stakeholders realized that no single initiative would solve ozone nonattainment, therefore they used a variety of methods to tackle the issue. The MPO supported tactics to address the region’s air quality issues, including: identifying and prioritizing specific issues relative to ozone levels and its precursor emissions specific to Mecklenburg County; developing a consensus set of principles and quantifiable emission reduction strategies to be considered by the Board; and presenting recommendations for action to the Board of Commissioners.

Moreover, smart growth, air quality, and land use planning had to be dealt with at a local level to address nonattainment status and regional growth. This included developing incentives for land use authorities to act together, supporting mechanisms for local governments to establish common goals, and encouraging competition with individual right-to-use property. All of these efforts, which have incorporated consensus-building features, have increased collaboration between the city and municipalities. For example, the Charlotte City Council decided to jointly develop a “Clean Air Policy” with Mecklinburg County. The region also has an Official Environmental Forum comprised of eleven counties and fifteen municipalities spanning from North to South Carolina. The Forum is responsible for categorizing regional environmental stakeholders and initiatives. In addition, it specifies environmental action items as well as establishes a consensus on which items should be enacted regionally and/or locally.

Outcomes
Overcoming the fragmented land use policies in the Mecklenburg area and encouraging regional leadership was the primary challenge confronting the region when seeking solutions to its air quality concerns. Coordination among stakeholders will remain the key for a successful future with clean air in North Carolina. Building awareness, encouraging public education, and elucidating action items are also valuable mechanisms to establish and agree to common goals among the various local governments in the area.
2.5 The Tools of Effective Planning: Air, Transportation, and Land Use Planning

Organization: Atlanta Regional Commission
Location: Atlanta, GA
Region Size: 3,000 sq mi Population: 3.1 million
Contact: Dan Reuter Phone: (404) 463-3100
Email: Dreuter@atlantaregional.com
Website: http://www.atlantaregional.com

Presentation Focus
In this presentation, responses to Atlanta’s air quality and transportation planning are examined in relation to their land use strategies.

Background
The Atlanta Regional Commission (ARC) is the MPO for the Atlanta metro area and is one of 16 regional development centers in Georgia. It is comprised of ten counties and covers 36 percent of the state’s population. Since the 1990 census, the Atlanta region’s population has increased by over one million people, representing one of the highest growth rates in the country. These demographics demonstrate the need to address its ozone conformity requirements with its land use and transportation planning. There are several services that ARC offers to support this integration such as leadership development, data services (GIS), government services, workforce development, commuter connection programs, and environmental, transportation and land use planning.

Overview
To address this challenge of population growth and vehicle miles traveled, ARC focused on its regional transportation plan (RTP). Several strategies discussed in this plan include an additional 220 miles of HOV lanes, 700 buses, 250 rail miles, 2,700 miles of new bike and pedestrian facilities, investments in rideshare programs, roadway systems and land use initiatives.

The RTP also looked at policy regarding growth in specific areas such as town and activity centers, MARTA, and small watersheds and the potential of a land use task force was utilized to provide modeling guidance.

Within the 2025 RTP, as a reaction to the U.S. DOT’s concern regarding the implementation of proposed land use policies, both ARC and the Georgia Regional Transportation Authority adopted the Land Use Coordinating Committee which sought to emphasize the importance of land use planning and developing strategies with local, state, and other interests. As a committee, they addressed general development issues, as well as provided a membership organization for local governments, state agencies and interest groups.

A second objective created by ARC established a program known as the Livable Centers Initiative (LCI) to provide planning studies and transportation project investments in town and activity centers. The LCI program provided $5 million for five years of studies and a policy to invest $350 million in centers. To date, 48 communities in the Atlanta region have participated and $70 million of transportation projects have been programmed to centers.

A third initiative sought to expand the availability of information on quality growth and the range of options for development choices through a program called Community Choices.
Other goals highlighting land use include integrating it with air quality and transportation planning, creating a consistent process for evaluating local comprehensive plans with regional policies and partnering with other organizations such as the Urban Land Institute, Georgia Conservancy, and Metro Atlanta Chamber of Commerce.

**Outcomes**
The Atlanta region’s rapid population growth created the need for action among local officials to overcome their air quality and transportation obstacles. A short and long term regional approach to planning is necessary for success. The integration of land use with air quality and transportation will enable the regional community to take a more comprehensive approach to their conformity problems.

### 2.6 Region 2020: Together Shaping Our Future, Setting the Framework for Smart Growth

**Organization:** San Diego Association of Governments  
**Location:** San Diego, CA  
**Contact:** Mike McLaughlin Phone: (619)595-5300  
**Email:** mmc@sandag.org  
**Website:** http://www.sandag.org/

**Presentation Focus**  
This presentation examined the San Diego Association of Governments’ (SANDAG) plan for improving air quality through smart growth strategies.

**Background**  
San Diego is a growing region with an expected increase in population by 32 percent (over 1 million), increase in employment by 24 percent, and increase in housing by 35 percent by 2020. SANDAG’s Region 2020, a regional transportation and land use report, was created to set the framework for how to deal with mobility, as well as population and commercial growth within the San Diego region. The San Diego region is designated an 8-hour ozone nonattainment area operating under a state implementation plan. Effective land-use strategies assimilated into smart growth planning will enable the region to meet its transportation and air quality challenges as well. Region 2020 is primarily focused on transportation and housing with a balance of economic, environmental and fiscal strategies.
Overview
Dense populations present various growth challenges for MPOs. Consequences of inaction include decreased open space and housing options, and increased pollution, congestion, energy consumption and cost of public services. By emphasizing smart growth, SANDAG encouraged compact, efficient and environmentally sensitive development, as well as connecting housing options with jobs and transportation. Importantly, smart growth principles are dealt with on two levels. On the local level, environment, land use, travel choice and amenities are covered. At the regional level, transportation and economic incentives and indicators are addressed.

Region 2020 also rewarded certain smart growth initiatives. Locally, density bonuses, tax credits and modified zoning have been used. Regionally, transportation funds are being directed toward smart growth opportunity areas. Other SANDAG actions included reprogramming $500,000,000 to urban systems and incorporating smart growth criteria into project evaluation. Specifically within Region 2020 SANDAG introduced more trolley lines, wider freeways and commuter bus services, efficient land use patterns that will decrease vehicle miles traveled by bringing home work and services closer together, reductions in peak traffic demand via flexible work hours and a region-wide system of HOV lanes and advances in technology integral to the regional transportation system.

Outcomes
The San Diego region’s air quality, traditionally, has not been a top quality of life issue, yet with increased population, the consequences—traffic congestion, less open space, more pollution—to the region’s air quality are indeed pressing and greatly impacting quality of life. Although SANDAG has moved toward planning smart growth and healthier transportation initiatives, the implementation of these programs will cost a lot of money and take a lot of time and effort.

Recommendations for the future:
Implementing smart growth planning has provided more transportation choices for the communities within the SANDAG region;
Tailoring land use decisions also connects housing with jobs, services, and transportation and focuses future growth away from rural areas;
Educating community leaders and decision-makers about the benefits of smart growth initiatives is important to its successful realization
Serving as an example, Region 2020 highlights how smart growth can be incorporated into a community’s efforts to address quality of life, congestion, and mobility.
2.7 U.S. EPA’s Voluntary Guidance on Land Use and Air Quality: An Overview

Organisation: U.S. EPA, Region 4
Contact: Alan Powell
Email: Powell.alan@epa.gov
Website: http://www.epa.gov

Presentation Focus
This presentation provides an overview of EPA’s guidance on land use and air quality. Tools such as strategies, incentives, and accounting measures are examined as a means to address land use and air quality concerns.

Background
EPA land use guidance asserts a clear connection between development patterns, air quality and transportation. These three areas share a symbiotic relationship and a change in one will likely result in a change in the others. For example, as land use change occurs, driving patterns change, and so do emissions coming from vehicles. If vehicle miles increase, then progress on measures to counteract ozone decrease. For example, the Vehicle Miles Traveled (VMT) in the ten largest metro areas increased significantly during the years 1982-1996.

Increase in VMT in Metro Areas

<table>
<thead>
<tr>
<th>Metro Area</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>New York/NE New Jersey</td>
<td>39.85%</td>
</tr>
<tr>
<td>Los Angeles</td>
<td>52.83%</td>
</tr>
<tr>
<td>Chicago/NW Indiana</td>
<td>79.47%</td>
</tr>
<tr>
<td>Philadelphia</td>
<td>41.41%</td>
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<tr>
<td>San Francisco/Oakland</td>
<td>50.87%</td>
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<tr>
<td>Detroit</td>
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<tr>
<td>Washington, D.C.</td>
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<td>Houston</td>
<td>54.36%</td>
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<tr>
<td>Boston</td>
<td>31.44%</td>
</tr>
<tr>
<td>San Diego</td>
<td>83.82%</td>
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</table>

Overview
EPA’s land use guidance supports several strategies, including infill development, mixed use development, parking management policies, transit oriented development projects and urban growth boundaries.

Moreover, EPA’s land use guidance provides several options for states in accounting for land use activities related to air quality and transportation planning. It also serves as a tool for states that choose voluntarily to employ a land use strategy for reducing mobile source emissions. Finally, it offers an incentive for states to further smart growth goals by showing benefits through the air quality and transportation planning.

EPA’s guidance presents three ways to account for the linkage between land use and air quality. First, it can occur through a state implementation plan’s (SIP) initial forecast of future emissions. Specifically, to reduce the amount of emission controls that are needed, the future impacts of beneficial land use activities are modeled for the SIP. Second, the air quality benefits of land use policies can be accounted for as a SIP...
control strategy. Land use activities that reduce driving trips and distances or encourage alternative modes of transportation such as walking, biking, and mass transit can be considered air quality controls. Finally, the link can be made through a conformity demonstration without including it in a SIP. Thus, future impacts of land use activities can be modeled for the conformity determination.

Challenges
The connection between development patterns, air quality, and transportation are not always clearly understood at the local level. EPA’s guidelines are designed to help clarify the linkage between land use and air quality.

Related modeling work can be found at the following sites:

- **EPA Office of Policy Smart Growth Index model:**
  http://www.epa.gov/piedpage/topics/sg_index.htm

- **EPA Office of Research and Development guidance on land use models for local planning:**
  http://www.epa.gov/ord/htm/modelmethods.htm

- **Institute of Transportation Engineers trip generation report:**
  http://www.ite.org/tripgen/triparticles.asp

- **DOT microscale and regional modeling and emissions models:**
  http://www.fhwa.dot.gov/environment/models.htm
2.8 Improving Air Quality through Land Use Activities: Transportation Conformity

Organization: Federal Highway Administration
Contact: Gary Jensen, Office of Natural and Human Environment
Email: Gary.Jensen@fhwa.dot.gov
Website: http://www.fhwa.dot.gov/environment/conform.htm

Presentation Focus
This presentation discussed transportation conformity aspects of EPA's guidance on improving air quality through land use activities.

Background
Conformity requires federally supported transportation investments to be consistent with state implementation plans (SIPs). Conformity applies to metropolitan transportation plans, transportation improvement programs (TIPs), and projects funded or approved by the Federal Highway Administration (FHWA) or the Federal Transit Administration (FTA), to make sure transportation initiatives are consistent with air quality goals, especially when an area is a nonattainment or maintenance area for ozone, carbon monoxide, particulate matter or nitrogen dioxide.

Overview
EPA's guidance generally captures how land use activities are currently being included within conformity determinations. Areas should use this guidance as reference as new and existing land use activities are introduced and implemented. The interagency consultation process should be used to ensure that this guidance is followed for new conformity determinations. Land use activities can be included in a conformity determination either as land use assumptions or control strategies, depending on the case. Both land use assumptions and land use control strategies affect the location of population and employment; their affects on population and employment should be integrated together before running the transportation model for the regional analysis.

Regardless of whether land use activities are considered land use assumptions or control strategies, there needs to be some type of assurance that the land use activities will occur before including them in the conformity determination. Land use activities can only be included in the determination to the extent that they are being implemented.

Outcomes
If there is doubt as to which category fits a particular project or policy best, then land use assumptions should be discussed with other participants during the interagency consultation process.

Regardless of whether a land use activity is called an assumption or a control strategy, it must be based in reality. If the land use forecast differs significantly from past trends, there must be adequate justification for the change.

Resource
For more information on conformity, see the FHWA website:
http://www.fhwa.dot.gov/environment/conform.htm
Workshop 3: Conformity Case Studies

Is problem definition important when trying to find solutions to air quality challenges? How can interagency partnerships improve the conformity process? How can legislative and regulatory barriers to conformity be overcome? What are MPO and Regional Councils of Government doing to overcome any technical or data limitations associated with achieving conformity? How can transportation modeling be improved to help achieve conformity?

Regional Councils and MPOs often struggle with the challenges of conforming to air quality standards. Such challenges include defining the problem, building effective partnerships, overcoming legislative and legal barriers, and addressing land use issues, and technical limitations.

In Workshop 3: Conformity Case Studies, both large and small regional councils and MPOs share the procedural, institutional, and technical aspects of achieving conformity, providing a better understanding of the fundamentals of air quality planning and contributing valuable insights for achieving attainment status.

Workshop Topics and Presenters:

3.1 Conformity Case Study: Identifying the Problem and Developing Control Strategies in North Central Texas
Chris Klaus, NCTCOG

3.2 Defining the Conformity Problem Leads To Clearly Established Goals and Effective Solutions
Joan Rolf, MWCOG

3.3 Interagency Partnerships Create Regional Consensus Around Conformity
Jayne Hayse, ARC

3.4 Producing Results in the Conformity Review Process: A COG’s Partnership
Chris Klaus, NCTCOG

3.5 The Benefits and Challenges of an Inspection and Maintenance Program
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3.7 Smart Growth San Diego Style: Choices Connecting Transportation and Land Use
Marnie Cox, SANDAG

3.8 SEMCOG: Overcoming Technical Limitations To Achieve Attainment Under the 8-Hour Ozone Standard
Paul Tait, SEMCOG

3.9 Conformity Analysis: A Smaller Agency’s Experience in Overcoming Lack of Data To Achieve
Saleem A. Salameh, KYOVA
3.1 Conformity Case Study: Identifying The Problem And Developing Control Strategies in North Central Texas

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Presentation Focus
In this presentation, the North Central Texas Council of Governments (NCTCOG) explained how it properly identified the region’s on-road mobile emission sources, followed by the development of local solutions to address its region-wide problem as a nonattainment designation.

Background
NCTCOG’s transportation department is responsible for the overall activities of the region’s long-range transportation plan, including preparation of an air quality conformity analysis. The regional SIP identified on-road vehicles as Dallas/Fort Worth’s largest source of emissions. In fact, vehicle travel to and from work accounted for 80 percent of the trips taken in their region. To address this issue, NCTCOG used a variety of tools to identify vehicular and emission trends.

Dallas-Forth Worth Non Attainment Area

2007 Emissions Sources

Source: DFW Attainment Demonstration, TNRCC, April 2000, Table 6-1 DFW NOx Reduction Estimates
Following the identification of vehicular and emission trends, regional reduction strategies were developed to reduce on-road mobile emission sources. It was found that specific actions and activities led to a large portion of the associative emissions. NCTCOG believes that by reducing the emissions associated with the small outliers, the North Central Texas region will be one step ahead of meeting the 1-hour ambient air quality standards as well as the 8-hour ambient air quality standards.

**Overview**

Using the MOBILE vehicle emission factor model software, NCTCOG examined VOC and NOx emission trends by speed and vehicle type. The trends depicted in each curve allowed NCTCOG to develop emission reduction control strategies based on predominant trends. For example, the MOBILE model indicated that at low traveling speeds, emissions for both VOC and NOx were extremely high. To combat such high emissions, NCTCOG staff first began to associate common vehicle activities with low speeds then develop appropriate control strategies to offset these trends associative to high emissions. Strategies ranged from developing vehicle trip reduction plans to reduce cold trips, a high emitting vehicle program to remove gross polluting vehicles, to lowering freeway speed limits to combat speeds and implementing intersection and signal progression improvements to reduce emissions associated with hard accelerations.

NCTCOG believes constraints breed innovation. As such, a new program has been implemented in the North Central Texas area in an effort to reduce gross polluting vehicles. Funded through the state and the region’s transportation policy body, the High Emitting Vehicle Program, included educational, vehicle detection, enforcement, research, and incentive components. For example, if a car fails a required emissions test, it must then go through the Public High Emitting Vehicle Assistance Program where it is either repaired or retired. While the regional transportation council funds the emissions test, the repairs are funded privately. A vehicle inspection report is filled out, program options are provided and an application is granted. Repair estimates are given and with permission from the owner, repairs and retesting ensue. If the vehicle fails, then incentive payments and alternate transportation assistance are discussed.

NCTCOG also implements a variety of traditional mobile source emission reduction measures such as high occupancy vehicle (HOV) lanes, grade separations, park-and-rides, and vanpools, as well as voluntary measures like clean vehicles, sustainable development, and employer trip reduction measures.

All of these emission reduction efforts were itemized by a specific funding source. For example, intersection improvements and high emitting vehicle programs were funded through CMAQ, while transportation land use outreach efforts, air quality education programs, and vanpools were funded through the Surface Transportation Program Metropolitan Mobility (STP-MM) funds.

**Outcomes**

NCTCOG faced conformity challenges that required clearly defining, identifying and understanding air quality constraints. To devise local solutions to the region’s air quality problems, NCTCOG undertook efforts to clearly identify the emission problems that contribute to poor air quality. With a clear understanding of the problems, NCTCOG then formulated a variety of targeted strategies to best address the problems. By pursuing this approach, the organization was able to itemize funding sources, thus ensuring that the targeted strategies would actually be enacted.
3.2 Defining The Conformity Problem Leads To Clearly Established Goals and Effective Solutions

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Presentation Focus
This presentation illustrates that the process of thoroughly defining problems can lead to the establishment of goal setting by MPOs and COGs when dealing with the issue of conformity.

Background
The Metropolitan Washington Council of Governments (MWCOG) consists of 18 local government members in the Washington, D.C. metro area (an interstate region). The Metropolitan Washington Air Quality Committee (MWAQC) is a multi-state planning body for the District, Maryland and Virginia area and is MWCOG’s primary committee coordinating air quality planning activities for the one-hour ozone standard in this designated nonattainment area. Its Air Quality Committee coordinates air quality planning activities with other external committees and the Transportation Planning Board; reviews policies; resolves policy

DFW Emissions Reduction Programs
Mobile Source Emission Reduction Control Strategies

<table>
<thead>
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<th>Transportation Control Measures (TCM)</th>
<th>Intersection Improvements</th>
<th>775 Locations</th>
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<tr>
<td>Transportation Control Measures (TCM)</td>
<td>Bicycle/Pedestrian Facilities</td>
<td>710 Miles</td>
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<td>Transportation Control Measures (TCM)</td>
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<td>Transportation Control Measures (TCM)</td>
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<td>Transportation Control Measures (TCM)</td>
<td>Vanpools</td>
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<td>Voluntary Mobile Emission Reduction Measures (VMEP)</td>
<td>Clean Vehicles</td>
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<td>Sustainable Development</td>
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<td>Alternate Measures</td>
<td>Other</td>
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3.3 Interagency Partnerships-- Federal, State, and Local--Create A Regional Consensus Around Conformity

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Presentation Focus
This presentation described how interagency partnerships can be used to create a regional consensus and consistency around the variety of issues surrounding conformity.

Background
Comprised of ten counties, the Atlanta Regional Commission (ARC) is one of 16 planning organizations in Georgia. During the implementation phase of its TIP, ARC must consult and coordinate with an interagency partnership, which includes the Environmental Protection Agency (EPA), the Georgia Environmental Protection Department (GA EPD), the Federal Highway Administration (FHWA), the Federal Transit Administration (FTA), the Georgia Department of Transportation (GA DOT) and Metropolitan Atlanta Rapid Transit Authority (MARTA).

Overview
ARC adopts a 25-year Regional Transportation Plan every three years and a Transportation Improvement Plan annually. As such, ARC must address conformity. From 1998-2001, the number of times the area exceeded the 1-hour and 8-hour ozone standard declined, yet the area still struggled to achieve conformity. For example, in 2001 there were three 1-hour and twenty 8-hour ozone standard violations. (On a favorable note, according to the Air Quality Index, the number of unhealthy air days for sensitive groups has decreased over the same period.) To address the intensity of the situation, a partnership approach through
the development of citizen and expert task forces was pursued, eventually evolving into an interagency forum to address conformity issues.

Specifically, coordination among the partners shaped the criteria selection process and other procedures for air quality conformity. Important to this process, ARC held monthly meetings with its partners, and they have continued to meet on a monthly basis. The consistency and cohesiveness of these partnerships should ease the way towards more efficient air quality planning.

Also important to the success of this process, ARC created a memorandum of agreement, detailing inter-agency consultation procedures. Should consensus on implementation not be reached then the concerns go to the Air Quality Partners Group, which is made up of all the agency heads. The last resort is to take the concerns to the Governor.

**Outcomes**

ARC’s main challenge was to ensure that the interagency consultation process included a structure that encouraged all members to understand procedures and operations so consensus can be reached.

The following helpful experiences were shared with workshop participants on the usefulness of interagency partnerships to achieve conformity:

- Facilitating successful, long-term working relationships throughout a project’s life cycle can be achieved through interagency cooperation
- Fostering a partnership with the state air agency when developing the motor vehicle emissions budget is important to success
- Structuring the interagency consultation process in a manner that achieves consensus can help ensure a cohesiveness that overcomes future changes to the Clean Air Act
- Designating one agency to take the lead in staffing the interagency meetings can ensure consistency.

**3.4 Producing Results In The Conformity Review Process: A COG’s Partnership**

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**Presentation Focus**

This presentation illustrated how interagency cooperation produces tangible results in the conformity review process.

**Background**

NCTCOG serves a 16-county region of North Central Texas, which includes two urban centers of Dallas and Fort Worth. NCTCOG has over 230 member governments including all surrounding counties, numerous cities, school districts and special districts. Partnerships are helpful when establishing a consistent conformity documentation process. NCTCOG fostered such relationships and interagency cooperation to enhance the efficacy of its Conformity Documentation Task Group.
Overview
Consultation partners for the Conformity Documentation Task Group included the EPA, Texas Natural Resource Conservation Commission, TX DOT, FTA and FHWA. The Task Force looked at several areas subject to conformity analysis including four nonattainment areas under the 1-hour ozone standards and three near nonattainment areas under the 8-hour standards. It attempted to establish a consistent conformity documentation process throughout Texas and provide a forum for information sharing and problem solving with consultation partners.

The Task Group had four main goals. These include reviewing Texas interagency consultation requirements, establishing a timeline and submittal process, identifying information guidelines and checklists and developing a consistent documentation structure. From these efforts, the group was successful in creating several products ranging from on-road mobile control strategy nomenclature, pre-analysis consensus plans, information guidelines, a consistent documentation structure and a conformity process flowchart.

The Task Group also assessed four mobile emissions reduction strategies. Transportation control measures (TCM) included projects intended to reduce on-road mobile emissions by decreasing vehicle use, changing traffic flow, and/or reducing congestion. Voluntary mobile emission reduction measures are designed to complement existing programs and reduce mobile source emissions by changing public activities. Finally, alternative measures include additional emissions reduction measures not accounted for in the SIP and may be used for substitution of local partnership.

The group also developed a pre-analysis consensus plan for the region. The plan reviews MTP/TIP details, including demographics and affected counties. SIP details such as applicable budgets and control strategies are then examined. Finally, mobile source emissions reduction strategies are assessed using MOBILE 5 input parameters.

Outcomes
The Task Group succeeded in creating a checklist for information guidelines. Categories included MTP, TIP, conformity and SIP documents; MOBILEx parameters, inputs, outputs and emission factors; and travel demand models such as HPMS, validation, VMT and ELS. The checklist was extended to include project listings, public, state, and federal involvement and emission estimates. Finally, the Task Force developed a documentation structure that establishes a conformity cycle and subsequent analysis under the MTP. This was all accomplished via the benefits of interagency cooperation and collaboration.

3.5 Conformity: The Benefits and Challenges Of An Inspection and Maintenance Program

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Presentation Focus
This presentation provided participants with a discussion of the benefits and challenges to Inspection and Maintenance (I/M) programs in the effort to reach conformity.

Background
I/M programs are required under the Clean Air Act to help states meet air quality standards. I/M programs were of particular importance to the North Jersey Transportation Planning Authority (NJTPA) and the Northern Jersey MPO because they were categorized as a severe nonattainment zone for CO and ozone mobile emissions targets. In 1997, the EPA disapproved of NJ’s proposed ozone reduction plan because the State had fallen behind in implementing its I/M program. A year later, NJ found itself in an air quality conformity freeze.

**Overview**

To avoid further sanctions, the NJTPA worked with the New Jersey Department of Environmental Protection (NJ DEP) and the New Jersey Department of Transportation (NJ DOT) to develop an acceptable SIP, secure EPA approval, and implement an enhanced I/M program in twenty-four months. The key component of the enhanced I/M program was the tail pipe emissions tests conducted on a dynamometer, which simulated “actual” driving conditions.

Within six months of the beginning of the conformity freeze, NJ DEP recalculated SIP emissions budgets. While the NJDEP was recalculating the SIP budgets, remedial actions targeting short-term emissions reductions, such as vehicle fuel caps and emission reductions from vehicle turnover, were instituted. In addition, funding for I/M programs increased over time with a greater percentage of CMAQ funds being devoted to this program. Over time, the funding for I/M programs has changed. In 1997, NJ committed $50 million at $10 million per year of CMAQ funds. In 1998, $225 million was committed at $45 million. Approximately 75% of CMAQ funds were allocated towards I/M projects.

**Outcomes**

There are some positive and negative evaluations of I/M programs. On the positive side, the I/M program was one of the most effective strategies for reducing air quality and was one of the most cost effective strategies for reducing air quality. It was more cost effective, compared to other transportation control measures, such as employer trip reduction and van-pooling. Annually, pollution was removed from as many as 600,000 cars each year in a typical urban area.

On the negative side, the I/M program only addressed air quality and not congestion issues. It can use up the majority of CMAQ funds and can result in commuter inconveniences such as long lines and delays. Additionally, almost half of NJ’s car fleet is post 1996 meaning they are generally cleaner and have new federally mandated emissions controls.
3.6 Building Links Between Air Quality and Land Use Planning: First Steps in the WILMAPCO Region

Organization: Wilmington Area Planning Council  
Location: Newark, DE  
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Website: http://www.wilmapco.org

Presentation Focus  
This presentation examined the opportunities and challenges of integrating smart growth and land use planning into the transportation and air quality conformity process.

Background  
The Wilmington Area Planning Council (WILMAPCO) is comprised of two regions that are both designated as severe nonattainment areas; New Castle in Delaware and Cecil in Maryland. While each region manages its own air quality planning, WILMAPCO coordinates their conformity analysis.

Overview  
In order to tackle the conformity crisis in New Castle County, WILMAPCO joined legislative, business and environmental groups in creating a council to promote awareness, review options in meeting conformity standards, and to carry out public outreach efforts.

WILMAPCO led the public outreach effort. The situation was addressed in July 2001 when on-board diagnostics, demographic changes, transit and other transportation control measures were incorporated into planning. However, public debate continued as to whether or not these measures were effective as long-term strategies to improve air quality, protect public health and allow for economic development.

Suggestions for the future include utilizing technologies such as on-board diagnostic tests that monitor vehicle emission-related components for deterioration and malfunction, and oxygen sensors and actuators, which signal motorists when emission standards are exceeded. Additional recommendations include tighter state monitoring and further research of I/M programs, land use activities and transit options such as light rail and/or feeder bus services that alleviate air pollution.
In Delaware, WILMAPCO uses the EPA Smart Growth Index model to review alternative plan scenarios. Specifically, these include performance based on key indicators related to land use, transportation and air quality factors including a balance between jobs and housing, population density, growth compactness and housing transit proximity.

In Cecil, conformity was not a major problem because Maryland is a leader in smart growth initiatives. Maryland has utilized voluntary measures and smart growth benefits. The state commits to collecting real data to evaluate the success of projects, transit ridership goals, designating growth areas and supporting policies against sprawl, thus generating air quality benefits. Among the many benefits are: congestion relief, transit support, community development, and multi-modal support.

**Outcomes**

WILMAPCO’s challenge involved engaging the public in meaningful debate over conformity analysis. Often, the public is more engaged in debates over conformity analysis when smart growth issues are examined. Smart growth issues are more easily understood than alternative conformity and air quality options.

Land use, community design, and smart growth are long-term air quality strategies that must be discussed in the short term. By emphasizing the health aspects of clean air, long-term implementation is facilitated. Congestion relief, transit support, community development, and a balance of technological approaches are among the numerous benefits.

### 3.7 Smart Growth San Diego Style: Choices Connecting Transportation and Land Use

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**Email:** mco@sandag.org  
**Website:** http://www.sandag.org

**Presentation Focus**

This presentation examined how land use and smart growth strategies can be used to improve air quality while encouraging regional growth.

**Background**

The San Diego Association of Governments (SANDAG) is the comprehensive planning organization in the San Diego region, with responsibilities in the area of growth management, economic development, housing, transportation, waste management, air and water quality and criminal justice. SANDAG uses land use and sustainable development to balance its annual growth with traffic congestion, housing, economic prosperity, and open space. The San Diego area is experiencing rapid growth with estimates of a 30 percent increase in population, 32 percent increase in civilian jobs and a 24 percent increase in housing between 2000 and 2020.

**Overview**

SANDAG’s “smart growth” plan (known as the Research Development Plan) encourages regional growth, while supporting measures that monitor air pollution. Smart Growth emphasizes compact, efficient and environmentally sensitive development, focuses future growth away from rural areas and connects housing with jobs, services and transportation. The San Diego regional smart growth plan specifically focused on
creating a balance through decreasing congestion, VMT, length of trips, and air pollution. With these smart growth actions, estimates include: a decrease of 69 percent of congestion on arterial roadways; a decrease of 22 percent in vehicle hours traveled; and a 20 percent decrease in trip length. Matched with these benefits, an 11 percent drop in air pollutants is anticipated.

SANDAG undertook three specific actions to address growth in its region. First, it reprogrammed $500,000,000 from rural projects to urban system highway projects. A large percentage of funds was directed to increasing the transit mix in the region from 4 percent to 16 to 20 percent. Smart growth criteria were incorporated into the project rating process. SANDAG considered using screening criteria that would require adoption of the Region 2020 resolution before STIP funds would be allocated.

Additionally, SANDAG went a step further by including incentives in its RDP for signatory communities, neighborhoods, and interest groups to include sustainable development activities in their planning.

Outcomes
Smart growth is rewarded in the following ways:
• Density bonuses, tax credits, modified zoning, and streamlined permits are awarded at the local level
• Transportation funds awarded at the regional level
• Tax reform and transportation, housing and environmental funds awarded at state and federal levels

3.8 SEMCOG: Overcoming Technical Limitations To Achieve Attainment Under the 8-Hour Ozone Standard

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Location: Detroit, MI
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Website: http://www.semcog.org

Presentation Focus
This presentation explored the technical limitations that the Southeast Michigan Council of Governments will encounter when working towards achieving attainment under the new 8-hour ozone standard.

Background
The Southeast Michigan Council of Governments (SEMCOG) is a regional planning partnership of 151 member local governments. SEMCOG serves as the designated metropolitan planning organization for transportation planning in the seven-county greater Detroit area. Prior to 1995, SEMCOG was designated as an ozone nonattainment area. By implementing strategies identified in its Ozone Study, they successfully moved from a moderate ozone nonattainment area to one of attainment in 1999.

Overview
In planning for the new 8-hour ozone standard, SEMCOG is currently trying to evaluate the work and data required to maintain attainment status. Past strategies will not be effective in addressing the longer averaging time and the more stringent limit (120 ppb vs 80 ppb) set forth by the new standard. The SEMCOG region has ozone values above the 8-hour ozone standard on more days and over a much larger area than under the 1-hour standard. In addition, SEMCOG already has several control measures in place, which results in a very low-level baseline for which to measure ozone, making it more costly to reduce each pound of pollution. Preliminary modeling also shows that more ozone precursor reductions are needed with the new
In addressing the 8-hour ozone standard, SEMCOG assessed the weekend effect. Specifically, the number of days above the 8-hour standard increased from Thursday to Saturday. However, there are days above the standard during the rest of the week as well. Therefore, SEMCOG will consider tailoring some strategies for weekends and others for weekdays as old control strategies are not likely to work for the 8-hour ozone standard.

**Outcomes**

To meet the challenge of the tougher ozone standard, SEMCOG had to reevaluate the work and data required to maintain attainment status and include strategies for weekend effects.

SEMCOG reiterated that a greater need for ozone precursor reduction measures exists more now than in the past. Because ozone is formed from transportation pollution, the importance of linking air quality planning with economic growth and mobile emission reductions is very important under the new standard. Additionally, SEMCOG’s research shows that old technologies will not adequately lead regions to attainment status under the new ozone standard. Finally, with other pollutants, like PM 2.5 potentially on the ‘regulatory’ horizon, proactive planning is a necessity.
3.9 Conformity Analysis: A Smaller Agency’s Experience In Overcoming the Lack of Data

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Location: Huntington, WV
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Phone: (304) 523-7434 Email:Ssalameh@citynet.net
Website: http://www.wvs.state.wv.us/kyova/

Presentation Focus
This presentation examined how a smaller agency overcame the lack of available data to achieve conformity.

Background
The Huntington, West Virginia metropolitan area (KYOVA) is a nonprofit association serving southwestern West Virginia and Ohio. This two-state metro area was redesignated from a moderate ozone nonattainment area to a maintenance attainment area in 1994. With the change in status, KYOVA had to adjust its proposed transportation projects to ensure attainment status over future years.

Overview
Transportation planning focused on project VMT for several horizon years spanning from 2002 to 2025. Historic trends showed that VMT increased linearly over time. This growth trend was then extrapolated to the horizon years using the travel-forecasting model, QRSII.

Using these projections and the Mobile5a emission factor modeling, area-wide NOx and VOC emission totals were calculated. Both were estimated as a function of speed, temperature, maintenance programs, altitude and several other factors. Results showed that future area-wide mobile source for these two emissions would be less than the revised SIP emissions budget.

In 2001, however, the U.S. EPA required KYOVA to use the latest planning assumptions using MOBILE6 and 5a models during air quality conformity planning. However, local vehicle registration data and other data were not available to KYOVA at the time. Eventually, the U.S. EPA indicated that national default data from 1996 would be sufficient for the MPO’s conformity analysis and SIP revisions.

KYOVA reached out to several agencies including the U.S. EPA, FHWA, FTA and the West Virginia Department of Transportation (WVDOT), the West Virginia Office of Air Quality (WVOAQ), and the Ohio Department of Transportation (OHDOT) to provide guidance on revisions to its SIP budget. When conformity lapsed in 2001, KYOVA felt comfortable with its revisions. The existing emissions budget was reallocated to increase the highway NOx and VOC emissions budgets. Existing VOC control regulations were formally incorporated into the plan. Cooperation among the many agencies continued throughout the entire conformity process.

Outcomes
The primary challenge for KYOVA in overcoming the conformity lapse was the lack of available data.

KYOVA emphasized the importance of interagency coordination to assist with brainstorming and guidance when lacking the local data needed for conformity planning. Such collaboration assists with emissions budgets, conformity complications, technical strategies and SIP planning.
Workshop 4: Project Selection Criteria and Performance Measures

What are project selection criteria and how are they used in TIPs? How can collaboration improve project selection for the multi-modal TIPs? How can MPOs and Regional Councils effectively allocate CMAQ funding for projects and still protect the environment, promote economic development and manage transportation systems? What is the role of performance measures in project selection criteria?

When developing TIPs, regional councils and MPOs, consult local governments for planning input, yet the aggregate amount of funding requested for projects typically exceeds the amount available in the TIP timeframe. TEA-21’s fiscal constraint requirements demand that regional councils and MPOs decide which projects to include or exclude in the TIP. Hence, transportation planners rely on selection criteria and performance measures to help determine which transportation projects to implement in an attempt to maintain or improve air quality.

Selection criteria are used to compare project alternatives and ultimately to recommend high-value projects for inclusion in transportation improvement programs or TIPs. Performance measures evaluate the success and effectiveness of long-range plans in meeting stated goals (e.g., reducing congestion, enhancing alternative modes, improving air quality and environment).

In Workshop 4: Project Selection Criteria and Performance Measures, examines how selection criteria and performance measures can help MPOs and regional councils realize their transportation planning objectives and guide the effective allocations of their CMAQ funding.

Workshop Topics and Presenters:

4.1 Congestion Mitigation and Air Quality Improvement Program: Findings from the TRB Special Report 264
   Dr. Michael Meyer, Georgia Tech

4.2 Collaboration Improves Project Mix in the Transportation Improvement Plan
   Dan Rocha, NCTCOG

4.3 A Broad Mix Of Projects Innovative Projects Can Impact Air Quality
   Diane Nguyen, SJCOG

4.4 Transportation-Based Performance Measures are Integral to Program Evaluation
   Jim Wild, EWCOG

4.5 Comprehensive Planning: A Way to Encourage Commitment and Input in the TIP Project Selection Process
   Jane Hayse, ARC

4.6 Incorporating Environmental Justice To Improve Air Quality and Transportation
   Daniel Gardner, NIRPC

4.7 Look Toward Committees to Effectively Rank, Evaluate and Monitor Projects
   Patricia Berry, CATS
4.1 Congestion Mitigation and Air Quality Improvement Program: Findings from the TRB Special Report 264

Organization: Georgia Tech University
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Presentation Focus
This presentation reviews the findings from the national study entitled, “Congestion Mitigation and Air Quality Improvement Program” (Special Report 264) conducted by the Transportation Research Board (TRB) in April, 2002.

