

# B. Social Considerations

## Social Considerations

### Policies

MTP Reference #	Environmental Justice
EJ3-001	Evaluate the benefits and burdens of transportation policies, programs, and plans to prevent disparate impacts and improve the decision-making process, resulting in a more equitable system.
EJ3-002	Balance transportation investment across the region to provide equitable improvements.

MTP Reference #	Public Involvement
PI3-001	Meet federal and state requirements to ensure all individuals have full and fair access to provide input on the transportation decision-making process.
PI3-002	Demonstrate explicit consideration and response to the public input received.
PI3-003	Use strategic outreach and communication efforts to seek out and consider the needs of those traditionally underserved by the transportation planning process.
PI3-004	Enhance visualization of transportation policies, programs, and projects.
PI3-005	Provide education to the public and encourage input and engagement from all residents on the transportation system and the transportation decision-making process.

### Identifying Populations

The North Central Texas Council of Governments (NCTCOG) collects and analyzes demographic data in an effort to better understand regional characteristics. While only the federally mandated low-income and minority populations were analyzed in Mobility 2045, additional demographic groups are mapped to enhance decision making. This appendix includes maps of groups in the region that constitute the federally defined, protected Title VI, and environmental justice populations. It also includes maps of populations NCTCOG considers during efforts to meet the needs of transportation-disadvantaged groups.

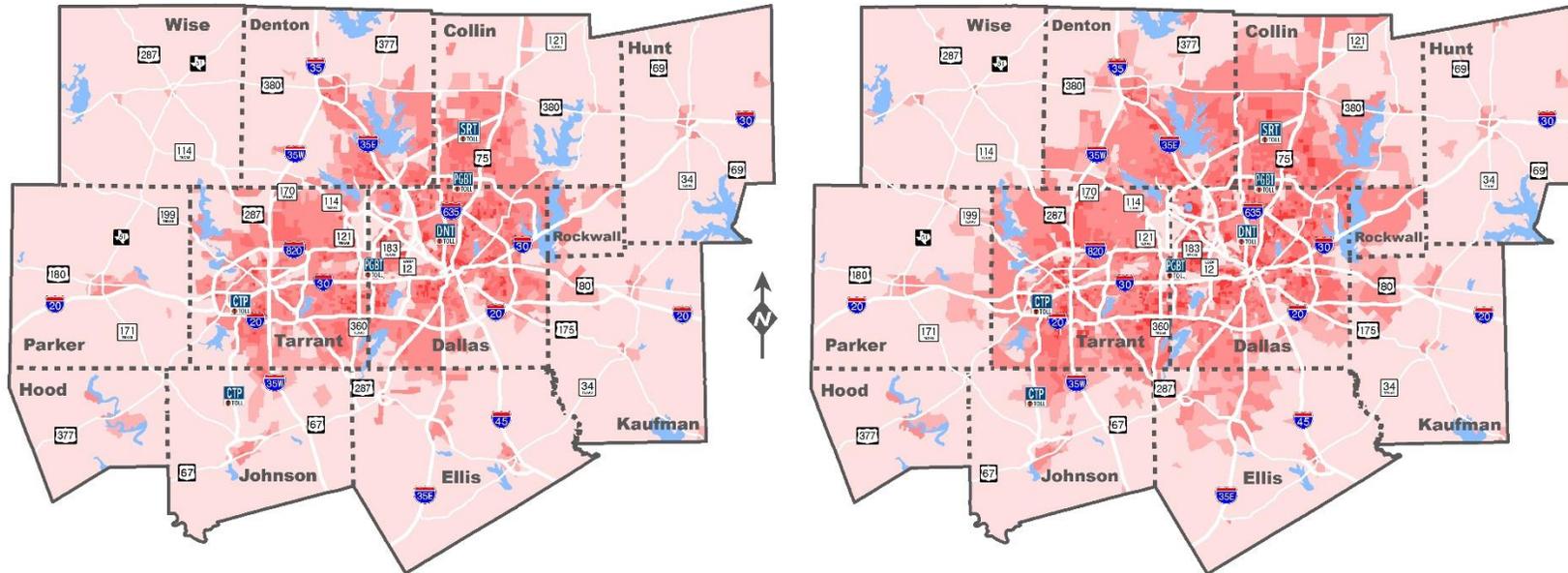
### Demographic Data Sources

The recommendations in Mobility 2045 were evaluated using the established performance indicators utilizing demographic data from the 2011-2015 American Community Survey 5-Year Estimates. Beginning in 2010, the decennial Census no longer captures income data, so Mobility 2045 utilizes the American Community Survey to evaluate the impacts of plan recommendations.

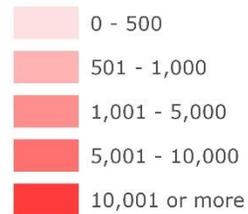
# Population Density

2017

2045



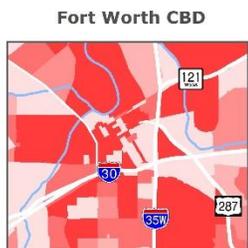
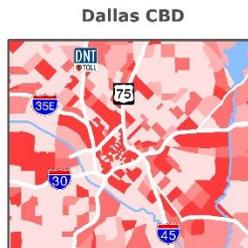
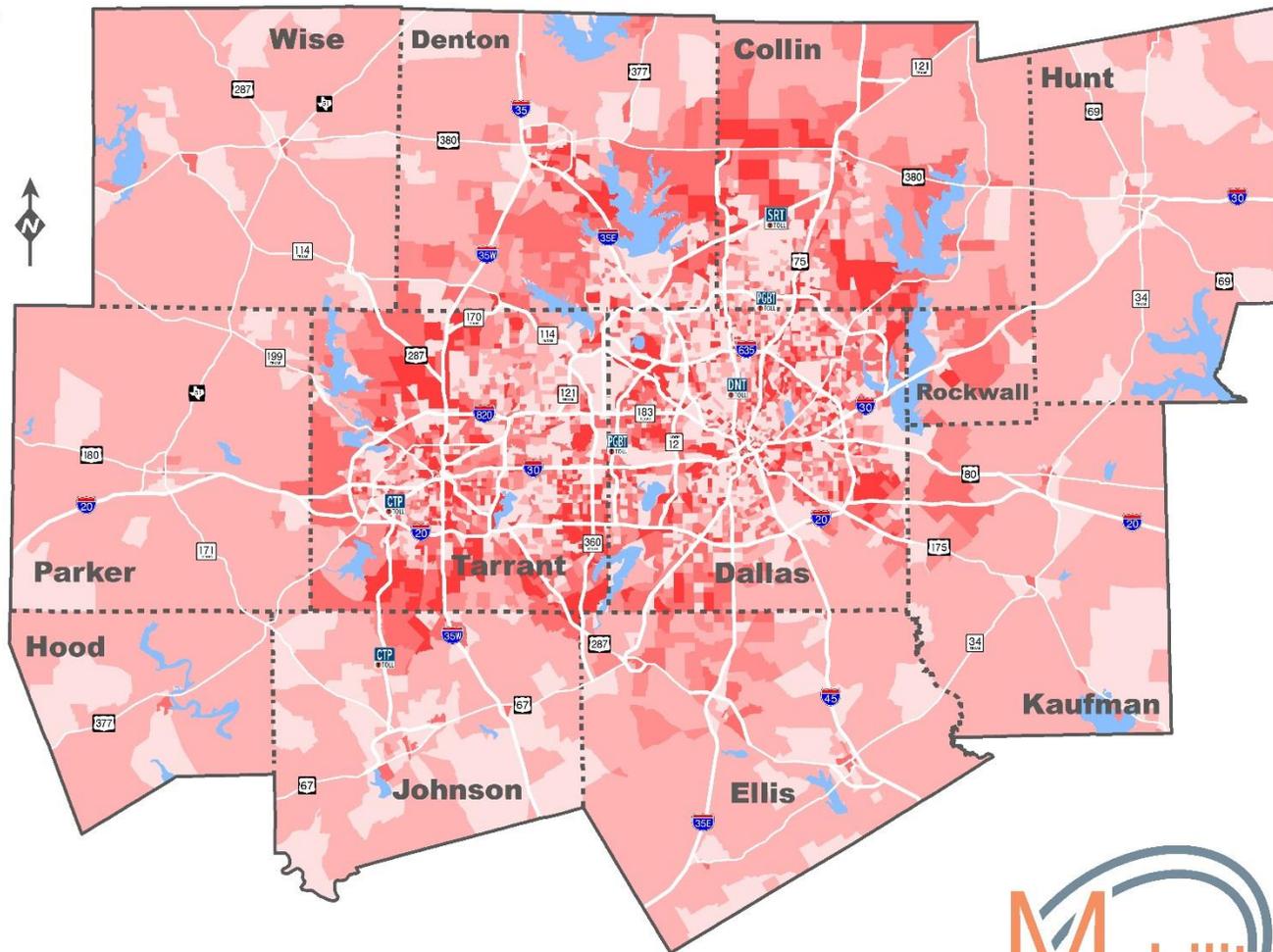
Population Density by Traffic Survey Zone (persons per square mile)



# Change in Population Density: 2017-2045

Change in Population Density by Traffic Survey Zone (persons per square mile)

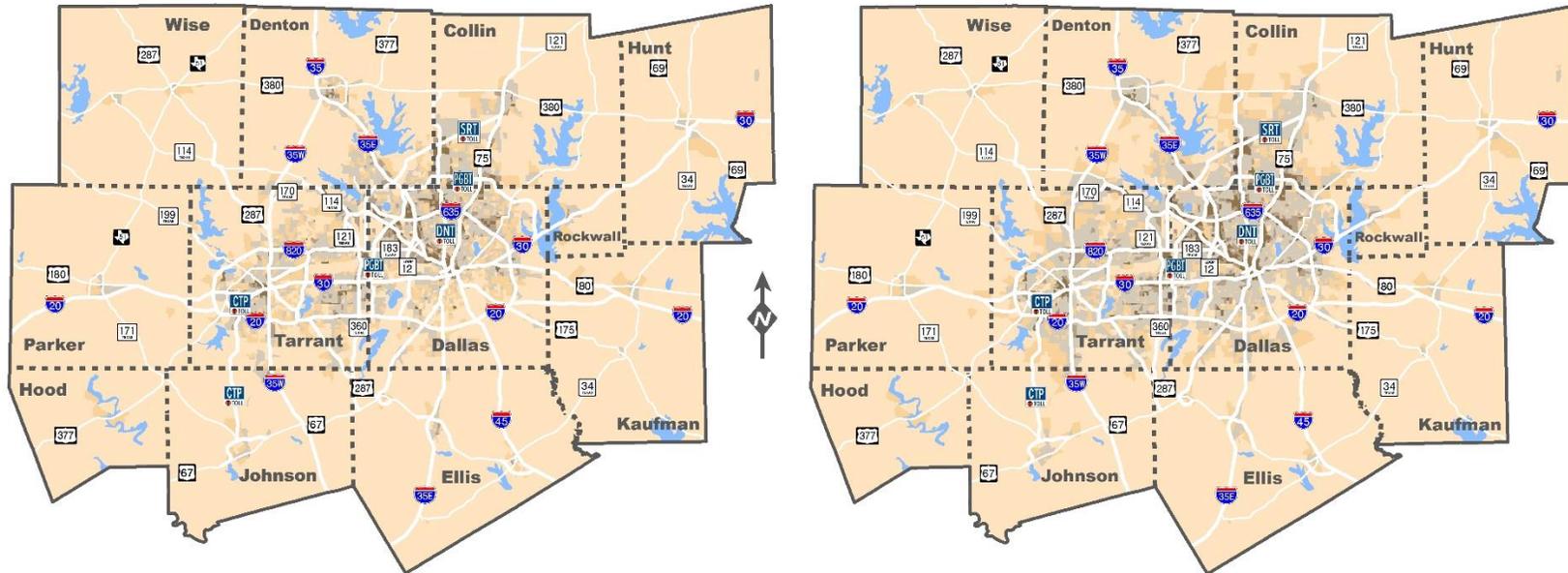
- Negative Change
- 1 - 500
- 501 - 1,000
- 1,001 - 3,000
- Greater than 3,000



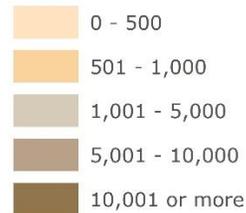
# Employment Density

2017

2045



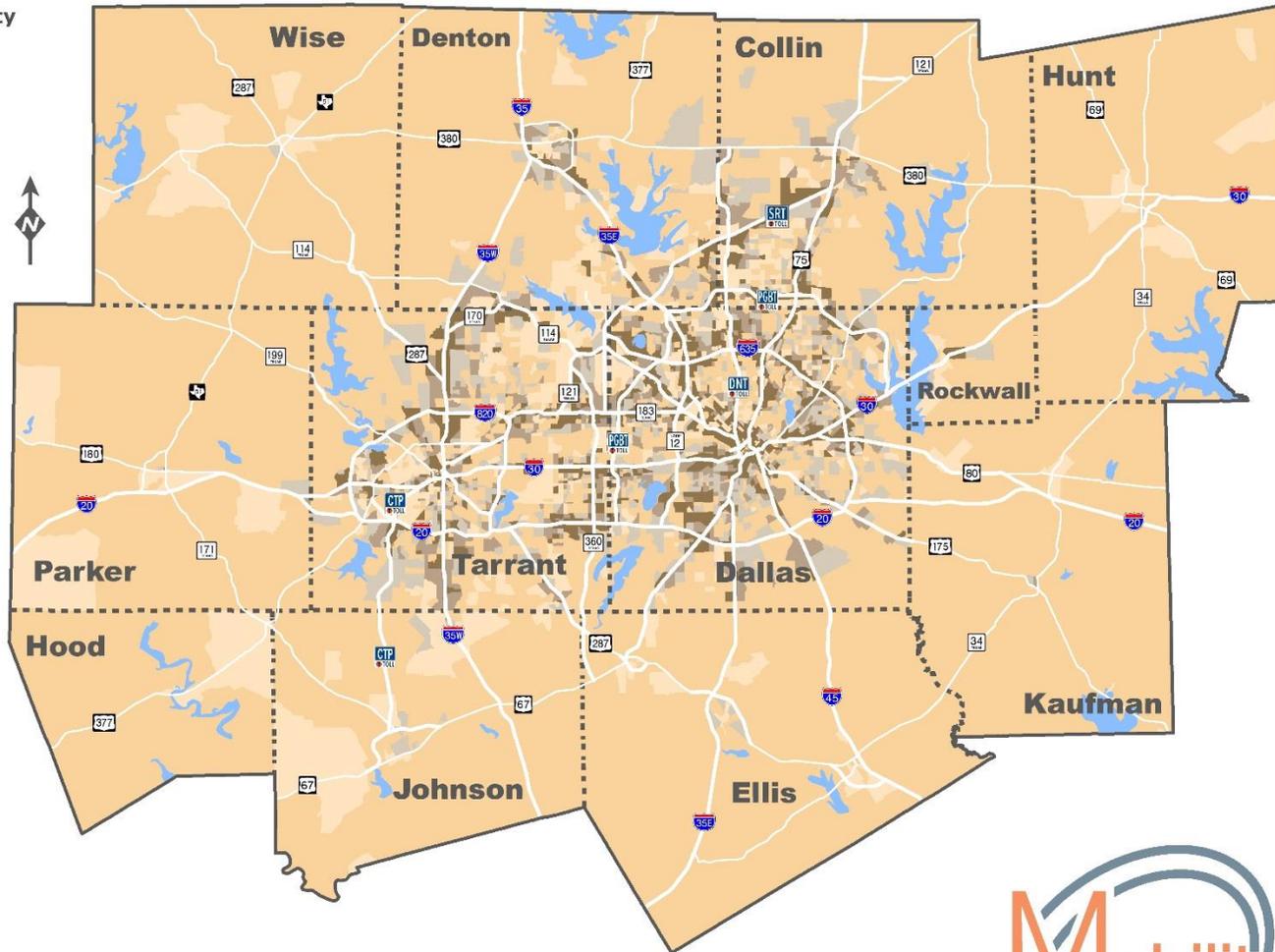
**Employment Density by Traffic Survey Zone (jobs per square mile)**



# Change in Employment Density: 2017-2045

**Change in Employment Density by Traffic Survey Zone (jobs per square mile)**

- Negative Change
- 1 - 500
- 501 - 1,000
- 1,001 - 2,000
- Greater than 2,000



**Dallas CBD**



**Fort Worth CBD**



## Demographic Groups

The following table describes the demographic groups that are featured in the following maps in this appendix. Some groups are federally designated as protected populations per Presidential Executive Order 12898 and the Title VI

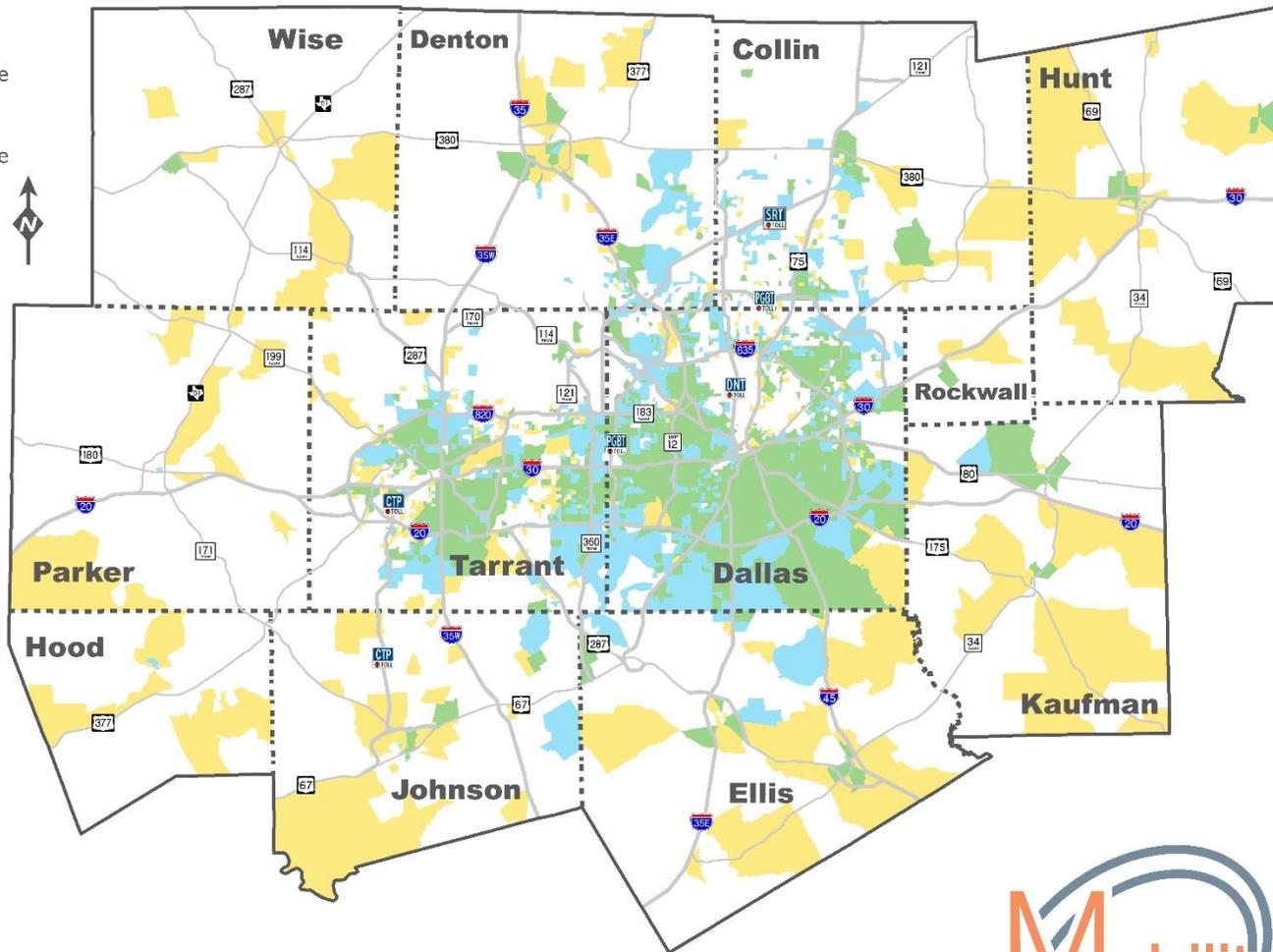
Statute of the Civil Rights Act of 1964; other groups may face disadvantages while using the transportation system. Group descriptions have been adapted from definitions developed by the US Census Bureau and the Federal Highway Administration.

Demographic Group	Description
65 and Over	Includes any person aged 65 and older
American Indian or Alaska Native	Includes any person having origins in any of the original peoples of North and South America (including Central America) and who maintains tribal affiliation or community attachment
Asian	Includes any person having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent
Black or African American	Includes any person having origins in any of the Black racial groups of Africa
Female Head of Household	Includes any household with children under 18 years old and with no husband present
Hispanic or Latino	Includes any person who identifies as belonging to one or more of the following specific categories, regardless of race: Mexican; Puerto Rican; Cuban; Dominican; Salvadoran; Guatemalan; Argentinean; Colombian; Spaniard; or other Hispanic, Latino, or Spanish cultures or origins
Limited English Proficiency	Includes any person aged 5 years or older who does not speak English as his/her primary language and who reported being able to read, speak, write, or understand English less than “very well”
Limited English Proficiency: Asian or Pacific Island Languages	Includes any person aged 5 years or older who speaks an Asian or Pacific Island language as his/her primary language and who reported being able to read, speak, write, or understand English less than “very well”
Limited English Proficiency: Other Indo-European Languages	Includes any person aged 5 years or older who speaks an Indo-European language other than Spanish as his/her primary language and who reported being able to read, speak, write, or understand English less than “very well”
Limited English Proficiency: Other Languages	Includes any person aged 5 years or older who speaks a language other than English, Spanish, Indo-European, Asian, or Pacific Island languages as his/her primary language and who reported being able to read, speak, write, or understand English less than “very well”
Limited English Proficiency: Spanish	Includes any person aged 5 years or older who speaks Spanish as his/her primary language and who reported being able to read, speak, write, or understand English less than “very well”
Low-Income (Environmental Justice Population)	Includes any person whose household income in the past 12 months was below the poverty threshold according to the US Census
Native Hawaiian or Other Pacific Islander	Includes any person having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands
Persons with Disabilities	Includes any civilian, non-institutionalized person with at least one disability that may limit the individual’s ability to care for himself or herself
Some Other Race	Includes any person who identifies as belonging to a race other than “White”, “Black or African American”, “American Indian or Alaska Native”, “Asian”, or “Native Hawaiian or Other Pacific Islander”
Two or More Races	Includes any person who identifies as belonging to two or more of the following racial categories: “White”, “Black or African American”, “American Indian or Alaska Native”, “Asian”, “Native Hawaiian or Other Pacific Islander”, or “Some Other Race”
Total Minority (Environmental Justice Population)	Includes any person who identifies as belonging to a race other than white, or who identifies his/her ethnicity as Hispanic or Latino.
Zero Car Households	Includes any housing unit that has no vehicle available

# Environmental Justice Index

## Block Group Characteristics

-  Low-income population above regional percentage (14.59%)
-  Total minority population above regional percentage (51.22%)
-  Low-income and total minority populations above (respective) regional percentages



Data is derived from the 2015 American Community Survey 5-Year Estimates. Descriptions of the demographic groups illustrated in this map are found in the preceding table.

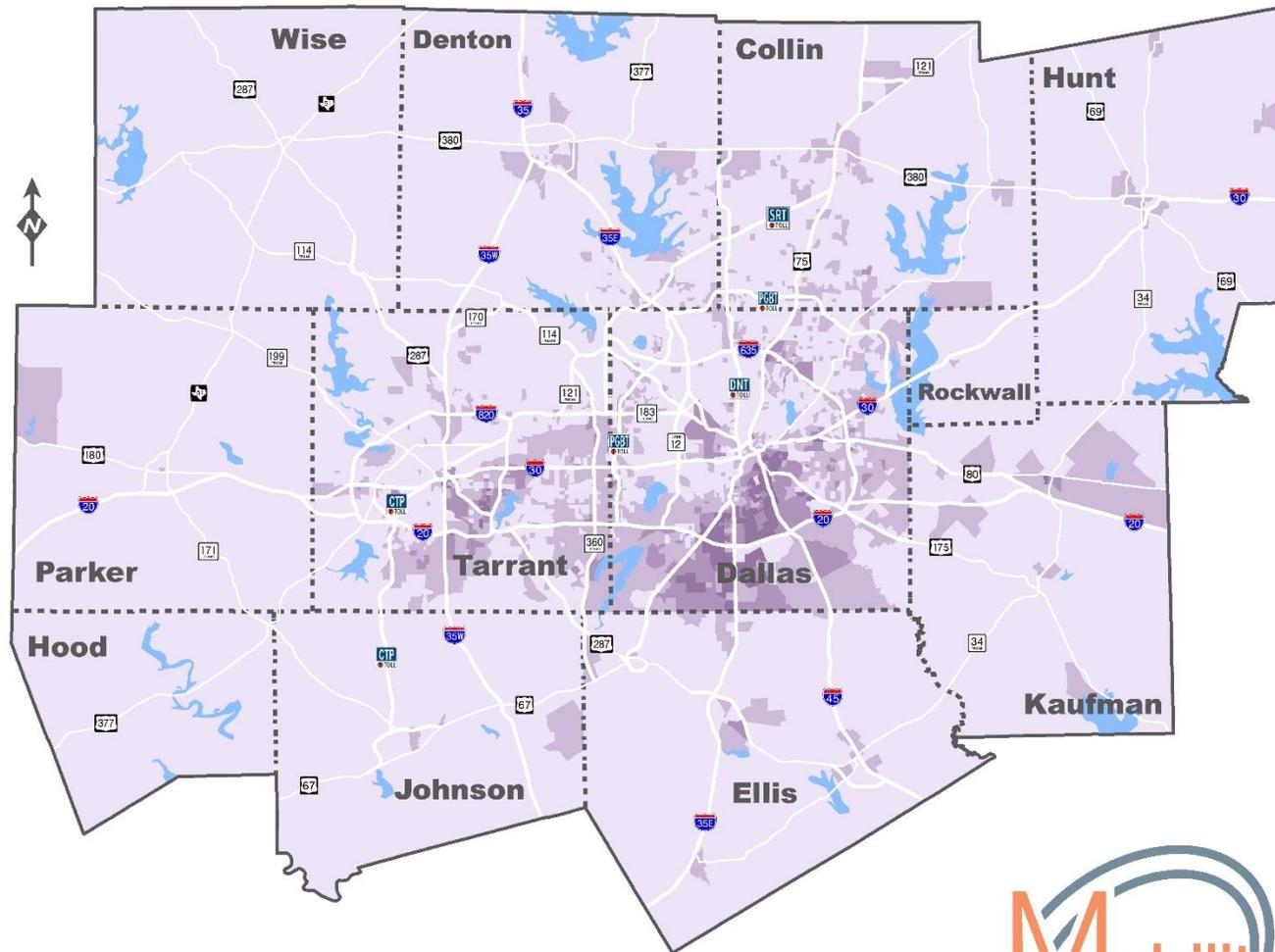


# Black or African American Population

**Percentage By Block Group**

- 0.00% - 15.13%\*
- 15.14% - 50.00%
- 50.01% - 75.00%
- 75.01% - 100%

\* Regional Percentage



Data is derived from the 2015 American Community Survey 5-Year Estimates. Descriptions of the demographic group illustrated in this map are found in the preceding table.

