2040 SOCIOECONOMIC DATA DEVELOPMENT

BY

RENAISSANCE PLANNING

FOR THE

COLLIER METROPOLITAN PLANNING ORGANIZATION

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Overview

The following is a description of the methods used to create 2040 socioeconomic data for Collier County. The 2040 data creation employed data review, ground-truthing using aerial images, manual coding of incremental changes and land use modeling. The manual coding process for dwelling units and employment was used where Developments of Regional Impact (DRIs) and other approved large developments indicated a specific plan of development. The land use modeling was used in other areas where specific development intent was not known. The modeling relied on an analysis of land available for development, suitability and attractiveness factors, and manifestation of new development based on the prevailing mix and densities of 2010 development in each traffic analysis zone (TAZ). Special consideration was given to redevelopment potential in downtown Naples and points north and south along the US 41/Tamiami Trail corridor. Hotel/motel units and school populations were forecasted for 2040 as well.

Data Review, Visual Inspection and Manual Intervention

The location and development status of schools, hotel/motel units, and approved DRIs were identified using a combination of 2010 socioeconomic data, other available data, and a visual inspection using Google Earth. The review included validating what is on the ground for 2010 as well as identifying the type of change anticipated for 2040. Each of the topics below had slightly different approaches.

Schools

The schools data for 2010 and the old 2007 socioeconomic data were used to compare school locations in Google Earth. There were some modifications needed to the 2010 data, which have been completed. The 2010 and 2040 data have been broken out into K-12 and university. For the university, the university student population in TAZs, where there was university population in 2010, was grown by the ratio of 2040 population to 2010 population. For the K-12 schools, the 2010 number of students in each TAZ was either grown by a factor of 1.1 to get to 2040 or the 2035 data was used as a guide for the growth in student population. For new schools, the new data relies on the locations and student populations identified in 2035. The schools calculations have been included in an Excel file.

Hotel/Motel

The hotel/motel data was reviewed relative to data collected by the MPO and data in the 2007 and 2010 data sets. There were a number of modifications to the hotel inventory that included putting hotels in the correct TAZ and adding hotels that were not on the list. Locations for new hotels were determined based on 2035 data in select cases. In most cases, the new hotels were based on a review of where hotels currently exist and the conditions revealed through aerial photography in Google Earth. The number of new hotel units assumed for 2040 was based on the percent change in employment over that period. Resorts and RV parks have hotel/motel units in the data to model the behavior of visitor populations in these areas. There were smaller numbers of units in the 2010 data that were maintained for 2040 in these locations.

Developments of Regional Impact

DRIs indicate areas that have been approved for significant, large-scale projects. To ensure that these planned developments were accurately portrayed in the 2040 data projections, twenty-six DRI locations were visually inspected. Using Google Earth, the County's Master List of Planned Unit Developments[1], and the 2010 socioeconomic data developed by Florida District 1, dwelling units and employment were allocated by TAZ.

It was assumed that 80% of the proposed dwelling units and employment space for each DRI would be constructed by 2040. Commercial space was allocated as one employee for each 750 square feet of proposed development, at the ratio of 30% commercial to 70% service – the average for the County's employment in 2010. Industrial space was allocated as one employee for each 1,500 square feet of proposed development. If the DRI's proposed construction was completed and included in the socioeconomic data for 2010, no dwelling units or employment were added. However, if 2010 socioeconomic data did not include the DRI's proposed development, the remainder of residential units and employment were allocated to TAZs based on available land and nearby development.

In total, 76 TAZs were visually inspected in this manner. This resulted in additions of 14,323 single family dwelling units and 16,457 multi-family dwelling units. Additionally, 673 industrial jobs, 1,854 commercial jobs, and 3,916 service jobs were added to these 76 TAZs. Any TAZs that were allocated during this process did not receive further development through the allocation formula. The following table shows the DRIs that were inspected and the TAZs for each[2].

Table 1 | Development Attributable to Approved DRIs

DRI Name	TAZs Included in DRI Area	SF DU[3]	MF DU	IND EMP	C/S EMP
Collier Tract 22	98,99	0	0	0	0
Olde Cypress	368	0	0	0	0
Pelican Marsh	113, 141, 162, 170	0	0	0	0
Island Walk	183	0	0	0	0
Pine Air Lakes	112, 478	0	0	0	0

[1] http://www.colliergov.net/modules/showdocument.aspx?documentid=54631
[2] The DRIs shown in the table accounted for 69 of the 76 TAZs validated using the visual inspection/buildout methodology.
[3] SF DU is single family dwelling units; MF DU is multi-family dwelling units; IND EMP is industrial employment; C/S is commercial/service employment.

