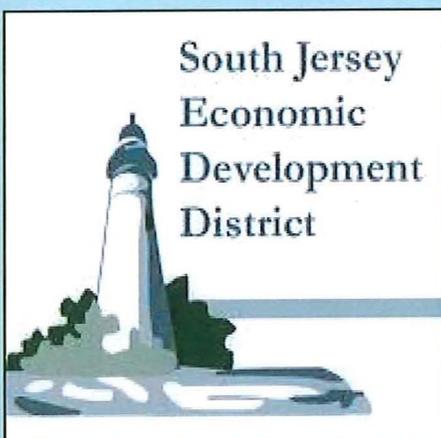


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ESTIMATING THE ECONOMIC CONTRIBUTION AND IMPACT OF THE POWER GENERATING INDUSTRY AND OTHER KEY INDUSTRY SECTORS ON THE ECONOMY OF SOUTHERN NEW JERSEY

An Analysis of the Regional Economy and An Assessment of Resiliency Opportunity



February 2020

By the South Jersey Economic Development District

SOUTHERN NEW JERSEY ECONOMIC IMPACT AND RESILIENCY ANALYSIS

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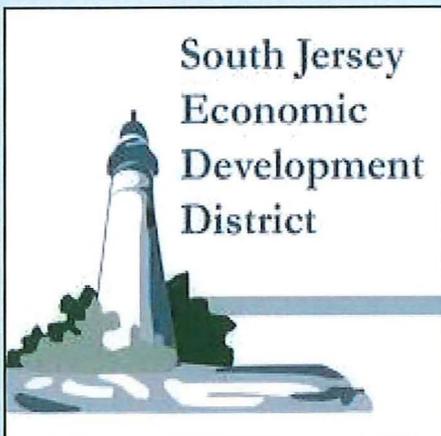
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**SOUTH JERSEY
ECONOMIC
DEVELOPMENT
DISTRICT**

**2019 Resiliency
Report**

TAB 1

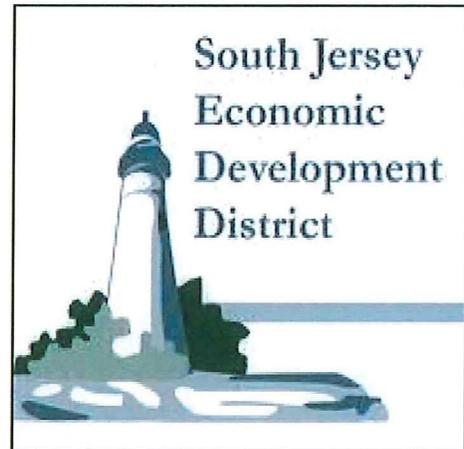
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SOUTH JERSEY ECONOMIC DEVELOPMENT DISTRICT RESILIENCY STUDY, 2019

INTRODUCTION

The South Jersey Economic Development District (SJEDD) is an organization consisting of a four-county collaboration inclusive of Atlantic, Cape May, Cumberland and Salem Counties. The SJEDD was certified by the US Economic Development Administration to foster regional coordination of US EDA grants and to address other regional economic development initiatives and challenges.



This Resiliency Study, sponsored by the SJEDD, examines the regional economy to assess its resiliency, particularly in light of what might be near or longer term impacts from one of the more significant industrial and employment sectors – including energy generation. Specifically, the study examines the various sectors of the economy to determine their current characteristics and potential for growth. In particular, the examination focuses on the economic impacts of two electric generating companies: the PSEG nuclear station: the Hope Creek and Salem plants in Salem County, New Jersey and the B.L. England Plant, a coal fired generating station in Cape May County which terminated its operations in May 2019. In order to get an assessment of the impacts stemming from the potential closings or downsizings of these facilities, it is important to understand the characteristics of the county and regional economies today. The energy sector is particularly significant since it employs a large percentage of the region’s high technology workforce. If this sector is impacted adversely or if power generation disappears as a source of employment in the regional economy, local officials and the SJEDD need to plan for ways to offset such impacts and provide for new high technology jobs. A report which focuses on the impact of the PSEG nuclear facilities, *The Brattle Report*, is referenced at several points throughout this analysis.

This study first takes a look at the economy of the South Jersey Region. This economic overview helps to put into perspective the contributions of energy employment and its related economic impact today. That analysis is included in Section 1 of the study. Section 2 then takes a look at the energy industry nationwide to assess trends in nuclear and coal fired power generation. Case studies that indicate how other communities have dealt with downsizing or closings are illustrated. These case studies provide some guidance and possible courses of action to mitigate the economic impact of potential closings in the South Jersey Region.

The final two sections of the study look specifically at the two major power generating facilities mentioned previously. Current employment and economic contributions to the region from the

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power and other sectors of the regional economy are examined relative to what might be anticipated regarding any possible downsizing or closings.

Suggestions are then developed that the SJEDD might initiate to mitigate disruptions in employment and the regional economy over the next several years. It is important that such policies begin to evolve now so that other economic sectors can be identified and promoted both locally and regionally to foster the economic resiliency of the region and enhance the quality of life that most residents of the southern New Jersey region enjoy.

As a result of the study's findings, there is a need to explore further the sectors of the regional economy where additional investment may be needed. Such investment might include identifying new development sites; targeting new technologies; expanding infrastructure; repositioning the workforce; or tackling other issues that advance economic resiliency. In order to offset or mitigate a loss of jobs in any sector of the regional economy, and particularly the energy generation industry, the region will have to focus on opportunities in a range of high technology jobs, which do not exist at the present time.

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SECTION 1 THE SOUTH JERSEY REGION TODAY

Industry and Employment Counts

The South Jersey Economic Development District is comprised of Atlantic, Cape May, Cumberland and Salem Counties. In each county there are small urban areas which have the highest concentration of jobs and population. These locations include Atlantic City and Hammonton in Atlantic County; Vineland, Bridgeton and Millville in Cumberland County; Middle and Lower Townships in Cape May County; and the Salem-Pedricktown Corridor in Salem County.

According to the District's 2017 Comprehensive Economic Development Strategy, (CEDs), the sectors that employ the greatest number of people are quite similar throughout the four-county region and are mostly service or retail oriented. Nearly all of the counties in the South Jersey Economic Development District experienced declines in the number of employees across all industries between 2006 and 2016, except for health care and social assistance, according to the most recent data from the US Census *County Business Patterns*. Over the same period, the number of establishments increased across most sectors except in the health care, social assistance and utilities sectors where the consolidation of establishments continues. In order to obtain a more recent snapshot of employment and industry, ESRI data were also examined. The following narrative summarizes the key employment and establishment trends in the four-county region using 2019 estimates from ESRI.¹

Table 1
Breakdown of Business and Employment Establishments

Industry Sector	Jurisdiction				
	Atlantic	Cape May	Cumberland	Salem	Region
Agriculture & Mining	222	111	121	99	553
Construction	776	518	276	154	1,724
Manufacturing	200	111	194	55	560
Transportation	270	158	149	65	642
Communication	98	28	50	14	190
Utilities	38	11	18	11	78
Wholesale Trade	270	119	190	64	643
Retail Trade	2,514	1,558	1,127	415	5,614
Finance, Insurance, Real Estate	796	578	310	152	1,836
Services	4,012	2,024	1,759	797	8,592
Government/Public Administration	477	370	233	180	1,260
Unclassified	235	154	114	47	550
TOTAL ESTABLISHMENTS	9,908	5,740	4,541	2,053	22,242

Source: ESRI, 2019

¹ ESRI is a data clearinghouse which estimates employment and industry counts using Dun & Bradstreet, Census and other nationally recognized databases.

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Table 1 illustrates the most recent estimates for the number of business and employment establishments for each county and the four-county region as a whole. As can be seen from the table, the figures mirror the patterns noted by County Business Patterns. The retail and service sectors clearly dominate the region, comprising more than 50% of all establishments.

Table 2 enumerates employment by industry sector. Again, the retail and service sectors are the dominant employers in each county throughout the region. However, construction, manufacturing and public administration all show significant concentrations of employment. A more detailed examination of each county follows.

Table 2
Breakdown of Regional Employment

Industry Sector	Jurisdiction				
	Atlantic	Cape May	Cumberland	Salem	Region
Agriculture & Mining	1,526	457	1,454	498	3,935
Construction	4,659	2,525	2,016	1,498	10,698
Manufacturing	3,057	953	7,292	2,337	13,639
Transportation	3,507	1,291	1,814	1,154	7,766
Communication	770	139	285	53	1,247
Utilities	1,348	91	332	64	1,835
Wholesale Trade	2,445	980	2,898	454	6,777
Retail Trade	30,487	18,391	13,288	5,134	67,300
Finance, Insurance, Real Estate	6,025	4,335	2,190	1,042	13,592
Services	125,065	23,750	20,261	8,936	178,012
Government/Public Administration	13,093	7,467	7,245	1,816	29,621
Unclassified	298	111	94	74	577
TOTAL EMPLOYMENT	192,280	60,490	59,169	23,060	334,999

Source: ESRI, 2019

Need for Additional Diversification – Atlantic County

In Atlantic County, the service economy is the dominant economic sector. 65% of all county employment is found in this sector. A breakdown of the service sector reveals the following. Not surprisingly, hospitality businesses such as hotels, motels, amusements and other entertainment businesses account for 66,131 jobs of the total 125,065 in this sector. This is followed by health services, with 20,595 jobs and educational services with 9,859 jobs. As such, it is no surprise that two of the largest employers in Atlantic County are the Borgota Hotel and Casino and Bally's Park Place Casino. Two hospital systems also employ a large number of people in the region, including AtlantiCare and Shore Memorial Hospital. The FAA Technical Center is also a large employer and provides a nucleus for future industry diversification.

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A Shifting Tide - Cape May County

Cape May County is even more dependent on the retail and services sectors of the economy. These two sectors comprise over 87% of total employment in the County. Like Atlantic County, the tourism industry dominates. Food and beverage stores are the dominant retail activity, and restaurants and accommodations comprise the dominant service sectors. Public administration is also a large service provider. The accommodations, food service, and retail trade depend heavily on healthy discretionary spending by consumers. Therefore, seasonal impacts or declines in tourism, can negatively impact the stability of the County's economy.

This cyclical trend is confirmed through analysis by the *Cape May County Economic Outlook* prepared by Stockton University in January 2019. According to this analysis, a net of approximately 2,100 jobs were added in the County since 2017 while the leisure and hospitality industry lost approximately 700 jobs. The additional jobs were added to health care and social assistance, professional business services and local government. This diversification indicates slow but steady progress in economic recovery which is central to both sustaining economic growth in the region and future economic resiliency.

The largest employers in Cape May County include the US Coast Guard Training Center, Cape Regional Medical Center, Atlantic Cape Community College, Morey's Piers, Atlantic Pier Amusements, and Cold Springs Fish and Supply Company.

The Manufacturing Center - Cumberland County

The economy in Cumberland County is more diverse than in Atlantic and Cape May. While the service and retail sectors are certainly significant and comprise 56% of all employment, manufacturing is also a large employer. Just over 12% of County employees work in manufacturing. The percentage is similar for public administration. The total number of employees in the County is 59,169. Within the manufacturing sector, food processing and cold storage are particularly significant. The Rutgers Food Innovation Center and a new Food Specialization Center currently under construction are major catalysts in any future growth and expansion in this industry.

The largest employers in Cumberland County include Inspira Medical Center, Durand Glass Manufacturing, Shoprite, Wal-Mart, F & S Produce, and Wawa.

Threatened Industries - Salem County

The economy in Salem County is the most diversified of any of the four counties within the South Jersey Economic Development District Region. Four industries make up over 75% of the employment in Salem County. These include manufacturing, retail, services, and public administration. Construction, transportation and warehousing are also significant employment sectors.

Within the service sector, which as in the case of the other counties, is the largest employment sector, educational services and healthcare services dominate. The largest employers in Salem

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County are PSEG, Chemours, Mannington Mills Inc., and Salem Medical Center. PSEG hosts many of the region’s high technology jobs, so any loss or downsizing of the power industry will leave a significant gap in technology employment.

Examining Regional Employment Trends

It is difficult to establish a trend line that incorporates the most recent 2019 data with an historical data series. The SJEDD Comprehensive Economic Development Strategy, CEDS, provided a look at 2012 information from ESRI, so that data offers a good 7 year trend in the various employment and business sectors. Table 3 illustrates these trends.

Table 3
Regional Business and Employment Trends, 2012 – 2019

Industry Sector	Number of Businesses			Number of Employees		
	2012	2019	% Change	2012	2019	% Change
Agriculture & Mining	708	553	(21%)	3,272	3,935	20%
Construction	2,717	1,724	(37%)	15,923	10,698	(33%)
Manufacturing	648	560	(14%)	16,079	13,639	(15%)
Transportation	906	642	(29%)	8,621	7,766	(10%)
Communication	181	190	5%	1,818	1,247	(31%)
Utilities	121	78	(36%)	2,448	1,835	(25%)
Wholesale Trade	1,106	643	(42%)	8,780	6,777	(23%)
Retail Trade	6,578	5,614	(15%)	77,285	67,300	(13%)
Finance, Insurance, Real Estate	2,224	1,836	(17%)	15,155	13,592	(10%)
Services	10,444	8,592	(18%)	142,239	178,012	25%
Public Administration	1,552	1,260	(19%)	35,723	29,621	(17%)
Unclassified	454	550	21%	1,674	577	(66%)
TOTAL EMPLOYMENT	27,639	22,242	(20%)	329,017	334,999	2%

Source: ESRI, 2012, 2019. Negative percentages are shown in (parentheses.)

As can be seen from this table, the trend lines in the industry sectors are alarming. Modest to significant declines in both business establishments and employment are found in almost all industry sectors. The major employment gain is seen in the services sector, where despite a decrease in the number of establishments, there has been a significant increase. This is due to an expanding health care industry and the sizeable rebound in the entertainment and hospitality industries, post recession. The “Great Recession” clearly took a toll on the numbers of businesses in the region and the employment base.

Location Quotients as They Define the Regional Economy

A location quotient is a value that provides a general measure of a local economy, when compared to a larger economic base. This comparison can show how employment is concentrated in one or more industrial sectors. Where there is a comparative concentration of employment the location quotient will be greater than one. Where a particular sector

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represents a smaller share of the local economy, as compared to the larger economic base, the location quotient will be less than one.

Where quotients are greater than one that generally means that there are conditions in the local economy that are favorable for that particular economic sector. Such conditions can include geographic location, highway access, labor force characteristics, an industrial heritage, or other factors. Location quotients can also show the extent to which an economy is dependent on a few industry sectors and highlight the need for diversification. Table 4 illustrates location quotients by County and the SJEDD Region.

Table 4
Location Quotient by County Compared to State of New Jersey, 2019

INDUSTRY SECTOR	ATLANTIC COUNTY	CAPE MAY COUNTY	CUMBERLAND COUNTY	SALEM COUNTY	SJEDD REGION
Agriculture & Mining	.88	.89	2.78	2.44	1.3
Construction	.63	1.11	.89	1.71	.84
Manufacturing	.19	.19	1.46	1.20	.48
Transportation	.60	.70	1.03	1.67	.77
Communication	.67	.33	.83	.33	.62
Utilities	1.00	.29	.85	.43	.79
Wholesale Trade	.29	.36	1.11	.45	.46
Retail Trade	.83	1.60	1.18	1.17	1.06
Finance, Insurance, Real Estate	.43	1.00	.57	.63	.56
Services	1.46	.88	.77	.87	1.19
Public Administration	.95	1.73	1.70	1.11	1.25
Unclassified	.50	.50	.50	.75	.43

Source: ESRI, 2019. Utility employment may be underreported, particularly in Salem County because employment is reported to corporate headquarters in a different location.

Not surprisingly, the industries with location quotients greater than one in each of four counties align with their major industry sectors or are complimentary industries. For example, the service industry employment has a location quotient over 1 in Atlantic County where the hospitality and entertainment businesses are particularly strong.

Industry sectors in Cumberland and Salem Counties, where employment is not dominated by tourism related sectors reflect more closely, the characteristics of the Statewide economy. Further research and analysis into these industry quotients may inform South Jersey leadership as to the resources or skills that are lacking among the four-county region inhibiting these industries from expanding to Southern New Jersey. *The lack of employment in key technology sectors such as communication and utilities also highlights the importance of the power generating industry and its related businesses as critical components in the regional economy.*

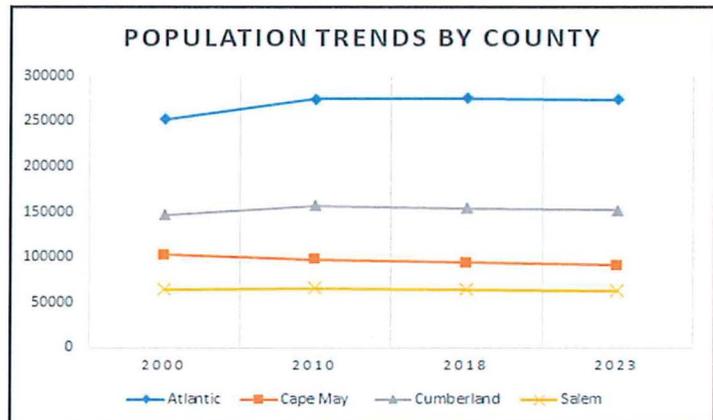
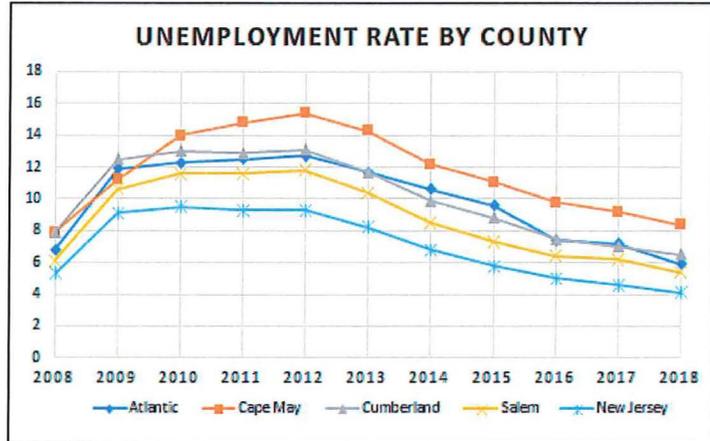
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Employment / Unemployment Trends

The unemployment rates throughout the SJEDD Region have followed the State trends over the last ten years, declining by as much as 7 percent since the highest unemployment rates in 2012. However, the unemployment rate is significantly higher across all four counties compared to State rate (4.1%). In Salem County, the unemployment rate is the lowest at 5.4%, followed by Atlantic County (5.9%), Cumberland (6.5%), and Cape May County (8.4%). On a positive note, throughout 2017 and 2018 the unemployment rate gap has decreased significantly since 2012 as the economy continues to strengthen.

