Heartland Economic Futures

Prepared by the Central Florida Regional Planning Council

As part of a U.S. Department of Housing and Urban Development Sustainable Communities Grant

For the Florida Heartland

Consisting of DeSoto, Glades, Hardee, Hendry, Highlands, Okeechobee, and Polk Counties

January 21, 2014

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"The work that provided the basis for this publication was supported by funding under an award with the U.S. Department of Housing and Urban Development. The substance and findings of the work are dedicated to the public. The author and publisher are solely responsible for the accuracy of the statements and interpretations contained in this publication. Such interpretations do not necessarily reflect the views of the Government."

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Introduction

Alternative Future Scenario Modeling (AFSM, "scenario modeling", or "Futures modeling") was a major component of the HUD Sustainable Communities grant awarded to the Central Florida Regional Planning Council. The process was somewhat similar to a report created earlier for the *1,000 Friends of Florida* using similar modeling techniques, but with different methods and goals. The Futures modeling conducted for this report was different in that it incorporates projected future employment to attempt to anticipate where infrastructure demand will be needed based on industry clusters. This Futures modeling effort uses the LUCIS (Land Use Conflict Identification Strategy) model and was conducted by the University of Florida.

Futures modeling was conducted for the seven counties in the rural Heartland region of Florida. Map 1 shows the location of the counties involved in the Futures modeling. These counties are partners and Consortium members in the Heartland 2060 regional visioning effort.

Map 1: Location of the Heartland Counties

Ultimately these alternative future scenarios, or Futures, will be compared and contrasted and the information they provide will be available for local leaders and decision-makers. Three different Futures are envisioned, based upon the regional Comprehensive Economic Development Strategy (CEDS), each with its own specific economic trajectory.

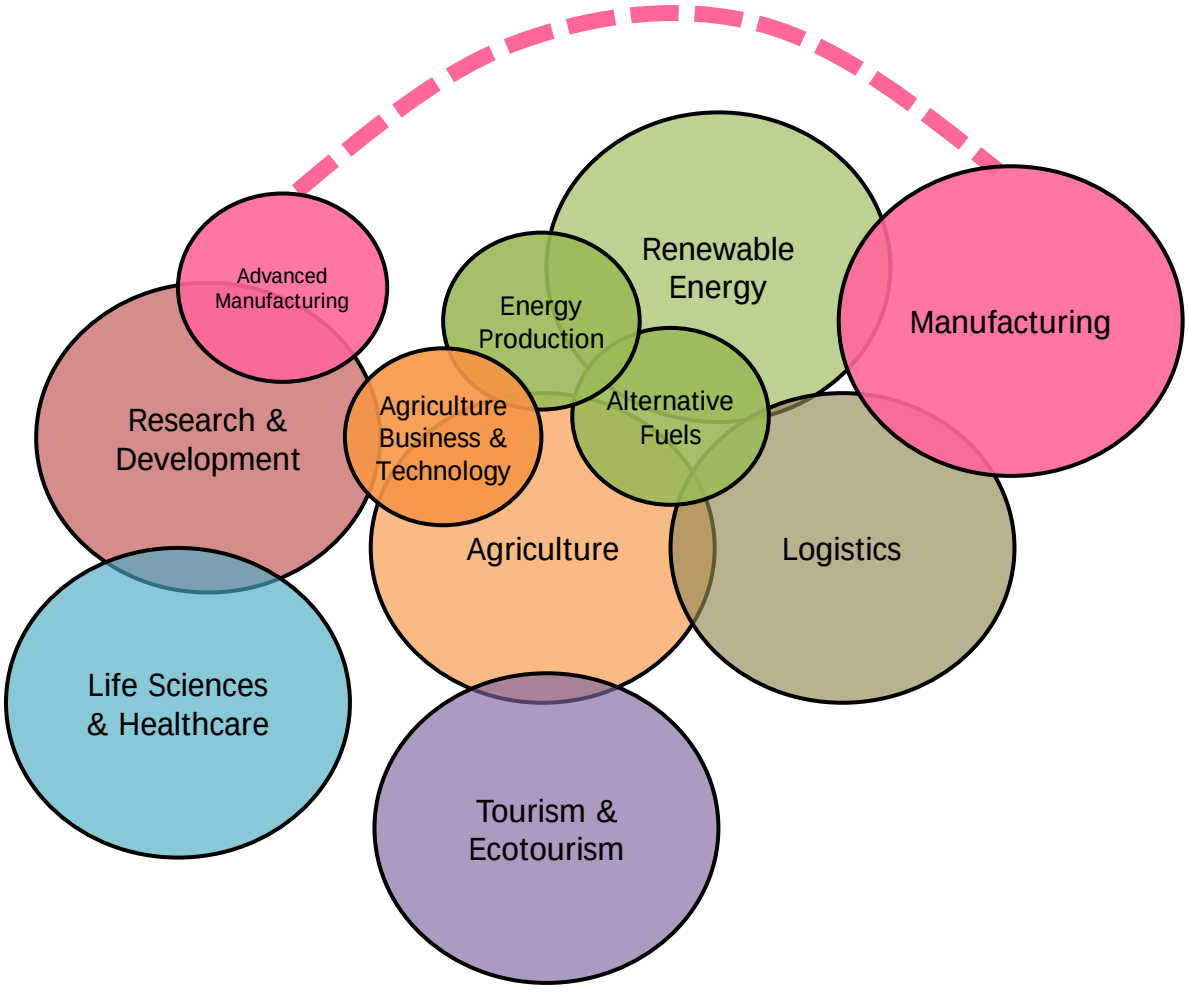
Background

The Regional Economic Models, Inc. (REMI) PI+ economic forecasting software was used to develop custom employment projections that form a core part of each of the Futures. The employment projection process is detailed elsewhere The PI+ software covers all counties in Florida, and is licensed collectively by all eleven of Florida's Regional Planning Councils (RPCs). The software is capable of projecting to the year 2060, which is the extent of the current scope of Futures modeling in the Heartland 2060 project.

