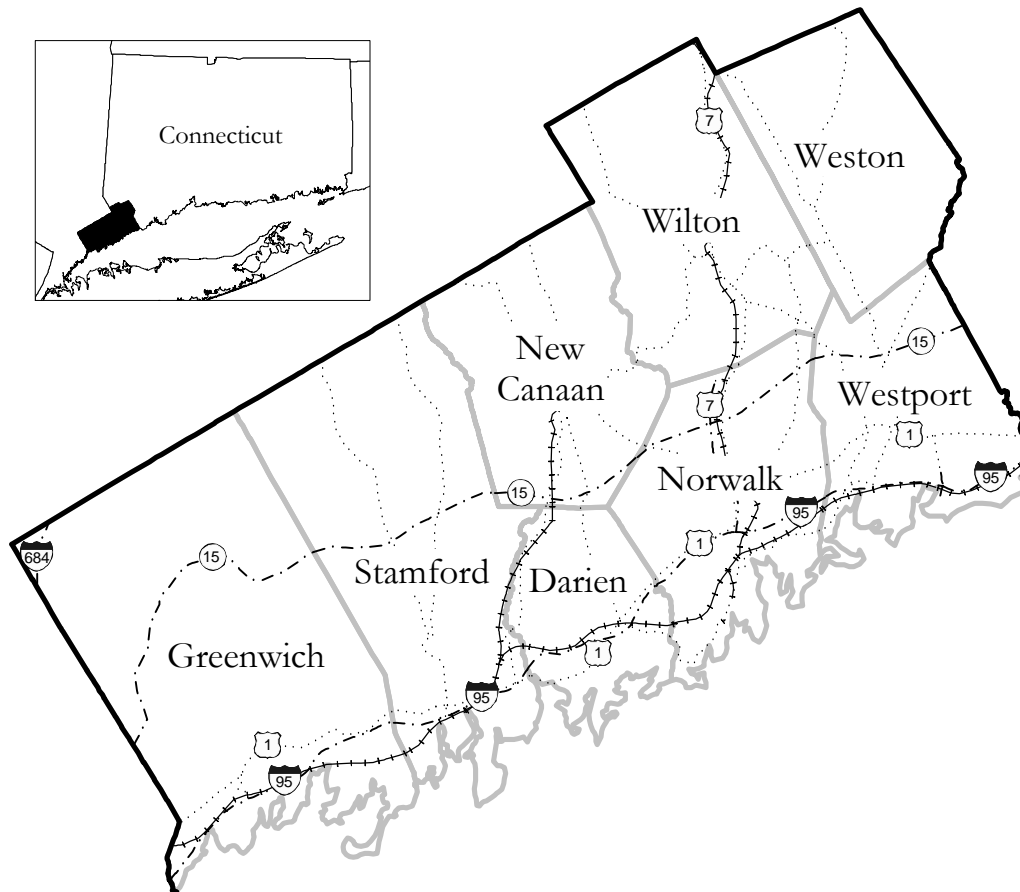


South Western Region Congestion Management System
Technical Memorandum
January 2004



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I. BACKGROUND

The metropolitan planning region covered by the South Western Region Metropolitan Planning Organization (SWRMPO) was designated as a Transportation Management Area (TMA) as a result of population growth measured by the 2000 Census. As a result, the SWRMPO is required to develop and implement a congestion management system (CMS) as part of its Long Range Transportation Plan.

The SWRMPO, through the South Western Regional Planning Agency (SWRPA), anticipated the future need to comply with federal CMS requirements. In 1999, SWRPA sought funding for a corridor-level congestion mitigation study through the Connecticut Department of Transportation (ConnDOT). In early 2001, ConnDOT entered into an agreement with SWRPA that provided federal CMAQ and state funds to conduct such a study. The study, called the Congestion Mitigation Systems “Vision 2020” Plan, commenced in May 2001 and was completed in February 2003. Study products include technical memoranda summarizing existing conditions and predicted future travel demand, preliminary analysis of possible “visions” for mitigating traffic congestion over time, and detailed market research reports that identify the types of options supported by commuters and shippers. A final report outlining a twenty-year plan for implementation of transportation improvements and the likely benefits of implementing such a plan also was prepared.

The *Vision 2020* planning process is the foundation for this technical memorandum.

II. CONGESTION MITIGATION SYSTEMS “VISION 2020” PLAN: DEVELOPMENT OF A FOUNDATION FOR IMPLEMENTATION OF A CONGESTION MANAGEMENT SYSTEM IN THE SOUTH WESTERN REGION

In May 2001, SWRPA commenced development of its Congestion Mitigation Systems “Vision 2020” Plan, hereinafter called *Vision 2020*. The primary objective of this planning effort was to develop a bold vision for transportation in the corridor that focused on the transport needs and travel patterns of the commuters and shippers that are, in fact, the “customers” of the region’s transportation system.

The purpose of this study was identify strategies that support safe, reliable, convenient and affordable travel options for the movement of persons and goods in and through southwestern Connecticut, with a focus on those travel options which have the greatest potential for reducing traffic congestion, improving environmental quality, promoting sustainable growth and offering long-term, flexible opportunities for increasing transportation system capacity.

A data CD containing a complete set of study products is contained in Appendix 1. Copies of the Tables of Contents for the technical memoranda and final report may be found in Appendices 1A through 1D.

Vision 2020 Coverage Area. The *Vision 2020* study focuses on the I-95 and Merritt Parkway corridors in southwestern Connecticut and includes all of Fairfield County and the New Haven County municipalities of Bethany, Branford, East Haven, Hamden, Meriden, Milford, New Haven, North Branford, North Haven, Orange, Wallingford, West Haven and Woodbridge.

Data Collection and Analysis. A summary of data collection and analysis activities is provided in the following chart:

Category	Data
Accident	SLOSS
	TASR
	Accidents, Injuries And Fatalities (1989-1998) - All Accidents
	Accident Rates (1989-1998) - All Accidents
	Time of Occurrence - All Accidents
	Route Class - All Accidents
	Environmental Conditions - All Accidents
	Town and County Of Occurrence - All Accidents
	Contributing Factors - All Accidents
	Type Of Collision - All Accidents
	Vehicle Type - All Accidents
	Driver Age - All Accidents
	Driver Sex - All Accidents
	Seat Belt Usage - All Accidents
	Holidays - All Accidents
	Accidents, Injuries And Fatalities (1989-1998) - Alcohol Involved Accidents
	Time of Occurrence - Alcohol Involved Accidents
	Driver Age - Alcohol Involved Accidents
	Driver Sex - Alcohol Involved Accidents
	Holidays - Alcohol Involved Accidents
	Accidents, Injuries and Fatalities (1989-1998) - Tractor-Trailer Involved Accidents
	Time of Occurrence - Tractor-Trailer Involved Accidents
	Route Class - Tractor-Trailer Involved Accidents
	Accidents, Injuries and Fatalities (1989-1998) - Pedestrian Involved Accidents
	Time of Occurrence - Pedestrian Involved Accidents
	Pedestrian Age - Pedestrian Involved Accidents
	Pedestrian Sex - Pedestrian Involved Accidents
	Accidents, Injuries and Fatalities (1989-1998) - Motorcycle Involved Accidents
	Time of Occurrence - Motorcycle Involved Accidents
	Motorcycle Driver Age - Motorcycle Involved Accidents
	Motorcycle Driver Sex - Motorcycle Involved Accidents
Helmet Usage - Motorcycle Involved Accidents	
Traffic Data	Historical Volume (I-95, Route 15, Route 1, Route 8, Route 34 and other major routes.
	Peak and Off-Peak Volumes
	Daily Traffic, I-95 and Route 15
	Ramp Analysis, I-95
	Ramp Volume, I-95
	Emissions (HOC/CO/NO _x), by vehicle type
	Travel time, by corridor
Traffic Data (cont'd)	Travel time, selected local routes
	Speed analysis
	Travel time/benefit calculations

Transportation Systems Inventory	Railroad facilities (MetroNorth, Amtrak)
	Bus routes (Bridgeport, Housatonic Valley, Milford, New Haven, Norwalk, Stamford/CT Transit, Westport)
	Roadways (Functional classifications)
	Port facilities (air and water)
System Performance	Baseline, 2000 and 2020
	With recommended improvements
Other	Population and Housing, 2000 Census
	Employers with >100 employees

Public Involvement. Opportunities for public participation were incorporated throughout the *Vision 2020* process and served several purposes:

1. To educate persons who live, work and do business in the study area about the causes of traffic congestion and potential strategies for congestion mitigation;
2. To engage persons who live, work and do business in the study in honest discussions about a variety of congestion mitigation strategies and their potential costs and benefits; and
3. To gauge the potential levels of public and political support for specific congestion mitigation strategies.

Data collected through public participation activities was used both to screen alternatives and improvements and to refine the strategies and improvements recommended in the final *Vision 2020* report.

A summary of public outreach and participation activities conducted during the *Vision 2020* process follows.

- Advisory Committee. An advisory committee including representatives of local, state and federal agencies, transportation providers, environmental organizations and the business community was the primary link between the study team and those constituencies that will likely emerge as providers or users of the transportation services comprising the vision. The advisory committee provided input on the direction of the study at regular intervals during the process. Advisory committee meetings were as follows:

June 26, 2001	SWRPA (Stamford)
November 16, 2001	Norwalk Transit District
January 11, 2002	The WorkPlace, Inc.
March 8, 2002	Norwalk Transit District
May 3, 2003	Norwalk Transit District
July 19, 2002	SWRPA
September 26, 2002	Norwalk City Hall

Summaries of these meetings including copies of project progress presentations are available for review on SWRPA’s website at www.swrpa.org.

Advisory committee members also were encouraged to review and comment on the draft technical memoranda which form the basis on the vision.

