

Oswego County Economic Advancement Plan: Existing Conditions Analysis

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Prepared for:

Oswego County, NY



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About Camoin Associates

Camoin Associates has provided economic development consulting services to municipalities, economic development agencies, and private enterprises since 1999. Through the services offered, Camoin Associates has had the opportunity to serve EDOs and local and state governments from Maine to California; corporations and organizations that include Lowes Home Improvement, FedEx, Volvo (Nova Bus) and the New York Islanders; as well as private developers proposing projects in excess of \$600 million. Our reputation for detailed, place-specific, and accurate analysis has led to projects in 29 states and garnered attention from national media outlets including *Marketplace* (NPR), *Forbes* magazine, and *The Wall Street Journal*. Additionally, our marketing strategies have helped our clients gain both national and local media coverage for their projects in order to build public support and leverage additional funding. We are based in Saratoga Springs, NY, with regional offices in Portland, ME; Boston, MA; and Brattleboro, VT. To learn more about our experience and projects in all of our service lines, please visit our website at www.camoinassociates.com. You can also find us on Twitter [@camoinassociate](https://twitter.com/camoinassociate) and on [Facebook](https://www.facebook.com/camoinassociates).

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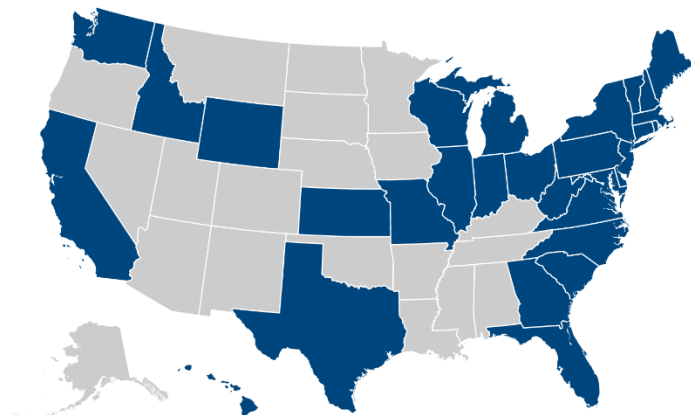


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Executive Summary

Camoin Associates completed this Existing Conditions Analysis for Oswego County, New York to inform our research and support the development of the county's Economic Advancement Plan. Key findings are synthesized in this Executive Summary, interpreting what the analyses mean for future economic development endeavors.

To obtain a comprehensive view of existing conditions in the county, we conducted research across five subject areas – a review of existing planning efforts and initiatives, a tour of the county followed by a series of stakeholder interviews, a demographic analysis, an economic base analysis, and a workforce analysis. During this review, we also held our first workshop with the Steering Committee and discussed with them important emerging ideas and trends in the county. The ideas, goals, values, and concerns expressed by the stakeholders and the Steering Committee informed the key findings of our review of demographic, economic, and workforce conditions and will be carried through in the development of the Economic Advancement Plan, along with these findings.

Like many areas of the Northeast that once thrived on manufacturing industries that have relocated to southern states or other countries, Oswego County faces significant challenges. Through the course of our interview process we found that many of these were in the forefront of the minds of stakeholders. A loss of population, unemployment and underemployment, a high poverty rate, and employers concerned about the ability to attract and retain skilled workers were cited more than once. Research findings in this report support the validity of these concerns.

These issues are among the motivations for the county's Economic Advancement Plan, but they are not the only realities existing within the county. As the Plan is developed and implemented, positive trends must also be identified, nurtured, and publicized.

Conversations and research revealed growth in manufacturing jobs, a relatively younger population than the region, substantial investments in education and business expansion, and strong growth in home sales prices. The *Targeted Industry Analysis* highlights strengths in energy production, manufacturing, and food processing that can create opportunities for development. Findings from this report, the *Targeted Industry Analysis*, *Infrastructure Analysis*, and *Comparison Analysis* all inform and support the *Action Plan Matrix* of recommended goals, objectives, and specific actions for Oswego County.

Key findings about current demographics, economic activity, and workforce, plus stakeholder insight from interviews and workshops, are presented in this Executive Summary, with supporting detail and data in appendices.



Key Findings from the Demographic, Economic, and Workforce Analyses

The data from which these findings are drawn is included in tables with brief explanatory text in Appendix A. Oswego County is compared to the Central New York Region, comprised of Onondaga, Oswego, Cayuga, Madison, and Cortland Counties, and to Upstate New York, which is defined as the state, excluding New York City and its nearest counties.












Demographics

- *Oswego County's population is ageing, not growing.* The trend of low to no growth in population, coupled with an increasing median age and more residents in the older cohorts of 55 years and older, is a challenge for the region and the entirety of Upstate. However, the county still has a slightly higher proportion of its residents in the younger age cohorts, with 35.4% of residents aged 24 and younger compared with 32.8% and 31.4% in the region and Upstate NY, respectively.
- *Median Household Income (MHI) in Oswego County lags behind the Central NY region and Upstate.* At \$47,256 per year for 2016, MHI is 9% lower than in the Central NY region at \$51,538. Upstate overall has a higher MHI of \$53,004. Furthermore, while both Central NY and Upstate are projected to increase MHI substantially by 2021, by \$3,298 and \$4,430, respectively, the county's MHI is projected to grow by only \$811 or 2%, which is lower than most measures of inflation, particularly for food and energy.

Median Household Income calculates the income of all earners in a household, so a family with two working partners has a higher MHI than either of those individuals would in a solo household. Shifts in marital patterns, including later marriage and divorce, both tend to depress MHI. Single-earner households also require jobs with relatively higher wages to maintain the same living standard as two-earner households, and this is particularly important where there are children.

Oswego County recognizes that an economic development approach that successfully raises MHI goes beyond adding higher paying jobs. Initiatives such as Ahead Together and adult education through the Center for Career and Community Education and CiTi are working toward re-engaging dislocated and discouraged workers.

- *Home values in Oswego County are rising faster than in the other geographies.* Home sales prices have risen 18% to \$100,000 in Oswego County since 2014, more than three times as fast as in Central and Upstate NY. Home prices are a good indicator of market improvements, but only provide information on properties that are offered for sale. Median values, which reflect a broader set

	2010 - 2016	2016	2016 - 2021
Population Growth 	 1.2%	124K	 0.4%
Median Age 	 3.1%	39.5	 3.0%
Median HH Income 	 4.2%	\$47K	 2.0%
Median Home Sales 	 18% <small>*From 2014</small>	\$100K	—

of existing homes, still lag behind the region and Upstate. A single-family home in the county has a median value of \$92,579 compared with \$127,110 in the Central NY region and \$148,985 in Upstate, as a whole. This gives the appearance of relative affordability, but the real property taxes on a median-priced home range from a low of \$217 per month to a high of \$456, and average \$308 per month.¹ Compared with an estimated \$398 per month mortgage payment to purchase a house, the property tax is a substantial sum that, unlike the mortgage, can potentially increase every year.²

Inconsistent local zoning and code enforcement fail to protect a homeowner's investment from sharp neighborhood changes or decline. Such changes can lead to concerns about having sufficient resources to maintain school quality, and even a feeling that communities do not have much to offer new residents and families, which can create further downward pressure on home values. Wage growth and job growth may therefore make purchasing a home more affordable, but efforts to make these purchases more desirable are also needed. The Land Bank (with its recent infusion of \$1 million), the Oswego Renaissance Association in the City of Oswego, and Fulton Block Builders in the City of Fulton, are examples of existing efforts to address these issues. Key activities include encouraging and funding improvements by groups of homeowners to create block-by-block momentum, and encouraging code enforcement and the use of zoning and other land use regulations.

Industries and Jobs

- *Oswego County has a high concentration – more than 50% - of jobs in Government, Health Care and Social Assistance, and Retail.* Local government jobs are declining in number. Retail jobs can be a good introduction to work for young people, but are less likely to generate self-supporting income. These industries generally don't bring money into the county economy from other regions, with the exception of "destination retail," which include regional malls, or large national specialty stores such as outdoor retailers.

Health Care and Social Assistance can provide well-paying jobs in certain areas such as physicians and registered nurses, but the area of greatest projected growth in that industry is in social assistance, where wages average under \$30,000 per year.

Of the 9,486 "Government" jobs in 2016, 1,611, or 17%, exist within public colleges, universities, and professional schools. This is largely faculty and staff at SUNY Oswego, with some locally-based faculty or staff of Cayuga Community College potentially included.³

- *Manufacturing jobs constitute 8.8% of jobs in the county and approximately 450 new jobs are expected by 2026.* These jobs generally pay above-average wages. Primary metal (chiefly aluminum in the county), fabricated metals, machinery, and chemical manufacturing pay average wages of \$65,000 per year in the county and are expected to continue growing.

Overall, 152 manufacturing jobs were lost between 2006 and 2016 in addition to the loss of 294 food processing jobs and 196 paper manufacturing jobs. These losses offset some of the growth in other sectors, such as the ones listed above and computer and electronic manufacturing, where jobs more than doubled from 20 to 54. However, growing sectors did outweigh shrinking ones, indicating a manufacturing base that could become more diverse and therefore more stable in aggregate over time.

¹ Does not consider exemptions such as STAR.

² Estimated using 10% equity and an interest rate of 4% over 30 years.

³ According to SUNY Oswego's 2015 Annual Report, it had 1,258 full-time faculty and staff and 517 part-time faculty and staff, for 1,775 jobs. Jobs data from EMSI includes both full-time and part-time positions.

- *The closure of large manufacturing facilities creates multiple negative effects.* In addition to eliminating jobs, the departure of major employers Nestlé and Birdseye diminished the commercial tax base. These effects can increase the tax rates on remaining businesses and residents, at the same time that job losses can create a higher demand for government services.
- *The potential closure of existing nuclear facilities remains a widely-held concern.* Workers potentially displaced from the future closure of the nuclear power plants have skills desired by industries the county has already targeted for growth opportunities, including engineering and manufacturing. However, existing companies in these areas would not be able to absorb the estimated 1,500-plus current workers at the plants; only 75 job openings annually are estimated to have a good match with the skills of the nuclear plant workers. In addition, plant closures would likely diminish the commercial tax base significantly.
- *Oswego County has competitive advantages in most industry sectors, especially compared to the region and Upstate.* A shift share analysis⁴ shows that in the following sectors, Oswego County is creating at least 45% more jobs than would be expected from purely national trends. This indicates that there are regional strengths and conditions benefitting the employment environment. The following industries demonstrated competitive advantage in the county:
 - Manufacturing, 136 jobs from national factors and 315 jobs from county conditions, or 232% regional effect.
 - Construction, 134 jobs from national factors and 289 from county conditions, or 215% regional effect.
 - Professional, Scientific, and Technical Services, 122 jobs from national factors and 55 from county conditions, or 45% regional effect.
 - Wholesale Trade, 46 jobs from national factors and 85 from county conditions, or 184% regional effect.

On the negative side, the shift share analysis shows that the county creates fewer jobs in several key sectors that support quality of life for residents and attract visitors and non-county spending. In the following industries, the county is projected to create *fewer* jobs than national factors suggest, indicating that these sectors face significant challenges in the county:⁵

- Health Care, 894 jobs expected from national factors, but 447 not created because of regional conditions, or 50% fewer jobs.
- Accommodation and Food Services, 463 expected from national factors but 229 not created because of regional conditions, or 49% fewer jobs.
- Retail, 442 jobs expected from national trends, but 116 not created because of regional conditions, or 36% fewer jobs.
- Services – for example personal and laundry, repair and maintenance, 105 jobs expected from national trends, but 199 jobs expected to be lost because of county conditions, leading to a net loss of 94 jobs, and 190% fewer jobs.

Oswego County's business environment is highly attractive, compared to both Central New York and Upstate New York, a theme that also emerged during stakeholder interviews. The shift share analysis shows that of 21 sectors, Oswego County factors make it more competitive than would be expected in 12 sectors,

⁴ Shift share analysis identifies the number of expected new jobs resulting from industry and economic trends nationwide, and a number in excess of (or lagging) that results from regional conditions. Where the number created regionally exceeds expectations based on national conditions, the region is seen to have a competitive advantage.

⁵ Utilities jobs are projected to increase by 175 based on national factors, but decrease by 250 as a result of conditions in the county. It is likely that the EMSI data reflect the uncertainty that surrounded the nuclear energy plants for much of 2016. Therefore this data is not considered as current or reliable as the data for other industries and is not included in the summary.

while Upstate NY factors increase an industry's employment strength in only 6 sectors and Central NY in only 3. This suggests that factors in the Oswego County economy or business climate may be more supportive of employment than the same factors in the other geographies.

Workforce and Education

- *Oswego County workers choose to live elsewhere.* In 2014, 63% of people employed in the county also lived in the county, down from 71% in 2004. As noted above, concerns about home values and community amenities such as schools can drive people to see Oswego County as a place to work but not as a community to join. In addition, most (59%) working residents of the county are employed outside of the county, usually Onondaga County, up from 53% in 2004. This indicates a mismatch between jobs sought and jobs available even among those who chose to live in county communities.
- *Several high-skilled occupations are highly concentrated in the county;* led by Education, Training, and Library (11.8% of jobs); Life, Physical, and Social Sciences; and Architecture and Engineering. These require expertise and education and many are in the "STEM" or science/technology/engineering/mathematics areas that are state and regional targets. Occupations requiring non-baccalaureate level skills, or "middle skills" that are more concentrated in the county include Installation, Maintenance, and Repair; Construction; Protective Service (police and fire, including fire prevention and protection at power plants), and Production (manufacturing production.)
- *Education and training are defined broadly.* While Oswego County lags behind the region and Upstate NY in the percentage of residents with college degrees, it is becoming an innovator in workforce education through CiTi and the Center for Career and Community Education (CCCE), which provide opportunities to earn certificates in demand in the region, including advanced manufacturing. Efforts are underway to teach soft skills such as communication and time management to help disengaged residents re-engage with work.
- *High unemployment is coupled with a reported labor shortage.* Oswego County's March 2017 unemployment rate was 6.5%, among the highest in the state, but both small and major employers have stated that they struggle to find desired qualified workers locally. Partnerships between employers such as Novelis, Pathfinder Bank, and Huhtamaki, and CCCE are working to improve the match between training and workforce needs.

Education Institutions and Programs

SUNY Oswego	- Bachelor's, Master's
SUNY Oswego Online	- Online MBA ★
Bryant & Stratton	- Certificates, Associate's, Bachelor's
CiTi	- Courses, Certificates, Education Support
CCCE	- Bachelor's, Master's
Cayuga Community College	- Certificates, Associate's
Cayuga CC Online Partnership	- Bachelor's, Master's

Key Themes from Existing Planning Efforts

Oswego County has been involved in significant planning efforts, including the Central New York Regional Economic Development Council's (CNY REDC) Five Year Strategic Plan and recent updates, CenterState CEO's ongoing initiatives, the Central New York Regional Planning and Development Board (CNY RPDB), the Brownfield Opportunity Area planning process that is underway for the City of Oswego, and the City of Oswego Downtown Revitalization Initiative, as well as other planning processes for municipalities in the county. Education, housing, and anti-poverty organizations and initiatives have also generated plans and documents.

In order to gain an understanding of the goals and strategies established for the Oswego region in the past, documents describing these efforts were reviewed, for overall background and to identify specific goals of the county that are also supported by regional initiatives; for example, the focus on advanced manufacturing.

This section of the report summary presents our findings about the economic development ecosystem, differences and fit for industries targeted regionally and by Oswego County, and the priorities of the planning and strategic documents; for example, how important infrastructure, workforce development, or poverty alleviation are to Oswego County compared to regional organizational goals.

The Key Themes approach seeks to address the differences in scope, timeline, and goals between planning efforts where Oswego County is part of a larger region, and plans and achievements within the county. As an example, CNY RPDB and CNY REDC both identify "environmental systems" as targeted industries for Oswego County and provide some background information and justification for the inclusion. Operation Oswego County and the Oswego County IDA have acted directly by providing support for Healthway and Northland Filter. The themes focus on the environment in which the county's economic development activities take place.

Oswego County and Regional Planning

- *The economic development ecosystem in which the county operates has multiple layers of organizations, plans, and initiatives.* This complexity is in part a result of a broad definition of economic development that goes beyond business and job growth to include housing, education, and anti-poverty/inclusionary efforts. It also stems from the multiple layers of organizations and plans; local, county, regional (CNY RPDB and CNY REDC,) and "superregional" (CenterState CEO). It may also be a barrier to individuals or businesses who wish to gain support, but cannot readily determine where to start.
- *Individuals in the county often serve in more than one capacity in economic development initiatives.* While this can create an efficient network of knowledgeable people to advocate for projects, the strength of the institutional relationships for continuity and future planning is not readily measured.
- *The largest regional organizations, CenterState CEO and the Central New York REDC, are the least focused on infrastructure.* The Inland Port and truck/train logistics goals, which are targeted for Onondaga County, are the exceptions. Water and wastewater, which are major hurdles for Oswego County, are not major regional priorities, although it is likely that other counties in the region also find business investment deterred by a lack of water and sewer. CNY RPDB has a stronger infrastructure focus, including in its discussion of Oswego County's needs.

