City of Frisco

Public Transit Study

Prepared by McDonald Transit Associates, Inc.

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Executive Summary

The City of Frisco is one of the fastest growing most vibrant cities in the United States. Population has almost tripled since the beginning of the new millennium. At the same time employment is booming, commercial development expanding, while the community is hard at work enhancing the "Frisco Quality of Life". Recognizing that improved roadways and other transportation options may be necessary for Frisco's future, the City commissioned this Public Transit Study. The goal is to study the feasibility of and need for public transportation services that would focus on Frisco residents and people who work or want to work in the City. The objectives of the study are to:

- Identify types of public transportation services, if any, that would be best suited to Frisco
- Describe potential funding options
- Explain the types of transit operation scenarios that make sense for Frisco
- Discuss how Frisco could be linked to neighboring transit systems
- Present a potential implementation schedule based on projected need and the growth of Frisco
- Provide dynamic performance measures to allow the City to assess the success of service in being effective and efficient

The study used a robust public involvement process that included outreach, interviews, and surveys with the general public, stakeholders, employers, elected officials, social service agency heads, and others. Citizens and Frisco community leaders have definite ideas about the demand and need for public transportation. There is a strong voice in Frisco for public transportation for elderly and disabled citizens. Many see a demand for some form of transit to get workers to Frisco for jobs of all kinds. There also is a consensus on the need for commuters to get to and from Dallas, as well as for connections to surrounding cities. Citizens, employers, and social service agencies all see the need for internal circulation. Business and community leaders see only a small need for a shuttle type service linking retail and entertainment venues and hotels. All groups agree that commuter rail is a highly desirable form of transportation. Part of the outreach process also included identifying potential users of public transportation services in Frisco. Large concentrations of potential users of commuter express bus service were identified through this process; however, data were insufficient to identify users of other types of service.

The feasibility for transit service was also assessed by studying cities comparable to Frisco. Two types of cities were studied: four demographically comparable and seven economic comparable cities. Ten of the eleven cities had comprehensive public transportation systems. Analysis of the transit details available for the demographically comparable cities indicated that Frisco's population might be able to support a transit system with an annual patronage of as much as 800,000 passengers.

Based on the research, the following transit services were identified as feasible and desirable for Frisco:

- Coordination of carpool and vanpool options
- Flexible bus route for circulation within Frisco
- Express bus service for commuters to and from downtown Dallas
- Bus route connection to DART light rail station in Plano
- Coordination with rural providers in Denton and Collin County
- Feeder services to future commuter rail stations in Frisco

The study provides a detailed implementation and financial plan. The implementation plan takes a conservative "crawl, walk, run" approach. Activities in the first year include confirming system plans, marketing carpooling and vanpooling options, and beginning purchase of system assets. Limited service begins in Year Two for the flexible route in Frisco, the commuter express route to Dallas, and the bus route to the Plano light rail station. Each year thereafter service is enhanced as demand increases.

The implementation plan is supported by a discussion of available sources of funding for the system. These sources include passenger fares and Federal and State grant funds. Performance measures are identified to assist in the ongoing evaluation of service and policy development. The amount of service proposed and related patronage estimates range from 8,304 hours of service with estimated annual patronage of 57,433 beginning in Year Two to 29,560 hours of service with estimated annual patronage of 321,167 in Year Seven.

Chapter 1

Introduction to the Frisco Public Transit Study

Study Purpose

The City of Frisco is one of the fastest growing cities in the United States. Its population has almost tripled in the last eight years. At the same time, City leaders have been vigilant in their efforts to develop the City with a constant focus on maintaining and improving the quality of life for its residents. Many businesses, both small and large employers, have been attracted to the community so that residents can live and work in Frisco. World-class sports and entertainment venues provide residents with recreation and attract scores of visitors to Frisco. All forms of retail shopping opportunities are conveniently located in Frisco to meet resident's needs and provide a commercial base for the City. Careful attention is paid to neighborhood development, greenspace, schools, the arts, and all quality of life issues that make Frisco the place to live in the Metroplex.

It is in this spirit of forward looking leadership that the City commissioned this Public Transit Study. The success of the Dallas Area Rapid Transit (DART) system in proximity to Frisco has alerted City leaders to the potential of public transportation to shape community development, promote sustainable growth, and give residents environmentally responsible transportation options. The creation of the Denton County Transportation Authority (DCTA) also has shown that momentum is building for a regional approach to transit issues.

In its 2006 Comprehensive Plan, the City has already included transit oriented development areas around potential rail stations identified in the North Central Texas Council of Governments Regional Rail Corridor Study. The purpose of this study is to perform a comprehensive assessment of the need for public transportation services in Frisco in the short and long term and recommend services to meet any identified needs.

Goals, Objectives, and Process

The overall goal of the study is to determine if and/or when it would be feasible to begin public transportation services in Frisco. While a minimal level of service has been operated by Special Programs for Aging Needs (SPAN) and Collin County Area Regional Transportation (CCART) for specific populations in Frisco,

these services are only used as a frame of reference for the study. The goal is to further study the need for services that would focus on Frisco residents and people who work or want to work in the City.

Within the overall goal, the following objectives guided the study:

- Identify types of public transportation services, if any, that would be best suited to Frisco
- Describe potential funding options
- Explain the types of transit operation scenarios that make sense for Frisco
- Discuss how Frisco could be linked to neighboring transit systems
- Present a potential implementation schedule based on projected need and the growth of Frisco
- Provide dynamic performance measures to allow the City to assess the success of service in being effective and efficient

These goals and objectives were used to guide the entire process of the study. The process was designed to be comprehensive and inclusive. In addition to the professional research and analysis that was conducted, a robust stakeholder involvement was conducted. Interested stakeholders were involved in a number of ways. There were two community input meetings, in-depth interviews with selected stakeholders, and surveys of social service agencies and large employers. The basic steps used in the process were as follows:

- Public and stakeholder involvement and input
- Identification of public transportation needs
- Development of demand estimates
- Study of comparable cities and related transit services
- Identification of transit options
- Description of implementation and operating scenarios
- Development of detailed short and long range financial plan
- Documentation of all results in a final report

The results of the study are provided in the remainder of this report.

Organization of Report

There are four chapters including this introductory chapter. Chapter 2 describes and analyzes the environment for public transportation in Frisco. It includes characteristics of the City data that help determine the feasibility of transit service, and then addresses the importance of density and transit oriented development to developing a successful public transportation system. The chapter also discusses the context for transit in Frisco by discussing current

transportation options in the City and by looking at transit in neighboring communities.

Chapter 3 assesses the potential demand for transit in Frisco. It summarizes all of the public and stakeholder input. Transit services in cities comparable to Frisco in size and economic activity are also analyzed. Demand for transit service is then estimated and summarized.

Chapter 4 concludes the study by identifying service strategies for provision of transit service. A range of alternatives is presented. The advantages and disadvantages of each alternative are clearly identified. Phased recommendations for consideration in implementing service are presented. Each recommendation is supported by financial estimates through 2015.

The project selection team included:

- John Lettelleir, Director of Planning and Development Services
- Cissy Sylo, Director of Engineering Services
- Jeffrey Witt, Comprehensive and Environmental Administrator
- Brian Moen, Assistant Director of Engineering Services
- Ryan Middleton, Planner

The consultant team thanks all participants in the study for the contributions of time and ideas to the effort. We are especially appreciative of the collaboration and cooperation of the City of Frisco staff.

Chapter 2

Environment for Public Transit in the City of Frisco

Introduction

This chapter provides a summary of the demographic and employment climate of the City of Frisco, along with the planning initiatives for transit oriented development and regional rail. The City is growing at a rapid rate in terms of both population and economic opportunities. It is fast becoming a "destination" with its sport venues, family-friendly atmosphere, job opportunities, and easy access from both State Highway 121 and the Dallas North Tollway. Currently, public transit opportunities are limited in the City of Frisco as shown in this chapter; however, as the City approaches build-out, public transit will become more and more important to the vitality of the City. A more detailed analysis of the study area can be found in Appendix A.

Study Area Description

The City of Frisco is located in North Central Texas, north of Dallas. The Collin/Denton county line runs through the City, splitting it between east and west. As of April 1, 2008, the City of Frisco lists its population at 99,978. Of the 2007 total population, 33% of the persons reside in the Denton County section of the City and 67% in the Collin County portion of the City. Table 2-1 below shows the City of Frisco's total population from 1970 to 2007 with data obtained from the NCTCOG.

Table 2 - 1: Population Growth

Year	Total Population
1970	1,845
1980	3,499
1990	6,138
2000	33,714
2006	84,650
2007	92,100
April 1, 2008*	99,978

*Data obtained from the City of Frisco

Table 2-2 below shows the breakdown of ethnicity as reported in the 2006 American Community Survey.

Table 2 - 2: Breakdown of Ethnicity

Race	Percent of Total Population
White	83.4%
African American	5.2%
Native American	.8%
Asian	4.5%
Hawaiian/Pacific Islander	0%
Other Race	3.5%
Multi-Race	2.6%
Total	100%

According to 2006 American Community Survey data, 11.3% of Frisco residents are under five years of age; 71.3% are between the ages of 18 and 64; and, 4.8% are 65 years and over. The breakdown of housing types for Occupied Housing Units shows that 81.4% of households are owner-occupied, with 18.6% as renter-occupied.

The 2006 American Community Survey also reports a median household income of $95,591. Per capita income is $42,216. Table 2-3 below shows a comparison of this median income with other cities in the Dallas/Fort Worth area. Figure A-2 in Appendix A graphically shows this information.

Table 2 - 3: Comparison of Income

	Median Household Income	Per Capita Income
Frisco	**$95,591**	**$42,216**
Allen	$85,986	$32,219
Plano	$77,038	$38,534
McKinney	$69,232	$30,135
Denton	$44,668	$21,203
Dallas	$38,276	$24,691

Employment

Employment data was obtained from the North Central Texas Council of Governments to show the number of jobs for the major employers in the City of Frisco. Due to the rapid growth in City services and addition of schools in Frisco, additional information was collected directly from the City and Frisco Independent School District to verify their number of employees. The major employers in the City of Frisco are displayed below in Table 2-4.

Table 2 - 4: Largest Employers in Frisco

Employer	Industry	Total Employees
Frisco ISD	Education	3,100
T-Mobile USA Inc	Information	1,500
City of Frisco	Government	900
Collin Co. Community College – Preston Ridge	Education	550
Amerisourcebergen Specialty Group (HQ)	Wholesale	500
CLA USA Inc	Finance	450
Sinacola Mario & Sons Excavating	Construction	400
Ikea Home Furnishings	Retail	400
Super Target	Retail	350
Eads Telecom North America	Manufacturing	300
Fujitsu Transactions	Professional/ Technical	300
Tenet Texas RBO	Finance	300
General Electric Consumer Finance	Finance	290
Foleys	Retail	250

The North Central Texas Council of Governments has created employment projections to the year 2030. Table 2-5 below shows the employment estimates for the City of Frisco.

Table 2 - 5: Future Estimates of Employment Counts

Year	Estimated Employment
2010	19,932
2020	42,620
2030	58,931

Besides the total number of employees in Frisco, it is also important to consider individuals who live in Frisco and work outside the City. Tables 2-6 and 2-7 below show journey to work data provided by the 2000 U.S. Census.

Table 2 - 6: Commute Travel Patterns to Frisco

From	To	# of Workers	% of Total
Frisco	Frisco	3,255	44%
Dallas		1,090	15%
Plano		945	13%
Other		2,035	28%
Total		**7,325**	**100%**

Table 2 - 7: Commute Travel Patterns from Frisco

From	To	# of Workers	% of Total
Frisco	Dallas	4,610	26%
	Plano	3,980	23%
	Frisco	3,255	19%
	Other	5,673	32%
	Total	**17,518**	**100%**

This data shows that the majority of residents in Frisco also work in Frisco; in fact, 11% work from home. Not surprisingly, the most common cities that Frisco residents travel to for work, as well as where workers employed in Frisco reside, are Dallas and Plano. All other cities located in Collin, Denton, Dallas, and Tarrant counties have journey to work activity to and/or from Frisco; however, the numbers are so low that discussion in the context of public transportation is not warranted in this report.

Transit Oriented Development

Frisco City leaders have been visionary in land use planning and zoning to reserve areas of the City for Transit Oriented Development (TOD). These are parcels in and around the proposed commuter rail stations identified in the Regional Rail Corridor Study (RRCS). One of the purposes of the study was to determine Transit Oriented Development goals for guiding the process of development around those station sites. This study purpose is addressed in a number of ways. First, a description of Transit Oriented Development principles and guidelines is synthesized from the literature and industry experience. Second, the public input process, especially the discussions with stakeholders, is mined for community perception about TOD and its implementation. Lastly, a discussion of TOD goals and a process for implementing them is provided.

It is important to have a clear definition of TOD prior to any discussion of the concept and implementation. Different organizations define TOD differently. For some it is defined in relation to its impact on the transit system. For others, the focus is specific development details and quality of life issues. Given the current status of transit service in Frisco, an appropriate definition should relate to the City's vision for the community and quality of life issues. As such, the following definition is assumed in all succeeding discussion of TOD:

> *Transit oriented development is moderate to high density development located within easy walking distance of a major transit stop, generally with a mix of residential, employment and shopping opportunities designed for*

access and mobility with an emphasis on pedestrians without excluding the automobile.

The above definition of TOD is consistent with the City's Comprehensive Plan and supportive of the kind of development that is best suited for the suburban environment that exists in Frisco.

Transit Oriented Development Principles

Successful transit oriented development relies on disciplined decisions in zoning and City ordinances to require developers to meet standards that promote transit oriented design. The City has implemented a Form Based Code Manual for development. The Manual "seeks to ensure that Frisco guides its development in a way that creates neighborhoods and centers which are simply great places to be and which foster social interaction and a sense of community." While the manual does not explicitly describe standards for transit oriented design, its approach is consistent with many transit oriented design principles. This section of the report is a description of the general principles of transit-oriented design with examples that may be applicable to development in Frisco.

Transit oriented design includes the steps needed to make the transit journey seamless. Organizing residential, commercial, retail, office, recreation, and community land uses in a manner that is convenient for pedestrian access is the key to transit oriented design. At the Dallas Area Rapid Transit's Mockingbird Station, access from loft apartments to light rail is safe and convenient. Additionally, the theater, retail shops, coffee shops, bank, and record store are also accessible with a short, practical walk from the light rail system and the residential area. Mockingbird Station has won several awards for its thoughtful design. Yet simpler transit oriented design is possible. In fact, transit design "intensity" must be chosen to fit the transit development program if the public and private partners are to be successful.

There are a variety of methods to design for transit convenience, access, and seamless transit. The key concepts to keep in mind can be summarized as follows:

Connectivity – Access to train or bus can include a $50 bus stop sign or a $50 million rail station. Features grow in scope from marking the safe transit stop, to providing climate controlled waiting areas, automobile parking, newsstands, and coffee shops. If you have waited for a bus at a sign in an un-mowed, unimproved easement you know when transit oriented development is missing. If you have taken the Atlanta Hartsfield/Jackson subway from

Terminal D to baggage claim and walked to the airport MARTA Station to reach Peachtree Center without stepping out in the rain, you know when transit oriented development is working.

Pedestrian Priority – Each transit trip includes two pedestrian trips, even if brief. In Europe, pedestrian access was the necessary design building block as it was in our United States cities designed before 1935. After 1950, our nation rewrote the rules, designing for the automobile trip. Hence, drive-in windows are found at restaurants, pharmacies, cleaners, and banks. In every economy, the nation keeps growing what people will buy. Our national obsession with drive–through windows is not surprising, nor is that commitment to the highest support of automobile parking in the world.

