ARK-TEX COUNCIL OF GOVERNMENTS
SULPHUR RIVER BASIN AUTHORITY

Population Study

Northeast Texas Population Growth Evaluation Executive Summary

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Abbreviations

ACS	American Community Survey
ATCOG	Ark-Tex Council of Governments
CQR	Count Question Resolution
EZP	Enterprise Zone Program
NCTCOG	North Central Texas Council of Governments
PES	Post-Enumeration Survey
SDF	Skills Development Fund
SRBA	Sulphur River Basin Authority
TDC	Texas Demographic Center
TEF	Texas Enterprise Fund

EXECUTIVE SUMMARY

ES.1 Study Goals and Drivers

This study was directed by the Ark-Tex Council of Governments (ATCOG) and the Sulphur River Basin Authority (SRBA) to investigate the long-term projection of population and housing for a ten-county region in Northeast Texas. The Texas Demographic Center (TDC) produces county-level population projections on a biennial basis and these projections are relied upon by local, regional, and state planning agencies for long-term planning purposes. Historically, the TDC projections have been the primary source of population estimates for the region. These projections have varied significantly over the last decade. Recent changes to growth patterns prompted a closer look at population trends and future potential growth for the region using alternate projection methods.

This study reviews factors that could influence short-, mid-, and long-term population growth in Northeast Texas. Discussion is provided on the methodology and limitations of four population projection approaches, including the method used by the TDC. Additionally, historical growth and population trends for the study area are characterized. The study area covers the nine Texas counties served by the ATCOG and SRBA, which include Bowie, Cass, Delta, Franklin, Hopkins, Lamar, Morris, Red River, and Titus Counties, as well as Hunt County served by the SRBA. Two growth projections for the study area are presented to represent valid alternative outcomes and to explore the uncertainties inherent in estimating long-term projections of population growth.

ES.1.1 Study Area Population and Housing Trends

Historical population growth from 1970 to 2022 for the study area is shown in Figure ES-1. This figure includes a combination of Decennial Census data, intercensal data, and postcensal data. Throughout the observed historical period, the overall population in the study area has increased consistently, with growth slowing in the late 1980s and early 2010s following periods of recession. According to postcensal data, population growth was bolstered in 2021 and 2022. Individual counties have experienced varying rates of population growth in recent decades. Over the last three decades, Hunt County experienced the largest sustained population growth. Generally, between 1990 and 2020, population growth has been seen in counties with larger populations while consistent population declines have been observed in counties with smaller populations. During the period from 2010 to 2020, growth in the number of housing units within the study area slowed, likely due to the recession. Between 1990 and 2000, positive growth in housing units occurred for all ten counties. Following the population trend, housing has grown steadily since around 2015. Slow growth in housing units was seen during the next decade. Between 1990 and 2020, Hunt County maintained a relatively consistent housing unit growth rate.

U.S. Census Bureau Surveys and Programs

Decennial Census – Mandated by the U.S. Constitution, this is a full count of all people residing in places across the nation. Occurs every ten years.

Population Estimates Program – Produces estimates of annual population by county using a combination of administrative records, vital statistics, and survey data to estimate population changes. For the years following the decennial census, these data are referred to as "postcensal". Following the next decennial census, the existing time series of postcensal estimates are adjusted to smooth the transition from one decennial census count to the next. These data are referred to as "intercensal".

ES.1.2 2020 Decennial Census Undercount and Adjustment

The 2020 Decennial Census was particularly challenging due to complications related to the COVID-19 pandemic. The Census Post-Enumeration Survey (PES) measures the accuracy of the Decennial Census. The findings released in 2022 estimate that Texas was one of six states with significant undercounts with Texas' undercount estimated at 1.92 percent or about 540,000 people (U.S. Census Bureau, 2022). The 2020 Census Count Question Resolution (CQR) operation gives states the ability to request a review of boundary and count cases to identify errors that may have occurred during the 2020 Decennial Census. As of the time of this writing, no 2020 Decennial Census correction has been released for Texas or areas within the study area. To account for the known undercount in the 2020 Decennial Census, a revised historical population series was generated using the 2020 vintage estimates from the Census Bureau for 2010 to 2020 and the annual net increase in population measured in the 2022 vintage estimates from the Census Bureau from 2020 to 2022. The resulting undercount using this method is 4,742 persons or 1.24 percent. The Census corrected population series is used in the remainder of this study.

