The Economic Impact Of the Agribusiness Industry In South Carolina

Prepared For the

Palmetto Agribusiness Council

Prepared by

Miley, Gallo & Associates, LLC

Columbia, SC Research Triangle Park, NC

September 2008

TABLE OF CONTENTS

1. INTRODUCTION …….. 1

2. OVERVIEW OF AGRICULTURE IN SOUTH CAROLINA ……... 1

3. OVERVIEW OF FORESTRY IN SOUTH CAROLINA …….. 9

4. OVERVIEW OF AGRI-TOURISM IN SOUTH ……..…… 17

5. ECONOMIC IMPACT OF AGRICULTURE AND FORESTRY INDUSTRIES IN SOUTH CAROLINA …….. 20

APPENDIX ……..……..……... 26

METHODOLOGY ……..……..……... 29

1. Introduction

South Carolina's agriculture and forestry industry represent one of the largest, if not the largest industry clusters in the state's economy. In fact, according to the South Carolina Department of Commerce: "agriculture and forestry together have the largest impact on our state's economy".[1] This report presents a summary of the combined impacts of these two industries – referred to here as the agribusiness industry. Overviews of both the agriculture and the forestry industries are provided. In addition, a brief overview of the agri-tourism industry is included. And finally, this report concludes with estimates of the total economic impact on South Carolina's economy from the agribusiness industry.

2. Overview of Agriculture in South Carolina

South Carolina's agricultural industry has been an important component of the state's economy for hundreds of years. The industry touches every corner of the state and every county. The state's growing season ranges from 290 days in the south to less than 190 days in the northwestern mountains. South Carolina has four distinct seasons, with mountains blocking cold air masses from the northwest creating mild winters. Measurable snowfall may occur 1 to 3 times in a winter in all areas except the Lowcountry, where snowfall occurs on average once in every three years. Rain inland is enhanced annually by the occurrence of tropical storms, characterized by storm surge, precipitation, winds and tornadoes.

The average annual temperature in the state varies from the mid-50s in the mountains to the low-60s along the coast, with average winter temperatures in the mid-30s in the mountains and to low-50s in the Lowcountry and average summer temperatures from the mid-60s in the mountains to mid-70s in the Lowcountry.

South Carolina is one of the fastest growing states in the U.S., particularly in the Southeast, being home to well over four million people and expected to gain one million new residents, particularly in the coastal areas, by 2025. The 40th largest state, South Carolina has one of the fastest rural-to-urban conversion rates of all fifty states and is ranked ninth in terms of total land area developed annually. Land is being consumed by urban growth at a much higher rate than would be indicated by population growth figures alone.[2]

In 2006, of South Carolina's 19.27 million acres, 4.85 million acres, or 25.1%, were in farms. From 2001 to 2006, the number of farms increased from 24,400 to 24,700, an average increase of 0.04 % annually. In 2006, the 61.6 % of farms had 1 to 99 acres, 30.1 % had 100 to 499 acres, 4.5 % had 500 to 999 acres, and 3.9% had more than 1,000 acres.

The average farm in 2006 was 196 acres compared to 449 acres for the United States. The number of livestock operations during the same period decreased from 10,500 in 2001 to 10,200 in 2006. In 2005, South Carolina's farm real estate per acre average total $2,300, including land and buildings, with a cropland average value of $1,850 (2004).

As reported in the 2002 Census, approximately 43.5 % of the total number of farms had sales of less than $1,000, 41.2 % had sales in the $1,000 to $19,999 range, 7.9 % in the $20,000 to $99,999 range, 3.9 % in the $100,000 to $499,999 range, and 2.8 % of farms had sales over $500,000.

In 2006, South Carolina was ranked 35th in the nation in total value of agricultural products sold, 33rd in the value of crops (including nursery and greenhouse), and 32nd in the value of livestock, poultry and their products. South Carolina ranked 2nd in peaches and flue-cured tobacco, 4th in tobacco (all types), 6th in peanuts, 7th in watermelons, 8th in cantaloupe, cucumbers, and sweet potatoes, 9th in turkeys, and 10th in tomatoes and snap beans. Cash receipts from agriculture in South Carolina in 2006 totaled $1,891 million. Broilers had the largest cash receipts, followed by greenhouse-floriculture-nursery, turkeys, cattle and calves, cotton lint and seed, tobacco, eggs, corn, soybeans and hogs.

Table 1

SC Commodities Leading Commodities for Cash Receipts, 2006

Rank	Commodity	Value of Receipts (millions)	Percent of Total Receipts	Percent of US Value
		1,000 dollars	percent	
	All Commodities	1,890,661	100.0	
	Livestock Products	1,102,586	58.3	
	Crops	788,075	41.7	
1	Broilers	562,000	29.8	3.0
2	Greenhouse/nursery	282,947	15.0	1.7
3	Turkeys	177,523	9.4	5.1
4	Cattle and calves	140,946	7.5	0.3
5	Cotton	105,301	5.6	1.7
6	Tobacco	71,967	3.8	6.2
7	Chicken eggs	68,135	3.6	1.6
8	Corn	66,238	3.5	0.3
9	Soybeans	54,293	2.9	0.3
10	Hogs	51,031	2.7	0.4
11	Dairy products	42,350	2.2	0.2
12	Peaches	37,474	2.0	7.3
13	Peanuts	30,554	1.6	5.1
14	Wheat	27,114	1.4	0.4
15	Tomatoes	18,096	1.0	0.8
16	Watermelon	14,175	0.7	3.3
17	Hay	13,293	0.7	0.3
18	Cucumbers	7,803	0.4	1.9
19	Beans, snap	3,330	0.2	0.7
20	Squash	3,120	0.2	1.4
21	Cantaloupes	2,200	0.1	0.6
22	Sweet potatoes	2,106	0.1	0.7
23	Pecans	1,821	0.1	0.6
24	Farm Chickens	1,135	0.1	2.2
25	Sorghum grain	945	0.0	0.1

Source: ERS-USDA, 2007

South Carolina's most significant agricultural commodities in terms of dollar value, along with their corresponding U.S. market share, are shown in Table 2 below. In descending order they were broilers, greenhouse and nursery, turkeys, cattle and calves, and cotton.

