Socioeconomic Report – REDACTED

Mohawk Solar Project

Towns of Canajoharie and Minden Montgomery County, NY

Prepared for:



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EXECUTIVE SUMMARY

On behalf of Mohawk Solar LLC (Applicant), Environmental Design & Research, Landscape Architecture, Engineering & Environmental Services, D.P.C. has prepared this socioeconomic report for the proposed 90.5 MW Mohawk Solar Project (the "Facility"), a utility scale solar power project located in the Towns of Minden and Canajoharie, Montgomery County, New York (see Figure 1: Facility Site). The Facility will represent the largest utilityscale solar power plant in New York State (New York). As measured to the nearest proposed Facility component, the Facility is located approximately 0.4 miles south of the Village of Fort Plain, 0.4 miles south of the Village of Canajoharie, and 1.7 miles northwest of the hamlet of Ames (see Figure 2: Regional Facility Location). The proposed Facility consists of the construction and operation of a commercial-scale solar power facility, including a solar field of PV panels producing direct current (DC) electricity; inverters placed throughout the Facility (internal to the panel arrays) to convert DC electricity to alternating current (AC) electricity; a medium voltage collection system that will aggregate the AC output from the inverters; access roads, and an operations & maintenance (O&M) facility. These panels and related facilities will be sited within privately-owned leased land within an approximately 2,300-acre Facility Site, with the panels within the perimeter fencing occupying approximately 700 acres. To deliver power to the New York power grid, the Applicant proposes to interconnect with the existing St. Johnsville-Marshville 115-kV transmission line, which is owned and operated by National Grid. An existing substation associated with this transmission line, the Marshville substation, is located along Route 10, just east of the Facility (see Figure 2) but is not included in part of the Facility. The Facility is scheduled to be constructed and go into operation in November 2021.

This report assesses the potential socioeconomic effects of this Facility on the host communities of the Towns of Canajoharie and Minden (the "Study Area"), Montgomery County and New York. It reviews relevant conditions throughout the area and interprets trends and patterns of change as represented by several demographic and economic indicators. Potential statewide and countywide impacts from the Facility are then assessed considering the current socioeconomic conditions of the area.

Montgomery County is in the Mohawk Valley of New York, bisected by the Mohawk River, and shares many economic and demographic characteristics of the region. Like many other counties in the area, Montgomery County has experienced a mix of population growth, stagnation and decline over the past 30 years, as have the Towns of Minden and Canajoharie. Age distribution patterns and educational attainment levels throughout the Study Area are relatively consistent with those in the surrounding areas. Housing availability throughout the Study Area is stable, and homeownership rates are high (between approximately 79.8% and 88.8%). Housing values are relatively stable and are well below the statewide median value. Poverty rates within the Study Area are slightly higher at 21.1% for both

towns above the County rate of 19.6%. In decreasing order of total employment, the five dominant employment sectors in New York are 1) Health Care and Social Assistance, 2) Educational Services, 3) Retail Trade, 4) Accommodation and Food Services, and 5) Professional, Scientific, and Technical Services. Although unemployment across all industries within Montgomery County is higher than the statewide average, recent (slow) declining growth has begun to bring the unemployment rate down.

The construction and operation of the Facility will have positive impacts throughout the local and statewide economy. Businesses involved in on-site Facility construction and operations, as well as those associated throughout the industrial supply chain, are expected to see a measurable increase in the demand for their services. In addition, the earnings by workers during construction and operation of the Facility are expected to generate additional spending, creating a "ripple effect" throughout the countywide and statewide economy. Using the Jobs and Economic Impact Model ("JEDI Model"), a model established by the National Renewable Energy Laboratory (NREL), with results shown in Table ES-1, it is estimated that Facility construction could increase onsite and off-site employment by 576 workers statewide with total earnings of approximately \$46.0 million. The operation and maintenance of the installed Facility is estimated to increase onsite and off-site employment demand by an additional seven workers statewide annually with total annual earnings of approximately \$0.7 million. The total value of onsite and off-site industrial production and induced benefits in the statewide economy associated with Facility construction is estimated at \$71.2 million and at \$1.3 million annually during operation.

	Jobs	Earnings (Millions)	Output (Millions)
Construction			
Project Development and Onsite Labor Total	369	\$30.6	\$32.9
Construction & Interconnection Labor	295	\$23.4	-
Construction-Related Services	74	\$7.1	-
Module & Supply Chain Impacts	112	\$8.8	\$20.4
Induced Impacts	95	\$6.7	\$17.9
Total Impacts	576	\$46.0	\$71.2
Annual Operation			
Onsite Labor Impacts	3	\$0.4	\$0.4
Module & Supply Chain Impacts	1	\$0.1	\$0.3
Induced Impacts	3	\$0.2	\$0.5
Total Impacts	7	\$0.7	\$1.3

Table ES-1, Estimated Summar	/ Results of Statewide Jobs and Economic Imp	act Analysis
Table LO-1. Lotimated Outminat		act Analysis

Source: Jobs and Economic Development Impact Model (USDOE NREL, 2018)

Note: Impact totals and subtotals are independently rounded, and therefore may not add up directly to the integers shown in this table. As detailed in Table ES-2, at a countywide level, it is estimated that the Facility construction could increase onsite

and offsite employment by 172 workers with total earnings of approximately \$9.7 million. The operation and

maintenance of the installed Facility is estimated to increase onsite and offsite employment demand by an additional three workers countywide with total annual earnings of approximately \$0.3 million. The total value of industrial production and induced benefits in the countywide economy associated with construction is \$16.2 million and \$0.5 million annually during operation.

	Jobs	Earnings (Millions)	Output (Millions)
Construction			
Project Development and Onsite Labor Total	106	\$6.5	\$8.1
Construction & Interconnection Labor	59	\$4.7	-
Construction-Related Services	47	\$1.8	-
Module & Supply Chain Impacts	45	\$2.3	\$5.3
Induced Impacts	21	\$0.9	\$2.9
Total Impacts	172	\$9.7	\$16.2
Annual Operation			
Onsite Labor Impacts	1	\$0.1	\$0.1
Module & Supply Chain Impacts	1	\$0.0	\$0.1
Induced Impacts	2	\$0.1	\$0.2
Total Impacts	3	\$0.3	\$0.5

Table ES-2. Estimated Summary Results of Countywide Jobs and Economic Impact Analysis

Source: Jobs and Economic Development Impact Model (USDOE NREL, 2018)

Note: Impact totals and subtotals are independently rounded, and therefore may not add up directly to the integers shown in this table.

Furthermore, the Facility is anticipated to have a positive impact on local taxing jurisdictions through payments in lieu of taxes (PILOT) and other payments. Taxing jurisdictions receiving various forms of payments include Canajoharie and Fort Plain Central School Districts, Montgomery County, Towns of Minden and Canajoharie, and the Minden Fire District. Given the budget constraints that local taxing jurisdictions are currently facing, it is expected that the PILOT payments will be a positive revenue stream to municipalities and other local taxing jurisdictions. The PILOT amount will total \$300,000 in the first year and escalate at 2% annually for 15 years. The Facility will not impose significant additional burdens on municipal and school district services and thus will not increase the costs to the participating Towns.

These estimates suggest that the construction and operation of the Mohawk Solar Facility will have a positive impact throughout the statewide and countywide economy through the provision of employment, spending of wages, and increase in industrial output. At the local level, direct payments will occur in the form of land leases, easements and other potential agreements (i.e., good neighbor agreements), as well as a number of local jobs and purchases of local goods and services (e.g., module washing, grass cutting, vegetation management, and snow removal).

INTRODUCTION

On behalf of Mohawk Solar LLC (Applicant), Environmental Design & Research, Landscape Architecture, Engineering & Environmental Services, D.P.C. has prepared this socioeconomic report for the proposed 90.5 MW Mohawk Solar Project (the "Facility"), a utility scale solar power project located in the Towns of Minden and Canajoharie, Montgomery County, New York (see Figure 1: Facility Site). The Facility will represent the largest utilityscale solar power plant in New York State. As measured to the nearest proposed Facility component, the Facility is located approximately 0.4 miles south of the Village of Fort Plain, 0.4 miles south of the Village of Canajoharie, and 1.7 miles northwest of the hamlet of Ames (see Figure 2: Regional Facility Location). The construction and operation of this commercial-scale solar power facility consists of a solar field of PV panels producing direct current (DC) electricity; inverters placed throughout the Facility (internal to the panel arrays) to convert DC electricity to alternating current (AC) electricity; a medium voltage collection system that will aggregate the AC output from the inverters; access roads, and an operations & maintenance (O&M) facility. These panels and related facilities will be sited within privately-owned leased or easement land within an approximately 2,300-acre Facility Site, with the panels occupying approximately 530 acres within the Facility Site. To deliver power to the New York power grid, the Applicant proposes to interconnect with the existing St. Johnsville-Marshville 115-kV transmission line, which is owned and operated by National Grid. An existing substation associated with this transmission line, the Marshville substation, is located along Route 10, just east of the Facility (see Figure 2) but is not included in part of the Facility. The Facility is scheduled to be constructed and go into operation in November 2021.

