CITY OF MCKINNEY
LAND USE ASSUMPTIONS REPORT
2012-2013 IMPACT FEE UPDATE

INTRODUCTION

To accurately determine the costs associated with providing infrastructure to serve new development for the purpose of assessing impact fees, a planning study must first be conducted to determine the type, amount, and location of expected growth over the next 10 years. That study, known as a Land Use Assumptions (LUA) report, is described in Chapter 395 of the Texas Local Government Code as the basis for which all capital improvement plans for impact fees are to be created. It must be updated every five years and/or as conditions for development change in the city.

CONTENTS

The report is divided into six sections that serve to satisfy the methodology requirements of State Law. They are:

I. **Study Process**: A description of the data types and basic procedures used in the study.

II. **Service Area Maps**: The impact fee service areas for roadway facilities and utility facilities based on the data collection zones.

III. **Baseline Data**: Information on population, land use, and square footage of non-residential uses for McKinney, as of 2012, for each service area.

IV. **Ultimate Projections**: Projections for population and square footage of non-residential uses which reflect a completely developed condition based on the city's Future Land Use Plan and current land use patterns.

V. **10-Year Growth Assumptions**: Population and non-residential growth assumptions for the next ten years by service area.

VI. **Summary Tables**: Tabular summary of figures for baseline and 10-year projections by service area.

I. STUDY PROCESS

In order to estimate current population, estimate non-residential square footage levels in McKinney and to develop growth assumptions to be used in capital improvements planning, a wide variety of data have been reviewed. By assimilating data of varying types and noting both the differences and similarities of their variables, logical conclusions have been drawn to support the inclusion of data which is the "most appropriate" for McKinney and its expected growth patterns. It is important to note that there is no "one right way" to carrying out a land use assumptions study, but City Staff has been very diligent to utilize generally accepted forecasting techniques based on sound planning principles.

A. *Data Types*:

1. Existing land uses (source: Collin Central Appraisal District).

2. Existing zoning map and regulations (source: City of McKinney).

3. Future land uses based on the adopted Future Land Use Plan and Module Diagram (source: City of McKinney).

4. Historical population information (source: City of McKinney).

5. Residential and non-residential developments constructed over the last seven years (source: City of McKinney).

6. McKinney Town Center Study Phase 2, *Market Feasibility Analysis* (source: City of McKinney).

7. Proposals for residential and non-residential developments that have been submitted to the City (and in some cases, have been approved) but not yet constructed (source: City of McKinney).

B. *Study Procedures*:

Using the data described above, the study has been prepared following these primary steps.

1. Update impact fee service area boundaries in accordance with State Law requirements. See Section II: Service Area Maps.

2. Collect/determine baseline data for 2012 population and non-residential square footage (by land use category and by service area). See Section III: Base Year Data.

3. Project the ultimate population and non-residential square footage (by land use category and by service area) for McKinney at build-out. See Section IV: Ultimate Projections.

4. Project population and non-residential square footage growth for the next ten years (by land use category and by service area). See Section V: 10-Year Growth Assumptions.

II. SERVICE AREA MAPS

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. Roadway service areas also represent areas of similar traffic generation characteristics and help to maintain efficiencies in accounting and administration of roadway impact fees.

Exhibit "A" shows the 2012 Roadway Service Area Map. The 2012 Roadway Service Area Map includes the same 13 Service Areas that the City of McKinney recognized during the 2007-2008 Impact Fee Update. Only slight changes have been made to align service area boundaries with newly constructed roadways. These slight changes do not necessarily alter Service Area boundaries; rather, they simply reflect the alignments of built roadways as opposed to proposed alignments.

Exhibit "B" shows the 2012 Utility Service Area Map. Since there were no changes in the boundary of McKinney's Extraterritorial Jurisdiction (ETJ), the 2012 Utility Service Area Map has not changed since the 2007-2008 Impact Fee Update.