Table 2

Top Five Agricultural Commodities 2006

Commodity	Value of Receipts Thousand $	Percent of State Total Farm Receipts	Percent of US Value
Broilers	$563,200	$29.8	3.0
Greenhouse/nursery	$282,947	15.0	1.7
Turkeys	177,523	9.4	5.1
Cattle and calves	140,968	7.5	0.3
Cotton	105,301	5.6	1.7
All Commodities	$1,890,661		0.8

Source: ERS-USDA, 2006

South Carolina's agricultural commodity exports in 2006 totaled $482.4 million. South Carolina's top five agricultural exports in terms of dollar value, along with their corresponding state ranking, were cotton and linters, poultry and products, other (nursery/greenhouse and miscellaneous vegetables), unmanufactured tobacco, and wheat and products.

Table 3

South Carolina Top Five Agricultural Exports 2006

Commodity	State Ranking	Cash Receipts (millions)
Cotton & linters	12	$91.9
Poultry & products	10	$83.2
Other	22	$75.7
Tobacco unmfd.	5	$58.9
Wheat & products	27	$45.9

Source: ERS-USDA, 2007

Exports for the category "Other" totaled $75.7 million, which included minor oilseeds, beverages other than juice, nursery and greenhouse, wine and miscellaneous vegetable products. Other agricultural exports included wheat and products, feed grains and products, soybeans and products, peanuts and products, cottonseed and products, fruits and preps, vegetables and preps, live animals and meat (excluding poultry), skins and hides, fats, oils and greases, dairy products, feeds and fodders, and seeds (ERS, USDA, 2006).

Table 4

2006 South Carolina Agricultural Exports

Commodity Group	Estimated Value
Feed grains and products	$24.8
Soybeans and products	$29.4
Peanuts and products	$11.2
Cottonseed and products	$ 2.3
Fruits and preps.	$14.9
Tree nuts	$ 1.2
Vegetables and preps.	$ 5.2
Live animals and meat (exc. Poultry	$14.0
Hides and skins	$13.5
Fats, oils and greases	$ 1.8
Dairy products	$ 2.8
Feeds and fodders	$ 9.4
Seeds	$ 2.7

Source: ERS-USDA, South Carolina Field Office, 2007

In 2006, South Carolina had 12.9 million acres of forest land, which represented 67 % of its land total. Hardwood and oak-pine timber types occupied approximately 6.9 million acres with planted pine stands amounting to 3.1 million acres and natural pine is 2.8 million acres. Eighty-eight percent of the forest land in South Carolina is in private ownership by approximately 363,000 owners, including families or individuals with 7.1 million acres and forest product companies with 3.8 million acres. South Carolina exports approximately $1 billion in forest products annually, and the state's forest industry ranks first in employment among South Carolina manufacturing sectors.

Crops in South Carolina

In 2006, cash receipts for crops in South Carolina totaled $787.5 million, with greenhouse, floriculture and nursery products contributing 35.7 %, cotton lint and cotton seed 13.3 %, tobacco 9.1 %, corn 8.4 %, soybeans 6.9 %, and other crops (peanuts, hay, oats, wheat, vegetables, sweet potatoes, peaches, pecans, apples, other fruits and nuts, tea, minor seed crops, miscellaneous field crops, and forest products) totaling 26.5 %.

South Carolina was ranked in the upper half of the nation for all of the major crops except for hay, winter wheat and apples.

Table 5

Crops Harvested, Acreage, State Ranking, and Cash Receipts, 2006

Crops	Acres Harvested	State Ranking	Cash Receipts (millions)
Corn for Grain	290,000	24	95.1
Cotton	298,000	12	99.8
Hay, All	360,000	38	44.5
Oats for Grain	18,000	23	1.8
Peanuts	56,000	6	30.7
Sorghum	7,000	19	1.0
Soybeans	390,000	22	76.9
Tobacco	23,000	2	71.9
Winter Wheat	123,000	26	18.8
Apples	600	31	.4
Peaches	14,000	2	37.5

Source: ERS-USDA, 2006

South Carolina's top crop counties included Lexington County for forage and corn, Kershaw County for forage and soybeans, York County for forage and cotton, Dillon County for soybeans, cotton and wheat, and Orangeburg County for corn, soybeans, wheat, cotton and forage.

Livestock and Livestock Products in South Carolina

In terms of number of head, broilers, chickens and turkeys were the predominant livestock in the state (Table 6). According to the National Agriculture Statistics Service for 2006, cash receipts from farm marketing for livestock products in South Carolina totaled $1.1 billion. Of that total, broilers contributed 56.2 %, turkeys 17.8 %, cattle and calves 14.1 %, eggs 6.8 %, and hogs 5.1 %. South Carolina is ranked tenth in the United States for the number of turkeys raised, 11th for goats, 12th for broilers, 20th for chickens, 21st for hogs, and 39th for cattle and calves.

Table 6

South Carolina Livestock and Poultry Inventories, 2006

Commodity	Inventory
All Cattle and Calves	410,000
All Hogs and Pigs	295,000
Average Number of Cows Milked	17,000
Milk Production (lbs.)	278,000
Goats, Meat and Other	44,000
Average Number of Layers	5,010,000
Egg Production	1,280,000,000
Turkeys Raised	9,600,000
Broilers Raised	227,100,000

Source: USDA-NASS, Statistics by State, 2006

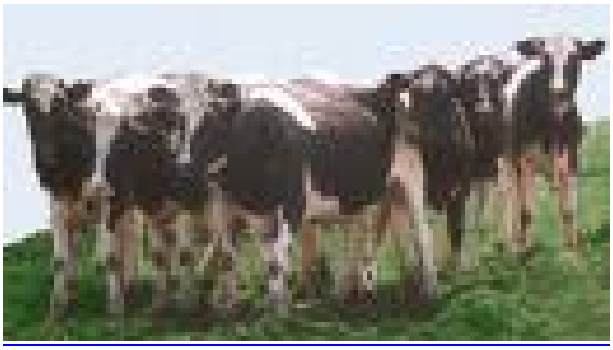

Table 7

Livestock Yield, Ranking and Cash Receipts, 2006

Commodity	Yield (millions)	State Ranking	Cash Receipts (millions)
Broilers	227.1	12	$563
Turkeys	9.6	9	$177
Cattle & Calves	.4	39	$141
Eggs	1.3	20	$ 68
Hogs	.3	21	$ 51

Source: S.C. Agricultural Statistics Service, 2007

South Carolina top livestock counties included Anderson (beef cattle and calves), Newberry (milk cows and calves), Kershaw (eggs, turkeys), Lexington, Oconee, Aiken, Saluda and Orangeburg (broilers). (NASS-USDA)

3. Overview of the Forestry Industry in South Carolina[3]

The forestry industry in South Carolina is as important to the state's economy as the agriculture industry -- and by some measures, even more so. It impacts every corner of the state and plays an important role in every county's natural resource base. Forests cover two-thirds of South Carolina's total land area. They provide clean air and water, wildlife habitat, recreation and natural beauty as well as a renewable forest products industry. Forests are essential to the state's economy, the environment, open space, and overall quality of life. The impact of forest products (forestry, logging, primary wood products and furniture manufacturing) on South Carolina's economy is over $17 billion annually and ranks second in value-added goods among the state's manufacturing sector. The state's forestry industry ranks first in employment among South Carolina's manufacturing sectors, employing 36,000 individuals. In 2006, South Carolina exported approximately $1 billion in forest products. Overall, forest product exports have increased by more than 59 % since 2001, from exports valued at $604 million in 2001 to exports valued at $962 million in 2006.

