# TRELINA SOLAR ENERGY CENTER

## Case No. 17-F-0366

## 1001.27 Exhibit 27

## Socioeconomic Effects

## Contents



## Tables

## Exhibit 27: Socioeconomic Effects

This Exhibit will track the requirements of proposed Stipulation 27, dated June 19, 2020, and, therefore, the requirements of 16 New York Codes, Rules and Regulations (NYCRR) § 1001.27.

The Project is located in the Town of Waterloo in Seneca County, which is part of the Finger Lakes Region of New York. The current demographic profiles of the communities are presented in Table 27-1 below:

**Table 27-1. Demographics[1]**

| Population | Town of Waterloo | Seneca County | New York |
|---|---|---|---|
| 2010 Population[2] | 7,642 | 35,251 | 19,378,124 |
| 2018 Population | 7,443 | 34,612 | 19,618,453 |
| Median Age | 44.8 | 42.2 | 38.7 |
| Foreign-born population | 1.0% | 2.2% | 22.6% |
| Veterans | 9.3% | 8.8% | 4.7% |
| High school graduate or higher | 88.8% | 85.4% | 86.5% |
| *Rural/Urban, 2010[2]* | | | |
| Inside Urban Area | 75.7% | 41.3% | 87.8% |
| Inside Rural Area | 24.3% | 58.7% | 12.1% |
| *Race and Ethnicity* | | | |
| White | 94.3% | 91.5% | 63.8% |
| Black or African American | 1.4% | 4.9% | 15.6% |
| American Indian/Alaska Native | 0.3% | 0.4% | 0.4% |
| Asian | 0.6% | 0.7% | 8.3% |
| Native Hawaiian/Other Pacific Islander | 0.0% | 0.0% | 0.0% |
| Some Other Race | 0.6% | 0.7% | 8.8% |
| Two or more races | 2.8% | 1.8% | 3.1% |

**Table 27-1. Demographics[1]**

| Population | Town of Waterloo | Seneca County | New York |
|---|---|---|---|
| Hispanic or Latino (any race) | 2.1% | 3.3% | 18.9% |
| Total housing units | 3,494 | 16,366 | 8,287,087 |
| Median household income (2018$) | $53,291 | $54,695 | $65,323 |
| Individuals below poverty level | 14.1% | 12.4% | 14.6% |
| Labor Force, American Community Survey (ACS) | 3,992 | 16,136 | 10,047,659 |
| Percent unemployed | 3.1% | 3.5% | 6.0% |
| Labor Force, BLS March 2020[3] | N/A | 15,950 | 9,431,634 |
| Unemployed, March 2020 | N/A | 771 | 400,782 |
| Unemployment rate, March 2020 | N/A | 4.8% | 4.2% |

*N/A indicates data are not available.*
*[1]Unless otherwise noted, data are from the US Census Bureau's 2014-2018 ACS 5-year estimates program.*
*[2]US Census 2010 decennial census.*
*[3]Bureau of Labor Statistics (BLS).*

### *Economic Modeling*

Estimates for direct jobs during construction of the Project were developed based on guidance from engineering, procurement, and construction (EPC) partners. Job counts by trade and the expected duration (months) of construction were based on the overall size of the Project in terms of megawatts of direct current (MWdc). The expected job counts and construction duration were evaluated to determine the average and peak labor forecast. The Applicant modeled payroll estimates and total labor costs based on the BLS New York wage rates for the trades required for the construction of the Project. Adjustments to wage rates and benefits were made to customize the payroll to the specific demands of the Project[1].

[1] Wage rate and payroll details are provided in the workpapers submitted to the NYSDPS under separate cover and pursuant to trade secret protection.

The estimate of direct jobs that will be created during the Project's operation and maintenance (O&M) phase was developed based on the requirements of the Trelina Solar Energy Center. Payroll and wage rates reflect the Applicant's expected pay scale for the Project.

The Applicant used the Job and Economic Development Impact (JEDI) model to estimate a range of likely secondary socioeconomic effects of the Project. The JEDI model was developed by the United States Department of Energy's National Renewable Energy Laboratory to estimate the economic effects associated with the construction and operation of power projects at the local or state level. For the purposes of this study, economic impacts were evaluated using the JEDI model[2] to capture the cumulative effects of the proposed Project.

The JEDI model relies on economic multipliers derived from Minnesota IMPLAN Group's IMPLAN accounting software and state data files. The multipliers capture the influence of the project development and onsite labor impacts and the subsequent rounds of economic activity. For example, a project's salary expenditures result in local revenue and supply chain impacts on the economy as workers spend their wages or salaries on goods and services (e.g., dining at local restaurants), which consequently supports jobs in sectors that contribute to other industries (induced impacts).