Three Potential Economic Futures

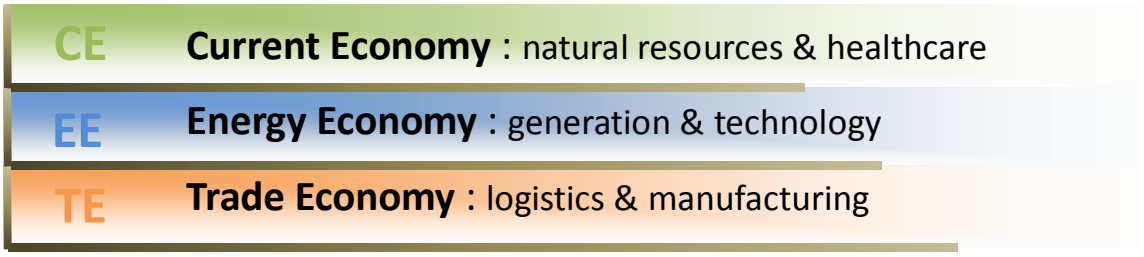
Three different potential economic Futures correspond to what may happen if there was directed regional development of industry clusters, as identified in the Comprehensive Economic Development Strategy (CEDS) document that has been produced for the region. The CEDS identifies the regional industry clusters in the Heartland region, as seen in Figure 1. The full findings of the CEDS are detailed elsewhere.

Figure 1: Future Industry Clusters in the Heartland, from CEDS



Employment projections were created for three different potential economic Futures, as developed during the Heartland 2060 regional vision process. These three Futures are the Current Economy, Energy Economy, and Trade Economy (see Figure 2). Two of the Futures (Energy Economy and Trade Economy) correspond to a regional focus on particular industry clusters, and the Current Economy Future corresponds to a continuation along the current economic trajectory. Since they represent a focused development of specific industry clusters, the Energy Economy and Trade Economy employment projections have more jobs in targeted NAICS codes than the Current Economy projections. In practice, the Current Economy can be thought of as representing the business-as-usual model, while the Energy Economy and Trade Economy represent projections above and beyond business-as-usual.

Figure 2: Three Potential Economic Futures for the Heartland



Employment projections for the Current Economy focus on continuing development in already regionally strong and important industry clusters such as health care and natural resources. The Energy Economy focuses on energy generation from alternative and renewable technologies and fuels, development of those technologies, and implementation of energy conservation and efficiency equipment. Employment projections for the Trade Economy tend to focus on industry clusters in the logistics, warehousing, trade, and manufacturing industries. These industry clusters come from the regional Comprehensive Economic Development Strategy, as produced by the Central Florida Regional Planning Council for the U.S. Economic Development Administration. See Table 1 for a summary of the industry cluster focus of each Future, as envisioned by the CEDS.

Table 1: Regional Industry Cluster Development Focus (from the CEDS)											
Economic Future	Agriculture	Agriculture Business & Technology	Logistics	Life Sciences & Healthcare	Tourism & Ecotourism	Research & Development	Manufacturing	Advanced Manufacturing	Renewable Energy	Energy Production	Alternative Fuels
Current Economy	**P**	**P**		**P**	**P**						
Energy Economy	S	S				**P**		**P**	**P**	**P**	**P**
Trade Economy	S	S	**P**			S	**P**	**P**			S
P= Primary focus. S = Secondary focus											

NAICS Codes and Industries

The PI+ software licensed by the Florida RPCs for the Heartland region uses 23 North American Industry Classification System (NAICS) codes, as standardized by the U.S. Census. Table 2 details the industry clusters in each NAICS code grouping. Employment projections were created for each county, for each NAICS code industry sector, and for each year. It is important to note that NAICS employment classifications distinguish by the type of work performed, and not by the field or industry in which the work occurs. This may cause some confusion because, for instance a grove or farm manager, although they work in the agricultural field would not be classified as Farm, but would be classified as Administrative and Waste Management Services. Likewise, a chemical engineer that works blending fertilizer for a mining company might be classified under Manufacturing (because this type of work is classified as Chemical Manufacturing), instead of Mining.

Table 2: NAICS Codes in the Florida Heartland	
CFRPC REMI v1.5 (23-sector)	**NAICS Code**
Accommodation and Food Services	72
Administrative and Waste Management Services	56
Arts, Entertainment, and Recreation	71
Construction	23
Educational Services	61
Farm	111-112
Federal Civilian	NA
Federal Military	NA
Finance and Insurance	52
Forestry, Fishing, and Related Activities	113-115
Health Care and Social Assistance	62
Information	51
Management of Companies and Enterprises	55
Manufacturing	31-33
Mining	21
Other Services, except Public Administration	81
Professional, Scientific, and Technical Services	54
Real Estate and Rental and Leasing	53
Retail Trade	44-45
State and Local Government	NA
Transportation and Warehousing	48-49
Utilities	22
Wholesale Trade	42
NA = Not Applicable. These industries are defined within the PI+ software, but do not correspond directly to a particular NAICS code.	

