



**LAND USE  
ASSUMPTIONS  
2018-2019**



**MCKINNEY<sup>®</sup>**

**T E X A S**

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# PURPOSE AND OVERVIEW

To accurately determine the costs associated with providing infrastructure services to new and existing development, a study must be conducted to determine the type, amount, and location of existing development and expected growth. This study is called the Land Use Assumptions (LUA), and is the first step in the impact fee update process. Impact fees are levied against new development to pay for the off-site construction or expansion of infrastructure that is necessitated by the additional impact caused by the new development.

As defined by Chapter 395 of the Texas Local Government Code, impact fees are “a charge or assessment imposed by a political subdivision against new development in order to generate revenue for funding or recouping the costs of capital improvements or facility expansions necessitated by and attributable to the new development”, and that “a political subdivision imposing an impact fee shall update the land use assumptions and capital improvements plan at least every five years”.



# STUDY PROCESS

This report documents the practical approach that was taken to determine Land Use Assumptions. The residential and non-residential growth projections formulated in this report were performed using reasonable and generally accepted forecasting and planning principles. The following data and procedures were used in developing this report:

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## Study Data

- Existing land uses and non-residential square footages (source: Collin Central Appraisal District).
- Existing zoning map and development regulations (source: City of McKinney).
- ONE McKinney 2040 Comprehensive Plan - Future Land Use Plan (source: City of McKinney).
- Historical population information (source: City of McKinney, U.S. Census Bureau).
- Texas Population Projections 2010 to 2050 (source: Texas Demographic Center)
- Proposals for residential and non-residential developments that have been approved by the City but not yet constructed (source: City of McKinney).

## Primary Steps

1. Update service area boundaries in accordance with State Law requirements.
2. Determine baseline conditions for 2019 population and non-residential square footage
3. Project the ultimate buildout population and non-residential square footage.
4. Project population and non-residential square footage growth for the next ten years.



# SERVICE AREA MAPS

## What is a Service Area?

As defined by Local Government Code Chapter 395, a “service area” may include all or part of the land within the political subdivision or its ETJ to be served by the capital improvements or facilities expansions specified in the Capital Improvements Plan, except roadway facilities and storm water, drainage, and flood control facilities.

For roadway facilities, a service area is limited to an area within the corporate boundaries of the political subdivision and shall not exceed 6 miles. Roadway service area boundaries generally follow existing and future major thoroughfares. Also, roadway service areas represent areas of similar traffic generation characteristics and help to maintain efficiencies in accounting and administration of roadway impact fees.

Exhibit “A” shows the 2019 Roadway Service Area Map. The 2019 Roadway Service Area Map includes the same 13 Service Areas that the City

of McKinney recognized during the 2012-2013 Impact Fee Update. Slight changes have been made to align service area boundaries with newly constructed roadways and the Master Thoroughfare Plan that was adopted in 2018 as part of the ONE McKinney 2040 Comprehensive Plan.

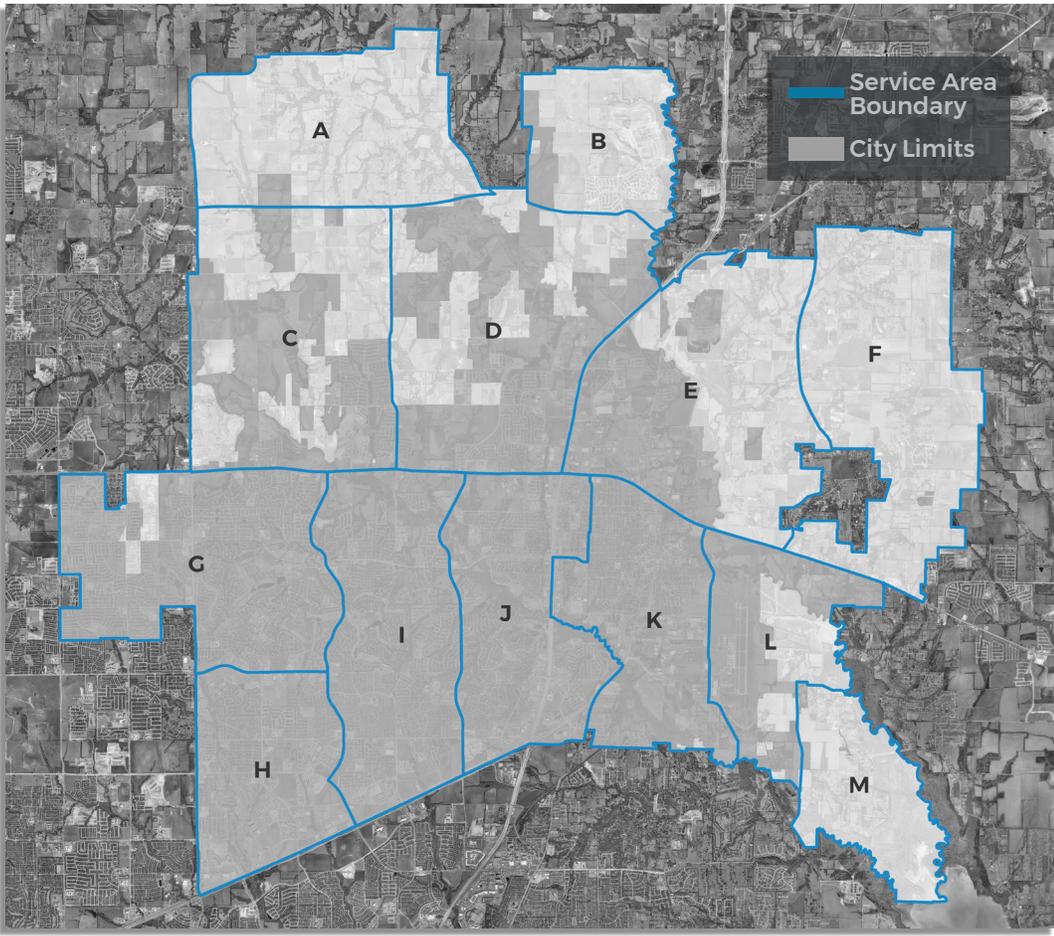
Exhibit “B” shows the 2019 Utility Service Area Map. Minor changes have been made to reflect changes in the ETJ boundary that have taken effect since the last impact fee update that was completed in 2012-2013.