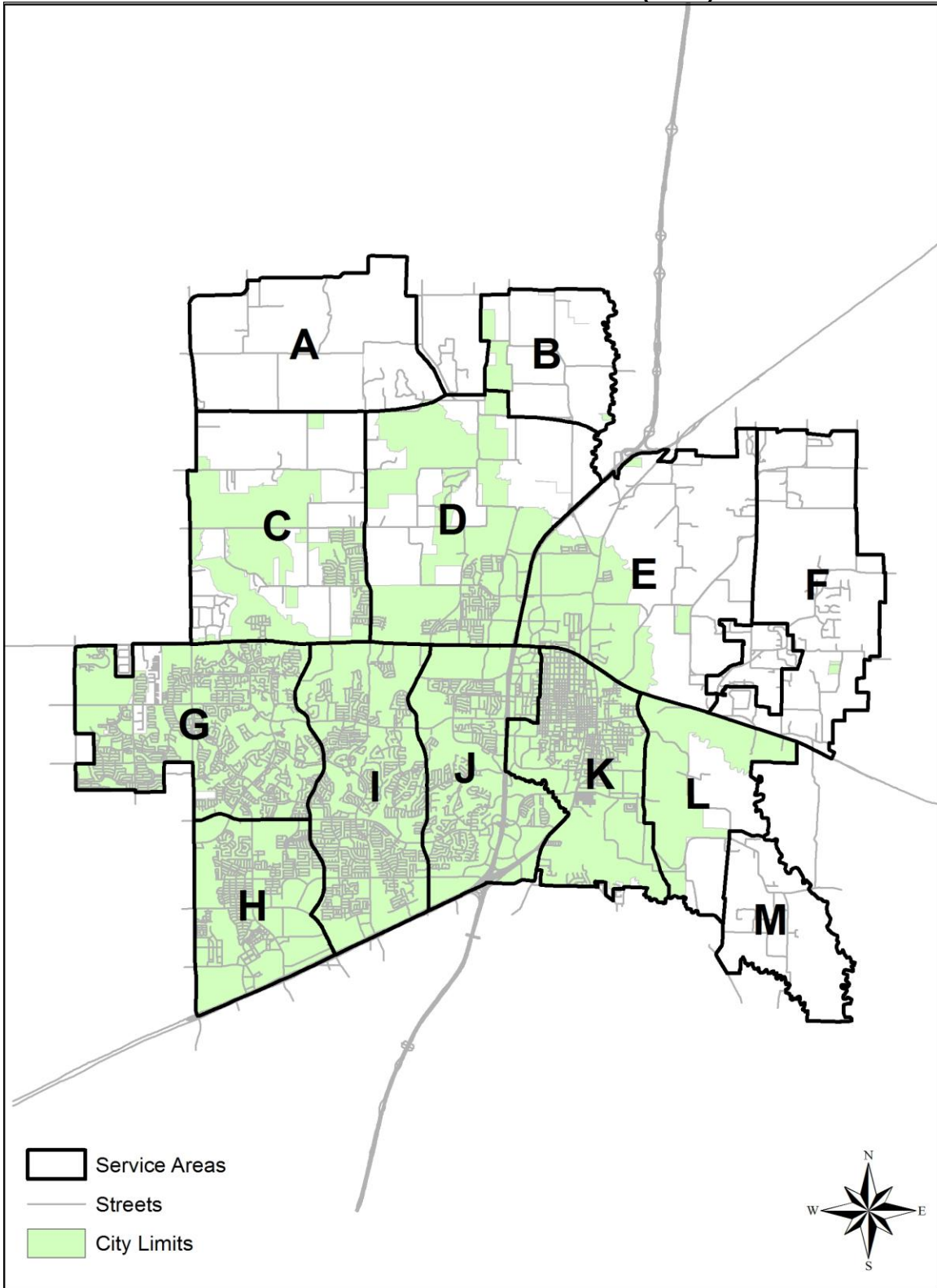**ROADWAY SERVICE AREA MAP (2012)**

EXHIBIT "A"
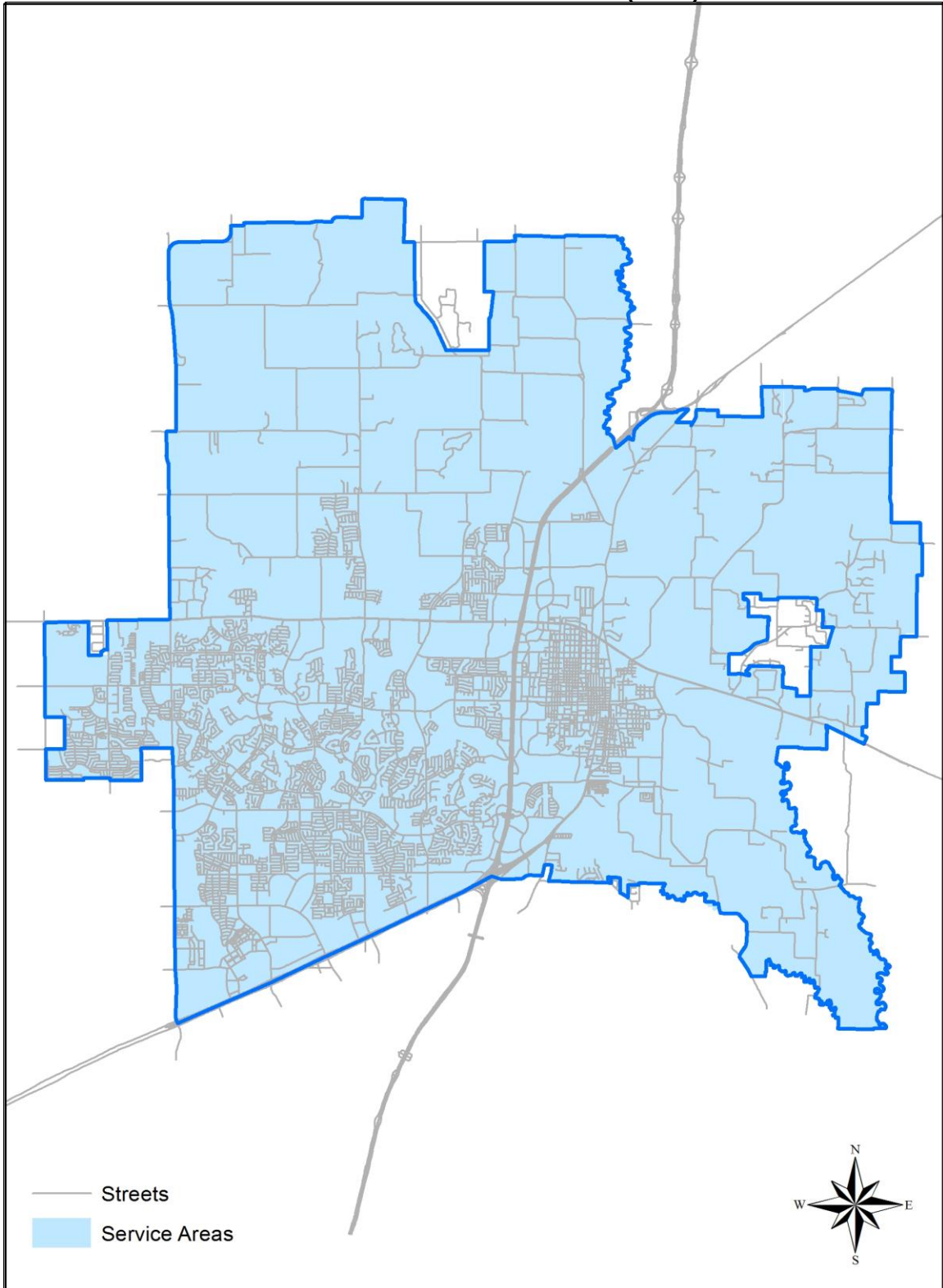
UTILITY SERVICE AREA MAP (2012)

EXHIBIT "B"

III. BASELINE DATA

A. _Population_:

The baseline population in McKinney as of January 1, 2012 has been estimated at 136,813.

