

# South East Texas Regional Public Transportation Coordination Plan

## TASK 3.4 REPORT ON CONSTRAINTS FOR EXPRESS BUS SERVICE

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# Introduction

Express bus is a service that provides riders a direct, quick connection to limited destinations. Express buses are often used to connect individuals to employment opportunities, and can provide workers living in a highly congested area with an alternative to their daily commute. An express bus boasts quicker trip times than other forms of public transportation because it has fewer stops and limited destinations with dedicated routes. In addition to alleviating congestion, express bus service can provide a community with an alternative means of maximizing employment and educational opportunities for its citizens, particularly those who are transit dependent. Transit dependent individuals are persons who must rely on public transportation services due to a lack of access to a personal vehicle. Though express bus service is targeted at the general population, it provides a valuable opportunity to transit dependent individuals who have difficulty accessing work or school.



As part of the South East Texas Regional Public Transportation Coordination Plan (RPTCP), the South East Texas Regional Planning Commission (SETRPC) is conducting a study to determine if there is a need for an express bus service in the southeast Texas area. An express bus service in southeast Texas could connect major local employers, institutions of higher education, or other concentrated centers, such as large shopping centers, enabling residents who either rely on public transportation or simply have trouble commuting to acquire greater access to employment opportunities, educational opportunities, and services. While the focus of the express bus service would be on connecting riders to either jobs or school, the service will also allow individuals the opportunity to connect from the express bus to the fixed-route public transportation systems currently operating in Beaumont and Port Arthur. Beaumont Municipal Transit (BMT) and Port Arthur Transit (PAT) would both be accessible from the express bus service, boosting economic opportunity in the area. The express bus service would benefit local industry by providing a steady stream of employees and customers who were previously cut off from the organization. Because an express bus service requires additional planning and funding over current public transportation outlays, the service should only be initiated if a demonstrated need and desire are present.

As part of the express bus study, the SETRPC considered the possible constraints on an express bus service. Constraints are the real or perceived obstacles to implementing a program, project, or policy. This document details the data collection process and outcomes used to compile a list of constraints, as well as a detailed discussion of the nine constraints identified during the study. Recommendations for overcoming the constraints will be provided in a later document.

## SECTION 1.0: DATA COLLECTION PROCESS AND OUTCOMES

Performing a constraints assessment allows planners to understand the obstacles to implementation during the planning phase of a program, project, or policy rather than during the implementation phase. Understanding the constraints prior to drafting a plan provides for a tailored approach to implementation that addresses obstacles before they arise. By anticipating problems before they happen, the plan can avoid the obstacle altogether, increasing the likelihood for the plan's success. Additionally, identifying and examining any possible constraints allows planners to develop recommendations for overcoming the obstacles during implementation.

To identify constraints, the SETRPC performed a literature review, examined previous studies, and consulted past constraints reports. Planning staff conducted computer-based research to collect reports and other literature concerning constraints on an express bus service or a Bus Rapid Transit (BRT) service, which is a more expansive version of an express bus. BRT is an umbrella term that includes a range of transit services that go beyond the service offered by traditional fixed-route bus systems. BRT attempts to mimic the service provided by rail transit while eliminating the added costs of converting from bus service to rail service, though critics argue that the wide array of services included under the BRT umbrella fail to meet the quality offered by rail transit. Express bus provides the minimum requirements of BRT, including reduced headways, speedy service, limited stops, quicker routes, faster boarding, and quicker fare collection. Advanced BRT systems and express bus share similar concerns, such as similar infrastructure needs, route planning, and limited resources.