Placing the pedestrian first can often be accomplished by designing the parking to be on the backside of the store, keeping the storefront close to the sidewalk. Pedestrian friendly neighborhoods require the same safety concerns as bike-, senior-, and kid-friendly neighborhoods. Cars must be well behaved. Streets that are too wide to cross, speed averages that are too fast, or avenues without sidewalks and bike lanes provide a disincentive to transit and pedestrian trips.

There is a wealth of literature and research on site design to encourage pedestrian access and walkability. A good summary source is the Kansas City Walkability Plan (LSA Associates, March 2003). There are five measures of pedestrian level of service: directness, continuity, street crossings, visual interest and amenity and security. All should be addressed in TOD site planning. A short summary of the major issues to be considered in each follows:

Directness – Provide and encourage direct pedestrian connections.

- Provide direct pedestrian connections to transit, schools, activity areas, and public facilities.
- Provide visible connections to key pedestrian destinations. Align and locate buildings, roadways, and open space so that pedestrians can see their destinations before arriving there.
- The location and pattern of streets, buildings, and open space must facilitate direct pedestrian access.

- Use light fixtures to provide direct indication for pedestrian traffic.
- Ensure that sidewalk uses, such as outdoor cafes, in high use retail pedestrian settings, are compatible with direct pedestrian access to buildings and other destinations.
- Avoid barriers that separate commercial developments from residential development and transit.
- Establish appropriate lot patterns that provide direct and visible connection of sidewalks between blocks.
- Ensure appropriate width of sidewalks and street crossings to facilitate continuous movement of two people comfortable walking side by side and allowing one to pass.
- Provide clear and direct pedestrian entries from the street, not just from parking areas.
- Minimize and remove physical obstructions/barriers that impede direct pedestrian access.

Continuity – Link schools, neighborhoods, parks, activity centers, and other destinations with a continuous pedestrian network.

- Provide a continuous and understandable pedestrian network by incorporating the following facilities, features, and elements:
  - Continuous sidewalks on both sides of the street.
  - A continuous alignment of building facades near the sidewalk.
  - A consistent park strip between the curb and the sidewalk.
  - Consistent street trees.
- Use pedestrian-scaled furnishings, signs, landscaping, and facilities that appear as unified and themed entities in pedestrian networks, areas, and corridors.

Street Crossings – Develop safe, comfortable, and attractive street crossings.

- Develop median refuges to improve the safety and comfort of arterial street crossings.
- Establish standardized street crossing improvements that include crosswalks, lighting, median refuges, corner sidewalk widening, sign, signals, and landscaping.
- Develop and design crosswalks that:
  - Ensure that signals, signs, and street markings have clear vehicular and pedestrian indications for street crossings.
  - Ensure that street crossings are lit to reflect the patterns of use.

- Minimize curb radius to:
  - Reduce the speed of right turning vehicles.
  - Reduce the distance for the pedestrian to cross the street.

Visual Interest and Amenity – Develop comfortable and attractive pedestrian facilities and settings to make an interesting pedestrian network.

- Provide pedestrian scale improvements that fit the urban context of the area. The color, materials, and form of pedestrian facilities and features should be appropriate to the area where it is located, as well as to the functional unity of the pedestrian network.
- Develop attractive improvements including landscaping, vertical treatments, sidewalk widening, and furnishing which improve the character and pedestrian scale of the urban environment.
- Incorporate special design features, public art, and site details that can enhance the pedestrian scale of streets and become urban amenities.
- Prohibit large surface parking lots to enhance the character of the pedestrian environment and to encourage pedestrian activities along the sidewalks on key streets and corners.

Landscaping:

- Develop a continuous edge of deciduous canopy street trees on both sides of the street. Select species that provide shade, shelter, and scale for the sidewalk/pedestrian environment, and the continuity for the pedestrian/ sidewalk environment.
- Develop attractive landscaping by considering the following criteria:
  - Reduce clutter of little plants and disorganized planting.
  - Establish patterns/spacing of street trees to provide a formal visual rhythm, linear edge, and organization of the sidewalk area.
  - Use landscaping selectively to soften harsh appearance of some buildings and parking lots at sidewalk edge.
- Screen blank building walls and retaining walls with landscaping, architectural features, or art to enrich the pedestrian environment.

Buildings:

- Encourage outdoor cafes and activity areas that provide pedestrian character and human scale to the sidewalk environment.
- Provide human scale character to the street with appropriate building design and details.
- Incorporate building entry details like porches and recesses, and occupied spaces like bay windows and balconies.

Security:

- Develop secure pedestrian settings by developing a well-lit inhabited pedestrian network and by mitigating the impacts of vehicles.
- Streets should appear inhabited to the greatest extent possible.
- Provide clear and direct lines of sight in pedestrian settings to increase feelings of security. Achieve this by minimizing use of shrubs, walls, berms, and other vertical features, which screen lines of sight to pedestrian facilities.
- Provide general illumination for security and visual safety of pedestrian areas and corridors.
- Develop physical buffers/edges between sidewalks and streets/parking lots.
- Avoid over-illumination of pedestrian areas, since these create, by contrast, shadowy areas nearby which may be threatening to pedestrians.

Vehicle Trip Reduction – If the neighborhood center has a grocery, pharmacy, coffee shop, restaurants, movie rental, bank, and cleaners, many of the trips can be combined. If this same center provides exceptional pedestrian access, many vehicle trips have been eliminated. Town center designs are the most profitable retail venues in our nation because people vote with their feet and their pocketbooks. Town center designs happen to be quite transit user friendly, but they are profitable because many feel the design is more competitive than malls or strip centers.

Practical Density – Transit cannot be efficient without moderate density, but poorly designed density destroys transit. Transit works best when both the origin and destination are dense in trip demand. At full capacity, buses and trains are a political, economic, and investment success. Low occupancy causes community support to evaporate.

As an indication of minimum density to support various modes of transit in a TOD environment, research is an aid. The "gold standard" in research on this topic is the 1977 work of Pushkarev and Zupan. Table 2-8 below illustrates minimum density needed to support various modes of transit:

Table 2 – 8: Transit Density Requirements

Mode	Service Type	Minimum Density (Dwelling Units Per Acre)	Area and Location
Dial-a-Bus	Demand response serving general public (not just people with disabilities).	3.5 to 6	Community-wide
"Minimum" Local Bus	1/2-mile route spacing, 20 buses per day	4	Neighborhood
"Intermediate" Local Bus	1/2-mile route spacing, 40 buses per day	7	Neighborhood
"Frequent" Local Bus	1/2-mile route spacing, 120 buses per day	15	Neighborhood
Express Bus – Foot access	Five buses during two-hour peak period	15	Average density over 20-square-mile area within 10 to 15 miles of a large downtown
Express Bus – Auto access	Five to ten buses during two-hour peak period	15	Average density over 20-square-mile tributary area, within 10 to 15 miles of a large downtown
Light Rail	Five-minute headways or better during peak hour.	9	Within walking distance of transit line, serving large downtown.
Rapid Transit	Five-minute headways or better during peak hour.	12	Within walking distance of transit stations serving large downtown.
Commuter Rail	Twenty trains a day.	1 to 2	Serving very large downtown.

This table, based on research by Pushkarev and Zupan (1977), indicates typical residential densities needed for various types of transit service. Such requirements are variable depending on other geographic, demographic and management factors.

You can see the practical density in Toronto or Atlanta. There is more than one million square feet of high-rise development around many of the stations. The clusters are obvious to any careful observer. New transit systems never expect this type of development quickly. But planning for dense development around stations is common in Plano and in Las Colinas. Practical density

includes offices, residential, retail, and hotels mixed in development close to, and convenient to, transit.

Developers care about profit, but design and functionality are issues with which developers gain comfort as they see the connection between success and design elements. Builders care about similar issues for similar reasons. Neither want to be penalized for constructing what they believe will be profitable and practical, but both can see the merit in many features that make the property yield more development per acre. Architects and engineers see density and design guidelines in a broader view. Green building advocates are also huge supporters of the concept of higher density because decreased. Transit's energy efficient trip design and the high efficient HVAC systems of a building both impact the global environment.

Parking and Floor Area Ratios

Minimum parking space requirements and maximum floor area ratios are strategies to insure the new development adds the "right" amount of infrastructure to support the new trip patterns of the development. Bonus incentives are often written into transit oriented development policies for limiting parking or increasing floor area ratio density. Both have the effect of encouraging transit or discouraging single occupant vehicle trips.

Variation by Mode

Transit oriented development can accomplish many objectives yet it must fit both the current service and the final service design. Commuter rail design features include more parking and less pedestrian access than light rail. Both include convenient bus and drop off access. Light rail access may be at grade, above grade, or below grade.

Bus rapid transit or express bus stations include a mix of these rail accessibility strategies. Express bus stations and commuter rail share common design features; bus rapid transit and light rail share many design features.

Vehicle Speed

The most important feature of transit is safe speed. The transit systems that offer faster commutes than the freeway have the most marketing success. But most transit systems operate at an

average speed, including stops, of half that of the automobile perceived speed.

Transit Oriented Development Guidelines

Once the principles are understood and adopted by the City, consideration should be given to adopting a Transit Oriented Development Ordinance. Included in Appendix B is a summary of a Transit Oriented Development Ordinance adopted by the City of Austin which is in the process of building a commuter rail system. It may be a good pattern for development of a similar ordinance in Frisco. Establishing such an ordinance in the early stages of commuter rail planning will promote development around the stations that is consistent with the City's Comprehensive Plan. The Transit Oriented Development Ordinance could be restrictive, prescriptive, or simply illustrative of best practices. It should consider the following guidelines:

Voluntary Design Manual

Many communities have approved the specific design criteria for pedestrian accessibility, transit stop, ingress and egress integration, and non-auto trip connection.

Information Only Design Review by Transit System

Some of the simplest approaches may be effective. Reviewing all developments with an eye toward eventual transit service is the key. For example, locating a large employment complex or public service building three miles from current or planned transit routes can be avoided by this simple design review.

Enforced Provisions for Transit Oriented Development

May include lane widths, curb radii, pavement specifications, pedestrian crossing, traffic calming, signal preemption, retail/office parking disincentives and many other strategies

Planned Developments

One method of enforcement for transit-oriented development without developer frustration is to allow incentives through planned developments. In markets that could support medium or higher densities, a density bonus can be granted to the development that builds in transit connectivity. In Seattle, several downtown developers were granted 25,000 square feet bonus allotments in exchange for easements connecting the development and the transit tunnel.

Regardless of the methods of zoning, planning, or regulations, the transit land use design is simple. Desired features are much cheaper at inception than at retrofit. The most important transit benefits to a development are real world transit service solutions for more square footage versus parking. And the most important development benefits for transit users are real world design solutions for encouraging transit /bike/pedestrian trips.

The Transportation Research Board identified the typical design components of a transit-oriented design at its 8th National Planning Conference for Small- and Medium-Sized Communities in September 2002. These include:

Development Design

- Mixed-use development
- High-density residential
- Park and Ride lots

Transit Pedestrian Connections

- Pedestrian-scale land use patterns
- Pedestrian connectivity
- Adequate sidewalks
- Well-located and designed crosswalks
- Active street life
- Bicycle facilities
- Traffic calming
- Multiple street connections near transit
- Adequate street furnishing
- Accommodate bus service

Transit Marketing That Stays

- Appropriate street furnishing
- Pedestrian-scale signs
- Design of bus shelters
- Bicycle facilities
- Site planning of transit stops
- Appropriate street trees
- Artwork to enhance pedestrian experience
- Public signage
- Light fixtures

In the Comprehensive Plan, the City of Frisco has identified three specific areas of transit-oriented development along the Burlington Northern and Santa Fe Railway, the expected rail line to be used for future regional rail serving Frisco. These areas are on the west side of the rail line at Virginia Parkway, the west side of the rail line at Main Street, and the east side of the rail line at State Highway 121. The City also has several other areas identified for both mixed-use residential and non-residential which, depending on the design, could be considered transit oriented developments. Consideration of the transit oriented design principles described above and eventual adoption of an ordinance to institutionalize them would create "transit places" consistent with the City's vision.

Transit Oriented Development Goals

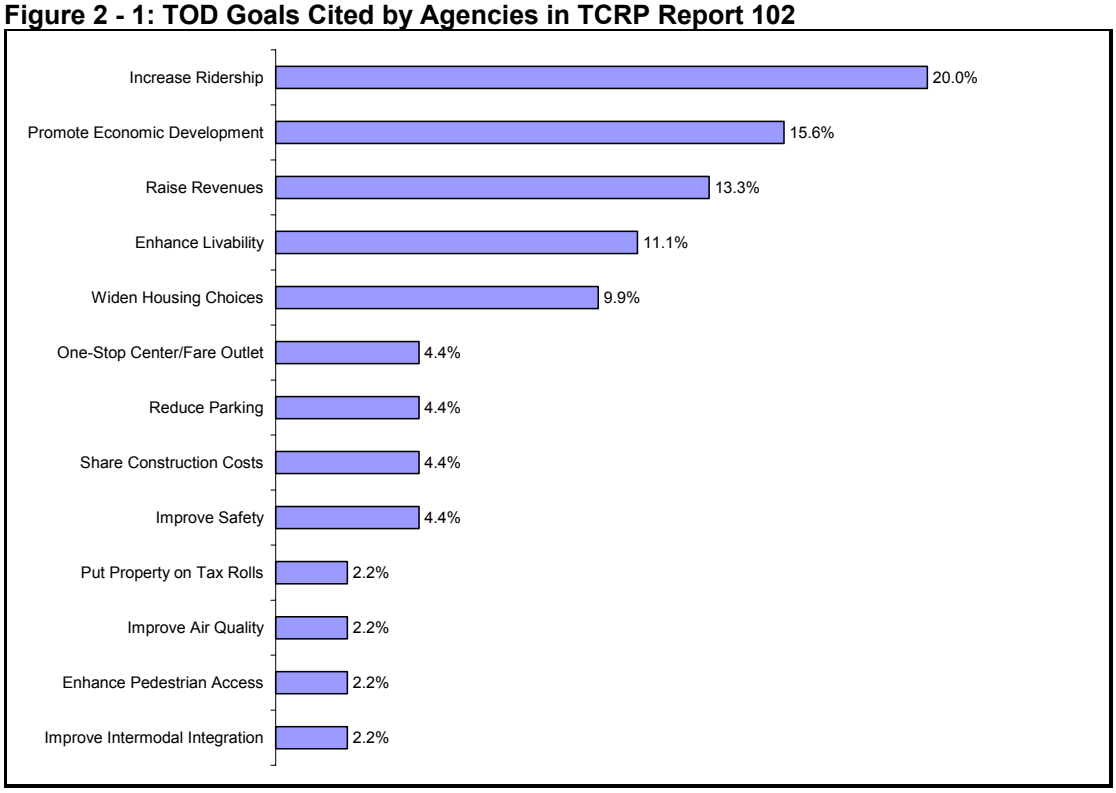
With the above discussion as background, the focus now shifts to developing TOD goals based on the unique characteristics of Frisco and input received in the process.

General public input to TOD goals was limited. During the small group discussions in the first round of input, there was general support for focused development around the envisioned commuter rail stations. Many participants also saw the need for public transportation services that would link the community to the stations and circulation around and to existing commercial development to facilitate access. The latter is not strictly within the definition of TOD because it applies to development designed around the single occupant automobile. However, it signals a perceptual willingness on the part of some citizens to link the ideas of more dense development with transit. This, of course, is a key ingredient in TOD. The remainder of the general public input was more concerned with service needs and design, rather than with specific comments on the concept of TOD.

Stakeholders also focused indirectly on TOD. Among the stakeholders who saw a need for public transportation, the majority linked that need to the rail system. As such, they also saw a need to make the stations vibrant centers for the system. Implicit in that discussion was recognition that access and mobility in and around the stations would be key. There also was stakeholder comment that the stations should be accessed by means other than the private automobile. Like the general public, many stakeholders saw a need to link existing development with transit. It is fair to summarize that stakeholders are open to TOD. Providing the public with more specifics and articulating a vision and set of goals for TOD are logical next steps.