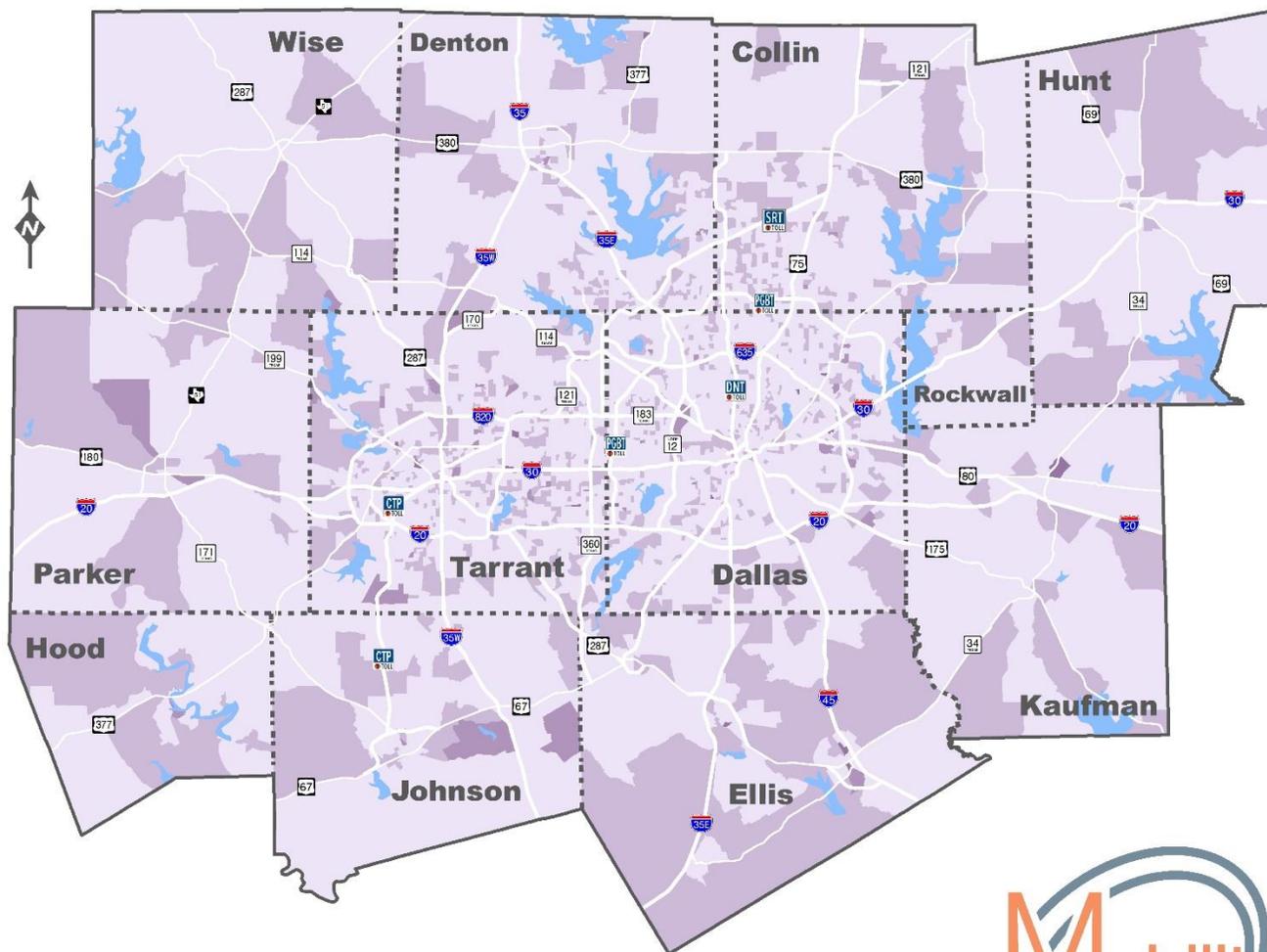


# American Indian or Alaska Native Population

## Percentage By Block Group

- 0.00% - 0.45%\*
- 0.46% - 5.00%
- 5.01% - 10.00%
- 10.01% - 21.41%

\* Regional Percentage



Data is derived from the 2015 American Community Survey 5-Year Estimates. Descriptions of the demographic group illustrated in this map are found in the preceding table.

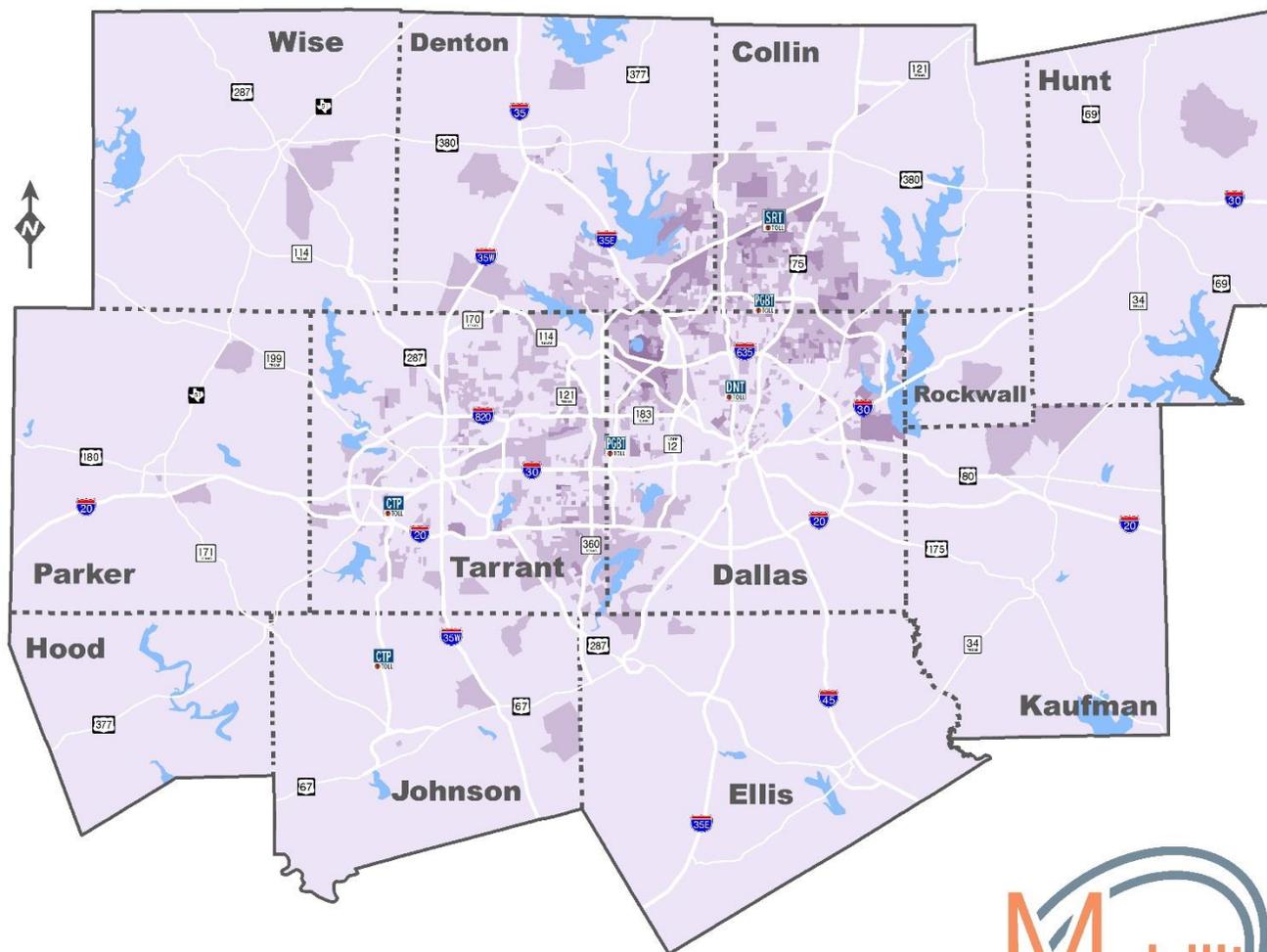


# Asian Population

## Percentage By Block Group

- 0.00% - 5.92%\*
- 5.93% - 25.00%
- 25.01% - 50.00%
- 50.01% - 90.55%

\* Regional Percentage



Dallas CBD



Fort Worth CBD



North Central Texas  
Council of Governments

June 2018

Data is derived from the 2015 American Community Survey 5-Year Estimates. Descriptions of the demographic group illustrated in this map are found in the preceding table.

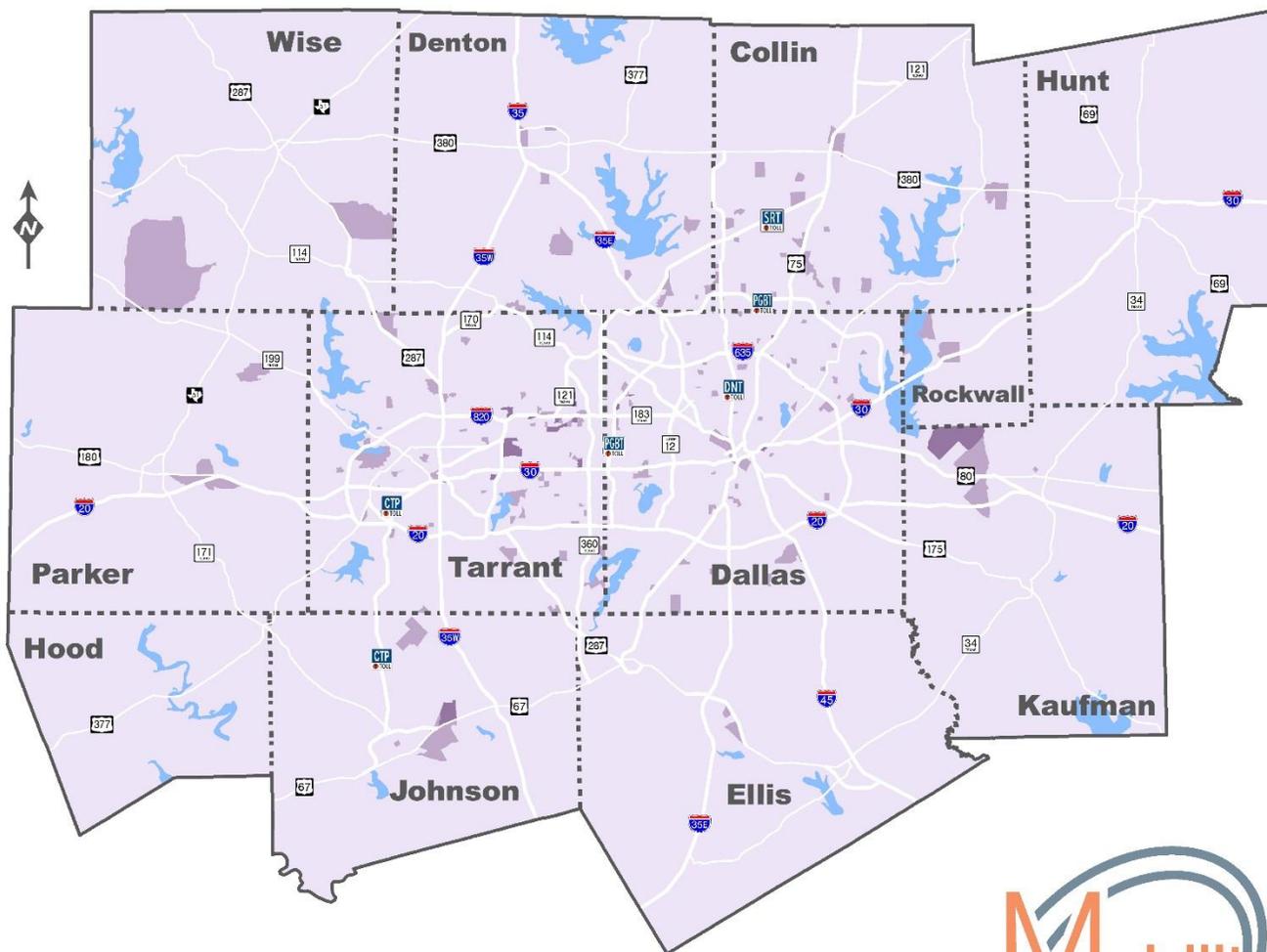


# Native Hawaiian or Other Pacific Islander Population

## Percentage By Block Group

- 0.00% - 0.10%\*
- 0.11% - 5.00%
- 5.01% - 25.47%

\* Regional Percentage



Data is derived from the 2015 American Community Survey 5-Year Estimates. Descriptions of the demographic group illustrated in this map are found in the preceding table.

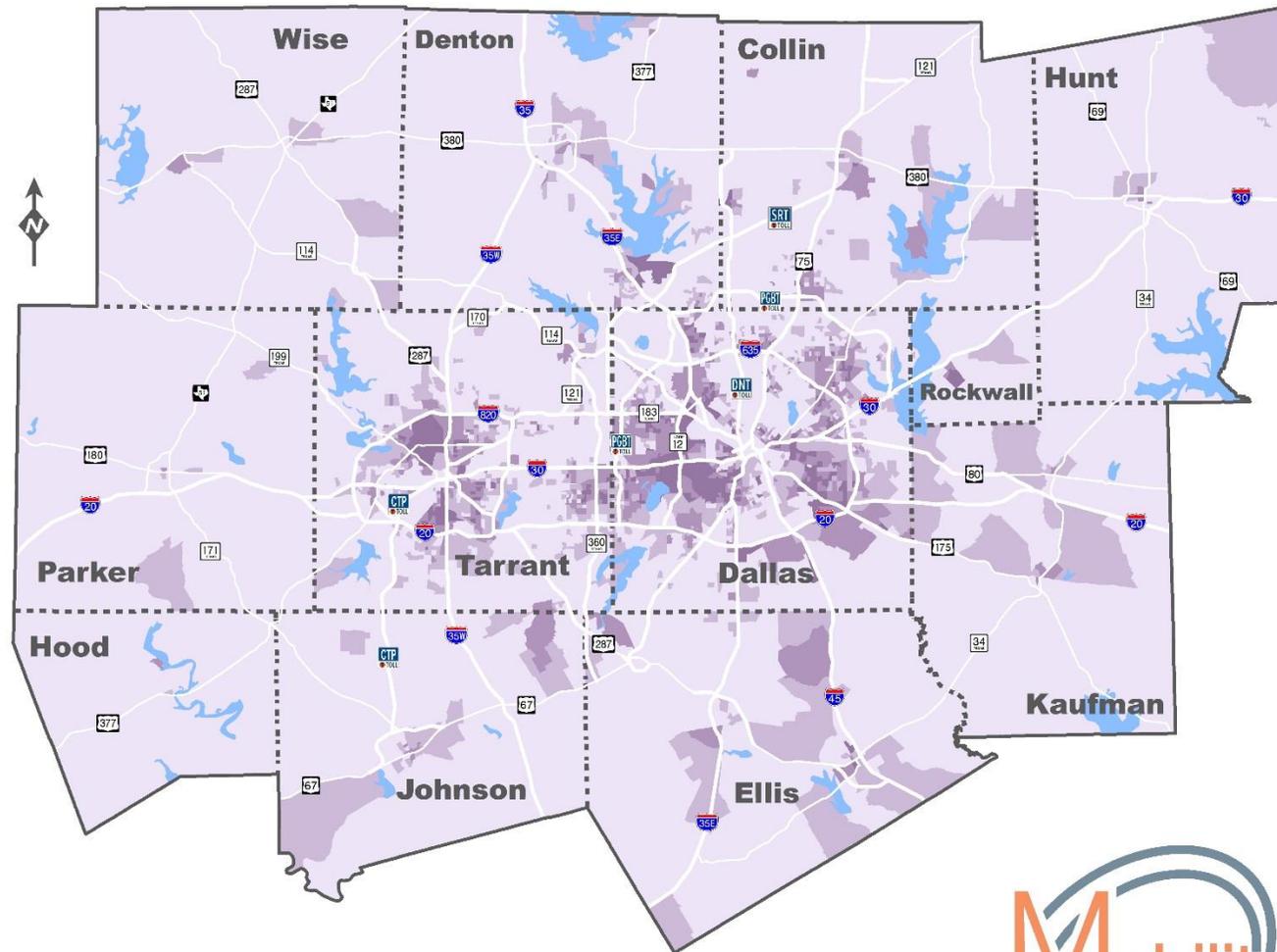


# Hispanic or Latino Population

**Percentage By Block Group**

- 0.00% - 28.04%\*
- 28.05% - 50.00%
- 50.01% - 75.00%
- 75.01% - 100%

\* Regional Percentage



Data is derived from the 2015 American Community Survey 5-Year Estimates. Descriptions of the demographic group illustrated in this map are found in the preceding table.

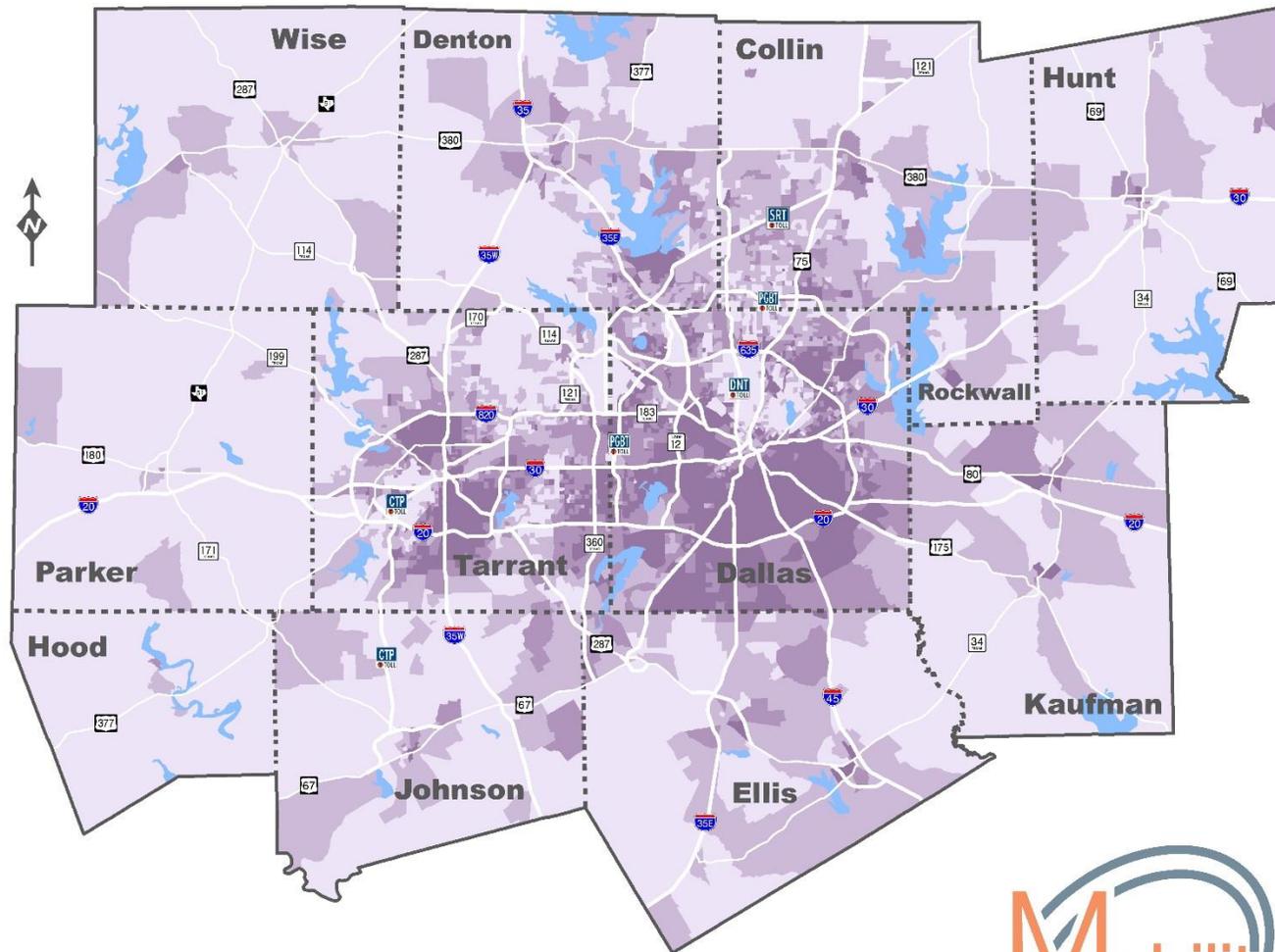


# Environmental Justice Population: Total Minority

### Percentage By Block Group

- 0.00% - 25.00%
- 25.01% - 51.22%\*
- 51.23% - 75.00%
- 75.01% - 100%

\* Regional Percentage



Data is derived from the 2015 American Community Survey 5-Year Estimates. Descriptions of the demographic group illustrated in this map are found in the preceding table.

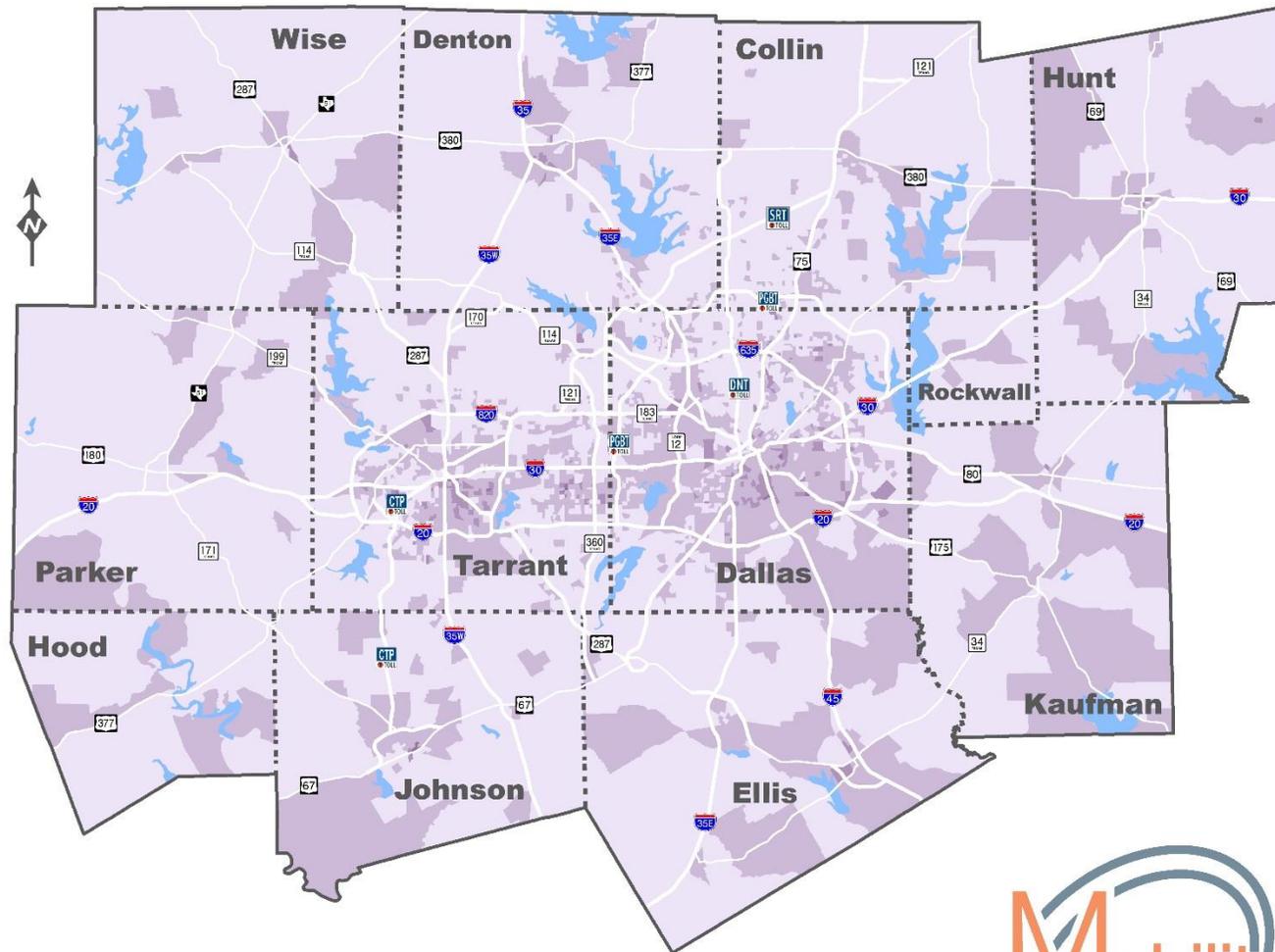


# Environmental Justice Population: Low-Income

## Percentage By Block Group

- 0.00% - 14.59%\*
- 14.60% - 50.00%
- 50.01% - 75.00%
- 75.01% - 100%

\* Regional Percentage



Data is derived from the 2015 American Community Survey 5-Year Estimates. Descriptions of the demographic group illustrated in this map are found in the preceding table.

