

SECTION 4

Future Transportation Conditions, Deficiencies, and Needs

This section provides an analysis of future (2025) No Build transportation deficiencies for the Dallas TSP study area. This analysis consists of a future operational assessment of each of the 25 study intersections, based on a cumulative analysis method. The cumulative analysis method projects future traffic volumes based on expected land use development in the study area and historical traffic growth. Resulting deficiencies of the existing transportation system under No Build conditions in the study area are described and possible improvements are identified. In addition to future roadway needs, potential future bicycle, pedestrian, transit, and safety improvements are identified. The No Build analysis of future forecasted conditions in year 2025 assumes existing roadway geometry¹ and traffic control with future traffic volumes.

Population and Employment Growth

The 1998 Dallas Comprehensive Plan included an urban growth management program. The urban growth management program provides a framework for transition from rural to urban land use. The program forecasted household and job growth for a 20-year planning horizon and assessed the expected land supply needed to accommodate future residential and employment growth.

Table 4-1 provides an overview of expected growth of population, households, and jobs in the City between 2000 and 2020.

TABLE 4-1
Expected Population, Job, and Household Growth in Dallas 2000 to 2020

Year	Population	Jobs	Households
2000	13,117	3,231	5,247
2020	19,049	5,772	7,620
Expected Growth 2000-2020	+5,932	+2,541	+2,373

Source: City of Dallas Comprehensive Plan (1998) Volume II Background Documents, pg. 20, Table 2.2.

Cumulative Analysis

Because a transportation model for the study area is unavailable, a cumulative analysis method was used to project future traffic volumes in the study area. The cumulative analysis method

¹ Those roadway improvements included in the City of Dallas Capital Improvement Program and the state's Transportation Improvement Program are assumed to be built for future No Build conditions.

considers traffic generated by two sources, expected development in the study area and historical traffic not associated with the development of land uses. The projected future volumes are distributed onto the study network and used to evaluate future deficiencies and identify potential transportation system improvements.

Expected Future Development

The Dallas Comprehensive Plan projects future demand by general land use category. This information was used as a basis for the cumulative analysis, and compared to the available land inventory (2004) as supplied by the City of Dallas. Available gross acreage was determined by summing all acreage identified as vacant, underutilized, or redevelopable by land use. Available developable acreage was determined by subtracting areas for roads and right-of-way (assumed to be 20 percent of gross acreage) and environmentally constrained areas – locations within the FEMA-defined floodway or along very steep (26 percent or higher) slopes.

Table 4-2 provides a summary of land demanded and available by land use category. In some instances, demand is higher than supply. For commercial and multi-family residential, this demand is accommodated through the three mixed-use nodes (Wyatt, LaCreole, and Barberry). Extra industrial demand is assumed to have been constructed between the release of the Comprehensive Plan and the updated Buildable Lands Inventory.

TABLE 4-2
Projected Land Use Demand and Supply

Land Use	Assumed Demand	Available Gross Acreage	Available Developable Acreage in City*	Acreage Assigned
Commercial	58	20**	14**	58**
Industrial	192	206	165	165
Multi-Family Residential	63	26**	16**	63**
Single-Family Residential	476	1,595*	1,220*	476
Public	33	Use SFR	Use SFR	33

* Gross acreage minus area for right-of-way, utilities, and interior roads, and minus environmental constraints.

** Land area inside the three mixed-use nodes are designated as single-family residential in the City's buildable lands inventory, but are expected to be rezoned (as per nodal master plan) to accommodate commercial and multi-family residential. The nodes are expected to accommodate the assumed demand for commercial and multi-family residential development.

The project management team analyzed the set of housing and employment needs in relation to the buildable lands inventory. Some general observations emerged:

- *Commercial Development* – Available parcels designated as commercial in the Comprehensive Plan are concentrated around the North Dallas intersection area, and at the northern portion of the Main/Jefferson couplet. The three mixed use nodes are also assumed to contain some level of neighborhood or general commercial development. Anticipated growth in

commercial is expected to absorb most developable vacant and underutilized commercial-designated parcels. Developability of commercial parcels may be tempered by the Rickreall Creek floodway.

- *Industrial Development* – Expected growth in industrial will be focused in southern Dallas, clustered north and south of the Monmouth Cutoff Road. Demand is expected to absorb much available industrial land in the City. Development of some industrial parcels located inside the 100-year floodplain would require a floodplain permit, but with appropriate mitigation development on these parcels is possible.
- *Multi-Family Residential Development* – The supply of vacant and underutilized parcels designated as multi-family residential are limited, and mainly located near the North Dallas intersection and along Rickreall Creek near the Main/Jefferson Couplet. Development of some of these parcels was assumed to be constrained due to the Rickreall Creek floodway. The three mixed use nodes are expected to absorb the majority of demanded multi-family residential development.
- *Single-Family Residential Development* – The City’s vacant lands inventory showed a greater supply of vacant or underutilized parcels designated as single-family residential (more than 1,500 acres) than demanded. Growth was therefore assumed to be focused in the three mixed-use nodes (Wyatt, LaCreole, and Barberry).

The cumulative analysis is organized into the five regions where land use is expected to impact the overall transportation network at a greater rate than historical trends. Land uses were related to land use categories listed in the Institute of Transportation Engineers (ITE) Trip Generation Manual (7th Edition), and associated trips were identified associated with each general region.

Monmouth Cutoff Road (Industrial)

All available net industrial property was assumed for buildout by 2025. All of this area is located at the southern section of Dallas, in the vicinity of the Monmouth Cutoff Road. Zoning for vacant or underutilized parcels was designated either as light industrial (IL) or heavy industrial (IH). Table 4-3 summarizes estimated trip generation associated with industrial land development.