JEDI addresses three measures of local direct and secondary economic impacts:

- Jobs: The jobs measure reflects changes in employment attributable to the development of an energy project. Jobs are expressed in terms of year-long, full-time equivalent (FTE) positions (2,080 hour units of labor).

- Earnings: Earnings captures the wages or salaries that are associated with jobs attributable to the development of an energy project. Earnings are expressed in terms of 2020 dollars.[3] While earnings represent wages or salaries for workers, this expense is recorded as *payroll* for the project. For the purposes of this analysis, JEDI's earnings projections will be reported as payroll.

- Output: Output measures economic activity. It includes all expenditures that are estimated to take place in an economy as a result of the development of a project. Output differs

[2] The JEDI Model used is version PV12.23.16. The model has been fully updated with Applicant's cost estimates, estimates of local percentages, and labor costs.
[3] Conversions between dollar years were made based on the JEDI models' deflator factors. These conversions were necessary to present all monetary amounts in terms of 2020 dollars (2020$).

from gross regional product (GRP) in that output includes the value of production in addition to the purchases of inputs, whereas GRP is a measure of the value of production. Output is expressed in terms of 2020 dollars.

JEDI results, in terms of jobs, payroll (earnings), and output, are provided across three categories:

- Project development/construction and onsite labor impacts: These impacts include labor costs during the development, construction, and O&M of a project. Labor costs may be associated with engineers, permitting specialists, crane operators, electricians, field technicians, and others. Parts and materials are not included in these types of impacts.

- Local revenue and supply chain impacts: This category includes all materials and equipment necessary for the construction of a project that are purchased locally. This may include wiring, hard hats, replacement parts, and the supply chain of inputs required to produce these materials. Expenses such as land easements, bookkeeping, financing, insurance, and utilities are also included in this category.

- Induced impacts: Induced impacts encompass the jobs and economic impacts that arise from spending by workers in the first two categories.

Together, the above impacts form the total direct and secondary economic impacts calculated by the JEDI models.

The JEDI models' results include two distinct time periods: construction, and O&M. Construction jobs are presented in terms of FTE jobs. While a part-time or temporary job may be considered one job by other models, it would only constitute a fraction of a job under the JEDI framework. For example, a three-month engineering job would add 0.25 FTE jobs to total estimated effects of the solar project. Equipment manufacturing jobs, such as solar module manufacturing, are captured in the construction period. The operation period results, which cover the life of a project, are reported as annual FTE jobs and annual economic activity.

For this Project, economic impact analyses were performed using the JEDI Model to analyze the construction of the Project. A range of results is provided, representing +/- 5 percent (95% to 105%) of forecast secondary employment and economic activity to reflect the uncertainty associated with multiplier-based, secondary impact estimates. Key assumptions used in the JEDI models for this Project include:

- Construction of the Project in 2022;
- 117.60 megawatts (MW) of DC power; and
- Construction in the State of New York.

The Applicant customized the JEDI models using inputs specific to the Trelina Solar Energy Center. These project-specific inputs include expenditures, wage rates, and percentage of spending that are local to New York[4].

***Limitations of the JEDI Model***

As with most input-output screening tools, the JEDI models focus on the economic impacts directly related to Project construction and operation (gross economic impacts). The JEDI Model does not evaluate other economic impacts associated with the Project.[5] Examples of other potential impacts include:

- Potential increases or decreases in electricity rates resulting from investments in new electricity infrastructure;
- Impacts associated with the possible cancellation of new power plants made unnecessary by the added capacity of the Project; and
- The displacement of some other type of economic activity due to investment in the proposed Project.

JEDI models do not calculate intangible or difficult to quantify effects associated with new projects. These types of effects include:

- Improvements in transmission or grid reliability;
- Changes in air or water emissions;
- Changes in water use from power generation;
- Changes in land use; and
- Stability of electricity prices that might result from the reduced fuel price risk of renewable sources of electricity.

Based on the JEDI results, this exhibit presents estimates of the annual secondary employment and economic activity likely to be generated in the vicinity of the solar facility by its construction.

[4] Labor expenditures are based on Project-specific job estimates and expected New York wage rates.
[5] See https://www.nrel.gov/analysis/jedi/limitations.html for more information.

To reflect the uncertainty associated with such, multiplier-based, secondary impact estimates, a range of estimates are provided. Limitations of the JEDI Model are discussed in more detail in later sections of this exhibit.