- Public Meetings. Other members of the general public also were provided with an opportunity to share their ideas for mitigating traffic congestion in the study area. Three general meetings were held during the initial phase of the study, one each in the South Western, Greater Bridgeport and South Central regions. An additional public meeting was held in the South Western Region upon release of preliminary evaluation results.

These public meetings occurred on the following schedule:

October 18, 2001	South Central Regional COG (North Haven)
November 1, 2001	Bridgeport City Hall
January 17, 2002	Darien Town Hall
September 26, 2002	Norwalk Town Hall

- Telephone Surveys. Two public opinion telephone surveys were conducted. Each survey was designed and fielded by the Center for Research and Public Policy. Each survey was answered by 1,000 randomly selected respondents. (A random digit sample technique used; unlisted and unpublished telephone numbers were available for sampling.) The demographic and geographic distribution of survey respondents reflected the demographic and geographic composition of the study area.

The first survey tested the following: perceptions of traffic congestion, roadway safety and the availability and accessibility of travel options; awareness of current transportation planning efforts; customer satisfaction with existing transportation infrastructure and services; and knowledge of general alternatives to travel by automobile. This survey was fielded in early October 2001.

The second survey tested the potential acceptance and success of specific congestion mitigation strategies. Specifically, respondents were asked what travel options they would support, what travel options they would use and how willing they were to pay for implementation of such improvements. Certain core questions fielded during the first survey were also asked again. This survey was fielded in September 2002.

- Focus Groups. Focus groups were conducted to test a variety of factors including public perception of traffic congestion, awareness of current transportation planning efforts, preference for various congestion mitigation strategies and willingness to pay for transportation improvements. A total of eight focus groups were held. Focus group participants included persons commuting by automobile and transit, business managers and human resources personnel, and shippers and receivers.

The focus groups were conducted in January 2002.

- Special Presentations. Information about the Vision 2020 process and objectives were given to several organizations at their request. These special presentations included opportunities for question and answer, and opportunities to provide comment of the congestion mitigation strategies under consideration.

Presentations were made to the following:

South Western Region Incident Management Team	April 9, 2002
East of Hudson Rail Operations Task Force	May 6, 2002
SACIA Leadership Fairfield County	May 17, 2002
Norwalk Traffic Summit	May 29, 2002
Transportation Strategy Board	March 11, 2003
Coastal Corridor Transportation Investment Area	March 18, 2003
Transportation Strategy Board	June 10, 2003

Informal project progress reports and updates were also provided periodically to the Transportation Strategy Board, the Coastal Corridor Transportation Investment Area and the Coastal Corridor Coalition.

- **Media.** SWRPA distributed periodic press releases to area print, radio and television media as a means of communicating information about the study to persons who live and work in the study area. Media coverage was provided by the following: Greenwich Time, Stamford Advocate, The Hour (Norwalk), Connecticut Post (Bridgeport), New Haven Register, Hartford Courant, Darien News, Norwalk Citizen-News, Westport News, New Canaan Advertiser, Wilton Bulletin, News 12 Connecticut, WICC/WEBE radio (Bridgeport), WEZN radio (Milford), WGCH radio (Greenwich), WSTC/WNLK radio (Stamford/Norwalk) WELI/WKCI radio (New Haven) and WABC radio (New York).

Press releases and custom articles were also provided to targeted organizations such as area Chambers of Commerce, ridesharing organizations and professional associations for publication in their organizations' newsletters.

Additionally, stakeholders and other interested parties will have an opportunity to comment on the South Western Region's transportation needs and priorities during the Long Range Transportation Plan (LRTP) update process.

Recommendations. The *Vision 2020* report concluded that there is no single solution for mitigating congestion in southwestern Connecticut. The report states that transportation and land use strategies must be coordinated to form a comprehensive transportation system with immediate, mid-term and long-term planned actions. These actions include improving the efficiency, operation and safety of existing transportation systems, better managing the demand for travel, and increasing the supply of transport services.

Selected recommendations set forth in the *Vision 2020* plan are as follows:

1. Immediate Actions (0-2 years)

Public Education

- Inform the public and decision makers of the benefits and costs of transportation strategies.
- Emphasize the importance of the transportation and land use connection.
- Engage various media outlets to keep awareness of transportation issues on the forefront.

Land Use Review

- Local land use boards should begin to review master plans and plans of conservation and development to identify how transportation is supported by local zoning regulations.

- SWRPA should conduct a detailed land use study to evaluate potential for additional transportation corridor and transit-oriented development in the study area.

Expand Travel Demand Management Programs

- Expand Travel Demand Management (TDM) programs to help reduce the number of peak-period single occupant automobile trips in the study area. TDM strategies that focus on providing incentives to modify travel behavior are preferred to those that penalize. Examples of programs that can have an impact on peak period trips are as follows: telecommuting; flexible work weeks; staggered work hours; organized vanpools; and voluntary distance-based pricing.
- SWRPA – in partnership with ConnDOT and transportation management organizations – should study the performance of existing TDM programs to assess the effectiveness of current outreach and marketing strategies, develop creative strategies for altering traveler behavior, calculate the total cost of removing single-occupant vehicles from roadways during peak periods and identify methods that may be implemented to more closely track TDM program participation and monitor program performance.

2. Short-Term Actions (2-7 years)

Transit Operational Improvements

- Expand parking at Metro North rail stations. Significant expansion should be targeted at the following locations: South Norwalk; Noroton Heights; Stamford; and Greenwich.
- Intelligent Transportation Systems (ITS) should be used to improve the efficiency and operation of existing bus service in the corridor.
- Weigh-In-Motion technology should be evaluated for use at the Greenwich weigh station.
- SWRPA should engage Metro North and ConnDOT in discussions about intrastate rail pricing and seek opportunities to implement pilot programs to test market response to reduced intrastate fares.
- Implement a universal commuter pass, such as a SmartCard.
- Establish intermodal hubs with strong bicycle and pedestrian connectivity.

I-95 Operational Improvements

- Seek funding for a detailed operational study of I-95 between Stamford and Norwalk.

Traffic Systems Management (TSM)

- Improve the safety and operation of major arterial roads, such as Route 1, to reduce congestion and decrease accidents. Techniques may include: signal timing and coordination; access management; and operational improvements – i.e. turn lanes, shoulders, geometric modification.

Truck Parking at Rest Area

- Assist ConnDOT with efforts to expand existing rest areas while minimizing impacts to communities. Opportunities for new rest areas should be explored.

Changes to Zoning Regulations

- Work with municipalities to structure zoning regulations to embrace transit friendly development, walkable communities, increased density and mixing of land uses, reduced parking requirements, and access management along transportation corridors and in town centers.

3. Long-Term Actions (7-20 years)

Transit Capacity Expansion

- Improving intrastate commuter rail service.
- Explore opportunities for establishing Bus Rapid Transit (BRT) service along Route 1 and inland transportation corridors that feed into Route 1.
- Evaluate expansion of commuter rail service or BRT services in the Route 7 corridor.

I-95 Capacity Expansion

- Explore possibility of expanding I-95 to include two variably priced managed lanes.

4. External Connections

Interstate Rail

- Service improvements including fleet configuration, infrastructure upgrades and service upgrades should be coordinated with intrastate service improvements so that optimum system performance can be achieved.

Freight

- Further examine need for another lower Hudson River crossing to access New York City and Connecticut.
- Conduct a rail capacity study similar to the Mid-Atlantic Rail Study to determine the actual track capacity due to passenger and freight rail services and schedules.
- Conduct a market analysis of the viability of Feeder Barge Service from intermodal ports in New Jersey to a deep water port in Connecticut.

Ferry

- Monitor the results of the Long Island Sound Waterborne Transportation Plan and other studies of potential interstate passenger ferry services, particularly those focusing on improved connections between southwestern Connecticut and Long Island, Lower Manhattan and Laganardia Airport.

Airport Connections

- Examine opportunities for improving transit connections between southwestern Connecticut and regional airports.

Route 7

- Plans to widen Route 7 to a four-lane arterial with full roadside access from Wilton to Danbury should be supported. Plans should incorporate ITS, where appropriate, to further improve the safety and operation of the roadway and to support use of priority signal treatments for transit.

Interstate 84

- Plans to widen I-84 from Danbury to Southington should be supported.

Merritt Parkway

- Evaluate this roadway and its interchanges for safety and operational deficiencies. Such evaluation should include a study of opportunities for improved emergency access and response and use of ITS to further improve the safety and operations of the roadway.

Evaluation of Recommended Improvements. The impact of implementing the package of improvements was evaluated as part of the *Vision 2020* planning effort. This evaluation focused on five basic metrics: travel time, vehicle miles traveled, mode shift, accessibility and safety. Summary tables illustrating the performance of recommended improvements in comparison to the base are provided in Appendix 1.

III. SCOPE, APPLICABILITY AND PURPOSE

Purpose. This technical memorandum was developed to identify both the steps taken in the South Western Region to support development and implementation of the region’s first CMS and future actions planned to address federal requirements related to on-going monitoring and evaluation.

The *Vision 2020* planning process is the foundation for this technical memorandum. More specifically, the *Vision 2020* process yielded the baseline data, screened strategies and post-implementation data used to plan future actions to mitigate and/or manage congestion in the South Western Region.

Area of Application. The CMS will focus primarily on the eight (8) municipalities in the South Western Region. The Region’s connections with the transportation networks and economies of adjacent regions will also be considered to the extent that they impact travel demand and trip patterns.

A detailed profile of the South Western Region may be found in Appendix 2.