DRI Name	TAZs Included in DRI Area	SF DU[3]	MF DU	IND EMP	C/S EMP
City Gate	542	0	0	500	107
Green Heron	253	0	0	0	0
Tollgate	233	0	0	0	0
Bretonne Park	265	0	0	0	0
Berkshire Lakes	252 (partial), 254 (partial), 256, 257, 567	0	0	0	0
King's Lake	279, 590	0	0	0	0
Collier County Government Complex	283, 284	0	0	0	0
Sabal Bay	294, 313, 605	1200	400	0	347
Lely Country Club	301, 302	0	0	0	0
Lely Resort	303, 304, 305, 306	350	900	0	0
Marco Shores/Fiddler's Creek	423, 437	1700	900	0	300
Winding Cypress	357, 362	450	450	0	38
Heritage Bay	403, 438, 439 (partial)	500	1100	0	245
Pelican Strand	375 (partial), 376	0	0	0	0
Vineyards	160, 172 (partial) 185, 186	0	0	0	0
Hacienda Lakes	359, 361, 634, 635	422	986	0	626
Parklands	370, 636	98	1184	0	0
Tuscany Reserve	377, 368 (partial)	475	140	0	0
Gray Oaks	154, 169, 174	500	100	0	0
Town of Ave Maria	269, 387, 669, 670, 671, 672, 673	5500	3300	0	1475
Rural Lands West (proposed)	72, 316, 341, 660, 662, 729	3300	1100	0	1333

Infill Development

The downtown Naples area and points north and south along the US 41/Tamiami Trail corridor were assessed for infill and redevelopment potential. Because the land use modeling approach relies on available land to model new development, it is not ideal for areas that are currently built out and/or developed, but underdeveloped. The remote sensing methods used for the land cover database do not

always capture the correct amount of available land in urban areas, and they do not capture redevelopment potential at all. Based on a visual inspection and knowledge of the area, there were a number of TAZs identified that have a significant infill or redevelopment potential based on the nature and age of development, the availability of infill sites (vacant land, large parking areas, out parcels, etc.) and the location of sites. This redevelopment potential was included in the process by hard coding available acres in to the land use allocation model. After a draft run of the land use allocation model, it was determined that the method of hard coding performed well for employment, but did not adequately capture multi-family development. A total of 2,035 units were added to the Tamiami Trail corridor to account for the shortcomings of the model.

Land Use Modeling

The equation used to allocate new dwelling units and new employment accounted for the total available land in a TAZ, the prevailing density of existing activity, and the proportion of activity for each use (single family, multi-family, industrial, commercial, or service employment), and each TAZ's attractiveness for development. Each of these variables is explained in detail below. This method allocated new units based on the availability of buildable land and the presence of similar land uses.

Available Land

Conservation Areas

US Environmental Protection Agency's (EPA's) Smart Location Database (SLD) has a coverage of protected and unprotected areas. Protected areas are a composite of any and all known protected lands, such as federal, state, local parks, conversation easements, water, or other restrictions to future growth. Unprotected lands in the SLD include both developed and developable areas. To assess unprotected land per TAZ, the SLD unprotected lands were intersected with TAZs in GIS, and the acreage of unprotected land per TAZ was calculated. To net out present development in order to obtain a measure of unprotected and undeveloped available land per TAZ, the United States Geological Survey (USGS) National Land Cover Database (NLCD) was used to obtain and calculate developed land per TAZ. Developed acres were subtracted from the acres of unprotected land to reach a net of available acres of developable, unprotected, undeveloped land per TAZ. In addition to the NLCD, county data in the area of Immokalee was used to account for the Natural Resource Protection Areas that are part of the future land use policies.

Prevailing Density

Current density is an important factor in predicting how TAZs will develop in the coming years. In the absence of concerted policies, future development is likely to occur commensurate with existing structures. The total area of developed land in each TAZ was calculated from the 2011 NLCD as described above. To determine current densities of existing development, the number of single family homes was divided by the footprint of developed land. The same was done for multi-family dwelling units and for jobs. A general measure of activity density was calculated by summing single family units, multi-family units, and jobs, then dividing by the footprint of developed land. For each TAZ, the proportion of each activity type (single family, multi-family, and employment) was determined by dividing the existing

densities by the measure of total activity density. This provided an indication of which TAZs were rich in housing and which were rich in jobs.

RFMUD Sending and Receiving Areas

The County's Rural Fringe Mixed Use District (RFMUD) policy is intended to influence future densities in Natural Resource Protection Areas through transferrable development rights. To reflect these future densities, any TAZs falling within a sending area was assigned a prevailing density of 1 unit per 10 acres, while any TAZs falling within the receiving areas were given a prevailing density of 1 unit per acre.

Attractiveness Factors

Rather than assigning a flat growth rate to the entire County, residential and employment growth rates were influenced by each TAZ's attractiveness for development. The attractiveness values included in this analysis were developed by calculating one number based on a number of factors. These factors included a summary of desirable/likely growth areas that were identified during a visioning workshop with MPO Board members, the occurrence of recent development in a localized area, and regional accessibility to employment and workers. The factors that attracted residential growth differed from the factors that attracted employment growth, as discussed below.