Background
This study was carried out by TRB in response to a Congressional request to find out whether the Congestion Mitigation and Air Quality (CMAQ) funding programs were cost-effective and/or whether its programs were working relative to other strategies used to reduce air pollution and congestion. CMAQ program was created in 1991, in conjunction with the transportation authorization bill called Intermodal Surface Transportation Efficiency Act of 1990 (ISTEA).

Important questions discussed within Special Report 264:
1. How well is the program meeting its primary goal of improving air quality?
2. Should more attention be paid to congestion alleviation as an important program policy goal in its own right?
3. Can desired program outcomes, such as reduced motor vehicle trips, travel, vehicle emissions, and pollutant concentrations, be measured?
4. Should the program be broadened and project eligibility expanded to cover new pollutants and emission reduction strategies?

Overview
CMAQ's main focus throughout its existence has consistently been air quality improvement. CMAQ spending is concentrated in the categories of transit (44 percent of funding) and traffic flow improvements (33 percent of funding). Due to the different communities that exist throughout the United States, the CMAQ funding has always supported diversity of projects and procedures.

TRB found through their research that there was broad support for CMAQ and the continuation of the program. They also found that it was not possible to undertake a credible scientific national-level study that evaluated program cost effectiveness.

There were many recommendations suggested by TRB for future implementation within the CMAQ program. The report reiterated the value of the CMAQ program, stressing the importance of reauthorization with certain modifications.

Outcomes
In order for CMAQ to continue its success in the future TRB made many suggestions to improve the program funding and evaluation structure, such as:
1. Maintain primary focus on air quality through a variety of congestion programs.
2. Involve state and local air quality agencies more directly in evaluation of proposals for CMAQ funding.
3. Broaden project eligibility and funding formula to include all pollutants regulated under 1990 CAA.
4. Any local projects demonstrating potential to reduce transportation-related emissions should be eligible.
5. Relax restriction on use of CMAQ dollars for operations.
6. Consider use of CMAQ dollars for land use strategies that have air quality benefit.
7. Develop more rigorous local procedures for selection and evaluation of CMAQ projects in context of local air quality and congestion problems.
8. Provide incentives and guidance to local recipients of CMAQ funds to encourage more evaluations of funded projects.
9. Undertake national-level targeted program evaluation.

4.2 Collaboration Improves Project Mix In The Transportation Improvement Plan

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Website: http://www.nctcog.org

Presentation Focus
This presentation outlined the North Central Texas Council of Government’s (NCTCOG) project selection process. Throughout this discussion, collaboration was emphasized between the State Transportation Department and NCTCOG. This relationship improved the quantity and quality of overall projects in the Transportation Improvement Plan (TIP), positively affecting the Dallas/Fort Worth metropolitan area’s air quality.

Background
The Transportation Improvement Program (TIP) for the Dallas/Fort Worth metropolitan area consists of a multi-year listing of surface transportation projects. Proposed funding for each project listed in the TIP comes from local, state and federal resources. The TIP, which is developed through a cooperative effort between the Regional Transportation Council of NCTCOG and the Texas Department of Transportation (Tx DOT), also includes substantial, collaborative input from local governments and transportation authorities in this metro region. It is important to note that both ISTEA and TEA-21 reconfirmed the responsibility of the state DOTs and MPOs to share in project selection for transportation-funded programs, specifically those projects that would best serve the mobility and air quality needs of the region.

The TIP objectives are as follows:

(1) Identify and delineate transportation improvement projects recommend by the TxDOT and the Regional Transportation Council (RTC).
(2) Identify transportation priorities.
(3) Indicate realistic, current estimates of costs for funding transportation improvement programs.
(4) Demonstrate that energy, environment, air quality, cost and mobility considerations are addressed in regional transportation planning and programming.
Within these objectives, projects are selected for inclusion in NCTCOG’s TIP based on a process referred to as a *Call for Projects*, which is issued to local governments as funding becomes available. Funding sources for these projects originate from the surface transportation program/metropolitan mobility (STP-MM) program, Congestion Mitigation and Air Quality (CMAQ) Improvement program, Urbanized Area Formula programs, Elderly and Persons with Disabilities programs, and the Urban Street Program (USP).

**Overview**

The Call for Projects selection process used consistent criteria to rank both congestion mitigation and surface transportation projects to ensure that they were environmentally friendly. Next, projects were prioritized and selected based on the extent that they addressed transportation and air quality concerns. During the overall process, projects were technically evaluated and selected based on their impact on transportation and air quality. The criteria used to assess the projects included current cost effectiveness, air quality and energy conservation, local cost participation share, and intermodal, multimodal, and social mobility concerns. The *Call for Projects* occurred in 1992, 1994 and 1999, and projects were selected on a competitive basis.

Cost-effectiveness was calculated according to two methods. Capacity and system improvements were evaluated using a travel time savings methodology while other improvements including transit and bicycle projects were evaluated using a methodology based on the vehicle hours of delay removed from traffic stream. On the other hand, air quality impacts were analyzed based on the change in emissions resulting from the implementation of a project. Since emissions are a function of VMT and NOx, a project can reduce emissions by improving the speed of traffic flow or by removing vehicle miles traveled from the traffic stream.

Since 1992, NCTCOG had three major and several smaller *Call for Projects*. This process covered a
variety of programs including mobility and air quality, urban street rehabilitation, alternative fuels and clean vehicles, and land use and transportation joint ventures. NCTCOG partnered with the state DOT for two programs targeting surface transportation enhancement and the elderly. It also focused on people with disabilities and their use of transit. Bicycle projects were based on the methodology of the “vehicle hours of delay” that results from vehicles removed from the traffic stream.

Outcomes
While funds for projects listed in the TIP are committed over a multi-year period, project listings are constrained financially to available funding resources, making the project evaluation criteria and selection process extremely important to this collaborative procedure.

MPO Project Selection - Calls For Projects
Mobility and Air Quality (CMAQ and STP-MM)
- Calls for Projects in 1992, 1994, and 1999
- Next call anticipated in 2002 or 2003
- Commitments = current transportation bill + 3 years
Urban Street Rehabilitation (TxDOT funds and STP-MM)
- Calls for projects in 1995 and 1998
TxDOT Calls for Projects (NCTCOG Participation)
- Surface Transportation Enhancement Program - 5 calls
- Elderly and Persons with Disabilities Program - 4 calls
Other NCTCOG Calls for Projects
- Alternative Fuels/Clean Vehicle Program - 3 calls
- Land Use/Transportation Joint Venture - 1 call

4.3 A Broad Mix of Innovative Projects Can Impact Air Quality

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Presentation Focus
The presentation showed how San Joaquin Council of Governments (SJCOG) worked to diversify a mix of traditional and innovative projects that could positively impact air quality levels, focusing on selection policies and criteria combined with stakeholder dialogue and collaboration.

Background
Many COGs strive to allocate their limited financial resources across diverse transportation and air quality projects. With air quality among the nation’s worst, the San Joaquin Council of Governments (SJCOG) addressed this issue by expanding CMAQ competition to include 15 school districts. Federal guidelines asserted that school districts were eligible for CMAQ funding and school buses were equally eligible for fleet conversions as street sweepers, garbage haulers, and light and medium-duty vehicles. At the time of this
assertion, buses were used beyond their 20-year life span due to the financial constraints on districts and CMAQ funding was a great way to fix this problem. Further, when school buses were incorporated into the mix of projects, they were among the highest polluters based on age and vehicle miles traveled.

Overview
By allowing school districts to compete for CMAQ funds, the SJCOG addressed three issues:

1. Based on CMAQ alternative fuels guidelines, it was determined that school districts, as public agencies, were qualified for CMAQ funds;
2. SJCOG acknowledged that policies would be adopted for alternative fuel vehicles that do not serve a public transit purpose; and
3. A fair distribution of funds had to be ensured so that traditional CMAQ recipients would not loose financial support.

With the cost of the bus projects more than double the available CMAQ funds, SJCOG conducted a survey of the respective school districts to estimate their likelihood to compete for CMAQ funds. A majority indicated a lack of interest to compete based on their small fleet sizes and the financial disincentive of the 20 percent local match provision, alleviating the traditional stakeholders concerns over the limited availability of CMAQ funding.

The SJCOG opened competition for a three-year allotment of CMAQ funds to fifteen local school districts in addition to traditional stakeholders such as public works departments, local and regional transit bus agencies, the commuter rail authority, and the air district. To maintain stakeholder consensus, the following policies were adopted towards heavy-duty, non-transit fleets:

1. Initial conversions were defined as sixteen percent of the fleet of five vehicles, whichever is more.
2. Initial conversions were funded at a rate of fifty percent per school bus vehicle with subsequent replacements limited to a maximum of twenty-five percent.
3. Each CMAQ cycle would fund up to eighteen percent of available funds or $3 million, whichever is more in order to cap funding use by another party in California.

Outcomes
Because opening the CMAQ funds to bus fleets was a new strategy, SJCOG had to confront the challenges of consensus building among stakeholders. Intense dialogue and consensus efforts resulted in the assurances of fair competition for CMAQ funds between new and traditional stakeholders, as well as the development of fair selection criteria.

With the appropriate parameters and policies in place—as developed through consensus—CMAQ funds were allocated towards a mix of projects including traffic signal coordination, transit bus vehicles, light-duty vehicle fleet conversions, compressed natural gas stations, and school buses to address serious air quality concerns.
4.4 Transportation-Based Performance Measures Are Integral To Program Evaluation

Presentation Focus
This presentation examines the importance of performance measurements in evaluating projects and/or program evaluation. It also provides a brief overview of six commonly recommended transportation-based performance measures often used in an evaluation.

Background
Performance measures serve as an integral part in a systematic process used to evaluate CMAQ programs. Performance measures also aid planners in identifying, prioritizing, and evaluating comprehensive strategies that integrate transportation and air quality. Performance measurement is a systematic process that begins with a vision defined by goals and objectives. For example, a vision to enhance environmental quality could be shaped by goals of improving mobility, protecting the natural environment and supporting economic development.

Performance measures are then used to demonstrate whether or not specific projects and/or programs are achieving stated goals. This stage requires data from relevant indicators such as transportation systems, urban activities, policies and environmental impacts to assess a project’s success.

Overview
Performance measures must be relevant to the project or program. Hence, when considering NAAQS, emission reductions and air quality improvements, the following six transportation-based performance measures are recommended:

(1) Accessibility includes average travel time from origin to the point of destination, percentage of a region’s “mobility-impaired” reaching activities by public transportation, and the population within “x” minutes of “y” percent of employment sites.

(2) Mobility highlights concerns such as person hours traveled, percent walking or bicycling, percent on-time transit performance and lost productivity due to congestion.

(3) Economic Development assesses the economic cost of crashes and lost time, jobs created or supported, and the percentage of the region’s unemployed or low-income who identify transportation access as a major barrier to employment.

(4) Quality of Life measures customer perceptions of urban quality of life, average number of hours spent traveling, amount of pollution generated (in tons), and lost time due to congestion.

(5) Environmental and Resource Consumption accounts for sprawl, number of accidents involving hazardous wastes, fuel consumption per vehicle miles traveled, and number of days in air quality noncompliance.

(6) Safety assesses the number of crashes per vehicle miles traveled per year and trip, as well the response
time to accidents, crash risk index, customer perception of safety and the percent of roadway pavement rated “good” or “better”.

Outcomes
Influences on performance cannot necessarily be collected in the form of objective data. Moreover, collecting data does not always mean that the data is needed or will be useful for performance measures. In the words of Albert Einstein, “Not everything that counts can be counted; and not everything that can be counted counts.” Intelligent Transportation Systems (ITS) have added value to and enhanced the systematic approach to transportation based performance measures. Therefore, planners should be proactive and thoughtful when it comes to collecting data that adds value to performance measures.

4.5 Comprehensive, Planning: A Way To Encourage Commitment and Input in the TIP Project Selection Process

Presentation Focus
This presentation examined how an inclusive, well-organized project selection process has helped the Atlanta Regional Commission (ARC) achieve its regional transportation goals.

Background
The Atlanta Regional Commission (ARC) fosters relationships between federal agencies, the Georgia Department of Transportation (GADOT), the Georgia Regional Transportation Authority, local agencies, and the public when developing transportation plans. ARC itself is subdivided into a 39-member Board, a 21-member Transportation and Air Quality Committee, a 15-member Transportation Coordinating Committee and various subcommittees. This structure facilitates open communication and collaboration.

Overview
The ARC TIP Subcommittee conducts its project selection process in three steps. First, the committee holds a workshop that teaches sponsors and staff about documentation and idea submission and allows for questions and answers. Two months later, it has a “call for projects” during which request forms are submitted electronically and sponsors are made aware of available funds to maintain realistic expectations. Finally, the committee objectively ranks projects based on evaluation criteria and then prioritizes funds across the selected projects until all funds are programmed.

Evaluation criteria include accessibility and mobility measures, air quality measures, system performance and preservation measures, and quality of life measures, described as follows:

(1) Accessibility and mobility monitors average speed per type of vehicle, average travel time in minutes and home-based, transit work trips
(2) Air quality assesses NOx and VOC levels
(3) System performance and preservation examines per capita VMT and VHT
Quality of life takes into account travel in congested conditions, proximity of investments to environmental justice groups, and impacts on wetlands and historic areas.

Outcomes
Since current criteria are limited by subjectivity and lack of applicability to all projects, ARC has had to propose new evaluation criteria. These criteria would overcome the previous challenges by assigning points based on quantifiable measures of need or impact, providing unique scoring for each of a variety of project types, and being more explicitly tied to defined goals and objectives of the TIP.

In summary, ARC’s comprehensive and effective planning process requires many key components, listed as follows:

•Excellent working relationships among all stakeholders;
•Structured decision-making process;
•Facilitated opportunities for constructive input;
•Desire for improvement;
•Willingness to be innovative and take risks;
•Feedback and approval at important milestones;
•Sharing credit and blame as appropriate;
•Ability to follow-through on commitments; and
•End products that are useful and intuitive for all potential audiences.

4.6 Incorporating Environmental Justice To Improve Air Quality And Transportation

Organization: Northwestern Indiana Regional Planning Commission (NIRPC)
Location: Portage, IN
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Presentation Focus
This presentation illustrated how the Northwestern Indiana Regional Planning Commission (NIRPC) incorporated environmental justice considerations into its regional planning process. The workshop also examined how incorporating these considerations can strengthen the air quality and transportation planning processes.

Background
NIRPC has developed partnerships with environmental groups, key policy individuals, and the private sector. These relationships resulted from the successes of many of NIRPC’s programs and have, in turn, contributed to further collaboration.

Overview
In order to broaden citizen participation, NIRPC contracted with a local environmental justice organization, in order to strengthen the regional planning process. Steps included:

•Expanding low-income and minority population involvement in the transportation planning/decision-making process, identifying the expanded activities and policies in a revision to the NIRPC Public Involvement Plan (PIP);
• Enhancing the identification of low-income and minority populations and the distribution of information relating to transportation planning activities impacting these populations;

• Improving the evaluation and analysis of the impacts of transportation planning activities on low-income and minority populations, assessing whether there would be disproportionately high and adverse impacts resulting from plans and programs;

• Evaluating the effectiveness of the impact of analysis; and

• Incorporating the implementation of the Environmental Justice strategy recommendations into the transportation planning process through the Unified Planning Work Program.

NIRPC created the Public Involvement Advisory Committee (PIAC) to oversee NIRPC transportation and associated air quality public involvement activities. This expanded the effectiveness of public involvement in the transportation planning process and strengthened the role of low-income and minority populations in these activities.

Focusing on specific outreach activities, PIAC looked toward planning and program activities, including TIP development amendments, special transportation planning activities and environmental planning and projects. In addition, PIAC had the responsibility for recommending any revisions to the TIP for transportation planning that reflect environmental justice provisions.

NIRPC’s Environmental Justice Strategy was formalized by adoption as part of the 2000 amendment to the Vision 2020–Northwest Indiana Regional Transportation Plan.

Outcomes
Despite its many successful efforts, NIRPC felt that they had to more actively pursue outreach in the areas of social justice, sprawl and transit to strengthen environmental justice components in the transportation and air quality planning processes.

In conclusion, NIRPC emphasized that environmental justice considerations can be incorporated into the transportation planning process; key to incorporating transportation and environmental planning is public involvement; and environmental justice can be an intricate part of air quality and transportation planning, including data management and transit and safety planning.

4.7 Look Toward Committees To Effectively Rank, Evaluate, and Monitor Projects

Organization: Chicago Area Transportation Study
Location: Chicago, IL
Contact: Patricia Berry
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Presentation Focus
This presentation demonstrated how the Chicago Area Transportation Study’s committee structure ranks, evaluates and monitors transportation projects.
Background
The Chicago Area Transportation Study (CATS) is responsible for selecting and monitoring CMAQ eligible projects for the northeastern Illinois planning area, while the Illinois Department of Transportation (IDOT) is responsible for administering funds, which equate to approximately $60 million in federal dollars. CATS is governed by a Policy Committee, which consists of 20 policy level representatives of local governments and transportation and planning agencies.

Overview
Potential transportation projects are ranked and selected by a systematic process. First, CATS staff analyzes information obtained by reviewing applications and MOBILE5. MOBILE5 is specifically used in assessing VOC reductions based on speed and year. Second components are then estimated: (1) the effects that traffic flow improvements and sign interconnects have on speeding, and (2) the trips that are eliminated or diverted due to bicycles, pedestrians and transit improvements.

Next, a CATS Selection Committee, comprised of representatives from CDOT, IDOT, IEPA, RTA, and local governments, chooses among ranked transportation projects. The projects are ranked based on primary criteria including cost per ton of VOC removed and reduction in NOx and on secondary criteria such as VMT reductions and trips eliminated. The recommendation(s) goes through a period of public comment after which the CATS Work Program Committee and the Policy Committee adopt a final program. The FHWA makes the eligibility determination after this adoption process.

In addition to evaluations, projects also go through a monitoring stage. If projects require increased funding during their span, they are first reevaluated. The cost increases will not be approved if the original project is ranked lower than other projects that were approved the same year. Also, a project meets satisfactory progress based on increases in engineering and construction contracts. If existing projects do not adequately meet this standard, they are contacted and new time lines are set. Finally, the Selection Committee often reprograms funds that have become available throughout the year—either from funds held in reserve or from withdrawn projects. These are then applied to small-scale increases for eligible projects.

Outcomes
Projects undergo a monitoring stage after implementation. Specifically, projects are reevaluated when cost increases are requested. If the new project ranking falls below other projects not approved that year, then the cost increase is not approved. Also, projects not making satisfactory progress are contacted and new time lines are set. Often, newly available funds coming from monies held in reserve or withdrawn projects are reprogrammed and applied to small-scale increases.
Workshop 5: Proposed 8-Hour Ozone Standards and Health Effects of PM 2.5

What are the proposed 8-hour ozone standards and how will they impact newly designated nonattainment areas? How will the reauthorization of TEA-21 affect the greater number of designated nonattainment areas anticipated under the 8-Hour Ozone Standard? What is an EAC and how can it help localities address the new 8-hour standard? What are the physiological health effects of particulate matter?

In Workshop 5, the regulations and implementation options for the new National Ambient Air Quality Standards are discussed. The reauthorization of the transportation bill (TEA-21) is also reviewed from a federal and state level perspective on how air pollutants affect their areas as well as different ways in which to counteract these emissions in the face of new legislation and regulation.

Workshop Topics and Presenters:

5.1 Revised Standards: A Discussion on Proposed Ozone and Particulate Matter NAAQS
   John Silvasi, U.S. EPA

5.2 The Federal Perspective: TEA-21 and its Effects on Air Quality Planning
   Michael Savonis, FH WA

5.3 A State’s Perspective On the New 8-Hour Ozone Standards
   Sheila Holman, NC DENR

5.4 The Importance of Data Inventory, Modeling and Verification to Early Action Compacts (EACs)
   Viplav Putta, INCOG

5.5 Cooperation Creates Better Policies for Tackling Ozone Transport
   Sandeep Day, WMSRDC

5.6 An Overview of the Physiological Health Effects Resulting From Particulate Matter
   George D. Thurston, Sc.D, NYU School of Medicine
5.1 Revised Standards: A Discussion On Proposed Ozone and Particulate Matter NAAQS

Organization: U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards
Location: Washington, D.C.
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Presentation Focus
At the time of this workshop, March 16, 2003, the new ozone guidelines, as presented by U.S. EPA, were highlighted. Covered in the discussion was the associated legal challenges, revisions to the EPA implementation plan, and the transition between the 1-hour and 8-hour standards.

Background
The changes in the Bush Administration’s proposal for reauthorization and the EPA-revised NAAQS will affect newly designated nonattainment areas.

Overview
The revised ozone standard will be monitored over an 8-hour period at 0.08 parts per million (ppm). To attain this standard, “the 3-year average of the fourth highest daily maximum 8-hour average of continuous ambient air monitoring data over each year must not exceed 0.08 ppm.” When implemented, the new PM NAAQS will account for finer particles that are less than or equal to 2.5 microns in diameter that generally come from fuel exhaust and industrial fuel combustion.

After many legal challenges, the U.S. Supreme Court upheld the NAAQS. However, the Court maintained that the U.S. EPA had to revise a more flexible subpart 1 and a more prescriptive subpart 2 of the Clean Air Act. As such, U.S. EPA’s revisions to subpart 1 take into consideration the following objectives:

- Incentives for expeditious attainment of and transition to the 8-hour standard;
- Reasonable attainment deadlines;
- Consistency with the Clean Air Act and Supreme Court;
- State flexibility;
- Emphasis on national and regional measures; and
- Reduction in the need for more expensive controls.

With these considerations, a new schedule was proposed regarding the implementation rule and designation of attainment status.

| Action Ozone PM2.5 EPA proposes implementation rule April 2003 Sept. 2003 |
| States and Tribes recommend designations July 2003 Dec. 2003 |
| EPA finalizes implementation rule Dec. 2003 Sept. 2004 |
| EPA finalizes designations April 2004 Dec. 2004 |
| State/Tribal plans due April 2007 Dec. 2007 |
| Attainment Dates 2007-2021 2009-2014 |
In reconciling Subpart 1 and 2 of the Clean Air Act—the classification of attainment dates for nonattainment areas—U.S. EPA devised two options to consider:

**Option 1**: Classify all 122 hypothetical 8-hour ozone designations under Subpart 2 of CAA.

**Option 2**: First, all 8-hour nonattainment areas will be divided into two groups based on their 1-hour ozone design value. Second, those 8-hour nonattainment areas achieving the 1-hour ozone standard will be regulated under the more flexible Subpart 1 regulations, while the 8-hour nonattainment areas not achieving the 1-hour ozone standard will be regulated under the stricter Subpart 2 regulations.

Regarding the transition of the 1-hour ozone standard to the 8-hour standard, two options again have been proposed:

**Option 1**: Revoke the 1-hour ozone standard one year after the EPA officially designates the 8-hour ozone standard.

**Option 2**: Retain the 1-hour ozone standard for those areas that would benefit from the 8-hour ozone standard.

Under both options conformity would only apply for one standard.

**Outcomes**
Reconciliation of Subpart 1 and 2 of the Clean Air Act was a critical issue to be addressed based on the Supreme Court’s ruling that the EPA’s implementation plan was unacceptable. Notably, this reconciliation would affect options for designating nonattainment areas, anti-backsliding, reasonable further progress, and new source review amongst other topics included in the proposal.

**5.2 The Federal Perspective: TEA-21 And Its Affects On Air Quality Planning**

Organization: Federal Highway Administration
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Website: http://www.fhwa.gov

**Presentation Focus**
This presentation provided participants with the federal perspective on TEA-21 Reauthorization and its impact on the funding of the Congestion Mitigation and Air Quality (CMAQ) program.

**Background**
The reauthorization of TEA-21 is expected to effect air quality planning – especially when considering the likelihood of nonattainment areas benefitting from the CMAQ program. Unlike the case with ISTEA and TEA-21, there will be no significant increase in funding under the most recent reauthorization.

**Overview**
With no significant increase in funding, this creates a challenge for localities because a greater number of
A topic of concern amongst the FHWA and regional councils is the limited nature of the current CMAQ funding formula. Notably, it does not account for particulate matter of any size, it does not provide for the inclusion of the 8-hour ozone or PM2.5 standards, and it is statutory.

Outcomes
While new ozone and particulate matter nonattainment areas are eligible for CMAQ funds, failure to change the formula will limit regional councils and MPOs’ ability to actually receive financial assistance. Without inclusion of the new standards, CMAQ formula reverts to the carbon monoxide standard. As a result, the distribution of CMAQ funding will be limited, with the number of states contributing to the formula dropping from 40 to 19, resulting in a greater percentage of states receiving minimum apportionment regardless of their ozone or particulate matter attainment status.

FHWA noted that other issues surrounding TEA-21 reauthorization and its impact on air quality planning should be addressed as well. One issue relates to the potential to expand CMAQ funding to operations in terms of, but not limited to, traffic and incident management.

For example, only 37 percent of transit costs are covered by commuter fares leaving nearly $14 billion not covered. Other examples could account for freight options, suballocation levels, and the relationship between CMAQ funds and local and/or multi-state purposes.

5.3 A State’s Perspective On The New 8-Hour Ozone Standards

Organization: N.C. Dept. of Environment and Natural Resources
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Presentation Focus
This presentation gave a state’s perspective on the new NAAQS, examining how North Carolina must respond to air quality conformity issues in its newly designated 8-hour ozone nonattainment areas.

Background
With the promulgation of the new NAAQS, North Carolina will have to readdress its nonattainment boundaries. After the ozone NAAQS is implemented, North Carolina is projected to be the second most impacted state in terms of nonattainment areas. As a result, the state looked to the EPA for guidance on designation and conformity issues.

Overview
The EPA states that any area with a violating ozone monitor and any nearby contributing areas should be designated as nonattainment. The EPA further recommends that the full metropolitan statistical area (MSA) serve as the 8-hour ozone boundary. Thus when adjusting for violating areas within the state that are a different size than the MSA, planners will have to adjust for the following: population densities, monitoring data, location of emission sources, traffic and commuting patterns, expected growth, meteorology and jurisdictional boundaries.
The State has taken several actions to reduce ozone-forming emissions from cars and trucks, power plants and other industries, including the following:

In 1999, the North Carolina General Assembly enacted legislation that will require cleaner gasoline statewide by 2004 and expand the motor vehicle emissions testing program to nearly half the state by 2006, (regardless of a regions’ attainment status); and in 2000, the North Carolina Environmental Management Commission began developing new rules to require substantial reductions in NOx emissions from power plants and other large industrial sources.

Outcomes
When determining nonattainment boundaries under the new 8-hour regulation, North Carolina must confront many challenges, including:

- Evaluating violations, conducting public meetings, and coordinating with many agencies impacted by the designation;
- Assisting designated nonattainment areas with New Source Review, SIP development, and control measures;
- Helping nonattainment areas demonstrate that area transportation plans meet conformity with SIP motor vehicle emissions budgets.

At the local level, planners should be reminded of several challenges when confronting newly established 8-hour nonattainment boundaries.

These include:

- Spending resources efficiently
- Balancing the environment with economic stability
- Working with informal transportation conformity processes in rural areas

5.4 The Importance of Data Inventory, Modeling, And Verification to Early Action Compacts (EACs)

Organization: Indian Nations Council of Governments
Location: Tulsa, OK
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Website: http://www.incog.org

Presentation Focus
The Indian Nations Council of Governments (INCOG) from Tulsa, Oklahoma gave an overview of its early action compact, or EAC, which is designed to help localities achieve the 8-hour standard.

Background
EAC agreements from a region to do early planning in order to meet attainment of the 8-hour standard by the end of 2005. In return, the EAC region receives a deferred designation as a nonattainment area. Using a local approach known as EAC, INCOG sought to reduce ozone and expedite achievement of the 8-hour standard before the EPA’s 8-hour implementation rulemaking.
Overview
To accomplish EAC, two major components would be required: first, a memorandum of agreement for the development and implementation of a technical plan, and second, a local stakeholder process to help define local area air shed modeling and appropriate control strategies.

Details within these components include a number of selected control measures that demonstrate a “modeled” achievement of the 8-hour standard by December, 2007. This modeled achievement would be enforceable through the SIP no later than December of 2004. As such, an 8-hour nonattainment designation could possibly be deferred, as long as the terms defined in the EAC memorandum of agreement are met. Also noted, to be eligible for the EAC, a poor air quality region must be in attainment for the 1-hour standard.

Outcomes
Verifying the necessary data for the EAC can be time and labor intensive, requiring many data requirements, including data on seasonal ozone episodes and area and point sources. Modeling requirements such as MOBILE 6 Travel Demand Models and non-road models adjusted for local equipment and usage rates are needed as well. Consequently, planners should create flexible time lines so that these and other technical requirements associated with the EAC can be addressed.

In summary, efficiently allocating finances and resources towards determining the nonattainment boundaries, compiling and verifying the emissions inventory, assessing the regional modeling, and validating and analyzing the results are a few examples of the technical requirements connected with the EAC.

5.5 Cooperation Creates Better Policies for Tackling Ozone Transport

Organization: West Michigan Shoreline Regional Development Commission
Location: Muskegon, MI
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Website: http://www.wmsrdc.org

Presentation Focus
This presentation highlighted how the West Michigan Shoreline Regional Development Commission created a coalition of partners to tackle the problems of ozone transport. Also outlined in this presentation are the cooperative efforts particularly directed to the rural areas that are experiencing the problems of ozone transport.

Background
The West Michigan area consists of a metropolitan population of approximately 1.1 million people. Three MPOs--the West Michigan Shoreline Regional Development Commission, Muskegon; the Macatawa Area Coordinating Council, Holland; and the Grand Valley Metropolitan Council, Grand Rapids--encompass this large geographic area. This area is currently under maintenance status, but is expected to receive a nonattainment designation under the 8-hour ozone standard.

Overview
The air quality problems that the West Michigan Shoreline Regional Development Commission must contend with are due to ozone transport. In some parts of the region, over 95 percent of ozone pollutants come
from larger metropolitan areas to the west and south. In addition, Lake Michigan has a chemical effect on ozone, exacerbating the pollution problem in shoreline counties.

The transport issue is so dominant a factor in the designation of Muskegon County, which is a small metropolitan area designated as a nonattainment county, that scientific studies have concluded that if the entire population of the county was moved outside, and all businesses and industries closed, the county would still be designated as nonattainment. Hence, actions addressing ozone transport and regional and interstate cooperation needed to be recognized and addressed.

To address these challenges, the West Michigan Clean Air Coalition was formed. The Coalition is a partnership between business and industry, the education community, public interest groups, a number of health departments, the three MPOs (as mentioned earlier), the Michigan Department of Transportation (MI DOT), and the Michigan Department of Environmental Quality (MI DEQ). The coalition comprises several committees. The committees assist in the development of policy and finances, serves as a liaison with federal, state and local agencies and develops media and public educational materials.

**Outcome**

It is an enormous challenge to create private and public sector cooperation in order to develop strategies that tackle air quality issues.

Based on a survey taken over an eight-year period, the Coalition’s efforts resulted in an increase of the public’s understanding (originally recorded as from 10 percent increasing to 75 percent) of ozone action days. In addition to educating the public and community businesses on ozone air quality issues, the Commission also focused on ways to overcome the economic disadvantages of being designated as a nonattainment region.

### 5.6 An Overview Of The Physiological Health Affects Resulting From Particulate Matter

**Organization:** New York University School of Medicine, Nelson Institute of Environmental Medicine  
**Contact:** George D. Thurston, Sc.D;  
**Associate Professor of Environmental Medicine**  
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**Presentation Focus**

This presentation examined the physiological side affects of particulate matter on human health. A variety of scientific studies and web resources were made available to workshop participants.

**Background**

Recent epidemiological and toxicological studies have indicated that particulate matter air pollution can cause significant adverse human health effects. Documented effects of ambient air pollution range from reduced lung function in children and adults; lung airway inflammation; asthma exacerbations; increased hospital ER visits and admissions; and increased mortality incidence.

**Overview**

Particulate matter air pollution is composed of two types of particles in the air. First are primary particles, which are emitted directly from air pollution sources such as diesel trucks. Second are secondary particles,
which are formed in the atmosphere from gaseous air pollutants such as sulfur dioxide from power plants that form sulfates. Those most affected by particulate matter include older adults, people with preexisting respiratory disease, children, healthy adults who exercise outdoors and people with inadequate health care.

Over time, combustion/industrial particles may be more toxic. Humans are now exposed to industrial and fossil fuel combustion particles that the lung did not evolve to deal with. These particles have different sizes, physiochemical characteristics, and deposit in different parts of the lung than more natural particles such as wind blown soil. Since the lung evolved defenses to keep particles out of the deeper, alveolar region, this suggests a cause for concern.

Cross-sectional studies conducted by Thurston and Ozkaynak (1987), Dockery et al (1993), and Pope et al (1995) suggest that sulfate-associated fine particles (ie fossil fuel combustion products) are amongst the most toxic. A recent JAMA article extended a follow-up analysis of the American Cancer Society data and confirmed the original associations of sulfates and PM2.5 with human cardiovascular mortality and found associated cancer deaths. Another study showed increased acute mortality at higher daily particulate matter pollution concentrations (Schwartz 1997).

**Outcome**

The body’s natural defense mechanisms are not strong enough to combat the more insoluble, smaller particles that make their way deeper into the respiratory system. While PM10 poses a problem for the upper, nasopharyngeal portion of the respiratory system, PM2.5 stresses the lower, tracheobronchial and pulmonary sections.

In conclusion, even with a limited number of nationwide continuous PM monitors, there is enough supporting scientific evidence showing that long-term exposure to fine particles has severe health impacts and avoiding acute exposures can help protect public health, especially amongst sensitive populations.

This research can be found in the JAMA, March 6, 2002 – Vol 287, No 9 at www.jama.com. Entitled: “Lung Cancer, Cardiopulmonary Mortality, and Long-term Exposure to Fine Particulate Air Pollution.” A link can also be found on the NARC website: http://www.narc.org.

**Additional Resources**

PM research website:  http://www.pmra.org/

The AIRNOW page has many publications, including the “ozone and your health brochure”:  http://www.epa.gov/airnow/publications.html

A brief descriptions of sources and effects for each of the 6 criteria pollutants can be found:  http://www.epa.gov/air/urbanair/6poll.html

Health effects fact sheet on PM2.5:  http://www.epa.gov/ttn/naaqs/standards/pm/s_pm_plain.html
Workshop 6: Data Needed for Air Quality and Transportation Models

What are some of the current modeling practices used by regional councils and MPOs? How do large and small MPOs differ in air quality and transportation modeling approaches and needs? What are some of the changes in MOBILE6 from the previous modeling software? Can MPOs and regional councils use alternative data collection and modeling methods? How important is the process of planning to do data collection and modeling?

*Workshop 6: Data Needed for Air Quality and Transportation Models* is a workshop put together so regional councils and planning organizations could learn useful tools and applications when developing their own data and modeling. In order to reach conformity modeling and data collection is a necessary part of a successful equation.

**Workshop Topics and Presenters:**

6.1 The Challenges of Modeling: The Results of a National Study on Modeling  
Dr. Thomas Walker, DVRPC

6.2 Modeling Complexities Challenging the Small and Medium-Sized MPOs  
Daniel Szekeres, Michael Baker, Jr., Inc.

6.3 An Overview of U.S. EPA's Modeling Software, Mobile6  
Janet Kremer, U.S. EPA

6.4 Working Together: The Importance of Understanding Science and Policy When Planning for Ozone  
Michael Koerber,

6.5 Early Planning Can Effect Ozone Action  
Bill Davis, NOACA

6.6 Using Alternative Data Collection and Modeling Methods to Aid Conformity  
Chuck Imbrogno, SPC

6.7 Planning for Setbacks in Conformity Documentations Can Offset Resource Constraints  
Robert Dickinson, SETRPC

6.8 The “Journey-Based” Travel Model Developed by NYMTC: An Overview  
Sangeeta Bhomick, NYMTC
6.1 The Challenges Of Modeling: The Results Of A National Study On Modeling

Organization: Delaware Valley Regional Planning Commission
Contact: Dr. Thomas Walker
Phone: (215) 238-2886 Email: twalker@dvrpc.org
Website: http://www.dvrpc.org

Presentation Focus
Dr. Thomas Walker presented the results of a national study on the state of modeling currently practiced by MPOs and Regional Councils. This study was administered by NARC, in conjunction with the Delaware Regional Planning Commission (DVRPC).

Background
This survey collected data on current modeling practices, planned upgrades, and the related costs for model enhancement, maintenance and validation. Using the size of the region as the unit of analysis, the survey responses were analyzed for forecasting responsibility, model type, validation frequency, input data, output use and planned upgrade timeline and expenditure. All of the MPOs that responded are the lead agencies for transportation forecasting within their regions, and under the conformity guidance are also “responsible” for the entire transportation air quality conformity process and determination.