For the purpose of further analysis and geographic specificity, sub-service areas were created to assist with the classification of existing population and non-residential square footages, and distribution of future projections. The sub-service areas are smaller boundary entities that nest within their larger service area counterparts.

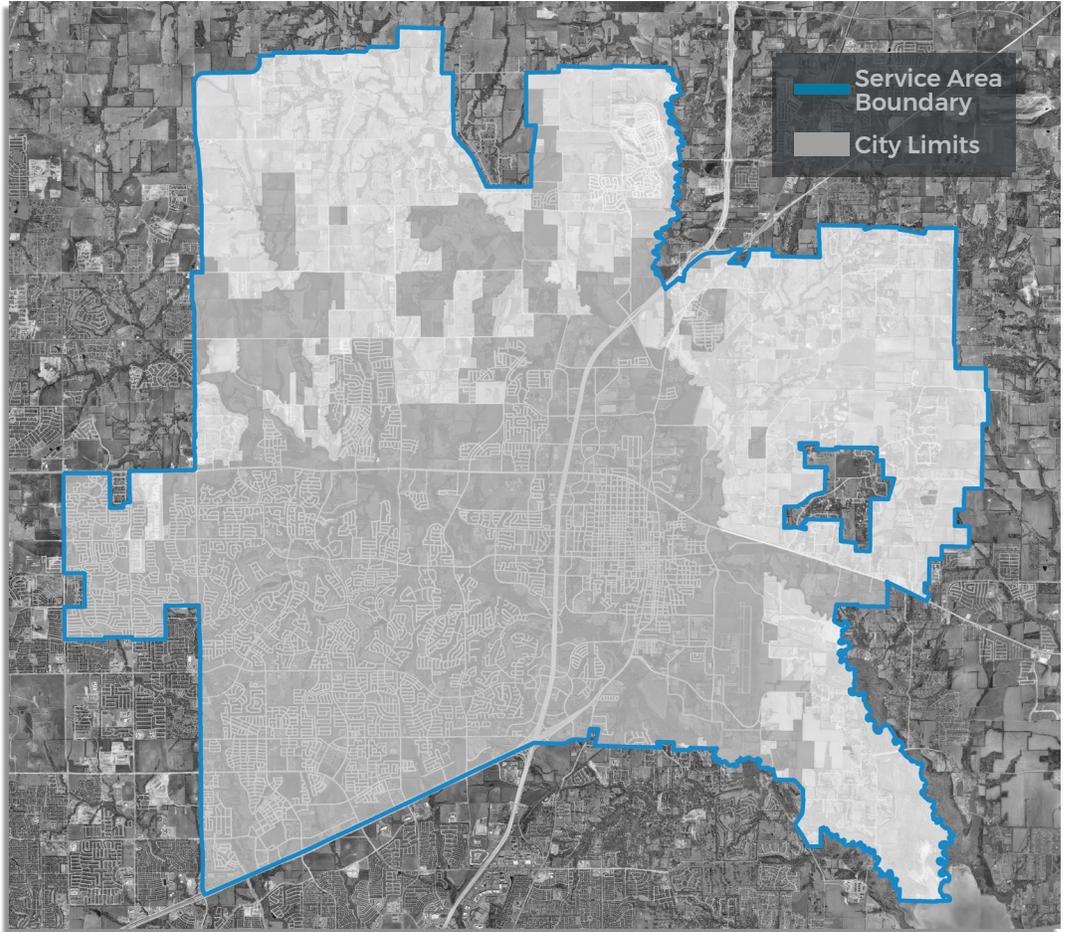
**“Roadway service areas represent areas of similar traffic generation characteristics”**



# EXHIBIT A: ROADWAY SERVICE AREAS



# EXHIBIT B: UTILITY SERVICE AREA



# BASELINE DATA



## Population

The baseline population in McKinney (including ETJ) as of January 1, 2019 has been estimated at 193,012.

Table 1 shows the population history for McKinney and its ETJ from the 2010 U.S. Census through the estimate for January 1, 2019. Using the official 2010 U.S. Census population as starting point, City Planning Staff estimated a population figure each year based on an analysis of building permit data for the previous years as well as on commonly accepted assumptions for occupancy rates and household sizes.

Table 1 illustrates that McKinney has been experiencing continual residential growth over the last nine years. This general trend of population growth is expected to continue throughout the ten year forecast of this study.

McKinney's population estimate was spatially distributed among the thirteen roadway service areas. To do this, City building permit data was used in conjunction with data from the 2010 Census to determine the location of McKinney's population. This permit data was subsequently converted into population using a "persons per dwelling unit figure" for single-family and multi-family housing types that is annually updated. For single-family, the average household size used is 3.08\*. For multi-family, the average household size used is 2.17\*.

YEAR	POPULATION	% GROWTH
2010	135,038	-
2011	137,406	1.8%
2012	141,330	2.9%
2013	145,511	3.0%
2014	153,807	5.7%
2015	159,100	3.4%
2016	166,569	4.7%
2017	174,141	4.5%
2018	184,420	5.9%
2019	193,012	4.7%

**TABLE 1: POPULATION HISTORY**

**“McKinney has been experiencing continual residential growth over the last nine years”**

## Non-Residential Square Footages

It is also necessary to establish a baseline figure for the square footage of non-residential uses currently in McKinney. For roadway impact fees, building square footage is the most common independent variable for the estimation of non-residential vehicle trips generated in the Institute of Transportation Engineers (ITE) Trip Generation Manual. Building square footage is closely tied to trip generation and is known at the time of assessment for an impact fee for a proposed development.

