

# Appendix C

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## WALLER COUNTY GROWTH MATRIX



# Waller County Growth Metrics

Revision 5–October 15, 2018 FINAL

Local communities desire population and economic growth. Such growth brings increased tax revenue, economic prosperity, social diversity, and increased services and amenities. With proper planning the challenges that come with growth, such as traffic congestion, housing shortages, and strains on local services and schools, can be minimized or eliminated.

Community growth typically happens incrementally over time, so it is hard to anticipate the demand growth will create on existing facilities and services. Likewise, because local governments deal with land development projects on a case-by-case basis, it is sometimes difficult to see the cumulative impact of these projects on the local transportation network.

The growth metrics below are intended to help Waller County officials better comprehend the magnitude of future population growth. These metrics are rough estimates of the potential impact of population growth and should not be considered definitive expectations of future growth or demand. Rather, the metrics are “food for thought” meant to facilitate contemplation of policies needed to accommodate such growth should it occur.

The metrics include projections for water demand, housing, education facilities, and businesses. Housing projections include projections for single-family, multi-family, and manufactured housing. Methodology and assumptions for each topic are explained in that section.

## Water Demand

Land development and urban growth are virtually impossible without water. Therefore, it is worth assessing the projected water demand for Waller County based on future population growth. The Waller County Comprehensive Strategic Plan (WCCS Plan) states that Waller County primarily relies on groundwater for municipal and agricultural uses. The WCCS Plan also states that Waller County should manage and protect its water resources.

The Texas Water Development Board (TWDB) is the state agency responsible for water planning and calculates water demand for all counties in Texas. TWDB water demand figures are show below for reference purposes only. TWDB data is available on their website at <http://www.twdb.texas.gov>.

Table 1 shows projected water demand in Waller County based on TWDB and H–GAC population projections for 2040. TWDB projects a population of 75,535 in Waller County in 2040. In contrast, H–GAC predicts a population of 175,895. Water demand acre-feet totals are based on the TWDB acre-feet per person amounts from the 2020 TWDB Water Demand Projections.

TABLE 1: Waller County 2040 Projected Water Demand (acre-feet)

City Name/Category	TWDB	HGAC
Brookshire	921	2,336
Hempstead	1,703	7,882
Katy <sup>1</sup>	7,748	6,254
Pattison	184	9,202
Pine Island	184	1,715
Prairie View	2,110	5,653
Waller	494	2,647
<b>Municipal TOTAL<sup>2</sup></b>	<b>13,344</b>	<b>35,689</b>
Unincorporated <sup>3</sup>	741	1,702
Irrigation <sup>4</sup>	21,096	17,562
Livestock <sup>4</sup>	1,069	890
Manufacturing <sup>4</sup>	134	413
Mining <sup>4</sup>	7	22
<b>County TOTAL</b>	<b>49,735</b>	<b>56,277</b>

1 acre-foot equals 325,851 gallons of water

<sup>1</sup> Population of Katy, TX includes portions of Harris and Fort Bend counties

<sup>2</sup> TWDB municipal water demand excludes Pattison, TX. Pattison, TX totals are estimates

<sup>3</sup> Water demand for unincorporated Waller County is estimated

<sup>4</sup> TWDB projects that the level of water demand for these uses will remain unchanged thru 2070; HGAC numbers based on 17% decrease in Irrigation & Livestock and 208% increase in Manufacturing & Mining; Mining includes oil & gas activities, extraction of aggregates such as sand, gravel and stones, and production of cement, etc.

As the Urban Land Institute notes, “As more U.S. land becomes urbanized and less is used for agriculture, water use is certain to increase, straining freshwater sources both above and below ground” (2002). With 175,000 residents, Waller County would need 13 percent more water than TWDB is projecting. The increase in municipal water demand is noteworthy at 167 percent more than TWDB estimate.

## Housing

Housing demand in Waller County will increase with population. A shortage of quality housing stock can hurt both population and economic growth. As the WCCS Plan states, “When communities fail to adequately address housing demands, large segments of the workforce may choose to commute in from outside of the County. This could result in the County being unable to attract the skilled labor force needed to attract quality industry to the local communities”.

Table 2 shows information on existing housing in Waller County. Table 3 shows projected housing demand based on H-GAC's population projection with current average household size. Note that the figures in Table 3 are in addition to existing housing stock in Waller County.