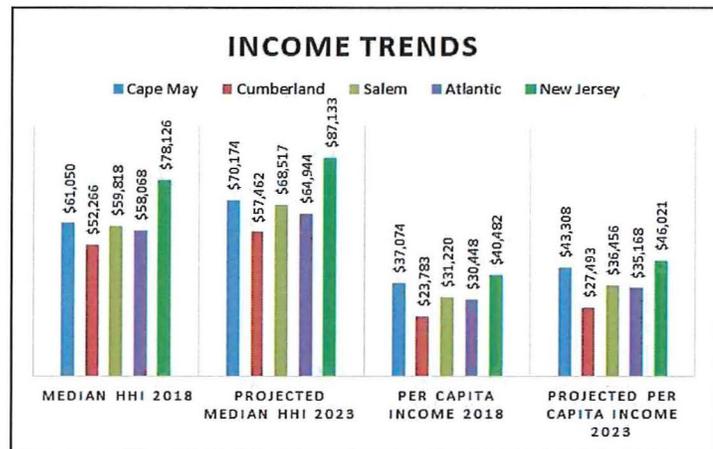
Regionally, the unemployment rate is the highest in Cape May County, given its more seasonal fluctuation, where it still remains at 8.4%, compared to 4.1% for the State of New Jersey – a gap of over four percent. Over the ten-year period the unemployment rate has been as high as 14% in the off-season and greater by as much as 8% compared to the State of New Jersey.

The current historic unemployment lows nationally and statewide provides an opportunity to determine the skills gaps for those people who remain unemployed during a healthy and vibrant national economy.



Population Trends

The population in the SJEDD region continues to decline at a slow pace and is expected to continue the downward population trend through 2023. Population is expected to decline by 1.3% between 2018 and 2023 in the four-county region, a projected loss of approximately 7,700 people according to ESRI.



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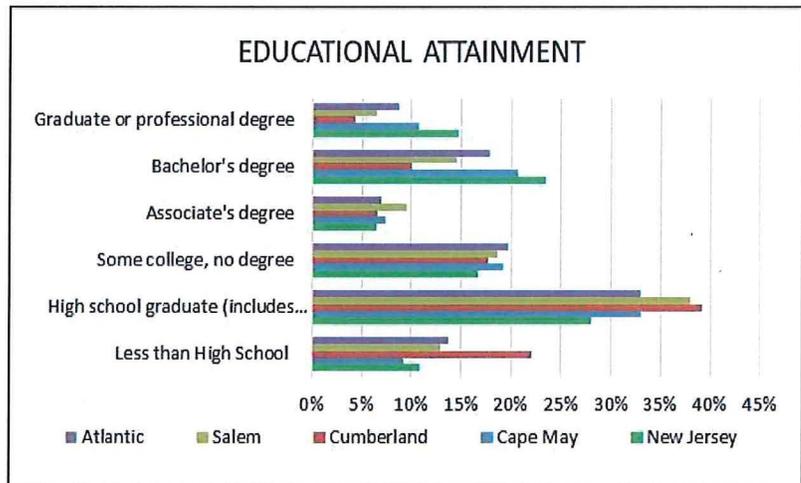
The population in the four-county region increased between 2000 and 2010 by a half a percent despite a modest decline in Cape May County. In more recent years the population declined by 0.8% between 2010 and 2018 in the four-county region. Atlantic County was the only county that experienced population growth in the last eight years while Cape May County had the greatest decline with a population loss of 4%. A declining population will play a significant role in both tax revenue for the state and region, and may impact housing values and property tax receipts for municipalities.

Income Trends

The median household income and the per capita income in the four-county region is significantly lower compared to that of the State of New Jersey in 2018. The disparity between the median household income for the state of New Jersey and Cumberland County is the greatest at \$20,000, while the gap between the State and Cape May County is the smallest at \$17,000. The gap is projected to increase in 2023 with a difference of \$23,000 in Cumberland County. However; the income gap is anticipated to remain constant for Cape May, Atlantic and Salem Counties. Cape May County has the highest median household income (\$61,050), followed by Salem County (\$59,918) and Atlantic County (\$58,068).

The State of New Jersey has higher per capita income compared to all four counties in the SJEDD as well. The gap between the per capita income in New Jersey and Cumberland, Atlantic and Salem Counties is between \$9,000 and \$10,000 while the difference is much less between Cape May County and the State of New

Jersey which is only \$3,400. The gap between per capita income for the SJEDD Region and the State is expected to remain the same according to the 2023 income projections provided by ESRI. The earning gap for Southern New Jersey residents is significant compared to State earnings and is closely correlated to the educational attainment levels discussed herein.



Educational Attainment Trends

According to the CEDs "Educational attainment continues to be a factor that continues to impact the marketability of Southern New Jersey in the regional and national economy. The educational attainment levels in the four-county region lag behind both the state of New Jersey and national averages. Retraining a workforce that has significant experience in the manufacturing industry is an integral part of growing the economy and making it attractive for

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new industry.” As the graph highlights, the number of people age 25 and older that have less than high school or a high school diploma is greater in all for counties compared to the State of New Jersey. The converse is also true, the number of people bachelor’s degrees, and graduate or professional degree is greater in the state of New Jersey compared to that of the four county SJEDD Region.

Table 5
Estimated and Projected Employment Aggregate Estimates by Minimum Educational Requirements
New Jersey: 2016-2026

Occupation	Employment		Change 2016-2026		Annual Average Openings			
	2016 Actual	2026 Projected	Number	Percent	Exits	Transfers	Change	Total
Total, All Occupations	4,318,450	4,671,200	352,750	8.2	209,590	276,160	35,270	521,020
Total High Requirements	1,203,100	1,304,450	101,350	8.4	35,120	57,580	10,090	102,720
Doctoral or professional degree	136,300	149,650	13,350	9.8	3,460	3,850	1,340	8,640
Master's degree	69,950	77,500	7,550	10.8	2,270	3,340	740	6,350
Bachelor's degree	996,850	1,077,300	80,450	8.1	29,390	50,390	8,010	87,730
Total Moderate Requirements	510,050	564,450	54,400	10.7	24,640	27,590	5,410	57,630
Associate's degree	91,050	101,200	10,150	11.1	3,200	4,810	1,000	8,980
Postsecondary non-degree award	291,350	330,950	39,600	13.6	14,620	16,560	3,940	35,140
Some college, no degree	127,650	132,300	4,650	3.6	6,820	6,220	470	13,510
Total Low Requirements	2,605,400	2,802,800	197,400	7.6	150,110	191,250	19,720	361,050
High school diploma or equivalent	1,602,850	1,701,250	98,400	6.1	78,490	104,600	9,850	192,900
No formal educational credential	1,002,550	1,101,550	99,000	9.9	71,620	86,650	9,870	168,150

Source: ACS, 2017

According to the New Jersey Department of Labor and Workforce Development Division of Economic and Demographic Research the number of jobs projected through 2026 in the state of New Jersey is approximately 352,750 jobs across all occupations. Those jobs that require “high requirements” which include a doctoral or professional degree, Master’s Degree or bachelor’s degree are expected to increase by 101,350 jobs between 2016 and 2026. The number of jobs with “moderate requirements”, which include associates degrees, postsecondary non-degrees, and some college, but no degree are expected to increase by 54,450 jobs. The greatest increase in the number of job openings are jobs with “low requirements” such as high school diploma and no formal educational credential which is

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expected to increase by 197,400 jobs between 2016 and 2026. While the number of jobs is expected to increase among lower skilled jobs the highest percent increase in jobs are for jobs with moderate and high requirements.

Workforce Employed in the County

The number of people residing and working in a community provides insight as the impacts a large employer closure will have on a community. In Salem County, most of the people that live in the County work outside of the county (73.2%), and many people that work in the county live outside the County (57.2%). This may mitigate the impact of a plant closure in Salem County since not all of the employees at the power plants live in the County as well. In the four-county region, Atlantic and Cape May County have the highest percentage of people both living and working in the county with over 64% of workers living in the County. In Cumberland County approximately 44% of those persons employed in the county live outside the county. Salem County has the highest percentage of in-migration for work with 57% of the workers commuting into the County for work.

**Table 6
Worker Totals and Flows by County, 2015**

WORKER TOTALS AND FLOWS	ATLANTIC	SHARE	CAPE MAY	SHARE	CUMBERLAND	SHARE	SALEM	SHARE
<i>Employed in the County</i>	117,121		32,621		57,010		20,975	
Employed in County but Living Outside	42,076	35.9%	11,481	35.2%	25,187	44.2%	11,993	57.2%
Employed and Living in the County	75,045	64.1%	21,140	64.8%	31,823	55.8%	8,982	42.8%
<i>Living in the Selection Area</i>	117,442		38,240		60,526		33,503	
Living in the Selection Area but Employed Outside	42,397	36.1%	17,100	44.7%	28,703	47.4%	24,521	73.2%
Living and Employed in the Selection Area	75,045	63.9%	21,140	55.3%	31,823	52.6%	8,982	26.8%

Source: US Census, "On the Map"

Commuting Patterns for Those Living in the County

Salem County has the greatest percentage of residents commuting from outside of the county, into the County to work. Approximately 73% of residents living in Salem County are employed outside of the County while only 26.8% live and work in the County, indicating that Salem County is largely a bedroom community with a greater population than jobs.

The converse is true in Atlantic County where over 64% of those individuals living in the county are employed in the County. Cumberland and Cape May County have a nearly 50/50 split of

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those living and working in the respective counties, with a favoritism of living and working in the county.

A series of maps geographically depicting the in-flow and out-flow migration of residents are in Appendix of this report.

Recent Plant Closures

The SJEDD four-county Region has experienced significant closures in the last decade contributing to both population loss and jobs loss that have not been recovered. The following is a list of large employment losses throughout the four-county region by County.

2014, The Atlantic Club Casino, Trump Plaza, Showboat, Atlantic City 6,000 jobs

2014, Ardagh Glass, Salem, 290 Jobs

2015, Gerresheimer Glass, Millville, 250 jobs

2016, Trump Taj Mahal, Atlantic City 2,000 jobs

2017, Mannington Mills, Mannington Township, 80 jobs

2018, Progresso Soup Plant, Vineland 340 jobs

2018, DuPont, Pennsville, 100 jobs

2019, B.L. England, Upper Township, 100 jobs

Job Creation / Recent Openings

2018, Hard Rock Hotel and Casino 3,000 Jobs

2018, Ocean Resort Casino Reopened 3,200 Jobs

The majority of the job losses in the region occurred in 2014 when several casinos in Atlantic City closed. Since that time the Hard Rock Hotel and Casino opened after a \$500 million renovation of the former Trump Plaza and the Ocean Casino Resort opened at the former Revel Hotel and Casino. For better or worse, the tourism industry which dominates the economy in Cape May and Atlantic Counties is highly dependent upon the national and regional economy. When the national economy suffers high unemployment and decreased disposable income the tourism industry suffers. This industry will continue to ebb and flow dependent upon the national economic conditions. Diversifying the local economy will help mitigate those impacts. On a positive note several casinos recently opened in Atlantic City, utilizing the Trump Plaza hotel and casino site and the Revel Casino employing nearly 6,200 people.

The job losses throughout Cumberland Salem Counties were largely amongst the manufacturing industry. The consolidation of the glass industry globally and in the United States has contributed to the reduction of glass manufacturing jobs in South Jersey. Ardagh Glass, and Gerresheimer Glass both closed in recent years leaving approximately 540 unemployed. Another difficult loss for Vineland was the closure of Progresso Soup in Vineland which employed nearly 350 people. The loss of these large manufacturing companies leaves

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many people trained in manufacturing without a transition to any manufacturing jobs. In Salem County, the PSEG nuclear facilities also face an uncertain future given the age of the facilities and the move nationally away from nuclear power.

Employment Outlook

The sectors with the highest percent increase in job openings are among occupations that require a bachelors or professional degree, while the service oriented lower skilled workers capture highest number of jobs through 2026 according to the New Jersey Department of Labor and Workforce Development Division of Economic and Demographic Research. According to the research, the occupations with the highest job growth in the state are service oriented jobs in the health care, retail, and food service sectors through 2026. Home health aides are projected to add 20,950 jobs between 2016 and 2026; an increase of nearly 50%. Laborers and freight stock and material movers are the second highest and are expected to add 17,900 jobs over the ten-year period.

The occupations anticipated to add the greatest number of jobs requiring a Bachelor's degree in New Jersey between 2016 and 2026 are:

- Registered Nurses (10,700 jobs)
- Software Developers (10,250 jobs)
- General and Operations Manager (4,300 jobs)
- Market Research Analyst and Researchers (4,050 jobs)
- Financial Managers (3,650 jobs)

Table 7
NJ Employment Occupations With the Most Forecasted Numeric Growth: 2016-2026

Occupation	Employment		Change 2016-2026		Education	Job Training
	2016 Actual	2026 Projected	Number	Percent		
Total, All Occupations	4,318,450	4,671,200	352,750	8.2		
Home Health Aides	42,550	63,500	20,950	49.3	High school diploma or equivalent	Short-term on-the-job training
Laborers and Freight, Stock, and Material Movers, Hand	120,400	138,300	17,900	14.9	No formal educational credential	Short-term on-the-job training
Registered Nurses	87,000	97,700	10,700	12.3	Bachelor's degree	None
Combined Food Preparation and Serving Workers, Including Fast Food	49,000	59,600	10,600	21.6	No formal educational credential	Short-term on-the-job training
Software Developers, Applications	45,450	55,700	10,250	22.5	Bachelor's degree	None
Waiters and Waitresses	62,050	70,600	8,550	13.8	No formal educational credential	Short-term on-the-job training

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Nursing Assistants	59,900	67,150	7,250	12.0	Postsecondary non-degree award	None
Janitors and Cleaners, Except Maids and Housekeeping Cleaners	69,850	76,450	6,600	9.4	No formal educational credential	Short-term on-the-job training
Hairdressers, Hairstylists, and Cosmetologists	26,650	33,050	6,400	24.0	Postsecondary non-degree award	None
Retail Salespersons	131,600	137,800	6,200	4.7	No formal educational credential	Short-term on-the-job training
Receptionists and Information Clerks	54,000	60,050	6,050	11.2	High school diploma or equivalent	Short-term on-the-job training
Heavy and Tractor-Trailer Truck Drivers	49,850	55,350	5,500	11.0	Postsecondary non-degree award	Short-term on-the-job training
Personal Care Aides	13,400	18,650	5,250	39.3	High school diploma or equivalent	Short-term on-the-job training
Social and Human Service Assistants	27,300	32,150	4,850	17.7	High school diploma or equivalent	Short-term on-the-job training
Landscaping and Groundskeeping Workers	36,000	40,800	4,800	13.3	No formal educational credential	Short-term on-the-job training
Medical Assistants	19,400	23,900	4,500	23.0	Postsecondary non-degree award	None
General and Operations Managers	44,800	49,100	4,300	9.5	Bachelor's degree	None
Market Research Analysts and Marketing Specialists	19,650	23,700	4,050	20.6	Bachelor's degree	None
Cooks, Restaurant	21,200	25,150	3,950	18.6	No formal educational credential	Moderate-term on-the-job training
Light Truck or Delivery Services Drivers	31,750	35,550	3,800	11.9	High school diploma or equivalent	Short-term on-the-job training
Food Preparation Workers	29,650	33,400	3,750	12.6	No formal educational credential	Short-term on-the-job training
Financial Managers	21,950	25,600	3,650	16.7	Bachelor's degree	None
Stock Clerks and Order Fillers	70,050	73,700	3,650	5.2	High school diploma or equivalent	Short-term on-the-job training
Customer Service Representatives	70,750	74,350	3,600	5.1	High school diploma or equivalent	Short-term on-the-job training
Teacher Assistants	59,600	63,150	3,550	6.0	Some college, no degree	None

Source: New Jersey Department of Labor and Workforce Development Division of Economic and Demographic Research

Significant job growth is anticipated among lower skilled workers that require no formal educational credential or a high school diploma or equivalent. According to the New Jersey Department of Labor and Workforce Development nearly 114,150 jobs are anticipated to open between 2016 and 2026 that require no formal educational credential. Nearly 27,200 jobs openings are expected that require post- secondary, non-degree programs. The region's

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community colleges and technical high schools can help fill the gap for students that require post-secondary and certificate programs. Connecting those workers with limited skills with short term, certificate programs will be an integral part to any resiliency program. Table 7 details these occupations.

**SECTION 2
IMPACTS FROM CLOSURES IN THE ENERGY ECONOMY – A NATIONWIDE
PERSPECTIVE**

Clearly, the Southern New Jersey Region is not the only area of the nation facing potential cuts in energy-related employment or the potential closing of power generating facilities or other major employers. There are numerous case studies and examples of communities that have undergone such changes. From these examples, the Southern New Jersey Region can anticipate more effectively, the types of changes that may occur in this sector, weigh such changes against other sectors of the economy, and plan more effectively to address the issue of economic sustainability.

