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Updated Guidebook: Using Public Transportation to Facilitate Last Mile Package Delivery

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UPDATED GUIDEBOOK: USING PUBLIC TRANSPORTATION TO FACILITATE LAST MILE PACKAGE DELIVERY

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DISCLAIMER

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GUIDEBOOK OVERVIEW

This guidebook provides public transit agencies in rural Texas communities with the information necessary to implement a package delivery service in coordination with a private package delivery partner.

Chapter 1 introduces the guidebook, describes its purpose, describes the opportunity to provide package delivery via rural transit, and documents findings from previous phases of research.

Chapter 2 reviews the current package delivery industry and describes the needs that rural transit agencies might be able to fill by providing service.

Chapter 3 outlines the opportunities for service provision in more detail and highlights specific market segments for rural transit agencies to pursue.

Chapter 4 documents the challenges that may arise when implementing rural transit package delivery services.

Chapter 5 provides examples of possible service models and documents current package delivery pricing models used by other entities.

Chapter 6 documents the outcomes and lessons learned generated by two pilot package delivery services implemented using guidance from previous chapters.

CHAPTER 1. INTRODUCTION AND BACKGROUND

The Texas Department of Transportation (TxDOT) funded Research Project 0-6891, conducted by the Texas A&M Transportation Institute, to learn more about coordinating package delivery service between private package delivery providers and rural public transit operators. This research project developed an understanding of opportunities to address current gaps in existing package delivery service by coordinating the network of intercity bus carriers and rural transit agencies in Texas.

Other than this guidebook, project outcomes include:

- Documentation of best practices.
- Descriptions of challenges.
- A review of policy implications.
- Documentation of potential for revenue generation.
- Opportunities for greater connectivity and service points.
- A pilot package delivery service.

The next section describes the purpose of the guidebook—the opportunity for rural transit agencies to deliver packages—and documents previous efforts related to this research project.

GUIDEBOOK PURPOSE

This guidebook is designed to inform rural transit operators of how to implement a package delivery service using information and input gathered from the state-of-the practice scan, the fact-finding questionnaire, and stakeholder workshops. The guidebook summarizes the fiscal, coordination, and transportation impacts of rural transit package delivery service and provides elements for consideration in developing and implementing package delivery service using rural transit services.

The guidebook includes the following sections:

- Review of the state of the practice.
- Opportunities for services and markets.
- Challenges associated with service provision.
- Potential service models and example service pricing.
- Appendices.

OPPORTUNITY TO BROADEN RURAL TRANSIT SERVICES TO INCLUDE PACKAGE DELIVERY

Texas is home to over 26 million residents—a number that is expected to grow to approximately 45 million by 2040 (*1*). Commerce and quality of life in Texas depend on the daily delivery of millions of tons of goods shipped efficiently and affordably over the Texas freight transportation system by a network of highways, railways, waterways, ports, airports, pipelines, and land ports-of-entry. The multimodal freight transportation system efficiently connects local, regional, national, and global markets. With population levels increasing and growth in online purchasing

and e-commerce, the state's transportation network can expect increasing levels of freight movements.

The last portion of the freight delivery trip is referred to as the last mile and represents the largest and most inefficient portion for carriers. This inefficiency is especially true in rural areas where customers may be spaced far apart. One consequence is that large package delivery carriers add fuel surcharges to rural packages, increasing the costs for rural residents. Improved efficiency of last-mile deliveries will benefit rural residents and freight carriers.

The Texas Freight Mobility Plan recognizes this issue and recommends facilitation of connections between local governments and the freight industry to enhance connectivity and develop solutions to last-mile challenges (*1*). Additionally, it states that Texas, "should invest in strategies and solutions that link the different freight transportation modes" and cites the following opportunities:

- Ensure the development of a system with adequate and available access points that facilitates the use of alternative modes beyond trucking to alleviate capacity concerns on highways (e.g., truck-rail facilities).
- Emphasize project selection criteria in the TxDOT planning process that support and prioritize funding of first- and last-mile connectors in locations with regional, statewide, and national significance, including both urban and rural connectors (*1*).

Rural transit agencies and intercity bus carriers are an important component of the Texas multimodal transportation system. Rural transit agencies operate demand-response, door-to-door, or curb-to-curb service throughout Texas, providing critical connections to goods and services for rural residents. In addition, intercity bus carriers offer package delivery services that can often deliver a package the same day it is shipped and provide direct connectivity between origins and destinations without the need for a distribution center.

This network of rural transit agencies and intercity bus carriers may effectively bridge the last-mile gap in package shipping from the freight drop point to the final destination by providing last-mile package delivery services in exchange for a service fee. These service fees, an alternative revenue stream, could offer rural transit operators the opportunity to operate more sustainably and potentially leverage additional state- and federal-level funding sources by providing funding for local match. Additionally, new service and greater connections in rural areas could improve quality of life.

RESEARCH PROJECT BACKGROUND

This section summarizes the activities used to develop this guidebook from tasks completed in the project and highlights relevant findings, including the state-of-the-practice scan, the fact-finding questionnaire, and rural and intercity bus workshops.

State-of-the-Practice Scan

Researchers aimed to describe the current last-mile package delivery environment through a scan of the historic and current state of the practice to establish a baseline understanding of package

delivery services in the United States and provide a better understanding of the opportunity for rural transit agencies to participate in freight delivery as a last-mile solution.

Documentation for this activity provided the following:

- The history and current state of the practice of last-mile package delivery services.
- The involvement (depth and breadth) of transit agencies in such services.
- Non-transit last-mile package delivery options.
- The network of intercity bus carriers that may interline with rural transit agencies.
- Relevant legislation, policies, and practices that affect package delivery operations.
- Specific examples found in existing literature of last-mile package delivery using rural transit.

The scan included a review of relevant literature, currently available services, and other information, including local, regional, state, and federal laws pertaining to package delivery. Key findings from the state-of-the-practice scan are:

- In recent years, large service providers have documented increased demand for package delivery. The growth of online shopping (or e-commerce) contributed most to the increase of package volumes.
- Package deliveries in rural areas of Texas face challenges from infrastructure deterioration and a population that is decreasing, aging, and dispersed.
- The last mile of the logistics chain, which accounts for a large proportion of shipment costs and complexity of operations, is often the most inefficient. In rural areas, low residential density adds distance and time to delivery routes.
- Package delivery companies are investing in methods to reduce the cost of delivering packages. Possible solutions may include the use of centralized package pickup, dropoff locations, and package delivery on buses.
- The Federal Transit Administration (FTA) has no specific guidance on package delivery using public transportation vehicles. Due to considerations of complying with regulations and ensuring safety operations, adding cargo operations to a passenger service may require adjustments to operational and procedural practices for both the operating agency and driver performing the movement.
- The literature review indicated that providing package delivery services as a means of augmenting transit agency revenue is not a concept that is currently under investigation by researchers and public transit agencies; however, private intercity bus operators have a long history with package delivery.

Fact-Finding Questionnaire

To gather data directly from stakeholders through a fact-finding questionnaire, researchers identified relevant types of stakeholders for package/freight delivery coordination between public rural transit agencies and the private sector. Types of stakeholders included FTA, TxDOT, rural transit agencies, and private-sector companies. The scope of work envisioned primarily using an online questionnaire, but the research team expanded the data collection effort to include virtual meetings with private-sector companies.

Findings from the stakeholder questionnaire built upon the baseline state-of-the-practice information collected and ascertained current experience with and interest in freight delivery as a last-mile solution.

Key findings from the questionnaire are as follows:

- Seven out of 37 Texas rural transit agencies have experience with at least one of the following forms of delivery: meals-on-wheels, package delivery, and freight haul. Five out of the seven are involved in package delivery now or were in the past.
- The primary motivations for delivering packages on buses is that this service can generate additional revenue, facilitate coordination between agencies, and benefit community partnership. Package delivery revenue averaged approximately $4,724 each year and ranged from $1,800 to $10,000.
- Keys to success for package delivery or freight haul include good communication, mutually beneficial arrangement, sufficient marketing, and detailed procedure on package tracking.
- Barriers to adopting package delivery on buses include lack of a proper contact person in package carrier companies, relative low revenue compared to the effort to coordinate package delivery, and the increasing need of on-demand package delivery service.

Rural and Intercity Bus Workshops

To develop dialogue between stakeholders and investigate the findings of the state-of-practice scan and fact-finding questionnaire more thoroughly, the research team facilitated a series of stakeholder workshops to capture rural transit agency and private intercity bus carrier perspectives on using public transit to facilitate last-mile package delivery in rural areas.

The workshops acted as a platform to inform participants and gain feedback on possible options, challenges, barriers, advantages, and disadvantages of using public transit to facilitate package delivery as well as to discuss opportunities for coordination of package delivery between the public and private sectors. Stakeholders, including representatives from the 37 Texas rural transit agencies, private and public intercity bus operators, private package delivery interests, TxDOT, and others, were invited to participate in the workshops.

The workshops revealed that transit agencies and private package carriers are equally interested in the concept of last-mile package delivery and perceive similar benefits:

- Additional reach and market share.
- Increased ridership.
- Increased revenue.
- Opportunities to collaborate on service provision beyond package delivery.

There is not a one-size-fits-all way to implement package delivery in rural areas. The type of package delivery service is dependent upon local/regional markets and the size/capacity of the local partner. The diversity of potential markets is substantial.

Package delivery can offer transit agencies the opportunity to provide an additional service to their customers and improve rural residents' accessibility to good and services. It can provide additional service points from private carriers. Funding partners (FTA, TxDOT, metropolitan planning organizations [MPOs], and others) will need to be educated about this concept to ensure that such programs are executed in the same way throughout Texas. It is crucial to have support from funding agencies to ensure successful programs.

CHAPTER 2. REVIEW OF STATE OF THE PRACTICE

This chapter reviews the state of the practice of package delivery, including the challenges associated with package delivery in rural areas and the increased costs to deliver packages, and describes existing examples of rural package delivery partnerships.

CHALLENGES FOR PACKAGE DELIVERY IN RURAL AREAS

Infrastructure deterioration and a population that is both decreasing and aging are the two major challenges that rural areas of Texas face for package delivery.

Infrastructure Deterioration

The condition of the infrastructure in rural areas is a concern for cargo and package pickup and delivery because current infrastructure and design standards/policies have not kept pace with changes in the freight industry (*1*). According to the Texas Freight Mobility Plan, of the 768 projects that are currently under planning or development, 511 projects (67 percent) are located in rural areas of Texas (*1*). Researchers have identified several policies that address connections between rural and urban areas and first- and last-mile connectors, and many apply to rural areas. The objectives of the policies are listed as follows:

- Emphasize project selection criteria in the TxDOT planning process that support and prioritize funding of first- and last-mile connectors in locations with regional, statewide, and national significance, including both urban and rural connectors.
- Identify, preserve, protect, and invest in first- or last-mile connector routes from the Texas Freight Network to freight gateways and generators, such as ports, international ports-of-entry, and intermodal facilities.
- Improve and strengthen Texas's rural freight transportation system to enable the transport of energy, food, and other critical raw materials.
- Strengthen rural economic development opportunities through alternative modal options and connectivity.

Aging and Dispersed Population

Texas has the largest rural population in the United State—6,197,604 in 2010. Rural population increased 7.5 percent from 2000 to 2010, but rural population is aging while increasing. The Texas State Demographer's Office estimates that as baby boomers continue aging and longevity increases, the percentage of the population that is age 65 or over is expected to grow nearly 300 percent over the next 30 years. Projections indicate that as people retire, they are expected to leave large urban centers and settle in rural areas of the state.