A comprehensive review of the potential socioeconomic effects on local municipalities and New York requires an examination of the related impacts generated from the construction and operation of the project under review. Specific to the proposed Facility, this report includes a review of the past and current demographic and economic characteristics and trends across New York, Montgomery County, and in the Study Area, which includes the Towns of Canajoharie and Minden.

Part I of this report presents a socioeconomic profile of the Study Area, Montgomery County, and New York, including a demographic profile with specific data on population size, age and educational attainment, housing occupancy rate and median value. A snapshot of the health of the statewide and local economy follows with specific data on the local labor force and unemployment rates and median household income, including poverty levels. Finally, local, county and state fiscal health is reviewed with attention focused on the existing tax base, recent budgets (including revenues, expenditures, and indebtedness). Part II of this report analyzes the potential positive and negative socioeconomic impacts of the Facility. The economic impacts were determined using the economic input-output Jobs and Economic Development Impact (JEDI) model. This model was created by MRG & Associates

under contract with the National Renewable Energy Laboratory and is an industry standard for investigation of the economic impacts of solar energy facilities. Potential measures intended to either eliminate or reduce the potential adverse impact are presented.

PART I: SOCIOECONOMIC PROFILE OF NEW YORK STATE AND STUDY AREA

1. Demographic and Housing Characteristics

This section reviews past, current and projected population, housing, and labor force characteristics and trends at three comparative levels: 1) New York, 2) Montgomery County, and 3) the Study Area. The most recent Decennial Census conducted by the U.S. Census Bureau was in 2010. For data not collected during the 2010 Decennial Census, the figures used are estimates based on the Census Bureau's American Community Survey, which apply to all years between 2013 and 2017. For the purposes of this report, these estimates will be referred to as estimates for 2017.

1.1 Population and Housing Trends

Populations for New York, Montgomery County, and the Study Area are shown in Table 1. While New York showed a slight increase in population from 2000 to 2017 (0.3 %), Montgomery County's population decreased slightly during the same period (-0.1%). At the local level, Minden experienced a population decrease (-0.6%) while Canajoharie experienced no change. Most residents across the State, as well as Montgomery County and the Study Area, are working adults (ages 16 to 64 years) or children. As shown in Table 2, the Study Area populations were similar to the statewide average of 17.5% for ages 0 to 15 years. There is a slightly lower proportion of people 65 years or older across New York (15.2%) than in Montgomery County, Minden, and Canajoharie (17.9%, 17.3% and 17.9%, respectively).

Table 1. Population Trenus and Densities	Table 1	. Population	Trends and	Densities
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Jurisdiction within a 5-Mile Radius of Project	2000 Population	2010 Population	2017 Population	% Annual Change 2000- 2017	Est 2030 Population	% Change 2017- 2030	Population Density (people per square mile)
New York	18,976,821	19,378,102	19,798,228	0.3%	20,463,657	3.4%	421.2
Montgomery County	50,219	49,708	49,500	-0.1%	48,961	-1.1%	122.8
Town of Canajoharie	3,797	3,732	3,637	-0.2%	3,522	-3.2%	85.4
Town of Minden	4,202	4,262	4,175	0.0%	4,155	-0.5%	81.9

Source: U.S. Census Bureau, 2000 and 2010 Decennial Census, Census Reporter, and 2017 American Community Survey 5-Year Estimates (2013-2017).

Table 2. Age Groups

Study Area Jurisdiction	<15 Years	% of Total Pop.	15-44 Years	% of Total Pop.	45-64 Years	% of Total Pop.	65+ Years	% of Total Pop.
New York	3,477,367	18%	8,028,727	41%	5,283,783	27%	3,008,351	15%
Montgomery County	9,327	19%	17,701	36%	13,620	28%	8,852	18%
Town of Canajoharie	787	22%	1,351	37%	957	26%	542	15%
Town of Minden	1,033	25%	1,240	30%	1,182	28%	720	17%

Source: American Community Survey 2013-2017 5-Year Estimates

While the statewide population is expected to increase over the next 30 years, the population of Montgomery County is expected to decrease by -1.1% (U.S Census Bureau, 2017). With a stable or declining countywide population, it can be anticipated that the distribution of population for surrounding municipalities will also slightly decrease.

The level of education attained, particularly in terms of a high school degree, has improved in the Study Area. Educational attainment is a measure of the highest level of education a person attains. On a community level, a high or increase in the educational attainment represents a positive attribute that is attractive to current and future employers. Solar projects such as this Facility create jobs that require various levels of education from advanced degrees, to long-term on-the-job training, and trade certifications (Bezdek, 2007). Thus, communities with an educated labor force are generally better suited to fill the employment positions created by a solar project. As illustrated in Table 3, the estimated level of education obtained by both state and local residents has shown a modest increase over the 2000-2017 study period.

Table 3. Educational Attainment

Study Area Jurisdiction	% High School Degree or Higher (2017)	2000-2017 Change	% Bachelor's Degree or Higher (2017)	2000-2017 Change
New York	86.1%	7.0%	35.3%	7.9%
Montgomery County	85.2%	7.1%	17.0%	3.4%
Town of Canajoharie	85.3%	3.1%	17.0%	0.8%
Town of Minden	78.6%	2.1%	12.4%	2.5%

Source: U.S. Census Bureau, 2000 Decennial Census and American Community Survey 2013-2017 Year Estimates

Vacancy rate is an indicator of the availability of housing to own or rent. Over the period 2013 to 2017, availability in New York has remained relatively consistent at an estimated 11.5% percent vacancy rate (U.S Census Bureau, 2017). For the same period, the vacancy rates for Montgomery County, Minden, and Canajoharie are 16.1%, 20.1% and 11.2% (U.S Census Bureau, 2017) respectively. With a slowly decreasing forecasted population, vacancy rates are projected to increase in these communities.

Within occupied housing, rates of homeownership are strong for the County and Towns of Minden and Canajoharie in 2017 at 83.9%, 79.9% and 88.8%, respectively, but significantly lower at 54% statewide (U.S Census Bureau, 2017). The median housing values statewide at \$293,000 was significantly higher than those in the Study Area, specifically, \$77,100 in Minden, \$99,300 in Canajoharie, and \$99,900 in Montgomery County (U.S Census Bureau, 2017).

2. Economic Characteristics and Local Employment

The economic health of a region and its local municipalities can be discerned from certain indicators such as vacancy rate, median household income, poverty level, unemployment rate and diversity in industry sectors and strength in local employment sources. As discussed in the previous section, the vacancy rate for the local communities is relatively high, indicating some instability in the local housing market.

Household income, as defined by the U.S. Census Bureau, is the sum of income received in a calendar year by all household members 15 years old or older, including nonfamily household members. Income considered are wages or salary; interest, dividends, or net rental or royalty income or income from estates and trusts; Social Security or Railroad Retirement income; Supplemental Security Income (SSI); public assistance or welfare payments; retirement, survivor, or disability pensions; among others. Poverty level is determined by the level of income for a family of specific size and composition (number of adults and children) compared to established income thresholds. If the

family income falls below the poverty threshold of \$25,900 for a family of four then they are considered below poverty level (U.S. Census Bureau, 2018).

2.1 Household Income

As illustrated in Table 4, in 2017, the estimated median household income for Canajoharie, Montgomery County, and Minden was \$50,031, \$47,449, and \$41,278, respectively, all lower than the \$62,765 for New York. For the Study Area, the median household income for Canajoharie was approximately 21% and 5.4% higher that Minden and Montgomery County, respectively. Also shown in Table 4, the 21.1% poverty rates in Minden and Canajoharie, and 19.6% in Montgomery County were all higher than the 15.1% statewide poverty rate.

Study Area Jurisdiction Median Household Income		% of Population Below Poverty
New York	\$62,765	15.1%
Montgomery County	\$47,449	19.6%
Town of Canajoharie	\$50,031	21.1%
Town of Minden	\$41,278	21.1%

Table 4. Household Income and Population below Poverty

Source: U.S. Census Bureau, 2013-2017 5 Year Estimates

Public assistance programs are available for many individuals who live below the poverty level in New York. Examples include help with buying food, special tax credits, home energy assistance and WIC (Women, Infant, and Children) programs. Statewide approximately 3.4% of households receive cash public assistance, compared to 6.2%, 3,2%, and 2.8% in Minden, Montgomery County, and Canajoharie, respectively.

2.2 Labor Force Characteristics

The regional and local economies in the Study Area are affected by three major trends: 1) transition from a manufacturing-based to a service-based economy, 2) relative population stability, and 3) a growing workforce. The characteristics of the local labor force, the dominant industries and employment sources all reveal the economic trends of the area.

As shown in Table 5, the U.S. Census Bureau estimates that 63.3% of New York's 2017 population, aged 16 years or older, was in the labor force, which is in close agreement with Minden at 64.3% and Montgomery County at 60.2%, and 7.4% greater than Canajoharie. In the last decade, the State's labor force participation rate increased by 0.9%.