MPO Board Visioning

On February 14, 2014, a visioning workshop was held with MPO Board Members. Participants were asked to provide their thoughts about likely and desirable locations of future growth on a base map of Collier County. Participants were able to locate future regional centers, town centers, neighborhood centers, and special use employment districts. Regional centers contain the highest density and variety of uses, and are 25% residential. Town Centers were described as medium density development with approximately 50% residential uses. Neighborhood centers contain buildings no taller than two stories, and include 75% residential uses, with commercial development intended to serve the daily needs of local residents. Special use employment districts were envisioned to include anything from sports facilities, to airports, or industrial facilities.

Regional centers, town centers, and neighborhood centers were included in the residential attractiveness factor. Special use employment districts, regional centers, and town centers were included in the employment attractiveness factor. A half-mile buffer was applied to the location of each center, and any TAZ falling within that buffer was assumed to have increased attractiveness. Each board member completed this activity independently, so some TAZs received multiple center designations. To reflect a higher likelihood of development occurring in these areas identified by multiple Board members, they received higher scores than TAZs in which only one Board member placed future development. Maps of the residential and employment factors resulting from this visioning process are shown in Figures 1 and 2.

Figure 1 | MPO Board Vision (Residential Factor)

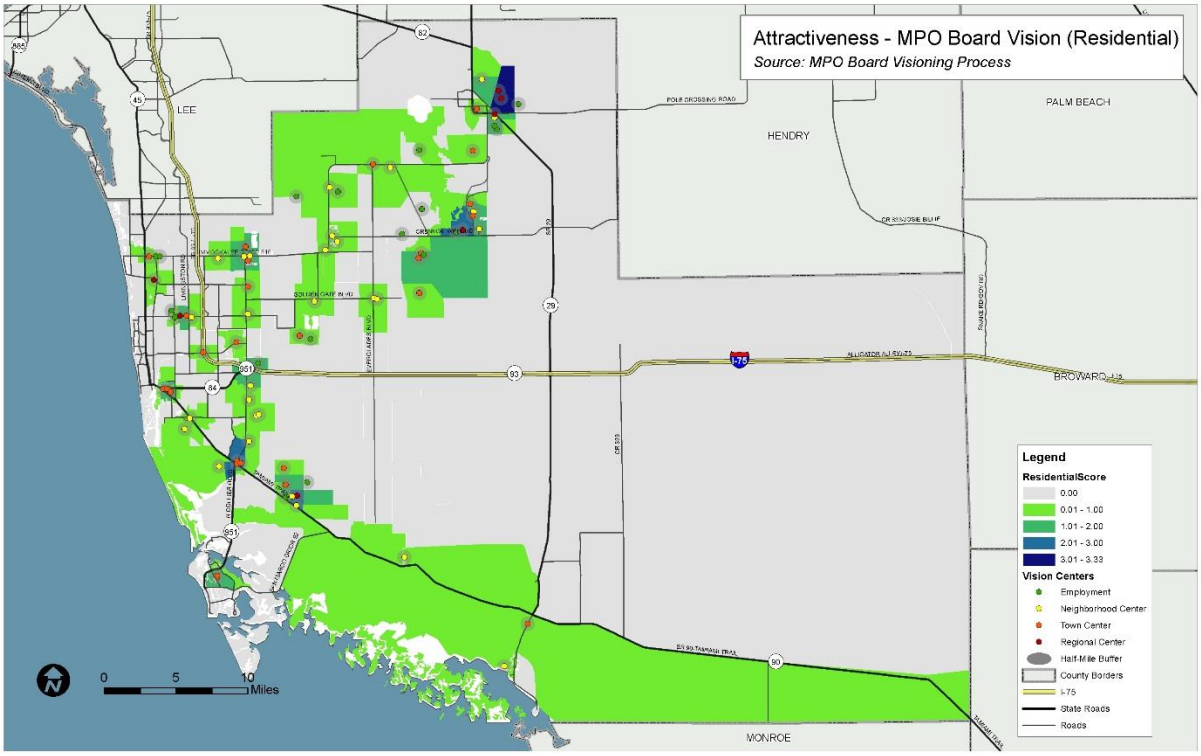
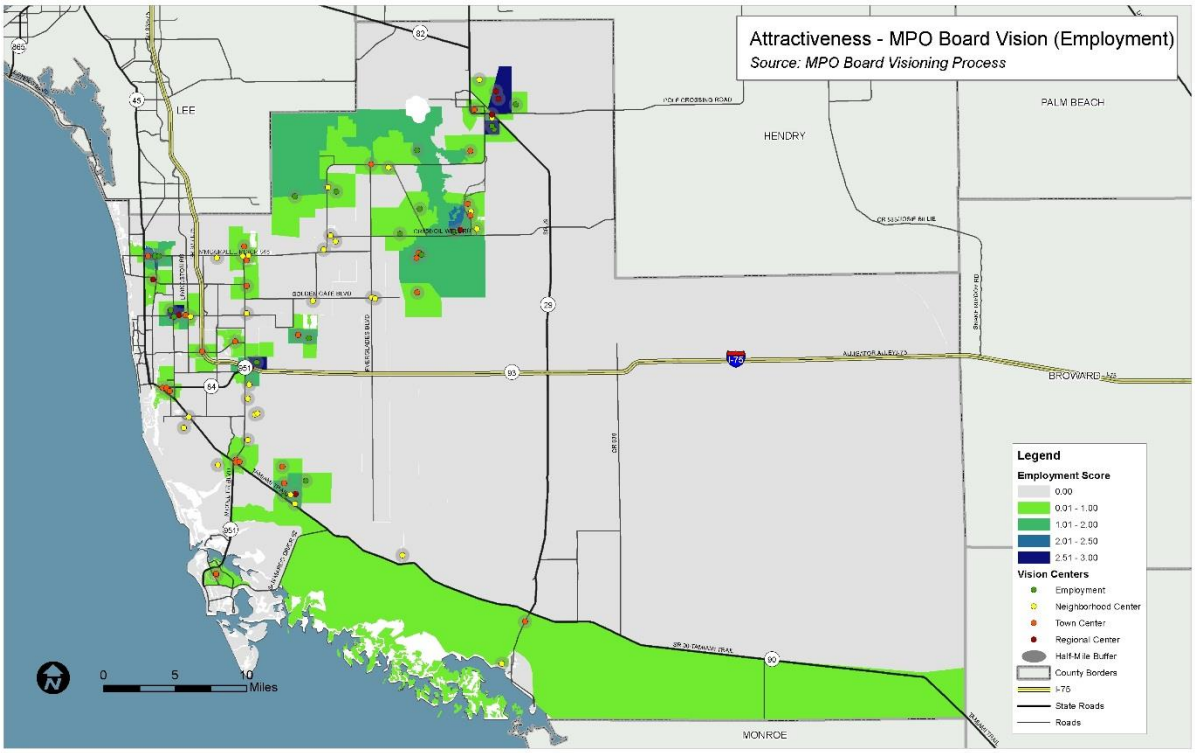


