METRO FORECASTING MODELS
MFM

Collier County, Florida – 2015 Forecast Report
Population, Housing and Commercial Demand

Thank you for purchasing this report, which contains forecasts of population growth, housing demand and demand for commercial space for Collier County, Florida (the Naples-Immokalee-Marco Island Metropolitan Statistical Area or MSA).

The analytical methods used to prepare these forecasts have proven to be more accurate than the industry standard of straight-line (linear) forecasts. Our goal is to maintain the most accurate forecasting models, which are based on our history of forecasting:

- In 1982 the City of North Port, Florida, asked Dr. Paul Van Buskirk (author of the Metro Forecasting Model) to forecast the population of their city in 2007, then 25 years into the future. In 1980 North Port had a permanent population of 6,350 people. Dr. Van Buskirk forecasted that in 2007 there would be a permanent population of 57,452; in 2010, the Census counted 57,350 people in North Port. The forecast was 99.7% accurate 25 years into the future.

- In 2002 the City of Cape Coral, Florida, engaged Dr. Van Buskirk to prepare a population forecast for their city to use in planning for future commercial sites, fire stations and schools. His 2010 forecast was 155,179 permanent residents; in 2010, the Census counted 154,305 permanent residents.

The information in this report can be used by businesses, property owners, developers, lenders and planners to help understand the past and future of the Collier County metro area and then use accurate forecasts in decision-making:

- ✓ **Businesses:** Metro's growth forecasts help make marketing decisions because growth forecasts can be compared to forecasts of other metropolitan areas.

- ✓ **Property Owners:** Housing and commercial demand forecasts help property owners understand how their land may increase or decrease in value based on the current and future supply versus demand for their respective land uses.

- ✓ **Developers:** Current and forecasted demand versus supply are used in due-diligence reviews and pro forma preparation, as well helping to broadly gauge absorption.

- ✓ **Lenders:** Loan requests for new construction can be compared to the forecasted demand for commercial or residential projects.

- ✓ **Planners:** Population, housing and commercial forecasts are used to evaluate the need for zoning changes desired by their clients.

For more detailed forecasts of population, housing and commercial demand, see our website.

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Collier County, Florida – Naples-Immokalee-Marco Island MSA
Population, Housing and Commercial Demand Forecast

The Collier County metro area is located in southwest Florida. In 2014 the permanent population was 348,777 according to the US Census, up from 321,520 in 2010 and 2,883 as far back as 1930. This metro area is ranked 21st in percentage growth in 2014 out of the 381 MSAs tracked by the Census.

Metro Forecasting Models (MFM) uses proprietary modeling software to forecast the future population of this MSA in 5-year increments. Whereas forecasters often apply linear extrapolation of past census data, a technique which becomes inaccurate over longer periods, MFM forecasting methodology has been documented to be far more accurate over time.

Figure 1 below is a population graph of the Collier County metro area showing actual change in population from 1940 to 2010.

After the MFM Composite Forecast Curve is established (the blue line), similar curves are generated for both an expanding and contracting economy for the entire MSA. In statistical jargon, these similar curves are each two standard deviations from the mean (composite) curve.

We find that MSA growth falls within these boundaries 95% of the time, barring catastrophic events (war, natural disaster, etc.) that permanently alter development potential.

Figure 1 presents a summary of our population forecasts for 2020 and beyond for the Collier County metro area (Naples-Immokalee-Marco Island MSA).