Case Study Analysis

This report looks at four case studies, all involving the downsizing or closing of power facilities. These case studies illustrate the impacts of energy company closures in a number of relatively small regions, which makes them relevant to the challenge that may present itself in southern New Jersey. They include:

- The Yankee Rowe Power Plant in Rowe, Massachusetts
- The Maine Yankee Power Plant in Wiscasset, Maine
- The Crystal River Plant in Crystal River, Florida
- The Kewaunee Power Station in Carlton, Wisconsin

These case studies summarize the closure of power plants that were significant economic drivers in their communities. In all cases there were significant losses of high paying jobs, and tax revenues. The cases studies, academic papers, and news items reviewed focus mostly on the immediate local effects in communities and with the exception of Maine Yankee in Wiscasset do not go on to discuss the economic effects of decommissioning.

Closing a power station is a long and complex process. Its decommissioning often requires an elaborate and expensive process, the economic costs and benefits of which were often underestimated. For example, the decommissioning of Yankee Rowe took 15 years and over \$600 million, about 15 times its construction cost in the early 1960s. These costs are only thought to go higher, with uncertainty about the source of the funds. Additionally, the timeline for some decommissioning processes is unknown, as the federal government's plans to develop a disposal and storage site for nuclear material has not materialized, leading to materials being stored and maintained on-site. This adds the potential for economic resilience and a transition period, at least in terms of jobs (see Maine Yankee summary), but raises the question of property reuse and total cost.

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Additionally, in contrast with the contents of the Brattle Report, information on the regional and statewide effects of the loss of generation was not highlighted in the material reviewed. Detail such as the cost of electricity, its effect on business, the environmental effects and the associated social costs of using fossil fuels as a replacement source were not front and center concerns in the cases reviewed.

Yankee Rowe, Rowe Massachusetts²

Population (appx): 360

Google Maps: <https://goo.gl/maps/9LgtDjuEKZA2>

Date Op-Shutdown: 1961-1992

Power: 185MW

Employees (appx): 250-260

Yankee Rowe, in Rowe Massachusetts was a relatively small nuclear power plant that operated between 1961 and 1992, with a strong record for safety and a well grounded foundation in the local economy. Located in Franklin County, northwestern Massachusetts, Rowe contributed significantly in both direct revenue and as a percentage of total revenue in the local tax base, paying \$696,000 in local taxes in 1991. Employees were well compensated, and many local organizations, the United Way for example, were supported by the operation. Yankee Rowe produced \$70 million dollars worth of electricity in its last year of operation. According to the State Commerce Department Input Output Model this resulted in 469 jobs in the local economy, or an additional job for every 1.8 Yankee Rowe employees. The station was also a heavy consumer of local goods, choosing to buy from local companies for their everyday needs.

The plant's closure affected every facet of local life in Rowe. Plant employees were no longer there to participate in the community or shop at local retail establishments, and the loss of tax revenue dimmed an otherwise bright spot in the relatively poor regional community. Since the town of Rowe is so small, and the station employed 7% of the adult workforce of the town at one time, the effects may be more significant than those in other communities. County officials and planners identified economic stimuli for the area after the plant closed, and during the decommissioning process, however at the time of the case study writing (1997), the effectiveness of the stimuli and the participation of the State in the recovery process was not yet known or felt.

² Sources: YankeeRowe.com

The Closing of the Yankee Rowe Nuclear Power Plant: The Impact on a New England Community, Mullin and Kotval, 1997

<https://thebulletin.org/2014/04/the-rising-cost-of-decommissioning-a-nuclear-power-plant/>

<https://www.bea.gov/>

US Census/American Fact Finder

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A review of GDP in the Springfield Massachusetts Metropolitan Statistical Area (MSA), of which Franklin County (and therefore Rowe) are a part, shows significant growth from 2001 to 2017, according to available records from the US Bureau of Economic Analysis website. The MSA's GDP rose from \$17.2 billion in 2001 to \$27.9 billion in 2017 (in present dollars). The Franklin County Regional Plan for Sustainable Development, *Sustainable Franklin County* (2013) cites lower unemployment than the national average, but also underemployment in the form of lower wages and salaries than the Massachusetts average. The plan does not refer to the shuttered facility in Rowe, or discuss the economic development strategies used to cope with the loss of economic activity.

Maine Yankee, Wiscasset Maine³

Population (appx): Lincoln County - 33,616 (2000)

Google Maps: <https://goo.gl/maps/rxFM4ZNT3Lu>

Date Op-Shutdown: 1973 - 1996

Power: 860 MW

Employees (appx): 470-480

Maine Yankee Atomic Power Station is on the coast of Maine in the town of Wiscasset. It was a power plant that provided significant economic benefit, though it had skeptics with regards to its safety performance. It closed before its license expired due to the high cost of increased age-related maintenance. Located on Maine's mid-coast, the facility was a large part of the local economy. The case study reviewed includes the site of the plant in Lincoln County, as well as two adjacent coastal Counties, Sagadahoc and Knox.

The three County study area has 108,448 residents in the 2000 census, and median household income was in the mid to low \$30,000s (according to a 1997 model-based estimate). Salaries at the power plant were good, ranging from \$17,000 to \$143,000, and an average of \$54,000. The majority of the 470-480 employees lived within 60 miles of the plant, between Saco to the South and Camden to the North. Wiscasset is served by US Route 1, with a connection not far to the South to Interstate 295. US 1 is a two-lane highway, not unlike some many of the highway arteries in South Jersey.

³ *Economic Consequences Of The Early Closure Of Maine Yankee Atomic Power Station Wiscasset, Maine (DRAFT), A Report to the New England Coalition on Nuclear Pollution, Shadis, 2002. Accessed 3/10/19*

<http://www.swrpc.org/files/Maine%20Yankee%20Draft%20Report.pdf>

"It's nuclear plant shut, Maine town full of regret", Boston Globe, September 18, 2013, Abel, David. Accessed online 3/10/19.

Maine Yankee Citizens Advisory Panel Final Report, 2005

<http://www.maineyankee.com/public/cap%20final.pdf>

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According to the case study there were few economic impacts at the local, regional, or state levels. The impacts that do register are to the facility's employees, contractors, and their families. Staff reduction was phased and included programs to help with the transition. 125 employees were made eligible for retirement (or early retirement) immediately. During decommissioning, it was found that employees were leaving more rapidly than anticipated, which was helpful to the transition process. The case study cites a shortage of skilled nuclear engineers and workers in the region which allowed affected employees to make a smoother transition to another facility or similar employment opportunity (although the case study does not provide specific examples.) In the face of this issue, financial incentives were offered to retain employees during the transition.

The loss of tax revenue was significant. Maine Yankee paid \$12.8 million in taxes in 1996, with the remaining tax payers of Wiscasset contributing a mere \$1 million. In 1998, after a revaluation, Maine Yankee paid \$5.8 million, and year after year reduced that to \$1.6 million in 2001. The town's budget was \$13 million per year, and there was a reserve fund of \$13 million as well. The balance of taxes would be picked up by the residents. Wiscasset is cited as having the fourth highest municipal taxes in Maine. This is a topic in the September 2013 Boston Globe article, "Its nuclear plant shut, Maine town full of regret", where in 2013 the town is still suffering from the effects of the closure. Costs that were covered by the power station related to schools, infrastructure, and services now would have to be borne by residents, as part of and separate from their tax bills.

Overall, the value of Wiscasset property fell 35 percent, while Lincoln County was almost unchanged between 1995 and 2000. However, local real estate sales are up in the late 1990s, and a local real estate agent was quoted as saying that the closure of the plant has made the town more attractive for people to move in, resulting in an influx of higher income retirees and upscale home construction.

There were no significant impacts to the state and local economies. Unlike the report on Yankee Rowe, where the power station purchased materials locally where possible, the case study found no evidence that beyond lost wages and direct spending by employees and contractors that the closure affected business proximate to Wiscasset.

A Decommissioning Citizens Advisory Panel (CAP) was formed in Wiscasset, and was made up of volunteers with a variety of backgrounds including economics. However, while the CAP acknowledged the importance of the plant to the area's economy in its final report, it chose to focus its efforts on the safe decommissioning of the plant, which it saw as the first condition necessary for the future success of the area.

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Crystal River 3, Crystal River, Florida⁴

Population (appx): 3,108 (2010)

Google Maps: <https://goo.gl/maps/PE376GN2gHT445g57>

Date Op-Shutdown: 1976-2009

Power: 860 MW

Employees (appx): 600

The Crystal River 3, the sole nuclear facility at the Crystal River Coal and Nuclear Power Plant, is located in Crystal River, Florida. The facility is situated on the western coast of Florida, on the Gulf of Mexico, 69 miles north of the City of Tampa. The plant operated from 1976 to 2009, when during a significant maintenance procedure, serious issues were encountered. Having shut down temporarily for maintenance in 2009, in 2013 Duke Energy, the plant's owner, decided that it would shut down permanently.

According to local news stories, the Crystal River 3 facility is a major part of the local economy, and has about 600 employees. The plant has four other fossil fired power plants, including a \$1.5 billion dollar natural gas plant that came online in 2018. Fossil fueled plants do not require the same number of employees as nuclear plants, or the same number of specialized technicians who command high salaries. However, Duke Energy has employees at other facilities in Florida, the Carolinas, and Indiana.

Housing values and tax receipts in the area have dropped significantly, and brought the County government close to bankruptcy. Local services and school budgets were cut, and the area's identity as a retirement community with a low cost of living was threatened by the need to raise taxes significantly. However, the area saw other economic development opportunities to offset any impacts from plant closing.

Tourism is a significant industry, with the Crystal River Wildlife Refuge attracting visitors when Manatees gather there in the winter. Additionally, there is the potential for business development in the area, and in 2013 the Citrus County Economic Development Corporation

⁴ "Crystal River nuclear troubles sapped jobs, tax base", *Pensacola News Journal*, July 12, 2017, Baucum, Joseph. Accessed online May 3, 2019.

<https://www.lohud.com/story/news/investigations/2017/07/12/crystal-river-nuclear-plant-troubles/439949001/>
<https://cpb-us-w2.wpmucdn.com/wp.wpi.edu/dist/e/117/files/2016/10/SocioeconomicImpactsPlantClosure.pdf>=

Citrus County EDC Strategic Plan, 2013

<http://www.swrpc.org/files/Citrus%20County%20EDC%20-%20Five%20Year%20Strategic%20Plan.pdf>

Citrus County EDC Website <http://edacitrus.com/>

Trigaux, R. (2015). Nuclear fallout: Crystal river area tops nation in GDP loss after plant closure. *Tampa Bay Times*, Retrieved from:

<https://www.tampabay.com/news/business/energy/nuclear-fallout-crystal-river-area-tops-nation-in-gdp-loss-after-plant/2246899>

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(Citrus County EDC) started the process of creating a five year strategic development plan. The decision to undertake this activity was backed up by the catastrophic decline in GDP for the area. The US Department of Commerce assessed the GDP in the 382 largest metropolitan areas in the nation, with the one containing Crystal River (Homosassa Metro) showing the greatest loss, at 7.5 percent, attributed to the closure of Crystal River 3.

The Citrus County EDC and the State of Florida offer several state and local incentives to locate a business in the area, including but not limited to including training grants, assistance with the construction of utilities, a business friendly tax code, micro-loans, job creation incentives, and many others.

The Citrus County EDC developed the *Citrus County EDC Strategic Plan* in order to provide economic support to the area in the wake of Duke Energy's decision to shut down Crystal River 3. The plan lists four "critical objectives":

- Assess the existing site inventory including infrastructure availability;
- Identify target industries based on the County's assets;
- Evaluate workforce availability related to the target industries; and
- Develop a marketing plan to attract the target industries.

The plan then lists goals in five areas; Product Development, Marketing, Target Industries, Workforce Development, and Economic Development Programming, and follows this with twenty strategies, each containing multiple actions.

The goals and strategies comprise a comprehensive effort to market and support existing assets and businesses in order to attract new investments and partnerships. It also discusses growing and improving the labor forces in Citrus County through education and training, and improving the status and operations of the EDC in order to increase its effectiveness. An interesting insight is offered in the plan in that real estate development opportunities that already have existing infrastructure available (transportation and utilities), are more attractive opportunities for businesses looking to relocate. This is partially implemented in the EDC's Utility Expansion Program, a local incentive that assists businesses that want to expand in Citrus County but lack the necessary infrastructure to do so. According to the US Bureau of Economic Analysis the GDP of the Homosassa Metro area has shown improvement since the 5 year plan was released, and is moving in the direction of pre-2014 numbers.

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Kewaunee Power Station, Carlton, Wisconsin⁵

Population (appx): 1,000 (2000 Census)

Google Maps: <https://goo.gl/maps/fRWFeYN5HUb5Cagh8>

Date Op-Shutdown: 1973-2013

Power: 566MW

Employees (appx): 632

Kewaunee Power Station, in Carlton, Wisconsin, operated between 1973 and 2013, generating 566MW of electricity with one reactor. It is located on the western shore of Lake Michigan, four miles north of the Point Beach Nuclear Plant (two 591MW reactors), and 25 miles southwest of the City of Green Bay, and 93 miles north of Milwaukee. The power station shut down in 2013, far sooner than expected, due to competition from natural gas fired plants. In 2012, when the decision was announced, the plant employed over 600 people and provided 70 percent of Carlton's tax base.

An interesting feature of the story in Carlton is that the power station paid a utility tax to the municipality of around \$450,000 per year instead of a property tax. Dominion Energy, the plant's owner, agreed to make a payment that would decline by 20 percent per year after shutdown. However, the municipality instituted a property tax, and Dominion protested their valuation. The issue was settled in 2017 with the town of Carlton not owing Dominion a tax refund, but other taxing authorities in the County including the school district owing almost \$12 million. While an agreement was reached, the fiscal health of all local governments and entities involved is far from what it was during the operation of the power plant.

Current information on Kewaunee County was drawn from its 2017 Master Plan, which showed that the unemployment rate in 2016 was as low as 3.2 percent, three years after the closure of the power station. In 2017 there were still 140 people employed at the power station involved in its decommissioning. That number, however, was projected to drop to 90 by the end of 2018.

⁵<https://www.power-eng.com/articles/npi/print/volume-7/issue-3/nucleus/lessons-learned-from-kewaunee-s-closing.html>

<https://cpb-us-w2.wpmucdn.com/wp.wpi.edu/dist/e/117/files/2016/10/SocioeconomicImpactsPlantClosure.pdf>

<https://doorcountypulse.com/town-carlton-reaches-settlement-closed-nuke-plant-taxes/>

<https://www.prnewswire.com/news-releases/dominion-energy-completes-decommissioning-milestone-at-kewaunee-power-station-300477737.html>

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CONCEPTS AND IDEAS FOR PROMOTING RESILIENCY

There are a number of themes running through the various case studies examined that illustrate the actions that other communities have taken to promote economic resiliency. Regardless of whether these actions are in anticipation of a reduction in energy related employment, or that of some other sector of the economy, they are all relevant initiatives and ones that the South Jersey region can advance.

While an economic slowdown or a major reduction in one of the region's economic sectors cannot be anticipated precisely, it is very likely that at some time in the future, the Salem and Hope Creek plants will be closed and a decommissioning process initiated. Consequently, the time to start building an economic resilience strategy is today – regardless of whether closures come in the power industry or some other sector of the regional economy.

There are a number of ways to improve the economic resilience of an area, many of which are detailed in the South Jersey Economic Development District's CEDS. These include increased marketing, communications, site development, worker training, and a host of other economic development strategies and tactics. There are, however, several specific actions that can be taken to mitigate the economic effects of the nuclear plant closure. These steps may not replace the 3,500 megawatts of power produced by Salem and Home Creek or their effects on the economy, but every mitigating action helps.

Worker Support and Retraining

Nuclear power technicians are well paid, highly educated workers in a field with reduced demand for employment. With very little new nuclear generation planned for the United States, nuclear technicians may decide to retrain, and educational and financial support could be provided for retraining those employees in South Jersey. Keeping these skilled workers in South Jersey will help insulate the local economy from the shock of the plant closure, and avoid the brain-drain associated with the closure of any high-tech business.

Home Value Support

Programs to support the maintenance and improvement of homes proximal to the generating station may help bolster real estate values, keeping the local tax base intact, and provide assistance to homeowners who may be looking to sell their property for a variety of reasons.

Energy demand reduction

The Brattle Report details a significant rise in the cost of electricity and its' effect on industry (and therefore jobs) with the closure of Salem and Hope Creek generating stations, in addition to increased demand for New Jersey based, and out of state, based fossil fuel fired energy production. The adoption of efficiency strategies and tactics, sometimes called "negawatts",

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will deputize every ratepayer and business owner in the fight to reduce demand in order to keep prices low. This can be supported by increased incentives for the installation of efficient appliances and light fixtures, consulting services for homes and business, and an educational campaign. Many of these strategies and tactics are already in effect at the State level as the Bureau of Public Utilities (BPU) Clean Energy Program. This program can be bolstered at the state, regional, or local level to improve participation.

The Brattle Report names fossil fuels as the most likely replacement for nuclear power, with increases in generation in New Jersey and outside of state. Most of the power would come from natural gas, and a significant portion is expected to come from coal, with only a small portion coming from renewable energy such as solar and wind. This is a weakness that can be addressed by improved incentives for all scales of solar and wind power installations. New Jersey has decent solar and wind energy potentials, with the added benefit of short transmission distances to users. Incentive programs and policy decisions to support utility scale investments in clean and renewable energy should continue.

Decommissioning

There are three options for decommissioning a nuclear reactor. The most immediate and complete option, known as DECON, is the total dismantling, decontamination, and removal of the facility. As plans for a federal facility to store spent fuel have never been completed, a small parcel of land will remain licensed for the safe storage of this material.

SAFSTOR is the deferred dismantling of the site. The facility is put into a condition that allows the radiation to naturally decay, and after the levels of radiation have naturally reduced, the site is dismantled.

ENTOMB is the permanent encasement of radioactive material in a material such as concrete. There has not been an instance where this choice has been selected.