### 27(a) On-Site Construction Work-Force Impacts

The Applicant estimates a total of 83.7 FTE direct jobs will be generated during construction. The majority of the workers will be laborers (28.8 FTE jobs) or electricians (25.1 FTE jobs). Table 27-2 summarizes the Applicant's forecast of the employment by job type associated with the construction of the Project.

**Table 27-2. Applicant's Forecasted FTE Direct Jobs during Project Construction**

| Type of Job | Number of FTE Jobs[1] Created |
|---|---|
| Laborers | 28.8 |
| Electricians | 25.1 |
| Equipment Operator | 12.1 |
| Construction Managers | 11.1 |
| Foreman | 6.6 |
| ***Total FTE Direct Jobs*** | **83.7** |

Note: *Numbers shown may not sum to totals because of rounding.*
[1]*Jobs are expressed in terms of year-long, FTE positions (2,080 hour units of labor).*

The Applicant has evaluated the expected quarterly total level of labor that will be required during the construction phase of the Project. Table 27-3 summarizes the Applicant's forecast of the employment associated with the construction of the Project. This forecast is not based upon JEDI modeling.

**Table 27-3. Applicant's Forecasted Direct Labor Force during Project Construction**

| Timing of Construction Activity | Construction Labor | Engineers and Other Professional Services | Total |
|---|---|---|---|
| 1st Quarter 2023, Average | 0.0 | 12.0 | 12.0 |
| 2nd Quarter 2023, Average | 98.0 | 12.0 | 110.0 |
| 3rd Quarter 2023, Average | 126.7 | 12.0 | 138.7 |
| 4th Quarter 2023, Average | 95.5 | 12.0 | 107.5 |
| **Peak Employment (June-August)** | **129.7** | **12.0** | **141.7** |

Note: *Numbers shown may not sum to totals because of rounding.*
*Labor is in terms of job count, not FTE jobs.*

Peak employment is forecast to occur during the end of the 2nd Quarter through the second month of the 3rd Quarter (June – August), with employment averaging 141.7 jobs. During this period of peak employment, 129.7 jobs will be in the construction discipline and 12 jobs will be in the engineering and other professional services disciplines.

Although the exact mix of local and non-local workers cannot be accurately forecast, the Applicant anticipates a significant number of local employment will be made from Seneca and the surrounding counties. The Project is located in the Rochester-Batavia-Seneca Falls Combined Statistical Area (CSA). A CSA is a larger region that reflects broader social and economic interactions. The CSA is home to almost 1.2 million people and has a labor force of more than 570,000.[6] The large labor force in the area provides an expanded opportunity for the hiring of local labor.

The *2018 National Solar Jobs Census* (The Solar Foundation, 2018) found that 65.5% of field crew were hired within the regional or metropolitan area, with 12.9% hired outside of the region, but within the state. The report also highlights two EPC firms. The one firm reported using 60% local labor on average, while the other reported using 90% local labor. Based on the findings of the report and the large regional labor force, it is estimated that during the peak construction period, between 85 and 128 construction workers from the local region would be hired at the

[6] BLS, 2020.

Project. Additional construction workers are expected to be hired from within New York State (NYS).

### 27(b) Construction Direct and Supply Chain Impacts

Independent of the JEDI model, the Applicant estimated the construction payroll by trade for the anticipated 11-month construction period. As shown in Table 27-4, the Project's construction payroll for New York workers is forecast to be $12.6 million. The payroll estimate includes wages and salaries, employer-paid insurance costs, paid leave, and payroll taxes. An estimated 60% to 90% of the total payroll is expected to be paid to workers in the region ($7.5 million to $11.3 million). Additional jobs and payroll will be generated during the permitting and engineering processes.

**Table 27-4. Applicant's Forecasted Direct Labor Force during Project Construction**

| Type of Job | Number of FTE Jobs[1] Created | Estimated Payroll[2] |
|---|---|---|
| Laborers | 28.8 | $3,242,162 |
| Electricians | 25.1 | $3,771,426 |
| Equipment Operator | 12.1 | $1,679,472 |
| Construction Managers | 11.1 | $2,648,305 |
| Foreman | 6.6 | $1,225,997 |
| ***Total FTE Jobs*** | **83.7** | **$12,567,363** |

*Note: Numbers shown may not sum to totals because of rounding.*
*[1]Jobs are expressed in terms of year-long, FTE positions (2,080 hour units of labor).*
*[2]Payroll includes wages and salaries, benefits, and payroll taxes.*

Table 27-5 below presents the expected total direct expenditures during construction of the Project. In-state (local) expenditures are also presented.

