

## 4.0 TRANSPORTATION IMPACTS

This chapter describes the anticipated transportation impacts of both the No-Build Alternative and the Build Alternative. The No-Build Alternative, as the name implies, does not include any changes to the existing transit system within the study area. However, it does take into consideration the DART's Blue Line light rail transit (LRT) extension to Downtown Rowlett, the extension of DART's Orange LRT Line to DFW International Airport, as well as the Fort Worth Transportation Authority's TEX Rail line to DFW International Airport. These improvements are also incorporated into the Build Alternative, which, in addition, includes the new LRT service in the study area from the existing Ledbetter Station to a new terminus station located on the University of North Texas (UNT) Dallas Campus, as detailed in **Section 2.2**.

In this chapter, the impact of each alternative on the transportation system is compared based on a set of transportation system performance measures. North Central Texas Council of Government's (NCTCOG's) travel demand model (TDM) is used to forecast the condition of the transportation system in the year 2035 using a given set of criteria. The performance measures used in this study were produced when the TDM was employed to model the criteria for each of the alternatives.

Whenever possible, this chapter provides both quantitative and qualitative data to depict the performance measures and associated transportation impacts of each alternative, compared to the existing conditions. (Refer to the *Mitigation Monitoring Program* contained in **Appendix H** for a detailed description of the impacts and the recommended mitigation measures.)

### 4.1 Impacts on Transit Service and Ridership

The study area is served by seven DART bus routes, which include four local and three rail feeder bus routes. The study area is not served by any express routes, and buses operate in mixed traffic on arterials and collector streets within the study area.

The Build Alternative would introduce LRT service, a fixed guideway transit service, into the study area to increase the reliability of transit service, particularly for commuters to the UNT Dallas campus or to employment and activity centers including, and north of, the Dallas CBD.

#### 4.1.1 Transit Levels of Service

In the study area, there is currently a higher than average number of persons who are transit-dependent, i.e. persons who have little to no access to the automobile mode of transportation, according to the 2006-2010 American Community Survey. Serving this transit-dependent population is made more difficult by the fact that both employment and residential centers in the larger region are widely dispersed geographically. This pattern is not expected to change significantly in the year 2035. The lack of express bus service in the study area means that the current transit service does not provide meaningful travel time savings to any members of the non-transit-dependent population who might consider using the transit system rather than using an automobile to meet their travel needs.

The No-Build Alternative would retain the bus operations in mixed traffic on arterials and collector streets within the study area.

The Build Alternative would provide an exclusive guideway that would connect to the existing DART LRT system to provide increased mobility to destinations throughout the DART Service Area. **Table 4-1** summarizes the projected daily performance measures anticipated for the year 2035. The performance measures listed in the table are the measures commonly used to assess transit system performance. These performance measures include:

- **Daily Passenger Miles** – a measure of consumer demand on the transit system, derived from multiplying the number of passengers by the number of miles traveled
- **Daily Passenger Hours** – a measure of consumer usage of the transit system, derived from multiplying the number of passengers by the number of hours spent traveling; this measure assists in the assessment of transit system efficiency, when used in connection with passenger miles
- **Linked Transit Trips** – a measure used to describe a trip from origin to destination for a complete one-way journey, including potential transfers
- **Daily Passenger (or Unlinked) Trips** – a measure used to describe the number of passengers who board public transit vehicles – counting passengers each time a transit vehicle is boarded, even though the boarding may be the result of a linked transit trip and therefore a transfer from another route in order to complete the same one-way journey

<b>Table 4-1</b> <b>South Oak Cliff Corridor Blue Line Extension</b> <b>Transit System Performance Measures - Year 2035</b>		
Performance Measure	No-Build Alternative	Build Alternative
Daily Passenger Miles		
1) Total	2,840,300	2,869,800
2) Percent Change	N/A	1.0%
Daily Passenger Hours		
1) Total	122,200	123,300
2) Percent Change	N/A	0.9%
Linked Transit Trips (Daily)		
1) Total	273,000	274,800
2) Added Transit Riders	N/A	1,800
3) Percent Change	N/A	0.6%
Daily Passenger (Unlinked) Trips		
1) Total	447,300	449,800
2) Additional Trips	N/A	2,500
3) Percent Change	N/A	0.6%

Source: NCTCOG Model run by DART staff, 2012 Note: Values have been rounded to the nearest hundred.

N/A = Not Applicable

A comparison of the alternatives reveals that forecasted 2035 system-wide passenger miles are estimated to increase from 2.84 million with the No-Build Alternative to almost 2.87 million daily miles with the Build Alternative due to the introduction of LRT service to the study area, a gain of approximately one percent, or over 29,500 daily passenger miles. On the other hand, total system-wide passenger hours are anticipated to increase from 122,200 with the No-Build Alternative to 123,300 hours with the Build Alternative, a rise of 0.9 percent. These numbers indicate that passengers would be able to travel more efficiently on the Build Alternative transit

network, i.e., the percent increase in miles exceeds the percent increase in service hours needed to provide those trips. Therefore, these forecasts show that the Build Alternative, and with it the extension of LRT service within the study area, would improve system-wide efficiency in 2035.

When comparing the year 2035 transit system performance measures for the No-Build Alternative and the Build Alternative, the forecasted total system-wide transit ridership would rise by 1,800 riders per day for linked trips, and by 2,500 trips daily for unlinked trips, an increase of approximately 0.6 percent for both linked trips and unlinked trips alike.

Overall, the DART transit system would experience an increase in ridership, passenger miles, and passenger hours with the Build Alternative, when compared to the No-Build Alternative.

### ***Geographic Coverage***

Among the impacts of transit is the change in geographic coverage created by the Build Alternative when compared to the No-Build Alternative.

#### ***No-Build Alternative***

The No-Build Alternative would not expand the geographic coverage of transit service beyond the area covered by the seven bus routes currently operating in the study area. However, the population and employment base within the study area is forecasted to increase.

