



WILMINGTON URBAN AREA Metropolitan Planning Organization

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Meeting Agenda Citizen Advisory Committee

Members:

City of
WILMINGTON
Lead Planning Agency

Town of
CAROLINA BEACH

Town of
KURE BEACH

Town of
WRIGHTSVILLE BEACH

NEW HANOVER
County

Town of
BELVILLE

Town of
LELAND

Town of
NAVASSA

BRUNSWICK
County

PENDER
County

CAPE FEAR
Public Transportation
Authority

North Carolina
BOARD OF
TRANSPORTATION

TO: WMPO Citizen Advisory Committee Members
FROM: Joshua Mello, Secretary
DATE: August 13, 2008
SUBJECT: August 20, 2008 Meeting

A meeting of the WMPO Citizen Advisory Committee will be held on **Wednesday, August 20 at 4:00pm**. The meeting will be held at the **Traffic Conference Room at 305 Chestnut Street, Floor 4** in downtown Wilmington.

The following is the agenda for the meeting:

- 1) Welcome
- 2) Presentation on scenario testing (Joshua Mello, WMPO)
This webinar will provide a clear understanding of how our travel demand model can be used by the CAC to evaluate policy alternatives and new transportation projects. The Powerpoint portion of the presentation is attached to the agenda.
- 3) Discussion of LRTP and CTP ideals and goals (committee)
The committee will discuss possible strategies we can use to develop a set of objective regional ideals and goals that can be used to evaluate policy alternatives and new transportation projects. Please see examples from other regions attached to the agenda.
- 4) Announcements
 - a. BikePed Committee Meeting: August 14 at 5:15pm at 305 Chestnut Street, Floor 4
 - b. Transportation Advisory Committee Meeting: August 27 at 4:00pm at New Hanover County Offices, Room 601
 - c. Technical Coordinating Committee Meeting: September 10 at 10:00am at 305 Chestnut Street, Floor 4
- 10) Next meeting September 17, 2008 at 4:00pm in the Lord Spencer Compton Conference Room at Wilmington City Hall (tentative)
- 11) Other business
- 12) Adjournment



TMIP Web Knowledge and Information Exchange:
Scenario Testing
August 7, 2008

Brian Gregor and Becky Knudson
Oregon Department of Transportation

Transportation Planning Section, Transportation Development Division





TMIP Web Knowledge and Information Exchange:
Scenario Testing: August 7, 2008

***Use of Scenarios with the Oregon
Statewide Integrated Model***

Becky Knudson, Oregon Department of Transportation



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Outline

- Brief overview of Oregon modeling program
- Statewide Integrated Model 1 case studies
 - Big picture visioning
 - Infrastructure investment
 - Problem definition and investment prioritization
- Statewide Integrated Model 2 development
 - Current phase of performance evaluation


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Overview of Oregon Program

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Integrated Models

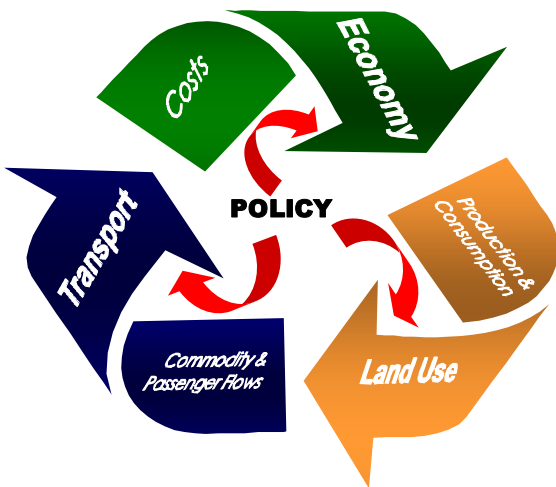
- Oregon Modeling Improvement Program (OMIP) established in 1994:
 - Improve modeling practices throughout Oregon
 - Meet new state and federal mandates
 - Provide analysis and information for decision-makers
 - Make ODOT an effective participant in decisions

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Oregon Integrated Model



The diagram illustrates the Oregon Integrated Model as a circular process. At the center is the word "POLICY". Surrounding it are six interconnected components, each represented by a curved arrow pointing clockwise to the next: "Costs" (green), "Economy" (green), "Production & Consumption" (orange), "Land Use" (orange), "Commodity & Passenger Flows" (blue), and "Transport" (blue). Red arrows indicate the flow between these components, showing a continuous cycle.



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Oregon Model Applications Big Picture Visioning

- **Big picture visioning**
 - **Willamette Valley Alternative Futures**
 - **Oregon Transportation Plan**

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Willamette Valley Alternative Transportation Futures



By 2050
Willamette Valley
population will increase
from 2.3 million to nearly 4
million

Oregon's governor initiated
a big-picture brain-storming
on alternative futures for
Oregon's most populous
and agriculturally important
region.

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Willamette Valley Project Approach

- Help decision-makers understand:
 - How different land use and transportation policies are likely to affect land use patterns and state highway congestion
 - Sensitivities of growth patterns and highway congestion to different land use and transportation policies

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Willamette Valley Scenario Descriptions

- Phase 1
 - No-Action (Reference Case)
 - Compact Development
 - Significant Highway Expansion
 - Significant Transit Expansion
 - Transportation Tax
- Phase 2
 - Hybrid 1: Transit vision
 - transit in urban areas, rural highways, graduated tax
 - Hybrid 2 - Balanced Transportation Expansion
 - Moderate transit and highway, minimal graduated tax

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Willamette Valley Findings

- Expanding highway capacity tends to draw people and jobs to outlying areas
- Expanding public transit tends to concentrate jobs in major urban centers and pull population to outlying cities
- Restricting land supply tends to direct more pop/employment growth away from major urban centers to smaller cities
- Effects differ by location characteristics, but not always apparent at the regional level or statewide.