For the purposes of economic resilience, DECON is recommended for its immediate creation of jobs and economic activity related to dismantling the site. This should be pursued to the maximum extent possible. However, as in all things nuclear, safety should remain the number one priority. The Nuclear Regulatory Commission allows a combination of DECON and SAFSTOR activities when necessary or appropriate.

Form an Advisory Panel

Citizen Advisory Panels (CAPs) are often formed when nuclear power plants close, and they take on the difficult work of analyzing the conditions related to the decommission of a power plant from a safety and land use perspective. This is a recommended activity and a role that the SJEDD could assume in advance of any announced closure. However, a portion of the activity of any Advisory Panel formed in relation to a nuclear decommissioning should examine the

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ongoing economic and social impacts and work with the utility company and regulatory agencies to define ways to mitigate them. This can be built into the organizing documents of the group, and supported by SJEDD staff. Additionally, this portion of the CAP can be formed now, before a closure date is announced, and begin the delicate work of planning for the economic transition away from nuclear power.

Additional guidance and ideas to promote greater resiliency can be found in Section 4 of this Study along with specific suggestions regarding investment in new sectors of the economy.

**SECTION 3
THE ENERGY ECONOMY IN THE SOUTH JERSEY REGION**

The four-county, southern New Jersey Region had two major electric generating stations – the PSEG nuclear facilities in Lower Alloways Creek Township in Salem County, and the B.L. England plant in Upper Township, Cape May County. In addition, there are some smaller facilities located in Vineland, Cumberland County, Carney’s Point and other locations in the region.

Power generation currently employs directly and indirectly an estimate of over 6,000 residents from around the region and beyond.⁶ This employment base represents an estimated 1.4% of the total workforce within the South Jersey Region. Beyond this statistical representation, however, is a more prominent fact – and that is the very large percentage of the region’s highest paying jobs and most significant technology positions that are provided by this industry.

Historically, as noted in Section 1, the South Jersey Region has relied on its traditional glass, food processing, agricultural and tourism-based employment as the mainstays of its economy. Employment in the high technology sector has been very limited. Consequently, a significant impact on the employment in the power generation industry would reduce or eliminate a major technology sector and the positive impacts which that sector brings to the local economy.

The significance of the energy sector’s employment base was borne out by a recently completed Brattle Study (November 2017)⁷ which indicates direct employment at the Salem and Hope Creek Nuclear facilities of 1,600 employees. This represents 7% of the approximately 23,625 jobs that exist currently in Salem County.⁸ It is also estimated that there are an additional 1,000 persons on site, twice yearly for refueling and maintenance of the facilities.⁹

In Cape May County, the B.L. England Plant has permanently closed. While there are a small number of individuals maintaining the property, the direct impact of the B.L. England operation is also significant in that it provides over \$6,000,000 toward the tax base of Upper Township – almost half of the entire municipal budget. At the time of the plant’s closing employment was just over 100 persons.

Clearly, the operation of these electric generating facilities represents a major contribution to the economy of the region and to the fiscal health of the municipalities in which they are

⁶ Brattle Report indicates PSEG facilities have a direct and indirect impact statewide of 5,600 jobs.

⁷ Salem and Hope Creek Nuclear Power Plant’s Contribution to the New Jersey Economy, The Brattle Group, November 2017.

⁸ The source for 23,625 jobs in 2018: ESRI, 2019 statistical estimate for all sectors.

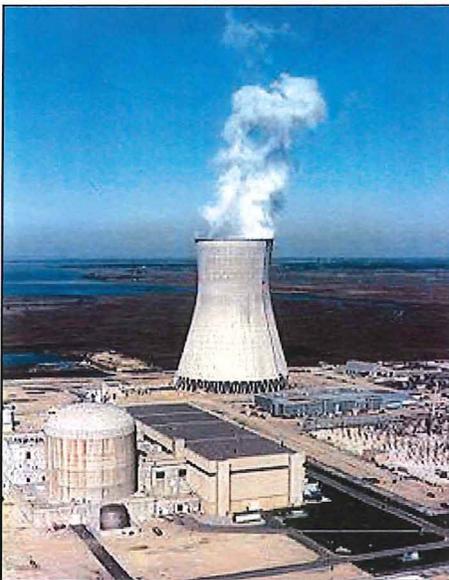
⁹ Source: PSEG, 2019 estimate

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located. Those contributions, if lost, will have a major economic impact on the South Jersey Region. Strategies to offset such impacts are the impetus for this study. A more detailed look at these power facilities and their characteristics is as follows.

THE SALEM AND HOPE CREEK NUCLEAR POWER STATIONS

The two reactor units of the Salem Nuclear Power Station came on line in 1977. The Hope Creek plant became operational in 1986. Together these stations represent the largest nuclear power generating complex on the East Coast and the second largest complex in the United States. Together, these units represent approximately 3,500 megawatts (MW) of capacity.¹⁰ Both the Salem units and Hope Creek facility are located in Lower Alloways Creek Township, in Salem County. Map 1 illustrates the location of these facilities.



These facilities contribute in a number of ways to the local and regional economies. They contribute directly to the local economy of the host municipality and county by providing an estimated 1,600 jobs directly. The indirect employment and economic benefits are also significant as it is estimated that the facilities provide 5,800 direct and indirect jobs to the economy of New Jersey.¹¹

The Salem Nuclear Power Station and the Hope Creek Plant comprise an Electric Power Generation and Transmission economic cluster that supports the employment of over 1,600 people in Salem County. The Electric Power cluster in Salem County also has direct links to the County's Distribution and eCommerce economic cluster, which employs approximately 1,600 people. A disruption in the Electric Power Generation and Transmission cluster will have a negative impact on the Distribution and eCommerce cluster.

Salem and Hope Creek Nuclear Power Plants' Contribution to the New Jersey Economy, The Brattle Group Report, November 2017

The report, "Salem and Hope Creek Nuclear Power Plant's Contribution to the New Jersey Economy", written by the Brattle Group (referred to as *The Brattle Report*, or the Report) in 2017 for PSEG and Exelon Generation, discusses a set of potential environmental and economic effects associated with the closure of these two power plants located in Salem County.

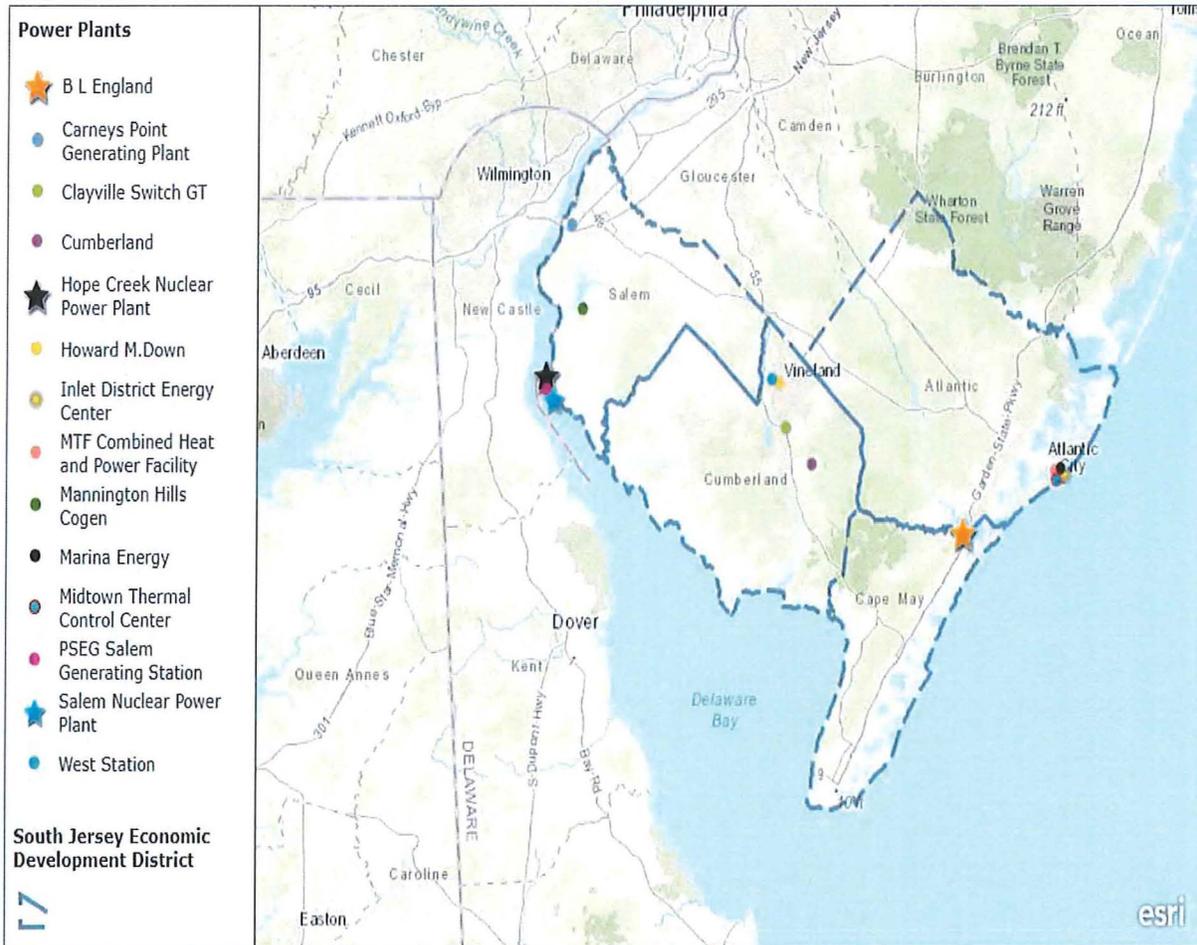
¹⁰ Brattle Report, page 3.

¹¹ Brattle Report, page 2

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Map 1
Location of Power Facilities in Southern New Jersey

Power Plants in SJEDD



Source: Brattle Report, 2017

According to the Brattle Report these generating stations are due to cease generation and begin the decommissioning process in 2019, largely due to the abundance of low-cost natural gas on the energy generation market. (However, recent negotiations regarding payment to PSEG of clean energy incentives from the State have altered this timeline. While payment was approved, the decision has been appealed by the NJ Rate Counsel.) The Report evaluated Salem and Hope Creek’s effect on electricity prices, in-state productive activity, New Jersey Gross Domestic Product (GDP) including an analysis of jobs and the low cost of energy on New Jersey businesses, and environmental effects as a social cost.

The Brattle Report “calculates the gross economic benefits of preserving these plants, not the net benefits of a proposed policy that would do so.” Additionally, the Report does not detail what those policies would be, or what policies could be put in place to provide economic resilience related to reduced tax receipts, reduced business activity, or lost jobs. It also does not

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detail whether or not the analysis includes the effects of the decommissioning process on direct and secondary jobs, or GDP.

The Salem and Hope Creek generating stations are responsible for \$1.29 billion in Gross Output, and \$809 million per year in GDP for the State of New Jersey. Part and parcel of this calculation is the 5,800 jobs the plants support, 1,600 direct and 4,400 secondary jobs. The Report does not detail the effects of the decommissioning process, which may offset some job and economic activity losses, although this depends on the type of decommissioning used. However, with 1,000 additional persons reporting to the site on a twice annual basis, this adds a minimum of \$50,000/day for each day spent on site.¹² (Fuel expenditures plus meal(s) purchased locally per person.)

Additionally, without these plants providing their 3,500 Megawatts (MW) of capacity, New Jersey will spend an additional \$400 million on electricity per year, \$3.64 per month for the average residential ratepayer. The Report estimates that 39% of the increased energy costs would be borne by residents, and 61% by business and industry. While significant fossil fuel generation can be brought online, it does not make up for the power that was supplied by nuclear, and New Jersey would be forced to import a significant amount of its energy.

The economic activity associated with these generating stations results in \$37 million in State taxes, and \$204 million in federal taxes. The Report does not detail the loss of local property taxes on the host municipalities or Salem County, or the effect of the loss of jobs and potentially of residents on the local community.¹³

The environmental benefits provided by Hope Creek and Salem, specifically to air quality and emissions avoided, are significant. Nuclear power plants do not produce air pollution while in operation, and thus avoid emitting carbon dioxide CO₂, sulfur dioxide SO₂, nitrogen oxides (NO_x (and its effect on ground level ozone), or particulate matter (PM₁₀ and PM_{2.5}). Each of these pollutants would increase as replacement fuels are expected to be 85 percent natural gas, with the balance almost entirely coal. An additional 13.8 metric tons of CO₂ would be released, the equivalent (according to EPA estimates) of adding three million cars to the road, and a 69 percent increase for the state's power sector emissions. An additional 4000 tons of SO₂ is projected to be emitted, an 88% increase. SO₂ emissions will increase from sources in 17 New Jersey Counties, including nine in north Jersey that are currently in non-attainment status.

The Report notes that the effects of air pollution may be carried by the wind, and that the pollution impacts of increased fossil fuel generation may be felt on a wide geographic scale.

The social costs of the increased emissions are estimated at \$733 million dollars (ten-year average annual impact) across the "Eastern Interconnection", the power grid that spans most

¹² Source: <https://www.forbes.com/sites/kellyphillipserb/2018/09/26/irs-announces-new-per-diem-rates-for-taxpayers-who-travel-for-business-but-watch-out-for-tax-law-changes/#4ce482df2781>

¹³ Brattle Report, 2017

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of the United States and Canada from the Rockies to the Atlantic. Of that \$733 million, \$171 in social costs will be borne by New Jersey. Social costs related to CO2 emissions (\$585 million for the Eastern Interconnection) are estimated using the EPA Fact Sheet, Social Cost of Carbon (December 2015). However, the Report notes that there is controversy surrounding this calculation. The Trump Administration has issued an executive order withdrawing documentation of the social cost of carbon dioxide, and has since revised it to a lower figure since the Brattle Report was written. The social cost of other pollutants is based on the National Academy of Science’s externality cost estimates.

The Brattle Report delivers an important warning about future economic and environmental conditions in New Jersey when Hope Creek and Salem nuclear power plants come offline. However, it does not account for the decommissioning process. The decommissioning process is a long and expensive one and may provide continued employment for a portion of the sites’ employees. This lack of uncertainty regarding decommissioning impacts may be because the decommissioning plans have not yet been made, and the analysis would depend on what form they take, their budget, and their timeline. Additionally, the report does not delve into policy recommendations for the economic or environmental resilience of the region, though it does detail a set of projected conditions to mitigate.

To understand how this impact can be measured locally and regionally, it must be compared with estimates of local and regional employment. The following table provides estimates of total employment in Salem County, the South Jersey Region and the State of New Jersey. The significance of 1,600 jobs is then compared to the total employment in the County and Region; and the 5,800 job figure is compared to Statewide employment.

Table 8
Employment Comparisons

JURISDICTION	TOTAL DIRECT EMPLOYMENT	PSEG EMPLOYMENT		% OF TOTAL
		Direct	Total	
Salem County	23,625	1,600	2,400	10.2%
South Jersey Region	229,423	1,600	3,200	1.4%
State of New Jersey	4,414,900	1,600	5,600	0.1%

Source: Brattle Report and 2018 ESRI estimates of direct employment. Total employment impacts for Salem County and the region were estimated using a very conservative multiplier of 1.5 and 2.0 to encompass the indirect employment impacts for the County. The regional indirect estimate was generated from statistics provided by the Nuclear Energy Institute, (NEI), see page 29 of this report.

As can be seen in Table 8, the PSEG employment represents a significant direct and indirect impact on the Salem County employment base. Those impacts diminish as the geographic jurisdiction expands.

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However, those figures only reflect one perspective of economic impact. To gauge the dollar impact of 1,600 jobs, the average per capita incomes for the various jurisdictions listed in the previous table are examined.

The per capita income figures reflect average incomes across all employment sectors and therefore, represent very conservative estimates. PSEG jobs at the nuclear plants have much greater average incomes than those of the listed jurisdictions. Average salaries for power plant employees range from the mid-\$30,000's to more than \$120,000 for the most experienced managers and administrators. So, conservatively a figure of \$78,000 is used as an approximate and conservative median per capita income from the PSEG plants.¹⁴

Table 9
Income Estimates

JURISDICTION	PER CAPITA INCOME All Sectors	PER CAPITA INCOME PSEG Estimate	TOTAL GROSS INCOME (1,600 PSEG Jobs)
Salem County	\$31,681	\$78,000	\$124,800,000
South Jersey Region	\$29,510	\$78,000	\$124,800,000
State of New Jersey	\$39,069	\$78,000	\$124,800,000

Source: ACS, US Bureau of the Census, 2017 income estimates and PSEG Wage Profiles.

Gross income from PSEG direct employment is estimated at \$124,800,000 annually. Per capita income at the nuclear plants exceeds the average for all three geographic jurisdictions: county, region and state.

A comparison of an estimate of gross income from direct PSEG employment to gross income of the various jurisdictions indicates that a complete closure of the Salem and Hope Creek facilities could have a significant impact both locally and regionally. Gross income at the PSEG facilities represents 12.3% of total gross income countywide. This comparison can be seen in Table 10.

Table 10
Income Estimates

JURISDICTION	PER CAPITA INCOME All Sectors	GROSS INCOME All Sectors	PSEG Impact as % of Gross Income
Salem County	\$31,681	\$1,011,194,158	12.3%
South Jersey Region	\$29,510	\$8,601,781,370	1.5%
State of New Jersey	\$39,069	\$348,745,538,000	0.04%

Source: US Bureau of the Census, American Fact Finder, 2017. Regional gross income is weighted given the population sizes of each of the four counties.

¹⁴ Research at the Nuclear Energy Institute (NEI) indicates that salaries at nuclear power plants are 36% greater than those in the local jurisdictions. Given the range of per capita incomes listed, \$45,000 is a reasonable estimate. (Source: <https://www.nei.org/advantages/jobs>)

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But, secondary impacts are also significant. Statistics from the Nuclear Energy Institute (NEI) indicate that for every 100 nuclear energy jobs, 66 secondary jobs are created in the local economy. That means that approximately 1,056 additional jobs are tied directly to the PSEG facilities.