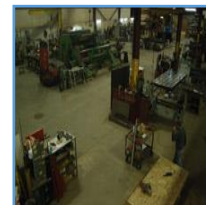
Oswego County Differentiation: Targeted Industries and Workforce Education

- *Oswego County appears to fall behind the Central NY region for state monies awarded through the Regional Economic Development Council competition.*
- *Industries targeted for regional "clusters" are not in all cases a good fit for the county, and some county strengths are underrepresented.* Digital electronics and information management are examples of industries that often seek larger urban settings and proximity to research universities. Some county strengths are

overlooked, for example metals and metal fabrication and coated papers and packaging. These are examples of “mature” industries, but that in no way means they are less than dynamic and innovative.

- *Oswego County sees its residents as a resource to train and educate, and as creators of new businesses.* An important starting question in the county is, “what do our residents need to learn to become productive?” As noted above, SUNY Oswego, Cayuga Community College, and CiTi (formerly BOCES) are critical partners in the economic development ecosystem. Compared with the regional focus on colleges and universities as the stimulus (instead of people), the county appears to be more profoundly aware of the potential to use education as an inclusionary resource to engage all county residents with an opportunity.

A bibliography of the documents reviewed is included as Appendix D. Appendix E is a list of major organizations and initiatives related to economic development in the region and county, which has been developed to show the breadth of the ecosystem available to energize and support economic development, as well as its complexity.



Appendix A: Market Analysis

The market analysis studies three areas to understand past trends, current conditions, and future projections:

- **Demographics, including population, income, and housing;**
- **Economic base, including largest industries, industry concentration, and competitive effects;**
- **Workforce, including commuting patterns, occupations in demand, and educational opportunities.**

Data in each of these areas is supported by brief explanatory text as well as charts and graphs.

Data Sources

Much of the data in this report were purchased from ESRI Business Analyst Online (ESRI) and Economic Modeling Specialists, Intl. (EMSI). The base of ESRI's data is the 2010 Census and the annual American Survey. It uses proprietary statistical models and updated data from the U.S. Census Bureau, the U.S. Postal Service, and various other sources to project current statistics and future trends. ESRI data are often used for economic development, marketing, site selection, and strategic decision making. For more information, visit www.esri.com.

EMSI data are compiled from several sources, including the U.S. Census Bureau and the U.S. Departments of Health and Labor using specialized proprietary processes and models to estimate current statistics and predict future trends. Visit www.economicmodeling.com for additional information.

Commuting information is provided by the U.S. Census Bureau through its interactive "OnTheMap" website, www.onthemap.ces.gov.

Geographies Studied

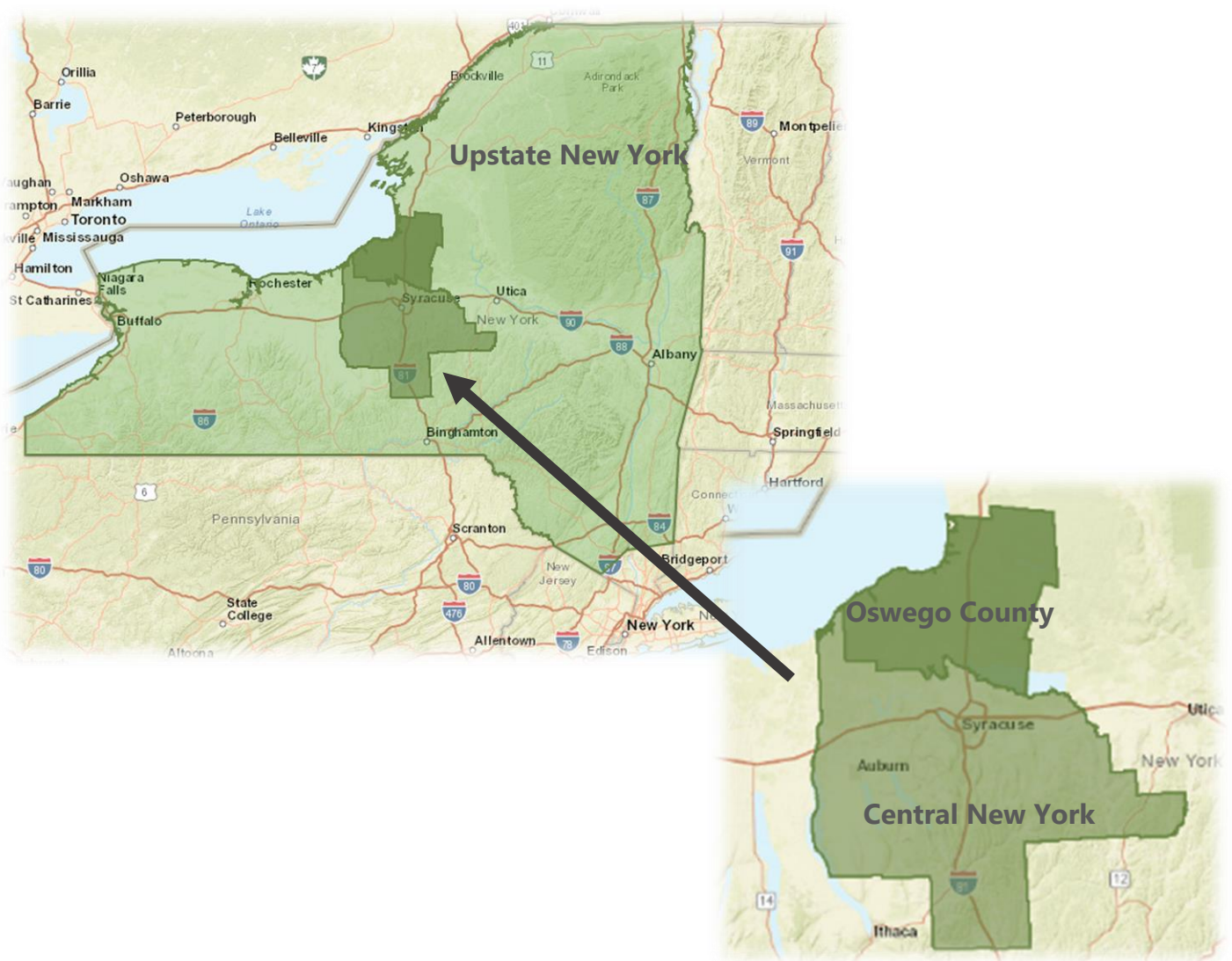
Data were analyzed for the following geographies:

Oswego County. Information was gathered to identify assets and characteristics that are within the county boundaries, including demographics, employers, and housing availability to compare to the larger regions.

Central New York. The Central New York region consists of Onondaga, Oswego, Cayuga, Madison, and Cortland counties. This region will help identify important issues and opportunities that may affect development within the county. It tracks the state's Central New York Regional Economic Development Council boundaries.

Upstate New York. Upstate New York was defined as New York State excluding New York City and its immediate economic regions: Rockland, Westchester, Bronx, New York, Queens, Kings, Richmond, Nassau and Suffolk counties. Upstate New York was examined to get a clear understanding of the economic and demographic environment in which Oswego County and Central New York operate.

The following maps depict Oswego County, Central New York and Upstate New York.



Demographic Trends

Population Summary

The population totals for all three geographies increased only slightly from 2010 to 2016, and the population is expected to grow slowly for the next five years, increasing by 1% or less. Oswego County is projected to experience the slowest population growth rate at 0.4% compared to 0.7% in Central New York and 0.8% in Upstate New York.

The number of households in each region increased over the past five years, and is projected to continue increasing through 2021. Average household size is expected to remain flat or decline in all three regions. Oswego County has the highest average household size at 2.52 people compared to 2.42 in Central New York and Upstate New York.

Demographics					
	2010	2016	2021	% Change 2010-2016	% Change 2016-2021
Oswego County					
Population	122,109	123,565	124,006	1.2%	0.4%
Households	46,400	46,989	47,173	1.3%	0.4%
Average Household Size	2.52	2.52	2.52	0.0%	0.0%
Central New York					
Population	791,939	802,051	807,813	1.3%	0.7%
Households	311,956	317,682	320,815	1.8%	1.0%
Average Household Size	2.43	2.42	2.41	-0.4%	-0.4%
Upstate New York					
Population	7,109,287	7,190,613	7,246,279	1.1%	0.8%
Households	2,813,047	2,858,999	2,887,973	1.6%	1.0%
Average Household Size	2.42	2.42	2.40	0.0%	-0.8%

Source: ESRI

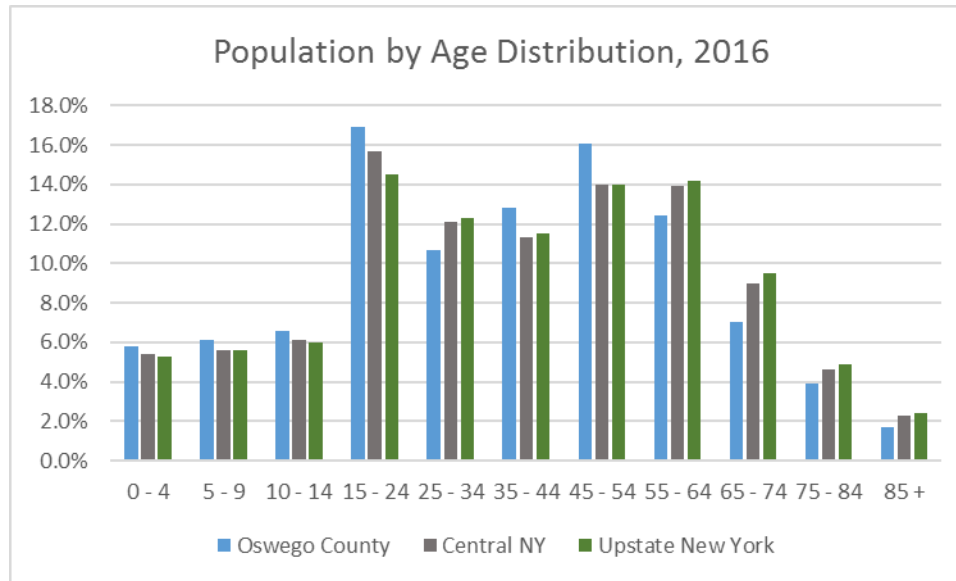
Age

The median age has been steadily increasing in Oswego County, Central New York and Upstate New York. Currently the median age in Oswego County is lower than Central New York and Upstate New York. However, the Oswego County median age is projected to increase from 39.5 in 2016 to 40.7 in 2021, slightly higher than the projected median age for Central New York.

Median Age			
	2010	2016	2021
Oswego County	38.3	39.5	40.7
Central NY	38.7	39.7	40.5
Upstate New York	39.9	40.8	41.5

Source: ESRI

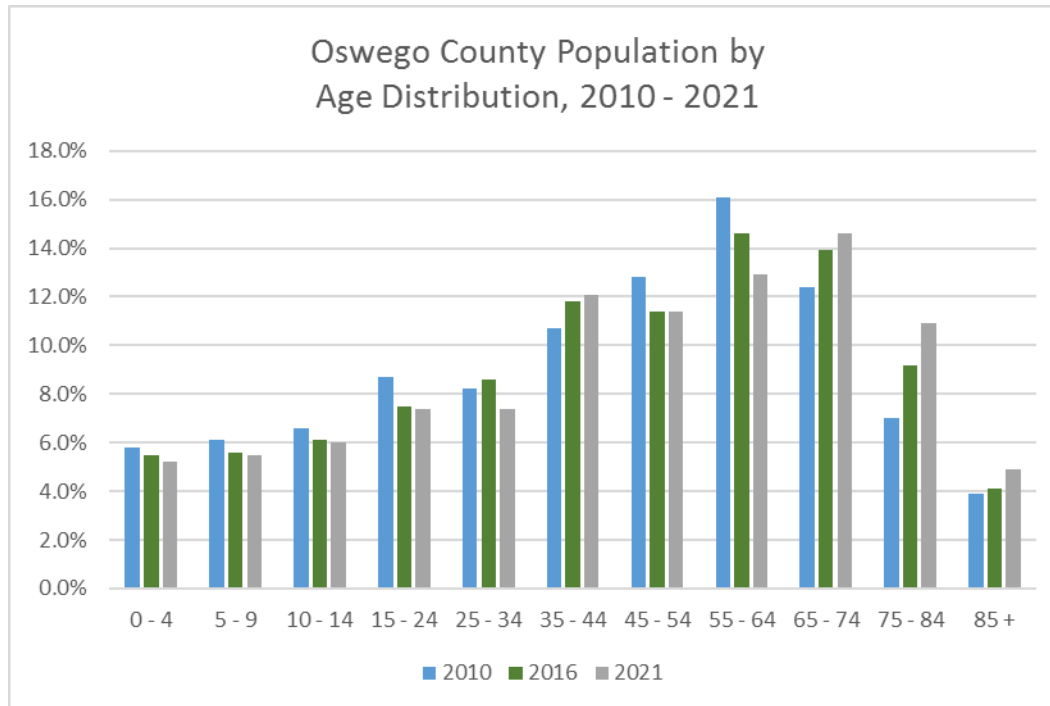
In relation to Central New York and Upstate New York, Oswego County has a higher percentage of individuals under the age of 24 and a smaller percentage of individuals 55 and up. This is demonstrated visually in the chart below with detailed data in the table that follows. Oswego County's high percentage of individuals under the age of 24 coupled with its relatively high average household size indicate that Oswego County likely has a relatively high number of families when compared to Central New York and Upstate New York.



Population By Age Distribution, 2016				
	Oswego County		Central NY	Upstate New York
	#	%	%	%
0 - 4	7,167	5.8%	5.4%	5.3%
5 - 9	7,537	6.1%	5.6%	5.6%
10 - 14	8,155	6.6%	6.1%	6.0%
15 - 24	20,882	16.9%	15.7%	14.5%
25 - 34	13,221	10.7%	12.1%	12.3%
35 - 44	15,816	12.8%	11.3%	11.5%
45 - 54	19,894	16.1%	14.0%	14.0%
55 - 64	15,322	12.4%	13.9%	14.2%
65 - 74	8,650	7.0%	9.0%	9.5%
75 - 84	4,819	3.9%	4.6%	4.9%
85 +	2,101	1.7%	2.3%	2.4%
Total Population	123,565		802,051	7,190,613

Source: ESRI

Oswego County's percentage of residents aged 24 years and younger is expected to decline. Additionally, the 45 to 54 age cohort has been declining and is projected to continue to do so. These cohorts are comprised of adults in critical working years and their decline could pose a challenge for the county's workforce.



Oswego County Population by Age Distribution, 2010-2021						
	2010		2016		2021	
	#	%	#	%	#	%
0 - 4	7,046	5.8%	6,747	5.5%	6,485	5.2%
5 - 9	7,494	6.1%	6,969	5.6%	6,794	5.5%
10 - 14	8,084	6.6%	7,481	6.1%	7,405	6.0%
15 - 19	10,618	8.7%	9,320	7.5%	9,152	7.4%
20 - 24	10,072	8.2%	10,676	8.6%	9,183	7.4%
25 - 34	13,088	10.7%	14,559	11.8%	15,031	12.1%
35 - 44	15,590	12.8%	14,089	11.4%	14,076	11.4%
45 - 54	19,618	16.1%	17,998	14.6%	15,950	12.9%
55 - 64	15,099	12.4%	17,216	13.9%	18,134	14.6%
65 - 74	8,585	7.0%	11,314	9.2%	13,491	10.9%
75 - 84	4,777	3.9%	5,035	4.1%	6,132	4.9%
85+	2,038	1.7%	2,161	1.7%	2,173	1.8%

Source: ESRI

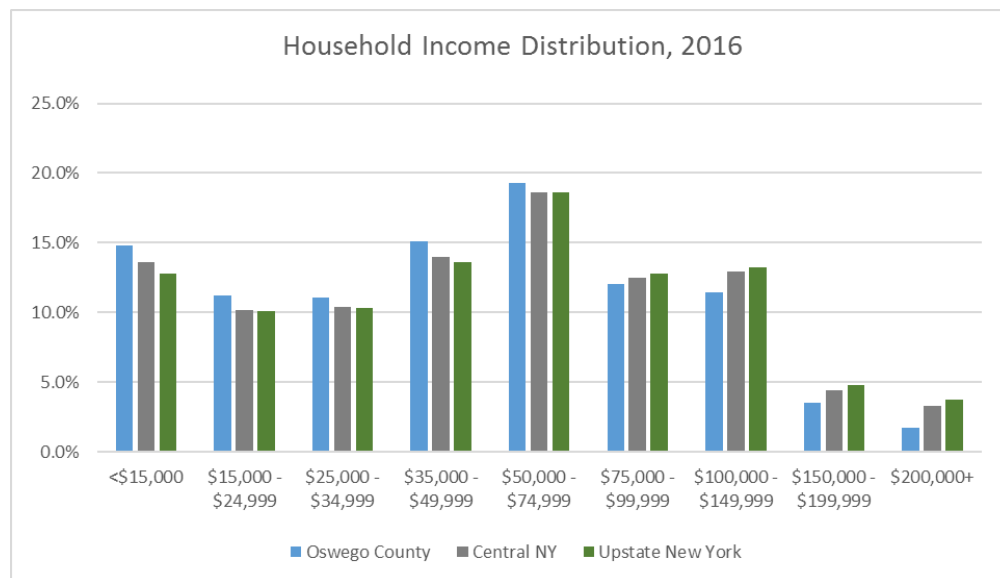
Income

The table below illustrates the median household incomes for all three geographies. The data show that Oswego County has the lowest median household income for 2016. The median household income is projected to increase by 2021, but at a much slower rate than that of Central NY and Upstate New York.