The building square footages were categorized into three commonly used land use classifications. Each classification has unique trip making characteristics.

**Basic:** Higher impact land uses that generate goods and services that are typically used and sold outside of McKinney, such as manufacturing, construction, transportation, warehousing, and other industrial uses.

**Service:** Land uses that provide personal and professional services, such as government facilities, schools, medical offices, and other professional offices.

**Retail:** Land uses where the retail sale of goods primarily serves households, and whose location choice is oriented towards a local market. Examples include restaurants, grocery, and clothing stores.

Baseline square footage of Basic, Service, and Retail uses are determined using data from Collin County Appraisal District (CAD). Collin CAD provides land use and square footage data for all existing non-residential uses within McKinney and its ETJ. Using this data, a summary table of all non-residential use categories within each service area was created. These figures act as the baseline conditions for non-residential square footages.

SERVICE AREA	RESIDENTIAL		NON-RESIDENTIAL SQUARE FEET		
	Population	Dwelling Units	Basic	Service	Retail
A	306	115	23,500	0	81,515
B	2,834	973	0	0	16,699
C	8,429	2,959	227,746	632,125	278,982
D	11,213	3,343	0	3,104,234	1,255,451
E	3,905	1,204	3,624,114	478,284	1,754,956
F	1,485	556	212,216	27,295	263,232
G	50,272	17,987	899,720	1,889,230	2,428,620
H	29,944	12,197	581,141	1,933,505	2,627,061
I	39,502	13,959	352,879	2,397,595	1,433,682
J	24,011	10,072	1,649,518	2,754,401	3,513,500
K	20,558	7,651	5,125,000	2,871,086	2,325,009
L	182	75	561,885	499,422	82,826
M	370	164	66,320	14,572	0
<b>TOTAL</b>	<b>193,012</b>	<b>71,255</b>	<b>13,324,039</b>	<b>16,601,750</b>	<b>16,061,533</b>

**TABLE 2: BASELINE CONDITIONS**

# ULTIMATE BUILDOUT PROJECTIONS



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## Overview

An ultimate buildout projection is needed to determine the potential for additional growth that is available in the undeveloped areas of the city and ETJ. The ultimate buildout projection is broken into the same sub-categories as the baseline data (population, dwelling units, basic, service, and retail). The baseline data was used as the developed areas, and the undeveloped areas were broken into the two following categories:

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## Zoning Applications

Staff analyzed the zoning districts for all parcels within city limits that were considered undeveloped\*. Base zoning districts were given an associated land use category (single-family, multi-family, basic, service, or retail). The Planned Development (PD) districts were reviewed and assigned one or more land use categories. In instances where multiple land uses existed in one zoning, the anticipated acreage of the different uses were applied. The land use acreages for each of these zonings were then multiplied by standard metrics from nearby existing conditions to determine the extent of additional growth that is possible. The standard metrics includes an average persons per acre for single-family and multi-family developments, as well as a typical floor-area-ratio (FAR) for non-residential uses. The districts from the ONE McKinney 2040 Comprehensive Plan's Preferred Scenario were utilized to derive a geographic and market specific approach in determining the existing condition metrics.

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## Future Land Use Plan Applications

Undeveloped areas located within the ETJ but outside the city limits are not subject to the City's zoning regulations. The Future Land Use Plan (FLUP) will be used to consider an appropriate land use at the time of development in the future. The ultimate buildout projection for the area within the ETJ but outside of the current city limits is calculated based on an analysis of the FLUP. Additionally, areas within city limits that are zoned "AG - Agricultural District" are anticipated to rezone and develop in the future and therefore will also adhere to FLUP designated land uses. The areas where the FLUP is applied were categorized by the Placetypes outlined in the ONE McKinney 2040 Comprehensive Plan. The Placetype acreages were multiplied using a calculator that determines anticipated population and square footages for non-residential uses. Since Placetypes are not land-use-specific, the calculator applies anticipated percentages to determine the associated acreage of a Placetype that will fall into one of the land use categories (residential, basic, service, retail).

SERVICE AREA	RESIDENTIAL		NON-RESIDENTIAL SQUARE FEET		
	<i>Population</i>	<i>Dwelling Units</i>	<i>Basic</i>	<i>Service</i>	<i>Retail</i>
A	46,188	17,743	9,419,802	12,772,114	4,609,915
B	25,032	8,233	51,707	245,645	369,503
C	57,987	19,538	227,746	2,158,784	4,397,073
D	66,423	23,628	917,483	8,690,336	8,077,829
E	32,533	11,449	11,542,472	3,242,892	6,352,282
F	13,811	4,668	998,038	908,095	1,841,789
G	52,046	18,687	1,157,424	2,184,560	4,653,668
H	39,582	16,242	641,152	7,115,049	4,131,473
I	46,593	16,581	808,120	3,663,775	4,102,982
J	28,292	11,771	2,180,080	6,881,683	5,658,617
K	24,126	9,048	7,823,668	4,434,426	2,966,485
L	300	114	9,239,373	3,235,736	420,080
M	957	362	4,152,840	1,076,720	229,602
<b>TOTAL</b>	433,869	158,064	49,159,907	56,609,815	47,811,298

**TABLE 3: BUILDOUT CONDITIONS**

$$\left[ \begin{array}{c} \text{Existing} \\ \text{Population} \end{array} \right] + \left[ \begin{array}{c} \text{Zoning} \\ \text{Applications} \end{array} \right] + \left[ \begin{array}{c} \text{FLUP} \\ \text{Applications} \end{array} \right] = \left[ \begin{array}{c} \text{Ultimate} \\ \text{Buildout} \end{array} \right]$$

**“An ultimate buildout projection is needed to determine the potential for additional growth”**

# 10-YEAR GROWTH ASSUMPTIONS

**This study considers the years 2019-2029. Acknowledging that the parameters of the study (city limits, Master Thoroughfare Plan, Comprehensive Plan, zoning maps, existing development, etc.) are changing constantly, this study is based on conditions as they were on January 1, 2019.**

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## Population Projections

The following methods were used in projecting the population of McKinney in 2029. An explanation of why these methods were chosen follows their description.