Between 2001 and 2006, the top forest product exported from South Carolina was paper and paperboard, which accounted for $2.5 billion or 58 % of South Carolina's forest product exports for the period. The number one export destination for these products was Canada, followed by China, Italy, Germany and Mexico. In particular, Canadian imports from South Carolina surged 65% in 2006. Kraft paper and paperboard accounted for almost 50 % of paper and paperboard exports.

Wood pulp product exports during 2001-2006 represented 32 % of South Carolina's forest product exports and were valued at $1.4 billion, with exports increasing every year within the period. Wood pulp products were exported primarily to customers the Netherlands and Italy, followed by Germany, South Korea and Japan.

Wood product exports amounted to $390 million in the period (9 % of total forest product exports), primarily lumber exports which accounted for $207 million (53 %). In recent years, however, lumber exports have experienced a significant decline – in 2006, lumber exports reached the lowest level since 2001 ($31.5 million worth of lumber exported in 2006 vs. $40.4 in 2004). Canada, Japan and China account for double-digit export shares of wood products with the balance of exports diversified across many countries.

Wood furniture ($47 million, 1 %) and pine oils ($526,000, < 1 %) also added to South Carolina exports during the period. Export destinations for wood furniture were Japan, Panama and Canada with pine oil exports destined primarily to Costa Rica, Chile and Jamaica. (South Carolina Forestry Commission, 2007)

Forest Products Industries[4]

South Carolina has 12.9 million acres of forest land, which represents 67% of the state's total land area. Hardwood and oak-pine timbers occupy over half the state's forest land, just over 6 million acres; planted pine stands amount to just over 3 million acres and natural pine is 2.8 million acres. Of these 12.9 million acres, approximately 11 million acres are held in private ownership, with families or individuals owning 7.1 million acres and forest product companies owning 3.8 million acres.

The impact of forest products (forestry, logging, primary wood products and furniture manufacturing) on South Carolina's economy is over $17 billion annually and ranks second in value-added goods among the state's manufacturing sector. The state's forestry industry ranks first in employment among South Carolina's manufacturing sectors, employing 36,000 individuals.

In 2003, Georgetown County had the highest cash receipts from timber harvests at a delivered value $48,632,766.

Table 8

County	Non-Industrial Private Forests Number of Acres	Non-Industrial Private Forests Percentage of Forests	Stumpage Value Paid to All Owners	Delivered Value of Timber	Value Rank by County
Georgetown	409,095	95	$30,178,695	$48,632,766	1
Newberry	311,340	87	$24,156,053	$42,720,226	2
Horry	431,391	91	$22,997,597	$33,367,793	3
Colleton	440,916	100	$20,283,083	$32,698,549	4
Aiken	376,455	86	$18,618,169	$29,706,370	5
Fairfield	366,672	93	$16,964,491	$28,117,563	6
Kershaw	320,228	100	$15,425,209	$27,560,714	7
Williamsburg	382,671	100	$16,461,338	$26,400,053	8
Hampton	228,104	92	$17,120,596	$26,199,543	9
Chesterfield	297,292	78	$14,195,956	$26,020,518	10

Source: SC Budget & Control Board, Office of Research and Statistics (data: 2003 South Carolina Agriculture Statistics Service).

.

Pulpwood and saw logs were the principal roundwood products in 2005. Combined output of these products accounted for 89% of South Carolina's total roundwood (576 million cubic feet) production and totaled 509 million cubic feet. Total receipts at South Carolina mills, which included roundwood harvested and retained in the State and roundwood imported from other States, totaled 582 million cubic feet. Seventy-five primary roundwood-using plants were active in the state in 2005.

Pulpwood

Pulpwood production, including chipped roundwood, accounted for 49 % of the state's TPO (timber product output) in 2005 and totaled 318 million cubic feet. Seven pulp mill facilities were operating and receiving roundwood in 2005. Seventy-five percent of roundwood cut for pulpwood was retained for processing at these pulp mills, and total receipts were 299 million cubic feet, or 51% of total receipts for all mills. Softwood output totaled 237 million cubic feet (3.4 million cords), and hardwood output totaled 81 million cubic feet (1.0 million cords). Roundwood pulpwood exports totaled 78 million cubic feet.

Saw Logs

Saw logs accounted for 40 % of the State's total roundwood products in 2005. Softwood saw log output totaled 234 million cubic feet; hardwood saw-log output amounted to 24 million cubic feet. In 2005, South Carolina had 48 sawmills; total saw-log receipts were 222 million cubic feet. Softwood saw-log receipts totaled 204 million cubic feet and hardwood saw-log receipts amounted to 18 million cubic feet.

Of the 48 mills operating in 2005, 35 % had receipts greater than 10 million board feet. Those 17 mills accounted for 90 % of saw-log receipts. Eight percent of the 48 mills operating in 2005 had receipts less than 1 million board feet. South Carolina retained 84 % of its saw-log production for domestic manufacture, with saw-log exports exceeding imports by 36 million cubic feet in 2005.

Veneer Logs

Output of veneer logs in 2005 totaled 42 million cubic feet and accounted for 6 % of South Carolina's total roundwood TPO volume. Softwood veneer production totaled 34 million cubic feet; output of hardwood veneer logs amounted to 7.3 million cubic feet. Eight veneer mills were operating in South Carolina in 2005. Receipts of veneer logs totaled 37.4 million cubic feet with softwood veneer receipts totaling 30 million cubic feet and hardwood veneer receipts totaling 7 million cubic feet. South Carolina retained 82 % of its veneer-log production for processing at domestic veneer mills with exports amounting to 7.6 million cubic feet and imports totaling 3.4 million cubic feet.

