METRO FORECASTING MODELS
MFM

Lee 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 goods and services for Lee County, Florida (the Cape Coral–Fort Myers 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 Lee 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 in 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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Lee County, Florida – Cape Coral–Fort Myers MSA
Population, Housing and Commercial Demand Forecast

The Lee County metro area is located in southwest Florida. In 2014 the permanent population was 679,513 according to the US Census, up from 1,414 in 1890.

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 Lee County metro area showing actual change in population from 1950 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 Lee County metro area (Cape Coral–Fort Myers MSA).

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

MFM 2020 Pop. 752,585

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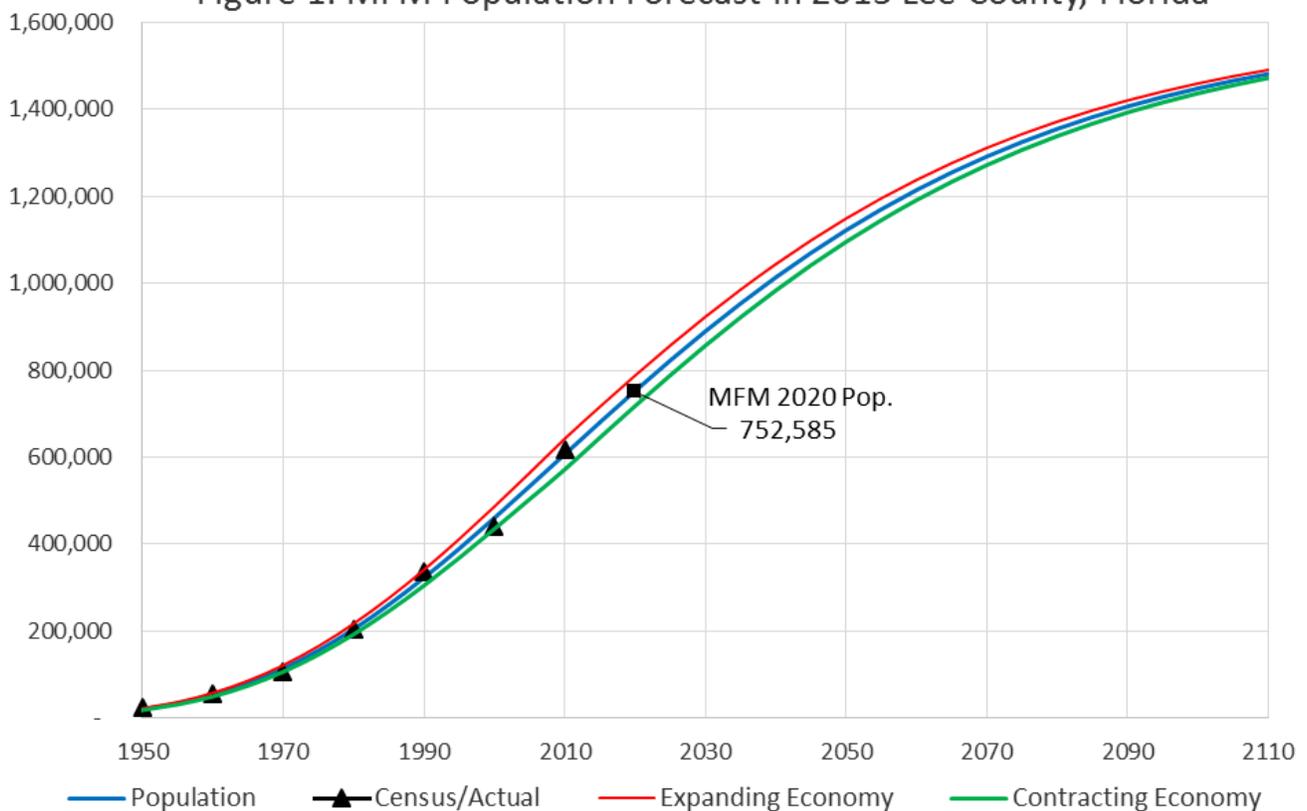
Source: US Census & Metro Forecasting Models, LLC