Regulatory Requirements. The following table of authorities outlines the applicability of federal CMS requirements:

Authority	Summary
23 CFR § 450.316	The metropolitan planning process requires Transportation Management Areas (TMAs) to develop a CMS that meets the requirements of 23 CFR § 450.320.
23 CFR § 450.320	A CMS should provide for “effective management of new and existing transportation facilities through the use of travel demand reduction and operational management strategies...” TMAs in a designated CO/O ₃ non-attainment area may not use Federal funds for “any project that will result in a significant increase in carrying capacity for single occupant vehicles unless the project results from a CMS meeting the requirements of 23 CFR §500.
23 CFR §500 et seq.	Federal requirements governing the development, implementation and management of transportation facilities and systems are contained in this section. Requirements specific to the development and implementation of a CMS are stated in 23 CFR §500.109.
23 CFR §500.109	Congestion is defined as “the level at which transportation system performance is no longer acceptable due to traffic interference.” “An effective CMS is a systematic process for managing congestion

	<p>that provides information on transportation system performance and on alternative strategies for alleviating congestion and enhancing the mobility of persons and goods to levels that meet State and local needs...consideration needs to be given to strategies that reduce SOV travel and improve existing transportation system efficiency.”</p> <p>Required elements are as follows:</p> <ol style="list-style-type: none">1. Identify methods to monitor and evaluate the performance of the multi-modal transportation system.2. Define parameters for measuring the extent of congestion and for evaluating the effectiveness of congestion reduction strategies.3. Establish a program for data collection and system performance monitoring4. Identify and evaluate anticipated performance and expected benefits of appropriate congestion reduction strategies.5. Develop an implementation schedule -- including possible sources of funding -- for recommended congestion reduction strategies.6. Implement a process for periodic assessment and the efficiency and effectiveness of implemented strategies.
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A complete set of the CMS regulations is contained in Appendix 3.

It should be noted that these requirements may change upon passage of the transportation reauthorization legislation pending in Congress. SWRPA is tracking the status of this legislation and will modify this CMS as needed to meeting any new or modified requirements.

Relationship to Long Range Transportation Plan. The CMS will be incorporated into the South Western Region’s Long Range Transportation Plan (LRTP) by reference and will be appended to the LRTP. The SWRMPO will be encouraged to use the CMS as a framework for establishing the local and regional transportation policies and priorities that comprise the LRTP.

Relationship to Transportation Improvement Plan. Projects included in the Transportation Improvement Plan (TIP) are consistent with both the region’s LRTP and the State of Connecticut’s LRTP. As with the development of the LRTP, the SWRMPO will be encouraged to review the CMS to identify – as priorities for funding – those projects identified in the LRTP that address the goals of the CMS.

Anticipated Challenges. The SWRMPO anticipates two challenges. The first challenge concerns the availability of sufficient financial and human resources to undertake additional data collection, data management and analysis functions. The SWRMPO relies on the Connecticut Department of Transportation (ConnDOT) to collect and analyze much of the data that must serve as the backbone to a meaningful CMS. SWRPA will begin meeting with ConnDOT immediately upon adoption of this CMS to identify data collection needs and to develop a coordinated plan for data collection and analysis.

The second challenge involves the need to coordinate a single, urbanized area-wide CMS for the Bridgeport-Stamford Urbanized Area (BRSTUA) in order to fully comply with the intent of the federal CMS regulations. The geographic area covered by the BRSTUA includes six planning

regions and five MPOs within the State of Connecticut, as well as portion of several municipalities under the jurisdiction of the State of New York. SWRPA will seek to build support for the development of an urbanized area-wide CMS among MPOs within the BRSTUA.

IV. PLANNED FUTURE ACTIONS

SWRPA will begin implementation of its CMS in early 2004 as required by federal transportation planning program regulations. This section provides an outline of those activities that will be undertaken by SWRPA during the first 18 months of the CMS implementation period. For ease of review, these activities are organized by category: planning and coordination; data collection and analysis; development of performance measures; evaluation of systems performance; and reporting.

Planning and Coordination. The chart below outlines the planning activities in which SWRPA will be involved – either as a lead agency or as a participant – during the first phase of CMS implementation. Activities include efforts to improve passenger and freight transport services, to enhance coordination between SWRPA and its partners in adjacent planning regions, and to better link land use and transportation planning efforts within the South Western Region.

Activity	Level of SWRPA Involvement	Time Frame	Projected Outcome
Formation of a CMS committee.	Lead agency	Current activity.	Assist in the development of a full CMS. Assist SWRPA staff and the SWRMPO with monitoring and reporting activities.
Update of SWR Long Range Transportation Plan	Lead agency	Current activity. Anticipated date of completion: June 30, 2004.	Updated plan including incorporation of selected recommendations from SWRPA's <i>Vision 2020</i> study and this CMS.
Update of SWR Plan of Conservation and Development	Lead agency	Current activity.	Updated plan including recommendations for improved coordination of land use and transportation planning.
Data Collection	Lead agency	On-going	Collect, organize and analyze data critical to the development and monitoring of a CMS. Data collection activities will be conducted in partnership with ConnDOT.
Darien/Norwalk Railroad Parking Study	Lead agency	Current activity. Anticipated date of completion: May 5, 2004.	Recommendation for location and concept design of additional rail station parking in Darien and Norwalk.
ITS Systems Plan	Lead agency	Anticipated start: March 1, 2004.	Regional ITS systems plan including recommendations to enhance accessibility/use of transit and improve coordination and performance of critical transportation networks in the region.
PANY-NJ East of Hudson Rail Infrastructure Needs Assessment	Participant, project advisory committee	Current activity	Develop recommendations/build support for infrastructure improvements to enhance cross-Hudson freight mobility.
Cross-Harbor Tunnel EIS	Participant, project advisory	Current activity	Recommended scenario for improved lower Hudson River freight crossing.

	committee		
PANY-NJ Smart Card Project	Participant, project advisory committee	Current activity	Development of operational specifications for regional smart card program.
NYMTC Long Island Sound Waterborne Transportation Plan	Participant, project advisory committee	Current activity. Anticipated completion date: May 1, 2004.	Plan for landside access and routes for movement of persons and goods across Long Island Sound.
East of Hudson Rail Operations Task Force	Participant in bimonthly dialogue	On-going	Develop recommendations/build support for infrastructure improvements to enhance cross-Hudson freight mobility.
SWR Incident Management Task Force	Lead agency	On-going	Continued coordination and improved management of highway incidents.
Bridgeport-Stamford Urbanized Area Planning and Coordination	Co-lead agency	On-going	Build consensus regarding major transportation projects in the Bridgeport-Stamford Urbanized Area.
I-95 Corridor Study (Operational Improvements)	Participant	TBD	To develop a plan for improving the operational efficiency and safety of I-95.

In addition to those activities listed in the chart above, SWRPA will actively advocate for the development of an urbanized area-wide CMS. Through the Bridgeport-Stamford Urbanized Area Planning and Coordination, SWRPA will educate its peer agencies about the benefits of an urbanized area-wide CMS and seek consensus on the development of such a CMS during the next LRTP update cycle. SWRPA will invite ConnDOT and the FHWA to be partners in this process.

Data Collection and Analysis. The purpose of data collection and analysis activities is two-fold: (1) to identify baseline conditions and characteristics and (2) to review, reorganize and update data collected as part of the *Vision 2020* planning process.

To date, SWRPA has obtained the following data sets: (1) data collected and analyzed as part of the *Vision 2020* planning process; (2) Census, 2000; and (3) the Department of Transportation’s 2003 CMS Data Book. Initially, this data will be separated into two categories: transportation networks, and geography and population.

Transportation Networks. This data set contains information about elements of the region’s transportation system. Information about infrastructure and services will be included. This data set will be ordered as follows:

- A. Transportation Networks (infrastructure)
 1. Roadway
 - a. Functional classification
 - b. Level of Service (LOS)
 - c. Average Daily Traffic (ADT)
 - d. Vehicle Miles Traveled (VMT)
 - e. Volume to Capacity Ratio (V/C)
 - f. Accident data (e.g. SLOSS, TASR)
 - g. Peak hour traffic counts

2. Parking Facilities
 - a. Park and Ride
 - b. Station-based
 3. Rail infrastructure
 - a. Track
 - b. Stations
 - c. Other facilities
 4. Water infrastructure
 - a. Schedules for dredging
 - b. Scheduled harbor maintenance
 5. TDM
 6. Communications
- B. Transport Modes (routes, facilities, ridership data)
1. Single Occupant Vehicles (SOV)
 2. Shared Ride
 3. Rail
 4. Bus
 5. Paratransit
 6. Bicycle
 7. Pedestrian
 8. Water

Geography and Population.¹ To maximize understanding of the relationships between land use and transportation policies, population trends and travel behavior, additional land use and economic indicators and demographic data also will be collected. This data be catalogued as follows:

- A. Regional and municipal boundaries
 1. Land use characteristics
 - a. Use classifications
 - b. Use densities
 - c. Parking
 - o requirements
 - o gross number
 - o density
 - o fee v. free
 2. Population data
 - a. gross population
 - b. population density

¹ Region, municipalities and critical corridors.

- c. age
 - d. household income
 - e. per capita income
 - f. cars/household
 - g. households without vehicles
3. Housing data
- a. gross housing units
 - b. housing unit density
 - c. location of affordable/special needs housing
4. Employment data
- a. Number employed
 - b. Number unemployed
 - c. Major employment locations (>50, 100, 500)
 - d. Employment density (jobs/acre or similar)
 - e. Journey to work
 - o origin-destination
 - o modal split
 - o vehicle registration

It is anticipated that these initial data collection and analysis activities will be completed by December 31, 2004.

Development of Performance Measures. The development of performance measures is a two step process. First, congestion must be defined. Then, an acceptable level of transportation system performance must be identified.

The *Vision 2020* study identified acceptable system performance as Level of Service (LOS) “C” or better. This study also identified five metrics that provide a basis for measuring transportation system performance. Those metrics are travel time, vehicle miles traveled, mode shift, accessibility and safety. Over the next 18 months, SWRPA will review those assessments and the underlying data to determine whether those definitions will be incorporated into the CMS as proposed in the *Vision 2020* study or modified.