ES.1.3 Study Area Migration Trends

Each year, the Census Bureau releases migration flow tables based on the American Community Survey (ACS) 5-year dataset. The ACS is an ongoing survey that collects information on demographic, social, economic, and housing characteristics of the U.S. population. Net migration data from the ACS by county from 2006 to 2020 was reviewed for the study area. Six of the ten counties had positive net migration in the 2006 to 2010 period, while only Franklin, Hunt, and Morris Counties had a positive net migration in the 2016 to 2020 period. Bowie County has seen the greatest out migration over the entire period while Hunt and Morris Counties had positive net migration over the entire period. Bowie, Cass, Delta, and Red River Counties had negative net migration over the entire 2006 to 2020 period.

ES.2 Key Drivers in Population Change

Population growth and decline is dependent on many interconnected factors, from the economy of an area and its location to the age of the population. The main drivers are births, deaths, domestic migration, and immigration to and from the county. These population growth dynamics are impacted by the community type and location with urban, suburban, and rural communities having differing population growth trends and drivers. The economic profile of an area also impacts growth. Rural counties adjacent to metropolitan areas have different economic drivers compared to rural counties surrounded by other rural areas. Texas specifically has a wide number of economic sectors throughout the state and growth in specific sectors could influence population growth patterns.

ES.2.1 Texas Specific Drivers

Texas has several statewide incentive programs that are aimed at promoting economic development and increasing skill levels and wages within the Texas workforce including the Texas Enterprise Fund (TEF), the Texas Enterprise Zone Program (EZP), and the Skills Development Fund (SDF). These programs have greatly impacted growth in Texas and are a driving force behind the state's population growth. Established in 1995, the SDF provides grants to Texas businesses for customized training and site-specific skill development programs (Texas Workforce Commission, n.d.). The TEF aims to incentivize companies to

develop new operations within Texas as opposed to another state. Within the study area, there have been four TEF projects since the program began: two in Lamar County, one in Titus County, and one in Hopkins County. The Texas EZP is a state sales tax and use tax refund program that focuses on promoting private development, investment, and job creation within state enterprise zones. Within the study area there have been 16 EZP projects with half in Lamar County. The remaining projects within the study area were in Bowie, Cass, Hopkins, and Titus Counties.

ES.2.2 Amenities, Recreation, and Reservoirs

The non-economic characteristics of an area, or amenities, such as climate, cultural attractions, and crime rates, can have a substantial impact on the quality of life and migration patterns. Amenities available within an area can be crucial for growth, especially for rural counties. Between 2000 and 2016, recreation based rural counties were the only rural county type to see positive rates of domestic migration (Pew Research Center, 2018). These amenity rich counties typically experience faster population growth among rural counties (Johnson, 2012). Reservoirs can also impact a region in ways beyond drinking water supply availability. The development of large reservoirs can create economic development opportunities that impact population growth in surrounding communities.

ES.2.3 COVID-19 Pandemic

The COVID-19 pandemic that began in 2020 impacted almost every key driver of population change. The pandemic caused major disruptions to the economy, existing natural growth patterns, and the work force. During the early months of the pandemic, there was a rapid shift to remote work. Domestic migration out of large urban centers spiked during the first year of the pandemic (Whitaker, 2021). Analysis of Census Bureau data for the first year of the pandemic showed population growth in non-metropolitan areas, suggesting rural populations began growing again (Johnson, 2022).