Figure 2 | MPO Board Vision (Employment Factor)

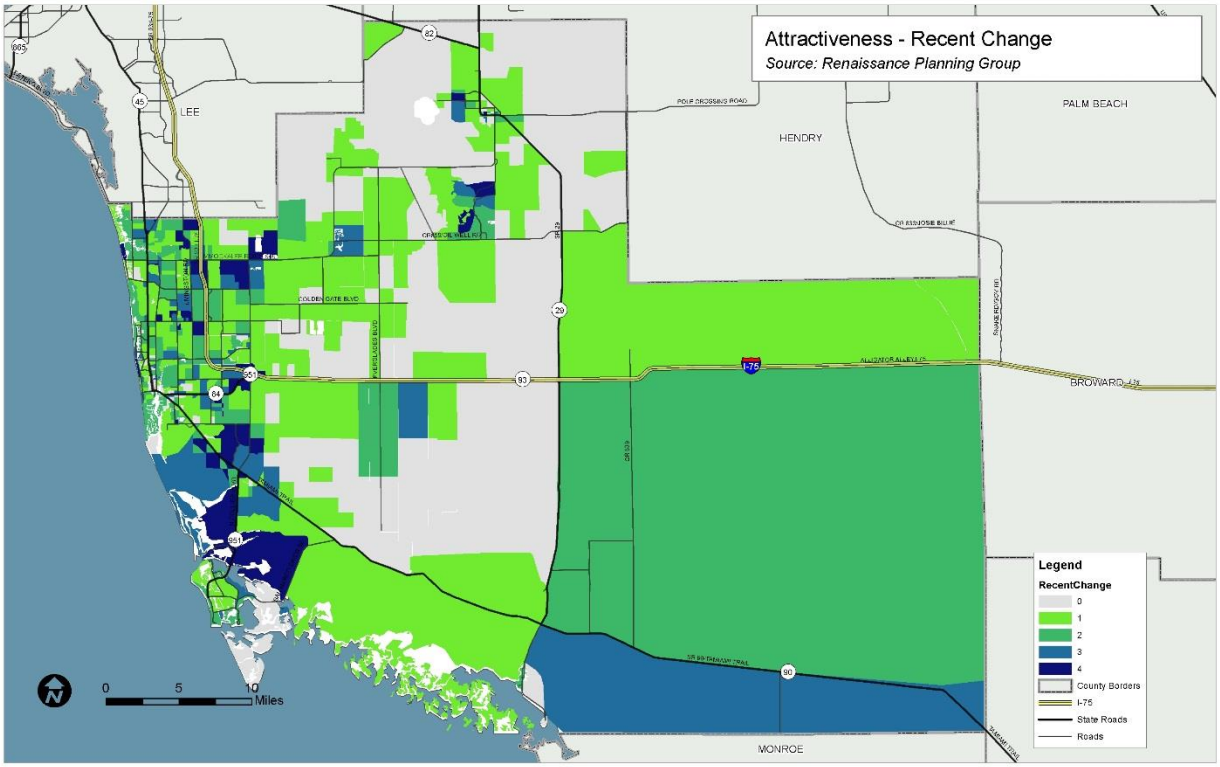


Recent Development

Growth follows growth is a primary assumption behind this measure of development attractiveness. Areas that have experienced recent changes or intensification have a stronger likelihood that future development will occur in proximity, especially where there is a supply of available land. The assumption here is that investment follows investment, and jobs and rooftops will go where there has been previous investment in the built environment. To identify areas that had experienced recent growth, the USGS satellite imagery of NLCD were assessed for the period of 2001 and 2011. Any changes in NLCD from 2001 to 2011 to some state of development (open, low, medium or high development intensity) were selected. In addition, any land cover change from a current state of development to a more intense state of development was also selected as an area that experienced development change through intensification. Acres of change, either new growth or intensification, were tabulated by TAZ.

The attractiveness from recent change was assessed on a scale from 0 to 4. Any TAZ with no additional development or increased density between 2001 and 2011 was assigned a recent change score of 0. TAZs that experienced change, but were below the 50th percentile were assigned a change score of 1. Those between 50th and 75th percentile were assigned a 2, and those between the 75th and 90th percentile received a weighting of 3. Any TAZ falling above the 90th percentile received a 4, the highest change score. These weightings can be seen in Figure 3 below.

Figure 3| Recent Change Factors (NLCD)



Smart Location Database

Growth is more likely to locate in areas that have greater accessibility to either jobs or workforce population. Employers tend to locate where other jobs are highly accessible and in areas that have higher accessibility to a workforce-age population. Future residential development will gravitate towards accessibility to jobs. To identify areas of higher employment and workforce accessibility, the US EPA's SLD was queried to obtain data for Census Block Groups for job access within a 45 minute automobile trip and working population access within a 45 minute automobile trip. The SLD census block groups were overlaid with the County's TAZs, which were then assigned the respective accessibility values for both job and workforce accessibility by automobile.

Both accessibility factors ranged from 0 to 3. Figures 4 and 5 show the areas with higher accessibility of jobs and workers. Similarly to the process described above, greater weightings were applied where higher levels of accessibly existed. TAZs below the 25th percentile received an accessibility score of 0. Those with accessibility between the 25th percentile and the 75th percentile received a score of 1. Those between the 75th and 90th percentiles received a 2, and the top 10th percentile received a weighting factor of 3. While residential attractiveness included only the accessibility to jobs, employment attractiveness incorporated both accessibility of workers and jobs, to account for the synergistic effects of locating near other jobs.

