

Targeting Growth Opportunities For Florence County, 2006



REDRL Research Report 08-2006-01

by

**David L. Barkley, Mark S. Henry, and Rebekka Dudensing
Regional Economic Development Research Laboratory
Department of Applied Economics and Statistics
Clemson University**

REDRL is an E.D.A University Center Program

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**David L. Barkley
Professor**

**Mark S. Henry
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**Rebekka M. Dudensing
Research Assistant**

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I. Introduction to Industry Targeting

Industry targeting is the process of focusing industrial development programs and efforts at specific industries or clusters of related industries. Industry targeting approaches have three principal components.

- The community (county, region, or state) establishes the specific goals of its industrial development program. Examples of such goals include: diversify the industrial base, provide employment opportunities for workers displaced by recent plant closings, enhance the profitability and growth of existing firms, or increase the local property tax base.
- The community identifies the industries that provide the greatest likelihood of meeting the established industrial development goals. For example, if the goal is to provide jobs for displaced workers, then the target industries will be those with occupational mixes that closely fit the skills and experiences of the displaced workers.
- The community develops industry recruitment, retention and expansion, and small business development programs focused on the target industries.

An industry targeting program should identify industries for which the region offers a competitive advantage in terms of labor skills and availability, location (proximity to input suppliers and product markets), and availability of public services. A targeted approach enables community leaders to focus their recruitment, retention and expansion, and small business development programs rather than attempting to provide assistance for many different industry types. This tailoring of industrialization initiatives provides three advantages for the community:

- targeting permits clearer identification of specific industry requirements and needs,
- targeting enables the community to provide (for a given budget expenditure) fewer but more highly valued programs, and

- targeting reduces the amount of financial incentives (e.g., tax rebates or labor training programs) needed to encourage the industry to locate in the region.

In summary, the targeting of industrial development programs permits a region to use its limited economic development resources more efficiently.

II. Targeting Industry Clusters

An industry cluster is a geographically bounded collection of similar and/or related firms that together create competitive advantages for member firms and the local economy. One goal of the Florence County industry targeting program is to identify industries that are most likely to benefit from the presence of emerging or developed industry clusters in the region. For this study, the region is defined as Florence, Sumter, Lee, Darlington, Dillon, Marion, Georgetown, Williamsburg, and Clarendon counties in South Carolina.

Industry clusters generally include firms with significant *horizontal*, *vertical*, and/or *labor pooling* linkages.

- *Horizontally* linked firms engage in the production of similar products (e.g., apparel firms, computer software firms, or automobile parts firms).
- *Vertically* linked firms engage in different production phases for the same product (e.g., sawmills, millwork, and cabinet manufacturers).
- *Labor Pool* linkages involve firms that draw from the same labor markets. That is, the firms have similar needs with respect to labor occupations and skills.

Firms in industry clusters may interact through purchase-sale relationships; interfirm collaboration in product development, marketing, or research; or a shared reliance on specialized services and labor markets.

A. *Advantages of Targeting Industry Clusters*

The targeting of industrial development programs at specific industry clusters generally will provide greater economic development benefits than those associated with a more unfocused industrialization efforts. Four principal benefits result from the development of industry clusters in a county or region.

- Clustering Strengthens Localization Economies. The concentration of an industry at a particular location may result in significant cost savings to firms in the cluster. These cost savings are referred to as *localization economies*. Sources of potential savings include a greater availability of specialized input suppliers and business services; a larger pool of trained, specialized workers; public infrastructure investments geared to the needs of a particular industry; financial markets familiar with the industry; and an enhanced likelihood of interfirm technology and information transfers.
- Clustering Facilitates Industrial Reorganization. The transition in industrial organization from large firms engaged in mass production to small firms focused on specialty production is well documented. This change in industrial structure is attributed to increased global competition and the emergence of new production technologies. Clusters are attractive locations for the small, specialized, computer-aided manufacturers for several reasons.
 - (1) The adoption of new production technologies is more prominent and easily attained among firms in industry clusters.
 - (2) Proximity between the more specialized firms and their input suppliers and product markets enhances the flow of goods through the production system.
 - (3) Ready access to product and input markets enables firms to quickly adapt to market changes.
 - (4) A concentration of firms provides the pool of skilled labor required by the computer-aided technologies.

- Clustering Encourages Networking Among Firms. Networking is cooperation among firms to take advantage of complimentaries, exploit new markets, integrate activities, or pool resources or knowledge. This cooperation occurs more naturally and frequently within industry clusters. Surveys of firms in manufacturing networks show that networks generate significant advantages for firms through cooperation with their counterparts. Networking firms are more likely than non-networking firms to engage in collaboration and information sharing in marketing, new product development, and technological upgrading. The networking firms also report that their competitiveness and profitability are enhanced by interfirm cooperation and collaboration.
- Clustering Results in Larger Local Economic Impacts. The total employment and income effects associated with attracting a new firm include the direct effects (firm employment and income) and indirect effects (employment and income changes at input suppliers for the new firm). The indirect employment and income changes generally are referred to as the multiplier effects. Programs supporting cluster development will have relatively large multiplier effects for the local economy because of strong linkages among cluster firms. That is, the total employment and income gains from recruiting (or retaining) cluster members will likely exceed those associated with non-cluster firms of similar size.

B. Disadvantages of Targeting Industry Clusters

The principal shortcoming with an industry targeting approach is the difficulty of “picking winners.” A prerequisite to targeting industries is the identification of regional competitive advantage based on labor force characteristics, unique regional attributes, and proximity to input and product markets. Industrialization efforts next must identify the industries that best fit the regional competitive advantage. The industry targeting

approach also must assess industry prospects for growth and potential local economic impacts. This process of “picking winners” is complicated by the volatility of the market place - - today's “rapid growth” sectors may be “slow growth” or “declining” industries in the future.

Industry targeting is not an exact science. Industries identified through a targeting study may choose not to locate in the region. Or, firms in a targeted industry may be attracted to the region but not provide the anticipated employment and income effects. Thus the targeting of specific industries for recruitment or retention and expansion does not guarantee that the desired employment and income gains will result. *However, industry targeting does increase the probability that the region will be successful in developing an industrial base that provides characteristics desired by the community.*

III. Overview of the Florence County Economy

A region's prospects for employment growth, through the attraction of new firms or expansion of existing firms, is related to the region's current industrial composition. The existing industrial base will influence a region's ability to expand as the national economy grows. For example, a region whose employment is concentrated in declining national industries is not likely to grow rapidly. The current industrial base in a region also influences the characteristics of the local labor force (occupational distribution, skills availability, wage structure), the availability of specialized business and professional services, and the presence of supportive institutions (tech schools, public agencies). Regions with skilled labor and access to a variety of supportive services and institutions will be better positioned to attract new firms than areas with more limited labor skills and services.

A. Trends in Total Employment

Table 1 provides employment trends for Florence County and comparison regions (South Carolina and the United States) for the years 1982 through 2003. Since 1982, employment in Florence County grew from 55,119 to 79,258 or by 43.8 percent. During the same period, employment in the state expanded by 49.8 percent; and national employment grew by 45.9 percent. Florence County experienced steady employment growth of 24,139 jobs from 1982 through 2003, with small employment declines occurring only during the periods 1984 to 1985, 1989 to 1990, 2000 to 2001, and 2002 to 2003. Despite this history of employment growth since 1982, the county's employment growth rate continued to slightly lag those of the state and the nation. In addition, employment in 2003 (79,258), remains below the 2000 peak year employment of 80,106. This lagging employment growth in Florence County since 2000 is consistent with the "jobless recovery" evident in both the state and national employment trends.

The unemployment rates in Florence County follow patterns similar to those of the state and nation (Table 2). Unemployment rates were relatively high in the early 1990s; however, the rates declined relatively consistently from 1993 to 2000 reflecting the strong national economy of the 1990s. Unemployment rates in Florence County (and the state and nation) increased since 2000. In Florence County, rates increased from 4.0% in 2000 to 8.2% for 2004. Florence County's unemployment rates exceeded those of the state and the U.S. for every year since 2000. These higher rates reflect the large job losses in manufacturing in South Carolina and the nation as the economy adjusts to increasing global competition.

Table 1. Total Employment: Florence County, South Carolina and the United States, 1982-2004

Year	United States	South Carolina	Florence County
1982	114,557,300	1,518,124	55,119
1983	116,056,700	1,551,846	55,424
1984	121,091,100	1,631,172	58,506
1985	124,511,700	1,663,379	58,227
1986	126,981,300	1,705,972	59,424
1987	130,416,400	1,748,413	60,559
1988	134,517,900	1,820,317	63,291
1989	137,240,800	1,870,980	65,703
1990	139,426,900	1,926,375	67,650
1991	138,663,800	1,899,155	67,889
1992	139,305,100	1,912,321	68,210
1993	141,996,400	1,948,070	69,841
1994	145,571,600	1,997,798	71,610
1995	149,358,800	2,057,073	73,161
1996	152,607,200	2,101,519	74,758
1997	156,230,200	2,164,766	78,150
1998	160,241,200	2,221,877	78,459
1999	163,757,900	2,272,154	79,347
2000	166,758,800	2,291,238	80,106
2001	167,014,700	2,265,724	79,345
2002	166,699,000	2,260,608	79,848
2003	167,174,400	2,273,945	79,258
2004	170,091,500	2,313,955	79,974

Source: Bureau of Economic Analysis, U.S. Department of Commerce.

Table 2. Unemployment Rates for Florence County, Adjacent Counties, South Carolina and the United States, 1990-2005

Year	Region		
	Florence County	South Carolina	United States
1990	4.7%	4.8%	5.6%
1991	5.9%	6.3%	6.8%
1992	7.2%	6.3%	7.5%
1993	8.5%	7.6%	6.9%
1994	7.5%	6.3%	6.1%
1995	6.5%	5.1%	5.6%
1996	7.8%	6.0%	5.4%
1997	5.5%	4.5%	4.9%
1998	4.3%	3.8%	4.5%
1999	5.0%	4.5%	4.2%
2000	4.0%	3.9%	4.0%
2001	5.7%	5.4%	4.8%
2002	6.6%	5.9%	5.8%
2003	7.7%	6.7%	6.0%
2004	8.2%	6.8%	5.5%
2005	----	6.8%	5.1%

Source: Bureau of Economic Analysis, U.S. Department of Commerce.

B. Employment by Major Industry Divisions

Employment levels in 2003 by major NAICS industry divisions for Florence County and the state of South Carolina are provided in Table 3. Florence County's non-farm employment is concentrated in government (16 %), retail trade (13%), manufacturing (12%) and health care (10 %). Florence County's shares of employment in the major industry divisions are similar to those of the state with three exceptions. Florence County is relatively over-represented in the finance and insurance sector and the health care and social assistance sector. For example, over 8 percent of Florence's employment is in finance and insurance compared with 4 percent for the state. Alternatively, employment in administration and waste services in Florence County is 4 percent of total employment as compared to 7 percent of total employment for the state.

