2007 Metropolitan Transportation Plan - 2030

Approved

Transportation Conformity Report for JOHRTS

FY 2006 - 2008 Revised Transportation Improvement Program

Approved

Draft FY 2008 - 2011 Transportation Improvement Program

South East Texas Regional Planning Commission

Adopted by the Transportation Planning Committee on April 12, 2007

1.0 Introduction

Photo courtesy of the Beaumont Conventions and Visitors Bureau

In 1974, the Governor of Texas designated the South East Texas Regional Planning Commission (SETRPC) as the Metropolitan Planning Organization (MPO) for Jefferson, Orange, and Hardin Counties. As the MPO, SETRPC is responsible for conducting comprehensive, coordinated, and continuing long-range transportation planning in the three-county region. The SETRPC-MPO conducts the transportation planning process to develop a 20-year long-range regional transportation plan that will accommodate the future needs of the three-county region and acknowledge the vital role that transportation plays in the region's social, environmental, and economic health. This plan is the Jefferson Orange Hardin Regional Transportation Study (JOHRTS) area Metropolitan Transportation Plan (MTP) – JOHRTS MTP.

Metropolitan Transportation Plan

The JOHRTS MTP provides for a multi-modal transportation network for the citizens of southeast Texas. The JOHRTS MTP incorporates public input, is financially and fiscally responsible, and conforms with the transportation provisions of the State Implementation Plan (SIP). The SIP is the statewide document which demonstrates how Texas will attain the National Ambient Air Quality Standards (NAAQS). Currently, the JOHRTS area is nonattainment as the three-county region does not meet the NAAQS for ozone.

This document presents the JOHRTS FY 2007 MTP-2030 and replaces the previously approved JOHRTS 2005 MTP-2030. The JOHRTS FY 2007 MTP-2030 incorporates the transportation planning requirements of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU).

Federal Transportation Requirements for MTPs

Legislation

The requirements for metropolitan long-range plans changed substantially with the passage of the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA). ISTEA's declaration of policy is "develop a National Intermodal Transportation System that is economically efficient, environmentally sound, provides the foundation for the nation to compete in the global economy and will move people and goods in an energy-efficient manner." As such, ISTEA emphasized initiatives that increased the performance of the existing transportation network by promoting: (1) reinvestment in existing infrastructure, (2) increased public involvement in the transportation planning process, (3) new

transportation technologies, (4) intermodal connections, (5) alternative funding strategies, and (6) a pragmatic approach to new construction projects.

Photo courtesy of the Beaumont Conventions and Visitors Bureau

The successor to ISTEA, the Transportation Equity Act for the 21st Century (TEA-21) was passed by Congress in 1998. This legislation continued to promote system preservation while increasing funding of transit and other transportation modes that have traditionally been under funded by the federal government. TEA-21 combined continuing and improving current programs with new initiatives to meet the challenges of improving safety, protecting and enhancing communities and the natural environment, and advancing the nation's economic growth and global competitiveness through efficient and flexible transportation.

TEA-21 placed greater emphasis on managing the existing transportation infrastructure by promoting the development of multimodal transportation systems with good intermodal connections. Also, TEA-21 added new programs that linked people with low incomes to suburban employment centers (Access to Jobs) and promoted the efficiency of transportation networks while preventing any negative impacts on communities (the Transportation and Community and System Preservation program).

In August 2005, Congress enacted the Safe, Accountable, Flexible and Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU). SAFETEA-LU builds upon the principles, values, and achievements of ISTEA and TEA-21 to create a safer, simpler, and smarter program for improving the safety of the surface transportation system. SAFETEA-LU is designed to preserve funding flexibility; simplify programs and continue efforts for streamlining project delivery; and make the programs smarter by expanding financing options, encouraging private sector participation, and increase oversight and accountability of public fund expenditures.

Environmental Justice

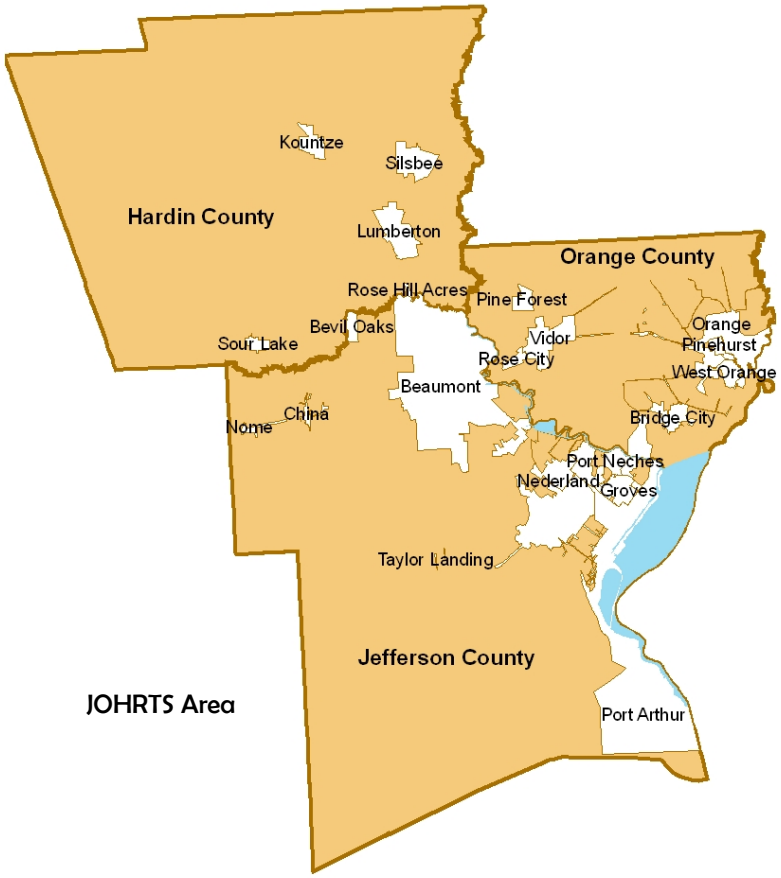
Recipients of federal-aid are required to comply with Title VI of the Civil Rights Act of 1964. Title VI declares policy prohibiting discrimination. Additionally, federal regulations mandate that MPOs utilize federal funds in a way that provides transportation equity to all segments of society.[1] The Environmental Justice (EJ) provisions require that everyone receive their share of transportation improvements without a disproportionate burden of adverse effects. Therefore, compliance requires analysis of data to

[1] Executive Order 12898 (2/11/94), United States Department of Transportation (DOT) Order 5610.2 (4/15/97), and Federal Highway Administration Order 6640.23 (12/2/98).

determine if a transportation project will cause "disproportionately high and adverse effects" on minority[2] or low-income[3] populations.

The Council on Environmental Quality (CEQ) provides guidelines for determining areas where disproportionate effects to minorities are likely to occur. The CEQ advises identifying areas where the minority and low-income populations (1) exceeds 50 percent or (2) is "meaningfully greater" than the local neighborhood area population.

To comply with Federal regulations regarding EJ, the SETRPC-MPO identified minority and low-income populations within the JOHRTS area. The two methodologies recommended by CEQ were examined for identifying minority population areas in the three county region. The "meaningfully greater" method of identifying minorities was evaluated and deemed ineffective for identifying minority and low-income populations within the JOHRTS area. The 50-percent method was determined to provide a better indication of the location of low-income and minority populations within the JOHRTS area.



JOHRTS Area

Current federal orders give local planning agencies considerable latitude in determining appropriate EJ policies. The SETRPC-MPO believes that public involvement is the most effective method to implement EJ in the JOHRTS area. Consequently, the SETRPC-MPO conducts public meetings at facilities near identified concentrations of minority and low-income households to provide a better opportunity for these population groups to become active participants in the transportation planning process for the JOHRTS area.

Air Quality Conformity

The 1990 Clean Air Act Amendments (CAAA) contain conformity requirements that are designed to ensure that planning for transportation systems is consistent with and conforms to the State Implementation Plan (SIP) for attaining and maintaining the

[2] Minorities are defined by the U.S. Department of Transportation as those persons covered under the US Census Bureau categories "Black," "Hispanic," "American Indian or Alaskan Native," "Asian or Pacific Islander," or "any readily identifiable group of minority persons."

[3] Low-income persons are defined as those living in households receiving incomes at or below the federal poverty level.

health-based NAAQS. Conformity requirements attempt to ensure that the transportation system and proposed projects do not cause new air quality violations or worsen existing conditions.

The CAAA address conformity in Section 176(c)(1). The federal regulation 40 CFR § 93 Subpart A implements the law. The State of Texas incorporates these federal regulations into Texas Administrative Code Title 30 Part 1 Chapter 1143 Subchapter G Rule 114.260.

The current rule for determining transportation conformity is based on the eight-hour standards for ozone and particulate matter ($PM_{2.5}$), which was effective in August 2004. In April 2004, EPA designated the JOHRTS area as non-attainment for ozone under the eight-hour standard. The Final Rule for the eight-hour standard was published and became effective June 15, 2004.

Goals and Objectives

Transportation plans require developing goals and objectives that reflect regional values and satisfy long-term regional transportation needs. To describe the preferred result for meeting the goals and objectives, the SETRPC-MPO developed a vision statement for the MTP.

The **Goals** are used as a general guide to achieve the result stated in the Vision Statement. **Objectives** are more specific than goals as they define results that must be attained or actions that must be followed for reaching the respective goal. The Vision Statement and the goals and objectives – together form a coherent plan to provide pragmatic solutions to identified transportation needs. While the Vision Statement stands alone, goals and objectives are not mutually exclusive of each other and often conflict with each other. For example, some projects that may encourage economic development may be excluded from the MTP because they have the potential to endanger wetlands or have an adverse effect on local communities. The cumulative effect that each project has on the MTP's goals and objectives must produce a significant net benefit before it can be incorporated into the MTP.

Photo courtesy of Marc Shepherd

The transportation goals and objectives established by the SETRPC-MPO fulfill the MTP's Vision Statement and are as follows. Please note: not listed in any particular order.

Goal #1: Preserve and Maintain the Existing Transportation System.

This goal focuses on optimizing the existing system while accommodating present and future transportation needs without constructing expensive new transportation facilities. This will help improve system reliability, enhance safety, and reduce operating costs.

Objectives:

- Give priority to projects that improve the condition of the existing transportation system or upgrade existing transportation facilities.
- Improve junctions between transportation modes.
- Discourage improvements that create unnecessary increases in travel demand.

Goal #2: Improve the Operational Efficiency of the Transportation Network.

This goal centers on improving person and goods movement within the existing transportation system.

Objectives:

- Encourage initiatives that promote transit and other transportation modes as alternatives to the single occupancy vehicle.
- Promote operational efficiency through the use of technological improvements.
- Support measures that reduce traffic congestion and peak hour travel demand.

Photo courtesy of the Beaumont Convention and Visitors Bureau

Goal #3: Enhance the Safety of the Transportation Community.

Public safety is a major concern for all residents in the JOHRTS area. Every effort is made to ensure that the safety of the public is improved whenever possible. Projects promoted under this initiative include those that continue to develop and maintain hurricane evacuation routes or prevent rail/vehicle accidents at railway crossings.

Objectives:

- Promote programs and projects that reduce the number and severity of traffic accidents, especially at railroad crossings.
- Give priority to construction projects that eliminate roadway hazards.
- Support the development and implementation of roadway design standards that improve highway safety.
- Maintain and enhance the existing hurricane evacuation system.

Goal #4: Enhance the Security of the Transportation Community.

With the JOHRTS area being a hub of intermodal traffic (land and seaborne) and with the ever changing weather in the Gulf of Mexico, the SETRPC-MPO has many facets to consider in transportation planning. Although the SETRPC-MPO may not be directly involved in Homeland Security planning, the SETRPC-MPO ensures that the Transportation Planning Committee (TPC) members review and consider the following issues:

Objectives:

- Ensure that priority access routes for emergency vehicles and other responders are identified and marked.
- Ensure that the TxDOT, city and county agencies work to coordinate the use of reversible lanes in the event of an emergency (either natural or manmade).
- Ensure that transit authorities and stakeholders are included in the planning process.
- Work with state and federal agencies to optimize the use of new and existing electronic message boards.
- Work with members to identify "bottlenecks" or "points of congestion" and work to improve those areas with applicable transportation related projects.

Photo courtesy of the Beaumont Convention and Visitors Bureau

Goal #5: Protect and Improve the Environment.

The JOHRTS area contains extensive wetlands, parks, and wildlife preserves. The SETRPC-MPO recognizes its responsibility in maintaining and protecting the integrity of these precious ecosystems as a legacy for future generations.

Air quality is also a major environmental issue in the JOHRTS area. The presence of petrochemical industries, dependency on the automobile as the main source of transport, and the proximity to other areas with similar characteristics make efforts to improve air quality a priority.

Objectives:

- Continue to develop plans and programs that will help the JOHRTS area achieve the federal clean air standard for ozone in accordance with the 1990 CAAA.
- Promote the development of a transportation system that minimizes the degradation of wetlands, wildlife reserves, recreational areas, and other valuable natural resources in the JOHRTS area.
- Promote consistency of transportation plan and transportation improvement programs with State and local planned growth and economic development patterns.
- Support the design and construction of transportation projects that adhere to high environmental standards. Such projects should reduce soil erosion, control sediment runoff, assist in floodplain management, protect watersheds, and enhance wetlands.

Goal #6: Maximize the Social Benefits of the Transportation System.

Every effort will be made to improve social conditions in the area by promoting transportation projects and programs that provide a net benefit to society. These projects and programs that have a potential to adversely impact society will be modified.

Objectives:

- Promote programs that provide transportation services to the economically disadvantaged, the disabled, and persons lacking automobile access.
- Support initiatives that improve access to natural, historic, cultural, and recreational resources within the region.
- Minimize any detrimental impacts of proposed transportation improvements upon neighborhoods.
- Encourage transportation projects and programs that support community development and revitalization.
- Ensure that all segments of the public have an opportunity to participate in the transportation planning process and all interested public and private organizations are kept up-to-date on all current transportation issues.

Photo courtesy of the Beaumont Convention and Visitors Bureau

- Improve the aesthetics of existing transportation facilities through landscaping, beautification, roadway design, and architecture whenever possible.

Goal #7: Foster Economic Development.

All transportation projects and programs should support efforts to improve the economy in southeast Texas.

Objectives:

- Support regional cooperation and collaboration in the promotion and operation of economic assets in the JOHRTS area.
- Encourage all economic development organizations to continuously promote the economic attributes of the region.
- Continue to promote transportation programs and projects that support economic development initiatives, with particular emphasis on intermodal facilities.
- Subscribe to efforts that encourage the development of tourism in the region.
- Give priority to transportation programs that retain existing businesses and attract new businesses to the area.

Photo courtesy of Marc Shepherd

Goal #8: Maintain Financial Responsibility in the Development and Preservation of the Transportation System.

As stated under SAFETEA-LU planning guidelines, all MTPs must adhere to the principles of financial responsibility. The SETRPC-MPO seeks to expand on this initiative by including it as a goal of the MTP for the JOHRTS area.

Objectives:

- Uphold cost-effective operating strategies for all transportation services.
- Ensure that all transportation projects and programs utilize available funds in the most cost-effective and financially responsible manner possible.
- Give priority to those transportation projects and programs that provide the greatest net benefit at the least cost.
- Seek out additional federal and state transportation funds whenever possible.

Homeland Security programs

As a result of the September 11, 2001 events, the Governor of Texas established an initiative to prepare a statewide strategic plan. Homeland security efforts by state, county, cities, and other agencies

resulted in the adoption of a "Texas State Homeland Security Strategy." The SETRPC-MPO works with and coordinates the efforts of the various city agencies, county agencies, and state agencies in Hardin, Jefferson, and Orange Counties.

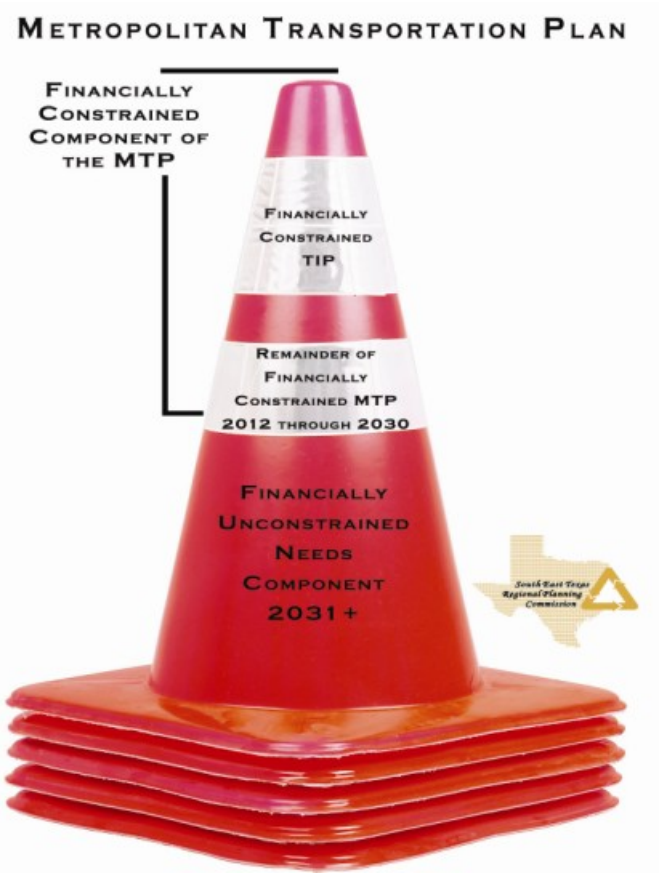
The issues identified in Goal #4 are considered as part of the approved Project Selection Process (PSP) when selecting projects for inclusion in the MTP and the Transportation Improvement Program (TIP).

Demographics and Travel Demand Model

TxDOT's Transportation Planning and Programming Division (TxDOT TPP) revalidated the travel demand model used in preparing this MTP. The 2001 field saturation traffic counts and the 2000 Census data were utilized for developing the model and forecasting future year data in the planning cycle. The roadway networks were updated based on the 2005 field reconnaissance and review. The model outputs were compared to available traffic count information to verify that the modeling assumptions were valid.

Plan Components and Structure

The MTP is a 20 to 25-year long range plan outlining the long term goals for the regional transportation system. It provides a project listing identifying those transportation improvements selected to meet the MTP's goals and objectives. The listed projects are grouped into two major components (financially constrained and financially unconstrained needs) and several subcomponents. These are described and illustrated as follows:



Financially Constrained Component (2008 – 2030)

This component constitutes those projects that have an identifiable funding source during the MTP planning horizon (normally years 1-20 plus) and includes the following three sub-components.

Transportation Improvement Program (2008-2011)

This section is a short-range implementation plan for the region. The TIP lists the transportation projects and programs that will be implemented in the coming four-year period (years 1-4).

Remainder of the Financially Constrained Component (2012 -2030)

This section consists of those projects that fall in the financially constrained MTP but are not in the TIP or locked years sections (normally years 5-20 plus).

The Financially Unconstrained Needs Component (2031+)

This component consists of those projects that have no identified funding source during the MTP planning horizon (normally projects not funded during the first 20 plus years). These projects were identified during the public involvement process as projects that the public deemed having merit. If additional funding were to become available, this list could be used to identify worthy projects to advance.

Photo courtesy of the Beaumont Convention and Visitors Bureau

2.0 The JOHRTS Area

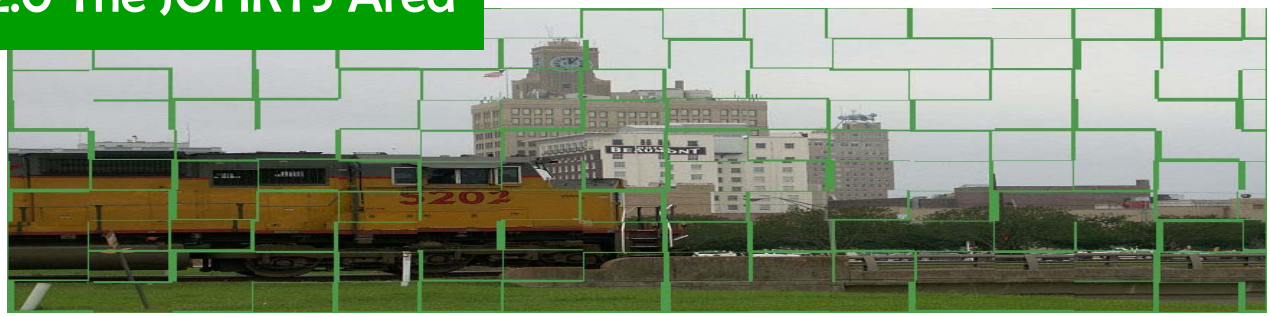


Photo courtesy of Jeff Steen

Overview

The Jefferson Orange Hardin Regional Transportation Study (JOHRTS) area consists of the three-county region of southeast Texas - Jefferson, Orange, and Hardin counties. As in other Texas urban areas, the JOHRTS area has experienced significant increases in traffic volumes and an associated increase in traffic congestion. In large measure, increased traffic and congestion are directly correlated to the region's growth in population; by the year 2030 the three-county area will reach approximately 435,700 persons. The population of the JOHRTS region was approximately 385,090 persons in 2000, with 252,051 in Jefferson County, 84,966 in Orange County, and 48,073 in Hardin County.

The study area includes the corporate limits of the Beaumont, Bevil Oaks, Bridge City, China, Groves, Kountze, Lumberton, Nederland, Nome, Orange, Rose City, Rose Hill Acres, Pine Forest, Pinehurst, Port Arthur, Port Neches, Silsbee, Sour Lake, Taylor Landing, Vidor, and West Orange. Geography and regional travel patterns are contributing factors to escalating traffic between the three major cities (Beaumont, Orange, and Port Arthur) and surrounding communities, increasing average trip lengths and vehicle miles traveled.

The study area also includes several intermodal facilities, including Southeast Texas Regional Airport, Orange County Airport, Hawthorne Field, Beaumont Municipal Airport, Port of Beaumont, Port of Port Arthur, Port of Orange, Port of Sabine Pass, and several railroads. An integral contributor to higher traffic volumes is the amount of truck traffic generated by the industrial nature of the local economy, the IH-10 major interstate corridor and the three main ports of Beaumont, Orange, and Port Arthur. During the past decade, the ports of Beaumont, Orange, and Port Arthur have undergone capital improvements to meet forecast demand.

The intent of this chapter is to place each of the modal profiles within the regional context; both the transportation system and the demand for transportation services are intimately linked to the region's geography, demographics, environment, and economy. Consequently, this chapter will review two key elements that play crucial roles in determining future transportation decisions. The first element is that the regional transportation plans are subject to air quality and conformity requirements. Secondly, since increasing traffic and congestion are directly correlated to the region's

population growth, socio-economic and travel behavior trends are also reviewed in the context of their role in transportation system decisions.

Air Quality Status

A principle concern underscoring regional congestion problems is the area's nonattainment status for ozone. Ozone is a harmful gas formed when volatile organic compounds (VOCs) and nitrogen oxides (NOx) react with sunlight. Major sources of these air pollutants are refineries, petrochemical facilities, power plants, trucks, and cars. Currently, the JOHRTS area produces enough NOx and VOC to create ozone levels that exceed National Ambient Air Quality Standards (NAAQS) for ozone. Consequently, the JOHRTS area is classified as a nonattainment area for ozone.

The 1990 Clean Air Act Amendments (CAAA) require that nonattainment areas adopt a structured, multi-year approach to attaining federal clean air standards, including a deadline for the reduction of ozone to permissible levels. As a result, the SETRPC-MPO is required to develop transportation programs and projects that reduce VOC and NOx emissions that contribute to the formation of ozone.

In late 2003, the U.S. Fifth Circuit Court of Appeals found the status of several nonattainment areas to be inadequate and the JOHRTS area Statewide Implementation Plan (SIP) was remanded. On March 30, 2004 EPA formally announced the JOHRTS region would be reclassified from "moderate" to "serious." On April 30, 2004, EPA announced their new classifications with respect to the more stringent 8-hour ozone standard and the JOHRTS region was designated a "marginal" nonattainment area with an attainment date of 2007.

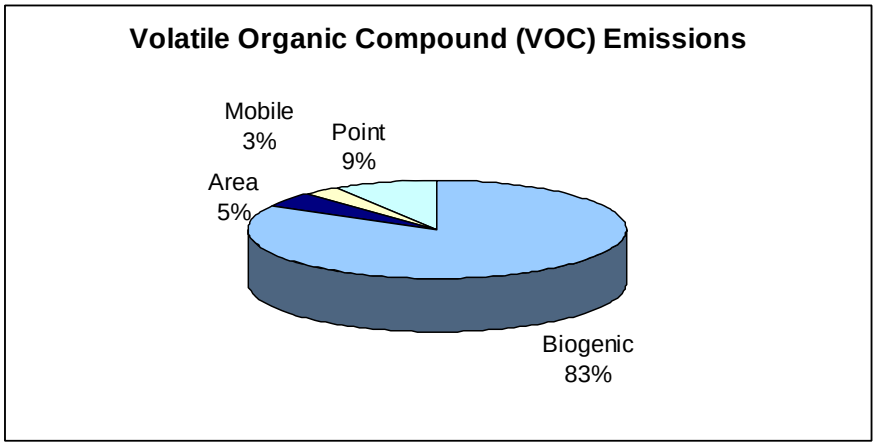
Air Pollution in Southeast Texas

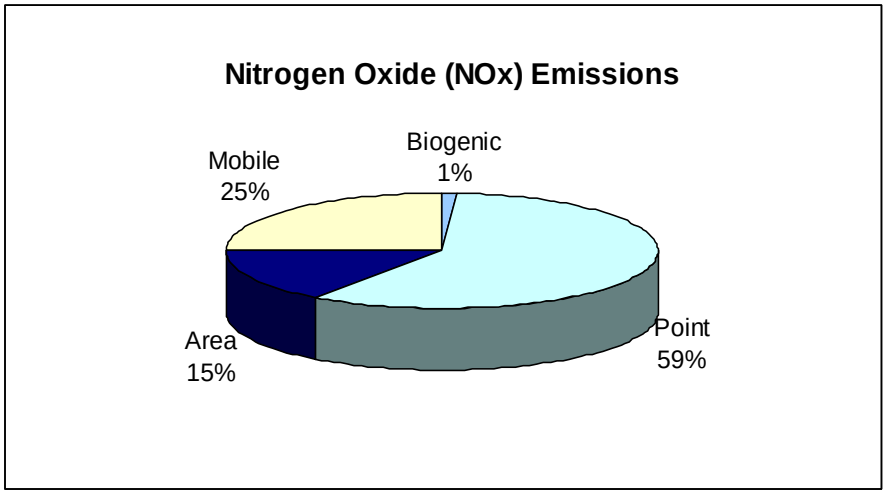
Air quality emissions are broken down into four major categories: on-road or mobile sources, area or non-road sources, biogenic sources, and point sources. Point sources comprise the majority (59 percent) of NOx emissions in the JOHRTS area and come from industrial operations. Area or non-road sources come from engines, trains, planes, boilers, solvents, paints, dry cleaning facilities, and construction equipment. Area source emissions currently comprise 15 percent of all NOx and five

percent of all VOC emissions in the JOHRTS area. On-road mobile sources are based on car and truck emissions and make up 25 percent and three percent of NOx and VOC emissions respectively.

Biogenic sources are emissions based on the natural result of plant photosynthesis and are based on the quantity and type of vegetation in the area. In southeast Texas, vegetation produces significant quantities of biogenic emissions that often overwhelm human emissions of VOC. While biogenic emissions only comprise one percent of NOx emissions they account for 83 percent of VOC emissions in the JOHRTS area.

Air pollution in the JOHRTS area also includes transported air pollutants that combine with locally produced emissions to produce ozone levels that exceed the NAAQS. The origin of most of the transported pollution has been traced to the Houston-Galveston nonattainment area. An analysis of air movements revealed that high ozone levels in the JOHRTS area would not have occurred if air pollution from the Houston-Galveston area had not transported into the region. Variations in temperature, wind speeds, and air mass movements also contribute to the frequency and severity of ozone in southeast Texas.

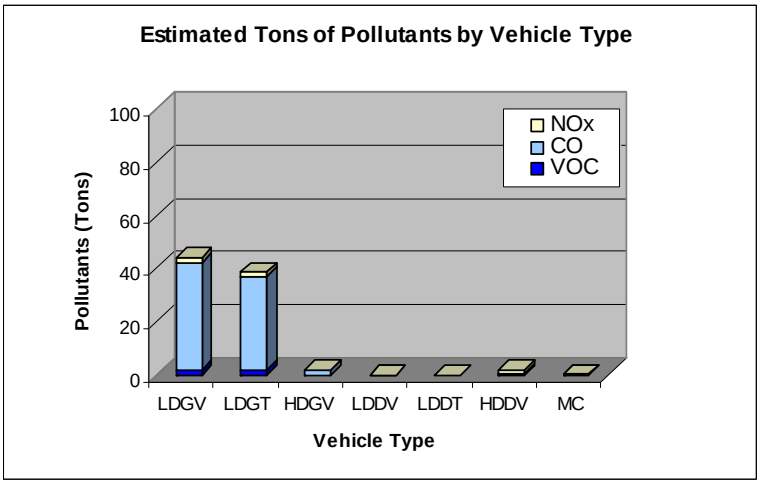




Sources of Emissions in the JOHRTS Area (from TCEQ May 2004 Proposed SIP Revision)

Understanding the Relationship between Vehicles and On-Road/Mobile Emissions

In order for the SETRPC-MPO to adhere to its mandate under the 1990 CAAA, the MPO staff must develop plans and programs that reduce the overall percentage of mobile source emissions within the JOHRTS area. In order for the staff to pursue plans and programs that will achieve this goal, they must understand the relationship between vehicles and NOx, VOC, and carbon monoxide (CO) emissions.



The emissions (VOC, NOx, and CO) from different on-road motor vehicles are estimated using MOBILE6, the latest EPA approved motor vehicle emission factor model. This model must be used for developing the on-road motor vehicle emission estimates required to make the conformity determination. Highway vehicle emission estimates are based on the combination of two fundamental measures of activity – vehicle miles traveled and the average rate of pollutants emitted by this travel. MOBILE6 computes separate emission estimates based on vehicle type such as heavy duty gas vehicle (HDGV), heavy duty diesel vehicle (HDDV), and light duty gas vehicle (LDGV). Because differences in emission characteristics exist depending on vehicle type and age, estimates incorporate the distribution of VMT (vehicle miles traveled) by vehicle type for a given area. For example, the emission estimates for the JOHRTS area will not necessarily be the same as those determined for the Houston-Galveston nonattainment area.

As a result of the characteristics of the JOHRTS region, including fleet composition, type of fuel used, and vehicle miles traveled, light duty gas vehicles (LDGV) and trucks account for the majority of on-road emissions tons/day or 95 percent while light duty diesel vehicles (LDDV) account for less than 0.01 percent and heavy duty diesel vehicles account for approximately 2.4 percent.

Measuring Air Quality

Measuring air quality in the JOHRTS area has been complicated by its current nonattainment status for ozone because two different standards based on the time interval over which pollution is measured have existed. These standards are called the one-hour standard and the eight-hour standard. In April 2004, EPA announced their plans for implementing the eight-hour standard and thus, revoking the one-hour standard in 2005.

The JOHRTS area has traditionally had difficulty meeting the one-hour standard mainly because of the transport of ozone and its precursors from the Houston-Galveston region. When the exceeded

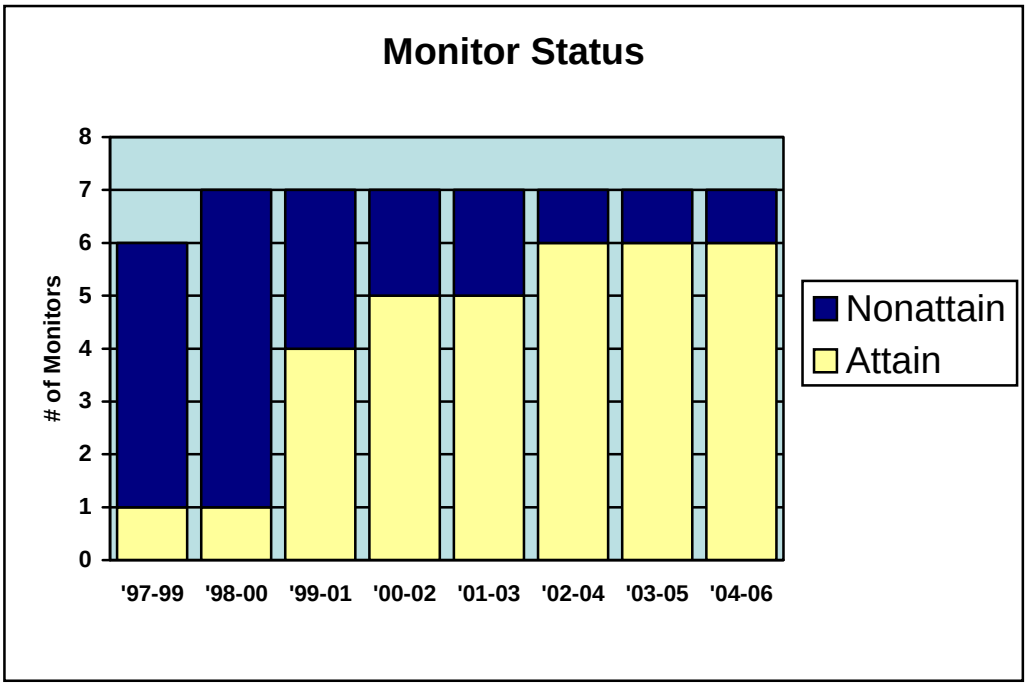
standards occur because of transport, this prevents the region from reaching attainment. Monitoring data show if the exceedances that are affected by transport from the Houston-Galveston area could have been negated, the JOHRTS area would have been in attainment for the one-hour standard. The same transport influence also affects the JOHRTS area's ability to attain the eight-hour standard.

Each monitoring site's daily measurement of ozone will be the maximum eight-hour average taken from eight-hour rolling averages throughout the day. At the end of each year, the fourth highest daily eight-hour average reading at each monitoring site will be recorded. If the average of the fourth highest daily eight-hour average readings over three consecutive years is more than 0.084 ppm, the eight-hour standard will be exceeded.