In establishing Frisco's goals for TOD at the station sites it is helpful to understand the range of options for TOD goals. The Transit Cooperative Research Program (TCRP) under the auspices of the Transportation Research Board commissioned a comprehensive study of TOD in 2004. The TCRP Report 102, Transit Oriented Development in the United States: Experiences, Challenges and Prospects, provides in-depth guidance in this regard. The study conducted a survey with responses from 145 TOD practitioners across the country. Public and private sector participants were included. Figure 2-1 below shows the goals that were identified for TOD around the country:

Figure 2 - 1: TOD Goals Cited by Agencies in TCRP Report 102



While the chart describes the range of options for establishing TOD goals in Frisco, the actual environment for and timing of constructing the rail stations suggests a particular emphasis. Rail service is in its infancy in development in Frisco. The City, however, is interested in setting the pattern for development of the rail station sites in the short term. This is coupled with the City's overall goals of diversifying its economic base, encouraging job growth in Frisco and encouraging more dense, less auto exclusive development. The TOD goals should reflect the study input and above circumstances and policies. The following seem appropriate in that milieu:

> *The City of Frisco seeks to encourage Transit Oriented Development at the three locations identified as potential station sites for the Regional Rail Service. The City shall implement policies and provide incentives that encourage mixed-use development at TOD sites to enhance mobility and access while providing viable options to use of single occupant automobiles. It shall be the goal of the City in its TOD efforts to: promote sustainable economic development that creates jobs in Frisco linked to transit hubs and enhance livability and the quality of life in Frisco through broader housing choices and enhanced opportunities for private development that promote and support transit usage.*

In order to move the TOD process to the next level, the City should initiate a comprehensive outreach and education effort to citizens, local businesses, the economic development community, and developers. The effort should begin with education about TOD in general and specific examples of the opportunities and challenges in implementing it in Frisco. Consensus should be sought on the comprehensive goals for TOD. This could be followed by adoption of a comprehensive TOD ordinance by the City Council.

Current Services

Frisco and Collin County

One local fixed route was operated in the City of Frisco by the Collin County Area Regional Transportation (CCART). The route served the Main Street, Preston Road, Stonebriar Center, and Parkwood corridors at hourly intervals. The latest ridership information available shows 1,406 boardings for the month of August 2007. That translates to approximately 50 boardings a day or 15,100 a year. The FY2006 annual expense for this service was $144,902, or $9.60 per boarding. For purposes of clarity and all further analysis, a boarding is defined as one passenger getting on a vehicle, regardless of the fare paid. Because it is

reasonable to assume that a person boarding a transit vehicle will make a return trip, two boardings can be estimated to mean one person using the service.

The transit industry typically measures cost effectiveness by calculating the operating cost per revenue hour. In Frisco's case, the operating cost per revenue hour was $41.17. This is a reasonable cost for this type of service when compared to other transit systems.

On March 1, 2008, CCART discontinued operation of the local fixed route. The City of Frisco and CCART were in disagreement over cost and utilization of the service and were not able to reach an agreement to continue the service.

A private company, Frisco Shuttle began replacement service on March 3, 2008. Frisco Shuttle operates more services than previously offered by CCART. These services include:

- Local circulator within Frisco
- Express service linking Frisco to Dallas at the DART Parker Road light rail station
- Airport drop off service to DFW and Love Field by appointment
- Curb to curb service connecting Frisco to Plano, McKinney, Allen and Little Elm

Service is available Monday through Friday from 7:00 am to 6:00 pm with some limited service on Saturdays. Fares range from $10 for a day pass on the local circulator to $44 for the airport drop off trips. Because this service is new, evaluation of its effectiveness and patronage is not possible.

CCART provides curb-to-curb demand response service to the City of Frisco in Collin County. This service is currently provided to the general public and is reservation-based. CCART provide service Monday through Friday from 7:00 a.m. to 7:00 p.m. and on Saturday from 8:00 a.m. to 6:00 p.m. The fares range from $.50 to $5.00 depending on the destination.

In addition to the public transportation noted above, there are six privately owned and operated taxi and/or shuttle service businesses located in Frisco.

McKinney and Collin County

Collin County Area Regional Transportation provides rural demand response service in Collin County. CCART operates four local fixed route bus and demand response service in the City of McKinney. Service on these routes is operated 6:00 a.m. to 9:00 p.m., Monday through Friday, and 8:00 a.m. to 6:00 p.m. on

Saturday, with one-hour frequency. In addition, the McKinney Avenue Transit Authority operates a vintage streetcar route along McKinney Avenue. The streetcar operates seven days a week with no charge. Service operates on weekdays from 7:00 a.m. to 10:00 p.m. and on weekends from 10:00 a.m. to 10:00 p.m.

Denton County

The Denton County Transportation Authority (DCTA) operates local fixed route bus, commuter express bus, and complementary paratransit services. The DCTA is currently planning to implement commuter rail service in 2010. This service would connect with the DART system. Special Programs for Aging Needs (SPAN) operates rural demand response service in Denton County. SPAN does provide service to residents in the Denton County portion of Frisco.

Dallas County

DART coordinates a rideshare program in Dallas, Denton, and Collin counties. Both vanpool and carpool programs are available to assist commuters in locating other people in their area that are commuting to the same general area.

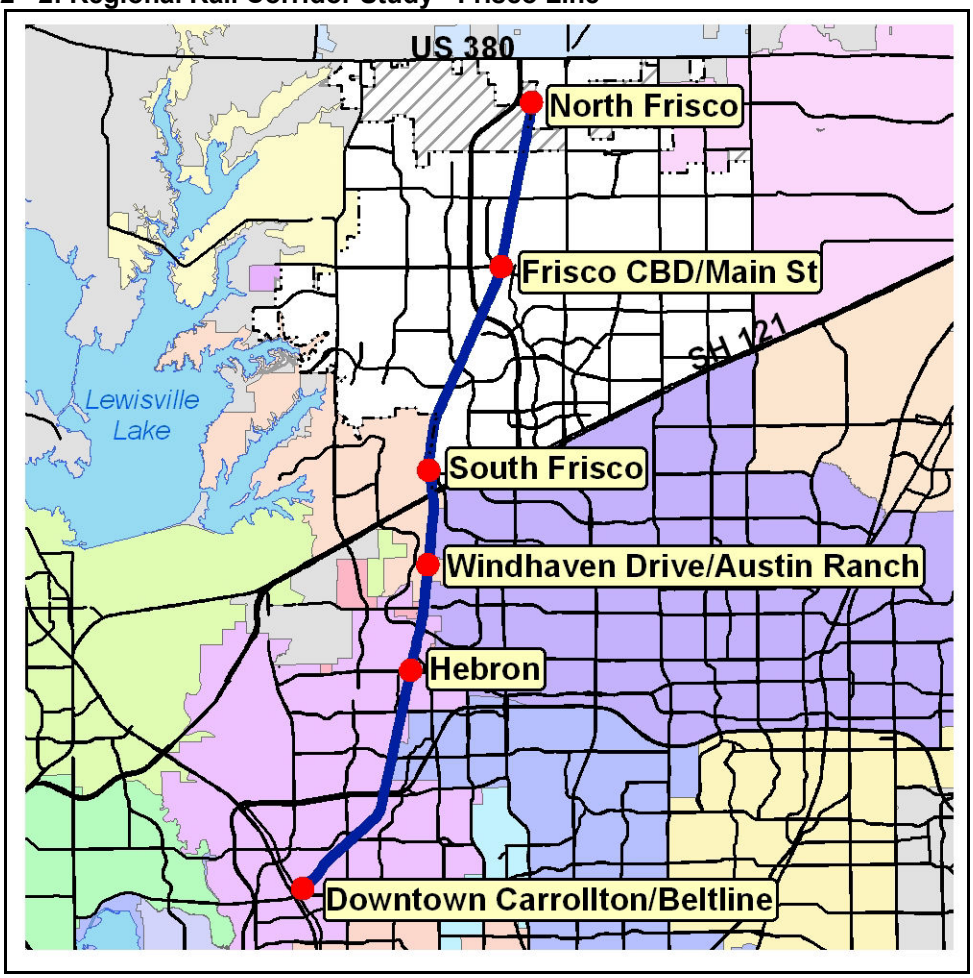
The rideshare matching program can match people interested in carpooling based on origin, destination and work hours. Vanpools are also an attractive option. Six to fifteen people can participate with one van at a shared cost of $200 - $215 per month. DART supplies the van and the insurance and there is an emergency ride home program available to users. There is currently one vanpool with 9 passengers originating out of Frisco.

DART operates a comprehensive system of local bus, express bus, cross-town bus service, commuter rail, light rail and complementary paratransit service in its member cities. Many of these services are operated in Plano, the closest location to Frisco. The closest DART rail station is at Parker Road in Plano. The nearest access to DART fixed route bus service is south of State Highway 121 at the Dallas North Tollway. Cross-town bus service is available at this location to access the West Plano Transit Center.

Regional Rail Plans

The Regional Rail Corridor Study (RRCS) was published on July 29, 2005. The Frisco corridor was identified as a priority for the region based on the growth and ridership estimations completed by the study. The recommendation from the study is shown in Figure 2-2 below.

Figure 2 - 2: Regional Rail Corridor Study - Frisco Line



The Frisco line would connect to the DART system at the Carrollton station. This is the same station that DCTA is using to connect to DART with the Denton County line that will run north to Denton.

Patronage on the Frisco portion of the regional line was estimated to be 3,020 daily boardings in 2007 with growth to 5,570 daily boardings in 2030.

Summary

The intent of this chapter is to present data about the environment that exists in Frisco as it relates to the consideration of providing public transportation or transit service. At this point in the process, no specific type or mode of service is identified. Rather, the factors that would support or work against the provision of any type of service are analyzed. The key factors of growth, population density,

commercial activity, demographic characteristics, employment, and land use are cataloged.

Based on the data in this Chapter, the following list shows an analysis comparing the factors for and against provision of transit service. These can be summarized as follows:

Factors Favoring Transit

- Growing senior and disabled population
- Traffic congestion
- Some concentration of commercial development and employment
- Rapid population growth
- Work commute volumes
- Potential connection to neighboring transit systems
- Existing public transit services in City and County

Factors Against Transit

- Auto dominance
- High household income
- Low percentage of transit-dependent population
- Suburban development patterns
- Marginal population density
- Abundant parking opportunities
- Marginal use of previous fixed route service

On balance, there seem to be enough factors suggesting that staged development of a public transportation system is needed and would be successful in Frisco.

The next chapter will add to this analysis with more detailed factors that estimate the actual demand for transit.

Chapter 3

Potential Demand for Public Transportation

Demand for public transportation is determined by analysis of a number of factors. These include travel demand from U.S. Census data, experiences of other transit systems, desired services of residents, input received from employers and other stakeholders and patronage patterns from similar types of service. This chapter analyzes potential demand for public transportation service in Frisco utilizing all of these factors.

National Transit Database Peer Analysis

Peer comparison reports are useful in providing general performance information to a transit system. In this case, the NTD peer analysis is a starting point to identify the extent of transit services in cities with comparable population characteristics and size to the City of Frisco. It also is important to understand that the comparisons that follow cannot be taken as absolute. Variation in city transit policy, service characteristics, and reporting make only the most general comparisons valid.

There were only four identified transit providers in cities that closely matched the City of Frisco. Although not empirical data to measure performance, this information is beneficial to see the levels of service provided by agencies that are similar in size and scope. All data for the peer analysis is taken from the 2006 National Transit Database and is shown for local fixed route bus services only. The NTD is a federally mandated system of measurement and record keeping for all transit systems. In order to remain eligible for Federal funding, transit systems must comply with NTD reporting requirements and file an annual report with the Federal Transit Administration (FTA). FTA compiles the data and publishes an annual report that traditionally lags two years behind the actual data. The service area of a system is defined by the transit agency itself and is based on annual report submissions.

The peer systems selected that most closely match the City of Frisco's population and size data are shown in Table 3-1 below based on the most recent data available for all peers:

Table 3 - 1: NTD Peer Cities

Agency	Service Area Population	Service Area (Sq. Miles)	Population Density
Clarksville, Tenn.	90,324	64	1,411
Midland, Texas	96,000	67	1,433
Denton, Texas (1)	102,000	65	1,569
Fargo, N. Dakota	105,539	45	2,345
Average	**98,466**	**60**	**1,634**
Frisco	99,327	70	1,419

Note: (1) Data source is 2005 NTD as Denton was combined with Lewisville in 2006 to form the Denton County Transportation Authority

Two of the cities have anomalies that are worth noting in this report. First, Fargo, North Dakota, has a much higher population density than the other cities. Interestingly, while such a density should support a higher level of transit service, their levels of transit service are in line with all the peers except Denton, Texas. The second anomaly concerns the relatively high level of service provided by Denton, Texas, although the population density is comparable to the other cities. This is caused by the amount of service DCTA provides to the University of North Texas and the express service it operates into downtown Dallas. As such, some of these factors are comparable to issues facing Frisco. Even with these anomalies, it is beneficial to include both of these cities in the analysis.

Tables 3-2 through 3-6 that follow show various service information characteristics for the peer cities.

Table 3 - 2: Peer City Service Characteristics

Agency	Vehicles Operated in Max Service	Annual Boardings	Revenue Miles	Revenue Hours	Boardings per Revenue Mile	Boardings per Revenue Hour
Clarksville	12	630,798	796,736	47,583	0.8	13.3
Midland	12	373,438	626,104	40,647	0.6	9.2
Denton	33	1,265,309	2,843,930	49,511	0.4	25.6
Fargo	12	899,946	531,056	41,940	1.7	21.5
Average	**17**	**792,373**	**1,199,457**	**44,920**	**0.7**	**17.6**

Table 3 - 3: Peer City Cost Data

Agency	Operating Cost	Cost per Revenue Mile	Cost per Revenue Hour	Cost per Boarding
Clarksville	$2,539,789	$3.19	$53.38	$4.03
Midland	$1,689,251	$2.70	$41.56	$4.52
Denton	$2,142,081	$0.75	$43.26	$1.69
Fargo	$2,369,512	$4.46	$56.50	$2.63
Average	**$2,185,158**	**$2.78**	**$48.67**	**$3.22**

Table 3 - 4: Peer City Farebox Data

Agency	Operating Cost	Farebox Revenue	Farebox Recovery Ratio
Clarksville	$2,539,789	$374,806	15%
Midland	$1,689,251	$228,727	14%
Denton	$2,142,081	$58,692	3%
Fargo	$2,369,512	$397,815	17%
Average	**$2,185,158**	**$265,010**	**12%**

Table 3 - 5: Percent of Budget Expended by Category

Agency	Vehicle Operations	Vehicle Maintenance	Non-Vehicle Maintenance	General Administration
Clarksville	72%	15%	1%	12%
Midland	68%	15%	0%	17%
Denton	72%	22%	0%	6%
Fargo	49%	21%	4%	27%
Average	**65%**	**18%**	**1%**	**16%**

Table 3 - 6: Staff Utilization

Agency	Number of Operating Employees	Operating Employees per 1,000 Revenue Hours	Number of Maintenance Employees	Maintenance Employees per 1,000 Revenue Miles	Number of Administrative Employees	Administrative Employees per Peak Vehicle
Clarksville	48.4	1.02	7.0	0.01	3.8	0.32
Midland	39.0	0.96	5.0	0.01	3.0	0.25
Average	**43.7**	**0.99**	**6.0**	**0.01**	**3.4**	**0.28**

Note: Staff utilization data is not available for Denton and Fargo

Table 3-7 below shows average information on characteristics of the peer cities that help to frame levels of service and cost expectations.