### **Gompertz Method**

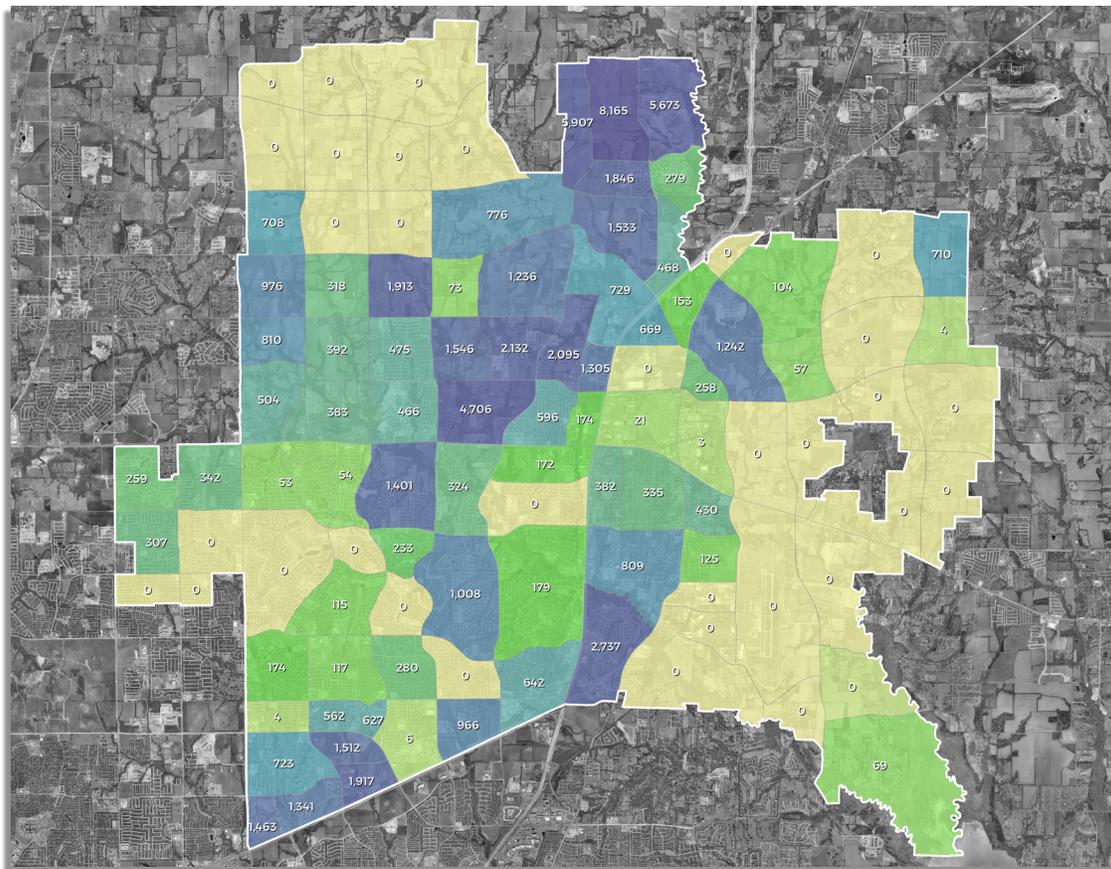
The Gompertz growth curve is an extrapolation method that generally fits the growth pattern of McKinney over the last few years. It assumes that, during the total growth period of a geographic area, the growth is slow in the beginning, then increases exponentially for a period of time, and then tapers off as the population approaches an upper growth limit. Using the ultimate population (433,869) from the ultimate buildout projections as the upper growth limit, a Gompertz curve has been plotted and used in part to project the population in 2029.

### **Ratio Method**

Projections for larger geographic areas (i.e. counties or regions) are more reliable than projections for smaller areas (i.e. cities) since a larger population base is less likely to exhibit short term variations. For this reason, the ratio

method has also been utilized. This method operates under the assumptions that if a relationship between a city's population and its larger geographic area has a generally fixed ratio, the population of the city can be related and projected based on the population projection of the larger area. Eight variations of the ratio method were tested for their ability to project McKinney's population over the next ten years. From these methods, the two best performing were chosen, McKinney's share of Collin County's growth, and Collin County's population rate of change.

The Texas Demographic Center's Population Projections Program produces projections for the state, and all counties in the state by age, sex and race/ethnicity. These projections contain the anticipated population for Collin County for every year from 2010 to 2050. Using the ratio methods described above, and for the purposes of the Land Use Assumptions, McKinney's population was projected out to 2029.



**EXHIBIT C: PROJECTED POPULATION GROWTH**

Similar to previous iterations of Land Use Assumptions, in projecting the population for McKinney it is assumed that using a combination of the Ratio and Gompertz method will perform best. The Ratio projection methods are a simplified extension of existing or predicted population trends. Gompertz is a logarithmic curve that recalculates new projections as new data points (updated yearly populations) are added. The combination of these methods help to provide a balanced approach for population projections.

In deriving the 2029 population, a weighted average was used between the three population projections (Collin County's Growth Share, Collin County's Population Rate of Change, and Gompertz) for the two methods. The average divides the weight of the projections by method, allotting 50% of the weight to the Ratio Method, and 50% to Gompertz. From this average, a population of 262,084 was calculated for McKinney in 2029; a growth of 69,073 from the 2019 population of 193,012.\*

Once the population was projected for the ten year window, distribution was completed using the spatial data generated during the buildout potential calculation. The existing level of developed area in a sub-service area was calculated as well as the sub-service area's remaining growth potential. Then, using common Planning practices the sub-service area's buildout percent was structured to reflect conditions that area likely to exist in 2029. These incremental percentage increases generate additional population, and are influenced by the sub-service areas buildout potential and location.