Among the documents reviewed, several items offered applicable data. The Santa Clara Valley Transportation Authority (VTA) published an in-depth report in 2007 on Bus Rapid Transit Service Design Guidelines that, while outlining a more advanced version of an express bus service, offered information useful to this study. Infrastructure needs, vehicle needs, fare collection, parking, and route design are all discussed within this report, demonstrating the obstacles and limits to beginning an express bus service. Like the VTA guidelines, other reports highlighted similar concerns for the implementation of express bus service. The Valley Metro Regional Public Transportation Authority in Phoenix released their commissioned RPTA Freeway Express Bus/BRT Operating Plan Final Report in October 2007. The report examined the agency's eleven-month Freeway Express Bus/BRT Operating Plan and provided recommendations based on the results. The document details the planning and infrastructure needs for an express bus service, including route planning, scheduling, purchasing vehicles, and parking concerns. The Madison (Wisconsin) Area Transportation Planning Board, which is a Metropolitan Planning Organization (MPO) as is the SETRPC, has published materials related to its ongoing Transit Corridor Study into implementing a BRT system. The study has revealed system needs such as parking, bus stations, vehicles, route design, fare collection, Intelligent Transportation Systems (ITS), and branding that act as constraints on service implementation. Each of the issues identified in these reports can act as constraints on the proposed express bus service in southeast Texas, depending on the type and level of service that best fulfills the needs of the community as determined by the results of this study.

During the constraints assessment process, the SETRPC also consulted past constraints reports concerning regional public transportation coordination in southeast Texas. Staff identified the September 2006 Report on Barriers and Constraints to Coordination for Regional Public Transportation Coordination Plan as relevant to the constraints assessment for the express bus study. This document cites funding limitations, urban and rural boundaries, and lack of awareness among the issues facing regional coordination. Of the barriers, which are statutory limitations, and constraints discussed in the report, these three issues are the ones likely to become obstacles to the express bus service.

The SETRPC identified nine constraints during the assessment process: funding, rural and urban boundaries, infrastructure, vehicles, fare collection, parking, lack of awareness, route design, and scheduling to fit work and school schedules. Each of these constraints will be analyzed and discussed in Section 2.0 of this document.

## SECTION 2.0: CONSTRAINTS

If a decision is made to conduct an express bus service in southeast Texas, planners must know the potential obstacles to project implementation. After they were identified during data collection, constraints were evaluated to determine the effect that they will have on the express bus service pilot project if it is implemented. Because constraints can be either “real” or “perceived,” the discussion concerning each constraint classifies the obstacle as “real” or “perceived” and provides reasons for the determination. Each of the nine constraints is discussed below, including a description of the constraint, its impact, and its classification as “real” or “perceived.”

### **Constraint:** Funding

**Description:** The greatest obstacle to implementing any new project is funding. A lack of funding and the difficulty in obtaining additional monies limits opportunities for project implementation. Because funding is limited, communities must decide how best to use their resources to maximize the benefits they provide. A new project, such as the express bus service, must prove its worth before resources can be designated for its purposes. In addition to the issue of limited resources, funding also becomes a constraint on the express bus service because of overlapping service areas and dedicated funding, which will be further discussed below.

**Impact:** The most obvious way that funding impacts the express bus service is by determining budgetary decisions. In addition, limited funding impacts the express bus service by reducing the opportunities to implement the project and by hindering the quality of the service once the project is implemented. Ridership may be affected if the service must be limited to certain subsets of the population due to either limited funding or funding restrictions. Funding may also impact the service coverage throughout the three county region.

**Real or Perceived?:** Funding is a **real** constraint on any project or program. If the express bus service moves forward toward implementation, the funding constraint will need to be resolved in order for the project to become a reality.

### **Constraint:** Rural and Urban Boundaries

**Description:** Implementing an express bus service would require a transportation provider to cross rural and urban boundaries in order to connect the major centers identified throughout the three county region, such as the four campuses in the Lamar University system. Because certain funding sources apply only to rural areas, the express bus service provider would need to ensure that rural transit funding did not pay for residents of urban areas. Origin and destination points will occur on either side of the boundaries, with one passenger's origin being another passenger's destination. In some instances, rural transit providers may be tasked with connecting rural residents to the express bus system. For example, an Orange resident could contact Orange County Transit (OCT) for a ride to Lamar State College – Orange where the individual could meet the express bus service for a ride to Lamar University in Beaumont. Because of the role that rural transit services will have in connecting riders, the express bus service may increase the demand on rural transportation services.