It is anticipated that the level of bus service would increase as the population of the study area increases; however, as the population and employment base grows within the study area, so would associated transportation demand, and the resulting potential traffic congestion and delays would make the bus transit service of the No-Build Alternative less reliable, regardless of transit service capacity or route expansion.

#### ***Build Alternative***

The Build Alternative would expand the geographic coverage of fixed guideway transit service from the existing Ledbetter Station to UNT Dallas along new right-of-way. This would allow a continuous, limited stop transit service along an exclusive guideway with two new LRT stations. These stations would be located northwest of the intersection of Camp Wisdom Road and Patrol Way as well as on the southern boundary of the UNT Dallas campus. A redesigned feeder bus system, which would utilize smaller buses appropriate for the proposed small bus operations, would bring transit riders to these LRT stations. Consequently, the combination of the new LRT stations and the new feeder bus service would more efficiently cover the same geographic area serviced by the No-Build Alternative.

### ***Transit Service Characteristics***

This section describes how the Build Alternative would change the transit system in terms of service aspects, such as frequency, mode, and capacity.

#### ***No-Build Alternative***

No additional transit bus routes would be provided as part of the No-Build Alternative. However, the frequency and service on certain routes would be increased as described in **Section 2.2.4**. For an in-depth description of the existing bus service, refer to **Section 3.3.3**.

***Build Alternative***

The Build Alternative LRT service would have a peak-hour headway of 15 minutes and an off-peak headway of 20 minutes. The feeder bus schedule would be optimized for efficient transfer between the transit modes.

The super light rail vehicles (SLRVs) are capable of a maximum operating speed of 65 miles per hour. However, average speeds are much lower. The vehicles would have a typical station dwell time of 20 seconds at Camp Wisdom Station. The LRT vehicles would have a longer dwelling time at UNT Dallas Station since it would be the terminus station for the extended Blue Line. **Table 4-2** shows select station-to-station estimated travel times for the Build Alternative.

Generally, two-vehicle trains would operate most of the day with single-vehicle trains operating after 7:00 p.m. The operating hours for the Build Alternative would be from approximately 4 a.m. until 1 a.m., seven days a week. Monday through Friday, morning peak hour service would be provided between 6:00 a.m. and 9:00 a.m., and afternoon peak hour service would extend from 3:00 p.m. to 6:00 p.m. This timetable is identical to the schedule currently used for DART’s LRT services in other corridors.

<b>Table 4-2</b> <b>South Oak Cliff Corridor Blue Line Extension</b> <b>Build Alternative Travel Distances and Time</b>		
Segment	Distance from Station to Station (Miles)**	Estimated Morning Peak Travel Time (Minutes)
UNT Dallas Station to Camp Wisdom Station	1.3	3
Camp Wisdom Station to Ledbetter Station	1.3	2
UNT Dallas Station to West End Station	11.9	32
UNT Dallas Station to Parkland Station*	15.1	48
UNT Dallas Station to Downtown Garland Station	28.5	64

\* Requires transfer to Green or Orange Line

\*\* Station-to-station distances are based on the regional travel demand model network.

Source: NCTCOG Model run by DART staff, 2012 and DART Trip Planner, 2012

Fares for the Build Alternative would follow the adopted DART policy of matching LRT fares to local bus fares. As of December 3, 2012, a single \$2.50 Local fare entitles the ticket holder to ride any DART bus or rail service or the Trinity Railway Express between Union and CentrePort/DFW Airport stations during a two-hour period. If transit riders use the TRE system to travel beyond CentrePort/DFW Airport or utilize Fort Worth Transportation Authority’s (FWTA) transit system, The T, or DCTA’s A-Train, a single \$5.00 Regional ticket is required. A midday pass, good between 9:30 a.m. and 2:30 p.m. Monday through Friday, is \$1.75 for the Local and \$3.50 for the Regional pass. It’s designed to encourage ridership during the parts of the day when DART has additional capacity. A variety of options including monthly passes, multiple ride tickets, day passes, mid-day fares, and reduced fares are available for use on the DART LRT system, DART and The T, and TRE and DCTA trains. No fare zone boundary would be in effect within the study area. Parking at Camp Wisdom Station would be free, and discussions concerning a non-Service Area resident fee to park at UNT Dallas Station are ongoing.

***Travel Times***

In order to demonstrate the time savings between the alternatives, **Table 4-3** shows the predicted average travel times, including initial wait time and time required for transfers, for

transit users traveling between select stations for the No-Build Alternative and the Build Alternative, as generated by the regional travel demand model.

<b>Table 4-3</b> <b>South Oak Cliff Corridor Blue Line Extension</b> <b>Select Transit Travel Times derived from Regional Travel Demand Model</b>		
Segment	Total Travel Time (Minutes) Peak / Off-Peak Period	
	No-Build Alternative	Build Alternative
UNT Dallas Station to West End Station	43 / 58	37 / 40
UNT Dallas Station to Parkland Station*	54 / 70	48 / 52
UNT Dallas Station to Downtown Garland Station	79 / 89	68 / 70

\* Requires transfer to Green or Orange Line  
 Source: NCTCOG Model run by DART staff, 2012

The evaluation of No-Build and Build Alternative total travel times reveals that implementation of the Build Alternative would reduce average peak travel time by up to 11.2 minutes and average off-peak travel by up to 18.7 minutes per trip. These travel time savings would in part be realized through overall faster transit service between the UNT Dallas Station and Ledbetter Station, as provided by the proposed LRT service in comparison to bus transit. In addition, the extension of the Blue Line would also eliminate a certain number of bus to LRT transfers, which would further reduce average travel time for transit users.

***Transfers and Access***

A critical aspect of a transit service investment is how it affects the travel and mode of access for system users. Transfers, although required for many trips, represent a travel time penalty and reduce the convenience of the system. This section outlines how the Build Alternative would impact these aspects of the system when compared to the No-Build Alternative.