Composite Panels

Roundwood harvested from South Carolina's forests for composite panels totaled 24 million cubic feet in 2005, an increase of 33 % from 2003. Softwood output accounted for nearly all of composite panel production in South Carolina.

Other Industrial Products and Plant Byproducts

Roundwood harvested for other industrial uses such as poles, posts, mulch, firewood, logs for log homes, and all other industrial products totaled 4.3 million cubic feet in 2005, an increase of 13 % since 2003. Softwood made up all of the other industrial products volume. There were 11 plants producing other industrial products in 2005. In 2005, processing of primary products in South Carolina mills generated 186 million cubic feet of wood and bark residues. Coarse residues from all primary products amounted to 67 million cubic feet, and bark volume totaled 61 million cubic feet. Sawdust and shavings made up 31 % of total residues, or 58 million cubic feet.

Exports of Forest Products[5]

In 2006, South Carolina exported approximately $1 billion in forest products. Overall, forest product exports have increased by more than 59 % since 2001, from exports valued at $604 million in 2001 to exports valued at $962 million in 2006.

Between 2001 and 2006, the top forest product exported from South Carolina was paper and paperboard, which accounted for $2.5 billion or 58 % of South Carolina's forest product exports for the period. The number one export destination for these products was Canada, followed by China, Italy, Germany and Mexico. In particular, Canadian imports from South Carolina surged 65% in 2006. Kraft paper and paperboard accounted for almost 50 % of paper and paperboard exports.

Wood pulp product exports during 2001-2006 represented 32 % of South Carolina's forest product exports and were valued at $1.4 billion, with exports increasing every year within the period. Wood pulp products were exported primarily to customers the Netherlands and Italy, followed by Germany, South Korea and Japan.

Wood product exports amounted to $390 million in the period (9 % of total forest product exports); primarily lumber exports which accounted for $207 million (53 %). In recent years, however, lumber exports have experienced a significant decline – in 2006, lumber exports reached the lowest level since 2001 ($31.5 million worth of lumber exported in 2006 vs. $40.4 in 2004). Canada, Japan and China account for double-digit export shares of wood products with the balance of exports diversified across many countries.

Wood furniture ($47 million, 1 %) and pine oils ($526,000, < 1 %) also added to South Carolina exports during the period. Export destinations for wood furniture were Japan, Panama and Canada with pine oil exports destined primarily to Costa Rica, Chile and Jamaica.

Manufacturing Statistics for South Carolina: 2006

South Carolina manufacturing industries in agriculture and forestry included food, textile mills, paper, wood products, furniture and related products, textile product mills and apparel and, to a slight extent, beverage and tobacco products. In 2006, over $21 billion dollars of goods were shipped and over 75,000 South Carolinians were employed with a payroll of over $2.6 billion (Table 9).

As a group, the forest products group, which included wood product manufacturing, paper manufacturing, and furniture and related products, shipped the largest value of good, nearly $9.8 billion. The textile mills group, which included textile mills, textile products mills and apparel, shipped the next largest value of goods, over $7 billion, followed by food products at $4.3 billion.

Table 9

Manufacturing Statistics for South Carolina: 2006

	Employees (Number)	Annual Payroll (Thousand $)	Establishments (Number) (2005)	Value of Shipments (Thousand $)
Food	17,222	537,116	189	4,307,930
Beverage & Tobacco Products (2003)	738	22,935	19	44,278
Textile Mills	25,509	790,914	176	5,102,424
Textile Product Mills	3,607	83,071	153	1,546,055
Apparel	2,742	57,087	93	382,591
Wood Products	9,986	354,368	240	2,496,210
Paper	11,734	655,550	75	6,340,684
Furniture & Related Products	3,830	128,969	248	951,717
Total	75,368	2,630,010	1,193	21,171,889

Source: U.S. Census Bureau, Manufacture, Mining and Construction Statistics, Annual Survey of Manufactures: Geographic Area Statistics, 2006; Statistics of U.S. Businesses: 2005: NAICS 31: Manufacturing, South Carolina. Available online at http://www.census.gov/epcd/susb/2005/sc/SC31.HTM

The forestry and agriculture industry in South Carolina supports thousands of jobs across the state in a wide variety of job skills. Many of these jobs are relatively high wage jobs that pay well above the state average. A selected listing of some of these job sectors in South Carolina are shown below in Table 10 As seen from this brief overview, the industry generates and supports many high-skill, high wage jobs in South Carolina.

Table 10

Annual Wages for Selected Job Sectors

Industry	Average Annual Wages
South Carolina Average	***$34,528***
Pulp, paper, and paperboard mills	$69,264
Paperboard mills	$66,144
Paper manufacturing	$59,904
Packaged frozen food merchant wholesalers	$51,272
Reconstituted wood product manufacturing	$49,036
Farm product raw material merch. whls.	$48,516
Sawmill and woodworking machinery	$44,772
Food product machinery manufacturing	$43,680
Farm machinery and equipment manufacturing	$42,224
Dairy product merchant wholesalers	$41,236
Wood product manufacturing	$40,560
Poultry hatcheries	$38,792
Grain and oilseed milling	$38,376
Support activities for forestry	$37,648

Source: South Carolina Employment Security Commission, 2007:3

4. Agriculture and Forestry Based Tourism in South Carolina

In addition to producing food and fiber, the agriculture and forestry industry provides other benefits (rural amenities) to the state's economy. Some of these amenities are public goods and do not have a market – visitors can benefit from the scenic beauty provided by the rural environment. However, agri-tourism, also known as eco-tourism, farm tourism or agro-tourism, can be marketed as a private good. Agriculture and forestry based tourism activities refer to visiting a working farm or forest or any agricultural or forestry operation to enjoy, to be educated or to be involved in what is happening on the operation. Agri-tourism attracts tourists to local areas, generates income for the farm, and diversifies a destination's product. [6]

Agri-tourism's increasing popularity over the past decade has been spurred by both supply and demand. On the demand side, increase in discretionary income has driven increased interest in farm activities in concert with general demand for outdoor recreational activities. It has been estimated that 30% of the U.S. population, or roughly 62 million Americans, visited farms one or more times in 2000[7]. Trends and future projections predict increases in the number of trips, participants and activity days and increase of multi-activity trip, but a decrease in the duration of trips.[8] Americans as a whole are traveling more as a family and looking for activities involving experiences.[9] Finally, studies show growing awareness and concern by the American public for support of local farmers.