Study Area Jurisdiction	Working Age Population	Population in Labor Force	% of Working Age Population in Labor Force
New York	16,080,981	10,152,999	63.3%
Montgomery County	39,440	23,735	60.2%
Town of Canajoharie	2,798	1,799	55.9%
Town of Minden	3,119	1,743	64.3%

Table 5. Labor Force Characteristics

Source: U.S. Census Bureau, 2013-2017 5 Year Estimates

Note: Working age population refers to individuals aged 16 years or older.

According to the U.S. Bureau of Labor Statistics (2018), the unemployment rates reported statewide and for Montgomery County in December 2013 and 2018 show a downtrend in recent years, from 7.7% to 3.9% for New York (not seasonally adjusted), and from 9.2% to 4.6% for Montgomery County. These statistics are indicators of a slowly recovering economy.

2.3 Local Industries

In decreasing order of total employment, the five dominant employment sectors in New York are 1) Health Care and Social Assistance, 2) Educational Services, 3) Retail Trade, 4) Accommodation and Food Services, and 5) Professional, Scientific, and Technical Services (US Census Quarterly Workforce Indicators, 2018). This compares with the five dominant employment sectors in Montgomery County, which are 1) Health Care and Social Assistance, 2) Manufacturing, 3) Retail Trade, 4) Transportation and Warehousing, and 5) Educational Services (US Census Quarterly Workforce Indicators, 2018). Major non-governmental employers in Montgomery County include Fulton-Montgomery Community College, St. Mary's Hospital, Power and Composite Technologies, Inc, Keymark Corporation and Beechnut Nutrition Corp (Montgomery County Development Center, Area Businesses, 2018).

Although several changes have occurred throughout the economy in recent years, most industries have remained relatively stable in their share of overall State employment. Notable shifts within large individual sectors have been sizeable, however. Table 6 shows the breakdown of annual average part-time and full-time employment in New York and Montgomery County from 2014 to 2017. Reductions in employment have occurred within Mining Quarrying, and Oil and Gas Extraction (-6.64%), along with relatively minor decreases in sectors such as Retail Trade (-0.65%), Information (-0.53%), and Wholesale Trade (-0.01%). There has been notable growth within some statewide sectors, including Construction (+13%), Administrative and Support and Waste Management and Remediation Services (+11%), Health Care and Social Assistance (+9), Professional, Scientific, and Technical Services (+7%), Accommodation and Food Services (+8%), Agriculture, Forestry, Fishing and Hunting (+6%), and Other Services (except Public Administration, +7%). (Statistics based on yearly average beginning-of-quarter employment from US

Census Quarterly Workforce Indicators, 2018). These increases have contributed to a 5% growth in the number of jobs statewide.

For the same 2014-2017 period Montgomery County endured sizeable to minor reductions in the following sectors: Information (-25%), Mining, Quarrying, and Oil and Gas Extraction (-15%), Finance and Insurance (-14%), Management of Companies and Enterprises (-14%), Accommodation and Food Services (-12%), Real Estate and Rental and Leasing (-9%), Other Services (except Public Administration) (-5%), and Professional, Scientific, and Technical Services (-1%). However, Montgomery County experienced job growth in several sectors, including: Administrative and Support and Waste Management and Remediation Services (+33%), and Construction (+27%). Job growth occurred to a lesser extend in Wholesale Trade (+9%), Agricultural, Forestry, and Fishing and Hunting (+6%), Educational Services (+5%), Transportation and Warehousing (+4), Health Care and Social Assistance (+4%), and Retail Trade (+3%). In certain sectors, job growth rates in Montgomery County exceeded the statewide rates and contributed to a total growth of 2% in the number of jobs.

Table 6. Tota	l Employment in	New York and	Montgomery County
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NAICS Code Description	Total full-time and part-time employment by NAICS industry New York (average annual number of jobs)				Tota emplo Montg (averag	l full-time yment by omery Co ge annual	and part-f NAICS incounty, New number o	ime lustry York f jobs)
	2014	2015	2016	2017	2014	2015	2016	2017
Health Care and Social Assistance	1,477,064	1,512,202	1,560,417	1,609,140	4,194	4,190	4,339	4,357
Retail Trade	922,144	925,423	932,729	915,802	2,220	2,220	2,274	2,276
Educational Services	902,688	898,183	904,262	917,190	1,371*	1,209*	1,423*	1,437*
Accommodation and Food Services	704,822	728,841	740,334	759,801	855	823	788	753
Professional, Scientific, and Technical Services	624,367	650,571	667,195	671,325	192	203	212	191
Finance and Insurance	513,368	517,185	518,933	519,669	340	331	313	294
Public Administration	463,209*	461,382*	460,902*	465,894	929	938	931	931
Manufacturing	455,903	454,853	451,099	446,006	3,701	3,599	3,743	3,693
Administrative and Support and Waste Management and Remediation Services	463,295	479,360	497,212	513,925	212	208	257	282
Other Services (except Public Administration)	345,477	356,417	365,511	369,018	479	481	446	457
Wholesale Trade	338,317	342,016	340,156	338,647	426	413	431	465
Construction	339,295	358,370	377,146	384,183	448	493	480	570
Transportation and Warehousing	303,800	312,175	313,503	322,944	1,695	1,576	1,683	1,759
Information	286,755	286,953	280,268	285,246	220	212*	176*	166*
Real Estate and Rental and Leasing	198,264	204,056	208,041	210,713	69	64	64	63
Arts, Entertainment, and Recreation	178,896	181,702	185,304	186,975	40	64*	61	39*
Management of Companies and Enterprises	149,807	150,404	150,485	151779	157	156	156	135
Utilities	42,012	42,758	42,233	42826	(x)	(x)	(x)	(x)
Agriculture, Forestry, Fishing and Hunting	25,245	25,894	26,228	26830	172	176	173	182
Mining, Quarrying, and Oil and Gas Extraction	4,721	4,674	4,441	4373	61*	56	(x)	52

Source: US Census Bureau Quarterly Workforce Indicators, 2017; *=Values represent an aggregation of sectors, some of which have significantly high margins of error; (x)=Values represent an aggregation of sectors that does not meet U.S Census Bureau publication standards¹

Agriculture remains a notable economic generator in Montgomery County, producing a diverse array of agricultural products for sale both local and nationally and offering an important employment opportunity for local laborers. Approximately 47% of the county's land mass is dedicated to agriculture (Montgomery County Agricultural and Farmland Protection Plan 2017), most of which is comprised of moderate-scale operations – nearly half are farm operations between 50 to 179 acres (USDA NASS 2012).

Montgomery County and its surrounding area is an important agricultural center due to its high-quality soils located near the Mohawk River. In the higher upland areas, soils are a lower agricultural quality. At a median size of 110 acres, Montgomery County farm operations are similar in size to operations in neighboring counties (Fulton, Hamilton, Herkimer, Oneida, and Schoharie) where the median sizes average 106 acres (USDA NASS 2012). USDA's National Agricultural Statistics Service estimates that most Montgomery County farm operations with hired staff employ approximately between ten or more hired workers (USDA NASS 2012). According to this most recent (2012) USDA Census of Agriculture, there are 659 farm operations within Montgomery County.

Employment in the Mohawk Valley, which includes the Study Area, is projected to grow by 8.4% from 2014 through 2024. This projected growth is expected to be concentrated in the service-providing sectors of the economy along with the extraction occupations and the agricultural occupations, while employment in manufacturing and government services is expected to grow at a much lower rate (less than 3%) (NYSDOL, 2014). Sectors expected to experience the most concentrated growth (12% or more) in the Mohawk Valley include Agriculture, Forestry, Fishing and Hunting Arts, Entertainment, and Recreation, Construction, Health Care and Social Assistance.

2.4 Local Municipal Tax Base and Budgets

Understanding the fiscal health of communities in which a project will be located is essential to assessing the potential economic impacts or benefits of that project. The general fiscal profile for any municipality includes its revenues, expenditures, and long-term debt obligations. The majority of revenue collected is through real property taxes, sales taxes, and state aid. In assessing the economic impact of the Facility, it is informative to review local property tax levies and tax rates for each affected taxing jurisdiction, as municipalities have the most direct control over these revenue sources.

Municipalities (towns, villages, and counties) and school districts, as independent taxing jurisdictions, are responsible for providing specific services and facilities to those who live and work within their boundaries and for levying the taxes needed to pay for those services/facilities. The taxing jurisdictions affected by the Facility include Montgomery County, the Towns of Minden and Canajoharie, and the Fort Plain and Canajoharie Central School Districts. Annual municipal expenditures are recovered in large part through each municipality's tax levy, which is borne by taxable properties. Real property taxes are determined by each property's assessed value, multiplied by the tax rate established by each taxing jurisdiction. Table 7 summarizes the most recent data available for municipal and county property tax levies and rates in the County and affected Towns.