ES.3 Methods for Forecasting Population

The four general approaches to forecasting population include the cohort-component method, econometric models, economic-demographic models, and urban system models. The following descriptions are broadly adapted from *A Practitioner's Guide to State and Local Population Projections* (Stanley et al., 2013). The cohort-component method is a method for projecting population size and composition by breaking the population into separate age cohorts and accounting for differences in mortality, fertility, and migration rates among them. A key limitation of this method is that it can be highly inaccurate if incorrect assumptions are made about fertility, mortality, and migration. Because of its potential volatility and its impact on total population growth, migration contributes more to the uncertainty of cohort-component projections for states and local areas than either mortality or fertility. This method is typically used in statewide approaches for forecasting population in the short-, mid-, and long-term and is used both by the Census Bureau and the TDC. Econometric models are used to project population growth using historical data and statistical regression techniques. Within econometric models, population is usually included as a part of a broader economic forecast of a region. Urban systems models simulate the complex dynamics of urban areas, including population, housing, land use, economic activities, and transportation patterns across small geographic areas. These models typically incorporate jobs, unemployment rates, and income, and well as land use and transportation characteristics.

ES.4 Population Projections

ES.4.1 Texas Demographic Center Population Projections

The TDC develops and releases statewide and county specific population projections for Texas. The TDC uses the cohort-component method to develop population projections which are based on the most recent Decennial Census. Multiple migration scenarios are developed for most vintages, typically based on estimates of migration rates from the previous 10-year period. The 2022 TDC projections are the most current projection series. This vintage utilizes the 2020 Decennial Census count for Texas counties without any adjustment for the known Census undercount. The implication, therefore, is that the 2022 Vintage starting point for projecting population is artificially lower than actual population for many Texas counties. Within this study, four different TDC vintage projections were reviewed for the study area: 2004, 2012, 2018, and 2022. Based on projections from these four vintages, there have been wide variations in the population projections for the 10-county region over the past 20 years. Overall, the historical population data falls in between the range of estimates from the TDC.

ES.4.1.1 Mid and Short-Term Accuracy

The 2004 vintage projections were developed almost two decades ago, and the accuracy of these projections were explored by comparing the 2004 vintage projections (1.0 migration scenario) in the year 2022 to the estimated population in 2022 from the postcensal estimates produced by the Census Bureau. This comparison was done for all counties to understand the broader accuracy of the TDC methodology. More than 40 percent of counties were overestimated by 35 percent or greater. Only 12 percent of counties had projections that ended up being ±5 percent of the actual population. The exercise was repeated using the 2018 vintage projections, again comparing the 2022 projection to the actual population in 2022. Roughly 45 percent of the county projections were within ±5 percent. However, this indicates that even in the 5 years since those projections were released, the TDC methodology is producing projections that are generally inaccurate for the remaining 55 percent of counties.

ES.4.2 Alternative Growth Projections

Two alternative projections for the study area were developed as part of this effort. Population and housing were estimated by county from 2022 to 2060 for both alternatives. For each alternative projection, new net housing units are estimated at the county level using the persons per household and vacancy rates from the 2021 ACS 5-year estimates.

ES.4.2.1 Linear Trend Projection

The linear projection assumes that the population will change by the same number of persons in the future as it did in the past, based on the historical change in population and that the factors influencing population dynamics will remain relatively stable over the projection period. For this projection series, the 25-year trend was deliberately selected (1998 to 2022) to smooth out ups and downs in migration and growth over the past decades. The use of a longer-term trend also averages out short-term volatility in the historical dataset, such as recessions. The trend was applied at the county level and then summarized for the 10-county region. Projected forward, this rate of growth results in a regional population of approximately 460,000 by 2060. Without significant changes to historical patterns and trends, Cass,

Morris, and Red River Counties are projected to experience continued declines in population. The largest net increase in population is within Hunt, Hopkins, Titus, and Bowie Counties.