Figure 1. MFM Population Forecast in 2015 Collier County, Florida

MFM 2020 Pop. 405,380

Legend: Population — Census/Actual — Expanding Economy — Contracting Economy
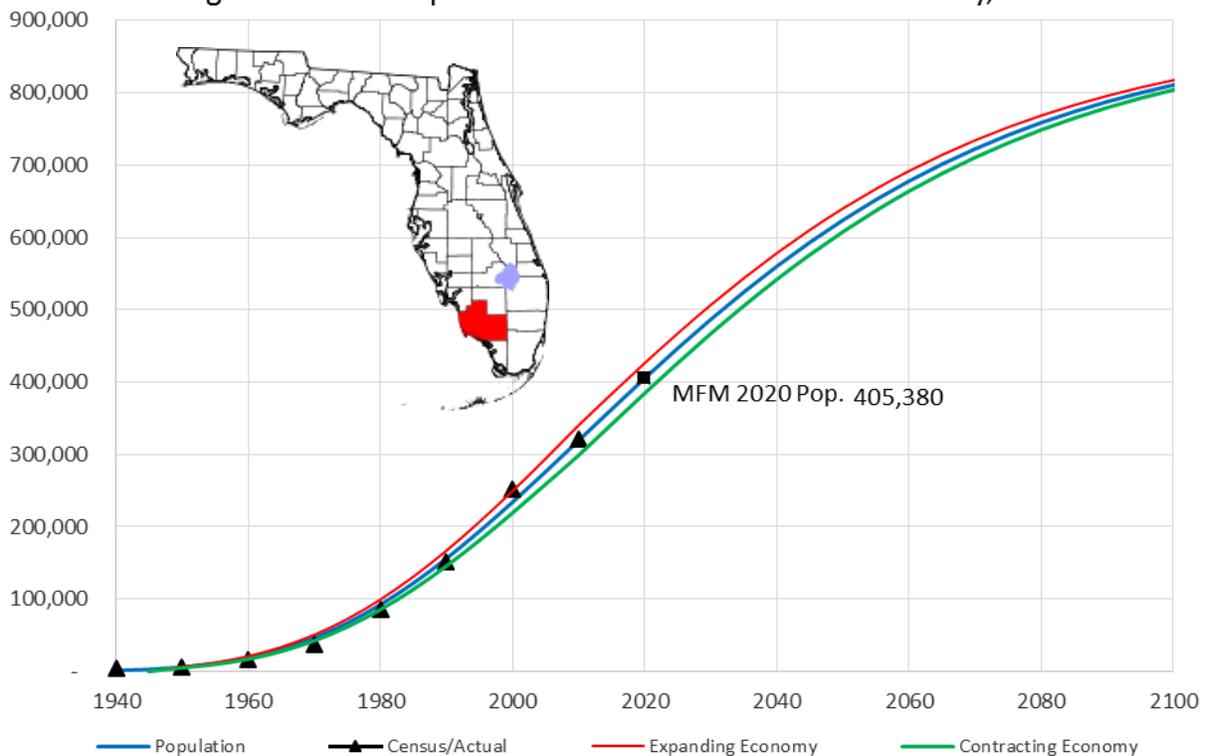
Source: US Census & Metro Forecasting Models, LLC

Population Forecast

Table 1 presents our specific analysis and population growth forecast for the Collier County metro area in 5-year increments for three different economies. The blue column, labeled "Composite," shows how the population will grow over time in a balanced economy.

The orange column, labeled "Expanding," presents a higher forecast for the population growth curve in a "Bull Market" economy. The data presented in this column provides a reliable guide for our clients who need to understand how this MSA will grow under favorable economic conditions.

The green column, labeled "Contracting," presents a lower forecast for the population growth curve in a "Bear Market" economy. The data presented in this column provides a guide for our clients who need to understand how economic trends, business decisions and government policy (national or local) could affect this MSA's growth under less favorable economic conditions.

As the economy cycles from bull to bear markets, the day-to-day or year-to-year population growth will revert to the Composite forecast. Depending upon the significance of economic trends and government and business policy, the change in growth can appear to be a never-ending boom-bust cycle.

The general population tends to mentally forecast growth by what has happened over the last year of their lives. If last year showed low or no growth, then next year would be the same or worse under that scenario. If last year was a good year, then next year will be just as good or better. The Composite forecast provides a balanced view of what the future holds for this MSA.