**Table 27-5. Direct Expenditures during Development and Construction of the Project**

| Installation Costs | Cost (2020$) | Local NY Share | Local NY Spending |
|---|---|---|---|
| **Materials & Equipment** | | | |
| Mounting (rails, clamps, fittings, etc.) | REDACTED | | |
| Modules and Inverter | | | |
| Electrical (wire, connectors, breakers, etc.) | | | |
| ***Subtotal*** | | | |
| **Labor** | | | |
| ***Installation*** | | | |
| **Other Costs/Development Costs** | | | |
| Permitting[1] | | | |
| Other Costs | | | |
| Business Overhead[2] | | | |
| ***Subtotal*** | | | |
| **Subtotal All Costs (without sales tax)** | | | |
| Sales Tax (Materials & Equipment Purchases)[3] | | | |
| **Total** | | | |

*Notes: Numbers shown may not sum to totals because of rounding.*
*[1]Permitting includes the fees paid to local governments.*
*[2]Business Overhead includes engineering and environmental permitting costs.*
*[3]Trelina Solar Energy Center will apply for sales tax abatement through a Payment-in-Lieu-of-Taxes (PILOT) agreement.*

As shown above, the Applicant estimates the Project costs to be roughly $REDACTED. These costs include $REDACTED in local labor costs. Permitting, a local expense, is anticipated to be $REDACTED. Approximately $REDACTED of Other Costs are anticipated to be spent locally. These Other Costs include materials such as concrete and gravel. Business Overhead, which includes engineering and environmental permitting costs, is estimated to be $REDACTED, with REDACTED spent in-state ($

REDACTED). Sales tax on materials and equipment purchases may be abated through a potential PILOT agreement. Total project expenditures within New York are projected to be $REDACTED.

The JEDI Model provides additional detail on spending at the industry level. The largest New York expenditures during the construction phase of the Project will be in the construction/installation industry, with roughly $12.6 million spent locally. Table 27-6 presents this detail.

**Table 27-6. Direct Local Expenditures by Industry during Project Development and Construction (2020$)**

| Industry | Local NY Expenditures[1] |
|---|---|
| Construction/Installations - Non-Residential | $12,567,363 |
| Wholesale Trade | $302,016 |
| Retail Trade | $32,820 |
| Transportation, Communication, and Public Utilities | $38,639 |
| Office Services | $1,497,013 |
| Architectural and Engineering Services | $353,600 |
| Other services[2] | $1,128,497 |
| Government | $83,441 |
| **Total** | **$16,003,390** |

***Note:*** *Numbers shown may not sum to total because of rounding and because industries with small impacts (less than $1,000 in earnings) are not shown.*

## 27(c) Indirect (or Secondary) and Induced Impacts during the Construction Phase

### *Indirect and Induced Impacts*

As discussed previously, the JEDI model was used to estimate the likely secondary socioeconomic effects of the Project's spending. The indirect impacts are economic effects associated with linked sectors in the economy that are upstream of the direct impacts, such as suppliers of hardware used to make the equipment installed onsite. For the purposes of this discussion, estimates are assumed to vary from 95% to 105% of the indirect, and induced impact estimates developed for this Project. The range accounts for the small changes that take place

over time in the IMPLAN multipliers used in the JEDI model. Estimates for New York are for the entire state, including Seneca County.

Table 27-7 below presents ranges of the indirect impacts estimated to be generated in the vicinity of the solar facility by its construction.

**Table 27-7. Indirect Local New York Impacts by Industry during Development and Construction of the Project**

| Industry | Labor Impacts (Jobs) | Earning Impacts (2020$) | Output Impacts (Thousands 2020$) |
|---|---|---|---|
| Construction/Installations: Non-Residential | 26.1 to 28.9 | $1,697,000 to $1,876,000 | $4,354,000 to $4,812,000 |
| Wholesale Trade | 0.5 to 0.5 | $41,000 to $45,000 | $102,000 to $113,000 |
| Retail Trade | 0.0 to 0.0 | $4,000 to $4,000 | $11,000 to $12,000 |
| Transportation, Communication, and Public Utilities | 0.1 to 0.1 | $6,000 to $7,000 | $17,000 to $19,000 |
| Office Services | 1.2 to 1.3 | $100,000 to $111,000 | $246,000 to $272,000 |
| Architectural and Engineering Services | 0.6 to 0.7 | $59,000 to $65,000 | $136,000 to $150,000 |
| Other services[2] | 1.7 to 1.9 | $149,000 to $164,000 | $388,000 to $429,000 |
| Government | 0.0 to 0.0 | $3,000 to $4,000 | $8,000 to $9,000 |
| **Total** | **30.2 to 33.4** | **$2,059,000 to $2,276,000** | **$5,262,000 to $5,815,000** |