ES.4.2.2 Modified Perryman Group Projection

The Perryman Group, an economic forecasting consultant, releases regular updates to its long-term forecasting model for Texas. The Perryman Group utilizes a *Multi-Regional Econometric Model*, an econometric model that projects population as well as economic indicators such as personal income, retail sales, nominal and real gross product by industry sector, and employment by industry sector. Projection data are available by region, but not by county. For this study, projections were obtained for the ATCOG and North Central Texas Council of Governments (NCTCOG), as Hunt County lies with the NCTCOG. The Perryman Group projections go to 2050 but were extended to 2060 using linear extrapolation to align with other projections discussed in this report, thereby referring to these projections as the "*Modified Perryman*" projections. The Modified Perryman projections were further disaggregated into county level projections using historical growth rates. The actual population growth for each county and the total growth in the region for that period were calculated. Then, the share of the total growth in the region seen for each county was determined and was used to determine the projections by county. A proportional adjustment procedure was used to differentiate between counties with negative and positive growing rates. This procedure avoids unrealistically low projections for counties with negative historical growth rates that can occur with simple allocations methods. All data shown comes from this Modified Perryman Group projection. Under the Modified Perryman projections, a population increase of 114,667 by 2060 is seen.

ES.4.2.3 Projection Comparison

As preparing for growth can take decades, local decision-makers need a good understanding of the strengths and weaknesses underpinning the estimates of growth in their area. The region has historically relied upon the TDC projections for planning purposes. With the uncertainty in long-term projections exhibited by the variability in the TDC projections identified herein, additional projection methods have been developed and analyzed. A comparison of the population projections included in this study is presented in Figure ES.1. The four scenarios from the TDC vary significantly. These variations are the result of the methodology used by the TDC including the reliance on short-term migration patterns, which can be volatile, to construct the cohort component model. The TDC methodology and assumptions are typically used by state agencies and are deemed appropriate for consistent planning at the county level across the state. However, at the local or regional level, other methodologies that capture local drivers can be more informative and indicative of potential, particularly in the long term. Historical net migration patterns in a region are not always accurate predictors of the future as migration patterns are influenced by several complex, interrelated factors. These limitations highlight the need to consider alternative approaches to better inform decision-makers about the uncertainties of such projections. Based on the analysis of available datasets and forecasting methodologies, the 25-year linear trend projection and the modified Perryman projections offer viable alternative estimates of growth in the study area when considering the TDC's population projections.

Table ES-1 through Table ES-10 provide historical and projected population and housing for each county in the study area.