The population forecasted in Table 1 provides a reliable guide for wise industry leaders who understand the pace of the last few years' growth does not mean that growth will continue in the same pattern. The expanding and contracting economy forecasts provide ranges for strategic planning by governments and the private sector.

Table 1: Collier Metro Population Forecast			
Year	Composite	Expanding	Contracting
1970	38,040*	44,913	37,785
1975	67,038	71,302	62,934
1980	85,971*	93,461	83,362
1985	122,238	128,166	116,450
1990	152,099*	162,930	149,802
1995	193,884	201,064	186,795
2000	251,377*	241,753	226,650
2005	276,300	284,124	268,509
2010	321,520*	327,317	311,499
2015	362,673	370,533	354,793
2020	405,380	413,069	397,652
2025	446,920	454,340	439,445
2030	486,806	493,881	479,664
2035	524,675	531,351	517,923
2040	560,273	566,515	553,950
2045	593,448	599,238	587,574
2050	624,130	629,463	618,714
2055	652,318	657,200	647,355
2060	678,064	682,509	673,541
2065	701,460	705,487	697,358
2070	722,624	726,258	718,919
2075	741,694	744,962	738,361
2080	758,819	761,748	755,830
2085	774,150	776,768	771,477
2090	787,839	790,173	785,455
2095	800,034	802,110	797,912
2100	810,875	812,719	808,990
Source: Metro Forecasting Models, LLC			
* Indicates actual US Census data			

Housing Demand Forecast

Table 2 presents the Collier County metro area housing demand forecast in 5-year increments. As explained for Table 1, the blue, orange, and green columns represent three economic conditions. This housing demand forecast provides information for home builders, urban planners, retailers and local governments for their future planning. The blue column, labeled "Composite," shows how the demand for housing will grow over time in a normal economy.

Housing demand drives many other industries such as material suppliers, contractors, professional services, retailers, restaurants and government. A growing population will need these services and many more to meet their day-to-day needs.

The data presented in this table provides information and guidelines for our clients who need to understand how the demand for housing units impacts this MSA's growth under different economic conditions. The formation of households, trends in household size, seasonal housing and vacancy rates play key roles in forecasting housing demand.

As population growth cycles from periods of lower growth to higher growth, housing demand will revert to the Composite forecast. Depending upon the significance of government and private sector policy, the change in growth can appear to be a never ending boom-bust cycle.

The 2010 Census counted 197,298 housing units versus our forecasted demand of 198,816 units. The model accurately identified a statistically significant population surge in the early-mid 2000s resulting in the housing boom and subsequent crash (see **Figure 4**). The 2010 Census and Collier County permitting data tells us there were approximately 207,734 units at the end of 2014. Our forecast demand of 215,877 units in 2015 indicate a pent up demand for 8,143 homes and implies the housing market should remain healthy for the foreseeable future.

Table 2: Collier County Metro Area Housing Units Demand Forecast			
Year	Composite	Expanding	Contracting
1970	19,569	20,996	18,208
1975	32,964	35,061	30,946
1980	53,789	56,776	50,892
1985	73,460	77,022	69,981
1990	96,968	101,076	92,932
1995	116,915	121,244	112,640
2000	137,527	141,980	133,110
2005	166,996	171,724	162,286
2010	198,816	203,741	193,895
2015	215,877	220,555	211,186
2020	241,298	245,875	236,698
2025	266,024	270,440	261,574
2030	289,766	293,977	285,514
2035	312,306	316,280	308,287
2040	333,496	337,211	329,732
2045	353,243	356,689	349,747
2050	371,506	374,680	368,282
2055	388,285	391,191	385,330
2060	403,610	406,255	400,917
2065	417,536	419,933	415,094
2070	430,133	432,297	427,928
2075	441,485	443,430	439,501
2080	451,678	453,421	449,899
2085	460,804	462,362	459,213
2090	468,952	470,341	467,533
2095	476,210	477,447	474,947
2100	482,664	483,761	481,542
Source: Metro Forecasting Models, LLC			

Most home builders forecast growth based on the recent orders for new homes. If last year showed little or no demand for new housing units, will next year be the same or worse? If last year was a good year for housing, will next year be just as good or better? The Composite forecast provides a balanced view of what the future holds for this MSA.