Median Household Income				
	2016	2021 (proj.)	# Change	% Change
Oswego County	\$47,256	\$48,067	\$811	2%
Central NY	\$51,538	\$54,836	\$3,298	6%
Upstate New York	\$53,004	\$57,434	\$4,430	8%

Source: ESRI

Currently Oswego County, Central New York, and Upstate New York have similar household by income distributions. The "middle" income households earning between \$35,000 and \$74,999 are decreasing. The largest cohort in Oswego County is households earning between \$50,000 - \$74,999, at 19.3% in 2016. However, this group is projected to decline by 2021 to 16.0%. County households earning between \$35,000 - \$49,999 are also expected to decline. The \$25,000 - \$34,999 cohort in Oswego County is projected to increase from 11.1% in 2016 to 15.7% in 2021. All regions are projected to have an increase in the percentage of households earning over \$100,000.



Households by Income, 2016 - 2021						
Income Bracket	Oswego County		Central NY		Upstate New York	
	2016	2021	2016	2021	2016	2021
<\$15,000	14.8%	15.9%	13.6%	14.3%	12.8%	13.2%
\$15,000 - \$24,999	11.2%	10.1%	10.2%	9.5%	10.1%	9.5%
\$25,000 - \$34,999	11.1%	15.7%	10.4%	12.9%	10.3%	12.3%
\$35,000 - \$49,999	15.1%	9.2%	14.0%	9.0%	13.6%	8.6%
\$50,000 - \$74,999	19.3%	16.0%	18.6%	16.4%	18.6%	16.6%
\$75,000 - \$99,999	12.0%	14.1%	12.5%	14.2%	12.8%	14.5%
\$100,000 - \$149,999	11.4%	12.8%	12.9%	14.7%	13.2%	15.2%
\$150,000 - \$199,999	3.5%	4.1%	4.4%	5.3%	4.8%	5.8%
\$200,000+	1.7%	2.0%	3.3%	3.7%	3.7%	4.2%
Total Households	46,989	47,173	317,682	320,815	2,858,927	2,887,901

Source: ESRI

Ethnicity

Of the three geographies, Oswego County currently has the least diverse population with 95.3% identifying as "White Alone" and 1.1% identifying as "Black Alone," 3.6% identifying as "Other Non-White," and 3% identifying as "Hispanic."

Population by Race/Ethnicity, 2016				
	White Alone	Black Alone	Other Non-White	Hispanic*
Oswego County	95.3%	1.1%	3.6%	3.0%
Central NY	85.1%	7.7%	7.1%	4.7%
Upstate New York	83.7%	8.3%	8.0%	6.6%

* Census respondents can identify as Hispanic plus any other race

Source: ESRI

Housing Tenure

The median home value in Oswego County is more than \$34,000 lower than the median home value of Central New York, and more than \$56,000 lower than the median home value of Upstate New York.

Over 75% of homes in Oswego County are valued below \$150k compared to 60.6% of Central New York homes and 50.4% of Upstate New York homes. More than twice as many homes are valued below \$50,000 in the county, compared with the other geographies.

Owner-Occupied Housing Units by Value, 2016						
	Oswego County		Central NY		Upstate New York	
	#	%	#	%	#	%
Less than \$50,000	7,575	22.8%	22,178	10.6%	1,969	10.4%
\$50,000 - \$99,999	10,632	32.0%	52,307	25.0%	3,767	19.9%
\$100,000 - \$149,999	6,844	20.6%	52,307	25.0%	3,805	20.1%
\$150,000 - \$199,999	4,718	14.2%	35,778	17.1%	3,067	16.2%
\$200,000 - \$249,999	1,628	4.9%	18,412	8.8%	2,006	10.6%
\$250,000 - \$299,999	831	2.5%	10,461	5.0%	1,458	7.7%
\$300,000 - \$399,999	399	1.2%	7,951	3.8%	1,420	7.5%
\$400,000 - \$499,999	166	0.5%	2,720	1.3%	549	2.9%
\$500,000 - \$749,999	199	0.6%	2,929	1.4%	492	2.6%
\$750,000 - \$999,999	100	0.3%	1,046	0.5%	2	0.0%
Greater than \$1,000,000	133	0.4%	1,465	0.7%	189	1.0%
Median Home Value	\$92,579		\$127,110		\$148,985	

Source: ESRI

The table below displays the housing units by year built in Oswego County compared to Central New York and Upstate New York. The median build year for housing in Oswego County is 1968, more recent than Central New York and Upstate New York.

Housing Units By Year Built						
	Oswego County		Central NY		Upstate New York	
	#	%	#	%	#	%
Built 2010 or later	273	0.5%	2,064	0.6%	19,306	0.6%
Built 2000 to 2009	4,002	7.5%	23,017	6.7%	244,188	7.6%
Built 1990 to 1999	6,687	12.5%	30,147	8.7%	286,822	8.9%
Built 1980 to 1989	7,957	14.8%	38,706	11.2%	340,892	10.5%
Built 1970 to 1979	6,908	12.9%	43,429	12.6%	393,207	12.2%
Built 1960 to 1969	4,686	8.7%	38,364	11.1%	336,319	10.4%
Built 1950 to 1959	4,350	8.1%	47,188	13.6%	397,388	12.3%
Built 1940 to 1949	2,044	3.8%	21,372	6.2%	211,474	6.5%
Built 1939 or earlier	16,754	31.2%	101,625	29.4%	1,003,458	31.0%
Total	53,661	100.0%	345,912	100.0%	3,233,054	100.0%
Median Year Structure Built	1968		1961		1960	

Source: ESRI

The majority of recent building permits in Oswego County, as reported by the Department of Housing and Urban Development ("HUD") have been for single family structures. Since 2010, there have only been 9 residential building permits for multi-family units compared to 220 for single-family structures. Overall, the number of residential building permits has ranged from 26 to 38 per year.

Building Permits in Oswego County							
Structure Category	2010	2011	2012	2013	2014	2015	2016
Single-Family	25	33	38	38	26	30	30
2 Unit Multi-Family	0	0	0	0	0	2	0
3-4 Unit Multi-Family	0	0	0	0	0	0	0
5+ Unit Multi-Family	7	0	0	0	0	0	0
Total	32	33	38	38	26	32	30

Source: SOCDS Building Permits Database

Price Income Ratio ("PTI") is a home purchase affordability measure that divides home values by household income. A low ratio indicates affordability, a higher one indicates more expensive homes. The county's ratio is 2.0, while Central New York is less affordable at 2.5 and the state is relatively high at 2.8. PTI does not take property taxes into account.

Price to Income Ratio, 2016			
	Median Household Income	Median Home Price	Ratio (lower is more affordable)
Oswego County	\$47,256	\$92,579	2.0
Central NY	\$51,538	\$127,110	2.5
Upstate New York	\$53,004	\$148,985	2.8

Source: ESRI, Camoin Associates

Tax rates within Oswego County were collected by the Oswego County Taxbook.⁶ Taxes on a median-priced home in Oswego County range from \$2,610 to \$5,470 per year. Average monthly taxes for a median-priced home are \$308. The majority of taxes in the average and high areas are attributed to school taxes with 52% and 68%, respectively.

Oswego County Taxes by Cities, Towns, and Villages, 2017				
	Aggregate Rate	Yearly Taxes	Monthly Taxes	Percent of Taxes for School
Low Taxes	31.32	\$ 2,610	\$ 217	42%
Average Taxes	41.52	\$ 3,694	\$ 308	52%
High Taxes	66.59	\$ 5,470	\$ 456	68%

Source: Oswego County Taxbook

A median-priced house with a 10% down payment and 30-year loan at 4% can expect costs of a \$398/month for mortgage and approximately \$308/month for taxes. To calculate the household income needed to purchase a median-priced home, the monthly mortgage and tax payments were added, for a monthly cost of \$706, multiplied by 12 months for an annual cost of \$8,472. HUD posits that housing is affordable if it consumes 30% or less of household income, so \$8,472 is divided by 30% to calculate a required annual income of \$28,240. At least 63% of households in the county have incomes of at least \$34,000.

Estimated Mortgage Payment	
	Oswego County
Median Price of Home	\$92,579
Down Payment @ 10%	\$9,258
Loan Amount	\$83,321
Average Mtg Payment 30 Years @ 4%	\$398
Average Tax Payments, Monthly	\$308
Household Income Threshold	\$28,240

Source: ESRI, Camoin Associates

Monthly payment does not include maintenance, insurance, or PMI.

Housing affordability was calculated for the rental units in the three geographies using their respective median incomes. The three areas have a relatively similar percentage of affordable rental units, ranging from 88% to 91%.

Rental Housing Affordability				
Community	Median Income	30% Threshold	Monthly Housing Affordability	Percentage of Affordable Rental Units
Oswego County	\$47,256	\$14,177	\$1,181	89%
Central New York	\$51,538	\$15,461	\$1,288	91%
Upstate New York	\$53,004	\$15,901	\$1,325	88%

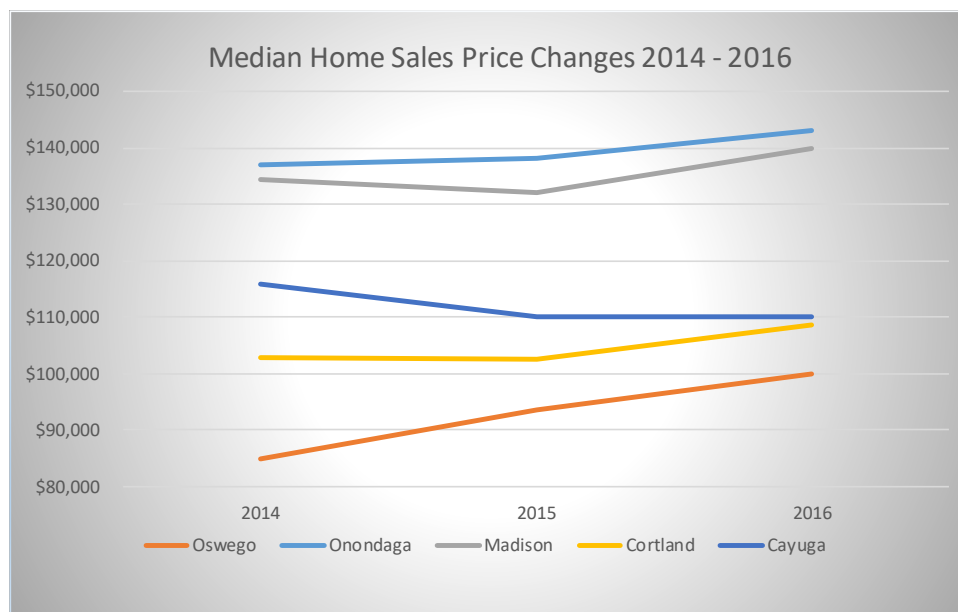
Source: ESRI

⁶ <http://oswegocounty.com/rpts/taxbook.html>

Housing Price Changes in Central New York

Median home values are estimated and published by the U.S. Census Bureau periodically, and this dataset is used by ESRI for its reporting of median home values for Oswego County and the comparison geographies. ESRI does not provide historical or projected median home values, and since ESRI aggregates data to create its Central and Upstate NY regions, median home values cannot be directly calculated using raw Census data. Therefore, this report incorporates data from the New York State Department of Tax and Finance, which publishes a list of median sales prices by county starting in 2014.⁷

Oswego County's median home sales price has risen 18% since 2014, more than three times as fast as any other Central NY county, and the average for Upstate NY.



Changes in Median Home Sales Price, 2014 through 2016							
	2014		2015		2016		% Change 2014 - 2016
County	# Sales	Median	# Sales	Median	# Sales	Median	Median
Oswego	905	\$85,000	1,001	\$93,750	920	\$100,000	18%
Onondaga	3,976	\$137,000	4,437	\$138,000	4,618	\$143,000	4%
Madison	630	\$134,310	603	\$132,000	658	\$140,000	4%
Cortland	378	\$103,000	472	\$102,645	422	\$108,700	6%
Cayuga	747	\$116,000	750	\$110,170	824	\$110,000	-5%
Central NY Averages	1,327	\$115,062	1,453	\$115,313	1,488	\$120,340	5%
Upstate NY Averages (includes Central NY Counties)	1,142	\$133,715	1,236	\$135,891	1,302	\$139,034	4%

Source: NYS Dept. of Tax and Finance. In order for a sale to be included in the above statistics it must be an arm's length residential sale coded non-condominium. Further, the sale price must be greater than ten dollars and the number of days between the sale date and the contract date must be less than three hundred and sixty five or indeterminate.

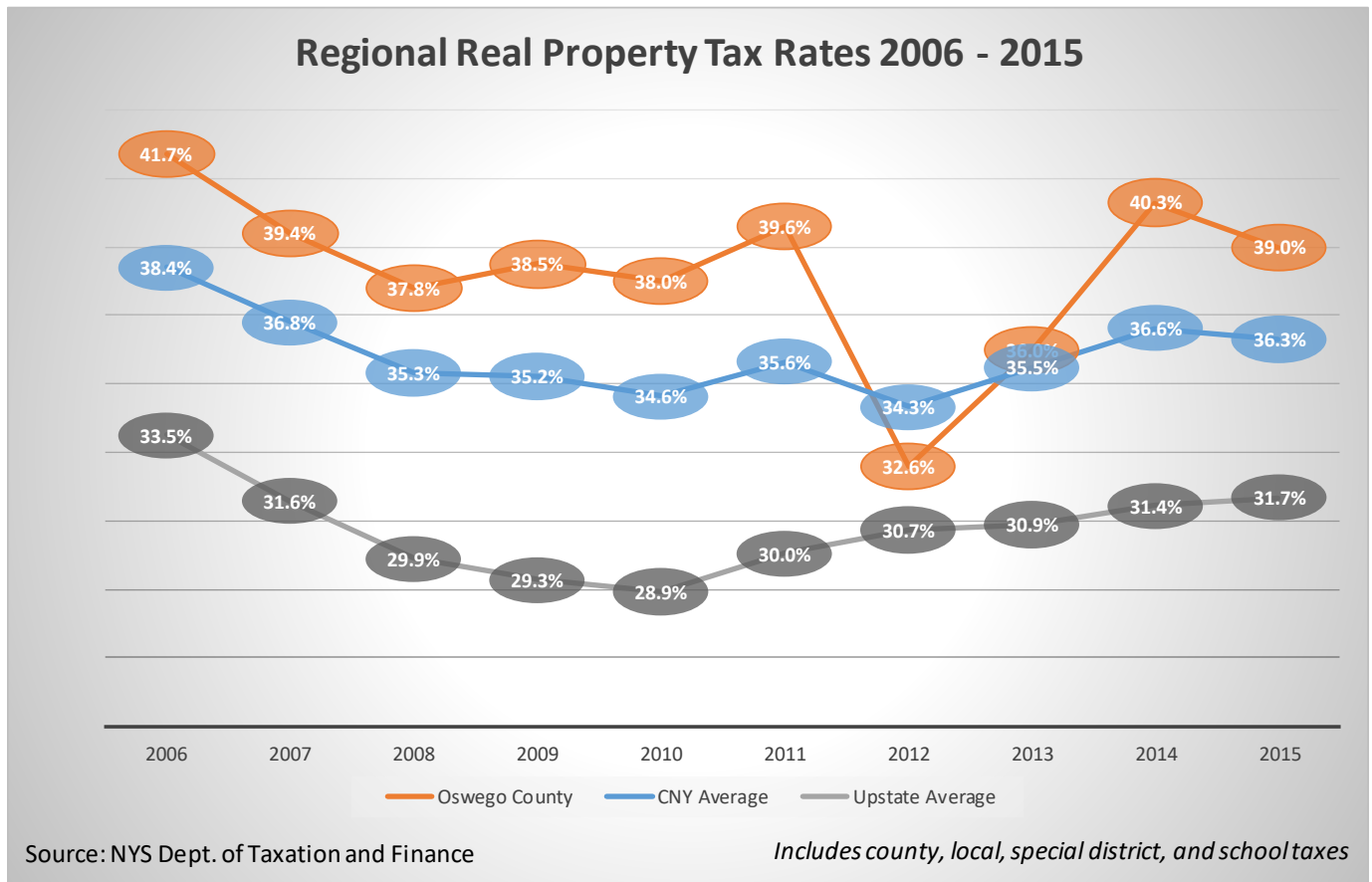
⁷ Median sales price is not the same as median home value, as it counts recent sales rather than values for the entire community. However, it is a good indicator of the "market" for home buyers and sellers.