The average population density in rural transit agencies was 24 persons per square mile in 2010—indicating very low-density, dispersed populations. Although total rural population in Texas is increasing because counties near metropolitan areas and along the border are growing rapidly, the percentage of the state's population residing in rural areas is expected to decrease over time. In counties in west Texas, the Panhandle, and some counties south of San Antonio, population is declining, and the migration of seniors is not expected to increase the density of

population in rural areas. Figure 1 illustrates the projected decline in population in several counties around the state by 2040.

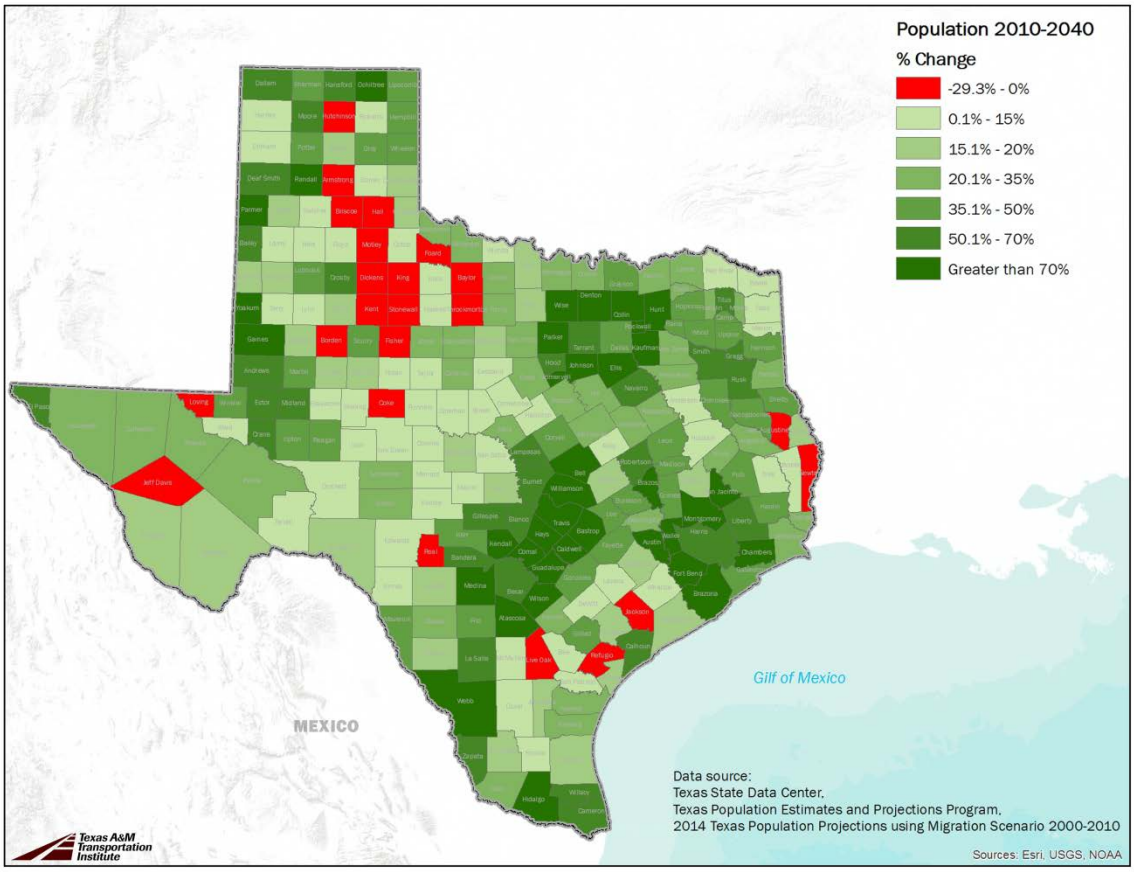


Figure 1. Projected Percent Population Change by County, 2010–2040.

An aging rural population introduces challenges related to the ability of people to drive themselves to goods and services. Online shopping with package delivery presents an alternative to visiting a retail establishment and may be a means to acquire products for those with limited mobility options. A dispersed population in low-density rural counties reduces the sustainability of private carriers due to greatly increased delivery cost.

Increased Costs to Deliver Packages

The last mile in the package delivery logistics chain accounts for the largest proportion of shipment costs and is often the most inefficient for carriers (*2*). In growing urban areas, the inefficiencies stem from the increasing number of delivery points, which add distance and time to current delivery routes. In rural areas, the challenge of increased delivery distance is exacerbated by the fact that, due to low residential density, there are fewer customers to cover the costs of providing delivery service.

A report commissioned by the Postal Regulatory Commission in 2011 stated that beginning in 1999, both the United Parcel Service (UPS) and FedEx introduced delivery area surcharges (DAS) to offset the costs associated with higher costs per delivery stop (*3*). Two types of DAS

fees are regular DAS fees and extended DAS fees—extended fees are specifically for rural delivery. Table 1 presents the 2011 estimated last-mile delivery cost per package for UPS, FedEx, and the United States Postal Service (USPS). These costs include both fixed and variable delivery costs. Although UPS and FedEx's costs are costs associated with both commercial and residential deliveries and USPS's costs are for residential service only, the average cost per package in an urban setting is comparable among UPS, FedEx, and USPS—between $1 and $2. In a rural setting, the additional cost to provide delivery service compared to the cost of providing similar service in urban settings is the basis for extended DAS fees. USPS's destination delivery unit (DDU) rate of $1.92 per package is the fee that USPS charges private carriers to complete last-mile delivery. This service avoids the extended DAS fee, reducing UPS and FedEx's rural delivery costs by nearly $1.20 per package (*3*).

Table 1. Cost of Delivery per Package.

Carrier	Urban	Rural (Extended DAS)
UPS	$1.40	$3.10
FedEx Ground/HD	$1.52	$3.19
USPS Parcel Post	$0.87	$0.57
USPS Bound Printed Matter Parcels	$0.43	$0.37
USPS DDU Rate	$1.92	$1.92

Note: DDU rate for a 4-lb parcel in 2011.
Source: (*3*).

As of October 2015, both FedEx and UPS had increased the companies' fuel surcharges despite significant decreases in fuel costs over the previous year. According to the *Wall Street Journal*, FedEx's increase is in response to heavier packages and a rise in residential deliveries (*4*). The same article states that "though e-commerce has taken off, margins on that business are narrower because of the higher costs of making deliveries to scattered homes" (*4*). USPS also serves more delivery locations than in previous years. USPS reports that their delivery points increased from 149.2 million locations in 2008 to 153.9 million points in 2014 (*5*). A 3 percent increase in delivery points (as experienced by USPS) can contribute to a significant amount of extra mileage, which increases fuel use and cost.

EXISTING EXAMPLES AND OPPORTUNITIES IN RURAL TRANSIT PACKAGE DELIVERY

Package delivery is already being done by buses, with the major and regional intercity bus companies offering different levels of service. Several rural transit agencies in Texas have experience in delivery. The following section presents results from a questionnaire of rural transit agencies with experience with delivery programs and describes current partnerships transit agencies in Texas have with package delivery.

Public and private intercity bus operators provide service throughout Texas; because of diminished populations in rural areas, many of these companies do not operate routes through the most remote areas of Texas. Figure 2 illustrates the intercity bus and Amtrak network through Texas.

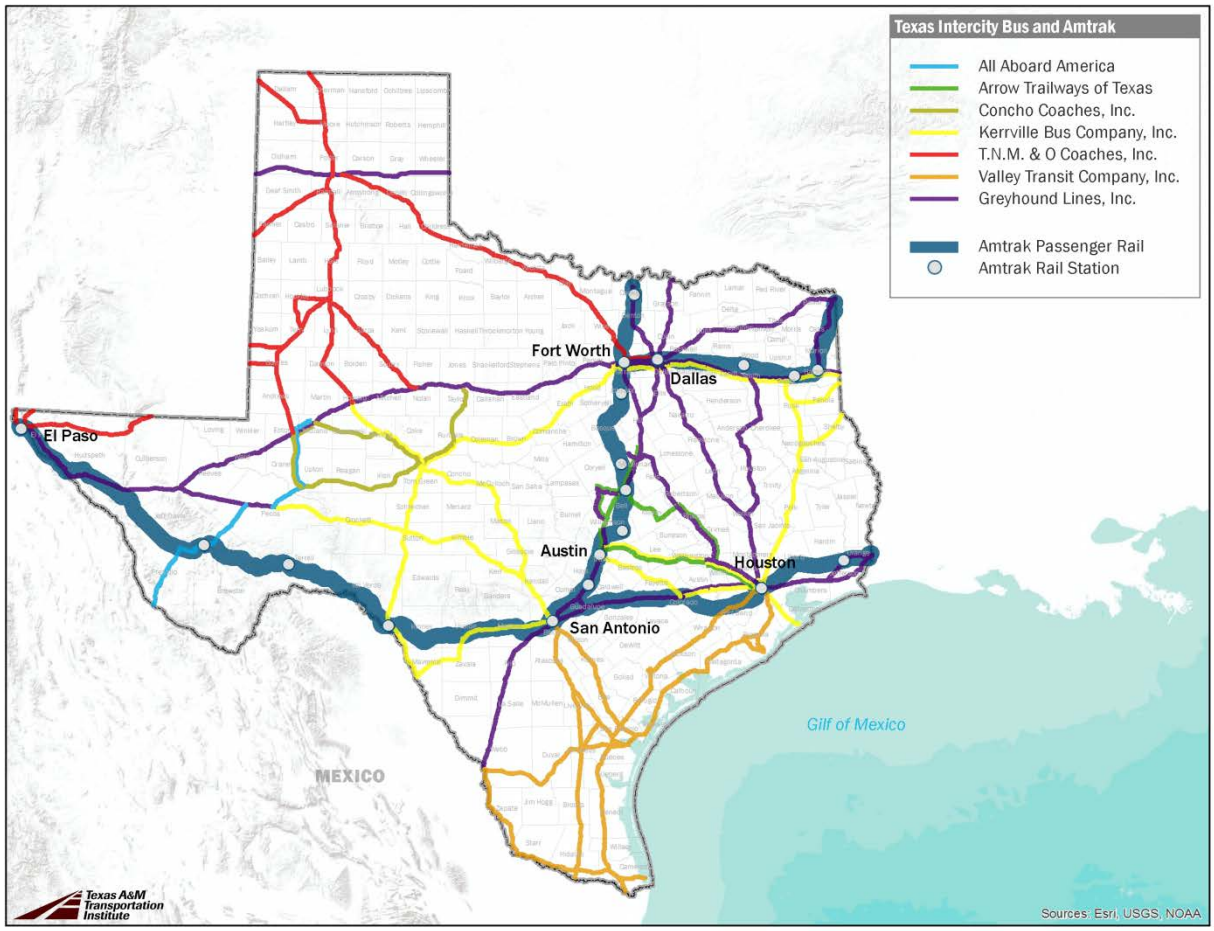


Figure 2. Texas Intercity Bus and Amtrak Network.

With the decline in rural intercity bus passenger service in Texas, rural package delivery service provided by intercity bus operators will also decline. Coaches that provide passenger service transport packages to the same destinations, so if passenger service is discontinued, package service is cancelled by default.

Thirty-seven rural transit agencies serve the residents of Texas and operate in all counties except Newton and Chambers in southeast Texas (see Figure 3). All rural transit agencies operate demand-response service or flexible route service that transports passengers to their door. The connections that rural transit agencies provide will become even more critical in the future as intercity bus carriers reduce service in response to diminished demand. These rural transit connections have the potential to augment/replace lost passenger and package delivery service.