Overview
Regional size can affect whether or not mobile source emissions modeling is currently required of the MPO. Almost all (except one) of the larger MPOs estimated their vehicular emissions, either directly or through outside agencies. By contrast, most (75 percent) of the smaller MPO’s (less than 500,000 population) in the sample are currently in attainment under the 1-hour ozone standard and are not required to demonstrate conformity. Only about one-third of these smaller MPO regions estimate vehicular emissions.

Under the proposed 8-hour standard, MPO size leads to differing needs regarding interagency coordination, consultant services, and resource allocation for transportation air quality modeling. The larger MPOs with conformity reclassifications under the 8-hour standard already have transportation and air quality modeling resources to draw on for emissions calculations.

The results of the survey showed that the largest MPOs planned to spend upwards of one million dollars a year on land use, transportation and air quality model validation and upgrade. Also of interest were the surveyed planning uses of the land use, transportation and emissions model results. As noted above, conformity is a major use for the models in nonattainment air quality regions. The traditional uses for travel demand models are still very prevalent. Three-quarters of smaller MPOs and all larger regional planning commissions use their model’s output for facility design and corridor studies. This also includes Major Investment Studies (MIS) and Environmental Impact Studies (EIS). More than 80 percent of MPOs use their models to evaluate the long-range transportation plans. Other significant uses mentioned in the survey responses include congestion management, land use scenario testing, environmental justice and ITS planning.

Outcomes
As revealed through the survey results, smaller MPOs more often must tackle a number of modeling challenges:
The new additions to the list of MPOs that are now required to prepare conformity determinations are primarily small MPOs — even rural counties in some cases;

Many smaller MPOs, with new 8-hour standard conformity requirements, have little or no modeling expertise and must either rely on the state department of transportation and environmental agencies, and/or consultants for the technical aspects of the conformity determination.

The smaller MPOs in the sample have much smaller budgets, with limited staff and technical resources available for modeling work. These smaller MPOs may be unprepared for the new responsibility to estimate emissions under the 8-hour standard due to small staff and technical resources. Thus, they may tend to use consultants to perform the conformity analysis as adjunct to the State Implementation Plan process. Some MPOs may form consortiums for transportation air quality analysis or be absorbed by adjacent larger MPOs.

The study also gave specific legislative recommendations, which were incorporated into NARC’s Priorities and Proposals for the Reauthorization of TEA-21 - Transforming the Landscape of Regional Travel. This document identifies six policy guidelines:

1. The bill should provide funding for model maintenance and upgrade
2. MPO’s should be given modeling flexibility to tailor their models to local issues and needs
3. Detailed model specification issues should not be addressed in the legislation, rather an updated best practices manual is needed
4. New transportation initiatives should include funding for required model upgrades
5. Required model validations should be coordinated with Census data availability
6. The bill must provide for MPOs who are in nonattainment because of the 8-hour standard

### 6.2. Modeling Complexities Challenging The Small And Medium-Sized MPOs

Organization: Michael Baker Jr., Inc.
Location: Philadelphia, PA
Contact: Daniel Szekeres Phone: (215)442-5325
e-mail: dszekeres@mbakercorp.com
Website: www.mbakercorp.com
Presentation Focus
This presentation focused on the needs and complexities of regional SIP/Conformity air quality modeling faced by small and midsize MPOs. An emphasis was placed on available data sources and software tools that can be used in the development of a robust and defensible emissions calculation process.

Background
Many small to midsize MPOs lack the staff, money and modeling expertise to perform air quality estimates without assistance. Dealing with modeling deficiencies and the potential air quality linkages has often caused such MPOs to develop new relationships with the U.S. DOT, the state DOT, state environmental agencies, consultants and other stakeholders to address air quality issues. In Pennsylvania, a consultant, under state contract, provided various levels of support for each area in the state ranging from technical support to performing all work phases of the conformity process.

Overview
The flow of data and tools typical of a mobile emission calculation process consists of a combination of traffic and air quality input data as well as software tools including: travel demand modeling software, post processing algorithms and EPA’s latest approved MOBILE6 emission model.

The major input data items to the emission calculation process include: VMT by facility class; regional congested speeds by time-of-day; estimates of regional trip starts; region-specific vehicle type mixes and fleet ages; regional control measures; fuel and environmental data; and the region-specific emission factors.

The MOBILE6 software provides “gram/mile” emission factors based on key input data provided to the model. The figure below illustrates the typical data requirements for MOBILE6 and highlights the data items provided as input for small urban and rural areas within Pennsylvania. Many of these data items are often prepared by state environmental agencies. MPOs may be expected to prepare estimates of VMT, speeds, vehicle mixes (# of Trucks) and potentially the number of trip starts if the region contains high levels of through traffic or where average trip lengths are significantly different from the MOBILE6 default values.

### Input Data to MOBILE6

<table>
<thead>
<tr>
<th>Required Local Data</th>
<th>Recommended Local Data</th>
<th>Optional Local Data</th>
<th>Recommended Default Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regional Temperatures</td>
<td>Registration (vehicle age) data</td>
<td>Diesel Sales Fractions</td>
<td>Other Air-Conditioning related inputs</td>
</tr>
<tr>
<td>I/M Assumptions</td>
<td>Absolute Humidity</td>
<td>Vehicle Trip Length Durations</td>
<td>Annual Mileage Accumulation Rates</td>
</tr>
<tr>
<td>Special Fuel Characteristics (RFG, RVP)</td>
<td>VMT Fractions by vehicle class</td>
<td>Hourly VMT Pattern Data</td>
<td>Vehicle Engine Starts Per Day</td>
</tr>
<tr>
<td>Calendar Year of Evaluation</td>
<td>VMT by Facility Class</td>
<td></td>
<td>Vehicle Soak Times (3 types)</td>
</tr>
<tr>
<td>Altitude</td>
<td>VMT Fraction by Speed</td>
<td></td>
<td>Status May Change in Future</td>
</tr>
</tbody>
</table>

Status May Change in Future
The estimate of regional travel, VMT, is provided by a traffic data source. For many areas, a travel demand model serves this role. For other areas, other traffic link or HPMS (FHWA’s Highway Performance Monitoring System) summary data must be used for the analysis. The use of travel demand models is not required for conformity planning, unless a region is designated as serious or worse classification of nonattainment. However, such tools are useful for determining project impacts and potential future year travel on individual roadways. For non-model areas in Pennsylvania, PENNDOT’s Roadway Management System (RMS) provides traffic data on individual state roadway segments. The data contains information on roadway volumes as well as other key physical characteristics (e.g. lanes, facility type, etc.) that allow for the calculation of congested speeds. Many other state DOTs may have similar information that can be evaluated for potential use in air quality analyses.

Sketch planning techniques and software can also serve as valuable tools to determine the potential impact of highway, transit, demand management and other transportation control measure projects. For example, the AQONE custom software has been used in Pennsylvania, New Jersey, Virginia, and Maryland to assist MPO and DOT staff in analyzing the VMT and emission impacts of transportation projects.

Congested speeds impact the emission factors produced by the MOBILE6 software. MOBILE6 allows input of congested speeds by time-of-day. Although models provide outputs for congested speeds, these values are usually not provided by time-of-day and are often sacrificed for production of more accurate traffic volumes. Non-model traffic data sources do not contain congested speed estimates. Such values must be calculated for individual roadway segments based on the available descriptive information and traffic volumes. Post processing methodologies or software often play a key role in the calculation and preparation of congested speeds for input to MOBILE6. Pennsylvania, Maryland, New Jersey, and NYC utilize a post processing package named PPSUITE. This software provides the user a shell to link travel models or databases to the MOBILE6 software.

Outcomes
As smaller regions come into nonattainment under the new 8-hour ozone standard, the need for conformity planning assistance will only increase. While staffing and resource constraints result in a greater need for conformity planning assistance, there are resources available that can help lend modeling expertise, improve data collection, form interagency relationships, and streamline the planning process.

6.3 An Overview Of U.S. EPA’s Modeling Software, Mobile6

Organization: U.S. Environmental Protection Agency, Region 3
Location: Philadelphia, PA Contact: Janet Kremer
Phone: (215)814-5000
Website: http://www.epa.gov/region3/contact.htm

Presentation Focus
This presentation provided workshop participants with an overview of the U.S. Environmental Protection Agency’s (EPA) latest emissions modeling software, MOBILE6.

Background
On January 29, 2003, EPA released MOBILE6, the newest iteration of their emissions modeling software. Use of the model is required for regions in serious, severe or extreme nonattainment of ozone standards. All other regions will be required to use the model for SIP/Conformity planning as of January 29, 2004.
Overview

‘MOBILE’ is a series of software developed and disseminated by U.S. EPA. The software calculates emissions factors in grams per vehicle miles traveled (VMT) for on-road mobile sources, accounts for factors which effect vehicle operation and emissions such as vehicle fleet characteristics (e.g. vehicle mix and age), traffic activity (e.g. speed and facility type), environmental variables (e.g. temperature and humidity), some control measures (e.g. Inspection/Maintenance and ATP), and fuels (e.g. RFG and RVP). Emission factors must be multiplied by VMT to obtain emission totals.

MOBILE6 succeeds the previous model, MOBILE5. The new or enhanced features include: more details, weather inputs, hourly temperatures, increased traffic activity data, speed distributions instead of averages, greater vehicle types, hot soak distributions, separate trip starts, facility (freeway, arterial, local and ramp) pattern data, and distribution of traffic per hour of day. The benefits of these changes include greater accuracy, greater input flexibility, incorporation of new vehicles, fuels, emissions control technologies and database file output. These lead to a more efficient, accurate planning process.

Regarding conformity planning and general curves, the MOBILE6 Volatile Organic Compounds (VOC) and Nitrous oxides (NOx), curves are less sensitive than with MOBILE5. This becomes more significant for NOx beyond the year 2020 by impacting future project emissions estimates.

Outcomes

Software changes increase the complexity of data needed and expertise required to run the model. This can be especially problematic in small- or midsize regions with staffing and resource constraints.

Resources

The EPA provides guidance and information on using MOBILE6 in the report Sensitivity Analysis of MOBILE6, the User’s Guide for MOBILE6, and the Technical Documentation Index for MOBILE6.

This information is accessible at http://www.epa.gov/otaq/m6.htm and is provided through the Office of Transportation and Air Quality (OTAQ), U.S. EPA.
6.4 Working Together: The Importance Of Understanding Science And Policy When Planning For Ozone

Organization: Lake Michigan Air Directors Consortium  
Location: Des Plaines, IL  
Contact: Michael Koerber  
Phone: (847)296-2181  
Website: http://www.ladco.org/ Email: koerber@ladco.org

Presentation Focus  
This presentation focused on the science of ozone formation. Included was an in-depth discussion on how science and policy can affect ozone planning.

Background  
In 1989, four states—Illinois, Indiana, Michigan, and Wisconsin—partnered with the U.S. Environmental Protection Agency (EPA) to address significant ozone problems in the Lake Michigan area. These four states and EPA signed a Memorandum of Agreement (MOA), establishing the Lake Michigan Ozone Study (LMOS) and forming the Lake Michigan Air Directors Consortium (LADCO) to oversee the study. LADCO currently provides technical assessments for and assistance to its member states on regional air quality problems, including ozone, particulate matter, regional haze and air toxics.

Overview  
One challenge is getting the science and policy groups to work together, since science should be objective, relevant, timely and comprehensible, while policy-makers must be committed, patient and willing to listen to and learn the technical issues.

Successful airshed planning requires a sound technical foundation to deal with the issues and challenges, as well as remaining policy-relevant to engage decision makers. Regulatory approaches to achieve these goals should be incremental, flexible, allow feedback of information, and recognize resource limitations and regional differences.

LADCO, since its establishment, has achieved several notable accomplishments while balancing sound science and policy. These accomplishments include:

- Improved air quality, with only a few monitoring sites still in violation of the 1-hour ozone standards;
- A successful network that combines resources, shares data, collaborates on technical activities, and fosters cooperation;
- The development of the expertise needed to collect and analyze air quality data, create multi-state emissions inventories, and run regional air quality models.

Overview  
Ozone is formed through a series of photochemical reactions between Volatile Organic Compounds (VOC) and nitrogen oxides (NOx), which are strongly influenced by weather. The concentrations of ozone precursors are highest in the summer, and hotter summers produce more ozone. While the ozone is being formed, the air moves, creating “transport” problems. Both the amount of heat and sunlight, and the amount of wind
influence the formation and transport of ozone.

**Transport**

The technical nature of ozone formation and transport results in unique issues for ozone planning. First, it creates a tension between the science and the policy aspects of conformity. Within this context, there is a need to balance regulatory requirements, budget limitations, and schedule constraints within the context of policy and science. Second, there can be conflicts between “real-world” air quality management and attainment of legal standards. Third, the ozone control path must be correctly identified (i.e. impact of Volatile Organic Compounds (VOC), Nitrous oxides (NOx), or a combination). Fourth, the role of transport significantly contributes to the presence of ozone. Finally, other regional pollutants must be considered (e.g. PM2.5 and haze).

**6.5. Early Planning Can Affect Ozone Actions**

Organizer: Northeast Ohio Area-wide Coordinating Agency  
Location: Cleveland, OH  
Contact: Bill Davis  
Phone: (216)241-2414  
Website: http://www.noaca.org

**Presentation Focus**
This presentation examined how early, coordinated planning can successfully impact conformity documentation, specifically when a number of multitiered stakeholders are participating in the process.

**Background**
The Northeast Ohio Areawide Coordinating Agency (NOACA) is the Metropolitan Planning Organization (MPO) for the Ohio counties of Cuyahoga, Geauga, Lake, Lorain and Medina. The organization works with a variety of agencies, such as Akron Metropolitan Planning Area Transportation Study, in putting together conformity documentation for an eight county nonattainment area.
Overview
Air quality planning requires a high amount of coordination. Multiple levels of government agencies are involved, and a conformity document requires approval by local government, the State environmental agency, the State transportation agency, the U.S. Environmental Protection Agency and the Federal Highway Administration.

Responsibility for the preparation of State Implementation Plan (SIP) documents and conformity documents varies by region. For reliability’s sake, NOACA prepares both types of paperwork for the eight-county nonattainment region in Ohio. This ensures that the modeling assumptions and procedures are the same for the two documents, and that the results are consistent with each other. In other areas, different agencies can tackle SIP and conformity issues, potentially leading to delay.

With a number of stakeholders involved in the conformity processes, early communications about modeling assumptions and methods can ensure that the document is accurate and deadlines are met.

One example of NOACA’s need for early, coordinated planning is the Build/No Build criterion. In theory, it prevents the start of any proposed transportation project that will adversely affect air quality. In practice, it presents significant modeling challenges. A project can pass or fail the criterion by fractions of a ton, which is often less than the margin of error in the modeling program itself. If a project doesn’t pass, planners can shuffle project staging in networks, remove projects, or use off-model credits (e.g. Clean Natural Gas bus projects).

If the emissions budget will be exceeded, NOACA considers four options: off-model credits; safety margins; new measures; and keeping the status quo. Off-model projects require assessing projects not accounted for in the travel model, and require off-model estimation of traffic counts, vehicle miles traveled, and speeds. Safety margins can be built into a SIP during its preparation and can be reallocated later to a source sector exceeding the emissions budget. New measures might include inspection and maintenance programs, new fuel formulations, changed speed limits or similar measures to decrease emissions. Maintaining the status quo means renewing the existing approved TIP or SIP without changes, which allows previously programmed projects to proceed. In order to achieve emissions with one or more of the first three options, NOACA found that early planning and coordination among stakeholders is critical.

Outcomes
In regions where different agencies are responsible for emissions modeling, lack of coordination may lead to inconsistent results and the conformity document may not be approved. In addition, as new air quality standards lead to more and smaller regions being designated nonattainment, early planning is critical in regions that are new to the conformity modeling process.

6.6. Using Alternative Data Collection And Modeling Methods To Aid Conformity

Organization: Southwestern Pennsylvania Commission
Location: Pittsburgh, PA
Contact: Chuck Imbrogno
Phone: (412)391-5590 Email: imbrogno@spc9.org
Website: http://www.spcregion.org
This presentation examined how the Southwestern Pennsylvania Commission (SPC) used alternative data collection and modeling methods to make conformity findings for three counties in its planning area.

**Background**
The SPC is the MPO for a ten-county region in Pennsylvania. In 1998, three counties were added to the SPC’s region and, in 2003, another county was added. Conformity assessments were required in three of the four new counties. SPC’s network travel demand model only covered the original six-county region.

Boundary issues arise when only part of a region’s nonattainment area is accounted for in the network travel demand model used for air quality planning. An area may be absent from the network due to lack of data or a previous attainment designation that didn’t warrant inclusion in the model. Conformity planning must then be completed with both the network model and with off-network modeling methods.

**Overview**
SPC deals with boundary issues in its 10 county region. Four of the ten counties were not accounted for in the network model. Alternative techniques were used to assess the conformity in the three nonattainment counties outside the network model area.

Data needed for the off-network model included:

**Roadway Inventory** (off the existing system): This included the state system and federal aid system, speed limits, number of lanes, facility type/functional class, traffic volume by vehicle type, and traffic growth rate.

**Vehicle Inventory**: This includes vehicle age by vehicle type and mileage accumulation by vehicle age and type.

**Proposed New Facilities**: This includes facility type, speed limits, number of lanes, techniques to estimate, traffic volume (from diverted travel, induced travel, traffic growth rate) and technique to estimate impact on existing facilities by volume, speed, and delay.

**Outcomes**
SPC turned to alternative approaches to make conformity findings in three of the four counties, which were added to the planning region in 1998. Interagency coordination was critical in developing the off-network modeling procedures and assembling the roadway vehicle inventory data.

• In order to collect this data and generate off-network results SPC consulted:
  • US Census Bureau; FHWA – Highway Statistics;
  • Highway Performance Monitoring System (HPMS);
  • The Highway Capacity Manual;
  • The U.S. EPA Conformity Website: http://www.epa.gov/otaq/transp/traqconf.htm;
  • The FHWA Conformity Website: http://www.fhwa.dot.gov/environment/conform.htm.

The following agencies also served as resources: Pennsylvania DOT (PENNDOT), PENNDOT’s Air Quality Consultant Team; and Pennsylvania’s Conformity Working Group, which includes all MPOs in nonattainment areas; the Pennsylvania Department of Environmental Protection (PaDEP); FHWA; EPA; and FTA. (This group continues to meet quarterly to facilitate interagency coordination on conformity issues.)
6.7 Planning For Setbacks In Conformity Documentation Can Offset Resource Constraints

Organization: South East Texas Regional Planning Commission
Location: Beaumont, TX
Contact: Robert Dickinson
Phone: (409)899-8444 Email: bdickinson@setrpc.org
Website: http://www.setrpc.org/

Presentation Focus
This presentation looked at the advantages to preparing detailed time lines in order to offset resource constraints when planning conformity determination. For the small- and midsize MPOs and Regional Councils, staffing and resource constraints are important factors in conformity planning.

Background
South East Texas Regional Planning Commission (SETRPC) is one of Texas’ 25 MPOs. They oversee a three-county region with a population of less than 200,000 people. The transportation staff includes one director and one or two planners. Thus, the staff must plan ahead during the conformity documentation process in case they hit setbacks and must make changes before a deadline.

Overview
SETRPC’s small staff severely constrains the data collection and modeling capabilities of the MPO, and makes it difficult to perform modeling for the nonattainment areas in the required three-year cycle. The staff spends all their time and resources on this task. As a result, SETRPC works closely with the Texas Department of Transportation (TxDOT), which runs the travel demand models for 22 of the 25 MPOs in Texas.

TxDOT also provides assistance in obtaining socioeconomic and highway network data. The socioeconomic data is extremely labor intensive and time consuming for the small staff of SETRPC. Collecting this data must start early and the MPO often confronts privacy and confidentiality obstacles. As such, TxDOT’s assistance greatly increases the ability of SETRPC staff to perform required conformity modeling. However, they found that alternate approaches allowed them to increase their efficiency when trying to work within the three-year cycle.

Outcomes
The amount of time conformity modeling requires, particularly the collection of socioeconomic data, combined with a small staff, makes conformity documentation difficult. In addition, the highway network in the SETRPC region is relatively small, with the staff driving the network annually, again consuming a large amount of staff time.

In addition, in order to obtain assistance from TxDOT, the SETRPC transportation staff developed a detailed timeline for data collection, modeling and documentation during the cycle. Under this timeline, all staff time was programmed, with staff learning that it is critical to allow for delays and setbacks in the timeline. As such, developing a timeline in advance, and building a margin of safety into it, can mean the difference between meeting or missing the three-year conformity deadline, particularly in a small MPO. Timeline tasks included collection and preparation of demographic data, collection of roadway data and projects for network model, operation of the travel demand model and MOBILE6.0 emissions model, interagency coordination, and preparation of necessary documents.
6.8. The “Journey-Based” Travel Model Developed By NYMTC: An Overview

Organization: New York Metropolitan Transportation Council
Location: New York, NY
Contact: Sangeeta Bhomick
Phone: (718)472-3046
Website: http://www.nymtc.org

Presentation Focus
The New York Metropolitan Transportation Council (NYMTC) shared with workshop participants how and why they developed the ‘journey-based’ travel model. They also discussed why this type of modeling is different from traditional methods.

Background
NYMTC is the designated Metropolitan Planning Organization (MPO) for ten counties in downstate New York. The NYMTC region encompasses 2,440 miles, includes 12 million people (65 percent of New York State population), and takes in 22,870 miles of center line roads. NYMTC’s travel demand model incorporates an enormous highway network, including SOV, HOV, taxi, truck and other commercial inputs, along with a vast transit network of over 100 New York City subway routes, 900 commuter rail routes, 2,300 bus routes, 50 ferry routes, as well as the Manhattan sidewalk network.

Overview
The NYMTC took a unique approach to travel demand modeling. In response to the Clean Air Act Amendments (CAAA) of 1990, and the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA), the NYMTC decided to develop their own travel demand model for use in both conformity planning and for the Regional Transportation Plan (RTP). The goal was to develop a tool for major investment studies, congestion management and corridor and subregional analysis, leading to the development of the Best Practice Model (BPM).

The BPM differs from traditional travel demand models because “journey” is the unit of analysis. A journey is travel between two principal points, with one point always being the home (“home-based”). This focuses on behavior of the traveler (rather than the trip itself), automobile ownership and family interactions, stops and stop locations.

This model also examines the availability of transit and household composition. It predicts changes in future travel patterns in response to changes in demographic profiles and transportation systems in the region. The BPM utilizes extensive Geographical Information System (GIS) based networks and encompasses 28 counties, 3,586 traffic analysis zones, four time periods, eight trip purposes, ten travel modes, 8 million households and 22 million trips. An example of the BPM in use is the Gowanus Expressway (Brooklyn) project, which is using the unique BPM features to prepare a draft environmental impact statement and to analyze the project’s potential environmental and economic impacts.

Outcomes
One of the primary challenges facing the NYMTC is data collection, which is extensive. Socioeconomic inputs include land use, population, household, employment and labor force data. Vehicle counts are obtained from NYMTC staff, and state, county and local agencies. Travel behavior (“journey”) information is obtained from roadside, household and mail surveys. All this data is then incorporated into the BPM.
In conclusion, the BPM is linked to the MOBILE5 and MOBILE6 models with post-processing software. The results are consistent, and the 1997 version of the BPM has been validated. The BPM is being used for numerous projects in the region, as well as contributing to improved transportation and air quality planning. Using socioeconomic and demographic forecasts from the 2000 Census, and new travel data collected in 2002, the NYMTC expects to have an updated BPM in January 2004.

**Workshop 7: Using Outreach To Improve Air Quality**

How can public outreach improve air quality? How will planning organizations get out their message? Who are the best people to receive this message? Who is receiving this message?

**Workshop 7: Using Outreach to Improve Air Quality.** This workshop will discuss the importance of building relationships and implementing effective public outreach. The workshop delves into the successes and challenges that arrive from specific case studies.

**Workshop Topics and Presenters:**

7.1 Public Outreach To Improve Air Quality: A SEACO Approach
   Catherine Zimmerman, Broward County

7.2 Public Outreach To Improve Air Quality: A NIRPC Approach
   Reggie Korthals, NIRPC

7.3 Public Outreach To Improve Air Quality: A FAMPO Approach
   Mauriza Chapman, FAMPO

7.4 Quantitative Evaluation of Travel and Emissions Reductions
   Eric Schreffler, ESTC

7.5 Types of Evaluation Research and Their Uses for Measuring Program Performance
   Kathy Daniel, FHWA
7.1 Public Outreach To Improve Air Quality: A SEACO Approach

Organization: Broward County, Dept. of Planning and Environmental Protection, Air Quality Division
Location: Southeast Florida (Broward, Miami-Dade, and Palm Beach Counties)
Contact: Catherine Zimmerman
Phone: (954)519-1482
Email: czimmerman@broward.org
Website: www.broward.org/air.htm

Presentation Focus
Raising people’s awareness about the effects of their transportation choices became a practical necessity in the region of Southeast Florida. This presentation examines how a public/private partnership --the Southeast Air Coalition for Outreach (SEACO)-- came together to embark on a public outreach program to improve air quality.

Background
Southeast Florida has over 5 million residents living in three counties of Miami-Dade, Broward, and Palm Beach. This substantial region has little public transit, a growing population (projected to be 7.5 million by 2030), an increase in vehicle miles traveled (VMT) per person, and mobile sources accounting for 50 percent of the air pollution. Despite the fact that the region had been in maintenance for the 1-hour ozone standard since 1990, the climb in population and subsequent use of automobiles had authorities concerned that the area is apt to suffer from air quality issues. As such, the three counties, with representatives from environmental and planning agencies, health departments, commuter services, some MPOs, as well as the Florida Department of Environmental Protection, the American Lung Association, and AAA, formed the air coalition, SEACO.

Overview
SEACO’s public outreach program--as developed through consensus--revolved around regular vehicle maintenance, with a special event, Car Care Month, taking place during the month of October. Regular maintenance saves the driver money, improves driver safety and respiratory health. It also promotes clean air. In launching Car Care Month, SEACO members agreed to continuity in message across county lines, the sharing of resources, and the establishment of business partners to help spread the message.

Members of SEACO took on special roles to ensure the event’s success. For example, local offices from the American Lung Association contributed $500 to the events. They also allowed for the use of 1-800-LUNG-USA as a contact number for questions concerning air quality and respiratory health. The local air agencies coordinated business contacts, distribution of materials, public relations, and funding for the agencies’ portion of purchases. The FL DEP more generally lent an air of credibility to the overall outreach effort, while also making its representatives available for interviews on radio public affairs broadcasts. AAA conducted vehicle “check lane” events, allowing county officials to set up informational tables to distribute materials on car care and air quality. Representatives from AAA also made time available to do radio public affairs programs.

Car Care Month included public outreach efforts, such as:
• Locating “pump topper” posters at gas stations;
• Distributing a variety of materials to the public at auto repair businesses, including car care log books, brochures that illustrate tips for cleaner air, tire pressure gauges, and other items;
• Offering free vehicle maintenance check lanes (in partnership with AAA);
• Promoting Car Care Month on public affairs radio shows;
• Advertising in trade publications;
• Airing radio PSAs during traffic and news reports.

Outcomes
Of particular challenge to the partners in the SEACO coalition was the issue of funding. For example, pump topper posters were extremely expensive. In addition, the local air agencies’ funding available for this effort varied according to budget issues and constraints. To solve this issue, the Miami-Dade air agency agreed to purchase the pump stopper materials. They would then invoice the two other counties based on a pre-agreed ability-to-pay a percentage of the total cost.

The issue of branding also posed a challenge to the overall public outreach effort. Often, the air agencies wanted their logos attached with events taking place in their respective county. A solution for the radio PSAs was simple, with the statement, “a service of your local air agency.” Promotional materials, on the other hand, remained unsolved.

In conclusion, because of the success of SEACO’s public outreach program, the coalition will seek more vigorous involvement with the business communities, as well as MPOs and commuter services. To help alleviate funding concerns, they plan to solicit additional financial support, as well as advertising assistance, from business interests.

Demonstrating the Benefits of Outreach
Without program evaluation, a community cannot assess whether a particular program is a success or needs improvement. Process evaluation can facilitate several benefits including: identifying program areas that may need improvement; allowing a community to determine accountability; and justifying program objectives. During the second half of Workshop 7: Using Outreach To Improve Air Quality, the presenters demonstrated accomplishments and areas for improvement by using the tracking tools and resources available through, “It All Adds Up to Cleaner Air.” The following highlights the benefits of SEACO’s public outreach program using the tools available through “It All Adds Up to Cleaner Air.:

Clean Air Partners

<table>
<thead>
<tr>
<th></th>
<th>2002</th>
<th>2003</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 government agency</td>
<td>4 government agencies</td>
</tr>
<tr>
<td></td>
<td>1 not-for-profit</td>
<td>2 not-for-profit</td>
</tr>
<tr>
<td></td>
<td>11 businesses</td>
<td>206 businesses</td>
</tr>
</tbody>
</table>

Business Partners 2003
Gasoline Stations
distributed print ads (1,500 times)  41,625,000 Tri-County viewers reached

Auto Businesses
distributed brochures & tire gauges (8,000 times)  8,000 Tri-County viewers reached

Earned Media/Public Relations
Using five radio spots, an estimated 12,000 Tri-County listeners were reached. By placing an ad in the Miami-Herald, approximately 185,000 readers received an “It All Adds Up” message. Individual county publications reached another 185,000 people in a total of three counties, while efforts like the vehicle check lanes reached 356 people in all three counties.
Presentation Focus
The Northwestern Indiana Regional Planning Commission (NIRPC) has found that public outreach programs provide both regulatory and non-regulatory benefits to the region’s residents. This presentation looks at the variety of programs that are part of NIRPC’s overall air quality improvement plan.

Background
NIRPC’s region comprises three counties that includes Lake, Porter, and LaPorte with approximately 741,468 residents. The region is located along major transportation routes in and out of the Chicago metropolitan area. The only regional transportation system is the South Shore Railroad that operates one commuter route from Chicago to South Bend, Indiana. There is no regional bus transit system. The region is the nation’s largest steel producing area, yet 44 percent of its air pollution is from mobile sources. Lake and Porter counties have been designated moderate nonattainment under the 8-hour ozone standard as part of the Chicago MSA. LaPorte County has also been designated moderate under the new 8-hour standard but is designated as a “stand-alone” nonattainment area. NIRPC’s makes use of its outreach program to support ozone regulatory requirements. In addition to addressing regulatory requirements, NIRPC has discovered that voluntary outreach is important to changing people’s transportation choices. With a significant number of minorities living near major truck and transit stops, NIRPC’s outreach program has also played a significant role in addressing environmental justice concerns.

Overview
The public outreach programs of NIRPC involve a broad array of partners, ranging from education providers to state, county and local parks, to business and industry and community coalitions, to environmental conservation groups, to government agencies and elected officials at the local, state and federal levels. These partners maximize visibility and credibility in the communities served, leverage resources, ultimately influencing transportation choices. NIRPC’s public outreach initiative of 2003 emphasized ozone awareness and health, car care for consumers and fuel initiatives. The following programs were implemented as part of the initiative:

Ozone Action Day - This program, which operated May through October, focused on distributing promotional/informational materials at Vehicle Inspection and Maintenance Centers, educating children about ozone through curriculum materials and classroom resources and disseminating general information on ozone through newspaper and radio public service announcements.

Car Care Program - This ten-week program involved a partnership between local radio stations and car care centers. Live programs, referred to as "Show Me The Money" enabled listeners to stop at the car care center and provide an air quality tip heard on the air, spin a wheel for a monetary reward and receive discounts on oil changes and tune-ups.

Gas Can Exchange - This partnership between the County Solid Waste Districts and the Lake Michigan
Hazardous Waste Team offered residents an opportunity to exchange old gas cans for new. The program operated one Saturday per month during July through October. Partnerships with local radio stations provided live coverage of the events.

School Bus Retrofit Program and Bio-Diesel Conversion Program - A partnership consisting of the Clean Cities Coalition, schools and municipalities undertook a fuel retrofit initiative. Through workshops and grant writing assistance, four school systems were able to convert school buses to using bio-diesel fuel. Two municipalities converted their vehicles to using compressed natural gas (CNG).

Diesel Emissions and Truck Stop Electrification Pilot Project - The primary goal of this program was to decrease idling in a highly populated area along a major truck corridor, tackling a regional environmental justice concern. The project involved the installation of 50 in-cab service modules for diesel trucks, which enabled the trucks to shut down their engines, rather than to continue to idle. Partners included U.S. EPA, Indiana Department of Environmental Management, Pilot Travel Centers, Black Oak Citizens Group, South Shore Clean Cities, Inc., and Idle Air Technologies.

Outcomes
The lack of funds, personnel, time and evaluation strategies make measuring program outcomes difficult. NIRPC anticipates that in the future by making use of EPA's, Demonstrating the Benefits Toolkit, the Commission will be better able to plan, evaluate and make adjustments to its program initiatives.

In conclusion, comparing 2002 to 2003, marked increases occurred in the request and distribution of ozone outreach materials, response and attendance at events, public interest in heavy diesel emissions and gas cans collected and distributed.

**Demonstrating the Benefits**
Without program evaluation, a community cannot assess whether a particular program is a success or needs improvement. Process evaluation can facilitates several benefits including: identifying program areas that may need improvement; allowing a community to determine accountability; and justifying program objectives. During the second half of Workshop 7: Using Outreach To Improve Air Quality, the presenters demonstrated accomplishments and areas for improvement by using the tracking tools and resources available through, “It All Adds Up to Cleaner Air.” The following highlights the benefits of NIRPC’s public outreach program using the tools available through “It All Adds Up to Cleaner Air.”:

<table>
<thead>
<tr>
<th>Clean Air Partners</th>
<th>2002</th>
<th>2003</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 government agencies</td>
<td>2 major industries</td>
<td>6 government agencies</td>
</tr>
<tr>
<td>6 businesses &amp; 1 University</td>
<td>1 radio station &amp; 1 newspaper</td>
<td>12 businesses &amp; 3 Universities</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Product Distribution</th>
<th>2002</th>
<th>2003</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 teacher curricula</td>
<td>5,000 Ozone brochures</td>
<td>80 teacher curricula</td>
</tr>
<tr>
<td>1,000 new gas cans</td>
<td>10,000 do not top off tank bro-</td>
<td>2,000 new gas cans</td>
</tr>
</tbody>
</table>
In-Kind Contributions
Much of the in-kind contributions for NIRPC’s “It All Adds up” public outreach program consisted of local businesses. For example, local newspapers ran quarter page ads every Saturday at no cost; radio stations provided one 60 second spot for each 60 second spot purchased and contributed to live remotes and giveaways; local car care centers provided discounted and free oil changes. In addition, the solid waste district provided caps and t-shirts for giveaways. Volunteers from Partners for Clean Air, South Shore Clean Cities, and high school environmental clubs.

Areas for Improvement
Through program evaluation, NIRPC has found areas for improvement, including:

- Keeping better records of in-kind contributions to use as matching funds;
- Using volunteers more effectively;
- Developing awards and recognition programs for volunteers; and
- Making more use of evaluation tools and resources.
7.3 Public Outreach Program Improves Air Quality: A FAMPO Approach

Organization: Fayetteville Area MPO
Location: Cumberland County
Contact: Mauriza Chapman Phone: (910)678-7615
Email: mchapman@co.cumberland.nc.us
Website: http://www.fampo.org

Presentation Focus
The Fayetteville Metropolitan Planning Organization (FAMPO), serving Cumberland County in North Carolina, implemented a public outreach campaign as a direct result of its decision to sign an Early Action Compact (EAC) in December 2002. This presentation describes the various public awareness strategies implemented by FAMPO in March and April of 2003 to help the area move toward attainment status.

Background
An EAC is an agreement between EPA and local officials, in which the local officials agree to implement an air quality improvement plan that will attain the 8-hour ozone standard early (by 2007) and, thereby, defer the effective date of their nonattainment designation. Like many small, rural areas, Cumberland County may confront the challenges and burdens of nonattainment status for the first time under the 8-hour ozone regulation. Public outreach is a significant part of this organization's work toward attainment of the standard.

Overview
In its initial public outreach undertaking, FAMPO has acted with local partners, referred to as adopting jurisdictions. FAMPO foresees a greater number and more diverse array of partnerships that include the public and private sectors as they continue to promote the importance of air quality, as well as, implement and receive recognition for their programs. FAMPO's public outreach strategies are twofold: 1) reduce NOx emissions; and 2) decrease Vehicle Miles Traveled (VMT).

The following describes the public outreach strategies undertaken by FAMPO in conjunction with its local partners:

Outreach through Education - This is an ongoing effort using the GLOBE curriculum, a hands-on primary and secondary educational science program that promotes environmental stewardship. There are currently 9,000 teachers in the FAMPO region who are trained and present the program to its students. Upon request, in addition to the GLOBE program, FAMPO staff and members of the Speakers Bureau participate in classroom education focused on air quality and ozone.

Public Outreach/Events - Staff and volunteers participate in fairs, festivals, community meetings, providing information on air quality and measures that the individual can take to help improve air quality.