*Note: Numbers shown may not sum to totals because of rounding and because industries with small impacts (less than $1,000 in earnings) are not shown.*

Indirect local impacts during the construction phase are estimated to be between 30.2 and 33.4 FTE jobs, payroll totaling between $2.1 million and $2.3 million, and output totaling between $5.3 million and $5.8 million. The construction/installation industry in New York is expected to experience the largest impact, with between 26.1 and 28.9 FTE jobs and between $1.7 million and $1.9 million in payroll and between $4.4 million and $4.8 million in output.

Induced impacts include the jobs and economic impacts generated from spending by workers whose jobs result from direct or indirect impacts of the Project. Table 27-8 presents ranges of the induced impacts likely to be generated in the vicinity of the solar facility by its construction.

**Table 27-8. Induced Local Impacts by Industry during Construction of the Project**

| Industry | Labor Impacts (Jobs) | Earning Impacts (2020$) | Output Impacts (2020$) |
|---|---|---|---|
| Construction/Installations: Non-Residential | 21.6 to 23.9 | $1,553,000 to $1,717,000 | $4,008,000 to $4,430,000 |
| Wholesale Trade | 0.5 to 0.6 | $37,000 to $41,000 | $96,000 to $107,000 |
| Retail Trade | 0.1 to 0.1 | $5,000 to $5,000 | $12,000 to $13,000 |
| Transportation, Communication, and Public Utilities | 0.1 to 0.1 | $4,000 to $5,000 | $11,000 to $12,000 |
| Office Services | 4.5 to 4.9 | $324,000 to $358,000 | $836,000 to $923,000 |
| Architectural and Engineering Services | 1 to 1.1 | $73,000 to $81,000 | $189,000 to $209,000 |
| Other services[2] | 2.0 to 2.2 | $153,000 to $17,000 | $396,000 to $438,000 |
| Government | 0.2 to 0.2 | $16,000 to $18,000 | $42,000 to $47,000 |
| **Total** | **30.0 to 33.1** | **$2,166,000 to $2,394,000** | **$5,590,000 to $6.179,000** |

*Note: Numbers shown may not sum to totals because of rounding and because industries with small impacts (less than $1,000 in earnings) are not shown.*

As shown in Table 27-8 above, induced impacts in New York are estimated to be between 30.0 and 33.1 FTE jobs, payroll of between $2.2 million and $2.4 million, and output of between $5.6 million and $6.2 million. The construction industry is expected to experience the largest impact, with between 21.6 and 23.9 FTE jobs and between $1.6 million and $1.7 million in payroll.

***Annual Net Secondary Effects***

As discussed previously, the JEDI Model addresses the gross economic impacts of the proposed Project. Annual net secondary effects from the Project's construction include consideration of the

above modeled impacts, as well as other difficult to quantify considerations that may be associated with the Project. The JEDI Model, for example, does not consider the following impacts that would occur as a result of the construction of the proposed Project:

- The displacement of some other type of economic activity due to investment in the proposed Project; and
- Changes in land use.

Economic displacement occurs when increases in economic activity in one business sector or geographic area leads, indirectly, to decreases in economic activity elsewhere. While displacement of some farming revenue will occur, it will be offset by lease payments to the landowners from the Applicant. In any event, even if there were a net loss, the overall impact on investment in New York is expected to be negligible, as the Gross Domestic Product (GDP) for the state as a whole was $1.73 trillion in 2018, with GDP attributable to construction of $53.8 billion.[7]

Changes in land use are addressed in Exhibit 4. The land use analysis found that although the solar arrays will occupy a portion of active farmland, this impact will be insignificant when considering farmland at both the town and county levels. The lease or purchase payments provided to landowners will stabilize revenues for local participating farms (as crop and dairy prices often fluctuate from year to year) and revenues paid to landowners are typically reinvested in the community, helping to create jobs and improve the local economy. This diversified income helps support the agricultural community base in the area.

### 27(d) O&M Employment Impacts

The Applicant has evaluated the expected annual level of labor that will be required during the O&M phase of the Project. The jobs presented here are expected to be performed by local New York workers. Table 27-9 summarizes the Applicant's forecast of the annual employment associated with the O&M of the Project.