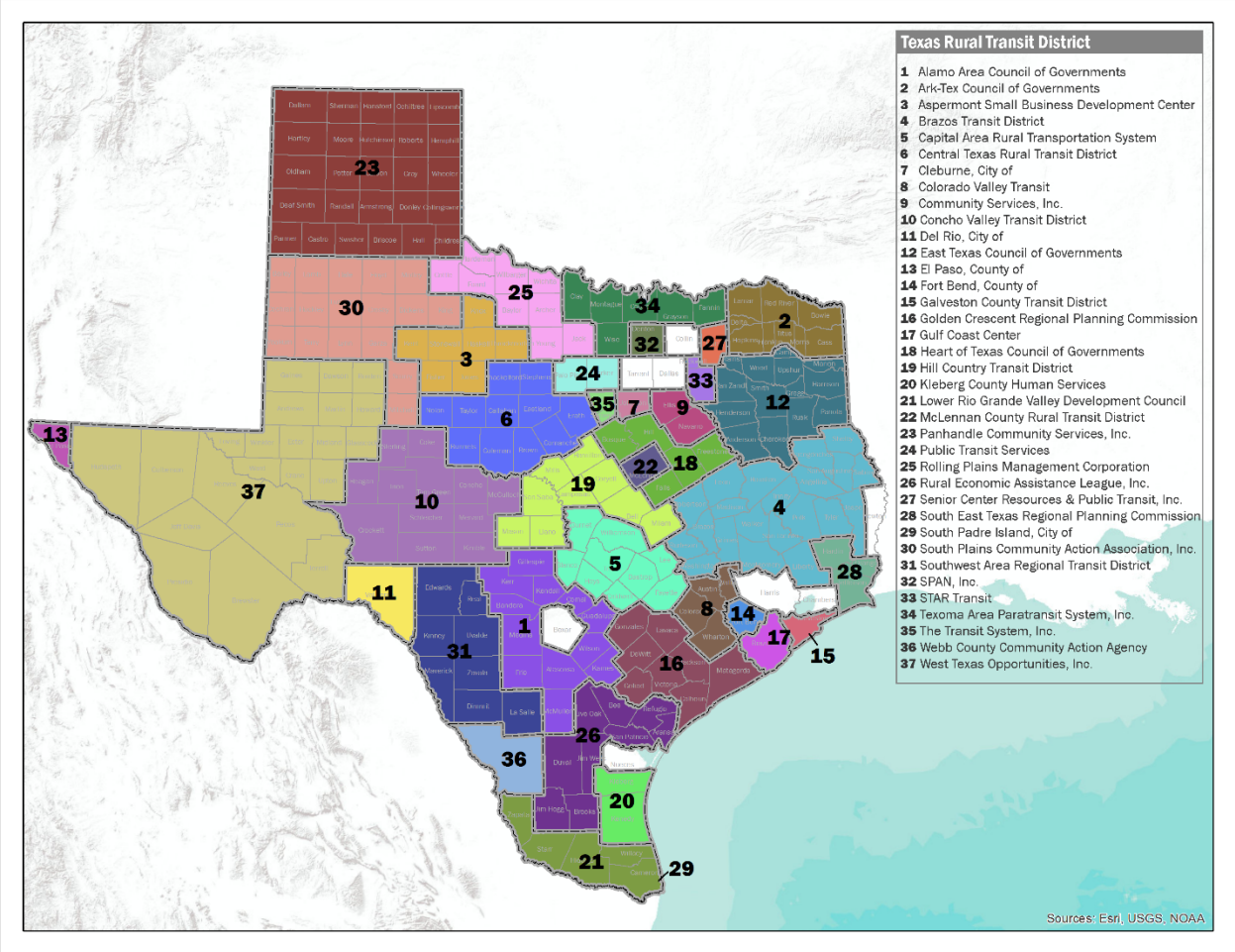


Figure 3. Texas Rural Transit Agencies.

Questionnaire—Rural Transit Agencies' Delivery Experience

In a questionnaire about delivery programs, researchers asked rural transit agencies in Texas which types of delivery services they are involved in or were involved in in the past. Of the seven agencies that responded to the questionnaire:

- Three have been involved with meals-on-wheels.
- Five have experience with package delivery.
- Two have experience with freight haul.

Agencies with package/freight experience briefly described the nature of their involvement in the industry in the questionnaire. The following is a summary of their involvement:

- An agency delivered packages that arrived at the transit facility to various entities in their service area.
- An agency had freight haul and package delivery contracts with intercity bus providers. The agency would (a) operate a pickup and delivery station for freight/packages, (b) process payment, (c) cost-share, and (d) transfer freight/packages with intercity bus providers.

- A health clinic uses a transit agency's services to send packages to a different healthcare provider in another city. The transit agency picks up the package and takes it to one of their facilities, where a driver from a neighboring rural transit agency picks up the package and takes it the rest of the way to its final destination.
- An agency worked with an intercity transit facility to deliver packages to smaller communities already served by their transit services.
- An agency picks up medication from one rural health clinic and delivers it to their partner rural health clinic in another city.

The questionnaire asked respondents what motivated them to get involved in package delivery/freight haul. The following is a list of their motivating factors:

- Contracts with multiple intercity bus providers.
- Increased services to the community and establishment of a positive working relationship with intercity bus providers.
- Increased revenues.
- Services for which the transit agency will make extra revenue.
- Coordination between two rural transit agencies and intercity bus providers.
- Community and agency partnerships.

The questionnaire asked respondents for examples of characteristics of successful delivery programs. Agencies shared the following remarks:

- On-time delivery.
- Good and open communication with intercity bus providers.
- Already-established relationship with the community used beneficially.
- Tracking/reporting requirement maintained.
- Arrangements that are mutually beneficial logistically.
- Marketing and coordination.
- Set procedures for where/when to pick up packages, contact names, and phone numbers for each end, and delivery confirmation signatures.

Current Partnerships with Transit Agencies in Texas

Rural transit agencies are creating community partnerships through package delivery services with local agencies in some areas in Texas. According to Higgins et al., Concho Coaches, a small regional intercity bus service, receives their largest portion of revenue from the freight services the company provides. The *Midland Reporter Telegram* states that Concho Coaches delivers plumbing supplies, smaller oil field service equipment, and other packages/products as requested (*6, 7*). Additionally, regional package delivery carriers, such as Lone Star Overnight, are growing and provide a different array of services and service levels compared to the major carriers. On many occasions, they can offer direct delivery from origin to destination without first entering the package into a major sorting facility. This section describes the package delivery programs at Capital Area Rural Transportation System (CARTS), Southwest Area Regional Transit District (SWART), and South Plains Community Action Association (SPARTAN), as well as partnerships with Greyhound.

Ark-Tex Council of Governments TRAX

Ark-Tex Council of Governments TRAX rural public transportation service is an interlining partner with Greyhound. Under this agreement, TRAX transports Greyhound Package Express (GPX) packages on TRAX intercity bus routes to Paris from Mount Pleasant, Linden, and Texarkana. Additionally, customers with pre-paid package shipments may send their packages GPX out of Paris. TRAX stores packages in a separate cargo compartment at the rear of the transit vehicle.

According to Ark-Tex staff, the agency and its customers benefit from the relationship with GPX and Greyhound because service is streamlined and the agency has gained the ability to provide service to additional destinations.

CARTS

CARTS is an interlining partner with Greyhound. Under their agreement, CARTS provides connecting service to Greyhound passengers and packages in the Austin, Texas, area. CARTS is also a Greyhound agent and sells Greyhound passenger tickets and GPX services. All of CARTS's routes are available for Greyhound passenger and package delivery services.

According to CARTS's staff, the transit agency's connection with Greyhound allows CARTS to better serve its customers by providing increased accessibility and connectivity. The transit agency specifically views package delivery as an additional service that it can offer to improve the quality of life of its constituents and provide a more well-rounded service.

SWART

SWART began providing package delivery services within the transit agency's region in 2016. These services are conducted under contract with Advance Headstart and include transportation of interoffice mail and other business-related items.

SPARTAN

SPARTAN, in partnership with West Texas Opportunities' transportation program TRAX, has developed a community partnership with South Plains Rural Health to transport packages between health clinics. SPARTAN picks up the package in Levelland and takes it to a SPARTAN office in Lubbock, where a driver from TRAX picks it up and transports the package to Lamesa.

Greyhound

Greyhound works with CARTS and the Wichita Falls Transit System (Falls Ride) to provide pickup and delivery service for Greyhound's package delivery service—GPX—in the service area of each transit agency. CARTS uses its transit vehicles and Falls Ride uses a maintenance van (labeled with GPX decals) for the service. Because both CARTS and Falls Ride operate on-demand service, they represent ideal partners for pickup and delivery service because of the on-demand nature of the current package delivery market. CARTS and Falls Ride provide GPX pickup and delivery service under Greyhound's standard contract for this type of service.

According to Greyhound's representative, approximately 25 percent of the company's GPX service occurs in Texas, and new strategies/services are typically tested in Texas first. Assuming the required infrastructure is in place (a local agent and last-mile delivery provider), the company would consider entering any market as a package delivery provider.

Beyond GPX, Greyhound is also pursuing partnerships with transit agencies to increase Greyhound's passenger service area. These agreements, ideally, would enable the company to access transit agency facilities, such as transit centers, for passenger pickup/dropoff and coordinate passenger transfers to transit-operated services so Greyhound can offer passenger service (and potentially package service) to more destinations. Transit agencies may act as Greyhound agents to sell Greyhound tickets and GPX services.

CHAPTER 3. OPPORTUNITIES FOR SERVICES AND MARKETS

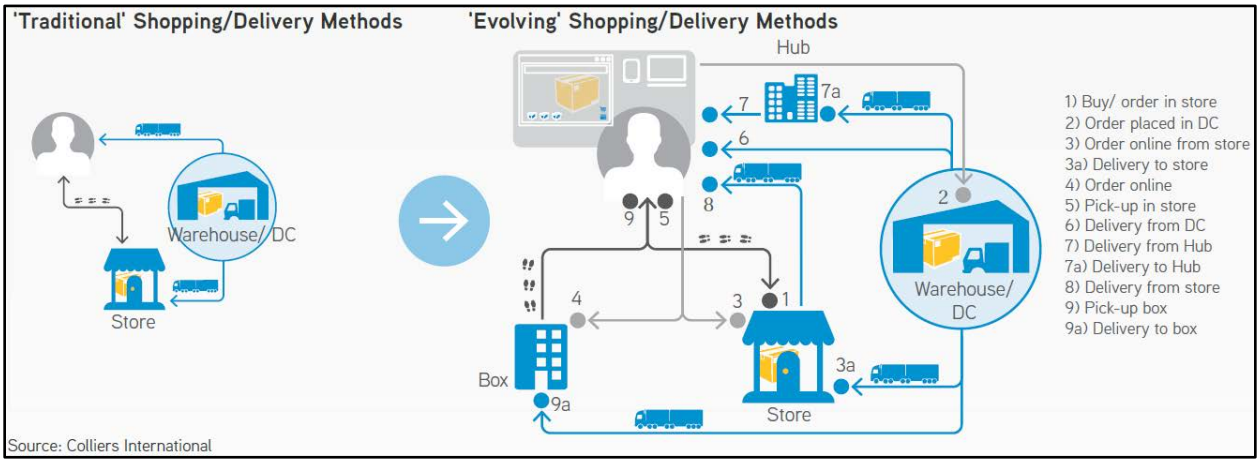
This chapter describes the impact the growing e-commerce industry has on package volume, the service span of rural transit agencies, community connections needed for a successful package delivery program, and potential markets for rural transit package delivery services.

GROWTH OF E-COMMERCE

In recent years, large service providers (UPS, FedEx, and USPS) have documented increased demand for package delivery. Perhaps the most significant factor contributing to the growth in package volumes is the growth of online shopping, or e-commerce. Online shopping allows for access to goods that may not be available in all areas because of limited local demand or scarcity of the good. E-commerce provides an economic development opportunity for people to participate in customer-to-customer exchange of goods.