TABLE 2: Current Waller County Housing Characteristics

Population (HGAC 2017)	48,775
Total Housing Units (ACS 2016)	16,146
AVG Household Size	3.02

<b>Housing Unit Percentages</b>	<b>Waller County</b>	<b>State AVG</b>
Single-Family Units	63.7%	67.9%
Multi-family Units	12.4%	24.6%
Manufactured Homes	23.3%	7.3%
Other	0.5%	0.2%

<b>Housing Types</b>	<b>Quantity</b>
Single-Family Units	10,288
Multi-family Units	2,003
Manufactured Homes	3,767
Other	88
<b>TOTAL</b>	<b>16,146</b>

Waller County has a high percentage of manufactured homes. Nearly one-quarter of all housing stock in Waller County is currently manufactured housing. An assumption in the housing projections that follows is that the percentages of housing types in Waller County will mirror state averages in the future. This assumption means that the percentage of manufactured homes in Waller will generally decrease by 2040. Another assumption is that household size will remain constant at 3.02 persons through 2040.

TABLE 3: Projected Housing Demand and Acreage

<b>Description</b>	<b>H-GAC 2040 Projection</b>
<b>Population</b>	175,895
<b>Housing Units</b>	58,227
<b>Housing Unit Types</b>	<b>Projected Units</b>
Single-Family Units	39,536
Multi-family Units	14,324
Manufactured Homes	4,251
Other	116
<i>Growth based on State AVG of Housing Types</i>	
<b>Additional Housing Units by Type</b>	<b>Quantity</b>
Single-Family Units	29,248
Multi-family Units	12,321
Manufactured Homes	484
Other	28
<b>Additional Housing Unit Acreage</b>	<b>Acres</b>
<b>Single-Family Acres</b> <i>based on 5,000 sq. ft. Lots</i>	3,354
<b>Multi-Family Sites</b> <i>based on 100 units/site</i>	123
<b>Multi-Family Acres</b> <i>based on 5 acres per site</i>	616
<b>Manufactured Home Sites</b> <i>based on 100 MH lots per site</i>	5
<b>Manufactured Home Acres</b> <i>based on 1,000 sq. ft. lots &amp; 100 MH lots per site</i>	11

Based on the projection in Table 3, Waller County will need more than 29,000 additional single-family homes by 2040. Over 100 apartment complexes could be added, and roughly five new manufactured home communities could be developed, based on the assumptions of the scenario. The location of these developments, and the roadway systems to and through

them, will have major impacts on the transportation network of Waller County and its cities. Such potential growth emphasizes the need for updated subdivision platting requirements, especially right-of-way dedication and roadway design geometry, as well as access management regulations.

In Texas, the median number of vehicles per household is 2.3 vehicles. The total projected housing units above could potentially generate 494,827 daily trips by 2040.

## Education

According to the WCCS Plan, education is a factor considered by businesses and persons contemplating moving into an area. With increasing population comes a need for additional educational facilities. School-related vehicle trips account for as much as 25 percent of daily weekday traffic. The location of school facilities and roadway infrastructure to support them is vital for safety and mobility within the community. Table 4 shows public school metrics for Waller County for the 2016-2017 school year.

TABLE 4: 2016-2017 Public School Enrollment, Staff, and Facilities serving Waller County Students

District Name	2016 Enrollment*	Teachers	Staff	Elementary Schools	Middle/Jr. High Schools	High Schools	Grand Total
HEMPSTEAD ISD	1,633	111	111	1	1	1	3
ROYAL ISD	2,365	179	174	1	1	1	3
WALLER ISD	3,819	375	427	5	2	1	8
KATY ISD*	1,376	464	138	2	2	1	5
Grand Total	9,193	1,129	850	9	6	4	19

\*Enrollment figures are for students that reside in Waller County. Katy ISD has one campus (Bryany Elementary) physically located in Waller County. Katy ISD has a total of five campuses that have attendance zones that extend into Waller County.

Table 5 shows the academic and financial information for the four school districts that service Waller County. The ability of Waller County school districts to fund new facilities, purchase transportation equipment, and hire new staff will profoundly affect development patterns within the county. Accordingly, these development patterns will impact the county's transportation network. Moreover, the school districts may be required to improve or construct new roadways as part of the construction of new facilities. Therefore, the financial health of Waller County school districts is important.