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Oregon Model Applications Big Picture Visioning

- **Big picture visioning**
 - **Willamette Valley Alternative Futures**
 - **Oregon Transportation Plan**

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Oregon Transportation Plan Update

- The Plan is Oregon's long-range multimodal transportation planning document
- Assesses state, regional, and local public and private facilities
- Establishes goals, policies, strategies to address future needs and challenges

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OTP Scenarios

Reference Scenario

Sensitivity Scenario 1 High Fuel Prices

Sensitivity Scenario 2 Relaxed Land Use Controls

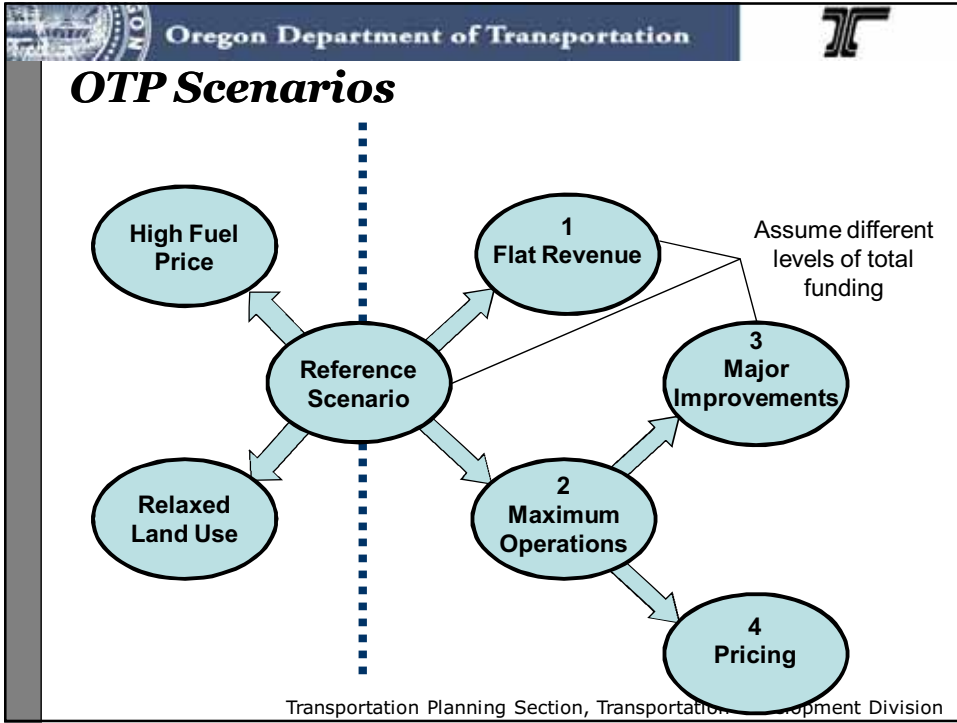
Alternate Scenario 1 Flat Revenue

Alternate Scenario 2 Max Operations & Maintenance
without Pricing

Alternate Scenario 3 Major Improvements

Alternate Scenario 4 Pricing



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Plan Analysis Findings



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OTP Performance Measures	
Performance Criteria	Model Generated Output
Accessibility/ Mobility	
Economic Vitality	
Efficiency & Cost Effectiveness	
Equity	
Reliability/ Responsiveness	
Safety	
Sustainability	
Public Support/Financial Feasibility	

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OTP Performance Measures	
Accessibility/ Mobility Performance Criteria	
<ul style="list-style-type: none"> •Average annual recurring and non-recurring delay per capita <ul style="list-style-type: none"> - average delay, Hh, region; average delay vehicle region 	
<ul style="list-style-type: none"> •Average travel time per trip (peak, off-peak, by purpose, region, income class) <ul style="list-style-type: none"> -average travel time; average trip distance 	
<ul style="list-style-type: none"> • Variable passenger transportation user cost as percent of income (by region, income class) <ul style="list-style-type: none"> -Passenger costs as percent of income by income category & region 	
<ul style="list-style-type: none"> •Percent of trips with viable transit, bicycle and walk options <ul style="list-style-type: none"> -Proportion of trips with transit as choice 	

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OTP Performance Measures

Economic Vitality Performance Criteria

- Change in economic output between alternatives
 - Total statewide production
- Change in employment between alternatives
 - Employment by industry
- Variable passenger transportation user costs as percent of income
 - Total labor income as percent of total transport costs by income group
- Number of workers within 30 minutes of the average job
 - Number of HH (workers) within 30 min by region


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Reference Case – Summary of Impacts

	Passenger Surface Transport	Trucking	Rail Freight	Aviation	Ports
Accessibility	↔	↓	↔	↔	↓
Mobility	↓	↓	↓	↔	↓
Economic Vitality	↔	↓	↓	↔	↓
Effectiveness and Efficiency	↔	↓	↓	↔	↔
Equity	↔	↔	↔	↔	↓
Public Support & Financial Feasibility	↔	↔	↔	↔	↔
Safety	↔	↔	↓	↔	↔
Sustainability	↔	↓	↓	↔	↓



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Oregon Model Applications Infrastructure Investment

- **East/Central Oregon Freeway**
- **Bridge Options/ Investment Prioritization**

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Legislative Directive to Study a New Freeway in Eastern Oregon



The 2001 Legislature asked:
“If a new freeway is constructed in Central or Eastern Oregon, will it divert traffic and development from I-5 in the Willamette Valley?”

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- Simple answer: No
- Modeling analysis showed:
 - Generally increase speed and reduce travel time from border to border
 - May benefit Washington or California more than Eastern or Central Oregon
 - Where access to the Willamette Valley improves, the larger market attracts more growth
- Better question:
 - “What can we do to divert traffic and development from I-5 and the Willamette Valley to Eastern and Central Oregon?”

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***Oregon Model Applications
Infrastructure Investment***

- **East/Central Oregon Freeway**
- **Bridge Options/ Investment Prioritization**

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Oregon Bridge Deficiency Analysis

In 2003, over 600 state and local bridges were found to have major deficiencies.

The model was used to determine the magnitude of the problem and to define a range of solutions.

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Number of Cracked Bridges by Route

Cracked Bridges

0 50 100 150 200

Route Category	Route	Number of Cracked Bridges (Approximate)
North-South Route	US97	20
	US395	15
	I-5	180
East-West Route	US26/20	15
	I-84	65
Port Connections	Astoria	10
	Newport	15
	Coos Bay	20
Local Bridges	Locals	120



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Bridge Analysis Results

- Model served to illuminate the root issue
- Wasn't an engineering problem
- Economic impacts were the issue
- Effects varied by region
- Scenarios used to evaluate proposed solutions and reveal economic impacts
- Final solution avoided 90% of economic impacts of "Do Nothing" approach for nearly half the cost



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Scenario Representation of Future

- Modeling showed no immediate crisis, but large loss of future jobs and production with no action
- Regional and industry impacts defined constituent issues
- Model results helped to clearly define the problem & build a staged solution
- ODOT changing from "worst first" to "corridor analysis"



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Phase 2 Statewide Model Development