County and Regional Tax Rates

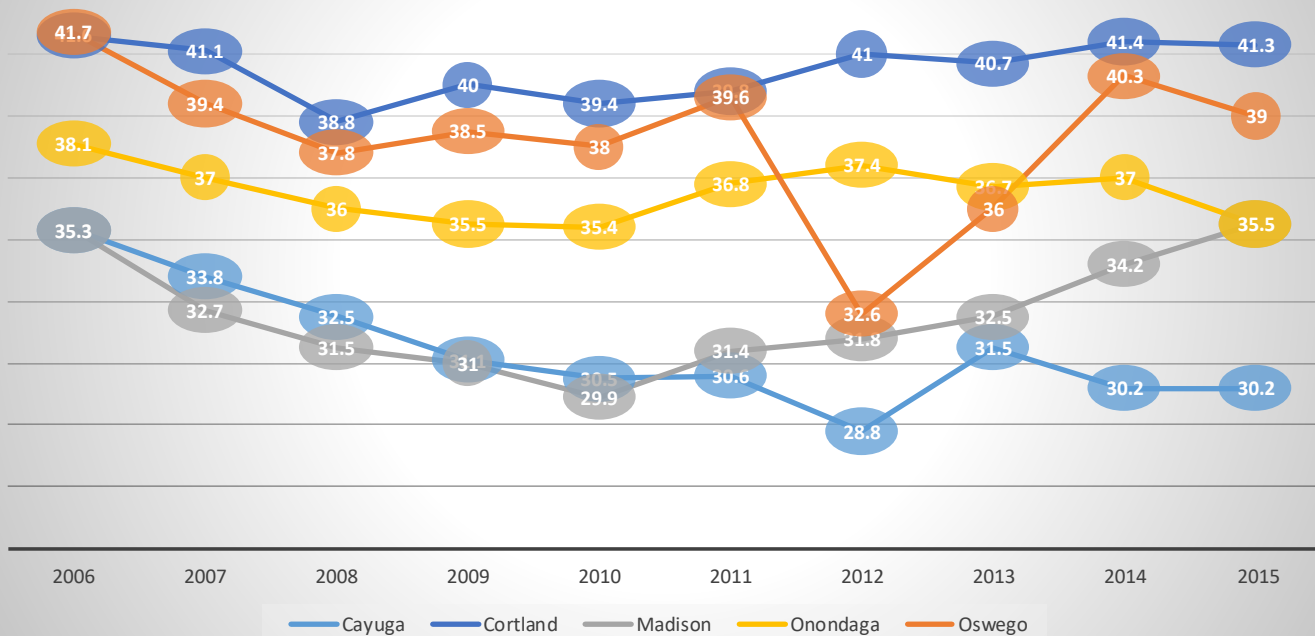
Aggregate real property tax rates in Oswego County are higher than the Central NY and Upstate NY regional averages. High real property tax rates can create downward pressure on home values, as the annual tax payments absorb funds that could otherwise have been spent on the property itself.

The first chart below shows Oswego County tax rates compared with the Central NY and Upstate regions, and is followed by a second chart detailing tax rates for the five counties that comprise the Central NY region.

Real property tax rates within each county vary by community, with differing rates for school districts, special districts, local governments, and in some cases the rates due to the county itself. This data has been aggregated for comparison purposes by the NYS Department of Tax and Finance. The rates are given in dollars per \$1,000 of full value, rounded to the nearest tenth of a dollar.



Central New York Counties Aggregate Real Property Tax Rates, 2006 - 2015



Source: NYS Dept. of Taxation and Finance

Includes county, local, special district, and school taxes

Oswego County experienced a sharp decrease in aggregate tax rates between 2011 and 2012, followed by increases in 2013 and 2014. This pattern is strongly visible in both of the tables above. The overall tax rate in the county decreased from \$41.7/\$1,000 to \$39.0/\$1,000 between 2006 and 2015. Many counties implemented gradual tax rate reductions that became effective in 2007 through 2011, but Oswego County's pattern of rate reductions was not as smooth, creating the noticeable single-year changes in the charts. The table at right summarizes the ten-year tax changes for Central NY counties.

Central New York County Aggregate Real Property Tax Rates			
in \$ per \$1,000 assessed value			
County	2006	2015	10 year change
Cayuga	\$35.30	\$30.20	-\$5.10
Cortland	\$41.60	\$41.30	-\$0.30
Madison	\$35.30	\$35.50	\$0.20
Onondaga	\$38.10	\$35.50	-\$2.60
Oswego	\$41.70	\$39.00	-\$2.70

Source: NYS Dept. of Taxation and Finance

Economic Trends

Largest Employment Sectors

The table below shows jobs in Oswego County, Central New York and Upstate New York by 2-digit NAICS codes.⁸ The 2-digit data provide an overview of 21 industry sectors. Sectors identified as particularly important to Oswego County follow with their respective NAICS codes. Code 99, "Unclassified Industry," is a designation from data provider EMSI that covers businesses that are not yet categorized and includes many small and startup businesses.

In all geographies Government, Health Care and Social Assistance, and Retail Trade are the largest industry sectors. Manufacturing, Construction, and Utilities industry sectors are larger in Oswego County than in Central New York or Upstate New York. As shown in the second table below, the industries with the highest average earnings per job are Utilities and Manufacturing with average per job earnings of approximately \$133,000 and \$65,000, respectively.⁹

Top Industry Sectors, 2-digit NAICS						
NAICS Code	Description	Oswego County			Central NY	New York State
		Current Wages, Salaries, & Proprietor Earnings	2016 Jobs	% of All Jobs	% of All Jobs	% of All Jobs
90	Government	\$39,695	9,486	25.7%	19.2%	18.1%
62	Health Care and Social Assistance	\$38,245	4,921	13.3%	11.7%	14.3%
44	Retail Trade	\$27,534	4,678	12.7%	11.1%	11.1%
72	Accommodation and Food Services	\$14,196	3,714	10.0%	8.0%	7.5%
31	Manufacturing	\$64,939	3,257	8.8%	8.7%	8.1%
23	Construction	\$58,645	2,200	6.0%	4.0%	4.6%
22	Utilities	\$132,888	1,822	4.9%	0.7%	0.4%
81	Other Services (except Public Administration)	\$21,394	1,404	3.8%	4.1%	4.2%
56	Administrative and Support and Waste Management and Remediation Services	\$25,983	887	2.4%	5.9%	4.8%
54	Professional, Scientific, and Technical Services	\$53,052	844	2.3%	9.0%	5.1%
52	Finance and Insurance	\$49,178	641	1.7%	2.9%	3.2%
42	Wholesale Trade	\$54,134	566	1.5%	3.3%	3.5%
48	Transportation and Warehousing	\$38,737	563	1.5%	2.5%	2.6%
11	Crop and Animal Production	\$24,198	525	1.4%	0.8%	1.1%
71	Arts, Entertainment, and Recreation	\$15,134	509	1.4%	1.5%	1.6%
53	Real Estate and Rental and Leasing	\$32,242	290	0.8%	1.2%	1.2%
51	Information	\$30,847	265	0.7%	1.3%	1.8%
99	Unclassified Industry	\$23,593	147	0.4%	0.2%	0.5%
61	Educational Services	\$18,759	129	0.3%	3.3%	4.6%
21	Mining, Quarrying, and Oil and Gas Extraction	\$52,845	59	0.2%	0.0%	0.1%
55	Management of Companies and Enterprises	\$43,271	59	0.2%	0.8%	1.4%
	Total	\$42,180	36,967	100.0%	100.0%	100.0%

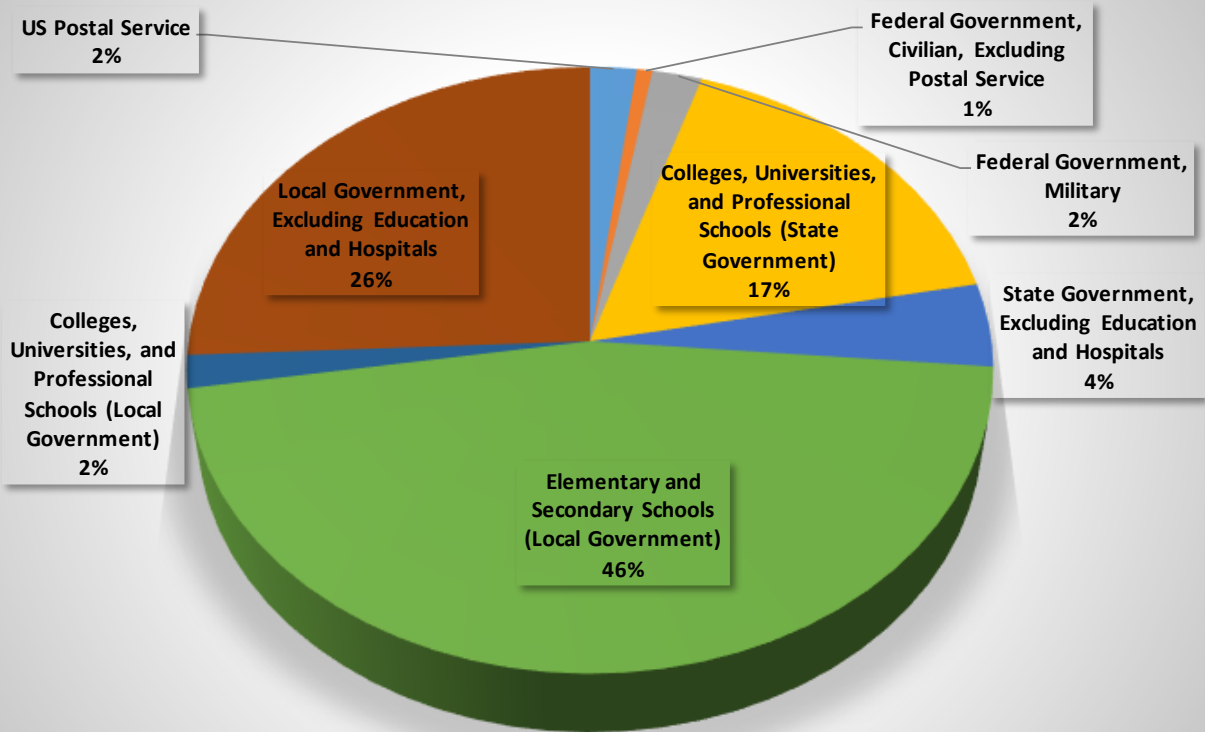
Source: EMSI

⁸ The North American Industry Classification System, a standard used by Federal statistical agencies in classifying business establishments for the purpose of collecting, analyzing, and publishing statistical data. <https://www.census.gov/eos/www/naics/>

⁹ Earnings are defined as labor-related personal income. Income from stock dividends or interest, rents, Social Security and other non-work sources are not included.

The next section of the report takes a deeper look at industry sectors that provide the greatest number of jobs in the county. These sectors are Government, Manufacturing, Utilities, and Healthcare. Together these industries comprise 52.7% of jobs in the county. Retail and Accommodations and Food Service also employ a significant percentage of workers, but the diversity, size, and part-time wages of many of these businesses prevent a meaningful analysis at the aggregate level.

Oswego County Government Jobs Detail, 2016



Source: EMSI

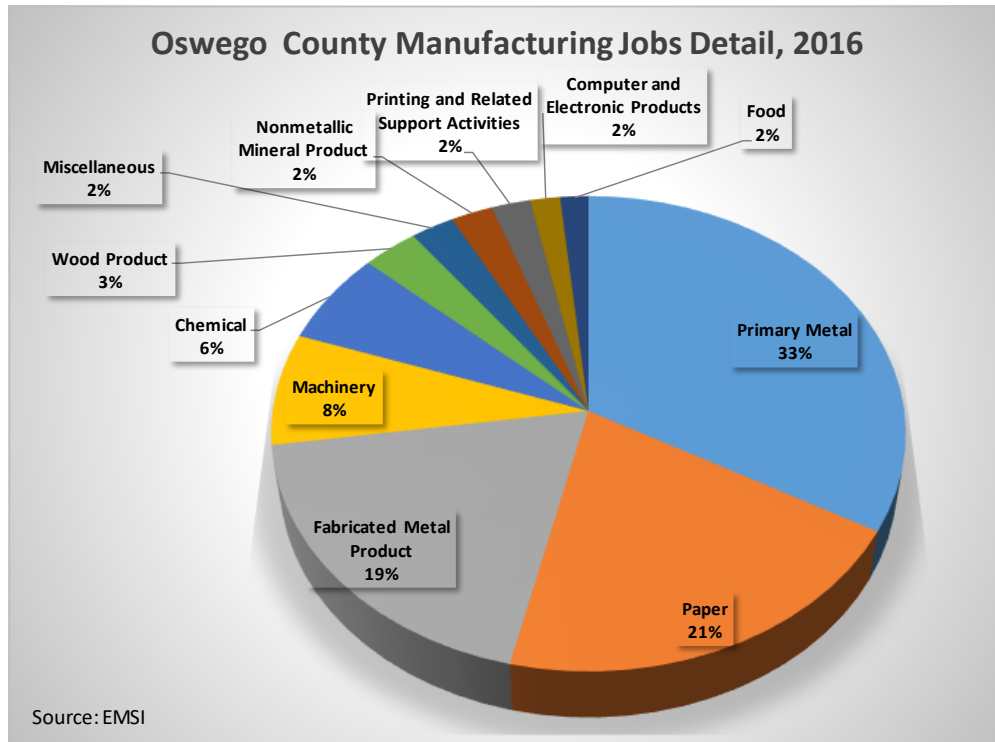
Oswego County Government Occupations, 2006 - 2016

NAICS Code	Description	2006 Jobs	2016 Jobs	2006 - 2016 Change	2006 - 2016 % Change
901149	US Postal Service	217	193	(24)	(11%)
901199	Federal Government, Civilian, Excluding Postal Service	54	66	12	22%
901200	Federal Government, Military	219	207	(12)	(5%)
902612	Colleges, Universities, and Professional Schools (State Government)	1,584	1,611	27	2%
902999	State Government, Excluding Education and Hospitals	261	421	160	61%
903611	Elementary and Secondary Schools (Local Government)	4,800	4,381	(419)	(9%)
903612	Colleges, Universities, and Professional Schools (Local Government)	126	166	40	32%
903999	Local Government, Excluding Education and Hospitals	2,684	2,440	(244)	(9%)
	Total	9,945	9,486	(460)	(5%)

Source: EMSI

SUNY Oswego's 2015 Annual Report lists 1,258 full-time faculty and staff and 517 part-time faculty and staff.

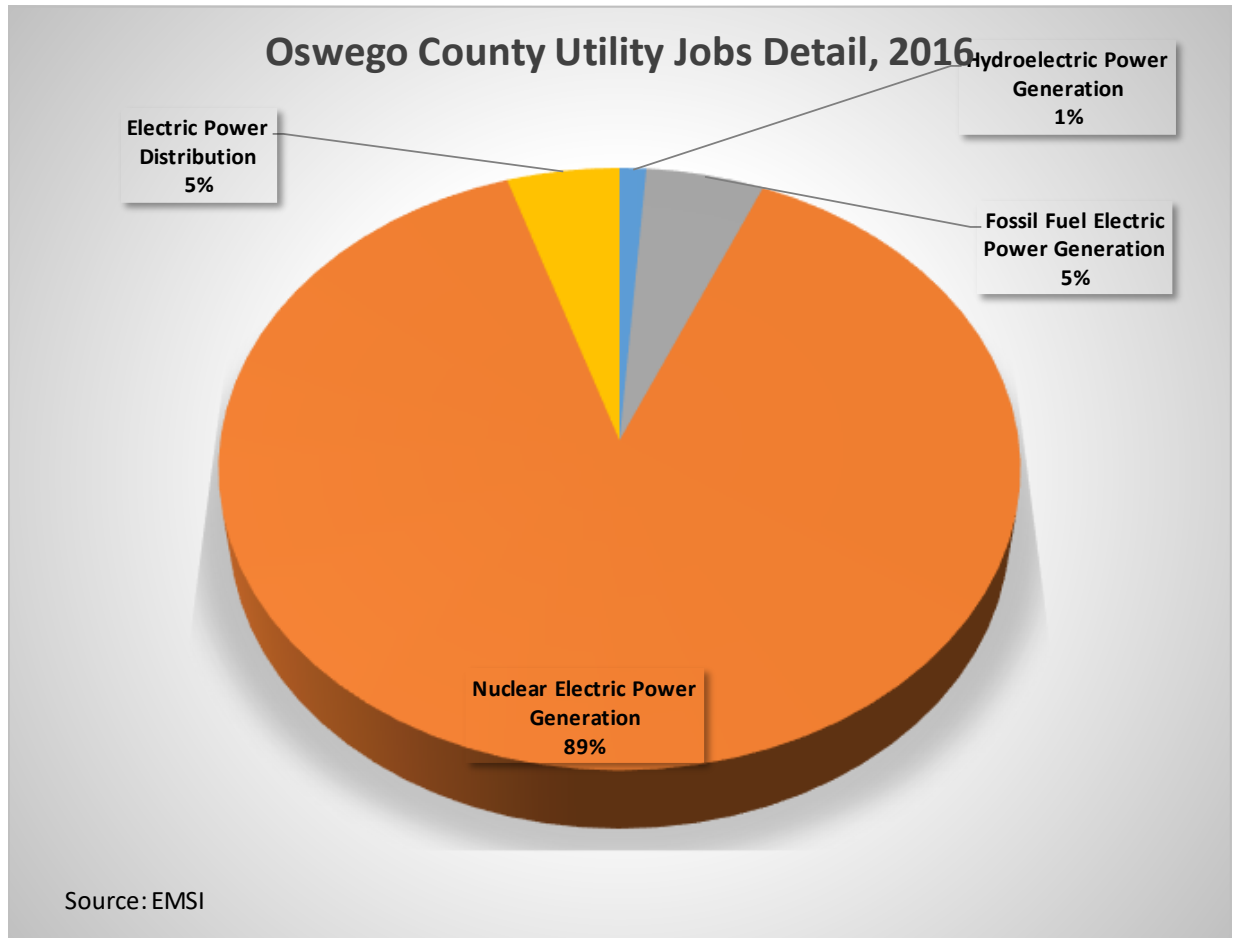
Oswego County has nine school districts and approximately 20,555 students (data from ESRI). Of the 4,381 elementary and secondary school employees, approximately 2,603 are teachers, including substitute teachers. Another 1,778 serve in maintenance, health, curriculum, transportation, and administrative capacities.