E-commerce includes customer-to-customer sales, in which customers purchase items from an individual instead of a major retail business. Customer-to-customer transactions involve the direct delivery of purchased items from the sellers to the buyers—deliveries most likely completed by one of the major package delivery companies or USPS—and potentially involve partnerships with public transit agencies.

E-commerce services add an additional shopping option for consumers. Traditional shopping, as described by the diagram on the left side of Figure 4, involves the customer traveling to a store and either purchasing a product or choosing an item to be delivered to the customer's residence. On the right, Figure 4 shows how the traditional retail pattern becomes more complex with the inclusion of online shopping. In addition to the store and major warehouse/distribution center, the infrastructure is expanded to include smaller warehouse hubs and pickup locations. All of these extra points require additional transport links. These additional links have the potential to increase overall transportation costs.



Source: (*2*) Copyright © 2015 Colliers International

Figure 4. Evolution of Logistics Needs.

Beyond the additional transportation links required to serve e-commerce shoppers, additional logistics considerations are generated when customers need to return or exchange goods purchased online. In the United States, USPS partners with both UPS and FedEx to handle the first-mile pickup service for return packages due to USPS's practice of collecting outgoing mail and packages while delivering (*3*).

Figure 5 displays historical and forecasted levels of e-commerce shopping in the United States from 2010 through 2018. Forecast assumptions reflect previous years' growth. By 2018, the forecast predicts that there will be 215 million online shoppers—an increase of 25 percent over the 2010 value of 172 million online shoppers.

Source: (*8*)

Figure 5. Number of Digital Shoppers in the United States from 2010 to 2018 (in Millions).

RURAL TRANSIT AGENCY SPAN OF SERVICE

Of Texas's 254 counties, only one county (Newton County) does not have rural transit service. The average span of service for rural transit service in Texas is from about 5:30 a.m. to 7:15 p.m. (see Table 2). A little over 50 percent of rural transit agencies operate service on Saturdays, and about 10 to 15 percent operate on Sundays, on average. For specific rural transit agencies, see Transit Profiles: http://tti.tamu.edu/group/transit-mobility/resources/profiles/.

Table 2. Rural Transit Average Span of Service.

	Mon-Fri Service Begins	Mon-Fri Service Ends	% with Saturday Service	% with Sunday Service
Mixed Urban/Rural	5:30 a.m.	7:23 p.m.	56%	11%
Rural Transit Agency	5:46 a.m.	7:05 p.m.	52%	14%

Rural transit agencies serve the general public and provide an important mobility option to transportation-disadvantaged people (such as senior citizens and people with disabilities) via demand-response or flexible-route services. Transit vehicles visit local residential areas often to transport riders. Transit centers typically have professional staff on duty for transit customer services and have the potential to serve as a package pickup and/or dropoff center if the transit staff receives proper training.

CONNECTIONS WITH THE COMMUNITY

Implementing a package delivery program can be advantageous for both the public and private transportation sectors because of the potential to increase revenue, increase markets and service points, and create economic development opportunities within a community.

A successful rural package delivery program connects public transit agencies and private intercity bus carriers, especially when transferring packages from the main carrier (e.g., GPX, UPS, FedEx) to the last-mile carrier (e.g., transit agency). Collaboration and coordination with rural transit agencies and private package carriers can reinforce the first- and last-mile connection for package delivery. It is important to create central package dropoff and pickup locations that are convenient to both customers and package carriers. Integrating schedules and frequencies has the potential to increase both ridership and package delivery.

A successful rural package delivery program also needs community buy-in. Package delivery service may result in confusion or pushback from riders, or riders may view the new service as a loss of passenger service. Transit agencies are responsible for communicating service changes to their ridership. Public outreach and education should reiterate that passenger service will not be affected (and cannot legally be reduced to deliver packages) and that package delivery service has the potential to fund transit service and expand service.

Furthermore, improved collaboration and coordination with state agencies, local governments, and MPOs is necessary to leverage freight and transit infrastructure improvements and increase support for coordinated package delivery.

MARKETS

Transporting goods efficiently contributes greatly to a vibrant economy. The potential markets that rural package delivery services could serve are substantial and diverse. Specific markets will vary depending on the area in the state. The following is a list of potential markets:

- Auto industry parts and equipment.
- Medical (biological samples, prescriptions, pharmaceutical).
- Environmental (air, water, soil, oil, agricultural).
- Military.
- College campuses.
- Restaurants, wholesale foods, and convenience stores.
- Perishables (fish, eggs, dairy).
- Private homeowners.
- Small businesses and artisans with small quantity shipping needs.
- Mail, documents, printed materials, and courier services.
- Same-day shipping needs.
- Regional employment centers/large companies.

The partnership between rural transit agencies SPARTAN and TRAX is a good example of rural package delivery services for medical products. A local health clinic uses the SPARTAN service to send packages to a different healthcare provider in Lubbock that is within the service area of neighboring rural transit agency TRAX. SPARTAN picks up packages and delivers them through the agency's commuter buses to its Lubbock office. TRAX drivers pick up the packages in the Lubbock office and deliver them to the final destination.

The package delivery market is quickly transitioning to an on-demand delivery model where customers can receive their purchases in as little as a few hours and typically in less than a week. This quick turnaround requires package delivery providers to respond to demand quickly and to offer flexible service. To meet the short timeframe delivery demands of consumers, goods must be transported overnight, and package delivery companies must be capable of receiving and beginning transport for outgoing shipments late into the day.

CHAPTER 4. CHALLENGES ASSOCIATED WITH SERVICE PROVISION

This chapter describes the challenges faced by rural transit agencies that provide or facilitate package delivery service. These agencies may be challenged by regulations, operational requirements, fiscal constraints, public and agency perception, marketing, transit service commitments, and service area size. In Texas, the sizes of rural transit agencies range from compact areas like El Paso County and South Padre Island to the expansive area covered by West Texas Opportunities and Brazos Transit District. Rural transit agencies operate in all counties with the exception of Newton and Chambers Counties in southeast Texas (see Figure 1).

REGULATIONS AND OPERATIONAL CONSIDERATIONS

There are numerous laws and regulations, both at the state and federal levels, associated with commercial package delivery. Regulations outline requirements for operator registration, driver licensing, and safety standards. Adding package delivery to a passenger service may require adjustments to operational and procedural practices for both the operating agency and driver performing the movement. Instituting a cargo transportation service requires a full understanding of federal and state operating requirements. This section provides an overview of some of the regulations and operational considerations that should be considered as part of a cargo service.

Driver and Operator Requirements

The following driver and operator requirements must be considered when adding package delivery service to passenger transportation services. Commercial vehicle operators (both passenger and cargo) are required to:

- Obtain a commercial driver's license (CDL). In Texas, there are three classes of CDLs. Each CDL is defined by the weight of the vehicle that the driver will operate or the number of passengers the vehicle is capable of transporting.
- Maintain a designated minimum level of insurance. For bus operators, insurance must cover $500,000 of liability for vehicles designed or used to transport more than 15 passengers (including driver) but less than 26 passengers (not including driver) or $5,000,000 of liability for vehicles designed or used to transport 26 or more passengers (not including driver). The insurance requirement for private or for-hire cargo carriers operating above defined weight levels is $500,000 of liability, with transporters of hazardous materials required to maintain a minimum insurance level of $5,000,000 of liability coverage (*9*).
- Pass additional tests and obtain endorsements on their CDLs, including endorsements for passengers, hazardous materials, and school bus operation (*10*).
- Operate within a regulated number of hours, both driving and on-duty hours (like loading and unloading cargo). For interstate carriers, the hours-of-service rules are slightly different between property-carrying drivers and passenger-carrying drivers. Intrastate carrier hours-of-service requirements are the same for all commercial motor vehicle drivers (*10*).
- Log and report driving and on-duty hours in most situations (a few rare exceptions may exempt drivers from maintaining the daily log documentation).

Transit agencies that perform package delivery will need to ensure that transit operators' CDLs are adequate for the addition of package delivery service. Drivers may need additional training to learn how to properly lift packages to prevent injuries. Driver retention can also be a major issue in many regions.

Passenger and Cargo Carrier Regulations

State and federal regulations may differ between passenger and cargo carriers. Additionally, anyone acting as a broker or a freight forwarder is required to register and obtain broker or freight forwarding authority from the United States Department of Transportation's Federal Motor Carrier Safety Administration (*11*).

Incorporating Package Delivery into Existing Operations

To successfully add package delivery service to existing passenger transportation services, a transit agency needs to consider the additional operating time and additional space required to execute a meaningful service. The following sections outline important issues to consider when incorporating package delivery into existing operations.

Concurrent Passenger and Cargo Trips

Will the agency combine package delivery service and passenger service or schedule vehicles for dedicated package service? Transit agencies may provide package delivery service via dedicated cargo trips or as part of passenger transport trips. When determining which method of service provision is appropriate for a transit agency, the following considerations are important:

- Considering the time required to pick up or deliver to locations along a route. This consideration is important to determine if mixed trips (passengers and cargo) or cargo-only trips are appropriate.
- Maintaining passenger utilization. This consideration is important because the ability to add cargo shipments without interfering with passenger utilization is essential when incorporating package delivery into existing operations.
- Maintaining current capacity. This consideration is important because taking seats away from passengers for cargo may interrupt current route capacity and vehicle use rates.
- Maintaining the same number of passenger seats. This consideration is important because vehicles designed to transport passengers are designed to address passenger needs, so adding non-passenger-related activities within trips may take away from the mission of a transit operator. Having the ability to handle these shipments without interfering with passenger seating, such as underbelly storage, could eliminate this concern. For example, Concho Coaches operates 15-passenger vans with the last row of seats removed to accommodate luggage and packages (*6*).

Vehicle Design

Is the vehicle capable of transporting packages and passengers safely and securely? Transport of packages requires a vehicle that has adequate cargo space that is separate and secure from passengers and is capable of carrying a specific load (in pounds). Adequate cargo space may be

defined as a secure storage compartment in the location of a passenger seat or stock cargo areas (as in a van) or an aftermarket storage compartment installed in place of some passenger seats (without impeding safe access or passenger load minimums).

Time and Scheduling

If package delivery service is integrated with passenger service, how does the time required to make deliveries affect overall transit performance and customer experience? Integrating package delivery service with package service could increase dwell time and contribute to additional slack in the transit agency's schedule. The amount of time required to load and unload the packages at each stop must be considered when designing service. Because of the additional variable it introduces, package delivery service could also cause uncertainty within the passenger service schedule. The agency also needs to be prepared for handling and managing the additional paperwork related to each shipment, such as bills of lading.

Safety and Security of Passengers

How will the transit agency ensure that the packages it transports are secure and cannot endanger the operator or passengers? Maintaining a secure environment for both passengers and packages is an important consideration when implementing a package delivery program. Serving passengers is the primary mission of a transit operator, so adding cargo service should not impact the needs and safety of passengers. Passenger ingress and egress (especially under emergency conditions) must be considered when combining passenger and cargo services.

Package Handling and Storage

Does the transit agency have a secure facility to store packages while in transit? How will the transit agency handle instances when a package is undeliverable? Where will the package be delivered alternatively? Packages may need to be stored in secure locations at stations or designated locations, secured while in transit, and secured at the final destination. Basic package security training can be provided to public transit drivers, and transit terminals can be used as a training ground for local law enforcement agencies. Handling and storage of packages may require additional employee training to ensure that the employees properly lift, handle, store, transport, and deliver packages.

Processing and Paperwork

How will the transit agency handle paperwork associated with packages? How will the introduction of additional steps to operator routine (e.g., scanning package for tracking) impact performance and passenger service? There are several smartphone-enabled systems available for package scanning that eliminate the need for scanners and reduce the cost of procuring and implementing additional hardware and technology.