TABLE 4-3
Trips Generated by Projected Industrial Development, by Land Use Category

Zoning	Land Use Category	Developable Acres	Trip Generation Rate*	Distribution	PM Peak-Hour Trips Generated
Light Industrial	General Light Industrial (110)	28	7.26 trips/acre	22% entering, 78% exiting	205
Heavy Industrial	General Heavy	137	2.16 trips/acre	Not available	295

TABLE 4-3
Trips Generated by Projected Industrial Development, by Land Use Category

Zoning	Land Use Category	Developable Acres	Trip Generation Rate*	Distribution	PM Peak-Hour Trips Generated
Industrial (120)					

* ITE Codes 110 and 120 were chosen, with average trip ends vs. acres on a weekday, peak hour of adjacent street traffic, one hour between 4:00 p.m. and 6:00 p.m.

North Dallas Intersection (Commercial and Multi-Family Residential)

All available net buildable land zoned commercial was assumed to be built out by 2025. This land is focused along the North Dallas intersection and at the northern edge of the Main Street/Jefferson Street couplet. Zoning for vacant, underutilized, or redevelopable parcels was General Commercial (CG) with a small amount (2 acres) zoned as Central Business District (CBD).

Because the zoning designations are simpler than the land use categories listed for retail and service commercial in the ITE Trip Generation Manual, a blended rate comprised of several possible commercial land use categories was used. Table 4-4 summarizes estimated trip generation associated with development in the North Dallas intersection vicinity.

TABLE 4-4
Trips Generated by Projected Commercial Development, by Land Use Category

Zoning	Land Use Category	Developable Acres	Total Dwelling Units or Gross S.F.	Trip Generation Rate	Distribution	PM Peak-Hour Trips Generated*
General Commercial	Blended Rate (Commercial)	12	130,679 s.f.	7 trips/1,000 s.f.	Not Available	915
Central Business District	Blended Rate (Commercial)	2	21,780 s.f.	7 trips/1,000 s.f.	Not Available	150
Multi-Family Residential	Mid-Rise Apartment (223)	6	96 d.u.	0.39 trips/d.u.	58% entering, 42% exiting	35

* A blended rate of 35 trips/acre was developed for commercial development. ITE Code 223 was used for multi-family residential, with average trip ends vs. dwelling units on a weekday, peak hour of adjacent street traffic, one hour between 4:00 p.m. and 6:00 p.m.

Barberry Node (Mixed Use)

The City of Dallas completed a master plan for the Barberry Mixed Use Node in 2000. This node is located south of the Dallas-Rickreall Highway, between Hawthorne Avenue and Fir Villa Avenue. The City estimates development of a mixture of commercial, residential, and open space. Table 4-5 summarizes the projected number of trips generated by each land use.

TABLE 4-5
Trips Generated by Projected Development in Barberrry Mixed Use Node, by Land Use Category

Zoning	Land Use Category	Net Buildable Acres	Total Dwelling Units or Gross S.F.	Trip Generation Rate	Distribution	PM Peak-Hour Trips Generated**
Neighborhood Commercial	Blended Rate (Neighborhood Commercial)	15	228,500 s.f.	3.7 trips/1,000 s.f.	Not Available	845
Multi Family Residential	Mid-Rise Apartment (223)	20	320 d.u.	0.39 trips/d.u.	58% entering, 42% exiting	125
Small Lot Residential	Residential Condominium/Townhouse (230)	22	154 d.u.	0.52 trips/d.u.	67% entering, 33% exiting	80
Single Family Residential	Single-Family Detached Housing (210)	75	300 d.u.	1.01 trips/d.u.	63% entering, 37% exiting	305
Schools	Elementary School (520)	15	450 students	0.28 trips/student	45% entering, 55% exiting	125
Parks and Open Space	City Park (411)	20	20 acres	2 trips/acre	50% entering, 50% exiting	40

The same densities designated in the 2000 Master Plan for the LaCreole Node were assumed for the Barberrry and Wyatt Nodes.

* A blended rate of 35 trips/acre was developed for commercial development. ITE Codes 223, 230, and 210 were used for residential, with average trip ends vs. dwelling units on a weekday, peak hour of adjacent street traffic, one hour between 4:00 p.m. and 6:00 p.m. ITE Code 520 was used for Elementary School, with average trips ends vs. students on a weekday, PM peak hour of generator. ITE Code 411 was used for City Park, with average trip ends vs. acres on a weekday.

** Rounded to nearest five trips.

The trips generated from expected land uses as outlined in the nodal master plan are relatively consistent with the *Transportation Impact Report and Congestion Management Plan* conducted by the City in 1999 for the Barberrry and LaCreole Nodes. For the Barberrry Node, differences were approximately 10 percent. These differences can be explained by acreages used (the 2003 master plan showed different acreages for certain land uses) and an updated version of the ITE Trip Generation Manual.

LaCreole Node (Mixed Use)

The LaCreole Node is located north of the Dallas-Rickreall Highway, east of Polk Station Road. Its location is east of the North Dallas intersection. The City has planned buildout of this area as a mixed use development comprised of a mix of residential densities with some commercial and open space. Table 4-6 lists projected trip generation by land use.

TABLE 4-6
Trips Generated by Projected Development in LaCreole Mixed Use Node, by Land Use Category

Zoning	Land Use Category	Net Buildable Acres	Total Dwelling Units or Gross S.F.	Trip Generation Rate*	Distribution	PM Peak-Hour Trips Generated**
General Commercial	Blended Rate (Commercial)	21	228,500 s.f.	7 trips/1,000 s.f.	Not Available	1,600
Multi Family Residential	Mid-Rise Apartment (223)	19	304 d.u.	0.39 trips/d.u.	58% entering, 42% exiting	120
Small Lot Residential	Residential Condominium/Townhouse (230)	20	140 d.u.	0.52 trips/d.u.	67% entering, 33% exiting	75
Single Family Residential	Single-Family Detached Housing (210)	16	64 d.u.	1.01 trips/d.u.	63% entering, 37% exiting	65
Mixed Use	Low-Rise Apartment (221) Blended Rate (Neighborhood Commercial)	14	70 d.u.	0.58 trips/d.u.	65% entering, 35% exiting	40
			30,500 s.f.	3.7 trips/1,000 s.f.	Not Available	115
Parks and Open Space	City Park (411)	4	4 acres	2 trips/acre	50% entering, 50% exiting	10

* A blended rate of 35 trips/acre was developed for commercial development acre. ITE Codes 223, 230, and 210 were used for residential, with average trip ends vs. dwelling units on a weekday, peak hour of adjacent street traffic, one hour between 4:00 p.m. and 6:00 p.m. ITE Code 411 was used for City Park, with average trip ends vs. acres on a weekday.