The housing demand forecast in **Table 2** provides benchmarks for planners, builders and developers who understand the pace of the last few quarters' growth does not mean that growth will continue at the same rate.

Commercial Demand Forecast

Table 3 presents the Collier County metro area commercial retail trade and services demand forecast in 5-year increments. The demand for retail and office space increases as the population grows.

When the increased population meets certain thresholds, the market can support new or expanded stores and services. For example a small population may want a big-box retail store but not have enough people to support the economic investment by the retailer. In those cases, the demand for the big box store is met by neighboring communities that are large enough to meet the minimum investment expectation by the retailer. Collier County has a regional shopping center, a lifestyle center, a power center an outlet center, seven community shopping centers and 23 neighborhood shopping centers. There are also two super regional centers in Lee County.

The demand forecast shown in **Table 3** is the *total* composite demand for commercial and office space in the MSA. A community can limit the type of commercial development allowed through local zoning codes. Where demand for commercial space exists but supply is not available, the demand is met outside that community such as the two super regional centers in Lee County. In Collier County, our research shows that neighborhood shopping centers on average require a population of 13,110 to be self-sustaining, while community and regional shopping centers need 31,464 and 157,234 respectively.

Table 3: Collier County Commercial Demand Forecast - Sq. Ft. Bldg.	
Year	1,000's SF
1970	3,627
1975	5,330
1980	7,513
1985	10,209
1990	13,422
1995	17,132
2000	21,286
2005	25,806
2010	30,597
2015	35,554
2020	40,571
2025	45,552
2030	50,413
2035	55,088
2040	59,526
2045	63,694
2050	67,569
2055	71,145
2060	74,421
2065	77,404
2070	80,107
2075	82,546
2080	84,737
2085	86,700
2090	88,453
2095	90,015
2100	91,404
Source: Metro Forecasting Models, LLC	

Figure 2. Collier County Commercial Demand Forecast 1,000's SF

Source: Metro Forecasting Models, LLC   MFM Forecast 2000 2010 2020
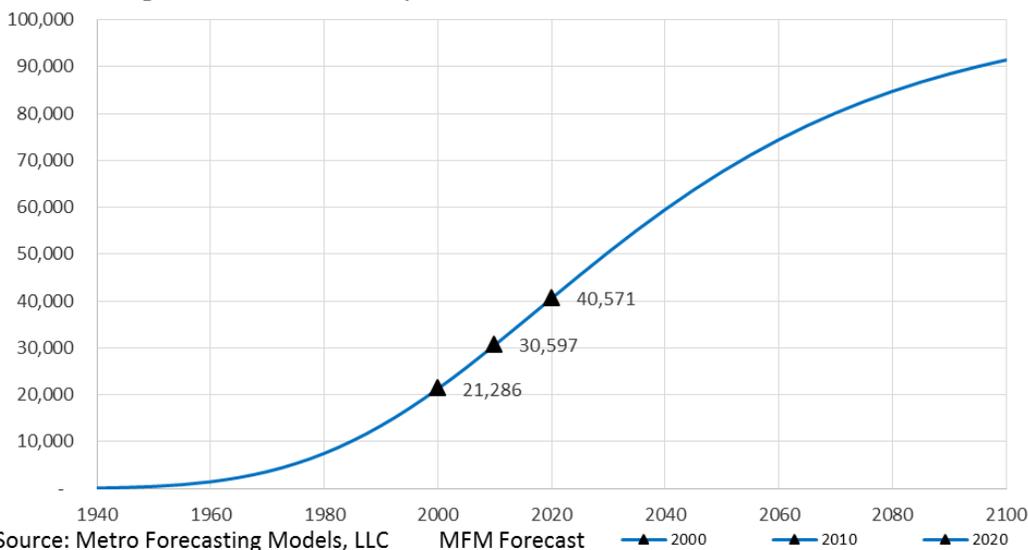
An MSA may also have more commercial space than the MSA's population could naturally support (i.e. Lee County). In these cases, demand for certain services from the population of neighboring communities may be met by the local MSA's supply.