Average 4th Highest Daily Maximum Eight-Hour Ozone Levels Per Three Year Period							
Years	SETRPC Monitoring Sites			TCEQ Monitoring Sites			
	Sabine Pass	Mauriceville	SE Tex. Reg. Airport	Port Arthur	Beaumont	Hamshire	West Orange
97-99	0.099	0.088	0.095	0.086	0.088	---	**0.076**
98-00	0.094	0.085	0.092	0.087	0.086	0.085	**0.075**
99-01	0.089	**0.081**	0.089	0.085	**0.080**	**0.083**	**0.074**
00-02	0.090	**0.076**	0.085	**0.084**	**0.080**	**0.079**	**0.081**
01-03	0.091	**0.076**	0.086	**0.078**	**0.078**	**0.075**	**0.080**
02-04	0.092	**0.072**	**0.084**	**0.078**	**0.079**	**0.076**	**0.082**
03-05	0.088	**0.074**	**0.084**	**0.080**	**0.081**	**0.079**	**0.079**
04-06	0.085	**0.071**	**0.083**	**0.081**	**0.082**	**0.081**	**0.077**

Source: The South East Texas Regional Planning Commission Ambient Air Quality Monitoring Network and the Texas Commission on Environmental Quality Monitoring Network

An examination of eight-hour readings between 1997 and 2006 reveals that the JOHRTS area has seen more monitoring sites come into attainment with the eight-hour standard as the area approaches its attainment deadline of 2007. Only one of the monitors was in noncompliance at the end of 2006 compared to six monitors in noncompliance in 1998.
The JOHRTS area is still experiencing transport of ozone and ozone precursors into the area which causes a higher background concentration. Despite these air transport problems, the JOHRTS area is making progress in its efforts to meeting the eight-hour ozone standard as the JOHRTS area closes in on the 8-hour ozone NAAQS.


Monitor Status
# of Monitors
8
7
6
5
4
3
2
1
0
'97-99
'98-00
'99-01
'00-02
'01-03
'02-04
'03-05
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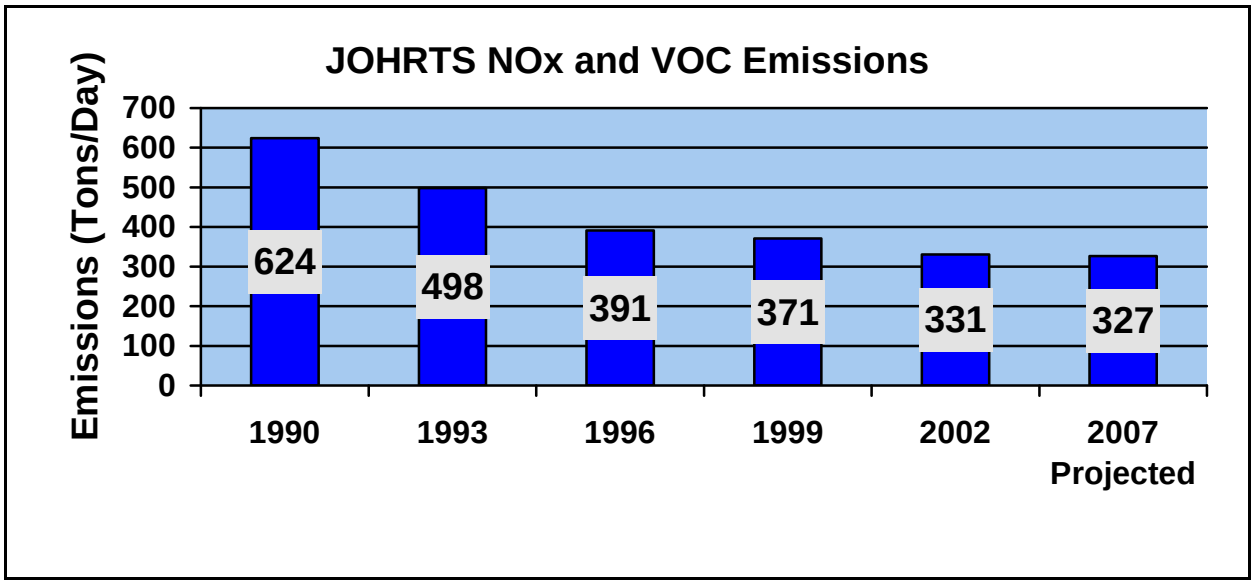
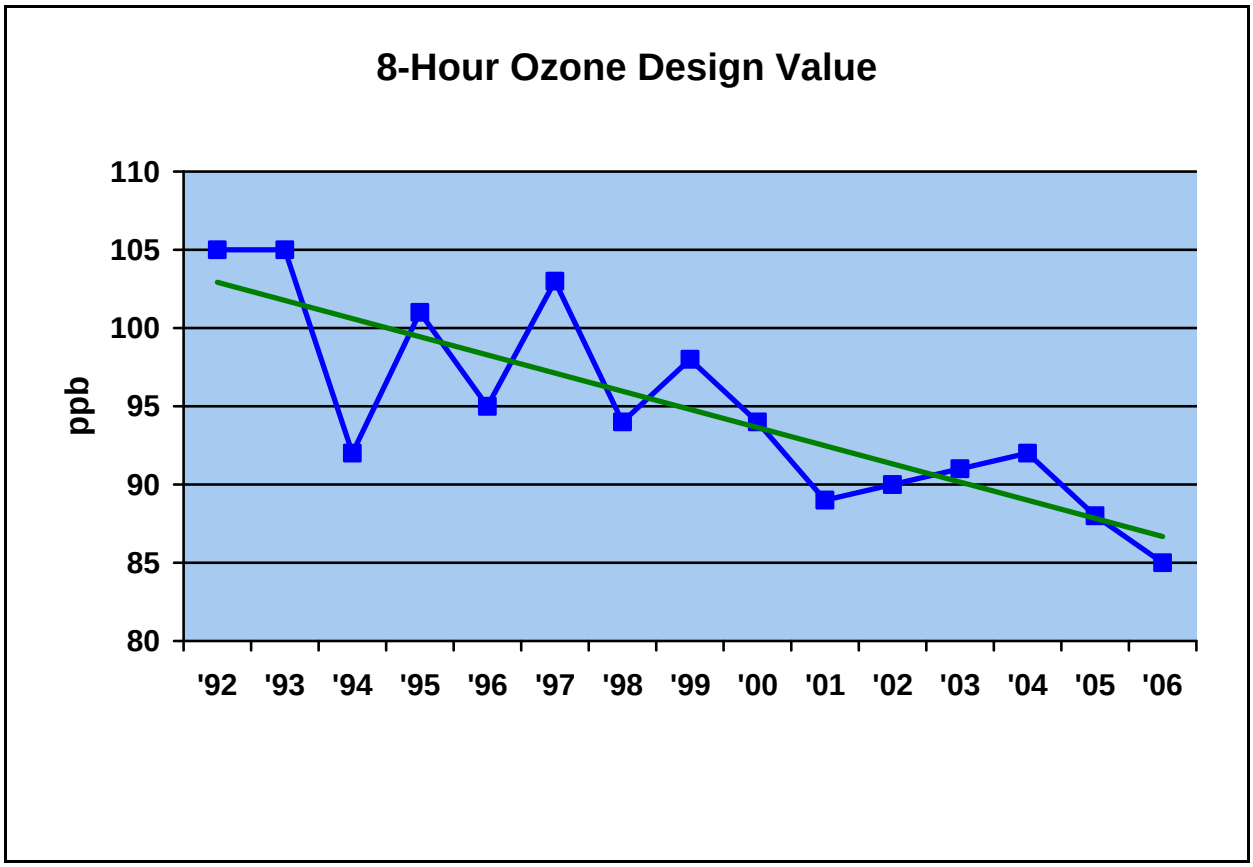
Nonattain
Attain


JOHRTS NOx and VOC Emissions
Emissions (Tons/Day)
700
600
500
400
300
200
100
0
624
498
391
371
331
327
1990
1993
1996
1999
2002
2007 Projected



Understanding Air Quality Conformity

The conformity process ensures that MPOs carry out their mandate to enforce transportation provisions outlined in the 1990 CAAA. This means that every effort must be made to ensure that transportation plans and programs are consistent with air quality goals. Because the JOHRTS area has yet to meet its required NAAQS target for the eight-hour standard for ozone, it is currently designated a "marginal" nonattainment area for ozone.

Strategies that the JOHRTS nonattainment area will employ to achieve the required emission reductions are documented in the State Implementation Plan (SIP). The SIP development process designates a motor vehicle emissions budget (MVEB) that quantifies the contribution that the transportation sector will make toward meeting the clean air standard. All MTPs must be modeled to demonstrate that over the life of the MTP, the MVEB designated by the SIP is maintained. In 2006, EPA approved the MVEB for the JOHRTS nonattainment area included in the Post 1996 Rate of Progress SIP. This MVEB however, is based on the one-hour standard as the Texas Commission on Environmental Quality (TCEQ) is in the process of establishing MVEB based on the eight-hour standard for EPA to issue a finding of adequacy. In accordance with the *Transportation Conformity Rule for the New 8-hour Ozone National Ambient Air Quality Standard – Final Rule July 2004*, the conformity determination as required for the new JOHRTS 2007 MTP – 2030 is conducted by using the

approved one-hour budgets since the JOHRTS nonattainment area boundary for the one-hour and eight-hour standards are the same. However, when EPA issues a finding of adequacy on the eight-hour budget, a new conformity determination will be required within two years.

The Conformity Test

The JOHRTS area nonattainment designation requires the SETRPC-MPO to revise the MTP every four years and show conformity on the new MTP to ensure that the programs and projects in the MTP are consistent with state and local air quality plans for attaining the NAAQS (or standard). In order for the JOHRTS area to meet conformity requirements under the eight-hour standard, the planned roadway improvements and programs in the JOHRTS 2007 MTP – 2030 must keep the VOC and NOx emissions below the emissions levels approved in the Post 1996 Rate of Progress SIP.

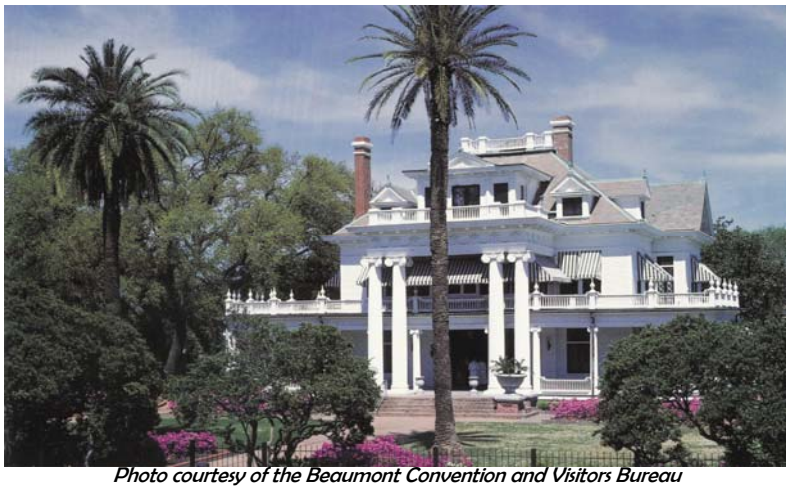


Photo courtesy of the Beaumont Convention and Visitors Bureau

The conformity analysis of the planned roadway improvements and programs included in the JOHRTS 2007 MTP – 2030 complies with the Transportation Conformity Rule for the New 8-hour Ozone National Ambient Air Quality Standard – Final Rule July 2004. The results of the analysis indicated that the emissions levels will be less than the emission levels approved in the Post 1996 Rate of Progress SIP and thus, the determination of a "conforming" MTP for the JOHRTS area resulted. However, a new conformity determination will be required upon the approval of the eight-hour MVEB and is anticipated to occur prior to the general four-year cycle.

Administrative Requirements

The nonattainment status of the JOHRTS area has forced the SETRPC-MPO to dedicate the majority of its resources towards fulfilling its conformity obligations. The SETRPC-MPO must ensure that communities within the JOHRTS area adhere to project construction schedules as they are laid out in the MTP by network year. For example, a project slated for construction in 2008 and listed in the MTP as a project in the 2015 network, must be built and operational before the end of 2015 ozone season. If the project is built after 2015, the 2015 network conformity analysis would be invalid, since all roadway improvements outlined in the MTP for that specific network year would not be completed by the end of 2015 ozone season. This could jeopardize the MTPs conformity status and may trigger a conformity lapse for the JOHRTS area. This could result in sanctions and require the SETRPC-MPO to develop a new MTP that passes conformity.

Conformity regulations require that the SETRPC-MPO submit a revised MTP every four years to show that the JOHRTS area is meeting its obligations under the SIP. The process of revising the MTP is complex and time consuming; submitting a revised MTP involves several complicated tasks requiring the cooperation and coordination of local, regional, state, and federal agencies. The SETRPC-MPO has been required to conduct a conformity determination three times within approximately three and a half years because of a recent court ruling, the adoption of the eight-hour standard by EPA, and revocation of the one-hour standard.[1] Furthermore, the SETRPC-MPO may be required to conduct yet another conformity determination prior to the four-year cycle once the JOHRTS area MVEB for the eight-hour standard are approved.

Sanctions

MPOs that fail to submit conforming MTPs or permit actions that trigger a conformity lapse violate the 1990 CAAA and are subject to federal sanctions. Sanctions can be imposed if SIP emission reduction strategies are not implemented or if the timing of local roadway construction projects does not adhere to project construction schedules outlined in approved transportation plans.

Photo courtesy of the Beaumont Convention and Visitors Bureau

Sanctions can include, but are not limited to, actions which subject the area to more stringent mandated air quality programs (vehicle testing, lower speed limits) and limits industrial source emissions. Sanctions could also result in the severe restrictions on the use of federal and state transportation funds for highway expansion projects in the region.

Current Initiatives

As part of its efforts to reduce mobile source emissions and attain the NAAQS, the SETRPC-MPO has implemented several programs, including an Ozone Action Day program. This voluntary program is designed to increase public awareness by encouraging individuals to reduce ozone-producing activities. These include reducing excess idling in drive-through lanes, refueling vehicles after 6 PM, postponing using small gasoline engines like lawnmowers until after 6 PM, combining several trips into one, keeping vehicles properly maintained, and sharing a ride to work or school. The Ozone Action Day program also involves local industries, small businesses, and local governments, who work together to improve air quality in the JOHRTS area.

[1] U.S. Fifth Circuit Court of Appeals, December 2002. Case Number 01-60537.

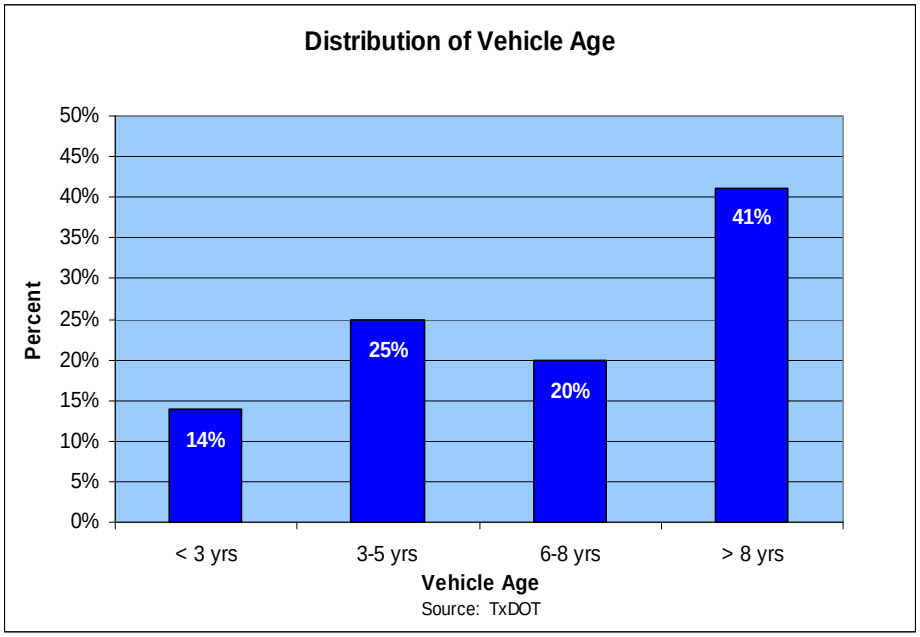
In addition, the SETRPC-MPO implements various improvements throughout the JOHRTS area that will reduce delay and congestion. These improvements are designed to reduce mobile source emissions and improve air quality. Many are funded through the Congestion Mitigation Air Quality (CMAQ) program, a federal funding category specifically designed for projects that can show quantifiable air quality benefits. Current CMAQ projects include public and private vehicle fleet replacement with alternatively-fueled vehicles, a peak-hour motorist assistance program on major freeways and principal arterials, signal preemption systems on emergency vehicles to provide faster access through traffic signals, and intersection improvements to reduce waiting time.

A detailed analysis is listed in the appendices of the Conformity Determination. The SETRPC-MPO staff, in cooperation with TxDOT Transportation Planning and Programming (TPP) staff, TxDOT Beaumont District staff, and the JOHRTS Technical Committee, conducted the air quality conformity assessment.

Fleet Characteristics

Vehicle Age

In the JOHRTS area, there are approximately 259,200 registered vehicles. Of these vehicles, 59 percent are less than six years old with 14 percent less than three years old. Vehicle age is a vital component for determining the emission rates of mobile sources. A young fleet age is beneficial for air quality as a young fleet age indicates high vehicle turnover rates, vehicles in good condition, and vehicles equipped with the latest emission controls. The vehicle fleet for the JOHRTS region is considered relatively new.



Vehicle Type

Of the estimated 259,200 registered vehicles in the JOHRTS region, light duty vehicles comprise 98.2 percent of the region's vehicles. Approximately 88.5 percent are passenger cars while light duty trucks and motorcycles are eight percent and two percent of the registered vehicles respectively. Less than two percent of the vehicles are heavy duty trucks. Mobile source VOC pollutants in the JOHRTS area are primarily produced by light duty vehicles. Heavy duty trucks are primarily responsible for the mobile source NOx emissions.

Registered Vehicles by Class				
Vehicle Classification	**Registered Vehicles**			
Light Vehicles	**Jefferson**	**Orange**	**Hardin**	**Total**
Passenger Cars (<= 6000 lbs)	144,504	52,899	32,101	**229,504**
Light Duty Trucks (> 6000 lbs)	11,649	4,721	3,572	**19,942**
Motorcycles	3,075	1,293	850	**5,218**
Total Light Vehicles	**159,228**	**58,913**	**36,523**	**254,664**
Heavy Vehicles				
Heavy Duty Gas Trucks	827	214	145	**1,186**
Heavy Duty Diesel Trucks	2,323	602	444	**3,369**
Total Heavy Vehicles	**3,150**	**816**	**589**	**4,555**
TOTAL Registered Vehicles	**162,378**	**59,729**	**37,112**	**259,219**

Source: TxDOT

Socio-economic and Environmental Characteristics

A critical component of all long-range transportation plans is the identification and projection of future transportation demand, which is closely related to land use, population, employment, housing, and their forecast growth within the region. Through an analysis of these socio-economic characteristics, a clear picture of current and future transportation demand is revealed.

Environmental resources are considered when planning to accommodate future growth and transportation demands. The appropriate environmental documentation will be conducted for projects proposed in this MTP. Potential impacts will be avoided where possible, and mitigation activities will be performed in accordance with Federal and State guidance. The environmental documentation process includes consideration of resource maps and inventories, which may involve consultation and coordination with Federal, State, and tribal agencies and wildlife and land management. Consultation with local stakeholders and agencies affected by transportation, as identified in the Public Participation Plan (PPP), is included in this process.

Land Use

Land use characteristics are one of the most critical factors influencing demand for transportation services. Placement of buildings within urban and rural areas has the ability to attract and generate significant amounts of traffic that influence demand for transportation improvements and roadway maintenance.

Jefferson County

Beaumont, Port Arthur, Port Neches, Nederland, and Groves are the major cities in Jefferson County. These larger cities generate most of the economic activity within the county and house the majority of residents. Land uses in the central areas of these cities are predominantly industrial and commercial. Industrial activities include oil refinery, oil and gas drilling, and other types of petrochemical operations; port facilities and maritime shipping operations; marine construction and repair; and sulfur, salt, sand, and gravel mining. Commercial land uses in the city center are mostly service oriented businesses and small retail shops.

Areas on the periphery of these cities consist of residential and commercial districts as well as some agricultural areas. Residential areas are primarily low-density single-family residential units, while agricultural areas consist of cow pastures, ranches, and rice farms. Commercial districts consist of large shopping or strip malls with an assortment of "Big Box" stores, restaurants, and small strip malls. These commercial districts generate significant amounts of traffic throughout the week and attract traffic from all the communities in the JOHRTS area. Institutional land uses are also prevalent in Jefferson County. Federal and state prisons are located in the central portion of the county, while hospital facilities are located in the areas of Beaumont and Port Arthur.

Jefferson County includes the small communities of Bevil Oaks, Nome, Taylor Landing, Hamshire-Fannett and China. These small communities act as suburbs for the larger cities in the county and are primarily residential in nature, with a few small shops (gas stations and convenience stores) that satisfy local demand for goods and services.

Photo courtesy of Marc Shepherd

Land use in rural areas of Jefferson County is mostly agricultural and consists of rice farms, ranches, and crawfish farms. Large tracts of land in these areas are also set aside for use as drainage or irrigation canals. Waterways are also prevalent throughout Jefferson County. The Gulf Intracoastal Waterway, the Neches River, and Sabine Lake in lower Jefferson County provide shipping routes for industrial maritime operations and pleasure craft. Numerous bayous, rivers, and lakes in the region also support recreational boating and water sport activities. Extensive tracts of land adjacent to the Gulf of Mexico and the Neches River have also been set aside for use as parks, wetlands, or wildlife refuges.

Orange County

The major urbanized areas in Orange County include the cities of Orange, West Orange, Rose City, Pinehurst, Pine Forest, Bridge City, and Vidor. The predominant land uses in these cities are a mix of industrial and commercial uses in the central areas. Industrial activities in these cities include: petrochemical facilities, oil wells, and gas drilling; port facilities and other associated industrial maritime operations; clay, sand, and gravel mining; sawmills, and other forestry production operations. Commercial districts in Orange County consist of a few "Big Box" stores and various retail and service businesses in small strip malls. All cities in Orange County have large residential districts concentrated on their outer edges.

Rural areas in Orange County include the communities of Orangefield and Mauriceville. Like Jefferson County, these small communities act as suburbs to the larger cities in the JOHRTS area. Land use within these cities is almost exclusively residential, with a few small businesses concentrated in their centers or next to major roadways. Areas outside these areas are dedicated for rice farming, forestry, or petrochemical operations. Areas in rural Orange County also contain many waterways and canals that are used to support local irrigation and drainage needs.

Environmental resources in Orange County include the Blue Elbow Swamp, located along the Sabine River near IH-10. The Blue Elbow Swamp also serves as a wetlands mitigation bank for TxDOT.

Photo courtesy of Marc Shepherd

Hardin County

This county is mostly rural, and includes the incorporated communities of Kountze, Sour Lake, Silsbee, and Lumberton. Land uses within these cities are predominantly residential, with a few small businesses. While these cities act as suburbs to the larger cities in Jefferson County, each city continues to have a strong local economy supported by several large local industries; both Silsbee and Kountze have rail yards, while Lumberton has a retail district along US 96 and a large forest products manufacturing facility.

In the rural areas of Hardin County, lands are dedicated for agricultural uses such as forestry and cow pastures. TxDOT has designated specific non-mow areas within TxDOT right-of-way for environmentally sensitive areas. Industrial land uses are also located in rural areas and include paper manufacturing and sawmills. Large areas of Hardin County also contain recreational areas that are part of the Big Thicket National Preserve, an environmental resource for the region.

Economic Conditions

In June 2005, building supply sales in the JOHRTS area revealed a healthy upswing in residential, commercial, and industrial construction. Some major petrochemical industries announced expansion plans that would bring thousands of jobs to the region. The four independent Lamar college campuses were experiencing higher student enrollments. As of October 2005, Hurricane Rita had landed in southeast Texas, and the economic conditions changed significantly. To fuel economic growth, the JOHRTS area faces the challenge of providing a skilled workforce and housing that workforce.

Hurricane Rita Results

Total damage resulting from Hurricane Rita was estimated at $10 billion, making Hurricane Rita the seventh costliest storm in U.S. history. Insured losses to homes and businesses totaled more than $4.9 billion. An estimated 75,000 household were destroyed or damaged. The Texas Forestry Association announced that timber damaged by the storm in Hardin County and across east Texas could have translated into $3.7 billion in forest products.

The Port of Beaumont maintained minimal damage, and cargo operations resumed within four days of Hurricane Rita. The hurricane gutted the Southeast Texas Regional Airport's main terminal. In late 2006, the airport continued to operate out of a terminal once reserved for private aviation purposes.

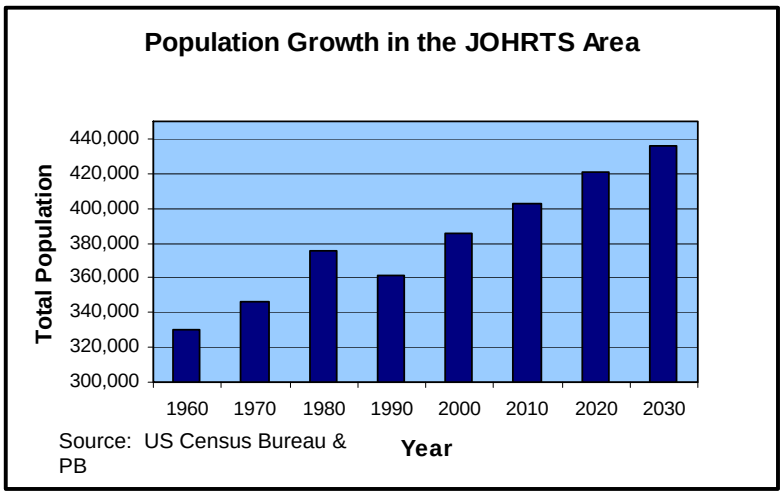
Federal and State funds have helped restore college and public school facilities that sustained millions in damages. Even so, student enrollment at Lamar colleges has declined 6.5 percent from the fall of 2005 to the fall of 2006. In March 2006, the Beaumont Independent School District announced that 60 to 70 percent of $15 million in repairs were complete.

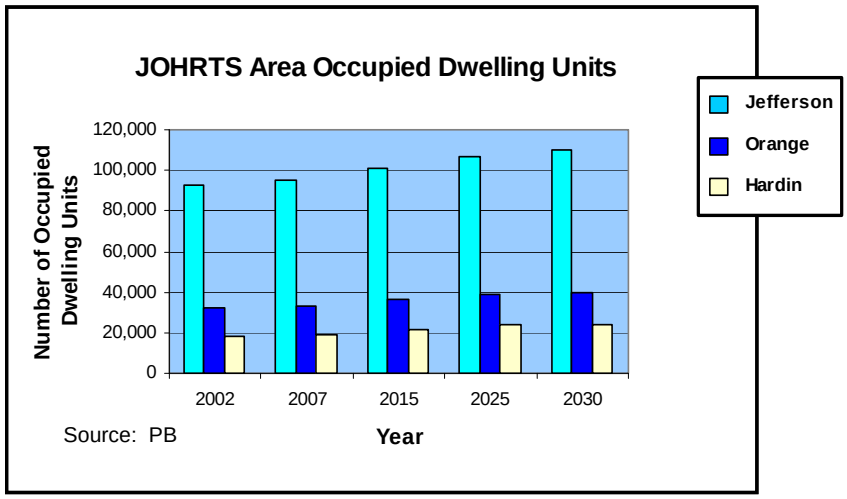
Understanding Land Use as a Barrier to Transportation Network Development

While land use development often creates opportunities for expansion of the transportation network, it can also act as a barrier to roadway development. Major constraints to the development and expansion of the transportation network include: waterways, rivers and bayous, lakes, canals, floodplains, wildlife preserves, parks, railroads, and reservoirs within the JOHRTS area. Existing developments can also prevent logical linkages between roadways and create additional expenses for roadway improvements. Another often overlooked barrier to roadway development is the transportation system itself; while the development of new roadways and linkages can open up new areas to development, such actions can also act as barriers to residents within existing communities, or move development away from economically depressed areas. These constraints make it difficult for urban areas to expand, prevent optimal location of new roadways, and inhibit the growth of the local economy.

Population

Population and employment growth in the JOHRTS region has paralleled the growth and decline of the petrochemical industry. Until the early 1980s, the region's population and employment grew rapidly along with the petrochemical industry. Between 1960 and 1980, the region's overall population grew by 44,852 persons, representing a 13.5 percent increase. In the 1980s, Jefferson, Orange, and Hardin counties experienced a decline in population and employment growth due to a downturn in the petrochemical industry. This resulted in a four percent decrease in population in the JOHRTS region between 1980 and 1990. However, the region experienced a 6.6 percent population increase between 1990 and 2000, or 23,864 people.





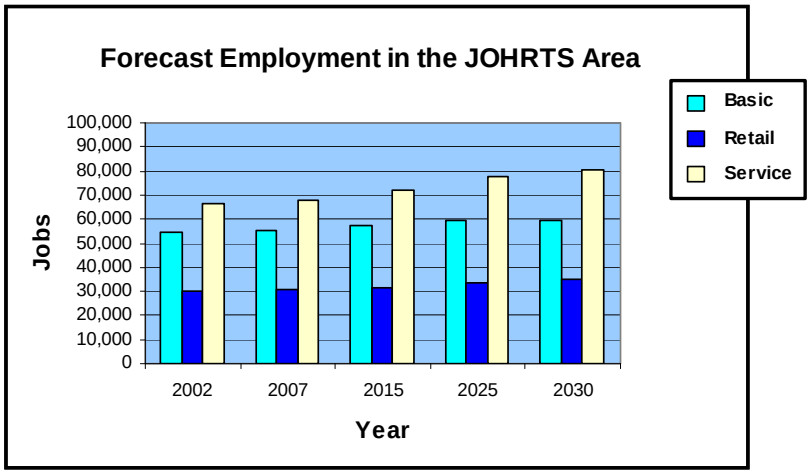
Population growth estimates reveal an 11.6 percent increase in population for the JOHRTS area between 2000 and 2030. While the population in Jefferson and Hardin counties is forecast to grow by 11.6 and 16.7 percent respectively, the population in Orange County is projected to grow by 8.5 percent.

Housing

The distribution of homes in the JOHRTS area is directly related to population; Jefferson County has the highest number of homes, followed by Orange and Hardin counties. Estimates of forecast housing growth reveal that Jefferson and Hardin counties will experience a dramatic increase in housing - approximately 36.7% and 25.3% respectively from 2002 to 2030. Jefferson County will continue to receive the most new homes (17,411) in the region. The estimate of forecast housing growth for Orange County indicates a modest increase of approximately 19.4% in its housing stock.

Household vacancy rates in all three counties are expected to drop by 8.4% by 2030. This indicates that most homes in the region will be occupied; suggesting that demand for new homes will remain stable over the next 25 years.

Persons per household are also expected to decline from over 2.7 persons/household in 2002 to 2.5 persons/household by 2030. Therefore, population growth due to an expansion in new housing may be counterbalanced by a decline in the number of persons residing within each home.



Employment

Measuring employment in the JOHRTS area is accomplished by estimating the number of full time equivalent positions for persons employed at businesses located within the study area. Employment data is based on the Standard Industrial Classification (SIC) code of the employer. The SIC code identifies the economic sector of the employer, categorized as basic, retail, and service. Basic sector employment includes mining, construction, manufacturing, transportation communications and public utilities, and wholesale trade. Retail sector employment includes retail businesses of any kind, while service sector employment includes finance, insurance, real estate services, educational services, and governmental organizations.

From 1970 to 1990, the basic sector employment for Jefferson, Orange, and Hardin counties decreased from 63 to 43 percent of the overall employment in the region. This loss of employment in the basic sector was replaced by growth in the service sector, which rose from 19 to 34 percent of total employment from 1970 to 1990. During this same time period, the retail sector employment increased slightly from 18 to 23 percent of total employment in the JOHRTS region.

By 2002, basic sector employment for Jefferson, Orange, and Hardin counties accounted for 36.2 percent of the overall employment in the region and is estimated to decrease to 34.1 percent by 2030.

By 2002, service sector employment for the JOHRTS area accounted for 43.8 percent of the overall employment in the region and is estimated to increase to 46.1 percent by 2030.

By 2002, retail sector employment for the JOHRTS area accounted for 19.9 percent of the overall employment in the region and is estimated to remain the same by 2030.

Overall employment, combining all employment sectors, is expected to increase by approximately 16.3 percent in the JOHRTS region from 2002 to 2030. Employment in Jefferson and Orange counties grew by 11.8 and 13.1 percent respectively, while Hardin county's total employment increased by 31.1 percent.

Traveler Behavior

Just as land use and socio-economic characteristics provide a foundation for understanding urban travel patterns, traveler behavior characteristics offer insight into regional trip making decisions. Results of the 1995 JOHRTS travel survey have been included in the data presented in this section. A new JOHRTS travel survey will be initiated in 2007; the data from the JOHRTS 2007 travel survey will be included in the next MTP.

Vehicles Available by Household Income					
Vehicles Available	<$10k	$10 - $20k	$20 - $30k	$30 - $40k	>$40k
0	47%	28%	10%	6%	10%
1	18%	24%	20%	14%	24%
2	5%	8%	13%	14%	61%
3+	3%	4%	6%	9%	78%

Source: 2000 Census Transportation Planning Package

Vehicle Availability

One important factor influencing travel behavior is the number of vehicles available within each household. Auto availability and use is directly proportional to household income and the size of household.