Employment change by major industry division is presented in Table 4. In Florence County, all industry divisions added jobs from 2001 to 2003 except wholesale and retail trade, manufacturing, information, and professional and technical services. The county's manufacturing sector lost over 1,400 jobs during this period as manufacturing employment declined from 11,217 in 2001 to 9,800 in 2003. This loss in manufacturing jobs reflects a decline at the national level during the period 2001-2003.

Alternatively, the county's 2001 to 2003 employment losses in wholesale and retail trade and in professional and technical services were at rates much higher than that experienced by the state or nation. Of particular importance is the employment change in professional and technical services (a loss of 400 jobs or 12% of the 2001 employees in the sector). A strong professional and technical sector is important to entrepreneurship, small business development, industry recruitment, and industry cluster development in the New Economy. In addition to industrial recruitment (or as a component of its

Table 3. Distribution of Non-Farm Employment by Major Industry (NAICS) Category, Florence County and South Carolina, 2003.

Industry	Florence		South Carolina	
	EMP 2003	% Total	EMP 2003	% Total
Forestry, fishing related activities	471.0	1%	12,904	1%
Mining	33.0	0%	2,515	0%
Utilities	114.0	0%	12,173	1%
Construction	4,358.0	5%	159,039	7%
Manufacturing	9,800.0	12%	283,053	13%
Wholesale trade	2,784.0	4%	69,055	3%
Retail trade	10,352.0	13%	273,007	12%
Transportation and warehousing	2,174.0	3%	60,902	3%
Information	1,259.0	2%	31,493	1%
Finance and insurance	6,424.0	8%	85,484	4%
Real estate and rental and leasing	1,665.0	2%	74,639	3%
Professional and technical services	2,903.0	4%	98,426	4%
Management of companies and enterprises	91.0	0%	10,545	0%
Administrative and waste services	2,930.0	4%	146,468	7%
Educational services	412.0	1%	29,128	1%
Health care and social assistance	8,080.0	10%	164,899	7%
Arts, entertainment, and recreation	966.0	1%	39,115	2%
Accommodation and food services	5,608.0	7%	179,628	8%
Other services, except public administration	4,684.0	6%	131,716	6%
Governmental and government enterprises	13,073.0	16 %	378,910	17%
Total Non-Farm Employment	78,145		2,243,100	

Source: Bureau of Economic Analysis, U.S. Department of Commerce.

Table 4. Percentage Employment Change of Non-Farm Employment by Major Industry (NAICS) Category, Florence County, South Carolina, United States, 2001-2003.

Industry	Florence County	South Carolina	United States
Forestry, fishing related activities, and other 3/	(D)*	0.3%	5.2%
Mining	(D)	-9.7%	-11.4%
Utilities	6.5%	-4.0%	-5.3%
Construction	-5.9%	-0.8%	-1.4%
Manufacturing	-12.6%	-11.4%	-11.0%
Wholesale trade	-13.1%	-0.8%	-2.7%
Retail trade	-3.0%	-0.3%	-0.3%
Transportation and warehousing	6.5%	-1.2%	-3.1%
Information	-5.3%	-8.3%	-12.7%
Finance and insurance	13.6%	8.1%	2.5%
Real estate and rental and leasing	15.1%	4.5%	4.9%
Professional and technical services	-12.0%	3.4%	0.0%
Management of companies and enterprises	13.8%	1.5%	1.3%
Administrative and waste services	29.1%	2.8%	0.9%
Educational services	6.5%	11.0%	8.3%
Health care and social assistance	7.5%	7.0%	5.7%
Arts, entertainment, and recreation	5.6%	5.0%	4.5%
Accommodation and food services	6.3%	5.2%	2.8%
Other services, except public administration	0.5%	6.6%	5.9%
Governmental and government enterprises	0.2%	0.6%	2.1%

Source: Bureau of Economic Analysis (BEA), U.S. Department of Commerce.

*D indicates that data was not disclosed due to too few establishments in the county.

industrial recruitment program) Florence County may wish to investigate alternatives to grow its professional and technical services sector.

C. Manufacturing Employment by Major Group

County employment shares for major manufacturing industry groups are provided in Table 5. A list of manufacturing facilities in the county, along with the facilities' employment and principal products, is provided in Appendix Table A. Relative to the United States, Florence County has a large share of manufacturing employment in chemical manufacturing (18.2%), fabricated metal products (13.3%), machinery manufacturing (12.5%), and paper manufacturing (8.4%). Florence County is relatively under represented in computers and electronic products (2.5% vs. 9.2% for the U.S.), printing and support activities (1.0 % vs. 4.6% for the U.S.), and plastics (2.6% vs. 5.6% for the U.S.).

Tables 6 and 7 provide comparisons of 2001 to 2004 employment change in principal manufacturing sectors for Florence Count and the United States. For the nation as a whole, employment declined in every manufacturing sector with the largest percentage declines in apparel (-33.2%), leather products (-28.6%), textile mills (-28.0%), and electronic equipment and components (-19.6%). Manufacturing for the nation declined by 13.0 percent for the 3-year period. Florence County also experienced relatively large employment losses (-19.2%) in manufacturing from 2001 to 2004. In terms of absolute job losses and percentage change, the Florence County sectors with the greatest decline were computers and electronic products (263 job losses, -54%); textile mills (308 job losses, -58%); textile mill products (254 job losses, - 46%); chemical

Table 5. Distribution of Manufacturing Employment by Major NAICS Code, Florence County, South Carolina, United States, 2004.

Industry	Florence County	South Carolina	United States
Food Manufacturing	9.1%	6.6%	10.5%
Beverage and Tobacco Product Manufacturing	0.0%	0.4%	1.4%
Textile Mills	2.5%	13.5%	1.7%
Textile Product Mills	3.4%	3.3%	1.2%
Apparel Manufacturing	1.3%	1.7%	2.0%
Leather and Allied Product Manufacturing	0.0%	0.0%	0.3%
Wood Product Manufacturing	5.3%	3.4%	3.8%
Paper Manufacturing	8.4%	5.3%	3.5%
Printing and Related Support Activities	0.9%	2.7%	4.6%
Petroleum and Coal Products Manufacturing	0.0%	0.1%	0.8%
Chemical Manufacturing	18.2%	8.0%	6.2%
Plastics and Rubber Products Manufacturing	2.6%	8.6%	5.6%
Nonmetallic Mineral Product Manufacturing	1.7%	3.3%	3.5%
Primary Metal Manufacturing	0.0%	2.2%	3.3%
Fabricated Metal Product Manufacturing	13.3%	10.2%	10.4%
Machinery Manufacturing	12.5%	7.5%	8.0%
Computer and Electronic Product Manufacturing	2.5%	2.6%	9.2%
Electrical Equipment, Appliance, and Component Manufacturing	5.8%	4.2%	3.1%
Transportation Equipment Manufacturing	10.0%	11.9%	12.4%
Furniture and Related Product Manufacturing	2.5%	1.5%	4.0%
Miscellaneous Manufacturing	0.2%	2.8%	4.6%

Source: ES202 data files, 2001 and 2004.

Table 6. Percentage Change of Manufacturing Employment by Major NAICS Code, Florence County vs. United States, 2001-2004.

Industry	Percentage Change, 2001-2004	
	Florence County	United States
Food Manufacturing	-14.7%	-4.1%
Beverage and Tobacco Product Manufacturing	-100.0%	-6.7%
Textile Mills	-58.6%	-28.0%
Textile Product Mills	-46.0%	-13.3%
Apparel Manufacturing	-51.1%	-33.2%
Leather and Allied Product Manufacturing	0.0%	-28.6%
Wood Product Manufacturing	8.1%	-3.9%
Paper Manufacturing	3.1%	-14.5%
Printing and Related Support Activities	-50.9%	-14.0%
Petroleum and Coal Products Manufacturing	-100.0%	-7.1%
Chemical Manufacturing	-15.8%	-7.5%
Plastics and Rubber Products Manufacturing	-54.4%	-10.2%
Nonmetallic Mineral Product Manufacturing	8.0%	-8.2%
Primary Metal Manufacturing	0.0%	-18.2%
Fabricated Metal Product Manufacturing	-22.6%	-10.8%
Machinery Manufacturing	4.3%	-16.4%
Computer and Electronic Product Manufacturing	-54.5%	-24.8%
Electrical Equipment, Appliance, and Component Manufacturing	-5.0%	-19.6%
Transportation Equipment Manufacturing	65.8%	-8.4%
Furniture and Related Product Manufacturing	-53.6%	-11.6%
Miscellaneous Manufacturing	-20.0%	-8.3%

Source: ES202 data files, 2001 and 2004.

Table 7. Distribution of Manufacturing Employment by Major NAICS Code, Florence County, 2001 and 2004.

NAICS Code	Title	2001	2004	Employment Change 2001-2004
311	Food Manufacturing	933	796	-137
312	Beverage and Tobacco Product Manufacturing	186	0	-186
313	Textile Mills	526	218	-308
314	Textile Product Mills	552	298	-254
315	Apparel Manufacturing	235	115	-120
316	Leather and Allied Product Manufacturing	0	0	0
321	Wood Product Manufacturing	434	469	35
322	Paper Manufacturing	717	739	22
323	Printing and Related Support Activities	161	79	-82
324	Petroleum and Coal Products Manufacturing	4	0	4
325	Chemical Manufacturing	1894	1595	-299
326	Plastics and Rubber Products Manufacturing	491	224	-26
327	Nonmetallic Mineral Product Manufacturing	137	148	11
331	Primary Metal Manufacturing	0	0	0
332	Fabricated Metal Product Manufacturing	1503	1164	-339
333	Machinery Manufacturing	1049	1094	45
334	Computer and Electronic Product Manufacturing	483	220	-263
335	Electrical Equipment, Appliance, and Component Manufacturing	540	513	-27
336	Transportation Equipment Manufacturing	529	877	348
337	Furniture and Related Product Manufacturing	474	220	-254
339	Miscellaneous Manufacturing	20	16	-4
	Totals	10868	8785	-2083

Source: ES202 data files, 2001 and 2004.

Table 8. Ownership of Manufacturing Plants, Florence County, 2006

	Foreign Owned	Domestic Branch	Locally Owned	Total Branch
Number of Establishments	5	26	62	93
% of Total Establishments	5.4%	28.0%	66.7%	100.0%
Employment	3,842	4,091	2,525	10,457
% of Total Employment	36.7%	39.1%	24.1%	100.0%

Source: South Carolina Industrial Directory, 2006.

manufacturing (299 job losses, -16%); fabricated metal products (339 job losses, -22%); furniture (254 job losses, -53%); and plastics (267 job losses, -54%). On the other hand, Florence County went counter to the national trend and experienced positive job growth in five industries: transportation equipment (348 jobs, + 65%); wood products manufacturing (35 jobs, + 8%); machinery manufacturing (45 jobs, + 4%); paper manufacturing (22 jobs, + 3%); and non-metallic mineral products (11 jobs, + 8%).