**No-Build Alternative**

With the No-Build Alternative, transit patrons would use the DART bus system for trips within the study area. For trips outside the study area, patrons could transfer to other DART bus routes or to the LRT system at Ledbetter Station, which is the current terminus of the Blue Line. The No-Build Alternative would result in 31,806 daily transfers between the local bus and the LRT system.

**Build Alternative**

The Build Alternative would use the DART bus network to transfer riders to and from the LRT system. As a result, a slight increase in transfers over the No-Build Alternative would result in a total of 31,904 daily transfers from the local bus to the LRT system.

Many of the riders would also take advantage of the park-and-ride features at the new stations, The predominant mode of access to the LRT system would vary by station. Based on forecasted travel demand, the South Oak Cliff Corridor Blue Line Extension LRT riders would drive (80.0 percent), take a bus (10.7 percent), or walk (8.8 percent) to one of the two new stations. In comparison, overall access to the LRT system within the DART Service Area would consist of approximately 37.8 percent of patrons driving and 20.1 percent walking, while 42.1 percent of LRT riders would use bus or rail transit service to gain access to the LRT system in 2035. As the areas develop around the new stations, it is anticipated that walk access would increase.

## ***Reliability***

Transit investments are typically designed to improve the reliability of the system into the future. This section describes how the Build Alternative would improve the consistency of service and encourage ridership through increased reliability of service.

### **No-Build Alternative**

The No-Build Alternative uses the DART bus transit system on the existing study area roadways under mixed-traffic travel conditions. Therefore, the bus system in the No-Build Alternative would be subjected to travel speeds and potential delays resulting from future congestion on the study area roadways. Currently, the major arterials connecting the study area to Ledbetter Station operate at volume to capacity (V/C) ratios well within an acceptable range indicating that traffic conditions have not deteriorated to unacceptable levels, even during peak travel times. However, as the population and employment growth in southern Dallas continues, associated travel demand and traffic volumes would increase and potentially cause future roadway congestion and delay. As a result, the buses operating in the mixed traffic environment would generally experience decreased reliability and increased travel times. **Section 4.2** discusses existing and future traffic volumes on roadways in or adjacent to the study area.

### **Build Alternative**

The Build Alternative would operate on an exclusive guideway and would not be subjected to traffic and signal delays along the major thoroughfares between Ledbetter Station and UNT Dallas Station. The Build Alternative would, therefore, be able to provide a consistently reliable transit service that is preferred by transit riders, as is reflected in the projected increase in system-wide ridership after implementation of the Build Alternative.

## ***Comfort***

Improving rider comfort through transit investments can encourage higher ridership. This section discusses how the Build Alternative would improve rider comfort when compared to the No-Build Alternative.

### **No-Build Alternative**

The No-Build Alternative would provide few enhancements to the comfort and convenience of transit users in the study area beyond those that are currently offered as part of the existing bus transit service.

### **Build Alternative**

The proposed Build Alternative would provide enhanced comfort and convenience for transit riders on the DART system as compared to the No-Build Alternative. The LRT system would offer transit service to passengers by providing new and conveniently located stations. The Build Alternative would be fully accessible for mobility-impaired patrons and would enhance regional mobility for transit-dependent populations. Additionally, the Build Alternative would operate within an exclusive guideway on continuously welded rail with fewer of the stop-and-go movements, which are usually associated with conventional bus transit service.

### **4.1.2 Transit Ridership**

The transit trips anticipated for each alternative were estimated in terms of both “linked” and “unlinked” passenger trips. The forecast of linked passenger trips includes all travel from the point of origin to the destination as a single trip, regardless of whether or not there was a

transfer from one mode to another, such as bus to rail. Therefore, the linked trips count all of the individual segments of travel as one trip.

The forecast of unlinked trips counts each segment of a trip on an individual mode as a separate trip, accounting for transfers (e.g. a bus ride and a transfer to the rail system to reach a given destination equals two unlinked trips). Linked trips provide an estimate of the number of people who use the transit system, while unlinked trips provide a measure of the number of persons using each route or mode of travel. Thus, for the following analysis of transit patronage, both linked and unlinked passenger trips are used to describe estimated 2035 ridership characteristics for each alternative.

**Ridership**

The forecast of ridership for the Build Alternative includes passengers who would access the LRT system at stations from automobiles, by walking, and from bus transfers. This estimate of LRT ridership was developed using linked trips to count only those riders using the LRT system. The regional travel demand model does not yet include UNT Dallas as a “special generator”, which allows the model to recognize ridership associated with student population. To account for future enrollment, DART manually added UNT Dallas as a special generator and assumed a 2035 student enrollment of 16,000, and also added 1,500 special generator service units. Based on the forecast of 2035 rail station activity, the South Oak Cliff Corridor Blue Line Extension would help increase the system-wide rail ridership from 193,488 with the No-Build Alternative to 196,113 for the Build Alternative, accounting for approximately 2,625 new daily passengers, equivalent to a 1.4 percent increase.

**Station Volumes and Boardings/Alightings**

The stations proposed for the Build Alternative were selected due to their potential to benefit economic development and their ease of access by bus, car, or walking. **Table 4-4** shows the anticipated 2035 daily volumes of transit passengers at each of the Build Alternative stations.

<b>Table 4-4</b> <b>South Oak Cliff Corridor Blue Line Extension</b> <b>Daily LRT Alternative Station Volumes in 2035</b>					
Station	Boardings	Alightings	Station Volume	Station Ridership	Parking Demand
Camp Wisdom	2,057	230	2,287	1,143	354
UNT Dallas	2,614	235	2,849	1,425	556
Total	4,671	465	5,136	2,568	910

Source: NCTCOG Model run by DART staff, 2012

The parking demand shown in **Table 4-4** is based on estimated ridership at system build-out in 2035. Camp Wisdom Station would initially accommodate approximately 117 parking spaces, and it is intended that additional parking would be shared with the future development in the area surrounding the station. The design for the UNT Dallas Station anticipates that 474 parking spaces would be built at first, but as the need arose, an extra 360 parking spaces could be made available. Furthermore, Ledbetter Station provides 377 parking spaces.