Figure 4| Access to Jobs

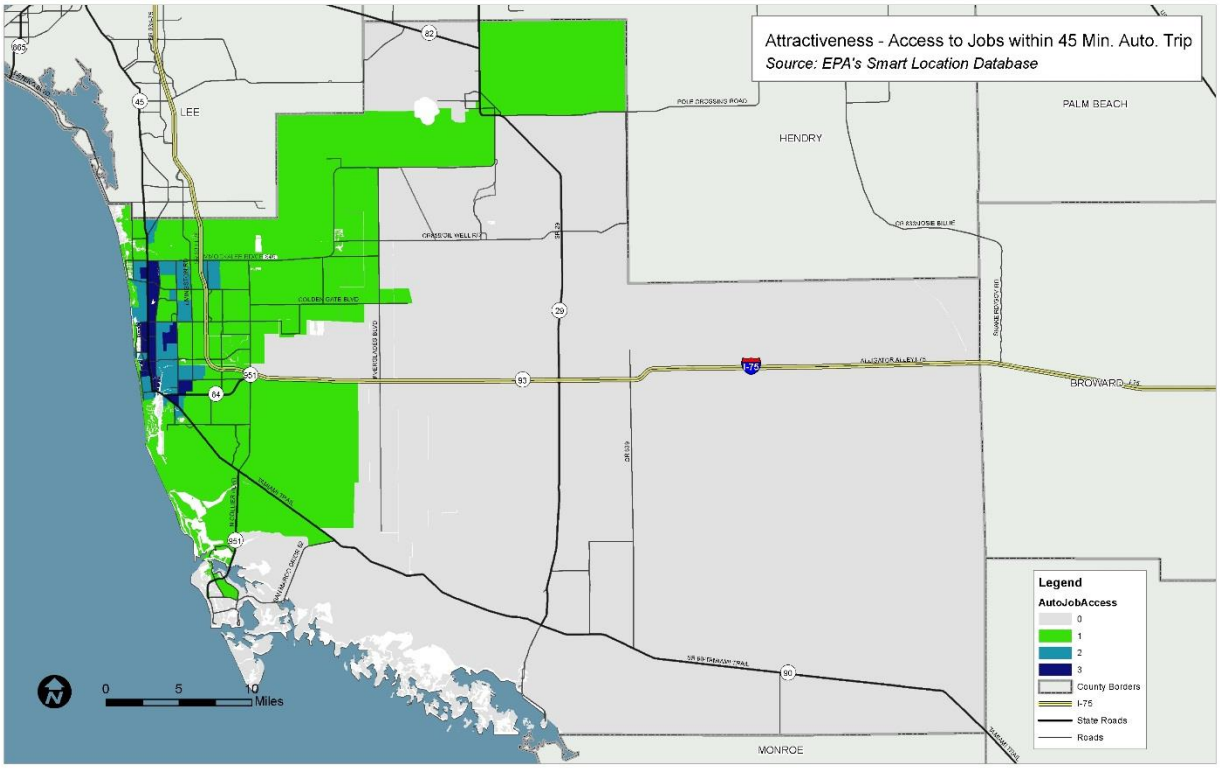
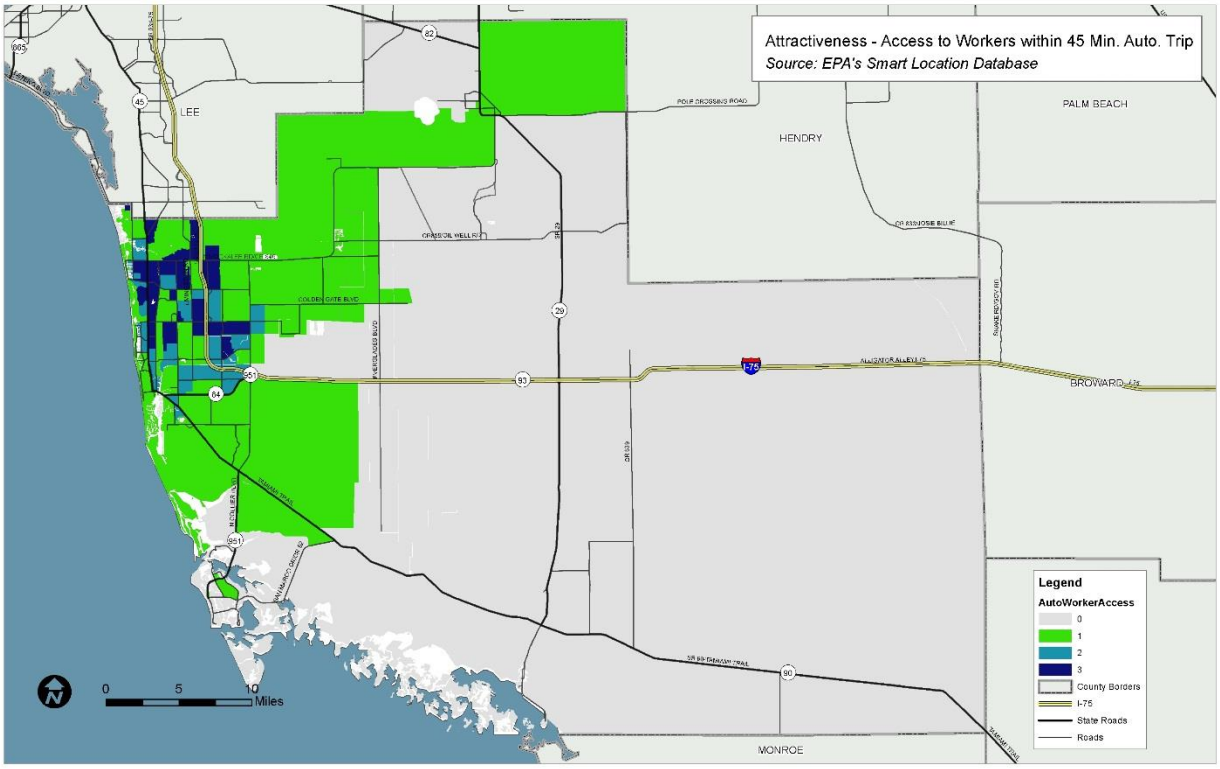


Figure 5| Access to Workers



Combining and Applying Attractiveness Factors

As discussed above, the residential attractiveness factor included the vision for regional centers, town centers, and neighborhood centers; the occurrence of recent change; and accessibility to jobs. These individual factors were summed and squared, to receive a residential attractiveness factor that ranged from 0.25 to 30.25. This final residential attractiveness factor can be seen in Figure 6.

The employment attractiveness factor incorporated special use employment districts, regional centers, and town centers in addition to the presence of recent development and accessibility to both jobs and workers. These individual factors were summed and squared, to receive an employment attractiveness factor that ranged from 0.25 to 38. This final employment attractiveness factor can be seen in Figure 7.