Speakers Bureau - This strategy involves reaching out to the general public with tips, educational information and public meetings on implementing voluntary reduction strategies through radio, television, and print media.

Air Quality Web Page - The web page provides information on upcoming meetings, underscores seasonal air quality tips, and explains the EAC program, as well as other relevant topics. It is maintained by FAMPO.
Bus Ridership For Youth - In partnership with Fayetteville Area System of Transit (FAST), this program offers bus tours for children of all ages, educates them on how to use the transit system and discusses the benefits of using public transit (including air quality and health issues). In addition, other partners such as the Boys and Girls Club promote these tours, providing the children with free bus passes.

Air Quality at the Local Libraries - Information flyers and brochures are distributed at the local libraries. Programs for children are offered, as well.

Air Quality Poster/Essay Program for Schools - This is a promotional contest targeting public schools in 2004 and public and private schools in 2005.

Discourage Open Burning on Ozone Alert Days - This program involves the distribution of outreach material that discourages open burning and will be implemented in conjunction with the North Carolina Department of Air Quality Outreach Team.

**Outcomes**
The primary challenge is to bring more public and private, particularly business interests, into the outreach network. This will enable FAMPO to embark on more complex, wider-ranging initiatives.

In conclusion, momentum, recognition, and success should enable FAMPO to garner more partnerships. FAMPO has been recognized for its efforts by the "It All Adds Up…" program as a community partners. They also have received the "It All Adds Up…" banner and appropriate links to add to the website.

**Demonstrating the Benefits**
Without program evaluation, a community cannot assess whether a particular program is a success or needs improvement. Process evaluation can facilitate several benefits including: identifying program areas that may need improvement; allowing a community to determine accountability; and justifying program objectives.

During the second half of Workshop 7: Using Outreach To Improve Air Quality, the presenters demonstrated accomplishments and areas for improvement by using the tracking tools and resources available through, “It All Adds Up to Cleaner Air.” The following highlights the benefits of the first year of FAMPO’s public outreach program using the tools available through “It All Adds Up to Cleaner Air.”:

<table>
<thead>
<tr>
<th>Organization/Event</th>
<th>Target Audience</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fayetteville Community College Health Fair</td>
<td>1,500</td>
</tr>
<tr>
<td>New Directions in Long-Term Care</td>
<td>58</td>
</tr>
<tr>
<td>Cumberland County employees newsletter</td>
<td>+/- 3,000</td>
</tr>
<tr>
<td>Public Works Commission Newsletter</td>
<td>115,000</td>
</tr>
<tr>
<td>South River Electric Newsletter</td>
<td>37,000</td>
</tr>
<tr>
<td>Lumbee River Electric Newsletter</td>
<td>46,000</td>
</tr>
<tr>
<td>Cumberland County Fair</td>
<td>35,000</td>
</tr>
<tr>
<td>Fayetteville State University Health Fair</td>
<td>550</td>
</tr>
<tr>
<td>Spring Lake Utility Insert</td>
<td>8,098</td>
</tr>
<tr>
<td>Fayetteville Chamber of Commerce</td>
<td>1,500</td>
</tr>
<tr>
<td>Clark Park Spring Nature Fair</td>
<td>900</td>
</tr>
<tr>
<td>Fort Bragg Military Reservation</td>
<td>4,000</td>
</tr>
<tr>
<td>Cape Fear and Pine Forest High School Environmental Curricula</td>
<td>482</td>
</tr>
</tbody>
</table>
Areas for Improvement
The first year of the public outreach program appears promising. For future years, FAMPO anticipates:
- engaging industry participation;
- seeking grants and donations for more media exposure; and
- continuing to monitor and evaluate program results.

7.4 Quantitative Evaluation of Travel and Emissions Reductions

Organization: ESTC
Contact: Eric N. Schreffler, Transportation Consultant
Phone: (858)538-9430
Email: estc@san.rr.com

Presentation Focus
Many communities throughout the country conduct air-quality alert/action-day programs to encourage people to reduce their driving on days forecasted to violate air quality standards. Eric Schreffler, Transportation Consultant, ESTC, developed a simple, low-cost method for quantifying the travel and emission impacts of these programs. The California Air Resources Board (CARB), U.S. EPA, FHWA and several California air districts funded his work. This presentation provided participants with an overview of the quantitative method to evaluate travel and emission reductions from these “ozone action” programs.

Background
This quantitative method to measure emissions impact was developed as part of a research project to measure the impacts of the “Spare the Air” programs in the cities of Sacramento and San Francisco. The objectives of this research involved developing a method to quantify trip and emission reductions, particularly for a community-based episodic education program. Another objective would ensure that the method be affordable for use by air districts, while, at the same time, maintain accuracy and rigor. Because the program involved surveys of the public, the method would also include a correction to adjust for survey findings. Finally, the method would be acceptable to EPA for SIP credit.

Overview
Without program evaluation a community cannot assess whether their program is living up to expectations. In fact, the EPA allows up to 3 percent of emission reductions in SIP to be achieved through Voluntary Source Emission Reduction Programs (VMEP). Evaluating a public outreach program for SIP credit requires a quantitative assessment based on a forecast of the program’s anticipated emission reductions measured against actual emission results which is different from evaluating the program’s effectiveness at raising public awareness. Therefore, by measuring the emission reductions from an outreach program, communities can:

- Qualify for SIP emission reduction credits;
- Satisfy measurement requirements in EACs;
- Evaluate the cost-effectiveness of programs and services;
• Learn how air quality alert/action programs affect travel behavior;
• Document CMAQ-funded program impacts;
• Help demonstrate conformity between transportation and air quality plans;
• Provide program managers with sound feedback on results.

The process began with the development of survey tools, followed by the collection of comprehensive travel data of a random sample of the Sacramento population and of individuals who said they purposely reduced travel due to Spare the Air messages. The data, collected over two summers, allowed researchers to compare the travel behavior of the same individuals on Spare the Air and regular (non-Spare the Air) participants (those who reduced trips) and nonparticipants.

The following ten steps summarize the method as developed for Sacramento:

1. Modify survey and sample size by (a) adding questions for percentage of participants, reported trip reduction, and type of trip reduced; and (b) ensuring a sample size of about 1,000 to obtain an acceptable range of error.
2. Field survey the evening of a Spare the Air Day.
3. Tabulate results, including proportion of participants, reported average number of trips reduced and type of trip reduced (e.g., work vs. non-work);
4. Estimate total participants by applying proportion of participants to driving population;
5. Estimate average trip reduction as derived from survey;
6. Apply correction factor, which involves multiplying correction (0.5) to average self-reported trip reduction;
7. Estimate total trip reduction by multiplying adjusted trip reduction by total participants;
8. Apply proportions of work and non-work trips reduced to adjusted total trip reductions, which determines the proportion of work and non-work trips reduced;
9. Estimate VMT reduction by multiplying trips reduced by type times average trip length; and
10. Estimate emission reductions by applying emission factors to total trip (by type) and VMT reduction.

Outcomes
Most public outreach programs rely on mass media and outreach, often falling under the aegis of public information and using mass marketing and media specialists. As such, the program facilitators frequently have little experience with impact quantification, so making the leap from marketing and education to travel behavior and trip reduction and then to emission reduction is a major challenge.

In conclusion, Schreffler noted that the benefits of program evaluation go beyond documenting SIP credit. With accurate data, communities can show the bottom line results of an air quality program. Communities must work with their EPA regional office when planning a public education measurement process, particularly if their goal is to obtain SIP credit.

Resources

Also see, www.arb.ca.gov/research/abstracts/98-318.htm or contact Eric Schreffler, estc@san.rr.com.
Research Design

- Track Behavior of Reducers and Control Group
- Compare STA Behavior to Other Days
- Compare Reducer Behavior to Non-reducers
- Develop Estimate of Actual Trip Reduction
- Compare Actual to Reported Trip Reduction
- Produce Correction Factor for Over-reporting of Trip Reduction

General Guidance

- Think through forecasting and measurement issues when designing program
- Maintain consistency in approach/methods
- Develop measurement plan – get help first time
- Don’t just do it for SIP or Early Action Compact
- Minimize assumptions and borrowed factors
- Minimize self-reporting bias
7.5 Types of Evaluation Research And Their Uses For Measuring Program Performance

Presentation Focus
This presentation examined the four main types of evaluation research, their uses for measuring program performance, and the tools available through the It All Adds Up to Cleaner Air program.

Background
Outreach programs involve the public and are an important part of local and regional efforts to reduce traffic congestion and air pollution. The programs are intended to inform the public about the correlation between transportation choices, traffic congestion and air pollution and identify steps people can take to ease congestion and improve air quality. Also, they help people understand why measures such as mandatory vehicle inspection and maintenance (I&M) or High Occupancy Vehicle (HOV) lanes, must be taken. One of the most important elements in public outreach programs entail changes in the public's awareness and attitudes. This can be measured with cost effective and timely evaluation research, which enables program managers to set objectives; focus on accomplishments; compare expectations with reality; and justify and account for your program. Further, including evaluation research as an integral part of the public outreach program in the planning stages helps to stimulate and support the creative process and in the later stages of the program it establishes a foundation for future decisions.

Overview
Evaluation research is a disciplined, organized, objective approach to obtaining and evaluating information. It is an important part of the many stages of a program, including planning, monitoring, assessing, and understanding program impacts. There are four main types of evaluation research, which are described as follows:

1) Formative evaluation uses focus groups to learn how the target audience feels about program strategies, messages and materials.

2) Process evaluation involves measuring an outreach programs' performance against its objectives. It All Adds Up To Cleaner Air provides participants with a Process Evaluation Workbook. This resource helps the user by: 1) providing a systematic approach for determining objectives; 2) recording activities, such as, press releases, advertising, media coverage, event attendance, etc.; and 3) calculating the results. This type of evaluation facilitates several benefits, including:

• Identifying program areas that may need improvement;
• Allowing a community to demonstrate accountability;
• Justifying program objectives.
3) Impact evaluation makes use of surveys to measure how effective your communications have been in raising awareness and knowledge of messages and it is one of the best ways to demonstrate the effectiveness of communications. In crafting a survey it is important to plan ahead, establishing clear objectives. Professional assistance can greatly aid in the survey development process. Purchasing telephone samples and using a tabulation service can ensure sound measurements. A questionnaire is also available through *It All Adds Up*.

4) Outcome evaluation assesses the connection between an initiative and long term outcomes (e.g., less air pollution and traffic congestion). It is often difficult, expensive, and takes years to research. More simply, monitoring outcomes are just as effective, including: changes in vehicle miles traveled (VMT); days in attainment of NAAQS; and behavior change.

**Challenges**
Because measuring program performance and administering surveys can be quite costly, evaluation budgets should be kept to about 10% of the entire program cost. Communities have an option of taking advantage of pro bono assistance or graduate school programs, provided they are less expensive than firms and can meet the deadlines.

In conclusion, evaluation resources measure the impact of communications, awareness, knowledge and
attitudes of the public outreach initiatives. Further, it supports accountability, effectiveness and improvement of the program. Without program evaluation a community cannot assess whether their program is a success or needs improvement. As such, it is important to share the research findings within the organization, with community leaders and program partners, and with the public. Research results should also be shared with others in the *It All Adds Up* program.

### Resources

**Website: [http://www.italladdsup.gov/](http://www.italladdsup.gov/)**

The website includes evaluation research information, with links to other evaluation resources, such as directories of suppliers; a Process Evaluation Workbook to help community organizations set their objectives and track progress; and two Impact Evaluation Surveys that communities can use to measure changes in people's awareness and attitudes.

### Workshop 8: New National Ambient Air Quality Standards: Vital Information for Planning for Air Quality

What are the new NAAQS? What are the implications of these standards on new and existing nonattainment areas? What are the perspectives on transportation conformity? How will regional councils and metropolitan planning organizations implement new policies for NAAQS?

*New National Ambient Air Quality Standards: Vital Information on Planning for Air Quality.* This workshop outlines the new NAAQS and how they will affect regional councils and MPOs. The workshop stresses the importance of involvement from all levels of government as well as from all stakeholders. This section also discusses the options available for communities around the country, regarding air quality. Several case studies demonstrate the regional perspectives of how they chose to deal with air quality in the face of growth and development. The first hour of the workshop consisted of a live broadcast from Chicago during NARC’s 38th annual conference and exhibition. The telecast can be viewed on the FHWA website: [http://www.fhwa.dot.gov/environment/conformity/outreach.htm](http://www.fhwa.dot.gov/environment/conformity/outreach.htm).

### Workshop Topics and Presenters:

8.1 8-Hour Ozone National Ambient Air Quality Standards: Implications for New and Existing Nonattainment Areas  
John Silvasi, U.S. EPA

8.2 Conformity Under NAAQS: Impacts on the Planning Process  
Rudy Kapichak, U.S. EPA

8.3 New NAAQS and Its Effect on Apportionment of CMAQ Funding
Presentation Focus
A detailed overview of the implications of the NAAQS on new and existing nonattainment areas was given. Participants also learned about sanctions regarding noncompliance to NAAQS.

Background
Two important rules relating to the new NAAQS were adopted on April 30, 2004. The first rule includes the 8-hour ozone designations, which covers 126 areas. Out of the 126 designations, 84 are covered under less prescriptive requirements, while the remaining 42 fall under more prescriptive requirements. Under this rule, Early Action Compacts (EACs) become effective June 15, 2004. The second rule describes the transition requirements from the 1-hour to 8-hour ozone designation.

Overview
The following describes the key elements of the new NAAQS:

Under the new NAAQS, 432 whole counties and 42 partial counties make up the 126 ozone designated areas. Most of these designated areas are in the northeastern part of the country. A large part of the country remains in attainment.
Under the old NAAQS, the 1-hour nonattainment areas were required to achieve attainment by a certain period of time. The time period depended on classification—marginal, moderate, serious, severe, with the more rigorous classifications given longer deadlines to implement but with stricter requirements.

Under the 8-hour rule, strict requirements are not mandated for those areas that are not classified, which include 84 of the 126 designated areas. The remaining areas, which are classified as marginal, moderate, serious or severe, must follow more prescriptive requirements. (These remaining areas’ classifications are generally less rigorous than under the 1-hour rule.)

The 1-hour ozone designation will be revoked June 15, 2005, one year after the effective date of designation. The one year date was chosen to correspond with the one year grace period for conformity. Under the anti-backsliding provisions, these areas are still required to use very specific control measures for the 1-hour standard. These applicable requirements must stay in place at least until an area can obtain the 8-hour standard. Discretionary emissions reduction in the SIP would remain but could be changed upon a showing that the change would not interfere with attainment of the national ambient air quality standards or reasonable further progress, or any other applicable requirement of the Clean Air Act. This would show that it remained useful. The second phase of the 8-hour ozone implementation rule will address reasonably available control measures, reasonably available control techniques, attainment demonstrations and modeling requirements, new source review and other requirements.

The Clean Air Act requires EPA to impose sanctions on a state if it fails to submit a timely SIP; if it fails to implement an approved plan; or if EPA disapproves the plan after the grace period. Two sanctions are available: (1) any new large industrial facility that emits VOC or NOx in the case of ozone built in the area must find offsets equal to twice its proposed emissions. This is known as the 2:1 offset. (2) A prohibition of federal funding for new highway projects (safety and air quality improvement projects are exempted from this sanction).

The process for applying for sanctions is as follows: EPA sends a “findings” letter to the Governor, identifying the problem (e.g. failure to submit a SIP). EPA applies the 2:1 offset sanction 18 months after the finding if the problem is not corrected. EPA applies the highway sanction six months after the offset sanction if the state has still not acted to resolve the problem.

The Clean Air Act does not sanction areas for failure to attain standards. If a classified area (e.g., marginal, moderate, serious) fails to meet the ozone air quality standard by its attainment date, it by law gets “bumped” to the next classification. Severe and extreme areas, however, would not be reclassified upwards, but are subject to the penalty fee provisions of Section 185 for failure to attain. An area with a higher classification must meet the requirements of the next category (and is given additional time to meet the standard).

There are fourteen nonattainment areas that committed in 2002 to do early planning to meet attainment through emission reductions for the 8-hour standard. They must implement all controls needed for attainment by the end of 2005. As such, these areas received compensation from EPA that includes deferred effective date for their nonattainment designation and exemption from conformity and new source review. These areas are called Early Action Compact, or EAC, areas.

**Outcomes**

Some of the outcomes as a result of the new NAAQS are highlighted below:
There are many requirements for out-of-compliance counties. In order to meet the requirements of the Clean Air Act, most 8-hour ozone nonattainment areas will be required to submit to EPA a SIP by April 2007. Through their SIP, states will design their approach to reducing emissions or ozone precursors and the ozone level in the air. The Clean Air Act’s comprehensive approach to reducing criteria air pollution covers many different sources and a variety of clean up methods. State air pollution control programs could include New Source Review permit program and Federal General Conformity and Transportation Conformity programs. State plans will make sure power plants, factories and other sources of pollution meet clean up goals by working through the air pollution permitting process that applies to industrial facilities. Working with EPA, tribal areas may also implement programs to further reduce emissions of ozone precursors from sources such as cars, fuels, and consumer/commercial products and activities. EPA is taking a wide range of national clean air actions that will help all areas across the country significantly reduce ozone. Many of these national actions will bring local areas into attainment without the need for local controls.

After an area is designated nonattainment for a national ambient air quality standard, the MPO must meet the deadlines for achieving the standard as mandated by the 1990 Amendments to the Clean Air Act. These deadlines range from the years 2007 to 2021 depending on the severity of the ozone problem in each area. In the interim, the nonattainment area must demonstrate to EPA that they are making reasonable further progress toward improving air quality.

States also submit plans to reduce emissions in nonattainment areas in their jurisdictions. For those nonattainment areas located in more than one state — for example, the Philadelphia, Wilmington-Atlantic City area includes counties from Pennsylvania, New Jersey, Maryland, and Delaware—the states must work together to improve ozone air quality.

It is an important part of the process to educate the public about pollutants and their place in the larger picture. Ozone is formed at ground-level by a chemical reaction of various air pollutants in the presence of sunlight. Ground level ozone is an air pollutant that damages human health and the environment. The pollutants that cause ozone to form are oxides of Nitrogen (NOx) and volatile organic compounds (VOC). Intense sunlight, which usually occurs in the summer, causes ground-level ozone to form in harmful concentrations in the air. Major sources of these pollutants include: vehicle and engine exhaust, emissions from industrial facilities, combustion from electric utilities, gasoline vapors, chemical solvents, and biogenic emissions from natural sources.

Exposure to ozone has been linked to a number of health effects, including significant decreases in lung function, inflammation of the airways, and increased respiratory symptoms such as cough and pain when taking a deep breath. Exposure can also aggravate lung diseases such as asthma, leading to increased medication use and increased hospital admissions and emergency room visits. Active children are most at risk, as well as adults who participate in a lot of outdoor activities and individuals with lung diseases.

Ozone also affects vegetation and ecosystems, leading to reduced agricultural crop and commercial forest yields, reduced growth and survivability of tree seedlings, and increased plant susceptibility to disease, pests, and other environmental stressors (such as harsh weather).
**Presentation Focus**

This presentation provides an overview of the most important conformity issues affected by the new NAAQS.

**Background**

Conformity is a Clean Air Act (CAA) requirement which ensures that transportation plans, Transportation Improvement Programs (TIPs), and projects in nonattainment and maintenance areas are consistent with a state’s air quality plan, called a SIP and that new violations are not created, existing violations not made worse and timely attainment of air quality standards not delayed. To accomplish this, emissions from the area’s transportation network are evaluated before plans, TIPs and projects are approved or funded. Essentially, conformity connects air quality and transportation planning.

**Overview**

The July 1, 2004 revisions made to the transportation conformity rule addresses three objectives. First, it provides rules for demonstrating conformity under the new 8-hour ozone and PM2.5 air quality standards. Second, it incorporates EPA and DOT guidance that resulted from the March 1999 court decision. And, third, it includes several provisions that streamline and improve conformity implementation. Highlighted below are key conformity issues and concerns for regional councils and MPOs:

Metropolitan transportation plans and TIPs in new nonattainment areas must be found to conform within one year of the effective date of designation; by June 15, 2005 for 8-hour ozone areas. After this date, conformity also will be required before any FHWA or FTA project approvals. Because PM2.5 nonattainment designations are expected to be effective in early 2005, conformity for PM2.5 would apply in early 2006.

Until June 15, 2005 all current 1-hour ozone nonattainment and maintenance areas must continue to comply with the conformity rule’s 1-hour provisions. In other words, a conformity determination will be required in these areas before adoption or approval of metropolitan plans, TIPs or projects.

On June 15, 2005, the 1-hour standard will be revoked for all but the Early Action Compact areas or EACs. After the revocation date, most areas will no longer be required to determine conformity for the 1-hour ozone standard. The only exceptions are Early Action Compact areas that have approved 11 hour ozone maintenance plans.

In EAC areas, 8-hour nonattainment designations are deferred and the 1-hour standard is not being revoked. Therefore, as long as an EAC area continues to meet its EAC milestones, 8-hour conformity will not be required. However, 1-hour maintenance areas that have EACs (Denver-Boulder, CO; Greensboro-
Winston Salem-High Point, NC; and Nashville, TN), 1-hour conformity will continue to apply unless the areas miss an EAC milestone and the 8-hour designation becomes effective or until one year after they are designated attainment, which could be as late as 2009.

After EPA finds 8-hour ozone or PM2.5 budgets adequate or approves them, the area must use those budgets in future conformity determinations. This is consistent with how conformity is currently done.

Eight-hour ozone areas that do not have 1-hour ozone budgets will use the interim emissions tests required by the rule. Marginal and “basic” areas may choose either the “build-no-greater-than-no-build” test or the “no-greater-than-2002” test. In other words, build emissions must be less than or equal to either no-build emissions and 2002 baseline emissions. Moderate and above areas will use the build-less-than-no-build test and the less-than-2002 test. As such, build emissions must be less than both no-build emissions and 2002 baseline emissions. The higher classification areas are required by the Clean Air Act to show that the transportation plans and TIPs contribute to annual emission reductions and, therefore, must pass both interim emission tests.

Before 8-hour budgets are found adequate, areas that have existing 1-hour budgets will use them for 8-hour conformity determinations, unless through an area’s consultation process another test is deemed more appropriate for meeting Clean Air Act requirements. Using the 1-hour budgets ensures that these areas continue progress and that they will attain the 8-hour standard by their deadlines. The primary criterion in this decision is whether the existing 1-hour budget meets the Clean Air Act requirements to not worsen air quality or delay timely attainment. Areas cannot ignore 1-hour budgets because they are hard to pass or because they are based on older data or an older emissions model. EPA will be posting additional guidance on its website regarding conformity in multi-jurisdictional areas.

Prior to PM2.5 budgets being found adequate or approved by EPA, all PM2.5 nonattainment areas may choose between the “build-no-greater-than-no-build” or the “no-greater-than-2002” tests. Further, the final rule requires that all regional emissions analyses in PM2.5 areas consider PM2.5 from motor vehicle tail pipes, brake wear and tire wear. These emissions should be calculated using MOBILE6.2 for all states outside of California where EMFAC 2002 should be used.

Conformity analyses will only need to include re-entrained road dust if EPA or the state air agency determines that re-entrained road dust is a significant contributor to PM2.5 regional air quality problems. This can be accomplished before PM2.5 SIP development. Conformity analyses will only need to include construction related fugitive dust from highway or transit projects if the SIP identifies construction as a significant contributor to regional air quality problems. Finalization of requirements for both PM2.5 hot spots and precursors are expected by EPA to be effective in early 2005.

Conformity determinations must demonstrate timely implementation of TCMs, regardless of what standard the SIP covers. For example, an 8-hour ozone nonattainment area that has a 1-hour ozone SIP with TCMs must use the 1-hour SIP and control measures, even though the 1-hour standard is being revoked. Therefore, any 8-hour conformity determination must demonstrate timely implementation of the TCMs developed for the 1-hour standard as long as they remain in the SIP.

**Outcomes**

Amendments necessitated by the March 1999 DC Circuit Court decision include: incorporating the process that is used to determine whether or not emissions budgets submitted in the SIPs are adequate for confor-
mity purposes into a rule, and revising provisions related to projects that can proceed during a conformity lapse.

The July 1, 2004 final rule also included several provisions to streamline the conformity process. For example, the list of events that trigger conformity determinations was updated by removing the requirement to redetermine conformity if a state makes changes to TCMs in its SIP and the point for the determination of latest available planning assumptions was changed from the point of DOT’s conformity determination to the point when an area begins its regional emissions analysis.

For additional information, see the EPA website [www.epa.gov/otaq/traq](http://www.epa.gov/otaq/traq) (at site check on “conformity) or go to the FHWA website at [http://wwwfhwa.dot.gov/environment/conform.htm](http://wwwfhwa.dot.gov/environment/conform.htm)

8.3 New NAAQS And Its Effect On Apportionment Of CMAQ Funding

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**Presentation Focus**
This presentation examined the new NAAQS and its effect on the CMAQ program.

**Background**
The Congestion Mitigation and Air Quality (CMAQ) was created by ISTEA in 1991, reauthorized by TEA-21 and is expected to continue in the next reauthorization. The focus of CMAQ is on transportation projects located in nonattainment and maintenance areas that reduce emissions. CMAQ funds are apportioned by weighted population. Factored into this apportionment is the severity of 1-hour ozone nonattainment classification, including carbon monoxide in nonattainment and maintenance areas. To date, $13 billion has been invested in 15,000 projects.

**Overview**
The new NAAQS will affect CMAQ funding. The transportation law—23 USC 104—contains the CMAQ formula which notifies states how much money will be allocated to them. Currently, SAFETEA a bill to reauthorize funds for federal aid highways, highway safety programs and assistance programs, includes 8-hour ozone and PM2.5 nonattainment areas, which TEA-21 and the House bill do not recognize from the new NAAQS.

With implementation of the new ozone standard, no counties will be removed from CMAQ funding eligibility in the short term. In FY 2006, the 1-hour ozone standard is revoked and only the 8-hour nonattainment areas will remain in the formula. Carbon Monoxide nonattainment and maintenance areas will still receive CMAQ funding.
The following shows how areas that are designated nonattainment under the new 8-hour ozone standard without classifications are addressed in the formula for CMAQ funding:

- New Ozone areas: 1.0 value;
- New PM areas: 1.2 value;
- Marginal to extreme 1-hour ozone nonattainment areas: existing values take precedence.

The following highlights the affect of new legislation and the CMAQ apportionment formula on fourteen ozone nonattainment areas that have developed EACs:

- No statutory basis for including EACs in formula, because nonattainment is deferred;
- No draft bill brings EAC into the formula; and
- An exception exists for EACs that are one-hour ozone maintenance areas, because they remain in maintenance.

**Outcomes**
The new NAAQS will result in a net increase of nonattainment counties with a projection of over 120 new ozone nonattainment areas, as well as over 100 new PM2.5 nonattainment areas. SAFETEA provides an increase in CMAQ funding to $8.9 billion.

**8.4 New Air Quality Standards: Atlanta’s Response**

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**Presentation Focus**
Planning for and meeting the challenges to implement the 8-hour ozone and PM-2.5 standards in Atlanta and its surrounding areas.

**Background**
There are nineteen counties containing portions of Atlanta’s urbanized area. The Atlanta Regional Commission (ARC) includes all or portions of eighteen of these counties in its transportation planning process. As of January 2004, thirteen of these counties were reclassified from Serious to Severe under the 1-hour ozone standard. Twenty counties surrounding Atlanta were designated Marginal under the 8-hour ozone standard. Implementation of PM-2.5 standard was also underway during 2004. Nonattainment area will be between 20-22 counties in size (designation not yet final).

Implementation of two new standards, combined with unprecedented growth and the challenges of education, interagency consultation and daunting legal challenges made Atlanta a focal point for air quality improvement and implementation of transportation conformity requirements.

**Overview**
ARC’s immediate milestones include the SIP submittal as a severe nonattainment area under the 1-hour ozone standard by July 2004 and conformity determination under both the 1-hour and 8-hour standards by January 2005. ARC expects to continue to deal with the following challenges in implementing the new NAAQS:

Different classifications under different standards make it difficult to inform planning partners about the state of air quality in the region. There was a classification downgrade under the 1-hour standard to “Severe”. There was also a classification upgrade under the 8-hour standard to “Marginal”. Consequently, extensive outreach is needed in areas designated as nonattainment (for both ozone and PM-2.5) to help explain transportation conformity and requirements of the Clean Air Act.

ARC met with all jurisdictions within the 20-county 8-hour nonattainment area to discuss and prepare planning requirements. ARC prepared a half-day workshop on transportation conformity and transportation/air quality planning in Atlanta for all member jurisdictions and planning partners and compiled the material in a notebook for all workshop participants. All materials are also located on ARC’s website. ARC has expanded its transportation-planning responsibilities to eighteen counties, many of which are more rural in nature. These rural districts must overcome the perception about being part of the metro-Atlanta urban area. There are two MPO’s within the 8-hour ozone nonattainment and one donut-county outside of either MPO but within the nonattainment area, making collaboration and cooperation more difficult than before. Multiple meetings held over a six to eight month time period between ARC, county commission chairs, and five affected RDCs. ARC expanded their planning boundary. TransAQ was created by ARC as a subgroup of a formal Interagency Consultation process to facilitate the process between primary parties. The group includes representatives from ARC, GDOT, EPD, and GRTA and meets on an as-needed basis to discuss handling of technical and policy issues related to conformity.

Litigation is the biggest unknown in this equation. There is a fear that litigation could greatly strain resources as well as the planning and conformity process. ARC has pushed for tedious documentation, as well as a sound demonstration of the logic behind the decision-making process. ARC must also build a consensus among stakeholders.

**Outcomes**

The significant overall requirements to implementing the new air quality standards effectively involves strategic and proactive planning and outreach with partners and stakeholders; proactive technical preparation; staff that can navigate the sea of new rules and various interpretations of new rules; and strong support from upper management for an inclusive and technically rigorous process.

Challenges thus far include:

*Rules Not Available in Timely Manner:*

There is an attempt to be proactive, but planning commissions can only guess “what-if”s” and “maybes” until rules are finalized (Implementation Rules, Conformity Rules, etc.). For instance: what conformity tests will be required and what additional resources will be needed to complete a conformity analysis under the new standard(s)?

*Potential for Regulations to Lead Science:*

Under the PM2.5 standard transportation conformity will be completed for the first time using tests that are not yet defined. A region should not be required to analyze pollutants (or precursors to PM-2.5 such as
NH3, SOx, etc.) that the state air agency may not identify within SIP as a contributor to air quality problems.

**Significant Resource Issues as Areas Transition to New Standards:**
Estimates of the burden on affected areas as they implement conformity measures were grossly underestimated at the federal level. Application requirements for expanded nonattainment area and additional testing will cost extra. Consultation costs for technical expertise, technical machinery, and inevitable litigation will also add to costs.

**Legal challenges at the national level are driving the process:**
At the national level there is a significant delay in releasing the final rules as a result of legal complications. Most issues regarding conformity will ultimately be decided by the courts. This will delay implementation of standards, deplete resources, complicate public outreach process, and disrupt future planning.

**Many issues that affect transportation conformity are out of MPO control:**
This is one of the primary frustrations for a MPO. There is no way for them to predict what occurrences are going to happen in their area. This, in turn, makes it almost impossible for them to plan, which is ultimately the job of the MPO.

**8.5 The Air Quality Planning Process**

**Presentation Focus**
This presentation focuses on the air quality planning process at the regional level. Specifically how this process will be put into action as a result of the new National Ambient Air Quality Standards (NAAQs). Under the new 8-hour ambient air quality ruling, if a state is not able to reach attainment in a certain region, they are required to develop a State Implementation Plan (SIP) detailing the measures to be implemented to bring the region into attainment of the standard and meet other Clean Air Act requirements.

**Background**
Preparation, development, and implementation of a SIP draws resources and expertise from all levels of the planning community and government to effectively collaborate and coordinate their findings. Involved in the SIP process are State and Regional Air Quality Agencies, the U.S. EPA, Metropolitan Planning Organizations in the affected area, the State DOT, and the U.S. DOT, as well as interest groups and public stakeholders.

The state takes the primary role in the development of the SIP. States maintain air quality monitoring networks so that they are able to determine accurate data about the quality of air in the region. The first step in preparation of a regional SIP is the creation of an inventory of pollutant emissions and sources. The inventory is developed using information from facility permits for stationary sources and activity levels such as population, or vehicle miles of travel for other emissions sources. The levels of emissions must then be...
projected to the future attainment date. The impact of in-place emissions control measures must also be incorporated to accurately estimate future years emissions. The future year emissions levels are then modeled using regional meteorology to determine whether and to what degree additional emissions controls are necessary to achieve the standards. In addition to the attainment demonstration modeling, the Clean Air Act contains requirements for incrementally reducing pollutant emissions. These Reasonable Further Progress (RFP) provisions require that areas reduce their pollutant emissions by 3 percent per year averaged over three years. This requires that the state develop and implement emissions control measures in advance of the required attainment dates.

During these SIP development processes, the state must involve the public and address their concerns over air quality policies and regulations before submittal of the final SIP to the U.S. EPA. The state and local air agencies cannot create an accurate and timely report without the help and resources of the MPOs, State DOTs, and interest groups who advise on feasibility and effectiveness of control measures. The state air agencies also enlist the help of the U.S. EPA who provides technical and policy assistance, promulgates Federal control measures, develops and approves air quality models, and issues SIP requirements and guidance.

Overview
The following describes in more detail the steps involved in the SIP development.

The emissions inventory developed by the state and local air agencies is the current comprehensive listing of air pollutant emissions. It is broken down and organized by the specific geographic area, specific time period, and for what specific purposes each pollutant was emitted.

The purpose of this inventory is to estimate the baseline emissions and then project future emissions levels for each targeted pollutant. Then, they are able to quantify reductions from certain control strategies. This process will allow them to determine reductions needed for attainment or maintenance, which will be included in the SIP. Emissions inventories are the foundation for key decisions during the SIP development process as they quantify air quality problem into usable data. It determines the level of emissions reduction necessary to attain the standard or meet the RFP requirements and this sets the framework for determining the number and stringency of control measures. It also defines the motor vehicle emissions budget.

Sources addressed in SIP Inventories:
Point Sources Emissions- are pollutants coming from larger fixed facility, such as from processes at a manufacturing facility. These sources usually have permits, which limit their activity levels to set emissions totals. The CAA defines the major stationary sources emissions threshold based on the region’s nonattainment classification. Area Sources Emissions- are pollutants that are generated from smaller or more numerous stationary sources rather than fall below the threshold of a point source. Sources include gas stations, dry cleaners and automobile body shops. Area sources also include activities by the general public that cause emissions such as the use of consumer products and paints On Road Mobile Source Emissions- are pollutants from vehicles licensed for highway use. Non Road Mobile Source Emissions- are pollutants that include a wide variety of internal combustion engines not associated with highway use including aircraft, ships or boats, lawn mowers, agricultural, and construction equipment.
When calculating on road mobile sources of pollution, such as cars, trucks, buses and motorcycles, it is important to collect area-specific activity data, such as fleet mix, vehicle miles traveled (VMT) and vehicle speeds.

**MOBILE6.2**

MOBILE6.2 is the U.S. EPA newly updated emissions factor model that generates emissions factors for on-road vehicles. It covers models from 1952 all the way to 2051. This model estimates emissions factors for CO, NOx, hydrocarbons, HAP and PM. It also includes exhaust, evaporative, and refueling emissions factors. It is able to calculate these emission factors in grams per vehicle mile as function of speed by facility type. The model incorporates vehicle registration data, vehicle classification, vehicle speeds, and trip starts per day.

The SIP modeling inventory is required for developing ozone attainment plans. This includes detailed information about current and projected emissions activities from sources from both within and surrounding the nonattainment area, as a significant portion of air pollution is transported throughout the eastern half of the country. Developing all this data activity requires coordination between the state air quality agency and other state and local organizations. Once the emissions inventory is complete, control measures and the motor vehicle emissions budgets can be put in place, creating a system which is dedicated toward effective change.

Control Measures are equipment, processes, or actions used to reduce air pollution. Control measures focus on all of the different kinds of air pollution, such as point sources, area sources, on-road mobile sources, and non-road mobile sources. The SIP not only includes local control measures but independent requirements from the federal and state governments. State air agencies specifically identify state/local controls to provide needed emissions reductions beyond Federal measures, evaluate cost-effectiveness and technical feasibility, consult with other agencies, interest groups and the public, as well as proposing control measures for the inclusion into the SIP. The EPA adopts national standards for controlling emissions from products such as motor vehicles, fuels, off-road equipment, and consumer products controls and have created a plan to significantly reduce NOx emissions from utilities.

Major parts of a control strategy SIP are the motor vehicle emissions budgets used by MPOs in conducting transportation conformity. Each such SIP budget has a ceiling on emissions for the planned transportation system. Motor vehicle emissions resulting from the implementation of regional transportation plans and transportation improvement programs (TIPs) must be below the motor vehicle emissions budget level established in the SIP to enable areas to reach attainment, maintenance, or specific RFP requirements. Thus the SIP establishes legal limits on emissions.