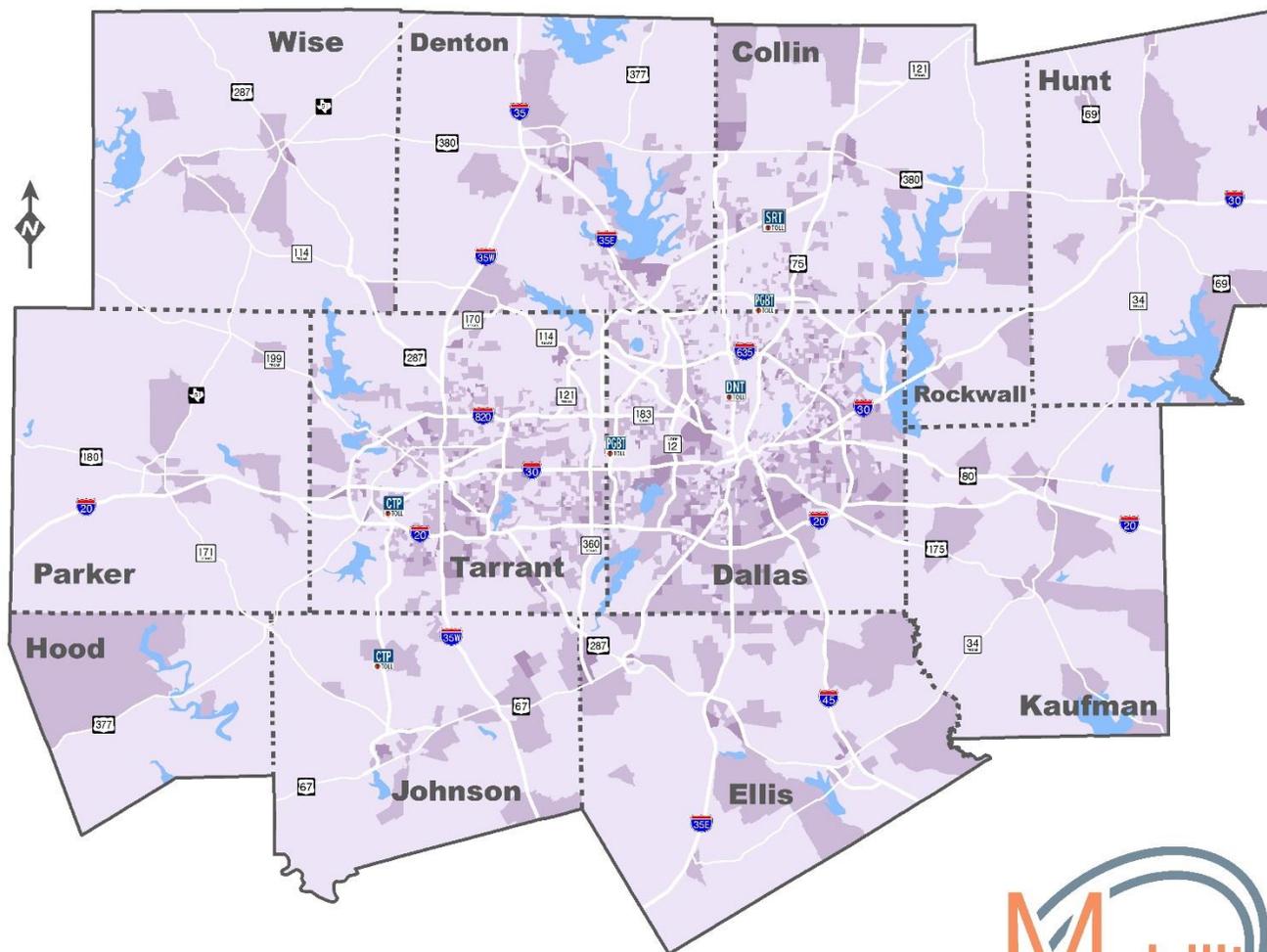


# Female Head of Household Population

## Percentage By Block Group

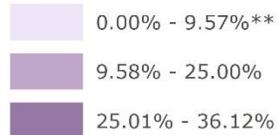
- 0.00% - 9.79%\*
- 9.80% - 25.00%
- 25.01% - 50.00%
- 50.01% - 64.86%

\* Regional Percentage



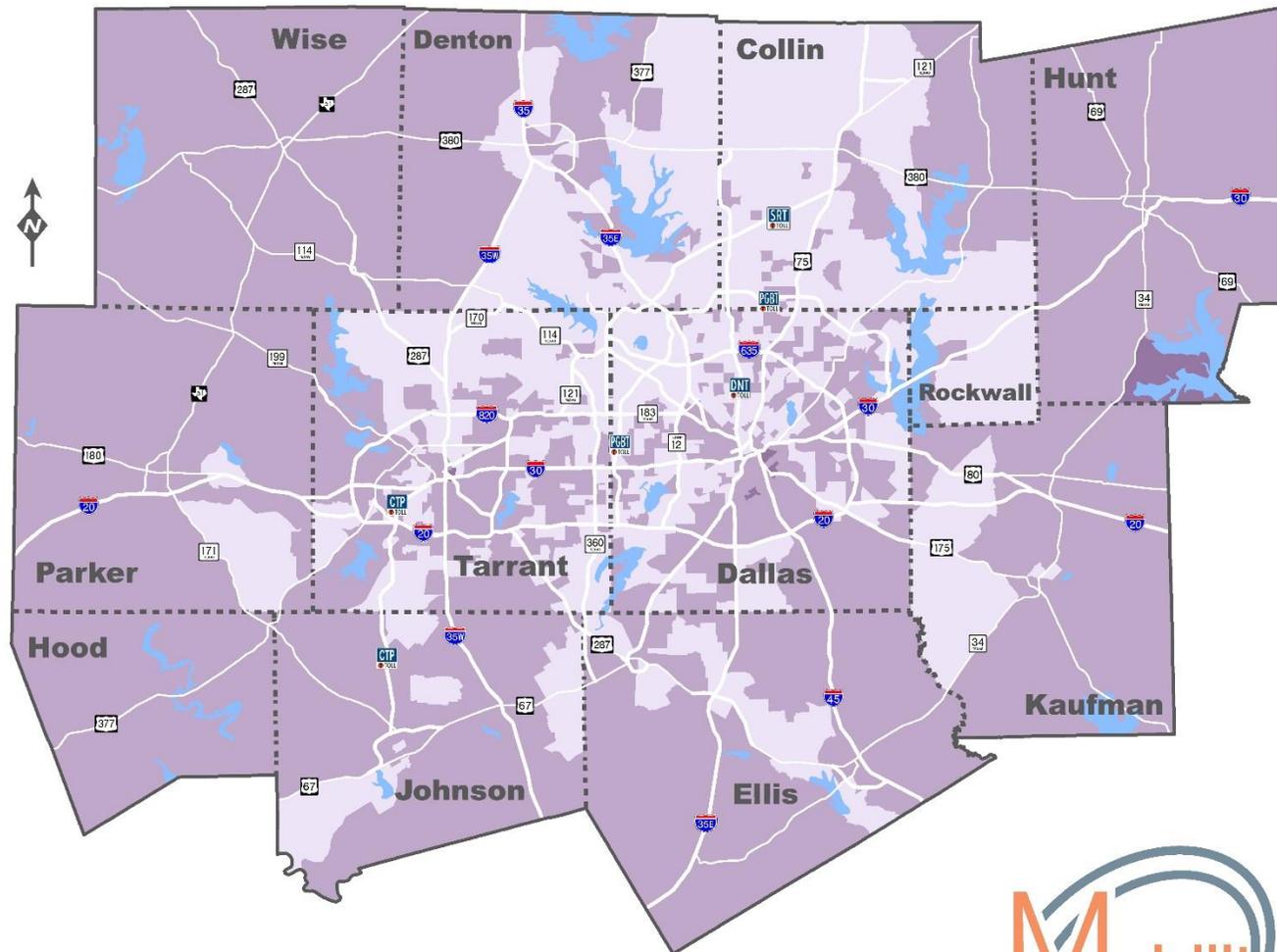
# Persons with Disabilities

## Percentage By Census Tract\*



\* Disability data by Census block group is not available for 2015.

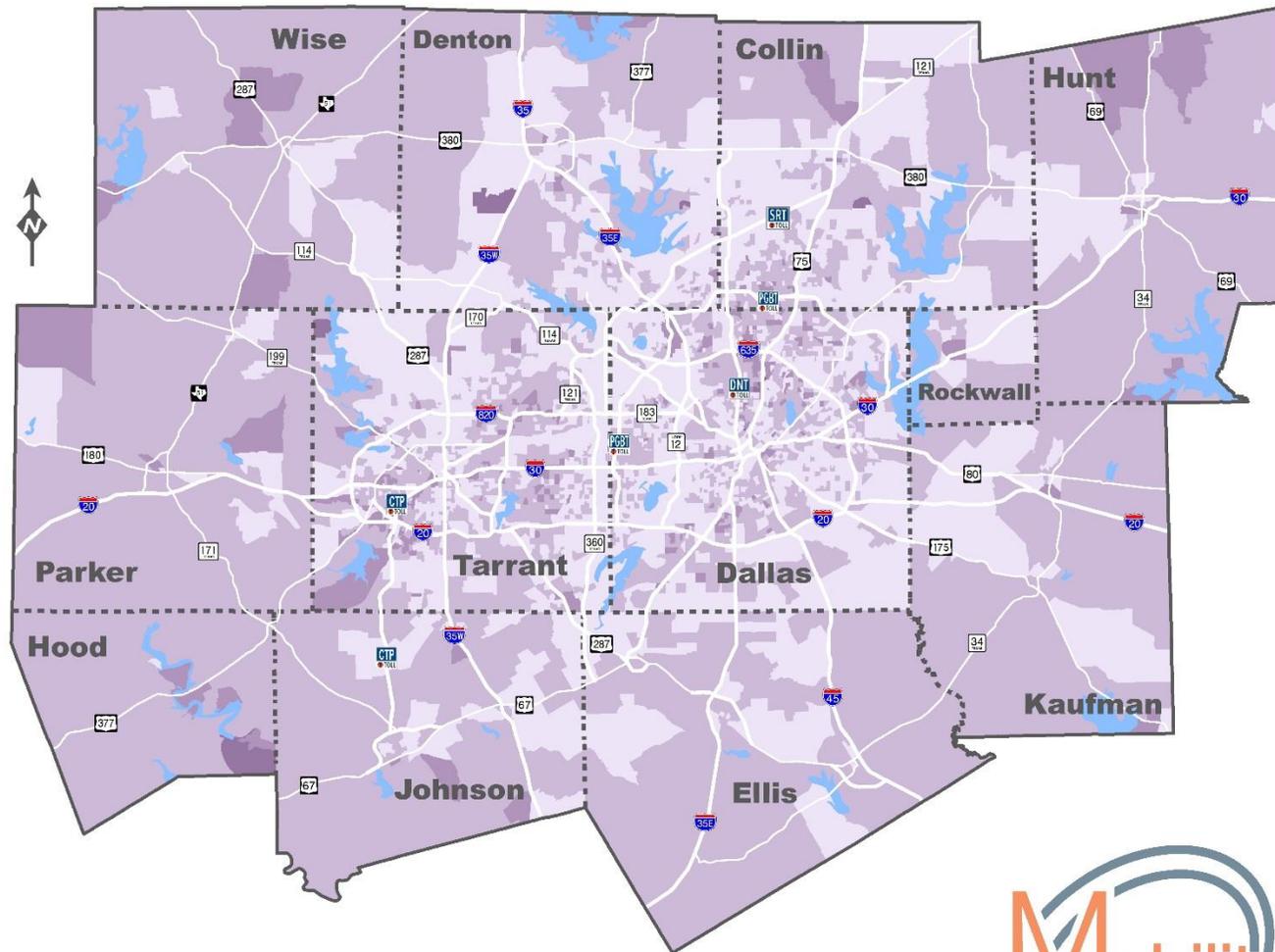
\*\* Regional Percentage



# 65 and Over Population

## Percentage By Block Group

- 0.00% - 9.88%\*
  - 9.89% - 25.00%
  - 25.01% - 50.00%
  - 50.01% - 100%
- \* Regional Percentage

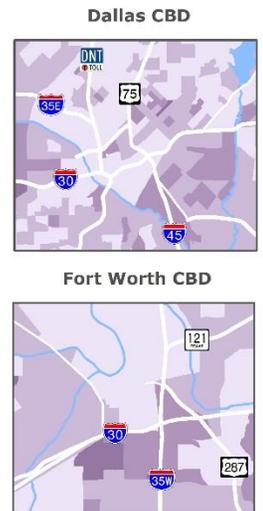
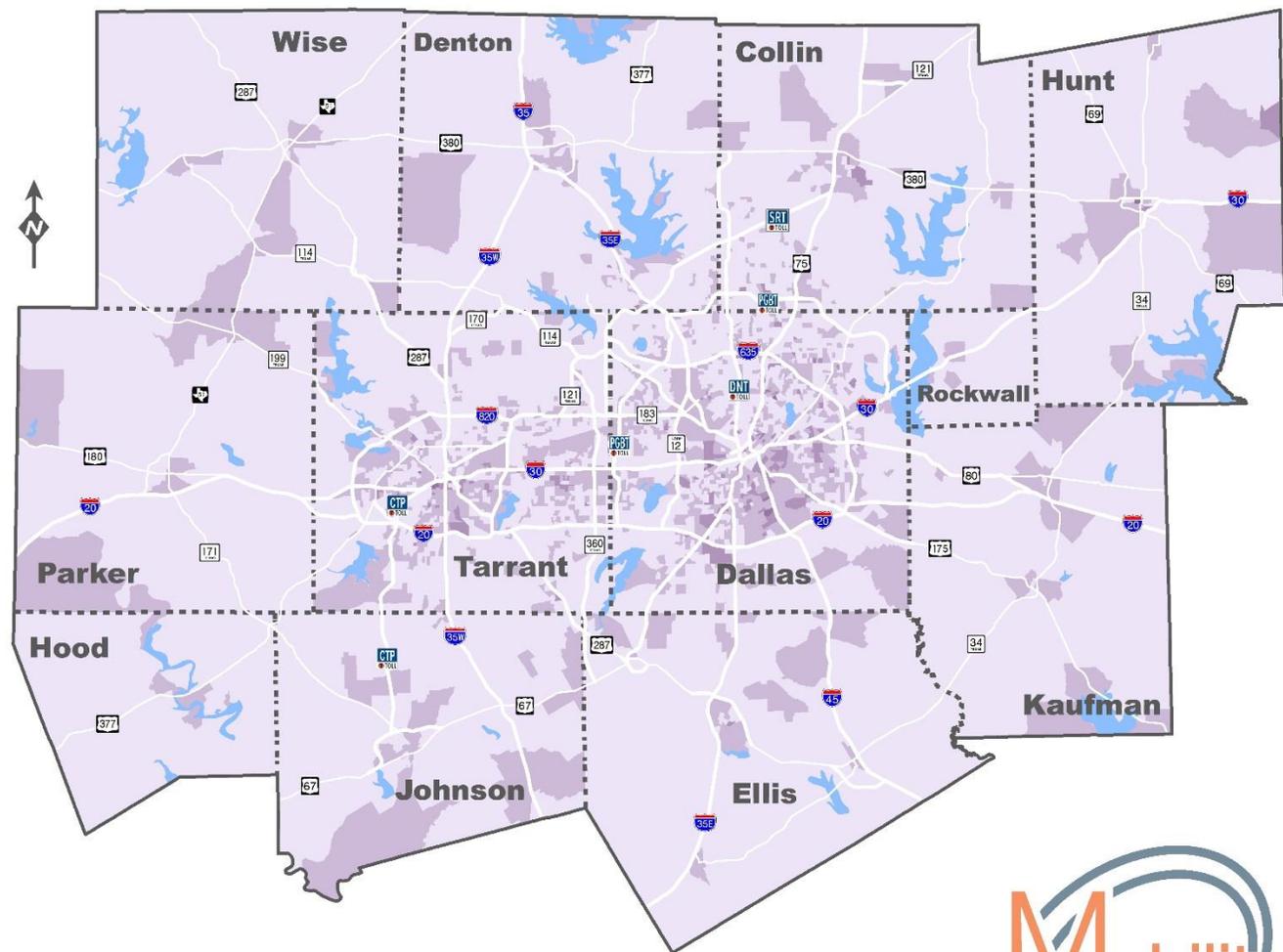


# Zero Car Households

**Percentage By Block Group**

- 0.00% - 5.11%\*
- 5.12% - 25.00%
- 25.01% - 50.00%
- 50.01% - 74.30%

\* Regional Percentage



Data is derived from the 2015 American Community Survey 5-Year Estimates. Descriptions of the demographic group illustrated in this map are found in the preceding table.

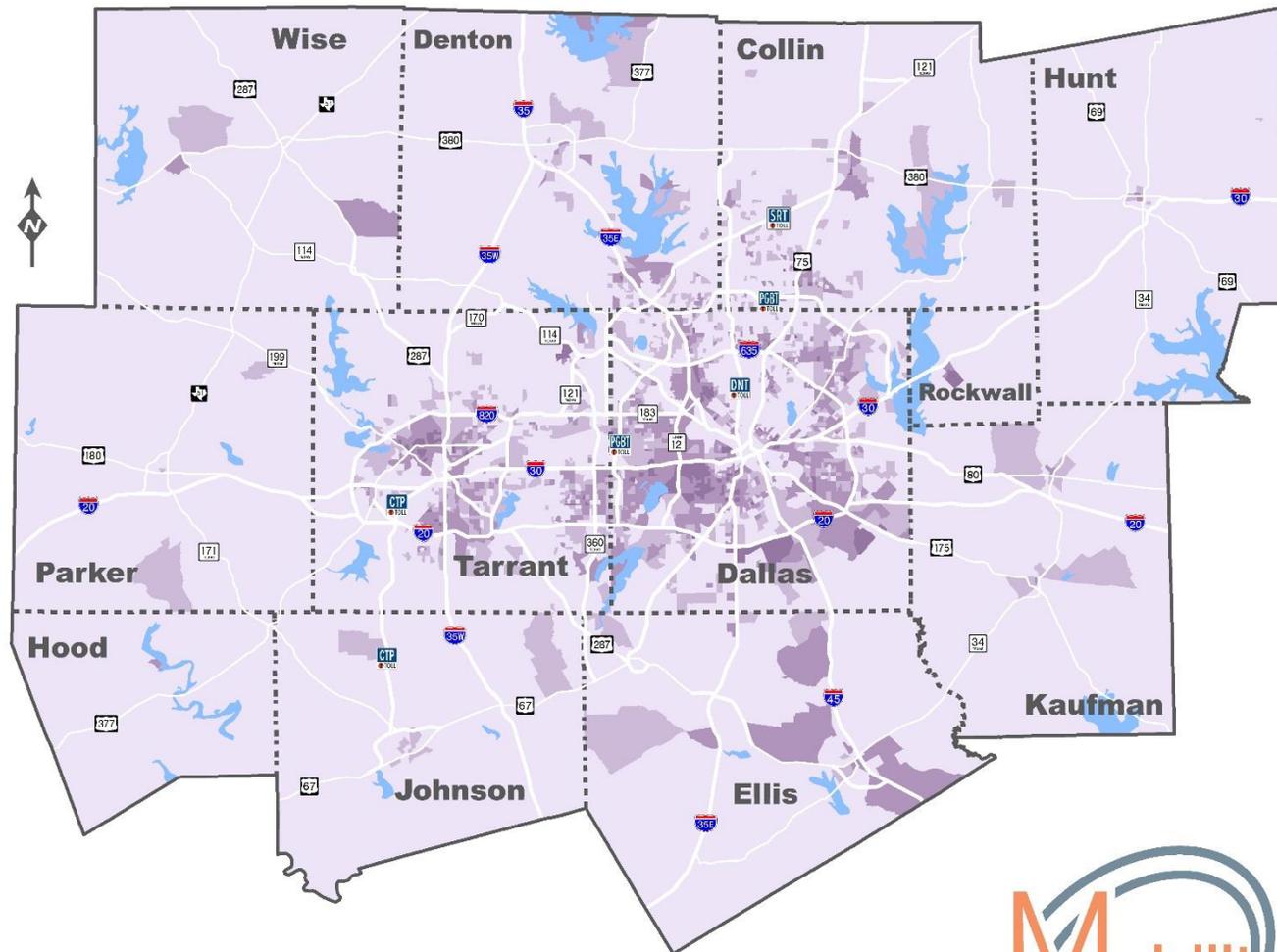


# Limited English Proficiency: All Languages

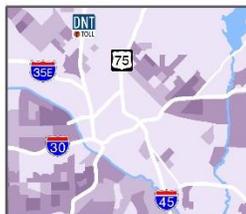
**Percentage By Block Group**

- 0.00% - 13.48%\*
- 13.49% - 25.00%
- 25.01% - 50.00%
- 50.01% - 81.2%

\* Regional Percentage



Dallas CBD



Fort Worth CBD



North Central Texas Council of Governments

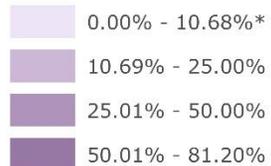
June 2018

Data is derived from the 2015 American Community Survey 5-Year Estimates. Descriptions of the demographic group illustrated in this map are found in the preceding table.

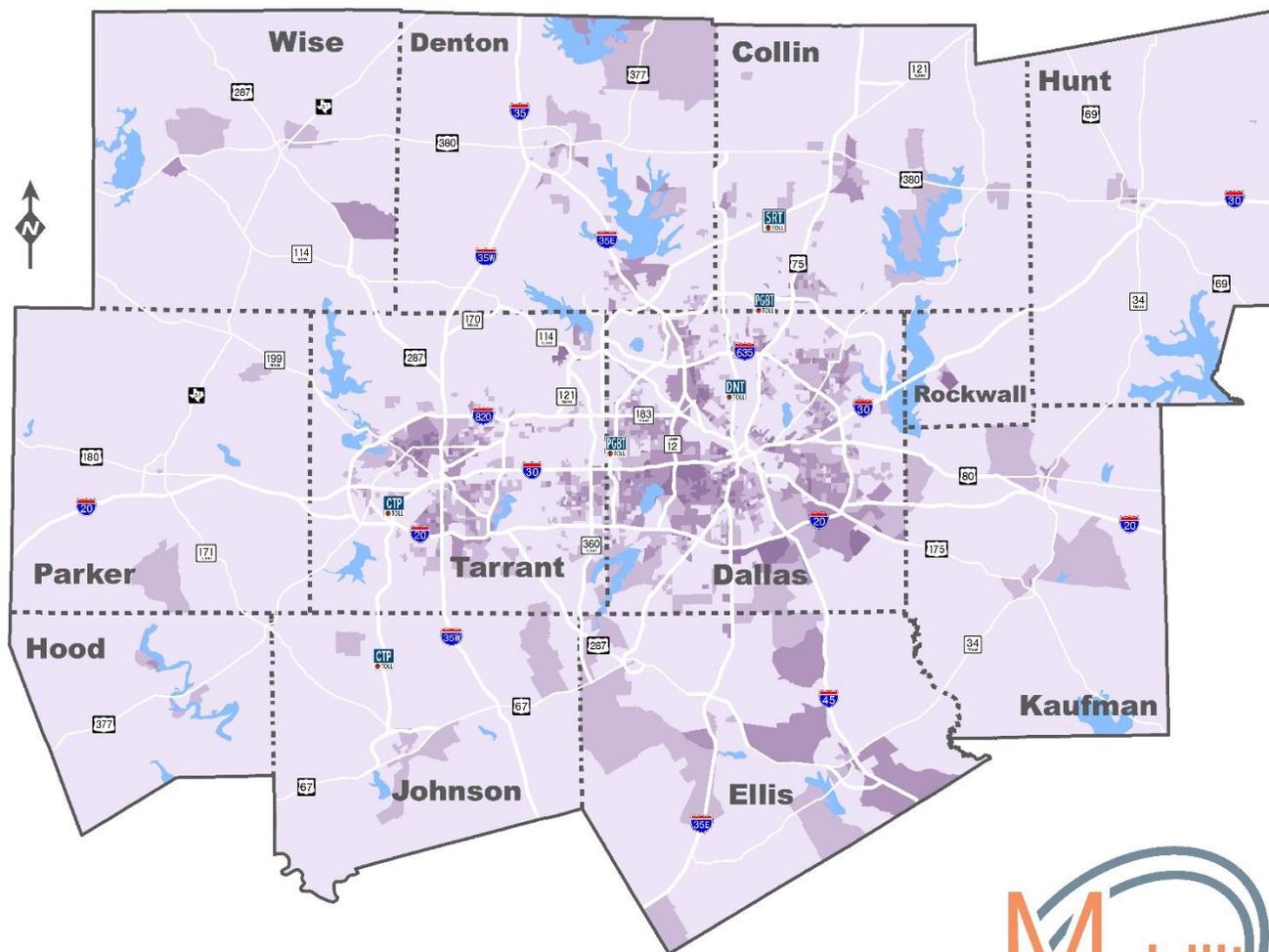


# Limited English Proficiency: Spanish

## Population By Block Group



\* Regional Percentage



Dallas CBD



Fort Worth CBD



North Central Texas Council of Governments

June 2018

Data is derived from the 2015 American Community Survey 5-Year Estimates. Descriptions of the demographic group illustrated in this map are found in the preceding table.