[7] Source: Bureau of Economic Analysis (2020).

**Table 27-9. Applicant's Forecasted Annual Direct Labor Force during Project O&M**

| Type of Job | Number of FTE Jobs Created | Payroll (2020$)[1] |
|---|---|---|
| Solar Technician (preventive and corrective maintenance) | 1.0 | $87,514 |
| Tech Leader | 1.0 | $127,168 |
| High Voltage Technician | 0.1 | $ 11,177 |
| ***Total*** | ***2.1*** | ***$225,859*** |

*[1]Payroll includes wages and salaries, benefits, and payroll taxes.*

Employment during the O&M phase is expected to be 2.1 direct FTE jobs. Payroll associated with these jobs is expected to be $225,859 annually.

Table 27-10 below presents the total direct expenditures during the O&M phase of the Project. Labor costs were estimated by the Applicant based on anticipated employment levels, wage rates by worker type, and overhead (including insurance benefits, taxes, and unpaid leave). Materials and equipment costs were also developed by the Applicant specifically for the Trelina Solar Energy Center. The expected local shares of spending and local spending amounts are also included.

**Table 27-10. Annual Direct Expenditures during Project O&M**

| Expenditure | Cost (2020$) | Local Share | Local Spending (2020$) |
|---|---|---|---|
| Labor: Technicians | $225,859 | 100% | $225,859 |
| Materials and Equipment | $240,000 | 100% | $240,000 |
| ***Subtotal All Costs (without sales tax)*** | ***$465,859*** | | ***$465,859*** |
| Sales Tax (Materials & Equipment Purchases)[1] | $19,200 | 100% | $19,200 |
| **Total** | **$485,059** | | **$485,059** |

*Notes: Numbers shown may not sum to totals because of rounding.*
*[1]Asssumes an 8 percent sales tax on materials and equipment.*

As shown above, annual O&M costs are expected to be $485,059, with $225,859 in local labor costs, $240,000 in materials and equipment costs, and $19,200 in sales taxes. The annual expenditure of $240,000 for materials and equipment is expected to be spent locally. Over 30 years, 63 FTE jobs will be generated by the Project. Payroll for the FTE jobs will total an estimated $6.8 million, with an anticipated $575,000 paid in sales taxes (2020 dollars).

In addition to the above expenditures, the Applicant will make lease payments to local landowners for up to 1,067 acres.[8] The payments are anticipated to total roughly $1.6 million in the first year and escalate at 2 percent annually throughout the life of the Project. Payments over the thirty years are estimated to total $64.9 million.

## 27(e) Secondary O&M Impacts

### *Indirect Impacts*

As shown in Table 27-11 below, annual indirect local impacts during the O&M phase are expected to total between 0.8 and 0.9 FTE jobs, with payroll totaling between $70,000 and $78,000 and output totaling between $187,000 and $207,000.

**Table 27-11. Annual Indirect Local Impacts by Industry during Project O&M**

| Industry | Labor Impacts (Jobs) | Earning Impacts (2020$) | Output Impacts (2020$) |
|---|---|---|---|
| Wholesale Trade | 0.2 to 0.2 | $19,000 to $21,000 | $48,000 to $53,000 |
| Retail Trade | 0.0 to 0.1 | $4,100 to $4,600 | $11,000 to $12,000 |
| Transportation, Communication, and Public Utilities | 0.1 to 0.1 | $9,000 to $10,000 | $25,000 to $27,000 |
| Insurance and Real Estate | 0.2 to 0.2 | $13,000 to $15,000 | $40,000 to $44,000 |
| Other services[2] | 0.1 to 0.1 | $7,000 to $8,000 | $19,000 to $21,000 |
| Government | 0.2 to 0.2 | $17,000 to $19,000 | $42,000 to $46,000 |
| **Total** | **0.8 to 0.9** | **$70,000 to $78,000** | **$187,000 to $207,000** |

*Note: Numbers shown may not sum to totals because of rounding and because industries with small impacts (less than $1,000 in earnings) are not shown.*

[8] Leased acreage is estimated. The final acreage leased will vary based on operational needs.

Table 27-12 presents the annual induced local impacts by industry. Annual induced impacts are expected to generate between 1.7 and 1.9 New York FTE jobs, payroll of between $132,000 and $146,000, and output of between $341,000 and $377,000.