Scenario Development

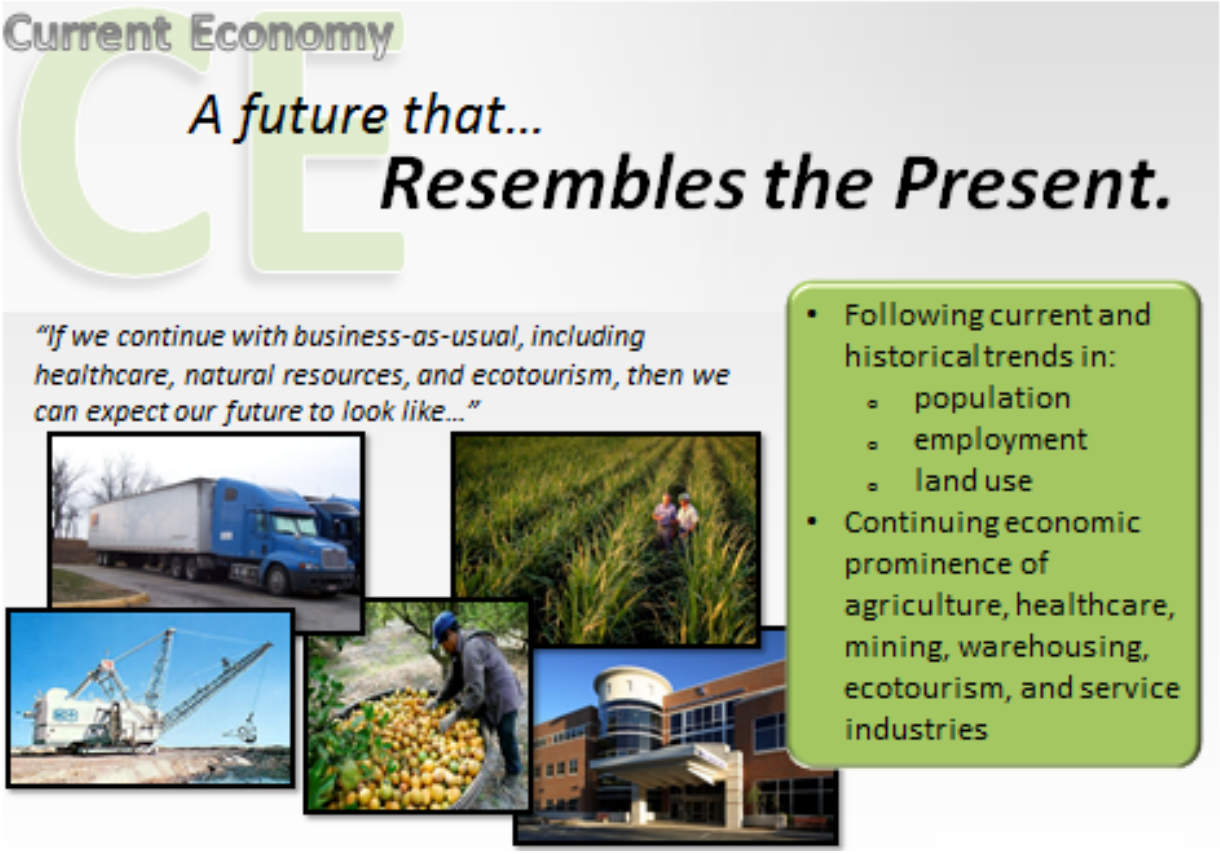
The REMI PI+ (v1.5.2, build 3274) economic forecasting software used to generate these employment projections uses a series of interconnected model elements and datasets to forecast micro economic trends. Many of these datasets, such as employment projections (based on the U.S. Bureau of Labor Statistics) or population projections (based on the U.S. Census) come imbedded in the software, but are also able to be manipulated. The PI+ software is very malleable. The imbedded population projections are built from the U.S. Census cohort-based method, and were deemed inappropriate for forecasting the population of the Heartland region. For this reason, unique population projections were developed for this project.

After the unique population projections were used to replace the stock REMI population projections, the model was run as normal, to the year 2060, and the employment projections were taken, to be used in the Futures modeling. The employment projections were separated by county, by year, and by NAICS code. The 23 NAICS codes that were used are detailed above, in Table 2.

Current Economy

The novel population projections, developed for this project, were built from the established and accepted methodology as put forth by BEBR. These population projections were used to replace the PI+ standard population projections. This somewhat altered the employment projections of the stock PI+ model, and these modified, unique employment projections are what make up the Current Economy employment projections. The general themes of the Current Economy Future are captured in Figure 3.