Study Area	Levy year 2016 (roll year 2015)				Levy year 2017 (roll year 2016)				
Jurisdiction	Property Tax Levy	Municipal Tax Rate	County Tax Rate	Eq. Rate	Property Tax Levy	Municipal Tax Rate	County Tax Rate	Eq. Rate	
Montgomery County	\$27,873,802	-	12.70	-	\$27,832,920	-	12.40	-	
Town of Canajoharie	\$456,728	2.37	12.70	61	\$472,520	2.53	12.40	100.00	
Town of Minden	\$686,756	4.18	12.70	100.00	\$686,756	4.12	12.40	100.00	

Table 7. Property Tax Levy and Municipal Tax Rate²

Source: NYSORPTS, 2018a

Another significant source of revenue for the county and local municipalities is local sales tax revenue. The current sales tax rate for Montgomery County is 8% (4% local tax plus 4% State tax) (New York State Department of Taxation and Finance, 2015). In 2016, the total sales tax revenue³ for Montgomery County was \$28,123,368, \$414,018 for the Canajoharie, and \$441,177 for the Minden (New York State Office of the State Comptroller, 2018a). In 2017, this sales tax revenue increased in Montgomery County by 5.91%. At a statewide level, this reflects trends indicating inflation increases, as well as improved consumer confidence and stronger, yet modest, wage growth. In addition, New York's unemployment rate was down slightly in 2017 compared to the previous year of 2016, and at its lowest level since 2006 (New York State Office of the State Comptroller, 2018b).

An overview of the balance of local taxing jurisdiction revenues, expenditures and indebtedness reveals its general fiscal health. As illustrated in Table 8, from 2016 to 2017, revenues in Canajoharie increased by 21%, while also slightly increasing in Minden by 7%. With respect to expenditures, both towns experienced an increase from 2016 to 2017: Canajoharie (10%) and Minden (1%). Montgomery County, however, decreased their expenditures between 2016 and 2017, while increasing their revenues. Indebtedness remains a lingering challenge for both Montgomery County and municipalities. School districts in New York are subject to a separate budgeting process. The budgets of

² Property tax levy reflects the amount of revenue required by the municipality through the property tax base and is equal to total municipal spending minus aid and other revenues. Tax base is equal to the sum of taxable parcel values. Municipal tax rate is determined by dividing the levy by the tax base, such that each taxable parcel produces that amount of property tax per \$1,000 assessed value. For a \$100,000 property in the Town of Minden, property tax liability = (4.12 / 1000) * 100,000, or \$412. An equalization rate is the state's measurement of a municipality's level of assessment (LOA). An equalization rate of 100 means that the municipality is assessing property at 100 percent of market value. An equalization rate lower than 100 means that the municipality's total market value is greater than its assessed value.

³ Sales tax revenue is distributed to towns, not directly collected by them. Not all towns receive distribution payments from Sales Tax Revenue.

the Fort Plain and Canajoharie Central School Districts both faced budget shortfalls and/or indebtedness in recent years (see Table 9).

Study Area Taxing Jurisdiction Budgets	2016	2017
Montgomery County		
Total Revenues & other sources	\$116,182,122	\$119,315,066
Total Expenditures & other uses	\$118,740,770	\$117,706,265
Total Indebtedness	\$33,168,031	\$36,234,000
Town of Canajoharie		
Total Revenues & other sources	\$1,481,783	\$1,791,568
Total Expenditures & other uses	\$1,547,403	\$1,702,092
Total Indebtedness	\$304,512	\$283,816
Town of Minden		
Total Revenues & other sources	\$1,798,514	\$1,920,880
Total Expenditures & other uses	\$1,686,905	\$1,825,110
Total Indebtedness	(x)	\$0
Canajoharie Central School District		
Total Revenues & other sources	\$21,687,119	\$22,799,344
Total Expenditures & other uses	\$21,469,243	\$22,362,417
Total Indebtedness	\$12,860,000	\$11,320,000
Fort Plain Central School District		
Total Revenues & other sources	\$20,800,279	\$21,545,170
Total Expenditures & other uses	\$21,345,658	\$21,607,432
Total Indebtedness	\$11,625,000	\$10,830,000

Table 8. Tax Jurisdiction Budgets (County, Municipalities, and School Districts)

Source: New York State Office of the State Comptroller, 2018; (x) = data unavailable

In the face of budget shortfalls and a statewide property tax cap, municipalities may find it advantageous to maximize other, less traditional forms of revenue.

PART II: SOCIOECONOMIC EFFECTS OF PROPOSED SOLAR FACILITY

The Facility will have positive onsite, supply chain, local revenue and induced economic effects on Montgomery County, Canajoharie, Minden, and the Canajoharie and Fort Plain Central School Districts. The Facility will provide direct financial benefits to the individual landowners under land lease or easement agreements with the Applicant. Some of these benefits have been initiated for participating landowners and will continue during construction and throughout the operating life of the Facility. The participating towns and school districts are anticipated to receive direct financial benefits from the Facility in the form of the PILOT payments. In addition, the local and statewide economy will experience employment opportunities and related economic benefits through onsite (e.g., construction laborers), supply chain (e.g., component manufacturers) and induced jobs (e.g., retail associates) and associated economic impacts. The overall socioeconomic impact of Facility construction and operation is discussed in detail below.

1. Effects on Population and Housing

As mentioned previously, Minden experienced a slight 0.6% population decrease between 2000 and 2017, while Canajoharie experienced an overall net 0% growth. The proposed Facility is not expected to influence these trends. For the duration of construction (approximately nine months) there could be a temporary increase in local population and demand for temporary housing by out-of-town workers. However, this demand will be relatively modest, and should easily be accommodated by the available rental or temporary housing in the local municipalities and surrounding communities. Beyond this relatively minor (and positive) short-term impact, Facility construction will have no significant impact on population and housing.

The Facility will also result in a small number of permanent positions when it becomes operational (see Part II Section 3.2). These employees are expected to reside within the Mohawk Valley, which could translate into a small but steady improvement to the local economy. Although this represents a positive economic impact, long-term employment associated with the Facility is not large enough to have a significant impact on the local population or housing market.

2. Effects on Property Values

Within the host community and the nearby communities, property values are not anticipated to be impacted. Until very recently (i.e. prior to 2018), most assumptions related to property related impacts were extrapolated from the

robust number of property value analyses from wind energy. These studies indicated that the impact of wind energy generation on neighboring property values was negligible (National Association of Realtors, 2019). The impacts on property values caused by solar facilities were anticipated to be less than the impacts on wind facilities, even more so when combined with mitigation measures to reduce visual impacts through vegetative screening, since PV modules are mounted close to the ground (National Renewable Energy Laboratory, 2016).

Recently there has been research that has specifically analyzed the impacts to property values from utility-scale solar facilities. In an *Exploration of Property Value Impacts near Utility-Scale Solar Installations,* researchers from the University of Texas at Austin conducted a geospatial solar-siting analysis of 956 utility-scale solar sites to determine the characteristics of solar facilities on communities of varying densities and housing stock. To determine the scale and the direction of potential impacts on home prices, property assessors were surveyed from 37 counties, each having one or more utility-scale solar. Geospatial findings suggest that relatively few homes are located within distance enough to be potentially impacted by visibility, due to the rural nature of most solar facilities. Meanwhile, most assessors surveyed believed that proximity to solar installations have either no impact or a positive impact on home values in general. Detailed analyses showed that while the negative property value impacts were perceived when dense neighborhoods were in proximity to relatively large-scale utility solar facilities, most survey respondents did not estimate an impact of solar facilities to properties. Some assessors perceived solar installations may have positive impacts to property values, such as when trees or other vegetation screens were planted or when the land hosting the solar facilities had a previously unappealing use.

Finally, supporting the findings of this recent large-scale analysis, a number of site-specific property value impact studies have been published recently. These studies include paired sales analyses conducted for utility-scale solar facilities in North Carolina (Kirkland 2018), for nine existing solar facilities throughout the Midwest (CohnReznick 2018a) and five solar facilities within Illinois and Indiana (CohnReznick 2018b). These studies analyzed adjoining properties before and after the solar facility was developed (i.e. a matched pair analysis). All studies determined that no consistent negative impact occurred to adjacent properties that could be attributed to the proximity of adjacent solar facilities. In the North Carolina Study, this lack of impact applied to both occupied residential home values and vacant land values alike.

Numerous property value studies based on statistical analysis of real estate transactions have found that neither wind nor solar facilities have significant impact on property values (Hoen & Rand, 2018; Loomis & Alderman 2011; National Association of Realtors, 2019; Loomis & Rand, 2017; Kirkland, 2018; CohnReznick, 2018a; CohnReznick, 2018b). Given the results of these studies, it is reasonable to conclude that the proposed Facility will not have a significant adverse impact on local property values.

3. Jobs and Economic Development Impact (JEDI) Model of the Solar Facility

The proposed Mohawk Solar Facility is anticipated to have local and statewide economic benefits. Solar power development, like other commercial development projects, can expand the local, regional, and statewide economies through both direct and indirect means. Income generated from direct employment during the construction and operation phases of the solar is used to purchase local goods and services, creating a ripple effect throughout the state and county. The employment and economic impacts of the Facility were assessed using the Job and Economic Impact (JEDI) solar model (version PV12.23.16r). Applying input assumptions of varying levels of confidence, the JEDI model allows users to estimate the jobs and economic development impacts from solar power generation projects for both the construction and operation phases (USDOE NREL, 2017). These economic development impacts, categorized by the levels of impact and indicators described in Appendix A, include onsite jobs and earnings, economic output from these onsite earnings, PV panel/local revenue/supply chain jobs and earnings, economic output from these PV panel/local revenue/supply chain earnings, induced jobs and earnings, and economic output from these induced jobs and earnings. It calculates the aforementioned indicators for each level of impact using project-specific data provided by the Applicant and geographically defined multipliers. These multipliers are produced by IMPLAN Group, LLC using a software/database system called IMPLAN (IMpact analysis for PLANning), a widely used and widely-accepted general input-output modeling software and data system that tracks each unique industry group in every level of the regional data (IMPLAN Group, 2015).