Population Forecast

Table 1 presents our specific analysis and population growth forecast for the Lee 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: Lee Metro Area Population Forecast			
Year	Composite	Expanding	Contracting
1970	114,069	119,811	108,502
1975	155,643	162,536	148,919
1980	204,751	212,733	196,926
1985	260,810	269,762	251,994
1990	322,901	332,663	313,250
1995	389,866	400,248	379,564
2000	460,405	471,208	449,653
2005	533,183	544,208	522,179
2010	606,905	617,966	595,839
2015	680,385	691,316	669,425
2020	752,585	763,244	741,876
2025	822,636	832,910	812,297
2030	889,850	899,650	879,974
2035	953,711	962,974	944,364
2040	1,013,862	1,022,547	1,005,089
2045	1,070,088	1,078,172	1,061,912
2050	1,122,288	1,129,768	1,114,718
2055	1,170,465	1,177,346	1,163,495
2060	1,214,694	1,220,993	1,208,309
2065	1,255,111	1,260,853	1,249,287
2070	1,291,892	1,297,107	1,286,601
2075	1,325,245	1,329,965	1,320,454
2080	1,355,393	1,359,651	1,351,067
2085	1,382,565	1,386,398	1,378,671
2090	1,406,997	1,410,438	1,403,499
2095	1,428,915	1,431,999	1,425,780
2100	1,448,540	1,451,299	1,445,735
Source: Metro Forecasting Models, LLC			

Housing Demand Forecast

Table 2 presents the Lee 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 371,099 housing units versus our forecasted demand of 344,343 units. The model accurately identified overbuilding in the mid 2000s resulting in the real estate bubble and subsequent crash, which was cause of the variance between two numbers (see **Figure 4**). The Census and Lee County permitting data tells us there are approximately 383,362 units in the first quarter of 2015. Our forecast demand of 386,034 units in 2015 indicates the housing market is just now reaching equilibrium.

Table 2: Lee County Metro Area Housing Units Demand Forecast			
Year	Composite	Expanding	Contracting
1970	45,888	48,197	43,648
1975	72,569	75,783	69,434
1980	111,991	116,357	107,711
1985	145,252	150,237	140,342
1990	183,207	188,745	177,730
1995	220,308	226,175	214,487
2000	259,180	265,261	253,127
2005	311,550	317,993	305,121
2010	344,343	350,619	338,065
2015	386,034	392,236	379,816
2020	426,998	433,046	420,923
2025	466,744	472,573	460,878
2030	504,879	510,440	499,276
2035	541,113	546,368	535,810
2040	575,241	580,169	570,263
2045	607,142	611,729	602,503
2050	636,759	641,003	632,464
2055	664,094	667,998	660,139
2060	689,188	692,762	685,565
2065	712,119	715,378	708,815
2070	732,989	735,947	729,986
2075	751,912	754,590	749,194
2080	769,017	771,433	766,563
2085	784,434	786,609	782,225
2090	798,296	800,249	796,312
2095	810,732	812,481	808,953
2100	821,867	823,432	820,275
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 Lee 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. Lee County has two super-regional shopping centers that are supplemented in part by demand from Collier, Hendry and Charlotte Counties.

The demand forecast shown in **Table 3** is the *total* 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. For example, neighborhood shopping centers may require a population of only 8,000–15,000 to be self-sustaining, while community and regional shopping centers may need a threshold population of 30,000 and 150,000 respectively.

An MSA may also have more commercial space than the MSA's population could naturally support. 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.

Table 3: Lee Metro Area Commercial Demand Forecast - Sq. Ft. Bldg.	
Year	1,000's SF
1970	9,460
1975	13,358
1980	18,235
1985	24,124
1990	30,992
1995	38,735
2000	47,188
2005	56,146
2010	65,391
2015	74,717
2020	83,939
2025	92,911
2030	101,519
2035	109,683
2040	117,352
2045	124,497
2050	131,110
2055	137,193
2060	142,760
2065	147,833
2070	152,439
2075	156,606
2080	160,365
2085	163,747
2090	166,783
2095	169,503
2100	171,935

Source: Metro Forecasting Models, LLC

Figure 2. Lee Metro Area Commercial Demand Forecast 1,000's SF

Source: Metro Forecasting Models, LLC   MFM Forecast   ▲ 2000   ▲ 2010   ▲ 2020
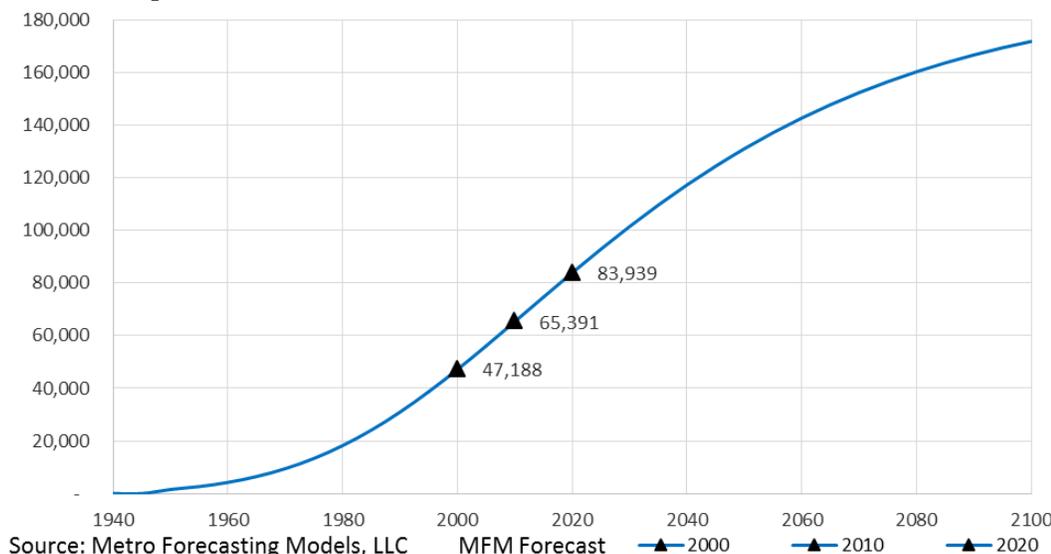
Cape Coral–Fort Myers MSA Overview