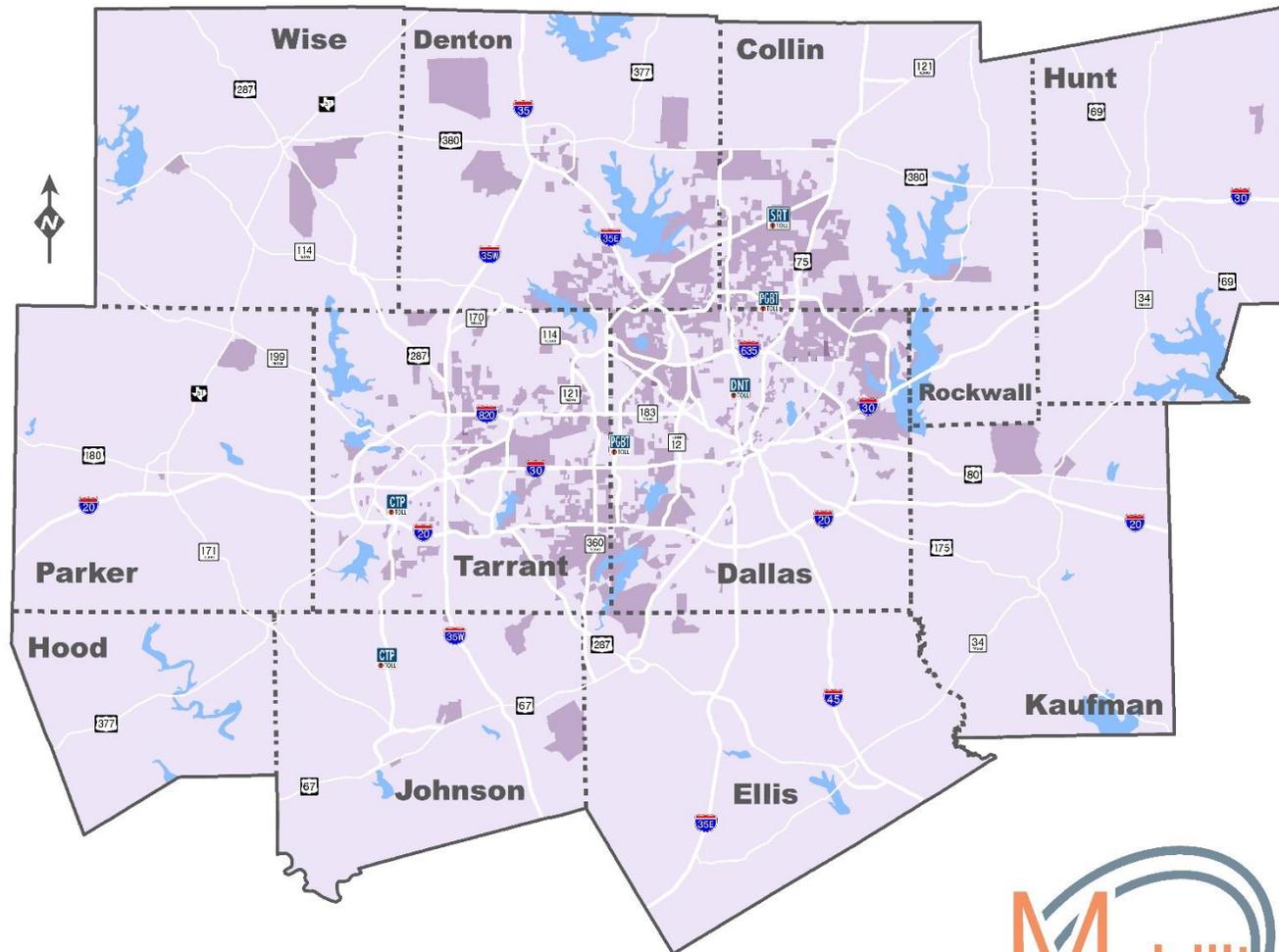


## Limited English Proficiency: Asian or Pacific Island Languages

### Percentage By Block Group

- 0.00% - 1.70%\*
- 1.71% - 25.00%
- 25.01% - 42.52%

\* Regional Percentage

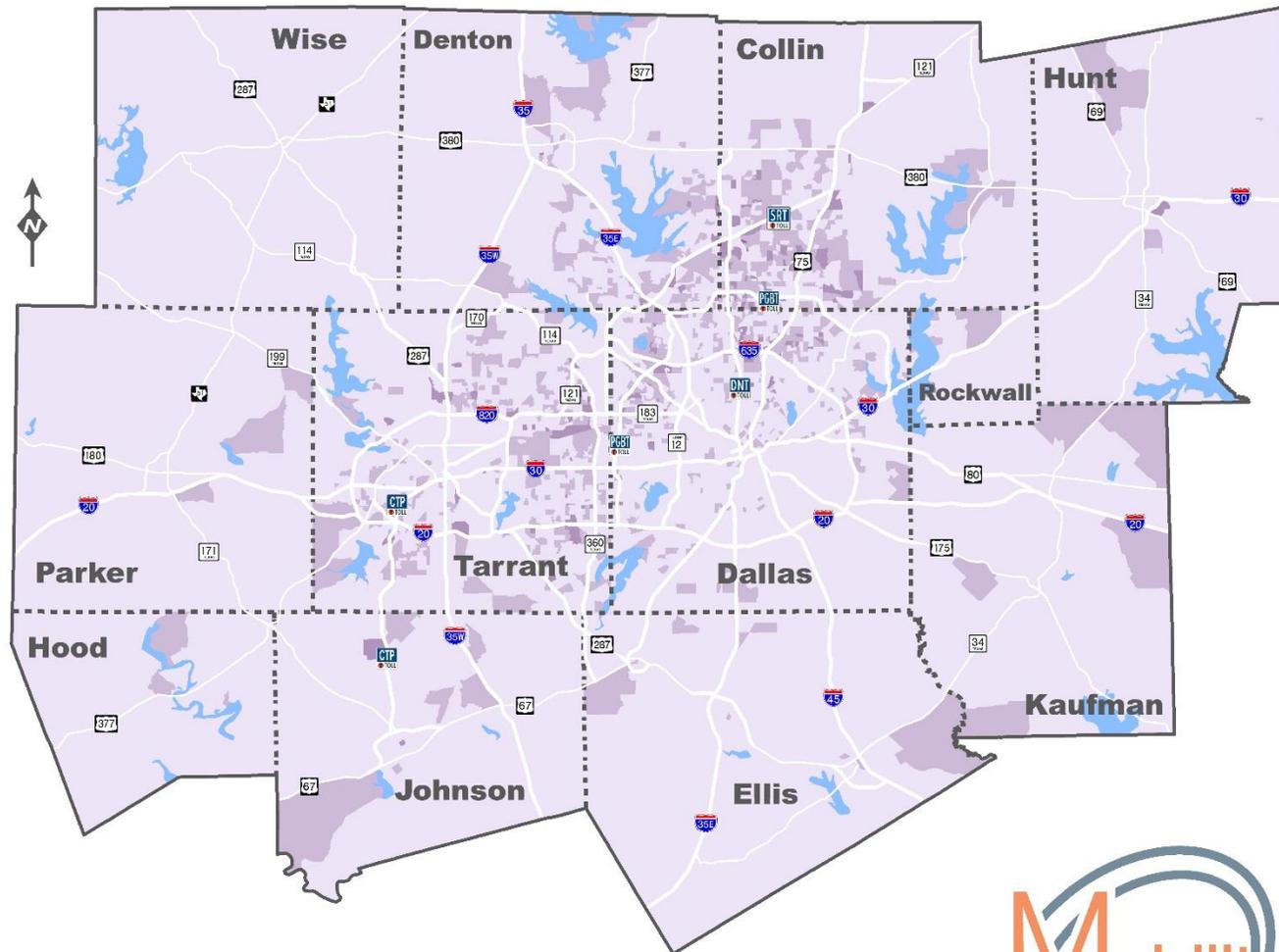


# Limited English Proficiency: Other Indo-European Languages

## Percentage By Block Group

- 0.00% - 0.76%\*
- 0.77% - 5.00%
- 5.01% - 25.00%
- 25.01% - 43.13%

\* Regional Percentage

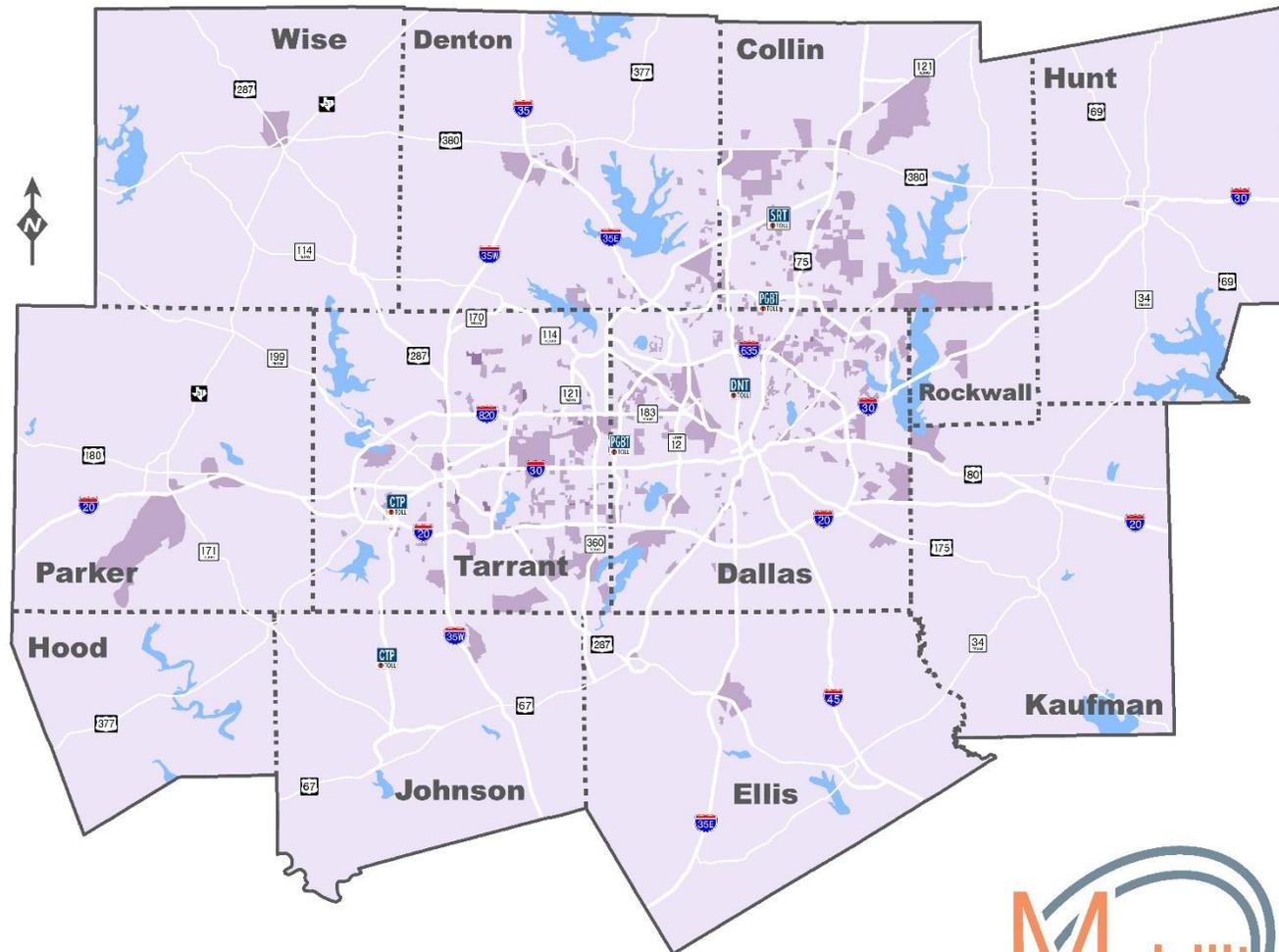


# Limited English Proficiency: Other Languages

**Percentage By Block Group**

- 0.00% - 0.34%\*
- 0.35% - 10.00%
- 10.01% - 47.59%

\* Regional Percentage



### Changes in Demographic Variables over Time

	2000 Decennial Census		2010 Decennial Census			2006-2010 ACS Estimates			2011-2015 ACS Estimates		
	Totals	Total Percentage†	Totals	Total Percentage†	Percent Change (2000-2010)	Totals	Total Percentage	Percent Change (2000-2010)	Totals	Total Percentage†	Percent Change (2000-2015)
Black or African American, Non-Hispanic or Latino	707,477	13.61%	941,545	14.67%	33.08%	898,733	14.50%	27.03%	1,013,733	14.85%	43.29%
Total Black or African American*	740,570	14.25%	1,015,603	15.82%	37.14%	910,633	14.69%	22.96%	1,032,926	15.13%	39.48%
American Indian or Alaska Native, Non-Hispanic or Latino	21,394	0.41%	24,987	0.39%	16.79%	20,659	0.33%	-3.44%	18,586	0.27%	-13.13%
Total American Indian or Alaska Native*	56,865	1.09%	84,851	1.32%	49.21%	31,026	0.50%	-45.44%	30,616	0.45%	-46.16%
Asian, Non-Hispanic or Latino	193,629	3.73%	338,081	5.27%	74.60%	317,118	5.12%	63.78%	400,798	5.87%	106.99%
Total Asian*	219,142	4.22%	385,636	6.01%	75.98%	319,721	5.16%	45.90%	404,322	5.92%	84.50%
Native Hawaiian or Other Pacific Islander, Non-Hispanic or Latino	3,707	0.07%	5,463	0.09%	47.37%	5,886	0.09%	58.78%	6,381	0.09%	72.13%
Total Native Hawaiian or Other Pacific Islander*	8,253	0.16%	13,086	0.20%	58.56%	6,363	0.10%	-22.90%	6,949	0.10%	-15.80%
Hispanic or Latino	1,120,527	21.56%	1,757,112	27.38%	56.81%	1,643,252	26.51%	46.65%	1,913,489	28.04%	70.77%
Some Other Race, Non-Hispanic or Latino	5,515	0.11%	9,072	0.14%	64.50%	13,752	0.22%	149.36%	9,827	0.14%	78.19%
Total Some Other Race*	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	402,430	5.90%	n/a
Two or More Races, Non-Hispanic or Latino	69,097	1.33%	99,550	1.55%	44.07%	89,353	1.44%	29.32%	132,721	1.94%	92.08%
Total Two or More Races*	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	190,376	2.79%	n/a
Total Minority	2,121,346	40.82%	3,175,810	49.48%	49.71%	2,988,753	48.21%	40.89%	3,495,535	51.22%	64.78%
Low Income	549,051	10.74%	n/a	n/a	n/a	817,184	13.18%	48.84%	982,780	14.59%	79.00%
Persons with Disabilities**	1,437,885	30.43%	n/a	n/a	n/a	n/a	n/a	n/a	647,657	9.57%	n/a
65 and Over	412,718	7.94%	570,341	8.89%	38.19%	531,410	8.57%	28.76%	674,572	9.88%	63.45%
Female Head of Household***	139,408	7.36%	180,959	7.81%	29.81%	182,847	2.95%	31.16%	235,295	9.79%	n/a
Zero Car Households	114,775	6.06%	n/a	n/a	n/a	112,842	1.82%	-1.68%	122,882	5.11%	7.06%
Limited English Proficiency (LEP)	592,713	12.39%	n/a	n/a	n/a	765,371	12.35%	29.13%	853,065	13.48%	43.93%
LEP: Spanish	486,521	10.17%	n/a	n/a	n/a	624,880	10.08%	28.44%	675,627	10.68%	38.87%
LEP: Asian or Pacific Island Languages	67,036	1.40%	n/a	n/a	n/a	89,868	1.45%	34.06%	107,495	1.70%	60.35%
LEP: Other Indo-European Languages	29,705	0.62%	n/a	n/a	n/a	35,731	0.58%	20.29%	48,382	0.76%	62.87%
LEP: Other Languages	9,451	0.20%	n/a	n/a	n/a	14,892	0.24%	57.57%	21,561	0.34%	128.13%
<b>Total Population</b>	<b>5,197,317</b>		<b>6,417,724</b>		<b>23.48%</b>	<b>6,198,833</b>		<b>19.27%</b>	<b>6,824,812</b>		<b>31.31%</b>

\*These categories include individuals who identified themselves as the specified race, and individuals who identified themselves as the specified race and identified their ethnicity as Hispanic or Latino.

\*\*The Census definition of Persons with Disabilities changed to be less inclusive after the 2000 Decennial Census.

\*\*\*The definition NCTCOG uses for Female Head of Household changed with the 2011-2015 American Community Survey to include female heads of household regardless of whether the children supported are the woman's own children.

†Total Percentage is the percentage of the region's population attributed to each population variable.

## Regional Environmental Justice Analysis

As described in the **Social Considerations** chapter, the analysis included the review of key system performance indicators, such as number of jobs accessible by automobile or transit and congestion levels. Results were compared for areas determined to have a percentage of protected class populations above the region’s percentage versus those with a percentage of protected class populations below the region’s percentage (see the *Environmental Justice Analysis Results* section for definitions). The performance indicator results are reported in the **Social Considerations** chapter for the Environmental Justice Aggregate Protected Class and for all protected classes in the *Environmental Justice Analysis Results* section found later in this appendix. The following section describes how the performance indicators were calculated.

### Accessibility Indicators

#### Job Accessibility

##### Access to Jobs by Automobile and Transit

Accessibility to jobs by car or transit were computed based on the travel times forecasted for roadway and transit networks scenarios (Build and No-Build). Accessible is defined as 30 minutes for auto and 60 minutes for transit. This calculation is done based on forecasted travel times from the centroid of each zone to the centroids of the remaining zones using the information indicated below. Additional travel time accessibility thresholds are included to represent short, average, and long travel times by auto and transit. Mobility 2045 includes results for the number of jobs accessible by auto within 0 to 15, 16 to 30, and 31 to 45 minutes, and by transit within 0 to 30, 31 to 60, and 61 to 90 minutes.

**For Auto:** AM shortest path time plus the time spent at trip end points going to and from the vehicle.<sup>1</sup>

**For Transit:** Minimum of the sum of the In-Vehicle Time, Initial Wait Time, Transfer Wait Time, Transfer Walk Time, Access Time, Egress Walk Time, and Dwell Time from the Bus, Rail, and Bus-Rail matrices for Peak Park-and-Ride<sup>2</sup> and No Park-and-Ride.<sup>3</sup>

First, the number of jobs was calculated for each destination Travel Survey Zone (TSZ). Next, the destination TSZs located within 0 to 15, 16 to 30, and 31 to 45 minutes for auto, and 0 to 30, 31 to 60, and 61 to 90 minutes for transit were identified for each origin TSZ. Then, the total number of jobs accessible by auto and by transit were summed and saved as attributes of each origin TSZ. Finally, the regional average number of jobs accessible to protected zones<sup>4</sup> for auto and transit was computed as weighted averages based on population using the following formulas (16 to 30 minutes by auto and 31 to 60 minutes by transit shown as examples):

$$Jobs\ for\ auto_{Regional\ average} = \frac{\sum_{i=1}^n Jobs\ within\ 16 - 30\ min_i \times Population_i \times \phi_i}{\sum_{i=1}^n Population_i \times \phi_i}$$

$$Jobs\ for\ transit_{Regional\ average} = \frac{\sum_{i=1}^n Jobs\ within\ 31 - 60\ min_i \times Population_i \times \phi_i}{\sum_{i=1}^n Population_i \times \phi_i}$$

Where:

<sup>1</sup> [TerminalPKTIME] of the PK\_HOV.mtx file

<sup>2</sup> Minimum of ([In-Vehicle Time] + [Initial Wait Time] + [Transfer Wait Time] + [Transfer Walk Time] + [Access Drive Time] + [Egress Walk Time] + [Dwelling Time]) from BPKPR.mtx, BRPKPRnew.mtx, and RPKPR.mtx

<sup>3</sup> Minimum of ([In-Vehicle Time] + [Initial Wait Time] + [Transfer Wait Time] + [Transfer Walk Time] + [Access Walk Time] + [Egress Walk Time] + [Dwelling Time]) from BPKNOPR.mtx, BRPKNOPRnew.mtx, and RPKNOPR.mtx.

<sup>4</sup> Protected zones are those whose population’s percentage of a protected group is greater than the region’s percentage of that protected group. For example, 14.59 percent of the region’s population is low-income. Any zone where more than 14.59 percent of residents are low-income is a protected zone.

$i$  = Index used to represent a travel forecasting zone.

$\emptyset$  = Parameter equal to 1 for protected zones, otherwise it is equal to 0.

The job accessibility values for the unprotected zones can be calculated using similar formulas to those previously described, but inverting the value of the parameter  $\emptyset$  so that it is equal to 1 for those zones that have a performance measure lower than the regional percentage.

### Access to Jobs by Bicycling and Walking

The calculation for this performance indicator was similar to the auto and transit accessibility indicators. Accessibility by bicycling and walking was computed based on model length of walkable links in the roadway networks scenarios (Build and No-Build). Accessible is defined as within two miles for bicycling and walking. This calculation is done based on model link lengths from the centroid of each zone to the centroids of the remaining zones using the information indicated below. Only zones that are classified as area types 1 (Central Business District), 2 (Outer Business District), and 3 (Urban Residential) were considered for this indicator.

First, the number of jobs accessible was calculated for each of the destination TSZs. Next, the destination TSZs located within two miles of each origin TSZ were identified. Then, the total number of jobs accessible by bicycle/walking was summed and saved as attributes of each origin TSZ. Finally, the following formula was used to calculate the regional average of the number of jobs accessible to protected zones by bicycle/walking:

$$Jobs\ for\ bicycle/walking_{Regional\ average} = \frac{\sum_{i=1}^n Jobs\ within\ 2\ miles_i \times Population_i \times \phi_i}{\sum_{i=1}^n Population_i \times \phi_i}$$

Where:

$i$  = Index used to represent a travel forecasting zone.

$\emptyset$  = Parameter equal to 1 for protected zones, otherwise it is equal to 0.

The job accessibility values for the unprotected zones can be calculated using similar formulas to those previously described, but inverting the value of the

parameter  $\emptyset$  so that it is equal to 1 for those zones that have a performance measure lower than the regional percentage.

### Accessibility to Special Generators

#### Population Accessible to Special Generators by Car

The Population Accessible to Hospital, Regional Shopping Mall, and University Special Generators is the number of people within 15 minutes of auto travel time in the off-peak period from protected zones to hospital special generators, and within 30 minutes of auto travel time in the off-peak period from protected zones to regional shopping mall and university special generators. Hospital special generators have a lower time threshold due to the critical need of accessing hospitals for emergency care.

This calculation incorporates the parameter  $\emptyset$  so only travel from protected zones is included; for unprotected zones, a similar formula to the one previously shown is used and the value of the  $\emptyset$  parameter is inverted accordingly. The formula for Population Accessible to Regional Shopping Mall and University Special Generators is shown below:

$$Population\ Accby\ autotoSG_{30min} = \sum_{i=1}^n \beta_i \times Population_i \times \phi_i$$

Where:

$i$  = Index used to represent a travel forecasting zone.

$\beta_i$  = Parameter for zone  $i$  which is 1 if the zone is within 30 minutes auto travel time in off-peak period to a Special Generator and 0 otherwise. Access to special generator types of Hospital, Regional Shopping Mall, and University Special Generators are calculated separately.

$\emptyset$  = Parameter equal to 1 for protected zones, otherwise it is equal to 0.

#### Percentage of Zones Accessible to Hospital Special Generators by Transit

The Percentage of Zones Accessible to Hospital Special Generators by Transit is the percentage of zones within 60 minutes of transit travel time in the off-peak period from protected zones to hospital special generators. The transit

travel time is calculated as the minimum of the sum of the In-Vehicle Time, Initial Wait Time, Transfer Wait Time, Transfer Walk Time, Access Time, Egress Walk Time, and Dwell Time from the Bus, Rail, and Bus-Rail matrices for Off-Peak Park-and-Ride<sup>5</sup> and No Park-and-Ride.<sup>6</sup>

This calculation incorporates the parameter  $\emptyset$  so only travel from protected zones is included; for unprotected zones, a similar formula to the one previously shown is used and the value of the  $\emptyset$  parameter is inverted accordingly. The formula for Percentage of Zones Accessible by Transit to Hospital Special Generators is shown below:

$$\% \text{ Zones Acc by Transit To Hospita } SG_{60\text{min}} = \frac{\sum_{i=1}^n \beta_i \times \phi_i}{\sum_{i=1}^n \phi_i}$$

Where:

$i$  = Index used to represent a travel forecasting zone.

$\beta_i$  = Parameter for zone  $i$  which is 1 if the zone is within 60 minutes transit travel time in off-peak period to a Hospital Special Generator and 0 otherwise. This transit travel time to a zone is calculated by finding the minimum travel time in the off-peak from BOPPR.mtx, BROPPRnew.mtx, ROPPR.mtx, BOPNOPR.mtx, BROPNOPRnew.mtx, and ROPNOPR.mtx

$\emptyset$  = Parameter equal to 1 for protected zones, otherwise it is equal to 0.

## Mobility Indicators

### Congestion Level

The Congestion Level is calculated for each protected group based on attributes of the links of the roadway networks. In this case, the first step consists of identifying if a link is located in a protected or unprotected zone.

<sup>5</sup> Minimum of ([In-Vehicle Time] + [Initial Wait Time] + [Transfer Wait Time] + [Transfer Walk Time] + [Access Drive Time] + [Egress Walk Time] + [Dwelling Time]) from BOPPR.mtx, BROPNOPRnew.mtx, and ROPPR.mtx

The regional congestion value for protected zones is then calculated using the formula presented:

Congestion Level =

$$\frac{\sum_{i=1}^n (\text{Max}(\text{AMHRVOC}_{AB_i}, \text{PMHRVOC}_{AB_i}) + \text{Max}(\text{AMHRVOC}_{BA_i}, \text{PMHRVOC}_{BA_i})) * \text{MODEL\_LENGTH}_i \times \phi_i}{\sum_{i=1}^n (\text{MODEL\_LENGTH}_i \times \phi_i \times \beta_i)}$$

Where:

$i$  = Index used to represent a roadway link where FUNCL = {1, 2, 3, 6, 7, 8}.

AMHRVOC\_AB/BA = Peak Hour Volume Capacity Ratio in the AB or BA direction of a link during the AM peak period, respectively.

PMHRVOC\_AB/BA = Peak Hour Volume Capacity Ratio in the AB or BA direction of a link during the PM peak period, respectively.

Model\_Length = Length of the link in miles.

$\emptyset$  = Parameter equal to 1 for links located in protected zones; otherwise it is equal to 0.

$\beta$  = Number of directions (AB, BA) on the link. 2 if DIR = 0; 1 otherwise.

For unprotected zones, a similar formula to the one previously shown is used and the value of the  $\emptyset$  parameter is inverted accordingly.