# 10-YEAR GROWTH ASSUMPTIONS

## Non-Residential Projections

To forecast the amount of growth in Basic, Service, and Retail land use categories over the ten year period of the study, a combination of methods were utilized. The previous ten years of non-residential square footages were analyzed on a service area basis to identify existing trends. The most consistent and noticeable trend were the land use categories relationship's with population. By analyzing the amount of Basic, Service, and Retail square feet per person for the last ten years, the following trends were identified:

**Basic:** It is assumed that as McKinney's population increases, the amount of Basic square footage per person will decrease. While total square feet of Basic has increased, the general trend for the past ten years showed a decrease in square feet per person. An average of the ten year median, and a ten year trend were used to determine a square foot per person growth over the next ten years. An additional 4,230,559 square feet of Basic is expected by 2029.

**Service:** It is assumed that as McKinney's population increases, the amount of Service square footage per person will remain the same. The general trend for the past five years showed a slight decrease in square feet per person. A five year median was used to determine a square

foot per person growth over the next ten years. An additional 6,160,065 square feet of Service is expected by 2029.

**Retail:** It is assumed that as McKinney's population increases, the amount of Retail square footage per person will slightly increase. The general trend for the past ten years showed a general increase in square feet per person. An average of the ten year median, and a ten year trend were used to determine a square foot per person growth over the next ten years. An additional 6,136,024 square feet of Retail is expected by 2029.

Once the square footages were projected for the ten year window, distribution was completed using the spatial data generated during the buildout determination process. The existing level of developed area in a sub-service area was calculated as well as the sub-service area's remaining non-residential growth potential. Then, using common Planning practices the sub-service area's buildout percent was structured to reflect conditions that area likely to exist in 2029. These changes in percent generate additional square footages for the three land uses, and are influenced by the sub-service areas buildout potential.



SERVICE AREA	RESIDENTIAL		NON-RESIDENTIAL SQUARE FEET		
	<i>Population</i>	<i>Dwelling Units</i>	<i>Basic</i>	<i>Service</i>	<i>Retail</i>
A	0	0	0	0	0
B	21,871	6,959	10,071	207,903	86,236
C	6,945	2,312	0	726,068	438,993
D	17,370	6,277	59,635	700,061	830,401
E	2,506	873	2,482,408	199,736	725,194
F	713	118	19,891	71,783	212,738
G	1,130	435	30,630	69,408	719,260
H	8,439	3,495	14,932	1,806,746	787,669
I	4,218	1,608	112,104	252,841	1,199,668
J	4,112	1,390	227,006	1,733,118	774,630
K	1,700	639	504,952	247,260	331,012
L	0	0	597,354	113,513	16,437
M	69	23	171,577	31,628	13,786
<b>TOTAL</b>	<b>69,073</b>	<b>24,128</b>	<b>4,230,559</b>	<b>6,160,065</b>	<b>6,136,024</b>