** Rounded to nearest five trips.

The trips generated from expected land uses as outlined in the nodal master plan are relatively consistent with the *Transportation Impact Report and Congestion Management Plan* conducted by the City in 1999 for the Barberry and LaCreole Nodes. For the LaCreole Node, differences were approximately 4 percent. These differences can be explained by acreages used (the 2003 master plan showed different acreages for certain land uses) and an updated version of the ITE Trip Generation Manual.

Wyatt Node

The Wyatt Node is located north of W. Ellendale Road, directly east of James Howe Road. The City has planned buildout of this area as a mixed use development comprised of a mix of residential densities with some commercial and open space. Table 4-7 lists projected trip generation by land use.

TABLE 4-7
Trips Generated by Projected Development in Wyatt Mixed Use Node, by Land Use Category

Zoning	Land Use Category	Net Buildable Acres	Total Dwelling Units or Gross S.F.	Trip Generation Rate*	Distribution	PM Peak-Hour Trips Generated**
Neighborhood Commercial	Blended Rate (Commercial)	5	54,450 s.f.	3.7 trips/1,000 s.f.	Not Available	200
Multi Family Residential	Mid-Rise Apartment (223)	15	240	0.39 trips/d.u.	58% entering, 42% exiting	95
Single Family Residential	Single-Family Detached Housing (210)	74	296	1.01 trips/d.u.	63% entering, 37% exiting	300
Parks and Open Space	City Park (411)	6	6 acres	2 trips/acre	50% entering, 50% exiting	10

The same densities designated in the 2000 Master Plan for the LaCreole Node were assumed for the Barberry and Wyatt Nodes.

* A blended rate of 35 trips/acre was developed for commercial development. ITE Codes 223 and 210 were used for residential; with average trip ends vs. dwelling units on a weekday, peak hour of adjacent street traffic, one hour between 4:00 p.m. and 6:00 p.m. ITE Code 411 was used for City Park, with average trip ends vs. acres on a weekday.

** Rounded to nearest five trips.

Trip Distribution

Trips were assigned to the transportation network using a series of distribution assumptions. The directions of ultimate destinations generally depend on the location of the growth area, but some general assumptions are listed as follows:

- *Points North:* OR 22, Oregon Coast, Spirit Mountain Casino
- *Points SW:* Falls City, Philomath
- *Points SE:* Monmouth, Independence
- *Points East:* Salem, I-5
- *Points West:* Ellendale

Specific destinations within Dallas include downtown and the commercial area around the North Dallas intersection. For some growth areas, a certain percentage of traffic (typically 5 percent) was assumed to use the local road network and not impact any of the study intersections. Furthermore, a percentage of traffic (typically 5-10 percent) was assumed to stay internal to the growth area. A summary of trip distribution by growth area is provided below.

Monmouth Cut-Off

Access points for the Monmouth Cut-Off industrial area on the No-Build network include Monmouth Cut-Off Road, Godsey Road, and Uglow Street. Miller Avenue is considered a

secondary access, used as a path for vehicles but largely developed and therefore not generating large volumes of new trips. Table 4-8 provides a summary of traffic volumes and distribution assumptions used for industrial development served by Monmouth Cutoff.

TABLE 4-8
Traffic Volumes and Direction for Monmouth Cutoff

Direction	Projected 2025 PM Peak Hour Traffic Volume
Traffic In	102
Traffic Out	390
Total Traffic	502
Direction	Distribution
To North Dallas intersection and points north	15%
To Dallas-Rickreall and points east	35%
To Monmouth Cut-Off Road and points SE	10%
To Fairview Road and points SW	10%
To W Ellendale and points west	5%
To Downtown	15%
Internal to Monmouth Cutoff Growth Area	5%
Assumed Use of Local Roads	5%
TOTAL	100%

North Dallas

Possible access points for the North Dallas Node on the No-Build network include Kings Valley Highway, the Dallas-Rickreall Highway, and W Ellendale Road. Table 4-9 provides an overview of expected traffic volumes and distribution associated with the North Dallas node.

TABLE 4-9
Traffic Volumes and Direction for North Dallas Intersection

Direction	Projected 2025 PM Peak Hour Traffic Volume
Traffic In	553
Traffic Out	548
Total Traffic	1101
To Downtown (points south)	45%
To W Ellendale (points west)	10%
To Dallas-Rickreall Highway (points east)	25%
To Kings Valley Highway (points north)	10%

TABLE 4-9
Traffic Volumes and Direction for North Dallas Intersection

Direction	Projected 2025 PM Peak Hour Traffic Volume
Traffic In	553
Traffic Out	548
Internal to North Dallas intersection	5%
TOTAL	100%

Barberry Node

Possible access points for the Barberry Node on the No-Build network include Fir Villa Road, Miller Avenue, Hawthorne Avenue, and Barberry Avenue (east to LaCreole Drive). The assumed distribution patterns are presented in Table 4-10.

TABLE 4-10
Traffic Volumes and Direction for Barberry Node

Direction	Projected 2025 PM Peak Hour Traffic Volume
Traffic In	818
Traffic Out	716
Total Traffic	1534
Direction	Distribution
To North Dallas intersection	20%
To Downtown	15%
To Dallas-Rickreall (points east)	20%
To Kings Valley Highway (points north)	5%
To W Ellendale (points west)	5%
To Monmouth-Independence (points SE)	10%
To Fairview Avenue (points SW)	10%
Internal to Barberry Node	10%
Assumed use of local roads	5%
TOTAL	100%

LaCreole Node

Possible access points for the LaCreole Node on the No-Build network include Polk Station Road to the Kings Valley Highway or the Dallas-Rickreall Highway, LaCreole Drive, and

Hawthorne Avenue. Expected traffic volumes associated with the LaCreole node and their expected distribution is shown in Table 4-11.