**Pollutants addressed in the Motor Vehicle Emissions Budget**

- CO in CO areas;
- NOx in NO2 areas;
- NOx and/or VOC in ozone areas;
- NOx, VOC, PM10 in PM10 areas;
- NOx, VOC, PM2.5, in PM2.5 areas.
Before MPOs can perform transportation conformity determinations, the EPA must make a finding that the motor vehicle emissions budgets are adequate. The EPA generally uses the same criteria to approve the budget as it would the entire SIP, creating a uniform system of evaluation. Criteria for an adequate budget includes that everything has been identified and quantified in the SIP and is consistent with SIP emissions inventory as well as the emissions reductions from SIP control measures. SIP must also show a schedule of how emissions will be reduced to meet attainment and contain agency commitments to transportation-related actions.

Once the budget has met the criteria, the state submits the SIP with the budget to the EPA. There is an official 90-day process, with public comment period. Within this period the EPA could find the SIP or SIP budget adequate and ready for action or inadequate and send it back to be redrawn. Final approval of the entire SIP takes a longer period of time.

Outcomes
There are many challenges facing this large of a task. The local air quality agencies must have a good working relationship with the state and local authorities in order to create effective data. Pollutants must be classified and modeled correctly, taking into account things such as transported pollution from upwind areas. Due to the large bureaucratic nature of this process it could take several years to properly develop the SIP. Litigation could also delay this process.

8.6 Regional Perspectives on Implementing New NAAQS

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Presentation Focus
This presentation focuses on how the Chicago Area Transportation Study (CATS) uses a consultation process to facilitate concurrent review by the regulatory agencies and to anticipate and address potential challenges to the planning process.

Background
CATS is composed of a 20-member Policy Committee, the Regional Council of Mayors, a professional working staff, a standing committee known as the Work Program Committee and other committees, subcommittees, and task forces created by the Policy Committee. CATS is the Metropolitan Planning Organization (MPO) for Northeastern Illinois, designated by the Governor of Illinois and local elected officials.
The Policy Committee develops and approves all regional transportation plans and programs for the area. The Council of Mayors encompasses 272 municipalities organized into 11 subregional councils plus the City of Chicago. The subregional councils appoint two mayors each to serve on the Council of Mayors Executive Committee, whose chairman sits on the Policy Committee.

The Council of Mayors is an important link between the MPO and the 272 municipalities that are connected in this region. The Work Program Committee (WPC) is made up of a representative from each of the Policy Committee member agencies plus six additional members, organized to review all the issues that will come before the Policy Committee for resolution. In order to tackle and assess all technical and policy issues, the Work Program Committee assigns issues to be discussed and developed in subcommittees and task forces. Committees created by WPC are the Unified Work Program Committee, Regional Transportation Plan Committee, TIP Procedures Committee, CMAQ Project Selection Committee, and Management and Operations Committee. Task Forces created are the Advanced Technology Task Force, Air Quality and Transportation Management Task Force, Bicycle and Pedestrian Task Force, Community Mobility Task Force, Intermodal Advisory Task Force, Private Providers Task Force, Public Involvement Task Force, and Task Force for Seniors and People with Disabilities. In addition, a consultation team is in place to review all matters pertaining to air quality conformity and approval of plans and programs.

Overview

Shared Path 2030 is a comprehensive process for developing and updating the Regional Transportation Plan (RTP) for northeastern Illinois. This plan combines long-term goals and strategies with current transportation decisions and investments carried out by CATS and all stakeholders involved. Past regional transportation plans have laid the groundwork for major transportation system improvements. The money spent to develop this transportation system comes from tax dollars, tolls, fares and other user fees, therefore public involvement is highly encouraged in this process. The process begins with establishment of goals and objectives and includes early and continuous public involvement. Individual transit and highway projects, as well as regional strategies are assessed. Proposals are evaluated and projected costs and revenues are reviewed and air quality evaluations are conducted.

The Regional Transportation Plan is the region’s long term vision and the Transportation Improvement Program (TIP) is the short-term schedule for implementing the RTP. All projects receiving federal funding and all regionally significant projects must be included in the TIP, with an identification of where the funding is coming from, when it is expected, and when the project will be undertaken. The region’s elected officials and transportation implementers’ work together to develop this program of work. This includes all maintenance and improvements, as well as progress on the projects identified in the Regional Transportation Plan. The TIP is a five year prioritized list of transportation projects with funding and scheduling details. It is based on guidance from the RTP. It must be fiscally constrained and meet air quality goals.

The consultation team is composed of representatives from the federal and state Environmental Protection Agencies, the state Department of Transportation, the transit oversight agency (the Regional Transportation Authority) and CATS. The team meets on an as needed basis with particular attention to conformity issues. As each deadline for conformity, plans, and programs are established, the team works to assure concurrent review and to help identify and resolve potential challenges. Other Policy and Work Program Committee members participate in the consultation process as appropriate when the challenges involve their projects, policies or strategies. Early and active involvement from the regulators and the planning participants allows for identification of the issues at hand, quick responses to rule changes and to changing local, regional, state and federal conditions and priorities. The consultation process has been extremely beneficial in assuring timely approval of all of CATS plans and programs.
Outcomes
Although an extensive process has been put in place to deal with all transportation initiatives and to aid the process, at the same time it has involved a tremendous commitment of staff time and increased the time the process takes because information from many stakeholders must be considered and many tasks must be performed concurrently.

8.7 Central Texas Early Action Compact: Why We Chose the EAC

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Presentation Focus
This presentation explains the perspective from a Metropolitan Planning Organization whose region has chosen the Early Action Compact route.

Background
The Early Action Compact (EAC) is an agreement (MOA) between local governments, the Texas Commission on Environmental Quality (TCEQ) and the EPA. Its purpose is to put in place a signed pact to make sure the specific area is on its way to attain the 8-hour ozone standard by 2007 and maintain attainment through 2012. In return, the EPA defers the nonattainment requirements as long as all milestones and terms are met. This pact requires early action to reduce ozone forming emissions, initiated and carried out by local decision makers.

In order to defer nonattainment status, EAC requirements are to develop a Clean Air Action Plan (CAAP). This plan is similar to an ozone nonattainment SIP and includes an 8-hour attainment demonstration, as well as emission reduction measures. The CAAP includes existing state and federal measures, new mandatory measures, and some voluntary measures. During the implementation of the CAAP there must be a continuation of the planning process and semiannual tracking and reporting in order to meet mandatory set milestones. Public and stakeholder participation is also required.

Key milestones CAMPO met or will meet:
June 16, 2003--List potential emissions reduction measures
March 31, 2004--Submit plan to TCEQ for inclusion in the SIP
December 31, 2005--Implement emission reduction measures
December 31, 2007--Attain 8-hour standard and maintain 3 years of clean data.

The rolling nonattainment deferral system is set up so if an EAC area does not meet its promised objective, a nonattainment designation will apply if applicable. Each deferral date is linked to key milestones that must be met in order to continue the deferral. The first deferral is until September 30, 2005; second deferral is until December 31, 2006; and the third deferral is until April 15, 2008.

Overview
There are a number of reasons why the Austin Round Rock MSA chose the EAC process for their community. The EAC process was a faster way for them to reach a clean air standard. Not only did they
feel that the air was borderline unhealthy, but they also felt that this was a better strategy for their local economy.

They predicted that the unhealthy air would affect them at least through 2007, unless they took action. The side effects from high levels of ozone are an irritation of the throat and lungs, reduced lung capacity, aggravated asthma, and other respiratory illnesses. The most at risk groups are children, the elderly, and those who exercise outdoors.

They also formulated that a nonattainment status would probably negatively affect local economic development, because of the negative stigma attached with this label. Nonattainment would increase cost to the consumer because of emission control equipment and it would put a limit on business expansions. It would also put delays in meeting transportation needs and would dilute resources from other projects to meet compliance needs. EAC, on the other hand, could defer nonattainment to a later date, and keep the status quo, while working towards a cleaner air policy. EAC also provides them with a local choice because the emission reduction measures are largely locally determined.

Ozone values were taken from 1997 to 2003 on Murchison and on Audubon. The six-year average for Murchison was 86ppb and Audobon was 84ppb. This indicates that at certain points, both counties were over the 8-hour Ozone standard, and the majority of the time they were flirting with disaster. Baseline 2007 design values were also calculated seven different times. This modeling indicated the region will still be on the cusp of nonattainment in 2007 without additional emission reduction measures.

The EAC applies to the Austin Round Rock MSA, which consists of Bastrop, Caldwell, Hays, Travis, and Williamson Counties. The EAC was signed on December 2002 by 5 counties, 7 cities (Austin, Bastrop, Elgin, Lockhart, Lulin, Round Rock, and San Marcos. Within this region there are urban, suburban, and rural environments, which span all socioeconomic differences.

All parties involved were committed to ensure an adequate safety margin against nonattainment, develop a reasonable CAAP that works for all jurisdictions, as well as meet all milestones.

In order to effectively deal with all the goals, an infrastructure was developed and responsibilities were divided. Parties involved were the Clean Air Coalition (elected officials from five counties and seven cities), the EAC Task Force (EACTF- formed to draft plans and agreements), the Clean Air Force (CAF-a nonprofit that created public involvement and voluntary programs), and the Capital Area Planning Council (CAPCO- which provide rider funding and technical analysis).

Specifically, the public involvement process plays an interesting and important role in this region. There were four stakeholder work groups, which focus on point, area, non-road, on-road sources of pollution. Two public opinion surveys (one general and one measure specific) were conducted in order to get as much public opinion and participation as possible. Additional outreach was conducted at public events, as well as public meetings.

Similar to a SIP, CAAP has many components that must be developed and completed in order to keep on schedule and meet the needs of the agreement. CAAP must make policy statements, have sound technical analysis, use public and stakeholder involvement, develop emission reduction measures, create maintenance for growth process, continue the ongoing planning process, and track and report all findings in a timely fashion.

Emission Reduction Measures: State and Local Involvement
The measures were developed through a fair share approach. Each jurisdiction and entity committed to do its fair share based on emissions contribution and socioeconomic circumstances.

State: These measures will apply MSA-wide and include a two county inspection and maintenance program and heavy duty vehicle idling restrictions, VOC controls on gas stations and degreasing processes and other products of the stakeholder work programs. The state greatly assists in this process because counties have limited legal authority to adopt air quality regulations. Cities do have legal authority, but they could run into preemption issues. TCEQ is the only entity that can provide uniform regulatory coverage. Finally, without the state, patchwork regulatory application would be confusing, create inequities, and influence growth patterns.

Local: These measures can be implemented without state action. The local measures are selected from a menu of options that provide choice. Chosen emission reduction measures were proportionate to emissions contribution and include O3 Flex and new EAC measures.

Requirements for CAAP include modeling updates and assumption verification, particularly growth assumptions. The planning process also must consider and evaluate future transportation patterns and their impact on air quality in a manner that is consistent with the most current adopted long-range transportation plan. They must project the most current trend and projections of local vehicle emissions.

If adopted, EAC measures are not necessarily going to be enough to address emissions growth. Therefore additional measures will have to be added to the CAAP, creating an ongoing process. Analysis of emissions growth through 2012 and estimated emissions from the current adopted transportation plan indicates current CAAP measures will be sufficient.

Transportation conformity does not apply if the EAC is successful. If the area does become nonattainment, conformity will apply one year after the effective date of designation. Although the EAC is not required to demonstrate conformity, the continued planning process directly addresses the goals of transportation conformity.

Under the EAC agreement, CAMPO committed to evaluate the air quality impacts of their long-range transportation plans. The next plan is due in June of 2005 and then in 2010. They will develop their 2005 plan as if they are in a nonattainment region. They will also plan for 2030 keeping in mind all of the intermediate years as well as develop emissions analysis.

Transportation Emission Reduction Measures (TERMs): In order to provide sound emissions analysis, the TERMs must be identified and quantified. The region identified 467 TERMs, which reduce VOC and NOx through 2012. TERMs tracking and semiannual report gives the implementation date and emission reductions as well as a substitution options if project is delayed or cancelled.

CAMPO also created a Commute Solutions Program, which involves a training program for employer transportation coordinators and develops commute solution fairs, ride matching, and a commute solution month. CAMPO also developed an Emissions Reduction Program in order to reduce their commute emissions by 10 percent annually.

Outcomes
TCEQ adopts CAAP SIP by December 2004 and then the region has to implement the state and local emission reduction measures. They have to track measures, and report these findings semiannually as well as conduct the continuing planning process and public and stakeholder education and awareness program. The region found it was important to the process to be aware of leadership changes at all levels. Staff
involvement can be critical to success. It is also imperative to stick to your principles, involve stakeholders, and be realistic about your goals.

8.8 Air Quality Planning Activities in the UNIFOUR Region of North Carolina Under the New NAAQS

Organization: Western Piedmont Council of Governments
Location: Hickory, N.C.
Contact: John Tippett, WPCOG, Board member on Unifour Air Quality Coalition
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Email: john.tippett@wpcog.org
Website: http://www.wpcog.org

Presentation Focus
This presentation explains how the Unifour region (Lenoir, Hickory, Morganton, and Taylorsville) in North Carolina was pushed into action to meet the new air quality standards. It focuses on the timeline they followed and their accomplishments during this process, including the numerous ozone control measures.

Background
In January of 1999, Western Piedmont Council of Government learned that the Unifour Region’s ozone levels violated the new EPA 8-hour standard. In the Spring and Summer of that year, public meetings were held between local governments, NCDAQ, EDC, Chambers of Commerce, and others, to raise awareness of this growing problem. In November 1999, the Catawba (County) Air Quality Committee (CAQC) was created to deal with this problem and in December of 2002 the Unifour Early Action Compact was agreed upon to further efforts regarding the cleanup of air pollution.

Overview
CAQC had their first public hearing in Western North Carolina on proposed new nonattainment designation. They successfully hosted two “Care for the Air” awareness races, lobbied for Hickory Ozone Forecast, formed Unifour Air Quality Coalition to receive the Ozone Forecasts, formed the Unifour Air Quality Committee and assisted Catawba and Hickory counties develop Air Quality Action Plans.

Other accomplishments were their adoption of an Air Quality improvement Tool Box, the establishment of Air Quality Education in Schools Program and the establishment a voluntary ban on open burning on high ozone forecast days. CAQC also participated in Voices and Choices and other regional and state forums.

CAQC’s assisted in the development of Hickory-By-Choice Land Use and Transportation Plan and the Small Area Plans in Catawba, Caldwell, and Burke Counties. They also developed the Transportation Demand Management Program and Compressed natural gas facility and vehicles.

In December 2002, the Unifour Early Action Compact was formed. As a result ozone control measures were created. All of these measures will be continued in the future to ensure success:

1. Local governments and private sector join N.C. Air Awareness Program;
2. Enhanced Ozone Awareness (Outreach-Communication-Marketing);
3. Participated in the Clean Cities program;
4. Created City and County Energy Plan;
5. Assigned staff to become air quality contacts;
6. Adopted a local clean air policy and appoint a stakeholder group;
7. Created landscaping standards;
8. Implemented Smart Growth, mixed-use and infill development policies;
9. Enforced smoking vehicle reports and require repairs;
10. Prohibited open burning on ozone action days;
11. Supported coordination of MPO and RPO efforts;
12. Encouraged the use of compressed work weeks or flexible work hours;
13. Expanded Transit and Ridesharing programs;
14. Improved traffic operational planning, engineering, and maintenance.

PM2.5 is also an increasing problem in the area as well. The value of PM2.5 has gone up from 2001 to the present. There is a section in central North Carolina that has the potential for nonattainment areas based on EPA’s presumptive MSA boundary guidance.

Outcomes
The difficulty in this process lies in the coordination and cooperation between various levels of government and involves the public and intersecting stakeholders. Although CAQC has accomplished many objectives on its way to forming the EAC, there are still many more things that need to happen in order for nonattainment to be averted.

8.9 Case Studies on Preparation for New NAAQS
Organization: IBI Group, Boston
Location: Boston, MA
Contact: Jonathan Makler, IBI Group Transportation Planner
Phone: (617)450-0701
Email: jmakler@ibigroup.com
Website: http://www.ibigroup.com/main/default.html

Presentation Focus
This presentation focuses on statewide conformity preparation efforts in North Carolina.

Background
The revised National Ambient Air Quality Standards were passed in 1997 for ground-level ozone and particulate matter. The implementation was delayed by litigation, but ultimately passed through the courts. Due to the new NAAQS around 35 states have been impacted, most of which are fast-growing southern states.

Specifically, North Carolina had high growth during the 1990s and significant transportation investments were developed and carried out as a result. This state also has a significant identification with natural resources (mountains, parks, lakes, ocean, etc.).

The ozone outlook from 2000 to 2002 in North Carolina showed that under the new standard there were numerous severe nonattainment violations and many moderate nonattainment violations. This model showed that North Carolina would need to go through a large undertaking to reach conformity.

Overview
Two strategies were developed in the state to address the new NAAQS:
Strategy 1-Minimize: N.C. proposed partial county nonattainment designations to achieve necessary control with minimal burden on communities.
Strategy 2-Mitigate: In 1998 N.C. Clean Air Act expanded Inspection and Maintenance to all 49 prospective counties. In 2002 the Clean Smokestacks Act imposed new stationary source restrictions, especially on coal-fired power plants.

Preparing for Conformity

The rationale:
There were many concerns about economic impacts on certain areas, especially for major road-building initiatives around the state, in dealing with conformity lapses. There were also concerns about the work load burden of performing conformity determinations on state agencies: Division of Air Quality (DAQ) and Department of Transportation (DOT).

The response:
DOT and researchers at N.C. State’s Center for Transportation and the Environment (CTE) saw a critical need for communication and cooperation in the fall of 2000. With the partnership of DAQ, stakeholders were convened at a roundtable to discuss conformity in May of 2001. Within this forum they were able to develop the concepts of target audience, outreach strategy, and the overall message. They believed it was pivotal to involve decision-makers within local government and key state agencies. From the key decision-makers’, advice, assistance, and their influence was key in conveying a solid and consistent message. Within this message they would explain the significance of conformity, its impact, and what can be done in the relevant context.

The outcome:
Due to the delayed implementation of these new standards until 2004, the enthusiasm was depleted from early efforts in 2000 and 2001; designation-related activities and personnel changes were a major drain on DAQ staff resources; and the formation of “early action compacts” (EAC) distracted and drained staff resources, and confused the message in some areas. The net result was that the roundtable took a back seat in the designation process.

Recently, interagency consultation on nonattainment designations suggested that roundtable and related activities did positively impact awareness at peer agencies. Because of EACs and improved air quality, the roundtable forum has been refocused on new counties in Charlotte and Triangle nonattainment areas and, potentially, any EAC dropouts.

Outcomes

From this experience it is important to note that building awareness and consensus among local officials is extremely beneficial, as seen in the EAC context. Within this forum, policy can be developed, human resources allocated, and early integration of goals can take place.

There were many challenges to this process. As a voluntary effort, the roundtable was limited by time constraints of participants and ability to mobilize allies with the clout to offer. There was a lack of rapid-response capability that hamstrung the group at critical opportunities. Professional staff often lacked training and preparation for communicating technical concepts with decision-makers. There was a serious need for capacity building programs aimed at local officials, such as ongoing programs that supply local officials the training on technical issues comparable to orientation programs which are available to Mayors, as well as
responsive programs, that result from technical events and updates that require communication between technical and policy elements of an agency.

The North Carolina air quality roundtable experience offers lessons for other states and regions that are going through similar situations.

For more information see the website for an article that appeared in TR News entitled:

“Conformity to the New Air Quality Standards”
[Link](http://www.ksg.harvard.edu/taubmencenter/research/maklerhowitt-trnews.pdfs)

**Workshop 9: Environmental Impacts of Transportation Planning, Land Use, Air and Water Quality**

How can communities plan effectively to compensate for increases in development and vehicle miles traveled, while simultaneously trying to protect air and water quality? How do planners, local elected officials, and citizen activists integrate land use, air and water quality planning? What is scenario planning and how will it help achieve the goals of sustainable growth? How can professionals promote smart growth to the general public?

This workshop extrapolated issues of importance to MPOs and Regional Councils in dealing with land use, air and water quality, and growth in their long-range transportation plans. When regions expand, their transportation network must meet the changing demands of land use, air, and water resource planning, in order to create workable solutions for the future. This workshop addressed some of the tools and processes being used to take comprehensive planning into consideration, as a means to create the most sustainable solution for a given community. Presentations include case studies describing the benefits of scenario planning, regional planning alternatives and visioning that can be addressed in long range transportation plans.

**Workshop Topics and Presenters:**

9.1 What If…The Washington Region Grew Differently?
   Public Forum on Alternative Transportation and Land-Use Scenarios
   John Swanson, Transportation Planner, WASHCOG

9.2 Transportation Conformity and the 8-Hour Ozone Standard
   Joan Rohlfis, Chief Air Quality Planner, WASHCOG

9.3 Transportation and Water Quality: Causes, Effects & Solutions
   Ted Graham, Director of Water Quality Planning, WASHCOG
9.4 Integrating Watershed Planning with Transportation Planning  
   Robert Goo, Office of Wetlands, Oceans, and Watersheds, EPA

9.5 Bay Regional Atmospheric Chemistry Experiment  
   Suzanne Cooper, AICP, TBRPC

9.6 Blueprint for the Future  
   Tom Cosgrove, Mayor, City of Lincoln/ SACOG Board Director

9.7 Implementing A Smart Growth Land Use Pattern to Manage Congestion: Results  
   From the “Regional Growth: Choices For Our Future” Project  
   Paul Hamilton, Chief Planner, TCRPC

9.8 FHWA Scenario Planning Initiatives  
   Sherry Ways, FHWA, Office of Planning

9.9 Maturing the Role of Transportation in Metropolitan Areas  
   Michael Morris, Transportation Director, NCTCOG

9.10 Holistic Approach to Metropolitan Transportation Planning  
   John Poorman, Staff Director, CDTC

9.11 Iowa 44 Corridor Coordinated Land Use and Transportation Planning  
   Tom Kane, Executive Director, DMAMPO

9.12 Integrating Land Use and Transportation Planning to Address Air Quality Conformity  
   Juanita Wieczoreck, Executive Director, Dover/Kent MPO

9.1 What If The Washington Region Grew Differently?  
   Public Forum on Alternative Transportation and Land Use Scenarios

Organization: Metropolitan Washington Council of Governments (MWCOG)  
Location: Washington, D.C.  
Presenter: John Swanson, Transportation Planner  
Phone: (202)962-3295  
Email: jswanson@mwcog.org  
Website: www.mwcog.org

Presentation Focus  
This presentation focused on a study of alternative land use and transportation planning options for the Washington, D.C. region. These “what if” alternative scenarios touch on concepts such as the housing boom in the outer suburbs, the jobs/housing imbalance, and the growing interest in higher density development.

Background  
The Metropolitan Washington Council of Governments covers approximately 3,000 square miles in Maryland, Virginia, West Virginia and the District of Columbia. The National Capital Region Transportation Planning Board (TPB), housed at WashCOG, prepares a financially constrained, 30-year transportation...
plan for the region. Based on this long-range plan, the TPB forecasts the following trends between 2005 and 2030:

- Population will go up 36 percent from 4.5 to 6.2 million;
- Employment will go up 48 percent from 2.8 to 4.2 million;
- Daily vehicle miles traveled will go up 37 percent from 109 to 150 million;
- Freeway and arterial lane miles will go up 16 percent from 15,300 to 17,600 miles.

These statistics show that the transportation sector will not be able to compensate for the increase in population and development in the region. Most transportation dollars will be needed for maintenance and oversight.

**Overview**

Four key issues plague the D.C. region’s land use and transportation development.

**Issue #1: Job Growth is Outpacing Household Growth**

Statistical trends show that forecasted job growth from 2010-2030 will increase by 800,000 while households will increase by only 400,000 in that same time period. Planners predicted that an additional 200,000 houses/apartments will need to be built to accommodate the job demand.

**Issue #2: Workers are Living Farther Away from Their Jobs**

The average commute is 30 minutes. This trend is worsening as prices for close-in housing increase and people move farther away from the regional core. Additionally, housing is developing at a more rapid pace to the north and west of the core.

**Issue #3: There is an East-West Divide in the Washington D.C. Region**

There are significant economic disparities between the eastern and western parts of the region. For example, from 1990-2000, job growth in the West had risen 20 percent while in the East it had risen only 1 percent. Such disparities have clear transportation implications: Westbound lanes are clogged in the mornings as workers drive to jobs, and eastbound lanes are clogged in the evenings as they drive home.

**Issue #4: Most Growth is Located Outside Transit Station Areas**

Given current trends, only 30 percent of job growth between 2010 and 2030 will be in transit station areas (half mile from transit). Only 20 percent of housing growth in the same period will be in transit station areas.

**Outcome**

If these trends continue without intervention, the Washington, D.C. area will have a difficult time accommodating transportation needs for all of its citizens. Therefore, the COG/TPB staff has studied alternate “what if” land use scenarios for how the region could be developed. All the land-use scenarios shifted growth into “regional activity centers,” which were designated in 2002 through a joint process at COG and the TPB:
1. What if more people lived closer to where they worked? The study is looking at a scenario that would increase household growth by 200,000 to meet forecast job growth.

2. What if more jobs were located closer to where people lived? The study created two scenarios that put households and jobs in closer proximity. The “Households In” scenario would shift 84,000 new households to inner jurisdictions, which are forecast to grow jobs faster than housing. The “Jobs Out” scenario would shift 82,000 new jobs to outer jurisdictions which are experiencing a surge in housing.

3. What if there was more development on the eastern side of the region? The “Region Undivided” scenario would shift 57,000 new households and 114,000 new jobs from the west to the east.

4. What if people lived and worked closer to transit? The “Transit Oriented Development” scenario would locate 125,000 new households and 150,000 new jobs closer to transit stations – within a half-mile radius.

All four scenarios would have positive impacts: Transit use would increase and morning congestion would decrease. But, the impacts by 2030 would be modest because most of the housing forecast for 2030 is already in place (72 percent) and 13 percent of the housing in 2030 will be in place by 2010. That means that only 15 percent of households in 2030 were in play for the study. While these scenarios only look out to 2030, the impacts will be much larger beyond that horizon.

It is also important to remember that scenario impacts may be large locally, but small regionally. The regional scope of the analysis tends to dilute the impacts of scenarios that could have profound effects on specific communities and neighborhoods.

The next study phase is developing alternative transportation scenarios including new transit facilities, car pool lanes and high occupancy/toll (HOT) lanes. Synergistic combinations of land use and transportation scenarios will be a feature of the final stages of the study.
The Regional Mobility and Accessibility Study will not produce a magic formula for solving congestion, but it will inform a growing public discussion on the direction and shape of future development. When it is concluded, regional leaders hope the results of the study will help steer the region closer to the goals of the TPB Vision, the regional transportation policy framework adopted by the TPB in 1998.

9.2 Transportation Conformity and the 8-Hour Ozone Standard

Organization: Metropolitan Washington Council of Governments (MWCOG)
Location: Washington, D.C.
Presenter: Joan Rohlf, Chief Air Quality Planner
Phone: (202)962-3358
Email: jrohlf@mwcog.org
Website: www.mwcog.org

Presentation Focus
This presentation focused on the integration between transportation and air quality planning in the metropolitan D.C. area, specifically the intricacies of the transportation conformity process in dealing with the new 8-hour ozone standard.

Background
According to the federal Transportation Conformity Rule, transportation plans and programs must be consistent with air quality goals. This process has been encoded into law in order to make sure that air quality throughout the country is not worsened, that there are no new air quality violations, and that there will be no delay in attainment of air quality standards. In order to complete these requirements, the Transportation Conformity Rule states that a Conformity Test must be implemented to link transportation planning and emissions reductions. This mobile emissions budget test is done at least every three years, or whenever change to transportation plans, TIPs, or regionally significant projects occur.

Overview
In January of 2003, Washington D.C. and the surrounding metropolitan area was designated as a serious nonattainment area for 1-hour ozone. In September 2003, MWCOG submitted the first part of their State Implementation Plan for 1-hour ozone. The second phase was submitted in March of 2004. By December of 2003, after evaluation, the Environmental Protection Agency found that the D.C. area was “adequate for conformity” in their SIP. By November of 2004, the MPO finally completed the process and was granted conformity determination for 1-hour ozone standard.

During the completion of the 1-hour ozone standard, the new ruling for 8-hour ozone designations were put into effect, therefore MWCOG simultaneously used an “interim emissions test” to demonstrate 8-hour conformity until an 8-hour budget was officially effective. Areas with adequate 1-hour budgets used them through the interim period unless they were deemed inappropriate. The existing budget could be adjusted to reflect changes in new nonattainment area boundaries. For example, the air quality and transportation planners had the option of not using Stafford County, VA in the emissions budget for the new 8-hour ozone test, because their county was added within the nonattainment region after the new 8-hour regulations were announced. Not using them in the preliminary planning would remove 3% in volatile organic compounds and 4 percent in nitrogen oxides.

Outcome
As a result of the new regulation, MWCOG was designated an 8-hour ozone moderate nonattainment area. During the interim period, the MWCOG region decided to use its one-hour mobile emissions budget to calculate the 8-hour ozone levels in their region. They included Stafford County, VA in the interim period between the one and eight hour standards, so they would be able to integrate this area more efficiently in the future. They set their Mobile Budgets for 2005, which was the attainment deadline for 1-hour ozone standard and began to think about planning for the new 8-hour attainment deadline set for 2010.

This presentation included statistics of how MWCOG planners and practitioners successfully reduced VOC and NOx.

MWCOG has planned for large emissions reductions by 2010 and beyond due to Tier 2 standards and HDDE rules. Although they plan for reduction of emissions, they have stated that meeting the 8-hour standard will be a much more difficult task that will require all mobile and non-mobile reduction measures, including existing Transportation Control Measures and other mobile emission reduction measures. Transportation planners need to think about new development projects and the consequences in relation to new regulations.

For more information visit: www.mwcog.org/environment, or www.mwcog.org/transportation

9.3 Transportation and Water Quality: Causes, Effects, & Solutions

Organization: Metropolitan Washington Council of Governments (MWCOG)
Location: Washington, D.C.
Presenter: Ted Graham, Water Resources Program Director
Phone: (202)962-3352
Email: tgraham@mwcog.org
Website: www.mwcog.org

Presentation Focus
This presentation explained the various ways transportation is associated with water pollution in the Washington, D.C. metropolitan area.

Background
The Washington, D.C. area is located in and around a large amount of water. The watershed, which includes the Chesapeake Bay, the Potomac River and numerous smaller tributaries, is an important part of
the identity of the city. Over the years, the impacts of agriculture and intensive development have adversely affected water quality in the region. The requirements of the Clean Water Act and increasing pressure from community-based organizations and others have contributed to a greater commitment to clean these waterways.

Overview
As in most urban areas, there are many different causes of transportation-related water pollution in the D.C. area. For example, vehicular emissions contribute to nitrogen overload. Of the total nitrogen load delivered to the Chesapeake Bay area from all pollution sources, about 98 million pounds, or 32 percent, is attributed to atmospheric deposition, roughly half of which is from mobile sources. The rest is mainly from power plants that is transported to the D.C. region. Uncontrolled runoff from paved surfaces causes stream-bank erosion and washes toxins, sediment, and trash into the water. In addition to these problems, poorly designed bridges and culverts break up the continuity of streams, disrupt stream flow, and impair the free migration of fish.

Outcomes
Stormwater runoff from roads and highways in large and small watersheds has degraded water quality and aquatic habitat. For example, dissolved oxygen (DO), which fish and other aquatic animals need to breathe, is often below water quality standards. Erosion and sediment often degrade habitat. Nutrients from runoff can lead to excessive algae growth. Toxins, sediment, and erosion, as well as blockages, also have played a part in degrading wildlife habitat and water quality.

The Chesapeake Bay community is struggling to revitalize their watershed from nutrient and
sediment pollution. Portions of the Bay and Tidal Rivers are listed as “impaired waters” under the Clean Water Act. Specifically, they have low dissolved oxygen levels, poor water clarity, and algae blooms.

In order to solve transportation-related water pollution problems, it is important that plans be implemented to minimize vehicle miles traveled, which will reduce nitrogen input via air deposition. It also is important to better control and, in some cases, treat road runoff through a variety of structural and non-structural solutions, including stormwater control devices, street cleaning, and antilitter campaigns. This will reduce toxins, nutrients, and erosion, as well as protect habitat and reduce trash. The Washington area also has to improve its stream-crossing standards in order to remove fish-migration blockages.

During his presentation, Dr. Graham urged transportation planners to work with water quality planners to create collaborative projects. He remarked that even though water-quality planners and transportation planners do not receive federal funds to work together, collaboration is imperative in order to save the area’s watershed system.

9.4 Integrating Watershed Planning with Transportation Planning

Organization: Environmental Protection Agency
Location: Washington, D.C.
Presenter: Robert Goo, Office of Wetlands, Oceans, and Watersheds
Phone: 202-566-1201
Email: Goo.Robert@epa.gov
Website: www.epa.gov

Presentation Focus
The focus of this presentation was to explain the importance of a coordinated resource perspective in dealing with the complex interactions between land use development, transportation systems, and water resource protection.

Background
There is a direct connection between transportation systems and water resource protection. Increased vehicle miles traveled and congestion has led to increased pollutant loading of metals, hydrocarbons, and runoff of soot and sediment in watersheds throughout the country. These accumulated pollutants have caused direct and indirect consequences leading to destruction of habitat and the degradation of human health.

In order to protect our existing water quality, we need to focus on protecting our surface and ground waters as well as our wetlands and riparian habitat. Watershed protection issues should be considered within the context of larger planning efforts and analyses should be conducted to determine whether potential development options will impact existing water quality, i.e., contribute to restoration, or further deterioration.

Overview
Increases in population and changes in land use make it imperative to plan more effectively. At current projections, the rate of land development is expanding at a faster pace than population growth. Historically, poorly planned growth has lead to widespread habitat destruction, decreases in species diversity and increased runoff, pollutant loadings, and vehicle miles traveled. As a result, water and air quality have been degraded. This degradation has lead to increased costs for drinking water treatment, storm water infrastructure, and stream and lake restoration efforts.
In order to combat the negative impacts of sprawl, it is important to develop and implement more effective land use planning and zoning laws that protect our natural resources. The following smart growth principles may be a useful starting point for communities to use in attempting to design and build more sustainable communities.

**Guiding Principles of Smart Growth:**

- Create a range of housing opportunities and choices;
- Create walkable neighborhoods;
- Encourage community and stakeholder collaboration;
- Foster distinctive, attractive places with a strong sense of place;
- Make development decisions predictable, fair, and cost effective;
- Create mixed-land use;
- Preserve open spaces, farmland, natural beauty and critical environmental areas;
- Provide a variety of transportation options;
- Strengthen and direct development towards existing communities;
- Take advantage of compact building design.

Where water quality or supply issues are important, it is crucial for the community to establish well-defined water resource goals that are integrated into the overall growth plans for the region. The development of transportation systems can have direct and indirect impacts on water quality and quantity. Throughout the planning process, communities should analyze whether there may be unintended negative consequences that may result from a given action and also identify resource management objectives and means to achieve them. Monitoring and evaluation systems should also be developed and implemented to provide feedback into the process.

The following guidelines are more specifically oriented towards water resource protection:

**Guidelines for Building Communities that Protect Water Resources**

- Establish community goals for water resources in the watershed;
- Direct development where most appropriate for watershed health;
- Minimize adverse impacts of development on watershed health;
- Promote opportunities for restoration;
- Assess and prevent unintended consequences of federal, state or local decisions affecting watershed health;
- Plan for safe, adequate and affordable water supplies as an integral part of growth;
- Consider the cumulative impacts of growth management decisions on the watershed;
- Monitor and evaluate the success of initiatives.

A sustainable community requires safe drinking water, efficient transportation systems, and enough space for everyone to live. Integrated planning is critical to achieving this success. For example, redevelopment and high density infill development around existing projects can create compact and attractive living while at the same time, protecting areas outside urban zones from being harmed.

Another strategy in the process of creating a sustainable community is using Low Impact Development (LID) strategies. LID is a strategy to manage storm runoff. It integrates land use planning, engineering, and
storm water management designs to protect, maintain and restore the ecological functions and health of watersheds. The primary goal of LID is to preserve or restore the pre-development hydrology of a watershed.

Outcomes
There are many things that a community can do to promote smart growth and low impact development.

Suggested approaches are:

• Better coordination between MPOs and natural resource agencies;
• Development of regional growth management plans;
• Invest in improved data management systems, i.e.: GIS;
• Invest in models;
• Share data;
• Invest in more comprehensive resource inventories;
• Integrate more environmental considerations into local land use planning;
• Integrate plans: land use, air, and water quality;
• Adopt a multi-disciplinary effort;
• Promote public participation, i.e.: Visioning (scenario planning);
• Strive for multiple purpose outcomes;
• Use water-sensitive designs;
• Engage in early and frequent communication;
• Conduct assessments, collect data information frequently.

A holistic approach that combines transportation and land use planning will be the way to address transportation systems, economic and cultural concerns, and environmental protection effectively in the future.

At present, opportunities exist for creating positive change. We have the ability to better assess atmospheric sources in order to improve emissions inventories and transport models. We can focus on “hot spots” which require extra monitoring in urban and agricultural areas and we can conduct more collaborative research in order to meet our goals. It is very important in this process to engage stakeholders in developing solutions to the problems as well as communicate the issues to the public. Not only do we need to integrate our planning now, but we need to create a long term, sustainable plan that will create a generational perspective.