Table 3 - 7: Average Data from Peer Cities

	Peak Vehicles	Operating Cost	Cost/ Revenue Hour	Cost/ Boarding	Farebox Recovery
Average	17	$2,185,158	$48.68	$3.22	12%

This information is useful to the City of Frisco by identifying what range of service levels and operating cost is reasonable to expect should the City opt to implement traditional fixed route services. As noted in Chapter 2, density is a key determinant of the need for transit service. While many believe Frisco's density will make traditional fixed route transit service a challenge in Frisco, it is noteworthy to observe that population density in Frisco is virtually identical to two of the peer cities that have significant levels of transit service. This may suggest that the City could support a transit system like those operated in some of the peer cities.

Economically Comparable Cities Analysis

Frisco presents a challenge in identifying other transit systems for comparison purposes. It is a unique City without traditional transit services. A method had to be found in addition to the traditional analysis of potential peer transit systems based on National Transit Database statistics. In its simplest form, this method strives to identify cities around the country that are economically comparable to Frisco without consideration of transit data. Once these cities are identified, details of transit service provided in those cities are summarized for consideration of transit options for Frisco.

Comparable city identification was accomplished by Buxton utilizing their extensive database of city demographic and economic data. The Buxton peer selection was based on factors including: total population, total workplace population, and similar socio-economic characteristics. Based on these parameters, seven economically comparable cities were identified for analysis. The identified cities are:

- Daly City, California
- Brandon, Florida
- Hoover, Alabama
- Mission Viejo, California
- Canton, Michigan
- Lee's Summit, Missouri
- Sandy, Utah

The seven cities meet the following criteria in relation to Frisco:

1. They are within 25% of Frisco's total household count.
2. They are within 25% of Frisco's total workplace population.
3. They have at least 70% of the households falling within the top half of the socio-economic spectrum.
4. They have at least 70% of the total workplace population falling within the top half of the socio-economic spectrum.

Table 3-8 below shows Frisco compared to the selected cities:

Table 3 - 8: Economically Comparable City Characteristics

City	Total Households	% in Top Half Socio-Econ Spectrum	Workplace Population	% in Top Half Socio-Econ Spectrum
Daly City	29,261	93%	29,919	92%
Brandon	35,164	82%	36,294	66%
Hoover	27,723	82%	38,705	58%
Mission Viejo	33,354	90%	41,515	92%
Canton	31,333	84%	27,537	75%
Lee's Summit	30,061	82%	36,086	71%
Sandy	26,666	84%	35,327	85%
Average	**34,187**	**85%**	**34,505**	**84%**
Frisco	**30,509**	**87%**	**35,055**	**77%**

Based on this group, a review was completed of how each city provides transit service in their community. Table 3-9 below shows the details for each city.

Table 3 - 9: Summary of Service Offered by Economically Comparable Cities

City (Urban Area)	Type of service	Hours of operation	Frequency	# of Routes
Daly City (San Francisco)	Bus ADA Rail	Up to 24 hour per day service 365 days per year	Varies between every few minutes up to every 30 minutes	25
Brandon (Tampa)	Bus ADA	M-F 5:00 am - 12:56 am Sat 7:20 am - 9:40 pm Sun 7:20 am - 9:40 pm	30 Min M-F 60 Min Sat 60 Min Sun	8
Hoover (Birmingham)	Bus ADA	M-F 5:00 am - 9:53 pm Sat 6:10 am - 9:30 pm	1-1.5 hours Mon-Fri 1.5-2 hours Saturdays	2

City (Urban Area)	Type of service	Hours of operation	Frequency	# of Routes
Mission Viejo (Orange Co., CA)	Bus Rail ADA	M-F 430a-1100p Sat-Sun 500a-900p	15-60 Min M-F 30-60 Min Sat-Sun	7
Canton (Detroit)	None	None	None	0
Lee's Summit (Kansas City)	Bus Flex Bus	Flex route - 9 am - 3 pm Express 6 - 7 am; 5 - 6pm	30 min	2
Sandy (Salt Lake City)	Bus ADA Rail	M-Th 4:17 am - 10:51 pm Fri-Sat 5:00 am - 2:00 am Sun 8:00 am - 11:00 pm	M-F 15-60 min Sat - 15 - 60 min Sun 2 - 4 hour	13

All but one of the selected cities has extensive transit service for their residents and connections with larger regional systems. Several also are served by rail systems. In most cases, transit service has been in place for many years. Of course, many of the selected cities have not grown as fast as Frisco.

These results are part of an overall analysis of transit demand for Frisco. It cannot be read in a vacuum. Just because several economically comparable cities in the United States have extensive transit service does not mean that Frisco should develop the same kind of service. Frisco is in the infancy of considering public transportation options. The selected cities have had years to develop their systems. While all the cities that have transit are part of a larger metropolitan area and transit service area, there is a critical geographic difference. Only Mission Viejo has a similar geographic orientation to the dominant downtown in its region, as does Frisco. All the other selected cities are much closer to their dominant downtown than Frisco is to downtown Dallas. Another parallel is the rail mode. Mission Viejo is served by Metrolink, a commuter train similar in concept to the one being developed by DCTA and the one in operation by Trinity Railway Express.

This analysis suggests that over time Frisco should consider implementation of public transportation options. Economically comparable cities have robust systems of bus, paratransit, and rail services in place for their residents. These have evolved over time in coordination with larger regional providers. This also suggests that partnerships with DART and DCTA to accomplish the same in Frisco could be a fruitful line of pursuit.

Implications for Potential Frisco Demand

Results from the peer analysis can assist in the development of patronage estimates for Frisco. To do this, the NTD peer data is the most useful. The cities studied in that analysis, while more mature in service history than Frisco, are comparable in broad demographic respects. On average, transit service in those cities has produced 8.05 annual passenger boardings per capita. Applying Frisco's current population to the average ratio would suggest that annual patronage on a mature transit system in Frisco could be as great as 800,000 annual passenger boardings. The range of estimates based on applying this ratio to Frisco's population is from a low of 386,000 to a high of 1.2 million.

Stakeholder Input

An integral part of the study effort was an aggressive and proactive public input process. Attempts were made to reach out to a wide variety of audiences. These included:

- Elected and appointed officials
- Business leaders
- Community decision makers
- Individuals and organizations with a stake in the success of the community (stakeholders)
- Residents in general

Public Meetings and Stakeholder Interviews

Interviews were held in person and via telephone with stakeholders, including various business, community, and social service agency representatives who have a direct stake in the success of transportation initiatives in the City of Frisco. It also included elected and appointed officials charged with policy and financing decisions about any services that may be proposed. Two community input sessions were also conducted.

The stakeholder input sessions were designed to glean the following information about transportation in the City of Frisco:

- Attitudes, perceptions and awareness of public transit options currently available
- What transportation needs existed for residents, large employers and retail businesses

- What, if any, public transportation options would serve those needs
- What barriers exist that would prohibit support of a public transit system

Detailed remarks from each of the meetings are included in the Appendix.

The vast majority of the interviewees were aware that CCART operated a fixed route, but were unsure of where it went, how it worked, and whom it served. Of those who were familiar with the CCART service, all agreed that it had not been marketed effectively. The most common transportation solution expressed was the completion of State Highway 121. Commuter rail was the most common public transportation solution cited.

About half of the stakeholders interviewed saw a need for public transportation for certain segments of the Frisco population, including seniors and the disabled. Issues identified were that the senior and disabled populations were growing and the need for mobility will increase. One of the stakeholders had the perception that the disabled population is growing at a faster rate than the general population. Only a handful of interviewees felt the student population would benefit from a public transit service.

The overwhelming majority of the stakeholders identified workforce transportation as the most important need of the City. In most cases, this was expressed as a need to bring workers in from other cities in the Dallas metropolitan area to Frisco. The perception was that most of the lower-wage workforce population in Frisco does not live in Frisco, as well as the price of gas and tolls to drive a car to Frisco were prohibitive. Many identified a need for residents of Frisco to access downtown Dallas for employment and cited commuter rail as a possible solution.

Several of the stakeholders considered the idea of a commuter express bus service feasible if certain conditions were met with regards to frequency of service, convenience, drop-off locations, and a guaranteed ride home program. Others adamantly decried any type of bus service, stating that residents of Frisco would not use it.

Traffic congestion for all sporting and special events was identified as a significant problem for the City. The stakeholders were evenly divided on whether parking challenges at Pizza Hut Park and Dr. Pepper Ballpark were significant enough to warrant shuttle service via bus. City-sponsored special events, such as Merry Main Street and the 4th of July celebration, were cited more often as needing shuttle service.

In general, there is support for some form of public transit service. In most cases, support for commuter rail was evident. Most of the stakeholders conceptually supported a local bus service; however, the support ranged based on the type, cost, and characteristics of the service. The service needs to be cost effective and would serve the seniors, disabled, and others who needed special transportation.

Local bus service was not seen as the solution to transporting lower-wage workers because the perception is that most of these workers live outside of Frisco. In fact, most of the stakeholders supported, at least in concept, a system of connections to various surrounding cities, primarily Dallas and Plano, but also such cities as Prosper, Little Elm, Garland, and Lewisville.

When asked if there would be support for an additional local tax to fund public transportation, there were mixed responses. Of those who responded affirmatively, all agreed that the initiative would have to be properly researched, with strong data clearly establishing the need, and a very detailed cost proposal. Those who responded in the negative stated that Frisco residents are already feeling the pinch of a down-turned economy and would not be interested in paying for a service that the majority of the population would not use.

A list of the stakeholders who were interviewed is included in Appendix C of this report. Interview transcripts are also available upon request. All interviews were anonymous and are denoted by numbers. Some of the interviewees were grouped into one interview and are shown as a single interview transcript.

Employer Survey

As part of the stakeholder outreach program, written surveys were mailed to 26 employers and 8 social service agencies. Of those, 12 employer and 5 social service agency surveys were completed and sent back. Charts for many of the results are included in Appendix D to illustrate the results.

Results of the employer survey showed that 84% of the respondents had over one hundred employees. The surveys showed that 25% of the respondents were in the retail industry, 25% were in the Food Service/Hotel industry, and the other 50% was split between government, manufacturing, business services, education, and technology industries.

Traffic congestion was cited by 46% of respondents as the greatest transportation barrier for customers. Tolls and parking were the next biggest barriers. Likewise, traffic congestion was rated the greatest transportation barrier

for employees. Tolls and lack of access to a car were the second and third greatest barriers.

The survey results showed that 60% of respondents stated that, if a public transportation system were implemented, it should serve both within and outside of the City limits. A far second, 30% stated that it should be only within the City and the remaining 10% stated it should only operate outside the City providing connections to other areas. Dallas/Fort Worth, McKinney, Little Elm, and Plano were cited most often as the cities a Frisco system should connect to.

When asked what type of public transit services would be most appropriate for the City, 30% cited commuter rail; 26% cited traditional bus; 22% citied local circulator shuttles; and, 22% citied door-to-door service.

The most likely users were cited as low income, hourly workers, and seniors, at a combined 53% of responses. The balance was split between students, disabled persons, commuters, and the general public.

The employers were asked their opinions as to whether their customers and employees would use a public transportation system. The survey results showed that 11% and 64% of customers and employees, respectively, would use the service.

Based on the results, customers and employees are coming from cities throughout the greater Dallas/Fort Worth Metropolitan Area.

Social Service Agency Survey

Lack of access to a car was by far the greatest transportation barrier for social service agency clients. A distant second was parking. No other barriers were noted.

100% of the respondents said that if Frisco started a public transportation system, their clients would use it. The main reason they would use it is because they have no car available to them. Other reasons that were frequently cited were the high price of gasoline and lack of a driver's license. The respondents identified work and medical purposes as being the most likely trip purposes for their clients on public transportation. .

Results showed that 80% of the respondents stated service should be offered both within and outside the city limits. All of the surrounding cities were selected as areas that should be served or connected to.

According to respondents, 40% cited door-to-door service as the most needed; 30% cited commuter rail; 20% cited traditional bus service; and 10% cited local circulator shuttles.

The most likely users were cited as low income and commuters, at a combined 42% of responses. The balance was split between all other groups.

Implications for Potential Frisco Demand

Public, stakeholder, employer, and social service agency input are excellent subjective indicators of demand. Citizens and Frisco community leaders have definite ideas about the demand and need for public transportation. Unfortunately, they are a bit in conflict. There is a strong voice in Frisco for public transportation for elderly and disabled citizens. This is only partially shared by community stakeholders. Both groups see a demand for some form of transit to get workers to Frisco for jobs of all kinds. There also appears to be a bit of consensus on the need for commuters to get to and from Dallas, as well as for connections to surrounding cities.

The groups disagree on the demand for "traditional" bus service in Frisco. Citizens, in general, employers, and social service agencies all see the need for internal circulation. Business and community leaders see only a small need for a shuttle type service linking retail and entertainment venues and hotels. All groups agree that commuter rail is a highly desirable form of transportation. Employers ranked all other types of service as generally equal. Social service agencies, in particular, rated demand response door-to-door service as the highest need for their clients.

Transit User Analysis

Another way to estimate demand is to profile existing users of public transportation service. Once the profile is established, it is projected on the entire community to identify overall level of demand. While this is a valuable technique, it was difficult to apply to Frisco. The CCART service that previously operated in the City did not have a broad enough passenger base to allow development of an accurate profile. There are no commuter services operated from Frisco to other communities. In an attempt to test demand a substitute tool had to be employed. The study used the DCTA express bus service to Dallas as a surrogate for service that could exist in Frisco. Demographic data about express bus passengers utilizing DCTA service from Denton and Lewisville to Dallas was obtained. This data was summarized and compared to comparable data for the overall Frisco population. As such, this is a demographic analysis not a profile in the usual sense.

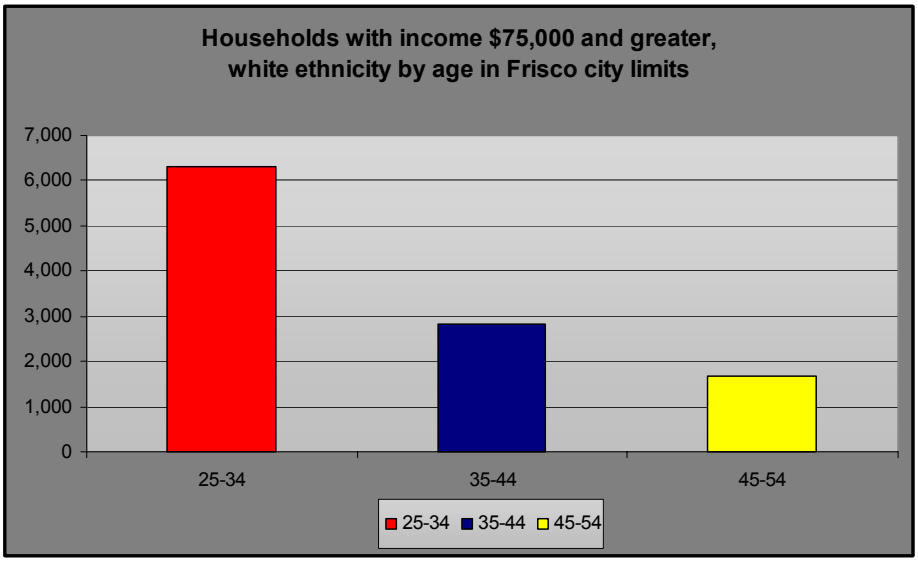
In conjunction with McDonald Transit Associates, Buxton conducted a study that identifies potential express bus service users in Frisco, Texas. To aid in McDonald Transit Associates' decision-making during the course of their work with Frisco, Buxton identified and mapped households that have characteristics of those using the express bus service in Denton County, Texas.