D. Ownership of Florence County Manufacturing Facilities

Manufacturing employment in Florence County is dominated by branch plants (Table 8). In 2006, over 75 percent of the county's employment was attributed to branch plants. Most of the county's branch plants (26 out of 31) were domestically owned. However, the 5 branch plants registered as foreign-owned employed 3,842 workers or 36% of the manufacturing workforce. A listing of Florence County's manufacturing facilities and their headquarters' locations (as provided in the South Carolina Industrial Directory) is provided in Appendix Table A.

The dominance of the county's manufacturing base by branch plants reduces local employment opportunities for managerial and professional positions since such jobs generally are located at the firms' headquarters. However, the large number of branch plants in the county indicates that the area is both visible to and attractive to "outside" investors. This visibility will be beneficial in implementing an industry targeting and recruiting program.

E. Occupational and Educational Characteristics of Florence County Residents

Florence County competes with nearby South Carolina and North Carolina counties for new manufacturing plants. For many manufacturing establishments, the quality of the local labor force is an important determinant in the plant location decision. Table 9 compares the 2004 labor forces of Florence County, the State of South Carolina, and the United States in terms of occupational distribution. The labor force characteristics of Florence and the State are relatively similar with only a few notable exceptions. Relative to the State average, Florence County's labor force has a high proportion of employees in business and financial operations; computer and mathematical occupations; and education, training, and library occupations. These occupations reflect the presence of Francis Marion University and Florence-Darlington Technical College in the county. Somewhat surprisingly, Florence County has a relatively low proportion of employment in production occupations (7.9% for Florence vs. 11.6% for South Carolina). This is not a disadvantage to the Florence area if the production workers have skills valued by targeted industry.

The educational attainment of Florence County workers is marginally less than the State average (Table 10). Florence County has proportionately more adults with high school diplomas or less (57.8 % vs. 53.6 %) and proportionately fewer in the labor force with bachelor degrees or higher (18.7% vs. 20.9 %). In sum, Florence County's work force is marginally less well educated than the State and national average. In the long run, improvements in educational attainment levels and worker occupational experiences will permit the county to broaden their industrial development program to include industries with higher education and skill requirements.

Table 9. Occupational Distribution for Florence County, South Carolina, and the United States, 2004.

Occupation (SOC Code)	Percent of Total			Total
	Florence County	South Carolina	United States	Florence County
Management Occupations	4.7%	5.3%	5.0%	3150
Business and Financial Operations	4.1%	2.9%	6.0%	3830
Computer and Mathematical	2.3%	1.2%	0.6%	410
Architecture and Engineering	1.8%	2.0%	1.3%	830
Life, Physical, and Social Science	0.9%	0.6%	0.5%	310
Community and Social Services	1.3%	1.2%	1.7%	1070
Legal Occupations	0.8%	0.6%	0.4%	260
Education, Training, and Library	6.2%	5.6%	4.1%	2590
Arts, Design, Entertainment, Sports, and Media	1.3%	0.8%	0.8%	510
Healthcare Practitioner and Technical Occupations	5.0%	5.1%	7.9%	5000
Healthcare Support Occupations	2.6%	2.3%	4.3%	2720
Protective Service Occupations	2.4%	2.3%	1.4%	920
Food Preparation and Serving	8.2%	9.1%	8.5%	5400
Building and Grounds Cleaning and Maintenance	3.3%	3.9%	3.7%	2370
Personal Care and Service	2.4%	1.9%	1.4%	910
Sales and Related Occupations	10.6%	10.3%	10.3%	6540
Office and Administrative Support	17.5%	15.4%	15.7%	9980
Farming, Fishing, and Forestry	0.3%	0.3%	0.6%	350
Construction and Extraction	4.9%	4.6%	3.2%	2050
Installation, Maintenance, and Repair	4.1%	4.9%	4.4%	2790
Production Occupations	7.9%	11.6%	10.1%	6450
Transportation and Material Moving Occupations	7.4%	8.1%	8.1%	5150

Source: Bureau of Labor Statistics, U.S. Department of Labor.

Table 10. Educational Attainment of Individuals Aged 25 and Older,
 Florence County versus South Carolina and United States, 2000.

Educational Categories	Share of Adult Population		
	Florence County	South Carolina	United States
Less than a High School Graduate	26.9%	23.7%	19.6%
High School Graduate	30.9%	29.9%	28.6%
Some College	23.5%	26.0%	27.4%
Bachelor's Degree	12.5%	14.0%	15.5%
College Beyond Bachelor's Degree	6.2%	6.9%	8.9%

Source: U.S. Census of Population.

The interested reader may refer to Appendices B and C of this report for additional data and discussion regarding the Florence County economy. Appendix B provides the Sonoran Institute's Socio Economic profile for Florence County, and Appendix C presents the South Carolina Department of Commerce Labor Profile for the county.

IV. Identifying High Potential - - High Impact Industries for Targeting

The objective of the Florence County industry targeting project is two fold:

- Identify manufacturing industries that have high potential for locating in the county.
- Identify manufacturing industries that provide attractive economic development impacts in terms of future job growth, wages paid, and contributions to the local tax base.

The targeting methodology focuses on identifying expanding industry clusters in Florence County and the surrounding area. The targeting of potential new members for existing area industry clusters provides the following advantages.

- The presence of an industry cluster in the area is evidence that the location is attractive to these types of manufacturers.
- The multiplier effects associated with attracting new firms to a cluster generally are greater than those resulting from noncluster firms.
- Members of industry clusters have stronger employment growth over time than firms that are not in clusters.
- Industry clusters have greater potential for new firm spin-offs than groupings of unrelated firms.

The remainder of this section provides the methods, data, and findings of our targeting approach. First, we outline the selection criteria used to identify prospective clusters. Next, we analyze the potential local economic development impacts of the

prospective clusters. Finally, we rank the clusters based on their potential impacts on the local economy.

A. Selection Criteria and Results: Florence County

Selection Criteria. Industry clusters in Florence County and the surrounding counties were targeted at the four-digit NAICS level. A list of the four-digit NAICS codes is provided in Appendix Table D. To identify industry clusters with desired characteristics, four screening criteria were used:

1. Six or more establishments in the multi-county region in 2004.
2. Area industry employment was greater than 500 in 2004.
3. Industry employment in the region increased at a rate similar to or greater than the national average for that industry.
4. An industry specialization index--the Location Quotient (LQ)--for Florence County exceeded 1.50 in 2004.

Screening criteria 1 and 2 identify four-digit NAICS manufacturing industries that had a significant presence in the County in 2004. The employment generation potential (based on 2001 to 2004 employment growth rates) and the “Location Quotient” criteria are used to identify industries for which Florence County exhibited a competitive advantage in attracting or developing. The Location Quotient (LQ) measure is calculated as follows.

$$\text{Industry Location Quotient} = \left(\frac{\text{Area Four-digit NAICS Industry Employment in Year } t}{\text{Total Area Employment in Year } t} \div \frac{\text{U.S. Four-digit NAICS Industry Employment in Year } t}{\text{Total U.S. Employment in Year } t} \right)$$

Table 11. Example of Calculation of Location Quotient for NAICS 3363,
Motor Vehicle Parts Manufacturing

A. *Employment Data, 2004*

– Area employment, NAICS 3363	2,703
– Area private employment, total	136,122
– U.S. employment, NAICS 3363	690,760
– U.S. private employment total	108,505,300

B. *Calculation of Location Quotient*

$$\text{LQ} = \frac{\frac{\text{NAICS 3363, Florence Area}}{\text{Total private employment, Florence area}}}{\frac{\text{NAICS 3363, U.S.}}{\text{Total private employment, U.S.}}}$$

$$\text{LQ} = \frac{\frac{2,703}{136,122}}{\frac{690,760}{108,505,300}} = \frac{.0198}{.0064} = 3.10$$

*ES202 employment data, 2004.

A location quotient (LQ) greater than one implies that the area (Florence County plus the surrounding counties) is “specialized” in that industry compared to the nation as a whole. That is, the county or region has been, over time, relatively successful in attracting or nurturing employment in a specific industry. Alternatively, a LQ less than one indicates that the area has a relatively small share of the industry's employment compared to the average county in the U.S. (see Table 11 for an example of a LQ calculation).

Selection Results: Florence County. The data used for identifying industry clusters in the Florence region are summarized in Table 12. For each of the 73 four-digit NAICS industries present in the area in 2001 or 2004, Table 12 provides the number of employees in 2001 and 2004, number of establishments in 2004, location quotients for 2004, and the 2001 to 2004 employment growth rates (%) for the multi-county region and the nation. Appendix Table D provides NAICS code descriptions.

Thirteen industries (four-digit NAICS classification) met the cluster screening criteria and were identified as local industry clusters with a significant local presence and employment change similar to or better than the national growth rate (refer to Table 13). Six of the identified industry clusters had positive local employment growth during 2001 to 2004 while national employment change for the manufacturing industries was negative. These industries are fabric mills (NAICS 3132), wood products manufacturing (NAICS 3219), textile furnishing mills (NAICS 3141), motor vehicle parts manufacturing (NAICS 3363), converted paper products manufacturing (NAICS 3222), and other general purpose machinery manufacturing (NAICS 3339). Seven additional industry sectors exhibited a strong presence in the area as indicated by employment, establishment numbers, and location quotients. These seven industries lost employment locally and

Table 12. Measures of Regional Competitiveness.

NAICS	Area Employment		Area Establishments 2004	Area 2001-2004 Growth (%)	National 2001-2004 Growth (%)	Area Location Quotient 2004
	2001	2004				
3111	14	0	0	-100.0%	-7.5%	0.0
3112	52	35	2	-32.7%	-4.2%	0.5
3113	420	0	0	-100.0%	-11.5%	0.0
3114	218	184	2	-15.6%	-8.4%	0.8
3115	65	184	1	183.1%	-3.0%	1.1
3116	4332	3767	13	-13.0%	-1.7%	5.9
3118	236	203	5	-14.0%	-5.9%	0.6
3119	367	17	5	-95.4%	2.3%	0.1
3121	224	16	4	-92.9%	-5.6%	0.1
3131	1647	1247	9	-24.3%	-22.9%	18.4
3132	1091	1371	10	25.7%	-31.2%	9.5
3133	3141	2397	9	-23.7%	-25.9%	27.7
3141	586	667	11	13.8%	-16.1%	5.2
3149	789	573	9	-27.4%	-9.1%	6.1
3151	333	334	6	0.3%	-31.7%	6.4
3152	1972	834	14	-57.7%	-34.1%	3.0
3159	35	3	1	-91.4%	-25.7%	0.1
3169	2	0	0	-100.0%	-31.8%	0.0
3211	540	556	10	3.0%	-5.8%	3.8
3212	552	612	5	10.9%	1.0%	4.1
3219	581	678	21	16.7%	-4.9%	1.7
3221	564	555	3	-1.6%	-18.2%	3.0
3222	2274	2379	20	4.6%	-12.8%	5.5
3231	269	260	29	-3.3%	-14.0%	0.3
3241	4	0	0	-100.0%	-7.1%	0.0
3251	149	158	4	6.0%	-13.4%	0.8
3252	3287	2701	6	-17.8%	-14.9%	20.2
3253	63	29	1	-54.0%	-7.5%	0.6
3254	6	321	2	5250.0%	2.3%	0.9
3255	66	149	4	125.8%	-7.4%	1.7
3259	63	0	0	-100.0%	-12.4%	0.0
3261	1328	1183	10	-10.9%	-9.0%	1.5
3262	38	10	5	-73.7%	-14.1%	0.0
3271	201	127	5	-36.8%	-16.3%	1.6
3272	5	2	1	-60.0%	-17.2%	0.0
3273	794	693	7	-12.7%	-2.7%	2.4
3279	10	0	0	-100.0%	-2.4%	0.0
3311	855	322	2	-62.3%	-21.3%	2.7
3312	11	3	1	-72.7%	-11.5%	0.0
3315	16	11	2	-31.3%	-16.9%	0.1
3321	3	2	1	-33.3%	-12.0%	0.0
3322	666	466	3	-30.0%	-18.6%	6.4
3323	1229	1016	17	-17.3%	-7.6%	2.1
3324	209	308	3	47.4%	-11.6%	2.7