The UNT Dallas Station would serve the growing UNT Dallas campus and the surrounding area. As on-campus housing would be limited to a small percentage of the student body, the campus would become a major traffic generator, with the potential for creating a large transit ridership base.

LRT service has been shown to change development patterns, which can not only support the development of new economic markets and attract new LRT riders, but also provide convenient access at the same time.

The stations in the study area may experience similar changes. The South Oak Cliff Corridor Blue Line Extension and its LRT stations would be located within the vicinity of suburban neighborhoods and a growing university campus. With the remainder of the study area largely characterized by undeveloped parcels slated for mixed use development, the new LRT service would likely foster development of the numerous undeveloped tracts near both the proposed stations, continuing the transformation of southern Dallas. Moreover, the LRT line would not only connect the university campus with downtown, but also allow faculty and students to connect to the main UNT Campus in Denton via DCTA's A-Train.

It should also be noted that *The UNT Dallas Campus Master Plan* has identified the main quad within the campus core as a gathering place for special events, and upon build-out, the campus will also contain a sports complex in support of the University's long-term objective of establishing an NCAA Division II athletics program. Special events and sports competitions hosted at the UNT Dallas campus have the potential to generate additional LRT ridership. Such gatherings do not produce trips on a regular weekday basis throughout the year and are therefore not addressed in NCTCOG's regional travel demand model. However, models do recognize institutions of higher learning as a distinctive type of trip generator. The most recent version of the NCTCOG model does not include the new UNT Dallas campus. Therefore, for this effort the model was manually adjusted to include UNT Dallas as a special generator.

#### **4.1.3 Ridership Impacts of Mobility 2035 Rail Improvements**

In order to understand how the Build Alternative fits in the larger proposed regional transit system, a second model run was conducted based on a different network. The underlying network in this scenario includes all rail projects contained in the *Mobility 2035* plan, some of which require private funding assistance or legislative action before they can be built.

The additional regional rail projects included in this scenario will not be completed by the time the South Oak Cliff Corridor Blue Line Extension is anticipated to start operating. However, the additional forecast demonstrates the impact these regional rail projects could have on the extended Blue Line in the long-term.

**Table 4-5** presents total Blue Line ridership under the No-Build, Build, and the Mobility 2035 Rail scenarios.

If all regional rail improvements proposed in *Mobility 2035* were implemented, overall ridership for the Blue Line would decrease by 12 percent. The loss in ridership is most likely due to the nearby Waxahachie Regional Rail Line, which would be located just three miles east of the proposed Camp Wisdom Station.

**Table 4-5**  
**South Oak Cliff Corridor Blue Line Extension**  
**Comparison of the Build Alternative and the Mobility 2035 Rail Scenario**

	<b>Ridership and Station Access</b>	<b>Build Alternative</b>	<b>Mobility 2035 Rail Alternate</b>	<b>Change percent</b>
Camp Wisdom Station	Station Ridership	1,143	897	- 21.5%
	Walk Access	166	172	+ 3.6%
	Drive Access	1,403	870	- 38.0%
	Parking Demand	354	278	- 21.5%
UNT Dallas Station	Station Ridership	1,425	1,359	- 4.6%
	Walk Access	245	250	+ 2.0%
	Drive Access	2,332	2,161	- 7.3%
	Parking Demand	556	530	- 4.7%

Source: NCTCOG Model run by DART staff, 2012

NCTCOG’s regional travel demand model was used to arrive at these forecasts. Generally, regional models are designed to provide travel movement predictions at a region-wide, macroscopic level, rather than a street-by-street or a station-by-station forecast. However, these forecasted ridership numbers and access figures seem reasonable, suggesting that some patrons residing in the market catchment area would take the Blue Line in absence of the proposed *Mobility 2035* rail improvements, but would switch to the Waxahachie Line, if it were available.

## 4.2 Highway and Roadway Impacts

Within the study area, there are no freeways, interstates, or other higher speed thoroughfares. However, Interstate Highway (IH) 35E and IH 20 are within a mile of the study area and IH 45 is located less than three miles to the east. The northern and eastern edges of the study area are close to Ledbetter Drive and Lancaster Road, both of which carry a state highway designation. The roadways in the study area are also discussed in **Section 3.3**.

“Level-of-service” (LOS) is a rating system for roadways based on operating conditions, with “A” being best and “F” worst. Low levels of congestion currently occur along the study area roadways. On the other hand, IH 45 and IH 35E, which serve CBD-bound traffic, and IH 20, which is part of a loop that circles the Dallas area, are experiencing higher levels of congestion. The region’s long-range transportation plan does not contain capacity improvements for any of the study area roadways and includes only one proposed project for the surrounding interstate highways, the Southern Gateway project along IH 35E/US 67. This project will add general purpose lanes as well as managed High Occupancy Vehicle (HOV) lanes. In absence of capacity-expanding roadway projects, congestion on the arterials in the study area is still expected to be within an acceptable range in the year 2035. However, segments of the freeways just outside of the study area would be over capacity and are expected to experience increased travel delay.