### Average Travel Length (Time and Distance)

#### Average Trip Time by Car (Minutes)

The Average Trip Time is the ratio of the product of trips and time to trips from protected zones to all zones. The value is calculated using home-based work trips and the shortest path travel time in the AM peak period. The calculation of Average Trip Time incorporates the parameter  $\emptyset$  so only travel from

<sup>6</sup> Minimum of ([In-Vehicle Time] + [Initial Wait Time] + [Transfer Wait Time] + [Transfer Walk Time] + [Access Walk Time] + [Egress Walk Time] + [Dwelling Time]) from BOPNOPR.mtx, BROPNOPRnew.mtx, and ROPNOPR.mtx

protected zones is included; for unprotected zones, a similar formula to the one previously shown is used and the value of the  $\emptyset$  parameter is inverted accordingly. The formula for Average Trip Time is the following:

$$\frac{\sum_{i=1}^n ([HBW]_i * [PKTIME\_AB / PKTIME\_BA]_i \times \phi_i)}{\sum_{i=1}^n ([HBW]_i \times \phi_i)}$$

Where:

$i$  = Index used to represent a travel forecasting zone.

[HBW] = Home-based work trips taken from core [HBW] in matrix PADIST.MTX.

PKTIME\_AB / PKTIME\_BA = Shortest path travel time in AM peak period; core in PK\_HOV.MTX; Terminal Time is not incorporated.

$\emptyset$  = Parameter equal to 1 for protected zones, otherwise it is equal to 0.

### Average Trip Length by Car (Miles)

The Average Trip Length is the ratio of the product of trips and length to trips from protected zones to all zones. The value is calculated using home-based work trips and the shortest path travel length in the AM peak period.

The calculation of Average Trip Length incorporates the parameter  $\emptyset$  so only travel from protected zones is included; for unprotected zones, a similar formula to the one previously shown is used and the value of the  $\emptyset$  parameter is inverted accordingly. The formula for Average Trip Length is the following:

$$\frac{\sum_{i=1}^n ([HBW]_i * [MODEL\_LENGTH(Skim)]_i \times \phi_i)}{\sum_{i=1}^n ([HBW]_i \times \phi_i)}$$

Where:

$i$  = Index used to represent a travel forecasting zone.

[HBW] = Home-based work trips taken from core [HBW] in matrix PADIST.MTX.

[MODEL\_LENGTH(Skim)] = Shortest path travel length in AM peak period; core in matrix PK\_HOV.MTX.

$\emptyset$  = Parameter equal to 1 for protected zones, otherwise it is equal to 0.

### Environmental Justice Analysis Results

The tables in this section represent the results of the key performance indicators for the aggregate protected and individual protected populations. The underlying demographic data used in the tool is based on the 2011-2015 American Community Survey 5-Year Estimates. A summary of the results for all the performance indicators for the Environmental Justice Aggregate protected class is included in the **Social Considerations** chapter.

Environmental Justice Population Group <sup>7</sup>	Regional Percentage	Total Population
Black or African American Race	15.13%	1,032,926
American Indian or Alaska Native Race	0.45%	30,616
Asian Race	5.92%	404,322
Native Hawaiian or Other Pacific Islander Race	0.10%	6,949
Some Other Race	5.90%	402,430
Two or More Races	2.79%	190,376
Hispanic or Latino Ethnicity	28.04%	1,913,489
Low Income	14.59%	982,780

### Definitions

**Total:** The total population for the region for each demographic scenario.

**Protected:** For the aggregate environmental justice group, the total population of a TSZ with a total minority population above the regional percentage or a low-income population above the regional percentage. For individual environmental justice groups, an individual environmental justice population group that is above the regional percentage. For each subsequent chart, the specific population is compared individually. For each racial group, the total number of individuals identifying as that race, regardless of ethnicity, are included.

**Non-Protected:** The total population less the protected population being analyzed. In the aggregate table, the non-protected population is the total population less all minority and low-income persons. For each subsequent chart, the non-protected population will include the total population less the total population of the specific population being compared. For this reason, some protected populations are included in the non-protected category. For example, for the low-income analysis, the non-protected population is the total population less the low-income population; minority populations that are not low-income are considered non-protected for this analysis.

**Current Network:** This scenario uses the 2018 network and demographic projection. This year was used to be consistent with the current network definition used for conformity determination. This analysis is performed to provide a base year to determine how the recommendations in Mobility 2045 impact the community.

**2045 Build:** This scenario uses 2045 demographic projections and assumes that all of the recommendations in Mobility 2045 are built. This analysis is performed to determine how building the recommendations in Mobility 2045 will impact the community.

**2045 No-Build:** This scenario uses the 2045 demographic projections and assumes that no recommendations in Mobility 2045 are built. This analysis is performed to determine how not building the recommendations in Mobility 2045 will impact the community.

**Number of Jobs Accessible by Auto:** The regional average number of jobs within 0 to 15, 16 to 30, and 31 to 45 minute travel contours from zones identified as protected or non-protected.

**Number of Jobs Accessible by Transit:** The regional average number of jobs within 0 to 30, 31 to 60, and 61 to 90 minute travel contours from zones identified as protected or non-protected.

**Congestion:** This is the average percent lane miles congested for zones identified as protected and non-protected.

**Difference:** The difference of the average number of jobs accessible for protected and non-protected populations or the difference between the percent lane miles congested.

**Percent Change:** This is the percent change in the number of jobs available within the given travel contours between the Current and Build scenarios and the Current and No-Build scenarios, or is the percent change in congestion.

<sup>7</sup> The statistics for the racial groups in this chart include individuals who identified themselves as the specified race, and individuals who identified themselves as the specified race and identified

their ethnicity as Hispanic or Latino. These statistics differ from those in Exhibit 3-10 in the **Social Considerations** chapter, where to prevent the double counting of individuals, racial groups do not include individuals who also identified themselves as Hispanic or Latino.

This represents the total number of people that live in a zone that is considered protected. For example, if a zone has a percentage of low-income individuals that is greater than the regional percentage of 14.59%, the entire population of the zone, both low-income and non-low-income individuals, is considered protected.

*How to Read the Chart:*

Performance Measure	Population	2018 Current Network	2045 Build	2045 No-Build	Percent Change (Current vs Build)	Percent Change (Current vs No-Build)	Difference Between Build and No-Build
Protected Population vs Non-Protected Population	Protected	3,998,817	5,555,650	5,555,650			
	Non-Protected	3,430,906	5,690,881	5,690,881			
	<b>Totals</b>	<b>7,429,723</b>	<b>11,246,531</b>	<b>11,246,531</b>			
Number of Jobs Accessible within 0-15 Minutes by Auto	Protected	72,960	76,307	62,815	4.6%	-13.9%	18.5%
	Non-Protected	54,366	44,398	35,553	-18.3%	-34.6%	16.3%
	<b>Difference</b>	<b>18,594</b>	<b>31,910</b>	<b>27,261</b>			
Number of Jobs Accessible within 16-30 Minutes by Auto	Protected	603,980	578,008	386,626	-4.3%	-36.0%	31.7%
	Non-Protected	425,411	332,112	209,026	-21.9%	-50.9%	28.9%
	<b>Difference</b>	<b>178,569</b>	<b>245,896</b>	<b>177,600</b>			
Number of Jobs Accessible within 31-45 Minutes by Auto	Protected	1,205,742	1,290,309	700,537	7.0%	-41.9%	48.9%
	Non-Protected	858,028	637,478	351,907	-25.7%	-59.0%	33.3%
	<b>Difference</b>	<b>347,714</b>	<b>652,831</b>	<b>348,630</b>			
Number of Jobs Accessible within 0-30 Minutes by Transit	Protected	14,966	17,081	12,143	14.1%	-18.9%	33.0%
	Non-Protected	12,020	10,426	8,106	-13.3%	-32.6%	19.3%
	<b>Difference</b>	<b>2,946</b>	<b>6,655</b>	<b>4,038</b>			
Number of Jobs Accessible within 31-60 Minutes by Transit	Protected	251,579	347,436	220,481	38.1%	-12.4%	50.5%
	Non-Protected	123,407	197,671	88,139	60.2%	-28.6%	88.8%
	<b>Difference</b>	<b>128,172</b>	<b>149,765</b>	<b>132,342</b>			
Number of Jobs Accessible within 61-90 Minutes by Transit	Protected	523,927	867,536	497,185	65.6%	-5.1%	70.7%
	Non-Protected	324,419	617,133	198,768	90.2%	-38.7%	129.0%
	<b>Difference</b>	<b>199,508</b>	<b>250,403</b>	<b>298,417</b>			
Number of Jobs Accessible within Biking/Walking Distance (2 miles)	Protected	12,172	17,801	17,726	46.2%	45.6%	0.6%
	Non-Protected	8,289	10,820	10,796	30.5%	30.2%	0.3%
	<b>Difference</b>	<b>3,883</b>	<b>6,981</b>	<b>6,930</b>			
Percent of Lane Miles Congested	Protected	48%	65%	77%	35%	61%	26%
	Non-Protected	43%	59%	75%	39%	76%	37%
	<b>Difference</b>	<b>5%</b>	<b>6%</b>	<b>2%</b>			

This represents the additional percentage of jobs available in the 2045 Build scenario compared to the No-Build scenario for both the protected and non-protected populations. Here the protected population has access to 18.5% more jobs in the Build scenario than the No-Build scenario.

This represents the difference in percentage of congestion levels in the Build and No-Build scenarios. Here the protected population will experience 26% less congestion in the Build scenario than in the No-Build scenario.

This represents the percent of lane miles congested. The higher the number, the worse the congestion.

For Percent of Lane Miles Congested, a higher percentage indicates worse congestion levels

*Performance Results for Environmental Justice Aggregate Protected Population*

Performance Measure	Population	2018 Current Network	2045 Build	2045 No-Build	Percent Change (Current vs Build)	Percent Change (Current vs No-Build)	Difference Between Current-Build and Current-No-Build
Protected Population vs Non-Protected Population	Protected	3,998,817	5,555,650	5,555,650			
	Non-Protected	3,430,906	5,690,881	5,690,881			
	<b>Totals</b>	<b>7,429,723</b>	<b>11,246,531</b>	<b>11,246,531</b>			
Number of Jobs Accessible within 0-15 Minutes by Auto	Protected	72,960	76,307	62,815	4.6%	-13.9%	18.5%
	Non-Protected	54,366	44,398	35,553	-18.3%	-34.6%	16.3%
	<b>Difference</b>	<b>18,594</b>	<b>31,910</b>	<b>27,261</b>			
Number of Jobs Accessible within 16-30 Minutes by Auto	Protected	603,980	578,008	386,626	-4.3%	-36.0%	31.7%
	Non-Protected	425,411	332,112	209,026	-21.9%	-50.9%	28.9%
	<b>Difference</b>	<b>178,569</b>	<b>245,896</b>	<b>177,600</b>			
Number of Jobs Accessible within 31-45 Minutes by Auto	Protected	1,205,742	1,290,309	700,537	7.0%	-41.9%	48.9%
	Non-Protected	858,028	637,478	351,907	-25.7%	-59.0%	33.3%
	<b>Difference</b>	<b>347,714</b>	<b>652,831</b>	<b>348,630</b>			
Number of Jobs Accessible within 0-30 Minutes by Transit	Protected	14,966	17,081	12,143	14.1%	-18.9%	33.0%
	Non-Protected	12,020	10,426	8,106	-13.3%	-32.6%	19.3%
	<b>Difference</b>	<b>2,946</b>	<b>6,655</b>	<b>4,038</b>			
Number of Jobs Accessible within 31-60 Minutes by Transit	Protected	251,579	347,436	220,481	38.1%	-12.4%	50.5%
	Non-Protected	123,407	197,671	88,139	60.2%	-28.6%	88.8%
	<b>Difference</b>	<b>128,172</b>	<b>149,765</b>	<b>132,342</b>			
Number of Jobs Accessible within 61-90 Minutes by Transit	Protected	523,927	867,536	497,185	65.6%	-5.1%	70.7%
	Non-Protected	324,419	617,133	198,768	90.2%	-38.7%	129.0%
	<b>Difference</b>	<b>199,508</b>	<b>250,403</b>	<b>298,417</b>			
Number of Jobs Accessible within Biking/Walking Distance (2 miles)	Protected	12,172	17,801	17,726	46.2%	45.6%	0.6%
	Non-Protected	8,289	10,820	10,796	30.5%	30.2%	0.3%
	<b>Difference</b>	<b>3,883</b>	<b>6,981</b>	<b>6,930</b>			
Percent of Lane Miles Congested	Protected	48%	65%	77%	35%	61%	26%
	Non-Protected	43%	59%	75%	39%	76%	37%
	<b>Difference</b>	<b>5%</b>	<b>6%</b>	<b>2%</b>			

For Percent of Lane Miles Congested, a higher percentage indicates worse congestion levels

*Performance Results for Low-Income Population*

Performance Measure	Population	2018 Current Network	2045 Build	2045 No-Build	Percent Change (Current vs Build)	Percent Change (Current vs No-Build)	Difference Between Current-Build and Current-No-Build
Protected Population vs Non-Protected Population	Protected	2,767,633	3,790,559	3,790,559			
	Non-Protected	4,662,090	7,455,972	7,455,972			
	<b>Totals</b>	<b>7,429,723</b>	<b>11,246,531</b>	<b>11,246,531</b>			
Number of Jobs Accessible within 0-15 Minutes by Auto	Protected	74,744	81,416	68,142	8.9%	-8.8%	17.8%
	Non-Protected	58,217	49,354	39,299	-15.2%	-32.5%	17.3%
	<b>Difference</b>	<b>16,527</b>	<b>32,062</b>	<b>28,843</b>			
Number of Jobs Accessible within 16-30 Minutes by Auto	Protected	600,120	604,978	414,709	0.8%	-30.9%	31.7%
	Non-Protected	474,860	376,613	236,793	-20.7%	-50.1%	29.4%
	<b>Difference</b>	<b>125,260</b>	<b>228,366</b>	<b>177,916</b>			
Number of Jobs Accessible within 31-45 Minutes by Auto	Protected	1,171,979	1,329,994	751,155	13.5%	-35.9%	49.4%
	Non-Protected	969,897	771,850	408,707	-20.4%	-57.9%	37.4%
	<b>Difference</b>	<b>202,082</b>	<b>558,144</b>	<b>342,449</b>			
Number of Jobs Accessible within 0-30 Minutes by Transit	Protected	18,294	21,340	15,337	16.6%	-16.2%	32.8%
	Non-Protected	10,822	9,837	7,438	-9.1%	-31.3%	22.2%
	<b>Difference</b>	<b>7,472</b>	<b>11,503</b>	<b>7,899</b>			
Number of Jobs Accessible within 31-60 Minutes by Transit	Protected	265,265	364,898	250,029	37.6%	-5.7%	43.3%
	Non-Protected	149,130	224,248	104,446	50.4%	-30.0%	80.3%
	<b>Difference</b>	<b>116,134</b>	<b>140,651</b>	<b>145,583</b>			
Number of Jobs Accessible within 61-90 Minutes by Transit	Protected	530,287	850,531	531,724	60.4%	0.3%	60.1%
	Non-Protected	373,330	685,057	251,855	83.5%	-32.5%	116.0%
	<b>Difference</b>	<b>156,957</b>	<b>165,474</b>	<b>279,869</b>			
Number of Jobs Accessible within Biking/Walking Distance (2 miles)	Protected	13,586	19,585	19,547	44.2%	43.9%	0.3%
	Non-Protected	8,475	11,566	11,511	36.5%	35.8%	0.7%
	<b>Difference</b>	<b>5,111</b>	<b>8,019</b>	<b>8,036</b>			
Percent of Lane Miles Congested	Protected	45%	62%	74%	37%	66%	28%
	Non-Protected	45%	61%	76%	37%	71%	34%
	<b>Difference</b>	<b>0%</b>	<b>0%</b>	<b>-2%</b>			

For Percent of Lane Miles Congested, a higher percentage indicates worse congestion levels

*Performance Results for Minority Population*

Performance Measure	Population	2018 Current Network	2045 Build	2045 No-Build	Percent Change (Current vs Build)	Percent Change (Current vs No-Build)	Difference Between Current-Build and Current-No-Build
Protected Population vs Non-Protected Population	Protected	3,433,152	4,662,533	4,662,533			
	Non-Protected	3,996,571	6,583,998	6,583,998			
	<b>Totals</b>	<b>7,429,723</b>	<b>11,246,531</b>	<b>11,246,531</b>			
Number of Jobs Accessible within 0-15 Minutes by Auto	Protected	76,097	81,793	67,244	7.5%	-11.6%	19.1%
	Non-Protected	54,303	44,842	36,114	-17.4%	-33.5%	16.1%
	<b>Difference</b>	<b>21,794</b>	<b>36,951</b>	<b>31,130</b>			
Number of Jobs Accessible within 16-30 Minutes by Auto	Protected	648,411	630,801	422,161	-2.7%	-34.9%	32.2%
	Non-Protected	412,518	328,082	207,952	-20.5%	-49.6%	29.1%
	<b>Difference</b>	<b>235,893</b>	<b>302,719</b>	<b>214,209</b>			
Number of Jobs Accessible within 31-45 Minutes by Auto	Protected	1,295,211	1,426,394	771,413	10.1%	-40.4%	50.6%
	Non-Protected	830,387	629,663	349,007	-24.2%	-58.0%	33.8%
	<b>Difference</b>	<b>464,825</b>	<b>796,731</b>	<b>422,406</b>			
Number of Jobs Accessible within 0-30 Minutes by Transit	Protected	15,446	17,831	12,476	15.4%	-19.2%	34.7%
	Non-Protected	12,025	10,798	8,418	-10.2%	-30.0%	19.8%
	<b>Difference</b>	<b>3,422</b>	<b>7,034</b>	<b>4,059</b>			
Number of Jobs Accessible within 31-60 Minutes by Transit	Protected	275,226	381,508	245,194	38.6%	-10.9%	49.5%
	Non-Protected	121,234	193,858	88,5909	59.9%	-26.9%	86.8%
	<b>Difference</b>	<b>153,992</b>	<b>187,650</b>	<b>156,604</b>			
Number of Jobs Accessible within 61-90 Minutes by Transit	Protected	569,424	945,070	557,644	66.0%	-2.1%	68.0%
	Non-Protected	313,574	596,194	196,433	90.1%	-37.4%	127.5%
	<b>Difference</b>	<b>255,850</b>	<b>348,876</b>	<b>361,210</b>			
Number of Jobs Accessible within Biking/Walking Distance (2 miles)	Protected	12,463	19,003	18,920	52.5%	51.8%	0.7%
	Non-Protected	8,589	10,916	10,890	27.1%	26.8%	0.3%
	<b>Difference</b>	<b>3,874</b>	<b>8,086</b>	<b>8,030</b>			
Percent of Lane Miles Congested	Protected	54%	71%	82%	33%	53%	20%
	Non-Protected	41.%	58%	73%	40%	77%	38%
	<b>Difference</b>	<b>12%</b>	<b>14%</b>	<b>9%</b>			

For Percent of Lane Miles Congested, a higher percentage indicates worse congestion levels

### Performance Results for Black or African American Population

Performance Measure	Population	2018 Current Network	2045 Build	2045 No-Build	Percent Change (Current vs Build)	Percent Change (Current vs No-Build)	Difference Between Current-Build and Current-No-Build
Protected Population vs Non-Protected Population	Protected	2,429,384	3,536,265	3,536,265			
	Non-Protected	5,000,339	7,710,266	7,710,266			
	<b>Totals</b>	<b>7,429,723</b>	<b>11,246,531</b>	<b>11,246,531</b>			
Number of Jobs Accessible within 0-15 Minutes by Auto	Protected	67,635	73,766	60,954	9.1%	-9.9%	18.9%
	Non-Protected	62,789	53,921	43,547	-14.1%	-30.6%	16.5%
	<b>Difference</b>	<b>4,846</b>	<b>19,845</b>	<b>17,407</b>			
Number of Jobs Accessible within 16-30 Minutes by Auto	Protected	535,099	517,600	347,097	-3.3%	-35.1%	31.9%
	Non-Protected	514,923	424,220	273,670	-17.6%	-46.9%	29.2%
	<b>Difference</b>	<b>20,176</b>	<b>93,380</b>	<b>73,428</b>			
Number of Jobs Accessible within 31-45 Minutes by Auto	Protected	1,149,609	1,169,687	629,851	1.7%	-45.2%	47.0%
	Non-Protected	994,435	863,782	475,636	-13.1%	-52.2%	39.0%
	<b>Difference</b>	<b>155,174</b>	<b>305,904</b>	<b>154,215</b>			
Number of Jobs Accessible within 0-30 Minutes by Transit	Protected	14,078	15,162	11,276	7.7%	-19.9%	27.6%
	Non-Protected	13,376	13,049	9,561	-2.4%	-28.5%	26.1%
	<b>Difference</b>	<b>702</b>	<b>2,113</b>	<b>1,714</b>			
Number of Jobs Accessible within 31-60 Minutes by Transit	Protected	222,826	316,499	187,769	42.0%	-15.7%	57.8%
	Non-Protected	177,605	251,085	137,803	41.4%	-22.4%	63.8%
	<b>Difference</b>	<b>45,221</b>	<b>65,414</b>	<b>49,966</b>			
Number of Jobs Accessible within 61-90 Minutes by Transit	Protected	488,233	817,520	439,733	67.4%	-9.9%	77.4%
	Non-Protected	404,379	705,655	303,276	74.5%	-25.0%	99.5%
	<b>Difference</b>	<b>83,854</b>	<b>111,865</b>	<b>136,456</b>			
Number of Jobs Accessible within Biking/Walking Distance (2 miles)	Protected	10,951	16,430	16,338	50.0%	49.2%	0.8%
	Non-Protected	10,101	13,278	13,247	31.4%	31.1%	0.3%
	<b>Difference</b>	<b>850</b>	<b>3,152</b>	<b>3,091</b>			
Percent of Lane Miles Congested	Protected	50%	70%	82%	39%	63%	24%
	Non-Protected	43%	59%	74%			
	<b>Difference</b>	<b>7%</b>	<b>11%</b>	<b>8%</b>			

For Percent of Lane Miles Congested, a higher percentage indicates worse congestion levels

*Performance Results for American Indian or Alaska Native Population*

Performance Measure	Population	2018 Current Network	2045 Build	2045 No-Build	Percent Change (Current vs Build)	Percent Change (Current vs No-Build)	Difference Between Current-Build and Current-No-Build
Protected Population vs Non-Protected Population	Protected	1,968,237	2,822,885	2,822,885			
	Non-Protected	5,461,486	8,423,646	8,423,646			
	<b>Totals</b>	<b>7,429,723</b>	<b>11,246,531</b>	<b>11,246,531</b>			
Number of Jobs Accessible within 0-15 Minutes by Auto	Protected	55,601	51,031	40,992	-8.2%	-26.3%	18.1%
	Non-Protected	67,535	63,220	51,711	-6.4%	-23.4%	17.0%
	<b>Difference</b>	<b>(11,935)</b>	<b>(12,189)</b>	<b>(10,719)</b>			
Number of Jobs Accessible within 16-30 Minutes by Auto	Protected	441,069	385,331	246,026	-12.6%	-44.2%	31.6%
	Non-Protected	550,514	550,514	313,759	-13.5%	-43.0%	29.6%
	<b>Difference</b>	<b>(109,455)</b>	<b>(91,122)</b>	<b>(67,733)</b>			
Number of Jobs Accessible within 31-45 Minutes by Auto	Protected	923,010	808,714	435,238	-12.4%	-52.8%	40.5%
	Non-Protected	1,089,201	1,010,656	553,914	-7.2%	-49.1%	41.9%
	<b>Difference</b>	<b>(166,190)</b>	<b>(201,942)</b>	<b>(118,676)</b>			
Number of Jobs Accessible within 0-30 Minutes by Transit	Protected	8,702	8,778	6,015	0.9%	-30.9%	31.8%
	Non-Protected	15,372	15,368	11,469	0.0%	-25.4%	25.4%
	<b>Difference</b>	<b>(6,670)</b>	<b>(6,590)</b>	<b>(5,455)</b>			
Number of Jobs Accessible within 31-60 Minutes by Transit	Protected	145,817	221,522	106,702	51.9%	-26.8%	78.7%
	Non-Protected	209,176	288,453	169,201	37.9%	-19.1%	57.06%
	<b>Difference</b>	<b>(63,358)</b>	<b>(66,931)</b>	<b>(62,499)</b>			
Number of Jobs Accessible within 61-90 Minutes by Transit	Protected	367,498	667,249	265,065	81.6%	-27.9%	109.4%
	Non-Protected	454,971	765,487	373,366	68.2%	-17.9%	86.2%
	<b>Difference</b>	<b>(87,473)</b>	<b>(98,238)</b>	<b>(108,301)</b>			
Number of Jobs Accessible within Biking/Walking Distance (2 miles)	Protected	8,233	11,001	11,000	33.6%		0.0%
	Non-Protected	11,153	15,364	15,298	37.8%	33.6%	0.6%
	<b>Difference</b>	<b>(2,919)</b>	<b>(4,362)</b>	<b>(4,298)</b>		37.2%	
Percent of Lane Miles Congested	Protected	41%	59%	75%	43%	81%	38%
	Non-Protected	46%	62%	76%	35%	66%	30%
	<b>Difference</b>	<b>-4%</b>	<b>-3%</b>	<b>-1%</b>			

For Percent of Lane Miles Congested, a higher percentage indicates worse congestion levels