Table 11

Consumer Surplus of Farm Trips, U.S.

Average Consumer Surplus ($ per visitor)	312.5
Average Consumer Surplus due to rural landscape only ($ per visitor)	38.4
Estimated number of visits to farms during the year (millions)	640
Total Consumer Surplus due to rural landscape (billions $ per year)	24.6
Total net farm income (1990-2000 average) (billions $ per year)	48.2

Source: The Demand for Agri-tourism in the United States, Carpio, Wohlgenant, and Boonsaeng.

On the supply side, economic pressures have forced farmers and ranchers to diversify into non-agricultural activities: rising production costs, encroachment of suburban development, political pressures on farm subsidy programs, labor force pressures, and the elasticities of commodities markets 2% of farms realize income from agri-tourism, with a total of approximately $800 per year.[10] In a 1985 study of willingness to pay for environmental amenity benefits of agricultural land, aggregate amenity benefits were estimated at approximately $13 per acre (Bowker and Didychuk).[11]

During 2004 and 2005, 10% (23,067,110) of adult Americans participated in an agri-tourism activity while on an out-of-town, overnight trip of one or more nights. The most popular activities were visiting an entertainment farm (4.9%) or a fruit-picking farm (4.6%), followed by dining at a farm (2.8%) and visiting a harvesting or other farm operation (1.2%). Participating in agri-tourism was reported to be the main reason for taking at least one trip during 2004 and 2005 by nearly 24% of those participating, and those who participated in agri-tourism activities on trips traveled more frequently than the average U.S. pleasure traveler. During 2004 and 2005, 11.9% (377,875) of South Carolinians participated in agri-tourism activities representing 16% of the pleasure travelers in the state.[12]

Over the two-year period studied, U.S. travelers who participated in agri-tourism activities exhibited the following characteristics: were more active on trips than the average U.S. pleasure traveler; were more active in outdoor activities (especially horseback riding, cycling, board and blade activities, and extreme sports); were more likely to take tours and cruises (especially wilderness or countryside tours and fresh water cruises); most often stayed at public campgrounds; were especially likely to have engaged in family activities; were more likely to have visited educational attractions (e.g., historical sites, museums and art galleries, science and technology exhibits); were much more likely than average to stay in a country setting (e.g., farm or guest ranch); and were more likely to look for family-oriented vacations that are intellectually stimulating, physically challenging and offer many things to do for both adults and children.[13]

Vacationers who participated in agri-tourism activities on trips also were found to pursue a wide range of cultural and entertainment activities while traveling (e.g., shopping, dining, visiting historical sites, museums and art galleries, theme parks and exhibits, festivals and fairs) and was especially like to visit attractions suitable for children and that provide opportunities to learn, and were much more likely to attend theatrical and musical attractions and sporting events.

Agri-tourism activities in South Carolina include visits to farms, U-pick farms and orchards, state farmers markets and roadside stands for purchase of locally-grown products, processors and livestock culture, university and private agricultural research stations, farm-related bed and breakfast accommodations, bicycle or automobile touring through farming regions, agricultural fairs and festivals, regional cuisine restaurants, living history farms.[14]

While the impacts from agricultural and forestry based tourism are not fully quantified in this report, their impacts are substantial and growing. They can be generated in every community and in every county in the state and have great potential for increasing per capita income and improving the quality of life in South Carolina.

5. Economic Impact of the Forestry and Agriculture Industry

The economic impacts from the agriculture and forestry industries are outlined in this section of the report. This analysis utilizes impact models generated by the IMPLAN modeling system. IMPLAN is a nationally recognized system of local economic models that are specifically designed to represent a local economy such as the Columbia metropolitan area.[15] The IMPLAN models are modifications of the national input-output models developed by the Bureau of Economic Analysis, US Department of Commerce. The IMPLAN models incorporate the most recent data available and are 2006 unless otherwise noted.

The multipliers used in this analysis estimate three components of total change within the local area:

- *Direct effects* represent the initial change in the industry in question.
- *Indirect effects* are changes in inter-industry transactions as supplying industries respond to increased demands from the directly affected industries.
- *Induced effects* reflect changes in local spending that result from income changes in the directly and indirectly affected industry sectors.

And it must be noted, that these estimates are conservative in nature. They do not include any output, labor income or jobs related to the agri-tourism industry. While these activities are occurring in South Carolina, at this time we do not have accurate enough data to include them in this analysis.

Economic Impacts of Forestry

The forestry industry in South Carolina is a tremendous economic engine. As seen in Table 12 the forestry industry generates substantial contributions to output, labor income and jobs. The industry generates direct output of almost $10.8 billion a year. And like agriculture, the direct activity of the industry has indirect and induced impacts. Together, the direct and indirect impacts of the forestry industry total over $17.1 billion a year. A list of the individual industries included in the forestry industry in this analysis is provided in Appendix Table A-1.

It is important to note that the definitions of what is included in this analysis as the "forestry industry" and the "agriculture industry" may differ from the definitions used in other studies. Some studies include recreation based activities. Some include government workers. A 2000 study by Clemson University, the industry was defined as including the fiber sector (which the included textiles and apparel sectors).[16] *That study estimated a much larger industry in terms of output and employment. Neither definition is necessarily "right or wrong", but merely different in scope and perspective. For that reason, the estimates of industry size and economic impact in this study may differ from of other similar studies.*

The industry generates substantial labor income while producing this total output. The direct labor income is estimated to be almost $2.2 billion a year. Adding the indirect and induced effects of this direct activity, the forestry industry generates almost $4.0 billion in labor income a year.

The forestry industry is a major job producer also. The industry directly creates and supports over 36,000 jobs a year.[17] The industry supports another 47,000 jobs indirectly for a total employment impact on the state of 83,824 jobs.

Table 12
South Carolina
Agriculture & Forestry Economic Impacts
Forestry Industry

	Direct	Indirect	Induced	Total*
Output	$ 10,790,000,000	$ 4,057,408,000	$ 2,292,836,000	$ 17,140,244,000
Labor Income	$ 2,180,063,000	$ 1,087,402,000	$ 701,402,000	$ 3,968,867,000
Jobs	36,365	26,094	21,366	83,824

* Totals may not equal sum of components due to rounding.