Although Denton County is not demographically equivalent to the City of Frisco, the type of express service provided by the Denton County Transportation Authority would be highly comparable to express service that could be feasible for Frisco. Therefore, it can be assumed that the most typical user in Denton County likely mirrors a potential user in Frisco. The demographics of those users include:

- White ethnicity
- Household income $75,000 and greater
- Age range 25-54

Figure 3-1 below represents 3 specific age ranges that meet the white ethnicity and household income $75,000 and greater requirement.

Figure 3 - 1: Breakdown of Potential Commuter Users by Age



Obviously, a vast majority of households fit this demographic profile. This information is valuable in three ways. First, should the City opt to implement a commuter express service, addresses of households that fall into the typical user profile are available to launch a direct mail campaign.

Second, if the City would like to perform a telephone survey to determine the likelihood of commuter express bus usage, these households should be targeted for the survey. Lastly, this information shows the highest density areas of possible riders to appropriately site park-and-ride locations.

Implications for Potential Frisco Demand

The implications for demand using the transit user analysis are clear. Based on people who use commuter express bus service in other cities, there is a large market for that type of service in Frisco. Of course, this conclusion has to be made destination specific given the wide variety of potential destinations elicited from Frisco citizens. The travel data discussed in Chapter 2 clearly show that the largest market for this type of service is a connection to and from Frisco and downtown Dallas.

Summary of Demand

Data gathered about potential demand for transit service in Frisco indicate a need for public transportation service. The limited amount of transit service provided in the past had a consistent patronage base of approximately 4 passengers per hour of operated service. While this number is low in comparison to established transit systems, it is high enough to indicate latent demand given the limited amount of service provided. Analysis of comparable cities also shows demand for public transportation services. Cities with economies comparable to Frisco have very extensive transit systems. Cities that have similar population and density patterns also have robust transit systems. In fact, patronage on a Frisco transit system could be as great as 1.2 million riders per year if that system performed as well as the best peer system based on National Transit Database information.

Input from citizens, stakeholders, employers and social service agencies indicate latent demand for transit at a non-empirical level. This is confirmed by analysis of potential commuter bus patrons that fit the DCTA customer demographics.

Given the indication of demand described in this chapter, the following types of public transportation service should be considered for Frisco:

- Internal circulation flex-route(s), meeting expressed needs and providing complementary paratransit service required by the Americans with Disabilities Act (ADA).
- Commuter service to downtown Dallas.
- Near-term connection to DART light rail via bus.
- Coordination with rural providers in Denton and Collin County.

- Feeder services to future commuter rail stations.

The strategies and implications of implementing these services are discussed in detail in Chapter 4.

Chapter 4

Public Transportation Service Alternatives

Approach

After synthesizing the data in the previous chapters, a transit system can be supported and is justified. Given the mixed public support for transit service in Frisco, the need to educate the public, necessary preparatory work, funding decisions, and details of implementation, no single solution is best. This chapter provides the details necessary to consider alternatives and develop a locally acceptable implementation plan. As an illustration, a recommended implementation plan is presented. This is intended as a starting point for the City to begin implementation of needed service.

Each potential service is described in detail. The opportunities and challenges of each service are also presented. The recommended implementation plan is presented in annual increments based on anticipated growth in Frisco and service development targets. The plan is supported by financial estimates.

Service Alternatives

The following initiatives are recommended for the City of Frisco and are described in detail below:

- Work with CCART and SPAN to coordinate transfers at the county line for more effective demand response service
- Implement local flex-route bus service
- Implement shuttle service to the DART Parker Road LRT station
- Implement express bus service to Downtown Dallas
- Implement feeder bus service to future regional rail stations in Frisco
- Support DART Carpool/Vanpool Program through a coordinated marketing effort

CCART and SPAN Demand Response Service

CCART and SPAN currently provide curb-to-curb demand response service to the City of Frisco on the Collin County and Denton County side, respectively. This service is currently provided to the general public and is reservation-based.

SPAN provides service Monday through Friday from 7:00 a.m. to 6:00 p.m. for a fee ranging from $1.25 to $2.50 depending on the passenger category (e.g. age 60 and over, disabled, or general public). CCART operates service Monday through Friday from 7:00 a.m. to 7:00 p.m. and on Saturday from 8:00 a.m. to 6:00 p.m. The fares range from $.50 to $5.00 depending on the destination.

Demand response service is typically expensive and is less productive than traditional transit service. However, it is the type of service that makes the most sense for residents with special needs or in a geographically rural area. The fact that Frisco is split between two counties poses a unique challenge. In order for this service to become more productive and convenient for Frisco residents, CCART and SPAN need to work together on a transfer agreement and procedures. This will allow patrons of each specific system to access services in the neighboring county.

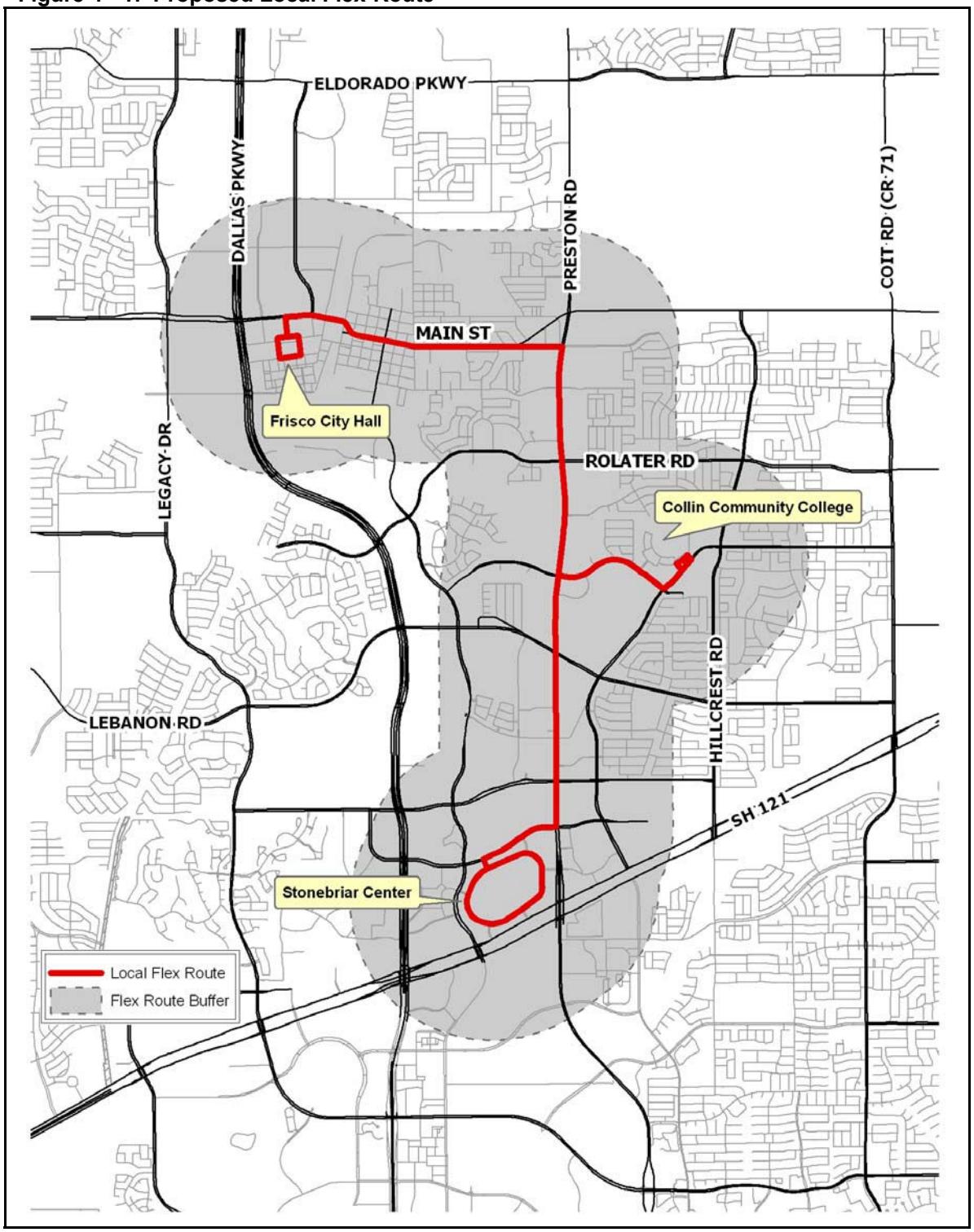
The most common performance measures for demand response service is passengers carried per hour of service, overall patronage, budgetary performance and some measure of service quality. Service quality can be measured by percent of trips on time, number of missed trips, cancellations or some combination of these measures. Acceptable productivity for demand response service is a range between 2 and 4 passengers carried per hour of service.

As this service is already in place, there are no implementation challenges. CCART and SPAN already provide service to Frisco residents in the respective counties. However, as recommended above, effort should be made by the City to encourage a seamless transfer agreement between CCART and SPAN at the county line, so that Frisco residents can be served effectively.

Local Flex-Route Bus Service

Population density and development patterns in Frisco are not consistent with successful operation of a traditional local fixed route bus service. However, there is a documented need for service for various segments of the population. To achieve the goals of providing cost effective, productive, and convenient service to these segments, a local flexible bus route, or flex-route, is recommended. This route primarily operates along Main Street and Preston Road, with service to Collin County Community College and Stonebriar Center. The route schedule is constructed to allow the bus to deviate from its fixed path to pick up or drop off patrons within a ¾-mile buffer around the route. Figure 4-1 below illustrates this concept.

Figure 4 - 1: Proposed Local Flex-Route



During the public input and stakeholder phase of the study, there was some discussion about the need for a rubber tired trolley route linking commercial and entertainment venues in Frisco and/or operating between original downtown and Frisco Square. There does not appear to be sufficient demand or interest for stand-alone trolley routes of this type. The flex-route that is proposed can meet many of the same needs along meeting additional demand. Vehicles from all services can be used to assist with special events on a break-even basis. Should there be a desire to have a "trolley type" vehicle in Frisco, the flex-route or DART Station Connector described below could be operated with such a vehicle. The budget and financial plan presented below are sufficiently flexible to allow selection of a "trolley type" vehicle if that is decided during the first year of implementation.

Performance measures for this type of service typically are overall patronage, passenger trips per hour or mile of service, budgetary compliance, percent of trips on time and appropriate safety and policy adherence measures. Ridership on this route would be greater than the previous fixed route operated by CCART because the service would be more flexible, operate more frequently with more overall operating hours. Initial patronage results on such a route should be in excess of 5 passengers per hour. As the service matures, an eventual goal should be 8 to 10 passengers per hour of service. The most appropriate vehicle for this service would be a small, 24-passenger, medium-duty transit vehicle.

The implementation challenges for this route are primarily start-up issues. The City would need to determine whether the service would be provided utilizing City personnel, through an agreement with a private provider, or via contract with a public provider of service. If the service is provided with City personnel, staff must be hired, vehicles procured, operating procedures drafted, and maintenance facilities located. The advantages to providing the service with City personnel and equipment include the ability to have more direct oversight and responsibility and taking advantage of City economies of scale. The key disadvantage is that it could take longer for the service to begin because of the time it will take to address all of the items

If the service is provided through an agreement with a private provider, all of the personnel and equipment can be supplied by the private provider. This allows for a quicker start-up of service. The disadvantage to the City is the lack of direct control over the service provided. However, with a well-written contract, the City can ensure that all of the necessary information is provided to them in a timely and accurate fashion.

The third option is to contact a public provider of transportation, such as DART or DCTA, to provide the service. This approach has the same advantage as the contract with a private provider but would be more costly than that approach.

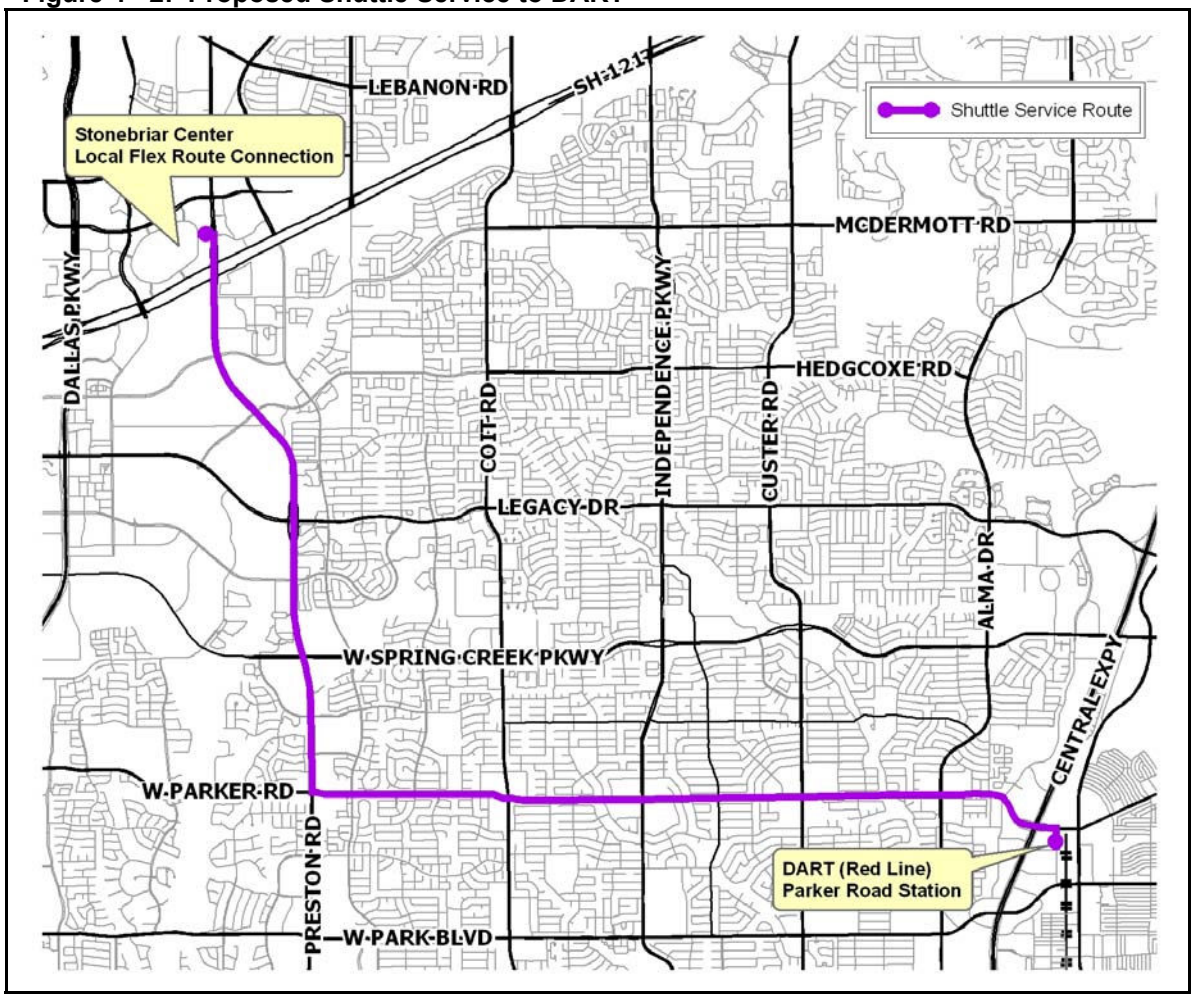
Regardless of the method of service provision, the City should consider assigning one staff person to oversee the transit program. This person would be responsible for oversight of the operations, as well as the contact for all funding issues.

Complementary paratransit service is required by the Americans with Disabilities Act whenever fixed route service is implemented. Because of the flexible nature of the fixed route service, the requirements are already met. No additional ADA complementary paratransit service will be needed in Frisco.

Shuttle Service to DART's Parker Road Light Rail Station

Throughout the stakeholder involvement process, it became very clear that transportation was needed to bring lower-wage employees into the City. The recommendation of shuttle bus service to and from the DART Parker Road station in Plano addresses this need for those employees with access to the DART light rail service. Figure 4-2 below shows the recommended routing for this service. Small buses interchangeable with the ones used for the local flex route would provide the most appropriate capacity for this service.