Table 12. Measures of Regional Competitiveness (Continued)

NAICS	Area Employment		Area Establishments 2004	Area 2001-2004 Growth (%)	National 2001-2004 Growth (%)	Area Location Quotient 2004
	2001	2004				
3326	43	35	2	-18.6%	-18.6%	0.5
3327	277	281	27	1.4%	-5.5%	0.7
3328	121	110	5	-9.1%	-12.9%	0.6
3329	685	668	8	-2.5%	-14.0%	1.9
3331	121	124	5	2.5%	-10.4%	0.5
3332	17	37	7	117.6%	-19.7%	0.2
3333	27	22	2	-18.5%	-17.7%	0.2
3334	629	567	3	-9.9%	-16.8%	3.0
3335	152	244	5	60.5%	-19.3%	1.0
3336	4	0	0	-100.0%	-12.3%	0.0
3339	1199	1229	8	2.5%	-17.4%	3.7
3341	8	6	3	-25.0%	-26.6%	0.0
3342	196	90	1	-54.1%	-38.7%	0.5
3344	290	130	2	-55.2%	-30.1%	0.2
3345	6	7	1	16.7%	-9.1%	0.0
3351	214	3	2	-98.6%	-18.2%	0.0
3352	1208	1069	3	-11.5%	-11.3%	9.5
3353	1136	692	4	-39.1%	-21.4%	3.6
3359	333	459	2	37.8%	-23.0%	2.7
3362	170	234	11	37.6%	3.7%	1.1
3363	2572	2703	10	5.1%	-10.0%	3.1
3366	311	548	3	76.2%	2.8%	2.9
3369	466	848	1	82.0%	-3.1%	17.9
3371	2054	1490	14	-27.5%	-8.3%	3.1
3372	242	95	2	-60.7%	-22.2%	0.6
3379	8	168	1	2000.0%	-4.1%	2.5
3391	60	25	8	-58.3%	-3.0%	0.1
3399	759	898	18	18.3%	-12.5%	2.0

Table 13. Developed Industry Clusters in Florence County and Adjacent Counties

A. *Positive Regional Employment Change, 2001-2004*

1. <u>3132</u> : Fabric Mills	
2004 Employment	1,371
2004 Establishments	10
Regional Employment Growth	25.6%
National Employment Growth	-31.2%
2. <u>3219</u> : Other Wood Products Manufacturing	
2004 Employment	678
2004 Establishments	21
Regional Employment Growth	16.7%
National Employment Growth	-5.0%
3. <u>3141</u> Textile Furnishings Mills	
2004 Employment	667
2004 Establishments	11
Regional Employment Growth	13.8%
National Employment Growth	-16.1%
4. <u>3363</u> : Motor Vehicle Parts Manufacturing	
2004 Employment	2,703
2004 Establishments	10
Regional Employment Growth	5.1%
National Employment Growth	-10.0%
5. <u>3222</u> : Converted Paper Products Manufacturing	
2004 Employment	2,379
2004 Establishments	20
Regional Employment Growth	4.6%
National Employment Growth	-12.8%
6. <u>3339</u> : Other General Purpose Machinery Manufacturing	
2004 Employment	1,229
2004 Establishments	8
Regional Employment Growth	2.5%
National Employment Growth	- 17.4%

Table 13. Developed Industry Clusters in Florence County and Adjacent Counties (cont.)

B. Negative Regional Employment Change, 2001-2004

1. <u>3329</u> : Other Fabricated Metal Product Manufacturing	
2004 Employment	668
2004 Establishments	8
Regional Employment Growth	-2.5%
National Employment Growth	-14.01
2. <u>3261</u> : Plastics Products Manufacturing	
2004 Employment	1,183
2004 Establishments	10
Regional Employment Growth	-10.9%
National Employment Growth	-9.0%
3. <u>3323</u> : Architectural & Structural Metals Mfg.	
2004 Employment	1,016
2004 Establishments	17
Regional Employment Growth	-17.3%
National Employment Growth	-7.6%
4. <u>3252</u> : Resin, Synthetic Rubber, Synthetic Filaments	
2004 Employment	2,701
2004 Establishments	6
Regional Employment Growth	-17.8%
National Employment Growth	-14.9%
5. <u>3133</u> : Textile and Fabric Finishing	
2004 Employment	2,397
2004 Establishments	9
Regional Employment Growth	-23.7%
National Employment Growth	-26.0%
6. <u>3131</u> : Fiber, Yarn, and Thread Mills	
2004 Employment	1,247
2004 Establishments	9
Regional Employment Growth	-24.3%
National Employment Growth	-22.9%
7. <u>3371</u> : Household and Institutional Furniture and Kitchen Cabinet Manufacturing	
2004 Employment	1,490
2004 Establishments	14
Regional Employment Growth	-27.5%
National Employment Growth	-8.3%

nationally from 2001 to 2004. In general, local employment losses reflected national employment change. Two local industry clusters, however, experienced local employment loss rates much higher than their respective national averages (NAICS 3323: architectural and structural metals manufacturing and NAICS 3371: household and institutional furniture and kitchen cabinet manufacturing. These two manufacturing sectors were included because employment change at the national level was relatively small during the 2001 to 2004 period.

Emerging Clusters. Table 14 provides a listing of 6 four-digit NAICS manufacturing industries under the category of “Emerging Clusters.” Emerging clusters are industries that miss the screening criteria with respect to cluster size (employment or establishment numbers) but the industry still exhibits a significant enough presence in the area to warrant attention. All emerging clusters had 2004 location quotients greater than 1.0 and 2001 to 2004 local employment growth rates greater than or similar to national growth rates. Four of the emerging clusters exhibited strong employment growth in the region from 2001 to 2004 (NAICS 3361: ship and boat building; NAICS 3335: metalworking machinery manufacturing; NAICS 3324: boiler, tank and shipping containers; and NAICS 3212: veneer, plywood, and engineered wood products manufacturing). The remaining two emerging industries experienced 2001 to 2004 employment losses both locally and nationally, but local employment change was reflective of the national industry trends. The emerging industry clusters with employment losses are: NAICS 3334, ventilation, heating, AC, and commercial refrigeration equipment and NAICS 3352, household appliance manufacturing.

Table 14. Emerging Industry Clusters in Florence County and Adjacent Counties

A. Positive Regional Employment Change, 2001-2004

1. <u>3366</u> : Ship and Boat Building	
2004 Employment	548
2004 Establishments	3
Regional Employment Growth	76.2%
National Employment Growth	2.8%
2. <u>3335</u> : Metalworking Machinery Manufacturing	
2004 Employment	244
2004 Establishments	5
Regional Employment Growth	60.5%
National Employment Growth	-19.3%
3. <u>3324</u> : Boiler, Tank and Shipping Container Manufacturing	
2004 Employment	308
2004 Establishments	3
Regional Employment Growth	47.4%
National Employment Growth	-11.6%
4. <u>3212</u> : Veneer, Plywood, and Engineered Wood Products Manufacturing	
2004 Employment	612
2004 Establishments	5
Regional Employment Growth	10.9%
National Employment Growth	1.0%

B. Negative Regional Employment Change, 2001-2004

1. <u>3334</u> : Ventilation, Heating, Air-Conditioning and Commercial Refrigeration Equipment	
2004 Employment	567
2004 Establishments	3
Regional Employment Growth	-9.9%
National Employment Growth	-16.8%
2. <u>3352</u> : Household Appliance Manufacturing	
2004 Employment	1,069
2004 Establishments	3
Regional Employment Growth	-11.5%
National Employment Growth	-11.3%

V. Characteristics of Target Clusters

The 19 industry clusters identified for the Florence and surrounding counties are good prospects for industrial recruitment since the area appears to provide a competitive advantage for these manufacturers. However, all 19 clusters are not equally attractive prospects based on the expected economic and fiscal impacts on Florence County. Insights into the potential local-level impacts associated with successfully recruiting an additional establishment are provided by comparing the establishment characteristics of cluster industries.

A. *Employment Growth Rate.*

Establishments in industries with rapid employment growth are more likely to expand and create new jobs more rapidly than establishments in slow growth or declining industries. The 2001 to 2004 national employment growth rates of the 19 industries are provided in Table 15. Among the 19 target industries, 2001-2004 *employment growth* occurred in only two: ship and boat building (3%) and veneer, plywood, and engineered wood products manufacturing (1%). Alternatively, 17 of the target industries reported *declining national employment* from 2001-2004. Employment declines were especially large for the targeted industries in the textiles sector: fabric mills (-31%), textile and fabric finishing (-26%), and fiber, yarn, and thread mills (-23%).

B. *Average Establishment Size.*

The 2004 average employment of U.S. establishments in the 19 target industries is provided in Table 16. Industries with large average establishment employment provide

Table 15. U.S. Employment Change for Selected Industries, 2001-2004.

NAICS Code	NAICS Industry Title	2001 to 2004 Employment Change
3366	Ship and Boat Building	3%
3212	Veneer, Plywood, and Engineered Wood Product Manufacturing	1%
3219	Other Wood Product Manufacturing	-5%
3323	Architectural and Structural Metals Manufacturing	-8%
3371	Household and Institutional Furniture and Kitchen Cabinet Manufacturing	-8%
3261	Plastics Product Manufacturing	-9%
3363	Motor Vehicle Parts Manufacturing	-10%
3352	Household Appliance Manufacturing	-11%
3324	Boiler, Tank, and Shipping Container Manufacturing	-12%
3222	Converted Paper Product Manufacturing	-13%
3329	Other Fabricated Metal Product Manufacturing	-14%
3252	Resin, Synthetic Rubber, and Artificial Synthetic Fibers and Filaments Manufacturing	-15%
3141	Textile Furnishings Mills	-16%
3334	Ventilation, Heating, Air-Conditioning, and Commercial Refrigeration Equipment Manufacturing	-17%
3339	Other General Purpose Machinery Manufacturing	-17%
3335	Metalworking Machinery Manufacturing	-19%
3131	Fiber, Yarn, and Thread Mills	-23%
3133	Textile and Fabric Finishing and Fabric Coating Mills	-26%
3132	Fabric Mills	-31%

Source: ES202 Data

Table 16. Average Establishment Size for U.S. Manufacturers for the Selected Industry Clusters, 2004.