**Impact:** Rural and urban boundaries impact available funding because of the rules attached to some grants. Additionally, boundaries will affect route design as riders are connected from origins and destinations on either side of the boundaries. This constraint may also impact ridership characteristics, service demands, and how different areas are served.

**Real or Perceived?:** Rural and urban boundaries are a **real** constraint and will need to be considered throughout the implementation process, particularly during route design. The impact of rural and urban boundaries can be alleviated by limiting rides offered by rural on-demand transit providers to rural residents and avoiding allocating rural transit funding to the express bus service.

## **Constraint:** Infrastructure

**Description:** Implementing an express bus service will both impact current infrastructure and create infrastructure needs. The service will affect current infrastructure such as roads by changing the demands on them. While the express bus service has the potential to reduce congestion on local highways if it becomes successful, in the short term it will add extra wear and tear from the buses. Additionally, the buses may impact traffic due to their size, maneuverability, and route design.

The express bus service may also require additional infrastructure such as bus stops, ticketing areas, and a park and ride facility. Passengers will need to load and unload at a designated location, requiring either the installation of a bus stop or the usage of an existent bus stop or other loading area. If the infrastructure is lacking, the project may require that a platform or shelter be built. The express bus service must assure the safety of riders when loading, unloading, or waiting for a bus. The eventual design and route selection for the service will determine the actual needs of the service, but infrastructure will be a driving force in the implementation plans for the service. Infrastructure used for the express bus service will need to be ADA compliant, which is an additional concern during the planning process.

Infrastructure also requires maintenance. Planners must determine who will maintain the infrastructure and must design a maintenance schedule. Funding must also be allocated for maintenance.

**Impact:** Infrastructure needs will require additional time and investment into the express bus service, though the service will initially be offered during a pilot project. Planners will need to balance the infrastructure developments that will proceed versus the time commitment established by the pilot project. This constraint will impact the project budget and will limit the express bus service to origins and destinations with useable infrastructure already in place. If additional infrastructure is required, right-of-way may also become an issue for the express bus service.

**Real or Perceived?:** Infrastructure needs are a **real** constraint that will shape the final design of the express bus service due to the level of funding and the reduced time commitment available during the pilot project. During the service roll out, a massive investment in infrastructure such as bus stops and a park and ride facility would be out-of-reach and unrealistic. As a result, planners will need to find a way to work around the infrastructure constraint.

## **Constraint:** Vehicles

**Description:** The need for vehicles is a constraint on the express bus service because the service cannot exist without designated vehicles. The express bus service will require at least one vehicle to get started, but a minimum of four vehicles will likely be needed in order for the service to be functional because of the various originations and destinations. If an express bus service connects individuals to employment or educational opportunities, the riders must reach their destinations according to their work or school schedules, which will require buses to leave from and arrive to multiple destinations at the same time. For example, three separate buses will be needed to connect Lamar State College – Orange, Lamar State College – Port Arthur, and the designated Hardin County origination point in order for all students to arrive at Lamar University in Beaumont for classes. Additionally, students leaving Lamar University in Beaumont for one of the other campuses will likely be leaving before the buses arrive from the other locations. The express bus service vehicles will also require maintenance, which must be included in the implementation plan.

**Impact:** Purchasing vehicles for the express bus service will add to the cost of the program. Because the service will initially be offered through a pilot project, funding for vehicles will be limited. The lack of vehicles will impact service quality, budget needs, and the ability to implement the program. Not purchasing enough vehicles to offer a functional express bus service may prevent the service from attracting enough riders to be successful.

**Real or Perceived?:** Vehicles are a **real** constraint because the service cannot be implemented without sufficient vehicles. Funding is a major concern because vehicles can be costly, and high costs are a disincentive to offering a pilot project. Applying for grants to purchase environmentally friendly buses may be an option for overcoming this constraint.