Table 1 below shows McKinney's population history from the 2000 U.S Census through the estimate for January 1, 2012. Using the official 2010 U.S. Census population as starting point, City Planning Staff estimates a population figure each year based on an analysis of building permit data for the previous year as well as on commonly accepted assumptions for occupancy rates and household sizes.

Table 1 below illustrates that McKinney has been experiencing steady residential growth over the last decade. With no foreseeable exhaustion of land, this trend of increasing population growth should continue well past the 10-year forecast of this study.

TABLE 1
CITY OF MCKINNEY
HISTORICAL POPULATION GROWTH
2000 – 2012

YEAR	POPULATION	ANNUAL PERCENTAGE GROWTH
2000	54,369*	------
2001	58,438	7.5%
2002	66,990	14.6%
2003	76,907	14.8%
2004	85,865	11.6%
2005	94,733	10.3%
2006	104,853	10.7%
2007	115,198	9.9%
2008	120,978	5.0%
2009	122,803	1.5%
2010	131,117*	6.8%
2011	133,376	1.7%
2012	136,813	2.5%

* Official Census figure

The citywide population estimate is then spatially distributed among the thirteen roadway service areas. To do this, data from Collin CAD is used in conjunction with City building permit data to convert the population into housing units. By querying the data using Geographic Information Systems (GIS) software, the

number of exiting housing units currently within each service area is estimated. Using the average number of persons in a single family unit and a multi-family unit (i.e. the household size), an estimated number of residents is determined for each service area. For single family, the average household size used is 3.0. For multi-family, the average household size used is 2.4. These are the standard household sizes used by City Planning Staff for the yearly population estimates. (See Summary Table in Section VI)

B. *Non-Residential Square Footages:*

It is also necessary to establish a baseline figure for non-residential uses currently in McKinney. Non-residential uses are estimated in square feet because building square footages provide the basis for determining the projected increase in Service Units demanded over the next ten years.

For roadway impact fees in particular, 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*. This statistic is more appropriate than the number of employees because building square footage is tied more closely to trip generation and is known at the time of application for any development or development modification that would require the assessment of an impact fee.

As a result, the non-residential uses are grouped into three broad categories: Basic, Service, and Retail. These three categories correspond to an aggregation of other specific land use categories based on the North American Industry Classification System (NAICS).

The Basic category generally consists of industrial uses. The Service category generally consists of office uses, including institutional uses (schools, government, and churches). The Retail category generally includes commercial uses.

Baseline square footage of Basic, Service, and Retail uses within the City of McKinney is determined using data from Collin CAD. Collin CAD provides the City Planning Staff with square footage data for all existing non-residential improvements (i.e. structures) within the city limits. GIS is then used to query the data by service area and by non-residential land use type. Using the results of these queries, a summary table of all non-residential uses within each service area is created. Adding the square footage of each non-residential land use within each service area gives the baseline square footages of Basic, Service, and Retail uses. (See Summary Table in Section VI)

IV. ULTIMATE PROJECTIONS

A. _Population_:

An ultimate population projection must also been established. This ultimate projection is needed as an input (i.e. it establishes an upper growth limit when plotting a Gompertz growth curve) for estimating the ten-year projection (which is provided in Section V). Therefore, the Ultimate Project has been calculated first in this report.