TABLE 4-11
Traffic Volumes and Direction for LaCreole Node

Direction	Projected 2025 PM Peak Hour Traffic Volume
Traffic In	1050
Traffic Out	976
Total Traffic	2026
Direction	Distribution
To Dallas-Rickreall Highway (points east)	30%
To Kings Valley Highway (points north)	20%
To North Dallas intersection and points west	15%
To LaCreole Drive (points south)	10%
To Downtown	10%
Internal to LaCreole Node	10%
Assumed use of local roads	5%
TOTAL	100%

Wyatt Node

Possible access points for the Wyatt Node on the No-Build network include James Howe Road, Wyatt Street, and W Ellendale Avenue. See Table 4-12.

TABLE 4-12
Traffic Volumes and Direction for Wyatt Node

Direction	Projected 2025 PM Peak Hour Traffic Volume
Traffic In	349
Traffic Out	256
Total Traffic	605
Direction	Distribution
To Downtown (points south)	20%
South on Wyatt Street	10%
To W Ellendale (points west)	10%
To North Dallas intersection	20%
To Dallas-Rickreall Highway (points east)	15%
To James Howe Road (points north)	10%

TABLE 4-12
Traffic Volumes and Direction for Wyatt Node

Direction	Projected 2025 PM Peak Hour Traffic Volume
Traffic In	349
Traffic Out	256
Internal to Wyatt Node	10%
Assumed use of local roads	5%
TOTAL	100%

Historical Growth Rates

Growth in traffic traveling through outside the study area was also expected. These trips are categorized as through trips. Through trips are defined as those vehicles that travel through the study area network without stopping anywhere in the City.

Future through trips were determined by assigning a historical growth factor to existing through trips. The existing through trips were established by analyzing the 2004 turning movement distribution at each intersection approach, with exceptions described in Table 4-13. As shown in Table 4-13, through trips were calculated from assessing the traffic volumes at each of the study network’s starting point (the nearest intersection to the study area boundary for each major travel direction) to each end point. A growth rate multiplication factor was applied to the calculated existing through trips at each intersection. This growth factor alone was added on top of the existing traffic volumes and the development generated trips, to avoid double counting trips already added from existing Dallas land use development.

TABLE 4-13
External-External Trip Table (Based on 2004 30th Highest Hour Design Traffic Volumes)

TO		North (Kings Valley Highway)	East (Dallas-Rickreall Highway)	SE (Monmouth Cut-off Road)	SW (Fairview Avenue)	West (W Ellendale Avenue)
FROM	North (Kings Valley Highway)	N/A	0	10	15	10
	East (Dallas-Rickreall Highway)	0	N/A	0	30	55
	SE (Monmouth Cut-off Road)	15	0	N/A	15	15
	SW (Fairview Avenue)	10	15	30	N/A	25
	West (W Ellendale Avenue)	20	60	15	45	N/A

Notes and Assumptions:

1. Trips traveling from West end of Ellendale Avenue to South end of Kings Valley Highway would use Levens Street.
2. No trips would be made from North end of Kings Valley Highway to East end of Dallas-Rickreall Highway and vice versa.

TABLE 4-13

External-External Trip Table (Based on 2004 30th Highest Hour Design Traffic Volumes)

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3. No trips would be made from East end of Dallas-Rickreall Highway to SE end of Monmouth Cut-off Road and vice versa.
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Operational Analysis of Future 2025 No Build Condition

An operational analysis was conducted for the forecasted year 2025 No-Build condition with Synchro, version 6. Results from the Synchro HCM Signalized and Unsignalized Reports are reported in this memorandum.

For the No Build condition, the OHP mobility standards apply on State Highways. The OHP mobility standards were also used for comparing study intersections not on State highways. An explanation of those criteria applied is provided below. Because there are no known programmed improvements at 23 of the 25 intersections in the study area, the No-Build condition assumes the current traffic control and lane channelization at those 23 intersections. One of the intersections that has programmed improvements is Kings Valley Highway and Walnut Avenue. It is stated in the *City of Dallas, Public Works Proposed Street Projects 2004-2005* that a signal will be installed at this location in April 2005. (That signal has been installed). The other intersection reflecting future improvements in the No-Build condition is the North Dallas intersection. This intersection is undergoing a major change in channelization and was completed in 2006.

More than half of the intersections analyzed in the operational analysis are along OR 223. Because of the varied operational characteristics of the different study intersections, three different OHP mobility standards apply to state facilities in Dallas. These criteria are outlined in Table 4-14.

TABLE 4-14

OHP Mobility Standards Applicable to OR 223 Intersections within Dallas UGB

Number	Location	Speed Limit	Applicable V/C Ratio
1.	Within STA	N/A	0.95
2.	Outside STA, outside MPO	< 45mph	0.85
3.	Outside STA, outside MPO	≥ 45mph	0.80

State mobility standards only apply to state highways; however the City does not have adopted standards for intersection performance. For this evaluation, the state standard of a “District/Local Interest Road” with a speed < 45 mph is used – the applicable V/C ratio for this type of facility is 0.85.

Future No Build Intersection Operation Results

Table 4-15 shows a comparison of the V/C ratio standards and the predicted future 2025 No-Build V/C ratios as calculated under No-Build conditions. Table 4-15 reports the overall intersection results for signalized intersections, but reports results for the movement with the worst operating performance on both the major and minor approaches at the unsignalized intersections.