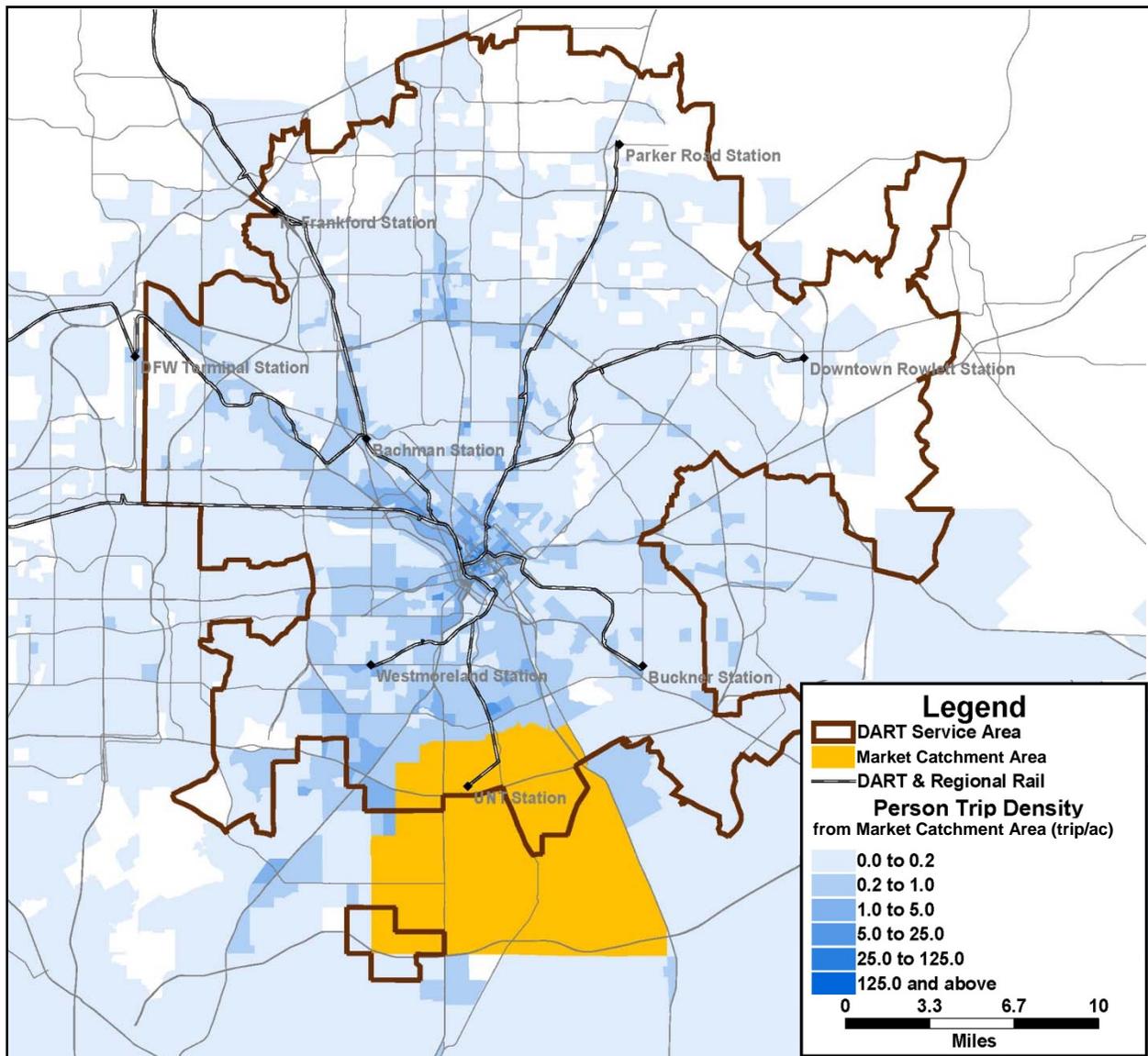
### 4.2.1 Regional Impacts

Regional travel patterns in the study area were derived from the NCTCOG travel demand model data and are summarized in **Table 4-6**. In 2035, commuters within the region are projected to generate 7,788,443 home-based work (HBW) trips daily. The implementation of the South Oak Cliff Corridor Blue Line Extension would increase the regional share of transit related home-based work trips by 0.9 percent and reduce the overall vehicle miles traveled (VMT) by 143,254 miles daily over the No-Build Alternative.

Table 4-6 South Oak Cliff Corridor Blue Line Extension Regional Home-Based Work Trips – Forecast for 2035			
	No-Build Alternative	Build Alternative	Change
Total HBW Trips	7,788,443	7,788,443	N/A
HBW Transit Trips	151,266	152,576	+ 0.9%
HBW Roadway Trips	7,637,177	7,635,867	- 0.02%
Regional VMT	287,587,685	287,444,431	- 0.05%

Source: NCTCOG Model run by DART staff, 2012

Workers living in southern Dallas travel to jobs at destinations all across the region. **Figure 4-1** illustrates the modeled commute patterns for year 2035 of residents living within the market catchment area of the project, which extends beyond the boundaries of the study area.