TABLE 5: Waller County School District Academic and Financial Information

	Hempstead ISD	Katy ISD <sup>1</sup>	Royal ISD	Waller ISD <sup>2</sup>
<b>Property Tax Rates in 2015 (per \$100 Valuation)</b>				
<b>Type</b>	<b>Amount (%)</b>	<b>Amount (%)</b>	<b>Amount (%)</b>	<b>Amount (%)</b>
Voter Approved Tax-Supported Debt	0.21	0.39	0.4888	0.4
Maintenance & Operations	1.17	1.1266	1.04	1.04
<b>Total</b>	<b>1.38</b>	<b>1.5166</b>	<b>1.5288</b>	<b>1.44</b>
<b>Taxes and Actual Revenues</b>				
Taxable Value Per Pupil (2013 Tax Year)	\$296,933	\$341,256	\$400,496	\$302,787
Total Revenue (2014-15)	\$17,326,511	\$782,000,158	\$28,457,183	\$66,893,698
Total Revenue Per Pupil	\$11,683	\$11,151	\$12,935	\$10,730
% State	50.2	34.9	33.6	41.2
% Local and Other	40	59.6	57	47
% Federal	9.8	5.6	9.4	11.8
<b>Actual Expenditures</b>				
Total Expenditures (2014-15)	\$17,077,852	\$829,972,599	\$28,752,270	\$64,132,564
Total Operating Expenditures (2014-15)	\$14,903,538	\$624,593,514	\$22,004,830	\$55,091,554
Total Operating Expenditures Per Pupil	\$10,050	\$8,907	\$10,002	\$8,837
Total Instructional Expenditures	\$7,811,388	\$394,595,889	\$12,342,072	\$31,357,099
Total Instructional Expenditures Per Pupil	\$5,267	\$5,627	\$5,610	\$5,030
<b>Current Debt Obligations</b>				
Outstanding Debt as of August 31, 2015				
<b>Type of Debt</b>				
Voter Approved Tax-Supported Debt	\$15,574,480	\$1,273,035,662	\$67,625,918	\$72,730,000
Maintenance and Operations Tax-Supported Debt	\$909,809	\$0	\$2,560,000	\$0
Revenue Supported Debt	\$0	\$0	\$0	\$0
Lease Revenue Obligations	\$0	\$0	\$0	\$0
<b>Total</b>	<b>\$16,484,289</b>	<b>\$1,273,035,662</b>	<b>\$70,185,918</b>	<b>\$72,730,000</b>

<sup>1</sup> Katy ISD has 5 campuses attended by students that live in Waller County. Only one campus is physically located in Waller County. Total Waller County student enrollment was 1,369 in 2016.

<sup>2</sup> Waller ISD attendance boundaries include portions of Harris County. Total Waller County Student Enrollment was 3,819 in 2016

TABLE 6: Potential Additional School Facilities

Grade Level	Current Campuses*	175K Population	Additional Campuses
Elementary School (PK-5)	9	21,365	+14
Middle School (6-8)	6	9,471	+8
High School (9-12)	4	12,079	+5
TOTAL	19	42,915	+27

\*Including five Katy ISD schools

Table 6 shows the additional school facilities needed with projected population increase to 175,895 persons. These facilities will be in addition to existing school facilities shown in the first column. The additional facilities are based on the assumptions that (1) the percentage of population under 18 years of age will remain at 24.4 percent of the total population; (2) the current percentages of students in elementary, middle, and high school will remain unchanged thru 2040; and, (3) additional campuses are based on current average campus sizes in Waller County. Increasing campus enrollment per school will reduce the need for additional facilities but will increase traffic volumes at these campuses.

Average Waller County school campus sizes are currently 687 students for elementary schools, 826 students for middle/junior high schools, and 1,621 students for senior high schools. In 2014, the median cost of a new elementary school was \$43,693 per student and provided 188 square feet per student. For middle schools the cost was \$43,635 per student, with 173.4 square feet per student. High schools cost \$45 million each and provided a median of 173,727 square feet (School Planning & Management, 2015). Applying these costs to the projected facilities in Table 6, and using the average campus sizes mentioned above, the school districts serving Waller County could potentially spend over \$900 million for new schools. Based on average Waller County campus sizes, new elementary schools would be approximately 129,000 square feet, and middle/junior high schools would be about 143,000 square feet.

Table 7 shows the amount of daily vehicle trips these additional schools would generate. Daily trips are based on 1.29 trips per elementary student, 1.62 trips per middle/junior high student, and 1.71 trips per high school student.

TABLE 7: Additional School Facility Daily Trip Generation (based on number of students)

Grade Level	175K Population	
	Additional Campuses	Daily Trips
Elementary School (PK-5)	14	27,561
Middle School (6-8)	8	15,344
High School (9-12)	5	20,654
	27	63,559

## Business

Economic growth is key to any community’s vitality and prosperity. However, like all other forms of growth, economic development generates additional traffic. Table 8 shows the potential additional businesses in Waller County based on population threshold analysis. Population threshold analysis estimates the population levels needed to support various types of businesses. This type of business analysis is a simple and quick way to determine retail and service business growth. The figures below are rough estimates of the potential number of businesses that can be supported by the projected population increase. However, it should be noted that other factors, such median household income, product or service demand, level of competition, and physical infrastructure, also affect the location and expansion of businesses.

The business types in tables 8 and 9 are listed by Standard Industrial Classification (SIC) codes. SIC is a system established by the US government for classifying major businesses and industries. SIC codes are hierarchical, and use two-, four-, and six-digit codes to characterize the primary business of a company or organization. The SIC codes below are for retail trade and service businesses only, and do not account for the introduction or expansion of other industries in Waller County to the resultant traffic impacts of the respective facilities of those industries.