TABLE 4-15
Operational Analysis of Study Intersections – No-Build (2025) 30th Highest Hour

Intersection	OHP Mobility Standard		Projected V/C Ratio	
	Major	Minor	Major	Minor
Signalized				
Kings Valley Hwy and Levens Street	0.85		0.87	
Dallas-Rickreall Hwy and Kings Valley Hwy (North Dallas intersection)	0.85		1.43	
Dallas-Rickreall Hwy and LaCreole Drive	0.80		1.38	
Washington Street and Main Street	0.95		0.76	
Miller Avenue and Uglow Street	0.85		0.66	
Kings Valley Highway and Walnut Avenue	0.85		0.62	
Unsignalized				
Kings Valley Hwy and Bridlewood Drive	0.80	0.85	0.34	0.21
Kings Valley Highway and Oakdale Avenue	0.85	0.85	0.03	0.34
Kings Valley Highway and Orchard Drive	0.85	0.85	0.59	>2.0
Kings Valley Hwy and Polk Station Road	0.85	0.85	0.22	0.77
Dallas-Rickreall Highway and Fir Villa Road	0.80	0.85	0.79	>2.0
Dallas-Rickreall Hwy and Oak Villa Road	0.80	0.85	0.90	0.40
Dallas-Rickreall Hwy and Polk Station Rd	0.85	0.85	0.79	>2.0
Monmouth Cutoff and Uglow Street	0.85	0.85	0.23	0.41
Monmouth Cutoff and Godsey Road	0.80	0.85	0.10	0.87
W Ellendale Ave and James Howe Road	0.85	0.85	0.06	1.10
W Ellendale Avenue and River Drive	0.85	0.85	0.41	0.24
W Ellendale Avenue and Levens Street	0.85	0.85	0.19	>2.0
Washington Street and Jefferson Street	0.95	0.95	0.51	>2.0
Mill Street and Main Street	0.95	0.95	0.43	>2.0
Mill Street and Jefferson Street	0.95	0.95	0.19	1.96
Main Street and Maple Street	0.85	0.85	0.04	0.15

TABLE 4-15
Operational Analysis of Study Intersections – No-Build (2025) 30th Highest Hour

Intersection	OHP Mobility Standard		Projected V/C Ratio	
	Major	Minor	Major	Minor
Miller Avenue and LaCreole Drive	0.85	0.85	0.32	1.81
Miller Avenue and Godsey Road	0.85	0.85	0.24	1.10
Miller Avenue and Fir Villa Road	0.80	0.85	0.29	0.55

NOTE: Numbers in **BOLD** indicate higher than acceptable mobility levels.

Intersection V/C ratios higher than OHP mobility standards indicate areas of congestion and longer-than-acceptable vehicle delay. Intersection V/C ratios lower than OHP mobility standards indicate intersections operating at acceptable levels of mobility. As shown in Table 4-15, 10 of the study intersections currently operate lower than the OHP V/C thresholds. Fifteen of the study intersections operate with higher than acceptable V/C ratios. Out of the 15 failing intersections, there are six with V/C ratios greater than two. Potential roadway improvement alternatives to mitigate deficiencies will be evaluated in the next phase of this project.

Queuing Analysis of Future Conditions (30th Highest Hour)

The V/C ratio provides only one measure-of-effectiveness of the intersection operation. Vehicle queuing overflow in the turn-lane shows where there is deficient vehicle storage at intersections. Vehicle queuing overflow in the through lane shows where there is deficient capacity between one intersection and the next. Table 4-16 shows each lane in the study area that has a queue length that exceeds the storage. Table 4-16 also shows the projected V/C ratio for each movement and the analysis method used to calculate the queue length. Eight intersections (a total of 22 approach lanes) are identified where 95th percentile queue length exceeds available storage capacity. Fourteen of the approach lanes in Table 4-16 are either exclusive left or right turn lanes. Five of the approach lanes are combined left/through or right/through lanes. Three of the approach lanes are exclusive through lanes.

TABLE 4-16
2025 30th Highest Hour Queue Analysis

Intersection	Approach	Lane Group	Existing Storage (feet)	Queue Length (feet)
Washington Street & Levens Street				
	Eastbound	Left	150	180
	Westbound	Thru/Right	300	570
Dallas-Rickreall Hwy & Kings Valley Hwy				
	Eastbound	Left	200	280
	Westbound	Left	335	370
	Westbound	Left	335	420
	Northbound	Left	215	310
	Northbound	Right	300	370
	Southbound	Left	100	280
Dallas-Rickreall Hwy & LaCreole Drive				

TABLE 4-16
2025 30th Highest Hour Queue Analysis

Intersection	Approach	Lane Group	Existing Storage (feet)	Queue Length (feet)
	Northbound	Left/Thru	130	160
Washington Street & Main Street				
	Eastbound	Thru	450	540
	Eastbound	Thru	290	420
	Southbound	Left	310	480
	Southbound	Thru/Right	310	330
Miller Avenue & Uglow Street				
	Northbound	Thru/Right	450	510
	Southbound	Left	120	420
Kings Valley Hwy & Orchard Drive				
	Eastbound	Left	100	110
	Southbound	Left	110	120
	Southbound	Thru/Right	480	500
Dallas-Rickreall Hwy & Fir Villa Road				
	Northbound	Right	200	220
W Ellendale Ave & Levens Drive				
	Eastbound	Thru	380	430
	Eastbound	Right	170	190
	Westbound	Left	110	180

Queue lengths were rounded up to the nearest 10 feet.

Queue lengths can impact overall intersection corridor operations by delaying and restricting upstream vehicle movements. This is true for both signalized and unsignalized intersections. For the signalized intersections with separate phase turning lanes, long queues can result in spillback into the main roadway section, thereby blocking side-streets, private driveways and hindering through traffic from proceeding even if that movement has a green signal. Traffic turning left onto a roadway at an unsignalized intersection can also delay right-turning vehicles while they wait for a safe gap in traffic to turn into. The through lanes with a higher queue length than existing storage indicate the queue spilling back to the next intersection, thereby blocking side-streets at that intersection.