Figure 4 - 2: Proposed Shuttle Service to DART



The shuttle would, ideally, operate all day with more frequent service in the peak commute times. The implementation plan described below presents a phased initiation of this service to meet anticipated needs. The City could work with the industry employers to determine the best operating hours.

Performance measures for this type of service typically are overall patronage, passenger trips per hour or mile of service, budgetary compliance, percent of trips on time, and appropriate safety and policy adherence measures.

Express Bus Service to Downtown Dallas

The stakeholder input and journey to work data suggested that express bus service to downtown Dallas would be beneficial and effective. The service could

serve as a precursor to commuter rail, allowing the residents of Frisco to begin seeing public transit as a part of their community's lifestyle.

This service would operate during peak morning and afternoon commute times and is geared for the Frisco resident traveling to downtown Dallas. Although a reverse commute can be offered, ridership may be minimal because of the faster light rail to shuttle service option. The stakeholder input suggested that a high-tech, classy express bus service would be the most palatable to Frisco residents. This translates to procurement of heavy-duty over-the-road coaches with amenities such as wi-fi access, overhead lighting, cushioned seats, and, possibly, overhead racks for briefcases, etc.

Buses would serve two to three park-and-ride locations in the City of Frisco. Ideally, there would be one park-and-ride at the north end of the City, one in the middle and one at the south end. Because of the lack of density at the north end, a park-and-ride at inception may not be warranted. It would likely serve residents from communities north of Frisco, rather than Frisco residents themselves. The park-and-ride locations could be City-owned land or used through an agreement with a landowner, such as a movie theater or large retail establishment. The park-and-ride locations could be sited at the future commuter rail stations. This could provide the initial impetus for Transit Oriented Development at those sites. Convenient and quick access and egress for the transit vehicle is of paramount importance when selecting a site. In addition to safe, clean, and on-time bus service, patrons will be more likely to use the service if the park-and-ride facility has a security presence of some type, easily readable markers directing them to the parking area, and a clean passenger waiting area.

The Denton County Transportation Authority implemented a similar type of express bus service in 2007. This service has been in operation since October 2006. The average number of passengers per hour is 10. Typically, with this type of service, an agency experiences a peak in ridership at its inception as people try the service for the novelty. Ridership will then drop slightly and build steadily over time. At about three years, a route will have established its ridership base, with marginal increases and decreases as environmental factors change, such as the price of gas or a marketing push by the agency.

Implementation challenges include purchase of the vehicles, negotiation for, or construction of, park-and-ride locations, and coordination with DART on routing through Downtown and use of their facilities. Once these items are complete, this service is simple to implement, easy to market, and exciting to watch grow.

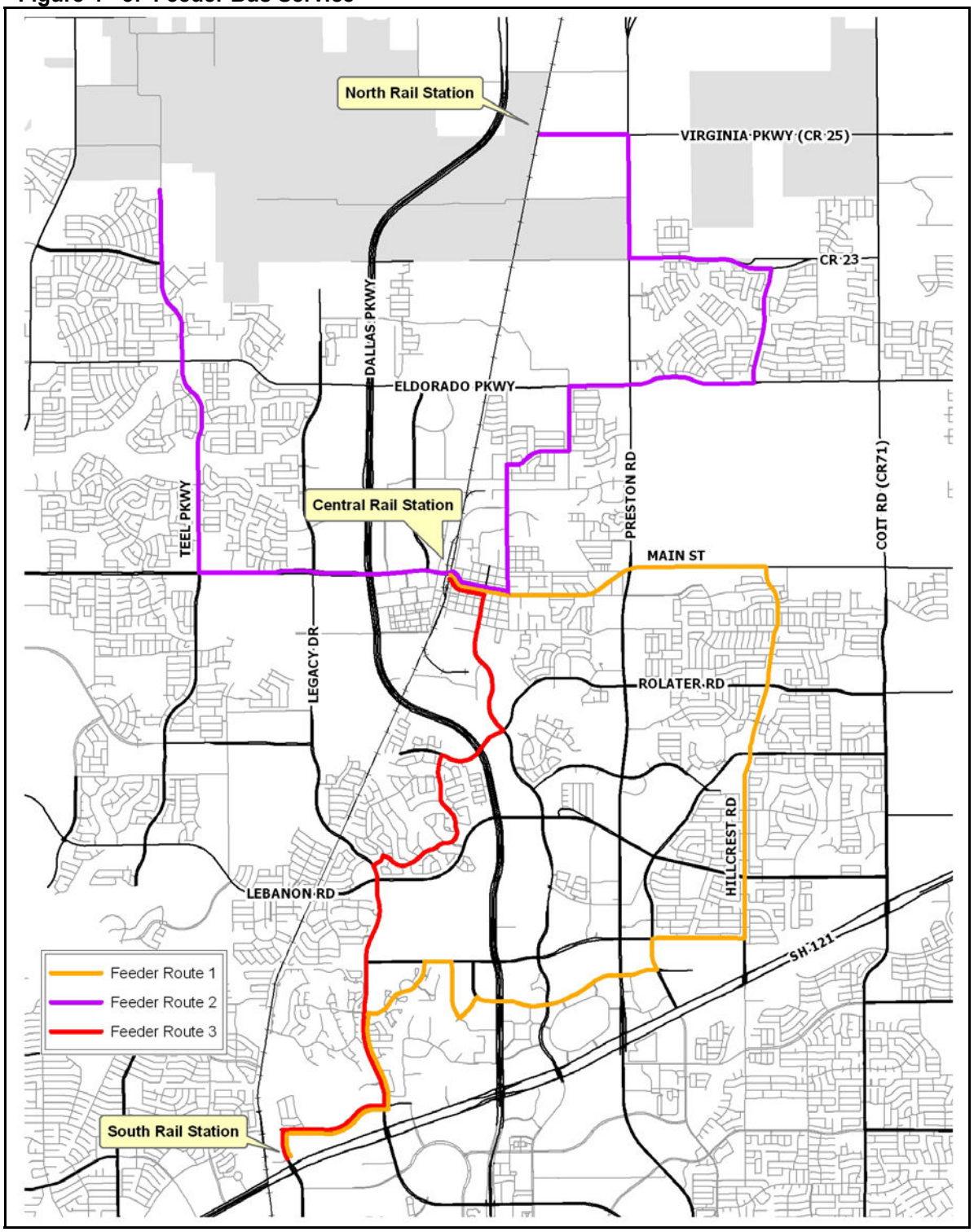
Performance measures for this type of service typically are overall patronage, passenger trips per hour or mile of service, budgetary compliance, percent of trips on time and appropriate safety and policy adherence measures.

Feeder Bus Service to Future Regional Rail

Convenient feeder bus service to light rail provides mobility options for residents. Feeder service would be provided in neighborhoods on a highly frequent basis transporting residents to the closest rail station. Figure 4-3 illustrates this concept below. Because rail is not expected for another 20 years, the routes shown on the map below are for illustrative purposes only.

There are no major obstacles to implement this service. It will undoubtedly be part of the operating plan for the commuter rail service. As such, its capital and other infrastructure start-up needs will be included in the plan. As with all public transit services, a comprehensive marketing campaign will be crucial to its success. Implementation should be eased because Frisco will have had experience with operation of a transit system by the time this service is necessary.

Figure 4 - 3: Feeder Bus Service



DART Carpool/Vanpool Program

This program is already in place, where citizens have the option to work through DART to set up carpools and vanpools, so there are no implementation challenges. However, in order for it to reach as many residents as possible, the City of Frisco should consider an ongoing marketing and education effort. A "Clean Air Campaign" including carpooling/vanpooling as the currently available option will not only increase usage of the program, but will begin to educate the public, and stir support for future public transportation initiatives such as commuter rail.

Recommended Implementation Plan

There are a wide variety of approaches that could have been taken in implementing public transportation service in Frisco. The plan that is described below is a conservative approach.

The philosophy behind the implementation plan is "crawl, walk, run." The plan recognizes the need to build support for initiation of transit service. Activities in each year build on the year before. This is a prudent approach for beginning new service. The plan takes advantage of existing resources initially and builds on their success in succeeding years. At each step of the plan key performance measures are identified so the City can evaluate performance prior to committing to the next step. The plan is based on the following assumptions:

- Normal lead times for buying vehicles, building facilities and acquiring grant funds can be achieved. In general, grants are assumed to be received approximately six months after application. Most new vehicle orders have a twelve-month delivery time from placement of order.
- All vehicles used in the service are clean diesel powered meeting the 2010 emission standards. Alternative fuel technologies are becoming more affordable and readily available; however, they are not considered in the financial component of this study.
- The station connector shuttles are dependent on implementation of the Regional Rail Corridor Service that is beyond the scope of this study. The concept of the shuttles is described earlier in this Chapter, but implementation is not assumed during the time frame of this implementation plan.
- Costs are based on the worst possible case and stated in actual year dollars with a 3% annual inflation rate. The total cost is shown for each year without consideration of possible grants and fares. Funding sources are identified and estimated in the financial plan section that follows. The

potential exists for minor cost reductions depending on the operations model selected by the City. The pros and cons of the different operating models are discussed earlier in this Chapter.

- Each year has a set of "performance measures" or benchmarks to be achieved in that year. If the benchmarks are not achieved, the City should evaluate the service and determine whether modifications can be made to improve service or if the unproductive service(s) should be discontinued.
- "Performance measures" include estimates of patronage. The estimates are calculations based on anticipated hours of service multiplied by estimated passengers per hour. The passengers per hour ratios are based on field experience with annual increases for improved productivity and customer response. In the text below, the annual service hours and predicted productivity are shown in parenthesis after the patronage estimates.

Year One

The first year of implementation is the organizing year. Transit staff is recruited and hired. There is one transit coordinator who shares administrative and other staff resources within a City Department, typically Public Works or Community Services, to economize. The staff begins laying the groundwork for the system by developing the detailed specifications for all aspects of the new service. This includes everything from getting a City decision on the operating model, to writing policies, to bidding for equipment, to filing grant applications, and participating in the regional planning process.

They also devote a significant amount of time to marketing activities aimed at enlisting employers in promotion of public transportation for their employees and eventual customers. Service coordination of existing providers and maximizing Frisco's utilization of the DART carpool and vanpool program are the main service approaches during the year. By the end of the first year, vehicles begin arriving to allow implementation of new services in the second year.

This is also the time to implement a park-and-ride site. The ideal location for a park-and-ride would be adjacent to a future rail station or through agreement with a large employer, such as Stonebriar Center or Hall Office Park.

Service Elements

- Hire one (1) Transit Coordinator and assign City support
- Increase marketing of carpool and vanpool programs in conjunction with DART

- Establish Employee Transportation Coordinators at all major employers in Frisco
- Request patronage of Frisco Shuttle
- Coordinate service between CCART and SPAN
- Develop plans for Year Two and get citizen input
- File grant applications
- Plan operating facility
- Procure commuter coaches and small buses for second year service
- Install initial bus stop signs and minor amenities

Cost

Table 4-1 below describes the expected expense in Year One of the Implementation Plan.

Table 4 - 1: Year One Costs

Item	Cost
Salaries and Benefits	$100,000
Marketing	$50,000
Operating Cost	*$150,000*
3 Commuter Coaches	$1,545,000
3 Small Buses	$600,000
Planning and Design for Facility	$600,000
Bus Stop Signs/Amenities	$10,000
Capital Cost	*$2,755,000*
Total	**$2,905,000**

Performance Measures

Following are the performance measures that affect the implementation plan for Year One:

- At least ten (10) employers join the program
- One hundred (100) citizens in DART carpool and vanpool database
- At least five (5) vanpools originate in Frisco

Year Two

In the second year, the first of the new services begin. It is assumed that the fledgling transit operation can use existing City facilities for vehicle storage. Maintenance can be performed by City staff if available or contracted out if that is not an option.

It is important to begin the three types of service at the same time. All are warranted and to a certain extent build on each other. Initial levels of service on the local flex route, express bus to Dallas, and the DART Parker Road station connector are modest to reflect the fact that it will take time to build patronage. These services also build on the efforts of Year One in promoting carpools and vanpools and employer education.

The transit staff enhances its marketing efforts and oversees the operation of the service. Support staff is added to implement increased activities. Detailed planning and procurement of assets for the facility and service development to be implemented in Year Three is completed. Throughout the process, transit staff continues a robust and dynamic public and stakeholder involvement process. Regular reports on service results are provided to City staff and the City Council.

Service Elements

- Transit staff consists of one (1) Coordinator and hire one (1) Support Staff
- Increase number of Employee Transportation Coordinators at all major employers
- Increase carpool and vanpool utilization
- Begin commuter express bus service to downtown Dallas
    - Two trips in each rush hour
    - Guaranteed ride home program included
- Begin local flex route
    - Hourly service
    - Twelve hours a day
    - Monday through Saturday
- Begin station connector route to DART Parker Road station
    - Weekdays only during rush hours
    - Thirty minute frequency
- Design and construct operating facility
- Purchase additional vehicle for flex route
- Initial fleet size
    - Three commuter express coaches
    - Three small buses

Cost

Table 4-2 below describes the expected expense in Year Two of the Implementation Plan

Table 4 - 2: Year Two Costs

Item	Cost
Salaries. Benefits & Services	$250,000
Operating Cost – Express	$265,727
Operating Cost – Flex-Route 1	$247,447
Operating Cost – Shuttle	$102,835
Operating Cost	*$866,009*
1 Small Bus	$206,000
Design & Construction of Facility	$3,400,000
Capital Cost	*$3,606,000*
Total	**$4,472,009**

Note: (1) Services include typical administrative expenses, such as marketing, printing, postage, etc.

Performance Measures

Following are the performance measures that affect the implementation plan for Year Two:

- At least twenty (20) employers in the program
- One hundred fifty (150) citizens in DART carpool and vanpool database
- At least ten (10) vanpools originate in Frisco
- Annual patronage on commuter express bus service is at least 25,000 (3,072 service hours at 8.4 passengers per hour)
- Annual patronage on Local Flex Route at least 18,500 (3,696 service hours at 5 passengers per hour)
- Annual patronage on DART Station Connector at least 13,100 (1,536 service hours at 8.6 passengers per hour)

Year Three

Based on population growth and the success of the new services, patronage is building on the new routes. In addition to normal administrative, planning, and marketing activities for the transit staff, procurement begins on adding to the transit fleet to accommodate growth and to enhance the DART Station Connector Route. The system moves to its new operating facility. The local flex route is enhanced by increasing frequency to a bus every thirty minutes. Other levels of service are maintained. Work begins to implement amenities to make the system

easier to use. Bus stop shelters and benches are added. Schedule information kiosks are established at major bus stops (i.e. Stonebriar Center). The website is enhanced providing real time vehicle location information.

Service Elements

- Transit staff continues with two (2) full time employees
- Continue management of carpool and vanpool program and Employee Transportation Coordinators
- Commuter express bus service to downtown Dallas
  - Two trips in each rush hour
  - Guaranteed ride home program included
- Local flex route enhanced
  - Half hourly service
  - Twelve hours a day
  - Monday through Saturday
- Station connector route to DART Parker Road station
  - Weekdays only during rush hours
  - Thirty minute frequency
- Purchase additional vehicle for commuter express route and DART Station Connector Route
- Bus stop amenities are installed
- Fleet is equipped with Global Position Systems and ability to provide real time location information for customers
- Fleet size
  - Three commuter express coaches
  - Four small buses

Cost

Table 4-3 below describes the expected expense in Year Three of the Implementation Plan.