The forecasted commercial demand in Table 3, combined with the knowledge of the existing commercial supply and vacancy rates, is useful in determining how much new space will be needed in 5-year steps. Note the demand is not linear; one 5-year step may forecast a demand rate that is greater or less than the previous 5-year period. **Figure 2** helps illustrate the changing demand for commercial space over time.

Naples-Immokalee-Marco Island MSA Overview

The Naples-Immokalee-Marco Island MSA ranked 21st nationally in population growth since the 2010 Census. This MSA had a population of 321,520 in 2010 and an estimated Census population of 348,777 in 2014. The major economic drivers for this MSA include construction, tourism, education, agriculture and healthcare. The largest employers in this MSA are Arthrex (a leading medical instrument designer and manufacturer), Collier County School District, NCH Healthcare, Health Management Associates and Publix Super Markets.

Collier County political subdivisions:
- City of Naples
- City of Marco Island
- Everglades City

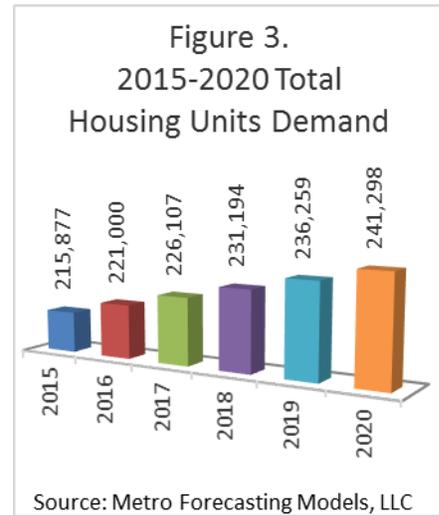### Historic Residential Building Permitting

Collier County has experienced a wide range of annual building permitting, from a high of 8,158 permit units in 2001 to a low of 944 in 2009. In 2014 the MSA permitted 3,610 residential units. Over the last 14 years (2000–2014), Collier County has on average issued 4,112 permits per year, as indicated in **Figure 4** by the dashed red line. As of May 2015 Collier County has issued 1542 residential permits signifying 2015 permitting is on pace to exceed 2014 permitting.

5-year Forecast (2015-2020)

The permanent population of this MSA is forecasted to grow by 11.8% from 362,673 in 2015 to 405,380 in 2020, increasing by 42,708 residents during this period. Housing demand resulting from the forecasted 5-year population growth is 25,421 new units from 2015–2020, as shown in Figure 3. Note these new units are in addition to the previously mentioned pent up demand for over 8,000 new units. The permitting data indicates there is a rebound in housing construction compared to 2009 permitting data. The demand for commercial space for goods and services to support the growing population will increase by 5.02 million square feet of building area from 2015 through 2020.

10-year Forecast (2015-2025)

The permanent population of this MSA is forecasted to grow by 23.2% from 2015 through 2025, increasing by 84,247 residents during this period to a total of 446,920 residents in 2025. Our 10-year forecast for new housing to serve the additional population is 50,147 units from 2015–2025. The growing population will increase demand for commercial space for goods and services by an additional 9.99 million square feet of building area from 2015 through 2025.