The following framework will be used to guide this process:

- Defining congestion.
 - o Focus on peak period only, or also consider off-peak times?
 - o Identify the start/end times for peak periods.
 - o Use performance measures as basis.
 - o Consider the technical and policy perspectives.
 - o Should corridor and “hot spot” congestion be defined differently?
 - o Analyze patterns of incidents.
 - o Develop method for analyzing recurring v. non-recurring congestion.
- Establishing performance measures.
 - o Acceptable V/C ratio (corridor, “hot spot”)?
 - o Acceptable LOS (corridor, “hot spot”)?
 - o Acceptable accident rates (e.g. targeted reduction over current)?

- Acceptable hours of congestion (e.g. targeted reduction over current)?
- Percentage increase in travel speed desired?

Strategy Evaluation. Through its *Vision 2020* study, SWRPA has identified a collection of strategies that will help mitigate the growth of traffic congestion in the South Western Region. These strategies have already been screened, evaluated as a package and will be incorporated into the region's LRTP in early 2004.

Future evaluation will be conducted using the process developed for the *Vision 2020* study. First, possible improvements will be identified as a systems management, a demand management or a capacity enhancing improvement. The placement of individual improvements along this continuum will assist in the initial assignment of priorities. Improvements then will be reviewed on the basis of professional judgment to determine their potential to achieve:

1. Reduction in person trips during peak periods
2. Reduction in VMT during peak periods
3. Measured shift from SOV to other modes
4. Measured shift from SOV to HOV
5. Measured improvement in systems/operational efficiency, e.g. on-time performance etc.
6. Desired capacity increases

SWRPA will also seek to identify quantitative methods for evaluating strategies and improvements that survive the initial screening and assessment process. Such quantitative methods will be designed once performance measurements have been developed. Thus, no such activities are planned during this initial phase of CMS implementation.

Progress Reports and Updates to CMS. The purpose of progress reports and updates is to assess the impact of transportation improvements – both infrastructure and services – over time. During this first phase of CMS implementation, an interim progress report will be developed for the period January 1, 2004, through June 30, 2004. Progress reports then will be made annually and the reporting period will be the same as the period covered by the Unified Planning Work Program and MPO Certification period.

Updates to the CMS will be prepared to coincide with updates to the LRTP or as needed.

V. SUPPLEMENT FOR CO/O₃ NON-ATTAINMENT AREAS

The federal CMS regulations require the CO/O₃ Non-Attainment Areas develop and implement a process for analyzing the travel demand impacts of any proposed project that seeks to increase single-occupant vehicle capacity at the corridor or regional level.

SWRPA will work with ConnDOT to develop such a process. It is anticipated that such a process will be ready for implementation by June 30, 2005. SWRPA will report on the status of these efforts in the interim progress report covering the period January 1, 2004, through June 30, 2004.

At this time, none of the proposed projects listed in the TIP or the LRTP will increase single-occupant vehicle capacity at the corridor or regional level. Thus, delivery of this supplement on June 30, 2005, will not compromise compliance with federal CMS regulations.

APPENDIX 1A

“Existing Conditions Technical Memorandum,” Congestion Mitigation Systems Plan “Vision 2020,” prepared for the South Western Regional Planning Agency by Wilbur Smith Associates, January 25, 2002.

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APPENDIX 1B

“Development of Alternatives Report,” Congestion Mitigation Systems Plan “Vision 2020”, prepared for the South Western Regional Planning Agency by Wilbur Smith Associates, September 2002.

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APPENDIX 1C

“Initial Vision Evaluation Report,” Congestion Mitigation Systems Plan “Vision 2020”, prepared for the South Western Regional Planning Agency by Wilbur Smith Associates, November 2002.

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APPENDIX 1D

“Final Report,” Congestion Mitigation Systems Plan “Vision 2020”, prepared for the South Western Regional Planning Agency by Wilbur Smith Associates, February 2003.

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APPENDIX 2 – EVALUATION MATRICES

Vision Performance as Compared to Year 2020 Base

Performance Measure	Home Based Work Trips					ADT Trips		TOTAL
	<u>Drive Alone</u>	<u>Carpool</u>	<u>BRT</u>	<u>Local Bus</u>	<u>Rail</u>	<u>External Auto</u>	<u>Total Trucks</u>	
Vehicle Miles Traveled per Year	-53,358,215	-7,504,735	N/A	N/A	N/A	-1,400,000	900,000	-61,362,950
Person Trips per Year	-3,338,250	-813,500	2,133,500	79,500	1,444,250	-400,000	0	-894,500
Total Travel Time (Vehicle Hours per Year)	-2,470,002	-290,909	N/A	N/A	N/A	-2,176,991	-470,000	-5,407,902
Total Travel Time (Person Hours per Year)	-2,470,002	-640,000	-60,000	-346,667	-60,000	-2,460,000	-470,000	-6,506,669
Tons of Emissions per Year								
HC	-70	-9	Neg.	Neg.	N/A	-32	-20	-130
CO	-1,951	-226	Neg.	Neg.	N/A	-1,174	-110	-3,461
NOx	-37	-5	Neg.	Neg.	N/A	12	4	-26
PM10	-2	0	Neg.	Neg.	N/A	0	0	-1
Energy Consumption (1000 BTU/yr)	247,000,000	-38,000,000	0		0	67,500,000	130,000,000	482,500,000
CO2 Emissions (Tons per Year)	-19,000	-2,280	Neg.	Neg.	N/A	-5,504	-10,400	-37,184
Accidents per Year								
Fatalities	-2	0	Neg.	Neg.	N/A	0	0	-3
Injuries	-378	-16	Neg.	Neg.	N/A	-90	-12	-496
Property-Damage-Only	-203	-16	Neg.	Neg.	N/A	-3	2	-221
Gallons of Fuel (Gallons per Year)	-2,275,111	-238,450	0		0	-552,096	-958,200	-4,023,857

Source: Wilbur Smith Associates based on output from STEAM model

Vision Benefits

	<u>Drive Alone</u>	<u>Carpool</u>	<u>BRT</u>	<u>Local Bus</u>	<u>Rail</u>	<u>External</u>	<u>Trucks</u>	<u>TOTAL</u>
User Benefits				Benefits (1000\$/yr)				
In-Vehicle Travel Time	57,912	8,378	5,649	953	1,871	4,320	20,269	99,352
Out-of-Vehicle Travel Time	0	0	3,481	2,860	5,030	0	0	11,371
Fuel Costs	1,315	3	0	0	0	828	1,102	3,248
Non-Fuel Operating Costs	-161	-16	0	0	0	-123	323	23
Out-of-Pocket Costs	0	0	-181	0	354	0	0	173
Internal Accident Cost	<u>10,070</u>	<u>1,359</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>5,156</u>	<u>731</u>	<u>17,315</u>
Subtotal	69,135	9,724	8,948	3,813	7,256	10,182	22,424	131,482
Revenue Transfers	-385	-47	570	243	95	-661	-408	-595
Reduction in External Costs								
Emissions	7,866	916	Neg.	Neg.	N/A	4,578	446	13,806
Global Warming	68	8	Neg.	Neg.	N/A	19	37	132
Noise	39	5	Neg.	Neg.	N/A	0	107	151
Accident	1,595	195	Neg.	Neg.	N/A	0	0	1,790
Other Mileage Based	<u>1,932</u>	<u>267</u>	<u>Neg.</u>	<u>Neg.</u>	<u>N/A</u>	<u>0</u>	<u>0</u>	<u>2,199</u>
Subtotal	11,499	1,392	0	0	0	4,597	590	18,078
Total Benefits	80,249	11,069	9,517	4,056	7,350	14,117	22,605	148,965