Figure 6 | Overall Residential Attractiveness Factor

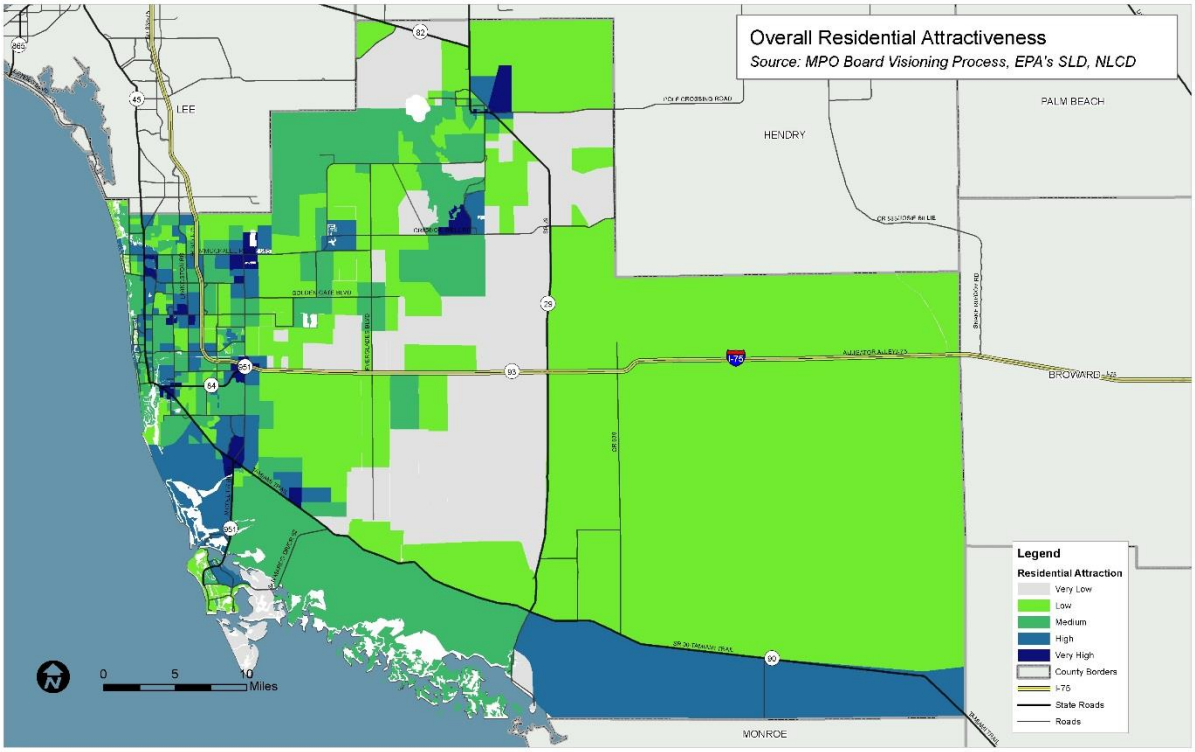
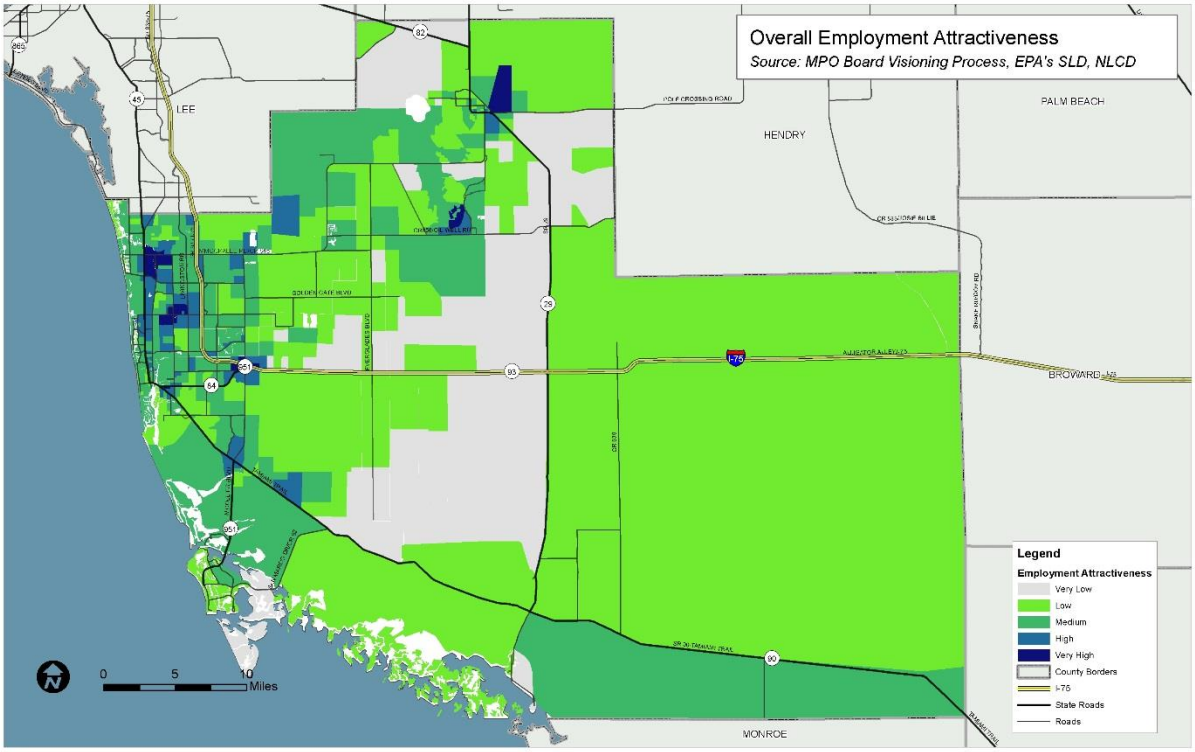