This report analyzes three levels of impact that the proposed Facility may have on the economy:

- On-site labor impacts: These are the direct impacts experienced by the companies/individuals residing in New York and Montgomery County engaged in the onsite construction and operation of the Facility. These values represent expenditure of dollars on labor (wages, salaries and associated expenses) by Facility onsite construction personnel as well as operation and maintenance (O&M) personnel. On-site labor impacts do not reflect material expenditures. Most other input-output models consider this level as "direct impacts", referring to changes in jobs, economic activity and earnings associated with the immediate impacts created by the investment, which would include the equipment and materials installed onsite. However, the immediate economic impacts of the physical items used onsite, normally included in direct impacts, typically occur at some geographic distance from the project itself. Because of JEDI's focus on the local impacts of a Facility, only the labor associated with the on-site location of the Facility (Construction, Construction-Related Services and Onsite Labor during Operational Years) is counted at this level.
- Module and supply chain impacts: These impacts measure the estimated increase in demand for goods and services in industry sectors that supply or otherwise support the companies engaged in construction and

operation (also known as "backward-linked" industries). These measures account for the demand for goods and services such as PV panel components, project analysis, legal services, financing, insurance, etc. Most other input-output models consider this level as "indirect impacts", referring to economic impacts associated with linked sectors in the economy that are upstream of the direct impacts, such as suppliers of hardware used to make the equipment and materials installed. However, because of JEDI's focus on the local impacts of the Facility, labor for components of this Facility (e.g. PV panel manufacturers) occurring at off-site locations is also counted in this level as a module and supply chain impact.

 Induced impacts: Induced impacts measure the estimated effect of increased household spending resulting from the project. Induced impacts reflect the reinvestment of earned wages, as measured throughout the first two levels of economic impact. This reinvestment can occur anywhere throughout the local, regional, or state economy on household goods, entertainment, food, clothing, transportation, etc.

Each of these three levels of impact can be estimated in terms of three indicators: jobs (as expressed through the increase in employment demand), the amount of money earned through those jobs, and the overall economic output associated with each level of economic impact. These indicators are described in further detail:

- Jobs: Jobs refer to the increase in employment demand because of facility development. These positions are
 measured across each level of impact, so that they capture the estimated number of jobs on-site, in supporting
 industries, and in the businesses that benefit from household spending. For the purposes of this analysis, this
 term refers to the total number of year-long full-time equivalent (FTE) positions created by the Facility. Persons
 employed for less than full time or less than a full year are included in this total, each representing a fraction of
 an FTE position (e.g., a half-time, year-round position is 0.5 FTE).
- Earnings: This measures the wages and salary compensation paid to the employees described above.
- Output: Output refers to the value of industry production in the State economy, across all appropriate sectors, associated with each level of impact. For the manufacturing sector, output is calculated by total sales plus or minus changes in inventory. For the retail sector, output is equal to gross profit margin. For the service sector, it is equal to sales volume. For example, output would include the profits incurred by those businesses that sell electrical transmission line, concrete, or motor vehicle fuel to the Applicant.

Calculating the number of jobs and economic output from a proposed facility using the JEDI model is a two-step process. The first step requires facility-specific data inputs (such as year of construction, size of facility, PV panel size and location). For purposes of the JEDI model, the Applicant has assumed the following inputs:

- Project Location: Montgomery County and
 New York
- Year of Construction: 2020-2021
- System Application: Utility-Scale
- Cell/Module Material: Crystalline silicon

- System Tracking: Single Axis Tracking (SAT)
- Average System Size: 125 000kW DC
- Number of Systems Installed: 1
- Total Project Size: 125,000kw DC
- Money Value (Dollar Year): 2018

Using this facility-specific data, the JEDI model then creates a list of default values, which include project cost values, default tax values, default lease payment values, and default local share of spending values. These default values are derived from 10 years of research by NREL, and stem from various sources, including interviews and surveys of leading project owners, developers, engineering and design firms, and construction firms active in the solar energy sector. The second step of the JEDI model methodology requires the review, and if warranted, the customization of default project cost values to more reasonable estimates. The Applicant reviewed the default project cost values. statewide shares, and countywide shares subtotaled by each of the following categories in the JEDI model: Materials and Equipment during Installation (i.e. Construction), Labor during Installation (i.e. Construction), Other Costs during Installation (e.g. permitting and overhead during Construction), Labor during Operation & Maintenance (O&M), Materials and Services during Operation & Maintenance, Debt Financing, Tax Parameters, Payroll Parameters. The Applicant then determined whether they were appropriate for the project under review. In this case, the Applicant reviewed the default values for the various categories in the JEDI model to determine whether they were on par with the real costs as experienced by the Applicant's team of development and financial experts. As a result of that review, adjustments were made to specific default values (see Table 9). The remaining cost values were unknown at the time of analysis (April 2019); therefore, after the remaining JEDI default values were reviewed, the Applicant determined them to be reasonable estimates based on previous experience in solar energy development. Note that although the Applicant originally estimated a lower estimate of construction workers in the NYSERDA application, the analysis presented here is based on more precise estimates using current budget estimates.

It is also noted that the analysis of secondary employment and economic activity does not consider other related impacts, such as the economic impact associated with the cancellation of new power plants made unnecessary by the added solar capacity of the project and the economic impacts associated with possible changes in the price of electricity due to the Project. Such an analysis is more appropriately performed by the Commission or Department of Public Service staff, given that those impacts will result from State policies and the Clean Energy Standard, regardless of which specific renewable energy facilities are ultimately constructed. Moreover, a recent study identified that one of the most significant drivers of the closure of fossil fuel plants is the price of electricity, particularly the low price of natural gas, and regulation of the energy sector, not the development of renewable energy projects (US Department of Energy 2017). The largest number of recent fossil fuel plant retirements occurred in 2015, and

corresponded with the deadline for coal and oil plants to implement pollution control equipment for mercury and air toxics, finalization of the Clean Power Plan, and "strong signals of future regulation," while the primary drivers of nuclear plant closures, aside from market conditions, were state policies/conflicts between states and nuclear generators, as well as looming significant plant maintenance issues). Furthermore, even if this analysis was not speculative in terms of "cancellation" of projects, it is beyond the capabilities, control or responsibility of any individual developer to assess the overall economic impact of State energy policy on the energy system. It is Applicant's understanding that economic analyses of these scales of impact were performed in conjunction with adoption of the CES.

Project Expenditure Categories	JEDI Default Value	Adjusted Value	Change
	\$	\$	
	\$	\$	
	\$	\$	
	\$	\$	
	\$	\$	
	\$	\$	
	\$	\$	
	\$	\$	
	\$	\$	
	\$	\$	
	%	%	

Table 9. Adjustments Made to JEDI Model Cost Inputs

Source: Jobs and Economic Development Impact Model (USDOE NREL, 2018); Cost values verified by the Applicant in April 2019.

Estimated non-payroll expenditures estimated to be made both within New York and within Montgomery County are listed in Table 10a (Construction/Installation Period) and Table 10b (Operation Period).

Construction / Installation Expenditure Categories	Project Expenditures	State Share	Statewide Expenditures	County Share	County Expenditures
	\$	%	\$	%	\$
	\$	%	\$	%	\$
	\$	%	\$	%	\$
	\$	%	\$	%	\$
	\$	%	\$	%	\$
	\$	%	\$	%	\$
	\$	%	\$	%	\$
	\$	%	\$	%	\$

Table 10a. Estimate of Annual Direct Non-Payroll Expenditures during Construction

Source: Jobs and Economic Development Impact Model (USDOE NREL, 2018); Cost values verified by the Applicant in April 2019.

Table 10b. Estimate of Annual Direct Non-Payroll Expenditures during Operation

Operation & Maintenance Expenditure Categories	Project Expenditures	State Share	Statewide Expenditures	County Share	Countywide Expenditures
	\$	%	\$	%	\$
	\$	%	\$	%	\$
	\$	%	\$	%	\$
	\$	%	\$	%	\$

Source: Jobs and Economic Development Impact Model (USDOE NREL, 2018); Cost values verified by the Applicant in April 2019.

The analysis presented here used the most currently available multiplier data specific to New York (2016) and specific to Montgomery County (2016) to estimate potential impacts on a statewide and countywide basis. The results of this analysis, estimated for both the construction and operation phases of the proposed Facility, are presented in Tables 11a and 11b and described in the narrative that follows.