Table 4 - 3: Year Three Costs

Item	Cost
Salaries. Benefits & Services	$300,000
Operating Cost – Express	$273,549
Operating Cost – Flex-Route 1 & 2	$509,741
Operating Cost – Shuttle	$105,920
Operating Cost	*$1,189,210*
1 Commuter Coach	$551,250
1 Small Bus	$212,180
GPS Hardware and Software	$300,000
Bus Stop Shelters, Signs and Information Displays	$50,000
Capital Cost	*$1,113,430*
Total	**$2,302,640**

Performance Measures

Following are the performance measures that affect the implementation plan for Year Three:

- At least twenty five (25) employers in the ETC program
- Two hundred (200) citizens in DART carpool and vanpool database
- At least fifteen (15) vanpools originate in Frisco
- Annual patronage on commuter express bus service is at least 28,400 (3,072 service hours at 9.2 passengers per hour)
- Annual patronage on Local Flex Route at least 40,500 (7,392 service hours at 5.5 passengers per hour)
- Annual patronage on DART Station Connector at least 14,500 (1,536 service hours at 9.4 passengers per hour)

Year Four

Ridership on all services continues to build. The transit staff is enhanced to deal with increasing levels of patronage and complexity brought on by a larger system. Additional trips are added to the commuter express route to downtown Dallas. Service on the DART Station Connector Route is increased to all day service with limited service on weekends. Planning and public input is conducted during the year to create a second local flex route on the west side of the Tollway

and increase commuter and DART Station Connector Service. The responsibilities of the transit staff have grown to the point that an additional staff member is added for administrative and marketing functions.

Service Elements

- Hire additional Support Staff for transit staff which is now composed of one (1) Coordinator and two (2) Support Staff
- Continue management of carpool and vanpool program and Employee Transportation Coordinators
- Commuter express bus service to downtown Dallas
    - Four trips in each rush hour
    - Guaranteed ride home program included
- Local flex route
    - Half hourly service
    - Twelve hours a day
    - Monday through Saturday
- DART Station Connector Route enhanced
    - Weekday service increased to match DART operating day with thirty minute frequency (20 hours per day)
    - Fifteen minute frequency during rush hours on weekdays
    - Limited service started on Saturday and Sunday (10 hours per day)
- Purchase additional vehicles for commuter express DART Station Connector and Local Flex Route
- Additional bus stop amenities are installed
- Fleet size
    - Four commuter express coaches
    - Five small buses

Cost

Table 4-4 below describes the expected expense in Year Four of the Implementation Plan.

Table 4 - 4: Year Four Costs

Item	Cost
Salaries. Benefits & Services	$400,000
Operating Cost – Express	$419,908
Operating Cost – Flex-Route 1 & 2	$525,033
Operating Cost – Shuttle	$546,626
Operating Cost	*$1,891,567*
1 Commuter Coach	$578,813
4 Small Buses	$874,182
Bus Stop Shelters, Signs and Information Displays	$15,000
Capital Cost	*$1,467,995*
Total	**$3,359,562**

Performance Measures

Following are the performance measures that affect the implementation plan for Year Four:

- At least thirty (30) employers in the Employee Transportation Coordinator program
- Two hundred fifty (250) citizens in DART carpool and vanpool database
- At least twenty (20) vanpools originate in Frisco
- Annual patronage on commuter express bus service is at least 46,000 (4,608 service hours at 10.2 passengers per hour)
- Annual patronage on Local Flex Route at least 44,700 (7,392 service hours at 6.1 passengers per hour)
- Annual patronage on DART Station Connector at least 79,700 (7,696 service hours at 10.4 passengers per hour)

Year Five

Community response to transit service continues to grow. Population increases and the growing "green" consciousness of the citizenry push demand to new levels. The transit staff has gotten into a good routine of administrative, planning, public involvement and marketing activities. A second local flex route is added serving the west side of Frisco. Increased service also is provided on the commuter express bus to downtown Dallas. Service on the DART Station

Connector is increased to seven days a week to match the DART light rail operating day.

Service Elements

- Transit staff continues with three (3) full time employees
- Continue management of carpool and vanpool program and Employee Transportation Coordinators
- Commuter express bus service to downtown Dallas
    - Seven trips in each rush hour
    - Guaranteed ride home program included
- Second local flex route added
    - Half hourly service
    - Twelve hours a day
    - Monday through Saturday
- DART Station Connector Route enhanced
    - Service increased to seven days per week to match DART operating day with thirty minute frequency
    - Rush hour service on weekdays every fifteen minutes
- Purchase additional vehicle for commuter express and DART Station Connector Route
- Additional bus stop amenities are installed
- Fleet size
    - Five commuter express coaches
    - Nine small buses

Cost

Table 4-5 below describes the expected expense in Year Five of the Implementation Plan.

Table 4 - 5: Year Five Costs

Item	Cost
Salaries. Benefits & Services	$425,000
Operating Cost – Express	$574,806
Operating Cost – Flex-Route 1 & 2	$1,081,569
Operating Cost – Shuttle	$631,500
Operating Cost	*$2,712,875*
Bus Stop Shelters, Signs and Information Displays	$15,000
Capital Cost	*$15,000*
Total	**$2,727,875**

Performance Measures

Following are the performance measures that affect the implementation plan for Year Five:

- All prior year employers maintained in the Employee Transportation Coordinator program
- DART carpool and vanpool database maintained at least at prior year level
- At least prior year number of vanpools originate in Frisco
- Annual patronage on commuter express bus service is at least 68,500 (6,144 service hours at 11.2 passengers per hour)
- Annual patronage on Local Flex Routes at least 98,400 (14,784 service hours at 6.7 passengers per hour)
- Annual patronage on DART Station Connector at least 98,300 (7,096 service hours at 11.4 passengers per hour)

Year Six

Service has become a routine function for the City. Patronage continues to grow with related improvement in productivity and efficiency. The levels of service established in Year Five are maintained and marketed to the community.

Service Elements

- Transit staff continues with three (3) full time employees
- Continue management of carpool and vanpool program and Employee Transportation Coordinators
- Commuter express bus service to downtown Dallas maintained
  - Seven trips in each rush hour
  - Guaranteed ride home program included
- Two local flex routes in operation
  - Half hourly service
  - Twelve hours a day
  - Monday through Saturday
- DART Station Connector Route operates seven days a week to match DART operating day
  - Thirty minute frequency all day everyday
  - Fifteen minute frequency during rush hours
- Additional bus stop amenities are installed
- Fleet size
  - Five commuter express coaches
  - Nine small buses

Cost

Table 4-6 below describes the expected expense in Year Six of the Implementation Plan.

Table 4 - 6: Year Six Costs

Item	Cost
Salaries. Benefits & Services	$425,000
Operating Cost – Express	$591,901
Operating Cost – Flex-Route 1 & 2	$1,114,016
Operating Cost – Shuttle	$650,445
Operating Cost	*2,781,362*
Bus Stop Shelters, Signs and Information Displays	$15,000
Capital Cost	*$15,000*
Total	**$2,796,362**

Performance Measures

Following are the performance measures that affect the implementation plan for Year Six:

- All prior year employers maintained in the Employee Transportation Coordinator program
- DART carpool and vanpool database maintained at least at prior year level
- At least prior year number of vanpools originate in Frisco
- Annual patronage on commuter express bus service is at least 75,500 (6,144 service hours at 12.3 passengers per hour)
- Annual patronage on Local Flex Routes at least 108,200 (14,764 service hours at 7.3 passengers per hour)
- Annual patronage on DART Station Connector at least 108,200 (8,632 service hours at 12.5 passengers per hour)

Year Seven

Service continues as a routine function for the City. Patronage continues to grow with related improvement in productivity and efficiency. The levels of service established in Year Five are maintained and marketed to the community. Three replacement vehicles are purchased to replace the first small buses placed in service in Year Two.

Service Elements

- Transit staff continues with three (3) full time employees
- Continue management of carpool and vanpool program and Employee Transportation Coordinators
- Commuter express bus service to downtown Dallas maintained
    - Seven trips in each rush hour
    - Guaranteed ride home program included
- Two local flex routes in operation
    - Half hourly service
    - Twelve hours a day
    - Monday through Saturday
- DART Station Connector Route operates seven days a week to match DART operating day
    - Thirty minute frequency all day everyday
    - Fifteen minute frequency during rush hours
- Additional bus stop amenities are installed
- Three replacement small buses purchased

- Fleet size
  - Five commuter express coaches
  - Nine small buses

Cost

Table 4-7 below describes the expected expense in Year Seven of the Implementation Plan.

Table 4 - 7: Year Seven Costs

Item	Cost
Salaries. Benefits & Services	$450,000
Operating Cost – Express	$609,508
Operating Cost – Flex-Route 1 & 2	$1,147,436
Operating Cost – Shuttle	$669,959
Operating Cost	*2,876,903*
3 Small Buses	$716,431
Bus Stop Shelters, Signs and Information Displays	$15,000
Capital Cost	*$731,431*
Total	**$3,608,334**

Performance Measures

Following are the performance measures that affect the implementation plan for Year Seven:

- All prior year employers maintained in the Employee Transportation Coordinator program
- DART carpool and vanpool database maintained at least at prior year level
- At least prior year number of vanpools originate in Frisco
- Annual patronage on commuter express bus service is at least 83,000 (6,144 service hours at 13.5 passengers per hour)
- Annual patronage on Local Flex Routes at least 119,000 (14,784 service hours at 8.1 passengers per hour)
- Annual patronage on DART Station Connector at least 119,000 (8,632 service hours at 13.8 passengers per hour)

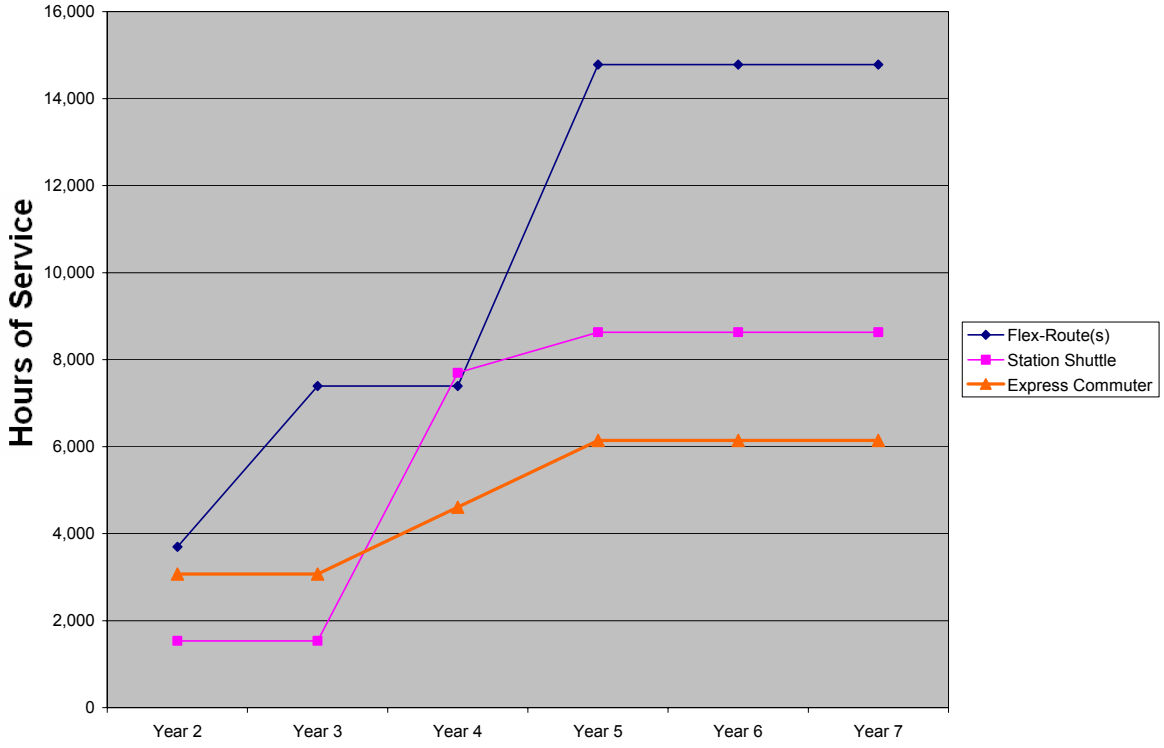
The implementation plan described in detail above is a conservative approach to providing a needed public transportation system for Frisco. It can be summarized with the following data and charts.

The overall level of service as measured in hours of service that vehicles are available to the public is shown in Table 4-8 and displayed graphically in Figure 4-2 below:

Table 4 - 8: Recommended Service Levels

	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
Flex-Route(s)	3,696	7,392	7,392	14,784	14,784	14,784
Station Shuttle	1,536	1,536	7,696	8,632	8,632	8,632
Express Commuter	3,072	3,072	4,608	6,144	6,144	6,144
Total Hours	**8,304**	**12,000**	**19,696**	**29,560**	**29,560**	**29,560**

Figure 4 - 2: Service Level Growth

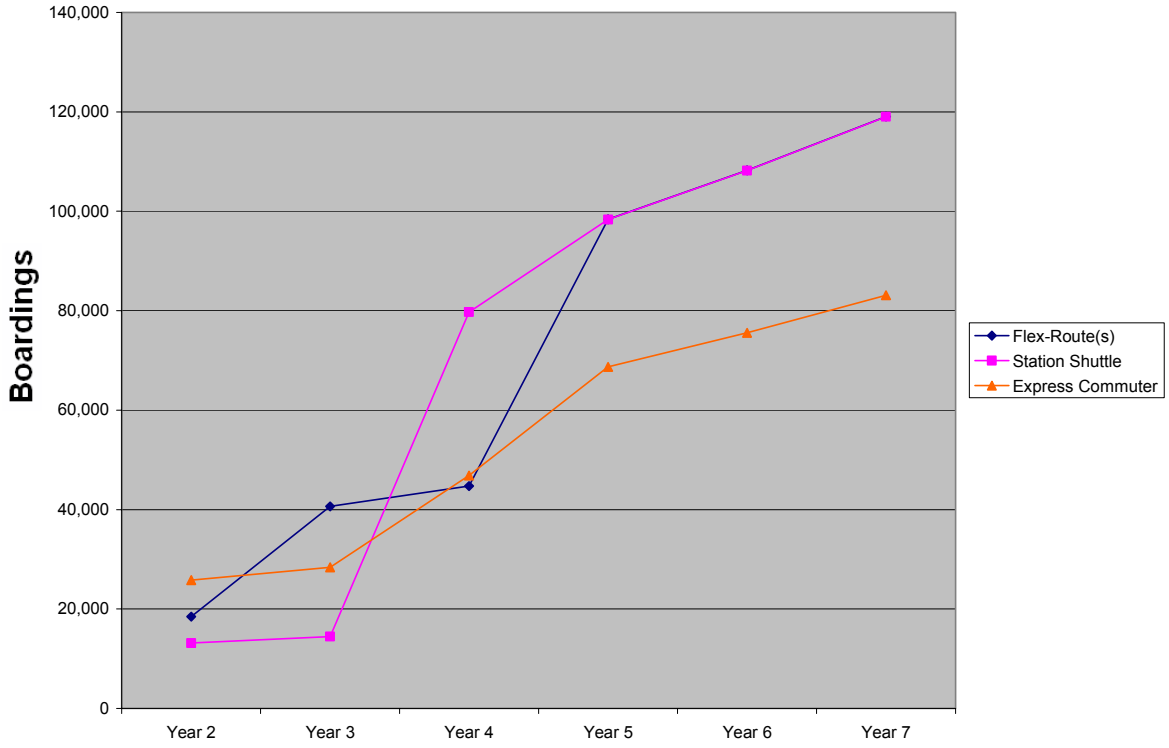


The level of service begins modestly meeting needs and grows into a comprehensive system serving local residents, employers, and commuters. Over the life of the plan, service increases two and one half times in logical increments. Patronage on the recommended system increases as well as shown in Table 4-9 and graphically displayed in Figure 4-3 below.