The ultimate population of the City of McKinney is a function of residential land use area (acres), housing density (dwelling units per acre), occupancy rate, and household size (persons per dwelling unit). An ultimate population of 357,967 persons is based on the following process:

Within current city limits: An existing land use map is derived from Collin CAD data and reflects currently developed properties in the City of McKinney. The existing land use map reflects existing uses and may not necessarily correspond with the zoning or Future Land Use Plan. By taking the Future Land Use Plan map and subtracting all developed land as shown on the existing land use map, a new map is created that show only undeveloped (vacant) areas within the current city limits. The undeveloped land map is then divided into service areas.

Staff then analyzes the zoning regulations for every undeveloped parcel of land in order to compile a summary of the number of acres available for eachtype of residential development (i.e. single-family, multi-family). For parcels currently zoned "Agricultural District," Staff uses the Future Land Use Plan (and its accompanying Module Diagram) to determine future anticipated uses. The Future Land Use Plan (and Module Diagram) is a guide indicating the City's desired future use of land and is already referenced when the City considers zoning requests. The acreage of each type of residential development in each service area is multiplied by the average dwelling units per gross developable acre of type as calculated from existing land use patterns.

$$\left[\substack{\text{Undeveloped} \\ \text{Acres}} \quad \mathbf{x} \quad \substack{\text{Average Dwelling Units per Gross} \\ \text{Developable Acre by Residential Type}} \quad = \quad \substack{\text{Projected} \\ \text{Dwelling Units}} \right]$$

Within the ETJ but outside current city limits: Property located within the ETJ but outside the city limits is not subject to the City's zoning regulations. Therefore, the Future Land Use Plan (and Module Diagram) is used to consider which zoning regulations would be applied to the property upon annexation into the city. Thus, the ultimate population for the area within the ETJ but outside of the current city limits is calculated based on an analysis of the Future Land Use Plan (and Module Diagram).

The acreage of each land use category in each service area is multiplied by the recommended average allowable housing density given by the Future Land Use Plan (and Module Diagram). The products of each land use category are then added together to obtain the total projected dwelling units in each service area.

$$\left[\begin{array}{ccccc} \text{Undeveloped Acres} & \textbf{x} & \text{Dwelling Units Per Acre} & \textbf{=} & \text{Projected Dwelling Units} \end{array} \right]$$

The projected number of dwelling units for each service area within and outside of the city limits are added together to get the total projected increase in the number of dwelling units to build-out.

This figure is converted to population by multiplying it by an average household size (persons per dwelling unit). For single family, the average household size used is 3.0. For multi-family, the average household size used is 2.4. These are the same average household sizes used for the yearly population projection by the City.

The total projected increase in population is added to the 2012 baseline population to determine the ultimate population of the City of McKinney at 100% build out.

$$\left[\begin{array}{ccccc} \text{Existing Population} & \textbf{+} & \text{Population Increase} & \textbf{=} & \text{Population at Build Out} \end{array} \right]$$

B. *Non-Residential Square Footage*:

To estimate the ultimate square footage of Basic, Service and Retail uses, a method similar to the one used for population is used.

Within the current city limits: A map is created showing only undeveloped (vacant) areas within the current city limits. The undeveloped land map is divided into service areas. Then, Staff analyzes the zoning regulations for every undeveloped parcel of land in order to compile a summary of the number of acres within the current city limits that could be developed for Basic, Service and Retail uses.

For purposes of this analysis, the Basic category consists of zoning districts with designations for:
- ML-Light Manufacturing
- MH-Heavy Manufacturing
- PD-Planned Development Districts with industrial-type base zoning districts or development standards.

The Service category consists of zoning districts designated for:
- O-Office
- O-1 Neighborhood Office
- PD-Planned Development Districts with office-type base zoning districts or development standards).

The Retail category consists of zoning districts designated for:
- BN-Neighborhood Business
- BG-General Business
- C-Planned Center
- PD-Planned Development Districts with commercial-type base zoning districts or development standards.

For properties currently zoned "Agricultural District," Staff uses the Future Land Use Plan (and the accompanying Module Diagram). See below for how Staff groups the various land use types of the Future Land Use Plan (and the Module Diagram) into Retail, Service or Basic categories.