All of the intersections listed above have reported V/C ratios higher than ODOT mobility standards except for Washington Street and Main Street, and Miller Avenue and Uglow Street.

Preliminary No-Build Year 2025 Traffic Signal Warrant Analysis

A preliminary traffic signal warrant analysis was conducted for each of the unsignalized intersections that failed to meet the OHP mobility standard in the future (2025) No-Build analysis. The preliminary traffic signal warrant analysis is based upon Warrant 1 (Eight-Hour Vehicular Volume) from the Manual on Uniform Traffic Control Devices (MUTCD). The analysis was based upon forecasted year 2025 30th highest hour ADT volumes, as directed by the ODOT Transportation Planning Analysis Unit (TPAU).

Condition A of the warrant analysis is based upon minimum traffic volumes and is designed to warrant the installation of traffic signals at intersections where there are large volumes of

intersecting traffic. Condition B of the warrant analysis is based upon interruption of continuous traffic and is designed to warrant the installation of a traffic signal at intersections where heavy major movements restrict minor turn movements. A location must meet one of these conditions to warrant the installation of a traffic signal. The MUTCD Millennium Edition provides more discussion on specifics of the warrant analysis.

As shown in Table 4-17, the analysis found that seven of the 12 unsignalized intersections will likely meet signal warrants in year 2025 under No-Build 30th highest hour conditions. Preliminary traffic signal warrant analysis worksheets are included in Appendix G for each of the intersections listed below.

TABLE 4-17
Results of Preliminary Traffic Signal Warrant Analysis – No-Build (2025) 30th Highest Hour

Intersection	Meets Preliminary Warrant
Kings Valley Highway and Orchard Drive	Yes – Condition A and B
Dallas-Rickreall Highway and Fir Villa Road	Yes – Condition A and B
Dallas-Rickreall Hwy and Oak Villa Road	No
Dallas-Rickreall Hwy and Polk Station Rd	Yes – Condition A and B
Monmouth Cutoff Road and Godsey Road	Yes – Condition B
W Ellendale Ave and James Howe Road	Yes – Condition B
W Ellendale Avenue and Levens Street	Yes – Condition B
Washington Street and Jefferson Street	No
Mill Street and Main Street	Yes – Condition A
Mill Street and Jefferson Street	No
Miller Avenue and LaCreole Drive	No
Miller Avenue and Godsey Road	No

As noted on the preliminary traffic signal warrant analysis worksheets, traffic signals may not be installed in all locations meeting the preliminary signal warrant. Further investigation must be done and submitted through ODOT Region 2 Traffic for consideration and approval.

Summary of Future Transportation System Needs

This section describes long- and short-term needs of the transportation system in Dallas. The needs in this section have not been prioritized.

Roadway Improvements

Table 4-18 provides a set of preliminary transportation system improvements for each of the roadway segments or intersections observed to have problems under the 2025 No-Build condition.

TABLE 4-18

Potential Roadway Improvements

No.	Street or Intersection	Potential Transportation System Improvement
Capacity		
1	Dallas Rickreall Highway	Add 2 lanes to Dallas Rickreall Highway from North Dallas Intersection to Fir Villa
2	Webb Lane	Webb Lane extension to Kings Valley Highway
Connectivity		
3	Fir Villa Road	Extend Fir Villa Road to Monmouth Cut-Off
4	Rickreall Creek	Extend River Drive south across Rickreall Creek, connecting to Mill Street
<i>Barberry Node Connections</i>		
5	Hawthorne Avenue	Extend Hawthorne Avenue south to Barberry Avenue
6	Hankel Street	Extend Hankel Street east to eastern city limits
7	Academy Street	Extend Academy Street east, connect with Hankel Street just west of Fir Villa Road
8	Barberry Avenue	Extension of Barberry Avenue east to E Ellendale
<i>LaCreole Node Connections</i>		
9	LaCreole Drive	Extend LaCreole Drive north to Kings Valley Highway
10	Hawthorne Avenue	Extend Hawthorne Avenue north to connect with new east-west circulation road
11	Polk Station Road and Hawthorne Avenue	New east-west circulation road connecting Polk Station Road and Hawthorne Avenue
<i>Wyatt Node Connections</i>		
12	Wyatt Street	Extend Wyatt Street north to City boundary (or Webb Road)
13	James Howe Road to Denton Avenue and Fairhaven Lane	Create east-west connector road from James Howe Road to Denton Avenue and Fairhaven Lane
<i>Alternate Circulation Options for LaCreole and Barberry Nodes</i>		
14	Bovard Avenue	Extend Bovard Avenue east to Oak Villa Road
Other City-Suggested Circulation Improvements		
16	Jasper Street	Extend Jasper Street north to city limits
17	Wood Lane	Extend River Drive north to city limits
18	SW Residential Area	New connector west from Fairview to serve residential development in southwest quadrant of city
19	Connection to Weyerhauser Mill	New connector east from Fairview to provide access to Weyerhauser Mill to/from the south

TABLE 4-18

Potential Roadway Improvements

20	Connection from Weyerhauser Mill	New connector from behind Weyerhauser Mill east to Uglow Avenue
21	Fern Avenue	Extend Fern Avenue east to Kings Valley Highway
Intersection Improvements		
22	Dallas-Rickreall Highway and Fir Villa Road	Signal
23	Dallas-Rickreall Highway and Oak Villa Road	Revisit after evaluating capacity improvements
24	Dallas-Rickreall Highway and LaCreole Drive	Revisit after evaluating capacity improvements
25	Dallas-Rickreall Highway and Polk Station Road	Signal and/or added turn pocket
26	Kings Valley Highway and Orchard Drive	Signal or channelization change
27	Dallas-Rickreall Hwy and Kings Valley Hwy (North Dallas Intersection)	Revisit after evaluating capacity improvements
28	W Ellendale Avenue and Levens Street	Change stop control or add signal
29	W Ellendale Avenue and James Howe Road	Add southbound left turn pocket
30	Mill Street and Main Street	Explore ways to channel traffic onto Washington Street
31	Mill Street and Jefferson Street	Explore ways to channel traffic onto Washington Street
32	Kings Valley Highway and Levens Street	Channelization change, signal timing change or added WBR turn pocket
33	Washington Street and Jefferson Street	Revisit after evaluating capacity improvements
34	Miller Avenue and Uglow Street	Realignment
35	Miller Avenue and LaCreole Drive	Revisit after evaluating capacity improvements then possibly add signal
36	Miller Avenue and Godsey Road	Signal and/or added northbound left turn pocket
37	Monmouth Cutoff Road and Godsey Road	Add southbound left turn pocket. Consider realignment of intersection. Eastbound LT and Westbound RT, Southbound LT, possible signal.