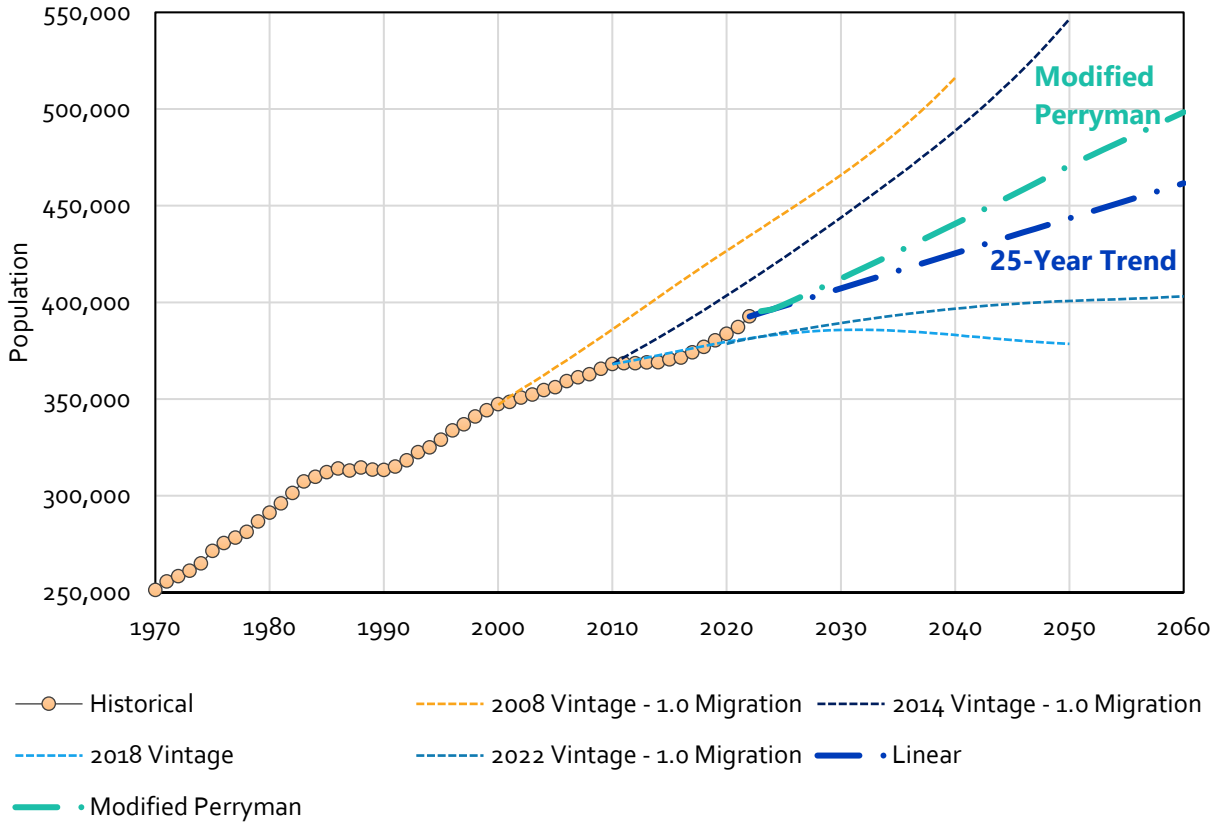

Figure ES.1 Summary of Population Projections for 10 County Region

Table ES.1 Bowie County Historical and Projected Population and Housing Units

	Historical Population Estimates			Projected Population			
	2000	2010	2020 (1)	2030	2040	2050	2060
Historical	89,156	92,564	93,481	-	-	-	-
TDC – 2022 Vintage (2)	-	-	-	93,746	93,256	92,580	91,309
Linear	-	-	-	94,566	97,033	99,501	101,968
Modified Perryman	-	-	-	94,605	97,483	100,234	102,963
	Historical Housing Unit Estimates			Projected Housing Units			
	2000	2010	2020	2030	2040	2050	2060
Historical	36,569	38,541	40,245	-	-	-	-
Linear	-	-	-	41,610	42,912	44,156	45,391
Modified Perryman	-	-	-	41,610	42,912	44,156	45,391

Notes:
(1) 2020 values for the historical estimates include adjustments for the Decennial Census undercount.
(2) TDC 2022 Vintage – 1.0 Migration Scenario.

Table ES.2 Cass County Historical and Projected Population and Housing Units

	Historical Population Estimates			Projected Population			
	2000	2010	2020 (1)	2030	2040	2050	2060
Historical	30,412	30,469	29,879	-	-	-	-
TDC – 2022 Vintage (2)	-	-	-	26,634	24,679	22,518	20,582
Linear	-	-	-	29,877	29,746	29,616	29,485
Modified Perryman	-	-	-	29,957	29,933	29,906	29,879
	Historical Housing Unit Estimates			Projected Housing Units			
	2000	2010	2020	2030	2040	2050	2060
Historical	13,917	14,386	14,785	-	-	-	-
Linear	-	-	-	14,915	14,871	14,809	14,746
Modified Perryman	-	-	-	14,909	14,898	14,885	14,872

Notes:
(1) 2020 values for the historical estimates include adjustments for the Decennial Census undercount.
(2) TDC 2022 Vintage – 1.0 Migration Scenario.