	Jobs	Earnings (Millions)	Output (Millions)
Construction			
Project Development and Onsite Labor Total	369	\$	\$
Construction & Interconnection Labor	295	\$	-
Construction-Related Services	74	\$	-
Module & Supply Chain Impacts	112	\$	\$
Induced Impacts	95	\$	\$
Total Impacts	576	\$	\$
Annual Operation			
Onsite Labor Impacts	3	\$	\$
Module & Supply Chain Impacts	1	\$	\$
Induced Impacts	3	\$	\$
Total Impacts	7	\$	\$

Table 11a. Summary of Estimated Results of Statewide Jobs and Economic Impact Analysis

Notes: Earnings and Output values are millions of dollars in 2018 dollars. Totals may not add up due to independent rounding. Source: NREL JEDI Model (version PV12.23.16r) (USDOE NREL, 2017); Cost values verified by the Applicant in April 2019.

Table 11b. Summary of Estimated Results of Countywide Jobs and Economic Impact Analysis

	Jobs	Earnings (Millions)	Output (Millions)
Construction			
Project Development and Onsite Labor Total	106	\$	\$
Construction & Interconnection Labor	59	\$	-
Construction-Related Services	47	\$	-
Module & Supply Chain Impacts	45	\$	\$
Induced Impacts	21	\$	\$
Total Impacts	172	\$	\$
Annual Operation			
Onsite Labor Impacts	1	\$	\$
Module & Supply Chain Impacts	1	\$	\$
Induced Impacts	2	\$	\$
Total Impacts	3	\$	\$

Notes: Earnings and Output values are millions of dollars in 2018 dollars. Totals may not add up due to independent rounding. Source: NREL JEDI Model (version PV12.23.16r) (USDOE NREL, 2017); Cost values verified by the Applicant in April 2019.

2.1 Economic Impact of Construction in Montgomery County and New York

Based upon JEDI model computations, it is anticipated that construction of the proposed Facility (estimated to last approximately 8 months) will generate employment of an estimated 369 FTE onsite Project Development and Onsite Labor positions for New York residents, 295 of which will be for Construction and Installation labor and 74 of which will be Construction-Related Services (engineers and other professional services). At the county level, the Facility is estimated to generate employment of an estimated 106 FTE onsite Construction and Construction-Related positions for County residents, 59 of which will be for Construction and Interconnection labor.

The JEDI model estimates a total of **Summ** million for annual earnings of the 295 onsite construction jobs for New York residents; **Summ** million of which is the estimated for annual earnings of the 59 onsite construction jobs for Montgomery County residents. These estimates of the annual construction earnings by trade are listed in Tables 12a and 12b. Estimated earnings represent total wages and salary compensation paid to New York and Montgomery County employees (i.e., wages plus **Markov** average annual overhead costs including SSI, Medicare, workers' compensation, and disability). Project Development and Onsite Labor earnings are realized by New York and Montgomery County residents who are engaged in the construction of the Facility, including the Construction, Engineering and Professional Services trades. Solar facility, Local Revenue, and Supply Chain earnings are estimated for New York and Montgomery County residents based on the increased demand for goods and services in industry sectors that supply or otherwise support the companies engaged in construction and operation (known as "backward-linked industries"). Induced earnings reflect the estimated increase in household spending by onsite employees due to an increase in their earnings, which is subsequently used to purchase local goods and services, creating a ripple effect throughout Montgomery County and State.

	Project Development and Onsite Labor Earnings	Module & Supply Chain Earnings	Induced Earnings
Ag, Forestry, Fish & Hunting	\$0.0	\$0.0	\$0.0
Mining	\$0.0	\$0.0	\$0.0
Construction	\$0.0	\$0.0	\$0.0
Construction/Installations – Non-Residential	\$	\$	\$
Construction/Installation Residential	\$0.0	\$0.0	\$0.0
Manufacturing	\$0.0	\$0.0	\$0.0
Fabricated Metals	\$0.0	\$0.0	\$0.0
Machinery	\$0.0	\$0.0	\$0.0
Electrical Equip	\$0.0	\$0.0	\$0.0
Battery Manufacturing	\$0.0	\$0.0	\$0.0
Energy Wire Manufacturing	\$0.0	\$0.0	\$0.0
Wholesale Trade	\$0.0	\$	\$
Retail trade	\$0.0	\$	\$0.0
Transport., Communication & Utilities	\$0.0	\$	\$0.0
Insurance and Real Estate	\$0.0	\$0.0	\$0.0
Finance	\$0.0	\$0.0	\$0.0
Other Professional Services	\$0.0	\$0.0	\$0.0
Office Services	\$	\$	\$
Architectural and Engineering Services	\$	\$	\$
Other services	\$0.0	\$	\$
Government	\$0.0	\$	\$
Semiconductor (solar cell/module) manufacturing	\$0.0	\$0.0	\$0.0
Total	\$	\$	\$

Table 12a. Estimated Annual Earnings by Trade Statewide During Construction Period (in \$ Millions)

Source: Jobs and Economic Development Impact Model (USDOE NREL, 2018); Note: Earnings are independently rounded, and therefore may not add up directly to the integers shown in this table.

	Project Development and Onsite Labor Earnings	Module & Supply Chain Earnings	Induced Earnings
Ag, Forestry, Fish & Hunting	\$0.0	\$0.0	\$0.0
Mining	\$0.0	\$0.0	\$0.0
Construction	\$0.0	\$0.0	\$0.0
Construction/Installations – Non-Residential	\$	\$	\$
Construction/Installation Residential	\$0.0	\$0.0	\$0.0
Manufacturing	\$0.0	\$0.0	\$0.0
Fabricated Metals	\$0.0	\$0.0	\$0.0
Machinery	\$0.0	\$0.0	\$0.0
Electrical Equip	\$0.0	\$0.0	\$0.0
Battery Manufacturing	\$0.0	\$0.0	\$0.0
Energy Wire Manufacturing	\$0.0	\$0.0	\$0.0
Wholesale Trade	\$0.0	\$	\$0.0
Retail trade	\$0.0	\$0.0	\$0.0
Transport., Communication & Utilities	\$0.0	\$0.0	\$0.0
Insurance and Real Estate	\$0.0	\$0.0	\$0.0
Finance	\$0.0	\$0.0	\$0.0
Other Professional Services	\$0.0	\$0.0	\$0.0
Office Services	\$	\$	\$
Architectural and Engineering Services	\$	\$	\$
Other services	\$0.0	\$	\$
Government	\$0.0	\$	\$
Semiconductor (solar cell/module) manufacturing	\$0.0	\$0.0	\$0.0
Total	\$	\$	\$

Table 12b. Estimated Annual Earnings by Trade Countywide During Construction Period (in \$ Millions)

Source: Jobs and Economic Development Impact Model (USDOE NREL, 2018) Note: Earnings are independently rounded, and therefore may not add up directly to the integers shown in this table.

The Applicant's construction management team has further evaluated the estimated peak job numbers to be 590 FTE statewide construction jobs and 118 FTE countywide construction jobs. Furthermore, the following estimated distribution of average work force, by discipline, for each quarter during the construction year 2020 are summarized in Tables 13a and 13b.

Quarterly Period	Construction and Interconnection Labor Quarterly Average FTE Jobs	Construction-Related Services (Engineers and Other Professional Services) Quarterly Average FTE Jobs
Q1 (Jan-Mar)	49	12
Q2 (Apr-Jun)	344	87
Q3 (Jul-Sep)	590	149
Q4 (Oct-Dec)	197	50

Table 13a. Estimated Quarterly Statewide Labor Averages

Source: Jobs and Economic Development Impact Model (USDOE NREL, 2018), Evaluation by Applicant's Construction Management Team in May 2019

Table 13b.	Estimated	Quarterly	County	ywide	Labor	Averag	jes
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Quarterly Period	Construction and Interconnection Labor Quarterly Average FTE Jobs	Construction-Related Services (Engineers and Other Professional Services) Quarterly Average FTE Jobs	
Q1 (Jan-Mar)	10	8	
Q2 (Apr-Jun)	69	55	
Q3 (Jul-Sep)	118	94	
Q4 (Oct-Dec)	39	31	

Source: Jobs and Economic Development Impact Model (USDOE NREL, 2018), Evaluation by Applicant's Construction Management Team in May 2019

As estimated by the JEDI model, solar facility manufacturing and supply chain industries could in turn generate an additional 112 jobs (with a total **second** million in earnings) in New York and 45 jobs (with a total **second** million in earnings) in Montgomery County over the course of Facility construction. In addition, Facility construction could induce demand for 95 jobs (with a total **second** million in earnings) statewide and 21 jobs (with a total **second** million in earnings) countywide through the spending of additional household income. The total estimated impact of 576 new jobs statewide during construction could result in up to **second** million of earnings, assuming a 2020 construction schedule and wage rates consistent with statewide averages. Montgomery County residents are estimated to obtain 172 of those construction jobs, resulting in up to **second** million of earnings countywide. Facility construction labor wages are comparable to similar positions within New York, which average approximately \$26 per hour for installation, maintenance and repair occupations (U.S. Department of Labor Bureau of Labor Statistics, 2019). Local, regional, and statewide employment during the construction phase will primarily benefit those in the construction trades, including equipment operators, truck drivers, laborers, and electricians. Facility construction will also require

workers with specialized skills, such as crane operators, solar energy facility assemblers, specialized excavators, and high voltage electrical workers. It is anticipated that many of the highly specialized workers will come from outside the area and will remain only for the duration of construction.