Within the ETJ but outside current city limits: The ultimate non-residential square footage for the area within the ETJ but outside the current city limits is calculated based on an analysis of the Future Land Use Plan (and Module Diagram). This analysis produces a summary of the number of acres within the ETJ but outside current city limits that could be developed for Basic, Service, and Retail uses.

For purposes of this analysis, the Basic category consists of the following future land use types:
- Light Industrial/Manufacturing
- Flex Office/Warehouse
- Airport Operations

The Service category consists of the following future land use types:
- Office-Neighborhood
- Office-Urban
- Office-Regional
- Employment Center
- Community Facilities

The Retail category consists of the following future land use types:
- Retail-Neighborhood
- Retail-Urban
- Retail-Regional
- Lodging
- Entertainment

Using the square footage data from Collin CAD, the square footage of all existing developments (i.e. the square footage of the improvements) are then divided by the total developed acreage to determine the square footage per acre for Basic, Service, and Retail uses. (See Table 2 below)

Using the analysis of the undeveloped acres of Basic, Service, and Retail uses both within and outside of the city limits, the projected increase in square footage in each service area is found by multiplying the acreage of undeveloped land by the square footage per acre. (See Table 3 below)

$$\left[\text{Existing Square Footage of Developed Land} \quad \mathbf{x} \quad \text{Acres of Developed Land} \quad = \quad \text{Projected Increase in Building Square Footage} \right]$$

The projected increase in non-residential square footage is then added to the 2012 baseline square footage to determine the projected ultimate non-residential square footage of Basic, Service, and Retail uses at build-out. (See Table 4 below as well as the Summary Table in Section VI)

Table 2 below shows the square footage per acre of existing Basic, Service, and Retail uses that are existing in the City of McKinney.

TABLE 2
CITY OF MCKINNEY
EXISTING BASIC, SERVICE, AND RETAIL
SQUARE FOOTAGE PER ACRE

	ACRES DEVELOPED	EXISTING BUILDING SQ. FT.	SQ. FT. PER ACRE
BASIC	1,272	11,453,254	9,004
SERVICE	1,749	9,804,080	5,606
RETAIL	1,281	9,900,940	7,729

Table 3 below shows the projected increase in non-residential square footage of Basic, Service, and Retail uses to build-out.

TABLE 3
CITY OF MCKINNEY
PROJECTED INCREASE IN BASIC, SERVICE, AND RETAIL
SQUARE FOOTAGE TO BUILD-OUT

	SQ.FT. PER ACRE	ACRES UNDEVELOPED	PROJECTED INCREASE IN BUILDING SQ. FT.
BASIC	9,004	5,304	47,758,891
SERVICE	5,606	5,804	32,543,118
RETAIL	7,729	6,215	48,033,018

Table 4 below shows the projected ultimate non-residential square footage of Basic, Service, and Retail uses at build-out.

TABLE 4
CITY OF MCKINNEY
PROJECTED BASIC, SERVICE, AND RETAIL
SQUARE FOOTAGE AT BUILD-OUT

	EXISTING BUILDING SQ. FT.	PROJECTED INCREASE IN BUILDING SQ. FT.	TOTAL SQ. FT. AT BUILD OUT
BASIC	11,453,254	47,758,891	59,212,145
SERVICE	9,804,080	32,543,118	42,347,198
RETAIL	9,900,940	48,033,019	57,933,959

V. 10-YEAR GROWTH ASSUMPTIONS

A. *Population:*

The ten-year population projection for land use assumptions is not only based on densities established by the existing zoning regulations and by the currently adopted Future Land Use Plan (and Module Diagram), but it is also based on historical population data. As aforementioned in Section III of this report, McKinney has experienced a steady growth over the past 15 years. With no foreseeable exhaustion of land, this trend of increasing population growth is expected to continue well past the 10-year forecast of this study.