Pricing

What will the pricing structure be? Pricing for package delivery service can be determined using per-mile fees, flat fees according to delivery zones, weight-based fees, market-based fees, or private-sector fee tables and policies. Furthermore, fees can be split into two categories:

- Local—packages that originate and terminate within the transit agency's service area.
- Last mile—packages that are transferred from a private carrier to be delivered within a transit agency's service area.

Delivery Destination

Where will the package be delivered? Rural package delivery does not have to exclusively provide door-to-door services. In fact, the final delivery destination represents the biggest challenge for package delivery services in rural areas. Existing package delivery companies (UPS, FedEx, USPS) vary in delivery practices in rural areas—delivering to the recipient's house or mailbox as conditions warrant. A transit agency should implement package delivery service policies to outline delivery location for different scenarios, such as whether to deliver a package to the mailbox on a roadway or to travel down a driveway and deliver at the door. Transit agencies should determine in their package delivery policies whether delivery to a house is going to occur within an operation with passengers on board.

Liability

Does the transit agency's insurance cover the additional risk/liability associated with package delivery service?

Potential risks associated with package delivery service include customer and employee injuries and lost, stolen, or damaged packages. Most transit agencies are part of the Texas Municipal League Intergovernmental Risk Pool (TML). According to TML staff, package delivery service is not included in the pool's liability coverage and is not available as an addendum, but if a transit agency elects to implement package delivery service, TML liability coverage for passenger transportation services is not affected.

Ark-Tex Council of Governments has its package delivery services (an interlining agreement with GPX) insured under a separate policy from its public transportation services. This policy is provided by National Fire & Marine Insurance Company and provides up to $500,000 in liability coverage for any single accident or loss that occurs related to package delivery service. This policy only covers nine TRAX vehicles that the agency uses to transport packages for GPX and requires that vehicle operators are at least 35 years of age.

The liability associated with lost, damaged, or stolen packages broadens a transit agency's risk exposure. For example, the maximum insurable value for packages that travel via GPX is $1,000, so risk exposure is still low. Additionally, in the case of the pilot study (discussed in more detail in Chapter 6), GPX assumed responsibility for handling all customer service issues related to lost or damaged packages, and the transit agencies were only required to refer customers to GPX.

Technology

What technological capabilities does the transit agency currently have at its disposal and what improvements to existing technology are required to execute effective package delivery services? The ability to track and dispatch packages in real-time is a key element of a competitive package delivery service, and without this capability, the service will struggle to compete effectively with large providers. A tracking system must allow consumers to check on packages, determine expected wait times, and answer other questions for themselves; this type of system reduces the need for customer service agents and increases customer satisfaction.

FISCAL

Funding sources that are dedicated to specific uses reduce flexibility and diminish opportunities for public and private entities to collaborate and identify innovative solutions to freight funding needs. This section documents fiscal challenges that transit agencies should consider when initiating a package delivery service.

Public Funds for Provision of Transit Services

Transit agencies in the United States receive funding from the federal government as a subsidy to support transit operation. The government controls the use of federal funds with detailed legislative code and FTA guidance and rules. If an agency uses federal money to fund any part of the agency's operation, that agency's services, policies, and practices must comply with federal guidance.

As of July 2016, FTA has not drafted guidance for transit agencies that operate package delivery services. Package delivery service is not included in current FTA guidance on incidental use, but two examples may have regulatory similarities: charter service and meals-on-wheels. While the existing legislation does not specifically mention package delivery, it governs non-mission specific activities and, pending interpretation by FTA, may be similar to future package delivery service guidance/regulations.

Charter Service—Charter service describes service provided on an exclusive basis to a specific group of paying customers. Some transit agencies operate charter services to augment revenues. According to Title 49 of the Federal Transportation Code, transit operators that receive federal funding may provide chartered service as an incidental service as long as the service "does not: (1) interfere or detract from the provision of the mass transportation service for which the equipment or facilities were funded under the Act; or (2) does not shorten the mass transportation life of the equipment or facility" (49 C.F.R. § 604.5[f]]).

Meals-on-Wheels—Federal funding guidance associated with Federal Section 5310, *Formula Grants for Special Needs of Elderly Individuals and Individuals with Disabilities*, outlines requirements for transit agencies that deliver meals to people who are homebound. Section 5310 states that "Public transportation service providers receiving assistance… may coordinate and assist in regularly providing meal delivery service for homebound individuals if the delivery service does not conflict with providing public transportation service or reduce service to public transportation passengers."

Federal Grant Funding

Rural transit agencies receive Federal Section 5311 non-urbanized area (rural) transit program formula funding for support of public transportation in rural areas with a population of less than 50,000. In addition to federal funding, rural transit agencies receive state and local funds for rural transit, including contract, county, and municipal government funds. In Texas, the state distributes Section 5311 funds in the following manner and order:

- Intercity bus allocation—unless the state certifies, after consultation with affected intercity bus service providers and other stakeholders, that the intercity bus service needs of the state are being adequately met, TxDOT will allocate not less than 15 percent of the annual Section 5311 federal apportionment for the development and support of intercity bus transportation.
- Administration—TxDOT may use up to 10 percent of the annual federal apportionment to defray its expenses incurred for administration.
- Needs and performance formula allocation (Texas Transit Funding Formula)—an amount not to exceed $20,104,352 after administration and intercity bus amounts are distributed is allocated based on needs and performance.
- Discretionary allocation—if the amount of the Section 5311 federal apportionments exceeds the $20,104,352 maximum amount, a part of that excess not to exceed 10 percent will be available to the commission for award at any time during the fiscal year on either a pro rata basis, competitively, or a combination of both. Consideration for the award of these additional discretionary funds may include, but is not limited to, coordination and technical support activities, compensation for unforeseen funding anomalies, assistance with eliminating waste and ensuring efficiency, maximum coverage in the provision of public transportation services, adjustments for reduction in purchasing power, and reductions in air pollution.
- Vehicle revenue mile formula allocation—any amount of the annual Section 5311 federal apportionment that is not otherwise allocated will be allocated to non-urbanized areas based on the proportion of vehicle revenue miles for that non-urbanized area to the total vehicle revenue miles for all non-urbanized areas.
- Adjustments to allocation—adjustments are determined in the case of a change due to a transit agency's service area or declaration of a previously designated urbanized area as non-urbanized.
- Application and contract—new subrecipients may receive funds by completing and complying with all application requirements, rules, and regulations applicable to the Section 5311 program.

States may not use more than 10 percent of apportioned Section 5311 funds, including funds apportioned under Section 5340 but not the Rural Transit Assistance Program allocation, to administer the Section 5311 program and to provide technical assistance to subrecipients. Under Section 5311, the federal share for capital assistance is 80 percent, and the federal share for operating assistance is 50 percent of net operating expenses. Net operating expenses are those expenses that remain after a transit provider subtracts operating revenues from eligible operating expenses. States may further define what constitutes operating revenues, but at a minimum, operating revenues must include farebox revenues. Some projects—to meet the requirements of

the Americans with Disabilities Act, the Clean Air Act, or bicycle access projects—may be funded at 90 percent federal contribution. State or local funding sources may provide the local share.

PERCEPTION AND MARKETING

Transit agencies that implement package delivery service may be challenged by public perception and the need to market this new service as a for-profit enterprise (instead of marketing services as a public good). According to the Texas Freight Mobility Plan (*1*), "The lack of awareness and understanding by the general public regarding the importance of freight movement in their daily lives impacts public support of projects and policies relating to freight." This section documents strategies for managing perception and for marketing a new type of service.

Managing Perception

Public funding, derived from tax dollars, grants, and other sources, is used to provide public transit, so public transit is a public good. Because of this fact, many people view transit service as a right and believe that it is something that should always be available and should always work. When a transit agency begins to offer package delivery service, public perception could be challenging if the transit agency does not preempt misconceptions and inform their riders of how this new service will benefit them by engaging in targeted outreach. From the perspective of improving financial sustainability, package delivery service is similar to other contracted service delivery.

Here are important elements to consider/include when developing an outreach strategy:

- Data collection about current perceptions of transit and package delivery services.
- Information for riders that shows what it costs to provide current service.
- Descriptions of existing funding sources and the amount of revenue each generates.
- Descriptions of how new revenue may improve service.
- Policies that ensure that transit riders will always take precedence over packages.

Marketing For-Profit Endeavors

Transit agencies that implement package delivery service may be challenged by the need to market a service that is unlike anything the agency has offered previously. Package delivery service is a for-profit enterprise, unlike transit service, which is typically provided for the lowest possible cost to the rider and is not designed or intended to generate a profit. If a transit agency takes on package delivery, the service will be delivered as a for-profit endeavor specifically to increase revenue while providing additional access and connectivity. Typical transit marketing may not generate business at a level that would sustain the package delivery service.

According to Erik Weber et al., transit marketing should be considered a "core investment," and a "better public image attracts riders, leading to higher revenue and greater demand for transit service" (*12*). For perspective, major auto companies (key competitors of transit), spent $21 billion on advertising in 2009 (*12*). After reviewing relevant literature, Hess and Bitterman

suggest that transit agencies would benefit from a defined brand for the services the agency offers and that transit agencies have a unique opportunity to advertise because transit vehicles travel throughout cities and regions (*13*). Additionally, transit agencies may see more of a return on marketing investments by focusing on indirect competition with other service. For example, transit agencies might make assertions related to the environmentally friendly nature of transit or the ability to do other things while traveling, such as reading or socializing (*13*).

Transit agencies that implement service may benefit from working with either internal or contracted marketing professionals to assess the local market and develop a specific market-focused advertising strategy that responds to consumer preference and needs. No matter the final strategy, marketing campaigns must be responsive to community perceptions to be successful. Additionally, transit agencies that implement package delivery services should assess the chosen marketing campaign at regular intervals to determine effectiveness and determine whether it can be improved.

Some marketing strategies that transit agencies might consider include one or more of the following:

- Soliciting feedback from consumers about what services they currently use, what their needs are, what they might be willing to pay for package delivery service, and how they perceive existing services and the new transit-based solution.
- Educating consumers on the benefits of the new service.
- Highlighting the fact that transit riders will not experience diminished service and that service could be expanded/improved.
- Encouraging transit users to spread the word about the package delivery service as a way of supporting their transit provider and community.
- Benefitting consumers/community by including a connection to intercity buses for both passengers and packages.
- Offering same-day delivery in some areas.
- Offering economic development opportunities, such as:
    - Couriers to connect complement transit package service with door-to-door and other package services.
    - Shipping dependent businesses (e.g., art galleries or crafts stores) located in the transit agencies' service area to take advantage of package delivery service.
    - The potential to grow an agriculture business by using package delivery service for lab work and to obtain needed tools quickly.
- Maintaining a social media presence.
- Hiring empowered drivers that represent the package delivery service via word-of-mouth and handouts (could be incentivized in exchange for commissions or something similar).
- Creating a specific/dedicated package delivery service logo to brand the new service and create a unique identity for the new service.
- Tracking performance before and after the implementation of package delivery service and making the data publically available to enhance transparency.

CHAPTER 5. POTENTIAL SERVICE MODELS AND EXAMPLE SERVICE PRICES

This chapter discusses the potential service models that a transit agent may adopt to provide package delivery services and presents example pricing for package delivery services.

The service models used to provide package delivery service will vary depending on the transit agency's capacity for adding an additional service, the market for package delivery services, and the availability of facility space that is available to house the service. While transit agencies may partner with any package delivery provider (UPS, FedEx, GPX, and others), according to previous research and stated interest from intercity bus companies (ICBs), it is likely that transit agencies will experience the fewest challenges partnering with ICB package delivery providers such as GPX.