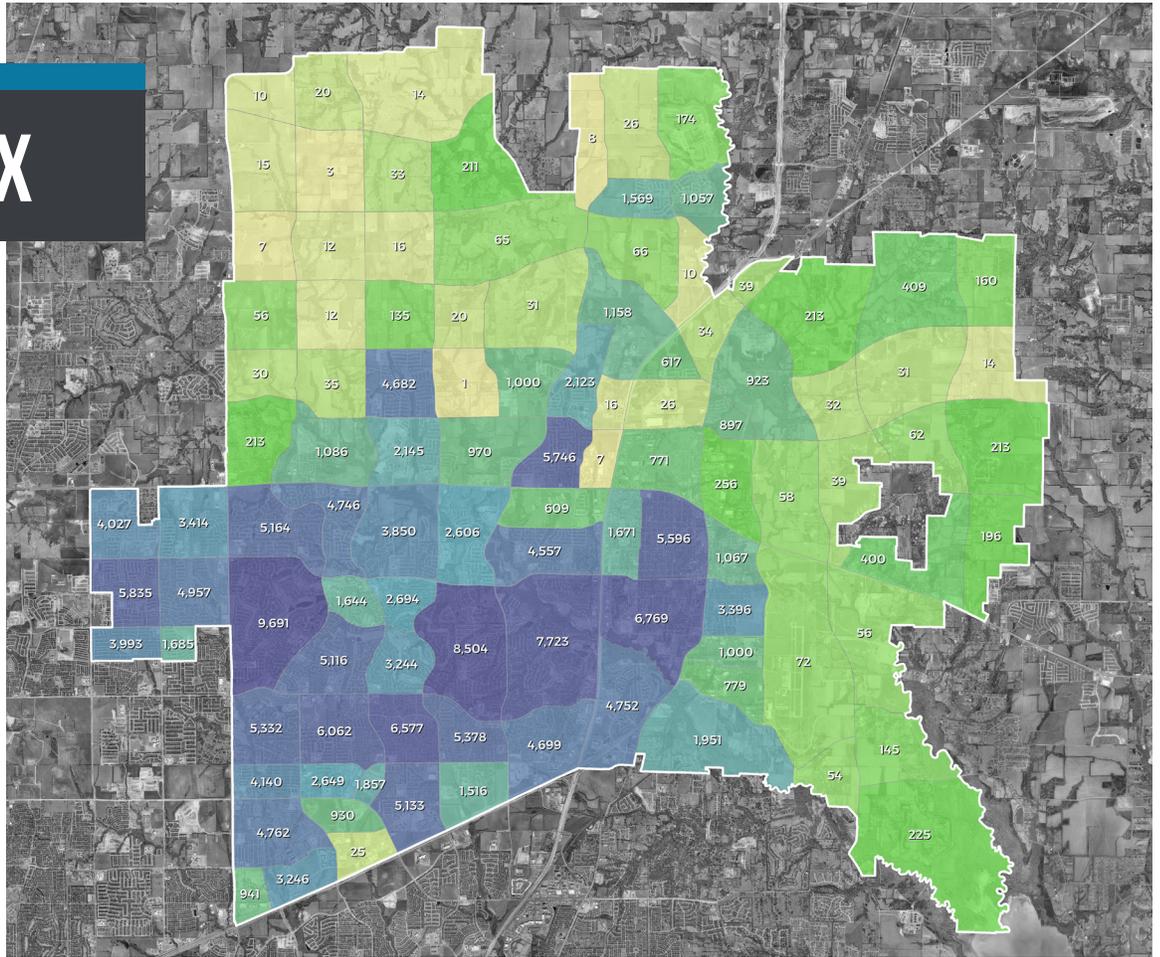
**TABLE 4: PROJECTED GROWTH**

SERVICE AREA	RESIDENTIAL		NON-RESIDENTIAL SQUARE FEET		
	<i>Population</i>	<i>Dwelling Units</i>	<i>Basic</i>	<i>Service</i>	<i>Retail</i>
A	306	115	23,500	0	81,515
B	24,705	7,932	10,071	207,903	102,935
C	15,374	5,271	227,746	1,358,193	717,975
D	28,583	9,620	59,635	3,804,295	2,085,852
E	6,411	2,077	6,106,522	678,020	2,480,149
F	2,198	674	232,107	99,078	475,970
G	51,402	18,422	930,350	1,958,638	3,147,880
H	38,383	15,692	596,073	3,740,251	3,414,730
I	43,720	15,567	464,983	2,650,436	2,633,350
J	28,123	11,462	1,876,524	4,487,519	4,288,131
K	22,258	8,290	5,629,951	3,118,347	2,656,021
L	182	75	1,159,239	612,935	99,263
M	439	187	237,897	46,200	13,786
<b>TOTAL</b>	<b>262,084</b>	<b>95,383</b>	<b>17,554,598</b>	<b>22,761,815</b>	<b>22,197,558</b>