When incomes from these additional jobs are incorporated into estimates of impact, this yields a total gross income from direct and indirect jobs of \$158,255,136. This figure in turn would be 15.7% of Salem County's gross income and 1.8% of the regional total.¹⁵

Roadway impacts to and from the nuclear facilities are limited. NJ DOT traffic count statistics show a 3,349 Average Daily Traffic (ADT) Count on Alloway Creek Neck Road, the only road providing access to the Hope Creek and Salem Nuclear Plants.¹⁶ Assuming that this count encompasses all 1,600 employees at the site, that leaves 149 additional counts for miscellaneous or visitor trips. Since the counts include movements in both directions, that would mean approximately 75 visitor trips to the site daily.

A conservative estimate of annual visitor trips to the nuclear sites is 18,750.¹⁷ Recent estimates for Executive Travel indicate that the average expenditure per day is \$325, which is inclusive of hotel, transportation, meals, and sundry expenses.¹⁸ Obviously, not all visitor trips to the Salem facilities are executive trips requiring overnight and other accommodations. Even a very modest \$50 of expenditures per trip results in an overall economic impact of almost \$1,000,000 annually in revenues to the local and regional economy. In addition and as noted previously, the 1,000 people coming to the site twice annually for refueling and maintenance also add considerably to the economic impact of the facility.

According to Lower Alloways Creek tax records, in 2019, PSE&G contributed \$1,780,000 in property taxes. In total, the Township only collected \$2,663,000 dollars in local property taxes from its residents. In addition, the Township receives \$5,000,361 in Energy Receipts Tax Revenue, and roughly \$451,000 from other locally generated revenues. Thus, Township's entire budget is just over \$8 million. Therefore, PSE&G's direct and indirect tax contribution comprises approximately 85% of the Township's total budget. Closing the PSE&G powerplant operations in Lower Alloways Creek would have devastated impacts to the Township's fiscal health. This would likely force Lower Alloways Creek to drastically cut services to its residents and enter into shared services agreements with neighboring municipalities. The loss of tax contributions mentioned above do not take into account people who live in town and work at

¹⁵ $1,056 \times \$31,681 = \$33,455,136 + \$124,800,000 = \$158,255,136$

¹⁶ Source: NJ DOT Traffic Count, 2016, <https://www.njtms.org/map/>

¹⁷ 75 visitor trips per day times 5 days/week times 50 weeks per year (discounting for two holiday and vacation weeks) = 18,750 visitor trips annually.

¹⁸ <https://executivetravel.com/new-business-travel-study-says-average-per-diem-is-now-325-day/>

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the plant who may move once the plant closes. In addition, the Salem County Chamber of Commerce reports that “PSEG Nuclear freely shares their leadership resources with many non profits in the area including Meals on Wheels, Habitat for Humanity and The Chamber, helping to make each organization stronger.”

THE B.L. ENGLAND GENERATING STATION

The B.L. England Generating Station is located on 80 acres of an approximately 300 acre site at Beesley’s Point, in Upper Township NJ, on the Great Egg Harbor Bay. The power station, which terminated operations in May 2019, used to be a three unit coal (and more recently oil) fired facility. It now has two primary power generating units, both of which are no longer in operation. There was



discussion about converting the power station to natural gas pending the extension of a South Jersey Gas Company pipeline through the NJ Pinelands. While this controversial extension was approved by the Pinelands Commission, the proposed conversion was not advanced. Instead, speculation involving the 350+ acre site has turned to the possibility of recreational or alternative energy reuse. The owner of the facility – Rockland Capital's R.C. Cape May Holdings, LLC. – acknowledges that the site is in the processing of being cleaned up but has not indicated any current reuse plans for the property. Upper Township is continuing to meet with R.C. Cape May Holdings to discuss possible options for the redevelopment of the property.

Orsted Energy, a Danish power company, has plans to develop a large wind farm operation just off of the Atlantic City coast. Orsted is investigating the R.C. Holdings site as a potential location for land-based transmission or an assembly/distribution site that supports its off-shore facilities. As recently as September 2019, Upper Township officials expressed interest in Orsted using the site to connect the offshore power generation to land based transmission. However, no final decisions have been made. So, the future of this valuable waterfront site is far from certain at this point. Clearly, however, it no longer is a significant employer in the region although it still contributes substantially to the Upper Township tax base.

At the time of its closing, the B.L. England plant had approximately 100 employees. According to New Jersey tax records, the property on which the former B.L. England Energy Station is located contributes \$336,879 in property taxes to Upper Township. Over 70% of the Township’s tax levy goes to the local school district and B.L. England’s closure could remove approximately

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\$219,800 from the local school district's budget. More significantly, however, are the \$6,191,482 dollars in revenues from what is formerly known as the Energy Receipts Tax. The law that provided the formula for the distribution of these receipts was modified in the 1980s and municipal receipts were frozen at approximately the 1980s level. Nonetheless, this tax contribution along with the power company's real estate revenues represents approximately half of Upper Township's budget of \$13,721,439. So a loss of this revenue would have a hugely significant fiscal impact on the municipality.¹⁹

While there has been no measurable impact on the Township's economy to date as the result of the recent job losses at the B.L. England plant, the Township is working very hard to generate concepts for alternative uses of the site that would generate an appreciable number of jobs and revenues. The Norfolk Southern rail line serving the site remains active, with trains currently hauling coal off of the site to destinations in Florida. The future of the rail line would also be a relevant aspect of the site's reuse that should be considered.

OTHER GENERATING STATIONS IN THE REGION

According to the Brattle Report, the Southern New Jersey Region has more than a dozen active power generating facilities. These stations range from small turbine co-generation facilities to the large plants such as B.L. England and the Salem nuclear facilities. Map 1 on page 28 illustrates the locations of these stations.

While all of these facilities contribute in some fashion to the PMT grid and will be increasingly important should there be a major shutdown or downsizing in the capacity of the large generating stations, their relative contribution in employment and economic impact is small.

Labor Force Comparisons

The power industry and particularly the nuclear power industry generate jobs in a wide variety of different fields. These include the skilled trades such as carpentry and electrical work; the engineering and professional fields and technical and radiological services.

An explanation is needed to differentiate between the local labor force and the resident labor force. The local labor force is reflective of the number of jobs in a particular area. As seen from Table 11 below, the South Jersey Region provides 339,423 jobs in a range of sectors, with retail trade and the service sector dominating the job base.

¹⁹ Upper Township case reference

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Table 11
Number of Jobs in the Region by Industry Sector

Economic Sector	Number of Businesses	Number of Jobs
	2018	2018
Agri/Mining	548	3,787
Construction	1,741	10,603
Manufacturing	554	13,433
Transportation	687	8,875
Communication	198	1,415
Utilities	85	1,876
Wholesale Trade	677	6,660
Retail Trade	5,609	72,648
Finance ,Ins, RE.	1,886	14,009
Services	8,635	172,567
Government	1,397	33,143
Other	766	407
TOTALS	22,783	339,423

Source: ESRI 2018. Note that utility jobs estimated in this table are lower than the estimate of utility jobs elsewhere in this report. This may be due to job reporting at a corporate headquarters rather than at the employment site.

A different breakdown is evident when one examines the types of jobs held by persons living in the region as opposed to working in the region. These figures represent the characteristics of the resident labor force. As seen in Table 12 on the following page, the employed residents of the region number 261,986.

There are 261,986 people employed in the South Jersey Region in a range of occupations. Similar to the retail and service sectors of the economy where there are the largest number of jobs in the region, the employment of people living in the region is also dominated by the service and sales sectors. When the resident workforce (261,986) is compared to the local workforce (339,423) it indicates that 77,437 workers commute into the region for employment.²⁰

²⁰ The in-commutation figure is probably much greater than 77,437 because the referenced calculation does not account for out-commutation. There are individuals who commute into the region for employment, which means that those jobs are not available to the resident labor force, which is then compelled to commute outside of the area. Neither do the figures account for seasonal employment, which probably swells the number of jobs available in the region.

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Table 12
Current Labor Force Characteristics: Counties and Region

EMPLOYMENT SECTORS	PERSONS EMPLOYED BY COUNTY				REGIONAL TOTALS
	Atlantic	Cape May	Cumb	Salem	
Management, Business, & Financial Occupations	14,938	5,458	5,482	3,435	29,313
Computer, Engineering & Related Science Occupations	4,102	1,173	1,371	1,075	7,721
Education, Legal, Arts and Media Occupations	12,839	5,103	5,710	3,076	26,728
Healthcare Practitioner & Technical Occupations	7,782	2,848	3,797	1,968	16,395
Service Occupations	37,429	9,547	13,877	4,859	65,712
Sales and Office Related Occupations	29,457	10,500	13,319	6,539	59,815
Natural Resource, Construction & Maintenance Occupations	10,519	4,573	7,656	3,547	26,295
Production, Transportation, & Materials Moving Occupations	10,671	2,968	11,502	4,866	30,007
TOTALS	127,737	42,170	62,714	29,365	261,986

Source: US Bureau of the Census, American Fact Finder, 2017

While Table 12 illustrates employment by occupation, another way to look at the resident employment base is to examine employment by industry sector. Table 13 makes that comparison. As can be seen from that table, the services sector dominates the resident labor force particularly in Atlantic and Cape May Counties. Cumberland County has significantly higher numbers of individuals employed in manufacturing and the agricultural sectors; and Salem County is the county with the largest number of persons employed in the utility industry.

Table 13
Resident Employment by Industry Sector

Economic Sector	Atlantic County	Cape May County	Cumberland County	Salem County	Total Employed Residents
Agri/Mining	518	350	2,338	696	3,902
Construction	8,167	3,497	3,783	2,212	17,659
Manufacturing	5,322	1,268	8,037	3,329	17,956
Transportation	3,938	1,063	2,659	1,725	9,385
Communication	1,744	501	665	390	3,300
Utilities	963	450	739	1,337	3,489
Wholesale Trade	2,246	1,002	2,050	1,220	6,518
Retail Trade	14,534	5,546	7,209	2,966	30,255
Finance ,Ins, RE.	6,177	2,827	1,973	1,473	12,450
Services	77,222	22,408	28,939	12,675	141,244
Government	6,906	3,258	4,322	1,342	15,828
TOTALS	127,737	42,170	62,714	29,365	261,986

Source: US Bureau of the Census, American Fact Finder, 2017

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SUMMARY

By comparing Table 12 (jobs in the region) with Table 13 (resident employment), the industry sector with the largest number of individuals commuting into the region for work is the retail sector. The service sector and the government sector also bring a large number of individuals to the region for work. All of the other sectors, with the exception of wholesale trade, export labor to other areas of the State or the greater region.

The following section of the report looks at the potential impact on the region should there be a significant loss of jobs in the utility/power industry and makes some suggestions about how such losses could be offset by growth in some of the stronger sectors of the region's economy.

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**SECTION 4
THE IMPACTS ON THE REGION FROM PLANT DOWNSIZING OR CLOSING**

In a white paper published by Electric Light & Power and International Power Grid, there were numerous impacts on fiscal health, tax rates, school construction and other economic and social indicators.²¹ These impacts will be discussed in more detail in the following pages, beginning with an overview of direct economic impacts.

DIRECT ECONOMIC IMPACTS

The Nuclear Plants

The Brattle Report indicates a direct net loss of 1,400 jobs at the nuclear facilities should the Salem and Hope Creek plants close.²² An estimate of job impacts statewide is illustrated in the table below. This table estimates the number of jobs impacted in each sector of the statewide economy as a result of PSEG’s nuclear plants.

**Table 14
Statewide Employment Impacts from Nuclear Power Generation**

Category	Estimate of Employment Impact
Sales and Related Office and Administrative Support	1,220
Construction and Extraction	780
Management, Business & Financial Occupations	510
Installation, Maintenance and Repair Occupations	350
Food Preparation and Serving Related Occupations	330
Building and Grounds and Personal Care Occupations	280
Transportation and Materials Moving Occupations	270
Production Occupations	260
Healthcare Occupations	250
Computer, Mathematical, Architectural and Engineering Jobs	240
Other	1,310
TOTAL IMPACT	5,800

Source: Brattle Report, 2017.

²¹ <https://www.elp.com/articles/2017/03/small-towns-cope-with-effects-of-closed-nuclear-power-plants.html>

²² The estimated 1,600 jobs currently provided at the nuclear plant would be offset by approximately 200 new jobs that would be created at other power generators to offset any closing.

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Human Costs

There are many potential costs to quality of life associated with the loss of jobs or the closing of any large industry in the region. These impacts were felt when the gaming industry suffered a significant decline in the recent decade. The loss of large employers such as General Mills/Progresso in Vineland resulted in layoffs of 370 individuals.

Such downsizings lead to a need for labor force retraining and in some instances causes employees to leave the region for work elsewhere. Companies often cease to contribute to philanthropical organizations and events. The Yankee Nuclear case study indicated that charities such as little leagues and other charities suffered from a lack of donations as a result of the plant closing.

However, there is evidence that there are also positive impacts stemming from plant closures, particularly nuclear plants. In a study performed by Olsen and Wolff, various economic indicators including housing prices and unemployment rates were positively affected following closures.²³

Benefits

There are also benefits that stem from the power plants remaining open and operative. The Brattle Study notes significantly that closure of the nuclear plants would have adverse impacts on air emissions. Emissions of carbon dioxide, nitrogen oxide, and sulfur dioxide would be much higher as a result of any plant closure since the power demands in the region would be met most likely by coal or natural gas plants elsewhere in the region or within the grid network.

FISCAL IMPACTS

As seen from the loss of casino and gaming jobs in the period 2005-2015, a serious economic decline in any industry can have significant impacts on the economy of a host community and region. In focusing specifically on the loss of energy jobs, these often high technology positions also mean a loss in the purchasing power of neighborhoods and communities.

²³ Nuclear Reactors in the US: Housing Values, Sorting, Migration and Employment, Skylar M. Olsen and Hendrick Wolff, 2013. From the study: *In contrast to the results from the plant placement set, plant closures in the 1990s have a net positive impact on housing values. They increase by 10%. Recall that treatment for the plant placement set drops home values by the same magnitude in the 1970s. Also inverting the effects of plant placement, tenure rates and population density increased with the removal of accident risk. However, not all the effects of plant placement are reversed. For example, plant closures further increased the portion of the population with college degrees (14 percentage points), dropped in the unemployment rate (-2 percentage points), and increased household income (19%) within the 5-mile treatment area of these plants. This is possibly due to labor needed for the decommissioning of the nuclear power reactors.*

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UNCERTAINTIES

There are a number of uncertainties that cannot be measured adequately at this time. The timeline for decommissioning the plants is one of them. Based on the case studies assembled by the Nuclear Regulatory Commission, the cost of decommissioning nuclear plants cost in the neighborhood of \$350,000,000 in 1995 dollars, or \$590,000,000 today.²⁴ Decommissioning can take up to 15 years to complete, so these costs are spread over a long period of time or an estimated \$39,000,000 annually.

Another estimate provided in conjunction with the Kewaunee Nuclear Plant Closing estimates a cost closer to \$900,000,000, with \$474,000,000 or 53% of costs going toward direct labor.²⁵ So, given a conservative estimate of \$500,000,000 to decommission the Salem facilities, this would mean a direct labor impact of \$265,000,000 over some length of time – 15 years – at \$17,667,000 per year. Although not all of these dollars will be spent in Salem County, the bottom line is that even with decommissioning, the economic impact of the Salem facilities both locally and regionally will be significant for many years to come.

The Speed of Alternative Energy Development

The proposed off-shore Wind Energy Facility being proposed by Orsted has the potential to impact the region in many ways. First, it will provide new, high technology jobs. It will generate clean energy for the region. It may reduce the need for existing power facilities, and it may utilize the B.L. England or PSEG sites for transmission, assembly, or some other aspects of off-shore energy production. None of these impacts is certain, however. The coming months and years will dictate the ultimate impact that off-shore power generation will have.

The National Economy and the Regulatory Environment

Impacts on the future of the power industry and the overall economy of southern New Jersey also depend on the national economic and regulatory environment. National recessions have always cut more deeply in southern New Jersey where agriculture, tourism, manufacturing, and the hospitality industries are significantly impacted. The principal purpose for examining resiliency options is to broaden the region's economic base to withstand more successfully, trends at the national and regional levels.

²⁴ <https://www.nrc.gov/waste/decommissioning/faq.html#19>

²⁵ <https://www.eia.gov/todayinenergy/detail.php?id=33792> (Kewaunee Scenario 1)

Weather Events

Fluctuations in jobs, new clean energy, and the regional and national economy are not the only threats to economic resiliency in the region. Weather events have also proven to cause substantial disruptions. According to the NJ Energy Master Plan, 2015, “Superstorm Sandy” downed 9,441 utility poles, left more than 100 transmission lines out of service, and damaged or flooded more than 4,000 transformers statewide, leaving 2.8 million electric customers without power after the peak of the storm. Full restoration of power took 14 days, despite having more than 17,000 crew workers, coming from across the country, and working around the clock.”²⁶

There are obviously other uncertainties that can impact on the regional economy and the ability of the region to grow and diversify. No organization can plan completely and perfectly for what is always an uncertain future. The following pages offer some suggestions for exploring initiatives that could offer opportunities for new investment and ultimately greater resiliency in the South Jersey economy.

²⁶ *NJ Energy Master Plan, 2015, p. 54*

**SECTION 5
EXAMINING RESILIENCY OPTIONS AND OPPORTUNITIES**

RESILIENCY OPTIONS

Regional Strengths and Assets

Table 4 on page 9 outlined those sectors of the economy with the greatest concentration of employers. This table suggests trends in the regional economy that show growth or the greatest potential for expansion in the following areas:

- Utilities
- Construction
- Manufacturing
- Transportation
- Retail Trade
- Real Estate/Leasing
- Health Care
- Hospitality Services (Accommodations, Food Services)

In addition, there are other assets of the region that can be used to grow the economy and offset any long-term downturns in the power industry or other economic sectors. The region's proximity to Philadelphia and other large urban centers in the northeast is one major asset. Its location near the major interstate highway system in the greater northeast including the New Jersey Turnpike (I-95), I-295, and other national arteries means that goods and services can be easily transported to ports, population centers nationally, and even to international destinations. The Port of Paulsboro is a rapidly developing transportation center located just north of the Southern New Jersey Region, where wind and alternative energy development is being planned. The B.L. England plant has also been discussed as an alternative energy site.