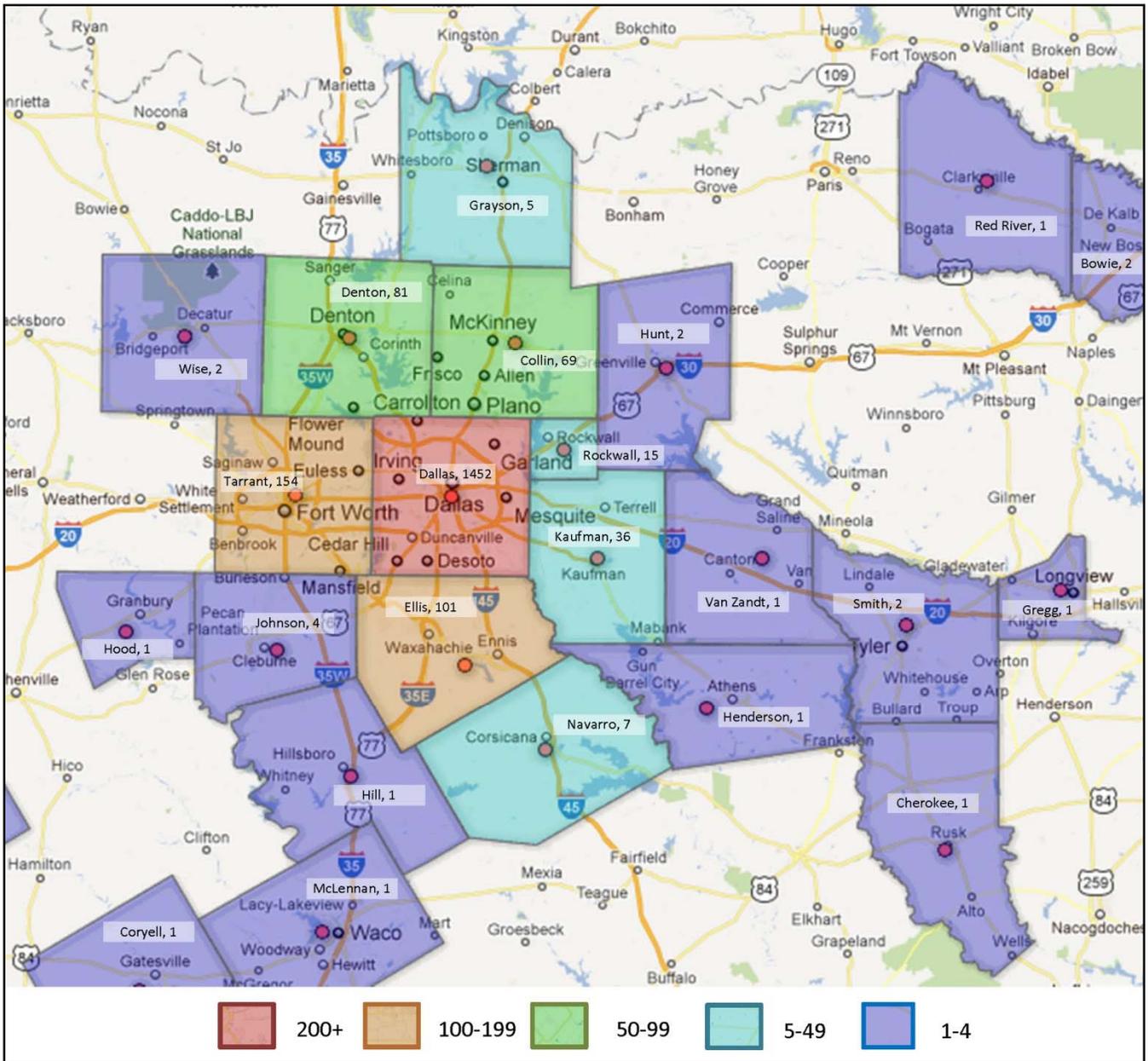


**Figure 4-1**  
South Oak Cliff Corridor Blue Line Extension  
Home-based-Work Trip Patterns for Study Area Residents

Source: DART, 2012

As shown, work trips are concentrated in the Dallas CBD as well as Northwest and North Central Corridors.

Transit ridership would also increase as the UNT Dallas campus continues to build out. At this time, a significant portion of the currently enrolled UNT Dallas students reside within Dallas County, as can be seen on **Figure 4-2**. Many of these students would be able to take advantage of the Build Alternative.



**Figure 4-2**  
**South Oak Cliff Corridor Blue Line Extension**  
**Distribution Map of Enrolled Students at UNT Dallas by County**  
 Source: UNT Dallas Fact Book, 2012

### 4.2.2 Local Impacts

The Build Alternative would help reduce traffic volumes on roadways in the study area. This and other impacts are identified in the following sections.

#### ***Impacts on Roadways and Level of Service***

##### *Freeway Impacts*

Although no freeways are located within the study area, the Build Alternative, park-and-ride lots, and feeder bus network would provide incentives for commuters to use transit. This could potentially decrease auto travel on nearby IH 45, IH 35E, and IH 20 in 2035. **Table 4-7** shows the 2009 average daily traffic (ADT) and the differences in modeled daily traffic volumes between the No-Build Alternative and the Build Alternative in 2035 on these interstate highways and other select roadways. The LOS on this stretch of IH 35E is projected to be LOS F in 2035. IH 45 and IH 20 are forecast to operate at LOS DE in 2035. Only one capacity improvement is planned for these interstate highway segments before 2035.

<b>Table 4-7 South Oak Cliff Corridor Blue Line Extension Roadway Traffic Volume and LOS</b>						
<b>Location</b>	<b>2009 AADT</b>	<b>2035 VPD No-Build</b>	<b>LOS No-Build</b>	<b>2035 VPD Build</b>	<b>LOS Build</b>	<b>VPD Change</b>
<b>IH 45</b>						
South of Ledbetter Drive	65,000	126,100	DE	126,000	DE	Reduction
South of Camp Wisdom Road	57,950	112,300	DE	112,200	DE	Reduction
<b>IH 35 E</b>						
South of Ledbetter Drive	111,000	136,400	F	136,100	F	Reduction
South of Camp Wisdom Road	104,000	134,000	F	133,800	F	Reduction
<b>IH 20</b>						
West of University Hills	146,000	190,300	DE	190,200	DE	Reduction
East of Lancaster Road	129,000	164,200	DE	164,100	DE	Reduction
<b>Lancaster Road</b>						
South of Ledbetter Drive	18,100	19,400	DE	19,300	DE	Reduction
South of Camp Wisdom Road	17,360	23,600	DE	23,500	DE	Reduction
<b>Camp Wisdom Road</b>						
East of University Hills	10,680	5,400	ABC	5,400	ABC	No change
West of Lancaster Road	9,410	5,500	ABC	5,400	ABC	Reduction
<b>University Hills Boulevard</b>						
South of Ledbetter Drive	7,570	12,500	ABC	12,400	ABC	Reduction
South of Camp Wisdom Road	6,810	5,600	ABC	5,500	ABC	Reduction

Source: TX DOT 2009 Saturation Counts and NCTCOG Travel Demand Model, 2012

VPD – Vehicles per Day

Note: 2035 VPD figures have been rounded to the nearest hundred.