Figure 3: Current Economy Future



Energy Economy and Trade Economy

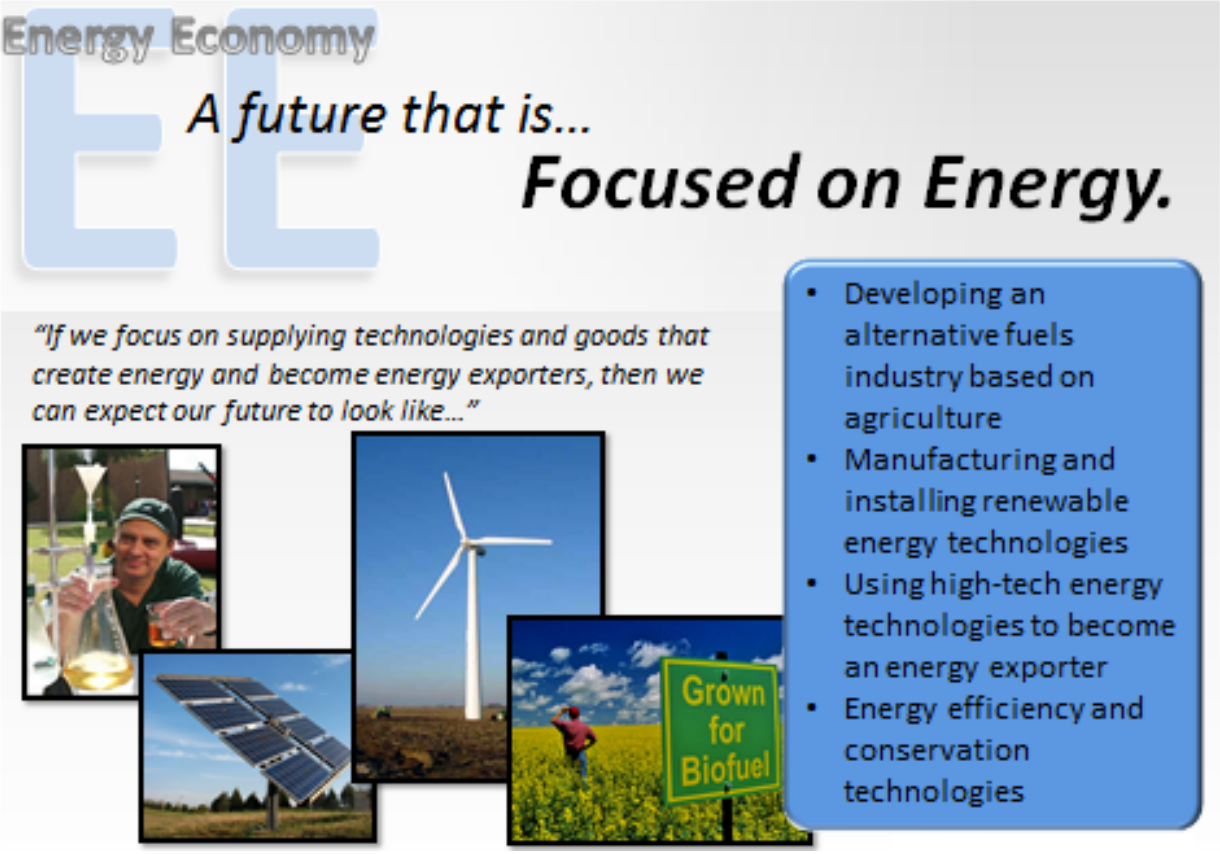
As stated previously, the employment projections for the Energy Economy and Trade Economy utilize the projections of the Current Economy as a base. Then, presumably, with focused development effort in targeted industry clusters, the Energy Economy and Trade Economy Futures will develop "extra" jobs in the targeted industry clusters. For this reason, the Energy Economy and Trade Economy Futures have projections that are equal to or greater than the Current Economy in any given county, NAICS code cluster, or year. The number of extra jobs possible given targeted industry cluster development was determined to be +2% more than the Current Economy. These extra jobs are distributed differentially in the Energy and Trade Economy Futures.

The determination of which NAICS code industry clusters would be affected by this targeted industry cluster development and by how much involved a targeted survey using local knowledge. Respondents were informed of the criteria for each Future (Energy Economy and Trade Economy) and asked to select industry clusters (from the 23 NAICS codes) where each alternative Future might have more projected employment than the

Current Economy Future. Each respondent was given one hundred points to distribute, which represented the additional +2% employment. All responses were averaged and weighted to distribute the projected job gains by industry. Responses fairly closely resembled each other, as was to be expected.

The general themes associated with each of the two alternative Futures are captured in Figures 4 and 5. These revolved around the particular economic trajectory for each, as envisioned in Table 1. The Energy Economy represents a directed focus on the development of energy efficiency, energy conservation, and renewable energy and alternative fuels technologies and industries. The Energy Economy envisions a future that is focused on energy. See Figure 4.

Figure 4: Energy Economy Future



The Trade Economy represents a directed focus on developing logistics and manufacturing industries and technologies. The Trade Economy envisions a future that is making and moving goods. See Figure 5.

Figure 5: Trade Economy Future

Supporting Datasets

Employment Projections

The additional 2% job growth expected to occur in target industries associated with each of the two alternate Futures was targeted to specific industries associated with the desired outcomes of each Future. Local expert opinion was used to determine in which industry sectors these extra 2% of jobs might occur. These opinions were aggregated and weighted to find consensus for distributing the extra 2% of jobs across targeted industry clusters.

Figure 6 shows the industry clusters that were weighted more heavily than the Current Economy given the expected focused development in the Energy Economy Future. This weighting structure shows where the extra 2% of jobs were distributed. The primary focus is on added employment in Professional, Scientific, and Technical Services, and Manufacturing, with secondary focus on Construction, Education Services, Farm, Forestry, Fishing, and Related Activities, and Utilities.