There are several methods for projecting population growth based on historic population data. One of these methods involves using a linear growth curve which assumes a constant growth rate and takes the form of a straight line when plotted. This method has suited the City of McKinney's relatively constant growth rate in previous studies.

However, during the period of this update, the City of McKinney (along with the rest of the country) has experienced a significant slowdown in the single family residential market. For projections over a relatively short period of time such as ten years, the linear method is too simplified and cannot accurately accommodate a significant economic slowdown such as what has occurred in recent years. Therefore, in order to develop a projection that is more accurate over the ten year growth horizon, two other standard methods of projection have been utilized. The average of the two methods has been incorporated into the land use assumptions report. These two methods are the Gompertz growth curve and the ratio technique.

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. When plotted, the curve resembles an "S". Using the ultimate population (357,966) from the build-out projections as the upper growth limit, a Gompertz curve has been plotted.

Projections for larger geographic areas (i.e. counties or regions) are more reliable than projections for smaller areas (i.e. cities) since the larger population base is less likely to exhibit short term variations. For this reason, a second method called the ratio technique has also been utilized. This method assumes that, if the relationship between the population of a city and its larger geographic area (for example, a county) has been a generally fixed ratio, the population of the city can be projected based on the population projection of the county.

Analyzing data from Collin CAD over the last five years shows that the total number of single family units in McKinney has been about 15% of the total units in Collin County. Likewise, analyzing data from the State Demographer over the

last five years shows that the population for McKinney has been about 15% of that of Collin County.

With no foreseeable constraint on the supply of developable land in McKinney, it is assumed that McKinney's share of population growth in Collin County will remain the same for at least the next 10 years. Using this assumption, McKinney's population has been calculated for the ten year period as 15% of the population projected by the State Demographer for Collin County for the same 10-year period.

The Gompertz projection provides the low end of the projection and the ratio method provides the high end. Then, the average of both methods is used to establish the 10-year population projection.

Once the population is projected for the 10-year window, dispersing the additional population among the service areas is necessary. In order to accurately disperse the population, population growth trends (i.e. quantity and location of anticipated additional residential dwelling units) have been analyzed by considering all planned lots/units shown on all pending plats and general development plans. (See Summary Table in Section VI)

Note: Municipal Utility District (Nos. 1 and 2) and Utility Impact Fees

The Trinity Falls MUD, a large master-planned development located wholly within the northern reaches of McKinney's ETJ, anticipates ultimate build-out of approximately 4,200 single-family residential units on approximately 1,700 acres. The City of McKinney will be providing water and wastewater service to this development, and, as such, this development will be subject to utility impact fees.

Based on consideration of data provided by the developer as well as information contained in various agreements between the developer and the City, City Staff is making the following assumptions for this impact fee update:

- Approximately 2,700 residential units are projected to be developed in the Trinity Falls development within the 10-year planning window of this impact fee update.

- No amount of non-residential square footage is projected to be developed in the Trinity Falls development within the 10-year planning window of this impact fee update.

- The Trinity Falls development is not anticipated to be annexed into the corporate boundaries of the City of McKinney within the 10-year planning window of this impact fee update.

B. *Non-Residential Square Footage*:

The baseline 2012 non-residential square footage figures have been used as a reference point of how developed the service areas are in 2012. To forecast the amount of growth in Basic, Service, and Retail use categories over the 10-year period of the study, a combination of three methods has been used.

It is assumed that the anticipated growth of uses in the Retail category will tend to follow the growth of population. In order to determine the amount of Retail growth within the City of McKinney, a ratio of current square feet of Retail space to population is determined. The location of the anticipated Retail growth is determined by analyzing population growth, the location of undeveloped land and the location of developing retail corridors and nodes. Using these methodologies, Staff is able to forecast the amount and location of Retail uses anticipated over the next 10 years.