Vehicles per Household				
Veh/HH	Household Size (Persons)			
Average	1	2	3	4+
	1.0	1.7	1.9	2.0

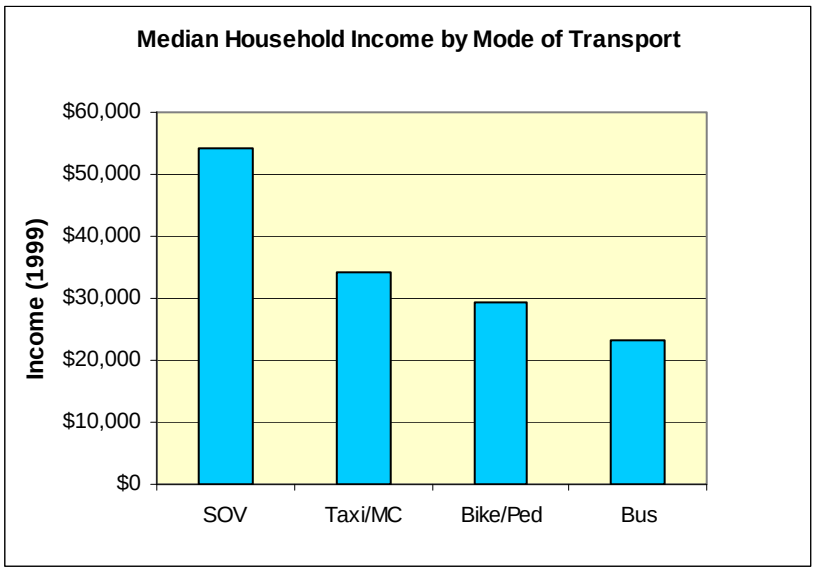
Source: 2000 Census Transportation Planning Package

An analysis of vehicle availability based on household income indicates that households with higher incomes have more vehicles available than lower income households. This is again made evident when households with no available vehicles are examined; as household income levels drop, the number of households with no vehicles rises significantly. It is important to note that approximately nine percent of all households in the JOHRTS area have no vehicles. Median vehicles per household data suggest that over 90 percent of the households in the JOHRTS area have at least one vehicle while 14.7 percent (21,040 households) have three or more vehicles.

Household size also determines vehicle availability. An analysis of vehicles by household size also indicates that larger households have more vehicles than smaller households. Of the households in the JOHRTS area that have three or more vehicles, approximately 47.3 percent are households with four or more persons while only 3.8 percent of the households with three or more vehicles have only one person.

Modal Choice

The relationship between vehicle availability and household income strongly influences how households choose their mode of transport in the JOHRTS area. Census data indicates that households with high median incomes are more likely to choose the automobile over other modes of transport. This relates to the fact that high-income households usually have more vehicles available. This direct relationship between income and auto use is also reflected in household trip rates.

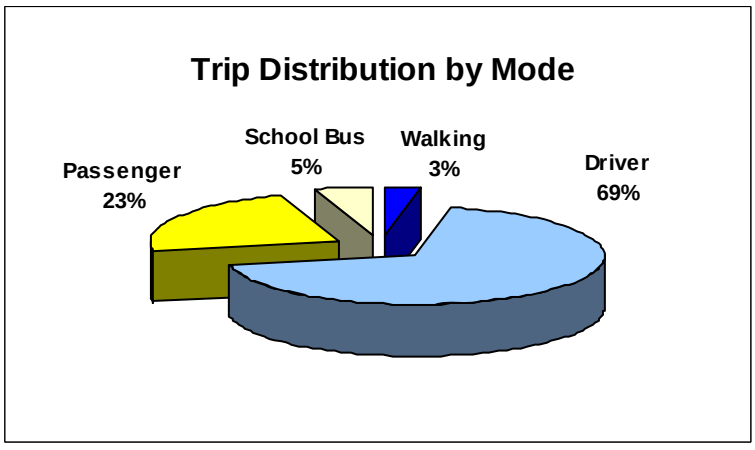


Trip Characteristics

A trip is defined as travel by any mode (walking, driving, or by bus) between two points, which are usually referred to as a trip origin and a trip destination. Methods of examining trip characteristics include evaluating trip rates, trip purposes, trip types, trip lengths, and trip times. By evaluating these characteristics in detail, transportation professionals can identify present and future demand for transportation services.

Trip Rates

An evaluation of vehicle trip rates per household supports our earlier discussion of household characteristics. Generally speaking, the households with higher incomes and more occupants generate more trips than low-income households with few occupants. Based on 1993 household survey data, vehicle trip rates in the JOHRTS area range from 1.5 to 19.5 with an average trip rate of 8.7 trips per household.

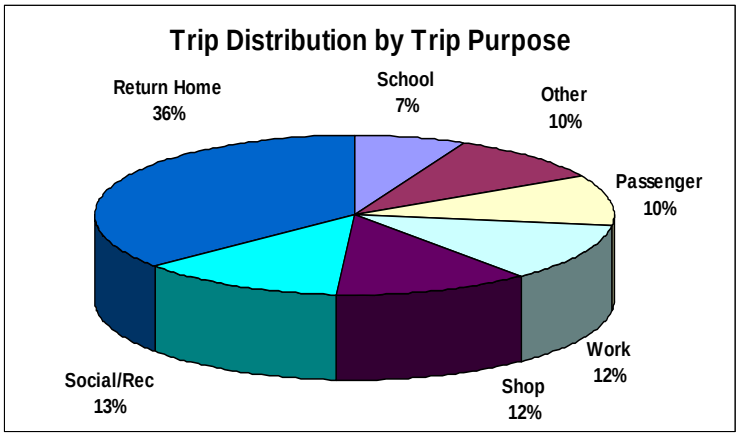


Trip Distribution by Mode

The majority (69%) of trips within the JOHRTS area are auto-driver. Other trip types include passenger trips, school bus trips, and walking. Note that bicycle trips are not identified as a dominant trip type.

Trip Distribution by Trip Purpose

The majority of trip purposes (36% or 20,000 recorded trips) were return trips to home. Other trip purposes were somewhat evenly distributed and included social/recreational trips, shopping, work, passenger, school and other trips. Note that work trips only comprised 12% of total trips, suggesting that the majority of trips within the JOHRTS area are not work-related.



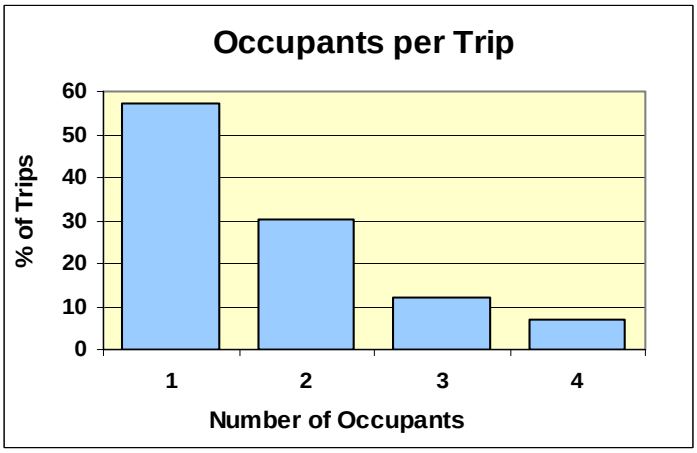
Source: 1995 Jefferson, Orange, and Hardin Regional Transportation Survey

Trip Distribution by Time of Day

Daily distribution of trips by trip type reveals that the majority of home-based work and non- work trips occur during the AM and PM peak periods, while non-home based trips peak during the middle of the day. Analysis of trip characteristics in the JOHRTS area suggests that local daily trip distribution patterns follow this typical travel pattern, although both AM and PM peak periods start one hour later than indicated in the chart below.

Vehicle Occupancy

The 1995 JOHRTS travel survey indicated that 57% of all trips in personal vehicles involved a single occupant. This characteristic is supported by a 1998 Congestion Management Study, which revealed that daily average occupancy rates range between 1.27 and 1.29 persons per vehicle. The highest occupancy rates (1.30) occurred during the AM and PM peak hours, with off-peak occupancy rates of approximately 1.25 persons per vehicle. These figures are slightly lower than the State average of 1.35 persons per vehicle for small urban areas. (Texas Transportation Institute, Urban Travel in Texas: An Overview of travel surveys, Texas A & M University, Bryan College Station, p. 13 – 16)

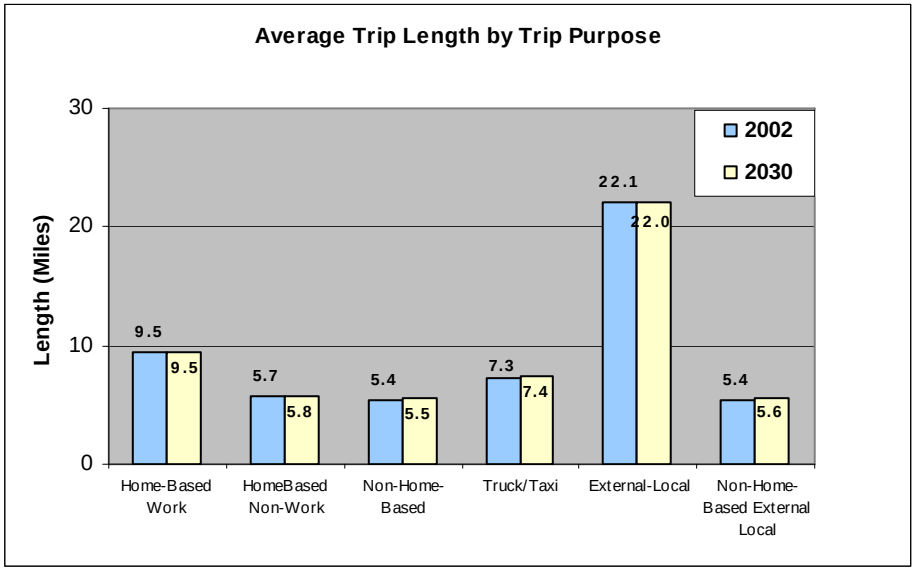


Source: 1995 Jefferson, Orange, and Hardin Regional Transportation Survey

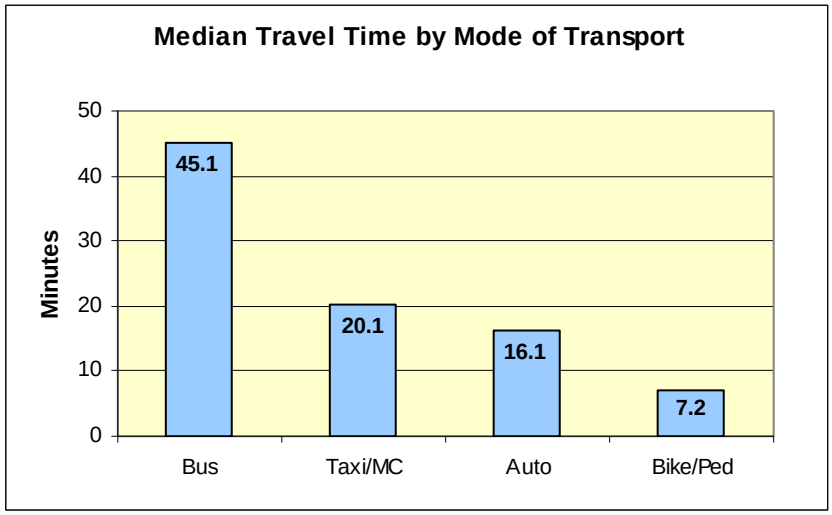
Vehicle occupancy rates by roadway type show little variation, suggesting that influence over persons per vehicle may be more closely related to trip type, income levels, household size, or other unknown factors.

Average Trip Lengths

According to the latest estimates, average trip lengths are highest for trips originating in the JOHRTS area and terminating in external areas; inter-regional travelers experience the highest trip lengths. Work trips have the second highest trip length, while other trip purposes have similar trip lengths. Note that none of the trip lengths are short enough to attract travelers to pedestrian or bicycle modes of transport. The average trip length for all trips in 1993 was approximately six miles. (Texas Transportation Institute, Urban Travel in the Jefferson-Orange-Hardin County Area, Texas A & M University, Bryan College Station, p. 25)



Source: Texas Department of Transportation - TPP



Source: 2000 Census Transportation Planning Package

Travel Times

Travel times have a major influence on travel behavior. Bicycle and pedestrian trips have the shortest median travel times in the JOHRTS area. Car trips and trips by taxi or motorcycle have the next shortest median travel times in the region with median travel times of 16.1 and 20.1 minutes respectively. Bus trips take almost three times as long as car trips, having median travel times of approximately 45 minutes. Average travel times in 1993 were approximately 11 minutes for all trips. (Texas Transportation Institute, Urban Travel in the Jefferson-Orange-Hardin County Area, Texas A & M University, Bryan College Station, p. 25)

Accident Characteristics

Accident trends from 1994 to 1998 indicate that accidents overall are declining. This decline is still occurring based on the review of accident data from 1998 to 2001. Although the majority of this reduction in accidents for the period of 1994 to 1998 is from a decrease in non-injury related accidents from 55% in 1994 to 40% of all reported accidents in 1998, the period of 1998 to 2001 indicates the decline has continued based on the reduction of injury accidents. Fatal accidents account for slightly over one percent of all accidents; however, the number of fatal accidents decreased by 0.2 percent from 1998 to 2000 but increased by 0.2 percent in 2001. However, the number of fatal accidents recorded in 2001 is less than the number of fatal accidents in 1998.

JOHRTS Area Accident Characteristics						
Accident Type	**1997**	**1998**	**1999**	**2000**	**2001**	**Annual Average**
No Injuries	2068	2213	2354	2325	2351	2262
Injuries	4381	4450	4233	4181	4019	4253
Fatalities	66	89	70	68	82	75
Total	**6515**	**6752**	**6657**	**6574**	**6452**	**6590**

Source: Texas Department of Public Safety

Accident Location by County

When accidents for the period of 1998 to 2001 are compared among counties, Jefferson County leads the JOHRTS area for all accident types. Although Orange County has more total accidents with no injuries or injuries than Hardin County, both counties have similar numbers of fatal accidents for the period 1998 to 2000. In 2001, Hardin County recorded only 13 fatal accidents while Orange County had 33. Accidents in Jefferson County account for over 67 percent of all accidents in the region, while Orange and Hardin counties comprise the remaining 25 percent and eight percent respectively.

Accident Characteristics by County, 2000 - 2001						
Accident Type	**Jefferson County**		**Orange County**		**Hardin County**	
	2000	**2001**	**2000**	**2001**	**2000**	**2001**
No Injuries	1531	1503	589	619	205	229
Injuries	2893	2872	949	858	339	289
Fatalities	43	36	14	33	11	13
Total	**4467**	**4411**	**1552**	**1510**	**555**	**531**
% Regional Total	**68%**	**68%**	**24%**	**24%**	**8%**	**8%**

Source: Texas Department of Public Safety

Accident Location by City

A comparison of accident characteristics by area over time reveals several interesting facts. Observations indicate that cities with large populations have the greatest percentage of accidents; the cities of Beaumont and Port Arthur consistently account for the majority of accidents. However, when areas are compared based on accidents per capita, analysis reveals that Orange (including West Orange and Pinehurst) has the highest accidents per capita and followed closely by Vidor. However,

Orange (including West Orange and Pinehurst) has experienced a decrease of 19.3 percent during the period of 1998 to 2001. The City of Nederland has experienced the greatest drop (21.1 percent). Although the number of accidents in the JOHRTS area have decreased during the period of 1998 to 2001, Groves and Beaumont has seen an increase during this same period of 2.7 percent and 1.3 percent respectively. Furthermore, the accidents occurring in rural areas of Jefferson county and Hardin county have increased by 8.5 percent and 8.3 percent respectively; however, the number of accidents in the rural area of Orange county has dropped by 15.5 percent.

Annual Accidents Per City in the JOHRTS Region

Jurisdiction	1997 Accidents		1998 Accidents		1999 Accidents		2000 Accidents		2001 Accidents		% Change
	Total	%	Total	%	Total	%	Total	%	Total	%	1997 - 2001
Beaumont	2,209	34.4%	2,351	35.5%	2,505	38.4%	2,396	37.2%	2,382	37.7%	7.8%
Port Arthur	1,366	21.3%	1,305	19.7%	1,134	17.4%	1,191	18.5%	1,208	19.1%	-11.6%
Nederland	146	2.3%	175	2.6%	149	2.3%	141	2.2%	138	2.2%	-5.5%
Groves	130	2.1%	110	1.7%	121	1.9%	123	1.9%	113	1.8%	-13.1%
Port Neches	98	1.5%	89	1.4%	93	1.4%	100	1.6%	87	1.4%	-11.2%
Lumberton	124	1.9%	119	1.8%	138	2.1%	134	2.1%	114	1.8%	-8.1%
Kountze	N/A	N/A	N/A	N/A	N/A	N/A	19	0.3%	16	0.3%	-15.8%
Silsbee	84	1.4%	107	1.6%	92	1.4%	99	1.5%	87	1.4%	3.6%
*Orange	695	10.8%	778	11.8%	674	10.3%	674	10.5%	628	9.9%	-9.6%
Vidor	298	4.6%	313	4.7%	324	4.9%	296	4.6%	293	4.6%	-1.7%
Rural Jefferson County	455	7.1%	445	6.7%	477	7.3%	516	8.0%	483	7.6%	6.2%
Rural Orange County	501	7.8%	537	8.1%	511	7.8%	444	6.9%	454	7.2%	-9.4%
Rural Hardin County	316	4.9%	290	4.4%	311	4.8%	303	4.7%	314	5.0%	-0.6%

Source: Texas Department of Public Safety

**Orange includes Pinehurst & West Orange*

Accident Location by Roadway

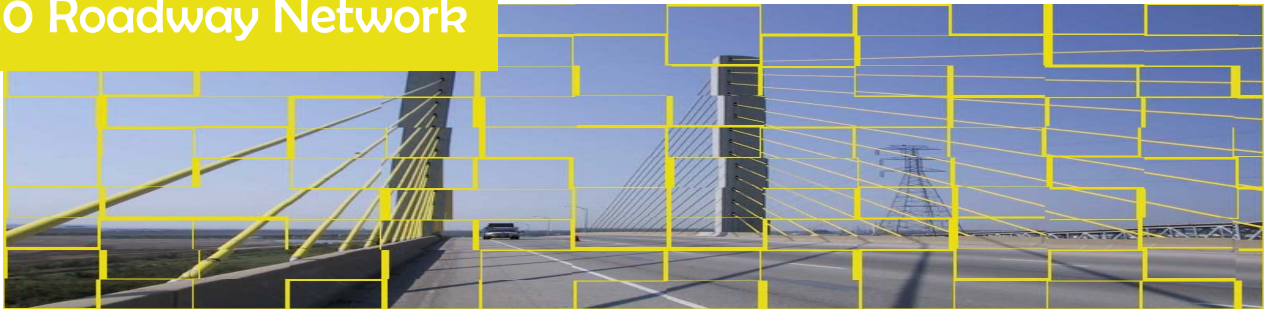
Most accidents in the JOHRTS area occur on city streets in urban areas. Large numbers of accidents are also reported on interstates and state highways. Accidents occur less frequently on farm-to-market (FM) and county roads.

JOHRTS Fatal Accidents by Roadway, 1997 - 2001

Roadway	Total Accidents					Percentage				
	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001
City Streets	43	50	31	46	53	65%	56%	44%	68%	65%
Interstate Highways	1	3	5	1	7	1%	3%	7%	2%	9%
State Highways	13	18	15	13	11	20%	20%	22%	19%	13%
FM Roads	6	12	10	3	7	9%	14%	14%	4%	8%
County Roads	3	6	9	5	4	5%	7%	13%	7%	5%

Source: Texas Department of Public Safety

3.0 Roadway Network



The roadway network system is the most important aspect of the JOHRTS area transportation system. This network is the most heavily utilized element in the transportation system and is relied on by all segments of the population to transport goods and people efficiently. The JOHRTS region depends on this roadway network to maintain its economic vitality by making the region accessible for industrial, commercial, and recreational uses. This system should be viewed as a regional economic asset that requires constant reinvestment to protect the economic stability of the region. Maintenance of the roadway network is also a critical factor in ensuring the safe travel of residents and visitors.

This chapter addresses current and future conditions and network needs, focusing on maintaining and creating a roadway system that will effectively meet future demands while optimizing existing financial resources.

Existing System

The existing roadway network system provides JOHRTS area residents with the ability to travel to and from work, shopping, and other key travel points. However, the efficiency with which they can make these trips determines the effectiveness of the current roadway network.

The JOHRTS area road network is characterized by the few major roadways that act as links between the various communities within the region. The lack of additional facilities limits route choice and makes most travelers dependent on a single route for intercity regional travel. This creates challenges for local transportation providers who must continue to manage the existing facilities, while accommodating increased travel demand. Wetlands and other environmentally sensitive areas necessitate extensive environmental studies and interagency consultation for new projects, making it difficult to build new linkages that increase route choice and system flexibility.

Roadway Network

The JOHRTS area road network is comprised of federal, state, and local highways. In combination with local streets this forms the existing roadway network. The following provides an overview of the roadway network classification system used by the Federal Highway Administration (FHWA) and the Texas Department of Transportation (TxDOT) followed by a discussion of the system's effectiveness. The public roads are classified for use in identifying proposed routes for the National Highway System (NHS). Each class is categorized by its traffic service function, related design, and location. The JOHRTS area road network is classified into the following categories:

- Interstate Highways – Multi-lane divided highways with full access control designated as part of the Interstate Highway System. Interstate 10 (IH-10) is the only interstate in the JOHRTS area and traverses east-west through Jefferson and Orange Counties.

- Other Freeways & Expressways – Non-Interstate divided highways in urbanized areas used for through traffic with full access control. Expressways are divided highways but with partial access control and grade separations at major intersections. US 69, US 90, US 96, US 287, SH 73, SH 87, and SH 347 fall into this category.

- Other Principal Arterials – These roadways serve as primary routes for traffic flows in urbanized and rural areas and accommodate both local and regional travelers. These are typically continuous multi-lane facilities that serve relatively high traffic volumes and operational speeds, occasionally providing local access. Examples of principal arterials in the JOHRTS area are Dowlen Road and College Street in Beaumont; 9th Avenue in Port Arthur; and 16th Street in Orange.

- Minor Arterials – Similar in function to principal arterials, but also serve a local access traffic demand. Lucas Drive in Beaumont, Nederland Avenue in Nederland, Procter Street in Port Arthur, Main Avenue in Groves, and West Park Avenue in Orange are examples of minor arterials.

- Collectors – Serve as intermediate connectors between arterials and local streets. Collectors are not intended for long through trips nor are they continuous for any great length. Collectors are divided into major and minor collectors in rural areas. Examples of collectors in the JOHRTS area are: East Chance in Lumberton, 60th Street in Port Arthur, and Calder Avenue in Beaumont.

- Local Streets – Providing access to adjacent land use is the primary function of local streets. Local streets are only intended to move local neighborhood traffic and are not designed to accommodate large traffic flows.

Note that many of the facilities in the JOHRTS area have more than one classification. For example: US 90 in Jefferson county acts as a Freeway/Expressway outside of Beaumont, but acts as a principal arterial under the name of College Street in Beaumont. Other examples of this characteristic include: US 69/287/96/Memorial Drive in Port Arthur and SH 87/16th Street in Orange.

Major Roadways

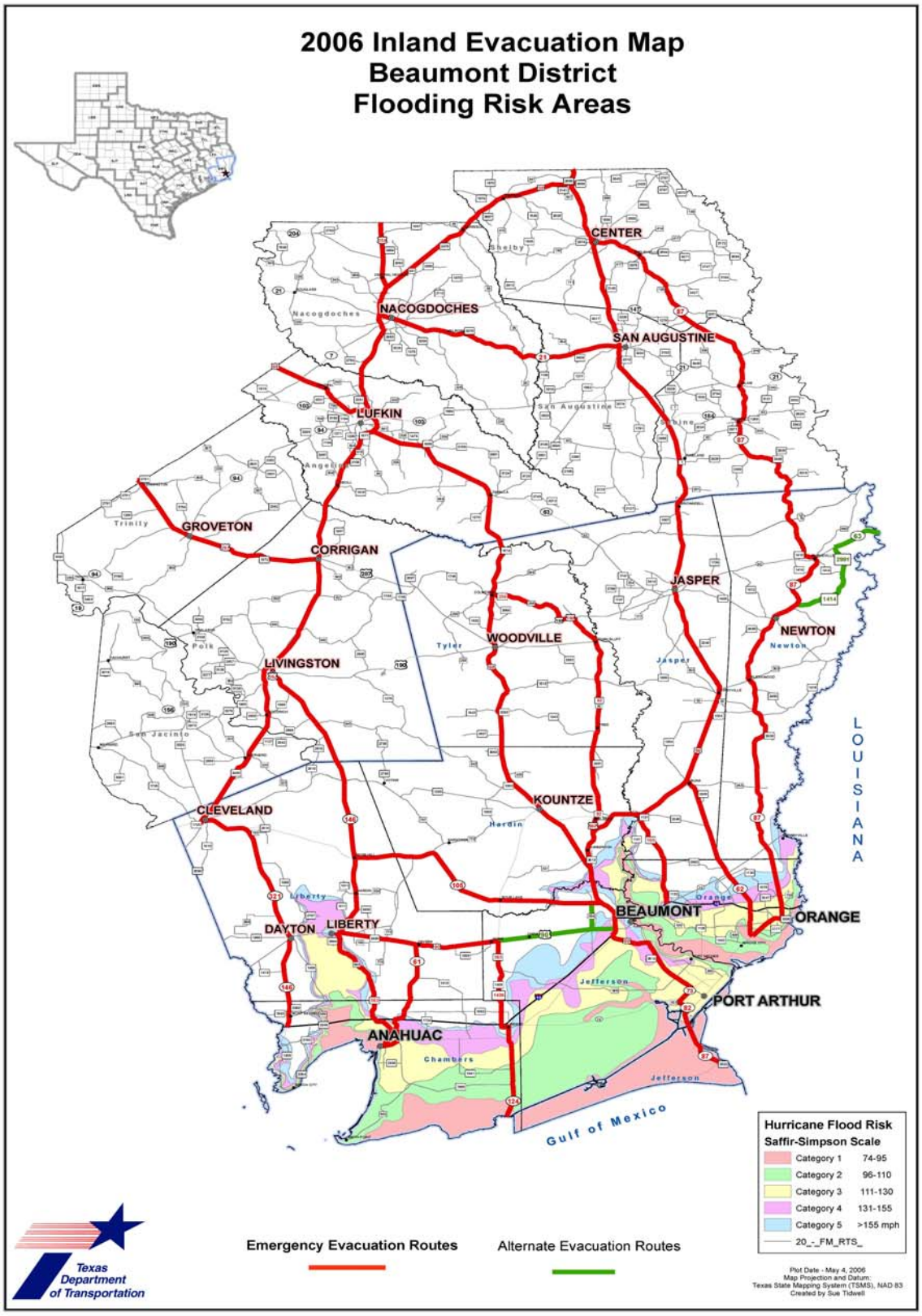
Several large roadways in the JOHRTS area play a dominant role in linking local communities to major cities within and out of the JOHRTS area. These major roadways are listed according their roadway classification.

- Interstate Highways
  - IH-10 - With full access control traversing east and west, IH-10 is primarily four-lanes expanding to up to eight lanes through the Beaumont area. The IH-10 corridor has great importance for state and national transportation movements. The FHWA and the States of Texas and Louisiana identified the IH-10 corridor from San Antonio to New Orleans as a strategic intermodal corridor for freight movement. Improvements planned for IH-10 from the Louisiana State line to Beaumont will expand the capacity of the facility from four to six lanes, with significant ramp and roadway design improvements to enhance traffic safety.
- Other Freeways and Expressways
  - US 69/287 - This facility extends in a north-south direction through Hardin and Jefferson counties. It is primarily a four-lane divided, access-controlled facility except for some portions in Hardin County. This facility connects the ports and intermodal facilities in the JOHRTS area with the proposed I-69/NAFTA Corridor running through Lufkin in Angelina County. Construction is planned on US 69 between Lumberton in Hardin county and Zavalla in Angelina county to enhance this connection.
  - US 96 – Traversing north-south as a four-lane divided facility with partial access control. US 96 acts as a vital transportation link between Silsbee, Lumberton and Port Arthur.

Hurricane Evacuation Network

In addition to serving daily travel demand, the JOHRTS roadway network is also the primary means of departure during emergency conditions. Frequently, hurricanes and tropical storms make landfall and cause damage to communities located along the Texas coast. The coastal counties of Jefferson, Orange, and lower portions of Hardin County are vulnerable to extensive flooding during hurricanes. During such potential disasters, the safe and timely evacuation of coastal and floodplain areas is crucial to ensure public safety. Consequently, development and maintenance of evacuation routes are an important element of the Metropolitan Transportation Plan.

In 1992, Hurricane Andrew forced the evacuation of the JOHRTS area. Local agencies in the JOHRTS area were unprepared for such a large-scale evacuation, which resulted in tens of thousands of people stranded in traffic jams on local highways. Such a situation would have been catastrophic had Hurricane Andrew landed in southeast Texas. Fortunately, it did not land in the JOHRTS area, but the traffic problems created by the evacuation underscored the need to re-evaluate hurricane evacuation within the region. In 1994, the Texas Transportation Commission established the Hurricane Evacuation Task Force to increase safety, access, and mobility for the transportation of people and goods during emergency situations. With the assistance of state and local agencies, and after holding public meetings, the Task Force established a regional network of roadways comprising the hurricane evacuation route system as an element of the Gulf Coast Regional Evacuation Plan. Additionally, the Task Force created a separate funding category for evacuation route improvements located in the Gulf Coast Districts.


2006 Inland Evacuation Map
Beaumont District
Flooding Risk Areas
CENTER
NACOGDOCHES
SAN AUGUSTINE
LUFKIN
GROVETON
CORRIGAN
JASPER
NEWTON
WOODVILLE
LIVINGSTON
KOUNTZE
CLEVELAND
BEAUMONT
ORANGE
DAYTON
LIBERTY
PORT ARTHUR
ANAHUAC
LOUISIANA
Gulf of Mexico
Hurricane Flood Risk
Saffir-Simpson Scale
Category 1 74-95
Category 2 96-110
Category 3 111-130
Category 4 131-155
Category 5 >155 mph
20_-_FM_RTS_
Emergency Evacuation Routes
Alternate Evacuation Routes
Texas Department of Transportation

The primary routes for the hurricane evacuation network in the JOHRTS area use a high-capacity north-south routes and east-west connectors permit a steady, constant flow of traffic, allowing for safe and rapid travel, were identified as potential evacuation routes. Roadways meeting these criteria are:

- US 69, 90, 96, and 287
- SH 62, 73, 82, 87, and 105
- FM Roads 92, 105, 364, 365, 770, and 1406

Operational actions to enhance rapid evacuation of residents in the JOHRTS area along these evacuation routes include:

- Traffic signal control access by police to allow a change in signal patterns at selected intersections. This will reduce cross-traffic at major intersections along evacuation routes, thereby enhancing the rapid movement of residents along evacuation routes.
- Barricading selected ramps along evacuation routes to prevent side traffic from interfering with evacuation traffic flows.

The Gulf Coast Regional Evacuation Plan for the JOHRTS area was put to the test during October 2002 for Hurricane Lili, the first hurricane since 1992 to threaten the JOHRTS area. The operational actions discussed above were implemented and were deemed successful.

In late September 2005, Hurricane Rita, a Category 3 storm, hit southeast Texas packing 120 mile per hour winds and forcing evacuation of the three-county area. Hurricane force winds, rain, and a 10-foot storm surge left an estimated 2 million people without critical utilities, including water, electricity, and sewer. An estimated 8.7 million cubic yards of debris littered the region. Thousands of Hurricane Rita evacuees were unable to return home for several weeks.

In response to the effects of the evacuation needs, the TxDOT-Beaumont District developed an Evacuation Task Force and created EvacuLanes to ensure safe and timely evacuation of coastal and floodplain areas during future emergency conditions. These changes to the Hurricane Evacuation Network also included added roadway shoulders on the evacuation routes, extending existing roadway shoulders on evacuation routes to 10 feet in width, and painting hurricane evacuation symbols on the major route roadways.

Current Trends

Auto Use

Low vehicle occupancy rates, high vehicle ownership, and auto-oriented land use development (see Chapter 2) in the JOHRTS area indicate an overwhelming reliance on the automobile as the primary mode of transport. Continued growth in population and auto use, through vehicle miles traveled (VMT), without corresponding system improvements will create more traffic congestion, resulting in longer delays for drivers along major roadways in the JOHRTS area. Jefferson County is expected to generate the highest traffic demand, although the greatest relative increase in travel demand will occur in Hardin and Orange Counties, with forecast increases in VMT of 36 and 30 percent respectively over the next 23 years.

Unless major changes in travel behavior occur, the cost of heavy dependence on automobile use will continue to perpetuate a financially unsustainable demand for roadway improvements. Roadway pavement conditions will continue to deteriorate, generating higher repair costs for vehicle owners and increasing the overall number of accidents in the JOHRTS area. Other consequences that decrease the region's livability are also possible; households with no automobiles may find themselves further isolated from economic opportunities. In addition, heavy traffic volumes may create higher levels of noise and air pollution for many communities in the JOHRTS area. Continued auto-oriented, low-density land use development and demand for roadway improvements may lead to increases in roadway construction and maintenance costs for JOHRTS area communities.

Travel and Trip Characteristics

Peak Travel Periods

Examination of peak travel periods identifies times during the day when roadways are most likely to be congested. In general, the JOHRTS area AM peak period traffic is from 7:00 to 9:00, while PM peak period traffic occurs from 4:00 to 6:00. Peak travel hours vary between individual roadways; some roadways have peak hours that start and end one hour earlier than typical peak hours. This is due to the location of large traffic generators or heavy traffic flows during peak travel periods.

Directional Distribution of Traffic

Distribution of traffic by direction along roadways during peak periods can be used to identify congestion flows and travel patterns. In the JOHRTS area, average daily traffic volumes are evenly distributed, with 50 percent of total traffic traveling in each direction. During the AM and PM peak

travel hours, the majority (50-60 percent) of traffic travels in the peak direction, although several roadways have a much larger imbalance in their directional distribution of traffic flows during the AM and PM peak periods. Specifically, these roadways are: FM 1006 in Orange County, SH 87 near SH 82 in Port Arthur, and US 96 in Lumberton.