- Develop a model with more detail
 - Transport: modes, freight
 - Industry: commodity,
 - Land Use: floor space industries
 - Households: income/size/ worker occupation
- Use a modular form to accommodate model improvements
- Add features desired for analysis


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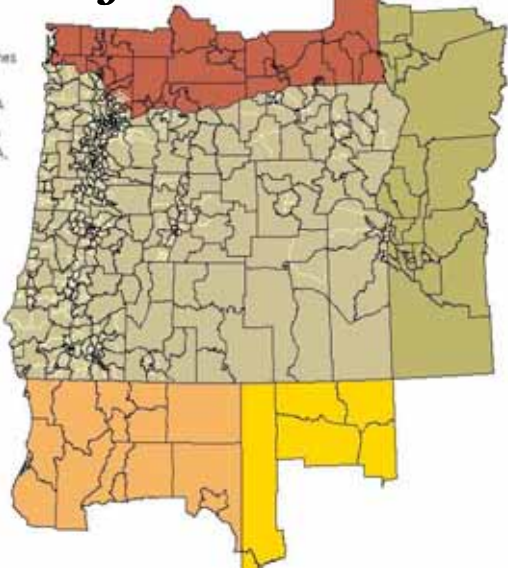

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SWIM2 model coverage and zones

36 Oregon counties
39 "halo" counties

2,950 alpha zones
519 beta zones





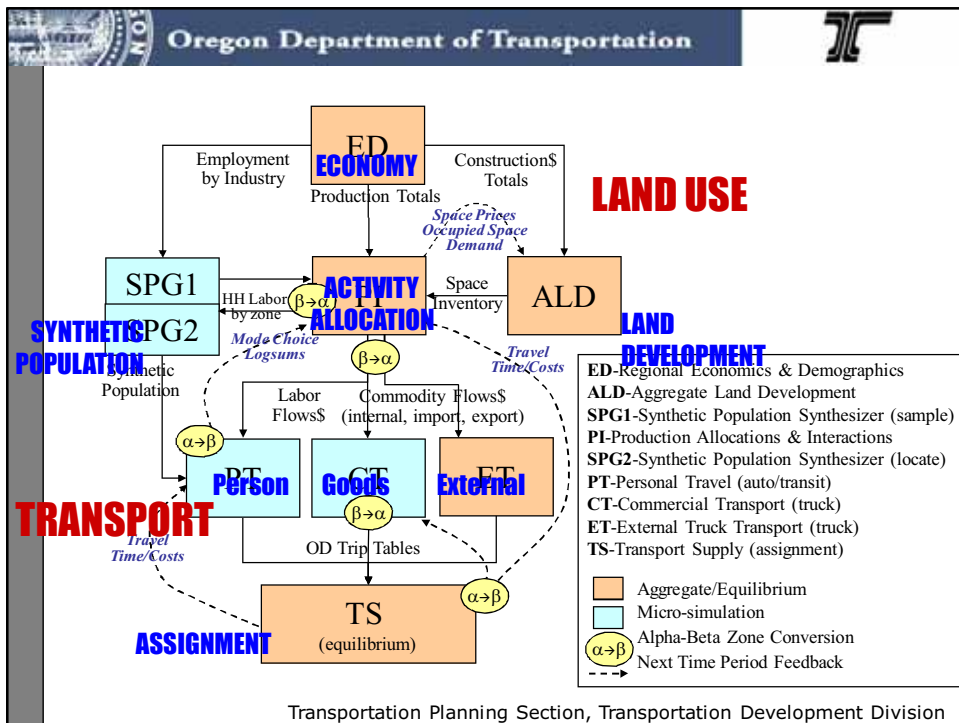
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Categories

- **Activities**
 - 18 Household income/size categories
 - 20 Industry sectors + 19 by space type
- **Commodities**
 - 42 SCTG Goods Commodities
 - 8 Labor occupations, 15 Services
 - 19 Floorspace types
- **Modes**
 - Auto: Drive Along, Shared Ride (2, 3+)
 - Urban Transit: Portland, Eugene, Medford, Salem, Corvallis
 - Intercity Transit: Air, Amtrak Rail, Intercity Bus
 - Non motorized: Walk, Bike
 - Freight: 5 truck weight classes + Air, Rail, Water, Pipeline
- **Road Network**
 - Roughly 40,000 links

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Model Calibration

- **Stage 1:** Statistical Parameter Estimation
- **Stage 2:** Calibrate Modules in Isolation
- **-- Full Model Integration --**
- **Stage 3:** Full Model Calibration
 - 1998 Base Year
 - 1998-2006 initial over time
 - 1990-2000 compare to 2000 targets
 - Model performance evaluation

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Stage3 Calibration results

- **Key Base-year Measures are reasonable**
 - Activity forecasts (ED)
 - Activity Location/quantity (PI)
 - Labor and Goods Flows (PI)
 - Trip Lengths (PI+PT+CT)
 - Trip Rates (PT)
 - Traffic Count Comparisons (TS)
- **Ready for scenario testing**

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Scenario Testing Goals

- Test policy levers
- Push the model
- Train agency staff
- Improve data management/archiving
- Automate output processing
- Develop visualization tools



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Begin testing in three basic areas

1. Added highway capacity
2. High travel costs
3. Stochastic variability



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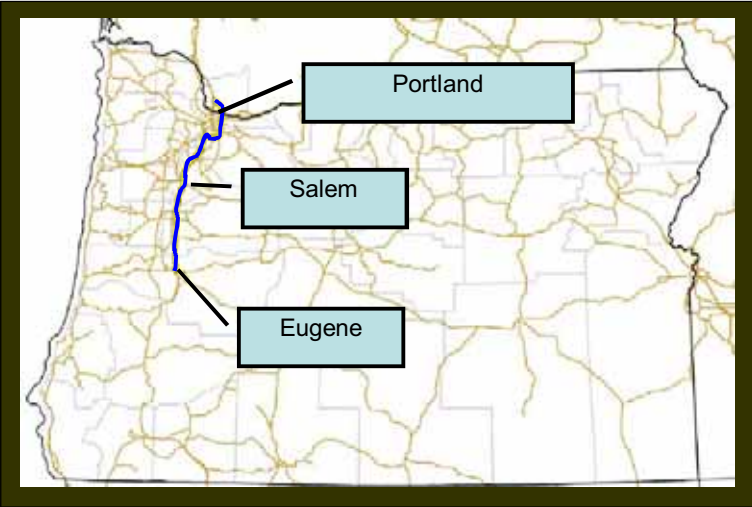
Test 1: Add Highway Capacity