Source: Wilbur Smith Associates based on output from STEAM model

APPENDIX 3

THE SOUTH WESTERN REGION PROFILE

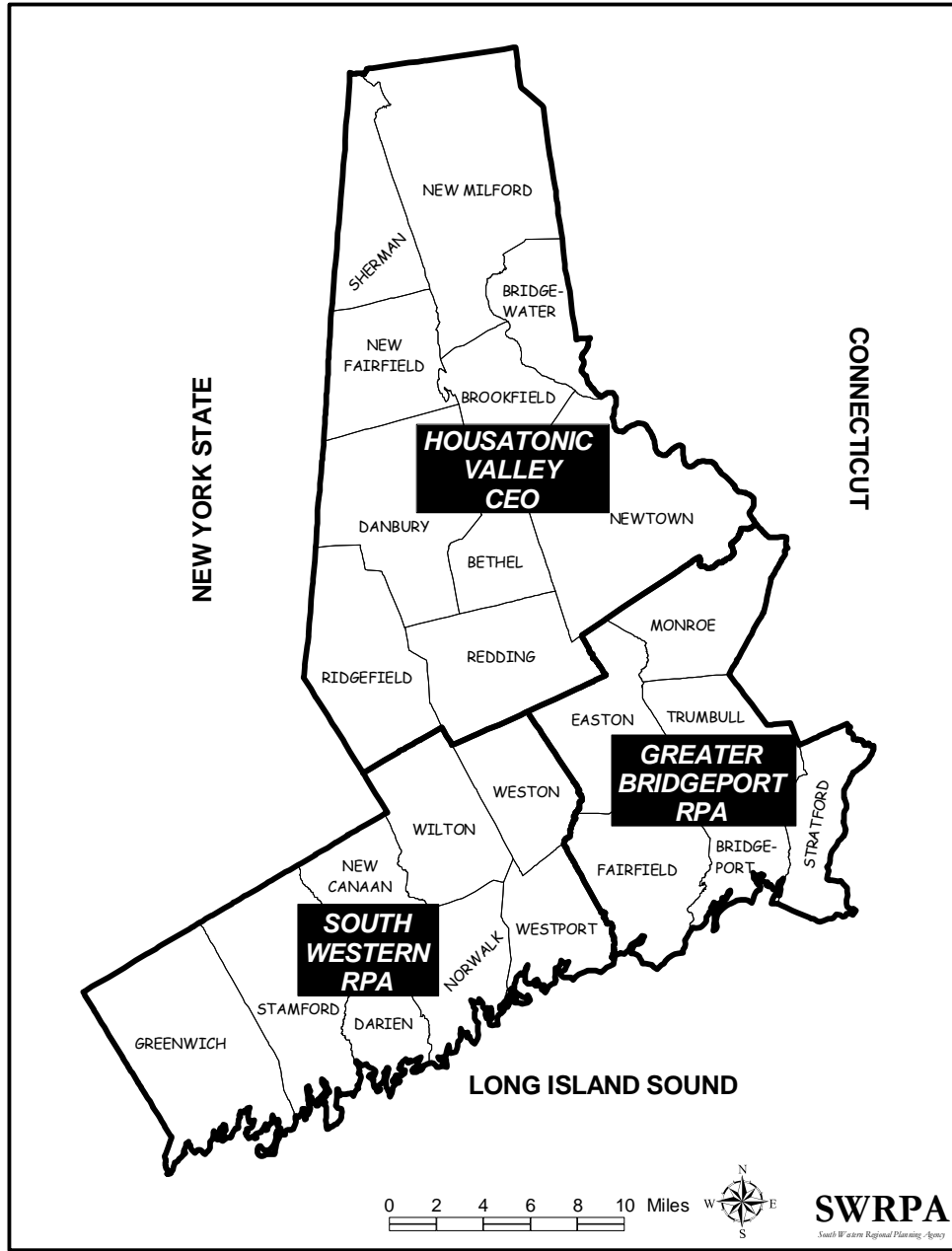


Figure 1 South Western Region Location

The South Western Region is comprised of eight municipalities: Darien, Greenwich, New Canaan, Norwalk, Stamford, Weston, Westport, and Wilton. The South Western Planning Region is bordered by New York State on the west and northwest, the Greater Bridgeport Planning Region on the east, the Housatonic Valley Planning Region on the north, and Long Island Sound on the south.

REGIONAL CHARACTERISTICS

The social-economic characteristics of the South Western Region and the travel patterns of those who live and work in the Region impact the capacity and needs of the Region's transportation network as we enter the 21st Century.

The Region's population remained very stable between 1980 and 1990 growing to 329,935 persons. The U.S. Census Bureau has issued the Census 2000 Redistricting Data Summary File, which has revealed some interesting, results in terms of population growth for the region. The region's population grew by 7.2% over the 1990 population bringing the regions total population to 353,556. All of the communities in the region experienced substantial population growth. (See *Table 1*).

Table 1. Historical Population by Municipality, 1940 – 2000

	1940	1950	1960	1970	1980	1990	2000	1940 - 1950	1950 - 1960	1960 - 1970	1970 - 1980	1980 - 1990	1990 - 2000
Darien	9,222	11,767	18,437	20,336	18,892	18,196	19,607	27.6%	56.7%	10.3%	-7.1%	-3.7%	7.8%
Greenwich	35,509	40,835	53,793	59,755	59,578	58,441	61,101	15.0%	31.7%	11.1%	-0.3%	-1.9%	4.6%
New Canaan	6,221	8,001	13,466	17,451	17,931	17,864	19,395	28.6%	68.3%	29.6%	2.8%	-0.4%	8.6%
Norwalk	39,849	49,460	67,775	79,288	77,767	78,331	82,951	24.1%	37.0%	17.0%	-1.9%	0.7%	5.9%
Stamford	61,215	74,293	92,713	108,798	102,453	108,056	117,083	21.4%	24.8%	17.3%	-5.8%	5.5%	8.4%
Weston	1,053	1,988	4,039	7,417	8,284	8,648	10,037	88.8%	103.2%	83.6%	11.7%	4.4%	16.1%
Westport	8,258	11,667	20,955	27,318	25,290	24,410	25,749	41.3%	79.6%	30.4%	-7.4%	-3.5%	5.5%
Wilton	2,829	4,558	8,026	13,572	15,351	15,989	17,633	61.1%	76.1%	69.1%	13.1%	4.2%	10.3%
South Western Region	164,156	202,569	279,204	333,935	325,546	329,935	353,556	23.4%	37.8%	19.6%	-2.5%	1.3%	7.2%

Source: SWRPA, 1990 Annual Data Book; Office of Policy and Management, Connecticut Historical Population Comparisons, 1960 to 1990; US Census Bureau, Census 2000 Redistricting Data Summary File

The population growth rates for SWRPA communities between 1990 and 2000 exceeded all of the government population projections. The City of Stamford was the only major urban center in Connecticut to show a growth in population from 1990 to 2000. The City of Stamford grew by 8.6% to remain the fourth largest city in the state. The SWRPA region includes three communities (Stamford, Norwalk and Greenwich) who rank in the top ten in the state in terms of total population. The Town of Weston topped the 10,000 person mark for the first time with a 16.1% population growth from 1990 to 2000. The Town of Westport reversed earlier decade losses in population to exceed the 25,000 mark again exhibiting a 5.5% growth in population over the last ten years. (See *Table 2*)

Table 2. Population by Race, South Western Region, 2000

Town	Total Population	One Race							Two Or More Races
		Total	White	Black or African American	American Indian and Alaska Native	Asian	Native Hawaiian and Other Pacific Islander	Some other race	Total
Darien	19,607	19,450	18,816	89	8	474	5	58	157
Greenwich	61,101	60,143	55,001	1,017	52	3,165	16	892	958
New Canaan	19,395	19,205	18,477	201	8	445	1	73	190
Norwalk	82,951	80,506	61,339	12,663	174	2,699	40	3,591	2,445
Stamford	117,083	113,490	81,718	18,019	243	5,856	46	7,608	3,593
Weston	10,037	9,939	9,610	88	11	195	10	25	98
Westport	25,749	25,540	24,503	292	12	625	5	103	209
Wilton	17,633	17,493	16,848	106	15	474	2	48	140
South Western Region	353,556	345,766	286,312	32,475	523	13,933	125	12,398	7,790

Source: US Census Bureau, Census 2000 Redistricting Data Summary File

The Connecticut Office of Policy and Management (CT OPM) will reassess population growth projections for the coming decades once all of the demographic data from Census 2000 has been thoroughly reviewed.

Besides the unexpected population growth in the latter part of the last decade other social economic factors remain present which will significantly impact the transportation network in the region. Analysts agree that the State of Connecticut's chief economic challenges remain the high cost of living and a growing labor shortage. With close ties to the financial services sector in New York and substantial employment in the sector, stock market corrections are a significant risk for Fairfield County and the SWRPA region. Some of the key factors include the following:

- Immigration is increasing and a demand for information technology skills will attract more technically skilled foreign born workers to the region. The current labor market conditions are tight. The current unemployment rate is 1.4%, which is the lowest in the state and well below the Connecticut rate of 2.1% and the national rate of 4.6%. The Connecticut Hispanic population reached 320,323 making up 9.4% of the total population of the state. The Fairfield County Hispanic population reached 104,835 or 11.9 percent of the total population in the County. Fairfield County now has the largest percentage of people claiming Hispanic heritage in the State of Connecticut. The 2000 Census Hispanic population count for the SWRPA region indicated that 38,291 people were of Hispanic origin or 10.8% of the region, 11.9% of the state total and 37% of the Hispanic population residing in Fairfield County. (See Table 3) New immigrants have been attracted to Fairfield County due to the many service and technical job opportunities. Sample data information from the 2000 Census (STF-3) will reveal the ethnic background of the population in the region, as well as, household info, income data, vehicle ownership, housing, and journey to work characteristics.

Table 5. Labor Force Data, South Western Region, 1995-1999

		1995	1999	1995-1999	
				Number	Percent
Darien	Labor Force	9,652	9,504	-148	-1.5%
	Employed	9,409	9,384	-25	-0.3%
	Unemployed	243	120	-123	-50.6%
	Percent	2.5%	1.3%		
Greenwich	Labor Force	30,207	31,409	1,202	4.0%
	Employed	29,274	30,943	1,669	5.7%
	Unemployed	933	466	-467	-50.1%
	Percent	3.1%	1.5%		
New Canaan	Labor Force	9,350	9,401	51	0.5%
	Employed	9,154	9,283	129	1.4%
	Unemployed	196	118	-78	-39.8%
	Percent	2.1%	1.3%		
Norwalk	Labor Force	47,633	48,383	750	1.6%
	Employed	45,510	47,044	1,534	3.4%
	Unemployed	2,123	1,339	-784	-36.9%
	Percent	4.5%	2.8%		
Stamford	Labor Force	62,391	65,615	3,224	5.2%
	Employed	59,444	63,972	4,528	7.6%
	Unemployed	2,947	1,643	-1,304	-44.2%
	Percent	4.7%	2.5%		
Weston	Labor Force	4,840	4,783	-57	-1.2%
	Employed	4,723	4,713	-10	-0.2%
	Unemployed	117	70	-47	-40.2%
	Percent	2.4%	1.5%		
Westport	Labor Force	14,192	14,177	-15	-0.1%
	Employed	13,820	13,954	134	1.0%
	Unemployed	372	223	-149	-40.1%
	Percent	2.6%	1.6%		
Wilton	Labor Force	8,742	8,972	230	2.6%
	Employed	8,521	8,846	325	3.8%
	Unemployed	221	126	-95	-43.0%
	Percent	2.5%	1.4%		
South Western Region	Labor Force	187,007	192,244	5,237	2.8%
	Employed	179,855	188,139	8,284	4.6%
	Unemployed	7,152	4,105	-3,047	-42.6%
	Percent	3.8%	2.1%		

Source: Connecticut Department of Labor, Local Area Unemployment Statistics, Annual Averages, 1995, 1999