Travel Speeds

Travel speeds are yet another indicator of mobility and can be used by transportation professionals to estimate congestion levels along roadways. Analyzing trends in speeds and congestion levels over time can also be useful. The following data provides average speeds for peak hours; however, it should be noted that while the range of speeds provided for peak and off-peak hours are similar, specific facilities have peak hour speeds that are less than their off-peak speeds.

Level-of-Service Definitions for Roadways

Level-of-Service	Description of Traffic Conditions
A	Free-flow traffic conditions; motorists travel at desired speeds; minor traffic flow disruptions.
B	Reasonable flow conditions; noticeable presence of other vehicles.
C	Stable traffic flow conditions; noticeable increase of platoon formation; ability to maneuver noticeably restricted.
D	Less than stable traffic flow; speed and ability to maneuver severely restricted.
E	Unstable traffic conditions; travel demand approaching roadway capacity.
F	Heavily congested flow; traffic demand exceeds roadway capacity; recurrent breakdowns in traffic flow; and reduced ability to maneuver.

Source: Highway Capacity Manual, Special Report 209, Transportation Research Board, 1994.

- AM Peak Hour:

  Average travel speeds on highways and freeways ranged from 45 mph to more than 60 mph, while average travel speeds on arterial streets were between 25 and 45 mph. Some roadways or sections experienced travel speeds as low as 15 mph during the AM peak period.

- PM Peak Hour:

  Average travel speeds on highways and freeways during the PM peak hour ranged from 45 mph to more than 60 mph, while average travel speeds on arterial streets were between 25 and 45 mph. Some roadways experienced travel speeds as low as 15 mph during the PM peak period.

- Off Peak Hours:

  During the off-peak period, average travel speeds on highways and freeways ranged from 45 mph to more than 60 mph. Average travel speeds on arterial streets ranged from 25 to 45 mph, although some areas experienced speeds of less than 15 mph.

Average Daily Travel and Peak Usage

Roadway travel patterns and traffic congestion can also be identified by examining Average Daily Traffic (ADT) patterns, represented as total daily traffic in both directions of travel for all vehicle types. Variations in the percent of daily traffic carried by roadways during peak travel hours in the JOHRTS area are directly related to the location and classification of the facility.

Peak hour traffic typically represents 10 percent of the ADT. During the AM and PM peak periods, roadways with the highest peak usage are US 69 near 60th Street in Port Arthur and SH 73/87 at Cow Bayou in Orange County. These facilities carry between 15 and 20 percent of total daily traffic during the peak hour. The highest overall ADT on major roadways occur at:

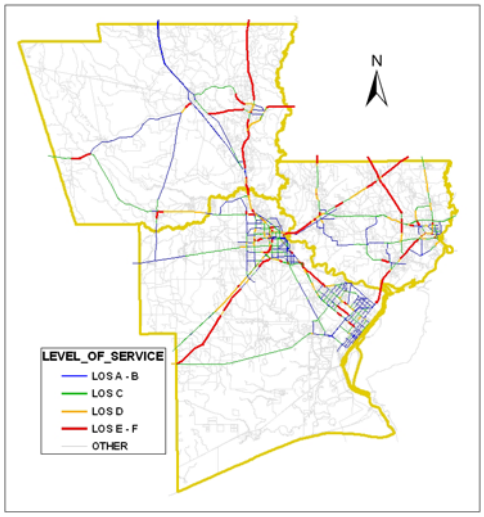
- IH-10 between Calder and US 90
- IH-10 between US 69, 96, 287 and the Orange County line
- US 69, 96, 287 (Cardinal Drive) near Fourth Street in Beaumont

Trends in Trip Type

An analysis of trip types in Texas by the Texas Transportation Institute (TTI) revealed a significant decline in the percentage of home-based trips counterbalanced by a rise in non-home based trips. Researchers concluded that this change in trip type indicates a fundamental change in urban travel patterns; more Texans have a tendency to complete chores during their lunch break or on their way home rather than making a special trip after they return home or before they leave for work. This suggests that congestion levels and time spent traveling may have influenced travel behavior to the point where drivers are now becoming more efficient in how they use their vehicles throughout the day. The same study also noted that while average person trips have remained stable, vehicle trip rates have increased substantially, suggesting that automobiles are being used more intensively than ever before.[1]

Roadway Capacity Analysis

Level of Service (LOS) is a scale used in the transportation industry to estimate how efficiently a roadway moves traffic. Transportation planners derive LOS for a roadway by examining its traffic volumes, operating capacity (the number of vehicles per hour the roadway can handle without creating congestion), and vehicle speeds. When the roadway traffic volume and speed exceed the capacity of the roadway, the facility loses its ability to efficiently move traffic and becomes congested. These levels of congestion range from uncongested traffic traveling at high speeds (LOS A) to severely congested traffic traveling at low speeds



Projected Level of Service (LOS) for 2030

[1] Texas Transportation Institute, *Urban Travel in Texas: An Overview of Travel Surveys,* Texas A & M University, Bryan-College Station, p. 13-16.

(LOS F). The map shown on the right illustrates the projected LOS for major roadways in the JOHRTS area in 2030.

Roadways that currently have low LOS are concentrated along three major transportation corridors in the JOHRTS area.

- US 69/96 – Between Lumberton, through Beaumont, to Port Arthur
- IH-10 – From eastern Jefferson County through Beaumont and Orange County to the Louisiana State Line
- SH 73/87 – From Port Arthur to Orange

Other roadways with low LOS include major arterial streets in Beaumont, Orange, and Port Arthur.

Roadway Pavement Conditions

Roadway truck and auto use is directly related to the rate at which pavement conditions deteriorate. Generally speaking, the more vehicles on roadways, the faster roadway pavement quality will decline. In the JOHRTS area, major emphasis is placed on roadway maintenance; TxDOT constantly evaluates pavement conditions of all major roadways within the region by examining distress, ride, and condition scores. These scores are also used to analyze roadway condition trends, pavement types, evaluate future needs, and prioritize roadway improvement projects.

In addition to estimating the cost to address added capacity and right-of-way, it is important to account for rehabilitation of roadways. The table below quantifies the rehabilitation needs and estimates magnitude cost based on historic average rehabilitation costs in the JOHRTS area. Bridge rehabilitation and reconstruction needs were based on a review of bridge condition scores for bridges not rehabilitated or reconstructed since 1990 or bridges that are part of an MTP project on the existing regional roadway system.

Photo courtesy of Jeff Steen

Roadway Rehabilitation Needs and Costs	
Lane Miles To Be Rehabilitated	**Cost (2005 dollars)**
1,329	$2,256,800,000

Source: JOHRTS Area Texas Urban Mobility Plan, 2006.

Bridge Rehabilitation and Reconstruction Needs and Costs		
Bridge Improvement Type	**Number of Bridges**	**Cost (2005 dollars)**
Rehabilitation	84	$3,400,000
Reconstruction	74	$13,400,000
Total	158	$16,800,000

Source: JOHRTS Area Texas Urban Mobility Plan, 2006.
Notes: Reconstruction cost assumed to be $50/sq. foot of deck
Rehabilitation costs assumed to be $25/sq. foot of deck.

Based on the above cost analysis, the total additional funding need beyond the JOHRTS MTP 2030 exceeds $1.4 billion. The additional funding needs are summarized in the following table.

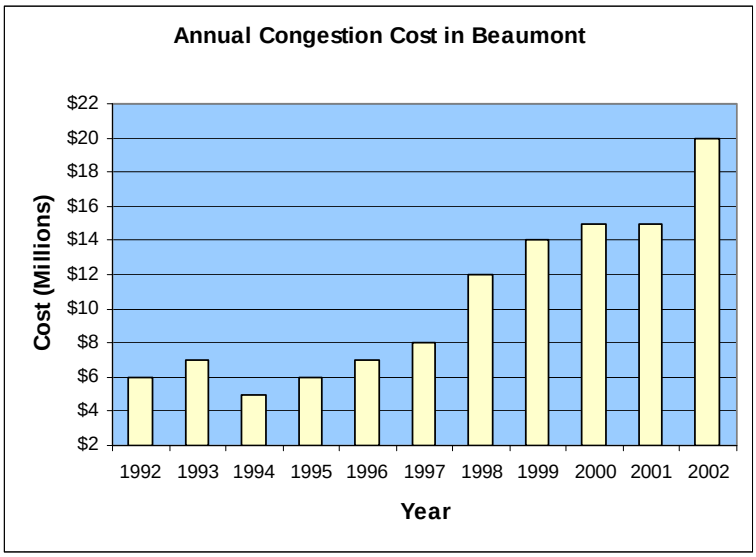
Total JOHRTS Region Additional Funding Needs	
Improvement Needs	**Cost (2005 dollars)**
Cost to Eliminate Level of Service "F" Conditions	$132,000,000
Reconstruction Costs	$1,258,800,000
Bridge Rehabilitation and Reconstruction Costs	$16,800,000
TOTAL COST	$1,407,600,000

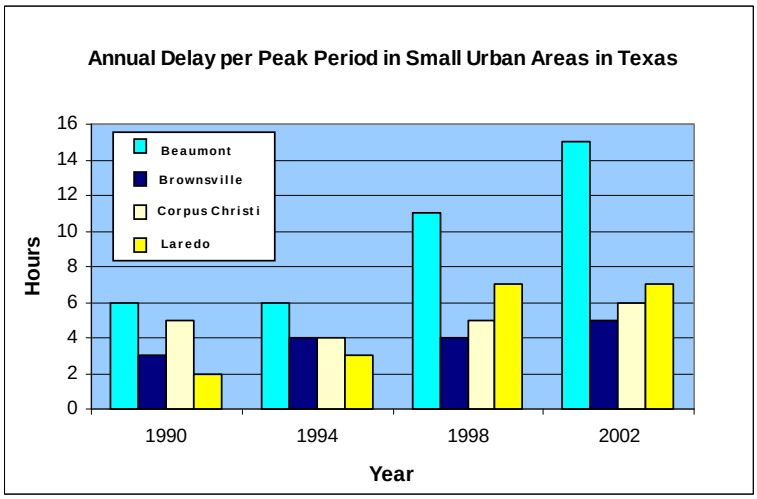
Source: JOHRTS Area Texas Urban Mobility Plan, 2006.

Delay Measurements

These measurements are used to demonstrate congestion and are expressed in terms of lost income and time due to congestion. Delay per driver data estimates the amount of time each driver spends in congested traffic due to typical traffic volumes, accidents, and vehicle breakdowns. Costs of delays due to congestion are based upon such variables as the value of the driver's time and fuel costs.

In the Beaumont area, the annual costs of congestion increased from $6,000,000 in 1992 to $20,000,000 in 2002. The annual delay for peak period drivers in the Beaumont area has also increased from a 6-hour delay in 1994 to a 15-hour delay by 2002 based on information from the 2002 Urban Mobility Study published by the TTI. Traffic forecasts indicate that this trend will continue, although future roadway enhancements may prevent dramatic increases.





Needs Assessment

When current socio-economic growth patterns, driver behavior, and roadway trends are examined, a clear picture of transportation needs in the JOHRTS area emerges. Population growth, high automobile availability, automobile use, low automobile occupancy rates and auto-oriented land use development indicate that JOHRTS area residents are heavily dependent upon the automobile as their primary mode of transportation.

An examination of current operating and roadway pavement conditions indicate that the JOHRTS area road network cannot sustain this growth demand indefinitely without substantial investment in its infrastructure. Declining pavement conditions indicate that many roadways in the region are in need of rehabilitation. Low LOS and travel speeds along major thoroughfares in the region indicate that many of these facilities accommodate traffic volumes that exceed their designed operating capacity and need major improvements to expand their capacity.

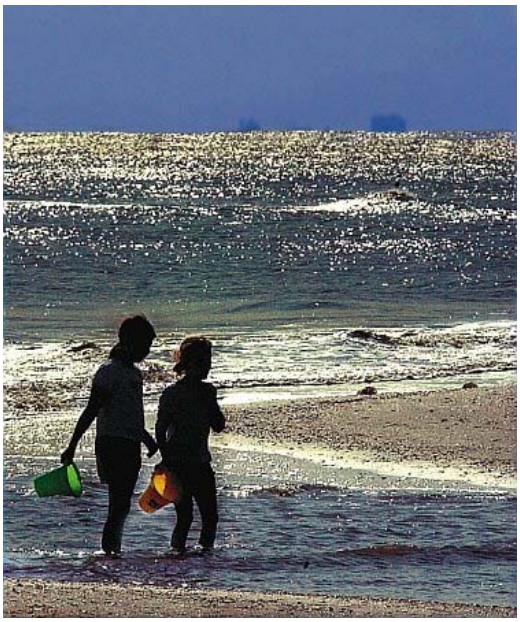


Photo courtesy of Brian Vincent, Port Arthur News

Delay per driver and accident statistics translate these problems into tangible facts, which confirm that congestion in the JOHRTS area is in fact a problem and that the costs to drivers are real and increasing. The number of person hours of delay due to congestion was 850,000 in 2000; nearly double that of 1982. The additional annual cost per driver in the area amounted to $220.

Major investment in the local roadway network is essential if current and future demand for auto use in the JOHRTS area is to be satisfied. However, this demand for expanded roadways and new facilities is not exclusive to the JOHRTS area; most major metropolitan areas in the country are also faced with similar problems. The JOHRTS area is unique from many other regions because of the additional barriers that complicate efforts to improve the roadway network. These barriers include factors that determine when and how fast improvements can be made to roadways, such as the processes used to obtain funding for transportation projects, environmental requirements, and other government regulations. The main barriers to accommodating the transportation needs in the JOHRTS area are listed below:

- Air Quality Mandates – JOHRTS area non-attainment status makes it difficult for transportation planners to solve congestion problems strictly through added capacity improvements, since building new roads will add VMT and may cause the JOHRTS area to exceed its allowable mobile source emissions budget.

- Environment – Environmentally sensitive areas such as wildlife preserves and wetlands make it difficult to improve existing roadways without compromising environmental assets or conducting comprehensive and costly environmental studies. The cost of construction projects in these areas is often much higher than other improvements due to the extra precautions or mitigations that must be taken in order to protect these environmentally sensitive areas.
- Development Patterns – Low density development discourages transit, bicycle or pedestrian modes of transportation. Urban sprawl and development that is not mixed-use makes the creation of an efficient multi-modal transportation system cost prohibitive.
- Climate - High temperature and humidity levels in the JOHRTS area make air-conditioned automobiles a more attractive mode of transport than bus, bicycle, or pedestrian modes for local residents. Such conditions also make the promotion of higher density communities that promote walking and support transit use much more difficult.
- Limited Transportation Planning Resources – Like most planning agencies, organizations within the JOHRTS area have scarce transportation planning and engineering resources. This makes it difficult for local communities to develop transportation plans that solve their current problems and develop a proactive approach for mitigating such problems in the future. The lack of such resources also permits reactive decisions regarding transportation improvements, which can lead to unnecessary improvements that may actually exacerbate existing problems and create additional traffic demand.

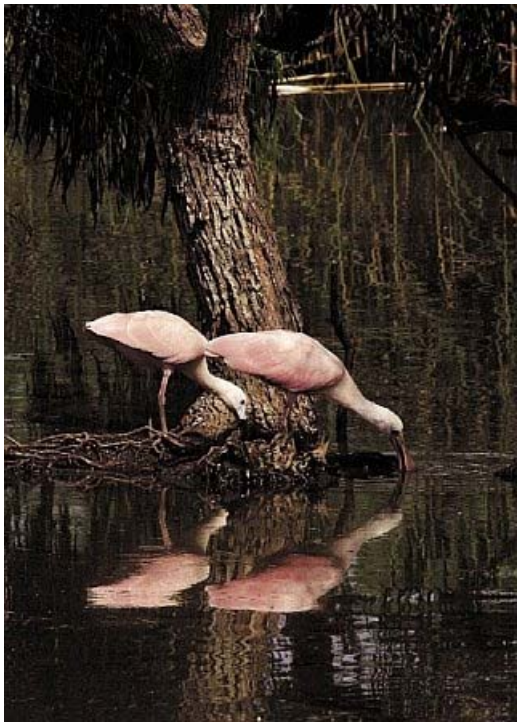


Photo courtesy of Brian Vincent, Port Arthur News

Future Alternatives

An assessment of alternatives that could meet current and projected transportation needs must promote initiatives that improve air quality within the JOHRTS area. Attainment of the air quality emissions standard in the JOHRTS area is a key factor that determines future transportation alternatives; the non-attainment status for the NAAQS in the JOHRTS area requires that any proposed improvements have a limited or no effect on VMT and lead to no increase in the allowable regional vehicle emissions.

Build Scenario-Highway Only

This strategy focuses on solving congestion problems solely by adding roadway capacity. Unfortunately, this alternative is not considered viable in the JOHRTS area. Added capacity projects would exceed available financial resources and increase travel demand and VMT. The combined effect would be to decrease air quality in the region while exhausting available transportation funds.

The No-Build Scenario

This scenario is conservative in nature and promotes keeping the current transportation system exactly the same without adding any improvements. While this scenario requires little capital investment, it does not accommodate future travel demand or improve air quality in the JOHRTS area, and is therefore not considered an attractive option.

Transportation Demand Management Strategies

Strategy	Cost	Benefit
Carpooling/Vanpooling Programs	Low	Decreased VMT
Parking Management/Pricing	Low	Decreased delay
Alternative Work Hours	Low	Decreased VMT
Express Bus Service	Low to Medium	Added capacity
Telecommuting	Low	Decreased VMT

Source: TTI

Transportation Demand Management (TDM)

Management of transportation facilities by influencing demand should be considered as part of a comprehensive option for addressing the travel demands of the region.

TDM techniques require cooperation with local area employers and public awareness campaigns that inform residents of their ability to alter travel behavior and reduce congestion. The main benefit of TDM is that it focuses on improving the efficiency of the roadway at minimum cost without generating additional traffic or VMT.

Transportation Control Measure (TCM)

TCMs attempt to influence travel behavior by changing the physical structure of the transportation system to promote more efficient transportation flows. Examples of TCMs include signalized timing, on-ramp metering lights, and turning bays at intersections.

Like TDM, TCM has the ability to meet future travel demand by optimizing the current roadway network without increasing VMT. The success of TCM will be determined by the ability of JOHRTS area residents to accept these options and alter their travel behavior.

Intelligent Transportation Systems (ITS)

This initiative centers on improving the efficiency of roadways through the utilization of technology. Strategies under ITS include: freeway, transit, and emergency response management; incident management; traveler information systems; and electronic toll collection. The main benefits of ITS are creation of programs that increase transportation efficiency and safety at minimum cost.

Proposed Policies

When all the transportation alternatives are examined, based on the current and forecast transportation needs in the JOHRTS area, policies that promote roadway efficiency while limiting increases in VMT, and therefore, mobile source emissions, are given priority. Strategies that follow this policy include TDM, TCM, ITS, and roadway maintenance projects. Proposed policies are also sensitive to the fact that forecast increases in travel demand will translate into necessary expansion of the current JOHRTS area transportation network. However, such improvements will give priority to expanding current facilities over constructing new roadways.

When discussing proposed policies for the JOHRTS area roadway network, it is important to note that the SETRPC-MPO has a limited influence over many transportation decisions and disbursement of transportation funds for major roadway or transit improvements. Much of this responsibility belongs to TxDOT or local agencies within the JOHRTS area. However, the SETRPC-MPO will use its resources and influence to promote its policies and strategies whenever possible.

Roadway Maintenance

The maintenance of the existing transportation system is key in satisfying future transportation needs. Failure to maintain the existing system can result in poor roadway conditions, reduced effectiveness of the roadway network, unsafe driving conditions, and increased repair costs. If a system is properly maintained, the following benefits can be achieved:

- Savings in driving costs and travel time
- Increased motorist safety
- Improved transportation system efficiency and effectiveness
- Increased driver satisfaction through improved roadway aesthetics and driving comfort

The SETRPC-MPO will continue to promote adequate roadway maintenance in the JOHRTS area and collaborate with TxDOT and local area agencies to support and fund roadway maintenance projects.

Roadway Improvements

Programmed roadway improvements satisfy identified transportation needs and involve: roadway widening and realignments; extensions of existing streets; and improvements to intersections, interchanges, traffic control systems, railroad grade crossings, bicycle routes, sidewalks, crosswalks,

and transit facilities. A complete listing of all programmed improvements is outlined in the MTP project listing in Appendix E. Listed below are the major transportation improvements in the JOHRTS area:

- US 69 from Lumberton in Hardin County to Zavalla in Angelina County: Currently, the environmental documentation for the construction of a new four lane limited access roadway is underway. Reconstruction and widening of US69 in Lumberton is also planned.

- IH-10: Proposed improvements to expand IH-10 from four to six lanes between Beaumont and the eastern county line in Orange are moving forward. Engineering and design studies for each of these phased construction projects are near completion – one section has been completed and a second section is currently under construction. TxDOT is still trying to secure funding to complete all the projects along the entire link. Long-range plans also exist to expand the capacity of IH-10 in Jefferson County from four to six or eight lanes.
- US 69 between Lumberton and Port Arthur: A long-range plan to expand US 69/96/287 from four to six lanes is currently being developed by TxDOT.

ITS Strategies

The SETRPC-MPO has recently adopted ITS in its list of transportation improvements through the installation of changeable message signs on IH-10 and US 69/96/287. Plans are currently underway to install emergency vehicle signal preemption systems at select locations within the JOHRTS area. The MPO will continue to examine new ITS projects and programs and identify those that would be of most use to travelers in the JOHRTS area.

TCM/TDM Programs

TDM or TCMs have long been used by agencies in the JOHRTS area to improve the operational efficiency of the roadway network. These control measures in the new MTP focus on signalization improvements and new turning bays at intersections. Low population densities and disbursed travel patterns, coupled with limited planning resources, have made the implementation of TDM projects unattractive; however, the SETRPC-MPO will continue to promote its Ozone Action Day Program that promotes many TDM initiatives, such as carpooling, and will examine new TDM programs that would be attractive for the JOHRTS area.

Funding

Funding of roadway improvements within the JOHRTS area comes from various federal, state and local sources. Funds from federal and state sources are mentioned below according to their funding category along with a brief description. See Chapter 9 – Financial Summary and Appendix G for a complete list of all transportation funds and funding categories.

Corridor/Project Specific Transportation Funds

These funds are dedicated to specific roadway projects that are identified and prioritized at the State level. The new funding categories are listed below:

Corridor specific selected by the TxDOT Commission and scheduled by the Districts

- Category 3 – Urban Area Corridor Projects
- Category 4 – Statewide Connectivity Corridor Projects

Project specific selected by the TxDOT Commission

- Category 6 – Structures/Bridge Replacement and Rehabilitation
- Category 9 – STP Transportation Enhancement
- Category 12 – Strategic Priority

Project specific selected by TxDOT Divisions or other state agencies

- Category 8 – STP Safety
- Category 10 – Miscellaneous Programs (State Park Roads, Railroad Replanking and Signal Programs, Federal Miscellaneous Programs)

Allocated (Bank Balance) Transportation Funds

These funds are part of the general annual allocation of transportation funds and are distributed at the discretion of TxDOT Beaumont District office staff. Note the SETRPC-MPO scores federal and state funding allocation in Categories 5 and 11 using its Project Selection Process (see Appendix C).

Bank Balance to the District

- Category 1 – Preventive Maintenance and Rehabilitation
- Category 10 – Construction Landscape Program
- Category 11 – District Discretionary

Bank Balance to the District with projects selected by the MPO

- Category 5 – Congestion Mitigation and Air Quality (CMAQ)

Photo courtesy of the Beaumont Convention and Visitors Bureau

Local Funding Sources

Communities in the JOHRTS area often fund entire transportation improvement projects by themselves. However, all such improvements usually require consultation with the SETRPC-MPO to ensure that the improvements support attainment of regional air quality goals. Projects such as these have no funding category and are listed as locally funded at the beginning of the MTP project listing in Appendix E.

Other Funding Sources

Occasionally, major roadway projects and programs receive special funds through a variety of sources. Funds include local donations (usually donations of land for right-of-way), in-kind matches for federal funds (manpower or other office resources), or monetary contributions. Traditional sources for these types of funds include economic development organizations, real estate developers, and special funds earmarked for the JOHRTS area by Congress.

4.0 Public Transportation

Introduction

Public transportation is an integral component of a region's multimodal transportation system offering tangible transportation benefits, including transit service for the elderly, the disabled, and people lacking access to autos. Public transit also offers additional benefits to society as a whole as increased transit use promotes clean air and various other environmental initiatives.

An examination of regional transit services identifies current and projected needs for public transportation in the JOHRTS area. Both fixed route and demand response services are examined in this chapter. From this assessment, potential alternatives and proposed policies are discussed in detail.

Existing System

The JOHRTS area is currently served by three public transportation systems: Beaumont Municipal Transit (BMT), Port Arthur Transit (PAT), and South East Texas Transit (SETT). The two largest cities in the JOHRTS area, Beaumont and Port Arthur, operate transit services within their respective metropolitan areas. SETT is a demand response transit service operated by SETRPC throughout rural portions of the JOHRTS area. The following services are provided by these three public transportation systems:

- BMT operates nine local bus routes throughout the Beaumont area. Transit routes operate from 6:00 AM to 9:30 PM Monday through Friday and 7:30 AM to 9:30 PM on Saturday. Transit routes all converge at the BMT transfer facility in downtown Beaumont to provide easy transfers to other routes. Fares for adults are $1.25 for all routes, with discounted fares of $0.75 for senior citizens, disabled, and youth (ages 6 through 18). Transfers are $0.25. Children under 6 can ride for free with an accompanying adult. Monthly passes allowing unlimited rides each month are also available.

- PAT operates eleven local bus routes throughout the Port Arthur area. Transit routes serve most major roadways between FM 365 and the Sabine-Neches Canal. PAT operates from 6:15 AM to 6:15 PM Monday through Friday. Service is not provided on Saturdays, Sundays, or city

holidays. Fares are $1.00 for adults, with reduced fares of $0.50 for senior citizens, children, and handicapped patrons. Transfers are free, with the exception of zone transfers (satellite routes), which have a $0.50 charge.

- SETT began service in 1992 and provides demand response transit service to Orange County, Hardin County, and rural areas in western Jefferson County. Fares range from $0.50 to $1.50 in Orange County and $1.00 to $1.50 in Hardin and Jefferson counties. Patrons call at least 24 hours in advance to arrange for the curb-to-curb service and are quoted a rate over the phone.

The following Transit Programs table provides a summary of schedules and fare information for the available programs.

Transit Programs in the JOHRTS Area

Transit Program	Schedule	Fare	2005 Ridership
Beaumont Municipal Transit (BMT)	Mon - Fri 6:00 am to 9:30 pm Saturday 7:30 am to 9:30 pm	Regular $1.25; Special* $0.75 Transfer $0.25	**693,575**
Port Arthur Transit (PAT)	Mon - Fri 6:15 am to 6:15 pm	Regular $1.00; Special* $0.50	**137,128**
South East Texas Transit (SETT)	Call 24 hours in advance	Orange County: Regular $0.50 - $1.50 Hardin County and Western Rural Jefferson County: Regular $1.00 - $1.50	**71,595**

Source: SETRPC-MPO
** For senior citizens, disabled, and children.*

SETRPC initiated transit demonstration projects – The Transit LINK and Mid-County Transit. The Transit LINK established in August 2001 connected the BMT and PAT services. The Transit LINK system operated with BMT and PAT buses and averaged about 70 riders per month. The Transit LINK terminated service July 31, 2003 as continued funding was unavailable. SETRPC implemented the Mid-County Transit service in summer 2002 for the cities of Nederland, Port Neches, and Groves. Mid-County Transit provides subscription service to the elderly and disabled residents of these cities and currently averages about 825 one-way trips per month.

In addition to the public agency transportation services noted above, several private taxicab operations provide transportation services in the JOHRTS region. A listing of the taxi operators and their respective service areas follow.

Taxi Operators in the JOHRTS area		
A 1 Taxi	Flanagan Taxi	Square Deal Taxi Cab
American Quality	Flanagan Transportation Co.	Square Deal Taxi Co.
Beaumont Taxi	La Uno Taxi	Texas Cab Co.
Daranda Taxi	Mid County Cab Co.	

Source: Golden Triangle Telephone Directory, 2006-2007.

Regional Public Transportation Coordination Plan

In cooperation with Texas Department of Transportation (TxDOT), under the provision of Chapter 461 of House Bill (HB) 3588, in eliminating waste and ensuring efficiency and maximum coverage in the provision of public transportation services, the SETRPC-MPO created the Regional Public Transportation Coordination Plan (RPTCP). The RPTCP is a collaborative product that responds to the requirements laid out in SAFETEA-LU.

The regional service coordination planning process included establishing and active participation of the lead agency and Steering Committee, general meetings, and the extensive public involvement and outreach effort. The RPTCP included a regional needs assessment, which was accomplished through numerous meetings and Transit Services Survey. As a part of the planning process, the Barriers, Constraints, and Opportunities for Coordination were identified and discussed. These elements were the basis for the Action Plan and continuation strategies for transportation coordination in the region. The Action Plan projects are a result of the voiced concerns from the surveys, the possible solutions to regional constraints, and guidance from the Steering Committee. Implementation of the Action Plan projects will create a more seamless public transportation system that achieves efficiency, eliminates waste, and increases coordination to address gaps in service and improve regional transportation.

Current Trends

Current service trends are used to evaluate the effectiveness of current transit service and assess future transit needs. As recipients of federal funds, the region's primary transit service providers (BMT, PAT, and SETT) annually report service data to the Federal Transit Administration (FTA). The service data is subsequently published by the United States Department of Transportation (USDOT) as the FTA Section 15 Annual Report. For the remainder of this chapter, Section 15 data serves as the basis for projecting future demand and funding levels. Using recent Section 15 data, a review of current trends focusing on ridership, funding, and service trend statistics for the 1995 to 2004 time period provides the basis for forecasting future transit demand.

Ridership Levels

With the exception of the 16 percent decline in 1998 ridership, BMT ridership steadily increased from 1995 to 2001. In 2002, BMT ridership decreased by 37 percent as fare rates increased and reductions in service occurred. The BMT ridership has continued to decline with a 30 percent drop from 2002 to 2004; however, a slight increase in ridership occurred in 2005. PAT ridership declined by 140,000 passenger trips (approximately 70 percent) from 1995 to 2001 and reached a low in 2002 at 143,175 (a 20 percent drop from 2001). However, in 2003, PAT experienced an increase of 20 percent from the 2002 ridership. PAT ridership has subsequently continued to decline in 2004 and 2005. Ridership for SETT slightly decreased between 1995 and 2001 (by approximately 6,500 trips or 8 percent) and declined from 2001 to 2002 by 14 percent. However, ridership increased in 2003 by 17 percent and remained about the same in 2004, with a slight decrease in 2005.

JOHRTS Area Transit Ridership

Agency	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
BMT	1,465,900	1,477,200	1,481,300	1,242,400	1,541,900	1,551,000	1,547,500	970,370	801,801	683,060	693,575
PAT	318,400	210,100	216,700	201,100	192,500	178,100	179,200	143,175	171,652	146,145	137,128
SETT	80,700	92,500	93,800	114,500	86,200	72,100	74,200	63,958	76,807	76,560	71,595
Total	1,865,000	1,779,800	1,791,800	1,558,000	1,820,600	1,801,200	1,800,900	1,177,503	1,050,260	905,765	902,298

Source: FTA; SETRPC-MPO

Funding Levels

Fiscal year 2005 BMT, PAT, and SETT federal source funding is approximately 38, 46, and 38 percent respectively. Farebox recovery ratios identify the percentage of transit system operating costs that are recovered through passenger fares. For BMT, PAT, and SETT these ratios represent 14.8, 7.6, and 7 percent respectively of each systems operating costs. The remaining 80 percent or more of the operating funds are obtained from a variety of sources, including federal, state, and local agencies. The percent of operating funds from various sources is identified in the 2003 funding sources table. It should be noted that transit budgets are typically based on historical funding levels and changes in federal transit funding policies may easily affect the amount of federal dollars available for transit.

2005 Funding Sources

Source	BMT	PAT	SETT
Passenger	14.8%	7.6%	7.0%
Local	35.9%	21.7%	19.0%
State	10.9%	24.2%	36.0%
Federal	37.7%	45.9%	38.0%
Other	0.7%	0.6%	0%
Total	100%	100%	100%

Source: SETRPC-MPO

Transit Statistics

The number of BMT fixed route (FR) vehicles operated to meet peak service requirement has remained constant for the past decade. The number of BMT demand response (DR) vehicles operated to meet peak service requirements has remained unchanged since 1996. Over the past ten years, BMT FR annual vehicle revenue miles increased 2.8 percent and DR annual vehicle revenue miles increased 12.2 percent. The annual number of FR vehicle revenue miles has fluctuated with a peak of 736,101 in 2005 while the annual number of DR vehicle revenue miles peaked in 2003 with 227,290.