- Add 4+ lanes I-5 Eugene through I-205 to WA
- A Priori Expectations:
 - Reduced travel times
 - More growth in urban Willamette Valley
 - Greater dispersion of HH
 - More long distance commuting
 - Lower land prices in Portland, higher in outlying areas
- Results:
 - Growth: HH, employment
 - Floor space: price
 - Travel: time,

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Test 1: Add Highway Capacity



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Test 2: High Cost Test

- Travel cost ten times higher than 1990
- A Priori Expectations:
 - More compact urban development
 - Less intercity commuting
 - Portland attract larger proportion of economic activity
 - Higher land prices in Portland
- Results:
 - Growth: HH location and income, workers, employment
 - Floor space: price
 - Travel: time, trips,



Major Findings

- Successfully ran multiple scenarios over time
- Initial look: results seem reasonable
 - In multiple dimensions
 - Direction
 - Further investigation of magnitudes
- Boise takes on role of “urban competitors”



Major Findings cont'd

- Higher travel costs caused growth in central Willamette Valley more than Portland
- Adding capacity had limited effect statewide
- Micro-simulation variations are small at statewide level



What Went Well

- Oscillations not problematic
- Transition to Agency operation and analysis
- Hardware worth the effort
- Careful organization of file structure worth effort
- Building off of reference case
 - Creating consistent reference case is challenging



Challenges...

- Response to capacity change seems small
- Reaching convergence in later years in high travel cost scenario
- Fixed economy – brought into focus given Boise response
- Tools to digest model outputs
- Runtime reduction
- Never enough time...
 - 30 year runs changed to 12 years
 - Five truck classed reduced to two
 - Delay several calibration tasks
 - Agency staff assigned to other projects

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Next Steps

- Review results at greater detail
 - Spatially
 - Categorically
- Less extreme travel cost increase
- Expand visualization tools
- Run times
- Further calibration
- Real world policy application
- Feedback to economy

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This is only the beginning...

1

Purpose, Vision and Goals

Purpose

Transportation 2030 is the Long Range Transportation Plan (LRTP) of the French Broad River Metropolitan Planning Organization (FBRMPO) and is prepared in order to meet federal regulations concerning transportation funding in local areas. According to these regulations, the LRTP must be updated every 5 years and should have minimum planning horizon of 20 years. This, the first LRTP of the expanded FBRMPO region, examines present and future transportation system needs of the FBRMPO region for the years 2005 – 2030. In addition, the Plan is designed to:

- Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity and efficiency;
- Increase the safety and security of the transportation system for motorized and non-motorized users;
- Increase the accessibility and mobility options available to people and for freight;
- Protect and enhance the environment, promote energy conservation and improve overall quality of life;
- Enhance the integration and connectivity of the transportation system for people and freight;
- Promote efficient systems management and operations; and
- Emphasize the preservation of the existing transportation system.

This plan contains a “fiscally constrained plan” and fiscal constraints are determined by projected funding levels at selected planning horizons. If areas within the FBRMPO region are ever designated in the future as being in “non-attainment” with Federal Environmental Protection Agency air quality standards, this Plan will need to be updated every three years.

The Plan reflects the “3-C” - *Comprehensive, Continuing, and Cooperative* process. It is comprehensive in that it looks at all modes of transportation and how they interconnect or work with each other as well as the environmental and social factors that effect, and are affected by, the transportation system. It is continuous in that it lays out an on-going and long-term program that allows for adjustments over time. It is cooperative in that it reflects regional and local considerations that are discussed openly through the MPO process. The Plan lays out the framework, issue considerations, and policy recommendations for decision-making that will guide how federal funds are finally invested in the FBRMPO region. Implementation of the Plan rests predominately with the MPO, NCDOT and MPO staff and citizens of the planning area.

Vision

The **Vision** for the Transportation system for the years 2005-2030 is that:

The French Broad River Metropolitan Region will develop and maintain a safe and efficient system for the transportation of people and goods that is compatible with the unique social and environmental context of our western North Carolina counties and municipalities. The system will include a well-integrated and connected roadway, transit, rail, freight, pedestrian, and bicycle network and provide for the multiple use of rights-of-way. The system will also enhance the environment and livability of the area by providing an optimum level of service, choice, mobility, convenience and energy efficiency.

Goals

The Goals of the Transportation 2030 Plan are to:

- Increase Safety for all modes of transportation
- Ensure that the transportation plan benefits, and is equitable towards, elderly, disabled, low-income, and minority populations
- Preserve or improve environmental and community conditions
- Implement policies that improve system quality and capacity
- Improve public involvement in MPO processes
- Develop a regional travel demand model for current and future planning
- Develop strategies to mitigate congestion
- Create a multi-modal transportation improvement program and set of priorities that is fiscally constrained

Detailed Goals and Objectives

Prior to the expansion of the French Broad River MPO, the Asheville Area MPO formed a Citizens Transportation Advisory Group (CTAG). The CTAG met for several years to discuss transportation planning and policy goals and objectives for the Asheville Area.

These detailed goals and objectives as developed by the Asheville area CTAG are presented as Appendix 1. Although they are not currently adopted policies, they serve as a useful guide for transportation policy in our region. The detailed goals and objectives represent many hours of committed citizen input, and the results reflect the importance of diverse and robust citizen participation in the transportation planning process.

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The Boston Region Metropolitan Planning Organization is responsible for programming the spending of transportation funds in 101 cities and towns in eastern Massachusetts and for conducting the regional transportation-planning processes through which the region's current and future transportation needs are identified and prioritized. It is the responsibility of the MPO to conduct its work and decision making so as to equitably distribute the benefits and burdens of the transportation system within the region and to utilize and conserve the available financial, infrastructure, natural, and cultural resources in the most effective way possible.

The MPO has defined its visions and policies for a number of topics to guide this planning and programming. The definition of a topic is a major area of focus. Policies are specific statements to be used in guiding decision making. Visions are descriptions of the end state that eventually exists after policies' objectives have been achieved.

The MPO's visions and policies are presented by topic below.

System Preservation, Modernization, and Efficiency*Vision*

Preserving the existing transportation network and replacing systems once their life span is realized are tasks critical to the promotion and effective management of regional mobility. The vision of the Boston Region MPO is to maintain and manage existing transportation facilities so that they function at their highest possible level of safety and efficiency. In this manner, people using elements of the system will experience the highest possible service level. Application of transportation systems management and intelligent transportation systems (ITS) technologies will be the main tool used to provide information, reduce congestion, and expedite transit service, thereby providing for system reliability, safety, and efficiency. Upgrading to keep in step with evolving standards will help meet the region's changing needs.