Table ES.3 Delta County Historical and Projected Population and Housing Units

	Historical Population Estimates			Projected Population			
	2000	2010	2020 (1)	2030	2040	2050	2060
Historical	5,323	5,232	5,349	-	-	-	-
TDC – 2022 Vintage (2)	-	-	-	5,244	5,218	5,182	5,114
Linear	-	-	-	5,542	5,553	5,565	5,576
Modified Perryman	-	-	-	5,653	5,824	5,987	6,149
	Historical Housing Unit Estimates			Projected Housing Units			
	2000	2010	2020	2030	2040	2050	2060
Historical	2,410	2,461	2,506	-	-	-	-
Linear	-	-	-	2,538	2,544	2,549	2,554
Modified Perryman	-	-	-	2,590	2,669	2,745	2,821

Notes:
(1) 2020 values for the historical estimates include adjustments for the Decennial Census undercount.
(2) TDC 2022 Vintage – 1.0 Migration Scenario.

Table ES.4 Franklin County Historical and Projected Population and Housing Units

	Historical Population Estimates			Projected Population			
	2000	2010	2020 (1)	2030	2040	2050	2060
Historical	9,459	10,598	10,821	-	-	-	-
TDC – 2022 Vintage (2)	-	-	-	10,324	10,184	9,942	9,789
Linear	-	-	-	11,580	12,220	12,861	13,501
Modified Perryman	-	-	-	11,857	12,985	14,063	15,133
	Historical Housing Unit Estimates			Projected Housing Units			
	2000	2010	2020	2030	2040	2050	2060
Historical	5,141	5,771	5,859	-	-	-	-
Linear	-	-	-	6,146	6,467	6,788	7,109
Modified Perryman	-	-	-	6,285	6,850	7,391	7,927

Notes:
(1) 2020 values for the historical estimates include adjustments for the Decennial Census undercount.
(2) TDC 2022 Vintage – 1.0 Migration Scenario.

Table ES.5 Hopkins County Historical and Projected Population and Housing Units

	Historical Population Estimates			Projected Population			
	2000	2010	2020 (1)	2030	2040	2050	2060
Historical	31,999	35,166	37,170	-	-	-	-
TDC – 2022 Vintage (2)	-	-	-	38,576	39,833	40,770	41,593
Linear	-	-	-	40,232	42,833	45,435	48,037
Modified Perryman	-	-	-	41,113	45,351	49,400	53,418
	Historical Housing Unit Estimates			Projected Housing Units			
	2000	2010	2020	2030	2040	2050	2060
Historical	14,058	15,036	15,520	-	-	-	-
Linear	-	-	-	16,629	17,749	18,870	19,991
Modified Perryman	-	-	-	17,008	18,834	20,578	22,309

Notes:
(1) 2020 values for the historical estimates include adjustments for the Decennial Census undercount.
(2) TDC 2022 Vintage – 1.0 Migration Scenario.

Table ES.6 Hunt County Historical and Projected Population and Housing Units

	Historical Population Estimates			Projected Population			
	2000	2010	2020 (1)	2030	2040	2050	2060
Historical	76,932	86,144	99,807	-	-	-	-
TDC – 2022 Vintage (2)	-	-	-	111,474	122,936	133,004	141,857
Linear	-	-	-	116,473	127,274	138,075	148,876
Modified Perryman	-	-	-	119,598	136,374	155,503	172,368
	Historical Housing Unit Estimates			Projected Housing Units			
	2000	2010	2020	2030	2040	2050	2060
Historical	32,600	36,763	38,683	-	-	-	-
Linear	-	-	-	44,828	49,348	53,868	58,388
Modified Perryman	-	-	-	46,136	53,156	61,162	68,219

Notes:
(1) 2020 values for the historical estimates include adjustments for the Decennial Census undercount.
(2) TDC 2022 Vintage – 1.0 Migration Scenario.