BMT Fixed Route Annual Service Statistics

Transit Statistics	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	Annual % Change
Number of Vehicles	12	12	12	12	12	12	12	12	12	12	12	0.00%
Vehicle Revenue Miles	540,700	534,000	528,900	541,400	664,600	694,700	725,240	667,743	653,069	728,800	736,101	3.43%
Vehicle Revenue Hours	41,500	41,600	41,500	42,300	49,800	49,700	42,861	37,520	37,520	51,700	47,430	2.28%
Unlinked Passenger Trips	1,449,200	1,457,100	1,457,100	1,217,900	1,520,200	1,527,900	1,243,170	949,843	777,957	661,700	671,420	-6.43%
Passenger Miles	5,083,800	5,111,200	5,111,200	4,685,500	5,855,100	5,881,700	4,773,772	3,647,397	2,987,354	2,857,600	2,689,700	-5.31%
Operating Expenses	$1,926,200	$1,880,823	$1,856,863	$1,912,099	$2,188,795	$2,306,149	$2,814,050	$2,771,180	$2,919,157	$2,886,300	$3,406,880	6.19%

Source: USDOT

BMT Demand Response Annual Service Statistics

Transit Statistics	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	Annual % Change
Number of Vehicles	3	5	5	5	5	5	5	5	5	5	5	6.67%
Vehicle Revenue Miles	89,600	131,400	145,000	125,000	114,700	126,100	197,459	204,374	227,290	136,300	187,838	11.40%
Vehicle Revenue Hours	7,600	11,100	11,200	10,000	10,000	10,600	17,671	17,671	17,671	10,600	13,032	9.19%
Unlinked Passenger Trips	16,700	20,100	24,200	24,500	21,600	23,100	23,504	20,887	23,844	23,000	22,155	3.47%
Passenger Miles	93,300	112,200	135,800	132,500	116,800	123,700	141,024	125,322	143,064	151,100	141,065	4.89%
Operating Expenses	$357,500	$479,346	$499,525	$510,638	$494,920	$535,701	$460,771	$464,449	$583,009	$766,000	$546,409	6.07%

Source: USDOT

PAT Fixed Route Annual Service Statistics												
Transit Statistics	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	Annual % Change
Number of Vehicles	6	5	5	5	10	10	5	5	5	5	5	3.33%
Vehicle Revenue Miles	318,700	232,700	230,800	232,300	231,400	232,300	247,000	252,762	246,012	234,800	126,920	-7.17%
Vehicle Revenue Hours	20,000	14,600	14,400	14,600	14,600	14,600	16,000	16,201	16,185	13,600	14,152	-2.81%
Unlinked Passenger Trips	296,100	189,300	192,500	181,400	172,400	160,800	160,750	152,778	121,263	124,600	116,632	-8.11%
Passenger Miles	1,279,200	832,800	846,800	943,500	896,600	836,100	847,500	794,917	630,468	934,600	828,258	-2.22%
Operating Expenses	$892,900	$743,576	$762,911	$749,807	$771,637	$841,643	$902,690	$961,553	$1,097,757	$1,106,700	$1,110,202	2.52%

Source: USDOT

PAT Demand Response Annual Service Statistics												
Transit Statistics	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	20005	Annual % Change
Number of Vehicles	4	4	4	4	5	5	4	4	4	4	4	0.50%
Vehicle Revenue Miles	76,300	75,600	78,200	74,300	71,000	71,800	74,500	79,256	88,893	98,100	91,809	2.05%
Vehicle Revenue Hours	6,300	6,000	6,000	6,000	4,800	4,800	4,750	4,769	5,727	6,800	6,427	0.79%
Unlinked Passenger Trips	22,300	20,800	24,200	19,700	20,000	17,400	18,500	18,874	21,912	21,500	20,446	-0.28%
Passenger Miles	114,900	104,200	120,800	117,900	120,500	104,300	111,000	113,244	131,472	109,800	103,505	-0.47%
Operating Expenses	$266,400	$286,659	$288,677	$269,336	$311,004	$327,701	$368,576	$339,977	$340,771	$380,400	$396,500	4.33%

Source: USDOT

The number of PAT FR vehicles operated to meet peak service requirements doubled to 10 in 1999 and 2000, but decreased to only five vehicles for the period 2001 to 2003. The number of PAT DR vehicles operated to meet peak service requirements has remained at four vehicles since 1995 except for 1999 and 2000 when five vehicles were used. The annual number of FR and DR vehicle revenue miles traveled decreased 2.7 percent and increased 2.1 percent respectively. The number of annual passenger trips (APT) decreased 2.8 percent annually for FR service but for DR service increased only one-half percent over the 1995 to 2005 period.

SETT vehicles operated to meet peak service requirements increased to 28 in 2003, but it has since decreased to 23 in 2005. Additionally, unlinked passenger trips and passenger miles also peaked in 2003. Operating expenses in 2005 showed a decrease of 11 percent.

SETT Demand Response Annual Service Statistics							
Transit Statistics	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**Annual % Change**
Number of vehicles	25	25	25	28	27	23	-2.13%
Vehicle Revenue Miles	NA	NA	NA	NA	NA	450,486	0.0%
Vehicle Revenue Hours	NA	NA	NA	NA	NA	41,342	8.30%
Unlinked Passenger Trips	72,080	74,166	63,958	76,807	73,834	71,595	4.40%
Passenger Miles	647,210	638,137	612,393	713,572	670,111	600,651	0.02%
Operating Expenses	718,241	755,780	773,769	923,842	940,345	835,172	3.33%

Source: SETT

Performance Measures

Performance measures are useful tools that provide insight into a system's ability to meet specific transit goals and objectives. FTA statistical data can be used to make strategic decisions regarding future transit service. More specifically, these performance measures offer planning, budgeting, and cost statistics to monitor and evaluate regional transit services. Trends seen in the years 1995 to 2005 have been reviewed for each performance measure. Each measure and its goal are defined below:

Photo courtesy of Brian Vincent, Port Arthur News

- Service Effectiveness
  - ✓ Increase APT per vehicle revenue mile (VRM) and vehicle revenue hour (VRH)
- Service Efficiency
  - ✓ Decrease operating expenses per VRH and VRM
- Cost Effectiveness
  - ✓ Decrease operating expenses per APT and passenger mile

Service Effectiveness

For BMT service effectiveness, FR services declined over the last decade while DR services improved during this same period. The number of APT for each VRM traveled decreased by approximately

5.50 percent and 5.22 percent for FR services and DR services respectively. The number of APT per VRH decreased for FR services by 8.10 percent but increased by 0.24 percent for DR services.

For PAT service effectiveness, FR service marginally improved while DR services remained constant for the 1995 to 2005 period. The number of APT of each VRM traveled decreased by approximately 5.48 percent for FR services and slightly decreased for DR services. The number of APT per VRH decreased slightly for FR services and 0.11 percent for DR services.

Service Effectiveness												
Performance Measure	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**Annual % Change**
BMT Fixed Route												
Unlinked Passenger Trips per VRM	2.68	2.73	2.75	2.25	2.29	2.20	1.71	1.42	1.91	0.91	1.09	-5.50%
Unlinked Passenger Trips per VRH	34.92	35.03	35.11	28.79	30.51	30.72	29.00	25.32	20.73	15.39	14.15	-8.10%
BMT Demand Responsive												
Unlinked Passenger Trips per VRM	0.19	0.15	0.17	0.20	0.19	0.18	0.12	0.10	0.11	0.11	0.47	-5.22%
Unlinked Passenger Trips per VRH	2.20	1.81	2.16	2.45	2.15	2.18	1.33	1.81	1.35	1.32	1.70	0.24%
PAT Fixed Route												
Unlinked Passenger Trips per VRM	0.92	0.81	0.83	0.78	0.75	0.69	0.65	0.60	0.49	0.53	0.51	-5.48%
Unlinked Passenger Trips per VRH	14.80	12.96	13.37	12.42	11.84	11.00	10.04	9.43	7.49	9.16	8.24	-5.13%
PAT Demand Responsive												
Unlinked Passenger Trips per VRM	0.29	0.28	0.31	0.26	0.28	0.24	0.25	0.24	0.25	0.22	0.22	-2.31%
Unlinked Passenger Trips per VRH	3.54	3.47	4.03	3.28	4.21	3.63	3.89	3.96	3.83	3.16	3.18	-0.11%
SETT Demand Response												
Unlinked Passenger Trips per VRM	**	**	**	**	**	**	**	**	**	**	0.16	**
Unlinked Passenger Trips per VRH	**	**	**	**	**	**	**	**	**	**	1.73	**

**PAT data unavailable*

***SETT data unavailable; reporting began in 2005*

Source: PB

Service Efficiency

BMT service efficiency is measured in operating expenses per VRM and per VRH. For 1995 to 2005, operating expenses for FR services have increased 2.89 percent and 5.20 percent respectively. However, operating expenses for DR services have decreased 1.36 percent and increased 1.41 percent, respectively. As such, the BMT service efficiency has increased for DR service but has declined with respect to FR services for the period of 1995 to 2005.

PAT service efficiency is measured in the same way. For 1995 to 2005, operating expenses increased 5.88 percent and 6.07 percent respectively for FR service. Additionally, operating expenses for DR services increased. Therefore, the PAT service efficiency has declined for FR and DR services for this period.

Service Efficiency												
Performance Measure	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	Annual % Change
BMT Fixed Route												
Operating Expense per VRM	$3.56	$3.52	$3.51	$3.53	$3.29	$3.32	$3.88	$4.15	$4.47	$4.16	$4.62	2.89%
Operating Expense per VRH	$46.41	$45.21	$44.74	$45.20	$43.93	$46.37	$65.66	$73.86	$77.80	$70.58	$71.80	5.20%
BMT Demand Responsive												
Operating Expense per VRM	$3.99	$3.65	$3.45	$4.08	$4.32	$4.25	$2.33	$2.27	$2.57	$2.71	$2.90	-1.36%
Operating Expense per VRH	$47.04	$43.18	$44.60	$51.06	$49.26	$50.73	$26.07	$26.38	$32.99	$32.53	$41.92	1.41%
PAT Fixed Route												
Operating Expense per VRM	$2.80	$3.20	$3.31	$3.23	$3.33	$3.62	$3.65	$3.80	$4.46	$4.71	$4.89	5.88%
Operating Expense per VRH	$44.64	$50.93	$52.99	$51.36	$53.00	$57.58	$56.42	$59.35	$67.83	$81.38	$78.44	6.07%
PAT Demand Responsive												
Operating Expense per VRM	$3.49	$3.79	$3.69	$3.62	$4.38	$4.56	$4.95	$4.29	$3.83	$3.88	$4.31	2.60%
Operating Expense per VRH	$42.28	$47.77	$48.11	$44.89	$65.21	$68.44	$77.59	$71.29	$59.50	$55.94	$61.69	5.02%
SETT Demand Response												
Operating Expense per VRM	**	**	**	**	**	**	**	**	**	**	$1.85	**
Operating Expense per VRH	**	**	**	**	**	**	**	**	**	**	$20.20	**

**PAT data unavailable*

***SETT data unavailable; reporting began in 2005*

Source: PB

Cost Effectiveness

Both municipal transit systems in the JOHRTS area indicate reduced cost effectiveness from 1995 to 2005. BMT operating expenses per APT increase 15.58 percent and 1.89 percent respectively for FR and DR services. Operating expenses per passenger mile for FR services increased 14.06 percent and for DR services increased 0.84 percent.

PAT operating expenses per APT increased 12.89 percent for FR services and 5.73 percent for DR services. However, while operating expenses per passenger mile for FR service increased 8.65 percent that for DR services decreased nearly 7 percent.

These figures indicate that BMT and PAT FR services cost rose significantly while PAT DR services cost decreased significantly and BMT DR services cost remained relatively constant during the same period.

Cost Effectiveness												
Performance Measure	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	Annual % Change
BMT Fixed Route												
Operating Expense per APT	$1.33	$1.29	$1.27	$1.57	$1.44	$1.51	$2.26	$2.92	$3.75	$4.58	$5.07	15.58%
Operating Expense per Passenger Mile	$0.38	$0.37	$0.36	$0.41	$0.37	$0.39	$0.59	$0.76	$0.98	$1.19	$1.26	14.06%
BMT Demand Responsive												
Operating Expense per APT	$21.41	$23.85	$20.64	$20.84	$22.88	$23.23	$19.60	$22.24	$24.45	$24.72	$24.66	1.89%
Operating Expense per Passenger Mile	$3.83	$4.27	$3.68	$3.87	$4.24	$4.33	$3.27	$3.71	$4.08	$4.12	$3.87	0.84%
PAT Fixed Route												
Operating Expense per APT	$3.02	$3.93	$3.96	$4.13	$4.47	$5.23	$5.62	$6.29	$9.05	$8.88	$9.51	12.89%
Operating Expense per Passenger Mile	$0.70	$0.89	$0.90	$0.79	$0.86	$1.01	$1.07	$1.21	$1.74	$1.18	$1.34	8.65%
PAT Demand Responsive												
Operating Expense per APT	$11.95	$13.78	$11.93	$13.67	$15.49	$18.85	$19.92	$18.01	$15.55	$17.69	$19.39	5.73%
Operating Expense per Passenger Mile	$2.32	$2.75	$2.39	$2.28	$2.58	$3.14	$3.32	$3.00	$2.59	$3.64	$3.83	6.39%
SETT Demand Response												
Operating Expernse per APT	**	**	**	**	**	**	**	**	**	**	$11.67	**
Operating Expense per Passenger Mile	**	**	**	**	**	**	**	**	**	**	$1.39	**

**PAT data unavailable*

***SETT data unavailable; reporting began in 2005*

Source: PB

Demand Analysis

To evaluate future transit needs, it is important to consider the projected demand for public transportation in light of current operational and service trends. Given that public transportation ridership has declined significantly since 1995, it is not appropriate to develop projections based on assumptions that there will be large increases in transit services and hence large increases in transit ridership. Future public transportation demand for transit services in the JOHRTS area is based upon projections where transit demand is held constant at year 2001 levels. These projections are usually represented as APT[1].

Projected Transit Demand (where demand is held constant)

JOHRTS Population and Person Trips		
	2001	2030
Population	385,222	435,676
Total Person Trips	1,579,363	1,897,036
Trips per Person	4.10	4.35

Source: SETRPC

These types of projections are based on the ratio of 2001 average weekday unlinked trips (AWT) to year 2001 estimated[2] total daily person trips (TPT). When this ratio (0.0035) is applied to 2030 daily person trips, it yields 6,639 daily transit trips or 1,726,140 APT by 2030. When APT projections per capita are projected, 1,635,302 trips are forecast for both FR and DR services by 2030. Based on these projections where demand is held constant, forecast demand for transit ranges between 1.6 and 1.75 million APT trips by 2030.

[1] Due to a lack of required data, SETT was not included in this part of the analysis.

[2] Estimated from vehicle trip total from 2001 JOHRTS Base Model and auto occupancy from 1998 Congestion Management Study.

JOHRTS Regional System Statistics									
	1995	1996	1997	1998	1999	2000	2001	2002	2003
Annual Unlinked Trips	1,784,300	1,687,300	1,697,965	14,443,500	1,734,378	1,729,173	1,445,924	1,142,382	944,976
Fixed Route	1,745,300	1,646,400	1,649,565	1,399,300	1,692,667	1,688,720	1,403,920	1,102,621	899,220
Demand Responsive	39,000	40,900	48,400	44,200	41,711	40,453	42,004	39,761	45,756
Average Weekday Unlinked Trips (AWT)	6,863	6,490	6,531	5,552	6,671	6,144	5,561	4,394	3,635

Source: USDOT

2030 Projected Annual Demand			
	1997 Transit Trips	2000 Transit Trips	2030 Projected Transit Trips
Fixed Route	1,649,600	1,688,700	1,676,000
Demand Responsive	48,400	40,500	50,100
Regional Total Transit Trips	1,698,000	1,729,200	1,726,100
Total Transit Trips Per Capita	4.48%	n/a	3.96%

Source: Parsons Brinckerhoff

Needs Assessment

Required levels of future transit service can be measured by estimating projected increases in annual vehicle revenue miles and hours, and by forecasting annual vehicle requirements and operating expenses for transit agencies in the JOHRTS area. All projected transit needs are assessed using conservative estimates of projected demand (constant demand trips).

Projected Annual Vehicle Revenue Miles

The projected number of revenue miles and hours for 2030 can be calculated by extrapolating ratios of 2001 VRM and APT to 2030 data. This results in a projected 19 percent increase in VRM for FR services (1,244,200 in 2001 to 1,485,300 by 2030).

Projected Annual Vehicle Revenue Hours

The projected number of revenue hours for 2030 can be calculated by extrapolating ratios of 2001 VRH and APT to 2030 data. These ratios project approximately 19 percent increase in VRH for FR transit, rising from 58,900 in 2001 to 70,300 by 2030. Forecasts also indicate that VRH for DR transit services will rise by 19 percent, from 22,400 hours in 2001 to 26,700 hours by 2030.

Projected Annual Vehicle Requirements

Future need estimates also include the number of vehicles required for service delivery. The ratio of vehicles operated in maximum service per APT can be used to estimate the number of vehicles required by 2030. This results in 20 FR and 10 DR vehicles required to meet projected 2030 demand, an increase of approximately 19 percent for each type of service.

Projected Annual Operating Expense

Future operating expenses for transit fleets can be calculated using 2001 revenue hour and mile forecasts. This forecast reveals a 19 percent rise in operating expenses for DR services from $829,300 in 2001 to $989,300 by 2030. Annual operating costs for FR services are also expected to rise, from $3,716,700 in 2001 to $4,437,100 by 2030, for a total increase of 19 percent.

Future Options

This is a vital function that cannot be disregarded. Consequently, a logical first consideration regarding future transit improvements is how best to maintain and strengthen the performance of this basic mobility provision.

Beyond that primary objective, it is appropriate to consider whether there is an added function to be performed by transit service. This added function would be to supplement transportation capacity, as an alternative to further expansion of the network of streets and highways. Accomplishment of that function would require the introduction of transit service designed to be competitive with travel by private automobile and the ability to attract significant numbers of travelers who would otherwise use automobiles, especially during peak periods. Transit service satisfying this objective would be substantially different in character from the basic mobility routes now provided. The most likely form this service would take would be express bus routes operating in major travel corridors during peak periods and in the peak direction. A successful route would be one able to attract enough passengers away from automobile travel in a corridor to improve the traffic level of service measurably, thereby deferring the need to increase roadway capacity in the corridor.

The potential for this second function to be performed successfully in the near term or more distant future should be investigated, so that decision makers and the transit operators are positioned to take action at the appropriate time. In this regard, there are many transportation management measures that can be examined for potential implementation to re-shape transportation policies, actions, and results.

Basic Mobility

In the meantime, the primary focus should remain on continuing and improving the current basic mobility service. The following table summarizes the recent status of the two transit service providers within the JOHRTS region – BMT and PAT. The data provided in the following table are not unusual examples among comparable urban areas and transit systems in the United States. They

show that the service does in fact provide useful amounts of transportation but does so at a cost well in excess of the revenue obtained from fares. This is to be expected due to the fact that it is not possible to attain a high degree of transit service productivity, considering the distribution of passenger trips geographically and by time of day. Even in much larger cities, an example being Houston, fare revenues are seen to contribute little more as a percentage of the cost to operate and maintain the transit services.

2005 Transit Operations Summary					
SUPPLIER	**BMT**		**PAT**		**SETT**
Service Type	Fixed Route	Demand Response	Fixed Route	Demand Response	Demand Response
Number of Vehicles Used	12	5	5	4	23
Hours of Service	15.5	15.5	12.0	12.0	10.0
Annual Revenue Vehicle Miles	736,101	187,838	226,931	91,809	450,486
Annual Revenue Vehicle Hours	47,430	13,032	14,395	6,427	41,342
Annual Operating & Maintenance (O&M) Cost	3,405,880	546,409	1,110,202	396,500	835,172
Annual Fare Revenue	514,149	63,518	82,170	32,818	63,570
Annual O&M Cost in Excess of Fare Revenue	2,891,731	482,891	1,028,032	363,682	771,602
Annual Unlinked Passengers Carried	671,420	22,155	116,656	20,446	71,595
Annual Passenger Miles Carried	2,689,700	141,065	828,258	103,505	600,651
Average Passenger Trip Length (Miles)	7.8	8.5	7.1	5.0	8.4
Average Passengers On Board	7.0	1.0	3.6	1.1	1.3
Average Fare per Passenger	$0.77	$2.86	$0.70	$1.61	$0.89
Average O&M Cost per Passenger	$5.07	$24.66	$9.52	$19.39	$11.67
Percent of O&M Cost Paid by Fares	15.1%	11.6%	7.4%	8.2%	0.08%

Source: SETRPC

Whether in larger or smaller cities, this basic mobility function is seen as a legitimate responsibility of government and a cost to be borne primarily from sources other than direct user charges (fares). In the JOHRTS area, federal funds cover about half of the O&M cost not met by fare revenues, and the remainder is divided fairly evenly between state and local sources.

Status-Quo Approach

Given this fairly typical situation, one option within the JOHRTS region is to seek to maintain the status quo – continued service for those who have no other mobility choice, with no basic change in policy and no re-examination of how the service is designed and provided.

Continual Refinement Approach

Another option is to continue this basic mobility program, but with deliberate actions to strengthen and refine the services that are provided. Taking this approach, objectives for improvement of transit with regard to basic mobility would include the following:

- Consider establishing dedicated local sources of transit funding to assure stability of transit service supply and a solid basis upon which improvements can be planned and implemented.
- Continually examine ways to increase the effectiveness of the service that is provided, and implement improvements carefully and periodically, with close monitoring to assess results and refine service changes.

Some concepts that might be considered for service improvement are:

1. Complete timed-transfer structuring of routes and timetables
2. Restoration of the link service connecting Beaumont and Port Arthur routes
3. Exploration to assure that the lowest-cost satisfactory solution is used to supply demand-responsive transportation
4. Analysis of fare structures to assure that fares are low enough to allow lowest-income users to make essential trips, and that the right balance is achieved between amounts of service provided and percentage of cost covered by fares
5. Periodic reassessment of the access being provided to employment opportunities
6. Consideration of transit implications whenever public investments affecting potential transit users and transit routes are being considered

This option includes continuation of service in existing markets, but also allows for the aggressive tracking of emerging new opportunities to provide service to those who have no other

transportation option besides transit. Additionally, this approach includes the proactive development of guidance tools and information sharing to foster dialogue among developers and municipalities that develop and maintain land use controls, with the objective of achieving "transit-friendly" growth in the JOHRTS region.

Historically, transportation improvements are implemented as a reaction of increased level of or a change in the nature of land use in an area or region. As is most regions, growth in the JOHRTS region has taken place in a manner that makes service by transit inefficient, both for the transit provider and transit user, even transit-dependent transit users. Land use regulations and requirements that dictate provisions for transit can be viewed by both the public and private sector as detrimental to the region's desire to attract growth and are unlikely to be implemented. As a consequence, the public sector, including the SETRPC-MPO and transit providers, should seek to research and develop guidelines that can be used by the development community and those from the public sector who affect land use to foster opportunities for transit. These guidelines could involve the coordinated planning of land use activities that might be served by transit or the creation of specific development opportunities that foster transit use as well as use by bicycles and pedestrian modes.

An additional step under this approach would be to identify a group made up of representatives of the transit providers, municipalities, school districts, chambers of commerce and/or other business interests that would meet periodically to discuss upcoming or expected land use changes and development and the role, if any, transit could play in delivering mobility services to the land uses.

A portion of the forecasted employment growth in the JOHRTS region over the term of the MTP will be filled by those who do not have or struggle to acquire and maintain the ability to travel by private auto. Area transit agencies and the SETRPC-MPO will track the growth in this need and evaluate the potential for transit service for these situations. Dialogue with the employers will also take place to determine the most efficient way to assist them in delivering the needed work force to an employment site. A starting point for this effort will be recommendations from the SETRPC Job Access-Reverse Commute (JARC) study that is currently underway. With the existence of multiple transit providers and the need for transit users to be able to access both transit systems, the provision of increased linkages between the two systems should also be considered. In addition, the Regional Public Transportation Coordination Plan was an essential element for increasing agency coordination, establishing regional public transportation objectives, and proposing effective projects. The planning process included multiple public meetings, establishing a steering committee, and several stakeholders meetings at various stages of the plan. The planning activity allowed for an evaluation of what constraints needed to be addressed for further coordination.

Supplementing Transportation Capacity

The second role of transit, mentioned in the introduction of this section on the future of transit service within the JOHRTS region, involves the potential expansion of the transit system to coincide with increased awareness of the role transit can play in meeting future transportation capacity needs. In its broadest definition transit can include programs to promote car-pooling and van-pooling as well as the introduction of bus services designed to compete with private autos. These programs, aimed at travel between home and work, can raise traffic levels of service without expansion of road capacity. A few hundred people traveling during peak hours and switching from single-occupant autos to buses and multiple-occupant autos or vans may be all that is needed to forestall the need to build more traffic lanes in a major travel corridor.

The JOHRTS MTP calls for the expansion of the roadway system as the prime method of maintaining and increasing mobility in the region. There are potential difficulties in this approach. Economic growth may be higher than expected, or in different areas. Constraints may arise, limiting or preventing the addition of roadway capacity as called for in the MTP. In such cases, transit may be called upon as an alternative to travel by auto by those who are not transit-dependent, but who currently are auto-dependent. A mechanism for periodic review of the levels of congestion on the region's roadways and growth in demand for access to particular locations such as work sites, particularly those with parking limitations, should be developed. In this context, a dialogue should take place among the SETRPC-MPO, transit providers and roadway system providers such as TxDOT, counties and cities. All may have roles in seeking out opportunities to introduce special bus services and targeted promotion of carpools and vanpools. These entities should begin the dialogue during the course of this MTP to develop decision rules or triggers to move into this specialized area of mobility and accessibility expansion.

Proposed Policies

Like many small urban and rural transit agencies, the availability of financial and manpower resources dictate transit planning activities. In the JOHRTS area, additional resources to promote and expand public transportation are virtually non-existent. A priority of the SETRPC-MPO remains to promote public transit services in the JOHRTS three-county region. As a result, agencies within the JOHRTS region continue to identify and develop transit projects. The City of Beaumont completed a new transit center in downtown Beaumont, which should reinforce current efforts to revitalize its downtown core.

Other public transportation improvements include the following:

- Annual Operating Assistance for BMT, PAT, and SETT;
- New bus shelters for PAT;

Funding

Planning and programming for future transit development is difficult due to the unpredictability of federal funding. In addition, obtaining funding now hinges on proposed improvements included in the regional plan, which SETRPC established in the Regional Public Transportation Coordination Plan. BMT and PAT's FR services are funded mostly by passenger fares, federal operating and capital assistance, and subsidies from local jurisdictions. As of 2002, BMT and PAT report public subsidies accounted for approximately 82 percent of their funding requirements. State legislation requires that funding be set aside from the highway construction fund (supported by a tax on gasoline) for transit programs, referred to as the Texas State Public Transportation Fund. Based on FTA data, it is possible to determine the trend of distribution over a period of years among funding sources.

Percent of Total Revenue by Source									
	1995	1996	1997	1998	1999	2000	2001	2002	Average
Transportation Revenues									
Passenger Fares	20.1%	18.2%	18.8%	17.5%	17.6%	16.3%	15.2%	12.8%	17.1%
Other	0.6%	0.5%	0.8%	0.5%	0.5%	1.0%	0.6%	0.5%	0.6%
Non-Transportation Revenue	0%	0%	0%	0%	0%	0%	0%	0.2%	<0.1%
Sources of Public Assistance									
Federal	39.3%	40.0%	40.0%	45.0%	39.2%	41.1%	38.8%	39.0%	40.3%
State	13.9%	14.1%	17.8%	22.0%	23.0%	24.2%	22.1%	27.2%	20.5%
Local	26.0%	26.7%	22.4%	15.0%	19.6%	17.4%	23.2%	20.3%	21.3%
Other	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total	99.8%	99.5%	99.8%	100.0%	99.9%	100.0%	100.0%	100.0%	99.8%

Source: USDOT

Previously, the projected operating costs for FR and DR services in 2030 were calculated to be $4,437,100 and $989,300 respectively. Applying the averages (shown in the following table) to projected expense levels allows for a future estimate and apportionment of revenue from the various funding sources in 2030.

However, only $2.0 million is expected annually in future federal assistance (average of years 2002 and 2003 allocation), which falls short of projected needs. In light of projected growth in population and demand for transit services, augmentation of local funding may be necessary if proposed policies are implemented.

Possible Distribution of Future Funding			
Type of Revenue	**Average % 1995-2002**	**Fixed Route**	**Demand Responsive**
Passenger Fares	17.1%	$758,744	$169,170
Federal	40.3%	$1,788,151	$398,688
State	20.5%	$909,606	$202,807
Local	21.3%	$945,102	$210,721
Other	0%		

Source: PB

5.0 Intermodal Freight

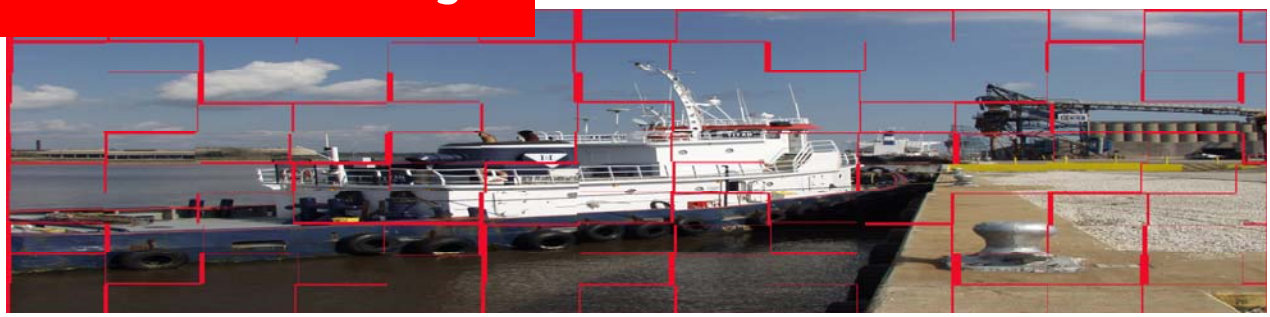


Photo courtesy of the Port of Beaumont

The essential movement of goods and products as freight cargo is often considered a region's lifeline. Ideally, a robust freight transportation system should rely on a variety of modes to ensure system flexibility. The development of intermodal networks requires preserving connections between modes (road/rail) and cooperation between local intermodal agencies and transportation providers. The implementation of the North American Free Trade Agreement (NAFTA) has also emphasized the development of a transportation plan that meets present and future intermodal transportation needs in the JOHRTS region.

The JOHRTS 2007 MTP-2030 targets improvements to intermodal facilities as a major objective under the goal of increasing economic activity in the region.

Existing System

The JOHRTS region is well served by an intermodal network composed of truck routes, railroads and railyards, airports, ports, and waterways. Major intermodal facilities in the JOHRTS area include:

Airports[1]	Ports/Waterways	Railroads
Southeast Texas Regional	*Port of Beaumont*	*Burlington Northern Santa Fe*
Orange County Airport	*Port of Port Arthur*	*Union Pacific*
Beaumont Municipal Airport	*Port of Orange*	*Kansas City Southern*
Hawthorne Field	*Sabine Pass Port Authority*	*Sabine River & Northern*

Trucking

The JOHRTS area truck network provides a vital link between airports, rail yards, ports, and trucking centers. This network is maintained by preserving arterial and freeway corridors at acceptable service levels to ensure connectivity between the various intermodal facilities. The JOHRTS region also has major truck service facilities along IH-10 (with one facility at Walden Road in Beaumont and two facilities at SH 62 west of Orange).

Major generators of truck traffic are ports, airports, and occasionally railways. Pipeline-truck terminals also generate high volumes of truck traffic; TRI-CON, Motiva, and Mobil pipeline-truck terminals along West Port Arthur Road generate some of the highest truck traffic in the JOHRTS area with approximately 180 to 270 trucks per day.

[1] For information on airport facilities and proposed improvements, please refer to Chapter 6: Air Access.

Existing commercial truck travel characteristics and truck movements in the JOHRTS area are summarized in the commercial truck survey conducted by PB Americas, Inc. between June and August 1993. This survey estimated that 24,510 trucks operated within the region and 20,560 trucks traveled into or through the region. The survey showed that truck drivers were recording up to 17 trips per day (averaging 6.2 trips per driver), for a total of 5,082 trips along designated truck routes in the JOHRTS region. This study also revealed that average truck trip lengths were 6.73 miles (equal to12.13 minutes) for internal trips and 28.46 miles or 45.19 minutes for external trips.

Ports and Waterways

The JOHRTS region has a comprehensive system of ports and waterways. Port facilities include the Port of Beaumont, Port of Port Arthur, Port of Orange, and the Sabine Pass Port Authority. The Sabine River, Neches River, Sabine Lake, and Gulf Intracoastal Waterway provide efficient vessel access to these port facilities.

The Port of Beaumont

The Port of Beaumont was established in 1916 and is located on the Neches River near downtown Beaumont. This port is the largest in the JOHRTS area and one of the busiest ports in the world. In 2002, the US Army Corps of Engineers ranked the Port of Beaumont 4th in the nation for both foreign trade and total tonnage. That year, the Port of Beaumont handled over 85.9 million tons of cargo, which included petroleum and forest products, bulk and bagged grains, roadway materials, metals, and military equipment. High cargo volumes at the Port during the same year meant that over 20,000 trucks and 30,000 railcars were serviced at the Port. The Port of Beaumont is also a dominant force in the local economy, generating over $190 million in economic impact and contributing 1,500 jobs.

Photo courtesy of the Port of Beaumont

The main entrance gate for the Port of Beaumont is located at the intersection of Main and Franklin Streets, and is accessible from IH-10, US 90, US 69/96/287, Spur 380 and SH 347. Vessel access is provided via the Sabine-Neches Waterway, a 40-foot deep federally maintained channel. Ships and barges have free and easy access to the Port via Sabine Pass, the Port Arthur and Sabine-Neches

Canals, and the Neches River. Union Pacific, Burlington Northern Santa Fe, Kansas City Southern, and Texas Mexican Railway railroads provide rail access to the Port of Beaumont.

The Port contains more than one linear mile of open wharf space, eight ship berths, 50 acres of open storage, and 600,000 square feet of transit sheds. Cargo transfer capabilities include rail-to-ship bulk cargo transfer facilities, heavy lift and gantry cranes, and vehicle ramps for roll-on/roll-off cargo ships.

The Port of Beaumont continues to play an important role in the security of the nation. The Port is currently the nation's main port for military equipment used in Operation Iraqi Freedom, handling about one-third of all of the cargo shipped for the U.S. in support of the war. The Port of Beaumont also played a major role in transporting military equipment during Operation Desert Shield and Desert Storm. In 1994, the Port of Beaumont became the home of the 1314th Medium Port Command of the U.S. Army, which handles military cargo and humanitarian aid shipments to various parts of the world.

Additionally, port-owned property in Orange County, located on the east bank of the Neches River, is being developed to provide berthing space and room for future expansion. Initial development activities include constructing a basic road, railway access, and utilities (potable water and electricity). Also, 650 feet of bulkhead has been installed to establish the future wharf line for development of marine facilities at this site.