Figure 3.
2015-2020 Total Housing Units Demand

Source: Metro Forecasting Models, LLC

Figure 4.
Collier County Residential Permitting History

Source: US Census

Figure 5.
2015-2020 Permits For New Housing Units Forecast By Year

Source: Metro Forecasting

MFM Back-Cast Analysis Description

Our proprietary population growth forecast model is capable of running different growth scenarios using historic population and housing data. Over time, an MSA's year-to-year population growth may be above or below our forecasted population if the economy is expanding or contracting, as demonstrated in **Figure 6**.

MFM uses the divergence of actual population from our growth curve forecast to measure where a specific MSA is within the growth cycle. When the measured or actual population is slightly above or below our forecast, we use statistical analysis to determine the significance of the divergence. Figure 6 shows how population growth from 2001 to 2005 exceeded our forecast (housing boom), and then from 2009 to 2014 fell below our forecast (housing bust). From 2014 to 2020 we expect the population to revert back toward the MFM composite forecast.
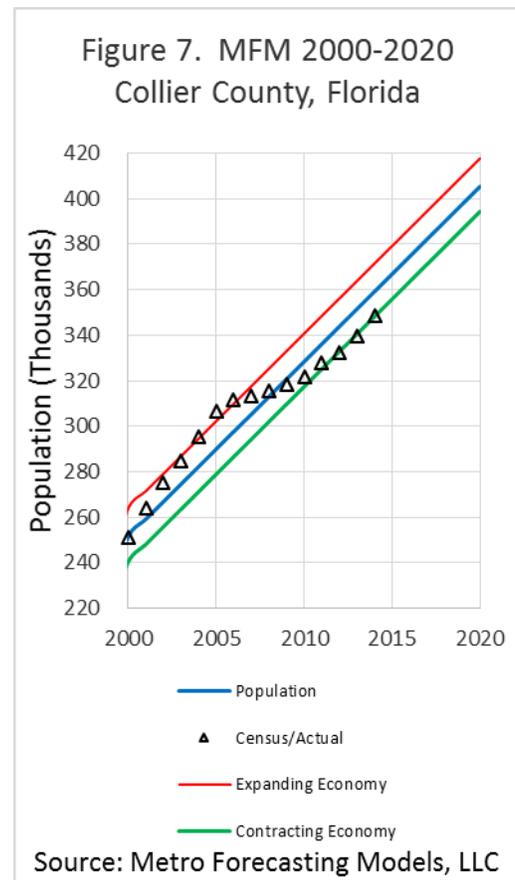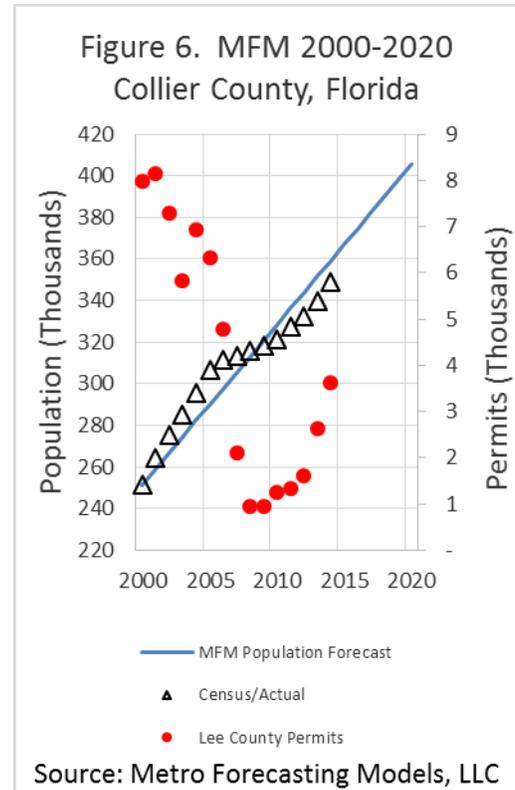
For an MSA that shows slower than forecasted growth for a period of years, we can demonstrate a growing potential **pent-up demand** for future housing, government services and commercial uses. For an MSA that shows a more rapid growth for a period of years, our forecast can indicate a potential **future oversupply** of housing and commercial space.