For more information, readers may want to refer to the following websites:

http://www.epa.gov/watertrain/smartgrowth/resources/index.htm
9.5 Bay Regional Atmospheric Chemistry Experiment

Organization: Tampa Bay Regional Planning Council (TBRPC)
Location: Tampa Bay, FL
Presenter: Suzanne Cooper, AICP
Phone: (727)570-5151 ext. 32
Email: Suzanne@tbrpc.org
Website: www.tbrpc.org

Presentation Focus
This presentation will focus on the efforts of the Bay Regional Atmospheric Chemistry Experiment and the Tampa Bay community to address air and water pollution problems in the Tampa Bay estuary.

Background
Tampa Bay is Florida’s largest open water estuary at approximately 400 square miles. Since 1950, nearly half of the bay’s marshes and 40 percent of its sea grasses have disappeared. Tampa Bay is a nitrogen limited system, and in the last half century nitrogen loading has been linked to the growth of unwanted algae and the loss of certain habitat, such as the sea grass. It was once believed that a significant amount of nitrogen loading was from untreated wastewater and other point sources. In 1991, according to the Tampa Bay Estuary Program, atmospheric deposition was an “unknown” and probably minor problem. By 2003, they were quoted saying that this was, “one of the most important issues facing restoration and protection of Tampa Bay.”

Overview
The Bay Regional Atmospheric Chemistry Experiment (BRACE) was designed to improve estimates of the atmospheric nitrogen deposition to Tampa Bay, to apportion atmospheric nitrogen between local, regional and remote emission sources, and to assess Tampa Bay air quality before and after the TECO Gannon Station repowering from coal to natural gas (97 percent reduction in NOx emissions expected).

BRACE partners included the Tampa Bay Estuary Program, Argonne National Laboratory, Environmental Protection Commission of Hillsborough County, Florida Department of the Environment, National Oceanic and Atmospheric Administration, as well as a number of universities and environmental advocates and various professionals from the public and private sector.

In May of 2002, BRACE evaluated Bay area pollution through meticulous testing and calculated research. They took continuous samples of more than 100 air pollutants, used aircraft to
characterize the urban air pollution, directly measured nitrogen deposition, calculated real time aerosol concentrations, examined hourly vertical profiles of temperatures and winds, and considered atmospheric turbulence testing in the region.

**Outcomes**
Using these extensive studies, BRACE revealed valuable information about wet versus dry-deposition rates, occurrence of ammonia (NH3) versus nitric acid (HNO3), ammonia exchange at the bay surface, the role of sea salt in nitrate creation, source apportionment and various other pieces of the atmospheric chemistry puzzle of the Bay area.

**BRACE research estimates:**
• Around 40-50% of the 5,000 metric tons/year of inorganic nitrogen that reach Tampa Bay is from atmospheric deposition.
• Ammonia contributes to pollution as much as oxides of nitrogen; the Bay is both a source and a sink for ammonia.
• Sea salt reacts with nitric acid to form sodium nitrate and may reduce the local deposition of nitrogen.
• Highly time-resolved gas and aerosol measurements reveal contributions from local nitrogen sources.

The preliminary results also indicate that the nitrogen airshed does not match the local watershed boundaries. Rather, the nitrogen airshed includes all of Florida, almost all the way up to Atlanta. Estimates indicate that more than 35 percent of atmospheric deposition of nitrogen in Tampa Bay is not local.

Thus far, BRACE has improved the atmospheric nitrogen deposition estimates in Tampa Bay and researchers in the progress of apportioning the atmospheric nitrogen between local, regional and remote sources. The assessment of Tampa Bay air quality before and after the retooling of the Gannon power plant is also under way.

There are many questions that still need to be answered in order to reduce air and water pollution in the area, but BRACE continues its partnership with the goal of understanding the sources of nitrogen pollution and water quality degradation.

**9.6 Blueprint for the Future**

Organization: Sacramento Area Council of Governments (SACOG)
Location: Sacramento, CA
Presenter: Tom Cosgrove, Mayor, City of Lincoln /SACOG Director
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Website: [http://www.sacog.org/](http://www.sacog.org/)

**Presentation Focus**
This presentation focuses on SACOG and their comprehensive Blueprint Plan which examines future growth and development of the Sacramento region over the next fifty years.

**Background**
The Sacramento area consists of six county Metropolitan Planning Organizations and one Council of Governments (SACOG). SACOG is overseen by a 32 person board representing all 28 jurisdictions in the
region, with a population of over two million people. Transportation planning is at the core of the Board mission, which is important because Sacramento is one of the fastest growing areas in California.

Overview
In order to sustain smart growth principles, SACOG staff, along with many local elected officials, created the Blueprint plan. This plan is a 50 year conceptual vision for future growth of the region. In order to create the most accurate information, SACOG will continually update the document with a two-plus year scenario planning exercise. This Blueprint was also made in a way that it would not contradict transportation plans (MTP) or State Improvement Plans (SIP).

As part of this plan, a state-of-the-art modeling and decision-support visioning tool was created. Alternative plans were displayed in this visioning program focusing on issues such as housing choices, transportation choices, compact development, use of existing assets, mix uses, high quality design, and the protection of natural resources. The analysis of these integrated issues led to the final report. In order to develop support for alternative development, SACOG held two forums where they used their visioning program to display the reports findings. One forum was a regional event hosting 1,400 members from the local community. The second forum was held specifically for local elected officials. These forums were to educate citizens and professionals about their choices as well as to get feedback about the proposed scenarios. In order to do this, they used visioning equipment which could immediately reflect an audience opinion through interactive PLACE3S web software technology. Using this method, SACOG could instantly calculate which ideas were popular and which ideas were not accepted by their constituency.

Outcome
Although the scenario plans were widely accepted, SACOG has more work to do in order to reach the implementation process of the Blueprint Plan. Next, SACOG plans to develop a detailed map with all of the local governments on it, as well as individual strategies each jurisdiction needs to implement in order to carry out the next phase of Blueprint. In order to implement plans, they will need to train local governments and private sector professionals. SACOG will also create an electronic “newsletter” to track projects and to share problems and ideas. They also hope to create an educational series for planners, planning commissioners, and elected officials. SACOG continues to work to remove barriers of those who oppose the Blueprint style of growth. They are also looking to create a system, along with the “newsletter”, to monitor and maintain the various projects.

9.7 Implementing A Smart Growth Land Use Pattern to Manage Congestion: Results From the “Regional Growth: Choices For Our Future” Project

Organization: Tri-County Regional Planning Commission (TCRPC)
Location: Lansing, Michigan
Presenter: Paul T. Hamilton, Chief Planner
Phone: (517)393-0342
Email: phamilton@mitcrpc.org Website: www.tri-co.org

Presentation Focus
This presentation showcased how the Tri-County Regional Planning Commission was able to create an integrated transportation and land use plan for smart growth in their region.

Background
The Lansing, Michigan region is comprised of 78 units of government of which 50 hold land authority. In the past few decades, moderate growth has turned rural areas into scattered low density developments resulting in loss of agricultural land. In order to create more sustainable growth and counteract sprawl, the Tri-County Regional Planning Commission has conducted a scenario analysis for land use and transportation alternatives.

Overview
Products of this undertaking included goals, objectives, investment strategies, criteria and performance measures, and a regional concept of management and operations which integrated land use and transportation considerations. In their preliminary analysis, they compared numerous factors such as agricultural land, open space, preserved areas, total developed land, retail land, residential areas, population in relation to developed and underdeveloped areas, household numbers and their surrounding properties, and transportation routes in relation to development.

Using these compiled statistics TCRPC made projections about how their communities would be impacted. They created impact evaluations and set alternative Wise Growth principles to create a sustainable alternative to current development patterns.

Wise Growth Principles
• Increased access to community parks;
• Protected natural areas and open space;
• Decreased agricultural land consumption;
• Increased access to transit;
• Increased access to existing public services;
• Decreased cost and expansion of future infrastructure;
• Jobs and services located adjacent to developed areas reducing travel times.

The transportation planning sector was intimately involved in this planning process. They took a large role in developing the plan and adopted the Wise Growth Land Use principles in their own specific plans. The MPO adopted a transportation network alternative which includes: a mix of projects, “strategic” medium transit system improvements, plus, assumed “strategic” net 10% reduction in regional trips due to increased efficiency of the system as a result of mixed use developments, management and operations, ITS technology and multi-modal transportation alternatives.

The MPO also created a Regional 2025 Transportation Plan which coincides directly with the Regional Land Use Goals and Objectives. Within this plan, they adopted 29 principles in five different “themes” for regional land use.

Five “Themes” in Regional 2025 Transportation Plan
1. Governmental;
2. Growth and Redevelopment;
3. Transportation and other infrastructure;
4. Open Space and resource protection;
5. Healthy economy and healthy environment.

One example, the Transportation Network Principle, is that maintenance and operations of existing roads, public transit, and non-motorized transportation modes take priority over highway expansion projects in rural areas.
To carry out this objective they conducted public involvement, public opinion research, and outreach components as well as obtaining participation by the businesses and local elected officials. TCRPC involved the media, created a logo, slogan, and style guide. They also created: a speakers manual and place mats to encourage people to discuss these issues, partnerships with Newspaper and TV outlets, fact sheets, a web site, newsletter and a toll free hotline. They were also able to target environmental justice groups as well as developers and the environmental groups. In order to create consensus they held 13 facilitated modified nominal group-style town forums, with electronic voting capabilities, created a committee and task force structure, held leadership briefings and focus groups as part of the overall visioning process. In total, TCRPC calculated that approximately 1,500 people participated in this process.

Outcome
In the end, TCRPC conducted focus groups on their Wise Growth plan. They were overwhelmingly reassured by the results that they were on the right track—88% of the chosen community leaders agreed with this plan, while 94% of the regional citizens agreed with this plan. Through the coordination of stakeholders and the integration of various planning projects, TCRPC was able to create consensus.

In reaching this consensus, TCRPC has also created an integrated regional management and operations concept for the implementation of all of these ideas which includes a twenty year strategy, year by year project investments and maintenance, as well as ways to more effectively coordinate these projects. They also created a more detailed Five Year Investment Strategy to consider all short term forms of management and operations treatments. Examples of strategies within this five year plan include:

- Travel demand and supply management strategies;
- Traffic calming measures;
- Signs, signals, and markings;
- Traditional traffic engineering treatments
- Bicycle and pedestrian improvements;
- Transit improvements;
- Access management;
- Land use and related decisions;
- Intelligent Transportation Systems (ITS).

There were many things that did and did not work in this alternative scenario building process:

What worked:
- Regional Composite GIS Maps: Land Use/Cover; Zoning; Comprehensive Plan Maps;
- Alternative Scenario Analysis: Build Out Analysis;
- Integration of Land Use Alternatives in Regional 2025 Transportation Plan;
- Town Hall Forums with Real Time Electronic Voting System (Visioning);
- Media plan/Public outreach and marketing
- Policy Map/Principles;
- Bringing new stakeholders into the process.

What did not work in this process
- Untested proprietary web based communications software;
- Website based survey methods;
Scenario planning was used by TCRPC in order to alter transportation decision patterns. Their plan will help that region reduce transportation costs and mitigate adverse environmental impacts of pollution. This could not be possible without tremendous amounts of work, including the development of an adequate budget, effective scheduling, allocation of staff responsibilities, as well as setting reasonable expectations. It is also essential to involve a large network of stakeholders with lots of public and professional participation, particularly nontraditional partners. Nontraditional partners played a significant role in creating dynamic perspectives and maintaining sustainable collaboration.

9.8 FHWA Scenario Planning Initiatives

Organization: U.S. Department of Transportation, Federal Highway Administration (FHWA)
Location: Washington, D.C.
Presenter: Sherry Ways, Office of Planning
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Website: http://www.fhwa.dot.gov/planning/scenplan/index.htm

Presentation Focus
This presentation focused on the importance of scenario planning and how the Federal Highway Administration plays a part in facilitating cooperation and information sharing.

Background
In 2004, Federal Highway Administration made available over $560 million in funding for state and metropolitan transportation planning. FHWA began work on scenario planning in September of 2003 with a National Scenario Planning Roundtable. Later that year, FHWA initiated a cooperative agreement with the University of Utah to fund research to synthesize scenario-planning activities across the country. In April of 2004, FHWA organized two national panel sessions on scenario planning at the American Planning Association’s (APA) Federal Planning Division Annual Meeting and the APA National Conference in Washington, D.C. Also in 2004, FHWA partnered with their Division offices in New York, Rhode Island and Hawaii to organize Scenario Planning Peer Workshops to generate interest and encourage local initiatives.

Overview
Scenario planning is a process in which transportation professionals and citizens work together to analyze and shape the long-term future of their communities.

Using a variety of tools and techniques, participants assess trends in key factors such as transportation, land use, demographics, health, etc. Participants bring the factors together in alternative future scenarios, each of these reflecting different trend assumptions and trade-off preferences. In the end, all members of the
community reach agreement on a preferred scenario. In other words, scenario planning uses technical analysis and public involvement consensus to prepare tools to make an effective plan.

People involved in this process:
Federal agencies; State DOTs, MPOs, Transit Agencies; Local Planning Commissions; departments and agencies; business associations and BIDs; advocacy organizations and professional groups, and; citizens and elected officials.

Three key subjects that stakeholders must find solutions for are demographics, congestion, and the environment:

Demographics
• Current growth patterns are more spread out across the country;
• In the 1990’s, every state in the country experienced growth;
• Based on 2000 census statistics, more than half the US population lives in the suburbs;
• Half of the US population works outside the county in which they live.

Congestion
• Texas Tech Institute’s 2004 Urban Mobility Report shows traffic congestion growing;
• In 2002, congestion cost about $63.2 billion in the top 85 urban areas;
• Travel demand continues to outpace improvement in transportation capacity.

Environment
• Dozens of laws have been passed by Federal, State and local governments;
• Environmental quality has improved enormously;
• Population and economic growth continue to pressure environmental resources;
• Americans want to improve the environment while accommodating housing, economic development, and recreation needs which allow them mobility.

Scenario Planning is important to state and local professionals because it enhances their ability to respond to change. It also helps manage and prioritize use of limited resources, provides information to avoid potential consequences and to seize opportunities, provides tools to assess transportation’s impact on communities, and facilitates consensus building among a wide variety of stakeholders, therefore enhancing capacity and the decision making framework. Scenario planning also provides an analytical framework to use complete data and system oriented tools to work through difficult problems.

Outcomes
Federal Highway Administration continues to support the use of scenario planning to help communities plan effectively as well as reach consensus.

In order to ensure success of scenario planning initiatives FHWA will continue to: encourage the use of PL and other transportation funds to implement scenario planning; provide feedback on efforts being planned and implemented; provide information on similar efforts; identify resources and tools and facilitate peer workshops.
9.9 Maturing the Role of Transportation in Metropolitan Areas

Organization: North Central Texas Council of Governments (NCTCOG)
Location: Dallas-Forth Worth, TX
Presenter: Michael Morris, Transportation Director
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Website: http://www.nctcog.org/trans/

Presentation Focus
This presentation focused on how the NCTCOG transportation planning division has moved towards building a more comprehensive sustainable planning process.

Background
The Dallas-Fort Worth area is continuing to grow in population and development and therefore increase in vehicle miles traveled and congestion has become a serious concern. By 2030 it is estimated that the cost of congestion will be $12.4 billion. In order to combat these issues the transportation planners have taken a comprehensive look at their community.

Overview
NCTCOG has not only looked at direct transportation related quality-of-life issues such as air quality, mobility, regional economic development, safety, preservation of system and goods movements, they have also looked at indirect transportation related quality-of-life issues such as accessibility, equity in modal responses, urban design, housing, mixed-use developments, and resource agency coordination. They realize that in order to positively impact transportation systems they need to deal with the interaction between direct and indirect transportation issues. These synergistic relationships and interactions is what will sustain overall quality of life for the surrounding region. For example if they implemented more efficient urban design practices, that in turn could positively impact air quality, mobility, and preservation of the existing system.

NCTCOG also prioritized the importance of any additional construction projects in their transportation plan. They believe that projects should not be started without necessity, rather the community should try and maintain existing infrastructure. Consequently they focused on the management and operations of these existing systems through the use of Intelligent Transportation Systems, Traffic Demand Management, and bike and pedestrian pathways. If building is an absolutely necessity then they turn their attention to rail and bus systems and then on HOV lanes. If all of these options have been completely exhausted, only then will they consider the construction of new highways. Throughout this planning process TCRPC has kept financial and air quality constraints in check as well as focused inter-modal and their sustainable development initiatives.

In order to stay financially constrained, environmentally sound, and economically competitive the funds are divided into the need based projects. In order to determine what funds are absolutely necessary, the Regional Transportation Council created a sustainable development policy that reviews the utilization of existing system capacity, promotion of mixed use, improvement of rail mobility, and improvement of access management. By evaluating these transportation alternatives in a scenario plan they were able to determine that a mix of these options was the best for sustainable growth. For instance infill development and mixed use transportation with rail access could be the best way to compensate for growth.
**Outcome**
Through this comprehensive planning strategy they estimated that by 2025 they would be able to stop 20 million vehicle miles traveled. This development plan would also reduce $1.3 billion in freeway construction needs and $1.1 billion in arterial construction needs, thus reducing capital costs by 14.7% as well as saving 1.8 square miles of impervious surface from being paved over.

Not only would this system help preserve the build environment and create a more efficient transportation system, it would also help preserve the precious resource of water. By addressing water in the transportation plans NCTCOG ensures their help with cleaning the major rivers and creating a system that protects the roads from erosion and pollution. Water conservation is an important part of the quality of life in the Dallas-Fort Worth area and must be treated accordingly.

**9.10 Holistic Approach to Metropolitan Transportation Planning**

**Organization:** Capital District Transportation Committee (CDTC)
**Location:** Albany, Saratoga Springs
**Presenter:** John Poorman, Staff Director
**Phone Number:** 518-458-2161
**Email:** jpoorman@cdtcmpo.org
**Website:** [http://www.cdtcmpo.org/](http://www.cdtcmpo.org/)

**Presentation Focus**
This presentation focuses on how Capital District Transportation Committee has developed a holistic approach to metropolitan transportation planning.

**Background**
CDTC covers an area of 800,000 people with multiple cities within its region. There is stable and slow growth that includes poorly formed suburban expansion and urban fiscal challenges. Paradoxically, although there are a high number of pedestrians who walk and use transit shares, there is relatively low suburban density.

CDTC has a planning budget of more than $1.5 million with a Transportation Improvement Plan budget of approximately $100 million. The Albany region has a strong micro-political structure in its towns, villages and cities. CDTC creates transportation planning for all of these separate jurisdictions and is separate from the regional planning board. CDTC realized in the early 1990’s that their proposed plans for future growth in the area was relatively weak, therefore they sought out a more effective plan.

**Overview**
CDTC has the technical credibility coupled with the analytic forum to create an effective transportation planning approach that is organic and holistic in scope. They have created a supportive culture that focuses on consensus building, collaboration, and flexibility among its 25 member staff, and a balance of responsibility over major federal transportation funds.

In order to create a plan that avoids transportation centricity, CDTC has become involved with local land use efforts, urban groups, business groups, and environmental groups. In order to create an effective long range transportation plan, CDTC felt they had to be involved with all stakeholders in land use decision making. Through their collaboration on many fronts, CDTC has developed various land use policies such as: a land use management plan required for capacity; mitigation fees expected, and used for highway and...
transit maintenance; local planning context required for TIP candidates to receive funds; and urban revitalization serving as the priority for future development.

CDTC has devoted its long range planning primarily to land use planning; therefore, the MPO has become the “go to” resource in their region on these specific issues. In the last four years they have produce 35 linkage studies connecting local initiatives in a more comprehensive regional vision, including plans for their transportation corridors. This vision includes policy suggestions involving land use zoning, regulations. Currently, the MPO administers mitigation fee calculations as well as administers local research initiatives at the local level.

Outcomes
The results of these policies and practices have led the way to an elevated consciousness about land use planning. These plans and policies have improved the overall quality of local planning and increased the use of professional staff by localities while simultaneously constraining the highway capacity budget. These positive results have also played a large role and is heightening regional influence on local planning initiatives.

Therefore, CDTC has focused its transportation planning within the context of other planning initiatives and has transformed its expectations accordingly. Through these initiatives with various stakeholders, a regional planning consensus has been developed. This regional vision promotes economic vitality, urban revitalization, suburban structure, access to opportunities, management of highway mobility and improvements with other modes.

9.11 Iowa 44 Corridor Coordinated Land Use and Transportation Planning

Organization: Des Moines Area MPO (DMAMPO)
Location: Des Moines, Iowa
Presenter: Tom Kane, Executive Director
Phone Number: 515-334-0075
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Website: http://www.dmampo.org/

Presentation Focus
This presentation focused on the initiatives taken by the Des Moines Area MPO to create a sustainable transportation plan for Iowa 44 corridor.

Background
By studying the corridor 44 and the surrounding area DMAMPO was able to come up with a land use and transportation alternative that would accommodate population growth and transportation infrastructure. Through the study of the Des Moines geography and its sub areas they were able to determine the need for two separate plans that interact closely with each other—one plan that will accommodate for the urban population and one for the rural population.

(Map- Geography of study/sub areas or both)

In order to develop a plan, the Des Moines Area MPO headed a comprehensive study that involved a multitude of stakeholder partners. This partnership consisted of 26 factions including local and state governments, school districts, businesses, and non-profits.
Overview
The MPO began their study by researching past construction history as well as inventorying current conditions such as pavement and shoulder widths, sufficiency ratings, traffic flows, and origin of destination studies. Through these studies, they were able to make future projections about population and employment growth, traffic and level of services available.

From these projections came the Iowa 44 Coordinated Land Use and Transportation Plan. These planning projections would develop land use goals, inventory existing conditions along the corridor, address safety issues, and identify areas with environmental sensitivity. The plan would also develop a strategy to balance current and future land use and development issues, identify needed corridor improvements and areas of future development and promote a regional perspective while recognizing the needs and development trends of each of the partnership members.

The Des Moines Area MPO has suggested that the comprehensive land use and transportation study suggestions be adopted, in order to create a right-of-way preservation effort in a coordinated and unified manner as well as create land use plans and zoning ordinances that capture specific implementation aspects.

Outcome
In order to carry out these objectives the DMAMPO has created a 28E agreement document with each other and Iowa DOT to adopt access management plans that promote a regional perspective. They have also requested that the Iowa DOT fund and implement a planning study for the Iowa 44 corridor.

9.12 Integrating Land Use and Transportation Planning to Address Air Quality Conformity

Organization: Dover/Kent MPO
Location: Dover/Kent, DE
Presenter: Juanita Wieczoreck, Executive Director
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Website: http://www.doverkentmpo.org/indexmpo.html

Presentation Focus
This presentation focuses on the Dover/Kent MPO’s land use and transportation planning project that was initiated to support the strategy of reducing emissions through smart growth.

Background
The Dover/Kent area is located within the Philadelphia air shed, which creates air quality issues for the surrounding communities. The urban area population of Dover/Kent is approximately 65,000 while the transportation and air quality planning region is about 138,000.

Overview
Due to limited congestion and dispersed population, it is hard to devise effective transportation strategies to reduce emissions in the MPO region. Traditional measures, such as ridesharing, have a minimal impact on daily Vehicle Miles of Travel (VMT).
In 2003, the MPO decided to modify the CorPlan land use model that had been developed for the Charlottesville-Albemarle County, VA MPO for use in its region as a tool to demonstrate the impact of land development patterns on transportation, and to incorporate the results into its long range transportation plan update. By advocating a more compact, managed development pattern in the region, the MPO anticipated that motor vehicle emissions would be reduced.

When time came to update the MPO’s Long Range Transportation Plan, as required by TEA-21 and the Clean Air Act Amendments of 1990 (CAA of 1990), the MPO could not reduce emissions generated by the plan adequately to meet the 2005 Rate of Progress Plan (ROP) budget in the State Implementation Plan (SIP). By that time, Mobile6 had become the emissions model of record and the ROP had been developed using Mobile 5b, widening the gap between the plan-generated emissions and the SIP budget.

In July 2004, conformity of the MPO’s Long Range Transportation Plan lapsed. To keep federal transportation funds flowing into the region, the MPO had to stop its plan update and the CorPlan modeling.

**Outcomes**

Once they could recommence the Long Range Transportation Plan update, the MPO members worked with the consultants to complete modification of the CorPlan model and develop three growth scenarios. These scenarios were described as the Livable Delaware Preferred Growth Scenario, which mirrored Governor Minner’s smart growth initiative, Slight Growth Outside of the Growth Area, and Growth Beyond the Growth Area, which represented a total disregard for the growth area.

The population and employment estimates generated by the CorPlan model were input into the Delaware Department of Transportation’s Tranplan model and level of service was calculated for the region’s highway system. The modeling assumed that no improvements would be made beyond projects in the current TIP.

The level of service maps clearly demonstrate that the Livable Delaware Scenario, while not preventing all future transportation problems, will experience about one third to one-half as many as the Growth Beyond the Growth Area Scenario. The reduced number of problem areas translate into a more affordable Long Range Transportation Plan. Additionally, by directing growth into a defined area, alternate modes from the single occupant vehicle are more feasible.

The Livable Delaware Initiative is supported at the state, county and municipal level. It is a major component of the Kent County Comprehensive Plan and coincides with the sending and receiving areas of the County’s Transfer of Development Rights Program.

(At the time of the presentation, no “build” scenarios to improve problem areas had been modeled.)

**Workshop 10: Climate Change: A Transportation Planning Approach to Reducing Greenhouse Gases**

What is the science behind climate change? What are the ecological and environmental effects of climate change? How does climate change relate to the transportation sector? What are local, regional, statewide
and federal entities doing to reduce greenhouse gas (GHG) emissions? How can Regional Councils and Metropolitan Planning Organizations play a role in addressing climate change? How does planning play a role in mitigating GHGs?

The workshop discussed the ramifications of climate change in the United States. Panelists focused on the topics of regional planning, transportation infrastructure and the environment in relation to climate change. Panelists presented ways in which regional councils and metropolitan planning organizations can educate themselves about this topic. The workshop also included concrete examples of how to reduce greenhouse gases in regional communities and offer participants a unique opportunity to interact with climate change experts.

10.1 Climate Change: Evidence, Causes, Uncertainties, and Role of Transportation
Phillip Duffy, Group Leader, Climate and Carbon Cycle Modeling, Lawrence Livermore National Laboratory

10.2 Transportation and Climate Change
Dan Sperling, Director, Institute of Transportation Studies/ Professor, Civil and Environmental Engineering/ Professor, Environmental Science and Policy, UC Davis

10.3 DOT Center for Climate Change and Environmental Forecasting
Diane Turchetta, Environmental Protection Specialist, U.S. Department of Transportation, Federal Highway Administration

10.4 Reducing Greenhouse Gas Emissions from Transportation
Kathryn Zyla, Research Fellow, Pew Center for Climate Change

10.5 Cities for Climate Protection: Regional Opportunities
Melissa Royael Capria, Senior Program Officer, CCP-US, International Council on Local Environmental Initiatives

10.6 Global Warming? No, It’s Just Good Planning!
Rex Burkholder, Metro Councilor, Portland, Oregon

10.7 Climate Change and the NY State Energy Plan
John Zamurs, Head, Air Quality Section, New York State Department of Transportation

10.8 California’s Regulations to Control Greenhouse Gas Emissions from Motor Vehicles
Doug Thompson, Air Quality and Transportation Planning, California Air Resource Board

10.9 Sacramento’s Regional Actions to Reduce Greenhouse Gases
Larry Greene, Executive Director, Sacramento Metropolitan Air Quality Management District

10.10 Bay Area Air Quality Management District Climate Protection Program
Ina Shlez, Principle Environmental Planner, BAAQMD
10.1 Climate Change: Evidence, Causes, Uncertainties, and Role of Transportation

Organization: Lawrence Livermore National Laboratories
Location: Livermore, CA
Presenter: Philip Duffy, Group Leader, Climate and Carbon Cycle Modeling, Atmospheric Science Division
Phone: (925)422-3722

This presentation focused on the evidence surrounding climate change, its causes, and the future projections and uncertainties that exist surrounding this topic.

Background
According to the Intergovernmental Panel on Climate Change (IPCC), world temperatures have increased 0.6 degrees Celsius in the last century. IPCC explains that not only has atmospheric temperature increased, oceans have also warmed, and the thickness and extent of ice cover in the north and south polar regions has decreased. Warming of the oceans has increased ocean levels, which has made coastal communities and habitat more vulnerable.

Globally, meteorological trends have shown: the length of freeze-free season has lengthened in mid and high altitudes; land snow cover has decreased 10 percent since 1960; retreat of mountain glaciers have continually occurred in the 20th century; 10-15% decrease in summer sea ice extent since the 1950s; global sea level has risen 0.1 to 0.2 meters since 1900; the frequency of extreme low temperatures has decreased since 1950; heavy precipitation has become more frequent in mid and high latitudes of the Northern Hemisphere; river flow is occurring earlier in some regions; and permafrost regions in the Arctic are smaller.

On a more regional scale, examples were given of how California has already experienced climate change. In the last few decades, snow cover has consistently melted more quickly, leading to heavier river flow earlier in the year and reduced water supply throughout the remainder of the year.

Overview
Humans unquestionably have contributed to these meteorological trends by emitting greenhouse gases into the atmosphere. Instead of these gases penetrating the atmosphere and going into space, they are trapped, creating the “greenhouse effect” and thus warming the earth. Earth is now absorbing more energy from space that it is emitting.

Outcome
In order to understand past and present climate as well as make projections for the future, meteorologists and climatologists use complex computer models to simulate climate. Climate projections are inherently uncertain, because one cannot know how rapidly greenhouse gases will build up in the atmosphere. (This depends on future rates of population and economic growth, and other factors.) Scientists also do not understand perfectly how the climate system will respond to an increase in greenhouse gases. With these uncertainties, climate models show a large range in the possibilities of warming.

Using computer modeling programs, Duffy displayed calculations of how natural forces alone, such as solar and volcanic systems, could not account for the observed warming during the past 50 years.

To learn more about the Lawrence Livermore National Laboratory and their climate change research, visit: http://www.llnl.gov/.
Presentation Focus
This presentation focused on how transportation relates directly to climate change issues, particularly in the United States.

Background
Vehicles emit large amounts of GHG into the atmosphere, through the combustion of fuel. It will be almost impossible to reduce vehicle GHG emissions to a sustainable level without extreme action, because of our dependency on oil, as well as our propensity for travel, consumption and sprawl development. Increased petroleum consumption is on the rise throughout the world, and in the United States alone it has risen 66 percent in the last 45 years and has no indication of slowing. Not only has oil consumption gone up, the oil industry has also turned to different types of carbon dense materials, such as tar sands and coal, that emit more GHG. Second, vehicle miles traveled (VMT) and congestion have also continued to increase at a rapid rate. In the United States, VMT is rising at 2 percent per year.

Overview
VMT and congestion have increased tremendously because of a variety of reasons. Urban population densities have decreased in almost every major city in the world, which in turn has increased sprawl development. As suburbs and population boom simultaneously, travel increases and transit becomes less viable. In fact, only 2 percent of passenger travel in the U.S. is mass transit related. Suburban development patterns tend to be too dense for cars, but not dense enough for conventional transit.

Freight has also increased at an alarming rate. The freight community has slowly switched its movement of goods from rail to trucks, and trucks are known to burn more fuel and emit more GHG than trains. Fuel economy of light duty vehicles in America has also gotten worse. Even though technologies have made cars and light trucks technically more efficient, their larger size and greater power offsets the efficiency improvements. We live in a transportation “monoculture” which is hostile to new transportation “species”. The transportation system is resistant to change and is not sustainable for future generations.

Three options were given that can help reduce VMT, such as: changing our behavior by increasing the cost of car travel, controlling sprawl, and adding more choice; improving conventional technologies, by introducing more efficient cars like hybrid electric vehicles (HEVs), or; introducing advanced vehicles and low-carbon fuels. A combination of all three would be most effective. The most important thing to recognize is, if the American people are unwilling to compromise their style of life, than it is important to create a market that will provide a plethora of options that promote efficiency and lessen environmental impacts.

Creating more efficient technologies and low-carbon fuels is one option for reducing energy consumption and GHG emissions. Sperling remarked that many of these fuels result in less GHG emissions, but they do
not come without significant limitations. Cellulosic ethanol (trees, switch grass, etc.) for example can result in near zero carbon, but it is expensive, often environmentally unfriendly, and there is limited land to cultivate this as a resource. Battery electric vehicles are very efficient, but are expensive and only practical for short distance travel. Hydrogen has the greatest potential for reducing oil use and GHGs, but hydrogen and fuel cells are expensive, storage is difficult, and the infrastructure does not exist.

Not only can we work to develop alternative fuels, we can also develop more efficient transportation operations, using Intelligent Transportation Systems (ITS) technology to help increase transportation efficiency. We have an opportunity to apply new ITS technology to help create new travel models, increase inter-modalism (integrated system using many different modes of transportation), and reduce vehicle travel to improve access and mobility. Creating an efficient transportation infrastructure is a key component to reducing GHG emissions. It is important to study how people travel, in order to create a system that accommodates their needs. Travel statistics show that half of all automobiles on the road travel a total of 20 miles or less per day. Therefore, key technologies and innovations can be created to accommodate this population through the use of a multimodal transit system, dynamic ridesharing, car sharing, automated truck lanes, road pricing (for specialized vehicles), and road management and maintenance.

**Outcome**
In order to create a sustainable system that will work, it is critical to develop a customer focus approach to transportation. Sperling remarked that every society finds an acceptable spectrum based on their values and circumstances. America values individualism and consumer sovereignty. We have a history of open space, abundant resources, large frontier and remoteness from foreign conflict. Therefore, the fight between our private desire and the public good is the critical issue when dealing with reduction of GHG emissions from motor vehicles. These issues create an interesting and urgent planning and policy challenge at all levels of society.

To learn more about Dan Sperling and ITS-Davis, visit: [http://www.its.ucdavis.edu/](http://www.its.ucdavis.edu/).

**10.3 U.S. DOT Center for Climate Change and Environmental Forecasting**

Organization: U.S. Department of Transportation, Federal Highway Administration  
Location: Washington, D.C.  
Presenter: Diane Turchetta, Environmental Protection Specialist  
Phone Number: 202-493-0158  
Email: Diane.Turchetta@fhwa.dot.gov  
Website: [http://climate.volpe.dot.gov/](http://climate.volpe.dot.gov/)

**Presentation Focus**
This presentation focused on the history, goals, strategies and initiatives created by the U.S. Department of Transportation’s Center for Climate Change and Environmental Forecasting (the Center/CCCEF).

**Background**
The Center began informally in 1997, with the initial focus on raising awareness within all the branches of DOT, on the issue of climate change and its effects on the transportation system and infrastructure. The first formal meeting was in 1999 and funding for this project was allocated soon thereafter in FY2000. The Center brought together staff from every DOT branch, thus creating a multimodal core of research professionals. CCCEF receives administrative support from the Research and Innovative Technology Administration (RITA). It also has a multimodal Steering Committee which oversees all climate change
strategies throughout the Department.

**Overview**
CCCEF was formed in order to: create leadership on transportation and climate change issues; coordinate a unified voice for DOT; improve DOT’s capacity for research, data, and evaluation on strategies to meet the nation’s mobility needs, while contributing to goals/commitments for reductions in GHGs; and prepare the transportation system to address the potential long-range effects of global climate change.

**Outcome**
The Center has engaged in many domestic and international activities since its inception. On the domestic front, it is involved as a full partner in the Administration’s Climate Change Science Program. The Center is also involved in ongoing impacts research featured as one of twenty-one Synthesis and Assessment products in the President’s Climate Change Research Initiatives. Internationally, DOT has had representation at many meetings and conferences dealing with this issue, including the United Nations Conference of Parties in 2000, 2003 and 2004. The DOT was also the lead author for the transportation chapter in the 4th Assessment from the Intergovernmental Panel on Climate Change, and will participate in reviewing the report.

The Center also conducts many research initiatives that focus on the effects of transportation and climate change as well as the impacts of climate variability. These research initiatives are in place in order to: create outreach, advocacy and action on the potential impacts of climate change on transport infrastructure and services; increase energy efficiency and reduction of greenhouse gases; improve transportation greenhouse gas data and modeling; and institutionalize capacity issues that support the implementation of multimodal and intersectional efficiency strategies. One specific report that was completed by CCCEF is called “Potential Impacts of Climate Change of Transportation”. This report looked at seven different local initiatives and how they are working towards reducing their on-road greenhouse gas emissions.

Many of DOT’s programs also have ancillary climate benefits. For example, DOT works on creating a sustainable Corporate Average Fuel Economy (CAFÉ) standard. CAFE is put in place to reduce energy consumption by increasing the fuel economy of cars and trucks. The CAFE standard saved 2.5 billion gallons of fuel in the latest rulemaking. Additionally DOT funds programs for, congestion mitigation, hydrogen-powered transportation, air quality improvement, idle-reduction, and transit development.

To access information on CCCEF’s many reports and initiatives, along with general information on climate change and transportation, visit the CCCEF website at: www.dot.gov/climate.