### Principal Arterial Impacts

Because of growth within the study area, traffic volumes are forecast to increase on many of the arterials. However, as can be seen in **Table 4-7**, major arterials within the study area would continue to operate at LOS C or better in 2035, with the exception of Lancaster Road, which is expected to operate at LOS DE in 2035.

The Build Alternative would have minor benefits to the arterial road system, when compared to the No-Build Alternative. University Hills Boulevard, Camp Wisdom Road, and Lancaster Road, which serve as the primary access roads to the new LRT stations and associated park-and-ride lots, would not experience a detrimental increase in traffic volumes by 2035 as a result of the Build Alternative.

### At-Grade Crossings and Intersection Impacts

Due to the topography, the Build Alternative proposes that all of the crossings of existing roads are grade-separated, resulting in no negative impacts on the existing roadway network.

### Local and Residential Streets

Depending on final design, the construction of the alignment may cause temporary construction impacts on nearby streets. Construction of an access road to UNT Dallas Station would only have minimal impact on surrounding roadways, and no residential streets would be closed as a result of the Build Alternative.

Because of the added traffic to and from the proposed Camp Wisdom Station and the potential site issues related to the topography in the study area, an analysis of the intersection of Camp Wisdom Road and Patrol Way was conducted. Based on data from the NCTCOG model, it was determined that neither current nor projected traffic meets the City of Dallas' warrant for a signal at this intersection. However, if Patrol Way is extended south of Camp Wisdom Road, a separate evaluation will need to be performed to evaluate the new intersection configuration. Based on the 5% design, the bridge deck would not create line-of-sight problems for drivers on Camp Wisdom Road.

A support column for the aerial guideway is proposed to be located near the northwest corner of Patrol Way and Camp Wisdom Road. The column placement may create a sight distance safety hazard for cars turning left from southbound Patrol Way to eastbound Camp Wisdom Road. During the final design, DART will explore options for this column placement and design to minimize sight distance safety issues and potential crash hazards.

Although only indirectly associated with the construction of the new Build Alternative, a redesign of the existing Ledbetter Station, as shown in **Figure 2-4** in **Chapter 2**, would be undertaken concurrently with the construction activities for the South Oak Cliff Blue Line Extension. To address concerns raised regarding the accessibility of the Ledbetter Station, a relocated kiss-and-ride area is proposed. Currently, patrons wanting to use the existing kiss-and-ride drop-off have to turn west onto Ledbetter Drive, turn left onto Denley Drive, and turn left again into the parking lot, which prompts some drivers to unsafely drop passengers across Lancaster Road at an unsignalized intersection just east of the station. The improved kiss-and-ride location would allow a much safer drop of passengers to an area near the station platform.

To accommodate the improved Ledbetter Station kiss-and-ride loop, the bus stop area would have a realigned access road at 56th Street. A signal warrant and operations analysis was conducted for the intersection of Lancaster Road and 56th Street, which showed that based on the existing traffic volumes, a traffic signal at this location would only meet some warrant requirements. Based on coordination with the City of Dallas, a determination was made that a traffic signal is not necessary at this time. It may be reconsidered in the future. Construction of the new bus and kiss-and-ride access roadways would cause temporary disruptions in travel patterns. However, impacts to the nearby neighborhoods are not expected, as the reconfiguration of the station access would occur within the existing right-of-way.

The Draft EA 5% design resulted in a low clearance structure of 12.7 feet at the northernmost police station parking lot entrance where the LRT structure is lower as it leaves Camp Wisdom Station. A revised plan has been developed that relocates the driveway south to allow for a clearance of 15.8 feet (see **Appendix C**).

**Transit Station/Park-and-Ride Lot Access**

Both Build Alternative stations would include parking. Camp Wisdom Station would include approximately 117 parking spaces. A park-and-ride lot with about 474 initial spaces would be available at the UNT Dallas Station with room to add about 360 additional spaces, as dictated by demand. In addition to generating automobile traffic related to parking, both stations would have bus traffic resulting from local and feeder bus service. However, the additional travel demand is not anticipated to have a negative impact on traffic flow and LOS on the surrounding roadways.

Below is a description of the vehicle access to be provided at the new LRT stations and park-and-ride lots. This information is also shown in **Table 4-8**.

- Camp Wisdom Station – Access to the station and parking would be provided from Patrol Way (via Crouch Road or Camp Wisdom Road).
- UNT Dallas Station – Access to the station and the park-and-ride lot would be provided via a private driveway from University Hills Boulevard. It is anticipated that in the future the station area would also be directly accessible from the main campus area and from future development to the south.

<b>Table 4-8</b> <b>South Oak Cliff Corridor Blue Line Extension</b> <b>Proposed Parking and Bus Facilities at LRT Stations</b>					
Station	Estimated Parking Spaces	Kiss-and-Ride Drop-off Spaces	Bus Bays	Weekday Bus Routes	Maximum Weekday Buses per Hour
Camp Wisdom	117	6	5	3	9
UNT Dallas	474*	7	4	1	2

\* Future potential build-out could accommodate an additional 360 spaces if warranted.

Source: DART, 2012

Traffic impacts on the primary access roads are not expected. If any impacts are identified during operations, changes will be made to signal timing and turn lanes where necessary.

### ***Safety Impacts***

The Build Alternative would improve on the currently limited extent of pedestrian infrastructure within the study area by including pedestrian enhancements at the LRT stations. The improvements would also consist of signage, lighting, and a sidewalk along Patrol Way in the station area. All new facilities would be accessible in accordance with the Americans with Disabilities Act (ADA). The Build Alternative would thus improve safety in the study area primarily by improving pedestrian access to transit.

In addition, the proposed Ledbetter Station kiss-and-ride improvement would be implemented, which would encourage the safe drop of passengers to an area near the platform over the current unsafe practice of dropping passengers across Lancaster Road at an unsignalized intersection east of the station.