TABLE 8: Current and Projected Additional Retail & Service Businesses

4-SIC Code	Category	2015 Businesses	175K Population
5211	LUMBER AND OTHER BUILDING MATERIALS (Montalbano, Olshan, 84 Lumber, etc.)	9	+22
5251	HARDWARE STORES (e.g.– Home Depot, Lowes, Ace Hardware, etc.)	5	+3
5311	DEPARTMENT STORES (e.g.–Walmart, Target)	1	+3
5331	VARIETY STORES (e.g.–Dollar General, Family Dollar)	6	+11
5411	GROCERY STORES (e.g.–Kroger, Randall’s, HEB, etc.)	22	+48
5511	NEW AND USED CAR DEALERS	7	+18
5531	AUTO AND HOME SUPPLY STORES (e.g.–Auto Zone, O’Reilly, etc.)	13	+30
5541	GASOLINE SERVICE STATIONS	18	+29
5651	FAMILY CLOTHING STORES (e.g.–Ross, Marshall’s, TJ Maxx, etc.)	2	+5
5699	MISCELLANEOUS APPAREL & ACCESSORIES (e.g.–Uniform Stores, Tailors, Tee Shirt Shops, etc.)	2	+5
5712	FURNITURE STORES	5	+13
5812	EATING PLACES (Fast Food & Sit-down Restaurants)	44	+115
5813	DRINKING PLACES	2	+5
5912	DRUG STORES AND PROPRIETARY STORES (e.g.–Walgreen’s, CVS, etc.)	3	+8
5932	USED MERCHANDISE STORES	7	+18
5941	SPORTING GOODS AND BICYCLE SHOPS (e.g.–Academy, Gander Mountain, etc.)	2	+5
5999	MISCELLANEOUS RETAIL STORES	9	+24
7011	HOTELS AND MOTELS	9	+24
7389	BUSINESS SERVICES	19	+50
7538	GENERAL AUTOMOTIVE REPAIR SHOPS	19	+50
7999	AMUSEMENT AND RECREATION (e.g.–Main Event, Dave & Buster’s, Water Parks, etc.)	7	+18
8011	OFFICES & CLINICS OF MEDICAL DOCTORS	10	+26
8021	OFFICES AND CLINICS OF DENTISTS	5	+13
8049	OFFICES OF HEALTH PRACTITIONER	5	+13
8062	GENERAL MEDICAL & SURGICAL HOSPITALS	0	+8
8231	LIBRARIES	3	+2
8351	CHILD DAY CARE SERVICES	8	+21

Table 9 shows the amount of vehicle trips these additional businesses could potentially generate.

TABLE 9: Daily Vehicle Trip Generation from additional Retail and Service Businesses

4-SIC Code	Category	175K Population
5211	LUMBER AND OTHER BUILDING MATERIALS	5,024
5251	HARDWARE STORES	464
5311	DEPARTMENT STORES	25,009
5331	VARIETY STORES	6,150
5411	GROCERY STORES	195,862
5511	NEW AND USED CAR DEALERS	4,116
5531	AUTO AND HOME SUPPLY STORES	3,609
5541	GASOLINE SERVICE STATIONS	43,053
5651	FAMILY CLOTHING STORES	13,891
5699	MISCELLANEOUS APPAREL AND ACCESSORIES	6,946
5712	FURNITURE STORES	1,095
5812	EATING PLACES (Sit-down Restaurants)	53,007
-	EATING PLACES (Fast Food Restaurants)	65,428
5813	DRINKING PLACES	593
5912	DRUG STORES AND PROPRIETARY STORES	11,938
5932	USED MERCHANDISE STORES	15,717
5941	SPORTING GOODS AND BICYCLE SHOPS	37,422
5999	MISCELLANEOUS RETAIL STORES	53,887
7011	HOTELS AND MOTELS	4,898
7389	BUSINESS SERVICES	2,735
7538	GENERAL AUTOMOTIVE REPAIR SHOPS	7,880
7999	AMUSEMENT AND RECREATION	75,389
8011	OFFICES AND CLINICS OF MEDICAL DOCTORS	4,138

8021	OFFICES AND CLINICS OF DENTISTS	2,069
8049	OFFICES OF HEALTH PRACTITIONER	2,069
8062	GENERAL MEDICAL AND SURGICAL HOSPITALS	10,447
8231	LIBRARIES	1,056
8351	CHILD DAY CARE SERVICES	6,310
	<b>DAILY TRIPS</b>	<b>660,204</b>

These projections speak to the need to assess the current regulatory regimes of the cities in Waller County, as well as the county itself. Creating a clear vision of desired future development and implementing the right regulatory policies to ensure the preservation of natural resources and physical infrastructure will aid Waller County in generating economic growth and maintaining a high quality of life for its residents.