Table 6. Labor Force Data, Connecticut Planning Regions, 1995 - 1999

		1995	1999	1995-1999	
				Number	Percent
Capital	Labor Force	356,840	344,728	-12,112	-3.4%
	Employed	335,612	333,625	-1,987	-0.6%
	Unemployed	21,228	11,103	-10,125	-47.7%
	Percent	5.9%	3.2%		
Central Connecticut	Labor Force	116,868	112,969	-3,899	-3.3%
	Employed	109,299	108,557	-742	-0.7%
	Unemployed	7,569	4,412	-3,157	-41.7%
	Percent	6.5%	3.9%		
Central Naugatuck Valley	Labor Force	136,543	135,397	-1,146	-0.8%
	Employed	128,383	130,560	2,177	1.7%
	Unemployed	8,160	4,837	-3,323	-40.7%
	Percent	6.0%	3.6%		0.0%
Connecticut River Estuary	Labor Force	31,062	31,778	716	2.3%
	Employed	29,732	31,038	1,306	4.4%
	Unemployed	1,330	740	-590	-44.4%
	Percent	4.3%	2.3%		
Greater Bridgeport	Labor Force	142,184	138,951	-3,233	-2.3%
	Employed	132,722	133,151	429	0.3%
	Unemployed	9,462	5,800	-3,662	-38.7%
	Percent	6.7%	4.2%		0.0%
Housatonic Valley	Labor Force	105,237	104,840	-397	-0.4%
	Employed	101,308	102,420	1,112	1.1%
	Unemployed	3,929	2,420	-1,509	-38.4%
	Percent	3.7%	2.3%		
Litchfield Hills	Labor Force	42,723	42,448	-275	-0.6%
	Employed	40,422	41,212	790	2.0%
	Unemployed	2,301	1,236	-1,065	-46.3%
	Percent	5.4%	2.9%		
Midstate	Labor Force	54,062	53,950	-112	-0.2%
	Employed	50,945	52,362	1,417	2.8%
	Unemployed	3,117	1,588	-1,529	-49.1%
	Percent	5.8%	2.9%		
Northeastern Connecticut	Labor Force	40,133	39,611	-522	-1.3%
	Employed	37,458	38,092	634	1.7%
	Unemployed	2,675	1,519	-1,156	-43.2%
	Percent	6.7%	3.8%		
Northwestern Connecticut	Labor Force	13,284	13,932	648	4.9%
	Employed	12,964	13,752	788	6.1%
	Unemployed	320	180	-140	-43.8%
	Percent	2.4%	1.3%		
South Central Connecticut	Labor Force	273,666	272,304	-1,362	-0.5%
	Employed	258,348	263,661	5,313	2.1%
	Unemployed	15,318	8,643	-6,675	-43.6%
	Percent	5.6%	3.2%		
South Western Connecticut	Labor Force	187,007	192,244	5,237	2.8%
	Employed	179,855	188,139	8,284	4.6%
	Unemployed	7,152	4,105	-3,047	-42.6%
	Percent	3.8%	2.1%		
Southeastern Connecticut	Labor Force	123,190	121,846	-1,344	-1.1%
	Employed	116,571	117,772	1,201	1.0%
	Unemployed	6,619	4,074	-2,545	-38.4%
	Percent	5.4%	3.3%		
Valley	Labor Force	42,985	41,549	-1,436	-3.3%
	Employed	40,327	39,979	-348	-0.9%
	Unemployed	2,658	1,570	-1,088	-40.9%
	Percent	6.2%	3.8%		
Windham	Labor Force	40,770	39,011	-1,759	-4.3%
	Employed	38,622	37,965	-657	-1.7%
	Unemployed	2,148	1,046	-1,102	-51.3%
	Percent	5.3%	2.7%		

Source: Connecticut Department of Labor, Local Area Unemployment Statistics, Annual Averages, 1995, 1999

- The area continues to experience the highest per capita income in the nation as well as the highest median sale price for homes in Connecticut. The cost of living in the SWRPA region is by far the highest in Connecticut and one of the highest in the nation. (*See Table 7*)
- The median age for residents in the region continues to rise to just over 38 years of age. As the median age continues to increase more specialized transportation for seniors and the disabled will be needed.

Table 7. SWRPA Housing and Population Profile

	2000 Population ¹	Land Area (Sq. Miles)	2000 Pop./Sq. Mile	1999 Estimated Housing Units ³	1999 Government Assisted Units ³	1990 Percentage of Single Family Units	1990 Percentage Housing Stock Built Before 1950 ²	1998 Per Capita Income (CT Rank) ⁴	1998 Median Sale Price (CT Rank) ⁴
Darien	19,607	13	1,416	6,865	87	94%	48%	\$107,225 (2)	\$539,000 (4)
Greenwich	61,101	48	1,221	24,257	1,223	68%	46%	\$95,636 (4)	\$592,000 (2)
New Canaan	19,395	22	807	7,245	137	84%	31%	\$108,008 (1)	\$641,000 (1)
Norwalk	82,951	23	3,436	33,090	4,026	54%	34%	\$46,332 (32)	\$212,500 (26)
Stamford	117,083	38	2,865	46,361	6,374	47%	27%	\$54,894 (14)	\$236,750 (18)
Weston	10,037	20	437	3,467	1	98%	22%	\$101,386 (3)	\$580,000 (3)
Westport	25,749	20	1,220	10,020	193	92%	33%	\$94,023 (5)	\$505,000 (5)
Wilton	17,633	27	593	6,286	156	91%	19%	\$84,035 (6)	\$445,000 (6)
South Western Region	353,556	210	522	137,591	12,197				
Fairfield County	882,567	626	1,410	327,184	30,894				
State of Connecticut	3,405,565	4,845	703	1,382,102	154,942				

Source: ¹ US Census Bureau, Census 2000 Redistricting Data (P.L. 94-171) Summary File

² US Census Bureau, 1990 Summary Tape File (STF-3)

³ DECD Affordable Housing Appeals List - 7/11/00

⁴ CT Policy and Economic Council

- The Journey to Work calculations from the Census 2000 should continue to illustrate the substantial increase in employee work trips into the region from surrounding Connecticut planning regions and New York State. The influx of financial, pharmaceutical and business services into the region should continue to grow along with a burgeoning “e-commerce” sector. The City of Stamford remains a corporate center along and attracts other new technology growth sectors. The Housatonic Valley Council of Elected Officials (HVCEO) located in upper Fairfield County experienced the largest population growth of the fifteen planning regions in the state from 1990 to 2000. (*See Table 8 & Figure 1*)
- The amount of vehicles and vehicle miles traveled continues to increase throughout the region and Connecticut. Vehicle Miles Traveled (VMT) is a common measure used by transportation professionals to gauge overall travel in the region and is an accumulation of all the miles traveled by all the vehicles in the region. The Connecticut Department of Transportation Office of Inventory and Forecasting data reveals that between 1997 and the year 2000 there has been a 8.1 % increase in Vehicles Miles of Travel (VMT) on I-95. The Merritt Parkway (Rte.15) has experienced a 5.3% increase in VMT. From 1996 to 1998 there were an additional 285,474 vehicles registered in the SWRPA region. (CT. Motor Vehicle Department – 1999).

- Beginning with an employment estimate of 190,130 in 1995, the ConnDOT forecasts an increase of 30,370 jobs or 16% bringing total employment in the region to 220,500 by the year 2020. (ConnDOT 1996a).

All of these factors listed above will exacerbate existing congested conditions on I-95 and the Merritt Parkway and place an enormous strain on the highway network which is near or at capacity during peak hours.

Detailed information on the Region's social-economic profiles and other characteristics is provided in the 1997 South Western Region Planners Data Book (SWRPA 1997a). Current and future Demographic Data Updates will be available both electronically from the Agency website (www.swrpa.org) and in hard copy.

Table 8. Population of Connecticut Planning Regions, 1990-2000

Planning Region	1990	Population Rank	2000	Population Rank
Capital	709,404	1	721,320	1
Central Connecticut	227,676	7	226,695	7
Central Naugatuck Valley	261,081	5	272,594	5
Connecticut River Estuary	54,684	14	60,051	14
Greater Bridgeport	299,708	4	307,607	4
Housatonic Valley	187,867	8	212,248	8
Litchfield Hills	77,601	12	79,188	12
Midstate	96,996	9	104,442	9
Northeastern Connecticut	71,880	13	76,572	13
Northwestern Connecticut	22,647	15	22,654	15
South Central Connecticut	536,853	2	546,799	2
Southeastern Connecticut	240,432	6	242,759	6
South Western Connecticut	329,935	3	353,556	3
Valley	80,308	10	84,500	10
Windham	78,341	11	82,580	11

Source: Connecticut Historical Population Comparisons, 1960 to 1990, Office of Policy and Management, Connecticut State Data Center 1/25/91; US Census Bureau, Census 2000 Redistricting Data Summary File