In addition to jobs and earnings, the construction of the Facility is expected to have a positive impact on statewide economic output, a measurement of the value of goods and services produced and sold by backward-linked industries. As described in the definition above, output provides a general measurement of the amount of profit earned by manufacturers, retailers, and service providers connected to a given project. The value of economic output associated with Facility construction is estimated to be **\$1000** million statewide and **\$1000** million countywide. Between workers' additional household income and industries' increased production, the impacts associated with the Facility are likely to be experienced throughout many different sectors and regions of the statewide economy.

2.2 Economic Impact of Operations in Montgomery County and New York

Based upon JEDI model computations, the operation and maintenance of the proposed Facility is estimated to generate three full-time jobs for New York residents with combined estimated annual earnings of approximately **million**. Montgomery County residents are anticipated to hold one of these onsite operational jobs, with total anticipated earning yielding **million**. These three positions have been verified as reasonable by the Applicant based on actual job numbers at other facilities and are anticipated to be comprised of technician positions. Projected wage rates are anticipated to be consistent with the higher statewide averages for wind service technicians, which are estimated to be approximately \$78,000 per year (U.S. Department of Labor Bureau of Labor Statistics, 2019). According to the Applicant's construction management team, wages for the three operational staff members will average approximately **\$1000**/hour or **\$1000**

Operation and maintenance should also generate new jobs in other sectors of the statewide economy through secondary employment, consisting of supply chain and local revenue impacts and the expenditure of new and/or increased household earnings. In total, while in operation, the Facility is estimated to generate a secondary employment demand of four jobs statewide with annual earnings of approximately **S** — million and two jobs countywide with annual earnings of approximately **S** million. This secondary employment is estimated to have an economic output of **S** — million annually statewide and **S** million annually countywide. Total economic output is projected to increase by an estimated **S** million statewide and **S** million countywide as a result of Facility operation and maintenance (see Tables 11a and 11b).

In addition to the economic benefits of Facility-related jobs, operation of the Facility also will result in payment to local landowners in association with the lease and easement agreements executed to host Facility components. These annual lease and easement payments will offer direct benefits to participating landowners, in addition to any income generated from the existing underlying land use (e.g., agricultural and timber production). As indicated above, the Applicant has estimated these payments to be \$600,000 annually. These lease and easement payments will have a positive impact on the region to the extent that landowners spend their revenue locally.

Thus, the local economy will experience a positive increase in jobs, earnings, and local economic activity that will last during the operational years of the Facility.

2.3 Economic Impacts on Property Taxes and Local Taxing Jurisdictions

Local Public Expenditures and Tax Revenues

The Facility will place little, if any, demand on municipal and school district services and so will have virtually no impact on municipal expenses. As a preliminary matter, solar facilities do not require municipal water, sewer, or solid waste disposal services.

With respect to police services, as part of its Application, the Applicant has committed to developing and implementing security measures, including security lighting, fencing, locked gates, signage and other measures designed to restrict site access and deter trespassers during construction and operation of the Facility. The Applicant also will implement an emergency action plan that includes measures for responding to various emergencies, including those that could potentially involve the police. These measures, taken together, will limit the need for the Facility to utilize municipal police services.

With respect to fire, local fire departments may be called upon to respond to fire-related emergencies common to construction projects generally. All Project personnel who have emergency responsibilities during the construction phase will review the Final Construction EAP and familiarize themselves with their respective responsibilities. One or more drills (depending on personnel turnover) will be staged during the construction phase to verify that the EAP is effective and that all personnel who have responsibilities understand and can execute them. Additional drills may be held if called for by site personnel or the local community. Once the Facility is operational, municipal fire departments are not expected to be called upon to fight Facility fires since fully staffed O&M personnel will be trained in emergency response and have control of the Facility Site during this phase. O&M personnel will be trained on the Final O&M EAP and will hold at least two drills on this plan per year. Local first responders will participate, if practicable. As a result, Facility operations are not expected to impact municipal fire services. In the unlikely event

that municipal fire services are utilized, the annual revenues from the Facility's fire district taxes to the Town of Minden's Fire District will be an available revenue source to cover any costs.

With respect to emergency medical response, local emergency medical services may be called upon to respond to medical emergencies common to construction and/or operational projects generally. In the event of any situation involving a medical, natural, or security emergency, Project staff and/or subcontractors will call 911 and inform local first responders. First responders will evaluate the situation and help facilitate the correct courses of action. However, given the small number of employees required to operate and maintain the Facility, the potential financial burden on a particular town of providing such services is expected to be comparatively small.

Although transportation of major Facility components during construction could potentially impact certain roadways, the Applicant will address/mitigate these impacts in accordance with Road Use Agreements that will be entered into with the towns. These agreements will require the Applicant to restore any roadways impacted by the transportation of Facility components during construction and operation of the Facility. By virtue of these agreements, the towns in which the Facility is located will not incur any additional highway maintenance costs related to the Facility other than normal wear and tear associated with the use of non-oversized/overweight vehicles required to transport workers and equipment to and from the Facility Site for operation and maintenance purposes.

More generally, some solar employees may elect to live in the towns in which the Facility is located. However, the impact of these employees and their facilities on town services are expected to be negligible. Moreover, any marginal increase in services is expected to be recovered through the employees' property tax payments.

With respect to the local school districts, some of the solar employees may have school-aged children. This may cause a marginal increase in school district services and expenditures; however, it is assumed that such expenditures can be recovered through those employees' school tax payments and the respective district's state aid. Moreover, as presented in Table 15, the affected school districts will receive a considerable share of the PILOT that will more than offset any possible increase in expenses incurred by the districts as a result of Facility employee children entering the districts.

Annual Payment Amounts to Local Taxing Jurisdictions

In exchange for a partial real property tax exemption, the Applicant expects to execute a PILOT Agreement, which will require annual PILOT payments to each taxing jurisdiction identified in Table 14 for the next 15 years. Although the terms of the PILOT Agreement have not been finalized, similar to other solar projects in New York, the Applicant

plans to enter into a PILOT to total \$300,000 per year accumulating up to approximately \$5.2 million over 15 years. The total amount will be distributed across five taxing jurisdictions.

The Applicant plans to execute PILOTs with each taxing jurisdiction within the Study Area. Towns receiving PILOTs are Towns of Canajoharie and Minden. Schools districts receiving PILOTs are the Fort Plain and Canajoharie Central School Districts. Montgomery County also will receive PILOTs. Table 14 summarizes the estimated PILOT payments projected to be made to each taxing jurisdiction within the Study Area, based on the Applicant's internal estimates using each municipality's share of combined tax rates and the share of the Facility's nameplate capacity in individual jurisdictions.

Taxing Jurisdictions Receiving PILOTs	Estimated Annual Installed Capacity (MWac) within Jurisdiction⁵	Annual PILOT Estimate	Estimated 15-Year PILOT Total ⁶
Town of Minden	23.36	\$	\$
Town of Canajoharie	67.14	\$	\$
Fort Plain Central School District	27.81	\$	\$
Canajoharie Central School District	62.69	\$	\$
Montgomery County	90.5	\$	\$
Facility Total	90.5	\$300,000	\$5,188,025

Table 14. Estimated Annual and Total PILOT Amounts⁴

As reflected in Table 14, over the 15-year span of the PILOT Agreement, an estimated total of \$5,188,025 will be paid to the local taxing jurisdictions. Upon expiration of the PILOT Agreement, tax payments will be dependent upon the value of the Facility's taxable assets at that time. Aside from the PILOT Payments, local taxing jurisdictions will also receive additional tax payments on an annual basis, as estimated in Table 15 per the Applicant's internal estimates based on each municipality's share of combined tax rates and the share of the Facility's nameplate capacity in individual jurisdictions.

⁴ All estimated values in this table are independently rounded, and therefore may not directly add up to the totals shown. All calculations utilized unrounded values.

⁵ Annual nameplate capacity within jurisdictions is calculated by aggregating the installed capacity per parcel within each jurisdiction.

⁶ 15-Year Total assumes two percent (2%) annual inflation.

Table 15. Other Estimated Local Payments⁷

Taxing Jurisdictions	Estimated Interconnection Switchyard Annual Payment	Estimated Annual Real Property Change of Use Payment	Fire District	15-Year Total ⁸
Town of Minden		\$		\$
Town of Canajoharie	\$	\$		\$
Fort Plain Central School District		\$		\$
Canajoharie Central School District	\$	\$		\$
Montgomery County	\$	\$		\$
Minden Fire District			\$	\$
Facility Total	\$75,000	\$30,000	\$15,000	\$2,055,210

In addition to the annual payments over the 15-year span of the PILOT Agreement, each of the five taxing jurisdictions receiving PILOT payments will receive a one-time land use change fee totaling \$162,000 across all taxing jurisdiction. Please note that individual payments are preliminary estimates only, as the exact allocation across project parcels is not certain at this point. Preliminary estimates by taxing jurisdiction include the following:

- Town of Minden: \$
- Town of Canajoharie: \$
- Fort Plain Central School District: \$
- Canajoharie Central School District: \$
- Montgomery County: \$
- 4. Consistency with State Smart Growth Public Infrastructure Criteria

The New York State Smart Growth Public Infrastructure Policy Act (hereinafter "Smart Growth Act") is meant to maximize the social, economic, and environmental benefits from public infrastructure development by minimizing the impacts associated with unnecessary sprawl. Under the Smart Growth Act, State infrastructure agencies, such as the New York State Department of Transportation (NYSDOT), shall not approve, undertake, or finance a public infrastructure project, unless, to the extent practicable, the project is consistent with the smart growth criteria set forth in New York Environmental Conservation Law (ECL) § 6-0107.