Oswego County Manufacturing Jobs, 2006 - 2016					
NAICS Code	Description	2006 Jobs	2016 Jobs	2006 - 2016 Change	2006 - 2016 % Change
331	Primary Metal	1,039	1,067	28	3%
322	Paper	857	661	(196)	(23%)
332	Fabricated Metal Product	604	615	11	2%
333	Machinery	195	245	50	26%
325	Chemical	14	204	190	1357%
321	Wood Product	100	101	1	1%
339	Miscellaneous	29	79	50	172%
327	Nonmetallic Mineral Product	83	75	(8)	(10%)
323	Printing and Related Support Activities	88	70	(18)	(20%)
334	Computer and Electronic Products	20	54	34	170%
311	Food	345	51	(294)	(85%)
	Total	3,373	3,222	(152)	(5%)

Source: EMSI

Data provider EMSI does not include all food processing jobs in its 2016 report of 51 positions, because of differences in how food processing and agricultural jobs are designated. According to Operation Oswego County, Champlain Valley Apples employs approximately 200 people, and the other food processors approximately another 115, for an estimated total of 366 jobs, and 3,537 manufacturing jobs overall. Since EMSI's 2006 food processing jobs may also have undercounted, change over the 10-year period cannot be reliably calculated. However, it is important to note that the food processing sector in the county is stronger than the EMSI data indicates.



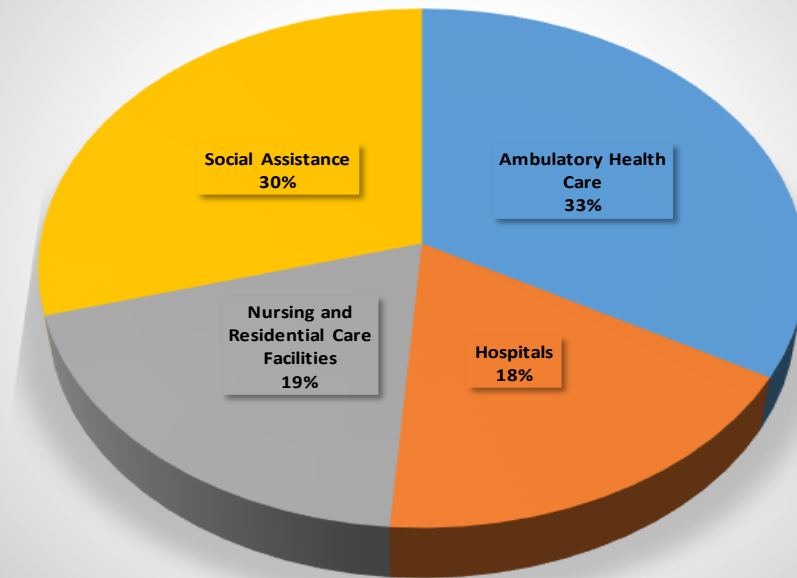
Oswego County Utility Jobs, 2006 - 2016					
NAICS	Description	2006 Jobs	2016 Jobs	2006 - 2016 Change	2006 - 2016 % Change
221111	Hydroelectric Power Generation	<10	21	Insf. Data	Insf. Data
221112	Fossil Fuel Electric Power Generation	486	94	(392)	(81%)
221113	Nuclear Electric Power Generation	1,542	1,591	49	3%
221122	Electric Power Distribution	0	89	89	Insf. Data
221310	Water Supply and Irrigation Systems	<10	<10	Insf. Data	Insf. Data
221320	Sewage Treatment Facilities	<10	<10	Insf. Data	Insf. Data
	Total	2,029	1,800	(229)	(11%)

Source: EMSI

Operation Oswego County provided an estimate of \$98,650 in wages for workers at the Brookfield hydroelectric facilities. Exelon's 2017 Fact Sheet for the Nine Mile Point nuclear generation facility reports a total payroll of \$110 million and 925 employees, for an average of \$118,919 each.

It is important to note that jobs in the utilities sector are consistently higher-paying than in other industries in the county, which are reported below on page 26.

Oswego County Healthcare & Social Assistance Jobs, 2016



Source: EMSI

Oswego County Healthcare and Social Assistance Jobs, 2006 - 2016

NAICS Code	Description	2006 Jobs	2016 Jobs	2006 - 2016 Change	2006 - 2016 % Change
621	Ambulatory Health Care	1,275	1,642	367	29%
622	Hospitals	1,141	884	(257)	(23%)
623	Nursing and Residential Care Facilities	1,030	956	(74)	(7%)
624	Social Assistance	1,221	1,451	230	19%
	Total	4,666	4,933	267	6%

Source: EMSI

Oswego County Social Assistance Jobs, 2006 - 2016

NAICS Code	Description	2006 Jobs	2016 Jobs	2006 - 2016 Change	2006 - 2016 % Change
624110	Child and Youth Services	277	62	(215)	(78%)
624120	Services for the Elderly and Disabled	291	551	260	89%
624190	Other Individual and Family Services	118	146	28	24%
624310	Vocational Rehabilitation Services	178	142	(36)	(20%)
624410	Child Day Care Services	355	548	193	54%
	Total	1,220	1,450	230	19%

Source: EMSI

Past and Projected Growth

The table below presents job numbers in each of 21 major industrial categories from 2006 through 2016, with projections for 2026. The table is sorted by the number of jobs projected to be added by 2026. Tables for Central NY and Upstate follow.

Oswego County is projected to experience a 14% growth in manufacturing jobs, while the region and Upstate are projected to experience 2% and -3% losses. Percent growth in two other well-paying industries is also notably better in Oswego County; Construction and Professional, Scientific, and Technical Services.

From 2006 to 2016 there was a decline of 726 total jobs in Oswego County. Over half of those jobs were attributed to Fossil Fuel Electric Power Generation. Over 2,000 jobs are projected to be added in Oswego County from 2016 through 2026. The sectors projected to experience the largest increase of number of jobs are Manufacturing, Health Care and Social Assistance, and Construction, adding over 400 jobs each.

Historical Industry Sectors in Oswego County									
NAICS Code	Description	2006 Jobs	2016 Jobs	2026 Jobs	2006-2016 Change	2006-2016 % Change	2016-2026 Change	2016-2026 % Change	Current Wages, Salaries, & Proprietor Earnings
31	Manufacturing	3,608	3,257	3,708	(351)	(10%)	451	14%	\$64,939
62	Health Care and Social Assistance	4,666	4,921	5,369	255	5%	448	9%	\$38,245
23	Construction	2,148	2,200	2,623	52	2%	423	19%	\$58,645
72	Accommodation and Food Services	3,232	3,714	3,948	482	15%	234	6%	\$14,196
44	Retail Trade	4,690	4,678	4,883	(12)	(0%)	205	4%	\$27,534
54	Professional, Scientific, and Technical Services	797	844	1,022	47	6%	178	21%	\$53,052
42	Wholesale Trade	535	566	696	31	6%	130	23%	\$54,134
48	Transportation and Warehousing	637	563	673	(75)	(12%)	110	20%	\$38,737
71	Arts, Entertainment, and Recreation	418	509	606	92	22%	97	19%	\$15,134
53	Real Estate and Rental and Leasing	320	290	359	(31)	(10%)	69	24%	\$32,242
99	Unclassified Industry	105	147	209	42	40%	62	42%	\$23,593
61	Educational Services	104	129	160	25	24%	31	24%	\$18,759
51	Information	276	265	288	(11)	(4%)	23	9%	\$30,847
55	Management of Companies and Enterprises	72	59	75	(13)	(18%)	16	27%	\$43,271
11	Crop and Animal Production	521	525	537	4	1%	12	2%	\$24,198
21	Mining, Quarrying, and Oil and Gas Extraction	51	59	70	8	16%	11	19%	\$52,845
52	Finance and Insurance	780	641	643	(138)	(18%)	2	0%	\$49,178
56	Administrative and Support and Waste Management and Remediation Services	1,088	887	849	(201)	(18%)	(38)	(4%)	\$25,983
22	Utilities	2,029	1,822	1,748	(207)	(10%)	(74)	(4%)	\$132,888
81	Other Services (except Public Administration)	1,670	1,404	1,310	(266)	(16%)	(94)	(7%)	\$21,394
90	Government	9,945	9,486	9,378	(460)	(5%)	(108)	(1%)	\$39,695
	Total	37,693	36,967	39,154	(726)	(2%)	2,187	6%	\$42,180

Source: EMSI

The data "Current Wages, Salaries, & Proprietor Earnings" are estimates from data provider EMSI. Operation Oswego County has internal information about salary and wage levels for specific companies that may indicate higher or lower earnings. This analysis may therefore be less accurate for specific companies than the county data. However, because the EMSI data is reported consistently across sectors, and across regions, comparisons are possible, and important to understand. For example, comparing Health Care and Social Assistance in Oswego County (above), Central NY (page 28) and Upstate NY (page 29) show that county workers in this sector have the lowest earnings among the geographies. This may indicate a competitive advantage for the county, or, conversely, a reason some specialists are difficult to attract, a challenge noted during the stakeholder interviews.

The table below shows the subsectors driving the projected increase in jobs in the Construction, Manufacturing, and Health Care and Social Assistance sectors in Oswego County. For each sector, the top three subsectors are shown. The Power and Communication Line and Related Structures Construction, Industrial Building Construction, and Residential Building Constructions subsectors are projected to increase by nearly 600 jobs through 2026. Within the Manufacturing Sector, Paperboard Container Manufacturing; Alumina and Aluminum Production and Processing; and Other Basic Organic Chemical Manufacturing subsectors projected to add 451 jobs in total by 2026. The Health Care and Social Assistance subsectors are projected to add 448 jobs in total through 2026.

Oswego County Top Industry Sectors Responsible for Job Growth, 5-digit NAICS, 2016-2026						
5-Digit NAICS Code	Description	2016 Jobs	2026 Jobs	2016 - 2026 Change	2016 - 2026 % Change	2026 Location Quotient
Construction						
23713	Power and Communication Line and Related Structures Construction	283	566	283	100%	10.09
23621	Industrial Building Construction	258	504	246	95%	11.55
23611	Residential Building Construction	380	447	67	18%	1.68
	Other	Insf. Data	Insf. Data	(174)	Insf. Data	N/A
Manufacturing						
32221	Paperboard Container Manufacturing	495	761	266	54%	22.61
33131	Alumina and Aluminum Production and Processing	901	1,045	144	16%	73.84
32519	Other Basic Organic Chemical Manufacturing	86	127	41	48%	9.32
	Other	Insf. Data	Insf. Data	0	Insf. Data	N/A
Health Care and Social Assistance						
62134	Offices of Physical, Occupational and Speech Therapists, and Audiologists	237	326	89	38%	2.79
62441	Child Day Care Services	548	626	78	14%	2.21
62149	Other Outpatient Care Centers	72	148	76	106%	0.79
	Other	Insf. Data	Insf. Data	205	Insf. Data	N/A

Source: EMSI

The following two tables present historical industry sectors for the Central NY region and Upstate New York.

Historical Industry Sectors in Central New York

NAICS Code	Description	2006 Jobs	2016 Jobs	2026 Jobs	2006-2016 Change	2006-2016 % Change	2016-2026 Change	2016-2026 % Change	Current Wages, Salaries, & Proprietor Earnings
62	Health Care and Social Assistance	46,258	51,822	59,225	5,564	12%	7,403	14%	\$44,949
61	Educational Services	14,917	17,332	19,465	2,415	16%	2,133	12%	\$38,949
72	Accommodation and Food Services	25,670	29,858	31,906	4,189	16%	2,048	7%	\$17,593
54	Professional, Scientific, and Technical Services	18,581	19,022	20,285	441	2%	1,263	7%	\$66,797
44	Retail Trade	43,169	42,593	43,729	(577)	(1%)	1,136	3%	\$28,073
23	Construction	18,199	16,712	17,473	(1,487)	(8%)	761	5%	\$52,479
81	Other Services (except Public Administration)	16,078	15,245	15,927	(833)	(5%)	682	4%	\$27,206
71	Arts, Entertainment, and Recreation	5,722	6,276	6,806	554	10%	530	8%	\$16,885
99	Unclassified Industry	748	1,060	1,559	312	42%	499	47%	\$25,653
48	Transportation and Warehousing	11,228	11,092	11,454	(136)	(1%)	362	3%	\$43,991
90	Government	67,503	65,688	66,025	(1,816)	(3%)	337	1%	\$47,989
42	Wholesale Trade	15,983	14,778	15,109	(1,205)	(8%)	331	2%	\$65,557
11	Crop and Animal Production	3,678	4,275	4,526	597	16%	251	6%	\$29,355
22	Utilities	3,889	3,577	3,731	(312)	(8%)	154	4%	\$111,756
56	Administrative and Support and Waste Management and Remediation Services	17,587	15,152	15,182	(2,434)	(14%)	30	0%	\$32,592
21	Mining, Quarrying, and Oil and Gas Extraction	294	222	216	(72)	(25%)	(6)	(3%)	\$49,806
55	Management of Companies and Enterprises	4,115	3,934	3,920	(181)	(4%)	(14)	(0%)	\$83,354
53	Real Estate and Rental and Leasing	5,282	4,616	4,565	(666)	(13%)	(51)	(1%)	\$39,841
51	Information	6,467	4,946	4,402	(1,520)	(24%)	(544)	(11%)	\$60,012
31	Manufacturing	38,968	30,605	29,945	(8,363)	(21%)	(660)	(2%)	\$64,375
52	Finance and Insurance	15,069	12,477	11,164	(2,593)	(17%)	(1,313)	(11%)	\$73,983
	Total	15,069	371,282	386,614	(8,123)	(2%)	15,332	4%	\$45,146

Source: EMSI

Historical Industry Sectors in Upstate New York

NAICS Code	Description	2006 Jobs	2016 Jobs	2026 Jobs	2006-2016 Change	2006-2016 % Change	2016-2026 Change	2016-2026 % Change	Current Wages, Salaries, & Proprietor Earnings
62	Health Care and Social Assistance	715,662	840,864	989,703	125,202	17%	148,839	18%	\$49,047
90	Government	757,576	835,694	972,882	78,118	10%	137,188	16%	\$55,782
72	Accommodation and Food Services	268,254	338,273	381,417	70,018	26%	43,144	13%	\$27,936
61	Educational Services	184,223	225,297	265,407	41,073	22%	40,110	18%	\$53,056
44	Retail Trade	503,877	519,906	551,388	16,029	3%	31,482	6%	\$35,203
23	Construction	226,711	221,365	247,159	(5,347)	(2%)	25,794	12%	\$62,091
81	Other Services (except Public Administration)	192,187	211,350	234,238	19,162	10%	22,888	11%	\$37,667
54	Professional, Scientific, and Technical Services	190,087	209,708	232,542	19,620	10%	22,834	11%	\$111,753
56	Administrative and Support and Waste Management and Remediation Services	184,794	194,475	215,864	9,680	5%	21,389	11%	\$53,100
99	Unclassified Industry	16,860	25,837	38,525	8,977	53%	12,688	49%	\$59,829
52	Finance and Insurance	148,806	133,130	144,362	(15,676)	(11%)	11,232	8%	\$239,977
71	Arts, Entertainment, and Recreation	68,825	82,168	92,748	13,343	19%	10,580	13%	\$51,180
48	Transportation and Warehousing	128,226	138,709	149,284	10,483	8%	10,575	8%	\$45,330
42	Wholesale Trade	144,468	140,248	148,285	(4,219)	(3%)	8,037	6%	\$92,879
53	Real Estate and Rental and Leasing	75,275	76,350	82,445	1,076	1%	6,095	8%	\$75,406
22	Utilities	22,746	21,671	23,536	(1,075)	(5%)	1,865	9%	\$114,361
55	Management of Companies and Enterprises	44,192	50,595	52,427	6,403	14%	1,832	4%	\$150,938
11	Crop and Animal Production	37,198	38,819	40,127	1,621	4%	1,308	3%	\$30,223
21	Mining, Quarrying, and Oil and Gas Extraction	5,079	4,308	4,416	(772)	(15%)	108	3%	\$61,161
51	Information	78,760	68,130	66,820	(10,631)	(13%)	(1,310)	(2%)	\$122,823
31	Manufacturing	399,395	322,975	314,446	(76,420)	(19%)	(8,529)	(3%)	\$64,800
	Total	4,393,202	4,699,868	5,248,020	306,666	7%	548,152	12%	\$73,573

Source: EMSI

Industry Concentration

Location quotient (LQ) is used to determine how concentrated an industry is in relation to the nation. A location quotient greater than one indicates a higher than average concentration of jobs in that industry. Utilities is highly concentrated with an LQ of 12.5, meaning that Oswego County has 12.5 times the concentration of Utilities jobs than the nation on average. Government; Construction; and Manufacturing are more concentrated than average with LQs of 1.25 or higher. The table below includes a modified bar chart to highlight the industry concentration.