Intercity bus operators have a long history with package delivery. GPX dominates the package delivery segment of the intercity bus industry; however, regional operators offer package delivery service within their service areas and transfer packages to GPX and other service providers to complete package delivery routes through interlining agreements. GPX and regional intercity bus operators participate as members of the National Bus Traffic Association (NBTA) and provide connecting service under interlining agreements that allow passengers and packages to travel throughout the country by transferring between NBTA member bus operators. NBTA is responsible for establishing and managing these agreements. Part of NBTA's role is to function as a clearinghouse for revenue generated by selling tickets and providing package express services. The organization distributes revenue generated from ticket sales and package delivery fees according to the percent of service provided by each member bus operator involved in each transaction. As of 2012, NBTA has distributed between its members $180 million worth of revenue from transactions for passenger and package delivery service.

Table 3 presents an example, according to NBTA, of the interlining revenue sharing process.

Table 3. NBTA Interlining Revenue Share Process.

Phase	Description		
1	Package delivery service worth $50 is purchased from Operator A.		
2	Three operators (A, B, and C) share responsibility to deliver the package from origin to destination. The total distance between origin and destination is 1,000 mi.		
	Operator A transports the package for 200 mi (20%). ➡	Operator B transports the package for 400 mi (40%). ➡	Operator C transports the package 400 mi (40%) to its destination.
3	Revenue from the package delivery service is allocated to each operator according to the percent of service provided:	20% =	$10.00 for Operator A.
		40% =	$20.00 for Operator B.
		40% =	$20.00 for Operator C.

The next section describes the three main service models that a transit agency might implement to provide package delivery service (options are modifiable to suit the agency and do not

represent all options). The section also outlines which transit agencies and markets each service model is appropriate for and documents each option's benefits and challenges for assessment. *Note: The section assumes that a transit agency will provide package delivery service in coordination with an ICB partner. Service models specific to coordination with companies such as UPS or FedEx may vary from these models.*

INTERLINING CARRIER WITHOUT LOCAL DELIVERY

The simplest service model for providing package delivery service is for a transit agency to act as an intermediary package carrier as part of its agreement to provide interlining services to an ICB partner (as outlined above). Under this model, the transit agency (when picking up transfer passengers) would accept packages to transport as well. The packages transferred to the transit agency's vehicle are transferred again from the transit vehicle back to the ICB company's vehicle at a later transfer point. This type of service allows packages to take the most direct route possible; for example, the alternative to transferring a package to a transit vehicle might require a longer overall trip for the package (because it has to go on the ICB's defined route instead of being able to take a shortcut via transit) and result in service that takes longer. This model does not allow customers to pick up or drop off packages. Additionally, this model does not require the transit agency to store packages or to accept payments for shipments. Interlining service is provided in exchange for mileage reimbursements directly from NBTA on behalf of the transit agency's ICB partner. Table 4 outlines what types of transit agencies might pursue the interlining carrier without local delivery service model and the benefits and challenges associated with the model.

Table 4. Interlining Carrier without Local Delivery Specifics.

Who's it for?	• Small agencies with limited staff time. • Agencies without secure package storage space. • Agencies that want to avoid handling package delivery fees and processing associated paperwork.
Benefits	• Additional revenue generation from existing service. • Simple and fast implementation. • Does not require interaction with additional customers or separate customer service staff.
Challenges	• Potential to increase dwell time. • Additional driver responsibility.

PICKUP/DROPOFF FACILITY

Acting as a pickup/dropoff location allows transit agencies to provide additional service options for package delivery and increases the market potential of the agency's package delivery service because of the higher level of service that customers receive. Under this service model, transit agencies will continue to provide interlining service and storage space for packages. Stored packages include those that are dropped off by customers (with labels printed by the customer and paid for online) and packages that have arrived and are awaiting customer pickup. This service model requires a transit employee to retrieve packages for customers to pick up. The package delivery partner will typically have direct access to the package storage area so that the

transit agency is not required to assist with access or be available to transfer packages. Table 5 outlines what types of transit agencies might pursue the pickup/dropoff service model and the benefits and challenges associated with the model.

Table 5. Pickup/Dropoff Facility Specifics.

Who's it for?	• Agencies that have available storage space. • Agencies that have greater service demand. • Agencies that can commit staff time to accept/retrieve customer packages.
Benefits	• Potential for additional market-share. • Opportunities for staff/customer interaction and outreach.
Challenges	• Providing a dedicated space for package storage. • Pickup/dropoff service requires additional staff time.

COMPLETE SERVICE

Transit agencies may decide to adopt a service model that offers complete service to customers. This model includes everything discussed in the previous service model sections, sales of package delivery services, and door-to-door pickup/delivery. The appendix presents a complete description of this service model, according to GPX. Table 6 outlines what types of transit agencies might pursue the complete service model and the model's benefits and challenges.

Table 6. Complete Service Specifics.

Who's it for?	• Agencies with customer service centers (to facilitate sale of service). • Agencies with excess facility space that can be converted to customer service use. • Agencies with high-demand for package delivery service.
Benefits	• Highest potential revenue generation because of the additional level of service offered. • Greatest opportunity to expand access for the community.
Challenges	• Requires additional staff time and training to ensure package delivery fees are handled appropriately. • Requires coordination of courier drivers (or third-party contractors) to execute door-to-door services.

SERVICE PRICING

If a transit agency operates package delivery service in coordination with a private package delivery company, the private partner will determine service pricing. The transit agency may also choose to develop separate local/regional package service that operates with a separate price schedule. Pricing will vary by market and be determined by numerous market-specific factors, such as demand, local cost of living, services required, and other variables. As an example of what pricing schedules are currently used in the larger package delivery industry, Table 7 and Table 8 present service details for each intercity bus operator and service brokers with unique package delivery service, including the levels of service, delivery fees, insurance fees, and a description of the service area.

Table 7. Intercity Bus Operators—Package Delivery Options.

Scope	Name	Shipping Options		Shipping* Cost *Shipping a 10-lb package, longest side = 12", $100 value		Package Tracking	Insurance Fees		Service Area
				Origin/Destination	*Fee*		*Declared Value*	*Fee*	
National Package Delivery	**Greyhound Package Express (GPX)**	Standard	• Shipped when space is available • Available as door-to-door, counter-to-counter or variation • Oversize shipments require additional transit time • Pick-up and drop-off are available during normal business hours	Austin/ Houston	$24.50	Yes, included in price	$0–$100	None	Service available throughout the United States
		Priority	• 100% money-back guarantee that packages arrive on-time • Available as door-to-door, counter-to-counter, or variation • After-hours pickup/dropoff • Guaranteed to ship on next available bus to destination • Limited to 800 miles or less	Austin/ Houston	$34.55	Yes, included in price	$101–$300	$2.00	
		Direct Drive	• Non-bus service • Limited to 400 miles • Door-to-door only	n/a	requires corporate account	Yes, included in price	$310–$500	$4.00	
							$501–$700	$6.00	
							$701–$1,000	$8.00	

Scope	Name	Shipping Options		Shipping* Cost *Shipping a 10-lb package, longest side = 12", $100 value		Package Tracking	Insurance Fees		Service Area
				Origin/Destination	*Fee*		*Declared Value*	*Fee*	
Regional Package Delivery	**Yo! Bus Package Express**	Shipping Pack	• 2 lb letter box		$5.00	Tracking service not provided	$0–$100	None	Yo! Bus will ship packages between its three terminals in New York, Philadelphia, and Boston
		Small Shipping	• Under 50 lb • Longest length < 24 inches		$10.00	Tracking service not provided	$101–$300	$2.00	
		Large Shipping	• 50 to 100 lb maximum • Longest length < 24 inches		$20.00	Tracking service not provided	$301–$500	$4.00	
							$501–$700	$6.00	
							$701–$1,000	$8.00	
Regional Package Delivery	**Peter Pan Bus Lines Package Express**	Standard only	• Shipped when space is available • Only available station to station	Albany/ Boston	$25-$26	Yes, included in price	$300	None	Peter Pan Bus Lines will ship throughout their northeast service area to designated stations
	Burlington Trailways Package Express	Standard Only	• Maximum weight per package is 100 lb • The extreme measurements of length, width, and height should not exceed 30" x 47" x 82"	Cedar Rapids/ Rockford	$28.17	Tracking service not provided	$0–$100	None	
							$101–$300	$2.00	
							$310–$500	$4.00	
							$501–$700	$6.00	
							$701–$1,000	$8.00	
	Trailways—Adirondack, Pine Hill, New York	Standard		Albany/ New York	$25	Tracking service not provided	$0–$100	None	
		Priority		Albany/ New York	$35	Tracking service not provided	$200	$2.00	
							$1,000	$8.00	

Scope	Name	Shipping Options		Shipping* Cost *Shipping a 10-lb package, longest side = 12", $100 value		Package Tracking	Insurance Fees		Service Area
				Origin/Destination	*Fee*		*Declared Value*	*Fee*	
	Valley Transit Company	Standard	• 100 lb maximum	Brownsville/ Corpus Christi	$26	Yes, included in price	$0–$100	None	
		Priority	• Package express contracted through Greyhound				$200–$500	$3.00	
Regional Package Delivery	**Fullington Trailways**	Standard only	• Maximum weight per package is 100 lb • The extreme measurements of length, width, and height should not exceed 30" x 47" x 82"	Wilkes Barre/ Clearfield (161 miles)	$24.35	Tracking service not provided	$100	free	Washington, D.C., Maryland, Pennsylvania, New Jersey, New York
							$101–$300	$2.00	
							$301–$500	$4.00	
							$501–$700	$6.00	
							$701–$1000	$8.00	
Texas Specific Service	**Concho Coach**	Standard	• 100 lb maximum	San Angelo/ Midland	$24.50	Tracking service not provided	$100	None	Only ship to Midland, Odessa, and San Angelo
							Per Additional $100 value	$1.00	
							Max Value $1,000	$9.00	

Source: Company websites and phone calls to company customer service representatives.

Table 8. Intercity Bus Freight—Brokerage Services and Fees.

Broker	Freight Servicer	Shipping Options		Shipping Cost		Package Tracking	Notes	Service Area
Box on a Bus[14]	Greyhound GPX	Self Service	Station-to-Station	• 10-lb package • 12" square • $100 value • From: Austin, TX • To: Houston, TX	$33.75	Yes, included in price	Additional parcels shipped results in reduced overall fee	Greyhound GPX Service Area
		Semi-Full Service	Door-to-Station		$65.00			
		Semi-Full Service	Station-to-Door		$65.00			
		Full Service	Door-to-Door		$96.25			
Busfreighter[15]	Greyhound GPX	Self Service	Station-to-Station	• 10-lb package • 12" square • $100 value • From: Austin, TX • To: Houston, TX	$60.00	Included in price. Only confirms departure and arrival	Offers discounted rates for 5 or more boxes shipped	Greyhound GPX Service Area
		Semi-Full Service	Station-to-Door		$120.00			
		Additional Fees						
		Additional Weight		$0.70	Per lb			
		Courier Pickup/Delivery		$65.00	Per Pickup/Delivery			
		Saturday Pickup/Delivery		$100.00	Per Pickup/Delivery			
		Courier Wait Time		$1.00	Per Minute			
		P&D Attempt Charge		$65.00	Per Attempt			
		Oversized (Item's Longest Dimension)		$10.00 (per)	36"–47"			
		Oversized (Item's Longest Dimension)		$18.00 (per)	48"–82"			
		Additional Piece(s)		$17.25	Per Box, Self Service			
				$27.25	Per Box, Full Service			
		Storage Charges		$5.00	Per Day/Per Shipment (GPX rule)			
1-800 Courier[16]	Greyhound GPX	***Broker's Service Example:*** We'll make an AM pickup in Bozeman, MT, of a 24" × 24" × 24" package with delivery to Everett, WA. We will pick it up and put on the bus in Bozeman, one of our professional couriers will retrieve your package from the bus in Everett and deliver to door by 12:40 p.m. the next day for $105.60. Our competition offers service by 3:00 p.m. for $313.58. Or, you can ship from New York to Washington, D.C., in as little as eight hours for only $80.00.					Couriers at each end deliver/pickup package from GPX and complete the first/last mile	Greyhound GPX Service Area

CHAPTER 6. OUTCOMES AND LESSONS LEARNED—PILOT PACKAGE DELIVERY SERVICE

In autumn 2016, the project team solicited transit agencies to participate in a pilot package delivery service in collaboration with GPX. Eight rural transit agencies stated interest in participating, and SWART and Concho Valley were selected to join the pilot. The project team selected the pilot transit agencies because of unique service areas and the potential to generate meaningful lessons for the pilot. Using the guidance presented in the previous chapters, the project team worked to facilitate coordination between SWART, Concho Valley, and GPX to establish a service plan and implement package service. This chapter documents the outcomes and lessons learned from this pilot service.