**Table 27-12. Annual Induced Local Impacts by Industry during Project O&M**

| Industry | Labor Impacts (Jobs) | Earning Impacts (2020$) | Output Impacts (Millions 2020$) |
|---|---|---|---|
| Wholesale Trade | 0.2 to 0.3 | $18,000 to $20,000 | $46,000 to $50,000 |
| Retail Trade | 0.1 to 0.1 | $4,900 to $5,400 | $13,000 to $14,000 |
| Transportation, Communication, and Public Utilities | 0.1 to 0.1 | $6,000 to $7,000 | $16,000 to $17,000 |
| Insurance and Real Estate | 0.1 to 0.1 | $10,000 to $11,000 | $25,000 to $27,000 |
| Other services | 0.1 to 0.1 | $7,000 to $8,000 | $19,000 to $21,000 |
| Government | 1.0 to 1.2 | $86,000 to $95,000 | $221,000 to $244,000 |
| **Total** | **1.7 to 1.9** | **$132,000 to $146,000** | **$341,000 to $377,000** |

*Note: Numbers shown may not sum to totals because of rounding and because industries with small impacts (less than $1,000 in earnings) are not shown.*

### *Annual Net Secondary Effects*

As discussed previously, the JEDI model results for the proposed Project address secondary economic effects. Annual net secondary effects from the Project's O&M include the impacts discussed above and other difficult to quantify impacts associated with the Project. The JEDI Model, for example, does not consider the following impacts that are likely to occur as a result of the operation of the Project:

- Potential increases or decreases in electricity rates resulting from investments in new electricity or fuel infrastructure;
- Stability of electricity prices that might result from the reduced fuel price risk of renewable sources of electricity.

- Impacts associated with the possible displacement of new power plants made unnecessary by the added capacity of the proposed Project;
- Improvements in transmission or grid reliability;
- Changes in air or water emissions; and
- Changes in water use from power generation.

The Project is located in New York Independent System Operator (NYISO) Zone C,[9] which includes the majority of Seneca County. As described in Exhibit 8, the Project is expected to decrease the wholesale load-weighted locational marginal pricing (LMP) in Zone C by approximately $0.06/megawatt-hours (MWh) in 2023. Modeling showed that production costs in NYS were reduced by $3.7 million, or 0.14%, with the Project.

If this reduction in pricing helps keep retail electric rates lower than they would otherwise be, there would be additional positive impacts to New York's economy arising from the operation of the proposed Project. Conversely, higher retail rates would have a negative impact on the state's economy. The Project may also support increased stability in electricity prices by reducing the fossil fuel price risk.

The Applicant is not aware of any reliable method to determine if the Project's added solar capacity would result in the cancellation of new power projects. Rather, the Project is being driven by NYS law, NYSPSC's Clean Energy Standard, and the NYS State Energy Plan (SEP). The additional solar capacity is vital to meeting the state's goals to have 70 percent of energy generation produced from renewable energy sources by 2030 to achieve a 40-percent reduction in greenhouse gas (GHG) emissions from the 1990 level by 2030 and to generate electricity carbon free by 2040 (Climate Leadership and Community Protection Act [CL&CPA] of 2019). Positive impacts to air quality are also projected, with an anticipated reduction in annual statewide emissions by 15 tons of $SO_2$, 23 tons of $NO_x$ and 50,522 tons of $CO_2$ (see Exhibit 8).

As a solar power generating facility, the Project will not use or emit any water discharges. There is no public water supply interconnection required for the operation of the Project, as stated in Exhibit 38. The Project will provide power generation without using water, which is a benefit when compared to thermoelectric generating facilities.

[9] NYISO Zone C is also referred to as the Central Zone.

### 27(f) School District Impacts During the Construction and Operation Phases

The Project is located within the Geneva City School District and the Waterloo Central School District. The largest impact in terms of jobs would be during the construction period. Families do not, however, typically relocate for short-term constructions jobs. Further, it is anticipated that some portion of the workers during both the construction and O&M phases of the Project will be local hires. No negative impacts to school district, therefore, are anticipated during the construction phase of the Project.

During the O&M phase of the Project, total annual impacts (direct, indirect, and induced) associated with employment are forecast to be between 4.6 and 4.9 FTE jobs. Long-term population impacts in the school districts are anticipated to be minimal during the O&M phase of the Project. PILOT payments are anticipated to be paid to the school districts during the O&M phase of the Project.

### 27(g) Municipal, Public Authority, and Utility Services Impacts during the Construction and Operation Phases

As described above, population impacts from the construction and operation of the Project are expected to be negligible. In addition, the cost of any services required by Project employees living within the local municipalities would be offset by property taxes (or PILOT payments) and utility fees. Further, the Project construction and operation are not anticipated to place any burdens on local services but will likely generate PILOT revenue or payments from the Host Community Agreement (HCA) for the taxing jurisdictions.