It is assumed that the anticipated growth of uses in the Basic category will not follow population but, instead, grow at the same rate it has over the last five years. It is also assumed that Basic uses will be concentrated in industrial areas of the city. A per year average of the amount of Basic uses constructed over the past five years is used by Staff to forecast the amount of Basic growth anticipated over the next 10 years. The location of the anticipated Basic growth is determined by analyzing the location of undeveloped land, zoning regulations and the Future Land Use Plan (and Module Diagram).

To forecast the amount of anticipated growth of uses in the Service category over the next 10 years, a combination of current square footage per person and historical levels of Service uses in McKinney is used. The amount of Service growth can be tied to population growth, but it is not as dependent on the population growth as Retail uses. It is assumed that the location of some Service uses (i.e. neighborhood-scale offices, churches, and schools) would be dispersed according to population, but the location of some other types of Service uses (i.e. larger-scale office parks, governmental centers, etc.) may be located within clusters throughout the city. The location of the anticipated Service growth is determined by analyzing the location of undeveloped land, zoning regulations, and the Future Land Use Plan (and Module Diagram) as well as the location of residential growth. (See Summary Table in Section VI)

VI. SUMMARY TABLES

Table 5.

Baseline 2012					
Service Area	Residential		Non-Residential Square Feet		
	Population	Dwelling Units	Basic	Service	Retail
A	0	0	0	0	0
B	0	0	0	0	0
C	3,501	1,245	10,233	108,704	488,070
D	9,584	2,776	66,490	1,775,143	719,239
E	2,550	635	3,159,347	759,829	984,216
F	0	0	0	0	0
G	35,028	12,584	138,680	1,201,866	883,757
H	13,294	5,222	293,832	803,818	1,218,376
I	33,327	11,881	101,530	1,259,562	872,364
J	21,291	8,816	1,453,785	2,040,859	3,000,259
K	18,223	6,584	5,628,221	1,852,784	1,723,306
L	15	13	601,136	1,515	11,353
M	0	0	0	0	0
Total	136,813	49,756	11,453,254	9,804,080	9,900,940

Table 6.

10-Year Projected Increase					
Service Area	Residential		Non-Residential Square Feet		
	Population	Dwelling Units	Basic	Service	Retail
A	0	0	0	0	0
B	7,919	2,740	0	0	0
C	8,216	2,843	0	261,471	672,692
D	5,199	1,799	0	392,211	831,620
E	2,439	844	530,732	0	170,542
F	43	15	0	0	0
G	14,236	4,926	37,908	436,138	618,214
H	10,407	3,601	37,910	1,926,111	1,035,982
I	7,537	2,608	56,865	855,438	327,306
J	3,725	1,289	132,684	459,139	599,805
K	2,468	854	331,707	125,597	244,095
L	0	0	199,024	0	0
M	0	0	0	0	0
Total	62,190	21,519	1,326,830	4,456,105	4,500,256

Table 7.

	10-Year Projection				
	Residential		Non-Residential Square Feet		
Service Area	Population	Dwelling Units	Basic	Service	Retail
A	0	0	0	0	0
B	7,919	2,740	0	0	0
C	11,718	4,088	10,233	370,175	1,160,762
D	14,784	4,575	66,490	2,167,354	1,550,859
E	4,989	1,479	3,690,079	759,829	1,154,758
F	43	15	0	0	0
G	49,264	17,510	176,588	1,638,004	1,501,971
H	23,701	8,823	331,742	2,729,929	2,254,358
I	40,864	14,489	158,395	2,115,000	1,199,670
J	25,016	10,105	1,586,469	2,499,998	3,600,064
K	20,691	7,438	5,959,928	1,978,381	1,967,401
L	15	13	800,160	1,515	11,353
M	0	0	0	0	0
Total	199,003	71,275	12,780,084	14,260,185	14,401,196

Note: All numbers are cumulative (i.e. numbers include the baseline 2012 from Table 5 figures plus the 10-year Projection Increase figures from Table 6.).