Figure 7| Overall Employment Attractiveness Factor



Dwelling Units

The equation used to allocate new dwelling units, both single family and multi-family, accounted for the total available land in a TAZ, the prevailing density of existing activity, the proportion of activity for each use (single family, multi-family, versus commercial), and each TAZ's attractiveness for residential development multiplied by a County-wide growth factor. The County-wide residential growth factor was determined by the number of new dwelling units required to house the 2040 population estimate from Florida's Bureau of Economic and Business Research (BEBR).

The number of new dwelling units required to meet the population totals is a function of a TAZ's vacancy rates and population per occupied dwelling unit, which were calculated separately for single family and multi-family units. Vacancy rates by household type were included in the 2010 socioeconomic model. However, this 2010 figure provides a single snapshot of housing occupancy shortly after the burst of the housing bubble. For the year 2040, it was assumed that vacancy rates would fall by 40%; that is, a higher percentage of all units would be occupied. The second part of the population equation is the number of people living in each dwelling unit. Using the ratios of population per occupied dwelling unit in 2010, an average population per single family and multi-family dwelling unit was calculated by TAZ. Changing demographic characteristics in the county indicate that household sizes will likely increase by 2040. To capture these trends, each TAZ's population per occupied single family unit and population per occupied multifamily unit was increased by five percent. Because some TAZs had high average populations per

occupied dwelling unit, the 2040 figures were capped at a maximum of 3.2 people per single or multi-family unit. The 2040 occupancy rates and population per occupied unit were then multiplied by the number of dwelling units to determine the single-family and multi-family populations in each TAZ. The County-wide residential growth factor was then applied in an iterative process to each TAZ that had not received manual interventions until the County's target 2040 population was reached.

Jobs

The 2035 socioeconomic model had a population to employment ratio of 0.484. By applying this ratio to the 2040 population estimate from BEBR, a target employment was calculated.

Hotel/motel and Schools

The hotel/motel units and schools allocated through manual inspection require associated workers. Hotels were assigned 0.2 commercial workers and one service worker per 10 rooms. The additional hotel/motel rooms built by 2040 therefore required 78 total commercial employees and 402 service employees. Schools serving students in Kindergarten through 12th grade were allocated one worker for every 15 additional students. Two-thirds of these jobs were anticipated to be in the commercial sector, while one-third were anticipated to be in the service sector. This resulted in a total of 1,861 commercial employees and 924 service employees. Universities, because of higher staff and faculty ratios, were assigned one job for every 12 students, at the same two-thirds commercial to one-third service ratio. This resulted in a total of 402 commercial employees and 200 service employees.

Additional Allocations

After subtracting the total number of employees assigned through new hotel/motel units and schools from the control total, the formula used to allocate employment was much the same as that used to allocate residences. The equation used to allocate new jobs – industrial, commercial and service – accounted for the total available land in a TAZ, the prevailing density of existing activity, the proportion of activity for each use (industrial, commercial, and service, versus residential), and each TAZ's attractiveness for employment development multiplied by a county-wide growth factor.

Allocation Summary

Table 2 provides a summary of the socioeconomic models for 2007, 2010, 2035, and 2040.

Table 2 | Summary of Socioeconomic Models

	2007	2010	2035	2040
Single Family Dwelling Units	77,775	89,115	116,474	139,041
Multi-Family Dwelling Units	118,133	97,385	165,137	122,837
Single Family Population	180,378	171,274	276,889	295,013
Multi-Family Population	153,856	145,465	227,253	197,519
Total Dwelling Units	195,908	186,500	281,611	261,878
Total Population	334,234	316,739	504,142	492,532
Hotel/Motel Units	9,343	11,343	10,719	15,375
Total School Enrollment	45,190	82,950	73,615	129,060
Industrial Employment	26,553	22,213	39,946	32,603
Commercial Employment	43,012	44,092	73,695	65,375
Service Employment	97,302	104,557	130,516	139,769
Total Employment	166,849	170,862	244,232	237,747

Table 3 provides a summary of the additions from 2010 to 2040.

Table 3 | Forecasted Increase in Socioeconomic Measures from 2010 to 2040

	From 2010 to 2040
New Single Family Units	49,071
New Multi-Family Units	26,307
New Industrial Employment	10,390
New Commercial Employment	21,283
New Service Employment	35,212
New Total Employment	66,885