*Performance Results for Asian Population*

Performance Measure	Population	2018 Current Network	2045 Build	2045 No-Build	Percent Change (Current vs Build)	Percent Change (Current vs No-Build)	Difference Between Current-Build and Current-No-Build
Protected Population vs Non-Protected Population	Protected	2,357,410	3,219,791	3,219,791			
	Non-Protected	5,072,313	8,026,740	8,026,740			
	<b>Totals</b>	<b>7,429,723</b>	<b>11,246,531</b>	<b>11,246,531</b>			
Number of Jobs Accessible within 0-15 Minutes by Auto	Protected	79,328	70,323	56,318	-11.4%	-29.0%	17.7%
	Non-Protected	57,423	56,084	46,093	-2.3%	-19.7%	17.4%
	<b>Difference</b>	<b>21,905</b>	<b>14,239</b>	<b>10,225</b>			
Number of Jobs Accessible within 16-30 Minutes by Auto	Protected	635,372	521,517	340,398	-17.9%	-46.4%	28.5%
	Non-Protected	468,607	426,330	279,252	-9.0%	-40.4%	31.4%
	<b>Difference</b>	<b>166,765</b>	<b>95,187</b>	<b>61,145</b>			
Number of Jobs Accessible within 31-45 Minutes by Auto	Protected	1,234,723	1,028,325	550,998	-16.7%	-55.4%	38.7%
	Non-Protected	957,080	932,548	513,347	-2.6%	-46.4%	43.8%
	<b>Difference</b>	<b>277,642</b>	<b>95,777</b>	<b>37,651</b>			
Number of Jobs Accessible within 0-30 Minutes by Transit	Protected	13,248	13,820	10,585	4.3%	-20.1%	24.4%
	Non-Protected	13,771	13,671	9,906	-0.7%	-28.1%	27.3%
	<b>Difference</b>	<b>(523)</b>	<b>150</b>	<b>679</b>			
Number of Jobs Accessible within 31-60 Minutes by Transit	Protected	217,054	335,634	164,548	54.6%	-24.2%	78.8%
	Non-Protected	180,929	245,988	149,088	36.0%	-17.6%	53.6%
	<b>Difference</b>	<b>36,125</b>	<b>89,645</b>	<b>15,460</b>			
Number of Jobs Accessible within 61-90 Minutes by Transit	Protected	516,638	971,914	398,548	88.1%	-22.9%	111.0%
	Non-Protected	392,368	648,133	325,177	65.2%	-17.1%	82.3%
	<b>Difference</b>	<b>124,270</b>	<b>323,781</b>	<b>73,372</b>			
Number of Jobs Accessible within Biking/Walking Distance (2 miles)	Protected	12,644	17,207	17,120	36.1%	35.4%	0.7%
	Non-Protected	9,327	13,090	13,056	40.4%	40.0%	0.4%
	<b>Difference</b>	<b>3,317</b>	<b>4,117</b>	<b>4,064</b>			
Percent of Lane Miles Congested	Protected	61%	77%	86%	25%	40%	15%
	Non-Protected	41%	58%	74%	41%	78%	37%
	<b>Difference</b>	<b>20%</b>	<b>18%</b>	<b>12%</b>			

For Percent of Lane Miles Congested, a higher percentage indicates worse congestion levels

*Performance Results for Native Hawaiian or Other Pacific Islander Population*

Performance Measure	Population	2018 Current Network	2045 Build	2045 No-Build	Percent Change (Current vs Build)	Percent Change (Current vs No-Build)	Difference Between Current-Build and Current-No-Build
Protected Population vs Non-Protected Population	Protected	547,614	758,018	758,018			
	Non-Protected	6,882,109	10,488,513	10,488,513			
	<b>Totals</b>	<b>7,429,723</b>	<b>11,246,531</b>	<b>11,246,531</b>			
Number of Jobs Accessible within 0-15 Minutes by Auto	Protected	70,437	65,022	53,487	-7.7%	-24.1%	16.4%
	Non-Protected	63,891	59,809	48,697	-6.4%	-23.8%	17.4%
	<b>Difference</b>	<b>6,545</b>	<b>5,213</b>	<b>4,789</b>			
Number of Jobs Accessible within 16-30 Minutes by Auto	Protected	550,792	502,218	331,326	-8.8%	-39.8%	31.0%
	Non-Protected	519,191	450,066	294,260	-13.3%	-43.3%	30.0%
	<b>Difference</b>	<b>31,601</b>	<b>52,152</b>	<b>37,066</b>			
Number of Jobs Accessible within 31-45 Minutes by Auto	Protected	1,066,465	1,007,947	529,529	-5.5%	-50.3%	44.9%
	Non-Protected	1,043,480	956,501	523,736	-8.3%	-49.8%	41.5%
	<b>Difference</b>	<b>22,984</b>	<b>51,446</b>	<b>5,793</b>			
Number of Jobs Accessible within 0-30 Minutes by Transit	Protected	9,862	9,651	6,234	-2.1%	-36.8%	34.7%
	Non-Protected	13,903	14,007	10,380	0.7%	-25.3%	26.1%
	<b>Difference</b>	<b>(4,041)</b>	<b>(4,356)</b>	<b>(4,146)</b>			
Number of Jobs Accessible within 31-60 Minutes by Transit	Protected	194,031	281,966	143,189	45.3%	-26.2%	71.5%
	Non-Protected	192,261	270,908	154,260	40.9%	-19.8%	60.7%
	<b>Difference</b>	<b>1,770</b>	<b>11,058</b>	<b>(11,071)</b>			
Number of Jobs Accessible within 61-90 Minutes by Transit	Protected	479,559	807,324	364,059	68.3%	-24.1%	92.4%
	Non-Protected	427,998	736,023	344,890	72.0%	-19.4%	91.4%
	<b>Difference</b>	<b>51,561</b>	<b>71,301</b>	<b>19,169</b>			
Number of Jobs Accessible within Biking/Walking Distance (2 miles)	Protected	11,672	14,862	14,824	27.3%	27.0%	0.3%
	Non-Protected	10,276	14,226	14,175	38.4%	37.9%	0.5%
	<b>Difference</b>	<b>1,396</b>	<b>636</b>	<b>649</b>			
Percent of Lane Miles Congested	Protected	54%	71%	85%	32%	57%	25%
	Non-Protected	44%	61%	75%	38%	70%	32%
	<b>Difference</b>	<b>10%</b>	<b>10%</b>	<b>10%</b>			

For Percent of Lane Miles Congested, a higher percentage indicates worse congestion levels

*Performance Results for Hispanic or Latino Population*

Performance Measure	Population	2018 Current Network	2045 Build	2045 No-Build	Percent Change (Current vs Build)	Percent Change (Current vs No-Build)	Difference Between Current-Build and Current-No-Build
Protected Population vs Non-Protected Population	Protected	2,602,318	3,477,104	3,477,104			
	Non-Protected	4,827,405	7,769,427	7,769,427			
	<b>Totals</b>	<b>7,429,723</b>	<b>11,246,531</b>	<b>11,246,531</b>			
Number of Jobs Accessible within 0-15 Minutes by Auto	Protected	76,088	81,544	67,990	7.2%	-10.6%	17.8%
	Non-Protected	58,059	50,591	40,531	-12.9%	-30.2%	17.3%
	<b>Difference</b>	<b>18,029</b>	<b>30,953</b>	<b>27,459</b>			
Number of Jobs Accessible within 16-30 Minutes by Auto	Protected	643,826	635,897	427,962	-1.2%	-33.5%	32.3%
	Non-Protected	455,589	371,989	238,039	-18.4%	-47.8%	29.4%
	<b>Difference</b>	<b>188,236</b>	<b>263,909</b>	<b>189,923</b>			
Number of Jobs Accessible within 31-45 Minutes by Auto	Protected	1,276,111	1,451,158	776,700	13.7%	-39.1%	52.9%
	Non-Protected	920,683	740,143	411,090	-19.6%	-55.3%	35.7%
	<b>Difference</b>	<b>355,428</b>	<b>711,015</b>	<b>365,610</b>			
Number of Jobs Accessible within 0-30 Minutes by Transit	Protected	16,313	18,675	12,771	14.5%	-21.7%	36.2%
	Non-Protected	12,146	11,493	8,905	-5.4%	-26.7%	21.3%
	<b>Difference</b>	<b>4,168</b>	<b>7,181</b>	<b>3,866</b>			
Number of Jobs Accessible within 31-60 Minutes by Transit	Protected	276,267	379,662	255,406	37.4%	-7.6%	45.0%
	Non-Protected	147,176	223,315	107,913	51.7%	-26.7%	78.4%
	<b>Difference</b>	<b>129,091</b>	<b>156,347</b>	<b>147,493</b>			
Number of Jobs Accessible within 61-90 Minutes by Transit	Protected	549,635	898,822	556,810	63.5%	1.3%	62.2%
	Non-Protected	368,275	670,122	251,919	82.0%	-31.6%	113.6%
	<b>Difference</b>	<b>181,360</b>	<b>228,700</b>	<b>304,891</b>			
Number of Jobs Accessible within Biking/Walking Distance (2 miles)	Protected	12,775	18,547	18,513	45.2%	44.9%	0.3%
	Non-Protected	9,088	12,354	12,298	35.9%	35.3%	0.6%
	<b>Difference</b>	<b>3,687</b>	<b>6,193</b>	<b>6,215</b>			
Percent of Lane Miles Congested	Protected	48%	65%	76%	36%	60%	24%
	Non-Protected	44%	60%	76%	38%	72%	35%
	<b>Difference</b>	<b>4%</b>	<b>4%</b>	<b>0%</b>			

For Percent of Lane Miles Congested, a higher percentage indicates worse congestion levels

*Performance Results for Some Other Race Population*

Performance Measure	Population	2018 Current Network	2045 Build	2045 No-Build	Percent Change (Current vs Build)	Percent Change (Current vs No-Build)	Difference Between Current-Build and Current-No-Build
Protected Population vs Non-Protected Population	Protected	2,201,169	2,996,573	2,996,573			
	Non-Protected	5,228,554	8,249,958	8,249,958			
	<b>Totals</b>	<b>7,429,723</b>	<b>11,246,531</b>	<b>11,246,531</b>			
Number of Jobs Accessible within 0-15 Minutes by Auto	Protected	75,934	77,146	63,680	1.6%	-16.1%	17.7%
	Non-Protected	59,507	53,991	43,696	-9.3%	-26.6%	17.3%
	<b>Difference</b>	<b>16,427</b>	<b>23,155</b>	<b>19,984</b>			
Number of Jobs Accessible within 16-30 Minutes by Auto	Protected	684,476	646,655	435,446	-5.5%	-36.4%	30.9%
	Non-Protected	452,918	383,453	246,383	-15.3%	-45.6%	30.3%
	<b>Difference</b>	<b>231,558</b>	<b>263,202</b>	<b>189,063</b>			
Number of Jobs Accessible within 31-45 Minutes by Auto	Protected	1,235,989	1,398,123	762,596	13.1%	-38.3%	51.4%
	Non-Protected	964,844	800,821	437,509	-17.0%	-54.7%	37.7%
	<b>Difference</b>	<b>271,145</b>	<b>597,302</b>	<b>325,088</b>			
Number of Jobs Accessible within 0-30 Minutes by Transit	Protected	17,102	18,631	12,675	8.9%	-25.9%	34.8%
	Non-Protected	12,133	11,927	9,165	-1.7%	-24.5%	22.8%
	<b>Difference</b>	<b>4,968</b>	<b>6,704</b>	<b>3,510</b>			
Number of Jobs Accessible within 31-60 Minutes by Transit	Protected	282,934	378,792	258,344	33.9%	-8.7%	42.6%
	Non-Protected	154,274	232,738	115,437	50.9%	-25.2%	76.0%
	<b>Difference</b>	<b>128,660</b>	<b>146,054</b>	<b>152,907</b>			
Number of Jobs Accessible within 61-90 Minutes by Transit	Protected	550,351	891,755	555,518	62.0%	0.9%	61.1%
	Non-Protected	381,889	686,009	270,147	79.6%	-29.3%	108.9%
	<b>Difference</b>	<b>168,462</b>	<b>205,746</b>	<b>285,372</b>			
Number of Jobs Accessible within Biking/Walking Distance (2 miles)	Protected	13,598	19,092	19,067	40.4%	40.2%	0.2%
	Non-Protected	9,024	12,517	12,458	38.7%	38.1%	0.6%
	<b>Difference</b>	<b>4,574</b>	<b>6,576</b>	<b>6,608</b>			
Percent of Lane Miles Congested	Protected	46%	64%	76%	39%	63%	24%
	Non-Protected	44%	61%	76%	37%	71%	34%
	<b>Difference</b>	<b>2%</b>	<b>4%</b>	<b>0%</b>			

For Percent of Lane Miles Congested, a higher percentage indicates worse congestion levels

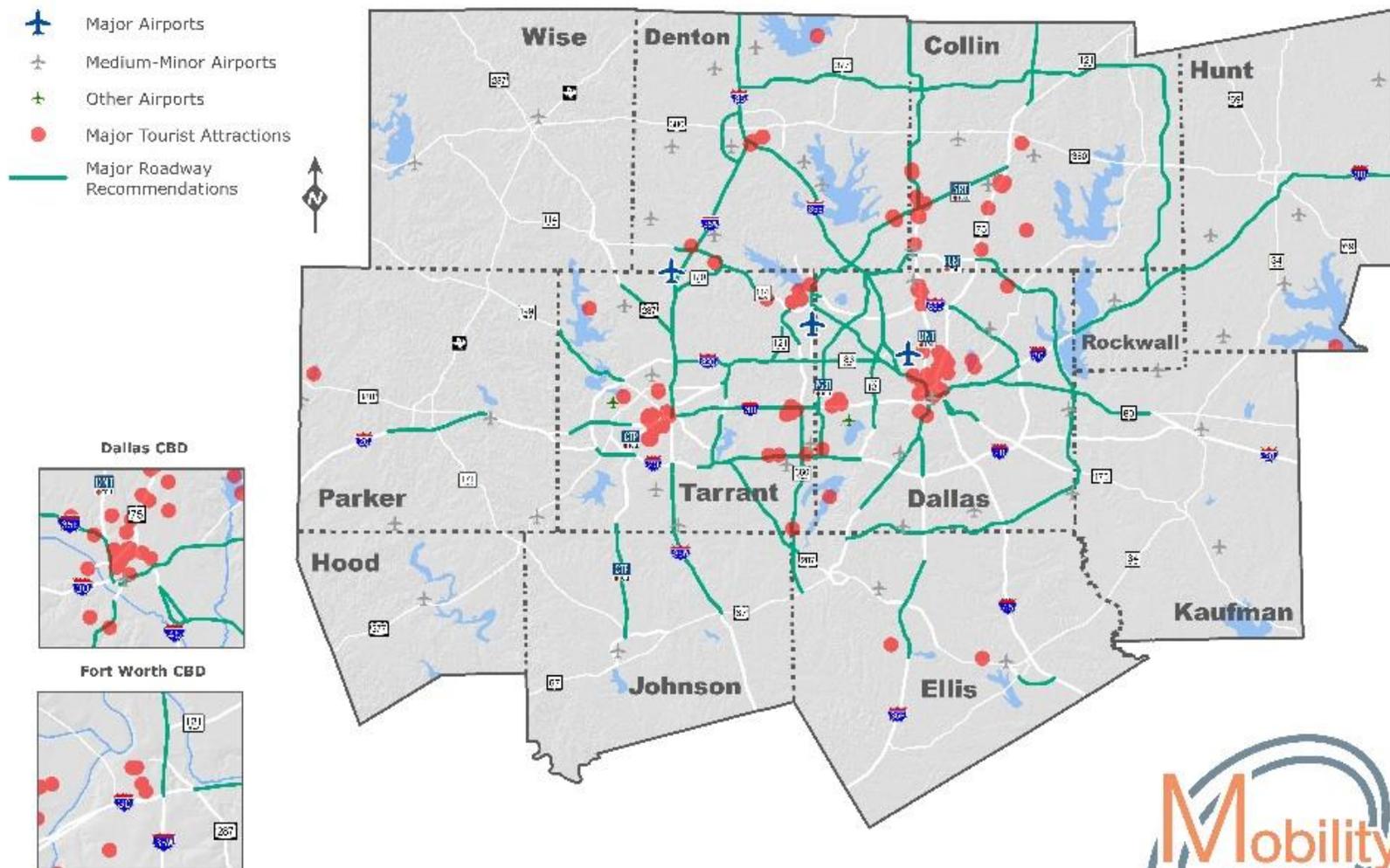
*Performance Results for Two or More Races Population*

Performance Measure	Population	2018 Current Network	2045 Build	2045 No-Build	Percent Change (Current vs Build)	Percent Change (Current vs No-Build)	Difference Between Current-Build and Current-No-Build
Protected Population vs Non-Protected Population	Protected	2,979,652	4,324,434	4,324,434			
	Non-Protected	4,450,071	6,922,097	6,922,097			
	<b>Totals</b>	<b>7,429,723</b>	<b>11,246,531</b>	<b>11,246,531</b>			
Number of Jobs Accessible within 0-15 Minutes by Auto	Protected	68,277	61,396	49,472	-10.1%	-27.5%	17.5%
	Non-Protected	61,760	59,389	48,733	-3.8%	-21.1%	17.2%
	<b>Difference</b>	<b>6,517</b>	<b>2,007</b>	<b>733</b>			
Number of Jobs Accessible within 16-30 Minutes by Auto	Protected	543,927	449,502	294,050	-17.4%	-45.9%	28.6%
	Non-Protected	506,518	456,130	298,450	-9.9%	-41.1%	31.1%
	<b>Difference</b>	<b>37,409</b>	<b>(6,628)</b>	<b>(4,400)</b>			
Number of Jobs Accessible within 31-45 Minutes by Auto	Protected	1,087,607	934,909	502,263	-14.0%	-53.8%	39.8%
	Non-Protected	1,016,763	975,623	537,785	-4.0%	-47.1%	43.1%
	<b>Difference</b>	<b>70,844</b>	<b>(40,714)</b>	<b>(35,522)</b>			
Number of Jobs Accessible within 0-30 Minutes by Transit	Protected	13,108	13,250	10,189	1.1%	-22.3%	23.3%
	Non-Protected	13,938	14,003	10,045	0.5%	-27.9%	28.4%
	<b>Difference</b>	<b>(830)</b>	<b>(754)</b>	<b>145</b>			
Number of Jobs Accessible within 31-60 Minutes by Transit	Protected	191,506	274,235	146,822	43.2%	-23.3%	66.5%
	Non-Protected	192,985	270,040	157,694	39.9%	-18.3%	58.2%
	<b>Difference</b>	<b>(1,479)</b>	<b>4,195</b>	<b>(10,872)</b>			
Number of Jobs Accessible within 61-90 Minutes by Transit	Protected	437,938	766,059	342,200	74.9%	-21.9%	96.8%
	Non-Protected	427,687	725,067	348,670	69.5%	-18.5%	88.0%
	<b>Difference</b>	<b>10,251</b>	<b>40,993</b>	<b>(6,470)</b>			
Number of Jobs Accessible within Biking/Walking Distance (2 miles)	Protected	11,816	15,530	15,435	31.4%	30.6%	0.8%
	Non-Protected	9,418	13,481	13,460	43.1%	42.9%	0.2%
	<b>Difference</b>	<b>2,398</b>	<b>2,050</b>	<b>1,975</b>			
Percent of Lane Miles Congested	Protected	47%	63%	77%	36%	65%	29%
	Non-Protected	44%	61%	75%	38%	71%	33%
	<b>Difference</b>	<b>3%</b>	<b>3%</b>	<b>2%</b>			

For Percent of Lane Miles Congested, a higher percentage indicates worse congestion levels

## Travel and Tourism

# Major Tourist Destinations in Dallas-Fort Worth



Facility recommendations indicate transportation need. Corridor specific alignment, design, and operational characteristics will be determined through ongoing project development.

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## Public Participation Requirements

Elements of the Public Participation Plan that specifically respond to federal requirements:

- Notices of public input opportunities, including public meetings, are sent to newspapers to ensure regional coverage. Translated notices are also sent to non-English newspapers. Notification is sent to local libraries, city halls, county court houses, and chambers of commerce (including minority chambers). The North Central Texas Council of Governments will maintain a comprehensive contact list of individuals and organizations that wish to be notified of all public input opportunities, as well as stakeholders outlined in federal requirements.
- Information is disseminated through North Central Texas Council of Governments publications, reports, public meetings, and other outreach events, the North Central Texas Council of Governments website, local media sources, and open meetings.
- To the maximum extent possible, the North Central Texas Council of Governments will employ visualization techniques such as maps, charts, graphs, photos, and computer simulation in its public involvement activities.
- Reports, plans, publications, recent presentations, and other information are available on the North Central Texas Council of Governments website. Public comments may also be submitted on the North Central Texas Council of Governments Transportation Department website and via email. Interested parties may subscribe to receive topic-specific email correspondence. Additional web-related communication tools are evaluated continuously for implementation.
- Public meetings are held in diverse locations throughout the region, accessible to individuals with disabilities, preferably near transit lines or routes, at both day and evening times. Public meeting materials and summaries are archived online and hard copies can be mailed upon request.

- Public meetings will be held during development of the Transportation Improvement Program, Metropolitan Transportation Plan, and Unified Planning Work Program. Online public input opportunities also exist. All public comments will be reviewed and considered by the Regional Transportation Council and standing technical, policy, and strategic committees. Public comments received on the Transportation Improvement Program and the Metropolitan Transportation Plan shall be included in documentation of the Transportation Improvement Program and the Metropolitan Transportation Plan or via reference to Transportation Conformity documentation.
- An additional opportunity for public comment will be provided if the final Transportation Improvement Program or Metropolitan Transportation Plan significantly differs from the draft made available for public review and public comment and raises new material issues that interested parties could not reasonably have foreseen from the public involvement efforts.
- When possible, public meetings will be coordinated with the Texas Department of Transportation.
- The North Central Texas Council of Governments regularly reviews its Transportation Public Participation Plan. If modified in a more restrictive fashion,<sup>8</sup> a 45-day comment period will be held following the public meetings at which proposed revisions are discussed.

These measures fulfill federal regulations outlined in 23 CFR §450.316 concerning interested parties, participation, and consultation:

(a) The MPO shall develop and use a documented participation plan that defines a process for providing individuals, affected public agencies, representatives of public transportation employees, public ports, freight shippers, providers of freight transportation services, private providers of transportation (including intercity bus operators, employer-based commuting programs, such as carpool program, vanpool program, transit benefit program, parking cash-out program, shuttle program, or telework program),

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<sup>8</sup> A restrictive modification is one that would remove an avenue or channel for public comment; for example, reducing the number of public meetings.

representatives of users of public transportation, representatives of users of pedestrian walkways and bicycle transportation facilities, representatives of the disabled, and other interested parties with reasonable opportunities to be involved in the metropolitan transportation planning process.

- (1) The MPO shall develop the participation plan in consultation with all interested parties and shall, at a minimum, describe explicit procedures, strategies, and desired outcomes for:
  - (i) Providing adequate public notice of public participation activities and time for public review and comment at key decision points, including a reasonable opportunity to comment on the proposed metropolitan transportation plan and the TIP;
  - (ii) Providing timely notice and reasonable access to information about transportation issues and processes;
  - (iii) Employing visualization techniques to describe metropolitan transportation plans and TIPs;
  - (iv) Making public information (technical information and meeting notices) available in electronically accessible formats and means, such as the World Wide Web;
  - (v) Holding any public meetings at convenient and accessible locations and times;
  - (vi) Demonstrating explicit consideration and response to public input received during the development of the metropolitan transportation plan and the TIP;
  - (vii) Seeking out and considering the needs of those traditionally underserved by existing transportation systems, such as low-income and minority households, who may face challenges accessing employment and other services;
  - (viii) Providing an additional opportunity for public comment, if the final metropolitan transportation plan or TIP differs significantly from the version that was made available for public comment by the MPO and raises new material issues that interested parties could not reasonably have foreseen from the public involvement efforts;

- (ix) Coordinating with the statewide transportation planning public involvement and consultation processes under subpart B of this part; and
- (x) Periodically reviewing the effectiveness of the procedures and strategies contained in the participation plan to ensure a full and open participation process.

(2) When significant written and oral comments are received on the draft metropolitan transportation plan and TIP (including the financial plans) as a result of the participation process in this section or the interagency consultation process required under the EPA transportation conformity regulations (40 CFR part 93, subpart A), a summary, analysis, and report on the disposition of comments shall be made as part of the final metropolitan transportation plan and TIP.

(3) A minimum public comment period of 45 calendar days shall be provided before the initial or revised participation plan is adopted by the MPO. Copies of the approved participation plan shall be provided to the FHWA and the FTA for informational purposes and shall be posted on the World Wide Web, to the maximum extent practicable.

(b) In developing metropolitan transportation plans and TIPs, the MPO should consult with agencies and officials responsible for other planning activities within the MPA that are affected by transportation (including State and local planned growth, economic development, tourism, natural disaster risk reduction, environmental protection, airport operations, or freight movements) or coordinate its planning process (to the maximum extent practicable) with such planning activities. In addition, the MPO(s) shall develop the metropolitan transportation plans and TIPs with due consideration of other related planning activities within the metropolitan area, and the process shall provide for the design and delivery of transportation services within the area that are provided by:

- (1) Recipients of assistance under title 49 U.S.C. Chapter 53;
- (2) Governmental agencies and non-profit organizations (including representatives of the agencies and organizations) that receive Federal assistance from a source other than the U.S. Department of Transportation to provide non-emergency transportation services; and

(3) Recipients of assistance under 23 U.S.C. 201-204.

(c) When the MPA includes Indian Tribal lands, the MPO(s) shall appropriately involve the Indian Tribal government(s) in the development of the metropolitan transportation plan and the TIP.

(d) When the MPA includes Federal public lands, the MPO(s) shall appropriately involve the Federal land management agencies in the development of the metropolitan transportation plan and the TIP.

(e) MPOs shall, to the extent practicable, develop a documented process(es) that outlines roles, responsibilities, and key decision points for consulting with other governments and agencies, as defined in paragraphs (b), (c), and (d) of this section, which may be included in the agreement(s) developed under §450.314.

### NCTCOG Transportation Department Publications

The following regular publications are available online and in print:

Progress North Texas (annual report)

Mobility Matters (semiannual newsletter)

Local Motion (monthly newsletter)

Fact sheets (continuing series)

Regional Mobility Initiatives (series of reports)

Charting the Future: A Guide to Transportation Planning and Programming in the Dallas-Fort Worth Metropolitan Area (citizen's guide published in English and Spanish)

Other technical reports and summaries are produced and distributed as needed.