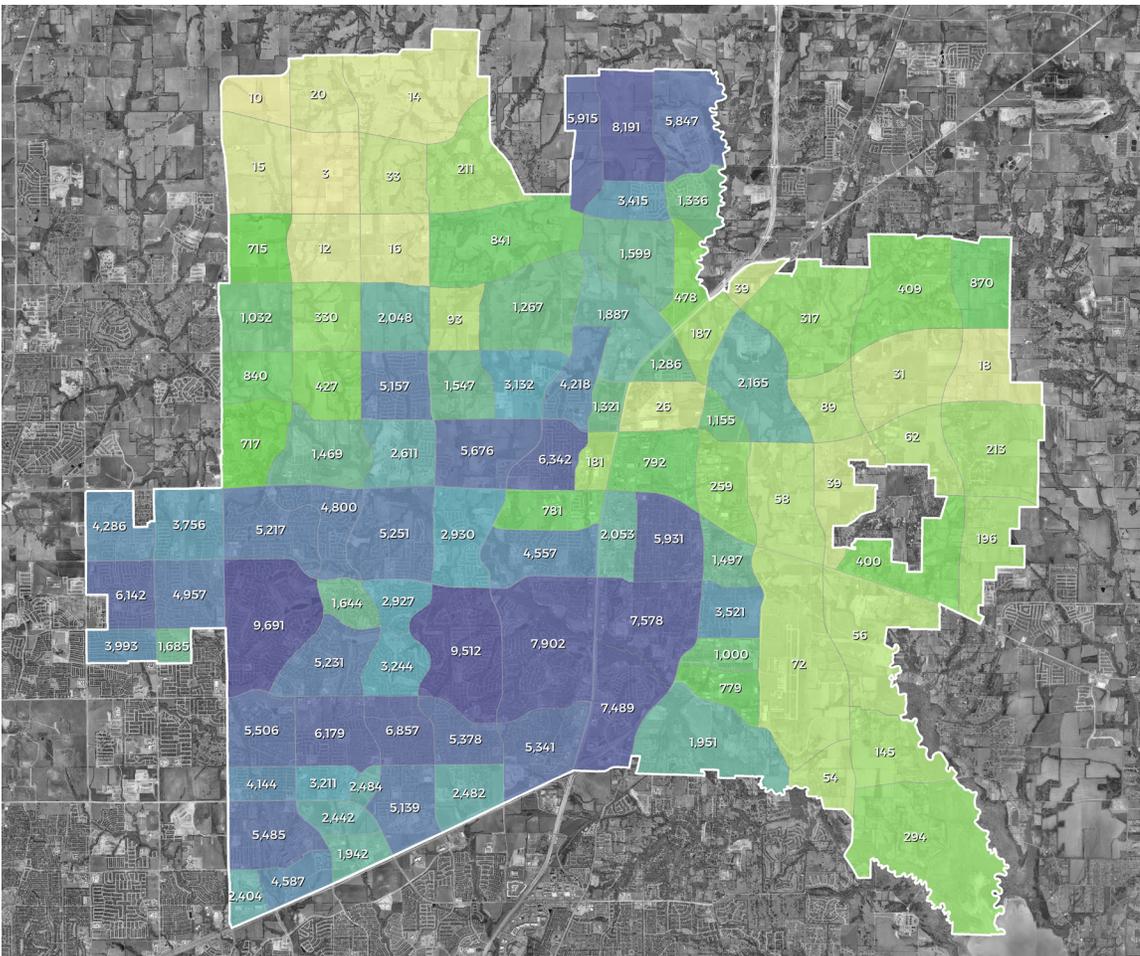
**TABLE 5: 2029 BASELINE CONDITIONS**

# APPENDIX

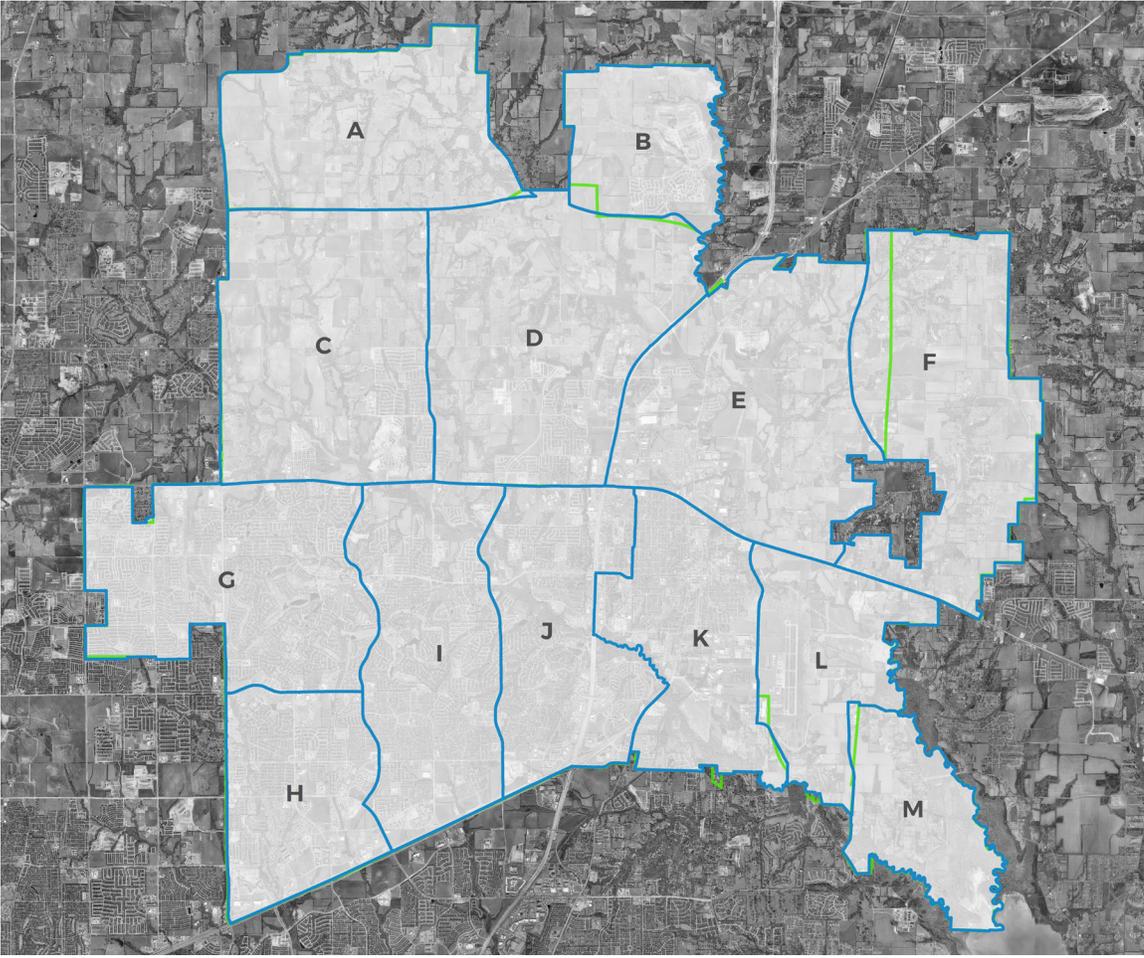
2019 POPULATION DISTRIBUTION



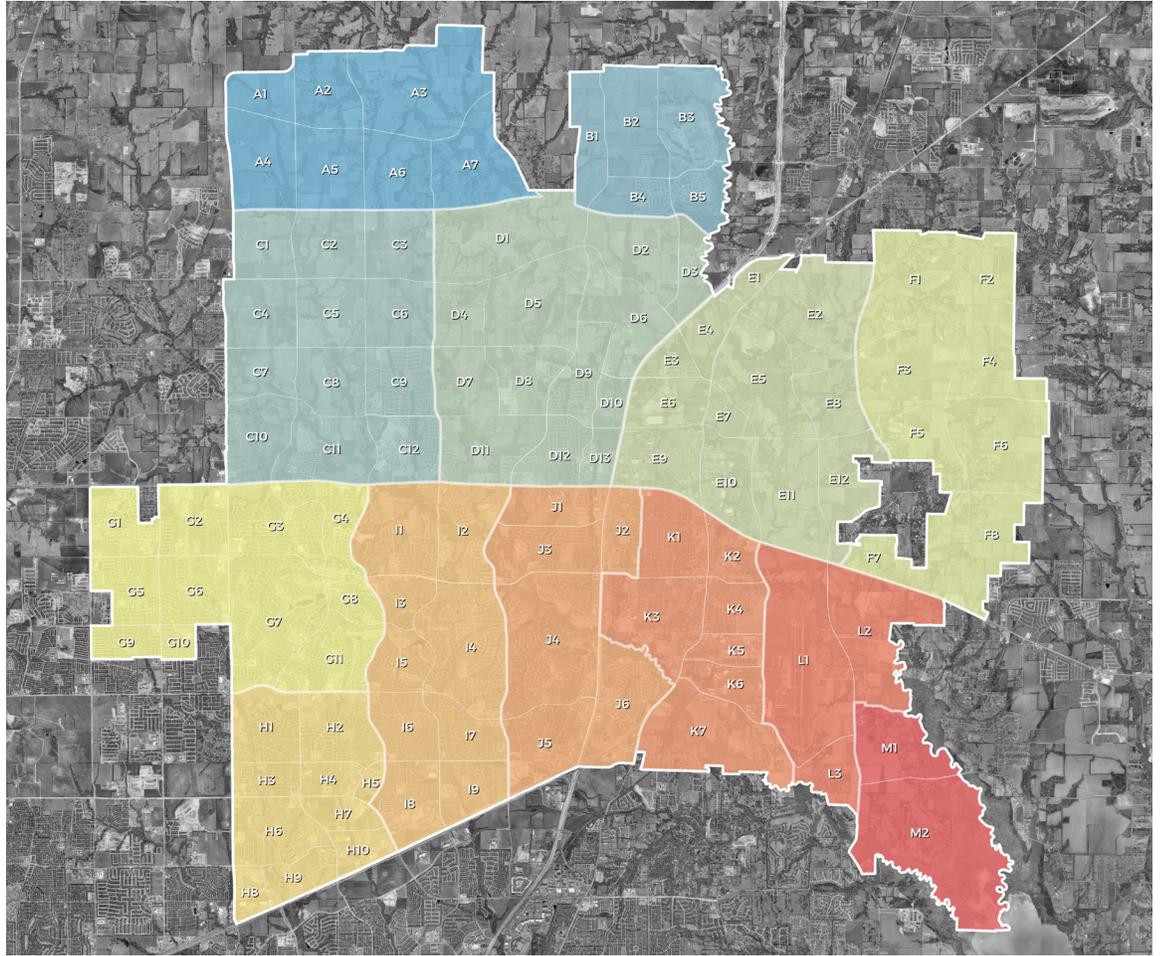
2029 POPULATION DISTRIBUTION



**SERVICE AREA CHANGES**



**SUBSERVICE AREAS**

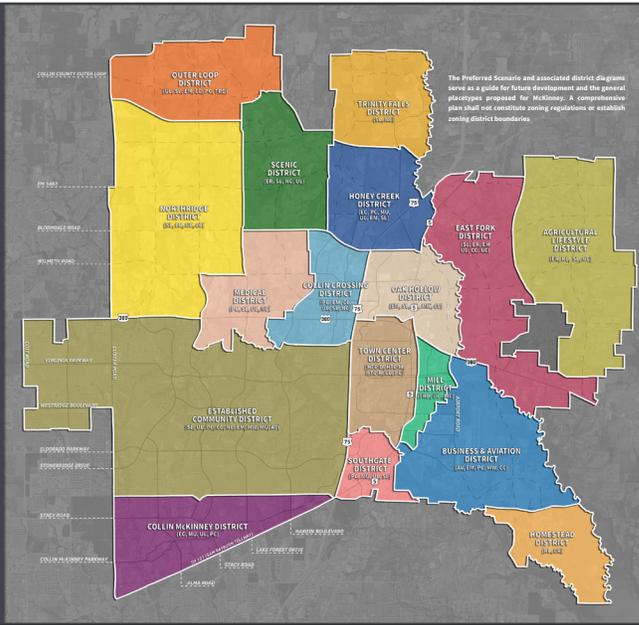


# PREFERRED SCENARIO

## PLACETYPES

- Aviation (AV)
- Commercial Center (CC)
- Employment Mix (EM)
- Entertainment Center (EC)
- Estate Residential (ER)
- Historic Town Center - Downtown (HTC-D)
- Historic Town Center - Mix (HTC-M)
- Historic Town Center - Residential (HTC-R)
- Manufacturing & Warehousing (MW)
- Mixed Use Center (MU)
- Neighborhood Commercial (NC)
- Professional Campus (PC)
- Rural Residential (RR)
- Suburban Living (SL)
- Transit-Ready Development (TRD)
- Urban Living (UL)

Version: 3.10.19



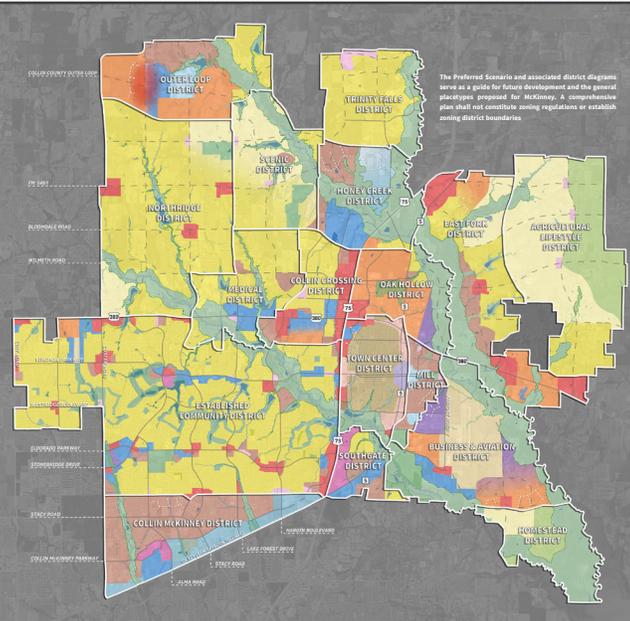
# PREFERRED SCENARIO

# LAND USE DIAGRAM

## LEGEND

- Placetypes**
- Aviation
  - Commercial Center
  - Employment Mix
  - Entertainment Center
  - Estate Residential
  - Historic Town Center - Downtown
  - Historic Town Center - Mix
  - Historic Town Center - Residential