Economic Impacts of Agriculture

Like the forestry industry, the agriculture industry in South Carolina is also a major economic engine. As seen in Table 13, the industry generates direct output of almost $10.0 billion a year. As with any economic activity, the direct activity of the industry has indirect and induced impacts. Together, the direct and indirect impacts of the agriculture industry total almost $16.8 billion.

The industry generates substantial labor income while producing this total output. The direct labor income is estimated to be $1.7 billion a year. Adding the indirect and induced effects of this direct activity, the agriculture industry generates almost $3.5 billion in labor income a year. (A list of the individual industries included in the agriculture industry in this analysis is provided in Appendix Table A-2.)

And finally, the agriculture industry is a major job generator. The industry directly creates and supports over 61,000 jobs a year.[18] The industry supports another 55,000 jobs indirectly for a total employment impact on the state of 115,645 jobs.

Table 13
South Carolina
Agri-Business Economic Impacts
Agriculture Industry

	Direct	Indirect	Induced	Total*
Output	$ 9,946,251,000	$ 4,731,486,000	$ 2,057,076,000	$ 16,734,813,000
Labor Income	$ 1,676,236,000	$ 1,181,210,000	$ 629,278,000	$ 3,486,724,000
Jobs	61,204	35,273	19,169	115,645

* Totals may not equal sum of components due to rounding.

The Combined Economic Impacts of Agriculture and Forestry

And finally, taken together, the agriculture and forestry industry in South Carolina is clearly one of the largest economic clusters and major economic engines in the state. Table 14 summarizes the combined economic impacts of the agribusiness industry. As seen below, the agribusiness industry generates substantial contributions to output, labor income and jobs. The combined industries generate direct output of almost $21.0 billion a year. The direct activity of the industry has indirect and induced impacts as well. Together, the direct and indirect impacts of the agriculture and forestry industry total almost $33.9 billion a year.

The agribusiness industry generates substantial labor income while producing this total output. The direct labor income generated by the agriculture and forestry industries is estimated to be almost $3.9 billion a year. Adding the indirect and induced effects of this direct activity, the combined industries generate almost $7.5 billion in labor income every year.

And finally, the job impacts of the agribusiness industry on the state's economy are tremendous. Together, these industries directly create and support over 97,000 jobs a year. In addition, the direct activity of the industry supports another 101,000 jobs indirectly for a total employment impact on the state of almost 200,000 jobs.

Table 14
South Carolina
Agri-Business Economic Impacts
Agriculture + Forestry

	Direct	Indirect	Induced	Total*
Output	$ 20,736,251,000	$ 8,788,894,000	$ 4,349,912,000	$ 33,875,057,000
Labor Income	$ 3,856,299,000	$ 2,268,612,000	$ 1,330,680,000	$ 7,455,591,000
Jobs	97,568	61,367	40,534	199,469

* Totals may not equal sum of components due to rounding.

These estimates of economic impact are somewhat conservative since they do not include many activities that can be and are often included as part of the "agriculture" or "forestry" industry. For example, some studies include food stores and restaurants as part of the agriculture industry; however they are excluded in this study. As noted earlier, some studies have included the fiber industry, but the fiber industry has also been excluded in this study. Some forestry studies include various recreational activities and government employees involved in the forestry industry in their industry descriptions – these have not been included in this study. The authors of this study do not dispute these approaches but chose to exclude them to be more conservative in nature. Including these other activities would only increase the magnitude of the industry and the overall economic impacts estimated here.

In addition, this study does not include the eco-tourism or other tourism type activities that could also be included. For example, this study does not include the tremendous impacts of hunting and fishing activities in the state. The 2006 US National Fishing, Hunting and Wildlife Associated Recreation study estimates that there are over $829 million of related expenditures.[19] Most of these activities are conducted on forestry and agricultural land.

And finally, it is important to note that this study looks at historical data and does not include the tremendous impacts of the industry in the future. For example, the agriculture and forest industry will play an essential role in advancing production and use of biomass energy resources and technologies for economic development and environmental sustainability. This will be accomplished by converting renewable feedstocks into bio-energy and bio-products. It will also foster energy security and be a critical component needed to revitalize the state's rural economy. These two industries will also play an important role in the state's efforts to promote economic development in the more rural areas of the state.

[1] SC Dept of Commerce, https://agriculture.sc.gov/
[2] South Carolina Dept. of Agriculture, 2008; The Nature Conservancy, 2006
[3] South Carolina Forestry Commission, 2007
[4] The data in this section are from T.G. Johnson and N. Smith, South Carolina's Timber Industry-An Assessment of Timber Product Output and Use, 2005.
[5] South Carolina Forestry Commission, 2007
[6] This discussion of agri-tourism does not include activities of hunting and fishing in South Carolina. It is estimated by the 2006 US National Survey of Fishing, Hunting and Wildlife that total expenditures in South Carolina in 2006 were over $829 million.
[7] Barry, J.J., and D. Hellerstain. "*Chapter 9: Farm Recreation*." In: Outdoor Recreation for 21st Century America" pp.149-167. A Report to the Nation: The National Survey on Recreation and the Environment. H.K. Cordell, Principal Author. Venture Publishing, Inc., State College, PA. 293 p. 2004
[8] English, D.B.K., H.K. Cordell, and J.M. Bowker. "Implications of this Assessment." In: Outdoor Recreation for 21st Century America" pp.149-167. A Report to the Nation: The National Survey on Recreation and the Environment. H.K. Cordell, Principal Author. Venture Publishing, Inc. State College, PA. 293 p. 2004
[9] Randall, J.L., and L.D. Gustke. *Top Ten Travel and Tourism Trends 2003*. Randall Travel Marketing, Inc. 18 p. (Available online at http://www.rtmnet.com/ Portals/cbae4f9e-04c4-4eba-a81b-780046ab046b/ 2003TravelTrends.pdf, as of February, 2005).
[10] Fleischer, A. and Pizam, A. "Rural Tourism in Israel." *Tourism Management*, 18 (1997):367-372.
[11] Bowker, J.M. and D.D. Didychuk."Estimation of the Nonmarket Benefits of Agricultural Land Retention in Eastern Canada." *Agricultural Resource Economics Review* (October)(1994): 218-225.
[12] "U.S. Travel Motivations and Travel Survey 2006: U.S. Activity Profile: Participating in Agro-Tourism While on Trips", Prepared by Lang Research Inc on behalf of: Ontario Ministry of Tourism, Ontario Tourism Marketing Partnership Corporation, Quebec Ministry of Tourism, Travel Manitoba, Canadian Tourism Commission, Tourism Saskatchewan, Atlantic Canada Tourism Partnership, Alberta Tourism, Parks, Recreation and Culture, Department of Canadian Heritage, Tourism British Columbia, Parks Canada Agency, Government of Yukon, Government of Northwest Territories. Available online at http://www.tourism. gov.on.ca/eng
[13] "U.S. Travel Motivations and Travel Survey 2006: U.S. Activity Profile: Participating in Agro-Tourism While on Trips", Prepared by Lang Research Inc on behalf of: Ontario Ministry of Tourism, Ontario Tourism Marketing Partnership Corporation, Quebec Ministry of Tourism, Travel Manitoba, Canadian Tourism Commission, Tourism Saskatchewan, Atlantic Canada Tourism Partnership, Alberta Tourism, Parks, Recreation and Culture, Department of Canadian Heritage, Tourism British Columbia, Parks Canada Agency, Government of Yukon, Government of Northwest Territories. Available online at http://www.tourism. gov.on.ca/eng
[14] Agri-Tourism, Virginia Cooperative Extension, Publication Number 310-003, posted November 2001
[15] IMPLAN is regional modeling system developed by MIG, Inc., Stillwater, MN.
[16] "Economic Impact of the Food, Fiber and Forestry System on the South Carolina Economy", Clemson University, 2000.
[17] This total does not include public sector employees that are involved in the forestry industry such as the South Carolina Forestry Commission, Clemson University and others.
[18] This total does not include public sector employees that are involved in the agriculture industry such as the South Carolina Department of Agriculture, Clemson University and others.
[19] 2006 US National Survey of Fishing, Hunting and Wildlife, U.S. Fish and Wildlife Service