Figure 6: Employment Projection Weighting for Extra 2% Jobs in Energy Economy

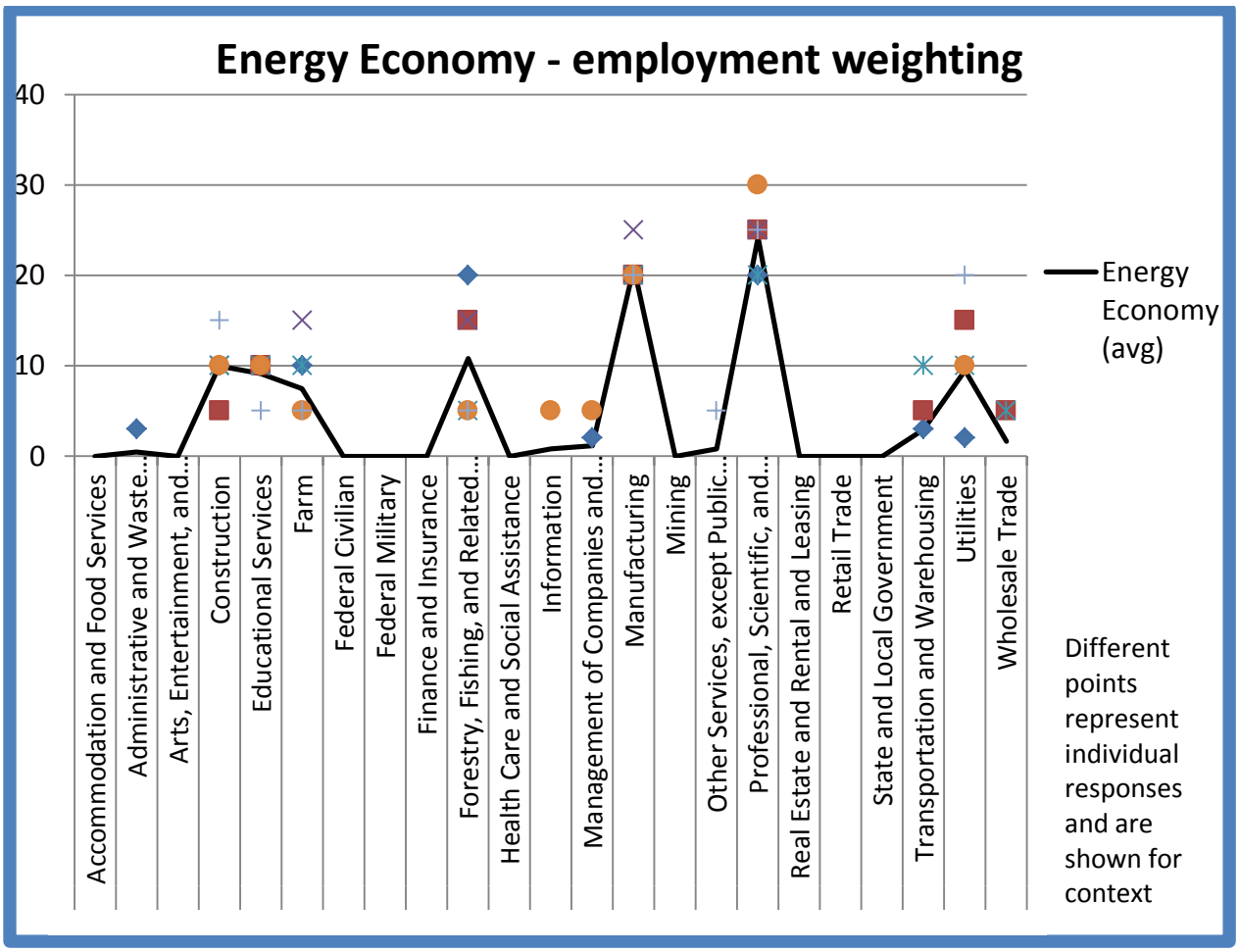
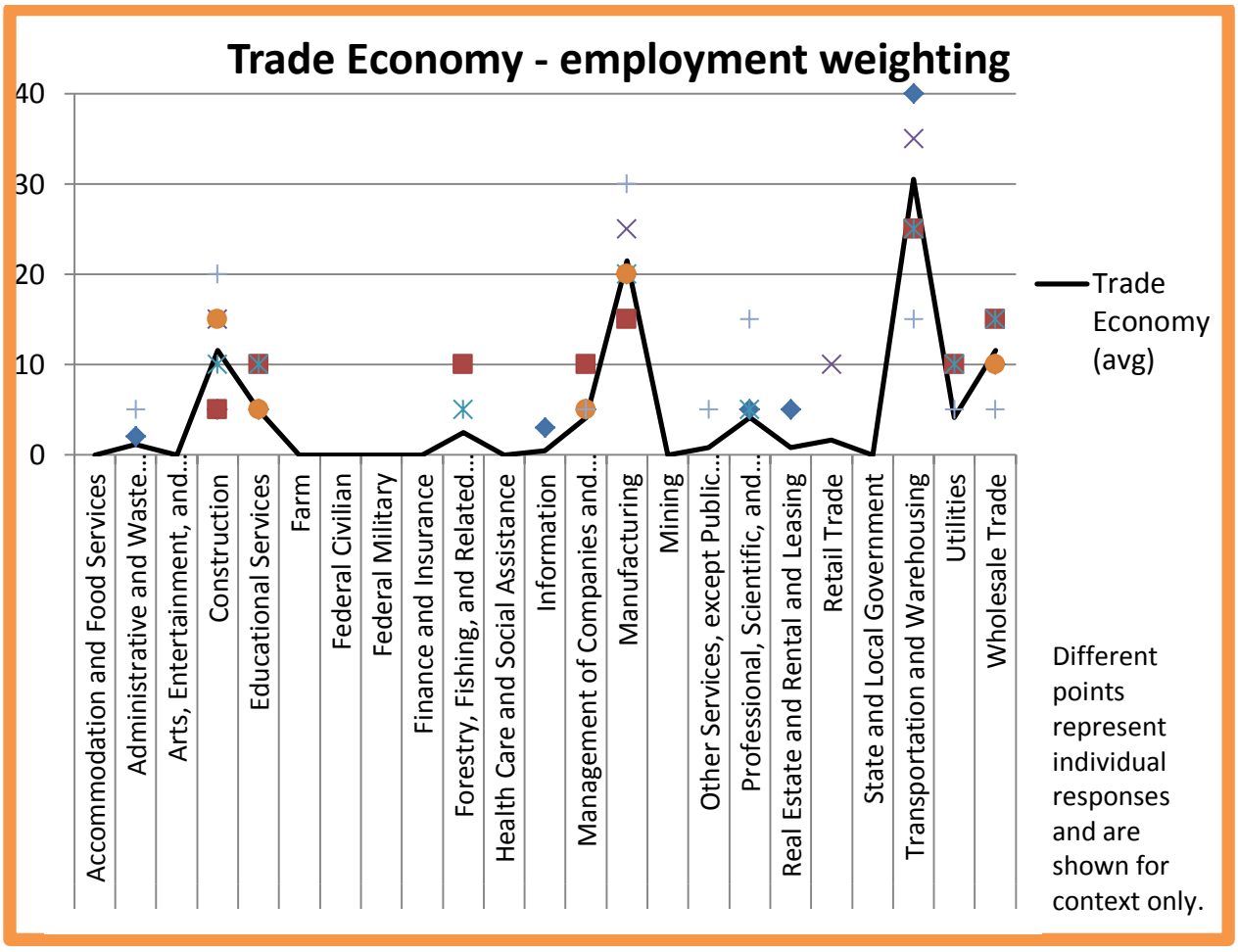