Table ES.7 Lamar County Historical and Projected Population and Housing Units

	Historical Population Estimates			Projected Population			
	2000	2010	2020 (1)	2030	2040	2050	2060
Historical	48,596	49,791	49,905	-	-	-	-
TDC – 2022 Vintage (2)	-	-	-	50,716	50,560	49,747	48,689
Linear	-	-	-	50,813	51,501	52,189	52,877
Modified Perryman	-	-	-	50,855	51,702	52,511	53,314
	Historical Housing Unit Estimates			Projected Housing Units			
	2000	2010	2020	2030	2040	2050	2060
Historical	21,162	22,488	22,942	-	-	-	-
Linear	-	-	-	23,351	23,668	23,984	24,300
Modified Perryman	-	-	-	23,370	23,760	24,132	24,501

Notes:
(1) 2020 values for the historical estimates include adjustments for the Decennial Census undercount.
(2) TDC 2022 Vintage – 1.0 Migration Scenario.

Table ES.8 Morris County Historical and Projected Population and Housing Units

	Historical Population Estimates			Projected Population			
	2000	2010	2020 (1)	2030	2040	2050	2060
Historical	13,027	12,934	12,393	-	-	-	-
TDC – 2022 Vintage (2)	-	-	-	11,295	10,590	9,811	9,142
Linear	-	-	-	12,186	11,789	11,391	10,994
Modified Perryman	-	-	-	12,310	12,128	11,925	11,719
	Historical Housing Unit Estimates			Projected Housing Units			
	2000	2010	2020	2030	2040	2050	2060
Historical	6,020	6,024	6,054	-	-	-	-
Linear	-	-	-	5,930	5,735	5,540	5,345
Modified Perryman	-	-	-	5,991	5,902	5,802	5,701

Notes:
(1) 2020 values for the historical estimates include adjustments for the Decennial Census undercount.
(2) TDC 2022 Vintage – 1.0 Migration Scenario.

Table ES.9 Red River County Historical and Projected Population and Housing Units

	Historical Population Estimates			Projected Population			
	2000	2010	2020 (1)	2030	2040	2050	2060
Historical	14,297	12,862	11,995	-	-	-	-
TDC – 2022 Vintage (2)	-	-	-	10,519	9,383	8,205	7,143
Linear	-	-	-	11,136	10,084	9,032	7,980
Modified Perryman	-	-	-	11,449	10,956	10,404	9,843
	Historical Housing Unit Estimates			Projected Housing Units			
	2000	2010	2020	2030	2040	2050	2060
Historical	6,922	6,828	6,993	-	-	-	-
Linear	-	-	-	6,607	6,039	5,471	4,904
Modified Perryman	-	-	-	6,776	6,510	6,212	5,909

Notes:
(1) 2020 values for the historical estimates include adjustments for the Decennial Census undercount.
(2) TDC 2022 Vintage – 1.0 Migration Scenario.

Table ES.10 Titus County Historical and Projected Population and Housing Units

	Historical Population Estimates			Projected Population			
	2000	2010	2020 (1)	2030	2040	2050	2060
Historical	28,138	32,334	32,926	-	-	-	-
TDC – 2022 Vintage (2)	-	-	-	30,777	30,064	28,978	27,938
Linear	-	-	-	34,837	37,330	39,823	42,316
Modified Perryman	-	-	-	34,931	37,918	40,773	43,606
	Historical Housing Unit Estimates			Projected Housing Units			
	2000	2010	2020	2030	2040	2050	2060
Historical	10,716	12,061	12,602	-	-	-	-
Linear	-	-	-	13,501	14,465	15,429	16,393
Modified Perryman	-	-	-	13,538	14,693	15,797	16,892

Notes:
(1) 2020 values for the historical estimates include adjustments for the Decennial Census undercount.
(2) TDC 2022 Vintage – 1.0 Migration Scenario.

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