Appendix A

Table A-1
Industries Included in Forestry Sector

Industry	Industry Output*
Logging	$1,129
Forest nurseries- forest products- and timber	$191
Agriculture and forestry support activities	$219
Maintenance and repair of farm and nonfarm re	$210
Sawmills	$913
Wood preservation	$230
Reconstituted wood product manufacturing	$362
Veneer and plywood manufacturing	$236
Engineered wood member and truss manufacturin	$249
Wood windows and door manufacturing	$109
Cut stock- resawing lumber- and planing	$5
Other millwork- including flooring	$155
Wood container and pallet manufacturing	$102
Manufactured home- mobile home- manufacturing	$40
Prefabricated wood building manufacturing	$44
Miscellaneous wood product manufacturing	$55
Pulp mills	$1
Paper and paperboard mills	$3,062
Paperboard container manufacturing	$1,595
Surface-coated paperboard manufactuing	$17
Coated and laminated paper and packaging mate	$318
Coated and uncoated paper bag manufacturing	$166
Die-cut paper office supplies manufacturing	$45
Envelope manufacturing	$0
Stationery and related product manufacturing	$150
Sanitary paper product manufacturing	$675
All other converted paper product manufacturi	$258
Farm machinery and equipment manufacturing	$79
Sawmill and woodworking machinery	$21
Paper industry machinery manufacturing	$11
Wood kitchen cabinet and countertop manufactu	$217
Upholstered household furniture manufacturing	$10
Nonupholstered wood household furniture manuf	$73
Wood office furniture manufacturing	$10
Custom architectural woodwork and millwork	$21
Totals	$10,978

*Millions of dollars

Table A-2
Industries Included in Agriculture Sector

Industry	Industry Output*
Oilseed farming	$61
Grain farming	$77
Vegetable and melon farming	$53
Tree nut farming	$2
Fruit farming	$57
Greenhouse and nursery production	$295
Tobacco farming	$58
Cotton farming	$98
All other crop farming	$80
Cattle ranching and farming	$216
Poultry and egg production	$769
Animal production- except cattle and poultry	$111
Fishing	$6
Hunting and trapping	$62
Agriculture and forestry support activities	$219
Maintenance and repair of farm and nonfarm re	$210
Dog and cat food manufacturing	$257
Other animal food manufacturing	$67
Flour milling	$121
Wet corn milling	$32
Soybean processing	$169
Other oilseed processing	$147
Fats and oils refining and blending	$10
Confectionery manufacturing from cacao beans	$2
Confectionery manufacturing from purchased ch	$16
Nonchocolate confectionery manufacturing	$6
Frozen food manufacturing	$362
Fruit and vegetable canning and drying	$261
Fluid milk manufacturing	$345
Cheese manufacturing	$23
Dry- condensed- and evaporated dairy products	$6
Ice cream and frozen dessert manufacturing	$2
Animal- except poultry- slaughtering	$505
Meat processed from carcasses	$344
Rendering and meat byproduct processing	$124
Poultry processing	$1,986
Seafood product preparation and packaging	$0
Frozen cakes and other pastries manufacturing	$63
Bread and bakery product- except frozen- manu	$259
Cookie and cracker manufacturing	$17
Mixes and dough made from purchased flour	$40
Dry pasta manufacturing	$77
Other snack food manufacturing	$47
Coffee and tea manufacturing	$60
Mayonnaise- dressing- and sauce manufacturing	$52
Spice and extract manufacturing	$71
All other food manufacturing	$54
Soft drink and ice manufacturing	$789
Breweries	$3
Wineries	$3
Cigarette manufacturing	$21
Other tobacco product manufacturing	$1
Leather and hide tanning and finishing	$0
Farm machinery and equipment manufacturing	$79
Lawn and garden equipment manufacturing	$776
Food product machinery manufacturing	$2
Veterinary services	$375
Totals	$9,946

*Millions of dollars

METHODOLOGY

This study estimates the economic impacts on the state of South Carolina of the agriculture and forestry industries. The methodology used in this study is the IMPLAN regional input-output modeling system developed by MIG, Inc. of Stillwater, Minnesota. This study uses 2006 data, the most recent data available for the IMPLAN models.

IMPLAN was developed by MIG, Inc. as a cost-effective means to develop regional input-output models. The IMPLAN accounts closely follow the accounting conventions used in the "Input-Output Study of the US Economy" by the Bureau of Economic Analysis (1980) and the rectangular format recommended by the United Nations.

The IMPLAN Input-Output Model mathematically describes commodity flows from producers to intermediate and final consumers. Purchases for final use (final demand) drive the model. Industries producing goods and services for final demand also purchase goods and services from other producers. These other producers, in turn, purchase goods and services. This buying of goods and services (indirect purchases) continues. Leakages from the region eventually stop the cycle.