PILOT PACKAGE DELIVERY SERVICE OUTCOMES

The project team worked with GPX and each transit agency to initiate the process of establishing package delivery service beginning in January 2017. During February and March, the pilot participants worked closely with GPX to plan service, negotiate operating agreements, and implement training (including package handling, processing of packages, and documentation of transactions/performance) for transit agency staff.

In April 2017, SWART launched its package delivery service and began working with GPX to market the service through signage, handouts distributed by transit operators, and a targeted marketing campaign that included direct calls to possible clients (conducted by GPS marketing staff). Figure 6 presents a screen capture showing available service from SWART.

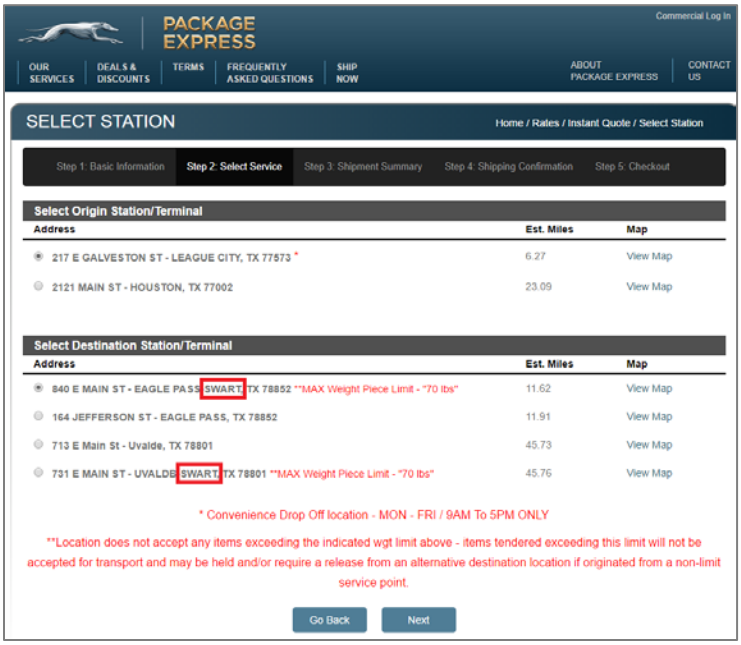


Figure 6. SWART Package Service Availability.

The process of launching the Concho Valley pilot package delivery service required additional negotiation and planning to account for existing conditions and to ensure that service was complementary to GPX's existing relationships in the region. The Concho Valley pilot was

supposed to begin operating in May, but the transit agency's staff met with a TML insurance representative and learned that TML could not insure package delivery service under existing liability coverage or as an addendum. To avoid possible liability issues, Concho Valley opted to delay service initiation until a solution for liability insurance is in place.

Goals, Objectives, and Performance

Goals, objectives, and performance measures establish upfront expectations and guide future decision-making. The project team worked with pilot participants to develop goals, objectives, and performance measures to guide the implementation and operation of the pilot package delivery service (listed below). The following sections document outcomes for these metrics:

- Goals:
    - Provide additional services to customers.
    - Increase non-program transit revenues.
    - Facilitate expansion of intercity bus passenger service in rural areas.
    - Test the concept of last-mile package delivery in the market.
    - Gather management/training/operation information to inform future package service expansion.
    - Contribute to economic development within the transit agencies' service area.
- Objectives:
    - Coordinate with private sector package delivery partners, such as intercity bus companies, to introduce package delivery service options.
    - Operate package delivery service under a fee-for-service model.
    - Document service impacts, staff training requirements, and lessons learned at regular intervals to improve service and facilitate goal achievement.
    - Document opportunities, challenges, and performance for monthly summary/documentation.
    - Provide access to affordable shipping services for local businesses and residents and foster opportunities for local service providers to partner to deliver packages.
- Performance Measures:
    - Packages and shipments per day.
    - Revenue from package service per month.
    - Revenue miles and hours completed with package onboard.
    - Portion of passenger capacity used for package service compared to total passenger capacity for vehicles that provided package service.
    - Non-passenger miles and hours that result from package service.
    - Operating cost associated with package services.
    - Staff time required per week for package services.
    - Transit referrals/conversions.
    - Package size.
    - Customer feedback.

Outcomes—Goals and Objectives

As outlined in the previous section, the pilot package delivery services launched with a series of goals and objectives to guide the execution of service. This section reviews the status of the

goals and objectives, as of May 31, 2017, and discusses each. Table 9 and Table 10 present the status of the goals and objectives (respectively) as well as a discussion of the effort/outcomes associated with each. The pilots completed 50 percent of the goals and 60 percent of the objectives during the performance period—January 1, 2017, through May 31, 2017.

Table 9. Status of Pilot Goals as of May 31, 2017.

Goals	Status as of May 31, 2017	Discussion
Provide additional services to customers.	Complete	The pilots added to the service portfolios of the rural transit agencies, providing a new service to the transit agency's customers.
Increase non-program transit revenues.	Initiated	The pilots did not receive service requests during the pilot period. During the performance period, the pilots could not increase non-program transit revenues.
Facilitate expansion of intercity bus passenger service in rural areas.	Initiated	Greyhound is interested in working with pilot participants and other transit agencies to increase service where appropriate, citing rekindled interest from the pilot project as the catalyst for such conversations.
Test the concept of last-mile package delivery in the market.	Complete	Two pilot package delivery services were initiated. SWART reached full service implementation and will offer package delivery service until at least the end of the project (service began on April 1, 2017).
Gather management/training/ operation information to inform future package service expansion.	Complete	The research team worked with the pilot participants to document requirements for managing, training, and operating transit-based package delivery service.
Contribute to economic development within the transit agencies service area.	Initiated	The pilots did not receive service requests during the pilot period. During the performance period, the pilots could not contribute to economic development.

Total	3	
Complete	3	50%
Initiated	3	50%

Table 10. Status of Pilot Objective as of May 31, 2017.

Objectives	Status as of May 31, 2017	Discussion
Coordinate with private sector package delivery partners, such as intercity bus companies, to introduce package delivery service options.	Complete	The research team worked with GPX and two rural transit agencies to initiated pilot package delivery service in two markets in Texas. Service, operated by SWART in coordination with GPX, launched in April 2017.
Operate package delivery service under a fee-for-service model.	Complete	SWART offered service, beginning in April 2017, to customers throughout the transit agency's service area.
Document service impacts, staff training requirements, and lessons learned at regular intervals to improve service and facilitate goal achievement.	Initiated	The pilots did not service requests during the pilot period. During the performance period, the pilots could not document service impacts, training requirement, or lessons learned.
Document opportunities, challenges, and performance for monthly summary/ documentation.	Initiated	The pilots did not service requests during the pilot period. During the performance period, the pilots could not document opportunities, challenges, or monthly performance.
Provide access to affordable shipping services for local businesses and residents and foster opportunities for local service providers to partner to deliver packages.	Complete	SWART offered service, beginning in April 2017, to customers throughout the transit agency's service area.
Total	5	
Complete	3	60%
Initiated	2	40%

Outcomes—Performance Measures

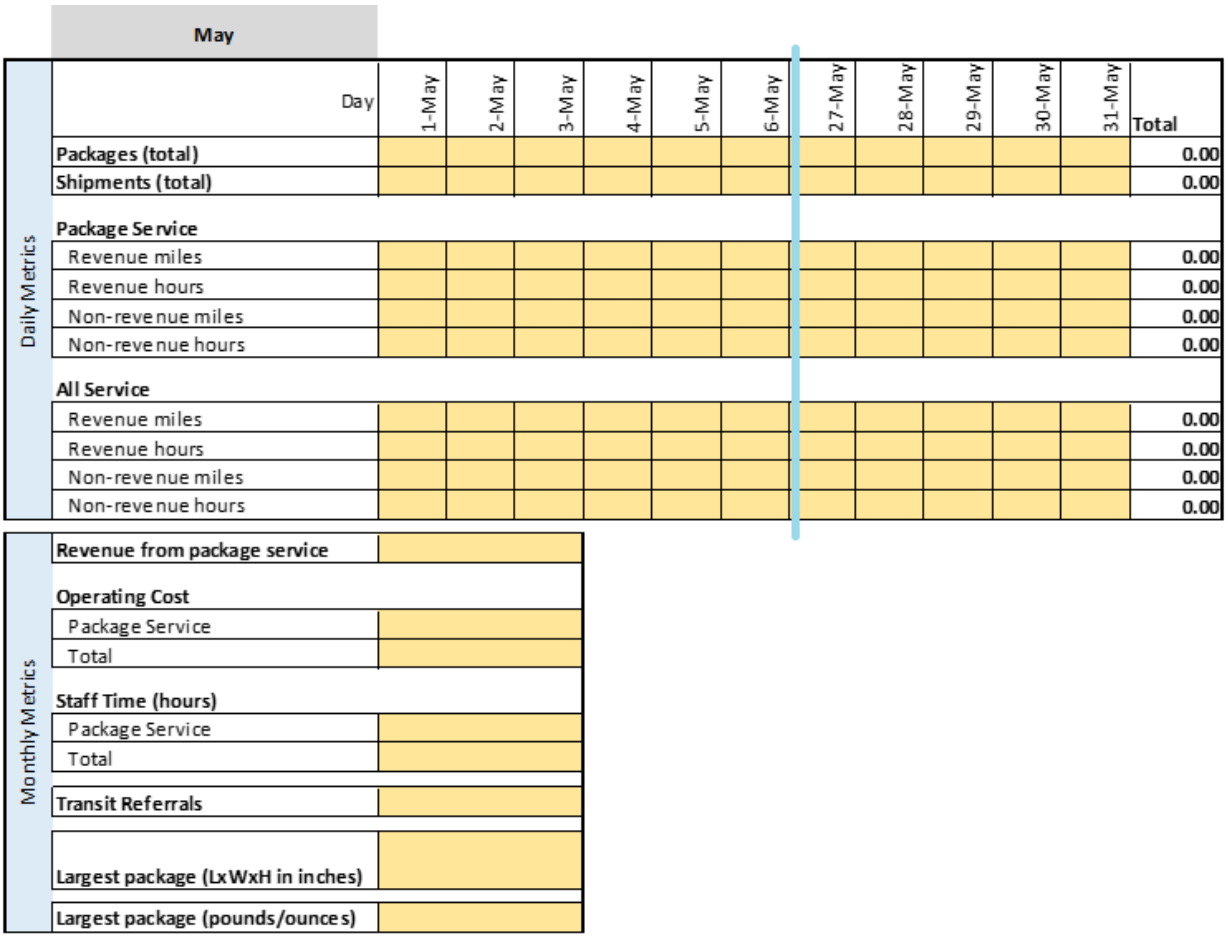
Working with pilot participants, the research team developed a series of performance measures, as follows:

- Number of packages and shipments per day.
- Revenue from package service per month.
- Revenue miles and hours completed with package onboard.
- Portion of passenger capacity used for package service compared to total passenger capacity for vehicles that provided package service.
- Non-passenger miles and hours that result from package service.
- Operating cost associated with package services.
- Staff time required per week for package services.
- Transit referrals/conversions.
- Package size.
- Customer feedback.