Table 4 - 9: Estimated Patronage

	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
Flex-Route(s)	18,480	40,656	44,722	98,388	108,226	119,049
Station Shuttle	13,148	14,463	79,712	98,347	108,182	119,000
Express Commuter	25,805	28,385	46,836	68,692	75,562	83,118
Total Persons	**57,433**	**83,504**	**171,269**	**265,427**	**291,970**	**321,167**

Figure 4 - 3: Estimated Patronage Growth



Over the life of the implementation plan, patronage increases almost four and one-half times. This is caused by increasing levels of service and improved efficiency as more people learn about and use the system.

Sources of Funding

The City of Frisco is eligible to receive state and federal funding through the North Central Texas Council of Governments (NCTCOG) as the designated recipient for federal funds. CCART is the designated provider for transit services in Collin County. As such, CCART has the responsibility of programming all of

the funding allocated to public transportation in Collin County. Following is a description of each type of funding and how it can be spent in the City of Frisco.

Federal Section 5307 – Urbanized Area Formula Funding

These funds are apportioned by the FTA based on the urbanized area boundaries through an intricate formula. The areas of the City of Frisco designated as urban in the 2000 Census are included in the Dallas/Fort Worth/Arlington urbanized area. Hence, 5307 funds are eligible to be expended in these areas. However, FTA allows local discretion on the expenditure of these funds as long as they meet the program requirements.

For urban areas within the Dallas/Fort Worth/Arlington urbanized area that are located outside of DART and DCTA service areas, funds are allocated to the designated provider. In Frisco's case, this is CCART. CCART may use these funds for any eligible activity in its service area, regardless of which urbanized area the funds were apportioned to.

Federal Section 5309 – Discretionary Funding Program

The Bus and Bus-Related Facilities program provides capital assistance for new and replacement buses and related equipment and facilities. Federal transit funds are available to State or local governmental authorities as recipients and other public transportation providers as sub-recipients for up to 80 percent of the net project capital cost. There are no minimum or maximum funding limits for applications under this notice; however, FTA intends to fund as many meritorious projects as possible. FTA may allocate less than the total amount requested in the application.

Eligible capital projects include the acquisition of buses for fleet and service expansion, bus maintenance and administrative facilities, transfer facilities, bus malls, transportation centers, inter-modal terminals, park-and-ride stations, acquisition of replacement vehicles, bus rebuilds, bus preventive maintenance, passenger amenities such as passenger shelters and bus stop signs, accessory and miscellaneous equipment such as mobile radio units, supervisory vehicles, fare boxes, computers and shop and garage equipment.

Federal Section 5311 – Rural Area Funding

Currently, much of Frisco falls into the rural area funding program because of its 2000 census population. CCART receives 5311 funding and programs these funds to the demand response service provided throughout the county in the areas designated as rural.

Federal Section 5310 – Elderly and Disabled Funding

Section 5310 funds are allocated to CCART to be expended only on elderly and disabled transportation. CCART programs these funds to the demand response service provided throughout the county.

Job Access/Reverse Commute Funding Program

Job Access Reverse Commute (JARC) funding is also available from the FTA through the NCTCOG's call for projects process. JARC funds are for use in assisting people with transportation needs that are transitioning off of welfare into the workforce or funding transportation for travel in the opposite direction at peak times.

Typically, an agency must prepare a JARC plan and have it approved by the NCTCOG prior to receipt of the funds. This is a viable way to begin new services that provide congestion mitigation. The downside is that they are limited to a three-year timeframe, so if Frisco desires to continue the service they must find the local operating funds.

These funds are a viable source of funding to assist the City in starting up some of the service recommendations described in this report. A joint application would be a strong contender for funds in this region. The service recommendations that make sense with this program are the local flex route, as a transportation option for low-income individuals, and the DART Station Connector service as the reverse commute service. The commuter express service to Dallas also could be eligible if a substantial reverse commute market could be developed.

NCTCOG has recently issued the JARC call for projects process. Applications are due in June 2008.

Congestion Mitigation and Air Quality Improvement (CMAQ) Funds

These funds, which can support transit projects at up to 80% of their operating expenses, are meant to support projects which have a congestion mitigation or air quality benefit. Transit projects are frequently recipients of CMAQ funds. A calculation of air quality benefit and an approvals process are required for CMAQ funds. However, a sunset provision makes them available to a certain project for only a limited period of time. These funds are a viable way to begin commuter

express service in the urbanized area of Frisco. This is also a good source of funding for the purchase of alternative fuel vehicles if the City opted to pursue them.

Currently, all CMAQ funds have been programmed by the NCTCOG. A new call for projects process will be initiated in 2009.

Federal New Freedom Funding

These funds, set aside on a formula basis as part of the recently approved SAFTEA-LU transportation reauthorization bill, may be available to assist with demand response funding in small amounts. The intent of this program is to encourage the consolidation of human service transportation services. This program supports new public transportation services and new alternatives to public transportation services to address the transportation needs of individuals with disabilities that go beyond those required by the Americans with Disabilities Act of 1990 (ADA).

NCTCOG has recently issued the New Freedom call for projects process. Applications are due in June 2008.

Federal Surface Transportation Program Funds (STP)

These funds are set aside to each state on a formula basis as part of the recently approved SAFTEA-LU transportation reauthorization bill. Typically, a percentage of these funds can be used by local governments and transit agencies through a competitive process. These funds may be used for capital and planning purposes. Eligible projects for capital funding include public transportation capital improvements, car and vanpool projects, fringe and corridor parking facilities, bicycle and pedestrian facilities, and intercity or intra-city bus terminals and bus facilities. As funding for planning, these funds can be used for surface transportation planning activities, transit research and development, and environmental analysis. Other eligible projects under STP include transit safety improvements and most transportation control measures. These funds may be available to the City in small amounts.

Currently, all STP funds have been programmed by the NCTCOG. A new call for projects process will be initiated in 2009.

Toll Revenues

The Denton County Transportation Authority and NCTCOG have negotiated an innovative program to fund part of the Denton commuter rail system with

revenues from the sale of the toll revenue on State Highway 121. Since a portion of these revenues will come from Frisco residents, the City should consider making a claim for this revenue to support its transit system development. Since this is such a new and speculative source of revenue, the study takes the conservative approach and does not project the use of toll revenues in the financial plan. A new call for projects process will be initiated in 2009 for toll revenue funds.

State of Texas Public Transportation Funding

Because Frisco's population was not more than 50,000 in the 2000 Census, it is not currently eligible for State Public Transportation Funding. Once the 2010 Census verifies Frisco's population, it could be eligible for approximately $300,000 in annual State funding. The actual amount will depend on appropriations by the State Legislature. These funds can be used for capital and operating expenses.

Non-Subsidy Operating Funds

Fares

Fares can only be counted on to generate a relatively small portion of the total operating budget. Fares are also subject to price elasticity. Attempts to maximize fare revenue as a portion of operating expense by raising rates can be counted on to have a negative affect on total ridership. One way to sell transit passes for the commuter-oriented services is to mimic the Frisco Shuttle "memberships" that are currently offered. This term denotes exclusivity and security, so that potential passengers envision themselves using the service because others like them are using it. Whatever they are called, monthly or annual passes are a consistent and typically predictable source of fare revenue.

Advertising and Other Self-Generated Funds

Advertising inside and outside buses at bus stops and at shelters can generate some revenue. Often the success of advertising programs is dictated by the current cost of other forms of advertising locally, and the level of sales effort expended to get a program started.

Direct Pre-Paid Fare Arrangements

A promising and challenging source of revenue is the concept of pre-paid fare arrangements. Essentially, this program refers to a contribution, usually made through a student fee that allows any registered student complete access to the

transit system at any time without paying a fare. Remarkably simple, these programs eliminate the barrier of a fare that can exist in trying a bus or trolley system initially and can lead to increased ridership. The obvious benefits to the employers and the City include reduced congestion and parking problems, better air quality, and the additional benefit of making the employment centers more accessible to a broader range of employees and customers, not just those with ready access to automobiles.

Pre-paid fare arrangements also may be possible with public and parochial schools, apartment complexes, and large and small employers.

Foundation and Philanthropic Organization Support

This type of support is sometimes used, but should not be counted on, to supplement local contributions, especially on behalf of persons with limited or fixed income or people with disabilities. Demand response service, because of its orientation toward social and personal service, could attract this type of funding.

Future Scenarios

The City has experienced tremendous growth by almost tripling its population since the year 2000. The 2010 census will validate that growth. Results from the 2010 census will be published in 2013 and the North Central Texas Council of Governments has identified three possible scenarios resulting from the 2010 census, including:

1. Frisco would join McKinney and Allen to become its own urbanized area;
2. Frisco would be added to the Dallas/Fort Worth-Arlington urbanized area; or,
3. Frisco would become its own urbanized area.

The census ultimately determines which of these three scenarios would occur; however, NCTCOG is working with these to anticipate how funding in the region will be affected. If Frisco were to be named its own urbanized area, it will then be able to receive federal funding specifically for use in the City of Frisco, as opposed to funds that are now allocated to serve the County at the discretion of CCART. Frisco could either work through NCTCOG as the designated recipient or go through the process to become its own designated recipient. The designated recipient is the federally recognized public body that fulfills statutorily required functions for funding eligibility

Although it may seem attractive to become a designated recipient, it can be quite cumbersome to a City whose business is not transportation. The Federal Transit Administration typically prefers as few as possible designated recipients in a region. Currently, the DFW region has four designated recipients:

- Fort Worth Transportation Authority
- Dallas Area Rapid Transit
- Denton County Transportation Authority
- NCTCOG

In order to be approved, the City would need to have concurrence from each of these, the Regional Planning Commission, and the Federal Transit Administration before being sent to the Governor for review and approval.

The simpler approach would be to allow NCTCOG to serve as the designated recipient of the funds. This does not mean that the NCTCOG would have discretion as to how the funds are spent. What it does mean is that NCTCOG would ensure the funds are being spent in the appropriate manner per the federal regulations for each type of funding, respond to all reporting requirements, provide support to the City in its provision of transit service, and be the responsible entity for the triennial review and other audit processes required as part of the grant agreement. Of course, funding would still be available to Frisco if one of the other options were chosen.

Financial Plan

The final step in the process is to consider the feasibility of initiating a public transportation system in Frisco and bring all of the above discussion into a logical financial plan. The financial plan that follows integrates all the service and funding source elements. It is based, of necessity, on a series of assumptions that can be summarized as follows:

- Costs are based on the details of the implementation plan.
- An average annual inflation rate of 3%.
- Fare revenue is calculated at 12% of operating expenses. This is the fare recovery ratio experienced by the National Transit Database peer systems discussed in Chapter 3.
- Actual fares are assumed to be set by policy of the City of Frisco. An average adult fare of $1.00 per ride is assumed with 50% discounts for elderly, disabled, and student riders.
- State funds become available for 2011 in an annual amount based on historic estimates for similarly sized small transit systems in Texas.

- Federal section 5307 funds for operating expenses (in the form of capital maintenance expenditures) are assumed to cover 40% of operating expenses based on national averages.
- JARC funds are assumed to be available for 25% of the net operating cost of the Commuter Express and DART Station Connector services.
- Frisco is expected to compete successfully for earmarked Federal funds (Section 5309) to provide 50% of the cost of vehicle and facility expenses.
- CMAQ funds are assumed to match annual fare revenue beginning in 2010.
- The remaining balances come from City of Frisco funds. No assumption is made about the source of these funds.

The details of the financial plan are shown in Tables 4-10 and 4-11 below.

Table 4 - 10: Operating and Capital Expenses

Operating Expenses	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
Staff/Administration	$150,000	$250,000	$300,000	$400,000	$425,000	$425,000	$450,000
Local Flex-Route	$0	$247,447	$509,741	$525,033	$1,081,569	$1,114,016	$1,147,436
DART Station Shuttle	$0	$102,835	$105,920	$546,626	$631,500	$650,445	$669,959
Commuter Express	$0	$265,727	$273,549	$419,908	$574,806	$591,901	$609,508
Sub-Total	***$150,000***	***$866,009***	***$1,189,210***	***$1,891,567***	***$2,712,875***	***$2,781,362***	***$2,876,903***
Capital Expenses							
Vehicles	$2,145,000	$206,000	$763,430	$1,452,995	$0	$0	$716,431
Facilities	$0	$0	$0	$0	$0	$0	$0
Preliminary Engineering	$600,000	$0	$0	$0	$0	$0	$0
Design & Construction	$0	$3,400,000	$0	$0	$0	$0	$0
Bus Stop Amenities	$10,000	$0	$50,000	$15,000	$15,000	$15,000	$15,000
Other	$0	$0	$300,000	$0	$0	$0	$0
Sub-Total	***$2,755,000***	***$3,606,000***	***$1,113,430***	***$1,467,995***	***$15,000***	***$15,000***	***$731,431***
Total	**$2,905,000**	**$4,472,009**	**$2,302,640**	**$3,359,562**	**$2,727,875**	**$2,796,362**	**$3,608,334**

Table 4 - 11: Operating and Capital Revenues

Operating Revenues	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
Fare Revenues	$0	$73,921	$106,705	$178,988	$274,545	$282,763	$291,228
Federal Sect. 5307	$60,000	$346,403	$475,684	$756,627	$1,085,150	$1,112,545	$1,150,762
JARC	$0	$81,084	$83,483	$212,637	$265,387	$273,316	$281,483
CMAQ	$0	$73,921	$106,705	$178,988	$274,545	$282,763	$291,228
State	$0	$0	$208,316	$282,163	$406,624	$414,987	$456,486
Local Funds	$90,000	$290,680	$208,316	$282,163	$406,624	$414,987	$405,717
Sub-Total	**$150,000**	**$866,009**	**$1,189,210**	**$1,891,567**	**$2,712,875**	**$2,781,362**	**$2,876,903**
Capital Revenues							
Federal Sect. 5307	$688,250	$901,500	$278,358	$366,999	$3,750	$3,750	$182,858
Federal Sect. 5309	$1,372,500	$1,803,000	$381,715	$726,498	$0	$0	$358,216
State Funds	$0	$100,000	$110,000	$73,400	$0	$0	$36,572
Local Funds	$693,250	$801,500	$343,358	$301,099	$11,250	$11,250	$153,786
Sub-Total	**$2,755,000**	**$3,606,000**	**$1,113,430**	**$1,467,995**	**$15,000**	**$15,000**	**$731,431**
Total	**$2,905,000**	**$4,472,009**	**$2,302,640**	**$3,359,562**	**$2,727,875**	**$2,796,362**	**$3,608,334**

Another way to analyze the financial plan is to summarize the local funding that would be necessary to implement the proposed public transportation system. This can be seen in Table 4-12 below:

Table 4 - 12: Local Funding Summary

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
Annual Frisco Funds Requirement	$783,750	$1,092,180	$551,674	$583,262	$417,874	$426,237	$559,503

The annual totals are greater in 2009 and 2010 because State and CMAQ funding are not yet available to Frisco. Of course, only the Frisco policy makers can decide the affordability of the public transportation system in comparison to other community priorities. However, the financial and operating model estimates that were used were conservative from a cost point of view for the City. Opportunities will present themselves throughout the implementation process to minimize cost and maximize sources of revenue from sources other than City funds.

Another way to analyze the data is to the trend in operating cost per boarding over the life of the implementation plan. This can be seen in Table 4-13 below:

Table 4 - 13: Per Boarding Operating Cost

	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
Boardings	57,433	83,504	171,269	265,427	291,970	321,167
Operating Cost	$866,009	$1,189,210	$1,891,567	$2,712,875	$2,781,362	$2,876,903
Cost per Boarding	$15.08	$14.24	$11.04	$10.22	$9.53	$8.96

Caution must be exercised when comparing startup costs for the first few years of service to cities whose transit systems have operated for long periods of time. As a system operates over time, the cost per boarding should decrease significantly.