A second asset is the region's internationally renowned shore and recreational destinations. Less well known are the area's environmental assets. Nationally designated waterways, internationally significant bird migration routes, historic and cultural assets, and pristine wetlands all make for a wide range of marketable destinations.

Tourism

The tourism industry in particular benefits from the region's geographic location. The industry in the region is expanding after the "Great Recession" and a downturn in the casino business.

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The most recent (2018) report from Tourism Economics on the health of the State’s tourism industry reported that for the first time since 2006, there was an increase in the bricks and mortar gaming venues in Atlantic City. Overall, revenue from tourism increased region-wide, as shown in Table 16 even though the effect of the gaming slow down in Atlantic County remains evident.

Table 16
5 Year Trend in Tourism Revenue for the Southern New Jersey Region

JURISDICTION	2012	2017	% CHANGE
Atlantic County	\$7,567,000,000	\$6,977,000,000	-7.8%
Cape May County	\$5,395,000,000	\$6,363,000,000	+17.9%
Cumberland County	\$317,000,000	\$348,000,000	+9.8%
Salem County	\$179,000,000	\$200,000,000	+11.7%
Southern New Jersey Region	\$13,458,000,000	\$13,888,000,000	+3.2%

Source: Economic Impact of Tourism in New Jersey, 2017. Tourism Economics Report, released January 2018.

Tourism is clearly one of the largest industries in the region generating almost \$14 Billion dollars in revenue annually. Roughly one job is created for every \$100,000 in tourism spending statewide. That means that the tourism industry in the Southern New Jersey region creates at a minimum over 166,000 jobs.²⁷ With additional emphasis region-wide on tourism development, this figure will increase.

Recommendations

1. Regional Clearinghouse. The SJEDD can become a clearinghouse for regional information and resources that promote tourism in the region. The website can be an initial point of contact for individuals interested in shore based tourism or ecotourism.
2. Technical Services and Support. The SJEDD can provide technical support, grant resources, and other assistance to counties, municipalities, and non-profit organizations in the region to help them identify funding and prospective partnerships to advance their tourism agendas.

Ecotourism and Cultural Tourism

Beyond the traditional “shore-related” tourism, the region also has many natural resources, cultural and historical assets that can serve as a basis for future growth and job development. Some of these assets such as “Cow Town,” Wheaton Village, the Cape May Zoo, Historic

²⁷ *Tourism Economics Report, 2018.* Because the overall ratio is a statewide estimate, a region such as southern New Jersey where tourism is such a vibrant industry probably has a much higher ratio of jobs/dollars expended.

SOUTH JERSEY ECONOMIC DEVELOPMENT DISTRICT RESILIENCY STUDY, 2019

Smithville, boating from Fortescue or birding along the National Wild & Scenic Maurice River are just a few examples.

Recommendations

1. Regional Marketing Opportunities. As discussed under tourism on page 42, the District can provide integrated and coordinated marketing for the full range of tourism assets in the region.
2. Coordination of Festivals and Events Expand Season. Various counties are already working with their tourism partners to extend the tourism season through such events as “The World Series of Birding,” and other spring and fall festivals. A Calendar of Events can be coordinated and promoted regionally through the District and staff can provide technical assistance or a funding channel to augment the calendar.
3. Visitor’s Center Advocacy. For many years, there has been discussion about interpretive centers and visitor’s centers to showcase some of the region’s many assets. Visitor Kiosks might be grant-funded and installed at prime locations along the region’s major arteries such as the Garden State Parkway, Route 55, Route 40 and so forth.

Healthcare

The healthcare industry is one of New Jersey’s largest employers. Health services employ 463,831 New Jersey residents, and represents 10.2% of all jobs statewide.²⁸ In the South Jersey Region, there are more than 31,000 people employed in health services. This represents 9.1% of all jobs in the region. As the southern New Jersey Region’s population expands, so will healthcare services. This will be particularly true for the growing elderly population as the baby boomer age group continues to move into the post-retirement years.

Recommendations

1. Senior Housing and Senior Care Facilities. As in other areas of the Country, senior care facilities including nursing homes, continuous care facilities, assisted living facilities and age restricted housing will expand to meet the needs of the large senior population. In this region, because the cost of housing is much less than in central and northern areas of the State, this may be an industry that can be targeted by the SJEDD and one that might fit particularly well as redevelopment projects in some of the region’s more densely developed communities.
2. Partnerships with Rowan University. Rowan University has a new medical school. Engaging students in the region, or adults seeking career changes with some of the

²⁸ ESRI, 2018 statistical estimate

medical training and opportunities that exist through Rowan can help to position the local workforce to take advantage of the changes in healthcare and medical services. The community colleges, workforce training organizations, technical and other schools can all collaborate to advance these opportunities.

3. Job Training Initiatives. With or without a partnership with Rowan, job training programs aimed at nursing, lab work, and other healthcare careers can be expanded to enhance job opportunities and make the region more attractive for healthcare investments.

Agribusiness and Food Processing

Agribusiness has been a longstanding component of the South Jersey economy. While farming of various types dominates the landscape of the region – particularly in the central and western areas, food processing and distribution have become staples in the agribusiness field. The Rutgers Food Innovation Center has helped over 1,000 companies develop or expand their business in the 15 years that the Center has been active.

Recommendations

1. Ongoing support for Food Industry. Through the work of the Rutgers Food Innovation Center and the new Food Specialization Center and Food Technology cluster being developed in Bridgeton, opportunities to grow the fishing, oystering, and other food production and processing operations which have been a historical part of the region's economy can be expanded.
2. Oyster and Seafood Industry Support. This specialty industry can expand not only through additional processing and packaging initiatives, but through fresh food outlets and regional distribution facilities.

SUMMARY

The South Jersey Region has a number of opportunities to offset declines in employment. There are sectors of the economy that are expanding and others where continued investment and new incentives will spur additional growth. Some of these sectors will involve high technology employment, such as the agriculture, food processing, and healthcare sectors.

However, there are not a sufficient number of potential technology jobs in these sectors to offset the level of high tech employment that would be lost if the power industry's high technology jobs disappear throughout the region. To offset such losses, new high technology industries will have to be created and others will have to be expanded.

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In the final analysis, this report touches the surface of such possibilities. If the South Jersey Economic Development District wishes to pursue these possibilities, there may have to be a much more detailed look at the types of investment in infrastructure, workforce training, marketing, and site development needed to attract the numbers of new companies and/or jobs to offset significant declines in technology employment in the power industry. The following pages summarize several possibilities for growth in some emerging technology sectors.

Alternative Energy Development and Investment

In 2013, the State initiated the Hazard Mitigation Grant Program, HMGP, which provides funding for local governments to support back-up power and alternative energy solutions for local governments to enhance energy resilience.

There is considerable discussion statewide about off-shore wind farms and other alternative energy investments. A recent, June 2019 article from ROI New Jersey noted that the State's Board of Public Utilities awarded the Danish company Orsted the opportunity to develop a 1,100 MW offshore wind farm.²⁹

According to the article, construction of the "Ocean Wind" project "which will be located 15 miles off the coast of Atlantic City, is expected to start in the early 2020s, with the wind farm operational in 2024." The project is expected to create over 3,000 direct jobs annually. The site of the B.L. England Plant has been identified as a possible location for assembly and/or distribution of wind farm components. Officials in Upper Township have expressed an interest in using the B.L. England plant site as a location for linking the offshore power generation to a land based network. Many of the employees who are tied to the Orsted complex will be working within the SJEDD Region. So, this could be a promising development and one that would promote economic resiliency.

As the interest in solar, wind and other energy alternatives becomes more prevalent, both large solar fields and smaller investments in on-site solar facilities will increase the demand for manufacturers and distributors of solar panels and related technology. The Southern New Jersey region, with its available open spaces, should be a prime location for such investments.

In addition to the investment in generating facilities, power companies will have to take steps to secure existing power infrastructure. General Electric prepared a study that focused on what it referred to as "Storm Hardening," meaning the types of steps and investments that power

²⁹ <http://www.roi-nj.com/2019/06/21/industry/orsted-pseg-selected-to-build-off-shore-wind-farm-off-coast-off-atlantic-city/>

SOUTH JERSEY ECONOMIC DEVELOPMENT DISTRICT RESILIENCY STUDY, 2019

generators need to make in order to protect their facilities from storm events. These types of investments can also generate new jobs in the utility industry.³⁰

Recommendations

1. Advocacy Role. The SJEDD Board can advocate statewide and nationally for legislative and other support that advances the region as a location for new, alternative energy investments. For example, the number of “Garden State Growth Zones” could be increased to accommodate or target new investment in alternative energy development.
2. Regional Coordination. With contacts in each of the four county region’s economic development offices, the SJEDD can host meetings and coordinate the marketing and profiling of sites that may be good locations for alternative energy manufacturing and/or distribution.
3. Funding Opportunities. The US EDA, the USD.A., the NJ EDA, and other state and federal agencies provide grant, loan and opportunities for technical assistance that can help the SJEDD and its member communities support the growth of this economic sector.

A New Sector in Aerospace and Aeronautics

Atlantic and Cape May Counties are investing heavily in the aerospace and aeronautic industries. Drone technology is becoming an increasingly important focus of Cape May County’s airport facility and the County’s new Technology Innovation Center. In Atlantic County, the Atlantic County Economic Alliance just completed a plan to develop a new Airport Aviation Training and Maintenance Academy. In addition, the ACEA is launching an aggressive effort to invest in its new Aviation District which includes the Atlantic City International Airport as a location for new aviation and aeronautic industries. A recently received US EDA i6 Innovation Grant to promote “Smart Airport Facilities” at the Atlantic City International Airport and a partnership with Cape May County’s Drone Aircraft Development Program are also creating new opportunities in this field.

Focusing on these sectors of the economy also provide opportunities to expand regional growth and offset any downturn in the power economy.

Recommendations

1. Continue to work with the counties in the region to advance the aeronautic and aviation industries by securing US EDA and related grant funding that helps to invest in business parks, educational training facilities, highway and other infrastructure improvements, and the ancillary activities that support the growth of these industries.

³⁰ https://www.nj.gov/bpu/pdf/reports/NJ_Major_Storm_Response-GE_Final_Report-2014.pdf

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2. Work with the New Jersey Business Action Center to assist in coordinating a marketing and outreach strategy to recruit new aviation and aeronautic companies to the region that specialize in manufacturing, assembly, testing, and other aspects of aeronautic development.
3. Promote new workforce development efforts to provide education and training programs that support the aviation and aeronautic industries through active engagement with the region's two Workforce Development Boards.

Precision and Scientific Glass

For years, there has been interest locally and regionally in repositioning jobs in the glass industry. Glass manufacturing has been a major focus of the region's economy for decades. Scientific and precision glass have been components of that industry, but ones that have not expanded significantly.

Is this a subsector of the glass industry that can be expanded? What skill sets, infrastructure, or other supportive services are needed in order to create a cluster of such businesses in the region? The answers to these and other questions are apparently yes. In October 2019, the Gerresheimer Glass Company, a German owned firm, opened the first ever Innovation and Technology Center. The *Gx Glass Innovation & Technology Center* will employ up to 25 engineering and technology experts to help address the needs of Gerresheimer's clients and to promote new glass products.

Recommendations

1. Collaborate with the Gx Facility
2. Explore partnerships with biopharma companies, healthcare providers, computer technology firms, and other businesses that rely on precision and scientific glass

Nutraceutical Development and Technologies

Nutraceuticals are food additives or food fortified products that not only supplement the diet but also assist in treating or preventing disease. Nutraceutical development occurs in partnership with research stations, universities and laboratories that are invested in food research and innovation. Given the area's long-standing leadership in food processing and development, this may be a high technology sector with regional viability. It would also be an industry sector that would provide a high technology niche for the region.

SOUTH JERSEY ECONOMIC DEVELOPMENT DISTRICT RESILIENCY STUDY, 2019

Recommendations

1. Explore nutraceutical industry and regional recruitment possibilities with Rutgers University Food Innovation Center
2. Engage county partners where seafood, food processing, and other related food development to discuss to develop nutraceuticals and the possibility of processing nutraceutical added products

Software and Related Development

Walhalla, North Dakota has positioned itself as a location for computer and software development companies. Through partnerships with the Red River Regional Council, the City of Walhalla, and the North Dakota Job Training Organization, “On Prairie Software” was able to set up shop and begin recruiting employees. Cited as reasons for this location are: Safe community; good work ethic; affordable land and labor; and ability to position software development technology in the US

The southern New Jersey Region has better access to labor, regional markets, and large technology centers than North Dakota. With access also to other regional assets such as recreation, cultural attractions, and world class sporting events, the small town environment of many areas of southern New Jersey may provide ideal locations for small start up and mid size companies.

Recommendations

1. Assemble a Market and Infrastructure Assessment to determine the types of companies and range of needs necessary to attract software and related businesses
2. Focus on the niche businesses within this industry sector that are most suitable for the southern New Jersey Region.
3. Develop a Recruitment Plan and Marketing Strategy

NEXT STEPS

This report has touched briefly on the possibility of significant losses in high technology employment and the future of the power industry in the southern New Jersey Region. It has highlighted opportunities in existing industries for expanding employment and growing those job sectors. However, the loss of high technology jobs poses a more challenging dilemma.

This generalized overview is intended as a first step in defining the types of industries that might provide greater resiliency in the economy of southern New Jersey. These options must

**SOUTH JERSEY ECONOMIC DEVELOPMENT DISTRICT
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be evaluated by the SJEDD Board to determine which sector deserves greater analysis and investment.

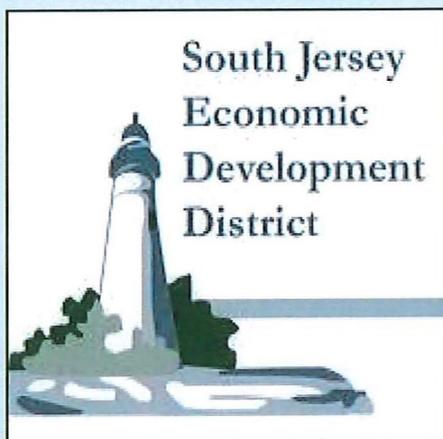
The SJEDD Board may wish to establish a Technology Subcommittee to begin discussing the types of industries, target locations, and levels of support needed to advance a business recruitment strategy. A formal request for funding from US EDA can provide the Board with a more detailed look at a few sectors and the types of infrastructure and region wide effort needed to advance this agenda.

**SOUTH JERSEY
ECONOMIC
DEVELOPMENT
DISTRICT**

**2019 Resiliency
Report**

TAB 2

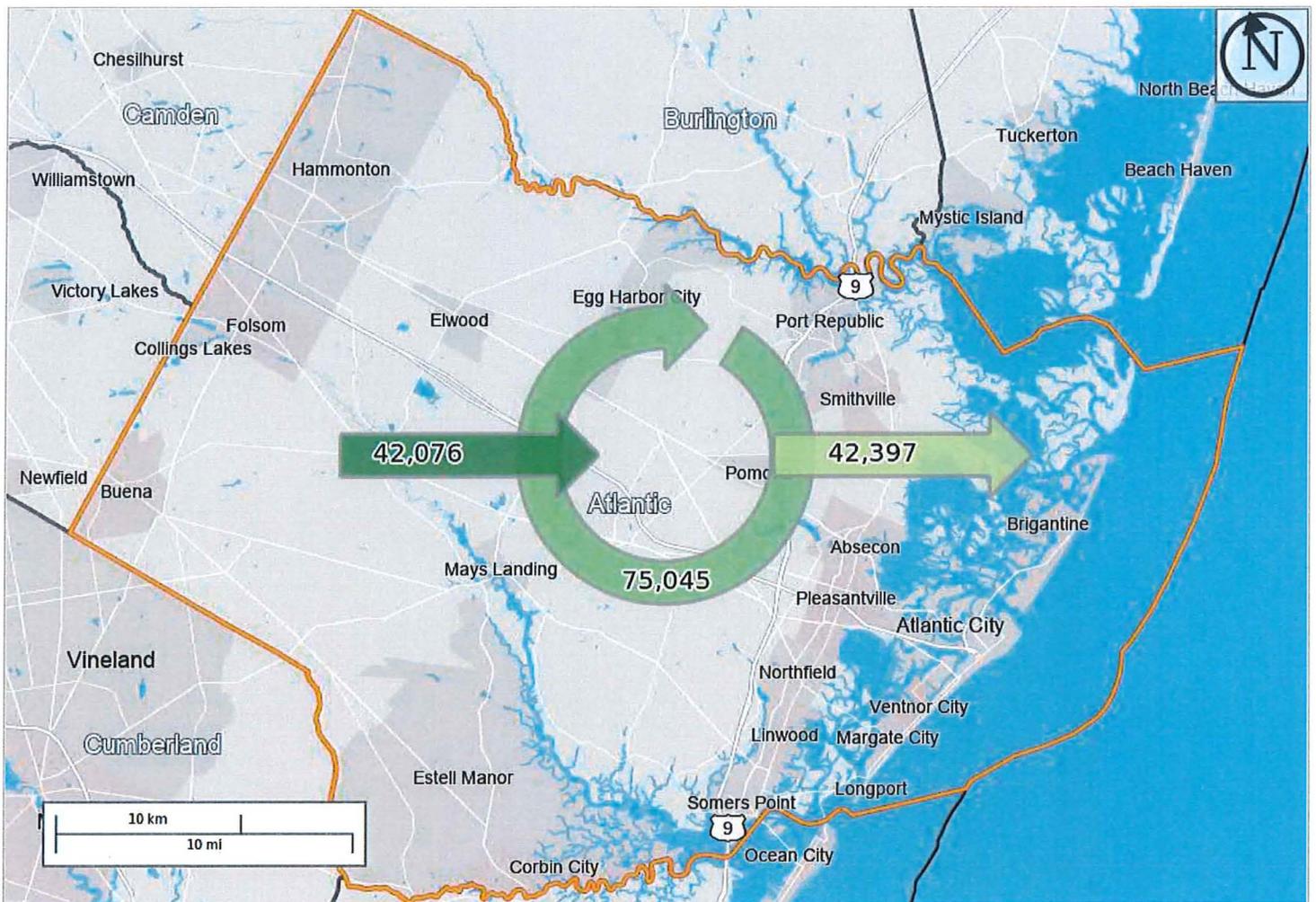
APPENDIX



Inflow/Outflow Report All Jobs for All Workers in 2015

Created by the U.S. Census Bureau's OnTheMap <https://onthemap.ces.census.gov> on 04/26/2019