Photo courtesy of the Port Arthur Convention and Visitors Bureau

The Port of Port Arthur

The Port of Port Arthur was established in 1964, and is located on 58 acres next to the Sabine-Neches Waterway, also known as the Gulf Intracoastal Waterway (GIWW), 19 miles inland from the Gulf of Mexico. The Port of Port Arthur is also a very busy port, ranked 29th in the nation in 2004, with total cargo volumes approaching 28 million tons of breakbulk and bulk commodities (forest products, iron and steel, petroleum, chemicals, etc). These high cargo volumes have been maintained with over 6,000 trucks and 9,500 railcars serviced at the Port in 2005.

The single entrance gate for the Port of Port Arthur is on Lakeshore Drive near Houston Avenue. The Port has road access via US 69/96/287, Procter Street, SH 73, SH 82, and Houston Avenue. Vessel access is provided along the Sabine-Neches Waterway, 19 miles from the Gulf of Mexico, which has a minimum width of 400 feet and a 40-foot depth for navigation of deep-sea vessels. The Port is directly connected to the Kansas City Southern Railroad and open to reciprocal switching to the Union Pacific Railroad, serving major markets in the United States, Canada, and Mexico.

The Port of Port Arthur has 17 acres of open dock space, five berths totaling 3,100 linear feet and 520,000 square feet of inside storage space. The Port's current railcar capacity for the wharf tracks is 150 cars; however, the shed tracks have an 80 car enclosed capacity, along with thirty enclosed truck loading doors. The renovated storage yard is able to accommodate an additional 140 railcars. Cargo transfer facilities include a 75-ton level-lufting crane, mobile cranes, and container handling equipment.

The Port of Port Arthur has become a leader in web-based access to terminal operations. Having recently installed Tideworks Technology to complement its Genoa Breakbulk Management System with RF (radio frequency) capability has enabled Port customers real-time access to inventory and cargo movement.

Photo courtesy of the Port of Beaumont

The Port of Orange

The Port of Orange is located on the western shore of the Sabine River in the southern portion of the city of Orange and has been serving Orange county since the late 1800s. The Port handled over 185,000 tons of mostly agricultural goods and forest products in 1995.

The Port's main gate is located on Alabama Street, and is accessible from IH-10 and SH 87 by using 8th and Border Streets. The Union Pacific and Burlington Northern Santa Fe railroads provide rail service to the Port, while the 30-foot Sabine River Channel provides access to the Gulf of Mexico.

The Port contains over 3,500 feet of harbor space, 2,300 feet of dock apron, approximately eight acres of storage, four ship berths, and capacity for up to 60 railcars. Cargo transfer facilities are limited to forklifts and heavy mobile cranes. The Port of Orange estimates that approximately 10,500 trucks are serviced annually through the Port. The Port of Orange also has 354,400 square feet of warehouses.

The Sabine Pass Port Authority

Founded in 1973, the Port at Sabine Pass is located near the community of Sabine Pass and has direct access to the Gulf of Mexico. The Port Authority primarily serves the needs of recreational boats and commercial fishing. The single access road to the Port is SH 87, which connects the Port with US 69/96/287. SH 87 south of Sabine Pass is still closed due to structural damage, and no rail access is provided to the Port.

Railroads

Photo courtesy of Jeff Steen

Railway operations play a major role in the economy of southeast Texas, especially in the small communities of Silsbee, Kountze, Sour Lake, and Vidor where railroads are one of the major employers. In addition, the reliance on railroads for goods transport to and from the major ports in the JOHRTS area makes efficient and effective railroad operations key to the continued economic vitality of the region.

The Burlington Northern Santa Fe (BNSF)

This railroad travels through the JOHRTS region in both north-south and east-west directions. The north-south BNSF rail line generally follows the alignment of US 287 from northern Hardin county to Beaumont, and then turns southwest along SH 124 in Jefferson county. The BNSF railroad travels east-west from eastern Hardin county along US 96, through Silsbee and Kountze, then west along FM 1293 and then FM 787. The BNSF rail yards in Silsbee and Beaumont have capacities of 1,200 and 600 railcars respectively.

The Kansas City Southern (KCS)

The KCS railroad travels from the northeast portion of Orange county along SH 12 to Beaumont where it turns southeast along SH 347 to Port Arthur. The KCS line provides rail access to the Port of Port Arthur and the communities between Beaumont and Port Arthur. The major KCS rail yards in Port Arthur and Beaumont have capacities of 1790 and 420 railcars respectively.

Union Pacific (UP)

This railroad merged with Southern Pacific in 1996 to create one of the largest railroad companies in the country. In the JOHRTS area, the railroad travels in an east-west direction from the Louisiana border, through Orange county, to Beaumont where it runs parallel to US 90 and splits into two separate railroads through western Jefferson county. UP has another railroad along West Port Arthur Road (Spur 93) that provides access from Beaumont to the refineries and port facilities in the Port Arthur area. Other UP rail lines extend from Orange north through Orange county. UP owns three major rail yards in the JOHRTS area: one near Sour Lake (capacity of 550 cars), the Beaumont yard (capacity of 1700 cars), and the Guffie yard between Beaumont and Port Arthur (capacity 200 cars).

Photo courtesy of the Nederland Economic Development Corporation

Sabine River & Northern (SRN)

This railroad is the smallest railway company operating in the JOHRTS area. It operates one rail line that runs from the city of Orange to the Inland Paper Company plant in northeast Orange county, then travels west to Mauriceville to connect with the north branch of the UP rail line. SRN operates a small rail yard near the Inland Paper Company plant.

Intercity Services

The intermodal transportation system for the JOHRTS area is also augmented through intercity bus and rail service provided by Greyhound Bus, Kerryville-Coach USA, and Amtrak.

Greyhound Bus Lines

This company is the main provider of intercity bus services in the JOHRTS area, and has its regional terminal located in Beaumont with two additional satellite terminals in Orange and Port Arthur. Approximately 30,000 boardings per year were recorded by Greyhound at its Beaumont terminal, which provides service to Houston, Lake Charles, and New Orleans. The Beaumont terminal has a seating capacity of 60 persons, four-bus capacity berthing area, and 20 available parking spaces. Satellite bus terminals in Port Arthur and Orange are located at public parking lots.

In early 2002, Greyhound and the TxDOT completed renovations of the Beaumont station. The improvements included a new roof, electrical upgrades, and air conditioning improvements at a total cost of approximately $352,000.

Photo courtesy of the Beaumont Convention and Visitors Bureau

Amtrak

Intercity rail service is provided by Amtrak through its Beaumont terminal and services about 312 trains annually. The terminal, located on Cedar Street in Beaumont, is unstaffed and has about 10 - 15 parking spaces. The westbound train departs the Beaumont terminal at 6:33 pm on Monday, Wednesday, and Friday with final destination in Los Angeles two days later at 6:40 am. The westbound train includes stops in Houston and San Antonio. The eastbound train departs the Beaumont terminal at 12:40 pm on Sunday, Tuesday, and Friday with final destination in Orlando at 8:45 pm the next day. The eastbound train includes stops in Lake Charles and New Orleans. Service in Beaumont is not available on Saturday and Thursday. The city of Beaumont is coordinating with Amtrak officials in efforts to relocate the Amtrak terminal in the downtown area, closer to major points of interest.

Current Trends

Roadway Improvements for Intermodal Operations

Southeast Texas regional truck trips are expected to increase by 13 percent by 2030, plus with the trade resulting from North American Free Trade Agreement (NAFTA), improvements to intermodal facilities are becoming more important to the JOHRTS area. As such the SETRPC-MPO:

- Supports a connection from southeast Texas along US 69 to the I-69 NAFTA Superhighway. The US 69 study continues as environmental documents for NEPA compliance are being developed.
- Provides emphasis on projects that tie the ports into the rail/highway system. Studies are currently underway to reconstruct SH 87 from Sabine Pass to High Island, which would enhance access to the Port at Sabine Pass. There are also projects listed in the MTP that address expanding the capacity of major truck routes (IH-10 and US 69/96/287) and improving local access to ports.

Port Improvements

The Port of Beaumont

The Port of Beaumont continues to grow and needs additional space and facilities in order to meet increasing demand. During the early 1990s, the Port completed over $20 million in capital improvement projects, including the Carroll Street Wharf extension, Harbor Island West Transit Shed, a new railcar holding yard, and a new Port Administration Marine Terminal building. In 1996, the Port of Beaumont completed a Master Plan, which led to the following actions:

Photo courtesy of the Port of Beaumont

- The purchase of the 10-acre Neches Park Homes property in 1995 for $1 million to increase storage capacity and expand railcar holding areas.
- The 1995 acquisition of property on the Orange County side of the Neches River to expand cargo capacity of the docks and add new access roads to the Port.

The Port of Beaumont continues to steadily expand and improve its facilities to enhance its role as a major partner in worldwide commerce. In 1998-1999, the Port of Beaumont initiated activities for developing the Orange county port-owned property and recently purchased additional acreage in support of this expansion.

The Port of Port Arthur

Like Beaumont, the Port of Port Arthur continues to expand its operations in order to meet increased demand for its facilities. In 1992 the Port of Port Arthur developed a Master Development Plan, which used low and high forecast ranges to predict demand. The high projection estimates that breakbulk cargo will increase to 910,000 tons by year 2000 and 1,290,000 tons by year 2010. The lower estimate foresees breakbulk cargo increasing to 510,000 tons by year 2000 and 625,000 tons by year 2010.

The Port of Port Arthur has increased its current ship berth capacity from two to five berths, increased storage space, extended one of its wharves, and enhanced rail access.

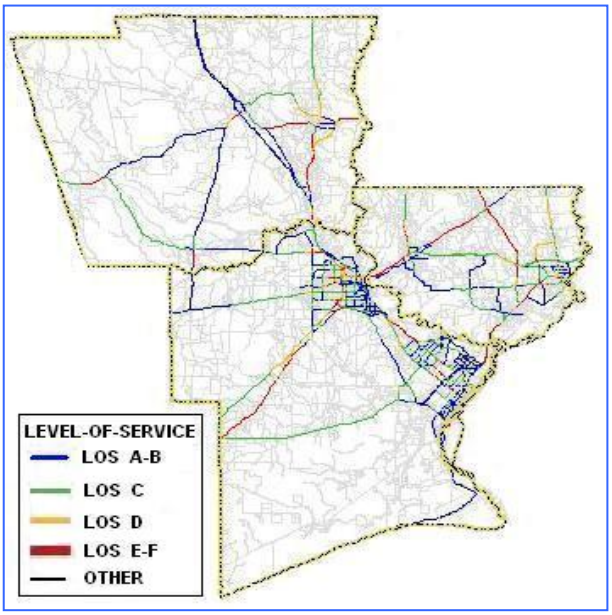
Port of Orange

After quadrupling its total tonnage between 1994 and 1995, the Port of Orange also considered several improvements. The Port completed their Port Review Plan, which recommended replacing 1,200 feet of dock apron and widening Alabama Street to enhance local access. The federal government has removed eight condemned piers at the port's Pier Road facility, which provided land for future expansion along the riverbank. The Port of Orange has developed a Master Plan, that will include hydrographic surveys and identification of funding sources to connect rail lines to the City of Orange's industrial park.

Level of Service Analysis

Regional Characteristics

Examining the Level of Service (LOS) for trucking, railroads, and ports involves reviewing daily truck traffic volumes and truck travel patterns on the JOHRTS area roadway network. This can be seen in TxDOT's 2002 Truck Traffic Flow Map to the right.



TxDOT 2002 Truck Traffic Flow Map

JOHRTS' major traffic facilities have recorded daily truck volumes that range from a high of nearly 13,200 trucks to a low of less than 300 trucks based on the truck traffic flow map. Truck volumes on IH-10 range from 11,700 near Hamshire, to 13,100 in Beaumont just east of US 69, and then to 12,100 east of Orange. Between Beaumont and Port Arthur, US 69/96/287 carried nearly 5,600 trucks, while US 87 supported over 2,300 truck trips between Port Arthur and Orange.

Truck volumes as a percentage of the total vehicles on a facility also vary throughout the region. Based on 2002 TxDOT vehicle classification counts, truck volumes ranged from 4 to over 36 percent

of the total vehicle traffic. The 33 percent truck traffic was recorded on IH-10 near Chambers county, underscoring the high volume of truck traffic utilizing the IH-10 corridor.

Access Roads to Intermodal Port Facilities

Martin Luther King, Jr. (MLK) Parkway (Spur 380) and Franklin Street provide roadway access to the Port of Beaumont. MLK Parkway is operating at an acceptable LOS C, and sections of Franklin Street have been upgraded. However, a consistent roadway cross-section for Franklin Street is still needed. The asphalt pavement on Franklin Street from MLK Parkway to Neches was replaced with load bearing concrete. This section of Franklin Street provides a two-lane city street with a continuous left turn lane. Franklin Street from the Port entrance to Neches currently provides a four lane city street with parking and left turn bays at intersections. Although this four lane section provided better traffic access to the Port of Beaumont, this street section is not considered load bearing. TxDOT and Port of Beaumont officials are attempting to secure funding to upgrade this section of Franklin Street.

The Port of Port Arthur is currently accessed by Gulfway Drive (SH 87) and Houston Avenue or Procter Street. Truck access to the Port is compromised due to delays at the railroad crossing on Gulfway Drive near Fort Worth Street and ineffective signal coordination along Houston Avenue.

Photo courtesy of the Port of Beaumont

Access roads serving the Port of Orange (8th, Border, and Alabama Streets) have sufficient capacities to sustain existing traffic volumes. However, increases in heavy truck traffic will necessitate further improvements if they are to continue providing safe and efficient access to the Port.

LOS and Railroads

Accident and delays at railroad crossings are known to contribute to travel delays and reductions in LOS. The location of rail lines and yards in urbanized areas creates conflicts between railway and roadway traffic. Such problems are evident in the community of Silsbee in Hardin county, where passing freight trains lead to significant delays for local roadway traffic. Objectives outlined in the

Photo courtesy of the Port of Beaumont

MTP support initiatives that will improve traffic safety at railroad grade crossings by installing flashers and crossing arms. Other strategies emphasize improving traffic flows by supporting efforts to finance the construction of grade separations at busy railroad crossings.

Needs Assessment

The preservation of the existing intermodal system should be a primary goal of transportation planning in the JOHRTS area. One method of preserving the existing system is by maintaining the traffic volumes on roadways with major trucking routes below the capacity of the roadway. Likewise, roadways that provide access to airport facilities should be free of undue congestion. For railroads, the tracks and crossings should be kept in good condition for traffic movement and safety considerations. Some needs are going to be recurring, such as preventive maintenance, while adopting new policies may solve other needs. Specific problems within the JOHRTS area that inhibit efficient intermodal operations are:

- Increasing traffic congestion along major truck routes
- Declining roadway pavement conditions
- Limited road access to ports and other major intermodal facilities
- Weight restrictions on bridges
- Inadequacies in intersection-turning radii
- Overpass height limits
- On/off ramp distances

Future Alternatives

The metropolitan transportation planning process provides the framework for the development of an efficient intermodal transportation system that will serve the needs of the JOHRTS region as it continues to grow and develop to 2030. The JOHRTS 2007 MTP-2030 encourages the development of an integrated multimodal transportation system that will efficiently move people and goods throughout the JOHRTS area. In order to meet the intermodal freight demands for the area, the

SETRPC-MPO, TxDOT, and the JOHRTS member cities will need to provide a concerted and cooperative effort. Initiatives to improve the intermodal network must involve the private sector, other states, and trucking-related interests (such as the Texas Motor Carriers Association). The SETRPC-MPO can help coordinate intermodal freight actions with TxDOT and local governments and utilize the MTP to plan and program intermodal improvements.

Based on the needs assessment, all policies should be focused on the following actions to ensure the integrity of the intermodal system within the JOHRTS area:

- Improve roadway maintenance along truck routes
- Improve intermodal interconnectivity
- Reduce congestion along truck routes and access roads to major intermodal facilities
- Develop a system of information management for identifying needs and rectifying problems
- Address issues pertaining to safety at railway crossings
- Coordinate systems management efforts with TxDOT, local governments, and intermodal interests

The four alternatives presented to improve the intermodal component of the transportation system are based on the level of effort to be undertaken. Each recommendation is aimed at enhancing the existing system to create an integrated intermodal transportation network.

The No Build Alternative

The No Build alternative involves maintaining the existing system at the current level of effort while intermodal demand increases. Due to the projected increases in transportation demand on interstates, expressways, and ports in the JOHRTS area, this alternative is not considered an attractive option.

The Build Alternative

Under the build alternative, the SETRPC-MPO would give priority to truck route maintenance projects, grade separations, and bridge maintenance during the Project Selection Process. Capital improvement projects for freight would be derived from highway programs and their funding sources. Efforts for improving truck routes would be made in conjunction with regular highway construction projects, and could include special purpose lanes dedicated to truck traffic. Projects under the build alternative may require preliminary studies or involve roadway resurfacing or rehabilitation, bridge expansion or replacement, construction of additional lanes, and grade separations. Zoning and planning efforts could further ensure adequate rail and road access to industrial areas.

The Improved Facilities Management Alternative

With the improved facilities management alternative, pavement management systems could be calibrated to include designated truck and hazardous material routes and monitor additional resultant pavement stress from truck traffic. This would allow for early diagnosis of problem areas and permit rehabilitation of these roadways on a timely and cost-efficient basis.

Frequent traffic counts conducted along designated truck routes would help forecast future needs and prevent or solve LOS problems. These counts could be supplemented with surveys and questionnaires of local trucking firms and those dependent on such firms. Data on freight tonnage and freight traffic could also be routinely collected to better evaluate the effectiveness of the entire intermodal system. Information on rail freight use would support efforts to enhance and maintain efficient and effective railroads. Resulting data could also be used to implement railroad crossing safety improvement and preventive maintenance programs.

Intelligent Transportation System (ITS) could also be used to notify truckers of congestion and recommend alternative routes. Incident management initiatives by local law enforcement could help reduce delays due to traffic accidents and thereby improve intermodal efficiency.

The Comprehensive Approach

This approach is a combination of the build and improved facilities alternatives. Strategies are based on a comprehensive analysis of intermodal operations and demand, with improvements that work together with land use development, ITS, and other roadway improvements in order to optimize their benefit to the community as a whole. This promotes a robust approach to solving intermodal problems by drawing on all available resources and ensuring they are coordinated to derive maximum benefit for least cost.

Proposed Policies

Policies promoted under the JOHRTS 2007 MTP-2030 are designed to satisfy identified regional transportation needs, including those relating to intermodal operations. Strategies outlined in the MTP follow the comprehensive approach, emphasizing a balance of roadway improvement and maintenance projects supplemented by facilities management programs. Major roadway projects outlined in the MTP are listed below:

- Use of ITS, such as changeable message signs and emergency vehicle preemption systems that enhance traffic flows, including truck movements.
- Over $30 million in railroad crossing and $ 8.8 million in rail yard improvments.
- Improvements on local access roads to JOHRTS area ports, including:
    - Construction of a new two lane roadway to enhance access to the Port of Port Arthur (Houston Avenue Loop)
- Comprehensive improvements to major truck routes in the JOHRTS area include:

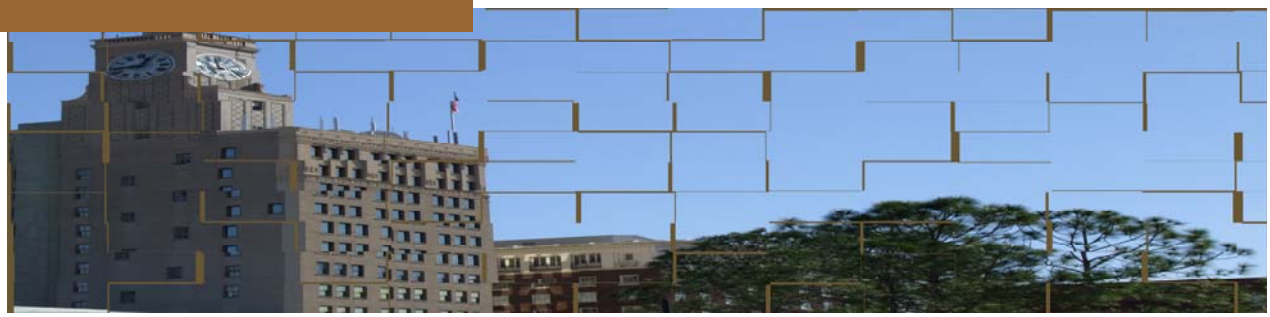
- Expansion of IH-10 from four to six or eight lanes through Jefferson and Orange counties
- Construction of a new four lane limited access facility from Lumberton to the NAFTA corridor in Angelina County
- Interchange and intersection improvements at selected locations in the JOHRTS area

Funding

Since trucks use the same facilities as the private automobile, the same programs that finance highway projects also fund truck facilities. Funding such as Statewide Connectivity Corridor Projects and Consolidated Structures Rehabilitation funds can finance these types of improvements.

Estimating specific costs at this stage in planning is not realistic given the number of variables involved per project and the diversity of projects that could be identified to improve freight movement. The programming and development of projects outlined under each alternative also depends on the availability and prioritization of funding.

6.0 Air Access



Airports constitute an important element of the intermodal transportation system. The efficient movement of people and goods at JOHRTS area airports is a key economic asset that allows the region to compete in the global marketplace. The increasing importance of service industries in the southeast Texas economy contributes to the demand for air travel and package delivery.

Without safe and efficient ground access to the regional airports, the JOHRTS area will not be able to take full advantage of the demand for air travel. This chapter discusses on the current and forecast conditions of each airport, assesses their needs, and identifies possible solutions, so that the JOHRTS area may fully benefit from demand for airport services and intermodal freight linkages.

Existing System

Presently, the JOHRTS area is served by one regional commercial airport and three general aviation airports.

The Southeast Texas Regional Airport

The Southeast Texas Regional Airport was established in 1944 and serves as the regional commercial airport for the JOHRTS area. This airport currently provides service from Atlantic Southeast Airlines (ASA) and Continental Express and is in the process of negotiating with two other airlines. Located midway between Beaumont and Port Arthur along US Highway 69/96/287, the regional airport has direct access to US 69 by way from Jerry Ware Drive and a one-way circular access road between the terminals. The airport has three parking lots with a total of 1,249 available parking spaces for both terminals and the general aviation area.

The Southeast Texas Regional Airport operates two runways and eight taxiways. The primary runway length is 6,750 feet and is equipped with an instrument landing system and medium intensity runway lights. The airport has five aircraft hangars, a commercial terminal, and a general aviation terminal. The 1994 Jefferson County Airport Master Plan identified future improvements to the airport, including runway extensions, additional access roads, and new taxiways. In addition, the Southeast Texas Regional Airport is equipped with ground passenger loading bridges at the main terminal for convenient all-weather boarding.

The Beaumont Municipal Airport

Photo courtesy of the Beaumont Convention and Visitors Bureau

This general aviation airport is located at 455 Keith Road in the city of Beaumont, and is bounded by US 90 to the south and Phelan Boulevard to the north. The Airport is located on 276 acres of land, and operates from 7:00 AM to sunset daily. A main entrance road provides access to the airport and terminal building off of Keith Road. An adjacent lot provides approximately 20 parking spaces. The airport maintains two runways and a major taxiway. The main runway, measuring 4,000 feet with displaced thresholds, is paved with asphalt and is equipped with medium intensity runway lights and Visual Landing Approach Slope Indicator (VLASI) visual approach aids.

The Beaumont Municipal Airport facilities consist of a terminal building, two large hangars, and three nested T-hangars. Beaumont Wings, Inc. (the airport operator) and the city of Beaumont (the owner) have added new hangars and a modern self-service fueling station. Additionally, the runway was recently resurfaced and lengthened, along with the addition of ramp space to the north of the terminal building. The airport currently supports approximately 65 general aviation aircraft and some transient military aircraft. The Beaumont Municipal Airport does not support freight or commercial passenger flight activity.

The Orange County Airport

The Orange County Airport is a general aviation airport and is located adjacent to SH 87, approximately four miles southwest of the city of Orange. Constructed in 1946, the 107.5-acre airport is owned by Orange County, and operates daily from 7:00 AM until sunset. The Orange County Airport serves the Orange County area, and has a total of approximately 31 aircraft based at the facility. A 1,000 foot gravel road provides the main access to the airport from SH 87. A 560 foot access road provides secondary access to the hangar area. This airport maintains a grass lot that provides 15 parking spaces.

Currently, the Orange County Airport operates two of four runways and six taxiways. One runway has an asphalt surface with medium intensity runway lights, the second runway is a sod surface, and two taxiways have pavements. The main facilities consist of an administration building and four hangars. Long range planned improvements at the airport include a runway extension, new and upgraded taxiways, and improved hangar access. The Airport plans to expand to include an air freight operator, flight school, and/or plane mechanic.

Hawthorne Field

Constructed in 1966, Hawthorne Field is owned by Hardin County and provides general aviation service to small jets and propeller aircraft. Housing approximately 20 aircraft, Hawthorne Field is located between Kountze and Silsbee at the junction of SH 327 and US 69/287. The main access road connects the Airfield to SH 327, while a future access road will connect US 69/287 with proposed corporate hangars. The Airfield provides about 3.2 acres of parking for the terminal and hangar areas.

Hawthorne Field operates one asphalt runway with medium intensity runway lights. The Airfield facilities consist of a terminal, a public hangar, and eight privately owned and ten T-hangars. Hardin county officials recently expanded the runway to 4,300 feet, resurfaced the runway, taxiways, and parking areas as well as replaced all electrical components (runway lights, beacon, etc.).

Current Trends

Activity levels at the four airport facilities vary considerably. Southeast Texas Regional Airport is the most active (54,296 operations) and Hawthorne Field the least active (3,800 operations) airport. Activity levels at all airport facilities are expected to increase in the future, with planned expansions and improvements at the airports contributing to the projected increase.

Southeast Texas Regional Airport

In 2003, the Southeast Texas Regional Airport supported 54,296 combined annual aviation operations. About 47 percent of the general aviation services were local operations, while 53 percent were itinerant operations. The following table provides the annual passenger counts for the regional airport. Passenger counts have fluctuated over the past three years, consistent with the national trend since 9/11 and the restructuring of the airline industry.

Regional jet service is provided by one major airline with direct service to Houston Bush Intercontinental Airport.

Southeast Texas Regional Airport Passenger Counts		
Year	Annual Passengers	
	Enplanements	Deplanements
1995	108,519	106,268
1996	107,035	105,593
1997	113,108	110,256
1998	113,339	111,140
2000	89,513	86,815
2001	73,989	70,563
2002	58,616	55,110
2003	42,476	41,894

Source: Southeast Texas Regional Airport

Note: In 2000, Delta discontinued service at the Southeast Texas Regional Airport. In 2002, American Eagle discontinued service at the Southeast Texas Regional Airport.

Beaumont Municipal Airport

The Beaumont Municipal Airport operations are expected to continue. With the completion of the recent improvements to the airport, no additional improvements are currently planned; however, routine maintenance will be provided.

Orange County Airport

Orange County Airport operations are relatively stable for continued service. According to the Orange County Aviation Association, this airport's growth space provides the potential for the Orange County Airport to be a legitimate reliever for the Southeast Texas Regional Airport.

Orange County Airport has planned improvements to satisfy future demand for air services within the county, including plans to expand the main asphalt runway from 4,400 to 5,500 feet. The runway expansion project is anticipated to be completed by the end of 2008. Once the runway extension is complete, the Airport has planned to build additional "T" hangars for small aircraft. The Airport is also proposing to improve the existing parking lot by constructing additional parking facilities.

Hawthorne Field

In 2002, Hawthorne Field supported 3,800 general aviation operations, but does not support commercial or military flight activity. Proposed improvements at Hawthorne Field include plans to extend the main runway 1,100 feet and construct a taxiway.

Level of Service Analysis

Providing adequate access to the JOHRTS area airports is a priority for the long-range transportation plan. Typically, roadways that provide direct access to airport facilities are classified as principal arterials. The effectiveness of these arterials can be evaluated based on the amount of roadway congestion, represented as Level of Service (LOS). The table below provides LOS definitions for various types of travel conditions on roadways. An LOS analysis of local and regional access roads for JOHRTS area airports is listed on the following page.

Level-of-Service Definitions for Roadways	
Level-of-Service	Description of Traffic Conditions
A	Free-flow traffic conditions; motorists travel at desired speeds; minor traffic flow disruptions.
B	Reasonable flow conditions; noticeable presence of other vehicles.
C	Stable traffic flow conditions; noticeable increase of platoon formation; ability to maneuver noticeably restricted.
D	Less than stable traffic flow; speed and ability to maneuver severely restricted.
E	Unstable traffic conditions; travel demand approaching roadway capacity.
F	Heavily congested flow; traffic demand exceeds roadway capacity; forced flow and ability to maneuver due to traffic congestion.

Source: Highway Capacity Manual, Special Report 209, Transportation Research Board, 1994.

Southeast Texas Regional Airport

Local Access Roads

Roadways adjacent to Airport Road are considered to be in good operating condition and provide convenient access to all areas of the Airport.

Regional Access Roads

Southeast Texas Regional Airport is also served by several regional roadways. Segments of US 69 that provide access to areas north of the Airport operated at an acceptable LOS B in 2002. SH 73 and SH 87 are the main highways that provide access to areas south of the Airport. While SH 73 operated at LOS A in 2002, SH 87 experienced heavy traffic congestion, and operated at LOS F. Access provided via IH-10 was considered satisfactory, with both eastern and western roadways operating at LOS C.

Beaumont Municipal Airport

US 90 provides direct access to the Beaumont Municipal Airport and operated at an acceptable LOS C in 2002, although projected traffic demand suggests that service levels may drop to LOS D. IH-10 also provides regional access to the Airport and operated at LOS C in both directions.

LOS on Airport Access Roads						
	2002			2030		
Roadway Segment	Traffic Volume	Road Capacity	V/C Ratio	Traffic Volume	Road Capacity	V/C Ratio
Southeast Texas Regional Airport						
US 69 between Spurlock Road & FM 365	38,100	76,000	0.50	43,800	76,000	0.58
SH 87 between Neches River Crossing & Levee Road	20,750	20,200	1.03	26,500	20,200	1.31
Beaumont Municipal Airport						
US 90 between FM 364 & Keith Road	16,550	22,000	0.75	18,000	22,000	0.82
Orange County Airport						
SH 87 between FM 105 & FM 1442	21,750	26,100	0.83	26,100	25,500	1.02
Hawthorne Field						
US 69 between FM 421 & SH 327	11,500	10,700	1.07	18,400	44,250*	0.42
SH 327 between US 69 & US 96 Business	8,350	11,900	0.70	11,700	11,900	0.98

Source: TxDOT TPP JOHRTS 2005 MTP – 2030 Travel Demand Model 2002 and 2030 Assignment Runs
**Capacity value for new US 69 alignment*

Orange County Airport

In 2002, the segment of SH 87 adjacent to the Airport was operating at a LOS D. Regional access to the Orange County Airport is also provided by IH-10, which operated at an LOS C. Access provided by SH 73/87 near the Neches River Bridge operated at an unacceptable LOS F.

Hawthorne Field

The Hawthorne Field authorities report that access to the Airport is primarily affected by travelers experiencing delays at railroad grade crossings in Silsbee and from congested traffic conditions along US 69 in Lumberton, which operated at an unacceptable LOS F. This should be remedied by improvement to the US 69 corridor which show the LOS improving to LOS A by 2030. Access from the east via SH 327 operated at an acceptable LOS C, although this does worsen to LOS E by 2030.

Needs Assessment

The LOS analysis of local and regional access roads demonstrated that traffic congestion along regional access roads is a problem for all airports in the JOHRTS area. Current trends indicate that increases in passenger activity at these airports may add to the congestion problems along these routes, thus generating demand for additional improvements.

Regional Airports

Based on forecasted 2030 traffic volumes, the most congested roads that provide access to the Southeast Texas Regional Airport are US 69 and SH 87. Scheduled improvements in the US 69 corridor will improve traffic flow to and from the north, while congestion in the SH 87 corridor will continue to operate at a poor level of service.

Other regional roadways serving the Southeast Texas Regional Airport are also projected to be operating under congested conditions. Since activity at Southeast Texas Regional Airport is projected to increase, congestion and accident problems are likely to occur more frequently in the future if no further improvements are undertaken.

General Aviation Airports

The LOS analysis for the traffic facilities providing access to the general aviation airports show that most of the access roads are relatively not congested. However, congestion on SH 87 is projected to worsen, possibly affecting access to the Orange County Airport. Improved access along the US 69 corridor in Hardin county should improve overall access to Hawthorne Field. However, a related increase in traffic on SH 327 is projected and could possibly affect access to Hawthorne Field.

Intermodal Needs

Heavy air cargo operations and high landing fees at airports in the city of Houston may make airports in the JOHRTS area attractive to air cargo carriers in the future. Increased demand for air cargo services may require roadway improvements to facilitate increased trucking activity. Potential rail linkages to JOHRTS area airports are unlikely, since expenditures on railroad extensions would only be justified if there were large heavy air cargo volumes.

Future Options

Given the level of congestion on roads serving the four JOHRTS area airports, future alternatives are aimed at relieving congestion and enhancing airport access. Several identified methods exist to decrease congestion on roadways, including adding capacity through roadway widening or additional travel lanes, rerouting traffic flows, or building new roadways.

Criteria

Roadway improvements at airports must be viewed from a local and regional perspective. While some proposed alternatives provide immediate benefits, they may also create additional problems for local communities. For example, improvements on regional access roadways (e.g. US 69) may decrease congestion for traffic accessing the airports, but may also generate unwanted traffic through local neighborhood streets. Awareness of the benefits of improvements that may enhance airport access and reduce congestion is therefore important.

Proposed alternatives should also enhance the safety of travelers in the JOHRTS area. Roadway improvements at high accident locations may reduce the number of accidents occurring along airport access roads. Signalization and channelization improvements at intersections can also enhance traffic safety around airports.