Naples-Immokalee-Marco Island Back-Cast Analysis

The Collier County metro area has shown lagging growth compared to our forecast since 2009. The forecasted population for 2015 using a back-cast analysis is 362,673 versus the 2014 Census *estimated* population of 348,777, as illustrated in **Figure 7**.

While the local economy is in a recovery mode broadly speaking, this metro's housing demand and supply have not reached equilibrium. Looking ahead, Collier County will have a more stable and limited variation from the forecast, resulting in more consistent growth for the next ten years. As we do our updates, we will monitor Collier County's growth to see if the population trends above the blue line shown in Figure 7.

The growth from 2001–2005 was a clear indicator that population was greatly accelerating compared to the long-term forecast. Since the Collier County metro area is still recovering from the recession, we anticipate the rental market to tighten and housing construction to accelerate to satisfy the housing needs of new and seasonal residents through 2020.

Figure 6. MFM 2000-2020 Collier County, Florida

Source: Metro Forecasting Models, LLC

Figure 7. MFM 2000-2020 Collier County, Florida

Source: Metro Forecasting Models, LLC

Metro Forecasting Models
Detailed Metro Analysis

The information presented in this report is for the MSA as a whole. Metro Forecasting Models consist of two basic models. The first is the Metro Forecasting aggregate model that forecasts for the entire metro area; the second is the Metro Forecasting disaggregate model that divides the metro are into hundreds or thousands of zones and forecasts the distribution and timing of growth for each zone.

Historically, and unfortunately, population forecasts have underestimated growth for fast growing areas. Accurate population forecasting is necessary to optimize the return on both public and private investment. For example, underestimating growth results in physical improvements that become obsolete (buildings are too small, roads too narrow, pipes too small). Overestimating growth can result in premature financial investment and under-utilization of capital improvements, resulting in a negative return on capital investment. Other negative impacts can result such as low economic activity, lower property values, and poor quality of life from inappropriate apportionment of land to support the future population.

Data Collection
and Input Process

For the MFM disaggregate forecast, we collect many thousands of data points from each MSA including specific attributes for *every* parcel within the MSA. We then group the collected data in hundreds or thousands of discrete areas known in the planning industry as Traffic Analysis Zones (TAZ for short). For example our model disaggregates the Lee County metro area into 1,434 discrete zones (see the TAZ map for Lee County, FL on the next page) and forecasts population growth for each of these zones. A TAZ is a specific geographic area that contains many lots/parcels/tracts with a combined population typically less than 3,000 people.

Our algorithms analyze each TAZ's development potential on an individual basis. The model then groups the zones by order from most likely to be developed to least likely. This same analysis is then repeated in 5-year increments until theoretical build-out is determined. From the forecasted data we can identify those zones that are built out, those that are experiencing rapid growth and those that demonstrate slow growth.

Figure 9. Typical Sigmoid Curve

Additional Model Outputs

The disaggregate model can provide many different reports to satisfy the needs of our varied clients. The following demand forecasts, indicating where and when development is anticipated to take place, are available for MSAs disaggregated by TAZ or other defined communities or neighborhoods in 5-year increments to build out:

- Population growth
- Multifamily and single family demand
- Multifamily and single family household size and vacancy rates
- Commercial demand for space
- Shopping center demand by type
- K-12 students for each school type
- Fire station demand

- Public parks differentiated by type
- Agricultural lands

Our disaggregate model has been used by governments and developers to determine where specific needs and markets exist or will exist and when. Government agencies have purchased property for future uses at lower prices, saving public funds. Developers and planners have used the model to demonstrate the need for a zoning change to local governments based on the model's demand forecasts. Call us or email today to discuss the MSAs you are interested in learning more about and what additional data we may have to assist you with making good planning and spending decisions.

Figure 10. Lee County, Florida, with 1434 zones.