Policies

To emphasize the preservation, modernization, and efficiency of the existing transportation system, the MPO will:

- A. Put priority on projects that maintain, repair, and modernize existing infrastructure.
- B. Set funding goals for maintaining the system.
- C. Make investments that maximize the efficiency, effectiveness, reliability, and flexibility of the existing transportation system.
- D. Encourage and support, through planning and programming, projects and programs that improve the operation of the existing transportation system through the use of intelligent transportation systems (ITS), new technologies, and transportation system management.

Mobility*Vision*

A coordinated mix of transportation modes and services will give users of the region's transportation system increased opportunities for convenient, reliable, speedy, affordable,

and accessible travel. Existing roadway, transit, bicycle, pedestrian, and freight links will be maintained and their serviceability improved. New routes, lines, and connections will serve additional needs. The spectrum of options will serve travelers from different areas of the region with varying needs.

Policies

To improve mobility for people and freight, the MPO will:

- A. Put a priority on projects and programs that increase the availability of transportation options for people and freight by improving connections, access to and within the system, services, and infrastructure to meet needs.
- B. Support projects and programs that improve public transportation service by making it faster, and more reliable and affordable.
- C. Consider how an improvement to a single mode can make the entire system work better.
- D. Fund projects that expand the existing transportation system's ability to move people and goods in areas identified in the Boston Region Mobility Management System, the Massachusetts Bay Transportation Authority (MBTA) Program for Mass Transportation, the MPO's Regional Equity Program, MPO and Executive Office of Transportation and Public Works (EOTPW) freight studies and through public comment. This includes encouraging options that manage demand. Adding highway capacity by building general-purpose lanes should be considered only when no better solution can be found and should be accompanied by proponent commitments, developed in the environmental review process, to implement transportation demand management (TDM) measures.
- E. Assist agencies and communities in planning and implementing projects that provide bicycle and pedestrian routes, networks, and facilities.
- F. Support programs that meet public transportation needs in suburban communities, including improving access to existing public transportation and partnering with others to initiate new intra-suburban services linking important destinations.
- G. Provide better access for all to transportation throughout the region, including for our youth, elderly and disabled users, and members of zero-vehicle households. This includes identifying and addressing structural and operational barriers to mobility.
- H. Develop a multimodal, comprehensive plan for freight movement that includes an evaluation of freight infrastructure needs and access to intermodal facilities (air, road, rail, and water).

Environment

Vision

Transportation planning activities and projects will strive to reduce air quality degradation and other environmental degradations caused by transportation. Vehicle emissions (carbon monoxide [CO], nitrogen oxides [NOx], volatile organic compounds [VOCs], particulates, and carbon dioxide [CO₂]) will be reduced by modernizing transit, truck, and automobile fleets, and through increasing transit mode share.

In the process of considering transportation projects, the MPO will take into account the management and minimization of soil and water contamination, such as highway and rail right-of-way runoff, and wetland impacts. Construction of transportation facilities will be planned and carried out in a manner that avoids or minimizes negative impacts to natural resources. Transportation planning will also promote project design that preserves cultural resources such as community character and cohesiveness, quality of life, and historic and scenic resources; protects greenfields, open space, wildlife, and ecosystems; and advances sustainability and health-promoting transportation options. Transportation agencies will work with environmental and cultural resource agencies to achieve these ends.

Policies

To minimize transportation-related pollution or degradation of the environment, promote energy conservation, support preservation of natural resources and community character, and advance sustainability, regional environmental benefits, and health-promoting transportation options, the MPO will:

- A. Give priority to projects that maintain and improve public transportation facilities and services so as to increase public transportation mode share and reduce reliance on automobiles.
 - B. Give priority to projects that reduce congestion or manage transportation demand to improve air quality.
 - C. Support, through planning and programming, projects that make transportation in the region more sustainable.
 - D. Promote the use of low-polluting or alternative fuels, efficient engine technology or other new, viable technology and resource protections.
 - E. Consider environmental issues during project selection; in particular, air quality and reduction of pollutants (CO, NO_x, VOCs, particulates, and CO₂), water resources (soil and water contamination, stormwater management, and wetlands impacts), greenfields and open space, and wildlife and ecosystems; and value those that reduce negative impacts.
 - F. Recognize value in transportation projects that preserve natural and cultural resources, including visual, historic, aesthetic, noise, community cohesiveness, and local quality of life values.
 - G. Recognize, in evaluations, projects that respect community character in their purpose and design.
 - H. Consult with environmental and cultural resource agencies and entities on environmental effects, particularly through the existing National Environmental Policy Act (NEPA)/Massachusetts Environmental Policy Act (MEPA) processes.
 - I. Encourage, through planning and programming, transportation choices that promote a healthy lifestyle, such as walking and bicycling.
-

Safety and Security

Vision

Safety and security initiatives will be implemented to protect the region from natural and human threats. Transportation infrastructure and its operation will be upgraded on an ongoing basis for the safety and security of all users. Technologies will be employed to manage incidents, conduct emergency response, and support safe evacuations using various transportation modes. Highway and transit infrastructure will be kept in a state of good repair. There will be fewer crashes, due to improved intersection designs and upgrades.

Policies

To improve safety and security for all transportation system users and prepare the transportation system for its role in emergency-response preparedness, the MPO will:

- A. Support designs and fund projects and programs that address safety problems and enhance safe travel for all system users. This includes designs and projects that encourage motorists, public transportation riders, bicyclists, and pedestrians to share the transportation network safely.
 - B. Support, through planning and programming, the installation, operation, upgrading, and timely maintenance of system infrastructure, including ITS, to provide for safety and security.
 - C. Participate in regional planning for safety and security initiatives, such as evacuation and contingency measures, and homeland security.
-

Regional Equity

Vision

Regional equity and the needs of low-income and minority residents will be assessed through regular activities and technical analyses. Low-income and minority residents will share equally with others in access to the transportation network and its mobility benefits. Environmental burdens from transportation facilities and services will be identified and minimized for all populations.

Policies

To promote the equitable sharing of the transportation system's benefits and burdens, and incorporate environmental justice principles into transportation planning and programming

activities, the MPO will:

- A. Continue the outreach to communities with a high proportion of low-income and minority residents to identify transportation needs.
- B. Assess regional equity by analyzing mobility, accessibility, and congestion for communities with a high proportion of low-income and minority residents.
- C. Fund projects that address identified regional equity issues and needs.