Oswego County Industry Concentration, 2016					
NAICS Code	Description	2016 Jobs	% of All Jobs	Location Quotient	
11	Crop and Animal Production	525	1.4%	1.16	<div></div>
21	Mining, Quarrying, and Oil and Gas Extraction	59	0.2%	0.40	<div></div>
22	Utilities	1,822	4.9%	12.51	<div></div>
23	Construction	2,200	6.0%	1.29	<div></div>
31	Manufacturing	3,257	8.8%	1.25	<div></div>
42	Wholesale Trade	566	1.5%	0.47	<div></div>
44	Retail Trade	4,678	12.7%	1.23	<div></div>
48	Transportation and Warehousing	563	1.5%	0.49	<div></div>
51	Information	265	0.7%	0.41	<div></div>
52	Finance and Insurance	641	1.7%	0.43	<div></div>
53	Real Estate and Rental and Leasing	290	0.8%	0.57	<div></div>
54	Professional, Scientific, and Technical Services	844	2.3%	0.39	<div></div>
55	Management of Companies and Enterprises	59	0.2%	0.13	<div></div>
56	Administrative & Support & Waste Mgmt & Remediation	887	2.4%	0.34	<div></div>
61	Educational Services	129	0.3%	0.15	<div></div>
62	Health Care and Social Assistance	4,921	13.3%	1.02	<div></div>
71	Arts, Entertainment, and Recreation	509	1.4%	0.88	<div></div>
72	Accommodation and Food Services	3,714	10.0%	1.15	<div></div>
81	Other Services (except Public Administration)	1,404	3.8%	0.71	<div></div>
90	Government	9,486	25.7%	1.66	<div></div>
99	Unclassified Industry	147	0.4%	2.43	<div></div>
	Total	36,967	100.0%		

Source: EMSI

Unclassified Industry's high LQ may indicate an above-average concentration of newly-started or small businesses.

Oswego County Concentrated Industry Sectors, 5-digit NAICS, 2016-2026

5-Digit NAICS Code	Description	2016 Jobs	2026 Jobs	2016 - 2026 Change	2016 - 2026 % Change	2026 Location Quotient
Utilities						
22111	Electric Power Generation	1,726	1,621	(105)	(6%)	43.32
	Other	Insf. Data	Insf. Data	31	Insf. Data	N/A
Construction						
23621	Industrial Building Construction	258	504	246	95%	11.55
23713	Power and Communication Line and Related Structures Construction	283	566	283	100%	10.09
	Other	Insf. Data	Insf. Data	(107)	Insf. Data	N/A
Manufacturing						
33131	Alumina and Aluminum Production and Processing	901	1,045	144	16%	73.84
32221	Paperboard Container Manufacturing	495	761	266	54%	22.61
32519	Other Basic Organic Chemical Manufacturing	86	127	41	48%	9.32
33324	Industrial Machinery Manufacturing	190	224	34	18%	8.13
32599	All Other Chemical Product and Preparation Manufacturing	69	109	40	58%	6.93
	Other	Insf. Data	Insf. Data	(74)	Insf. Data	N/A

Source: EMSI

Shift Share Analysis

Shift Share Analysis distinguishes an industry's employment growth attributable to local competitive advantages or disadvantages from growth that stems from overall national economic activity or national employment trends in that industry. It helps to answer the question of, *"Why is employment growing or declining in this local industry?"* To do this, shift share analysis splits regional job growth into three components: national industrial mix, national growth, and regional competitive effects.

This shift share analysis presents the *net* number of jobs expected to be added or lost between 2016 and 2026 for each industry, then the *gross* number jobs expected to be added or lost based on each of the factors, followed by the *net* number of jobs expected to be added or lost by 2026.

Industrial Mix Effect – The industrial mix effect represents the share of regional industry job changes explained by changes in the industry at the national level. The national growth rate of the total economy is subtracted from the national growth rate of the specific industry, and this growth percentage is applied to the regional jobs in that industry. In the manufacturing sector, this effect shows that Oswego County is expected to lose 172 manufacturing jobs based on national industry trends.

National Growth Effect – The national growth effect estimates how much of the regional industry's growth is explained by the overall growth of the national economy: if the nation's whole economy is growing, some positive change in each industry in the local region would be expected (the "rising tide that lifts all boats" analogy). The national growth effect projects a gain of 308 manufacturing jobs in the county.

Expected Change – This is the rate of growth of the particular industry at the national level, the sum of the industrial mix and the national growth effects. In the county, 172 manufacturing jobs lost and 308 jobs gained from industrial mix and national growth effects result in a net expected gain of 136 jobs from national factors.

Regional Competitive Effect – The regional competitive effect calculates how much of the change in a given industry is due to some unique competitive advantage that the region possesses, because the change cannot be explained by national trends in that industry or the economy as whole. This effect is calculated by taking the total regional growth of the given industry and subtracting the national growth for that same industry. This effect can be positive even as regional employment in the industry declines, indicating that the regional decline is less than the national decline. In Oswego County's manufacturing sector, national effects predict 136 net new jobs by 2026, but regional competitive effects are expected to create *another* 315 jobs beyond that, for a total projected gain of 451 manufacturing jobs by 2026.

The shift share analysis in the table below shows that Oswego County has competitive advantage in Manufacturing, Construction, and Wholesale Trade, industries where the projected jobs to be added exceed jobs expected from only national factors. Positive numbers in the column for regional competitive effect show industries where the county has an advantage, and negative numbers where it is lagging national trends, such as in Finance and Insurance. To show how each component adds to or subtracts from jobs, the top row presents a mathematical formula.

Oswego County, Shift Share Analysis of Job Changes, 2016 - 2026						
2-Digit NAICS Code	Description	A Nat'l Industrial Mix Effect	+ or - B Nat'l Growth Effect	= C Expected Change from Nat'l Factors	+ or - D Regional Competitive Effect	= Jobs Projected Jobs Added by 2026
31	Manufacturing	(172)	308	136	315	451
62	Health Care and Social Assistance	429	465	894	(447)	448
23	Construction	(74)	208	134	289	423
72	Accommodation and Food Services	112	351	463	(229)	234
44	Retail Trade	(121)	442	321	(116)	205
54	Professional, Scientific, and Technical Services	42	80	122	55	178
42	Wholesale Trade	(8)	54	46	85	130
48	Transportation and Warehousing	15	53	68	41	110
71	Arts, Entertainment, and Recreation	19	48	67	30	97
53	Real Estate and Rental and Leasing	(7)	27	20	50	69
99	Unclassified Industry	44	14	58	5	62
61	Educational Services	8	12	20	11	31
51	Information	(13)	25	12	11	23
55	Management of Companies and Enterprises	2	6	8	8	16
11	Crop and Animal Production	(25)	50	25	(13)	12
21	Mining, Quarrying, and Oil and Gas Extraction	1	6	7	4	11
52	Finance and Insurance	(13)	61	48	(46)	2
56	Administrative & Support & Waste Mngmt & Remediation Services	35	84	119	(157)	(38)
22	Utilities	3	172	175	(250)	(74)
81	Other Services (except Public Administration)	(28)	133	105	(199)	(94)
90	Government	(639)	897	258	(366)	(108)
	Total	(391)	3,497	3,106	(918)	2,188

Source: EMSI

Note that Competitive Effect can be positive even as regional employment in the industry declines. This would indicate that regional decline is less than the national decline.

In contrast, Central New York and Upstate New York do not have a competitive advantage relative to the rest of the nation in most industry sectors, seen in the large number of industries with negative numbers in the column for regional competitive effect. In Central NY, jobs are added in spite of regional effects in all industries except Crop and Animal Production and Utilities. In Upstate overall, Accommodation and Food Services, which includes many tourism businesses, and Educational Services, stand out as regional strengths, while most other industries are expected to shed jobs as a result of regional factors.

Central New York, Shift Share Analysis of Job Changes, 2016 - 2026						
2-Digit NAICS Code	Description	A Nat'l Industrial Mix Effect	+ or - B Nat'l Growth Effect	= C Expected Change from Nat'l Factors	+ or - D Regional Competitive Effect	= Jobs Projected Jobs Added by 2026
90	Government	(4,431)	6,224	1,793	(2,753)	64,841
62	Health Care and Social Assistance	4,494	4,871	9,365	(3,538)	57,320
44	Retail Trade	(1,109)	4,043	2,934	(2,015)	43,666
72	Accommodation and Food Services	897	2,819	3,716	(1,185)	32,331
31	Manufacturing	(1,622)	2,900	1,278	(953)	30,979
54	Professional, Scientific, and Technical Services	959	1,811	2,770	(1,490)	20,431
61	Educational Services	1,041	1,633	2,674	(964)	18,968
23	Construction	(557)	1,562	1,005	(970)	16,545
81	Other Services (except Public Administration)	(301)	1,443	1,142	(641)	15,756
56	Administrative and Support and Waste Management and Remediation Services	602	1,441	2,043	(1,697)	15,584
42	Wholesale Trade	(221)	1,399	1,178	(910)	15,055
48	Transportation and Warehousing	301	1,050	1,351	(643)	11,811
52	Finance and Insurance	(256)	1,191	935	(2,310)	11,218
71	Arts, Entertainment, and Recreation	231	591	822	(236)	6,838
11	Crop and Animal Production	(207)	405	198	165	4,639
53	Real Estate and Rental and Leasing	(118)	431	313	(381)	4,485
51	Information	(235)	460	225	(797)	4,286
22	Utilities	7	339	346	171	4,102
55	Management of Companies and Enterprises	128	346	474	(539)	3,598
99	Unclassified Industry	283	90	373	21	1,349
21	Mining, Quarrying, and Oil and Gas Extraction	5	22	27	(24)	233
		(108)	35,070	34,962	(21,692)	384,037

Source: EMSI

Upstate New York, Shift Share Analysis of Job Changes, 2016 - 2026

2-Digit NAICS Code	Description	A Nat'l Industrial Mix Effect	+ or - B Nat'l Growth Effect	= C Expected Change from Nat'l Factors	+ or - D Regional Competitive Effect	= Jobs Projected Jobs Added by 2026
72	Accommodation and Food Services	14,542	45,691	60,233	15,676	75,909
62	Health Care and Social Assistance	61,705	66,884	128,589	(59,057)	69,532
54	Professional, Scientific, and Technical Services	25,962	49,025	74,987	(7,438)	67,548
61	Educational Services	18,158	28,484	46,642	14,294	60,936
81	Other Services (except Public Administration)	(5,402)	25,936	20,534	7,037	27,571
52	Finance and Insurance	(8,118)	37,763	29,645	(4,803)	24,841
44	Retail Trade	(13,971)	50,951	36,980	(14,657)	22,323
56	Administrative & Support & Waste Mngmt & Remediation Services	11,258	26,959	38,217	(17,102)	21,115
71	Arts, Entertainment, and Recreation	4,804	12,293	17,097	(4,280)	12,817
23	Construction	(6,264)	17,549	11,285	(645)	10,641
51	Information	(9,831)	19,245	9,414	822	10,236
55	Management of Companies and Enterprises	3,677	9,939	13,616	(5,053)	8,564
99	Unclassified Industry	6,061	1,934	7,995	(55)	7,940
53	Real Estate and Rental and Leasing	(3,319)	12,151	8,832	(1,089)	7,742
22	Utilities	36	1,828	1,864	2,502	4,367
42	Wholesale Trade	(2,587)	16,387	13,800	(9,553)	4,247
48	Transportation and Warehousing	2,826	9,872	12,698	(8,828)	3,871
11	Crop and Animal Production	(1,871)	3,658	1,787	415	2,202
21	Mining, Quarrying, and Oil and Gas Extraction	93	396	489	(111)	379
31	Manufacturing	(16,601)	29,675	13,074	(14,966)	(1,892)
90	Government	(60,500)	84,991	24,491	(118,497)	(94,005)
	Total	20,659	551,612	572,271	(225,387)	346,884

Source: EMSI

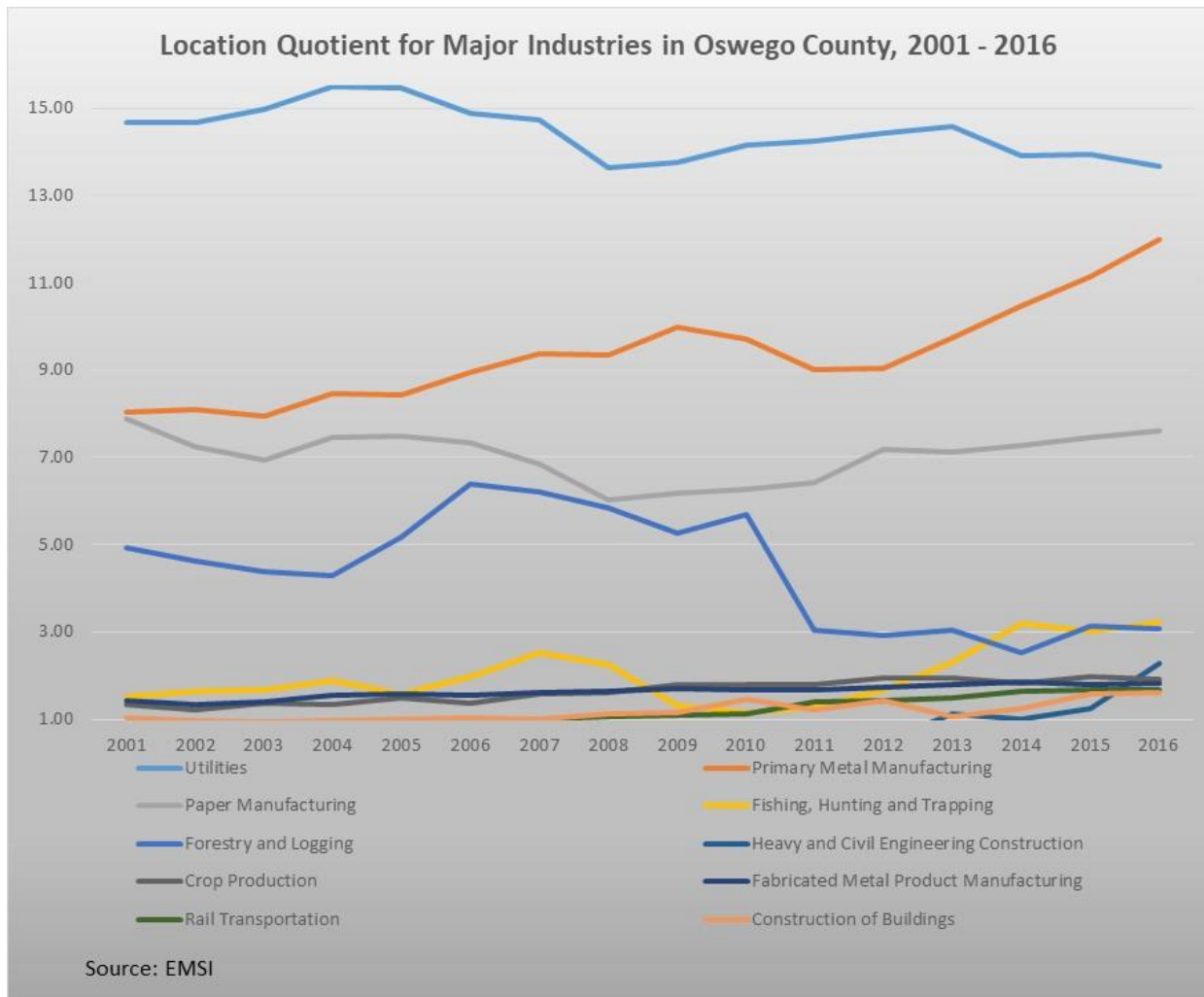
Industry Concentration and Nuclear Energy Generation

Concentration of Industry in Detail

Considering the contraction of the nuclear energy generation industry nationally, Oswego County is concerned about its concentration of jobs and economic activity in this sector. Recent closure threats at the two facilities in the county give a sense of urgency to the issue of economic diversification. This section of the report analyzes concentration trends for the county economy over the past 15 years.

For this analysis, Location Quotient (LQ)¹⁰ is used to explore the change in concentration of the ten industries with the highest concentrations in Oswego County as of 2016, based on 3-digit NAICs codes.

As shown in the chart below, the most concentrated industry is Utilities, with an LQ in the 14.5 – 15.5 range. Most Utilities activity in the county stems from the nuclear facilities. Concentration has been diminishing since 2013. Primary Metal Manufacturing; Fishing, Hunting, and Trapping; and Fabricated Metal Product Manufacturing have been becoming more concentrated.



¹⁰ EMSI Description: "Location Quotient (LQ) is a way of quantifying how concentrated a particular industry, cluster, occupation, or demographic group is in a region as compared to the nation. It can reveal what makes a particular region "unique." An LQ of greater than 1 indicates that the industry is more concentrated than the baseline for the U.S. economy."

A deeper look at LQ within the electrical power generation and distribution sector confirms that the concentration of nuclear economic activity is significantly higher than the U.S. average, with a peak LQ of 169.93, compared with a baseline of 1.0. Note, however, that Hydroelectric and Fossil Fuel also have high LQ's. The LQ analysis illustrates Oswego County's industry cluster around electrical generation.