⁷ All estimated values in this table are independently rounded, and therefore may not directly add up to the totals shown. All calculations utilized unrounded values.

⁸15-Year Total assumes two percent (2%) annual inflation.

Although the Facility will not result in the construction or operation of public infrastructure and will not result in unnecessary sprawl, approvals from the NYSDOT may be required to allow Facility components to cross State highways (e.g., Interstate 90). Therefore, this section provides a detailed statement regarding the Facility's consistency with the smart growth criteria in ECL § 6-0107(2). As discussed below, the Facility is consistent with five applicable criteria while the remaining five criteria do not apply to the Facility.

1) Criterion 1: To advance projects for the use, maintenance, or improvement of existing infrastructure

The purpose of the Facility is to create an economically viable solar -powered electrical-generating facility that will provide a source of renewable energy to the New York grid, and in doing so, improve the State's existing energy infrastructure. The Facility components include a solar field of PV panels producing direct current (DC) electricity; inverters placed throughout the Facility (internal to the panel arrays) to convert DC electricity to alternating current (AC) electricity; a medium voltage collection system that will aggregate the AC output from the inverters; access roads, and an operations & maintenance (O&M) facility. While these Facility components are not public infrastructure and are generally not expected to result in the utilization of public infrastructure, the Facility will contribute up to 90.5 MW of renewable energy to the New York grid. As reported by the Preliminary Scoping Statement (August 2017), total net generation delivered to National Grid's existing St. Johnsville-Marshville 115-kV transmission line is expected to generate enough electricity to meet the average annual consumption of approximately 28,000 households in New York. Solar energy source is a resilient source of electricity; after disaster events, PV projects are able to re-start to support the grid faster than other forms of generation. Additionally, the Facility will use portions of existing State highway infrastructure to transport equipment. However, none of these activities are anticipated to have any long-term impact on existing infrastructure.

After careful consideration of its contribution to and utilization of both the New York power grid and transportation routes identified above, it has been determined the Facility is consistent with this smart growth criterion. Consequently, the necessary changes to the public infrastructure (contribution of renewable energy to power grid, utilization of existing transportation routes and construction of access road intersections to existing roads) are also consistent with the criterion.

2) Criterion 2: To advance projects located in municipal centers

"Municipal centers" are defined in the Smart Growth Act as "areas of concentrated and mixed land uses that serve as centers for various activities, including, but not limited to, central business districts, main streets, downtown areas, brownfield opportunity areas, downtown areas of local waterfront revitalization program areas, transit-oriented development, environmental justice areas, and hardship areas," as well as "areas adjacent to municipal centers, which have clearly defined borders, are designated for concentrated development in the future in a municipal or regional comprehensive plan, and exhibit strong land use, transportation, infrastructure and economic connections to a municipal center; and areas designated in a municipal or comprehensive plan, and appropriately zoned in a municipal zoning ordinance, as a future municipal center."

Large-scale solar energy projects, such as the Facility, require extensive land; moreover, the requirement for interconnection to high-powered transmission lines restricts large-scale solar energy projects to comparatively isolated rural areas. Therefore, this criterion does not apply to the Facility.

3) Criterion 3: To advance projects in developed areas or areas designated for concentrated infill development in a municipally approved comprehensive land use plan, local waterfront revitalization plan and/or brownfield opportunity area plan

See discussion of Criterion 2 above. Large-scale solar energy projects such as the Facility cannot be located within areas designated for concentrated infill development nor are, they well-suited to developed waterfront areas and/or brownfield opportunity areas. Therefore, this criterion does not apply to the Facility.

4) Criterion 4: To protect, preserve and enhance the State's resources, including agricultural land, forests, surface and groundwater, air quality, recreation and open space, scenic areas, and significant historic and archaeological resources

The Facility will generate up to 90.5 MW of much-needed clean energy while largely preserving the vacant, agricultural and forested land that comprises the Facility Site. The Facility's Article 10 Application provides a detailed analysis of the potential environmental impacts and benefits, including analyses specifically associated with agricultural land, agricultural viability, forests, surface and groundwater, air quality, recreation and open space, scenic areas, and significant historic and archaeological resources. In addition, a Visual Impact Assessment (VIA) has been prepared which assesses potential visual impacts within a 2-mile radius of the Facility Site. Based on these analyses, the Applicant believes that the Facility has avoided and minimized impacts to these resources to the maximum extent practicable (based on the layout as currently proposed), and

that any remaining impacts are outweighed by the benefit provided by the Facility's generation of up to 90.5 MW of clean, renewable energy. Therefore, the Facility is consistent with this criterion.

5) Criterion 5: To foster mixed land uses and compact development; downtown revitalization; brownfield redevelopment; the enhancement of beauty in public spaces; the diversity and affordability of housing in proximity to places of employment, recreation, and commercial development; and the integration of all income and age groups.

See response to Criterion 2 above. The Facility must necessarily be located in a rural area well removed from any areas that would potentially experience compact development, downtown revitalization, or significant quantities of housing, etc. (e.g., villages and cities). Therefore, this criterion is not applicable.

6) Criterion 6: To provide mobility through transportation choices including improved public transportation and reduced automobile dependency

The Facility is does not directly or indirectly affect transportation options. Therefore, this criterion is not applicable.

7) Criterion 7: To coordinate between state and local government and inter-municipal and regional planning

The Applicant has conducted extensive public outreach to local government and planning agencies throughout the development and review of the Facility. This has included the public outreach conducted in accordance with the requirements of the Article 10 process and the Public Involvement Program (PIP) plan prepared specifically for the Facility, which includes frequent stakeholder consultation and other forms of engagement, public education, public meetings, ample notification periods, and public comment periods at key milestones. The Applicant also has reached out individually to each of the local governments that will be directly affected by the Facility. Moreover, the Article 10 process specifically requires outreach and coordination between the Applicant and State agencies with a role in reviewing the Application for the proposed Facility. To the extent applicable, these outreach efforts and municipal/agency consultations satisfy the criterion related to coordination between State and local governments.

8) Criterion 8: To participate in community-based planning and collaboration

The Applicant team has conducted and will continue to conduct extensive public outreach to community-based organizations throughout the development and review of the Facility. This has included the public outreach conducted in accordance with the requirements of the PIP. See response to Criterion 7 for additional detail. These outreach efforts satisfy the criterion related to participation in community-based planning and collaboration.

9) Criterion 9: To ensure predictability in building and land use codes

The Applicant has no role in or authority over the development or enforcement of building or land use codes in the Towns of Canajoharie and Minden. Therefore, this criterion does not apply to this Facility.

10) Criterion 10: To promote sustainability by strengthening existing and creating new communities which reduce greenhouse gas emissions and do not compromise the needs of future generations by among other means, encouraging broad-based public involvement in developing and implementing a community plan and ensuring the governance structure is adequate to sustain its implementation

The Facility is consistent with State policies designed to encourage initiatives that reduce greenhouse gas emissions and contribute to the transition of New York's energy markets by encouraging renewable alternatives. The Facility promotes the reduction of greenhouse gas emissions through the use of renewable energy. The Facility, therefore, supports this smart growth criterion.

11) Smart Growth Attestation

The Smart Growth Act requires that the chief executive officer of a state infrastructure agency (or his or her designee) attest in writing that the project under review, to the extent practicable, meets the relevant smart growth criteria in ECL § 6-0107(2). As previously noted, the Facility will not result in the construction or operation of public infrastructure as that term is used in the Smart Growth Act. As a result, the requirement to obtain an attestation from the chief executive officer of a state infrastructure agency does not apply to the Facility.

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FIGURES



Mohawk Solar

Towns of Canajoharie and Minden, Montgomery County, New York

Socioeconomic Report Figure 1: Facility Site

Notes: 1. Basemap: USGS The National Map: Orthoimagery, ESRI StreetMap North America, 2008. **2.** This map was generated in ArcMap by Environmental Design and Research on June 3, 2019. **3.** This is a color graphic. Reproduction in grayscale may misrepresent the data.



Laydown Area

<u>Civil Boundaries</u>

- City/Village Boundary
- County Boundary



Mohawk Solar Towns of Canajoharie and Minden, Montgomery County, New York

Socioeconomic Report Figure 2: Regional Facility Location

Notes: 1. Basemap: ESRI ArcGIS Online "World Street Map" map service. 2. This map was generated in ArcMap by Environmental Design and Research on February 15, 2019. 3. This is a color graphic. Reproduction in grayscale may misrepresent the data.