Land Use and Economic Development

Vision

Multimodal transportation will serve business, residential, and mixed-use centers. Transit, bicycle, and pedestrian facilities will be linked in a network to a growing inventory of denser residential development, employment and commercial centers, and major destinations. Transportation investments will focus on centers of economic activity and areas with adequate water, sewer, and other public infrastructure. Transportation rights-of-way will be used to maximize public benefits.

Transportation planning will be integrated with land-use and economic-development planning to the greatest extent possible in order to achieve more mobility, foster sustainable communities and transportation, and expand economic opportunities and prosperity. Transportation improvements will be made to facilitate the movement of freight throughout the region.

Policies

To promote the integration of land-use, economic-development, and transportation planning to achieve efficiencies; benefits for mobility and the environment, including sustainable communities and transportation; and stronger economic opportunities, the MPO will:

- A. Link transportation planning with land-use and economic-development plans, particularly in areas identified for economic development by state, regional, and local planning.
- B. Make transportation investments where existing or planned development will encourage public transportation use, walking, and bicycling.
- C. Give priority to projects in areas identified in local and regional plans as being suitable for concentrated development and/or redevelopment, including brownfield redevelopment; support initiatives that increase sustainability.
- D. Consider both existing development and densities in transportation decision-making and give priority to projects that support them.
- E. Consider the appropriate use and maintenance of transportation rights-of-way to maximize public benefits.
- F. Put priority on transportation investments related to existing centers of economic activity; or to areas with adequate water and sewer infrastructure; or to municipal centers or areas targeted for economic development.
- G. Support, through planning and programming, transportation improvements that provide transportation links for economic activities such as freight movement.

Public Participation

Vision

Members of the public will have the opportunity to be informed about and involved in MPO planning and decision-making regarding transportation projects, programs, and spending for the region. Information will be presented in clear and concise formats, including visualizations, accessible formats, and other media. The MPO will strongly encourage low-income and minority residents and those with limited English proficiency to participate. The Regional Transportation Advisory Council will continue to contribute to the development of all MPO documents.

The MPO will work with project proponents and members of the public to help them understand the MPO project evaluation and selection processes. To facilitate this understanding, the MPO will, in conducting those processes, consistently follow its published

project-selection criteria.

The MPO will consult with environmental, cultural resource, community, business, economic development, and other agencies throughout the region and state to promote the integration of their interests with transportation planning and programming.

Policies

To promote public involvement in all phases of transportation planning and design, the MPO will:

- A. Implement the MPO public participation plan in a way that provides all residents and businesses the opportunity to participate in the transportation planning process.
- B. Communicate effectively with project proponents and members of the public to ensure their understanding of the MPO project evaluation and selection processes and facilitate their participation.
- C. Use the MPO's criteria, based on MPO policies, in decision-making and project selection.
- D. Continue to work with the Advisory Council in the development of all MPO documents, and support the Advisory Council's work of bringing the public's views to MPO decision-making.
- E. Reach out to under-represented persons and groups, including low-income and minority residents and those with limited English proficiency, to ensure that decisions are made in an open and participatory process.
- F. Solicit the input of environmental, cultural resource, community, business, economic development, and other appropriate agencies on MPO activities to promote the integration of these interests with transportation planning and programming.
- G. Work to improve coordination among the local, regional, and state jurisdictions that own and operate the region's transportation system.
- H. Expand methods of communication and explore new technologies to improve outreach. Use varied media and visualization techniques.

Finance

Vision

Projects programmed by the MPO will effectively and efficiently use the region's limited financial resources to maintain, operate, and improve the transportation system. In addition, the MPO will pursue opportunities for innovative funding and public-private partnerships. The MPO will encourage implementing agencies to provide transparent and accurate information to better estimate and contain project costs.

Policies

To secure and efficiently and effectively apply financial resources for the maintenance, modernization, and appropriate expansion of the regional transportation system, the MPO will:

- A. Consider project effectiveness in meeting transportation needs during project selection.
- B. Work to identify and acquire new revenues for the transportation system, including those from innovative funding sources and public-private partnerships.
- C. Work with implementing agencies, communities, and project proponents to identify and adopt information systems to better estimate and contain project costs.
- D. Consider the cost of maintenance and operations when selecting projects.

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2.0

GOALS AND OBJECTIVES

2.1 Mission

The mission of the Mecklenburg-Union Metropolitan Planning Organization (MUMPO) is to plan for transportation options that assure mobility, respect the natural and built environment, and strengthen the economic prosperity of MUMPO's planning area. Four surface transportation modes – roadway, transit, bicycle and pedestrian – comprise a system designed to foster the safe and efficient movement of people and support the growth and development objectives of the Mecklenburg-Union MPO. Rail lines, intermodal terminals and Charlotte/Douglas International Airport provide connections for people traveling and goods shipped to and from this area.

This **2030 Long-Range Transportation Plan (LRTP)** describes the programs that carry out MUMPO's mission. To determine the projects that make up the plan, MUMPO is guided by the goals and objectives below. The plan is based on an assessment of future travel conditions and a variety of land development and environmental factors described in this document.

2.2 Goals

- ▶ Provide a **safe and efficient** transportation system.
- ▶ Improve the **quality of life** for residents of the Mecklenburg-Union MPO area.
- ▶ Provide a transportation system that serves the public with **mobility** choices, including walking, bicycling and transit options.
- ▶ Provide a transportation system that is sensitive to significant features of the natural and human **environments**.
- ▶ Provide **equitable** transportation options for low income and minority neighborhoods.
- ▶ Provide meaningful opportunities for **public involvement** in the transportation planning process.

2.3 Objectives

① Streets and Highways

Develop an efficient street and highway network capable of providing an appropriate level of service for a variety of transportation modes.

- Develop streets and highways in a manner consistent with adopted land use plans.
- Increase the connectivity of the existing street network and improve access to city and town centers.
- Develop regionally significant streets and highways in a manner which minimizes travel times and distances.
- Optimize the inter-city, inter-regional and intra-regional capacities of major transportation corridors.
- Develop streets and highways that are accessible to or compatible with multiple modes of transportation.
- Develop visually attractive corridors.
- Minimize accident potential and severity.
- Include sidewalks and bicycle facilities in the design of roadways to accommodate and encourage pedestrian and bicycle travel.

② Public Transportation System

Promote a safe, efficient and diverse public transportation system that is accessible to various segments of the population.