The Cape Coral–Fort Myers MSA ranked 11th nationally in population growth in the 2010 Census. This MSA had a population of 618,754 in 2010 and an estimated Census population of 679,513 in 2014. The major economic drivers for this MSA include construction, tourism and healthcare. The largest employers in this MSA are the Lee Memorial Health System, Lee County School District, Hertz Global Headquarters, Florida Gulf Coast University, Publix Super Markets and corporate headquarters for clothes retailer Chico's FAS.

Lee County political subdivisions:
- City of Fort Myers
- City of Bonita Springs
- City of Cape Coral
- City of Sanibel
- Town of Fort Myers Beach
- Village of Estero (formed 2015)
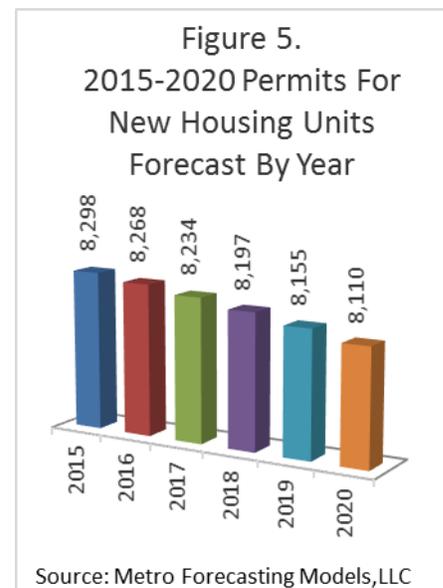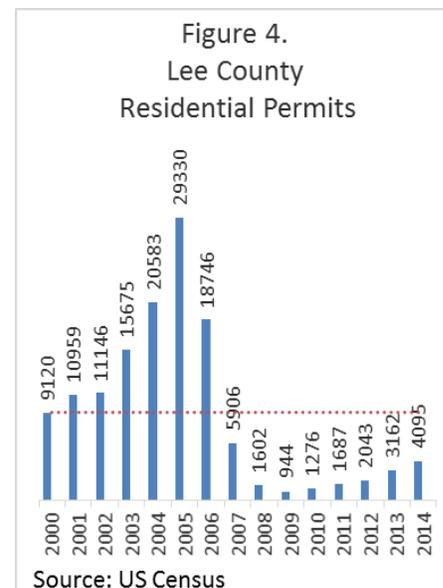
Historic Residential Building Permitting

Lee County has experienced a wide range of annual building permitting, from a high of 29,330 permitted units in 2005 to a low of 944 in 2009. In 2014 the MSA permitted 4,095 residential units. Over the last 14 years (2000–2014), Lee County has on average issued 9,085 permits per year, as indicated in **Figure 4** by the dashed red line.

5-year Forecast (2015-2020)

The permanent population of this MSA is forecasted to grow by 10.6% from 2015 through 2020, increasing by 72,199 residents during this period. Housing demand resulting from the forecasted 5-year population growth is 40,964 new units from 2015–2020, as shown in Figure 3. Due to the overbuilding in 2003–2006 as demonstrated in Figure 4, we find the near-term demand for new housing will continue to be muted compared to the historic annual permits issued. The demand for commercial space for goods and services to support the growing population will increase by 9.22 million square feet from 2015 through 2020.

10-year Forecast (2015-2025)

The permanent population of this MSA is forecasted to grow by 20.9% from 2015 through 2025, increasing by 142,250 during this period to a total of 822,636 residents in 2025. Our 10-year forecast for new housing to serve the additional population is 80,709 units from 2015–2025. The growing population will increase demand for commercial space for goods and services by an additional 18.19 million square feet from 2015 through 2025.