In accordance with DART Policy, fencing would be provided along the right-of-way in areas where the guideway is traveling at grade. Locations of fencing and other safety and security elements are discussed in **Section 5.15**.

### ***Parking Impacts***

A small section of the Dallas Police Department South Central Station area, currently used for parking, would be needed for the LRT alignment. The rail guideway would clip the northeast corner of the police property and displace about 12-18 striped parking spaces. Approximately 6 informal spaces along the access aisles would also be temporarily impacted until a new access aisle is in place.

Depending on the construction approach of the alignment, there could also be a temporary disruption to the police overflow parking on Patrol Way due to construction activities.

### ***Mitigation Measures***

The Build Alternative would operate within an exclusive right-of-way on a fixed guideway. Roadway impacts due to new traffic generated at the proposed LRT stations are considered to be minor and localized. Based on the existing and projected traffic volumes, the results of a signal warrant and operations analysis revealed that a traffic signal would not be warranted at the intersection of Camp Wisdom Road and Patrol Way. However, as part of the extension of Patrol Way south of Camp Wisdom Road, which would result in the addition of a fourth leg to the intersection, a reevaluation of traffic signal warrants as well as sight lines should be undertaken.

Additional roadway and grade crossing impacts, as well as crossing-related road closures are not anticipated as proposed crossings of existing roadways would be grade separated. This fully grade-separated alignment was chosen as it: 1) best fits the study area topography along Wagon Wheels Trail and Crouch Road; and 2) responds to anticipated traffic volumes and avoids potential sight line issues at the crossing of Camp Wisdom Road.

A future extension of Red Bird Lane is provided for in the 5% preliminary design and would be accommodated in the final design of the Build Alternative and appropriate crossing infrastructure would be installed at the time of roadway construction. In addition, future at-grade crossings west and east of UNT Dallas Station are provided for in the 5% preliminary design and would be accommodated during final design.

To mitigate the impact on the Dallas Police Department South Central Station parking lot, construction of replacement spaces at the west side of the existing lot would be undertaken. Temporary parking during construction would also be provided on police property. The Build Alternative is therefore not anticipated to reduce the available parking within the study area. Coordination with the Dallas Police will continue during final design to finalize the northernmost driveway relocation so that sufficient clearance is provided.

Patrons who desire to park at stations would be encouraged to use the DART park-and-ride facilities. Upon build-out of the surrounding areas, if parking demand should exceed supply, DART would work with the City of Dallas and affected property owners to implement measures such as shared parking agreements, or restricting transit patron parking at non-DART parking facilities during business hours or for extended periods of time.

### **4.3 Impacts on Movement of Freight**

The Build Alternative would operate on an exclusive right-of-way throughout the study area.

#### **4.3.1 Freight Railroads**

The closest freight railroad tracks are located two miles east of the study area, resulting in no interaction between the proposed LRT and freight operations. No mitigation is necessary.

#### **4.3.2 Trucking and Deliveries**

Since the crossings of all existing roads are slated to be grade separated, no mitigation related to public roadways is required. The Dallas Police Department South Central Station is serviced by fuel delivery trucks and refuse haulers. Current design plans for aerial structure over the relocated north driveway to the police station provides a clearance of 15.8 feet (see **Appendix C**). DART will coordinate with the police department to ensure that truck access paths are functional with the relocated driveway configuration.

### **4.4 Impacts on Non-Motorized Circulation**

Convenient access to the proposed LRT stations extends beyond providing access roads to the surrounding study area roadways, but would also facilitate and encourage pedestrian and bicycle movements.

#### **4.4.1 Pedestrian Movements**

Pedestrian access is a key component of the design of DART LRT stations. Pedestrian circulation facilities in the study area consist of sidewalks within neighborhoods and adjacent to select roadways, as detailed in **Section 3.3.4**. Specific pedestrian circulation system elements have not been developed by the City of Dallas and the proposed station areas are currently not well served due to their proximity to mostly undeveloped parcels of land. The Build Alternative would include provisions for perimeter sidewalks and internal walkways at each station, complementing any existing sidewalks and providing direct pedestrian access to each station.

Within the vicinity of Camp Wisdom Station, sidewalks are currently only provided along Magnolia Trace apartments. The resulting 450-foot gap between the proposed station area sidewalk and the existing Magnolia Trace sidewalk would fall outside of DART property and would typically be completed by others.

*The UNT Dallas Campus Master Plan* proposes to connect the university campus and the future UNT Dallas Station via a pedestrian promenade that would assist in the facilitation of overall pedestrian circulation. DART will coordinate with UNT Dallas on the implementation of such a pedestrian connection.

At this time, no informal pedestrian crossings have been identified during field work activities. No impacts are anticipated and no mitigation is necessary.

#### **4.4.2 Bicycle Movements**

The Build Alternative would encourage bicycle use as stations would provide bicycle racks and long-term bicycle storage lockers where feasible. In addition, cyclists may bring their bicycles onto DART trains at any time of the day and all DART buses are equipped with bicycle racks.

Existing bicycle routes are shown in **Figure 3-8**. Plans for bicycle circulation facilities have been developed by the City of Dallas and NCTCOG as part of the regional Veloweb. The proposed alignment would cross the funded Five Mile Creek Greenbelt Trail, but as the LRT structure would be aerial as it crosses the trail, no impact to bicycle movements is expected. The future Runyon Creek Greenbelt Trail, which would connect Wagon Wheels Trail and the UNT Dallas campus, is planned to run parallel to the alignment with no crossings. Therefore, no impacts are anticipated. DART will work with the City of Dallas to provide access from the trail to Camp Wisdom and UNT Dallas Stations when design for the trail begins. Furthermore, DART will coordinate with the City of Dallas during final design so as to not preclude the future implementation of a trail within DART right-of-way between the Camp Wisdom and UNT Dallas Stations. This use would be in accordance with DART Policy III.09 *Hike and Bike Trail Use on DART Right-of-Way*. The trail concept would not compromise use of the corridor for transit purposes.