### **Constraint:** Fare Collection

**Description:** Fare collection is a constraint because an express bus service relies on swift fare collection in order to provide speedier service. Fare collection can occur on-board with little investment, but on-board collection adds time to the ride. Off-board collection can be done in advance but requires additional investment.

**Impact:** The method of collecting fares will impact headways, as well as how the service is implemented. This constraint will also determine budgetary needs.

**Real or Perceived?:** Because the express bus service proposed for this pilot project is aimed at connecting individuals to employment and educational opportunities rather than speeding up commutes, fare collection may be a **perceived** constraint. Additionally, this service will have few stops, meaning that fare collection will only take place once or twice during a ride.

### **Constraint:** Parking

**Description:** Parking needs will be determined by how the express bus service is implemented. If the bus service focuses on transit dependent clientele with few individuals who own a personal vehicle accessing the service, then parking needs will be minimal and inconsequential. However, if the express bus service serves commuters who require parking for their vehicles, then parking may become a legitimate constraint on the service. Planners must consider the parking available at selected origination and destination points and its ability to meet needs.

**Impact:** Needed and available parking will impact the selection of origination and destination points, as well as budgetary needs. Available parking will impact the ridership because insufficient parking will prevent non-transit dependent individuals from accessing the service.

**Real or Perceived?:** Parking may become a real constraint as the express bus service grows, but during the initial pilot project parking will likely be a **perceived** barrier because the initial service offering will be focusing on connecting individuals to employment and educational opportunities that they have been unable to access, which includes mainly transit-dependent individuals.

**Constraint:** Lack of Awareness

**Description:** Transit awareness in general is low, meaning that the express bus service will be in an uphill battle to draw in potential riders. An express bus service will be new to the area, and a new service requires special marketing to ensure that the targeted ridership knows what it is and how to use it.

**Impact:** Lack of Awareness will impact the budgetary needs of the express bus service because funding will need to be allocated for marketing. A lack of awareness may translate into fewer riders, which would result in an unsuccessful project.

**Real or Perceived?:** Lack of awareness is a **real** constraint that must be overcome in order for the express bus service to be successful. If the targeted ridership does not know that the service is available, then few will use it.

**Constraint:** Route Design

**Description:** The express bus service will require the design of a new route based upon the origins and destinations selected for the service. The routes must maximize coverage with few vehicles. Though the express bus service will begin with limited vehicles, the project must serve all three counties in southeast Texas. The bus routes will need a schedule with days of service and service hours, which will need to align with the schedules offered by the bus destinations. Bus routes for the express bus service must coordinate with current bus routes offered by the fixed-route services provided by BMT and PAT.

**Impact:** The bus route design will impact ridership, service quality, and coverage of service. Some desired origins or destinations identified during the public involvement phase may have to be eliminated due to route design issues.

**Real or Perceived?:** Route design is a **real** constraint because it will limit the service area and possibly reduce the ridership by offering inadequate coverage or by eliminating origins and destinations.

**Constraint:** Compatibility with Work or School Schedules

**Description:** The purpose of the express bus service is to connect individuals to employment and educational opportunities. The express bus service will only be useful to riders if it is compatible with their work and school schedules. For a standard eight-to-five schedule, for example, the first bus would need to arrive at the destination before eight o'clock, and the final bus would need to pick riders up around five o'clock. For transit dependent individuals, connecting to the express bus service from the current transit providers may be difficult due to the service hours of those providers, which is a consideration for the express bus service planning process. The destinations selected for the service will determine the earliest necessary arrival times. If the express bus service is connecting riders to Lamar University, for example, the bus must arrive at the school at a time that allows riders to attend scheduled classes. If the express bus service is connecting riders to a place of employment, then the bus must arrive by the time work begins.

**Impact:** The most important impact is that the service may not work. For the pilot project, the service may be limited to the local university and colleges because there are classes available after eight o'clock, which will allow transit dependent individuals the time required to connect to the express bus service through the current transit providers.

**Real or Perceived?:** The need to be compatible with work or school schedules is a **real** constraint because the express bus service cannot work if riders cannot rely on it to get to work or school on time.