Figure 3.
2015-2020 Total Housing Units Demand

2015: 386,034
2016: 394,302
2017: 402,537
2018: 410,734
2019: 418,889
2020: 426,998

Source: Metro Forecasting Models, LLC

Figure 4.
Lee County Residential Permits

2000: 9120
2001: 10959
2002: 11146
2003: 15675
2004: 20583
2005: 29330
2006: 18746
2007: 5906
2008: 1602
2009: 944
2010: 1276
2011: 1687
2012: 2043
2013: 3162
2014: 4095

Source: US Census

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

2015: 8,298
2016: 8,268
2017: 8,234
2018: 8,197
2019: 8,155
2020: 8,110

Source: Metro Forecasting Models, LLC

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 2005 to 2007 exceeded our forecast (housing boom), and then from 2008 to 2009 fell below our forecast (housing bust). From 2000 to 2014 the population is approaching the MFM forecast as the economy is recovering.
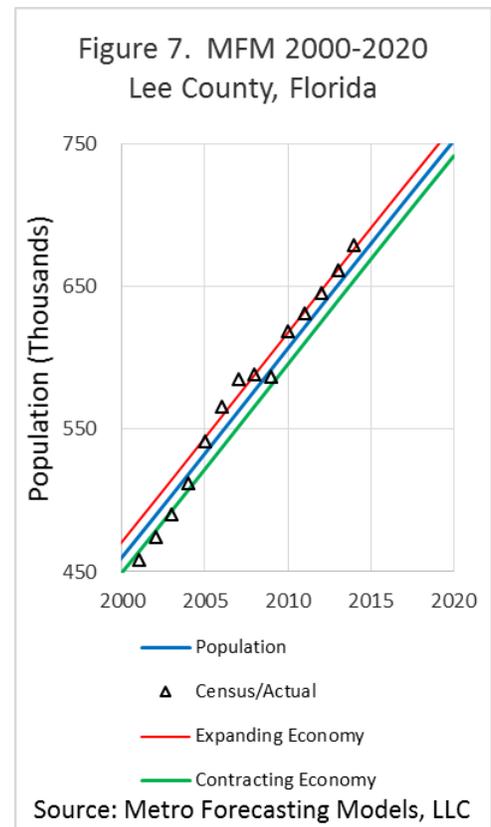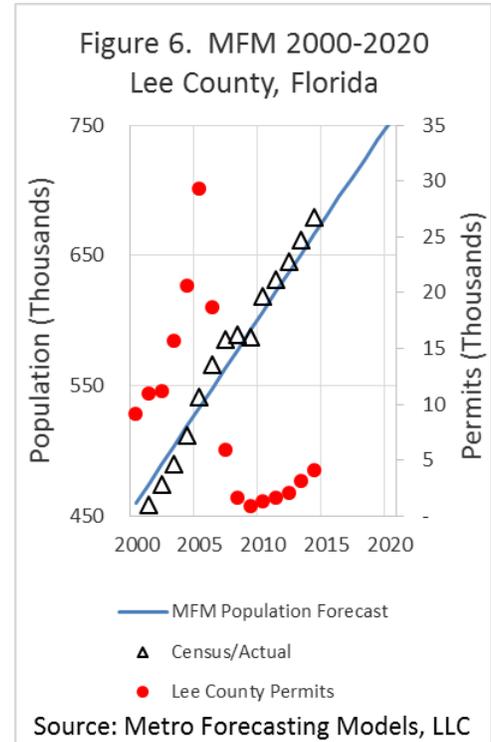
For an MSA that shows slower than forecasted growth for a period of years, we can demonstrate a growing potential **pent-up demand** for future housing, government services and commercial uses. For an MSA that shows a more rapid growth for a period of years, our forecast can indicate a potential **future oversupply** of housing and commercial space.

Cape Coral–Fort Myers Back-Cast Analysis

The Lee County metro area has shown growth consistent with our forecast since the 2010 Census. The forecasted population for 2015 using a back-cast analysis is 680,385 versus the 2014 Census *estimated* population of 679,513, as illustrated in **Figure 7**.

While the local economy is in a recovery mode broadly speaking, this metro's housing demand and supply have reached equilibrium. Looking ahead, Lee 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 Lee County's growth to see if the population trends above the red line shown in Figure 7.

The growth from 2003–2006 was a clear indicator that population was greatly accelerating compared to the long-term forecast. Since the Lee 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 Lee County, Florida

— MFM Population Forecast
△ Census/Actual
● Lee County Permits

Source: Metro Forecasting Models, LLC

Figure 7. MFM 2000-2020 Lee County, Florida

— Population
△ Census/Actual
— Expanding Economy
— Contracting Economy

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). 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.