NAICS Code	NAICS Industry Title	Average Establishment Size (# of Employees)
3352	Household Appliance Manufacturing	162
3363	Motor Vehicle Parts Manufacturing	107
3131	Fiber, Yarn, and Thread Mills	97
3366	Ship and Boat Building	78
3334	Ventilation, Heating, Air-Conditioning, and Commercial Refrigeration Equipment Manufacturing	72
3252	Resin, Synthetic Rubber, and Artificial Synthetic Fibers and Filaments Manufacturing	72
3132	Fabric Mills	66
3222	Converted Paper Products Manufacturing	62
3212	Veneer, Plywood, and Engineered Wood Products Manufacturing	57
3261	Plastics Product Manufacturing	51
3324	Boiler, Tank, and Shipping Container Manufacturing	45
3329	Other Fabricated Metal Product Manufacturing	43
3339	Other General Purpose Machinery Manufacturing	38
3141	Textile Furnishings Mills	33
3133	Textile and Fabric Finishing and Fabric Coating Mills	31
3219	Other Wood Products Manufacturing	28
3323	Architectural and Structural Metals Manufacturing	27
3371	Household and Institutional Furniture and Kitchen Cabinet Manufacturing	20
3335	Metalworking Machinery Manufacturing	18

Source: ES202 Data

greater potential for immediate job generation than industries whose operations require, on average, fewer employees. Average establishment employment among the 19 target industries ranged from 18 to 162.

Industries with the largest average employment per establishment included: household appliance manufacturing (162); fiber, yarn, and thread mills (97); motor vehicle parts and accessories (107); and ship and boat building (78). *Industries that provide, on average, relatively few jobs per establishment are:* metalworking machinery manufacturing (18); household and institutional furniture (20); architectural and structural metals (27); and other wood products manufacturing (28).

C. Average Earnings per Employee.

Other establishment characteristics held equal, a manufacturing plant paying high wages will provide greater local economic development impacts than a manufacturing establishment offering primarily low wage jobs. Table 17 provides the U.S. average annual earnings per worker for the 19 target industries.

High earnings industries include resin, synthetic rubber and synthetic fibers manufacturing (\$63,745); motor vehicle parts manufacturing (\$51,394); and metalworking machinery manufacturing (\$47,282). The *lower earnings industries* include textile furnishing mills (\$29,398); fiber, yarn, and thread mills (\$30,178); and household and institutional furniture (\$30,492).

Table 17. Average Annual Earnings per Worker for Selected Industries, 2004.

NAICS Code	NAICS Industry Title	Average Earnings Per Worker (\$)
3252	Resin, Synthetic Rubber, and Artificial Synthetic Fibers and Filaments Manufacturing	\$63,745
3363	Motor Vehicle Parts Manufacturing	\$51,394
3339	Other General Purpose Machinery Manufacturing	\$49,975
3335	Metalworking Machinery Manufacturing	\$47,282
3324	Boiler, Tank, and Shipping Container Manufacturing	\$46,685
3329	Other Fabricated Metal Product Manufacturing	\$45,527
3222	Converted Paper Product Manufacturing	\$45,121
3352	Household Appliance Manufacturing	\$43,403
3334	Ventilation, Heating, Air-Conditioning, and Commercial Refrigeration Equipment Manufacturing	\$41,951
3366	Ship and Boat Building	\$41,779
3323	Architectural and Structural Metals Manufacturing	\$38,401
3261	Plastics Product Manufacturing	\$37,854
3212	Veneer, Plywood, and Engineered Wood Product Manufacturing	\$35,494
3133	Textile and Fabric Finishing and Fabric Coating Mills	\$34,899
3132	Fabric Mills	\$34,823
3219	Other Wood Products Manufacturing	\$31,462
3371	Household and Institutional Furniture and Kitchen Cabinet Manufacturing	\$30,492
3131	Fiber, Yarn, and Thread Mills	\$30,178
3141	Textile Furnishings Mills	\$29,398

Source: ES202 Data.

The reader should note that Table 17 provides the average wages for four-digit NAICS industry groupings, and much wage diversity may be present within the grouping. For example, the 1997 average wages in motor vehicles parts industry (3363) ranged from \$12.70/hour for body manufacturing to \$21.50/hour for the manufacturing of transmission and power train parts (Table 18). Thus, information on industry average wage is just a first approximation of the potential wage and income impacts of attracting a new facility. Detailed information on industry wage structure should be collected as the industry targeting process becomes more specific.

D. Inter-Regional Linkages

The local economic impact of a new manufacturing establishment is not limited to the income and employment generated at the facility. New manufacturing plants have backward and forward linkages that lead to the generation of jobs and income in other sectors of the local economy.

- *Backward Linkages:* Manufacturers purchase inputs and services from other area firms. These input and service purchasers stimulate employment and income growth in these supplying firms.
- *Forward Linkages:* Employees of manufacturing establishments spend their salaries and wages in the local economy. Employee purchases of goods and services stimulate employment and income growth in the local consumer goods and services sectors.

The impact a manufacturing establishment has on the local economy will vary according to the magnitude of the firm's backward and forward linkages. Insights into potential inter-regional linkages for the 20 target manufacturing industries are provided by comparisons of industry multipliers.

Table 18. Examples of Wage Variation Within a Four-Digit Industry,
Motor Vehicle Parts

Industry	Average Hourly Wage (\$)
<u>Motor Vehicle Parts</u>	
Motor Vehicle Body Manufacturing	\$12.70
Gasoline Engine & Engine Parts	19.70
Other Motor Vehicle Electronic Equipment	15.80
Steering and Suspension Components	21.10
Brake System Manufacturing	15.10
Transmission & Power Train Parts	21.50
All Other Motor Vehicle Parts	14.30

Source: 1997 Economic Census of Manufacturers

Industry Multipliers. The attraction of a new firm to the county may create more jobs for the county than those employed directly at the facility. This creation of multiple jobs is called the multiplier process, and results from rounds of spending stimulated by the new firm. When the new manufacturer purchases inputs locally, the local supplying firms hire additional employees. And when employees at the new manufacturing facility spend their paychecks, local merchants hire more employees. As these new employees at input suppliers and retail establishments spend their paychecks, additional employment and income is stimulated. And the process continues. The end result of all these rounds of spending is that the cumulative increase is larger than the initial boost to the economy.

The exact size of this cumulative effect on local income and employment cannot be determined without specifics concerning the spending patterns of the firm and its employees. However, these impacts may be estimated using multipliers derived from input-output tables. A *multiplier* is simply a number by which the initial change (in employment, income, or sales) is multiplied in order to estimate the total change.

Estimating Income Multipliers. The income multiplier provides the change in total regional income associated with each dollar change in income generated by the new firm. The income multiplier is estimated as follows:

$$\text{Local Income Multiplier} = \frac{\text{Direct + Indirect + Induced Income Generated in the Local Economy}}{\text{Direct Income Generated by New Firm}}$$

where:

- direct income = income earned by employees of the new firm plus local rent, interest, and profits paid by the new firm.
- indirect income = amount of income generated by local businesses supplying inputs to the new firm

- induced income = sum of local income generated in all subsequent rounds of spending income induced by local spending by employees of the new firm and its suppliers plus the additional spending by new employees of local merchants catering to these individuals.

The sum of the *Direct*, *Indirect*, and *Induced* effects equals the *Total* effect. The *Total* effect is an estimate of all the new income created in the region (at the new business, suppliers to the business, and local merchants) as a result of the initial change in final demand sales by the firm. The *Total* effect assumes sufficient time has passed for all the rounds of spending to occur.

Differences by Industry. Local income multipliers differ among industries because each industry has different input demands and different tendencies to purchase and hire locally. Factors contributing to industry differences (other things being equal) are summarized below.

- *Multipliers will be higher in industries which rely heavily on local inputs.* The purchase of inputs from local sources returns money to the community for later rounds of spending. Branch plants often have low multipliers because purchasing decisions are established by headquarters located outside the region. Also, many high tech firms have low multipliers because of the need to purchase inputs from numerous locations.
- *Multipliers will be higher in industries which hire locally.* Workers from other communities tend to spend less locally than resident employees. These leakages will be high and immediate as the in-commuters in the work force take their paychecks home for spending.
- *Multiplier effects will be higher over the long-run in industries with growth potential.* Growing industries are more likely to reinvest profits locally to accommodate expansion. These new investments to expand plant and machinery will augment the long-run impact of the businesses.

- *Multipliers will be higher in companies that are locally owned.* The profits of hometown businesses are more likely to remain in the community than the net revenues of branch plants. Locally-owned plants are also more likely to purchase inputs from area merchants.

Cluster Industry Multipliers. Income multipliers for the 19 cluster industries are provided in Table 19. All multipliers were estimated for Florence County and adjacent counties using IMPLAN. Income multipliers differed relatively little among the 19 cluster industries. The largest multiplier values were approximately 2.00 (e.g., wood products manufacturing and veneer and plywood manufacturing) while the smallest multiplier values were around 1.50 (e.g., metal working machinery and ship and boat building). In general, the multipliers for the 19 cluster industries were relatively low.

Low multipliers for manufacturers in the area may be attributable to:

- (1) The industry has weak buy-sell relationships with other county firms, i.e., many of the industry's inputs come from outside the county and/or the industry's output is sold outside the county.
- (2) The industry has a labor intensive production process and direct effects are large relative to indirect and induced effects.

In summary, the anticipated multiplier effects of the 19 cluster industries are relatively small and similar. As such, we recommend that little weight be given to industry differences in likely multiplier effects.

Cautionary Note. Information on an industry's income multiplier should be used in conjunction with earlier information on prospective industry establishment size. All other establishment characteristics held equal, an establishment with a large income multiplier is preferred to one with a small multiplier. However, the community economic development impacts of a small establishment (small direct effect) with a large multiplier may be very similar to a large establishment (large direct effect) with a small multiplier.

Table 19. Average Income Multipliers for Selected Industries, 2004.