During the pilot period, the pilot participants had access to an online tool to document these performance statistics. Because neither participant received a request for package delivery service during the performance period and there was no performance to track, the pilot participants did not need to use the tool. For reference, the following link provides access to a test version of the performance tracking tool: http://sgiz.mobi/s3/Last-Mile-Package-Delivery-Monthly-Reporting/. This tool provided a destination for pilot participants to submit narrative responses to nine feedback prompts (presented in the following list) and submit performance tracking spreadsheets (example presented in Figure 7):

Performance Tracking Response Prompts

1. Please provide any necessary documentation/discussion related to your tracking spreadsheet.
2. Benefits and challenges.
3. Service impacts.
4. Staff training and feedback.
5. Opportunities and performance.
6. Requests for additional passenger service as a result of package service.
7. Package size/weight including thoughts/lessons on storage in the vehicle, securing packages, passenger comfort/capacity/safety.
8. Customer feedback.
9. Lessons learned and changes for next month.



May

Daily Metrics

Day	1-May	2-May	3-May	4-May	5-May	6-May	27-May	28-May	29-May	30-May	31-May	Total
Packages (total)												0.00
Shipments (total)												0.00
Package Service												
Revenue miles												0.00
Revenue hours												0.00
Non-revenue miles												0.00
Non-revenue hours												0.00
All Service												
Revenue miles												0.00
Revenue hours												0.00
Non-revenue miles												0.00
Non-revenue hours												0.00

Monthly Metrics

Revenue from package service	
Operating Cost	
Package Service	
Total	
Staff Time (hours)	
Package Service	
Total	
Transit Referrals	
Largest package (LxWxH in inches)	
Largest package (pounds/ounces)	

Figure 7. Data Reporting Spreadsheet.

Strengths, Challenges, Opportunities, and Threats

Analyzing the strengths, challenges, opportunities, and threats (SCOT) associated with an undertaking provides a quick understanding of the project's successes and areas of needed improvement. SCOT outcomes present factors that are internal to a project or organization as strengths and challenges. Internal factors may include human and physical resources, budget, practices, and/or previous experience. External factors are labeled as opportunities and threats and may include elements out of direct control, market conditions, demographics, funding, environment, and/or legislation/policy. Categorizing factors as internal and external helps to direct the analysis (e.g., "Is this positive outcome a result of internal or external forces?") and allows strategic use of the findings (e.g., "In the future, this project needs to hire staff with more directly related skills"). Table 11 documents the factors identified as either strengths, challenges, opportunities, or threats, and Figure 8 displays the balance of strengths and opportunities compared to challenges and threats. Strengths and opportunities, together, represent positive contributions or outcomes. Challenges and threats represent future considerations.

Table 11. SCOT Analysis—Pilot Package Delivery Service.

Internal

Positive Contributions/Outcomes

Strengths

Low cost of entry

- Service uses existing transit vehicles, drivers, and dispatchers.
- Technology requirements are limited to desktop computers and, optionally, tablets.

Service diversity

- Package delivery service provides customers with additional connections to their home regions, state, and nation.
- Transit agencies gain experience operating innovative service and thinking outside the box, which could contribute to future transit service innovation.

Challenges

Low demand for service

- During the performance period, the pilots did not receive requests for service. Without demand, the service cannot be successful.

Insurance requirements

- Liability insurance that covers package delivery activities is required for transit agencies to accept the additional risk associated with a new service. During the performance period, the transit agencies were unable to obtain adequate insurance.

Opportunities

Economic development

- Package service has the potential to facilitate low-cost shipping for local businesses and generate demand for secondary service-sector businesses such as couriers.

Buy-in from TxDOT and stakeholders

- TxDOT and stakeholders throughout Texas signaled support for this type of service during workshops and through the project period.

Threats

Appearance of limited profitability

- Because the pilots did not receive service requests, it could appear as though the service concept may not be profitable. Given a longer performance period, it is likely that demand and profitability would increase.

Future Considerations

External

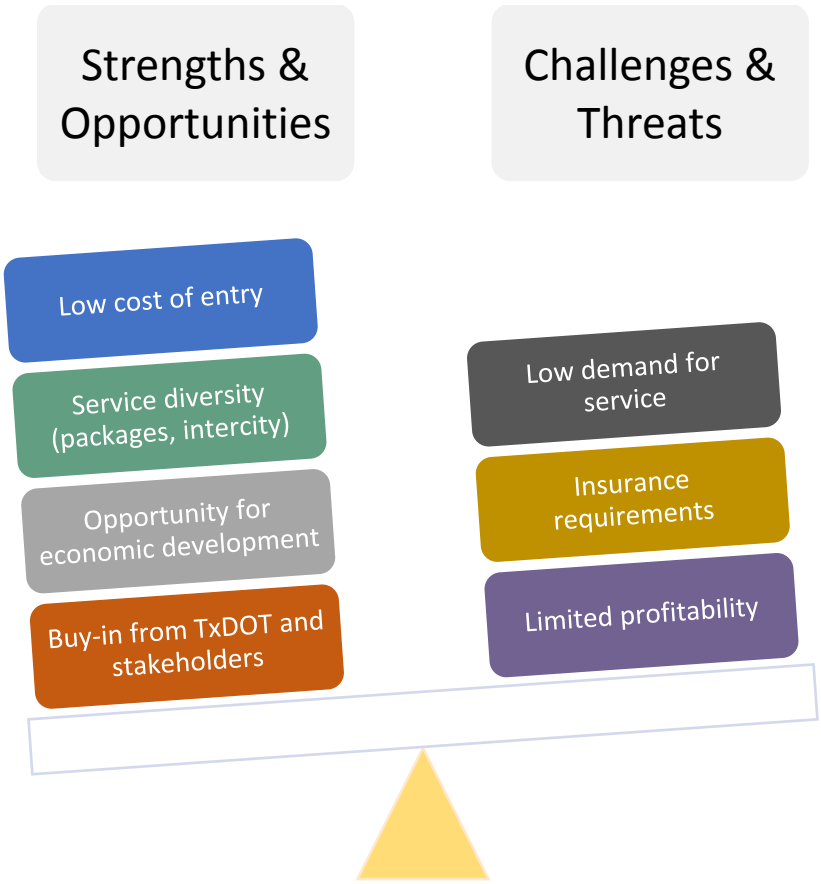


Figure 8. Balance of SCOT Findings.

LESSONS LEARNED

Throughout the performance period, the project team discussed the status of the pilots and documented the ongoing lessons learned from both the transit agency and GPX perspectives. Finally, the project team met with each pilot participant to discuss project outcomes and lessons learned. This section outlines the lesson learned from the pilot package delivery service implementation according to three broad themes—communication/education, marketing, and operations.

Communication/Education

Package delivery service is logistically challenging for companies that are dedicated to such service. Adding this type of service to a transit agency's existing operations introduces an additional level of challenge. As such, communication and education are key to a successful transit-based package delivery service. Communication/education lessons include:

- Communication between the transit agency and the private package delivery company should be thorough and frequent to plan and coordinate service and handle day-to-day operational challenges.

- Developing a shared understanding of what each party's roles and responsibilities are beyond package delivery service is key to eliminating confusion or miscommunication during service implementation. Some considerations include:
  - The mission of each service partner.
  - Terminology that is unique to each industry (rural transit and package delivery).
  - Limitations of the partners as related to package service.
- Peer mentors are invaluable for transit agencies that are new to a service type, including package delivery. For example, pilot participants relied on information from peer transit agencies in Texas with similar experience to gain understanding of how to incorporate the logistics of package service within their current service portfolios.

Marketing

New service options benefit from marketing. GPX and SWART worked together to market the package service to customers via multiple media, including handouts and signage provided by GPX, direct-call marketing by GPX sales members, and direct-to-customer information provided by drivers and SWART customer service staff. Additionally, SWART staff attended meetings with local business stakeholders to share information about the new service. Despite the significant marketing push, SWART did not receive requests for package service during the performance period. Marketing lessons include:

- Marketing is a key component of a new service and something that must be approached according to the needs of the area. For example, SWART customers and stakeholders like to meet the person providing the service and get a face-to-face understanding of who is behind the scenes.
- Teaching customers about how to purchase service and what service is available is an ongoing requirement. According to SWART, some potential customers lack knowledge/experience related to online purchasing of package delivery service. Instead, SWART has learned that customers want to work with a person and purchase service directly. Without this option, often the customers opt out of a specific service.
- A visible service presence can positively affect marketing outcomes. According to SWART's experience, people recognize that intercity bus service carries packages. Due to Greyhound's current location in SWART's service area (outside of town near the freeway), customers do not regularly see Greyhound and do not know the company is operating in the area, so the customers do not pursue package delivery service.

Operations

New services often require time to grow and attract customers. Additionally, new service requires insurance to operate. Lessons related to operations include:

- Due to the uncommon nature of package delivery service, from the perspective of traditional transit-focused insurers, insurance coverage for this type of service should be secured ahead of other operational variables.
- The pilot period was not long enough to allow the new package delivery service to become established and to attract customers. The outcomes are likely to be different given additional time, and transit agencies that elect to implement such a service should

anticipate the time required to generate buy-in from the market. For example, SWART has learned from prior experience that new service in that area can take one to two years to become established.

APPENDIX: GREYHOUND PACKAGE EXPRESS SERVICE CENTER PROGRAM—DESCRIPTION AND AGREEMENT

Greyhound Package Express Service Center Program

Greyhound has been in business for over 100 years. During that time we have provided package delivery service for large companies such as NCR, Clinique, American Red Cross and many more. With the growing shift to e-commerce, some consumers are seeking additional avenues to ship their packages. This includes the option to conveniently drop-off and pick up their packages locally instead of scheduling a pick up at their residence or business.

To help fill this void, Greyhound Package Express has developed the Service Center Program.

A Greyhound Package Express Service Center is a professionally-staffed location that provides shipping drop-off services to the general public.

Service Center Benefits

- Industry leading drop-off compensation
- Greyhound Package Express websites and customer service provide location information and directions (no selling)
- Simple acceptance procedures and service support requirements
- No invoicing – Fee's paid automatically on a monthly basis

How it Works

- At drop-off - Record shipment receipt confirming order number, labeling, number of items; obtain customer confirmation signature
- Reply to order email alert confirming drop-off and number of items tendered
- Secure shipment until scheduled courier arrives to transfer to the Greyhound location for final transport (Depending on volume the pick up's can be Ad-hoc or regularly scheduled)
- Email courier pick up confirmation details once picked up

A per shipment fee will be paid to the Service Center for their services. All customer aftercare will be provided by Greyhound Package Express.

Greyhound Package Express will also move toward offering this service for package pick up by the consumer as well. Once that program is finalized operating instructions will be made available.

Businesses suitable to be a Greyhound Package Express Service Center are locations with enough space to store multiple packages until a pick up occurs. Normally 100 square feet is ample space. They should also have traditional business hours where staff is available to receive the packages. On top of the additional revenue being a Service Center allows you for handling the shipments, another benefit is the additional visibility to your core business from the Greyhound Package Express customers.

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