## Mobility 2045 Questionnaire Responses

1. How often do you use the following modes of transportation when you leave your home?

	Always	Frequently	Sometimes	Rarely	Never	Not Sure	Total Votes
Drive alone	24.3%	60.0%	10.2%	2.9%	2.6%	0.1%	2,896
Carpool or vanpool (more than just yourself in the car)	1.7%	16.6%	27.5%	22.9%	30.9%	0.5%	2,717
Rideshare apps or taxi service	0.3%	4.0%	13.6%	28.7%	52.8%	0.6%	2,704
Bus	0.6%	2.2%	3.6%	12.9%	80.0%	0.6%	2,686
Train	0.8%	3.2%	11.6%	27.2%	56.4%	0.7%	2,709
Bike	1.2%	8.9%	13.2%	16.3%	60.0%	0.5%	2,726
Walk	1.3%	12.6%	28.5%	25.6%	31.7%	0.3%	2,731

2. Do you have any difficulty traveling to the following destinations or activities?

Check all that apply.

Work	34.7%	(1,016)
Medical care	15.9%	(464)
Shopping	23.8%	(697)
Recreation/Entertainment	28.1%	(823)
It is not difficult to reach my destinations	44.8%	(1,311)
Other ( <i>please specify</i> )	11.1%	(324)

3. What are the reasons it's difficult to reach your day-to-day destinations?

Check all that apply.

Cost of transportation	7.5%	(219)
No car available	2.3%	(66)
Traffic congestion	58.9%	(1,725)
Transit is not available	24.3%	(712)
Transit takes a long time	18.9%	(554)
Lack of bicycle facilities	15.5%	(454)
Lack of sidewalks	18.0%	(526)
Nothing makes it difficult to reach my destinations.	28.1%	(822)

4. Which of the following strategies do you think are important for improving transportation?

	Very Important	Somewhat Important	Not Sure	Somewhat Unimportant	Not important at all	Total Votes
Maintaining and operating the existing roadway system efficiently	77.3%	18.5%	1.9%	1.5%	10.8%	2,886
Reducing single-occupancy trips/increasing auto occupancy	20.4%	35.7%	18.2%	13.8%	12.0%	2,822
Supporting the use and development of transit, such as bus and rail	56.7%	25.5%	6.6%	5.8%	5.4%	2,877
Increasing the number of lanes for cars on roadways	38.3%	30.3%	9.9%	10.4%	11.0%	2,848
Increasing bicycle facilities and sidewalks	38.2%	28.2%	11.0%	12.7%	10.0%	2,840

5. How often do you use the following technologies when you travel?

	Always	Frequently	Sometimes	Rarely	Never	Not Sure	Total Votes
Navigation apps like Google Maps, Waze, CoPilot, or others	25.60%	47.89%	19.90%	3.97%	3.42%	0.03%	2,894
Electronic messaging signs located on highways	15.55%	31.09%	33.67%	14.08%	5.58%	0.87%	2,869
Real-time bus or train arrival information	4.13%	6.78%	13.67%	22.21%	52.15%	1.91%	2,832
News reports on road construction or road closures	11.65%	27.35%	30.83%	19.50%	11.13%	0.38%	2,867
Ridesharing apps/taxi services	1.45%	5.66%	16.38%	27.46%	48.83%	1.03%	2,826

**Mobility 2045 Public Meeting Locations**

Date	Event	Location	Items
April 28, 2017	Surface Transportation Technical Committee	NCTCOG Office, Arlington	Presentation
May 9, 2017		Richardson Civic Center	Public Meeting
May, 10, 2017		NCTCOG Office, Arlington	Public Meeting
May 11, 2017	Regional Transportation Council	NCTCOG Office, Arlington	Presentation
May 15, 2017		North Richland Hills Library	Public Meeting
May 26, 2017	Surface Transportation Technical Committee	NCTCOG Office, Arlington	Presentation
August 24, 2017	University of North Texas Mean Green Fling	Denton	Community Event, Transportation Engagement Survey
August 25, 2017	Surface Transportation Technical Committee	NCTCOG Office, Arlington	Presentation, Transportation Engagement Survey
September 11, 2017	Splash Dayz Water Park & Conference Center	White Settlement	Transportation Engagement Survey (available at public meeting)
September 13, 2017		NCTCOG Office, Arlington	Transportation Engagement Survey (available at public meeting)
September 14, 2017	Regional Transportation Council	NCTCOG Office, Arlington	Presentation, Transportation Engagement Survey
September 18, 2017		Lewisville Public Library	Transportation Engagement Survey (available at public meeting)
September 22, 2017	Surface Transportation Technical Committee	NCTCOG Office, Arlington	Presentation
October 10, 2017		Ella Mae Shamblee Public Library, Fort Worth	Public Meeting
October 11, 2017		NCTCOG Office, Arlington	Public Meeting
October 12, 2017	Regional Transportation Council	NCTCOG Office, Arlington	Presentation
October 16, 2017		Grand Central Library, Garland	Public Meeting
October 27, 2017	Surface Transportation Technical Committee	NCTCOG Office, Arlington	Presentation
November 9, 2017	Regional Transportation Council	NCTCOG Office, Arlington	Presentation
December 8, 2017	Surface Transportation Technical Committee	NCTCOG Office, Arlington	Presentation
December 14, 2017	Regional Transportation Council	NCTCOG Office, Arlington	Presentation

**Mobility 2045: Committee, Transportation Partner, and Public Comments**

*Oral Comments Received at April 2018 Comment Period*

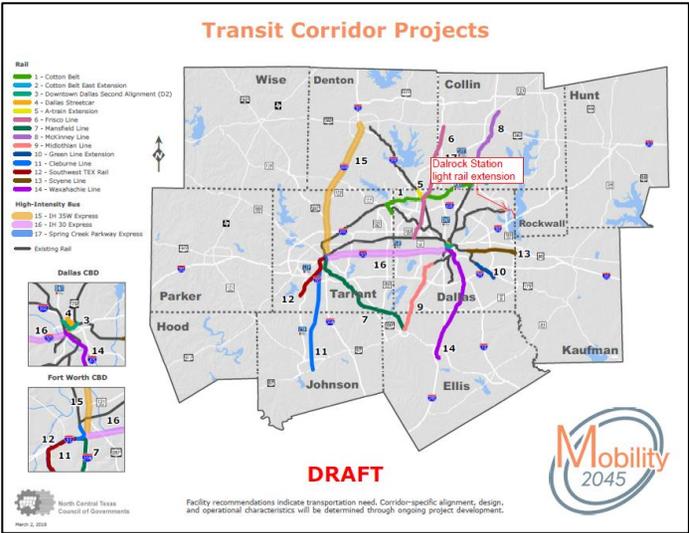
Respondent	Topic	Comment
Frances Hiner, Citizen (Garland)	LBJ East	I live four doors from LBJ East. I was there when it opened. We have people who have nowhere to go on LBJ East. There is not a day we are not in red. There isn't a day without an accident. You have been telling us for 30 we're the next project you're going to work on and now you're pushing us back again. You have been working on IH 35 since 1967. We want our road repaired.
Gail Belton, Citizen (Garland)	Southern Gateway and LBJ East	Is the Southern Gateway a public/private partnership? Is LBJ East an inactive project?
Kristy Myers, LBJ Now (Garland)	LBJ East	I work with the group called LBJ Now. We are trying to fight on your side to give it attention and support.
Charlie Giddens, Citizen (Garland)	Expansion of DART service	What are we doing to expand DART service to cities like Wylie?
Camille White, Citizen (Garland)	Funding for LBJ East	How much funding is being used for LBJ East?
	High Five	When heading north on IH 35 and exiting the High Five, it is always congested. It is very confusing.
Howard Tubre, Citizen (North Richland Hills)	Transportation's Impact on Water Resources	I live in Haltom City. With continued development in this area, how does transportation planning affect water resources?
Bob Prejean, Citizen (North Richland Hills)	IH-30	Our infrastructure was built at a time when they didn't really care about impacts. One of the recommendations in CityMAP was to reroute IH 30. We'd like to see IH-30 rerouted to another location to help preserve water.
Councilwoman Nicole Raphiel, City of Desoto (North Richland Hills)	STAR Transit	We recently expanded STAR Transit service in our area. I didn't see that in the Mobility 2045 Plan.
Thomas Hendricks, Citizen (Arlington)	DART Green Line	I represent Cleburne, and an item on our wish list is an extension of the DART Green Line. It's included in the plan, but 25 years is a long way out. We have near-term objectives in mind. I would like to meet with someone so we can address these initiatives and make sure we understand the impact an extension would have.
Kathryn Kososki, Citizen (Arlington)	Transit in Collin County	Have any routes changes for the bus and DART system in Collin County?
Chad Edwards (DART)	Transportation Network Companies in Mobility 2045	What programs or policies have been developed in Mobility 2045 to address the Transportation Network Companies (TNC)?

*Oral Comments Received at May 2018 Comment Period*

Respondent	Topic	Comment
Charles Edmonds, Trinity Metro Board of Directors (Fort Worth)	Strategy to encourage transit use	Do you all have a specific strategy to encourage people to utilize public transit? We just started an initiative with the Tarrant County College (TCC) campuses. Students will be able to go from campus to campus using a public transportation pass. There might also be something we can do to help raise awareness.
James Watson, Citizen (Fort Worth)	Light rail	Is anyone advocating the use of rail?
Andre McEwing, Tarrant Transit Alliance (Fort Worth)	Technology's impact on transit funding	Would transit funding be impacted by innovative technology?
Mary German, Arlington Convention and Visitors Bureau (Arlington)	Advancement of technology	How does the advancement of technology impact planning both today and in the future?
Sarah Depew, Citizen (Richardson)	Technology's impact on the plan	How does innovative technology impact the plan?
Nancy Jakowitsch, Citizen (Fort Worth)		How are multimodal and land-use initiatives being factored into the plan?
		Do you factor in current behavior?
		If we're basing the plan on current behavior, will we be able to make progress?
Debbie Fisher, Lucas City Council (Richardson)	Transportation impacts on City of Lucas	I am a councilmember for the City of Lucas. We are a low-density population and yet all of the plans have created a congestion bottleneck our citizens are paying for, and it's a big concern. We're not a wealthy city, and the arterial plans are impossible to attain. We aren't the ones adding to the congestion.
Alex Gonzalez, Creekside at Lake Highlands Homeowners Association (Richardson)	Status of LBJ East project	What is the latest news on the LBJ East project?
Chris Guldi, Sierra Club (Richardson)	Attainment in Rockwall County	How did Rockwall County manage to be in attainment?
	Source of ozone formation	I noticed in your presentation you only addressed the on-road vehicle emission source.
	Emission budget	Who sets your emission budget?

*Written Comments Submitted by Website, Email, and Social Media*

Email	Comment	Response
Dan Mingea	<p>In reviewing past COG presentations, it was previously said by County Commish "no new taxes...wink, wink." Of course, we knew this to be untrue. As I pointed out in one of your meetings, COG said we would need 18 cents in new taxes just to maintain status quo. Now, I see COG proposes to enhance revenue by increase gas tax at the state and federal levels, as well as increases in registration "fees".</p> <p><a href="http://nctcog.org/trans/mtp/2045/documents/M2045RTC3.08.2018.pdf">http://nctcog.org/trans/mtp/2045/documents/M2045RTC3.08.2018.pdf</a> COG wants to put roads through my neighborhood, "acquire" my land, and raise my costs (not taxes?), let me pay the bill! Just say NO!</p>	
Michael Veale	<p>Following the link, I was surprised to see only maps and lists of projects as the content of Mobility 2045. The red text (below) from the graphic you included in your email manages expectations that the plan "defines a long-term vision" - Mobility 2045: Metropolitan Transportation Plan for North Central Texas ...Mobility 2045 will define a long-term vision for the region's transportation system... Will <u>and</u> when will NCTCOG be pushing all the appropriate and necessary context that creates the rationale for the "recommended maps and projects"? Without that, how that the recommendations be judged/evaluated by the public? All I found were a number of presentations. I checked numerous other COG sites and discovered all have significant documentation that drove their recommendations.</p>	
Karl Woods	<p><b>Dear Madam or Sir:</b></p> <p>I am selling my farm property located in Royse City, Texas, just 31-miles east of downtown Dallas on Interstate-30 East.</p> <p>My attorney has asked me to contact your transportation experts to determine whether or not any <b>current-in progress transportation/construction projects</b> are happening <b>NOW</b> for the Interstate-30 transportation needs of the Royse City area travelling from Dallas through Royse City to Commerce, Texas.</p> <p>Also, are there any <b>immediate</b> transportation/construction improvement plans that are proposed where construction will begin soon that will improve the Interstate-30 transportation needs of the Royse City area travelling from Dallas through Royse City to Commerce, Texas.</p> <p>Specifically, are there any "just-completed" projects now open that will improve the Interstate-30 transportation corridor from Dallas through</p>	

Email	Comment	Response
	<p>Rockwall and Roys City to Commerce, Texas and beyond?</p> <p>For example, is there a eight-lane (that is four lanes in each direction) proposed construction and expansion projects for a Super-Interstate-Highway from Dallas, along I-30, to Commerce, TX, through Rockwall, Roys City, and Greenville?</p>	
<p>Shawn Poe, P.E., CFM, Director of Public Works, City of Rowlett</p>	<p>Hello,</p> <p>There are several revisions Rowlett would like considered for this document. What is the deadline for submitting the requests?</p>	
<p>Shawn Poe, P.E., CFM, Director of Public Works, City of Rowlett</p>	<p>Hello,</p> <p>Attached are comments related to the 2045 Mobility Plan for consideration to be included in the proposed plan. I apologize for the late response but had to gather input from staff and the process took longer than expected. Sarah Chadderdon at the NCTCOG already informed me the DART rail extension in Dalrock would not be considered for this draft but I was directed to submit the comments anyhow. Let me know if you have any questions.</p>  <p><b>Transit Corridor Projects</b></p> <p><b>Rail</b></p> <ul style="list-style-type: none"> <li>1 - Cotton Belt</li> <li>2 - Cotton Belt East Extension</li> <li>3 - Downtown Dallas Second Alignment (D2)</li> <li>4 - Dallas Streetcar</li> <li>5 - Arapaho Extension</li> <li>6 - Frisco Line</li> <li>7 - Mansfield Line</li> <li>8 - Muckley Line</li> <li>9 - Midfield Line</li> <li>10 - Green Line Extension</li> <li>11 - Cleburne Line</li> <li>12 - Southwest TEX Rail</li> <li>13 - Skyline Line</li> <li>14 - Mesquite Line</li> </ul> <p><b>High-Intensity Bus</b></p> <ul style="list-style-type: none"> <li>15 - IH 30W Express</li> <li>16 - IH 20 Express</li> <li>17 - Spring Creek Parkway Express</li> </ul> <p><b>Existing Rail</b></p> <p><b>DRAFT</b></p> <p>North Central Texas Council of Governments  <small>Map 3.2018</small></p> <p>Facility recommendations indicate transportation need. Corridor-specific alignment, design, and operational characteristics will be determined through ongoing project development.</p>	

Email	Comment	Response																																																																																																																																																																																																																													
	<p><b>Transit Projects Listing</b></p> <table border="1"> <thead> <tr> <th rowspan="2">Corridor ID</th> <th rowspan="2">MTP ID</th> <th rowspan="2">Corridor</th> <th rowspan="2">From</th> <th rowspan="2">To</th> <th rowspan="2">Estimated Length (miles)</th> <th rowspan="2">Region</th> <th rowspan="2">Agency</th> <th rowspan="2">Mode</th> <th rowspan="2">Status</th> <th colspan="5">Connectivity Network Year *</th> <th rowspan="2">Recommendation</th> <th rowspan="2">Project Type</th> <th rowspan="2">Capital Cost (\$M) (FY)</th> </tr> <tr> <th>2018</th> <th>2020</th> <th>2030</th> <th>2037</th> <th>2045</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>TR-12314.0</td> <td>Cotton Belt</td> <td>UPRRA Terminal A/B</td> <td>Dalrock</td> <td>26</td> <td>East</td> <td>DART</td> <td>Regional Rail</td> <td>Programmed</td> <td>N</td> <td>N</td> <td>Y</td> <td>Y</td> <td>Y</td> <td>DART</td> <td>New Corridor</td> <td>\$1,100</td> </tr> <tr> <td>2</td> <td></td> <td>Cotton Belt East Extension</td> <td>Dalrock</td> <td>Wylie</td> <td>9</td> <td>East</td> <td>East-Other</td> <td>Regional Rail</td> <td>Future</td> <td>N</td> <td>N</td> <td>N</td> <td>N</td> <td>Y</td> <td>NCTCOG</td> <td>New Corridor</td> <td>\$908</td> </tr> <tr> <td>3</td> <td>TR-12339.1</td> <td>Downtown Dallas 2nd Alignment (D2)</td> <td>Victory Station</td> <td>Deep Ellum</td> <td>2.4</td> <td>East</td> <td>DART</td> <td>Light Rail</td> <td>Programmed</td> <td>N</td> <td>N</td> <td>Y</td> <td>Y</td> <td>Y</td> <td>DART</td> <td>New Corridor</td> <td>\$1,300</td> </tr> <tr> <td>4</td> <td>TR-12351.1</td> <td>Dallas Streetcar Corridor (L4)</td> <td>Urban Circulator/Neckline / Future Trolley</td> <td>Union Station</td> <td>1.3</td> <td>East</td> <td>East-Other</td> <td>Streetcar</td> <td>Programmed</td> <td>N</td> <td>N</td> <td>Y</td> <td>Y</td> <td>Y</td> <td>DART</td> <td>New Corridor</td> <td>\$81</td> </tr> <tr> <td>5</td> <td>TR-12396.1</td> <td>A-Train</td> <td>Trinity Mills</td> <td>East Line (Dumbarton)</td> <td>2</td> <td>East</td> <td>DCTA</td> <td>Regional Rail</td> <td>Future</td> <td>N</td> <td>N</td> <td>N</td> <td>Y</td> <td>Y</td> <td>DCTA</td> <td>Extension of Line</td> <td>\$115</td> </tr> <tr> <td>6</td> <td>TR-12312.0</td> <td>Prisco Line</td> <td>South Irving Transit Center</td> <td>Prisco</td> <td>29</td> <td>East</td> <td>East-Other</td> <td>Regional Rail</td> <td>Future</td> <td>N</td> <td>N</td> <td>N</td> <td>Y</td> <td>Y</td> <td>RRC</td> <td>New Corridor</td> <td>\$1,371</td> </tr> <tr> <td>7</td> <td>TR-12328.0</td> <td>Marshall Line</td> <td>Midlothian</td> <td>Fort Worth ITC</td> <td>30</td> <td>West</td> <td>West-Other</td> <td>Regional Rail</td> <td>Future</td> <td>N</td> <td>N</td> <td>N</td> <td>Y</td> <td>Y</td> <td>NCTCOG</td> <td>New Corridor</td> <td>\$1,780</td> </tr> <tr> <td>8</td> <td>TR-12390.1</td> <td>McKinney Line</td> <td>Parker Road Station (Phase)</td> <td>McKinney North</td> <td>18</td> <td>East</td> <td>East-Other</td> <td>Regional Rail</td> <td>Future</td> <td>N</td> <td>N</td> <td>N</td> <td>Y</td> <td>Y</td> <td>RRC</td> <td>New Corridor</td> <td>\$1,817</td> </tr> <tr> <td>9</td> <td>TR-12336.0</td> <td>Midlothian Line</td> <td>Westmoreland</td> <td>Midlothian Central</td> <td>18</td> <td>East</td> <td>East-Other</td> <td>Regional Rail</td> <td>Future</td> <td>N</td> <td>N</td> <td>N</td> <td>Y</td> <td>Y</td> <td>RRC</td> <td>New Corridor</td> <td>\$1,817</td> </tr> <tr> <td>10</td> <td>TR-12302.1</td> <td>Green Line - 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	<p><b>Arterial Improvements - Dallas (Northeast)</b></p> <p>Legend:  <span style="color: purple;">—</span> RSA Recommendations  <span style="color: green;">—</span> Non-RSA  <span style="color: blue;">—</span> Other Study Roadways</p> <p>Callouts:          Castle Road 2 lanes to 4 lanes undivided. Non-RSA \$5.5M          Elm Grove 2 to 4 lanes undivided. Non-RSA \$1.2M          Liberty Grove 2 lanes to 4 lanes undivided. Non-RSA \$1.2M          Dalrock 2 lanes to 4 lane divided. Non-RSA \$20M          Chiesa 2 lanes to 4 lane undivided. Non-RSA \$14M          Liberty Grove 2 lanes to 4 lanes undivided. Non-RSA \$9M          Miller Road from 2 lanes to 4 lanes divided including new bridge over L.R.H. RSA recommended due to incident manage if IH-30 is closed. \$27.8M          Chiesa Road from SH 66 to Dalrock 2 lanes to 4 lane divided. RSA recommended due to current and future volume \$26M          Dalrock 4 to 6 lanes. RSA recommended due to current volume and need \$15M</p> <p>Mobility 2045          May 2018          North Central Texas Council of Governments          Facility recommendations indicate transportation need. Corridor-specific alignment, design, and operational characteristics will be determined through ongoing project development.</p>																																																																																																																																																																																																																														

Email	Comment	Response
Michael Veale	Your flyer indicates all public sessions Alsace passed. Would appreciate a calendar of all remaining meetings till M2045 approval including public sessions and meeting of RTC and other committees/subcommittees in the review and approval process. Could not find such details.	
Donna Pierce	I love the idea of having more light rail – I wish you would consider heading to Denton. I also wish you would look into east-west connection between them. Several years ago we were living in Denton and my husband was going to school in Richardson. He would have taken the light rail but it required going all the way into Dallas and then back up to Richardson. Also, there was a strong possibility that the rail would have stopped running before he reached Lewisville. I would use light rail if they ran late enough that I could attend an event at Fair Park (such as a play) but I don't want to end up missing the last train to get back to my car.	
Matt Daigle	Hi, I was wondering which people that put forward this plan are elected officials in Dallas? Or, is any of this plan subject to approval by any elected officials in Dallas?  What I'm getting at, is this is the dumbest plan I have ever heard in terms of use of money, and none of the podunk communities like Cleburne would ever make financial sense to run a DART rail line to them.  I hate this plan, I hate this committee, and I want to complain to the correct people, so kindly direct me to whom I may speak.	Thank you for your comments regarding the Mobility 2045 Plan. I am attaching the current Regional Transportation Council roster which identifies members representing Dallas. Hopefully this information is helpful. Thank you for your interest in transportation planning in North Central Texas.
J. David Chilcott, DCMA Raytheon Dallas @ McKinney	In Collin County (City of Murphy), Please connect the North End of North Murphy Road to the Southern End of Angel Parkway. Having the 1 light at an intersection would alleviate a ton of traffic instead of having 2 right next to each other. Also the areas of Murphy, Wylie, Parker, Lucas are in need of better access to get to freeways. People are using Park, Parker, 544, Renner and Bethany like freeways at freeway speeds, just to get to 75 or George Bush. This area is and has developed too fast with no real freeway access.	
John Lowery	Hi there,  I would like to voice my desire for the creation of a rail line from McKinney to Dallas. I read an article that indicated it may be a possibility, and I feel considering the rapid growth of the area and the dreadful commute choices to Dallas, this would be an excellent idea for the long term.	

Email	Comment	Response
<p>Debbie Fisher, Councilmember, City of Lucas</p>	<p>At the May Public Hearing in Richardson, I expressed my displeasure with your plan solving all your transportation problems through the City of Lucas. Our City is not the area generating the massive increase in the traffic in Collin County, yet you expect us to be the ones bearing the burden. As a result of that meeting, our council will be voting on June 7 to rescind our previous support.</p> <p>I propose the following:</p> <ol style="list-style-type: none"> <li>1. Areas where the population and job increases are creating the need for this transportation plan should be required to resolve these issues within their own boundaries and through the use of unincorporated areas, not taking over smaller cities like Lucas.</li> <li>2. Areas of approved Municipal Utility Districts should be required to produce a plan for traffic exit through their region.</li> <li>3. Include in your planning the increased burden for emergency services, particularly in smaller cities such as Lucas.</li> </ol> <p>The increased traffic in Lucas is due to pass through traffic only. That traffic is not coming here to work or shop as we are a bedroom community. Our taxpayers are already bearing an undue burden for the increase in emergency services due to the additional traffic. We will vigorously oppose this attempt to further increase this burden.</p>	
<p>Bud Melton</p>	<p>Please consider the following comments as you're finalizing the draft long range mobility plan:</p> <p>Some of the alignments shown on the Regional Veloweb map don't appear to be updated per recent CIP elections. For example, the fully-funded Trinity Forest Spine alignment in SE Dallas. This may impact totals of those Funded and those Planned.</p> <p>In light of increased designations of shoulders as bikeways, particularly in the more rural areas, please ensure these are described and budgeted sufficiently to ensure a finer grade of chip-seal so that the quality of the experience is less impacted by roadway vibration.</p> <p>The proposed \$.4B cut in Sustainable Development funding partnerships does not seem consistent with concerns conveyed in appendix B. Social Considerations. Why cut one of the best-leveraged public/private partnership program?</p> <p>Given the constrained financial reality, it seems that much more funding would be allocated for Land Use Strategies that lead to less reliance on individual motor vehicles.</p>	

Email	Comment	Response
	There also doesn't seem to be enough emphasis on emerging mobility technologies. Are we as a region willing to be 'drawn into these' or would we better be situated to become drivers of these emerging trends? Already, several local cities are rolling out new traffic safety technologies that should be viewed as disrupters of traditional transportation planning.	
Jennifer Fundora, Center for Transportation and Environment	I hope this email finds you well. My name is Jennifer, an Associate at the Center for Transportation and the Environment in Atlanta, Georgia. Attached are comments concerning Mobility 2045 from our organization's Executive Director, Dan Raudebaugh. We appreciate you taking the time to read our comments, and please do not hesitate to contact Dan or I with any questions.	
Randall Duty	Why isn't the Kansas City Southern line that runs mostly parallel to TX 78 from Wylie to East Dallas being considered as a commuter rail corridor for the mobility plan?	
Jim Bookhout	My comment is <b><u>NO MORE TOLLS</u></b> . I am opposed to any further tolling of our Texas roadways.	
Dan Mingea	4/30/2018 DMN has an article, "Cars are ruining our cities," which needs to be read and digested by COG, Commish, and City Councils. More roads is not the answer, it's time to think outside the old weary and worn box. What's wrong with being a small city??? Where's the bad in that? No urban sprawl needed, JUST SAY NO!! Smog in Dallas? Build some new roads into the 'burbs, spread the smog around! Bring it on!!	
Jon Donhy	Dear NCTCOG,  1. Why are toll roads still being discussed? I thought the public had made it clear that no more toll roads were to be constructed.  2. Why is it necessary for TxDot to duplicate your extensive studies? (They are presenting their study for Hwy. 380 tonight in Princeton.)	
Erik Smith	A few months ago, the curious decision was made to seemingly worsen traffic flow on the 121 to 35 south ramp in the morning. What used to be 3 lanes of traffic merging into 2 lanes on the 'weave segment' leading to the Bush Turnpike is now 3 lanes of 121 being merged into 1 lane - seemingly for the benefit of the single lane exiting 35 and onramp from the 35 south service road. I feel this should be reversed given the immensely greater traffic flow on 121 relative to the 35 exit and 35 service road onramp - traffic on 121 now seems no better than it was prior to the installation of the 'weave segment'.	