Inflow/Outflow Counts of All Jobs for Selection Area in 2015 All Workers



Map Legend

Selection Areas

📍 Analysis Selection

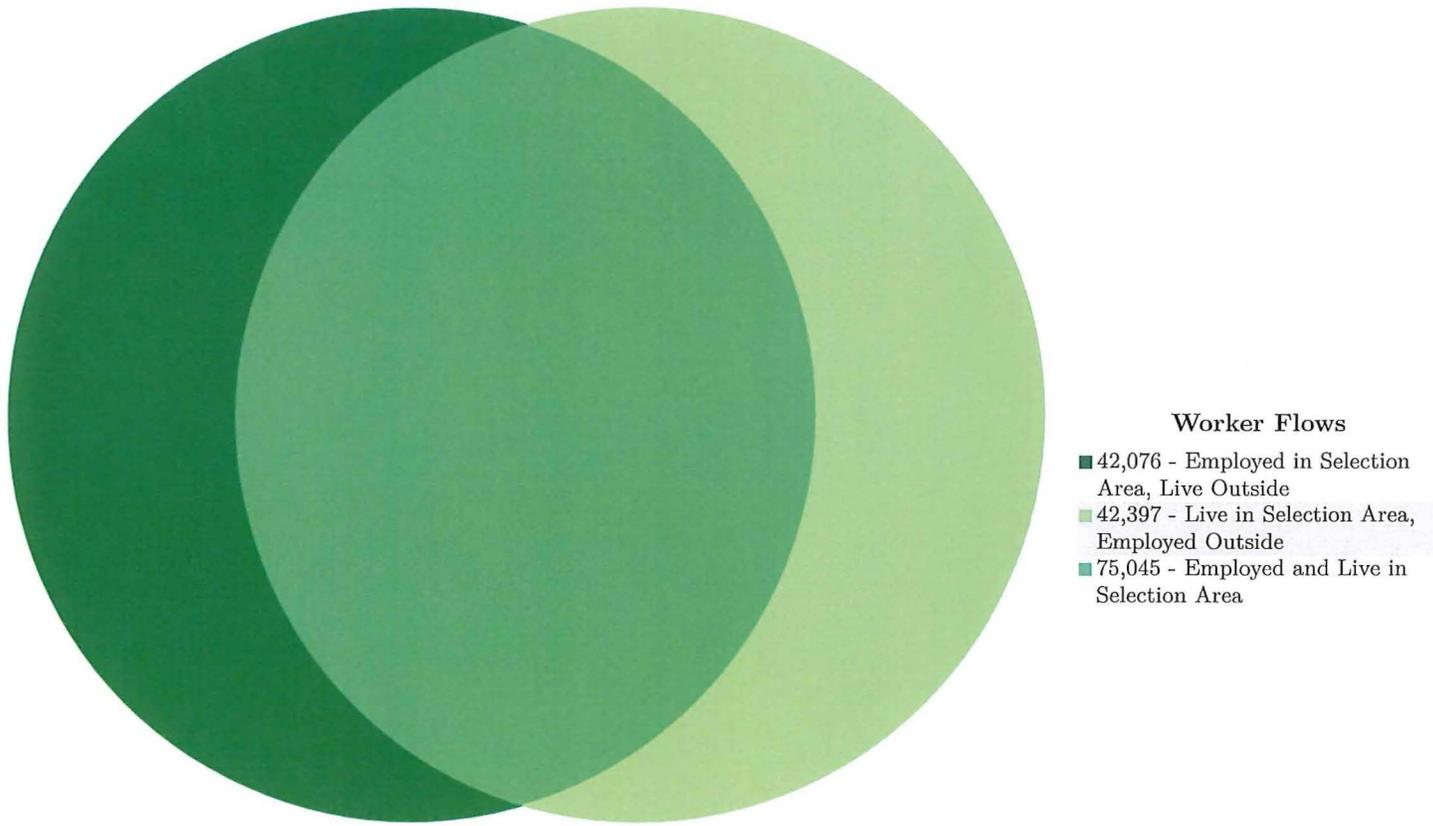
Inflow/Outflow

- ➔ Employed and Live in Selection Area
 - ➔ Employed in Selection Area, Live Outside
 - ➔ Live in Selection Area, Employed Outside
- Note: Overlay arrows do not indicate directionality of worker flow between home and employment locations.



Inflow/Outflow Counts of All Jobs for Selection Area in 2015

All Workers



Inflow/Outflow Counts of All Jobs for Selection Area in 2015

All Workers

Worker Totals and Flows	2015	
	Count	Share
Employed in the Selection Area	117,121	100.0
Employed in the Selection Area but Living Outside	42,076	35.9
Employed and Living in the Selection Area	75,045	64.1
Living in the Selection Area	117,442	100.0
Living in the Selection Area but Employed Outside	42,397	36.1
Living and Employed in the Selection Area	75,045	63.9

Additional Information

Analysis Settings

Analysis Type	Inflow/Outflow
Selection area as	N/A
Year(s)	2015
Job Type	All Jobs
Selection Area	Atlantic County, NJ from Counties
Selected Census Blocks	10,965
Analysis Generation Date	04/26/2019 12:39 - OnTheMap 6.6
Code Revision	862b6296f5ebf0d900479b7d896f6536db69dfe7
LODES Data Version	20170818

Data Sources

Source: U.S. Census Bureau, OnTheMap Application and LEHD Origin-Destination Employment Statistics (Beginning of Quarter Employment, 2nd Quarter of 2002-2015).

Notes

1. Race, Ethnicity, Educational Attainment, and Sex statistics are beta release results and are not available before 2009.
2. Educational Attainment is only produced for workers aged 30 and over.
3. Firm Age and Firm Size statistics are beta release results for All Private jobs and are not available before 2011.

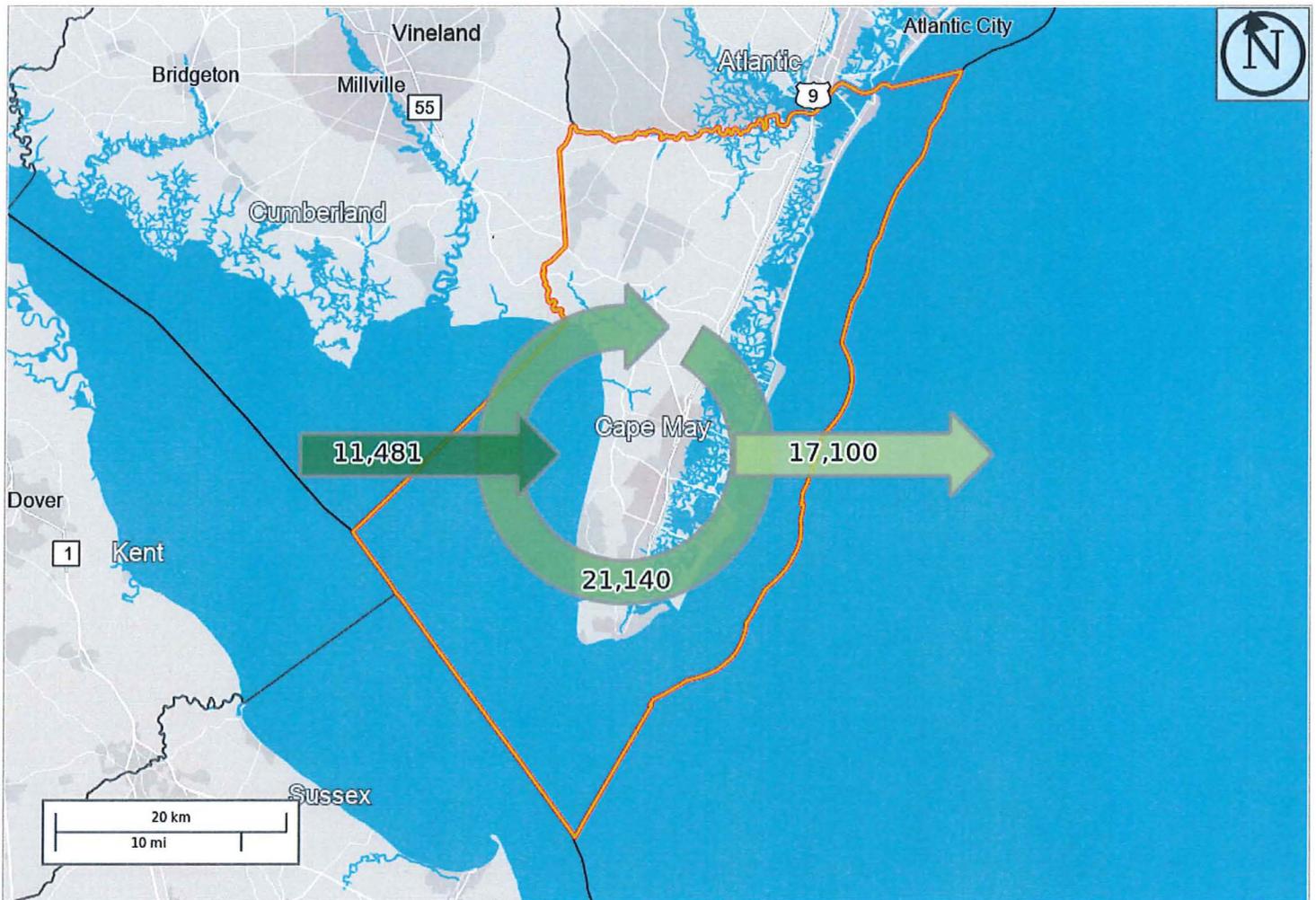
Inflow/Outflow Report

All Jobs for All Workers in 2015

Created by the U.S. Census Bureau's OnTheMap <https://onthemap.ces.census.gov> on 04/30/2019

Inflow/Outflow Counts of All Jobs for Selection Area in 2015

All Workers



Map Legend

Selection Areas

📍 Analysis Selection

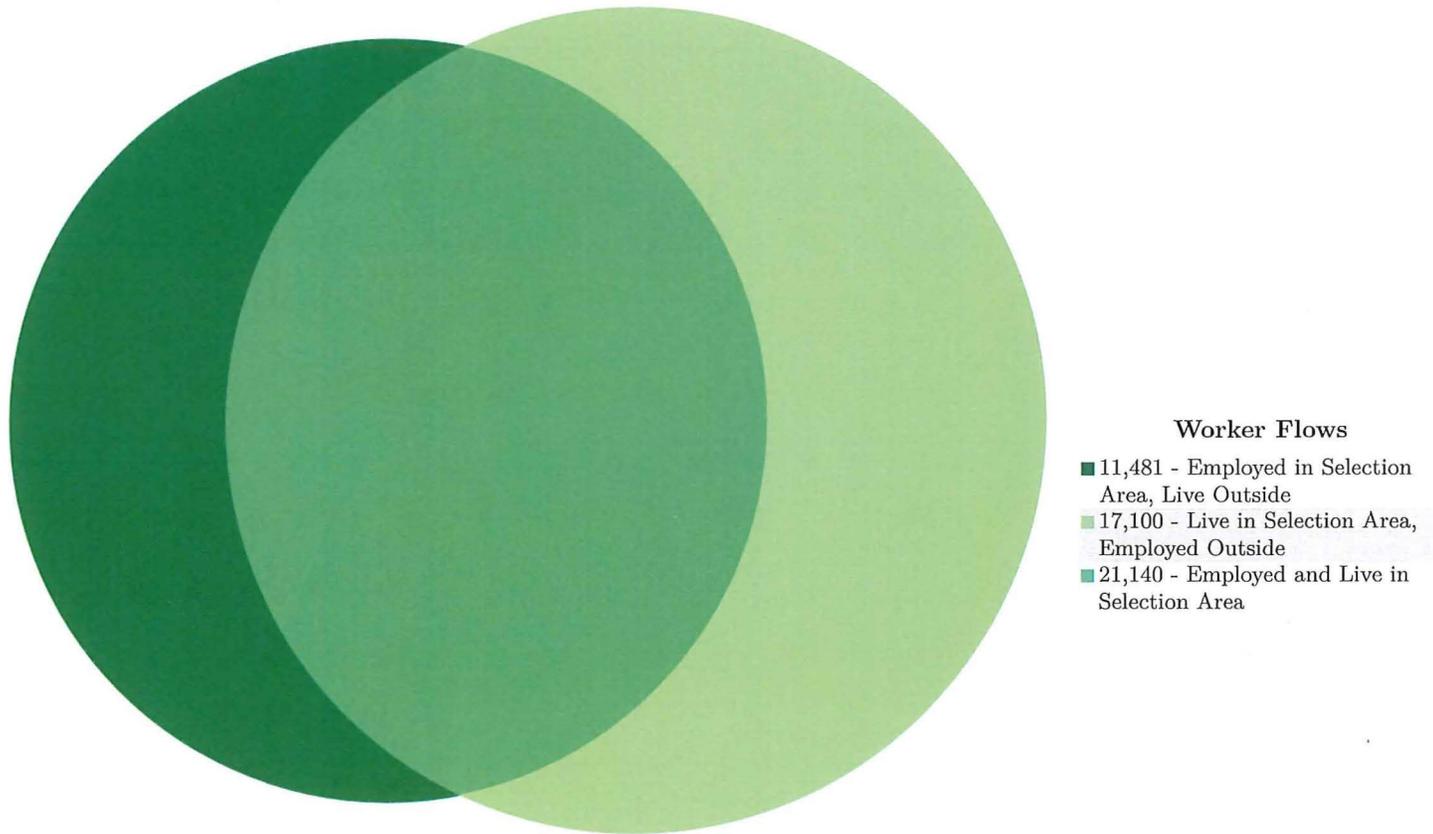
Inflow/Outflow

- Employed and Live in Selection Area
 - Employed in Selection Area, Live Outside
 - Live in Selection Area, Employed Outside
- Note: Overlay arrows do not indicate directionality of worker flow between home and employment locations.



Inflow/Outflow Counts of All Jobs for Selection Area in 2015

All Workers



Inflow/Outflow Counts of All Jobs for Selection Area in 2015

All Workers

Worker Totals and Flows	2015	
	Count	Share
Employed in the Selection Area	32,621	100.0
Employed in the Selection Area but Living Outside	11,481	35.2
Employed and Living in the Selection Area	21,140	64.8
Living in the Selection Area	38,240	100.0
Living in the Selection Area but Employed Outside	17,100	44.7
Living and Employed in the Selection Area	21,140	55.3

Additional Information

Analysis Settings

Analysis Type	Inflow/Outflow
Selection area as	N/A
Year(s)	2015
Job Type	All Jobs
Selection Area	Cape May County, NJ from Counties
Selected Census Blocks	5,181
Analysis Generation Date	04/30/2019 22:31 - OnTheMap 6.6
Code Revision	862b6296f5ebf0d900479b7d896f6536db69dfe7
LODES Data Version	20170818

Data Sources

Source: U.S. Census Bureau, OnTheMap Application and LEHD Origin-Destination Employment Statistics (Beginning of Quarter Employment, 2nd Quarter of 2002-2015).

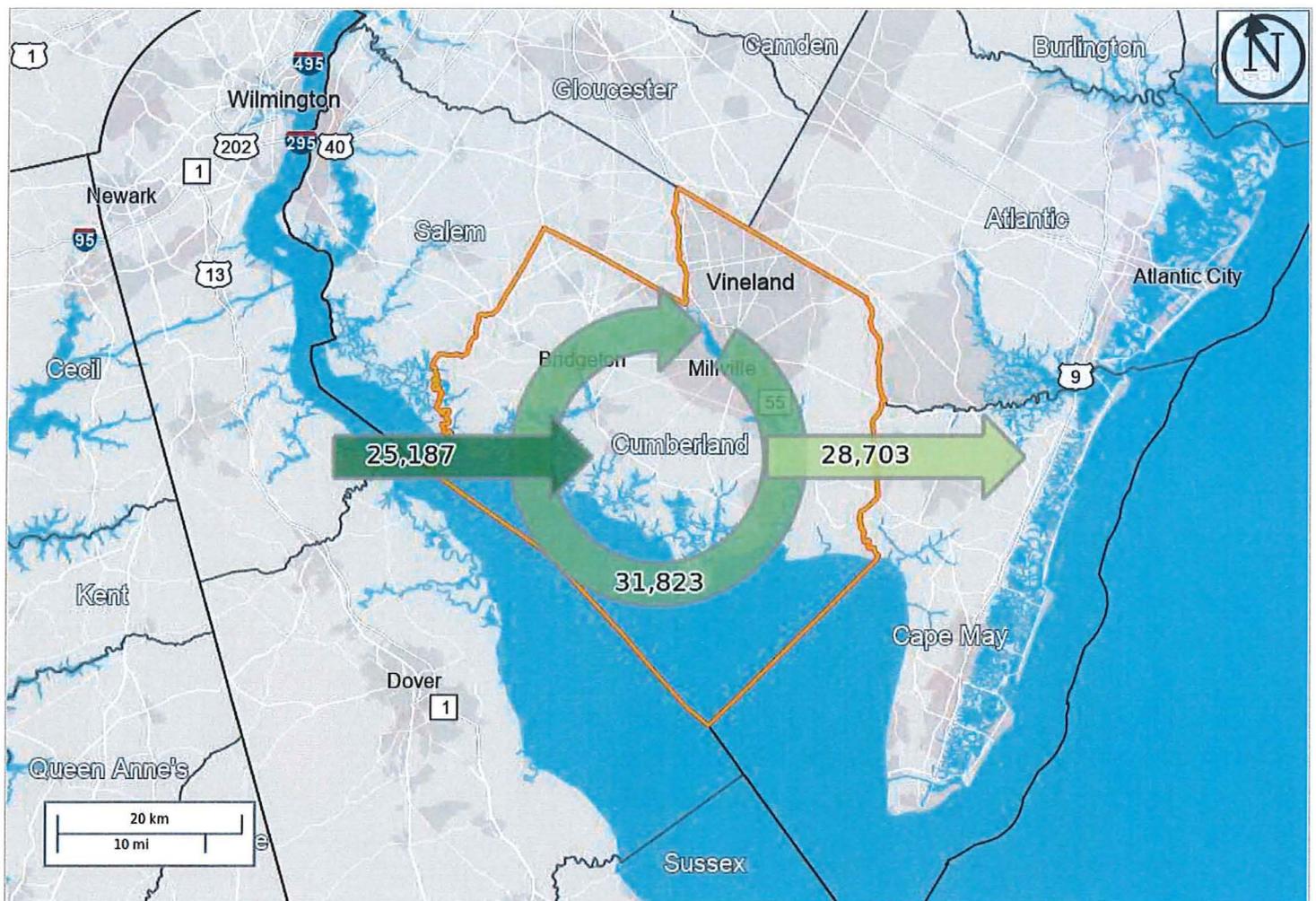
Notes

1. Race, Ethnicity, Educational Attainment, and Sex statistics are beta release results and are not available before 2009.
2. Educational Attainment is only produced for workers aged 30 and over.
3. Firm Age and Firm Size statistics are beta release results for All Private jobs and are not available before 2011.