The IMPLAN input-output model mathematically derives the indirect and induced effects. The resulting multipliers describe the change in output for every regional industry caused by a one-dollar change in final demand for any given industry. The notion of a multiplier rests upon the difference between the initial effect of a change in final demand and the total effects of that change. Total effects are the direct effects plus indirect effects, plus induced effects. Direct effects are the production changes associated with initial final demand changes. Indirect effects are production changes in backward-linked industries caused by the changing input needs of directly effected industries. Induced effects result from the household expenditures from the directly or indirectly generated labor income.

The multipliers used in this analysis estimate three components of total change within the local area:

* *Direct effects* represent the initial change in the industry in question.

* *Indirect effects* are changes in inter-industry transactions as supplying industries respond to increased demands from the directly affected industries.

* *Induced effects* reflect changes in local spending that result from income changes in the directly and indirectly affected industry sectors.

This cycle of spending continues until leakages from the region (spending on goods and services outside the area) stop the cycle. Due to these multiplier effects, the initial, direct investment results in indirect and induced impacts of many more dollars.

In essence, the multipliers estimated by this methodology represent the consecutive rounds of buying and selling that ripple through an economy. To produce one dollar of new product, employees must be hired and paid. The wages paid to these workers will then be spent on goods and services, such as food, gasoline, clothes, housing, etc. within the region and outside the region. As these cents are spent, they become income to the recipient, and the spending continues over and over again. The induced effect is the cumulative amount of spending.

The economic activity of the project also requires intermediate inputs to be purchased such as electricity, raw materials, transportation services, labor etc. These expenditures become income to the recipient and pay for the purchases of raw materials, labor, etc. They, in turn, are then spent over and over again in the economy. Purchases made from outside the region are considered "leakages" from the economy. The consecutive rounds of selling goods and services continue until these leakages from the region end the cycle. The indirect effect is the cumulative amount of such spending.

The IMPLAN databases consist of two major parts: national-level matrices and tables and economic and physical data at the county and/or state level. The national matrices are used with regional data to create a regional model.

The following national-level matrices are included with each IMPLAN database.

1. The *National Absorption Table* is a coefficient form of the National Use Table derived by dividing each element of the Use Table by the respective industry's total dollar output. The resulting Absorption Table shows how an industry spends each dollar of outlay on goods and services to produce a dollar of output. Each column is an industry's production function reflecting the proportions of commodities used to produce one dollar of output.
2. The *National Byproducts Table* is a coefficient form of the National Make Table derived by dividing each element by the Make Table row (industry) totals. Each industry can produce more than one commodity. The Byproducts Tables shows what percentage of an industry's total output each commodity represents.
3. Deflators are used to adjust values from one time period to another.
4. Margins split a purchaser price into the appropriate producer values.

The local economic data in an IMPLAN database include Industry Output, Employment, Value Added and Final Demands. The value-added components are employee compensation, proprietors' income, other property type income, and indirect business taxes. The final demands components in the initial Final Demands Table are personal consumption expenditures, state and local education and non-education purchases, federal military and non-military purchases, inventory purchases and capital formation. Regional data is applied to the national matrices to create a set of regional accounts.

GENERAL LIMITING CONDITIONS

This economic impact analysis is not a budget or forecasting document and is not intended to depict a definitive course of action. Moreover, economic impact analysis is not designed as a space or facility-planning document. Many assumptions underlying fiscal and economic impact analyses are based on policy decisions which, if modified, would affect the overall results.

This study is based on estimates, assumptions and other information developed by Miley, Gallo & Associates, LLC from its independent research effort, consultations with the client and its representatives, and primary and secondary sources. We have utilized sources that are deemed to be reliable but cannot guarantee their accuracy. Moreover, estimates and analysis are based on trends and assumptions and, therefore, there will usually be differences between projected and actual results because events and circumstances frequently do not occur as expected, and those differences may be material. No responsibility is assumed for inaccuracies in reporting by the client, the client's agent and representatives or any other data source used in preparing this study.

This report is based on information that was current as of August, 2008 and Miley, Gallo & Associates, LLC has not undertaken any update of its research effort since that date. We have no obligation, unless subsequently engaged, to update this report or revise this analysis as presented due to events or conditions occurring after the date of this report.

Possession of this study does not carry with it the right of publication thereof or to use the name of "Miley, Gallo & Associates, LLC" in any manner without first obtaining the prior written consent of Miley, Gallo & Associates, LLC. No abstracting, excerpting or summarization of this study may be made without first obtaining the prior written consent of Miley, Gallo & Associates, LLC. This report is not to be used in conjunction with any public or private offering of securities or other similar purpose. This study may not be used for purposes other than that for which it is prepared or for which prior written consent has first been obtained from Miley, Gallo & Associates, LLC.

This study is qualified in its entirety by, and should be considered in light of, these limitations, conditions and considerations.

MILEY, GALLO & ASSOCIATES, LLC

Miley, Gallo & Associates is one of the Southeast's leading economic and financial consulting firms. The firm specializes in economic impact analyses, fiscal impact analyses, feasibility reports, impact fee studies and benefit/cost modeling. Our clients include national and prominent local real estate developers, school districts, local governments, regional development agencies, and other private sector development firms. Miley, Gallo & Associates partners appear regularly before decision-makers at all levels of government and understand the values, needs and desires of the clients they represent. With offices located in Research Triangle Park, North Carolina and Columbia, South Carolina, the firm is well positioned to provide clients with hands-on service for projects throughout the entire Southeast region.

Miley, Gallo & Associates appreciates that every research project is unique and deserves a custom solution. Public policy decisions are not made overnight, and we excel at providing advice and counsel along the way. We represent our clients. Our business plan is simple: we focus on exceeding our client's expectations and building long-term relationships.

The roots of Miley, Gallo & Associates, LLC can be traced to 1993 when Harry W. Miley, Jr. Ph. D. founded Miley & Associates, Inc. After several years of successful client collaborations, Lucy L. Gallo and Dr. Harry Miley decided to leverage the depth of their experience in the accounting, finance and economic aspects of real estate transactions to form Miley, Gallo & Associates, LLC. The Company is an economic and financial consulting firm providing a range of analytical services to public and private sector clients. Miley, Gallo & Associates conducts fiscal and economic impact analyses of proposed new developments and has extensive experience in assisting clients with their economic development and community revitalization projects.