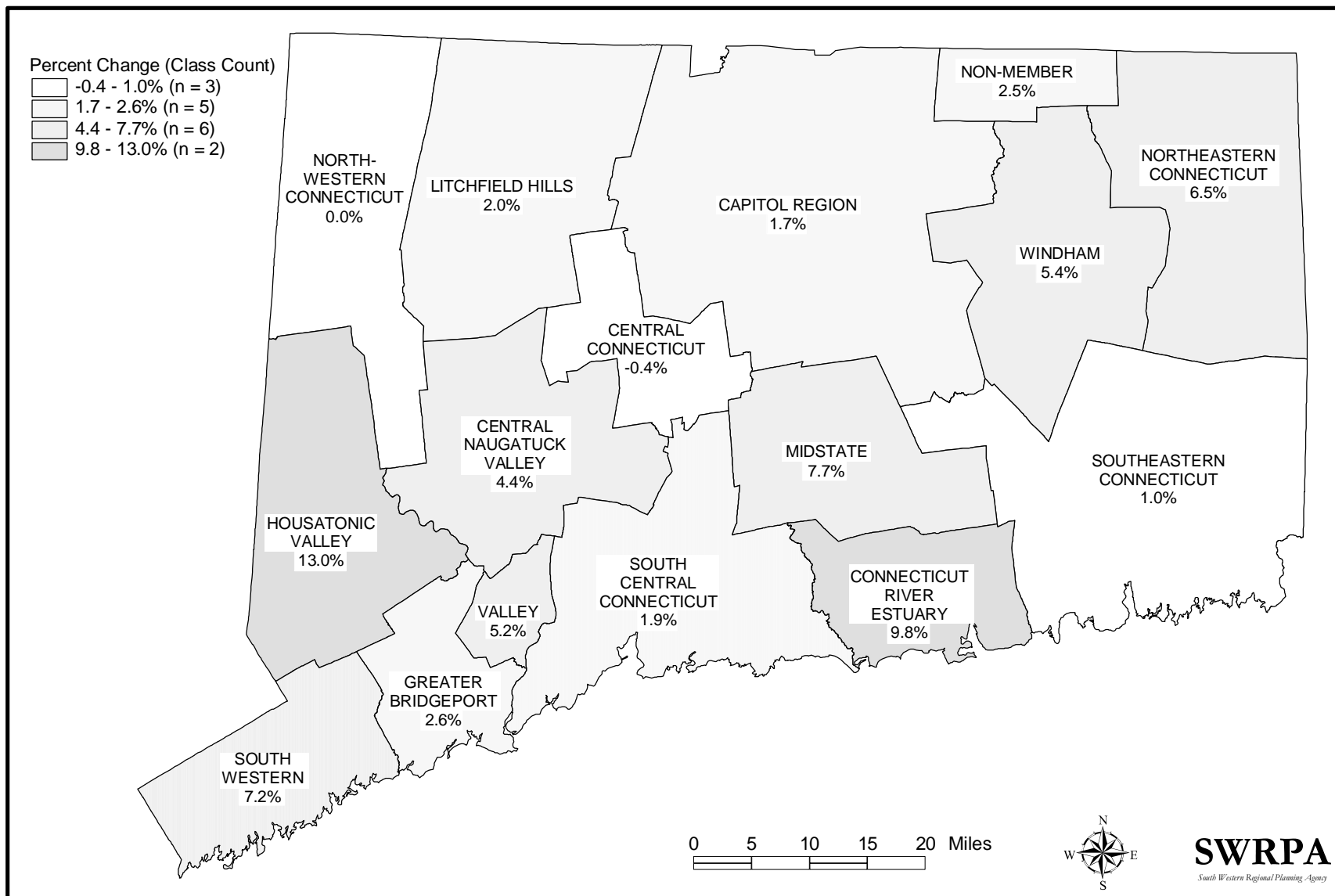


Figure 2. Change in Population by Planning Region, 1990 – 2000

TRANSPORTATION INVENTORY AND TRAVEL CHARACTERISTICS
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A diverse transportation system with highway, transit and transportation demand management components serves local, regional and inter-regional travel needs. The Region's state and local highway system includes more than 1,500 miles of roads, almost 800 road and rail bridges, 22 at-grade rail/highway crossings, more than 800 traffic signals, 5 commuter park and ride lots, and thousands of public parking spaces in structures, on-street and off-street lots as well as bicycle and multi-modal trails, bicycle storage, and sidewalks. Commuter rail service by MetroNorth and ConnDOT provide intrastate and interstate service, with AMTRAK providing inter-regional service at Stamford. Local bus transit services provided by Norwalk Transit District and Connecticut Transit include fixed route service, special commuter connections in Greenwich, Norwalk, Stamford, Westport and Wilton, I-Bus between Stamford and White Plains, and Easy-Access the regional elderly and disabled transportation service.

Vehicle Miles of Travel, Vehicle Occupancy and Congestion

In 1990, the Region logged in 7.8m vehicle miles of travel (VMT) daily. By 2000, this increased by 1.2m to 9m vehicle miles of travel (an increase of 15 %). By 2020, the VMT is predicted to be 11.2m, an increase of 2.2m, or an increase of 25% according to ConnDOT's Series 25 VMT Projections (ConnDOT CMS 2000). The Region's average vehicle occupancy in 1998 was 1.21 persons per vehicle in the a.m. peak as compared to 1.19 in 1995. The p.m. peak hour occupancy is 1.36 in 1995 and 1998. The 1998 statewide average vehicle occupancy is greater, at 1.23 in the a.m. peak and 1.32 in the p.m. peak.

The most heavily traveled corridors, such as I-95, carry as many as 148,000 vehicles per day. Because single occupant vehicles are the norm, congestion is experienced on the major arteries and local roads for ever-increasing periods. In 1998, 42% of all state highways were over capacity, as compared to 33% in 1995. The situation is predicted to increase to 48% of the state routes being over capacity in 2020. In 1995, 62% of Route 15, and 73% of I-95 are over capacity. By 2020, ConnDOT forecasts that 100% of Route 15, and I-95 will be at Level of Service F (over capacity).

The inventory of transportation services and facilities is offered in the Transportation Data Guide Update #15 and updates (SWRPA 1996-2000). The Transportation Data Guide documents the Region's transportation resources including information on the highway system, (commuter parking, bridges, accidents and traffic volumes, and registered vehicles), the rail system (rail parking, rail service and ridership), bus transit (ridership, fares and fleet), waterborne freight activity, the Town Aid Program, 1980 and 1990 Census journey-to-work, vehicle availability, disability status data, and ConnDOT Series 20 Home-based work trips.

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TITLE 23--HIGHWAYS

CHAPTER I--FEDERAL HIGHWAY ADMINISTRATION, DEPARTMENT OF TRANSPORTATION

PART 500--MANAGEMENT AND MONITORING SYSTEMS--Table of Contents

Subpart A--Management Systems

Sec. 500.109 CMS.

(a) For purposes of this regulation, congestion means the level at which transportation system performance is no longer acceptable due to traffic interference. The level of system performance deemed acceptable by State and local officials may vary by type of transportation facility, geographic location (metropolitan area or subarea, rural area), and/or time of day. An effective CMS is a systematic process for managing congestion that provides information on transportation system performance and on alternative strategies for alleviating congestion and enhancing the mobility of persons and goods to levels that meet State and local needs. The CMS results in serious consideration of implementation of strategies that provide the most efficient and effective use of existing and future transportation facilities. In both metropolitan and non-metropolitan areas, consideration needs to be given to strategies that reduce SOV travel and improve existing transportation system efficiency. Where the addition of general purpose lanes is determined to be an appropriate strategy, explicit consideration is to be given to the incorporation of appropriate features into the SOV project to facilitate future demand management and operational improvement strategies that will maintain the functional integrity of those lanes.

(b) In addition to the criteria in paragraph (a) of this section, in all TMAs, the CMS shall be developed, established and implemented as part of the metropolitan planning process in accordance with 23 CFR 450.320(c) and shall include:

(1) Methods to monitor and evaluate the performance of the multimodal transportation system, identify the causes of congestion, identify and evaluate alternative actions, provide information supporting the implementation of actions, and evaluate the efficiency and effectiveness of implemented actions;

(2) Definition of parameters for measuring the extent of congestion and for supporting the evaluation of the effectiveness of congestion reduction and mobility enhancement strategies for the movement of people and goods. Since levels of acceptable system performance may vary among local communities, performance measures and service thresholds should be tailored to the specific needs of the area and established cooperatively by the State, affected MPO(s), and local officials in consultation with the operators of major modes of transportation in the coverage area;

(3) Establishment of a program for data collection and system performance monitoring to define the extent and duration of congestion,

to help determine the causes of congestion, and to evaluate the efficiency and effectiveness of implemented actions. To the extent possible, existing data sources should be used, as well as appropriate application of the real-time system performance monitoring capabilities available through Intelligent Transportation Systems (ITS) technologies;

(4) Identification and evaluation of the anticipated performance and expected benefits of appropriate traditional and nontraditional congestion management strategies that will contribute to the more efficient use of existing and future transportation systems based on the established performance measures. The following categories of strategies, or combinations of strategies, should be appropriately considered for each area: Transportation demand management measures, including growth management and congestion pricing; traffic operational improvements; public transportation improvements; ITS technologies; and, where necessary, additional system capacity.

(5) Identification of an implementation schedule, implementation responsibilities, and possible funding sources for each strategy (or combination of strategies) proposed for implementation; and

(6) Implementation of a process for periodic assessment of the efficiency and effectiveness of implemented strategies, in terms of the area's established performance measures. The results of this evaluation shall be provided to decision makers to provide guidance on selection of effective strategies for future implementation.

(c) In a TMA designated as nonattainment for carbon monoxide and/or ozone, the CMS shall provide an appropriate analysis of all reasonable (including multimodal) travel demand reduction and operational management strategies for the corridor in which a project that will result in a significant increase in capacity for SOVs (adding general purpose lanes to an existing highway or constructing a new highway) is proposed. If the analysis demonstrates that travel demand reduction and operational management strategies cannot fully satisfy the need for additional capacity in the corridor and additional SOV capacity is warranted, then the CMS shall identify all reasonable strategies to manage the SOV facility effectively (or to facilitate its management in the future). Other travel demand reduction and operational management strategies appropriate for the corridor, but not appropriate for incorporation into the SOV facility itself shall also be identified through the CMS. All identified reasonable travel demand reduction and operational management strategies shall be incorporated into the SOV project or committed to by the State and MPO for implementation.

(d)(1) Compliance with the requirement that the planning process in all TMAs include a CMS will be addressed during metropolitan planning process certification reviews for all TMAs specified in 23 CFR 450.334. If the metropolitan planning process in a TMA does not include a CMS that meets the requirements of this section, deficiencies will be noted and corrections will need to be made in accordance with the schedule established in the certification review.

(2) Until October 1, 1997, the interim CMS procedures in 23 CFR 450.336(b) may be used to meet the requirement in 23 U.S.C. 134(1) that Federal funds may not be programmed in a carbon monoxide and/or ozone nonattainment TMA for any highway project that will result in a significant increase in single-occupant-vehicle capacity unless the project is based on an approved CMS. After September 30, 1997, such projects must be based on a CMS that meets the requirements of this part.