**10.4 Reducing Greenhouse Gas Emissions from Transportation**

Organization: Pew Center for Climate Change
Location: Arlington, VA
Presenter: Kathryn Zyla, Research Fellow
Phone Number: (703)516-4146
Email: zylak@pewclimate.org
Website: http://www.pewclimate.org/

**Presentation Focus**
This presentation focused on the connection between climate change and transportation and what is being done throughout the country to mitigate greenhouse gases.
**Background**
The Pew Center was founded in May 1998, and is an independent, nonprofit, and nonpartisan organization. The Center is divided into five major program areas that include scientific studies/analyses, domestic and international strategies, outreach (business and states), solutions, and communications.

The presentation focused on a Pew Center report entitled, “Reducing Greenhouse Gas Emissions from U.S. Transportation” done by David L. Greene, Oak Ridge National Laboratory and Andreas Schafer, Massachusetts Institute of Technology.

**Overview**
This report came up with many different ideas as to how to reduce GHG in this country, including alternative fuels, vehicle energy efficiency and system efficiency. The pros and cons were presented to using certain alternative fuels, such as liquefied petroleum, low carbon-to-hydrogen fuels, hydrogen and electric fuels.

Vehicle energy efficiency is another way transportation experts can change the system to reduce cars’ GHG emissions. Currently, vehicle fuel economy could be increased by 12-17% (25-42% for light trucks) using technologies that would not change the size, weight, or performance of vehicles. While many of these technologies would increase the price of the vehicle, they would more than pay back their cost over the life of the vehicle because of reduced fuel usage. Another way to affect vehicle energy efficiency is to reduce the energy that is needed to move the vehicle; for example, by altering its weight, aerodynamic drag or rolling resistance. To change these features, lighter car materials, low resistance tires and electrification of mechanical accessories could be applied.

Not only can professionals work to reduce vehicle efficiency, system efficiency can also be changed. Although behavioral changes can happen quickly, they require determined and sustained efforts. Governments can play a major role in behavioral changes through investments in infrastructure and operations (highways, transit, airports, etc.). They determine how these systems are run. State and local governments are critical in this process. These governments can take part in: creating more direct routes (through GPS and information technology); increasing vehicle occupancy rates (through ride share, HOV lanes, and parking restrictions); shifting traffic to lower-emission modes (by improving intermodal freight transfers and increasing transit occupancy rates); and improving the efficiency of vehicles through maintenance and driving behavior (through proper vehicle maintenance, minimized braking and lowered/enforced speed limits).

**Outcome**
This report made many recommendations for future implementation. The report analysis discusses future possibilities for regulation, vehicle efficiency, system efficiency and traffic demand management. These recommendations were made in order to build a more efficient and environmentally sensitive transportation system.

To access this report and learn more about the Pew Center for Climate Change, visit: [http://www.pewclimate.org/](http://www.pewclimate.org/).
Presentation Focus
This presentation focused on ICLEI and their Cities for Climate Protection program.

Background
ICLEI’s mission is to build and support a worldwide movement of local governments to achieve and monitor tangible improvements in global environmental conditions through cumulative local actions. It is a worldwide network.

One of ICLEI main programs is called Cities for Climate Protection Campaign (CCP). CCP was created to build a worldwide movement of local governments (cities, towns, and counties) who could achieve measurable reductions in local greenhouse gas emissions, improve air quality and enhance urban livability. Thus far, there are 500+ participating municipalities worldwide, 156 participants of which are from the United States. CCP has continued to grow in the United States, because of the commitment and interest from local governments surrounding climate change. ICLEI is particularly excited by the recent signing of the US Mayors Climate Protection Agreement, where 160 city mayors pledged to reduce greenhouse gas emissions within their jurisdictions.

Overview
CCP has two complimentary approaches to dealing with local government greenhouse gas emissions reduction. First, ICLEI staff helps local governments make improvements in operations that result in increased efficiency. Second, they help participating local governments to create and set policies that change a community’s habits. For example, CCP participants promote energy efficiency through procurement, improvement of solid waste management, as well as improvement of public transportation systems. Once a municipality is interested in joining the CCP program, they must agree to follow a five milestone process, developed by ICLEI staff, which includes: conducting a baseline inventory and forecast of GHG emissions; setting a reduction/avoidance goal; developing an action plan, with implement measures, and; monitoring and evaluating these measures.

Outcome
ICLEI is also looking to expand their actions to the multi-jurisdictional level as well. The Central Connecticut Regional Planning Association (CCRPA) is the first regional council to get involved in the CCP program. In order to accomplish this task, CCRPA had to get “buy-in” from all seven local governments within this region and pass a resolution establishing their participation in the campaign. ICLEI was then able to place an intern directly with the CCRPA to complete a global warming emissions inventory for each community in the region as well for municipal operations of the individual local governments. This project was made possible through funding provided to ICLEI by the Tremaine Foundation. Once completed, these emissions inventories helped the Central Connecticut region create initiatives to reduce GHG emissions. CCRPA also found this successful because it unified member towns around one issue and cultivated relationships for the future. CCRPA is now in the process of looking for additional funds to carry
out the majority of their action plans. ICLEI urges regional councils to become members and take on the issue of climate protection in their region. The CCP is a good forum for discussion and it can provide guidance on local action plans.

To learn more about ICLEI and their Cities for Climate Protection program visit: http://www.iclei.org/.

10.6 Global Warming? No, It’s Just Good Planning!

Organization: Metro
Location: Portland, Oregon
Presenter: Rex Burkholder, Metro Councilor, District 5
Phone Number: (503)797-1546
Email: burkholderr@metro.dst.or.us
Website: http://www.metro-region.org/

Presentation Focus
This presentation focused on Portland’s growth initiatives and how they have helped the region reduce its emissions.

Background
The Metro region covers 30 cities, 4 counties, 2 states and over 2 million people. The Metro district itself includes 25 cities, parts of 3 counties and 1.7 million people.

Portland has faced many boom and bust cycles in their history, which shape who they are and how they have developed over the years. To counteract the booms and busts and create a sustainable growth and development pattern, action was taken in the early 1970s to reverse sprawling growth trends. This vision focused on supporting high-density urban living, light rail use and multimodal projects. In 1977, the development of a transit mall became the new focus for redevelopment in the central city, making transit a more viable option for travel. Today, light rail provides 27 percent of weekly day transit trips for the Portland region and transit ridership has increased at twice the rate of population and is increasing at a rate 66 percent higher than VMT growth. Two more light rail and a commuter rail line are planned in the next 5 years.

Overview
Residents and their governments continue to think about how they will accommodate future growth in their communities while maintaining livability. In order to do this, Metro developed a 50-year plan to start the process of planning for the future. By broadly involving the public using questionnaires, meetings, and forums, the council was able to develop a plan with comprehensive, long-term consensus. The “2040 growth plan”

**Leveraging the MPO**

- Regional Transportation Plan supports 2040 land uses
- $29 Million annually in flexible federal funds (STP, CMAQ)
- Land use/economic development filter
  - Within 1 mile of 2040 center
  - Multi-modal
  - Support desired land uses
focuses on creating vibrant urban centers with safe and sustainable travel options. All streets will be retrofitted to include sidewalks and bikeways that will make it easier to access transit. Federal transportation funds programmed by Metro in its role as MPO are targeted to achieve regional land use goals through targeted investments in multimodal projects as well as programs in transportation demand management and transportation oriented development. It is important to recognize that the citizens of Portland have supported the development of a regional government from the onset and have given it increased powers over time in the areas of land use and transportation.

Outcome
As a result of Metro’s actions, VMT per capita trends are down dramatically and therefore GHG emissions are down as well. In addition, the City of Portland set goals to reduce GHG emissions to 10 percent below 1990 levels by 2010. Due to considerable action and effort, the city is 0.1 percent below 1990 levels despite 25 percent increase in population. In addition to regional transportation and land use policies, the City of Portland purchases 10 percent renewable energy, planted more than 750,000 trees and shrubs and insulated 10,000 housing units.

To learn more about Metro and their smart growth actions, visit: http://www.metro-region.org/

10.7 Climate Change and the NY State Energy Plan

Organization: New York State Department of Transportation
Location: Albany, N.Y.
Presenter: John Zamurs
Phone Number: (518)457-5646
Email: jzamurs@dot.state.ny.us
Website: www.nyserda.org/Energy_Information/energy_state_plan.asp.

Presentation Focus
This presentation focused on the statewide efforts that involved all the New York Metropolitan Planning Organizations to compose GHG emissions inventories and climate action plans, in conjunction with the New York State Energy Plan.

Background
The N.Y. State Energy Plan, adopted in 2002, has become the blueprint for informed energy decision-making throughout the state. It provides broad statewide energy policy direction and considers transportation, environment, energy, and economic development within its plans.

Overview
The plan gave approximately 65 recommendations for change, 30 of which were directly or indirectly related to transportation. Many of these transportation recommendations also related to greenhouse gas emissions reduction. The plan commits the state to a goal of reducing greenhouse gas emissions 10 percent below 1990 levels by 2020. The state also adopts the goal of reducing statewide energy use in 2010 to a level that is 25 percent below 1990 energy use per unit of Gross State Product. In addition, the State will adopt a goal of increasing the share of renewable energy as a percentage of primary energy use up to 50 percent by 2020. The plan also recommends working with regional and local planning organizations, to analyze and quantify the energy use and air pollution emissions expected to result from transportation plans and programs.
N.Y. State Department of Transportation is supervising the effort to consider the energy use and greenhouse gas emissions impact of transportation actions. The MPO’s are assessing and comparing the cumulative energy and GHG impacts of projects listed in the Transportation Improvement Plans (TIP) and Long Range Plans. Projects analyzed were those identified as regionally significant, such as highway and road projects, traffic signalization projects, transit/rail, etc.

The MPO reaction to this effort was both positive and negative. The MPOs urged the state to be a leader in greenhouse gas reduction, through a guidance program. This plan is far reaching in its policy objectives. It has promoted awareness of issues and recognizes the important role of transportation in the process as well as supporting innovative projects with alternative selection decision making.

To learn more about the New York State Energy Plan, visit: www.nyserda.org/Energy_Information/energy_state_plan.asp.

10.8 California’s Regulations to Control Greenhouse Gas Emissions from Motor Vehicles

Organization: California Air Resources Board
Location: Sacramento, CA
Presenter: Doug Thompson, Manager, Motor Vehicle Assessments Section
Phone Number: (916)322-2990 or (800)242-4450
Email: dthompson@arb.ca.gov
Website: http://www.arb.ca.gov/homepage.htm.

Presentation Focus
This presentation focused on California’s initiatives to reduce GHG emissions, by creating policy and technology that will make cars more efficient.

Background
The Governor of California is at the forefront of climate change policy because they are already experiencing the detrimental effects of it. California residents recognize climate change and its potential affects on future generations and have clearly supported action to reduce GHG emissions. From 2002-2004 80 percent of California residents voted in favor of a bill, AB 1493. AB 1493 requires that automobile manufacturers adopt regulations by January 1, 2005 to maximize the most feasible and cost effective way to reduce GHGs from their vehicles. Regulations may not take effect prior to January 1, 2006 and they apply to 2009 and later model years. Regulations must provide maximum flexibility and credit for early automakers action and an alternative means of compliance. Regulations, however, do not require fees or taxes on vehicles, fuel, or VMT; bans on the sale of any vehicle category; reduction in vehicle weight; limitation on or reduction of speed limit, or limitation on or reduction of VMT. This regulation is comprehensive and provides a strong technical basis from worldwide experts as well as an extensive public process to ensure the successful implementation of this ruling.

Overview
There are many components to a vehicle’s makeup that contribute to the release of GHG emissions. Therefore, to counteract air pollutant emissions and start the process of meeting AB 1493 regulations, car companies have developed many different types of technologies that help reduce GHG emissions. To meet this regulation, all car companies must take into account that: all GHG emissions apply to this ruling (CO2, CH4, N2O, HFCs), all vehicular GHG sources are held accountable (i.e. tail pipe and air conditioner), and
all emissions are weighed according to “global warming potential”. Standards were set to be feasible for the manufacturer’s heaviest fleet, which ensures all manufacturers can comply without altering their fleet mix; therefore, the regulation is developed in a way that maintains consumer choice.

**Outcome**
Thompson shared that AB 1493, once in affect, will have many positive affects. Although the new technologies will increase the initial price of the car, their will be an overall net savings throughout a car’s life time. The new technologies will also reduce GHG emissions from cars by 27 percent by the year 2030. Economically, this will bring 53,000 new jobs to the state of California by 2020, increase business and have a positive effect on minority and low income communities. The regulation will also comply with all legislative requirements. All maximum feasible and cost effective reductions will be met, making this economical for the consumers and flexible for car manufacturers.

To learn more about AB 1493 and the Air Resource Board go to: [http://www.arb.ca.gov/homepage.htm](http://www.arb.ca.gov/homepage.htm).

### 10.9 Sacramento’s Regional Actions to Reduce Greenhouse Gases

**Organization**: Sacramento Metropolitan Air Quality Management District  
**Location**: Sacramento, CA  
**Presenter**: Larry Greene, Executive Director  
**Phone Number**: (916)874-4802  
**Email**: lgreene@airquality.org  
**Website**: [http://www.airquality.org/](http://www.airquality.org/)

**Presentation Focus**
This presentation focused on the Sacramento Air Quality Management District’s initiatives to create a comprehensive long range land use policy, consequently reducing GHG emissions and increasing the quality of life in the Sacramento region.

**Background**
The Sacramento region consists of five air districts and six counties, as well as their constituent municipal governments.

Throughout the last decade, SMAQMD has continuously worked on a number of short term and long term initiatives to reduce reactive organic gases and nitrogen oxides, indirectly affecting GHG emissions. These efforts have continuously connected the Air District to the Council of Governments in their region, the Sacramento Area Council of Governments (SACOG), especially in dealing with land use initiatives.

**Overview**
Due to the State Implementation Plan (SIP) and its direct correlation to transportation planning and land use regulations and policies, Larry Greene and SMAQMD decided to work directly with SACOG to promote and carry out their Blueprint Plan for 2050 and subsequent plan enhancements. This blueprint plan was created as a comprehensive long range plan that works to provide Sacramento residents with a regional multi-modal transportation system, various housing choices, high density development, use and reuse of existing assets, mix land use principles, natural resource conservation and quality design. Fortunately, for the upcoming planning cycles, the 8-hour ozone SIP and the 2030 Metropolitan Transportation Plan have
common time lines SMAQMD and SACOG collaboration not only works because of complimentary time lines and strategies, but because they can technically support each other, share common elected officials, and share in the cost of project implementation.

**Outcome**

Through computer model programs SACOG created a base case scenario model of what the area would look like in 2050 if nothing was done, versus a preferred model of the city if all of their principles and projects were implemented. As a means to gain approval from the community, public workshops were held and community perspectives were gauged. First, county-wide workshops were held to gain perspectives from each individual jurisdiction and then a larger regional workshop was held to collaborate and condense all of the data into one action plan. SACOG, with the backing of local residents, was able to get official “buy-in” from all Sacramento local elected officials in October of 2004, officially creating a comprehensive long term policy on growth and development in the region. Twenty-eight local government commitments for implementation were signed and a 2030 map for SIP/MTP strategies is being developed in order to create a specific plan for implementation projects. Counties and cities in the region have already begun to implement specific plans for their community.

For more information on SMAQMD, visit: [www.airquality.org](http://www.airquality.org). To learn about SACOG and their Blueprint plan, visit: [www.sacog.org](http://www.sacog.org).

### 10.10 Bay Area Air Quality Management District Climate Protection Program

**Organization:** Bay Area Air Quality Management District  
**Location:** San Francisco, CA  
**Presenter:** Ina Shlez, Principal Environmental Planner  
**Phone Number:** (415)749-5000  
**Email:** IShlez@baaqmd.gov  
**Website:** [www.baaqmd.gov/pln/climatechange.htm](http://www.baaqmd.gov/pln/climatechange.htm)

**Presentation Focus**

This presentation focused on why BAAQMD has adopted a climate change action plan.

**Background**

Air quality professionals in the Bay area have considered many factors to be interrelated with climate-related changes. The increase in Bay Area population for example is projected to increase from 7 million in 2000 to 8.8 million by 2030. This rise in population will affect emissions increases, due to congestion, increased energy consumption and vehicle miles traveled. It is projected that from 1990 to 2020 there will be an increase of approximately 32 percent in GHG emissions in California. This rise in emissions could potentially lead to an increase of as much as four degrees Fahrenheit. The rise in temperature has already led to other ecological and health related affects in California such as rising sea levels, heat related deaths, infectious diseases, and higher risks of respiratory problems caused by poor air quality. This will only worsen as temperatures continue to climb. Rising temperatures have also negatively affected other air pollutants. Higher temperatures in the San Francisco Bay region have led to increased emissions, increasing ozone formation and particulate matter. These trends threaten to erode the air quality improvements made in the Bay Area over the past 50 years.

A large part of California’s GHG emissions come from its transportation system, which emits 41 percent of its GHG emissions from transportation sources, as opposed to the 27 percent average for the entire country.
Shlez emphasized that all air pollutants are interrelated and that using methods to reduce one kind of air pollutant can lead to the reduction of other air pollutants. These co-benefit strategies are particularly effective when dealing with mobile sources. Numerous Bay Area District programs are currently working to reduce criteria pollutants and therefore indirectly reduce GHG emissions.

**Overview**

There are many statewide and local initiatives that are working towards the reduction of GHG emissions. Along with the Governor’s and the Air Resource policy and technology efforts, many local governments have created initiatives to reduce GHG emissions in the Bay Area. All of this action in the state has led the Bay Area Air Quality Management District towards its own action plan on climate change. Using the enthusiasm of staff, Executive Director and Advisory Council, BAAQMD Board of Directors passed a resolution on June 1, 2005 acknowledging climate change as a current problem as well as formally creating the BAAQMD Climate Protection Program.

The Climate Protection Program goals and initiatives are to: provide regional support and leadership on the issue; collaborate with other regional and State efforts; develop inventory of GHGs for the region; host forums to coordinate climate protection initiatives; create guidance for new initiatives; technical assistance to local stakeholders; public education and outreach campaigns; work with internal district programs and staff, inventorying our own GHG emissions and setting reduction targets.

**Outcome**

The next step for BAAQMD is to involve local stakeholders in the development of the program. They also need to roll out emissions inventory data for the region and assess the biggest sources of pollution, as well as develop new outreach and education tools and materials for stakeholders and the general public.

To learn more about BAAQMD visit: [www.baaqmd.gov/pln/climatechange.htm](http://www.baaqmd.gov/pln/climatechange.htm).
<table>
<thead>
<tr>
<th>Glossary</th>
<th>Definition</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Quality Management District</td>
<td>Air quality agency that regulate air pollution within their multi-jurisdictional area.</td>
<td>10.9; 10.10</td>
</tr>
<tr>
<td>Build/No Build</td>
<td>&quot;Build-no-greater-than-no-build&quot; is test allowing certain ozone and carbon monoxide areas of lower classification and all PM$<em>{10}$, PM$</em>{2.5}$, and NO$_2$ areas to be able to determine conformity if the build emissions are equal to or lower than the no-build emissions.</td>
<td>6.5; 8.2; 9.7</td>
</tr>
<tr>
<td>Call for Projects</td>
<td>A key component of TIP is the Call for projects program, a competitive process that distributes discretionary capital transportation funds to regionally significant projects.</td>
<td>4.2; 4.5</td>
</tr>
<tr>
<td>Carbon Monoxide</td>
<td>Carbon monoxide (CO) is a colorless, odorless, poisonous gas. It is produced by the incomplete burning of solid, liquid, and gaseous fuels. Appliances fueled with natural gas, liquified petroleum (LP gas), oil, kerosene, coal, or wood may produce CO. Burning charcoal produces CO. Running cars also produce CO.</td>
<td>6.8; 8.3</td>
</tr>
<tr>
<td>Clean Air Act Amendments (CAAA)</td>
<td>The Clean Air Act was created in 1970. It was the first federal legislation to regulate air quality. Since then it has been amended many times to reach stricter air quality standards</td>
<td>1.1; 1.2; 1.5; 1.7; 5.1; 3.5; 6.8; 8.1; 8.2; 8.4; 8.5; 8.9; 9.10; 9.12; 10.10</td>
</tr>
<tr>
<td>Clean Water Act</td>
<td>Growing public awareness and concern for controlling water pollution led to enactment of the Federal Water Pollution Control Act Amendments of 1972. As amended in 1977, this law became commonly known as the Clean Water Act. The Act established the basic structure for regulating discharges of pollutants into the waters of the United States. It gave EPA the authority to implement pollution control programs such as setting wastewater standards for industry. The Clean Water Act also continued requirements to set water quality standards for all contaminants in surface waters.</td>
<td>9.3</td>
</tr>
<tr>
<td>Conformity</td>
<td>Process to assess the compliance of any transportation plan, program, or project with air quality implementation plans. The conformity process is defined by the Clean Air Act and regulated by the conformity rule.</td>
<td>1.1; 1.6; 1.7; 2.8; 3.1; 3.2; 3.3; 3.4; 3.6; 3.9; 5.2; 5.3; 6.1; 6.2; 6.3; 6.4; 6.5; 6.6; 6.7; 8.2; 8.4; 8.7; 8.9; 9.2</td>
</tr>
<tr>
<td>Congestion</td>
<td>CMAQ is a categorical Federal-aid funding program created with the passage of ISTEA.</td>
<td>1.4; 3.1; 3.5; 4.1; 4.2; 4.3; 4.4; 4.7;</td>
</tr>
<tr>
<td>Glossary</td>
<td>Definition</td>
<td>Reference</td>
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<td>-------------------------------------------</td>
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</tr>
<tr>
<td>Quality Improvement Program (CMAQ)</td>
<td>This funding program directs funding to projects that contribute to meeting the NAAQS. CMAQ funds generally may not be used for projects that result in the construction of new capacity available to SOVs.</td>
<td>5.2; 7.4; 8.3; 8.6</td>
</tr>
<tr>
<td>Council of Governments</td>
<td>This is a council set up by local jurisdictions to handle certain planning responsibilities at the regional level.</td>
<td>1.4; 1.6; 1.8; 2.8; 3.2; 3.4; 3.8; 4.2; 4.3; 4.4; 5.4; 8.8; 9.1; 9.2; 9.3; 9.6; 9.9; 10.9</td>
</tr>
<tr>
<td>Data Collection</td>
<td>Collection of air and transportation data.</td>
<td>3.2; 3.9; 4.4; 5.4; 6.2; 6.5; 6.6; 6.7; 6.8; 7.4; 9.6; 9.9</td>
</tr>
<tr>
<td>Department of Transportation (U.S.)</td>
<td>Federal department working on all aspects of transportation.</td>
<td>1.7; 3.4; 6.2; 8.2; 8.5; 8.9; 10.3</td>
</tr>
<tr>
<td>Early Action Compact (EAC)</td>
<td>This is an area that commits early to cleaning up their air pollution to avoid the label of nonattainment. To start the process they must submit a plan of action.</td>
<td>5.4; 7.3; 8.1; 8.2; 8.7; 8.8; 8.9</td>
</tr>
<tr>
<td>Economic Benefits</td>
<td>Economic benefits of reducing congestion and air quality pollution.</td>
<td>8.7</td>
</tr>
<tr>
<td>Eight-Hour Ozone</td>
<td>The 8-hour ozone national ambient air quality standard codified at 40 CFR 50.10.</td>
<td>2.4; 3.3; 3.4; 5.1; 5.2; 5.3; 5.4; 5.5; 6.1; 6.2; 7.2; 8.1; 8.3; 8.7; 8.8; 9.2; 10.9</td>
</tr>
<tr>
<td>Emissions budget</td>
<td>The part of the SIP that identifies the allowable emissions levels, mandated by the NAAQS, for certain pollutants emitted from mobile, stationary, and area sources. The emissions levels are used for meeting emission reduction milestones, attainment, or maintenance demonstrations.</td>
<td>1.6; 3.2; 8.2</td>
</tr>
<tr>
<td>Emission inventory</td>
<td>This is the process by which regions gauge the status of their air quality.</td>
<td>1.6; 8.2; 8.5</td>
</tr>
<tr>
<td>Environmental Impact Statement (EIS)</td>
<td>The National Environmental Policy Act of 1969 requires that federal agencies prepare detailed analyses of any of their actions that significantly affect the quality of the environment. Environmental impact statements (EIS) are the result of this requirement. EIS have been produced, since 1969, on virtually every type of activity, from oil and gas development to scientific research in</td>
<td>6.8</td>
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<tr>
<td>Glossary</td>
<td>Definition</td>
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<tr>
<td>Environmental Justice</td>
<td>This type of litigation is brought on when poor and minority communities are discriminated against due to the pollution/waste dumped into their communities.</td>
<td>3.4; 4.6</td>
</tr>
<tr>
<td>Environmental Protection Agency (U.S. EPA)</td>
<td>EPA is the Federal regulatory agency responsible for administering and the enforcement of Federal environmental laws including the Clean Air Act, the Clean Water Act, the Endangered Species Act, and others.</td>
<td>1.1; 1.2; 1.3; 1.6; 1.7; 1.8; 2.7; 2.8; 3.3; 3.4; 3.6; 3.9; 5.1; 6.2; 6.3; 6.4; 6.5; 6.6; 7.2; 7.3; 7.4; 8.1; 8.2; 8.5; 8.8; 9.2; 9.4</td>
</tr>
<tr>
<td>EPA Smart Growth Index</td>
<td>The Smart Growth Index (SGI) is a GIS sketch model for simulating alternative land-use and transportation scenarios, and evaluating their outcomes using indicators of environmental performance.</td>
<td>2.7; 3.6</td>
</tr>
<tr>
<td>Federal Highway Administration (FHWA)</td>
<td>An agency of the U.S. Department of Transportation that funds highway planning and programs.</td>
<td>1.4; 1.7; 2.8; 3.3; 3.4; 3.9; 4.7; 5.2; 6.2; 6.6; 7.4; 8.2; 8.3; 9.8; 10.3</td>
</tr>
<tr>
<td>Federal Transit Administration GIS</td>
<td>A branch of the Department of Transportation Geographic Information Systems are a collection of computer software and geographic data. GIS is used for capturing and displaying geographically referenced information.</td>
<td>1.7; 2.8; 3.3; 3.4; 3.9; 6.6; 8.2</td>
</tr>
<tr>
<td>Greenhouse Gas Emissions</td>
<td>Emission of those gases that, by affecting the radiation transfer through the atmosphere, contribute to the greenhouse effect. This occurs from natural and manmade processes.</td>
<td>10.1; 10.2; 10.3; 10.4; 10.5; 10.6; 10.7; 10.8; 10.9; 10.10</td>
</tr>
<tr>
<td>HOV</td>
<td>High Occupancy Vehicles. HOV lanes are restricted to vehicles with a set number of occupants and are used on highways to ease traffic flow.</td>
<td>2.5; 2.6; 3.1; 6.8; 7.5; 9.9</td>
</tr>
<tr>
<td>Inspection and Maintenance Program (I/M)</td>
<td>Vehicle inspection and maintenance programs (I/M) help improve air quality by identifying high-emitting vehicles in need of repair (through visual inspection, emissions testing, and/or the downloading of fault codes from a vehicle’s onboard computer) and causing them to be fixed as a prerequisite to vehicle registration within a given non-attainment area.</td>
<td>3.5; 7.5; 8.7</td>
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<tr>
<td>Intelligent Transportation Systems</td>
<td>Intelligent transportation systems (ITS) encompass a broad range of wireless and wire line communications-based information and electronics technologies. When integrated into the transportation system's infrastructure, and in vehicles themselves, these technologies relieve congestion, improve safety and enhance productivity.</td>
<td>4.1; 6.1; 9.7; 9.9; 10.2</td>
</tr>
<tr>
<td>Interagency Cooperative Partnerships</td>
<td>Cooperation between different organizations and agencies on different levels of government.</td>
<td>1.2; 3.3; 3.4; 3.9; 4.2; 4.5; 4.6; 4.7; 5.5; 6.5; 8.4; 8.6</td>
</tr>
<tr>
<td>Land Use</td>
<td>Refers to the manner in which portions of land or the structures on them are used (i.e., commercial, residential, retail, industrial, etc.).</td>
<td>1.2; 2.1; 2.2; 2.3; 2.4; 2.5; 2.6; 2.7; 2.8; 3.1; 3.6; 3.7; 9.1; 9.4; 9.6; 9.7; 9.10; 9.11; 9.12; 10.9</td>
</tr>
<tr>
<td>Memorandum of Agreement (MOA)</td>
<td>MOA’s are agreements between organizations with the purpose of creating an understanding of how a technical plan will be developed and implemented. MOAs are integral in the accomplishing Early Action Compacts (EACs).</td>
<td>1.3; 3.3; 5.4; 6.4</td>
</tr>
<tr>
<td>Metropolitan Planning Organization (MPO)</td>
<td>The organizational entity designated by law with lead responsibility for developing transportation plans and programs for urbanized areas with populations of 50,000 or more. MPOs are established by agreement of the Governor and units of general purpose local government which together represent 75 percent of the affected population of an urbanized area.</td>
<td>1.4; 1.5; 1.6; 1.7; 1.8; 2.2; 2.4; 3.2; 3.5; 3.9; 5.2; 6.1; 6.2; 6.4; 6.6; 6.7; 6.8; 7.1; 7.2; 7.3; 8.1; 8.4; 8.5; 8.6; 8.7; 8.8; 9.2; 9.4; 9.6; 9.7; 9.8; 9.10; 9.11; 9.12; 10.6; 10.7</td>
</tr>
<tr>
<td>Mobile 5/6</td>
<td>This is a software system developed by the EPA that generates information about criteria air pollutants. Specifically, Mobile 5/6 estimates emissions from mobile sources.</td>
<td>1.6; 1.8; 2.8; 3.2; 3.4; 3.9; 4.7; 4.9; 5.4; 5.6; 6.2; 6.3; 6.8; 8.2; 8.5; 9.2; 9.12</td>
</tr>
<tr>
<td>Mobile source</td>
<td>Mobile sources include motor vehicles, aircraft, seagoing vessels, and other transportation modes. The mobile source related pollutants are carbon monoxide (CO), Volatile organic compounds (VOCs), nitrogen oxides (NOx), and small particulate matter (PM10).</td>
<td>3.1; 3.4; 7.1; 9.3</td>
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<tr>
<td>Modeling</td>
<td>A way in which transportation and air quality professionals can tabulate the status of congestion and air pollution in their region. Modeling also enables them to make projections about the future.</td>
<td>6.2; 6.5; 6.6; 6.7; 6.8; 8.7; 9.4; 9.6</td>
</tr>
<tr>
<td>Motor Vehicle Emissions Budget (MVEB)</td>
<td>That portion of the total allowable emissions defined in a revision of the applicable SIP, for a certain date for the purpose of meeting reasonable further progress milestones or attainment or maintenance demonstrations for any criteria pollutant or its precursors allocated by the applicable SIP to highway and transit vehicles.</td>
<td>1.6; 1.7</td>
</tr>
<tr>
<td>National Ambient Air Quality Standards (NAAQS)</td>
<td>Federal standards that set allowable concentrations and exposure limits for various pollutants. The EPA developed the standards in response to a requirement of the CAA.</td>
<td>1.1; 2.4; 4.4; 5.1; 5.2; 5.3; 7.5; 8.1; 8.3; 8.4; 8.5; 8.6; 8.8; 8.9</td>
</tr>
<tr>
<td>New Source Review</td>
<td>Congress established the New Source Review (NSR) permitting program as part of the 1977 Clean Air Act Amendments. It ensures that air quality is not significantly degraded from the addition of new and modified factories, industrial boilers and power plants. It also assures people that any large new or modified industrial source in their neighborhoods will be as clean as possible, and that advances in pollution control occur concurrently with industrial expansion.</td>
<td>5.1; 5.3; 8.1</td>
</tr>
<tr>
<td>Nitrogen Oxides</td>
<td>A group of highly reactive gases that contain nitrogen and oxygen in varying amounts. Many of the nitrogen oxides are colorless and odorless. NOx is formed when the oxygen and nitrogen in the air react with each other during combustion. The primary sources of nitrogen oxides are motor vehicles, electric utilities, and other industrial, commercial, and residential sources that burn fuels.</td>
<td>1.1; 1.5; 1.6; 2.4; 2.8; 3.1; 3.2; 3.9; 4.2; 4.5; 4.7; 5.3; 6.2; 6.3; 6.4; 7.3; 8.1; 8.5; 8.7; 9.2; 9.4</td>
</tr>
<tr>
<td>Non-Attainment</td>
<td>A geographic region of the United States that the EPA has designated as not meeting the NAAQS.</td>
<td>1.1; 1.3; 2.4; 2.8; 3.2; 3.4; 3.8; 3.9; 5.2; 5.3; 5.4; 5.5; 6.2; 6.7; 7.3; 8.1; 8.2; 8.3; 8.4; 8.5; 8.7; 8.8; 8.9; 9.2</td>
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<tr>
<td>On-Board Diagnostics</td>
<td>OBD is a computer-based system built into all model year (MY) 1996 and newer light-duty cars and trucks. OBD monitors the performance of some of the engines' major components, including individual emission controls. The system provides owners with an early warning of malfunctions by way of a dashboard &quot;Check Engine&quot; light (also known as a Malfunction Indicator Light or MIL, for short).</td>
<td>3.5; 3.6</td>
</tr>
<tr>
<td>One-Hour Ozone</td>
<td>The 1-hour ozone national ambient air quality standard codified at 40 CFR 50.9</td>
<td>1.1; 2.2; 2.4; 3.2; 3.3; 3.4; 3.8; 5.1; 6.1; 6.4; 8.1; 8.2; 8.3; 8.4; 9.2</td>
</tr>
<tr>
<td>Ozone Classifications</td>
<td>Ozone classifications span from extreme, severe, and serious to moderate and marginal and can also be classified as subpart EAC.</td>
<td>1.1; 1.3; 1.6; 2.2; 2.4; 3.3; 3.8; 5.1; 5.2; 7.1</td>
</tr>
<tr>
<td>Ozone Nonattainment Area</td>
<td>This is when an area is not within regulation for ozone pollutants. EPA designates an area as ozone nonattainment if it has violated, or has contributed to violations of the national 8-hour ozone standard over a three-year period. EPA also may designate an area as attainment/unclassifiable, if it has:1) monitored air quality data show that area is has not violated the ozone standard over a three-year period; or if 2) there is not enough information to determine the air quality in the area.</td>
<td>1.2; 1.3; 1.5; 1.6; 1.7; 2.2; 2.4; 2.8; 3.4; 3.8; 3.9; 5.2; 5.4; 5.5; 6.2; 6.3; 6.4; 7.2; 7.3; 8.1; 8.2; 8.3; 8.4; 8.5; 8.7; 8.9</td>
</tr>
<tr>
<td>Parts Per Million (ppm)</td>
<td>A measure of air pollutant concentrations.</td>
<td>1.1</td>
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<tr>
<td>Particulate Matter (PM)</td>
<td>Any material that exists as solid or liquid in the atmosphere. Particulate matter may be in the form of fly ash, soot, dust, fog, fumes, etc. Small particulate matter is too small to be filtered by the nose and lungs. PM-10 is particulate matter that is less than 10 microns in size. PM-2.5 is particulate matter that is less than 2.5 microns in size. A micron is one millionth of a meter.</td>
<td>1.1; 1.3; 5.1; 5.2; 5.6; 6.4; 8.8</td>
</tr>
<tr>
<td>PM 2.5</td>
<td>A certain kind of particulate matter, which is an air pollutant.</td>
<td>1.1; 5.2; 5.6; 6.4; 8.2; 8.3; 8.4; 8.8; 8.9</td>
</tr>
<tr>
<td>Public Outreach</td>
<td>An effort by an organization to connect its ideas to the public. Public outreach often involves education and dissemination of an</td>
<td>7.1; 7.2; 7.3; 7.4; 7.5; 8.1; 8.4; 8.5; 8.7; 9.6; 9.7</td>
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<tr>
<td>Reformulated Gasoline</td>
<td>Reformulated gasoline (RFG) is gasolines blended to burn cleaner and reduce smog-forming and toxic pollutants in the air we breathe. The Clean Air Act requires that RFG be used in cities with the worst smog pollution to reduce harmful emissions of ozone.</td>
<td>1.7</td>
</tr>
<tr>
<td>Regional Haze (RH)</td>
<td>The Regional Haze Rule requires state and federal agencies to work together to develop and implement air quality protection plans to reduce the pollution that causes visibility impairment, particularly in the National Park system.</td>
<td>6.4</td>
</tr>
<tr>
<td>Regional Transportation Plan</td>
<td>These are comprehensive plans created by regional entities including Metropolitan Planning Organizations and Regional Councils and can cover planning for aviation, highways, transit and other modes of transportation.</td>
<td>1.8; 2.1; 2.2; 2.5; 2.8; 3.3; 4.2; 6.8; 8.5; 8.6</td>
</tr>
<tr>
<td>Retrofit</td>
<td>EPA has developed the Voluntary Diesel Retrofit Program. This program will address pollution from diesel construction equipment and heavy-duty vehicles that are currently on the road today.</td>
<td>4.3; 10.3</td>
</tr>
<tr>
<td>Rural Small and Medium Sized Metropolitan Planning Organizations</td>
<td>Metropolitan Planning Organizations in a region with a population above 50,000 and below 200,000 people.</td>
<td>5.5; 6.1; 6.2; 6.3; 6.5; 6.7; 7.3; 8.4; 9.7; 9.11</td>
</tr>
<tr>
<td>SAFETEA-LU (Safe Accountable Flexible Efficient Transportation Equity Act-A Legacy for Users)</td>
<td>SAFETEA-LU authorizes the Federal surface transportation programs for highways, highway safety, and transit for the 5-year period 2005-2009.</td>
<td>8.3</td>
</tr>
<tr>
<td>Scenario Planning</td>
<td>Scenario planning is a strategic planning method that some organizations use to make flexible long-term plans.</td>
<td>3.1; 9.1; 9.6; 9.7; 9.8; 9.9; 9.10; 9.12; 10.6; 10.9</td>
</tr>
<tr>
<td>Selection Criteria &amp; Performance Measures</td>
<td>Creating tools to score how the implementation of planning has affected the quality of life within a region.</td>
<td>4.1; 4.2; 4.3; 4.4; 4.5; 4.6; 4.7; 7.1; 7.2; 7.3; 7.4; 7.5; 9.4; 9.6</td>
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<tr>
<td>Severe Ozone</td>
<td>This is a classification of ozone status under the National Ambient Air Quality Standards (NAAQS).</td>
<td>1.2; 3.1; 3.6; 3.9; 4.4</td>
</tr>
<tr>
<td>Smart Growth</td>
<td>Smart growth is development that serves the economy, the community, and the environment. It changes the terms of the development debate away from the traditional growth/no growth question to &quot;how and where new development should be accommodated&quot;.</td>
<td>1.2; 2.1; 2.2; 2.3; 2.4; 2.5; 2.6; 2.7; 2.8; 3.5; 3.6; 3.7; 3.7; 8.1; 8.2; 9.4; 9.6; 9.7; 9.12; 10.6</td>
</tr>
<tr>
<td>State Implementation Plan (SIP)</td>
<td>A plan mandated by the CAA that contains procedures to monitor, control, maintain, and enforce compliance with the NAAQS.</td>
<td>1.1; 1.2; 1.5; 1.7; 1.8; 2.1; 2.2; 2.7; 2.8; 3.2; 3.5; 3.9; 5.3; 5.4; 6.2; 6.3; 6.4; 6.5; 7.3; 7.4; 8.1; 8.2; 8.4; 8.5; 8.7; 9.2; 9.6; 9.7; 9.12; 10.6</td>
</tr>
<tr>
<td>Surface Transportation Program/Metro Mobility (STM-MM)</td>
<td>The STP provides flexible funding that may be used by States and localities for projects on any Federal-aid highway, including the NHS, bridge projects on any public road, transit capital projects, and intra-city and intercity bus terminals and facilities. A portion of funds reserved for rural areas may be spent on rural minor collectors.</td>
<td>4.2</td>
</tr>
<tr>
<td>Transit</td>
<td>Public transportation, including buses and trains.</td>
<td>2.7; 3.5; 3.6; 4.1; 4.2; 4.3; 4.6; 4.7; 5.2; 6.2; 7.2; 8.8; 9.1; 9.2; 9.7; 9.10;</td>
</tr>
<tr>
<td>Transportation Control Measures (TCM)</td>
<td>Actions to adjust traffic patterns or reduce vehicle use to reduce air pollutant emissions. These may include HOV lanes, provision go bicycle facilities, ridesharing, telecommuting, etc. Such actions may be included in a SIP if needed to demonstrate attainment of the NAAQS.</td>
<td>1.2; 1.3; 1.8; 2.1; 3.1; 3.4; 3.6; 5.4; 6.2; 8.1; 8.2; 8.5; 9.2; 10.6</td>
</tr>
<tr>
<td>Transportation Implementation Program (TIP)</td>
<td>Also known as a transportation program, a TIP is a program of transportation projects drawn from, or consistent with, the transportation plan and developed pursuant to Title 23, U.S.C. (United States Code) and the Federal Transit Act. This document is prepared by metropolitan planning organizations listing projects to be</td>
<td>1.2; 1.3; 1.5; 1.7; 1.8; 2.1; 2.8; 3.3; 3.4; 3.6; 4.2; 4.5; 4.6; 6.1; 8.2; 8.5; 8.6; 9.2; 9.9; 9.10; 9.12; 10.7</td>
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<tr>
<td>Transport, Ozone</td>
<td>Ozone pollution caused by transport vehicles including trucks and rail.</td>
<td>5.5; 6.4; 9.3</td>
</tr>
<tr>
<td>Truck Stop Electrification</td>
<td>Truck stop electrification allows truckers to &quot;plug in&quot; vehicles to operate necessary systems without idling the engine. In some cases, a stand-alone system can provide heating, ventilation, and air conditioning directly to the sleeper compartment.</td>
<td>7.2; 10.3</td>
</tr>
<tr>
<td>Urban Air shed Models (UAMs)</td>
<td>Airshed models are used to project emissions for use in regional air quality plans.</td>
<td>1.3; 5.4; 6.4; 6.5</td>
</tr>
<tr>
<td>Vehicle miles traveled (VMT)</td>
<td>The sum of distances traveled by all motor vehicles in a specified region.</td>
<td>1.3; 1.6; 2.5; 2.7; 3.2; 3.7; 3.9; 4.2; 4.3; 4.4; 4.5; 4.7; 6.2; 6.3; 6.5; 7.1; 7.3; 7.5; 8.5; 9.3; 9.4; 9.9; 9.12; 10.2; 10.6; 10.8; 10.10</td>
</tr>
<tr>
<td>Volatile Organic Compounds (VOCs)</td>
<td>VOCs come from vehicle exhaust, paint thinners, solvents, and other petroleum-based products. A number of exhaust VOCs are also toxic, with the potential to cause cancer.</td>
<td>1.1; 1.4; 1.5; 2.8; 3.1; 3.2; 3.9; 4.5; 4.7; 6.2; 6.3; 6.4; 8.1; 8.5; 8.7; 9.2</td>
</tr>
<tr>
<td>Watersheds</td>
<td>Surface drainage area that contributes water to a lake, river, or other body of water.</td>
<td>9.3; 9.4; 9.5</td>
</tr>
</tbody>
</table>
Workshop I: Integrating Air Quality and Transportation Planning