Figure 7 shows the industry clusters that were weighted more heavily than the Current Economy given the expected focused development in the Trade Economy Future. This weighting structure shows where the extra 2% of jobs were distributed. The primary focus is on added employment in Transportation and Warehousing, and Manufacturing, with secondary focus on sectors such as Construction, Educational Services, and Wholesale Trade.

Figure 7: Employment Projection Weighting for Extra 2% Jobs in Trade Economy



Respondents to the employment weighting were also asked to add comments regarding each NAICS code industry cluster that, in their opinion, would add jobs under the conditions stated above. These comments were used to develop datasets that were used in the Futures modeling, during the employment allocation process. In general, these comments followed the general themes expressed in each Future.

Regional Employment Centers

Regional Employment Centers (RECs) were identified for each of the three Futures to help spatially allocate jobs. These datasets were developed using local expert opinion. The resultant datasets are described in Figures 8, 9, and 10 for the Current Economy, Energy Economy, and Trade Economy, respectively. In application, these areas were also buffered, so that their impact on allocating employment would be extended beyond the boundaries of each particular area. This was done because employment centers generally aggregate.

The Current Economy RECs dataset was used to guide employment allocation in all three scenarios. These represent the present-day areas driving the regional economy. The other two REC datasets were used to guide employment in their respective Futures, as they represent the opportunity areas associated with each Future.