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TITLE 23--HIGHWAYS

CHAPTER I--FEDERAL HIGHWAY ADMINISTRATION, DEPARTMENT OF TRANSPORTATION

PART 450--PLANNING ASSISTANCE AND STANDARDS--Table of Contents

Subpart C--Metropolitan Transportation Planning and Programming

Sec. 450.316 Metropolitan transportation planning process: Elements.

(a) Section 134(f) of title 23, U.S.C., and Federal Transit Act section 8(f) (49 U.S.C. app. 1607(f)) list 15 factors that must be considered as part of the planning process for all metropolitan areas. The following factors shall be explicitly considered, analyzed as appropriate, and reflected in the planning process products:

(1) Preservation of existing transportation facilities and, where practical, ways to meet transportation needs by using existing transportation facilities more efficiently;

(2) Consistency of transportation planning with applicable Federal, State, and local energy conservation programs, goals, and objectives;

(3) The need to relieve congestion and prevent congestion from occurring where it does not yet occur including:

(i) The consideration of congestion management strategies or actions which improve the mobility of people and goods in all phases of the planning process; and

(ii) In TMAs, a congestion management system that provides for effective management of new and existing transportation facilities through the use of travel demand reduction and operation management strategies (e.g., various elements of IVHS) shall be developed in accordance with Sec. 450.320;

(4) The likely effect of transportation policy decisions on land use and development and the consistency of transportation plans and programs with the provisions of all applicable short- and long-term land use and development plans (the analysis should include projections of metropolitan planning area economic, demographic, environmental protection, growth management, and land use activities consistent with metropolitan and local/central city development goals (community, economic, housing, etc.), and projections of potential transportation demands based on the interrelated level of activity in these areas);

(5) Programming of expenditures for transportation enhancement activities as required under 23 U.S.C. 133;

(6) The effects of all transportation projects to be undertaken within the metropolitan planning area, without regard to the source of funding (the analysis shall consider the effectiveness, cost effectiveness, and financing of alternative investments in meeting transportation demand and supporting the overall efficiency and effectiveness of transportation system performance and related impacts on community/central city goals regarding social and economic development, housing, and employment);

(7) International border crossings and access to ports, airports, intermodal transportation facilities, major freight distribution routes, national parks, recreation areas, monuments and historic sites, and military installations (supporting technical efforts should provide an analysis of goods and services movement problem areas, as determined in cooperation with appropriate private sector involvement, including, but not limited to, addressing interconnected transportation access and service needs of intermodal facilities);

(8) Connectivity of roads within metropolitan planning areas with roads outside of those areas;

(9) Transportation needs identified through the use of the management systems required under 23 U.S.C. 303 (strategies identified under each management system will be analyzed during the development of the transportation plan, including its financial component, for possible inclusion in the metropolitan plan and TIP);

(10) Preservation of rights-of-way for construction of future transportation projects, including future transportation corridors;

(11) Enhancement of the efficient movement of freight;

(12) The use of life-cycle costs in the design and engineering of bridges, tunnels, or pavement (operating and maintenance costs must be considered in analyzing transportation alternatives);

(13) The overall social, economic, energy, and environmental effects of transportation decisions (including consideration of the effects and impacts of the plan on the human, natural and man-made environment such as housing, employment and community development, consultation with appropriate resource and permit agencies to ensure early and continued coordination with environmental resource protection and management plans, and appropriate emphasis on transportation-related air quality problems in support of the requirements of 23 U.S.C. 109(h), and section 14 of the Federal Transit Act (49 U.S.C. 1610), section 4(f) of the DOT Act (49 U.S.C. 303) and section 174(b) of the Clean Air Act (42 U.S.C. 7504(b)));

(14) Expansion, enhancement, and increased use of transit services;

(15) Capital investments that would result in increased security in transit systems; and

(16) Recreational travel and tourism.

(b) In addition, the metropolitan transportation planning process shall:

(1) Include a proactive public involvement process that provides complete information, timely public notice, full public access to key decisions, and supports early and continuing involvement of the public in developing plans and TIPs and meets the requirements and criteria specified as follows:

(i) Require a minimum public comment period of 45 days before the public involvement process is initially adopted or revised;

(ii) Provide timely information about transportation issues and processes to citizens, affected public agencies, representatives of transportation agency employees, private providers of transportation, other interested parties and segments of the community affected by transportation plans, programs and projects (including but not limited to central city and other local jurisdiction concerns);

(iii) Provide reasonable public access to technical and policy information used in the development of plans and TIPs and open public meetings where matters related to the Federal-aid highway and transit programs are being considered;

(iv) Require adequate public notice of public involvement activities and time for public review and comment at key decision points,

including, but not limited to, approval of plans and TIPs (in nonattainment areas, classified as serious and above, the comment period shall be at least 30 days for the plan, TIP and major amendment(s));

(v) Demonstrate explicit consideration and response to public input received during the planning and program development processes;

(vi) Seek out and consider the needs of those traditionally underserved by existing transportation systems, including but not limited to low-income and minority households;

(vii) When significant written and oral comments are received on the draft transportation plan or TIP (including the financial plan) as a result of the public involvement process or the interagency consultation process required under the U.S. EPA's conformity regulations, a summary, analysis, and report on the disposition of comments shall be made part of the final plan and TIP;

(viii) If the final transportation plan or TIP differs significantly from the one which was made available for public comment by the MPO and raises new material issues which interested parties could not reasonably have foreseen from the public involvement efforts, an additional opportunity for public comment on the revised plan or TIP shall be made available;

(ix) Public involvement processes shall be periodically reviewed by the MPO in terms of their effectiveness in assuring that the process provides full and open access to all;

(x) These procedures will be reviewed by the FHWA and the FTA during certification reviews for TMAs, and as otherwise necessary for all MPOs, to assure that full and open access is provided to MPO decisionmaking processes;

(xi) Metropolitan public involvement processes shall be coordinated with statewide public involvement processes wherever possible to enhance public consideration of the issues, plans, and programs and reduce redundancies and costs;

(2) Be consistent with Title VI of the Civil Rights Act of 1964 and the Title VI assurance executed by each State under 23 U.S.C. 324 and 29 U.S.C. 794, which ensure that no person shall, on the grounds of race, color, sex, national origin, or physical handicap, be excluded from participation in, be denied benefits of, or be otherwise subjected to discrimination under any program receiving Federal assistance from the United States Department of Transportation;

(3) Identify actions necessary to comply with the Americans With Disabilities Act of 1990 (Pub. L. 101-336, 104 Stat. 327, as amended) and U.S. DOT regulations "Transportation for Individuals With Disabilities" (49 CFR parts 27, 37, and 38);

(4) Provide for the involvement of traffic, ridesharing, parking, transportation safety and enforcement agencies; commuter rail operators; airport and port authorities; toll authorities; appropriate private transportation providers, and where appropriate city officials; and

(5) Provide for the involvement of local, State, and Federal environment resource and permit agencies as appropriate.

(c) In attainment areas not designated as TMAs simplified procedures for the development of plans and programs, if considered appropriate, shall be proposed by the MPO in cooperation with the State and transit operator, and submitted by the State for approval by the FHWA and the FTA. In developing proposed simplified planning procedures, consideration shall be given to the transportation problems in the area and their complexity, the growth rate of the area (e.g., fast, moderate or slow), the appropriateness of the factors specified for consideration in this subpart including air quality, and the desirability of

continuing any planning process that has already been established. Areas experiencing fast growth should give consideration to a planning process that addresses all of the general requirements specified in this subpart. As a minimum, all areas employing a simplified planning process will need to develop a transportation plan to be approved by the MPO and a TIP to be approved by the MPO and the Governor.

(d) The metropolitan transportation planning process shall include preparation of technical and other reports to assure documentation of the development, refinement, and update of the transportation plan. The reports shall be reasonably available to interested parties, consistent with Sec. 450.316(b)(1).

[58 FR 58064, Oct. 28, 1993, as amended at 61 FR 67175, Dec. 19, 1996]

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TITLE 23--HIGHWAYS

CHAPTER I--FEDERAL HIGHWAY ADMINISTRATION, DEPARTMENT OF TRANSPORTATION

PART 450--PLANNING ASSISTANCE AND STANDARDS--Table of Contents

Subpart C--Metropolitan Transportation Planning and Programming

Sec. 450.320 Metropolitan transportation planning process: Relation to management systems.

(a) Within all metropolitan areas, congestion, public transportation, and intermodal management systems, to the extent appropriate, shall be part of the metropolitan transportation planning process required under the provisions of 23 U.S.C. 134 and 49 U.S.C. 5303-5305.

(b) In TMAs designated as nonattainment for ozone or carbon monoxide, Federal funds may not be programmed for any project that will result in a significant increase in carrying capacity for single occupant vehicles (a new general purpose highway on a new location or adding general purpose lanes, with the exception of safety improvements or the elimination of bottlenecks) unless the project results from a congestion management system (CMS) meeting the requirements of 23 CFR part 500. Such projects shall incorporate all reasonably available strategies to manage the SOV facility effectively (or to facilitate its management in the future). Other travel demand reduction and operational management strategies, as appropriate for the corridor, but not appropriate for incorporation into the SOV facility itself, shall be committed to by the State and the MPO for implementation in a timely manner, but no later than the completion date for the SOV project. Projects that had advanced beyond the NEPA stage prior to April 6, 1992, and which are actively advancing to implementation, e.g., right-of-way acquisition has been approved, shall be deemed programmed and not subject to this provision.

(c) In TMAs, the planning process must include the development of a CMS that provides for effective management of new and existing transportation facilities through the use of travel demand reduction and operational management strategies and meets the requirements of 23 CFR part 500.

(d) The effectiveness of the management systems in enhancing transportation investment decisions and improving the overall efficiency of the metropolitan area's transportation systems and facilities shall be evaluated periodically, preferably as part of the metropolitan planning process.

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