NAICS Code	NAICS Industry Title	Multiplier IMPLAN
3219	Other Wood Products Manufacturing	2.04
3212	Veneer, Plywood, and Engineered Wood Product Manufacturing	1.99
3131	Fiber, Yarn, and Thread Mills	1.92
3133	Textile and Fabric Finishing and Fabric Coating Mills	1.91
3371	Household and Institutional Furniture and Kitchen Cabinet Manufacturing	1.87
3363	Motor Vehicle Parts Manufacturing	1.81
3141	Textile Furnishings Mills	1.80
3132	Fabric Mills	1.78
3261	Plastics Product Manufacturing	1.76
3334	Ventilation, Heating, Air-Conditioning, and Commercial Refrigeration Equipment Manufacturing	1.75
3222	Converted Paper Product Manufacturing	1.70
3352	Household Appliance Manufacturing	1.68
3252	Resin, Synthetic Rubber, and Artificial Synthetic Fibers and Filaments Manufacturing	1.65
3339	Other General Purpose Machinery Manufacturing	1.65
3324	Boiler, Tank, and Shipping Container Manufacturing	1.59
3335	Metalworking Machinery Manufacturing	1.49
3323	Architectural and Structural Metals Manufacturing	1.47
3329	Other Fabricated Metal Product Manufacturing	1.46
3366	Ship and Boat Building	1.36

VI. Index of Industry Characteristics

Unweighted Index. Comparisons among industry characteristics are complicated by the fact that an industry may “rate” high on one characteristic and “rate” low on another. For example, establishments in the veneer and plywood industry (NAICS 3212) experienced relatively rapid employment growth but employees have relatively low average annual earnings. Thus the attraction of a veneer and plywood facility to Florence County will provide promising employment growth potential, but the jobs would pay lower wages than those of many other target industries. On the other hand, an establishment in the ship and boat building industry (NAICS 3366) provides, on average, rapid job growth and high earnings. Thus, from a community development standpoint, adding a ship and boat building plant would be preferred to the attraction of a veneer and plywood facility (everything else held equal).

A ranking of the 19 cluster industries based on the four industry characteristics is provided through the calculation of an index. This index is estimated as follows:

1. The national averages for industry establishment characteristics (growth rate, mean plant size, mean wage rate, income multiplier) are standardized. That is, the 19 values for each characteristic are treated as observations from a standard normal distribution (a distribution with a mean of 0.0 and standard deviation of 1.0). Standardization of characteristic data permits reliable comparisons across characteristics that have different measures (for example, employment vs. wages vs. multiplier effects).
2. The actual value for the characteristic is replaced by its corresponding standardized value. This standardized value is the number of standard deviations above (+) or below (-) the mean for the 19 industries (see Table 20). Standardized values near 0.0 reflect actual values near the average for the 19 industries. Negative standardized values reflect below average actual values and positive standardized values represent above average actual values. The larger the standardized value (+ or -) the further above or below the characteristic mean. For example, a standardized value of +1.00 or higher places the industry in approximately the top 15 percent of the 19 industries, while a value

Table 20. Standardized Distributions of Industry Characteristics (Employment Growth Rate, Mean Establishment Size, Mean Earnings per Worker, Income Multiplier), Florence County and Surrounding Region Clusters

NAICS Code	NAICS Industry Title	US '01-'04Emp Growth (%)	2004 Mean US Establishment Size	2004 Mean US Avg. Earnings/Worker	Income Multiplier	Sum of Indices
3363	Motor Vehicle Parts Manufacturing	0.37	1.37	1.17	0.50	3.41
3352	Household Appliance Manufacturing	0.23	2.92	0.27	-0.20	3.21
3212	Veneer, Plywood, and Engineered Wood Product Manufacturing	1.68	-0.03	-0.63	1.44	2.47
3252	Resin, Synthetic Rubber, and Artificial Synthetic Fibers and Filaments Manufacturing	-0.21	0.38	2.58	-0.36	2.39
3219	Other Wood Product Manufacturing	0.98	-0.85	-1.09	1.69	0.73
3366	Ship and Boat Building	1.90	0.55	0.08	-1.90	0.63
3222	Converted Paper Product Manufacturing	0.04	0.10	0.46	-0.12	0.48
3334	Ventilation, Heating, Air-Conditioning, and Commercial Refrigeration Equipment Manufacturing	-0.43	0.39	0.10	0.17	0.23
3261	Plastics Product Manufacturing	0.49	-0.21	-0.36	0.20	0.13
3131	Fiber, Yarn, and Thread Mills	-1.16	1.11	-1.23	1.07	-0.22
3324	Boiler, Tank, and Shipping Container Manufacturing	0.18	-0.36	0.64	-0.72	-0.26
3339	Other General Purpose Machinery Manufacturing	-0.50	-0.58	1.01	-0.39	-0.45
3371	Household and Institutional Furniture and Kitchen Cabinet Manufacturing	0.59	-1.06	-1.20	0.78	-0.90
3329	Other Fabricated Metal Product Manufacturing	-0.10	-0.44	0.51	-1.39	-1.42
3323	Architectural and Structural Metals Manufacturing	0.66	-0.89	-0.30	-1.32	-1.84
3141	Textile Furnishings Mills	-0.35	-0.70	-1.32	0.44	-1.93
3133	Textile and Fabric Finishing and Fabric Coating Mills	-1.52	-0.77	-0.70	1.03	-1.96
3132	Fabric Mills	-2.14	0.23	-0.71	0.31	-2.31
3335	Metalworking Machinery Manufacturing	-0.73	-1.14	0.71	-1.24	-2.39

of -1.00 or lower places the industry in the bottom 15 percent. Or, an alternative perspective is that the middle 50 percent of the industries will have standardized values between approximately -.70 and +.70.

3. The standardized values for the four industry characteristics are summed for each industry, and this value is reported in the last column of Table 20. This sum represents an unweighted sum, that is, each of the four industry characteristics is given equal weight in construction of the index.

Table 20 provides the unweighted rankings of the 19 industry clusters based on employment growth rate, plant size, income multiplier, and average annual earnings per worker. *The industry clusters with the most favorable economic development impacts include:* motor vehicle parts and accessories (3.41); household appliances (3.21); veneer and plywood manufacturing (2.47); resin and synthetic fibers (2.39). *The industries that provide the least favorable impacts are:* metalworking machinery (-2.39); fabric mills (-2.31); textile and fabric furnishing (-1.96); and textile furnishing mills (-1.93). The remaining target industries offer some interesting trade-offs from an economic development perspective. Ship and boat building, for example, offers above average employment growth potential, earnings, and plant size. However, this industry maintains few linkages to other local industries as indicated by a low income multiplier. Alternatively, general purpose machinery manufacturing offers high average earnings per worker but below average plant size and employment growth.

VII Import Substitution

The industry cluster approach to industry targeting identifies manufacturing industries with good potential for future growth based on data indicating that an industry cluster has developed in the region, and as a result, the region is a low-cost location for other establishments in the cluster's industries. An alternative industry targeting approach is to identify industries that may fill "gaps" in the regional economy, where

“gaps” are goods used by local households and businesses that are produced outside the local economy (refer to Figure 1). Imports of goods and services into a region exist

because:

- the region does not have the natural resources required for production (e.g., copper mining, avocados)
- regional markets or demand are insufficient to justify a local facility (e.g., soft drink bottling plant)
- the region is a relatively high cost location for production due to labor availability and quality, location with respect to inputs and markets, and/or availability of public and private infrastructure and services.

The objective of an *import substitution* program is to determine which of the imported goods and services might be reasonable candidates for replacement by local production.

The replacement of imports with local production reduces leakages of money outside the regional economy, increases the local income and employment multipliers, and provides additional jobs for area residents.

The identification of target industries for import substitution is helpful for economic development programs focusing on industrial recruitment, entrepreneurial and small business development, and business retention and expansion. For example, large gaps or imports in the economy may indicate opportunities to attract new branch plants. Smaller gaps may identify opportunities for new business development (serving the local market) or identify local prospects for expansion based on networking and stronger linkages between area businesses (e.g., “buy local” programs).

Figure 1

A. Desirability Criteria

Regional imports of manufactured goods are estimated using the regional economic modeling system IMPLAN (IMPact analysis for PLANning), an input-output model constructed for the regional economy using data for 2001. The model accounts for 374 manufacturing industries and commodities. Four criteria were used to identify industries that are good prospects for import substitution.

- (1) Based on IMPLAN data, industry imports into the seven county region exceed \$10 million per year (refer to Appendix Table F).
- (2) Industry output (sales) exist for regional firms and sales exceed the national average for sales per establishment. The presence of local production indicates that the region is not at a serious disadvantage as a location for plants in that industry. Alternatively, no local production (e.g., wines or roasted coffee) may indicate that the region is not a reasonable location for the activity due to natural resource requirements or other competitive disadvantages.
- (3) Imports are sufficient to support at least two facilities of average size. That is, if the average plant size in terms of sales for industry x is \$50 million, then area imports must exceed \$100 million to support two or more new plants. Alternatively, total imports divided by average plant size provides an estimate of the number of new local establishments, by industry, the area economy could support based on import substitution. We hypothesize that a region's probability of attracting or starting a new establishment is directly related to the number of establishments required to fill the import gap.
- (4) Textile and apparel manufacturers were excluded because South Carolina already is recognized as a viable location for these firms.

B. Targets for Import Substitution

Twenty-two industries met the four criteria for selecting good prospects for import substitution (see Table 21). Twelve of the industries were previously identified as good candidates for industry cluster development. Included among these 12 industries are four industries that ranked above average in terms of local economic development impacts (3363: Motor Vehicle Parts Manufacturing; 3252: Fibers and Filaments

Table 21. Industries with Good Prospects for Import Substitution

NAICS Code	NAICS Industry Title
<u>A. Member of Regional Cluster (Table 20)</u>	
3323	Architectural and Structural Metals Manufacturing
3371	Kitchen Cabinet Manufacturing
3261	Plastics Products Manufacturing
3363	Motor Vehicle Parts Manufacturing
3366	Ship and Boat Building
3252	Fibers and Filaments Manufacturing
3339	Other General Purpose Machinery
3334	Ventilation, Heating, AC Equipment Manufacturing
3335	Metalworking Machinery Manufacturing
3222	Converted Paper Products Manufacturing
3219	Other Wood Products Manufacturing
3329	Other Fabricated Metal Products Manufacturing
<u>B. Not Member of Regional Cluster</u>	
3231	Printing and Related Support Activities
3362	Motor Vehicle Body and Trailer Manufacturing
3118	Bakeries and Tortillas Manufacturing
3328	Coating, Engraving, and Heat Treating Activities
3372	Office Furniture (Including Fixtures)
3353	Electrical Equipment Manufacturing
3121	Beverage Manufacturing
3114	Fruit and Vegetable Preserving and Specialty Food Manufacturing
3369	Other Transportation Equipment
3342	Communications Equipment Manufacturing

Manufacturing; 3222: Converted Paper Products; and 3366: Ship and Boat Building).

The potential local economic development impacts of the 12 cluster and import substitution industries are provided in Tables 17, 18, and 19.