Figure 8: Current Economy Regional Employment Centers

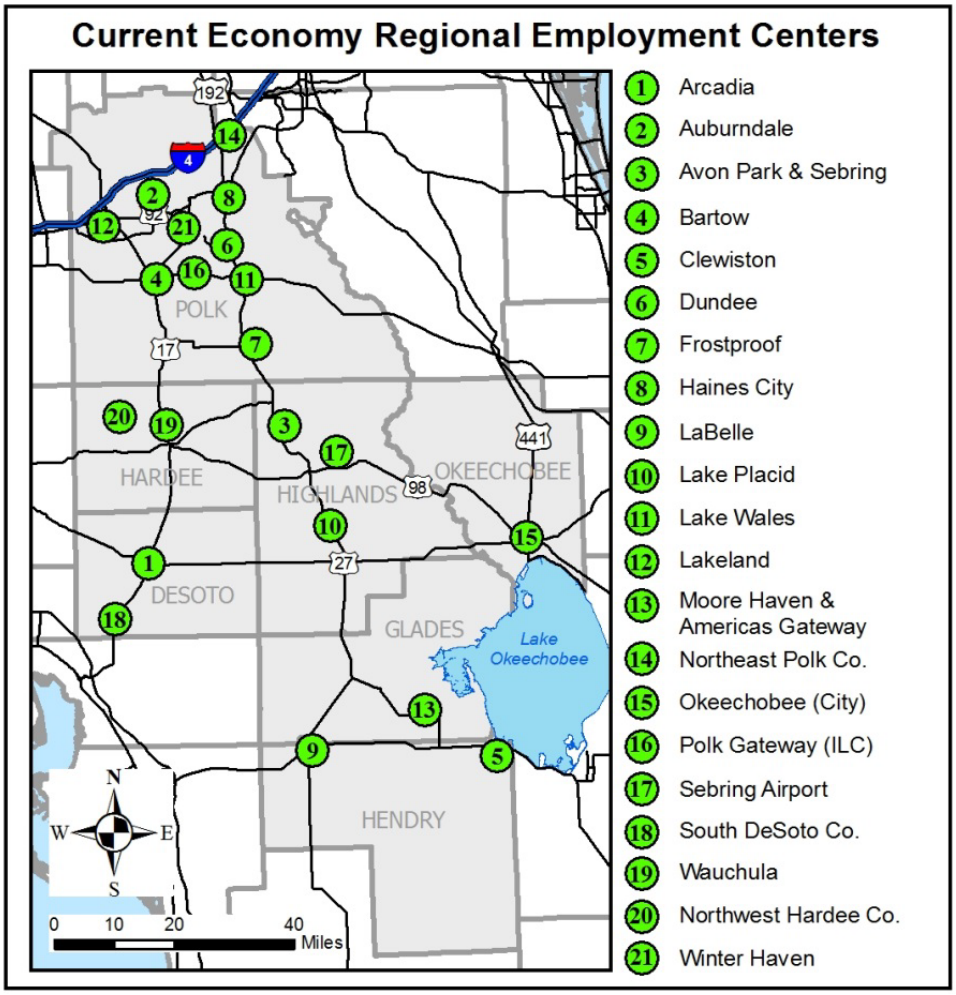


Figure 9: Energy Economy Regional Employment Centers

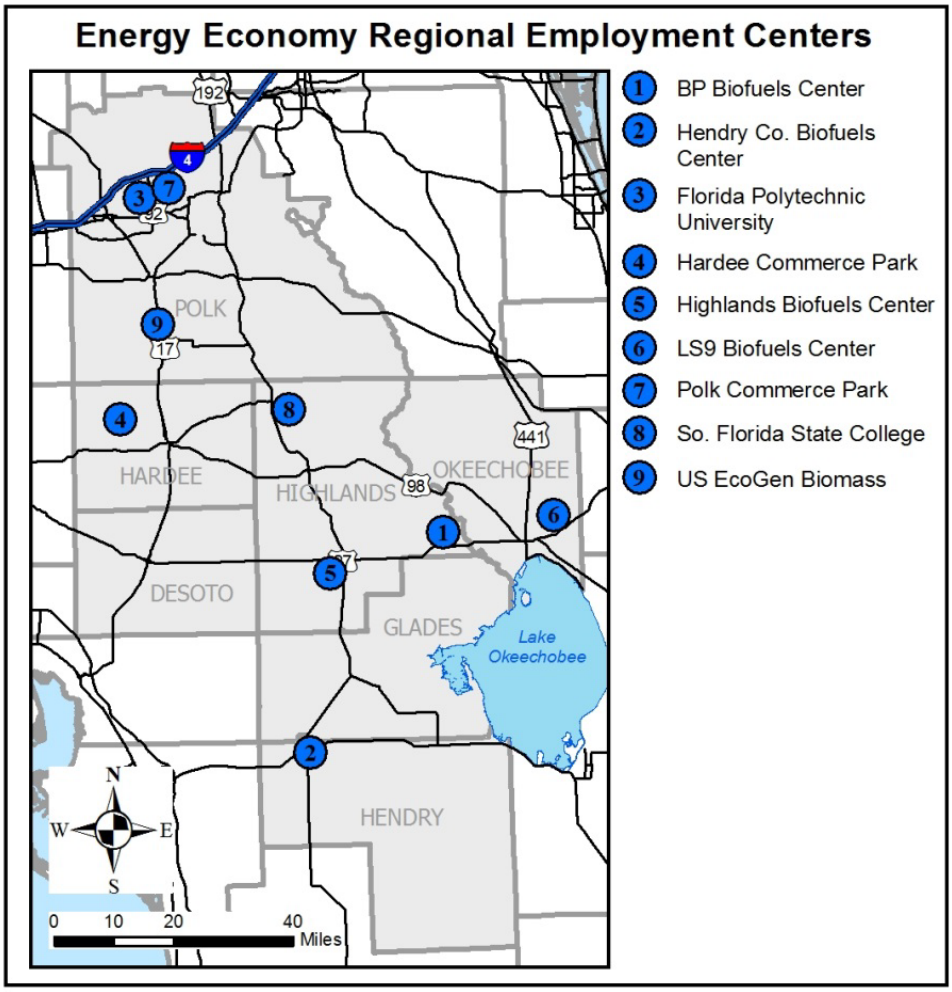
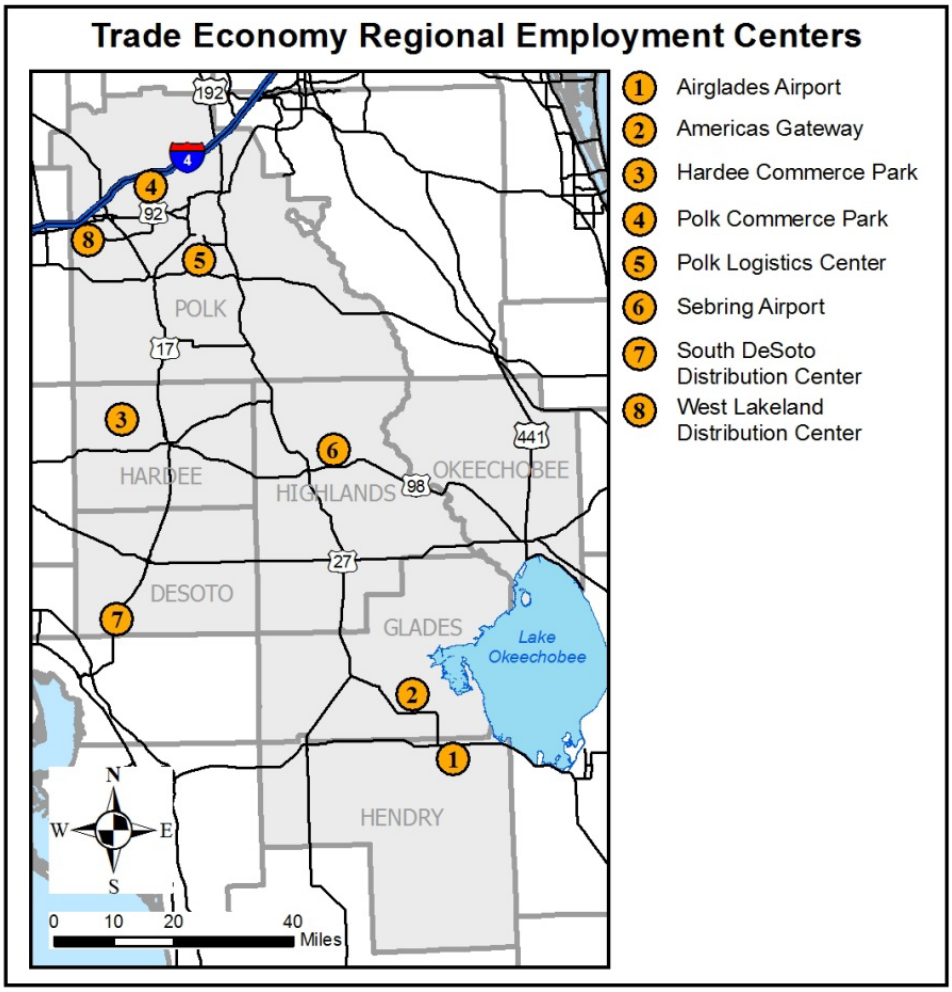