- Operate safe and efficient scheduled transit services that minimize travel times and distances.
- Implement land use strategies that maximize the potential for transit patronage and coverage.
- Develop land use and density criteria for transit centers and corridors.
- Establish programs and incentives that encourage ridesharing (or eliminate barriers to ridesharing).
- Serve the elderly and transportation-disadvantaged populations with convenient transportation to needed services.
- Increase transit patronage as a percentage of total trips.
- Maximize transit's coverage area to the extent feasible.
- Facilitate the integration or coordination of different transportation modes by establishing inter-modal facilities.
- Reserve designated rail and transit corridors for future needs.

③ Pedestrian and Bicycle Transportation

Develop a transportation system that integrates pedestrian and bicycle modes of transportation with motor vehicle transportation, and encourages the use of walking and bicycling as alternative modes.

- Increase the design sensitivity of specific transportation projects to the needs of pedestrians and bicyclists.
- Improve the transportation system to accommodate pedestrian and bicycle access along roadways, through design and facility standards.
- Increase pedestrian and bicycle safety through public awareness programs.
- Provide linkages for pedestrians and/or bicyclists with neighborhoods, employment centers, services, commercial areas and other business districts, parks, and cultural facilities such as schools and churches.

④ Rail and Air Transportation

Maximize rail and air travel and transportation opportunities.

- Promote initiatives at Charlotte/Douglas International Airport that increase the attractiveness of the airport as a major passenger and cargo facility.
- Maintain the airport's ongoing long range planning function.
- Promote future opportunities for inter-regional mobility through enhancements to inter-city rail service and the provision of high-speed rail service.

⑤ Freight and Goods Movement

Provide a freight transportation system supporting the movement of goods.

- Develop a transportation system supporting Charlotte's position as a major distribution center, improving and maintaining access for freight to other markets via a network of highways, railroads and Charlotte/Douglas International Airport.
- Develop streets and highways that are accessible to and compatible with multiple modes of transportation.
- Facilitate coordination among transportation modes through the establishment of Intermodal facilities
- Identify opportunities to share rail corridors with transit.
- Support expansion opportunities at Charlotte/Douglas International Airport that increase the attractiveness of the airport as a major cargo facility.
- Designate safe routes, with minimal urban exposure, for the transport of hazardous materials.
- Designate truck routes that minimize exposure to neighborhoods and to historic and cultural resources.

⑥ The Environment

Develop a transportation system that preserves and enhances the natural and built environments.

- Develop transportation systems and programs that maintain or improve air quality.
- Design transportation facilities that minimize the impact of traffic noise on surrounding properties.
- Design transportation systems and facilities that preserve and complement the area's natural features.
- Plan transportation facilities that protect cultural and historic resources.
- Design attractive transportation systems that reinforce community standards of appearance.
- Plan transportation facilities that minimize neighborhood disruption and related impacts.
- Designate safe routes, with minimal urban exposure, for the transport of hazardous materials.
- Designate truck routes that promote safety and minimize exposure to neighborhoods and to historic and cultural resources.

⑦ Financial

Make investment decisions for transportation modes that make the most efficient use of limited public resources.

- Minimize implementation and operation costs of transportation projects.
- Develop transportation projects that enhance the local and regional economies.
- Actively explore new sources of revenue.

CHAPTER FOUR

GOALS, OBJECTIVES AND PERFORMANCE MEASURES

This chapter describes the goals, objectives and performance measures that were identified to guide the development of the RTP. Goals and objectives provide the overall policy direction, whereas performance measures are needed for each objective, so that progress toward meeting goals and objectives can be determined. In addition, the related topic of plan phasing is also discussed in this section.

A set of regional transportation goals and objectives was approved by the Transportation Policy Committee (TPC) on February 19, 2003. Later, on May 21, 2003, the TPC took action to approve performance measures for each objective. Together, these criteria provide the planning process with a basis for identifying options, evaluating alternatives and making decisions on future transportation investments.

The TPC utilized input from a variety of sources in developing a set of goals, objectives and performance measures. These sources included the results of the five expert panel forums held in the region during February and March 2001, and the sixteen (16) focus group sessions held throughout the region in May and June of 2001. In addition, information was obtained from a historical document search, which focused on goals and objectives contained in member agency general plans or other planning documents. This information was augmented by the results of other RTP study tasks, input from MAG modal committees, and extensive discussions by the TPC.

PLAN ASSESSMENT CONCEPTS

Sound planning principles call for the use of specific criteria to evaluate plan alternatives,

assess plan performance and prioritize the phasing of projects. These criteria include a hierarchy of goals, objectives and performance measures.

A goal is a general statement of purpose that represents a long-term desired end to a specific state of affairs. It is generally measurable by qualitative means. By identifying broad goals that are both visionary and practical, and which respond to the values of the region, the focus of the planning process can be more readily communicated to the public. The goals, in turn, can be defined in greater detail by specifying multiple objectives for each goal.

An objective is very similar to a goal, as it represents a desired end to a specific state of affairs. However, an objective is an intermediate result that must be realized to reach a goal. The definition of an objective is usually more focused than that of a goal and is typically more subject to being measured. Objectives can be further assessed through performance measures that are identified for each objective.

Performance measures are criteria used to provide more quantitative information that can be used to assess how well objectives are being met. They can be applied at the system level and project level. In addition, they can be used to evaluate plan options, as well as monitor plan performance.

In the discussion below, goals, objectives and performance measures have been grouped into two categories of factors that can be used to gauge the progress and success of the plan. These categories are: 1) System Performance Measures, and 2) Plan Evaluation Criteria.

System Performance Measures

System performance measures are goals, objectives and performance measures that provide information about how the regional transportation system is performing overall. Some of these performance measures are also used to evaluate individual components of the overall transportation system or to evaluate proposed projects. For example, the average delay time during the peak commute period can be used to measure how the overall system is expected to perform in the future compared to today. This measure can also be used as one indicator to compare how two different future transportation systems perform. In addition, the average delay in a given travel corridor can be used to examine the impact of a proposed transportation investment within that corridor.

The performance measures are tied to the objectives contained for the first three goals:

- System Preservation and Safety
- Access and Mobility
- Sustaining the Environment

These measures were used in the analysis of proposed projects to be included in the RTP and to assess how different transportation system options perform with respect to the adopted objectives under these three goals. They will also serve as the basis to monitor how the transportation system performs as the RTP is implemented.