The remaining 10 industries are not developed to the extent necessary to be identified as a regional cluster. However, the recruitment of firms in these import substitution industries still provides favorable local economic development impacts in terms of increased jobs and earnings. The average earnings per worker, average plant size (employment), and national employment growth rate (2001-2004) for the 10 “high potential” industries are provided in Table 22. These measures are industry averages, and as noted previously, much variability in earnings, plant size, and employment growth potential may exist within an industry. The industries with the greatest potential impacts on the Florence economy are motor vehicle body and trailer manufacturing (3362) and other transportation equipment (3369). These two sectors rate relatively high in all three economic impact categories (growth rate, plant size, and earnings per employment). Two food products industries (3121: Beverage Manufacturing, 3114: Fruit and Vegetable Preserving and Specialty Food Manufacturing) rated relatively high in two of the three impact categories. The remaining 6 industries provided a more mixed economic impact potential, i.e., average or above average rankings for one measure and below average rankings for others. The selection among these industries will depend on (1) the importance Florence County places on the specific industry characteristics (employment growth potential, plant size, wage rate) and (2) the desired location for the new manufacturing establishment (e.g., the more urban part of the region versus the more rural locations in neighboring counties).

Table 22. Industry Clusters of High Import Substitution Manufacturers, Florence County and Surrounding Region

NAICS Code	Industry Title	US 2001-04 Emp. Growth (Percent)	2004 Mean Earnings/Worker	2004 Mean Estab. Size (Employees)
3362	Motor Vehicle Body and Trailer Mfg.	3.7%	\$38,325	68
3369	Other Transportation Equipment	-3.1	\$54,357	42
3121	Beverage Manufacturing	-5.6	\$46,054	42
3118	Bakeries and Tortillas Manufacturing	-5.9	\$30,509	24
3114	Fruit and Vegetable Preserving and Specialty Food Manufacturing	-8.4	\$36,012	94
3328	Coating, Engraving, and Heat Treating Activities	-12.9	\$36,259	20
3231	Printing and Related Support Activities	-14.0	\$39,752	17
3353	Electrical Equipment Manufacturing	-21.4	\$48,186	53
3372	Office Furniture (Including Fixtures)	-22.2	\$37,068	31
3342	Communications Equipment Manufacturing	-38.7	\$75,887	58

VIII. Recommended Industries for Targeting

This study identified 19 high potential industry clusters and 22 high potential import substitution industries. Twelve industries were included on both lists, thus a total of 30 industries were identified using the industry cluster and import substitution targeting approaches. Among the 29 target industries, the most desirable prospects to recruit may be the industries that have good growth potential, large establishment size, and high employee earnings. Based on these criteria, we recommend that Florence County focus its initial targeting program on the following seventeen industries. The ten *primary targets* provide the most favorable potential local economic impacts in terms of job creation, wages, and multiplier effects. However, the seven *secondary target industries* may be reasonable prospects for parts of the region where labor is less skilled and jobs are scarce.

A. Preferred Targets

Industry Clusters

(1) Motor Vehicle Parts and Manufacturing (3363)

- significant presence in the region (10 establishments; 2,703 employees)
- large average plant size (107 employees)
- high average earnings per worker
- above average national employment growth
- recognized industry cluster for South Carolina

(2) Household Appliance Manufacturing (3352)

- emerging presence in the region (3 establishments; 1,609 employees)
- large average plant size (1,162 employees)
- medium average earnings per worker
- average national employment growth

- (3) Converted Paper Products Manufacturing (3222)
 - significant presence in region (20 establishments; 2,379 employees)
 - medium average plant size (62 employees)
 - medium average earnings per worker
 - average national employment growth
 - recognized industry cluster for South Carolina
- (4) Resin, Synthetic Rubber, Synthetic Filaments (3252)
 - significant presence in region (6 establishments; 2,700 employees)
 - medium average plant size (72 employees)
 - high earnings per employee
 - below average national employment growth
- (5) Ship and Boat Building (3366)
 - emerging presence in region (3 establishments, 548 employees)
 - medium average earnings per worker
 - medium average plant size (78 employees)
 - positive national employment change
- (6) Plastic Products Manufacturing (3261)
 - 10 establishments and 1,180 employees in region
 - medium average plant size (51 employees)
 - medium average earnings per worker
 - above average national employment change

Import Substitution

- (1) Motor Vehicle Body and Trailer Manufacturing (3362)
 - 23 establishments required to fill regional imports
 - relatively rapid national employment growth
 - medium earnings per worker
 - medium average plant size (68 employees)
 - member of target industry cluster for state

- (2) Other Transportation Equipment (3369)
 - 3 establishments required to fill regional imports
 - relatively rapid national employment growth
 - high industry earnings per worker
 - medium average plant size (42 employees)
- (3) Beverage Manufacturing (3121)
 - 3 establishments required to fill regional imports
 - average national employment growth
 - medium average plant size (42 employees)
 - above average industry earnings per worker
 - member of South Carolina food industry cluster

B. Secondary Targets

Industry Clusters

- (1) Veneer, Plywood, and Engineered Wood Products (3212)
 - regional presence is 52 establishments, 612 employees
 - medium average plant size (57 employees)
 - below average industry earnings per worker
 - growing national employment
- (2) Other Wood Products Manufacturing (3219)
 - regional presence is 21 establishments, 678 employees
 - average plant size is small (28 employees)
 - below average industry earnings per worker
 - above average national employment change
- (3) Boiler, Tank, and Shipping Containers (3324)
 - regional presence is 3 establishments, 300 employees
 - below average plant size (45 employees)
 - above average industry earnings per worker
 - average national employment growth

Import Substitution

(1) Bakeries and Tortilla Manufacturing (3118)

- 9 establishments required to fill regional imports
- above average national employment growth
- below average plant size (42 employees)
- below average industry earnings per worker

(2) Fruit and Vegetable Preserving and Specialty Food Manufacturing (3114)

- 3 establishments required to fill regional imports
- average national employment growth
- above average establishment size (92 employees)
- average national employment growth

C. Prospective Companies for Targeting

The identification of the “best” companies to recruit in the selected targeted industries is very problematic, as indicated by the recent collapse of some of Wall Street’s “favorite” firms such as Lucent, Enron, and WorldCom. However, the names and addresses of prospective recruits may be identified using input from Florence County officials regarding their recruitment focus and the Harris InfoSource Database of establishment-level data. First, Florence County indicated that they wanted to focus their recruitment activities on six of the identified industry clusters and six states. Specifically,

Target Industries

3212: Veneer, Plywood, and Engineered Wood Products Manufacturing

3222: Converted Paper Products Manufacturing

3252: Resin, Synthetic Rubber, and Artificial Synthetic Fibers and Filaments Manufacturing

3362: Motor Vehicle Body and Trailer Manufacturing

3363: Motor Vehicle Parts Manufacturing

3366: Ship and Boat Building

Target States

California

Illinois

Michigan

New Jersey

Ohio

Pennsylvania

Two sets of screening criteria were used depending on whether the target was a branch of a multi-plant firm or a single location establishment. The screening criteria for the two establishment types are as follows.

Multi-Plant Firm

1. A branch plant of the firm was present in the Southeast in 2005. Southeast was defined as AL, GA, KY, MS, NC, SC, TN, and VA. This criterion indicates that the firms consider the Southeast a viable location.
2. The branch plant in the Southeast had 100 or more employees and positive employment growth 2002-2005.
3. Headquarters for the branch plant is located in one of the six target states.
4. Company employment (all branch sites) exceeded 1000 in 2005.

Single Location Firm

1. The firm is located in one of the six target states.
2. Firm employment is greater than or equal to 200.
3. The firm experienced positive employment growth from 2002-2005.

The results of our screening approach are provided in Appendix E for multi-plant firms and Appendix F for single-location firms. Among the multi-plant firms we identified, 65 prospects (6 engineered wood products, 9 converted paper products, 8 synthetic fibers, 5 motor vehicle body and trailer, 42 motor vehicle parts, and 1 ship and boat building). Among the single location firms we identified 129 prospects (65 engineered wood products, 20 converted paper products, 10 synthetic fibers, 10 motor vehicle body and trailer, 80 motor vehicle parts, and 4 ship and boat building. The 2005 Harris InfoSource information sheets on each firm will be provided to Florence County in a separate file.

IX. Marketing Florence County

The marketing strategy for Florence County will vary by target industry and by whether the industry is a prospect for an industry cluster or import substitution. *For members of an industry cluster*, the county will want to promote the advantages of proximity to the cluster. These advantages include:

- Existence of an industry cluster in the region is evidence that Florence County is a good location for that industry.
- Presence of a cluster in the region ensures that the skilled and trained labor required by that industry are available.
- Specialized input and service providers locate near clusters, thus reducing the cost of acquiring these inputs.
- The cluster provides the opportunity for the exchange of information among firms regarding new markets, technologies, and production methods.
- Industry clusters encourage the development of financial markets familiar with the industry's product markets and production processes.

For the import substitution targets, the county should focus promotional materials on the size and growth of the local market for specific goods and services. In addition, the county should promote the development of locally-owned businesses in the import substitution industries. Promotional efforts include:

- Entrepreneurial and small business development programs for new firms in import substituting industries (e.g., incubators, financing, labor training, technology transfer, and marketing).
- “Buy Local” programs that encourage regional businesses to use regional suppliers when possible.
- Business retention and expansion (BR & E) programs focused on expanding the local markets of existing manufacturers.

In conclusion, a balanced industrial development program provides resources for industrial recruitment, small business development, and the retention and expansion of local firms. A community or county will have different competitive advantages for the three components of industrial development. That is, a good target for industry recruiting is not necessarily a good industry for small business development. The industries identified in this study enable the county to focus specific programs at the appropriate prospects. A targeted effort enhances the employment generation potential of the county’s economic development programs, an important consideration in times of limited resource.

Table.