Email	Comment	Response
John Koonz	<p>Car-First transportation policies have failed us. The death toll on our roads is unacceptable. The financial strain of car ownership on struggling families is overwhelming. Traffic is at a standstill, but we cannot pave enough lanes to get out of it. Our climate is affected by car pollution. We must shift transportation modes, but we are going to meet a lot of NIMBY resistance. Americans are lazy and addicted to the convenience of personal car ownership. Our leaders must have the courage to stand up to the push-back from the people who think the status quo is ok - even though they are harmed by it too.</p>	
Karl Woods	<p>Subject: Roysce City, TX, Immediate Transportation I-30 Improvements projects</p> <p>Dear Madam or Sir: I am selling my farm property located in Roysce City, Texas, just 31-miles east of downtown Dallas on Interstate-30 East. My attorney has asked me to contact your transportation experts to determine whether or not any current-in progress transportation/construction projects are happening NOW for the Interstate-30 transportation needs of the Roysce City area travelling from Dallas through Roysce City to Commerce, Texas. Also, are there any immediate transportation/construction improvement plans that are proposed where construction will begin soon that will improve the Interstate-30 transportation needs of the Roysce City area travelling from Dallas through Roysce City to Commerce, Texas. Specifically, are there any "just-completed" projects now open that will improve the Interstate-30 transportation corridor from Dallas through Rockwall and Roysce City to Commerce, Texas and beyond? For example, is there an eight-lane (that is four lanes in each direction) proposed construction and expansion projects for a Super-Interstate-Highway from Dallas, along I-30, to Commerce, TX, through Rockwall, Roysce City, and Greenville?</p>	<p>The North Central Texas Council of Governments (NCTCOG) Transportation Department is currently finalizing the recommendations for the region's long-range transportation plan, Mobility 2045. We have coordinated extensively with our transportation partners in the development of the plan. A Metropolitan Transportation Plan (MTP) typically recommends projects out to a 20-year horizon, with this plan extending out to 2045. Federal requirements state that the recommendations must be staged at least 10-years apart, therefore; the lane recommendations will be reported in this plan for the years 2018, 2020, 2028, 2037 &amp; 2045. Due to the years of staging, a project may be open to traffic in the year 2021 but it will not show reported until 2028. You may find the recommendations here:</p> <p><a href="https://www.nctcog.org/trans/mtp/2045/documents/9MAY2018PAC_KET_002.pdf">https://www.nctcog.org/trans/mtp/2045/documents/9MAY2018PAC_KET_002.pdf</a>. You may also find more near-term improvements in NCTCOG's programming document, the recently approved 2019-2022 Transportation Improvement Program. You can query 'IH 30' in the project listing to review the various funded projects and determine the status based on the estimated completion date. <a href="https://www.nctcog.org/trans/tip/19-22/FinalTIPListings.pdf">https://www.nctcog.org/trans/tip/19-22/FinalTIPListings.pdf</a>The Texas Department of Transportation (TxDOT) would have a better source of information regarding ongoing and completed projects. They have an excellent project tracking tool on their website. <a href="http://apps.dot.state.tx.us/apps-cq/project_tracker/">http://apps.dot.state.tx.us/apps-cq/project_tracker/</a></p> <p>The interactive map is color-coded by; construction underway or begins soon, construction begins within 4 years, constructions begins in 5-10 years, and corridor studies/constructions in 10+ years. This database also contains a contact person for each project. I hope that you find this information helpful. Please feel free to contact me if you have questions or need further information.</p>

Email	Comment	Response
<p>Dave Carter, City of Richardson</p>	<p>Mitzi – Here are some comments: 1. RSA 2.305.275 - is shown on map as located on Campbell Road between Greenville and Glenville Road. However, the table lists it as on Campbell between Jupiter and Shiloh which would overlap with RSA 2.305.325. I believe the RSA 2.305.275 location on the map is correct - however, Campbell is not planned to be widened to 8 lanes wide in this section between Greenville and Glenville. I suspect it is a holdover from the Campbell Road Tunnel project which was eliminated around 15 years ago. I think you can eliminate this project. 2. RSA 2.330.425 - Main Street from US75 to Sherman Street is already at least 6 lanes (3 Eastbound, and 5 Westbound when you include left turn and right turn lanes). It won't be getting any wider in that segment so I think you can remove this project as well. 3. RSA 2.330.475 - Belt Line Road from Abrams to Frances Way- This project shows widening Belt Line from 4 lanes to 6 lanes which is never going to happen. Main Street / Belt Line in downtown Richardson is constrained to only 4 lanes. Widening Belt Line Road to 6 lanes east of Abrams would not remove the downtown bottleneck and would require acquisition of land from approximately 50 single family homes, 2 apartment buildings, 3 churches, and a shopping center. We could use some isolated widening to add a westbound left turn bay at Abrams and at Walton, however, the full widening to 6 lanes can be removed from the Mobility Plan.</p>	<p>Dave, Thanks for your review and comments. These projects must have been left over from previous MTPs. We will remove the overlapping project and the recommendations for widening.</p>
<p>Patrick Kennedy, DART Board</p>	<p>Chair Bauman/Mr. Thomas, I'm responding to chair Bauman's request for feedback and/or questions related to the NCTCOG's 2045 Mobility Plan. I have three: First, I was of the understanding that Dallas city councilwoman Sandy Greyson (cc'd) requested the inclusion of targets for mode share would be included so that there are performance metrics applied to the taxpayer dollars that the RTC and NCTCOG are appropriating. However, after reviewing the 2045 plan I have not seen any such targets. Is there a reason target metrics have not been included? Without those policy targets, the long-range regional performance metrics are projecting current commuting patterns/modes to 27 years in the future and assume the market would not in any way adapt to changing conditions. Thus not including target metrics as guides makes long-range planning inherently directionless. Second, after reviewing the Revenue and Expenditure Summary and subsequently reviewing the project-related parameters for the traditional sources of funding (categories 2, 5, 7, and 12), it seems that at the very least Category 7 (Surface Transportation Block Grants) and Category 5 (Congestion Mitigation and Air Quality grants) can be used for public transit capital projects. The funding sources account for \$8,277,500,000 by 2045. However, only \$84,500,000 or 1% of these funds are currently earmarked for transit. I would like to know</p>	

Email	Comment	Response
	<p>why so little of these kind of multi-modal discretionary funds are being utilized in a truly multi-modal fashion and what specific projects are these funds going towards instead. Lastly, why are the population projections largely outside of currently populated cities within the region while nationwide trends are reversing course and instead favoring infill locations? It would seem a better use of taxpayer dollars to be investing and reinvesting in areas where taxpayers currently live and/or in areas needing greater density in order to better support transit and modal-shift away from single-occupant vehicle travel. Furthermore, on the population projection heatmaps, why is 10,000 per square mile, a number lower than needed baseline for transit-supportive density, the highest color category? There are many census tracts within the region that are already over 20-, 30-, and even 40-thousand residents per square mile.</p>	
<p>Paul McManus</p>	<p>Hello, I enjoyed watching the replay of NCTCOG’s transportation public meeting held in Arlington last Tuesday (May 15), and I wanted to comment on a portion of the meeting and also ask a couple of questions. I was very impressed with and pleased to hear about NCTCOG’s plans to work with school districts and local governments throughout DFW to help encourage and promote kids walking or riding bicycles to and from school in order to help reduce car traffic and road congestion, and also to promote physical activity and the enjoyment of walking and bicycle riding. I live in the master planned community of Lantana (pop. 12,000) in Denton County, which has three elementary schools and one middle school. One of the elementary schools is about a block or two off of Lantana Trail, the main thoroughfare, and another elementary school is adjacent to the middle school. While there are a fair number of kids here in Lantana who walk or ride bikes to and from school, there are many who don’t, which creates much car traffic, the potential for either illegal or unsafe parking, and it also increases the potential for accidents with pedestrians. In the seven years I’ve lived in Lantana, there have been at least two incidents of cars hitting kids walking to or from school, and also at least three near misses. I think it would be wonderful if Denton ISD, the schools here in Lantana, the Lantana Community Association, and Denton County Fresh Water Supply Districts 6 and 7 could encourage and promote kids walking or bicycling to and from school. Has NCTCOG contacted or worked with the aforementioned groups here in Lantana and Denton County to help promote walking and bicycling to and from school? I also wanted to follow up regarding a question I had after watching the replay of the previous transportation public meeting in April. What specific programs does NCTCOG have or support promoting the use of mass transit and non-motorized options to improve air quality? Please let me know if</p>	

Email	Comment	Response
	<p>you have any questions or need any additional information. Thank you very much!</p>	
<p>Debbie Fisher</p>	<p>At the May Public Hearing in Richardson, I expressed my displeasure with your plan solving all your transportation problems through the City of Lucas. Our City is not the area generating the massive increase in the traffic in Collin County, yet you expect us to be the ones bearing the burden. As a result of that meeting, our council will be voting on June 7 to rescind our previous support. I propose the following: 1. Areas where the population and job increases are creating the need for this transportation plan should be required to resolve these issues within their own boundaries and through the use of unincorporated areas, not taking over smaller cities like Lucas. 2. Areas of approved Municipal Utility Districts should be required to produce a plan for traffic exit through their region. 3. Include in your planning the increased burden for emergency services, particularly in smaller cities such as Lucas. The increased traffic in Lucas is due to pass through traffic only. That traffic is not coming here to work or shop as we are a bedroom community. Our taxpayers are already bearing an undue burden for the increase in emergency services due to the additional traffic. We will vigorously oppose this attempt to further increase this burden.</p>	
<p>John Lowery</p>	<p>Hi there, I would like to voice my desire for the creation of a rail line from McKinney to Dallas. I read an article that indicated it may be a possibility, and I feel considering the rapid growth of the area and the dreadful commute choices to Dallas, this would be an excellent idea for the longterm. Thanks, John</p>	
<p>Sidney Puder - US Fish and Wildlife Service</p>	<p>We have reviewed Mobility 2045: The Metropolitan Transportation Plan for North Central Texas. We took special interest in Section 4.3: Natural Environment and Section C: Environmental Considerations, Potential Mitigation Activities and Locations. We always have difficulty finding mitigation for projects and/or mitigation banks in urban settings. However, at this time we have no substantive comments. Please keep this office of USFWS informed and up-to-date concerning items you think we might have an interest.</p>	
<p>Sam Gutierrez, Texas Instruments</p>	<p>To whom it may concern;</p> <p>I just viewed a story from NBC5 on your plans for expansion into Collin county.</p> <p>Many of my co-workers are frustrated with the fact that there is no community transportation/DART rail for us in southern Dallas! Duncanville, Cedar Hill, DeSoto, Lancaster, Red Oak, Ovilla are just a</p>	

Email	Comment	Response
	<p>few cities that are still in Dallas county but yet DART continues to move further North and ignore the southern portion of Dallas.</p> <p>I have to drive south to Glenn Heights to get a DART shuttle that will take me to downtown where I take the DART train to work. I no longer take that route because of the waste of 30 minutes coming from and to the Glenn Heights station which makes my total commute time 75 minutes, one way, which is more time as me driving to work.</p> <p>Also recognizing that DART has no interest in providing reasonable transportation for our southern Dallas cities, I choose not to support DART by stopping to use their services, even though we get a discount from TI. Why should I financially support DART if it doesn't benefit me, but only residence in North, far North and now even farther North Dallas? Please create a DART rail to these southern parts of DALLAS county instead of another county.</p> <p>Your company is D(Dallas)ART not C(Collin)ART.</p> <p>DeSoto is currently using a private transportation contractor to provide buses for us to get from place to place because of growing demand and DART's lack of concern for southern Dallas county. Lancaster, Cedar Hill along with other cities will soon be starting their own community transportation.</p> <p>Please start a dialog with our southern cities for opportunities to provide transportation solutions and services for us instead and before expanding to another county.</p>	
<p>James D. Chilcott, Raytheon Dallas @ McKinney</p>	<p>In Collin County (City of Murphy), Please connect the North End of North Murphy Road to the Southern End of Angel Parkway. Having the 1 light at an intersection would alleviate a ton of traffic instead of having 2 right next to each other. Also the areas of Murphy, Wylie, Parker, Lucas are in need of better access to get to freeways. People are using Park, Parker, 544, Renner and Bethany like freeways at freeway speeds, just to get to 75 or George Bush. This area is and has developed too fast with no real freeway access.</p>	<p>I can tell you that the Mobility 2045 Plan already contains a widening/rerouting project for Farm-to-Market Road (FM) 2551 - Angel Parkway between FM 2170 (Main Street) and FM 2514 (Parker Road). The project will widen Angel Parkway from 2 lanes to a 6-lane divided facility, and it will reroute the southern end of the current roadway to connect directly with the Murphy Road section of FM 2551 as it travels south of FM 2514 (Parker Road) past Southfork Ranch. This will eliminate the existing offset intersection at Parker Road as you described below. The project is environmentally cleared and fully funded, and it's scheduled to be let for construction in January 2020. I also appreciate your comment regarding needed east-west and north-south mobility through the cities of Murphy, Wylie, Parker, and Lucas. Over the past 18 months, I've served as co-manager for the Collin County Strategic Roadway Plan (CCSRP)...and one of our primary tasks has been to improve overall thoroughfare</p>

Email	Comment	Response
		<p>connectivity and capacity through those cities. I certainly invite you to visit our agency's CCSRP web page so that you may view and analyze our study process and preliminary recommendations: <a href="https://www.nctcog.org/trans/thoroughfare/CCSRP.asp">https://www.nctcog.org/trans/thoroughfare/CCSRP.asp</a>. On the web page, you'll find a link to the latest CCSRP Corridor Opportunities Map...each of the solid and dotted red lines represent recommendations for either new thoroughfares or added capacity to existing thoroughfares in the area of Collin County east of the US Highway 75 corridor. All of the solid and dotted red lines have been added to the upcoming Mobility 2045 Plan as new projects, and you will see that these recommendations may begin to address the issue you raised below. We expect that extra capacity to these facilities will help supplement the large-scale east-west travel now occurring on the roadways you mentioned, but we expect to continue the CCSRP study later this summer after the Mobility 2045 Plan is approved to see if additional improvements may also be need to be planned for in the future.</p>
<p>W.J. Melton, Dallas</p>	<p>Please consider the following comments as you're finalizing the draft long range mobility plan:</p> <p>Some of the alignments shown on the Regional Veloweb map don't appear to be updated per recent CIP elections. For example, the fully-funded Trinity Forest Spine alignment in SE Dallas. This may impact totals of those Funded and those Planned.</p> <p>In light of increased designations of shoulders as bikeways, particularly in the more rural areas, please ensure these are described and budgeted sufficiently to ensure a finer grade of chip-seal so that the quality of the experience is less impacted by roadway vibration. The proposed \$.4B cut in Sustainable Development funding partnerships does not seem consistent with concerns conveyed in appendix B. Social Considerations. Why cut one of the best-leveraged public/private partnership program?</p> <p>Given the constrained financial reality, it seems that much more funding would be allocated for Land Use Strategies that lead to less reliance on individual motor vehicles. There also doesn't seem to be enough emphasis on emerging mobility technologies. Are we as a region willing to be 'drawn into these' or would we better better situated to become drivers of these emerging trends? Already, several local cities are rolling out new traffic safety technologies that should be viewed as disrupters of traditional transportation planning.</p>	

Email	Comment	Response
<p>Gary Hogan</p>	<p>I am the President of a very active and involved City of Fort Worth Neighborhood Association who for years have been the voice of this community. The Chapel Creek Neighborhood Association. I have several new concerns regarding Proposed Near-Term Improvements IH 20/ IH 30 (Tarrant / Parker County). We last looked at this area in 2013 and presented to community meeting on 5/25/2016. The Chapel Creek Blvd I-30 bridge is well under construction. AMEN.</p> <p>However, the area now has concerns about mobility being directed solely to the Chapel Creek Blvd corridor to the future above plan 1,100 homes are currently planned and started on prior vacant land East of Chapel Creek Blvd. About another 1,000 homes are underway also West of Chapel Creek Blvd. and we recently heard of a new Charter School also planned near there current mobility plans for I-30 corridor West of Loop 820 to Hwy 580 appears to direct all traffic through Chapel Creek Blvd. NCTCOG , TXDOT and City of Fort Worth need to review the mobility transportation planning in light of this growth. Please advise as to best contact with NCTCOG for me to discuss.</p>	<p>We have the bridge that he mentioned in the Non-RSA list. Chapel Creek is a Non-RSA and I don't see any other improvements on it.</p>

### Greater Dallas Planning Council Comments

Overall, the GDPC Mobility Task Force sees much to applaud in this plan. The breadth and depth of considerations of the mobility landscape are impressive. The narrative texts and appendices are thorough, leaving only a few of our questions untreated, if not answered (please see those below).

That said, we find a substantial dissonance between the plan’s many “considerations” and its final budgetary commitments.

The “Financial Reality” chapter implies that we will be continuing a low-density, car-centered development model (suburban sprawl), despite the extensive evidence in the plan document itself that a radical re-appraisal of such a model is in order. A plan should be based on observation and prediction, and its action steps are what shape the future. Any plan must be measured, not by what it says, but by where it commits resources. This plan commits the largest single chunk of resources, \$52B, to additional roadway occupancy and capacity.

In our view, a better plan for the region would provide more of the available funds to:

- prepare for unpredictable yet inevitable technological disruption.
- increase social justice by mitigating the severe and growing racial and economic inequality across the region.
- allow us to better adapt to inevitable environmental change.

#### Transportation Technology (Chapter 7)

**It is critical that the plan fund preparations for the technological disruption we can expect (though not precisely predict) in the next 20 years.**

-Data-based, network technologies have already disrupted traditional taxi services (Lyft, Uber) and are shifting public attitudes toward car ownership. They invite a re-thinking of bus transit (frequent bus service, optimized intermodal transportation) and even land use (parking). Similar disruptions are emerging in retail (grocery and parcel delivery, regional malls) and ride-sharing.

-Automated vehicle technology (connected and automated) appears to be emerging at an increasing tempo. It could have profound impact on how we value our vehicles and the time spent in them.

-Via, Uber and other platforms including flying vehicles may be much closer to reality than many believe. Dallas will be one of two markets where this new form of transportation will be implemented.

-Freight lanes have been dedicated in several states, reducing congestion and improving air quality. Combined with autonomous technology, they could further reduce environmental impacts and obviate additional road construction.

-Intelligent transportation systems (ITS) are demonstrating huge increases in the utility of existing lane space in both urban and suburban areas, suggesting less demand for new lane construction, even with continued population growth.

-Tech-driven disruptions are hard to predict. An Innovation Technology component could be incorporated into the plan that allows it to be adaptive, dynamic and responsive when such disruptions occur in the marketplace. One possible action: development of a funded “mobility learning lab.”

-NCTCOG could work with private industry firms to study/develop ITS infrastructure for the adoption of connected and automated vehicles.

#### Social Considerations (Chapter 3)

Across the NCTCOG region, vast **inequalities** of income, housing, school quality and access to work persist and are increasing. As such, they threaten the well-being of the regional population. Inequality costs us all through health care, remedial education, criminal justice and forfeited economic development. **The plan needs to directly address equity issues that are prevalent in the region.**

Tolling lanes does seem a fairer way of distributing the cost of new highways to users. The proposed restriction of tolled lanes to the center of the region runs counter to social justice and encourages sprawl.

Improvement of mobility for the poor and underserved will clearly depend on better public **transit**, which, impacts their access to work, health care, housing and schools. The dollars allocated for “Growth, Development and Land Use Strategies” seem disproportionately low, *per capita*, to impacted individuals across the region. What is the priority for funding for that development?

**Environmental Considerations (Chapter 4)**

**This plan needs to help the region adapt to the environmental impacts it acknowledges.**

-Widely accepted climate forecast projections mean hotter summers and more extreme weather in Texas through the rest of the century. Extreme drought and more powerful storms pose nonlinear increases in costs of energy, road maintenance, disaster recovery and hardened infrastructure. The 2045 plan does speak of “resilience” (Ch 4.4 P. 24) but again, such efforts do not appear in the cost model.

-Air quality and related health costs can be directly tied to traffic density. Although “improved air quality” is an explicit goal of the plan, it does not seem to figure in the development plans or the cost model.

-The carbon footprint of low-density development is substantially larger than for higher-density. This fact does not seem to be reflected in the implicit development model.

-The Wildlife Habitat exhibit in the slide deck does not address ecological corridors along creeks and rivers, some of the most sensitive to new construction of highway infrastructure.

-Concrete is truly the “floor” of the Mobility 2045 low-density model. Concrete paving is energy-intensive and, once in place, adds to the urban heat sink effect. It is also getting more expensive as global supply/demand for riverine sand changes.

**Development Paradigm**

**The plan needs to shift priorities from a low-density paradigm to a more sustainable higher density, multimodal approach.**

-Mobility 2045 seems premised on an extension of the suburban low-density, car-centric model, one in which highways remain unquestioned as the most efficient means of transportation.

-Recent real estate valuation trends suggest that the core and outlying town centers are urbanizing (McKinney, Legacy, Southlake). Young workers prefer to live closer to work, while retired folks want to downsize in denser housing forms near urban amenities.

-Current commercial real estate returns suggest denser development is more profitable than low-density.

-New, multi-family construction is inherently more likely to support affordable housing options than more land-intensive housing.

-Investments in walkability, bicycling and other active transit (last mile) would seem to offer higher leverage on “mobility” in general than added motor vehicle infrastructure.

-Building more lane miles when future demand is so unpredictable makes less sense than to provide for more conventional mass transit, active transit and other innovative forms of mobility adapted to higher density land use.

-2045 SD Program budget is cut by \$400M – hitting the most needed of all programs to help drive land use decisions that favor transit, walking and bicycling.

-In this plan, environmentally impacted cities have not been allocated funds to support densified land use.

-Investment in active transportation and innovative mobility technologies might offer a better ROI than building more lane miles.

\*CityMAP: per the GDFC’s previous engagement and feedback on this groundbreaking and innovative approach to transportation planning, why it is not incorporated into Mobility 2045?

Finally:

**What are NCTCOG’s legislative priorities related to this plan?**



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June 6, 2018

Mr. Kevin Feldt, AICP  
 Program Manager  
 North Central Texas Council of Governments  
 616 Six Flags Drive, Centerpoint Two  
 Arlington, TX 76005-5888

Dear Mr. Feldt,

The Center for Transportation and the Environment (CTE) appreciates the opportunity to comment on the draft Mobility 2045 long-range transportation plan. CTE is a 501(c)(3) nonprofit with a mission to improve the efficiency and sustainability of the United States' energy and transportation systems. CTE collaborates with federal, state, and local governments, fleets, and vehicle technology manufacturers to advance clean, sustainable, innovative transportation and energy technologies. As such, there are several initiatives included in the Mobility 2045 plan that are of particular interest to CTE.

Sections 4.2: Air Quality, 5.5: Sustainable Development, 6.4: Public Transportation, 6.5 Roadway, and Section 7.0: Transportation Technology collectively address air quality, sustainability, and technological advancements that can also be achieved through the deployment of zero-emission transit buses. While the plan specifically discusses the implications of electrification specific to light-duty vehicles and future, automated shuttle and "pod" vehicles, CTE would encourage inclusion of zero-emission bus deployments within the long-range plan. According to the Department of Transportation, the United States has over 300 individual zero emission buses operating in transit fleets throughout the nation. Both battery electric and fuel cell options are available to help with pollutant emissions reduction and fuel efficiency for bus fleets.

Successful deployments of zero-emission technology in the transit market supports the following goals included in Mobility 2045, including:

- Preserve and enhance the natural environment, improve air quality, and promote active lifestyles. (Section 3.0, Section 5.0, Section 4.0)
- Develop cost-effective projects and programs aimed at reducing the costs associated with constructing, operating, and maintaining the regional transportation system. (Section 5)
- Encourage livable communities which support sustainability and economic vitality. (Section 3.0, Section 4.0, Section 7.0)
- Develop cost-effective projects and programs aimed at reducing the costs associated with constructing, operating, and maintaining the regional transportation system. (Section 2.0, Section 5.0, Section 7.0)

However, successful deployments of zero-emission buses benefit from adequate pre-deployment planning. CTE has provided technical assistance and project management services on many battery and fuel cell electric bus deployment projects. Collectively, CTE has assisted more than 50 transit agencies that have either deployed, or will soon deploy, more than 200 zero-emission buses. The lack of widespread deployments can present challenges for transit agencies unfamiliar with zero-emission technology, as they include new specific operating characteristics and fueling requirements. CTE strives to minimize these challenges and reduce the risk associated with these vehicles by helping end users match the technology to



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the most appropriate applications. Route and rate modeling is necessary to ensure fleet vehicles are deployed in the most efficient manner, so the vehicles will complete the route and also experience the most favorable charging costs. As bus fleets transition to 100% zero-emission, CTE is also assisting agencies with feasibility studies and transition roadmaps. These analyses are important to determine the most efficient path for scale-up, how to minimize costs, and what will be the most effective mix of technology between battery and fuel cell electric for the application.

Consideration of zero-emission technologies in the transit sector supported by adequate planning prior to deployment would contribute to NCTCOG's efforts to offer clean transportation options to the citizens of the Dallas-Arlington-Fort Worth area. CTE appreciates the opportunity to comment on the draft Mobility 2045 plan. If you have any questions concerning CTE's work to support the deployment of zero-emission transit buses, please do not hesitate to contact me at 404-518-2322 or [djra@cte.tv](mailto:djra@cte.tv).

Sincerely,



Daniel J. Raudebaugh  
Executive Director

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