Location Quotient Patterns in Electric Generation Sector 2001 - 2016 Summary			
	Lowest LQ	Average LQ	Highest LQ
Hydroelectric	0.00	3.31	17.75
Fossil Fuel	0.27	12.02	32.45
Nuclear	60.69	123.90	169.93
Electric Power Distribution	0.00	0.84	2.13

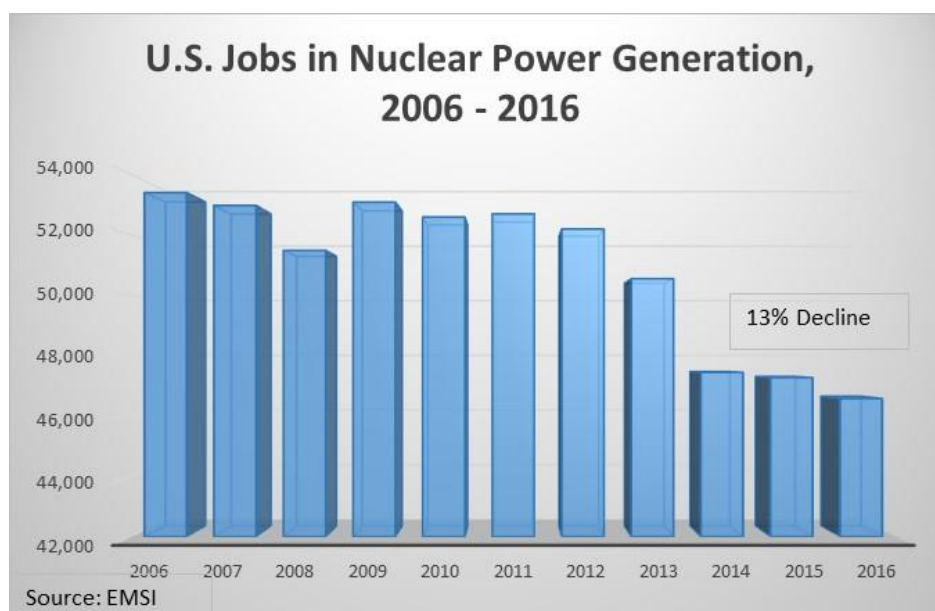
Source: EMSI

The table below summarizes LQ patterns in the energy sectors since 2012. As shown, Hydroelectric reached a low LQ of 0.00 in 2002, after having an LQ of 4.01 the previous year. As with other renewable energy sources, this form of power generation is highly variable as it depends on water flows and therefore rainfall. Fossil Fuel and Nuclear generation have maintained relatively consistent LQ values since 2012.

Location Quotient Patterns in Electric Generation Sector, 2012 - 2016					
	2012	2013	2014	2015	2016
Hydroelectric	7.40	0.22	2.09	17.75	13.89
Fossil Fuel	3.23	1.63	3.29	4.61	4.18
Nuclear	136.88	145.42	147.10	144.52	145.15
Electric Power Distribution	2.13	1.96	1.60	1.89	1.81

Source: EMSI

The LQ of the Nuclear industry in Oswego County is affected not just by the industry's importance locally, but by national trends. According to the U.S. Department of Energy,¹¹ 17 facilities across the country have been or are scheduled to be decommissioned as of 2017, including the Indian Point facility in Buchanan, NY. Since 2006, 6,819 jobs have been lost nationwide in this industry, or 13% of total jobs in the sector, with more expected. Within this context, the simple preservation of the county facilities raises the LQ for the industry in Oswego County, as a higher percentage of the nation's active capacity is in the county. The chart at right presents this decline graphically.



¹¹ <https://www.nrc.gov/info-finder/decommissioning/power-reactor/>, accessed 8/11/17

Employment Opportunities for Nuclear Workers

Cost competitiveness of nuclear power compared to other sources, particularly natural gas, is a challenge for facilities nationwide, as it has been for the plants in Oswego County. Within a 5-10 year time horizon, this is likely to continue to be the most significant hurdle for continued operation of all U.S. facilities. Closure of the Oswego County facilities has been postponed, but the potential for future decommissioning remains a concern. As of 2016, approximately 1,525¹² workers are employed at the nuclear facilities, or 4.1% of an estimated 36,900 jobs in the county.

From a labor perspective, workers would have three general choices: 1) leave the county for a job at another plant; 2) leave the county for a skilled job elsewhere; or 3) stay in the county and obtain another skilled job. Some workers may be able to retire only slightly earlier than planned, but others may choose to stay in the county at any wage level, including public assistance with either choice depriving the county economy of knowledgeable, experienced workers.¹³

Among the three job codes that refer specifically to nuclear work, (Nuclear Power Reactor Operators, Engineers, and Technicians), there are 483 workers, more than 60% of whom are at least 45 years of age. Those 55 and older comprise a subset of approximately 25%, or 124, of these plant workers. While worker age skews slightly older, 36% are currently aged 24 – 44 and continued operation of the facilities will result in replacement of retiring workers with potentially younger new hires. As a result, it is likely that a majority of workers dislocated by a plant closure will need to find other work. Other skilled jobs, such as Security Guards and Electricians, are essential to the plant but because those jobs are not specific to the nuclear industry and may reflect work at other employers, their demographics cannot be isolated.

Leaving the county for another plant is less likely, as a further loss of cost competitiveness locally would likely be part of a national trend that leads to other plant closures. The second option, leaving for another job in another sector, is not desirable, as the county benefits from retaining skilled workers and their families. The third option of staying raises the question “what would a nuclear plant worker do?”

The table at right lists general job categories for the county’s current nuclear workforce. In addition to nuclear-specific fields such as engineers and technicians, other occupations are well represented including security guards, electricians, managers, and sales/service occupations. This latter group would experience significant dislocation from a plant closure, but is likely to have more skills that are readily transferable into other industries. Nuclear-specific workers such as operators, engineers, and technicians are likely to have the lowest degree of skills transferability. A list of jobs most compatible with the skill sets of these three types of workers is included on page 39.

Job Categories of Nuclear Plan Workers in Oswego County			
SOC	Key Occupation	2011 Jobs	2016 Jobs
33-9032	Security Guards	375	347
51-1011	First-Line Supervisors of Production and Operating Workers	265	266
51-8011	Nuclear Power Reactor Operators	221	199
47-2111	Electricians	157	196
17-2161	Nuclear Engineers	199	167
19-4051	Nuclear Technicians	158	137
11-9199	Managers, All Other	113	124
41-3099	Sales Representatives, Services, All Other	87	106
11-1011	Chief Executives	51	54
		1,627	1,596

Source: EMSI

¹² Data provider EMSI records 1,596 workers at the facilities as of 2016. Exelon’s published fact sheets, discussed in and attached to the *Targeted Industry Analysis*, state approximately 1,525 workers. The text uses Exelon’s numbers.

¹³ Unemployment, additional need for social services, and the loss of a major component of the tax base would be severe economic effects as well.

This analysis was performed by matching occupation codes for the existing positions with that position's skill set, then identifying other jobs with a high degree of skill match. On a scale of 1 to 100, a skill match of at least 90 merited inclusion in this table. Salary levels were not considered. The initial analysis included the possibility of working at another nuclear facility in the county, and these were eliminated.

Altogether, 33 careers, from Electrical Engineer to Computer Operator to Agricultural Inspector, were included as having a high degree of skills compatibility. In aggregate, these field are declining in Oswego County and only 75 actual positions would be expected to become available on an annual basis, assuming these trends continue. With the possibility of more than 1,525¹⁴ workers being dislocated, 75 possible openings in *related* fields is a bleak picture.

This analysis does indicate areas of expertise which would have the greatest ability to absorb dislocated nuclear workers. Engineering, manufacturing plant operations, machine and system technicians and operators, power distributors and dispatchers, and fire prevention and protection fields are among these areas. As an example, there is compatibility in the county with the fabricated metal (Novelis) and machine shops (more than 30 small businesses), paper manufacturing (Huhtamaki, Felix Schoeller), heat transfer equipment (Fulton Companies), and specialty manufacturing areas such as air filters (Healthway) and cell lab technology (BioSpherix.). All of these companies together, at their current size, would be unlikely to be able to absorb hundreds of Exelon employees¹⁵, but they do indicate existing manufacturing and technology expertise that is already in the county and already being encouraged to expand.

It should be noted that nuclear plant workers, across the full range of positions, are an asset and represent some of the top talent currently working in the county. With adequate preparation and support, should they be dislocated because of plant closures they would become available to close the talent gap employers have cited in interviews. A proactive approach can be to pursue opportunities to deepen the understanding of the skills of the nuclear plant workers and how they integrate into the current economic picture, not only to mitigate possible future job loss effects but also to leverage their skills and experience *now* in support of the goals of expanding manufacturing, technical, and scientific activity within the county.

Solutions to retain potentially displaced nuclear plant workers are a long term goal and, without oversimplifying or dismissing the severity of the possibility, an effective solution is to grow the sectors that need the engineering and technical skills these workers have. The county is keenly aware of the value of engineering and manufacturing jobs, and its economic development efforts already target these types of industries. Appreciation of the value of these jobs underpinned the selection of industry sectors in the Economic Advancement Plan's *Targeted Industry Analysis*, which specifically discusses Advanced Manufacturing and diversification within the Energy sector, including leveraging the existing uniquely valuable nuclear expertise to attract new and more cost-effective reactor technologies. Goals and objectives around supporting and expanding these industries are incorporated into the *Action Plan Matrix*.

¹⁴ See Footnote 12, above

¹⁵ As noted, approximately 124 nuclear-specific positions are held by employees at least 55 years of age. If all current employees shared the same age demographic – which is unlikely – then 25% x 1,525 total employees would calculate to 381 workers at or near retirement or early retirement. More than 1,000 workers would *not* fit within that demographic.

Occupations Compatible with the Skills of Nuclear Operators, Engineers, and Technicians, Oswego County

	2006 Jobs	2016 Jobs	2006-2016 Change	2006-2016 Estimated Annual Openings
Electrical Engineers	116	60	(56)	22
Industrial Engineers	85	87	2	6
Fuel Cell Engineers	60	59	(1)	5
Mechanical Engineers	43	50	7	4
Biofuels/Biodiesel Technology and Product Development Managers	43	50	7	4
Stationary Engineers and Boiler Operators	37	39	2	3
Geothermal Technicians	30	24	(6)	3
Power Distributors and Dispatchers	23	21	(2)	2
Chemical Technicians	12	<10	(7)	2
Quality Control Analysts	16	17	1	2
Police Identification and Records Officers	13	12	(1)	2
Microsystems Engineers	20	20	0	2
Validation Engineers	19	18	(1)	2
Wind Energy Engineers	19	18	(1)	2
Cytogenetic Technologists	19	18	(1)	2
Cytogenetic Technologists	28	25	(3)	2
Computer Operators	28	25	(3)	2
Biological Technicians	13	11	(2)	1
Chemical Plant and System Operators	<10	<10	(1)	1
Industrial Engineering Technicians	<10	<10	5	1
Fire-Prevention and Protection Engineers	13	11	(2)	1
Materials Engineers	<10	11	1	1
Cardiovascular Technologists and Technicians	11	11	0	1
Biomass Plant Technicians	10	<10	(1)	1
Nanotechnology Engineering Technicians	<10	<10	(1)	1
Gas Plant Operators	<10	<10	(2)	1
Petroleum Pump System Operators, Refinery Operators, and Gaugers	<10	<10	(1)	1
Chemical Engineers	<10	<10	0	0
Materials Scientists	<10	<10	1	0
Agricultural Inspectors	<10	<10	0	0
Gas Compressor and Gas Pumping Station Operators	<10	<10	0	0
Marine Architects	<10	0	0	0
Marine Architects (17-2121.02)	0	0	0	0
Total				75

Source: EMSI

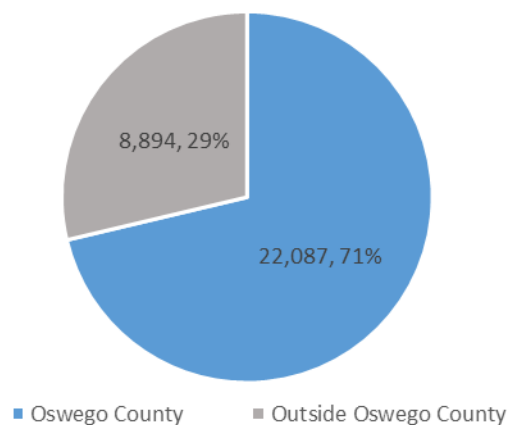
Workforce Trends

Commuter Inflow and Outflow

The following charts depict the number of people both living and working in Oswego County in 2004 and 2014, the last year in which the U.S. Census reported commuter data. Since 2004, the number of Oswego employees and residents has decreased by 575 and 760, respectively.

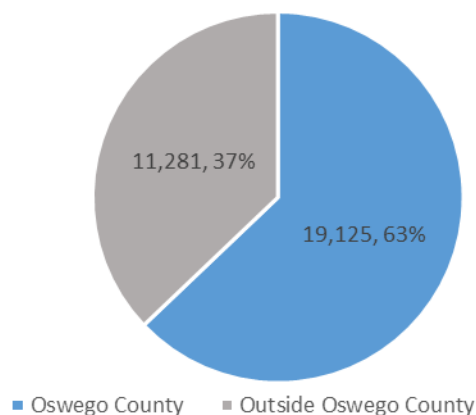
The percentage of Oswego County employees living outside of the county has increased from 28.7% in 2004 to 37.1% in 2014. The majority of Oswego County employees live in the County, at 62.9% in 2014. Fewer than 13% of Oswego County employees commute from Onondaga County. Additionally, Oswego County employees also commute from Cayuga, Jefferson, Oneida, Madison, Monroe, Wayne, Erie, Lewis and other counties.

Where Oswego County Employees Live, 2004



Source: OntheMap

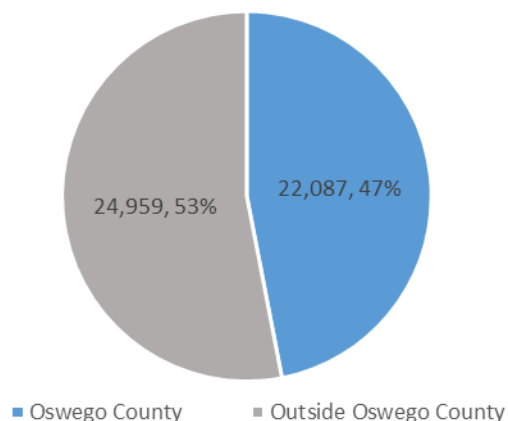
Where Oswego County Employees Live, 2014



Source: OntheMap

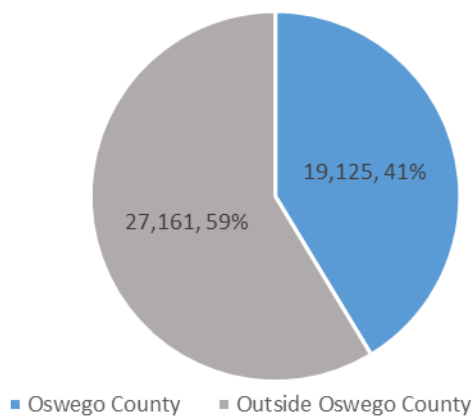
The percentage of Oswego County residents who work outside of Oswego County has increased from 53.1% in 2004 to 58.7% in 2014. Currently, 41.3% of Oswego County residents live and work in Oswego County. Additionally, 34.3% of Oswego County residents work in Onondaga County. Roughly a quarter of Oswego County residents commute to other counties including Monroe, Oneida, Jefferson, Erie, New York, Cayuga, Albany, and Broome.

Where Oswego County Residents Work, 2004



Source: OntheMap

Where Oswego County Residents Work, 2014

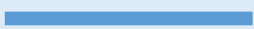
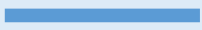
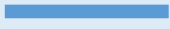

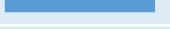

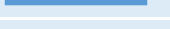





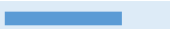
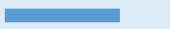
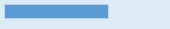







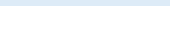


Source: OntheMap

Top Occupations

The table below presents the percentage of occupations in Oswego County, showing where it has a higher or lower concentration of those occupations than the national average. Location Quotient is used here, as it was to identify industry concentration. In this table, a Location Quotient greater than one indicates that the county has more workers in an occupation than the national average, which can be important for employers identifying a suitable workforce.

Several high skilled occupations are highly concentrated. Education, Training, and Library (11.8% of jobs); Life, Physical, and Social Sciences; and Architecture and Engineering require expertise and education and many are in the “STEM” or science/technology/engineering/mathematics areas that are state and regional targets. Occupations requiring non-baccalaureate level skills, or “middle skills” that are more concentrated in the county include Installation, Maintenance, and Repair; Construction; Protective Service (police and fire), and Production (manufacturing production).