MANUFACTURING INDUSTRY	NAICS Industry	TOTAL ALL IMPORTS	Avg Sales PER EST \$million	TO REPLACE IMPORTS OF ESTAB NUMBER
Dental laboratories	339116•	\$10.660	\$0.394	27.03
Miscellaneous electrical equipment manufacturing	335999'	\$238.714	\$9.624	24.80
Industrial gas manufacturing	32512	\$181.275	\$7.647	23.70
Narrow fabric mills and schiffli embroidery	31322	\$71.378	\$3.070	23.25
Miscellaneous wood product manufacturing	321999–	\$39.071	\$1.980	19.73
Truck trailer manufacturing	336212•	\$139.277	\$7.937	17.55
Confectionery manufacturing from purchased chocola	31133	\$83.130	\$5.670	14.66
Boat building	336612j	\$68.634	\$4.971	13.81
Sheer hosiery mills	315111	\$113.888	\$9.435	12.07
Machine shops	33271	\$14.507	\$1.264	11.48
Laminated plastics plate, sheet, and shapes	32613	\$55.993	\$5.046	11.10
Curtain and linen mills	31412	\$35.726	\$3.225	11.08
Synthetic dye and pigment manufacturing	32513	\$196.621	\$19.405	10.13
Ornamental and architectural metal work manufactur	332323	\$19.006	\$1.948	9.76
Audio and video equipment manufacturing	3343	\$99.259	\$11.993	8.28
Doll, toy, and game manufacturing	33993	\$22.253	\$2.851	7.80
Metal heat treating	332811#	\$35.772	\$4.973	7.19
Lighting fixture manufacturing	33512	\$50.035	\$6.985	7.16
Manifold business forms printing	323116l	\$55.402	\$8.391	6.60
Fertilizer, mixing only, manufacturing	325314Â	\$34.606	\$5.429	6.37
Saw blade and handsaw manufacturing	332213	\$48.050	\$7.632	6.30
Blind and shade manufacturing	33792	\$25.318	\$4.739	5.34
Industrial process furnace and oven manufacturing	333994\	\$22.698	\$4.285	5.30
Ophthalmic goods manufacturing	339115¶	\$17.038	\$3.426	4.97
Ground or treated minerals and earths manufacturin	327992ñ	\$94.125	\$19.191	4.90
Ready-mix concrete manufacturing	32732	\$17.994	\$3.837	4.69
Phosphatic fertilizer manufacturing	325312Á	\$189.048	\$40.727	4.64
Plastics material and resin manufacturing	325211¼	\$205.878	\$46.167	4.46
Software reproducing	334611	\$12.281	\$2.863	4.29
Turned product and screw, nut, and bolt manufactur	33272	\$24.179	\$5.680	4.26
Textile and fabric finishing mills	31331	\$17.367	\$4.240	4.10
Knit fabric mills	31324	\$30.751	\$7.664	4.01
Nonchocolate confectionery manufacturing	31134	\$41.223	\$10.504	3.92
Fabricated structural metal manufacturing	332312	\$17.764	\$5.210	3.41
Electric power and specialty transformer manufactu	335311‡	\$33.839	\$10.348	3.27
Mayonnaise, dressing, and sauce manufacturing	311941j	\$59.108	\$18.140	3.26
Computer terminal manufacturing	334113c	\$70.190	\$21.569	3.25
Metal can, box, and other container manufacturing	33243	\$32.846	\$11.370	2.89
Other leather product manufacturing	3169	\$6.198	\$2.199	2.82
Textile bag and canvas mills	31491	\$3.161	\$1.125	2.81
Wood office furniture manufacturing	337211–	\$14.154	\$5.169	2.74

Wood container and pallet manufacturing	32192	\$3.308	\$1.253	2.64
Office machinery manufacturing	333313=	\$40.563	\$15.616	2.60
Fabricated pipe and pipe fitting manufacturing	332996*	\$13.823	\$5.428	2.55
Electroplating, anodizing, and coloring metal	332813%	\$3.402	\$1.358	2.51
Dry pasta manufacturing	311823d	\$10.720	\$4.404	2.43
Metal cutting machine tool manufacturing	333512H	\$6.193	\$2.612	2.37
Printing ink manufacturing	32591	\$17.868	\$7.561	2.36
Air purification equipment manufacturing	333411C	\$8.942	\$4.086	2.19
Mattress manufacturing	33791	\$14.095	\$6.551	2.15
Dental equipment and supplies manufacturing	339114μ	\$10.533	\$4.941	2.13
Surface-coated paperboard manufacturing	322226œ	\$18.052	\$8.632	2.09
Custom compounding of purchased resins	325991Í	\$28.193	\$14.149	1.99
Metal tank, heavy gauge, manufacturing	33242	\$13.088	\$6.575	1.99
Automatic vending, commercial laundry and dry clean	333311A	\$13.616	\$6.978	1.95
Jewelry and silverware manufacturing	33991	\$5.999	\$3.142	1.91
Other millwork, including flooring	321918'	\$3.219	\$1.834	1.75
Fluid power cylinder and actuator manufacturing	333995]	\$13.026	\$7.610	1.71
Secondary processing of copper	331423	\$22.772	\$13.641	1.67
Plate work manufacturing	332313	\$2.763	\$1.677	1.65
Overhead cranes, hoists, and monorail systems	333923W	\$16.923	\$10.744	1.58
Sporting and athletic goods manufacturing	33992	\$7.267	\$4.690	1.55
Metal coating and nonprecious engraving	332812\$	\$5.150	\$3.437	1.50
Explosives manufacturing	32592	\$13.384	\$9.029	1.48
Custom architectural woodwork and millwork	337212	\$4.185	\$3.000	1.40
Propulsion units and parts for space vehicles and	336415	\$31.156	\$23.501	1.33
Sheet metal work manufacturing	332322	\$5.747	\$4.401	1.31
Sawmills	321113‰	\$6.084	\$4.944	1.23
Coated and uncoated paper bag manufacturing	322223Ÿ	\$11.501	\$9.487	1.21
All other transportation equipment manufacturing	336999¤	\$26.080	\$21.646	1.20
Porcelain electrical supply manufacturing	327113Ɔ	\$10.271	\$8.552	1.20
Fabric coating mills	31332	\$7.835	\$6.773	1.16
Motorcycle, bicycle, and parts manufacturing	336991€	\$8.157	\$7.391	1.10
Magnetic and optical recording media manufacturing	334613~	\$12.125	\$11.084	1.09
Glass container manufacturing	327213ä	\$37.558	\$34.442	1.09
Malt manufacturing	311213l	\$12.881	\$13.133	0.98
Hand and edge tool manufacturing	332212	\$4.756	\$4.861	0.98
Engineered wood member and truss manufacturing	321213ž	\$4.739	\$4.939	0.96
Electricity and signal testing instruments	334515w	\$12.425	\$13.140	0.95
Heating equipment, except warm air furnaces	333414E	\$10.257	\$10.882	0.94
Cheese manufacturing	311513W	\$37.488	\$39.866	0.94
Electronic computer manufacturing	334111a	\$50.058	\$54.815	0.91
Resilient floor covering manufacturing	326192Ô	\$18.936	\$21.090	0.90
Flavoring syrup and concentrate manufacturing	31193	\$35.635	\$41.267	0.86
Pesticide and other agricultural chemical manufact	32532	\$23.647	\$27.806	0.85
Custom roll forming	332114	\$19.954	\$25.184	0.79
Other major household appliance manufacturing	335228†	\$40.789	\$51.651	0.79
Nonclay refractory manufacturing	327125á	\$4.941	\$6.326	0.78
Other hosiery and sock mills	315119,	\$6.925	\$8.903	0.78
Foam product manufacturing	32614	\$8.455	\$11.359	0.74
Stationery and related product manufacturing	322233£	\$10.674	\$14.406	0.74

Glass and glass products, except glass containers	327211å	\$5.455	\$7.379	0.74
Other oilseed processing	311223L	\$11.551	\$16.859	0.69
Motor and generator manufacturing	335312^	\$8.472	\$12.441	0.68
Dry, condensed, and evaporated dairy products	311514X	\$28.117	\$42.744	0.66
Accessories and other apparel manufacturing	3159	\$2.310	\$3.717	0.62
Industrial mold manufacturing	333511G	\$0.934	\$1.566	0.60
Photographic and photocopying equipment manufactur	333315?	\$5.228	\$8.933	0.59
Tobacco stemming and redrying	31221	\$43.540	\$76.533	0.57
Reconstituted wood product manufacturing	321219<	\$11.901	\$21.125	0.56
Iron and steel forging	332111	\$5.108	\$9.300	0.55
Rubber and plastics hose and belting manufacturing	32622	\$5.522	\$10.430	0.53
Nonferrous metal, except copper and aluminum, shap	331491	\$10.964	\$20.745	0.53
Hardware manufacturing	3325	\$7.120	\$13.845	0.51
Wood preservation	321114Š	\$3.946	\$7.774	0.51
Vitreous china plumbing fixture manufacturing	327111Ü	\$7.225	\$14.267	0.51
Postal service	491	\$67.160	\$137.558	0.49
Printing machinery and equipment manufacturing	3332939	\$2.364	\$4.861	0.49
Nonwoven fabric mills	31323	\$9.969	\$20.858	0.48
Poultry processing	311615]	\$29.982	\$66.642	0.45
Other miscellaneous textile product mills	314991	\$1.008	\$2.268	0.44
Animal, except poultry, slaughtering	311611Z	\$12.748	\$29.741	0.43
Motor vehicle body manufacturing	336211"	\$4.358	\$10.276	0.42
Kitchen utensil, pot, and pan manufacturing	332214	\$4.881	\$11.747	0.42
Mixes and dough made from purchased flour	311822c	\$7.227	\$18.489	0.39
Paperboard container manufacturing	32221	\$5.663	\$14.756	0.38
Fiber, yarn, and thread mills	3131	\$5.625	\$14.679	0.38
Other basic inorganic chemical manufacturing	32518	\$9.283	\$24.243	0.38
Air and gas compressor manufacturing	333912S	\$4.811	\$13.865	0.35
Enameled iron and metal sanitary ware manufacturin	332998,	\$4.987	\$15.456	0.32
Envelope manufacturing	322232¢	\$3.771	\$12.466	0.30
Surgical appliance and supplies manufacturing	339113´	\$2.251	\$9.190	0.24
Gasket, packing, and sealing device manufacturing	339991½	\$1.775	\$7.785	0.23
Ball and roller bearing manufacturing	332991'	\$4.592	\$20.542	0.22
Totalizing fluid meters and counting devices	334514v	\$2.194	\$10.640	0.21
Noncellulosic organic fiber manufacturing	325222¿	\$10.668	\$53.641	0.20
Plastics bottle manufacturing	32616	\$3.452	\$17.841	0.19
Petrochemical manufacturing	32511	\$16.435	\$85.836	0.19
Wood windows and door manufacturing	321911	\$1.420	\$7.467	0.19
Metal household furniture manufacturing	337124"	\$1.543	\$8.140	0.19
Petroleum lubricating oil and grease manufacturing	324191µ	\$2.357	\$12.905	0.18
Other tobacco product manufacturing	312229s	\$1.438	\$7.964	0.18
AC, refrigeration, and forced air heating	333415F	\$3.582	\$21.318	0.17
Lime manufacturing	32741	\$1.731	\$13.608	0.13
Military armored vehicles and tank parts manufactu	336992£	\$3.233	\$28.381	0.11
Scales, balances, and miscellaneous general purpos	333997_	\$0.547	\$4.932	0.11
Breakfast cereal manufacturing	31123	\$18.556	\$175.137	0.11
Turbine and turbine generator set units manufactur	333611N	\$5.732	\$56.263	0.10
Toilet preparation manufacturing	32562	\$2.843	\$30.677	0.09

Books printing	323117§	\$0.661	\$9.706	0.07
Cigarette manufacturing	312221r	\$62.655	\$1,091.829	0.06
Petroleum refineries	32411	\$13.118	\$238.102	0.06
Paper industry machinery manufacturing	3332917	\$0.330	\$6.141	0.05
Iron and steel mills	331111ô	\$2.493	\$69.436	0.04
Construction machinery manufacturing	33312	\$0.742	\$24.536	0.03
Power-driven handtool manufacturing	333991Y	\$0.405	\$13.437	0.03
Rolling mill and other metalworking machinery	333516L	\$0.642	\$26.327	0.02
Household laundry equipment manufacturing	335224...	\$1.257	\$79.378	0.02
Automobile and light truck manufacturing	33611	\$7.702	\$649.713	0.01
ALL IMPORTS		\$3,810.154		