All improvements must also lead to a quantifiable reduction in roadway congestion and increase accessibility to airports in the JOHRTS area for as many modes of transport as possible. The following proposed alternatives involve roads directly surrounding the four major airports and are separated into transportation management and capital improvements:

Photo courtesy of Marc Shepherd

Transportation Management

- Focus intersection/signalization and signage improvements on air access roads
- Conduct a study of planned improvements surrounding the Southeast Texas Regional Airport to prioritize the importance and cost-efficient ways of relieving the congestion on surrounding roadway networks
- Provide and display taxi service and taxi/airport shuttle phone numbers at airports without transit service
- Encourage employer-sponsored rideshare programs for airport employees

Capital Improvements

- Enhance access to Southeast Texas Regional Airport by decreasing congestion on US 69 by adding roadway capacity
- Evaluate airport access issues in all major investment studies on JOHRTS area roadways
- Encourage the development of pedestrian and transit facilities at all airports

Proposed Policies

Identified transportation improvement projects for JOHRTS area roadways involve a combination of capital improvements and transportation programs designed to enhance accessibility, reduce congestion, and increase roadway traffic safety. These projects include:

- Long-range plans to expand US 69/96/287 from four to six or eight lanes from Lumberton to Port Arthur
- Long-range plans to expand IH-10 in Orange and Jefferson counties from four to six or eight lanes
- Construction and improvements to various local airport access roads

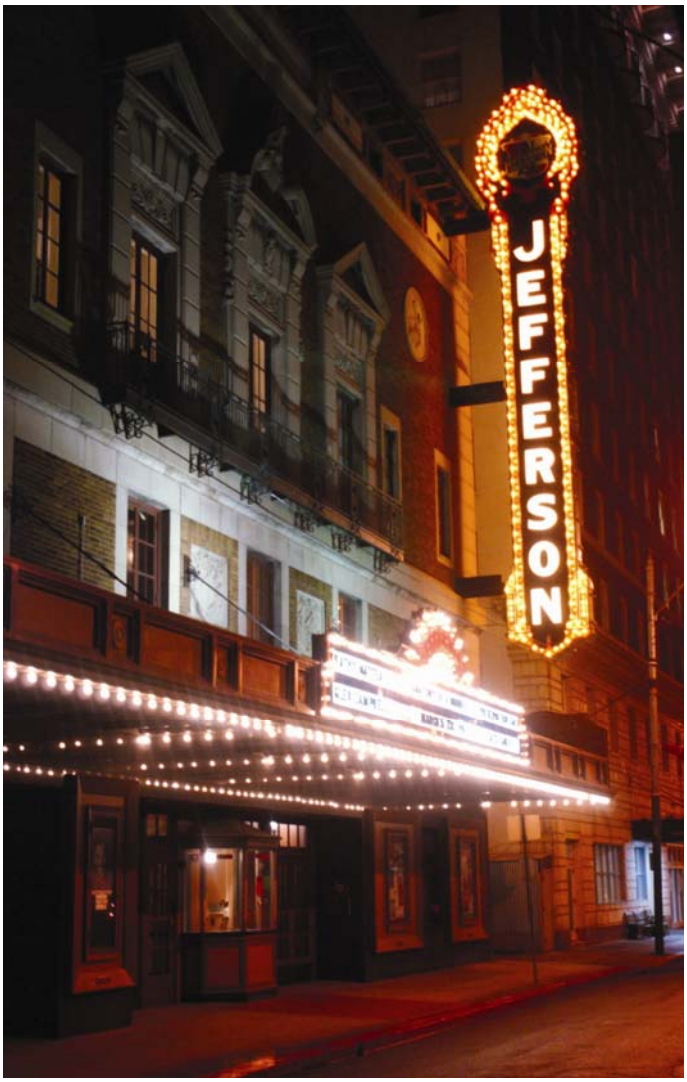


Photo courtesy of the Beaumont Convention and Visitors Bureau

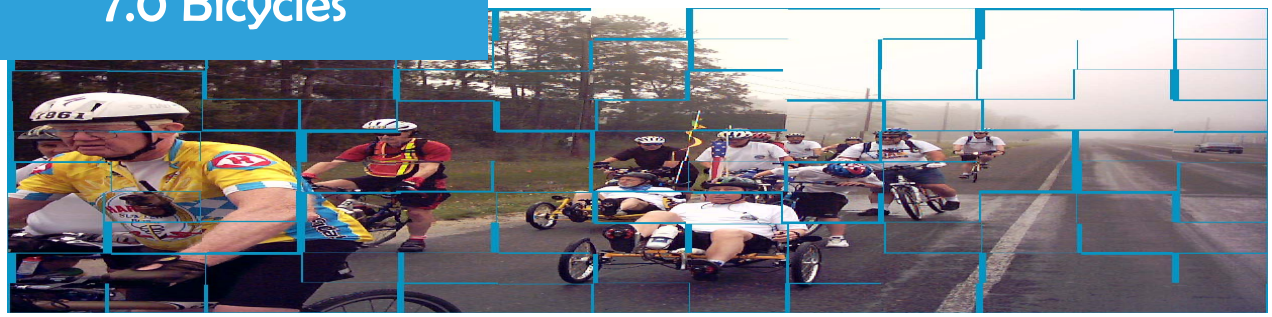
Funding

Federal funding categories for roadway access to the JOHRTS area airports are described in detail in Chapter 3. However, these funds may not be the best choice for selected roadway improvements at JOHRTS area airports.

Access roads that connect the arterials to the airports are usually on airport property and are eligible to receive capital funds through federal aviation programs or general funds from city and county governments. The Southeast Texas Regional Airport has access to capital improvement funds from the Federal Aviation Administration for road access and parking facility improvements.

Orange County Airport is using fifty-percent matching county and state funds for parking improvements and an additional access road for agricultural crop-dusting flights. Beaumont Municipal Airport is currently not utilizing any additional funds for access improvements.

7.0 Bicycles



Introduction

To create more effective and efficient multimodal transportation networks, the federal legislation emphasizes developing underutilized transportation modes. Consequently, states and local communities are implementing bicycling programs to encourage alternative transportation modes. Bicycling is one of the more attractive alternatives to the automobile and is not only cost-effective but is environmentally friendly. Additionally, bicycling is a good form of exercise and a popular recreational activity. The SETRPC-MPO is committed to identifying and promoting bicycle programs and developing policies as a means to achieve a higher quality transportation system serving the transportation needs within the JOHRTS area.

However, high temperatures and humidity during the summer months make cycling more attractive during the spring, fall, and winter months. Although congestion and air quality issues in the JOHRTS area contribute to increase public interest for promoting alternative transportation modes such as bicycle use, the limited funding and auto-dependency (and its convenience) are barriers that hinder efforts for developing and implementing bicycle programs.

Within the JOHRTS area, bicycling is primarily a recreational activity; however, bicycling is also used as a means for travel to work and/or school. In 2004, the SETRPC-MPO conducted a Jobs Access Reverse Commute Study in cooperation with the Texas Workforce Commission. This study revealed that some employers in the three county region have provided a bicycle to an employee who had no other dependable means of transportation. Additionally, some persons seeking employment through the Texas Workforce Centers either walk or ride a bicycle as potential employers are not located along fixed transit routes or a friend and/or relative with an automobile is not available to provide transportation.

Existing System

Bicycling Classifications

By Facility Type

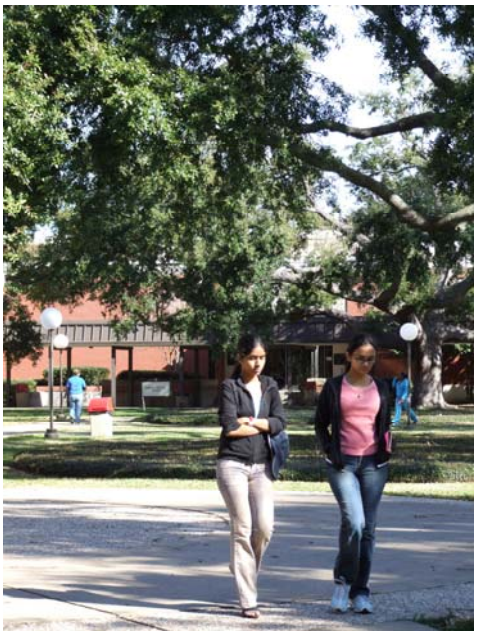
Bicycle networks are typically categorized by class or type, depending on the delineation and degree of separation from roadway traffic. The following definition of facility types and user groups provide a basis for evaluating the status of the existing system:

Class I — A bike path or trail, which is physically separated from the roadway. The path either shares the right-of-way of the roadway or another facility, or is located within a dedicated right-of-way.

Class II — A bike lane shares the roadway and is delineated by striping, signing, and/or pavement markings for the preferential or exclusive use by bicycles.

Class III — A bike route is simply a route designated for bicycle use with appropriate directional and informational markers.

Bikeway is another name given to bicycle facilities. This is an all-inclusive term for bicycle networks that includes all facility classifications listed above, plus any bicycle facilities that are not specifically classified.



By Bicyclist Type

In addition to system classifications, bicyclists are also categorized as follows.

Group A — Advanced bicyclists including experienced riders that prefer sufficient operating space to share roadways with vehicular traffic.

Group B — Basic bicyclists including casual, new adult, or teenage riders that prefer well-defined separation from vehicular traffic.

Group C — Children bicyclists including pre-teen riders who prefer low volume and low speed streets with well-defined separation from vehicular traffic.

Facility Status

Within the JOHRTS area, a regional bicycle network is in development. Although limited investment has been made, facilities exist at the municipal level in Orange, Groves, and Port Arthur. They are:

Orange — Approximately 1.5 miles of a Class III route along 16th Street from IH-10 to Green Avenue.

Groves — Approximately three blocks of a Class II route along 25th Street.

Port Arthur — Hike and Bike trail on Pleasure Island.

Planning Efforts

State Level

In 1993, the TxDOT Beaumont staff initiated a statewide planning effort to develop a statewide map of highway routes suitable for bicycles. This map was to assist TxDOT in identifying improvements and consider their potential impacts on bicycle use. To accomplish this task, TxDOT decided to conduct a survey of the rural roadways to determine the type or status of shoulders. Unfortunately, TxDOT was unable to obtain adequate funding for this endeavor and the survey was not completed. However, TxDOT continues efforts to acquire funding for developing this statewide bicycle map that would benefit the southeast region as well as other regions within the State of Texas.

Regional Level

In 1994, The SETRPC-MPO conducted a survey of bicyclists throughout the three-county region to identify bicycling characteristics and desired improvements as an initial step for determining regional needs. In 2004, the SETRPC-MPO conducted another survey; however, it also resulted in a low response rate (26%). Although the surveys had a low response rate, the information provided the SETRPC-MPO valuable insight into the bicycling activities and needs for the JOHRTS area. In general, the 1994 and 2004 survey results are very similar but emphasize that most bicycling in the JOHRTS area is recreational and not deemed as an alternative transportation mode to the automobile.

The SETRPC-MPO has undertaken other initiatives to support bicycle network development. The SETRPC-MPO conducted a series of meetings with municipalities throughout the JOHRTS area to identify the needs and priorities and obtain suggestions for actions to consider with respect to bicycle system development. Data collected by SETRPC-MPO staff was evaluated for its ability to promote bicycling and identify key routes for future network development.

In November 2006, the SETPRC-MPO facilitated a meeting between TxDOT Beaumont staff, local government officials, and members of the South East Texas Hike and Bike Coalition (SETHBC). SETHBC presented a proposal for a continuous network of bike paths or routes for Beaumont. The outcome of the meeting included an agreement from TxDOT for bicycle lanes and signage on SH 105 and commitment from Beaumont officials to study potential locations for additional bicycle facilities.

Local Level

In 1990, a Comprehensive Hike and Bicycle Plan for the City of Port Arthur was completed. This plan outlined a network supplementing the Class I routes currently designated within the JOHRTS area. The plan includes a total of approximately 15 miles of Class I, 14 miles of Class II, and 30 miles

of Class III bikeways. The plan provides sections for all levels of bicyclists and links residential areas with schools, parks, and other scenic areas.

Current Trends

Bicycling Characteristics

User Profile

Children and a relatively small number of avid cyclists currently utilize bicycle transportation for recreational purposes. The bicycle is also used as a primary mode of transport by a small segment of the population who have no access to automobiles or public transportation.

Bicyclist Behavior

According to the results of the 1994 Bicycle Survey, constraints that prohibit more bicycle use are linked to traveler behavior and concerns over existing bicycle facilities. With the 2004 survey, a majority of respondents stated that bicycling is limited with the lack of bike lanes and/or paved shoulders. Most respondents identified designated bike lanes or paved shoulders as the most desireable for bicycling.

Trip Characteristics

Trip Purpose

Most bicycle trips can be defined as either commute or recreational trips. Commuter use is defined as a primary purpose trip such as to work, or school, with the objective of quickly reaching a destination. Recreational use is defined as a non-primary trip where route choice is more dependent on the amenities of the route.

The 1994 Bicycle Survey conducted by the SETRPC-MPO identified recreational trips as the most widely used trip type for bicyclists in the JOHRTS region. Nearly all (97.4 percent) of the responses identified recreational trips as the typical trip purpose, with work trips accounting for only 18.2 percent and errands accounting for only 15.6 percent[1]. Trip purpose was not specifically identified in the 2004 survey, but several respondents indicated they had considered riding their bike to work and/or school.

[1] Respondents were permitted to choose more than one trip type in giving their response (thus, totals do not equal 100 percent).

Trip Length

Of those responses received from the 2004 survey, the cyclists in the JOHRTS area bicycle nearly every day or at least once a week. The bicycle trip length varies from less than three miles to more than 20 miles; however, most respondents stated a willingness to bicycle more than five miles per trip. This is slightly higher than the average bicycle trip length of 1.9 miles revealed by the 2001 National Household Travel Survey (NHTS), further emphasizing that bicycle use in the JOHRTS region is for primarily recreational purposes.

Total Trips

Overall, the nation has seen a decline in utilitarian bicycle usage. Based on the 2001 National Household Travel Survey, bicycle trips have dropped from 0.5% of all work trips in 1980 to only 0.4% of all work trips by 2001. The 2002 National Survey of Pedestrian and Bicyclist Attitudes and Behaviors shows that commuting to/from work only represented 5 percent of all bike trips. In southeast Texas, the 1993 Household Survey conducted by TxDOT and TTI indicated that 0.288 perecnt of all trips were by bicycle.

Photo courtesy of the Nederland Economic Development Corporation

Demand Analysis

Potential Trips

Total daily trips for the JOHRTS area are forecasted to be 1,482,059 for 2030 based on TxDOT's travel demand model for the area. Using the average of 0.288 percent of all trips yields 4268 trips in 2030 that might travel by bicycle.

Required Bicycle Facilities

While there are currently no established planning standards for bikeways, a suggested standard has been developed for application in areas with average or lower density, with average density defined as 8,000 people or less per square mile. For such areas, one mile of bikeway per 1,000 people is suggested as an adequate guideline for facility development[2]. This ratio allows most residents to live within one-half mile of a bicycle network. With respect to the JOHRTS area and based on the suggested planning standard, the miles of bikeway recommended by county and city are listed in the last two columns of the table on the following page. These figures represent a goal or benchmark by which to measure demand as projects are planned or implemented.

[2] M.G. Jones, "Building Bikeways," Planning, October 1993.

Evaluation of Bikeway Demand					
Locality	Population (2000)	Area (sq.mi.)	Density (pop/sq.mi.)	Bikeway Demand (miles) Regional	Local
Jefferson County	**252,051**	**904**	278.8	**252**	
Beaumont	113,866	85	1339.6		114
Port Arthur	57,755	82.9	696.7		58
Groves	15,733		3025.6		16
Nederland	17,422	*	3056.5		17
Port Neches	13,601	*	1511.2		14
Orange County	**84,966**	**356**	238.7	**85**	
Orange	18,643	*	927.5		19
Vidor	11,440	*	1079.2		11
Bridge City	8,651	*	1696.3		9
West Orange	4,111	*	1284.7		4
Pinehurst	2,274	*	1263.3		2
Hardin County	**48,073**	**894**	53.8	**48**	
Silsbee	6,393	*	852.4		6
Lumberton	8,731	*	928.8		9
Kountze	2,115	*	528.8		2
Totals	**385,090**	**2154**	178.8	**385**	**281**

Source: 2000 U.S. Census Data

Based on JOHRTS countywide populations, approximately 385 miles of bikeway are needed to meet the suggested planning standard on a regional basis. Based on urban population, approximately 281 local miles are needed. Using these two estimates as a range, 300 miles would be a reasonable figure to use as an ultimate goal for systemwide development. However, preservation and enhancement of the bicycle network should always supercede efforts that increase its total size.

Needs Assessment

All proposed bicycle plans and programs should support the creation and maintenance of a safe, convenient, and efficient bicycle network that promotes bicycling as a viable alternative mode of transportation. The bicycle system should be connected to other modes to create an efficient and effective multimodal transportation system for the JOHRTS area.

Planning for bicycle facilities must also take into account the characteristics and needs of the user population. Diversity of cycling skills and different motivations for cycling indicate that a given set of bicycle facilities and routes will not be suitable for the entire cycling population; the bicycle network must accommodate the needs of all types of users. The Bicycle Federation of America estimates that fewer than five percent of bicyclists would qualify as experienced, Class A riders. This implies that a system for the general populace should include amenities for the predominant Class B and C riders.

Based on the evaluation of current trends and projected need, new bicycle paths, lanes, and trails are needed to safely accommodate bicyclists in the region. As these facilities expand, additional funds will be needed to maintain these new bikeways. Consequently, the needs for new facilities must be weighed against the needs of other modes of transport that often utilize the same funding sources, which are usually dedicated for either roadway or transit improvements.

Future Alternatives

Implementation of a bicycle program will require the consideration of several elements, regardless of the development strategy and level of investment. The build, no-build, and the indirect approach are three alternatives that the SETRPC-MPO can use to influence bicycle network development.

No Build Alternative

This option proposes no improvements or additions to the existing bicycle network. Given that the current network is inadequate to accommodate both present and future needs, this alternative is not considered an attractive option.

Build Alternative

Given the existing level of development for bicycle use, the SETRPC-MPO and local planning agencies must work toward constructing new bicycle facilities. The proposed network should include the identification by class (I, II, III) and intended user group (A, B, C) with a scope of improvements comparable to the demand in miles (approx. 300) as indicated previously. Development of this bicycle network should be based on decisions made in cooperation with the public and local community officials.

For major highway projects involving significant investment of federal funds, the consideration of bicycles should be part of the alternatives analysis process. For less complex and less expensive projects, such as widening projects, the evaluation of potential improvements for bicycles should be established as a standard step in the process of project development. A maintenance program should also be considered that focuses on maintaining the bicycle network and its facilities.

Indirect Approach

This alternative focuses on promoting bicycling through programs that utilize existing resources to promote bicycle use and safety.

Coordination

The key element in successful integration is the coordination of bicycle transportation program efforts among the various organizational levels within the planning environment. At a regional level, a designated MPO bicycle coordinator could play an active role in communicating and coordinating regional bicycle transportation efforts with the State and member communities. Such a person should work with bicycle coordinators at TxDOT district and state offices to pursue and initiate programs and projects that develop or enhance bicycle facilities in the JOHRTS area. As an active participant in the planning process, the SETRPC-MPO coordinator should establish a routine schedule for contact with representatives and coordinators from other entities and act as the official point of contact for all bicycle related affairs, such as planning, training and public awareness.

Data Collection

To improve decisions pertaining to the development of bicycle facilities throughout the Region, a system could be established to collect and manage data for the bicycle transportation system. Data would include information on bicyclists, roadways, bikeways, and bicycle accident statistics. Collection of this data could support development of a regional map of arterials categorized by the level of "rideability" for bicyclists, based on criteria such as traffic volume, average vehicle operating speed, traffic mix, sight distance, on-street parking, shoulder width spacing, and number of intersections.

Training

Support should be provided for training of transportation planners and engineers at the regional, and local levels. The training program should include the status of bicycle facilities within the metropolitan region, and accepted design standards and guidelines for bicycle facilities with an emphasis on safety.

Training programs should be targeted at bicyclists in the JOHRTS area. To improve safety and reduce the number of accidents involving children, training programs on bicycling should be taught to children at local schools. Classes and workshops for adults would also enhance bicycle safety and help promote bicycling. Increased emphasis on bicyclists' rights and responsibilities during driver's education and defensive driving courses would improve driver awareness of bicyclists and improve bicycle safety.

Public Awareness

Improving public awareness could result in better knowledge of benefits and bicycle services, and ultimately increased usage. A useful approach could include the coordination of education, training, and advertising to promote bicycle use. Public service announcements can also be useful in advertising services available to bicyclists and educate the public on rules and etiquette for sharing the road with bicyclists. Information can be distributed via television, the Internet, newspapers, flyers, newsletters, or posters in schools and workplaces.

Proposed Policies

Proposed initiatives for bicycle networks in the JOHRTS area are constrained by limited financial and manpower resources, and an auto-oriented society in southeast Texas. These factors make it difficult to implement bicycling programs in the JOHRTS area. Nevertheless, SETRPC-MPO staff, in conjunction with TxDOT and officials from local communities will continue to promote bikeways and bicycling in the JOHRTS area.

Bicycle and pedestrian facilities recently constructed include the following:

- Pleasure Island Trail, which extends nearly 7 miles (11 kilometers) on Pleasure Island from SH 82 to the termination of Lakefront Drive

Proposed initiatives to improve bicycle facilities in the JOHRTS area include:

- Support the implementation of phases II and III of the Comprehensive Hike and Bicycle Plan for the City of Port Arthur

- Promote cooperation and coordination among cities, state agencies, and the private sector when developing comprehensive bicycle plans for cities in the JOHRTS area.
- Encourage connection of bicycle facilities between municipalities throughout the JOHRTS area, as well as linking neighborhoods with popular destinations such as schools, employment centers, retail establishments, tourist attractions, medical facilities, and outdoor recreation areas wihin the communities.
- Seek out new funding sources for proposed bicycle plans, programs, and projects.
- Encourage public awareness, education, and safety relating to bicycles. Implement bicycle programs by educating local transportation officials on the benefits of bicycle networks and distributing information on available funding sources.
- Collect roadway and bicycle data to make informed and educated decisions on proposed bicycle projects in the JOHRTS area.
- Whenever possible, provide shoulders on roadways.

Funding

Public and private funding is also possible but is dependent on the influence of current policy and level of commitment within the community.

Federal Sources

It is to be expected that practically all projects will involve multiple funding sources. All Federal funding contributions for bicycle transportation projects and programs require a 20 percent State or local match. Although several Federal sources exist, there are three main programs that specifically provide funding for bicycle projects.

National Highway System (NHS) Funds

These funds may be obligated for the construction of bicycle facilities on land adjacent to any highway on the NHS, other than the Interstate system, and are made available at the discretion of the State. Two defining categories of projects include 1) the construction of bicycle facilities as an incidental part of a larger NHS project, and 2) the construction of bicycle facilities adjacent to an NHS route as an independent project.

Surface Transportation Program (STP) Funds

These funds encompass a much broader range of funds for transportation projects that can be used for bicycle facilities. Specific bicycle projects sponsored by Transportation Enhancement Activities (TEAs) include construction of bicycle facilities and conversion of abandoned railway corridors to bicycle trails. The recently constructed bicycle facilities were funded with transportation

enhancement funds. Several projects to which federal funds were made available have been cancelled due to a lack of local matching funds.

Congestion Mitigation and Air Quality Program (CMAQ) Funds

These funds are available for projects and programs in areas in non-attainment of national ambient air quality standards according to the 1990 CAAA. Eligible projects must contribute either directly or indirectly towards the attainment of required standards. Bicycle projects eligible for CMAQ funds include bikeway construction projects, public education programs, and bicycle safety initiatives. Similar bicycle facility projects defined as Transportation Control Measures in the 1990 CAAA are also eligible.

Additional Funding Sources

Other funding sources for bicycle plans and programs are also available through various Federal programs that are designed to support bicycle, pedestrian, and other nonmotorized transportation projects:

The National Recreational Trails Fund

This program states that at least 30 percent of the annually appropriated funds must be spent on facilities for nonmotorized users. These funds are not considered as available revenue for planning purposes although they do remain as a potential source if future appropriations are made.

The Scenic Byways Program

This program was established under ISTEA and provides funds for the development of bicycle facilities along highways. Funding is decided and prioritized by an application process.

The Section 402 Highway Safety Grant Program

This safety program considers bicycle safety programs a priority and expedites application and funding processes for these and other priority projects.

Federal Transit Enhancements

Funding under this initiative may be used for bicycle access to transit facilities, parking facilities for bicycles in or around transit facilities, and installation of racks or other bicycle storage equipment on transit vehicles.

Photo courtesy of Brian Vincent, Port Arthur News

State Bridge Program

Funds used to maintain and rehabilitate bridges in the State can also support the accommodation of bicycle facilities on bridges if such improvements can be provided at a reasonable cost as part of a highway bridge deck replacement or rehabilitation.

Local Funding Sources

Depending on the level of commitment, there are various local options available to support the development of bicycle facilities. One such strategy is to require developers to incorporate bicycle facilities as part of their proposed development, or contribute towards local bicycle projects as a condition for project development. Fundraising efforts have also proven effective in raising funds for bicycle plans and programs.

8.0 Pedestrian

Introduction

Pedestrian travel is an integral component of a balanced transportation system and is of great importance in ensuring the overall efficiency of the entire transportation network. Often underutilized, pedestrian networks can provide some of the greatest benefits for transportation users and the community as a whole.

Pedestrian facilities can play an important role in enhancing the quality of life in urban areas. Sidewalks, pathways, and urban trails enhance a city's livability by increasing both transportation and recreational options for residents. Pedestrian facilities also increase mobility for children, persons with disabilities, and those unwilling or unable to choose other modes of transportation.

Promotion of pedestrian facilities also has the potential to improve the health of the general public. Increased pedestrian activity translates into a healthier, more productive population, stimulating economic growth while reducing medical costs to the community as a whole.

To ensure that pedestrian facilities provide the greatest benefit to the community, several important principles should be followed. Since pedestrian accidents usually result in serious injury or death, special efforts must be undertaken to increase pedestrian safety. When necessary, crosswalks should be painted and well marked with additional signalization and pedestrian-activated signals. Curb-ramps and audible signal devices should also be placed at selected intersections to accommodate disabled persons. Construction of grade-separated crossings should be considered when planning pedestrian crossings at busy intersections.

Since pedestrian and transit modes often work together to move people throughout urban areas, efforts to increase linkages between these two modes should be pursued. Special efforts should be made to ensure that sidewalks connect to transit stops whenever possible.

Location of pedestrian facilities is also very important. Construction of new pedestrian facilities should focus on short walking trips, and should be strategically placed along routes that link the community with nearby schools, parks, commercial centers, and other pedestrian networks.

Recreational pedestrian facilities should be based on a system of paths or trails that focus on exercise and enjoyment of the outdoors and link local pedestrian networks. Aesthetics play an important role

in the design and placement of recreational pedestrian facilities; care should be taken to maintain a natural environment along pedestrian paths to enhance their attractiveness.

Existing System

The existing pedestrian network system within the JOHRTS area provides numerous opportunities for enhancement. Presently, the pedestrian network is comprised of various plans adopted or proposed by local jurisdictions within the JOHRTS area. In many instances, pedestrian facilities also accommodate bicycle activities to create a pedestrian network more recreational in nature and less integral as a component of the transportation system.

Photo courtesy of the Nederland Economic Development Corporation

All large cities in the JOHRTS area have established sidewalk ordinances through subdivision regulations to ensure that pedestrian facilities are expanded. The City of Beaumont has an ordinance that requires sidewalks along arterial and collector streets and in areas designated "safe school zones" by the Planning and Zoning Commission. The City of Port Arthur ordinance states that sidewalks should be located along all major thoroughfares as outlined in its comprehensive plan. The City of Orange also has sidewalk provisions stated in its subdivision regulations that require sidewalks on both sides of the street in new areas. All cities however, permit variances that free the developer from building sidewalks where pedestrian facilities are considered unnecessary. Once constructed, sidewalk maintenance and rehabilitation becomes the responsibility of the respective city.

Existing bicycle and pedestrian facilities in the JOHRTS area include the 25th Street bike lane in Groves, the 16th Street bike route in Orange, sidewalks along major thoroughfares, and pedestrian crosswalks at various locations throughout the JOHRTS area. Major recreational pedestrian/bicycle facilities also exist on Pleasure Island adjacent to Port Arthur and along the waterfront in downtown Beaumont. The City of Beaumont is also planning to develop pedestrian facility improvements from the Dannenbaum Transit Terminal to major activity centers in downtown Beaumont.

Current Trends

Trip Characteristics

National Trends

Walking remains a viable mode of transportation for many Americans. The 2001 National Household Travel Survey (NHTS) which replaced the Nationwide Personal Travel Survey (NPTS) shows an increase in walking trips over previous surveyed years. The 2001 NHTS found that 8.6 percent of all trips were walking, up 1.4 percent from the 1990 NPTS estimate of 7.2 percent. It is considered that some of this increase is attributed to much improved surveying techniques in the 2001 NHTS.

The 2001 NHTS also revealed that 45 percent of all pedestrian activity was recreational. National trends also show that pedestrian trips are consistently characterized by their relatively short distance. The 2001 NHTS study revealed that average pedestrian trip length nationwide was 0.91 miles. The 2002 National Survey of Pedestrian and Bicyclists Attitudes and Behaviors showed 68 percent of all walking trips were less than one mile. These distances are within comfortable travel distance for most pedestrians and are a significant proportion of total daily trips.

Regional Trends

Pedestrian travel in the JOHRTS area occurs at lower levels than those at the national level. The 1993 JOHRTS Household Travel Survey indicated that approximately three percent of person trips were walk trips, which is significantly lower than the 2000 national percentage of 8.6 percent.

Total pedestrian work trips have declined from 1.8 percent of all work trips in 1990 to 1.1 percent in 1993[1]. This drop is even more significant when compared to a USDOT study in 1980, which revealed that 2.7 percent of workers in the Beaumont-Port Arthur urbanized areas walked to work.

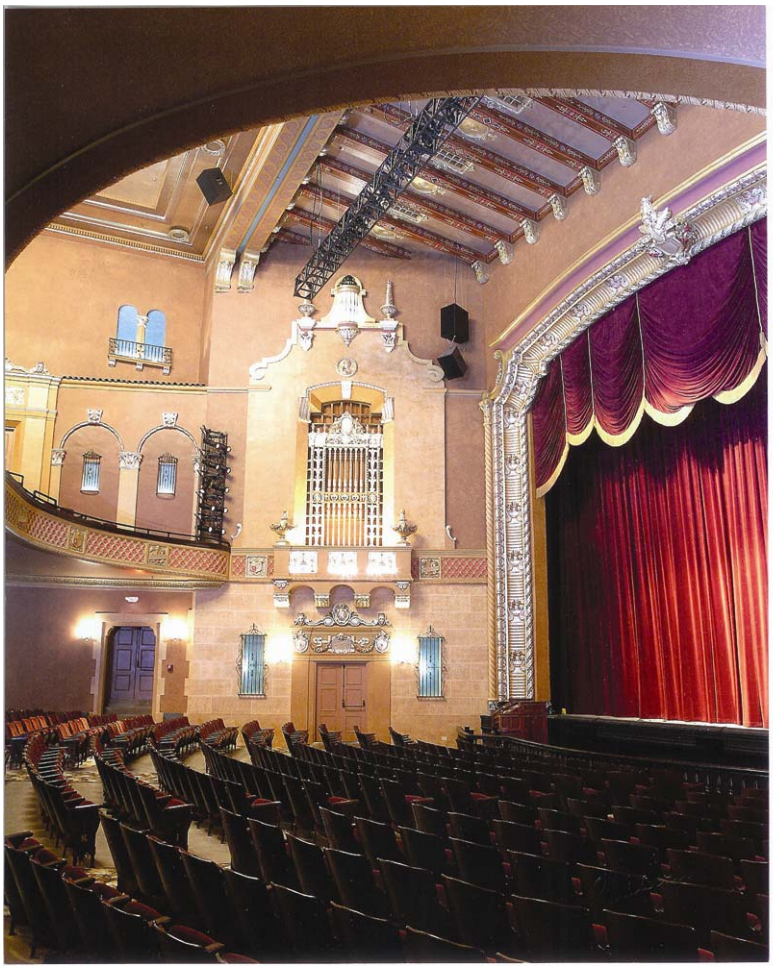


Photo courtesy of the Beaumont Convention and Visitors Bureau

In 2004, the SETRPC-MPO conducted an informal survey to identify reasons for less pedestrian travel in the JOHRTS area. Most respondents stated a willingness to walk at least five blocks, but indicated the lack of sidewalks and heavy traffic as barriers to walking.

[1] 1993 JOHRTS Household Travel Survey and the 1990 Census.

Pedestrian Development Trends

Enhancement Projects

Stimulated by ISTEA and TEA-21, transportation planners in the JOHRTS area have concentrated on the provision of joint recreational pedestrian/bicycle facilities. Local planners and engineers have utilized funds through the TxDOT Transportation Enhancement Fund for pedestrian facilities. Projects that have utilized enhancement funding over the past few years follow.

- The construction of the Pleasure Island Hike and Bike trail, which now extends nearly 7 miles (11 kilometers) on Pleasure Island from SH 82 to the termination of Lakefront Drive
- The reconstruction of Boston Avenue in the City of Nederland. Highlights of this project include: street resurfacing; sidewalk improvements including planters and decorative paving stones; and new lighting fixtures.

Other Projects

In addition to the transportation enhancement projects, other initiatives are underway in the JOHRTS area that will significantly increase pedestrian activity.

- The Beaumont Main Street Program completed the Crockett Street Entertainment District in 2002. The Main Street Program is also working on other downtown rehabilitation and construction projects that will increase pedestrian activity downtown.

Demand Analysis

Automobile ownership is often used to reveal the number of people dependent on walking, transit, or bicycling, and is a good indicator of demand for pedestrian facilities. The 1980 census indicated that 9.6 percent, or 8,414 households in the Beaumont-Port Arthur urbanized areas had no vehicles. The 1990 census listed 11.2, 6.4 and 8.0 percentages of zero auto households for Jefferson, Orange, and Hardin counties respectively. The 2000 census listed 10.8, 7.5 and 5.2 percentages of zero auto households for Jefferson, Orange, and Hardin counties respectively.