Oswego County Employment Concentration, Top Occupations in 2016				
Description	2016 Jobs	% of All Jobs	National Location Quotient	
Education, Training, and Library	4,370	11.8%	1.99	
Life, Physical, and Social Science	460	1.2%	1.57	
Installation, Maintenance, and Repair	1,736	4.7%	1.32	
Construction and Extraction	1,976	5.3%	1.29	
Architecture and Engineering	678	1.8%	1.21	
Food Preparation and Serving Related	3,752	10.2%	1.15	
Protective Service	980	2.7%	1.15	
Production	2,350	6.4%	1.13	
Building and Grounds Cleaning and Maintenance	1,481	4.0%	1.03	
Farming, Fishing, and Forestry	293	0.8%	1.01	
Community and Social Service	597	1.6%	0.99	
Personal Care and Service	1,584	4.3%	0.99	
Healthcare Practitioners and Technical	1,945	5.3%	0.97	
Sales and Related	3,365	9.1%	0.94	
Office and Administrative Support	5,058	13.7%	0.92	
Management	1,629	4.4%	0.83	
Healthcare Support	895	2.4%	0.82	
Transportation and Material Moving	1,790	4.8%	0.75	
Legal	166	0.5%	0.60	
Arts, Design, Entertainment, Sports, and Media	386	1.0%	0.58	
Business and Financial Operations	918	2.5%	0.50	
Military	207	0.6%	0.44	
Computer and Mathematical	350	0.9%	0.34	
Total	36,967	100.0%		

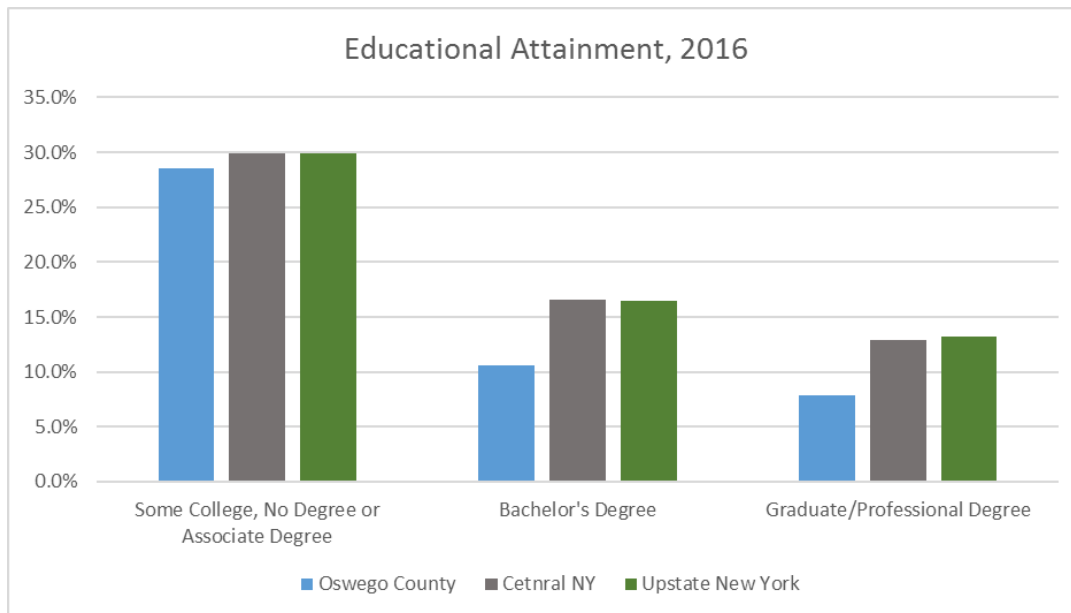
Source: EMSI

Educational Attainment

Oswego County's population is on par with Central New York and Upstate New York for individuals with educational attainment up to an Associate Degree. However, Oswego County has a lower percentage of the population with a Bachelor's Degree or higher relative to Central New York and Upstate New York.

Population 25+ by Educational Attainment , 2016			
	Oswego County	Central NY	Upstate New York
Less than 9th Grade	3.6%	3.0%	3.3%
9th - 12th Grade, No Diploma	9.7%	7.3%	6.9%
High School Graduate	31.6%	24.8%	25.2%
GED/Alternative Credential	8.2%	5.5%	5.1%
Some College, No Degree	17.5%	17.7%	18.2%
Associate Degree	11.0%	12.2%	11.7%
Bachelor's Degree	10.6%	16.6%	16.5%
Graduate/Professional Degree	7.9%	12.9%	13.2%
Total 25+ Population:	82,372	539,186	4,942,777

Source: ESRI



Education and Workforce Development Initiatives

Education builds a skilled workforce; therefore, access to high-quality education contributes to economic and workforce success. In this section, we examine Oswego County's educational institutes, organizations, partnerships and initiatives to better understand how the workforce's skills can be obtained to match the skills required for jobs within the county. The main forms of education and workforce training examined are Bachelor's Degrees, Associate's Degrees and middle skills including certificates, workforce training, and soft skills:

Bachelor's Degree: There are two places where Oswego County residents can obtain a bachelor's degree; SUNY Oswego, Bryant and Stratton College.

Associate's Degree: There are two colleges within Oswego County where residents can earn an associate's degree: Cayuga Community College, Bryant and Stratton College. A P-tech program that begins in high school allows participating students to finish an Associate's Degree from Cayuga Community College on an accelerated schedule.

Middle Skills: Middle skills are those in which require some significant education and training beyond high school but less than an associate's degree.

Certificates

The Center for Instruction, Technology and Innovation (CiTi) offers certificates for certified nurse assistant, 10-hour OSHA training, air brakes training, CDL-A tractor trailer, heating, HVAC, welding, etc.¹⁶

The Center for Career and Community Education (CCCE) has a certificate degree program through Cayuga Community College that leads to an Advanced Manufacturing Certificate. The program is 33 credit hours and focused on Manufacturing Processes and Materials, Machine Tools, Computer Aided Design, Solid Modeling and Advanced CAD/CAM. It offers hand-on learning, high-tech labs and faculty who are experienced in the industry.

Bryant and Stratton College offers programs to earn a certificate in skills-based careers such as accounting, medical billing, health management, human resources, and paralegal.

Workforce Training and Entrepreneurship

CiTi offers a variety of workforce training that does not necessarily result in obtaining a certificate.

Operation Oswego County offers training and networking classes in areas such as small business, women entrepreneurial skills and general employment opportunities.

Manufacturer's Association of Central NY (MACNY) offers training, network and support for manufacturing jobs. Some of the training covers topics such as leadership and supervisory skills, management, supply chain, safety, human resources, and apprenticeship trades.

Soft Skills

Soft skills are personal attributes that enable a person to effectively interact with other people. These skills are needed to attain and retain a job. CiTi's Project Explore is an alternative education option in which students can learn soft skills and entry level job skills.

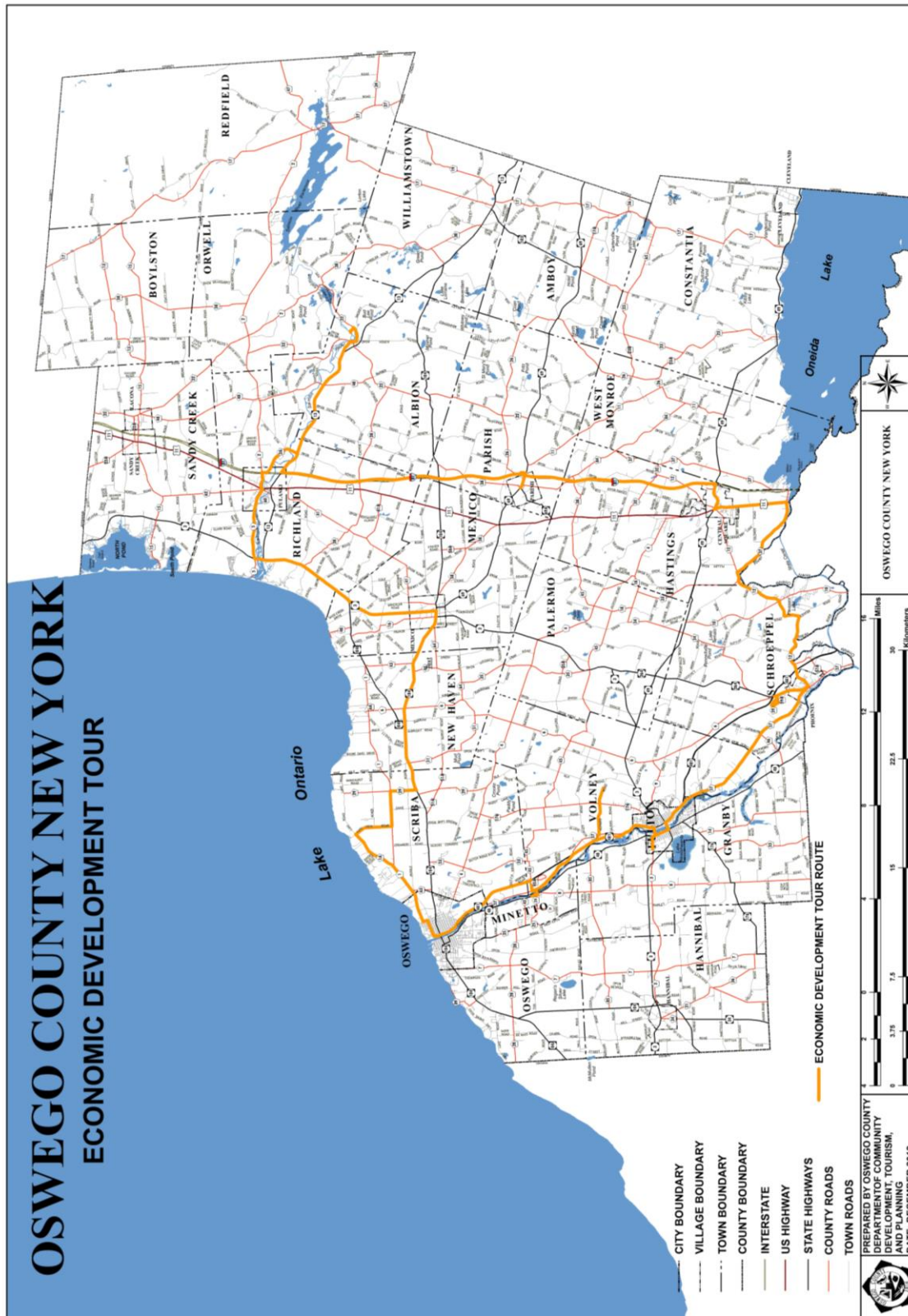
The Center for Career and Community Education offers a "Professional Certificate Series" program for students to achieve soft skills training. Examples of programs include Dealing with Difficult People, Stress Management, Effect Telecommunication, Presentation Skills, and Time Management.

Programs Offering Workforce Support include the Career Transfer Skills Program, Transportation Access to Employees in Poverty and Oswego County 2nd Chance Program which offers assistance in workforce reengagement for long term unemployed, non-violent offenders, substance abusers and veterans suffering with PTSD.

New Regional Technical High School through CiTi expects to open in the fall of 2017 with courses of study strongly focused on jobs, including Advanced Metal Manufacturing, Construction Technology, Computer Systems and Networking, Nursing, Welding, and Public Safety & Justice. In addition to appealing to students seeking work immediately upon graduation, CiTi seeks to enroll students who plan to continue to college or enter the armed forces. Only two Upstate NY communities, Albany and Buffalo, have similar programs for high school students.

¹⁶ U.S. Department of Labor, Occupational Safety and Health Administration: OSHA – 10 is intended to provide workers with awareness of common job-related safety and health hazards and is required by many if not most manufacturers. Additional, further OSHA courses are available for supervisors and workers with safety responsibility.

Appendix B: Map of County Tour



Appendix C: Steering Committee and Stakeholders Interviewed

Steering Committee

Eric Behling	Behling Orchards
Shane Broadwell	Majority Leader – Oswego County Legislature
Phil Church	Oswego County Administrator
Shawn Doyle	Oswego County Legislator
Tom Drumm	Oswego County Legislator
Joseph Fiumara	Executive Director, Fulton Community Development Agency
Kevin Gardner	Chair, Oswego County Legislature
Roy Reehil	Oswego County Legislator
Justin Rudgick	City of Oswego, Community Development Director
Gary Toth	Chair, OCIDA, Building Trades
Mike Treadwell	Executive Director, Operation Oswego County
Dave Turner	Oswego County, Director of Community Development, Tourism, & Planning.

Stakeholders

Atom Avery	Developer
Billy Barlow	Mayor, City of Oswego
Barb Bateman	Vice President, NBT Bank
David Bottar	Executive Director, CNY Regional Planning and Development Board
Nick Canale	Owner of Canale's Restaurant and OCIDA Board Member
Kevin Caraccioli	Caraccioli & Associates, PLLC, Attorney for City of Oswego and OCIDA
Pam Caraccioli	Deputy to the President for External Partnerships and Economic Development, SUNY Oswego
Vince Carroccio	Fulton Companies
Pat Carroll	UA Local 73, Plumbers and Steamfitters
Jeff Coakley	Chief Strategy Officer, Oswego Health
Carla DeShaw	Executive Dean, Community Education and Workforce Development, Cayuga Community College
Jeremey Dygert	Plant Manager, Champlain Valley Specialty
Tom Fernandez	WoodBine Group
Lou Fournier	President, Sutton Realty
Terry Gorman	CEO, St. Lukes Health Services
Tim Hardy	General Manager, Sunoco Ethanol
Theresa Himes	President, Bosco & Geers Food Market
Tom Iorizzo	Northeast Council of Carpenters
George Joyce	CEO, Laser Transit
Zelko Kirincich	Executive Director & CEO, Port of Oswego
Jimmy Koid	K&N Foods
Vince Lobdell	Chairman & CEO, Healthway
Christian Morgia	VP Sales, Eagle Beverage
Joe Moribito	Developer

Tony Pauldine	President, Pauldine Construction
Tom Schneider	President and CEO, Pathfinder Bank
Brandon Schwerdt	Manager, Oswego County Airport
John Sharkey	Universal Metal Works
Kevin Shutt	Plant Manager, Novelis
Rob Simpson	President and CEO, CenterState Corporation for Economic Opportunity
Joseph Solazzo	Laborers International Union
Morris Sorbello	Oswego County Legislator
Mark Southwick	Plant Manager, Huhtamaki
Deborah Stanley	President, SUNY Oswego
Norm Swanson	President and Owner, WoodBine Group, Tailwater Lodge
Michael Szidat	President, Felix Schoeller North America
John Torrese	President, Oswego Speedway
Chena Tucker	Associate Director, SUNY Oswego Office of Business and Community Relations
Casey Walpole	Oswego County Labor Council, AFL-CIO
Chris Weaver	Director of Employment & Training, Oswego County
Bob Wilmott	Northeast Council of Carpenters
Ron Woodward	Mayor, City of Fulton

Appendix D: Bibliography of Existing Plans and Initiatives

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Appendix E: Major Organizations and Initiatives

Oswego County Economic Development Ecosystem		
Name	Jurisdiction	Organization, Task Force, or Initiative?
Oswego Renaissance Association	City of Oswego	Organization
City of Oswego Brownfield Opportunity Area	City of Oswego	Task Force
City of Oswego Community Development Office	City of Oswego	Government
Oswego Housing Authority	City of Oswego	Government
CNY REDC, Oswego Local Planning Committee (DRI)	City of Oswego	Task Force
Greater Oswego Fulton Chamber	Cities of Oswego and Fulton	Organization
Fulton Community Development Agency	City of Fulton	Government
Fulton Housing Authority	City of Fulton	Government
Fulton Block Builders	City of Fulton	Organization
Greater Mexico Chamber of Commerce	Town and Village of Mexico	Organization
Pulaski/Eastern Shore Chamber of Commerce	Village of Pulaski, More	Organization
Fort Brewerton/Greater Oneida Lake Chamber of Commerce	Fort Brewerton, More	Organization
Oswego County Legislature	County	Government
Oswego County Legislature Economic Development Committee	County	Government
Oswego County Department of Community Development, Tourism, & Planning	County	Government
Oswego County Business Expansion Center (OOC Foundation)	County	Initiative
Oswego County Micro Enterprise Training System (OOC Foundation)	County	Initiative
Oswego County Small Business Training Classes (OOC Foundation)	County	Initiative
Oswego County Women's Network for Entrepreneurial Training (OOC Foundation)	County	Initiative
Operation Oswego County	County	Organization
Oswego County IDA	County	Organization
Oswego County Civic Facilities Corporation	County	Organization
Operation Oswego County Foundation	County	Organization
Center for Instruction, Technology, and Innovation (CiTi)	County	Government
Oswego County Workforce NY / Workforce Development System	County	Organization
Oswego County Opportunities	County	Organization
Oswego County Land Bank Corporation	County	Organization
Cornell Cooperative Extension Oswego County	County	Organization
Oswego County Community Health and Poverty Reduction Task Force (Legislature)	County	Task Force
Oswego County Legislature Tourism Advisory Council	County	Task Force
Port of Oswego Authority	Region	Organization
Onondaga County Water Authority	Region	Government
Central NY Biotech Accelerator (NYS Certified Business Incubator)	Region	Initiative
Central NY Tech Garden/ Regional Innovation Hot Spot (CenterState CEO)	Region	Initiative
SUNY Oswego Small Business Development Center	Region	Initiative
Central NY Enterprise Development Fund (CNY RPDB)	Region	Initiative
Central NY Regional Economic Development Council (REDC)	Region	Organization
Central New York Regional Planning and Development Board (CNY RPDB)	Region	Organization
Upstate Venture Connect	Region	Organization
ARISE Oswego County/ CNY	Region	Organization
Central NY Technology Development Organization	Region	Organization
Manufacturer's Association of Central NY (MACNY)	Region	Organization
CenterState CEO	Superregional	Organization

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