Bicycle Improvements

Bicycle improvements were identified to connect existing bicycle facilities, to connect various attraction areas for bicyclists (e.g., the Aquatic Center, downtown, the Creek), and along City arterials and Connectors. Three types of bicycle improvements were recommended – on-street bicycle lanes, shared-use paths, and signed bicycle routes. On-street bicycle lane improvements are organized into short-term and long-term needs. Short-term needs are those that are “warranted” today given existing traffic volumes and use. It is expected that many of these improvements can be integrated into future roadway projects.

Long-term needs are those where currently there is no need for dedicated facilities but this need is expected once the three mixed-use nodes are developed and roadway traffic increases.

Potential bicycle improvements are outlined in Table 4-19.

TABLE 4-19

Potential Bicycle Improvements

No.	Street	Potential Transportation System Improvement
Bicycle Lanes - Short Term		
B-1	Ellendale Avenue / Dallas-Rickreall (223)	Stripe bicycle lanes from western city limits to eastern city limits
B-2	Levens Street	Stripe bicycle lanes from Ellendale to Academy
B-3	King's Valley Highway	Stripe bicycle lanes on both sides of roadway from Ellendale to Orchard; on north side of roadway from Orchard to city limits
B-4	LaCreole Drive	Stripe bicycle lanes from Ellendale to Miller Avenue
B-5	Fir Villa Road	Stripe bicycle lanes or bikeway shoulder from Ellendale to Miller Avenue
B-6	Miller Avenue	Stripe bicycle lanes on both sides of roadway from LaCreole to Fir Villa
B-7	Monmouth Cutoff Road	Stripe bicycle lanes from Uglow to city limits
B-8	Uglow Avenue	Stripe bicycle lanes from Monmouth Cut-Off to Washington Street
B-9	Washington Street	Stripe bicycle lanes from Uglow Avenue to Main
B-10	Main Street	Stripe bicycle lanes from Ellendale to Washington
B-11	Jefferson Street	Stripe bicycle lanes from Main to Washington
Bicycle Lanes - Long Term		
B-12	River Drive	Stripe bicycle lanes from Ellendale to Mill Street
B-13	Orchard Drive	Stripe bicycle lanes from King's Valley Highway to city limits
B-14	Polk Station Road	Stripe bicycle lanes from King's Valley Highway to Ellendale / Dallas-Rickreall (223)
B-15	Hawthorne Avenue	Stripe bicycle lanes from Ellendale / Dallas-Rickreall (223) to Barberry Avenue
B-16	Hankel Street	Stripe bicycle lanes from Hawthorne to Main Street
B-17	Godsey Road	Stripe bicycle lanes from Miller Avenue to Monmouth Cut-Off
B-18	Mill Street	Stripe bicycle lanes from Uglow to River Drive
B-19	Washington Street and Fairview Avenue	Stripe bicycle lanes from Main Street to city limits
B-26	New Collectors and Arterials	Add bicycle lanes to future collector and arterial streets as per development code.

TABLE 4-19

Potential Bicycle Improvements

Bicycle Routes		
B-20	Walnut Avenue	Comprehensively sign from Levens to LaCreole
B-21	Main Street	Sign from Washington to Ash
B-22	Jefferson Street	Sign from Washington to Ash
B-23	Hayter Street	Sign from Maple to Oakdale
B-24	Oakdale Avenue	Sign from Hayter to Fairview
B-25	Maple Street	Sign from Fairview to terminus of Maple
Multi-Use Paths		
T-1	Rickreall Creek Trail	Build trail from Lyle Street to Fenton Street, provide connections over Rickreall Creek at Uglow and Aquatic Center
T-2	Rickreall Creek Trail East Extension	Build trail on north side of Rickreall Creek from LaCreole to Fir Villa, linking new roadways and neighborhoods intermittently

Pedestrian Improvements

The Dallas pedestrian system is comprehensive in certain areas such as downtown and along most major roadways, but lacking in other areas, such as on the outskirts of town and in developments built before City development code required sidewalks to be constructed with new development. A series of pedestrian improvements are recommended. These include new sidewalks, expansion of existing sidewalk networks (such as installation of sidewalk on both sides of roadway where currently the sidewalk is only on one side), improvements to existing sidewalk networks (such as curb cuts, planters, or widening), and pedestrian crossing improvements at specific intersections (such as minimizing crossing distance, improved crosswalks, and minimizing potential obstructions).

Potential pedestrian improvements are outlined in Table 4-20.