1.1 Ozone Air Quality Standards: A Federal Update on Attainment and Nonattainment
Presenter: Tom Helms
Organization/RC/MPO: Environmental Protection Agency
Location: Research Triangle Park, NC
Population Size: Not Applicable
Topic: 8-hour NAAQS
Attainment Status: Not Applicable

1.2 Smart Growth and SIP: Opportunities and Challenges
Presenter: Diane Franks
Organization/RC/MPO: Maryland Department of Environment
Location: Baltimore, MD
Population Size: Not Applicable
Topic: Smart growth, SIP, state planning
Attainment Status: Not Applicable

1.3 Local Air Quality Planning Challenges: A Regional Planning Agency/MPO Perspective
Presenter: Lindy Bauer
Organization/RC/MPO: Maricopa Association of Governments
Location: Phoenix, Arizona
Population Size: 3,389,260
Topic: Conformity
Attainment Status: Nonattainment for Carbon Monoxide, Ozone, PM-10

1.4 Looking at Transportation Conformity Issues from the Federal Perspective
Presenter: Dan Wheeler
Organization/RC/MPO: Federal Highway Administration
Location: Washington, D.C.
Population Size: Not Applicable
Topic: Nationwide conformity
Attainment Status: Not Applicable

1.5 Transportation Conformity: A State Department of Transportation Perspective
Presenter: Paul J. Sylvia, Principal Air Quality Specialist
Organization/RC/MPO: Rhode Island Department of Transportation
1.6 Examining Potential Effects of Transportation Conformity Litigation on Regional Mobility
Presenter: Lilly Wells, Air Quality Program Coordinator
Organization/RC/MPO: Houston-Galveston Area Council
Location: Houston, Texas
Population Size: 4,854,454
Topic: Conformity Litigation
Attainment Status: Ozone Nonattainment

1.7 The Legal Ramifications of Litigation: An MPO Perspective
Presenter: Chick Krautler, Executive Director
Organization/RC/MPO: Atlanta Regional Commission
Location: Atlanta, Georgia
Population Size: 3,429,379
Topic: Litigation
Attainment Status: Ozone Nonattainment

1.8 Noted Gaps Between Air Quality and Transportation Planning: A COG Perspective
Presenter: Michael Morris, Transportation Director
Organization/RC/MPO: North Central Texas Council of Governments
Location: Arlington, Texas
Population Size: 5,387,277
Topic: NAAQS, transportation planning, land use, council of government
Attainment Status: Ozone Nonattainment (Moderate)

Workshop II: Smart Growth and Alternative Land Use

2.1 Integrating Growth Management into Transportation Plans
Presenter: Annette Liebe, Manager
Organization/RC/MPO: Metro
Location: Portland, Oregon
Population Size: 1,906,300
Topic: Smart growth, land use, transportation planning, regional government
Attainment Status: Attainment

2.2 Integrating Land Use with Transportation and Air Quality Planning: A State DOT Perspective
Presenter: Janet D’Iganazio
Organization/RC/MPO: North Carolina Department of Transportation
Location: Raleigh, North Carolina
2.3 Slow But Smart in Philadelphia: Air, Transportation, and Land Use Planning Strategies
Presenter: Barry Seymour
Organization/RC/MPO: Delaware Valley Regional Planning Commission
Location: Philadelphia, Pennsylvania
Population Size: 5,387,407
Topic: Smart growth/land use, transportation, air quality, two state framework
Attainment Status: Ozone Nonattainment (Moderate)

2.4 An MPO Overcomes Fragmented Land Use Strategies and Achieves A Regional Air Policy
Presenter: Don Willard
Organization/RC/MPO: Mecklinburg County Department of Environmental Protection
Location: Mecklinburg, North Carolina
Population Size: 716,407
Topic: Land use, regional air quality
Attainment Status: Maintenance

2.5 The Tools of Effective Planning: Air, Transportation, and Land Use Planning
Presenter: Dan Reuter
Organization/RC/MPO: Atlanta Regional Commission
Location: Atlanta, Georgia
Population Size: 3,429,379
Topic: Air Quality, Land Use, Transportation
Attainment Status: Ozone Nonattainment (Marginal)

2.6 Region 2020: Together Shaping Our Future, Setting the Framework for Smart Growth
Presenter: Mike McLaughlin
Organization/RC/MPO: San Diego Association of Governments
Location: San Diego, California
Population Size: 2,860,000
Topic: Long Range Smart Growth
Attainment Status: Maintenance

2.7 U.S. EPA’s Voluntary Guidance on Land Use and Air Quality: An Overview
Presenter: Allen Powell
Organization/RC/MPO: Environmental Protection Agency
Location: Region 4
2.8 Improving Air Quality through Land Use Activities: Transportation Conformity
Presenter: Gary Jensen, Office of Natural and Human Environment
Organization/RC/MPO: Federal Highway Administration
Location: Washington, DC
Population Size: Not Applicable
Topic: Land use, air quality, conformity
Attainment Status: Not Applicable

Workshop III: Conformity Case Studies

3.1 Conformity Case Study: Identifying the Problem and Developing Control Strategies in North Central Texas
Presenter: Chris Klaus, Transportation Planner
Organization/RC/MPO: North Central Texas Council of Governments
Location: Arlington, Texas
Population Size: 5,308,277
Topic: Conformity, air quality planning
Attainment Status: Ozone Nonattainment (Moderate)

3.2 Defining the Conformity Problem Leads to Clearly Established Goals and Effective Solutions
Presenter: Joan Rohlf
Organization/RC/MPO: Metropolitan Washington Council of Governments
Location: Washington, D.C.
Population Size: 4,211,964
Topic: conformity, air quality planning
Attainment Status: Ozone Nonattainment (Moderate)

3.3 Interagency Partnerships—Federal, State, and Local—Create A regional Consensus Around Conformity
Presenter: Jane Hayse, Division Chief, Transportation
Organization/RC/MPO: Atlanta Regional Commission
Location: Atlanta, Georgia
Population Size: 3,429,379
Topic: Interagency cooperation and coordination, conformity
Attainment Status: Ozone Nonattainment

3.4 Producing Results in the Conformity Review Process: A COG’s Partnership
Presenter: Chris Klaus
Organization/RC/MPO: North Central Texas Council of Governments
Location: Arlington, Texas
3.5 Conformity: The Benefits and Challenges of an Inspection and Maintenance Program
Presenter: David Heller
Organization/RC/MPO: North Jersey Transportation Planning Authority
Location: Newark, New Jersey
Population Size: 6,300,00
Topic: Conformity, inspection and maintenance
Attainment Status: Ozone Nonattainment (Moderate)

3.6 Building Links Between Air Quality and Land Use Planning: First Steps in the WILMAPCO Region
Presenter: Ted Matley, Executive Director
Organization/RC/MPO: Wilmington Area Planning Council
Location: Newark, Delaware
Population Size: 6,000,000
Topic: Air quality, land use
Attainment Status: Ozone Nonattainment (Moderate)

3.7 Smart Growth San Diego Style: Choices Connecting Transportation and Land Use
Presenter: Marney Cox
Organization/RC/MPO: San Diego Association of Governments
Location: San Diego, California
Population Size: 2,860,000
Topic: Transportation, land use
Attainment Status: Maintenance

3.8 SEMCOG: Overcoming Technical Limitations To Achieve Attainment Under the 8-Hour Ozone Standard
Presenter: Paul Tait, Executive Director
Organization/RC/MPO: Southeast Michigan Council of Governments
Location: Detroit, MI
Population Size: 4,907,319
Topic: Technical limitation of conformity
Attainment Status: Maintenance (Marginal)

3.9 Conformity Analysis: A Smaller Agency’s Experience In Overcoming the Lack of Data
Presenter: Saleem A. Salameh, P. E.
Organization/RC/MPO: KYOVA Planning Commission
Location: Huntington, WV
Population Size: 200,000
Workshop IV: Project Selection Criteria and Performance Measures

4.1 Congestion Mitigation and Air Quality Improvement Program: Findings from the TRB Special Report 264
Presenter: Dr. Michael Meyer
Organization/RC/MPO: Georgia Tech University
Location: Midtown Atlanta, Georgia
Population Size: Not Applicable
Topic: Performance Measures
Attainment Status: Not Applicable

4.2 Collaboration Improves Project Mix in the Transportation Improvement Plan
Presenter: Dan Rocha
Organization/RC/MPO: North Central Texas Council of Governments
Location: Arlington, TX
Population Size: 5,308,277
Topic: Collaboration between State DOT and Council of Governments
Attainment Status: Ozone Nonattainment (Moderate)

4.3 A Broad Mix of Innovative Projects Can Impact Air Quality
Presenter: Diane Nguyen, Senior Regional Planner
Organization/RC/MPO: San Joaquin Council of Governments
Location: Stockton, California
Population Size: 563,598
Topic: Innovative approach to air quality
Attainment Status: Ozone Nonattainment (Serious), PM-10 Nonattainment (Serious)

4.4 Transportation-Based Performance Measures are Integral to Program Evaluation
Presenter: Jim Wild
Organization/RC/MPO: East-West Gateway Council of Governments
Location: St. Louis, Missouri
Population Size: 2,480,000
Topic: Transportation, performance measurement evaluation
Attainment Status: Maintenance (Moderate)

4.5 Comprehensive, Planning: A Way to Encourage Commitment and Input in the TIP Project Selection Process
Presenter: Jane Hayse, Division Chief
Organization/RC/MPO: Atlanta Regional Commission
Location: Atlanta, Georgia
Population Size: 3,429,379
Topic: Comprehensive transportation planning
Attainment Status: Ozone Nonattainment (Moderate)
4.6 Incorporating Environmental Justice to Improve Air Quality and Transportation
Presenter: Daniel Gardner, Executive Director
Organization/RC/MPO: Northwestern Indiana Regional Planning Commission
Location: Portage, Indiana
Population Size: 741,468
Topic: Environmental justice, air quality
Attainment Status: Ozone Nonattainment (Moderate)

4.7 Looking Toward Committees to Effectively Rank, Evaluate, and Monitor Projects
Presenter: Patricia Berry
Organization/RC/MPO: Chicago Area Transportation Study
Location: Chicago, Illinois
Population Size: 9,650,000
Topic: Committee work, transportation
Attainment Status: Ozone nonattainment (Moderate)

Workshop V: Proposed 8-Hour Ozone Standards and Health Effects of PM-2.5

5.1 Revised Standards: A Discussion on Proposed Ozone and Particulate Matter NAAQS
Presenter: John Silvasi, Environmental Engineer
Organization/RC/MPO: Environmental Protection Agency, Office of Air Quality Planning and Standards
Location: Washington, D.C.
Population Size: Not Applicable
Topic: Revised standards, ozone, particulate matter
Attainment Status: Not Applicable

5.2 The Federal Perspective: TEA-21 and its Affects on Air Quality Planning
Presenter: Michael Savonis
Organization/RC/MPO: Federal Highway Administration, Administrator
Location: Washington, D.C.
Population Size: Not Applicable
Topic: Federal involvement, TEA-21, Air quality, CMAQ
Attainment Status: Not Applicable

5.3 A State’s Perspective on the New 8-Hour Ozone Standards
Presenter: Shelia Holman, Assistant Chief
Organization/RC/MPO: North Carolina Department of Environment and Natural Resources
Location: Raleigh, NC
Population Size: Not Applicable
Topic: State, air quality, conformity
Attainment Status: Not Applicable
5.4 The Importance of Data Inventory, Modeling, and Verification to Early Action Compacts (EAC)
Presenter: Viplav Putta, Assistant Manager
Organization/RC/MPO: Indian Nations Council of Governments
Location: Tulsa, Oklahoma
Population Size: 800,000
Topic: EAC, emissions inventory, modeling
Attainment Status: Ozone Nonattainment (Marginal)

5.5 Cooperation Creates Better Policies to Tackle Ozone Transport
Presenter: Sandeep Dey, Executive Director
Organization/RC/MPO: West Michigan Shoreline Regional Development Commission
Location: Muskegon, MI
Population Size: 300,000
Topic: Coalition of partners, air quality, ozone, transport
Attainment Status: Maintenance (Moderate)

5.6 An Overview of the Physical Health Affects Resulting from Particulate Matter
Presenter: George Thurston, Sc. D; Associate Professor of Environmental Medicine
Organization/RC/MPO: New York University School of Medicine
Location: New York, New York
Population Size: Not Applicable
Topic: Physiological health affects, particulate matter
Attainment Status: Not Applicable

Workshop VI: Data for Air Quality and Transportation Models

6.1 The Challenges of Modeling: The Results of a National Study on Modeling
Presenter: Dr. Thomas Walker
Organization/RC/MPO: Delaware Valley Regional Planning Commission
Location: Philadelphia, Pennsylvania
Population Size: 5,387,400
Topic: Modeling, air quality
Attainment Status: Ozone Nonattainment (Moderate)

6.2 Modeling Complexities Challenging the Small and Medium-Sized MPO’s
Presenter: Daniel Szekeres
Organization/RC/MPO: Michael Baker Jr., Inc.
Location: Philadelphia, PA
Population Size: Not Applicable
Topic: Modeling, small and medium MPO’s
Attainment Status: Not Applicable

6.3 An Overview of U.S. EPA’s Modeling Software, Mobile6
Presenter: Janet Kremer
Organization/RC/MPO: Environmental Protection Agency
6.4 Working Together: The Importance of Understanding Science and Policy
When Planning for Ozone
Presenter: Michael Koerber
Organization/RC/MPO: Lake Michigan Air Directors Consortium
Location: Des Plaines, Illinois
Population Size: Not Applicable
Topic: EPA, Memorandum of Agreement, Lake Michigan area, ozone
Attainment Status: Not Applicable

6.5 Early Planning Can Affect Ozone Actions
Presenter: Bill Davis
Organization/RC/MPO: Northeast Ohio Areawide Coordinating Agency
Location: Cleveland, Ohio
Population Size: 3,000,000
Topic: air quality planning, conformity, stakeholders, MPO
Attainment Status: Maintenance (Moderate)

6.6 Using Alternative Data Collection and Modeling Methods to Aid Conformity
Presenter: Chuck Imbrogno
Organization/RC/MPO: Southwestern Pennsylvania Commission
Location: Pittsburgh, Pennsylvania
Population Size: 2,656,000
Topic: Modeling, data collection, MPO, conformity planning
Attainment Status: Maintenance

6.7 Planning for Setbacks in Conformity Documentation Can Offset Resource Constraints
Presenter: Robert Dickinson
Organization/RC/MPO: South East Texas Regional Planning Commission
Location: Beaumont, TX
Population Size: 385,000
Topic: Conformity planning
Attainment Status: Ozone Nonattainment (Moderate)

6.8 The “Journey-Based” Travel Model Developed by NYMTC: An Overview
Presenter: Sangeeta Bhomick
Organization/RC/MPO: New York Metropolitan Transportation Council
Location: New York, New York
Population Size: 13,000,000
Topic: Travel demand model, MPO
Attainment Status: Ozone Nonattainment (Moderate)
Workshop VII: Using Outreach to Improve Air Quality

7.1 Public Outreach to Improve Air Quality: A SEACO Approach
Presenter: Catherine Zimmerman
Organization/RC/MPO: Broward County, Department of Planning and Environmental Protection, Air Quality Division
Location: Broward, Miami-Dade, and Palm Beach Counties
Population Size: Not Applicable
Topic: Outreach programs
Attainment Status: Not Applicable

7.2 Public Outreach to Improve Air Quality: A NIRPC Approach
Presenter: Reggie Korthals, Environmental Directory
Organization/RC/MPO: Northwestern Indiana Regional Planning
Location: Lake, Porter, and LaPorte Counties, Indiana
Population Size: 741,468
Topic: Public outreach
Attainment Status: Ozone Nonattainment (Moderate)

7.3 Public Outreach Program Improves Air Quality: A FAMPO Approach
Presenter: Mauriza Chapman
Organization/RC/MPO: Fayetteville Area MPO
Location: Cumberland County, North Carolina
Population Size: 276,000
Topic: Public outreach, EAC
Attainment Status: Ozone nonattainment (Moderate)

7.4 Quantitative Evaluation of Travel and Emissions Reductions
Presenter: Eric Schreffler, Transportation Consultant
Organization/RC/MPO: ESTC
Location: San Diego, CA
Population Size: Not Applicable
Topic: Data collection, air quality, California
Attainment Status: Not Applicable

7.5 Types of Evaluation Research and Their Uses for Measuring Program Performance
Presenter: Kathy Daniel
Organization/RC/MPO: FHQWA
Location: Washington, D.C.
Population Size: Not Applicable
Topic: outreach programs, evaluation, research
Attainment Status: Not Applicable

Workshop VIII: New National Ambient Air Quality Standards: Vital Information On Planning for Air Quality
8.1 Eight-Hour Ozone National Ambient Air Quality Standards: Implications for New and Existing Nonattainment Areas
Presenter: John Silvasi
Organization/RC/MPO: Environmental Protection Agency
Location: Research Triangle Park, North Carolina
Population Size: Not Applicable
Topic: NAAQS, ozone
Attainment Status: Not Applicable

8.2 Conformity Under NAAQS: Impacts on the Planning Process
Presenter: Rudy Kapichak, Gary Jensen
Organization/RC/MPO: Environmental Protection Agency
Location: Washington, DC
Population Size: Not Applicable
Topic: NAAQS, conformity
Attainment Status: Not Applicable

8.3 New NAAQS and its Affect on Apportionment of CMAQ Funding
Presenter: Jim Thorne
Organization/RC/MPO: FHWA
Location: Chicago, Illinois
Population Size: Not Applicable
Topic: New NAAQS, CMAQ funding
Attainment Status: Not Applicable

8.4 New Air Quality Standards: Atlanta’s Response
Presenter: Tracy Clymer
Organization/RC/MPO: Atlanta Regional Commission
Location: Atlanta, Georgia
Population Size: 3,429,379
Topic: New NAAQS
Attainment Status: Ozone Nonattainment (Moderate)

8.5 The Air Quality Planning Process
Presenter: Mike Rogers
Organization/RC/MPO: Illinois Environmental Protection Agency
Location: Springfield, Illinois
Population Size: Not Applicable
Topic: Development and implementation of SIP, MOBILE6.2
Attainment Status: Not Applicable

8.6 Regional Perspectives on Implementing New NAAQS
Presenter: Patricia Berry
Organization/RC/MPO: Chicago Area Transportation Study
Location: Chicago, Illinois
Population Size: 9,650,000
Topic: New NAAQS, planning
8.7 Central Texas Early Action Compact: Why we chose EAC
Presenter: Cathy Stephens
Organization/RC/MPO: Capital Area Metropolitan Planning Organization
Location: Austin, TX
Population Size: 1,160,000
Topic: EAC, planning
Attainment Status: Early Action Compact

8.8 Air Quality Planning Activities in the UNIFOUR Region of North Carolina Under the New NAAQS
Presenter: John Tippett
Organization/RC/MPO: Western Piedmont Council of Governments
Location: Hickory, North Carolina
Population Size: 318,489
Topic: New NAAQS, planning
Attainment Status: Early Action Compact

8.9 Case Studies on Preparation for New NAAQS
Presenter: Jonathan Makler
Organization/RC/MPO: IBI Group
Location: Boston, Massachusetts
Population Size: Not Applicable
Topic: NAAQS, conformity
Attainment Status: Not Applicable

Workshop IX: Environmental Impacts of Transportation Planning Land Use, Air and Water Quality

Presenter: John Swanson, Transportation Planner
Organization: Metropolitan Washington Council of Governments (COG)
Location: Washington, D.C.
Population size: 4,211,964
Topic: Scenario planning, growth, economy, transportation, air quality
Attainment Status: Ozone Nonattainment (Moderate)

9.2 Transportation Conformity and the 8-Hour Ozone Standard
Presenter: Joan Rohlfis, Chief Air Quality Planner
Organization/RC/MPO: Metropolitan Washington Council of Governments
Location: Washington, D.C.
Population size: 4,211,964
Topic: Scenario planning, growth, economy, transportation, air quality
Attainment Status: Ozone Nonattainment (Moderate)
9.3 Transportation and Water Quality: Causes, Effects & Solutions
Presenter: Ted Graham, Water Resources Program Director
Organization/RC/MPO: Metropolitan Washington Council of Governments
Location: Washington D.C.
Population size: 4,211,964
Topic: Water quality, transportation
Attainment Status: Ozone Nonattainment (Moderate)

9.4 Integrating Watershed Planning with Transportation Planning
Presenter: Robert Goo, Office of Wetlands, Oceans, and Watersheds, EPA
Organization/RC/MPO: Environmental Protection Agency
Location: Washington D.C.
Population size: Not Applicable
Topic: Water quality, air quality, smart growth, development, transportation
Attainment Status: Not Applicable

9.5 Bay Regional Atmospheric Chemistry Experiment
Presenter: Suzanne Cooper, AICP
Organization/RC/MPO: Tampa Bay Regional Planning Council (TBRPC)
Location: Tampa Bay, Florida
Population size: 2,855,154
Topic: Water quality, transportation, growth, air quality
Attainment Status: Not Applicable

9.6 Blueprint for the Future
Presenter: Tom Cosgrove, Mayor, City of Lincoln / SACOG Director
Organization/RC/MPO: Sacramento Area Council of Governments (SACOG)
Location: Sacramento, California
Population size: 1,936,000
Topic: Scenario planning, land use, growth, transportation
Attainment Status: Ozone Nonattainment

9.7 Implementing A Smart Growth Land Use Pattern to Manage Congestion: Results From the “Regional Growth: Choices For Our Future” Project
Presenter: Paul T. Hamilton, Chief Planner
Organization/RC/MPO: Tri-County Regional Planning Commission (TCRPC)
Location: Lansing, Michigan
Population size: 447,728
Topic: Scenario planning, comprehensive planning, land use, transportation
Attainment Status: Ozone Nonattainment

9.8 FHWA Scenario Planning Initiatives
Presenter: Sherry Ways, Office of Planning
Organization/RC/MPO: U.S. Department of Transportation, Federal Highway Administration (FHWA)
Location: Washington, D.C.
Population size: Not Applicable
Topic: Scenario planning, federal programs and grants
Attainment Status: Not Applicable
9.9 Maturing the Role of Transportation in Metropolitan Areas
Presenter: Michael Morris, Transportation Director
Organization/RC/MPO: North Central Texas Council of Governments (NCTCOG)
Location: Dallas-Fort Worth
Population size: 5,308,277
Topic: Comprehensive Planning, transportation, growth
Attainment Status: Ozone Nonattainment (Moderate)

9.10 Holistic Approach to Metropolitan Transportation Planning
Presenter: John Poorman, Staff Director
Organization/RC/MPO: Capital District Transportation Committee (CDTC)
Location: Albany, Saratoga Springs
Population size: 800,000
Topic: Comprehensive planning, transportation, growth
Attainment Status: Ozone Nonattainment

9.11 Iowa 44 Corridor Coordinated Land Use and Transportation Planning
Presenter: Tom Kane, Executive Director
Organization/RC/MPO: Des Moines Area MPO (DMAMPO)
Location: Des Moines, Iowa
Population size: 456,022
Topic: Growth and development, transportation planning
Attainment Status: Maintenance

9.12 Integrating Land Use and Transportation Planning to Address Air Quality Conformity
Presenter: Juanita Wieczoreck, Executive Director
Organization/RC/MPO: Dover/Kent MPO
Location: Dover/Kent, Delaware
Population size: 138,000 (air quality region)
Topic: Land use, transportation planning, air quality standards
Attainment Status: Nonattainment Ozone

Workshop X: Climate Change: A Transportation Planning Approach to Reducing Greenhouse Gases

10.1 Climate Change: Evidence, Causes, Uncertainties, and Role of Transportation
Presenter: Philip Duffy, Group Leader, Climate and Carbon Cycle Modeling, Atmospheric Science Division
Organization: Lawrence Livermore National Laboratories
Location: Livermore, California
Population Size: Not Applicable
Topic: Climate change, science
Attainment Status: Not Applicable

10.2 Transportation and Climate Change
Presenter: Dan Sperling, Director of ITS-Davis, Professor of Civil and Environmental Organization: UC-Davis
Location: Sacramento, California
10.3 U.S. DOT Center for Climate Change and Environmental Forecasting  
Presenter: Diane Turchetta, Environmental Protection Specialist  
Organization: U.S. Department of Transportation, Federal Highway Administration  
Location: Washington, D.C.  
Population Size: Not Applicable  
Topic: Climate change, transportation, research, federal government programs  
Attainment Status: Not Applicable

10.4 Reducing Greenhouse Gas Emissions from Transportation  
Presenter: Kathryn Zyla, Research Fellow  
Organization: Pew Center for Climate Change  
Location: Arlington, Virginia  
Population Size: Not Applicable  
Topic: Climate change, transportation, research  
Attainment Status: Not Applicable

10.5 Cities for Climate Protection: Regional Opportunities  
Presenter: Melissa Royael-Capria, Senior Project Officer  
Organization: International Council of Local Environmental Initiatives, Cities for Climate Protection  
Location: Oakland, California  
Population Size: Not Applicable  
Topic: Climate change, GHG emissions inventory, transportation  
Attainment Status: Not Applicable

10.6 Global Warming? No, It’s Just Good Planning!  
Organization: Metro  
Location: Portland, Oregon  
Presenter: Rex Burkholder, Metro Councilor, District 5  
Population Size: 2,100,000  
Topic: Climate change, growth, land use, transportation  
Attainment Status: Maintenance

10.7 Climate Change and the NY State Energy Plan  
Presenter: John Zamurs  
Organization: New York State Department of Transportation  
Location: Albany, New York  
Population Size: Not Applicable  
Topic: Climate change, MPO’s, GHG emissions inventories, transportation,  
Attainment Status: Not Applicable
10.8 California’s Regulations to Control Greenhouse Gas Emissions from Motor Vehicles
Presenter: Doug Thompson, Manager, Motor Vehicle Assessments Section
Organization: California Air Resources Board
Location: Sacramento, California
Population Size: Not Applicable
Topic: Climate change, air quality, transportation technology, transportation regulations
Attainment Status: Not Applicable

10.9 Sacramento’s Regional Actions to Reduce Greenhouse Gases
Organization: Sacramento Metropolitan Air Quality Management District
Location: Sacramento, California
Presenter: Larry Greene, Executive Director
Population Size: Not Applicable
Topic: Scenario planning, climate change, growth, land use, transportation, air quality
Attainment Status:

10.10 Bay Area Air Quality Management District Climate Protection Program
Presenter: Ina Shlez, Principal Environmental Planner
Organization: Bay Area Air Quality Management District
Location: San Francisco, California
Population Size: Not Applicable
Topic: Climate change program, health, air quality, transportation
Attainment Status: Not Applicable
Appendix

Organized by Population Size

Fayetteville Area MPO (NC)
121,015 (2000)
Early Action Compact (Sub Part 1)
7.3

Dover/Kent MPO (DE)
138,000 (2004)
Nonattainment for 1-hour ozone
9.12

Des Moines Area MPO (IA)
198,682 (2001)
Conformance
9.11

KYOV A Interstate Planning Commission (WV)
200,000 (2000)
Maintenance (Moderate)
3.9

West Michigan Shoreline Regional Development Commission
300,000 (2000)
Maintenance (Moderate)
5.5

Western Piedmont Council of Governments (NC)
318,489 (2000)
Early Action Compact
(Sub Part 1)
8.9

South East Texas Regional Planning Commission
385,000 (2000)
Ozone Nonattainment (Moderate)
6.7

Tri-Country Regional Planning Commission (MI)
447,728 (2000)
Nonattainment 8-hour ozone
9.7
San Joaquin Council of Governments
563,598 (2000)
Ozone Nonattainment (Serious); PM-10 Nonattainment (Serious)
4.3

Wilmington Area Planning Council
600,000 (2000)
Ozone Nonattainment (Moderate)
3.6

Baltimore Metropolitan Council
628,670 (2003)
Ozone Nonattainment (Moderate)
1.2

Mecklenburg County Department of Environmental Protection (NC)
716,407 (2001)
Maintenance (Sub Part 1)
2.4

Northwestern Indiana Regional Planning Commission
741,468 (2000)
Ozone Nonattainment (Moderate)
4.6; 7.2

Capital District Transportation Committee (NY)
794,293 (2000)
Ozone non-attainment
9.10

Indian Nations Council of Governments (OK)
800,000 (2000)
Ozone Nonattainment (Marginal)
5.4

Rhode Island Department of Transportation
1,076,164 (2003)
Ozone Nonattainment (Moderate)
1.5

Capital Area MPO (TX)
1,160,000 (2000)
Early Action Compact
8.7

Sacramento Area Council of Governments (CA)
1,936,006 (2000)
9.6, 10.9
Philadelphia, PA
1,517,550 (2000)/ (6,188,463 suburbs)
Ozone Nonattainment (Moderate)
6.2

Metro (Portland)
1,906,300 (2001)
Maintenance
2.1

East-West Gateway Council of Governments (MO)
2,480,000 (2004)
Maintenance (Moderate)
4.4

Southwestern Pennsylvania Commission
2,656,007 (2000)
Maintenance (Sub Part 1)
6.6

San Diego Association of Governments
2,860,000 (2000)
Maintenance (Sub Part 1)
2.6; 3.7

Northeast Ohio Areawide Coordinating Agency
3,000,000 (2000)
Maintenance (Moderate)
6.5

Maricopa Association of Governments (Phoenix)
Ozone Nonattainment (Sub Part 1); Carbon Monoxide Nonattainment (Serious); PM-10 Nonattainment (Serious)
1.3

Atlanta Regional Commission
3,429,379 (2000)
Ozone Nonattainment (Marginal)
1.7; 2.5; 3.3; 4.5; 8.4

Metropolitan Washington Council of Governments
4,211,964 (2000)
Ozone Nonattainment (Moderate)
3.2
Houston-Galveston Area Council
4,854, 454 (2000)
Ozone Nonattainment (Moderate)
1.6

Southeast Michigan Council of Governments
Maintenance (Marginal)
3.8

Broward County, Department of Planning and Environmental Protection (FL)
5,000,000 (2000)
Maintenance
7.1

North Central Texas Council of Government (Dallas)
5,308,277 (2000)
Ozone Nonattainment (Moderate)
1.8; 3.1; 3.4; 4.2

Delaware Valley Regional Planning Commission
Ozone Nonattainment (Moderate)
2.3

North Jersey Transportation Planning Authority
6,300,000 (2000)
Ozone Nonattainment (Moderate)
3.5

North Carolina Department of Transportation
2.2

North Carolina Department of Environment and Natural Resources
5.3

Chicago Area Transportation
8-9.65 million (2004 estimates for city and suburban area)
Ozone Nonattainment (Moderate)
4.7; 8.6

Illinois Environmental Protection Agency
12,653,544 (2003)
8.5
New York Metropolitan Transportation Council
13,000,000 (2000)
Ozone Nonattainment (Moderate)/ PM-10 Nonattainment (Moderate)
6.8

Lake Michigan Air Directors Consortium (IL)
45,200,000 (2000)
6.4