Figure 10: Trade Economy Regional Employment Centers



Reclassifying Employment for Allocation

Due to programming constraints, several of the NAICS employment codes were combined during the allocation process. This was performed with consideration for the employment types emphasized in each of the Futures, as well as with consideration to using the results of the allocation for future traffic analyses. The traffic analyses will use FSUTMS employment categories, of which there are only three: Commercial, Service, and Industrial. See Table 3 for crosswalk.

Table 3: Crosswalk between NAICS employment code names and names used in Futures employment allocation		
Employment Allocation name	**NAICS employment code name** (when several NAICS codes were joined, then are separated by "/")	**FSUTMS employment code equivalent**
Service_ind (aka Service-Industrial)	Transportation and Warehousing	Service
Industrial	Manufacturing / Construction / Mining	Industrial
Commercial_ser (aka Commercial-Service)	Wholesale Trade	Commercial
Institutional	Professional, Scientific, and Technical Services / Educational Services	Service
Service	Other Services, except Public Administration / Management of Companies and Enterprises / Accommodation and Food Services / Administrative and Waste Management Services / Arts, Entertainment, and Recreation / Real Estate and Rental and Leasing / Finance and Insurance / Information / Utilities / State and Local Government / Federal Military / Federal Civilian	Service
Agriculture	Farm / Forestry, Fishing, and Related Activities	Industrial
Retail	Retail Trade	Commercial
Healthcare	Health Care and Social Assistance	Service

Since these jobs were tracked by their Employment Allocation name in the Futures modeling process, then can be reconstructed and summarized by location. This will help in planning for infrastructure, workforce housing, and numerous other decision-making processes. See Table 4. A similar example is presented in Table 1, also.

Table 4: Potential Employment Types Driving Each Future			
	Relevant Future		
Employment Allocation name	**Current Economy**	**Energy Economy**	**Trade Economy**
Agriculture	X		
Commercial_ser (aka Commercial-Service)			X
Healthcare	X		
Industrial		X	X
Institutional		X	
Retail	X		
Service	X		
Service_ind (aka Service-Industrial)			X

Conclusion

Many factors were considered in the creation of the Futures and their subsequent modeling using the LUCIS system. All of the factors used and considered were based on the best available data, and were tempered and vetted by local expert knowledge.

These Futures can and will be analyzed with the intent of creating informational tools for use by decision-makers in planning for the future. The results of this information can have impacts on all kinds of infrastructure planning, including transportation, potable and stormwater, telecommunications and broadband, and electrical and utilities. This information can also be used for affordable and workforce housing planning and provision, as well as concerns such as health care and access, transit and pedestrian concerns, and quality-of-living. This information can also be used for conservation, natural resource, and recreation planning. Basically, the results of this Futures modeling can be used in guiding any infrastructure or planning activities regarding people and their use of land.