Inflow/Outflow Report All Jobs for All Workers in 2015

Created by the U.S. Census Bureau's OnTheMap <https://onthemap.ces.census.gov> on 04/26/2019

Inflow/Outflow Counts of All Jobs for Selection Area in 2015 All Workers



Map Legend

Selection Areas

- Analysis Selection

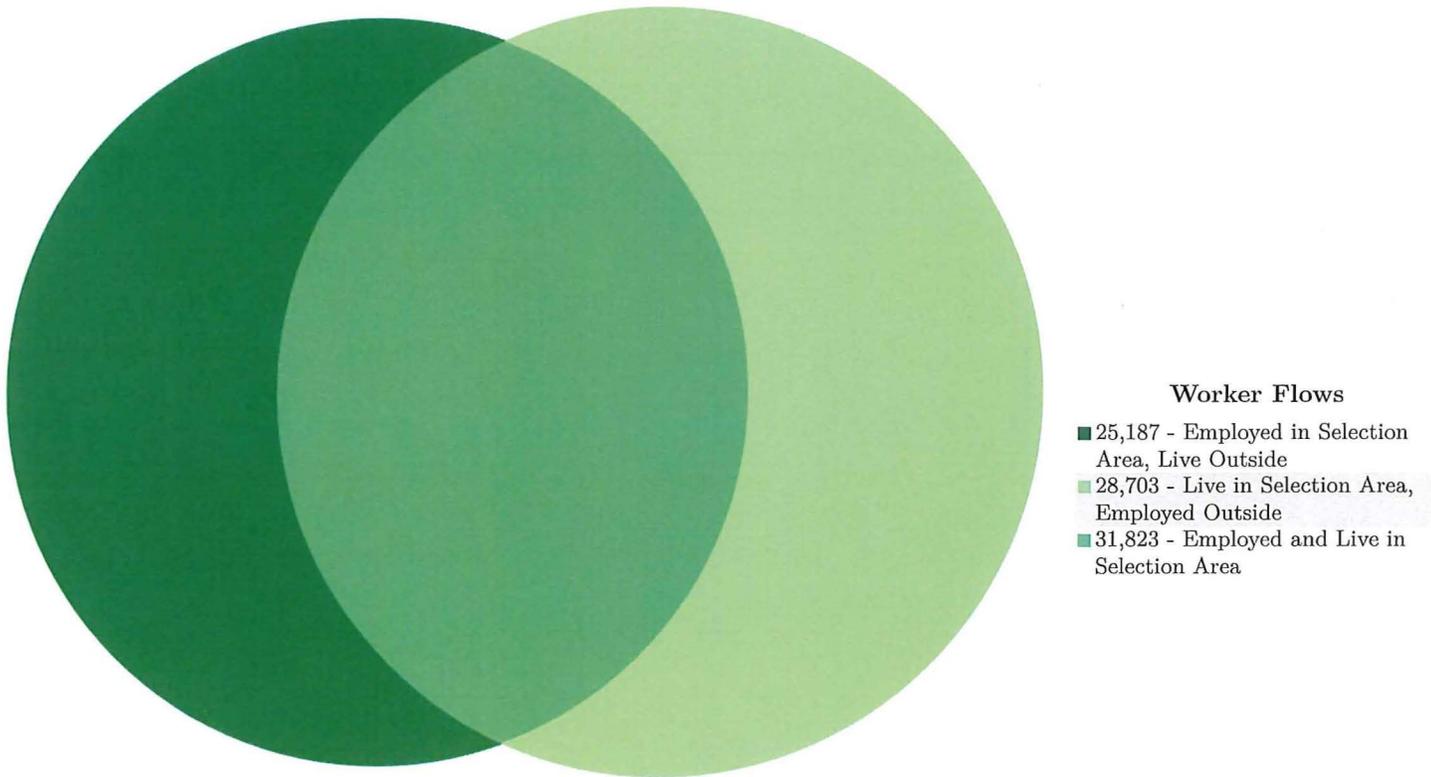
Inflow/Outflow

- Employed and Live in Selection Area
 - Employed in Selection Area, Live Outside
 - Live in Selection Area, Employed Outside
- Note: Overlay arrows do not indicate directionality of worker flow between home and employment locations.



Inflow/Outflow Counts of All Jobs for Selection Area in 2015

All Workers



Inflow/Outflow Counts of All Jobs for Selection Area in 2015

All Workers

Worker Totals and Flows	2015	
	Count	Share
Employed in the Selection Area	57,010	100.0
Employed in the Selection Area but Living Outside	25,187	44.2
Employed and Living in the Selection Area	31,823	55.8
Living in the Selection Area	60,526	100.0
Living in the Selection Area but Employed Outside	28,703	47.4
Living and Employed in the Selection Area	31,823	52.6

Additional Information

Analysis Settings

Analysis Type	Inflow/Outflow
Selection area as	N/A
Year(s)	2015
Job Type	All Jobs
Selection Area	Cumberland County, NJ from Counties
Selected Census Blocks	4,461
Analysis Generation Date	04/26/2019 12:40 - OnTheMap 6.6
Code Revision	862b6296f5cbf0d900479b7d896f6536db69dfe7
LODES Data Version	20170818

Data Sources

Source: U.S. Census Bureau, OnTheMap Application and LEHD Origin-Destination Employment Statistics (Beginning of Quarter Employment, 2nd Quarter of 2002-2015).

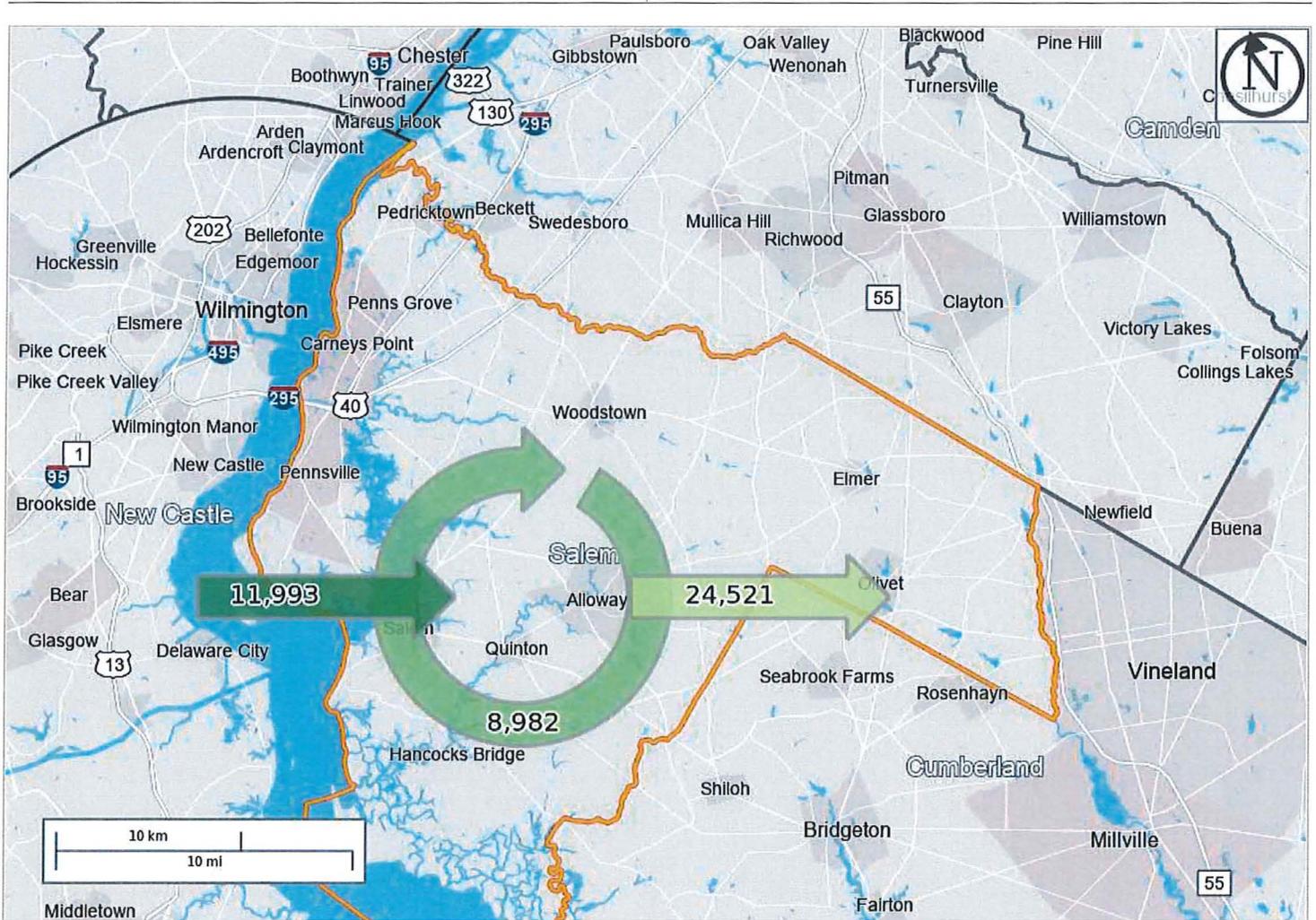
Notes

1. Race, Ethnicity, Educational Attainment, and Sex statistics are beta release results and are not available before 2009.
2. Educational Attainment is only produced for workers aged 30 and over.
3. Firm Age and Firm Size statistics are beta release results for All Private jobs and are not available before 2011.

Inflow/Outflow Report All Jobs for All Workers in 2015

Created by the U.S. Census Bureau's OnTheMap <https://onthemap.ces.census.gov> on 04/26/2019

Inflow/Outflow Counts of All Jobs for Selection Area in 2015 All Workers



Map Legend

Selection Areas

- Analysis Selection

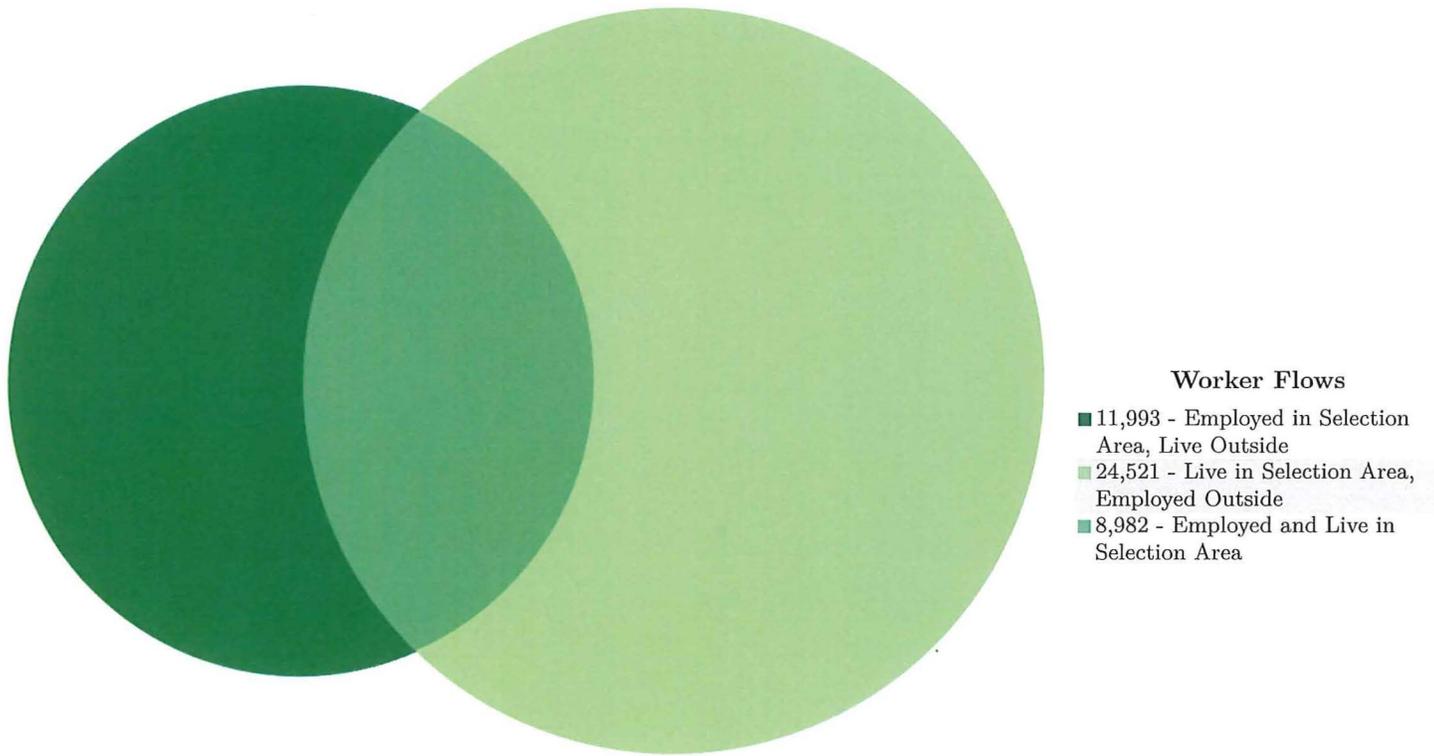
Inflow/Outflow

- Employed and Live in Selection Area
 - Employed in Selection Area, Live Outside
 - Live in Selection Area, Employed Outside
- Note: Overlay arrows do not indicate directionality of worker flow between home and employment locations.



Inflow/Outflow Counts of All Jobs for Selection Area in 2015

All Workers



Inflow/Outflow Counts of All Jobs for Selection Area in 2015

All Workers

Worker Totals and Flows	2015	
	Count	Share
Employed in the Selection Area	20,975	100.0
Employed in the Selection Area but Living Outside	11,993	57.2
Employed and Living in the Selection Area	8,982	42.8
Living in the Selection Area	33,503	100.0
Living in the Selection Area but Employed Outside	24,521	73.2
Living and Employed in the Selection Area	8,982	26.8

Additional Information

Analysis Settings

Analysis Type	Inflow/Outflow
Selection area as	N/A
Year(s)	2015
Job Type	All Jobs
Selection Area	Salem County, NJ from Counties
Selected Census Blocks	2,756
Analysis Generation Date	04/26/2019 12:35 - OnTheMap 6.6
Code Revision	862b6296f5ebf0d900479b7d896f6536db69dfe7
LODES Data Version	20170818

Data Sources

Source: U.S. Census Bureau, OnTheMap Application and LEHD Origin-Destination Employment Statistics (Beginning of Quarter Employment, 2nd Quarter of 2002-2015).

Notes

1. Race, Ethnicity, Educational Attainment, and Sex statistics are beta release results and are not available before 2009.
2. Educational Attainment is only produced for workers aged 30 and over.
3. Firm Age and Firm Size statistics are beta release results for All Private jobs and are not available before 2011.

2020 Resiliency Analysis

SOUTH JERSEY ECONOMIC DEVELOPMENT DISTRICT

Disclaimer

This is an Analysis of the economy and the potential for economic resiliency in the four county region of the South Jersey Economic Development District, (SJEDD.) The report makes assumptions based on the various power generating industries and services, and other industry sectors in the Region today as well as recommendations about possible actions to support economic resiliency. Any recipient, reader or other user (collectively, "User") of this work product ("Work") accepts the Work without any representation or warranty, expressed or implied, that any use of or reliance on the Work is entirely at User's own risk, and that, by acquiring, using or relying on the Work, User releases, acquits and forever discharges the SJEDD, Triad Associates, and any and all contributors to this Work from any and all claims, whatsoever, including but not limited to, any actions, causes of action, demands, rights, punitive damages, costs, loss of use, property damage, bodily injury claims, expenses and liens which it has had, may now have, may claim to have or may hereafter have or claim to have, which in any way result from, arise from, or grow out of the Work.

ESTIMATING THE ECONOMIC CONTRIBUTION AND IMPACT OF THE POWER GENERATING INDUSTRY AND OTHER KEY INDUSTRY SECTORS ON THE ECONOMY OF SOUTHERN NEW JERSEY

*An Analysis of the Regional Economy and
An Assessment of Resiliency Opportunity*

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