  - Manufacturing & Warehousing
  - Mixed Use Center
  - Neighborhood Commercial
  - Professional Campus
  - Rural Residential
  - Suburban Living
  - Transit-Ready Development
  - Urban Living
- Other Features**
- Floodplain / Amenity Zone
  - District Boundary

Version: 3.10.19



# FUTURE LAND USE DIAGRAM

# MASTER THOROUGHFARE PLAN

## LEGEND

- Major Regional Highway/Multi-Modal
- Tollway
- Principal Arterial (130' - 6 lanes)
- Major Arterial (124' - 6 lanes)
- Greenway Arterial (140' - 6 lanes)
- Greenway Arterial (120' - 4 lanes)
- Minor Arterial (100' - 4 lanes divided)
- Minor Arterial (80' - 4 lanes undivided)
- Minor Arterial (70' - 3 lanes)
- Town Thoroughfare (2 lanes)
- Town Thoroughfare (2 lanes one way pairing)
- McKinney City Limits
- McKinney ETJ
- Other Cities

Ord. No. 2018-10-072

Disclaimer: The Master Thoroughfare Plan provides generalized locations for future thoroughfares. Alignments may shift as roads are engineered and designed to accommodate floodplain areas and to meet sound engineering and safety planning principles. The boundaries shown on the plan are not precise (site specific) locations of future thoroughfares.



# MASTER THOROUGHFARE PLAN