TABLE 4-20

Potential Pedestrian Improvements

New Sidewalks		
P-1	Ellendale Avenue	Construct new sidewalk from Wyatt to River Drive
P-2	River Drive	Construct new sidewalk over Rickreall Creek from River Drive to Mill Street

TABLE 4-20

Potential Pedestrian Improvements

P-3	King's Valley Highway	Construct new sidewalk on south side of roadway from Wal-Mart to Polk Station Road; on north side of roadway from 100' east of Dallas Drive to Polk Station Road
P-4	Dallas-Rickreall Highway (223)	Construct new sidewalks from LaCreole to Fir Villa
P-5	Fir Villa Road	Construct new sidewalks from Dallas-Rickreall Highway to existing sidewalk
P-6	Miller Road	Construct new sidewalk from just east of LaCreole to just west of Fir Villa
P-7	Godsey Road	Construct new sidewalks from Monmouth Cut-Off to Miller Avenue
P-8	Ugflow Avenue	Construct new sidewalks from railroad tracks to Monmouth Cut-Off
P-9	Fairview Avenue	Construct new sidewalks from Oakdale Road to Bridlewood Drive
P-10	Maple Street	Construct new sidewalk from Lyle to Ugflow on south side of roadway
P-17	New Collectors and Arterials	Construct new sidewalk on future collectors and arterials
P-18	Monmouth Cutoff Road	Construct new sidewalks on Monmouth Cut-Off from Ugflow Avenue to Godsey Road
Sidewalk Improvements		
P-11	Ellendale Avenue	Construct new sidewalk on north side of roadway from Wyatt to city limits
P-12	Levens Street	Widen and improve sidewalk condition, particularly in front of school from Ellendale to Rickreall Creek
P-13	Ellendale Avenue	Widen sidewalk between LaCreole and Levens, possible buffering with landscaping
P-14	Mill Street	Improve sidewalk condition between Jefferson and Ugflow, make curb ramps ADA accessible, fill in missing segments
P-15	Ugflow Avenue	In-fill sidewalk segments between Ash Street and railroad tracks
P-16	LaCreole Drive	In-fill sidewalk segment on east side of roadway between Walnut and Barberry
Intersection Improvements		
I-1	Levens and Ellendale	Improve pedestrian safety with various treatments, including raised medians (pork chops), marked crosswalks, illumination
I-2	Levens and Walnut	Improve pedestrian safety with various treatments, including marked crosswalk, warning signage, illumination, curb extensions

TABLE 4-20

Potential Pedestrian Improvements

I-3	North Dallas Intersection - Dallas-Rickreall/Ellendale/King's Valley/Main	Improve pedestrian safety with various treatments, including raised medians (pork chops) and upgraded curb ramps
I-4	Dallas Drive and King's Valley Highway	Improve pedestrian safety with raised median, marked crosswalk, illumination, and warning signs
I-5	LaCreole and Miller	Improve pedestrian safety by signaling intersection, marking crosswalks, and installing pedestrian signal heads
I-6	Ash and Uglow	Improve pedestrian and bicyclist safety with marked crosswalks, curb extensions, and warning signage
I-7	Maple and Fairview	Improve pedestrian and bicyclist safety with marked crosswalks, curb extensions and warning signage

Transit

The City does not directly operate transit service in Dallas. Rather, point-deviated fixed route transit is operated by the Chemeketa Area Regional Transit System (CARTS), and paratransit service is provided by Polk County Dial-A-Ride.

Opportunities for Higher-Quality Service

Several opportunities are available for the City to coordinate with area transit service providers and the Oregon Housing Associated Services (OHAS) to provide higher-quality transit service to City residents and employees:

- **Increase Service Frequency.** Currently, CARTS operates 10 runs servicing Dallas, Rickreall, Salem, Monmouth, and Independence. These runs are provided during the weekday peak hours only. A 2004 survey of riders indicated that midday and evening service would be of interest to riders, both those commuting to and from Salem and to non-commuter patrons using transit service during non-peak times. The City of Dallas shall coordinate with CARTS to identify potential operation and rolling-stock funding sources to operate more frequent service, including the potential need to procure additional transit vehicles.
- **Weekend Service.** CARTS service does not operate on weekends. The recent ridership survey conducted for CARTS service also indicated that weekend service is of great interest. The City of Dallas should coordinate with CARTS to identify potential funding sources for operating weekend service.
- **Education and Advertisement.** The City of Dallas should work with area transit agencies to jointly advertisement transit service within the City, and inform residents of transit options.
- **Extension of Cherriots Service.** Future service to Dallas is mentioned as a possibility in the short-range element of Cherriots' Strategic Business Plan. In this plan, Cherriots identifies funding to be made available in fiscal year 2008 or later that could be available to explore expanding commuter services to communities near Salem. The City of Dallas is encouraged

to coordinate with Cherriots to identify demand for this service within Dallas, and on possible scheduling and routing issues.

- **Park-and-Ride Lot.** According to CARTS' spring 2004 ridership survey, over half the riders boarding a CARTS bus in Dallas disembarked in Salem. Furthermore, a significant percentage of Dallas residents commute by automobile to Salem each workday. There is a potential demand for a park-and-ride facility on the east end of Dallas for CARTS and possible future Cherriots service. Often, park-and-ride facilities can be located in existing parking lots that are currently used for other purposes and not demanded during the weekday. Potential compatible uses for a commuter parking lot include churches, fraternal organizations, cinemas, and dinner-oriented restaurants. The city will identify possible existing parking lots/sites and speak with the owners in order to secure a park-and-ride site on the east side of town.
- **Transit Amenities.** CARTS buses currently stop at 12 fixed locations in the City of Dallas. These include the hospital, Goodwill, the Aquatic Center, downtown, in front of the Safeway, and in front of the Wal-Mart. The City should coordinate with other relevant agencies to improve transit amenities at these locations, by either building new facilities or replacing existing facilities over time. Transit amenities include transit shelters with rain and wind protection, benches, trash receptacles, and schedule information. All transit stops should be accessible to all potential riders as per standards provided in the Americans with Disabilities Act.

Safety Improvements

- **Access Management.** Access management efforts along OR 223 would be expected to improve safety along the highway.
- **Sight Distance and Stop Control.** Evaluate sight distance and stop control at the following intersections: Dallas-Rickreall Highway / La Creole Road, Ellendale / Levens, and Dallas-Rickreall / Fir Villa Road. Coordinate findings with capacity improvements above.
- **Signage/Orientation.** Evaluate the potential integration of a coordinated signage/wayfinding system through the Main/Jefferson couplet to reduce confusion and improve safety at the couplet's north and south ends. This is especially recommended for the southern end of the couplet.

Insert Figures 4-1a through 4-1.