Photo courtesy of the Beaumont Convention and Visitors Bureau

Pedestrian use in the JOHRTS area can also be evaluated based on estimates from recent travel survey data. Applying the 1993 JOHRTS Household Travel Survey average of 2.9 percent to 1992 TxDOT estimates of 1,289,948 daily total person trips yields approximately 37,408 daily pedestrian trips for 1992. Applying the same percentage to the region's 2001 and projected year 2030 total daily trips of 1,224,313 and 1,482,059 would mean that 42,979 pedestrian trips are

estimated to occur daily in 2030 - a 13 percent increase in pedestrian travel in the JOHRTS area between 1992 and 2030.

Daily walk trips to work are not expected to increase significantly by 2030. Using TxDOT's projection of 239,227 work trips (HBW) in 2030 with the 1993 JOHRTS Household Travel Survey figure of 1.1% indicates 2631 pedestrian work trips. This indicates an increase of over 11% between 2002 and 2030.

Given potential future demand estimates of pedestrian trips in the JOHRTS area, the existing pedestrian system will require improvement and expansion to accommodate future demand. This will require a significant financial investment by all area agencies.

Needs Assessment

An overwhelming dependence on the automobile as the primary source of transportation has helped to define pedestrian needs within the JOHRTS area. Automobile dependence has fostered an environment that supports auto-oriented urban and transportation development. This makes it increasingly difficult to develop and implement programs that not only create pedestrian networks but networks that would be utilized.

The use of autos as the primary mode of travel has also supported the development and maintenance of transportation networks that are almost exclusively dedicated to the automobile; provisions for pedestrian facilities are usually subservient to auto needs when local agencies allocate funding for their transportation systems. Consequently, many cities invest little in the maintenance and development of their pedestrian facilities, resulting in facilities in need of rehabilitation or replacement. The lack of adequate pedestrian facilities at major intersections has also jeopardized the safety of the general public in the JOHRTS area.

For those cities that do allocate funds for pedestrian facilities, there are few plans to develop comprehensive pedestrian networks that link people from home to work, shopping, recreational facilities, or other modes of transport. This has helped create sidewalks that lead to nowhere, or link areas that act neither as generators or attractors for pedestrian travel. When pedestrian facilities are planned, they usually focus on the development of recreational facilities.

With demand for pedestrian facilities expected to outpace all other modes of transport, a fundamental change in attitude is necessary. In order to meet future demand and ensure pedestrian safety, agencies in the JOHRTS area should reconsider their investment in pedestrian networks.

Future Alternatives

Strategies that focus on the development of a pedestrian network should address several key elements. Pedestrian networks should provide access from major trip origins to major destinations. These networks should link residential areas with schools, recreational areas, and shopping centers. Emphasis should be placed on creating links between pedestrian facilities and other modes of transport, especially transit. Whenever possible, these networks should be linked to form a larger regional pedestrian system.

The three proposed alternatives include the build and no-build scenarios and the comprehensive approach. The first alternative - the no-build scenario - involves maintaining current levels of effort, time and capital. The second alternative - the build alternative - involves upgrading the current system through construction and capital projects. The third and final option entails improving the pedestrian network through management and public awareness strategies.

No-Build Alternative

Maintaining current levels of effort requires little in the way of investment, so it is the least expensive alternative in economic terms. Minimal investment in pedestrian activities would enable funds to be used for other transportation modes that have a higher volume of traffic and more user demand.

A drawback to this option is that it would not meet the projected demand for pedestrian facilities in the JOHRTS area. The pedestrian system would remain noncontiguous and continue to jeopardize pedestrian safety. Lack of investment in rehabilitation would mean higher reconstruction costs to repair sidewalks and crosswalks in the future.

Build Alternative

This alternative relies on increasing and improving the facilities available for the pedestrian network. While this is the most expensive of all the options, it provides the greatest improvement to the pedestrian network, expanding the capacity of the network to accommodate future demand while increasing pedestrian safety. This requires improving existing facilities in addition to providing new sidewalks, crosswalks, and pathways. Costs associated with constructing new pedestrian facilities follow.

Unit Costs for Pedestrian Facilities		
Facility	Unit	Unit Cost
Concrete sidewalk, 5 ft. wide, 4 in. thick	LF	$45
Concrete sidewalk on existing bridge, 5 ft wide, 4 in thick	LF	$400
Concrete pedestrian bridge	SF	$450
Handicap curb ramps	EA	$2000
Marked crosswalk, pavement striping	EA	$300
Marked crosswalk, textured pavers	SY	$50
Pedestrian signal pole	EA	$1500
Signal head (signal section, louver, and back plate)	EA	$650
Activator (each)	EA	$200

Source: Texas Department of Transportation, Average Low Bid Unit Price, 2006, Pedestrian & Bicyclist Information Center, 2006

The Comprehensive Approach

Under this alternative, no new facilities would be provided, but the level of service would improve, as would the ability to identify future problems and needs. Efforts would focus on optimizing pedestrian facilities and enhancing public awareness.

Public Awareness Strategies

Improving public awareness of pedestrians would involve educating the public on the benefits of walking and promoting local pedestrian systems. These efforts could result in increased pedestrian activity and safety.

Distribution of information with maps would help encourage pedestrian activity and allow pedestrians to make informed choices about their mode of travel. The construction of a website with pedestrian safety tips and other related information would also help improve awareness of pedestrians and their rights, and enhance the safety of pedestrians in the JOHRTS area.

Public education could also be another key component of a public awareness campaign. Posters, brochures, or other training materials could be provided to schools, senior centers, and local grassroots organizations. Police or other public officials could also make appearances to discuss pedestrian safety issues, with special presentations at local elementary schools. Driver's education and defensive driving classes should also be modified to include a discussion on the rights of pedestrians and the appropriate driver behavior toward pedestrians.

Proposed Policies

With limited available resources and the low percentage of the population that actually uses pedestrian facilities, the more frequently used modes of transport will receive funding. However, the SETRPC-MPO will continue to promote and encourage pedestrian policies and programs for the JOHRTS area. Based on the current status of pedestrian facilities and the projected growth in pedestrian travel, the SETRPC-MPO will continue to promote the initiatives that follow:

- Encourage improved pedestrian facilities linked to transit stop locations, nearby schools, and retail centers.
- Increase awareness of the current status of pedestrian facilities, expressing the urgency for new improvements.
- Coordinate with and encourage JOHRTS area agencies to develop and implement comprehensive pedestrian plans and programs for "walk to work" trips and recreation.
- Optimize existing funding resources for pedestrian improvements and seek out new funding sources.

Funding

Federal Funding Sources

Four main sources of federal funding exist for pedestrian transportation projects, with a number of other federal programs providing additional funding.

National Highway System Funds

Pedestrian transportation facilities are eligible for funding from the NHS. Two defining categories of projects include 1) the construction of pedestrian facilities as an incidental part of a larger NHS project, and 2) the construction of pedestrian facilities adjacent to an NHS route as an independent project. In addition, NHS funds can be transferred to the Surface Transportation Program (STP) by the State.

Surface Transportation Program Funds

Pedestrian transportation facilities are specifically listed as eligible activities under this program. In several places, agencies have developed criteria for determining project priorities that include positive scores for pedestrian elements. Consequently, large proportions of highway and transit projects in these areas include pedestrian improvements.

Federal funding has previously been provided via STP funds for Transportation Enhancement Activities (TEAs) such as scenic beautification, historic preservation, bicycle projects, and pedestrian facility improvements. As previously mentioned, the JOHRTS area has had considerable success in utilizing these funds to construct pedestrian facilities.

The Congestion Mitigation and Air Quality Program

Funds from CMAQ provide funding for attainment of clean air standards set under the 1990 CAAA. Pedestrian facilities are eligible recipients of CMAQ funds both in their own right and as part of transportation control measures. Although historically these funds have been used for congestion management projects, pedestrian projects remain eligible for CMAQ funding and during a recent call for CMAQ projects, some pedestrian projects were funded.

Local Funding Sources

Local funding for pedestrian facilities would increase the autonomy of local pedestrian programs and ensure an independent, reliable source of funding. The most common local funding sources are user fees, sales tax revenues, and bonds. Proposed pedestrian improvements near schools could be funded by the school district.

Photo courtesy of the
Port Arthur Convention and Visitors Bureau

Other various mechanisms can also be used to promote the development of new facilities without specifically requesting funds. Local agencies should update and continue to use zoning ordinances that require developers to construct sidewalks for pedestrian access in subdivisions and commercial areas. Cities should also examine the use of building permits as a tool to encourage developers to build pedestrian facilities at new locations. Cities could also provide tax incentives to encourage local retail establishments to retrofit their establishments with sidewalks.

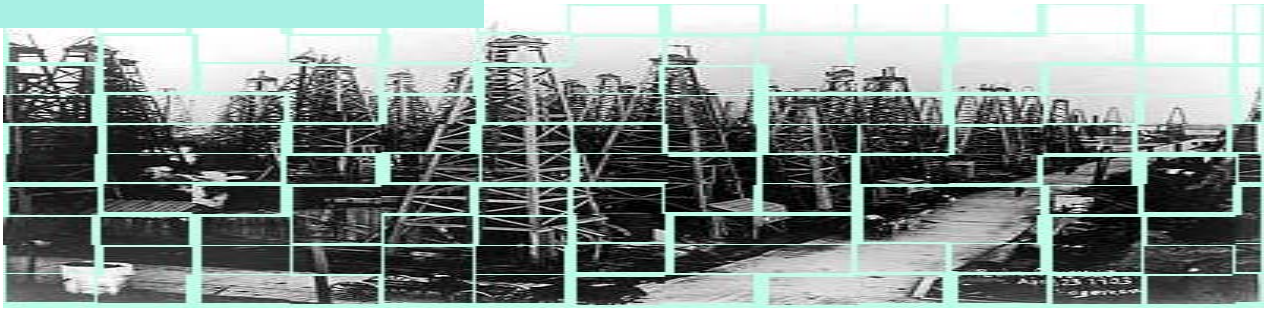
Other Funding Sources

Other funding sources for pedestrian plans and programs are also available through various federal programs that are designed to support bicycle, pedestrian, and other non-motorized transportation projects:

- The National Recreational Trails Fund is a small funding source subject to annual appropriation by Congress, and funds the development of recreational trails.
- The Scenic Byways Program provides funds for trails and paths of a scenic and recreational nature. This federal funding is decided and prioritized by an application process.
- Federal transit funding authorized under Title III, Section 25 of SAFETEA-LU may be used for pedestrian access to transit facilities and to provide pedestrian shelters.
- Federal Lands Highway Program funds may be used for the construction of pedestrian walkways on federal lands in conjunction with trails, roads, highways and parkways.
- The Section 402 Highway Safety Grant Program assigns high priority to pedestrian safety programs and, as a result, expedites the approval process for these efforts.

- Under the Bridge Program, funds used to maintain and rehabilitate bridges in the state can also support the accommodation of pedestrian facilities on bridges if such improvements can be provided at reasonable cost as part of a highway bridge deck replacement or rehabilitation.

9.0 Finance



Overview

This analysis focuses on the long-range financial constraints and opportunities in the JOHRTS area over the 24 fiscal years of this Plan. This evaluation includes the identification of existing and potential sources of transportation funds that may be available within the region.

Federal Transportation Funding Under SAFETEA-LU

This section summarizes available funding from existing federal sources as outlined under the six year SAFETEA-LU legislation. This excludes any required state or local matching funds.

Transit

SAFETEA-LU Transit apportionments to urbanized areas have been estimated for FY 2007, 2008 and 2009. For the TIP and this MTP, JOHRTS is continuing the funding levels for the remaining years at the FY 2009 levels (years 2010-2030). For urbanized areas with populations less than 200,000, funding may be used for either capital or operating expenses at local discretion and without limitation. The apportionment of 5307 transit funds for the plan years is summarized below:

Transit Funding Under SAFETEA-LU					
City	FY 2007	FY 2008	FY 2009	FY 2010-2030	Total
Beaumont	$1,537 K	$1,666 K	$1,772 K	$37,212 K	$42,187 K
Port Arthur	$1,513 K	$1,641 K	$1,746 K	$36,666 K	$41,566 K

Based on historical funding, SETRPC-MPO is using the following estimates for funding of FTA Categories 5309, 5310 and 5311:

Category	2007 – 2030 Total Funding
FTA 5309*	$5,000,000
FTA 5310*	$3,330,000
FTA 5311*	$9,840,000

- FTA 5309, 5310 and 5311funding are programmed at the State level. Funding shown here is estimated for planning purposes only.

Highways

Funding for highways under SAFETEA-LU has kept the program structure of TEA-21, including the streamlined categories and significant program changes.

Preventive Maintenance and Rehabilitation:

These funds may be used for rehabilitation of the Interstate Highway System main lanes, frontage roads, structures, signs, pavement markings, striping, etc. These funds may be used for the construction of interchanges and High Occupancy Vehicle (HOV) lanes on the Interstate Highway System, but may not be used to add new Single Occupancy Vehicle (SOV) lanes:

- Funding category 1
- Annual average funding for the Beaumont District from 2007 to 2010 is $46,098,750
- Historically, SETRPC-MPO receives approximately 41% of the annual amount
- SETRPC has programmed $0 in projects and has a placeholder of $452,173,416
- Funds allocated by the Commission by formula to the districts. Projects are selected by the districts.

Urban Area (Non-TMA) Corridor Projects:

These are funds intended to address mobility and added capacity needs on the major state highway system corridors which serve the needs of urban areas. Corridors are selected by the MPO through the MTP process. Projects are recommended by districts based upon corridors selected by the MPO:

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- Funding category 3
- Annual average funding for the Beaumont District for the plan years is $7,300,000
- Historically, SETRPC-MPO receives approximately 30% of the annual amount
- SETRPC has programmed $183,433,110 in projects.

Statewide Connectivity Corridor Projects:

These funds are allocated to address added capacity and other mobility needs on major state highway system corridors that serve the mobility needs of statewide connectivity between urban and metropolitan areas:

- Funding category 4
- Annual average funding for the Beaumont District from 2006 to 2016 is $37,410,555
- Historically, SETRPC-MPO receives approximately 100% of the annual amount
- SETRPC has programmed $259,644,787 in projects and has a placeholder of $9,711,197
- Projects in this category are identified on corridors that are selected statewide.

Congestion Mitigation and Air Quality Improvement (CMAQ):

This category of funding addresses congestion mitigation and air quality improvements in non-attainment areas. Each non-attainment area receives an annual allocation to expend each year:

- Funding category 5
- Average annual funding for the Beaumont District from 2006 to 2009 is $6,292,250
- Historically, SETRPC-MPO receives 100% of the annual amount
- SETRPC has programmed $36,663,165 and has a placeholder for $114,350,835
- A new call for projects is expected to occur soon to identify projects that are currently in the placeholder.

Consolidated Structures Rehabilitation:

This category of funding addresses the replacement or rehabilitation of eligible bridges on and off the state highway system, and railroad grade crossings and underpasses along the state highway system:

- Funding category 6
- Average annual funding for the Beaumont District from 2007 to 2017 is $12,354,099
- Historically, SETRPC-MPO receives approximately 41% of the annual amount
- SETRPC has programmed $33,431,793 and has a placeholder for $87,747,087
- Projects are prioritized at the state level, placeholder represents an average amount received historically.

Safety:

This category of funding addresses both safety-related projects based on accident data and installation of automatic railroad warning devices at selected railroad crossings on and off the state highway system:

- Funding category 8
- Annual average funding for Beaumont District from 2007 to 2010 is $1,084,125
- Historically, SETRPC-MPO receives approximately 58% of the annual amount
- SETRPC has programmed $0 and has a placeholder for $14,992,152
- Projects selected at the state level based on federally mandated safety indices, placeholder represents an average amount received historically.

Transportation Enhancements:

This category of funding addresses projects above and beyond typical transportation improvements. Funds may also be used to renovate, build and relocate safety rest areas along the state highway system:

- Funding category 9
- Annual average funding for the Beaumont District from 2006 to 2009 is $842,816
- Historically, SETRPC-MPO receives approximately 70% of the annual amount
- SETRPC has programmed $0 and has a placeholder for $14,098,632
- Projects recommended by local government entities, reviewed and recommended by TxDOT and committee, selected at the Commission, placeholder represents an average amount received historically.

Supplemental Transportation:

This category of funding addresses various projects including construction and rehabilitation of roadways within and adjacent to state parks and wildlife refuges; landscaping development projects such as right-of-way development, rest and picnic area development, and environmental mitigation activities; and remaining railroad crossing surfaces and automatic device maintenance needs. This program also includes federal supplemental projects (congressional high priority projects):

- Funding category 10
- Annual average funding for the Beaumont District from 2007 to 2010 is $745,000
- Historically, SETRPC-MPO receives approximately 78% of the annual amount
- SETRPC has programmed all $14,200,000 in projects.

District Discretionary:

This category of funding addresses various projects on the state highway system selected at the district's discretion, and also off system urban and rural mobility projects in coordination with the MPO:

- Funding category 11
- Annual average funding for the Beaumont District from 2006 to 2009 is $11,930,500
- Historically, SETRPC-MPO receives approximately 40% of the annual amount
- SETRPC has programmed $103,661,920 and has a placeholder for $10,870,880
- Funding is allocated to the districts and selected at the district's discretion.

Strategic Priority:

This category of funding addresses Commission-selected projects that promote economic development, provide system continuity with adjoining states and Mexico, and address other various strategic needs:

- Funding category 12
- Historical annual average funding from the Beaumont District for the JOHRTS area from 1995 to 2005 is $6,676,370
- Historically, SETRPC-MPO receives approximately 41% of the annual amount. For this Plan a more conservative $14,000,000 (annual average of $583,333) is used
- SETRPC has programmed all $14,000,000 in projects.

Routine and Contracted Maintenance:

While not a funding category as such, these are funds designated for routine maintenance for the current highway system. This includes routine repairs of guardrails, litter, mowing, potholes, grading etc.

- Annual average funding for the Beaumont District is $27,000,000.
- Historically, SETRPC-MPO receives approximately 41% of the annual amount
- SETRPC does not list this money in the project listing. This program is expected to spend approximately $265,680,000 in the JOHRTS area during the life of this Plan.

Metropolitan Planning:

The SETRPC-MPO from 1999 to 2005 received annual average funding of $459,466 for metropolitan planning purposes, including administration, transportation planning, and project programming activities. The SETRPC-MPO also received annual average funding of $97,512 from FTA 5303 funds.

High Priority Projects:

There are 220 earmarked projects within Texas, seven of which are located within the JOHRTS area, these are:

- 609 and 5000 – Washington Boulevard Improvements – Beaumont
- 1182 – Port of Beaumont Southside Intermodal Project – Port of Beaumont
- 1766 – Dowlen Road Improvements – Beaumont
- 2731 – Downtown Streetscape Improvements – Beaumont
- 2984 and 3366 – Access Road Connecting East Bank Port of Beaumont with I-10 Frontage Road – Port of Beaumont

Overview of MTP Funds

All projects funded in the MTP are categorized by funding type and funding availability. Those projects that have, or will have, funds available for their construction are located in the financially constrained Transportation Improvement Program or the financially constrained portion of the MTP (see Appendix E). MTP projects that do not have a dedicated funding source are located in the financially unconstrained needs component (see Appendix F).

A review of the funding as shown above indicates that the total estimated federal and state funds available from FY 2007 to 2030 is approximately $1,614,658 (not including local funds). A review of the financially constrained projects shows that $645,034,775 of the estimated available federal and state funds are programmed, $969,624,199 are unprogrammed. Of the remaining unprogrammed funds $834,691,287 are monies used for maintenance of the existing system or are subject to statewide competition of funding. Approximately $134,932,912 are monies that can be programmed at the district or MPO local level but have not been (see categories previously).

Photo courtesy of the Orange Convention and Visitors Bureau

Financially Constrained Needs Component

Projects located in this section have dedicated funding sources, which originate from federal, state, or local agencies.[1] Funding categories in this component can also be further classified into obligated and unobligated funds. The obligated and unobligated funds discussed below represent an estimate of the funds available for the JOHRTS area and not the entire TxDOT Beaumont District since the District covers eight counties.

Obligated Funds

These are funding categories whose funds are obligated towards projects in the MTP. Total obligated funds for projects in the MTP are approximately $1,884,583,232. This amount includes approximately $270,000,000 in local funds.

Unobligated Funds

These are federal and state funds that are allocated to the JOHRTS area, but have yet to be allocated to a specific project. Unobligated balances occur due to differences between how the SETRPC-MPO and TxDOT outline their expenditures; the SETRPC-MPO is required to list expenditures for 20 or

1 Note that transit funds are not discussed in this section. The FTA usually distributes these funds over a short time horizon. Please refer to Chapter 4, "Public Transportation," for a detailed explanation of transit funds.

more years, while TxDOT only specifies funds for ten-year periods. Consequently, several funding categories have significant portions of unobligated funds. Total unobligated funds comprise $134,932,912 for the FY 2007 JOHRTS MTP-2030.

Financially Unconstrained Needs Component

Projects listed in this section have no identified funding source during the MTP planning horizon. Total funds required for constructing projects in this component are estimated at $296,545,932.

Other Funding Sources

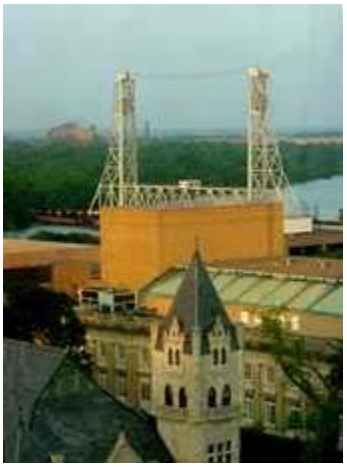
The State provides a baseline level of funding through state mobility funds; however, this funding may not be sufficient to cover the cost of needed improvements. Therefore, it will be up to local transportation officials, agencies and elected leaders to develop sources of revenue to cover any gap in funding. The following provides examples of potential funding sources that are frequently considered by transportation agencies in other areas and are potential options in the JOHRTS area.

Local Option Sales Taxes for Transportation

The use of local option sales tax revenues to fund transportation needs in the southeast Texas region represents a significant opportunity. In general, the State of Texas Tax Code authorizes cities and counties to adopt local sales and use taxes for any purpose other than repaying bonds. Provided the sum of all local option taxes in a given area does not exceed 2%, and the local option tax is approved by referendum, each city and/or county in the southeast Texas region could adopt up to a ½% sales tax that could be earmarked to address transportation system needs.

State Infrastructure Bank

This is a banking system set up by TxDOT with federal and state funds and is designed to encourage local entities to pay a larger share of the cost for highway projects. Local entities may apply for loans, lines of credit, letters of credit, bond insurance, and capital reserves for roadway improvement projects.



Traffic Impact Fees on New Development

Traffic impact fees can be an important element of the transportation funding mix but are best when combined with some other source of funding. Since impact fees can only be used to address the impacts of new development, the revenues cannot be used to address existing transportation needs, operations and maintenance. However, impact fees ensure that new development pays its fair share of the cost to improve the transportation system so as not to exacerbate existing transportation problems. In the southeast Texas region, impact fees used in conjunction with some other form of local transportation funding (like a local option sales tax) would potentially create a complete transportation funding package that would allow the JOHRTS area, in cooperation with TXDOT and local jurisdictions, to meet all the regions transportation needs.

Pass-Through Financing of Transportation Facilities

The use of toll revenue financing is attracting increased attention as a means to complete transportation projects when other funding sources may be limited. Issuing bonds secured by toll revenue gives state and local authorities the ability to accelerate transportation projects that might otherwise not be able to be completed using traditional funding sources. HB 3588 allows TxDOT to enter into an agreement with Regional Mobility Authorities (RMAs) to pay a per-vehicle fee as reimbursement for construction and maintenance of state highways or as compensation for the cost of maintaining facilities transferred to an RMA. Based on pre-determined levels of usage, this approach allows TxDOT to effectively pay 'tolls' on behalf of motorists using a new facility with revenues being derived from traditional funding sources such as gas tax revenues. The 'shadow toll' or 'pass through financing' payments received by the RMA from TxDOT can then be used to repay revenue bonds issued by the RMA to advance the project.

State Tax on Motor Fuels

Some states have begun to evaluate the possibility of extending the retail sales tax to gasoline and dedicating the proceeds for transportation or transit. A number of other states, such as New Jersey, Florida, California, and Maryland, use excise taxes on motor fuels for transportation funds. However, the potential to implement this tax is highly suspect, given the recent rise in gas prices and the subsequent proposals by members of Congress to reduce gasoline taxes.

Photo courtesy of the Beaumont Convention and Visitors Bureau

Bond Issues

The City of Beaumont recently generated significant funds for roadway and other capital improvements through the issue of "Certificates of Obligation", commonly known as bonds. Issuing bonds to fund city improvements largely depends on a favorable bond rating and low interest rates. Funding transportation improvements by issuing bonds remains an attractive option for cities in the JOHRTS area.

Glossary of Transportation Terms and Acronyms

ADA - Americans with Disabilities Act of 1990. Requires public transportation to provide equal access to those with one or more disabilities.

Attainment Area - A metropolitan area which is in compliance with the National Ambient Air Quality Standards identified in the Clean Air Act Amendments of 1990. The JOHRTS area is a non-attainment area.

APT - Annual unlinked passenger trips.

AWT - Average weekday trips.

Bicycle Locker - An enclosed receptacle, accessed by coins, designed to secure bicycles away from the elements.

Bicycle pockets - A lane for bicyclists that is on the inside (closer to the street's center line) of the vehicular lane that is farthest to the right at an intersection. This reduces conflict between right-turning automobiles and bicyclists that are traveling straight through the intersection.

Bicycle Rack - A small, fixed framework designed to secure bicycles.

Bike Lane - A portion of a roadway designated by striping, signing, and pavement markings for the preferential or exclusive use of bicycles.

Bike Path - A bikeway physically separated from motorized vehicular traffic by an open space or barrier and either within the highway right-of-way or within its own right-of-way.

Bike Route - A segment of a system of bikeways designated by the jurisdiction having authority with appropriate directional and informational markers. Bike routes are shared with vehicular traffic.

Bikeway - any road, path, or way which in some manner is specifically designated as being open to bicycle travel, regardless of whether such facilities are designated for the exclusive use of bicycles or are to be shared with other modes of transportation. An all-inclusive classification.

CBD - Central Business District

Class I Rail Lines - Rail lines operated by large-scale railroad corporations that serve a nationwide market.

Class III Rail Lines - Small-scale rail lines that are usually locally operated and function only within a single state or a few contiguous states; also called short lines.

Clean Air Act Amendments of 1990 (CAAA) - Identified vehicles as one of the primary sources of pollution and called for stringent new requirements in metropolitan areas and

states where attainment of National Ambient Air Quality Standards (NAAQS) is a potential problem.

CMAQ - The Congestion Mitigation and Air Quality Program provides funding for attainment of clean air standards under the CAAA.

Conformity - A process defined in the Clean Air Act Amendments and required for nonattainment areas which involves assessing the compliance of a transportation plan, program or project with the State Implementation Plan (SIP).

Curb Lanes - Narrow lanes existing alongside the curb of the street, often included with the construction of the curb. These lanes can be used by bicyclists as bike lanes.

Enhancement Funds - see Transportation Enhancement Funds

FAA - Federal Aviation Administration

FHWA - Federal Highway Administration.

FHWA "Design Cyclist" Classification - Bicycle riders are grouped into one of three categories, Group A, B, or C, depending on level of experience.

- Group A - Advanced Bicyclists: Experienced riders who can operate under most traffic conditions; they comprise the majority of current users on collector and arterial streets.
- Group B - Basic Bicyclists: Casual or new adult and teenage riders who are less confident of their ability to operate in traffic without special provisions for bicycles.
- Group C - Pre-teen riders whose roadway use is initially monitored by parents, eventually they are accorded independent access to the system.

Fixed Guideway - A mode of transportation comprised of vehicles that can only operate on their own guideways (i.e. rapid rail and light rail).

FLH - Federal Lands Highway Program.

FTA - Federal Transit Administration.

HOV - High Occupancy Vehicle

HBW - Home Based Work (HBW) trip or trip purpose. A HBW trip's origin or destination end of the trip occurs at the home and is work related.

HBNW - Home Based Nonwork (HBNW) trip or trip purpose. A HBNW trip's origin or destination occurs at home and the trip purpose is non-work related (i.e. shopping, school, or recreation).

ICC - Interstate Commerce Commission

Intermodal - The interaction of various modes of transportation, particularly as it relates to connections, choices, coordination, and cooperation.

ISTEA - Intermodal Surface Transportation Efficiency Act. The Act was signed into law on December 18, 1991, and was effective for a six-year period (federal fiscal year 1992 through 1997). ISTEA resulted in broad changes to the way transportation decisions are made by emphasizing diversity and balance of modes and preservation of existing systems over construction of new transportation facilities.

JOHRTS – Jefferson-Orange-Hardin Regional Transportation Study

Long Range Transportation Plan - A 20-year Plan (minimum horizon required by ISTEA) which is required for both metropolitan areas (greater than 50,000 population) and states. The Plan must consider social, environmental, energy, and economic factors in determining overall regional and state goals.

LOS - Level of Service. The Highway Capacity Manual defines six levels of service, ranging from LOS A (best) to LOS F (worst).

Mode - A means of transporting people and goods that includes automobiles, transit (i.e. buses, carpooling, HOV lanes, fixed guideway), bicycling, walking, air travel, railroads, waterways, and trucking.

Model - A mathematical representation of relationships within a system that is used to analyze various conditions based on changes in the relationships. For example, in transportation, future travel demand can be forecast based on changes or projections in socio-economic data.

MPO - Metropolitan Planning Organization. The agency designated by the governor of each state to carry out long range transportation planning for a designated metropolitan area. SETRPC serves as the MPO for the JOHRTS area.

Multimodal - Involves all modes of transportation.

NAFTA - North American Free Trade Agreement.

Nationwide Personal Transportation Study (NPTS) - The NPTS conducted by the Bureau of the Census has been the primary source of national data on travel patterns and frequency, transit use by trip purpose, and the characteristics of transit users compared to other travelers.

NHB - Non-home Based (NHB) trip or trip purpose. Neither the trip origin nor destination is associated with the home.

NHS - National Highway System.

No Build - As in No Build assignment. A phrase used to describe a future transportation network that does not include any additions or enhancements. Generally, it is the exact transportation network used in the base year analysis (i.e. 1990 or 1997).

Nonattainment Area - A metropolitan area which is not in compliance with the National Ambient Air Quality Standards. Areas can be considered nonattainment for one or more pollutants including carbon monoxide (CO), ozone, and particulate matter (PM). In

nonattainment areas, long range plans and Transportation Improvement Programs (TIPs) must demonstrate conformity with the State Implementation Plan (SIP) before receiving approval, and thus, federal funding for transportation improvements. JOHRTS is a non-attainment area.

Park-n-Ride - A transit access mode. The term is derived from the fact that people drive their cars to a transit stop, park their vehicles in area designated for parking, and then ride the transit system.

Recessed Stop Lines - Stop lines are stripes painted on road surfaces at intersections to indicate the stopping location for automobiles. Moving these lines back (away from the centerpoint of the intersection) allows stopped bicyclists in a bicycle lane to be within the viewing angle of the stopped automobile traveling in the same direction.

Roundabouts - (Traffic Circles) These are actually mini-roundabouts involving the placement of an island (usually landscaped) in the middle of a residential street intersection. Roundabouts have been effective at reducing motor vehicle speeds and the number of collisions. The cost for each traffic circle is about $5,000 to $6,000 (USDOT, Case Study 19).

ROW - Right of Way. A term that generally indicates a strip of land or property acquired or designated for transportation purposes.

SETRPC – South East Texas Regional Planning Commission. SETRPC is the MPO for the JOHRTS area.

SIP - State Implementation Plan. Each state is required to develop a plan to ensure attainment of National Ambient Air Quality Standards.

STIP - Statewide Transportation Improvement Program. The STIP includes projects to be implemented throughout Texas consistent with the Statewide Transportation Plan.

Surface Transportation Program (STP) - A funding category which provides flexibility in the expenditure of "road" funds for non-motorized and transit modes, and for a category of activities known as transportation enhancement, which could be used to enhance the historic, environmental, and multimodal characteristics of the transportation system.

TIP - Transportation Improvement Program. The TIP is a financially constrained short-range document that lists specific projects to be implemented within the JOHRTS area. Projects included in the TIP must be consistent with the long-range plan, and inclusion of projects in the TIP is a requirement for the use of federal transportation funding.

TPT - Total person trips.

Traffic Analysis Zone (TAZ) - A geographic division of the urban study area used in planning to aggregate socio-economic characteristics, determine number of trip generated, and represented by a centroid when used for traffic assignment purposes.

Transportation Enhancement Activities (TEAs) - A range of ten projects with an objective that extends beyond that of providing a transportation function (e.g. bicycle facilities). Eligible for Transportation Enhancement Funding.

Transportation Enhancement Funds - A sub-allocation of the STP program to be used for transportation projects that represent efforts over and above what would normally be undertaken.

Transportation Management Area (TMA) - Urbanized areas with over 200,000 population are designated as TMAs. Within each TMA, plans and programs must be based on a continuing and comprehensive transportation planning process carried out by the MPO in cooperation with the State and local transit operators.

Transportation System Management (TSM) - TSM includes relatively low cost expenditures used to improve the efficiency and safety of the existing transportation system (i.e. intersection modification, traffic signalization, and signal timing coordination).

Urbanized Area (UZA) - A geographical designation applied within metropolitan areas by the US. Census Bureau following each decennial census. The boundaries of the UZA are based on population density and are used to separate rural from urban populations for purposes of statistical analysis and some federal programs. A UZA consists of a central city and the surrounding closely settled territory ("urban fringe"). The urban fringe is defined as a contiguous area that is incorporated with a population of 2,500 or more or with a population density of 1,000 persons or more per square mile. Unincorporated areas are included if they have a density of 1,000 persons or more per square mile. If an area has a density of less than 1,000 persons per square mile the area is included as long as areas that do conform surround it.

US DOT - US. Department of Transportation.

V/C Ratio - Volume (V) to Capacity (C) ratio representing demand over supply. Demand is expressed as vehicles per hour per lane, or volume, and capacity is maximum number of vehicles that can pass over a given section of roadway.

VOMS - Vehicles operated in maximum service.