Plan Evaluation Criteria

This category of goals, objectives and performance measures provides information on objectives that relate to the planning process, and the importance of accountability during the development and implementation of the plan. These objectives are associated with the fourth goal:

- Accountability and Planning

PERFORMANCE MEASURES BY GOAL AND OBJECTIVE

The TPC identified a total of four goals, 15 objectives and 19 performance measures and 5 evaluation criterion. These factors are listed below and grouped into the major categories of System Performance Measures and Plan Evaluation Criteria.

SYSTEM PERFORMANCE MEASURES

Goal 1: System Preservation and Safety

Transportation infrastructure that is properly maintained and safe, preserving past investments for the future.

Objective 1A: Provide for the continuing preservation and maintenance needs of transportation facilities and services in the region, eliminating maintenance backlogs.

Performance Measures:

- Percent of maintenance and preservation needs funded.

Objective 1B: Provide a safe and secure environment for the traveling public, addressing roadway hazards, pedestrian and bicycle safety, and transit security.

Performance Measures:

- Accident rate per million miles of passenger travel.

Goal 2: Access and Mobility

Transportation systems and services that provide accessibility, mobility and modal choices for residents, businesses and the economic development of the region.

Objective 2A: Maintain an acceptable and reliable level of service on transportation and mobility systems serving the region, taking

into account performance by mode and facility type.

Performance Measures:

- Travel time between selected origins and destinations.
- Peak period delay by facility type and geographic location.
- Peak hour speed by facility type and geographic location.
- Number of major intersections at level of service “E” or worse.
- Miles of freeways with level of service “E” or worse during peak period.

Objective 2B: Provide residents of the region with access to jobs, shopping, educational, cultural, and recreational opportunities and provide employers with reasonable access to the workforce in the region.

Performance Measures:

- Percentage of persons within 30 minutes travel time of employment by mode.

Objective 2C: Maintain a reasonable and reliable travel time for moving freight into, through and within the region, as well as provide high-quality access between intercity freight transportation corridors and freight terminal locations, including intermodal facilities for air, rail and truck cargo.

Performance Measures:

- Average daily truck delay.

Objective 2D: Provide the people of the region with transportation modal options necessary to carry out their essential daily activities and support equitable access to the region’s opportunities.

Performance Measures:

- Jobs and housing within one-quarter mile distance of transit service.

- Percentage of major arterial streets that have bike lanes.
- Percentage of regional connectors funded as part of the total Off-Street System Plan and the Regional Bicycle Plan.

Objective 2E: Address the needs of the elderly and other population groups that may have special transportation needs, such as non-drivers or those with disabilities.

Performance Measures:

- Percentage of workforce that can reach their workplace by transit within one hour with no more than one transfer.

Note: There was also a separate Title VI and Environmental Justice analysis, which is detailed in Chapter Seven of this Plan.

Goal 3: Sustaining the Environment

Transportation improvements that help sustain our environment and quality of life.

Objective 3A: Identify and encourage implementation of mitigation measures that will reduce noise, visual and traffic impacts of transportation projects on existing neighborhoods.

Performance Measures:

- Per Capita Vehicle Miles of Travel (VMT) by facility type and mode.
- Total transit ridership.

Objective 3B: Encourage programs and land use planning that advance efficient trip-making patterns in the region.

Performance Measures:

- Households within one-quarter mile of transit.
- Transit share of travel (by transit sub-mode).

Objective 3C: Make transportation decisions that are compatible with air quality conformity and water quality standards, the sustainable preservation of key regional ecosystems and desired lifestyles.

Performance Measures:

- Households within five miles of park-and-ride lots or major transit centers.
- Amount of pollutant emissions by type-National Air Quality Standards (NAQS).

PLAN EVALUATION CRITERIA

Goal 4: Accountability and Planning

Transportation decisions that result in effective and efficient use of public resources and strong public support.

Objective 4A: Make transportation investment decisions that use public resources effectively and efficiently, using performance-based planning.

Evaluation Criteria:

- Adopt performance measures that will result in a regional transportation system that is effective and efficient and meets the transportation goals and objectives of the region.

Objective 4B: Establish revenue sources and mechanisms that provide consistent funding for regional transportation and mobility needs.

Evaluation Criterion:

- Percent of state and federal transportation taxes collected in Maricopa County that are returned to the region.

Objective 4C: Develop a regionally balanced plan that provides geographic equity in the distribution of investments.

Evaluation Criterion:

- Geographic distribution of transportation investments.

Objective 4D: Recognize previously authorized corridors that are currently in the adopted MAG Long-Range Transportation Plan; i.e., Loop 303 and the South Mountain Corridor.

Evaluation Criterion:

- Inclusion of committed corridors.

Objective 4E: Achieve broad public support for needed investments in transportation infrastructure and resources for continuing operations of transportation and mobility services.

Evaluation Criterion:

- Voter approval for a regional transportation revenue source.

PLAN PHASING PRIORITY FACTORS

The phases in which the elements of a plan are implemented is another important consideration in the development of the total plan. The preparation of phasing schedules considers a number of factors, which are discussed below.

- Traffic Demand and Congestion: When considering traffic volumes throughout the region, traffic demand served and levels of congestion are key considerations in phasing plan elements. Segments with higher traffic volumes and greater congestion that are identified early in the period, are considered for earlier implementation.
- System Continuity: The phasing of facility development needs to expand the highway network in a logical sequence, so that maximum possible system continuity, connectivity and efficiency are maintained.

- Revenue Availability: The cash flow patterns from revenue sources limit the amount of work that can be accomplished within a given period of time. In addition, since revenue streams are lower in the early years and greater in the later years, generally more construction can be phased in the later parts of the planning period.
- Bonding Capacity and Strategies: Through bonding, funding for transportation projects can be shifted to earlier phases in the planning period. However, this has to be weighed against the reduction in total revenues available for constructing projects resulting from interest costs. A conservative bonding scenario was assumed in developing the phasing plan.
- Cost: Large projects with high total costs may need to be spread over a period of years to accommodate cash flows.
- Project Development Process: The implementation of freeway and highway projects requires a complex development process. The early stages of this process involve extensive corridor assessments, environmental studies, and engineering concept analyses. This is followed by right-of-way acquisition and final design work, before actual construction may begin. All these steps must be sequenced over a multi-year period.
- Project Readiness: Certain projects have already been under study for a number of years and are further along in the highway development process. These projects would continue to proceed through the process from their current stage.
- Concurrent Progress on Multiple Projects: Major needs for freeway and highway improvements exist throughout the MAG area. The phasing of projects should proceed so that improvements to the roadway network can be accomplished throughout the planning period in all areas of the region.