### 27(h) Designated Tax Jurisdiction, Tax and Payment Impacts

The Project includes property within four taxing jurisdictions that are expected to receive PILOT revenues or payments as part of an HCA. The jurisdictions are:

- Seneca County,
- Town of Waterloo,
- Geneva City School District, and
- Waterloo Central School District.

These jurisdictions will benefit from a PILOT agreement and/or an HCA as described in the following section, and from additional economic activity in the vicinity of the Project. NYS is also

anticipated to benefit from additional tax revenue generated by the construction and O&M of the Project.

### 27(i) Incremental Amount of PILOT Agreements and an HCA

The Applicant anticipates executing PILOT agreements with the Seneca County Industrial Development Agency (IDA), which would benefit the Town of Waterloo, the Geneva City School District, and the Waterloo Central School District. The PILOT agreement would require annual PILOT payments for 20 years. An HCA is expected to be executed with the Town of Waterloo. While the specific terms of the PILOT agreement and HCA have not yet been negotiated, these agreements will increase the revenues of the local taxing jurisdictions and will represent a significant portion of their total tax levy. For the purposes of this Exhibit, annual PILOT and HCA payments are estimated to be $440,000 beginning in 2022. Total PILOT and HCA payments over the 20-year agreement period are estimated to total $10.7 million.[10] Table 27-13 below details the estimated PILOT and HCA payments to each taxing jurisdiction.

**Table 27-13. Anticipated Annual and Cumulative PILOT and HCA Payments for Solar Energy Center**

| Taxing Jurisdiction | 2022 Annual Payment | Cumulative (20-year) Payment |
|---|---|---|
| Town of Waterloo | $146,208 | $3,552,467 |
| School Districts | $215,744 | $5,242,014 |
| Seneca County | $78,016 | $1,895,584 |
| **Total** | **$439,968** | **$10,690,065** |

*Notes: Payments related to the solar energy center are anticipated to increase over time by 2% per year. Numbers shown may not sum to totals because of rounding.*

The school districts are anticipated to share $5.2 million overs the 20-year period. The Town of Waterloo is expected to receive a total of $3.6 million over 20 years, with Seneca County receiving a total of $1.9 million over 20 years. Payments to local jurisdictions are anticipated to be approximately $10.7 million between 2022 and 2041. After the 20-year PILOT and HCA period, the Trelina Solar Energy Center will pay property taxes to the local jurisdictions for the remainder of the Project's useful life.

[10] Payments are anticipated to increase over time by 2% per year.

### 27(j) Comparison of Fiscal Costs to Jurisdictions

As discussed previously, the Project is not anticipated to impose fiscal costs related to the services provided by the local taxing jurisdictions. Employment during the construction phase will be temporary and is not expected to result in the relocation of families. Job-related impacts during the O&M of the solar energy center are relatively small. With the expected payments associated with the PILOT agreement and the HCA, the Project will result in positive fiscal impacts for the local jurisdictions.

### 27(k) Analysis of Local Emergency Response

Exhibit 18 outlines safety and security for the Project. Detailed information regarding the emergency response procedures for possible contingencies (such as a fire emergency) is found in the Emergency Response Plan (ERP) in Appendix 18-2. The ERP includes information on local fire departments and local police/sheriff departments/offices. In the event of an emergency, the Site Leader will assess the situation and perform the proper actions and procedures as outlined in the ERP. This may include potential evacuation and contacting emergency services.

The ERP for the Project will be shared with the local emergency response teams. Local emergency response teams will be given an opportunity to review these plans, ask questions and provide suggestions. The Applicant understands the importance of coordination with local fire, police and other emergency services and will work to ensure that they are kept updated on the status of the Project and are made aware of potential safety and security emergencies. Preliminary introductions and discussions have been conducted with local fire and police as described in the Public Involvement Program (PIP) meeting log and additional discussions will occur prior to construction and prior to the start of operations. The Applicant will work with local emergency responders to coordinate any training that may be necessary. To the knowledge of the Applicant, no equipment beyond that presently owned by the public fire department or other first responders will be needed to respond to emergencies at the Project either during the construction or operation of the Project.

### 27(l) Smart Growth Infrastructure Compliance Impacts

The Project is a privately funded energy project and, as such, is not subject to New York Environmental Conservation Law Article 6, Section 107 (ECL § 6-107) requiring the construction of new or expanded “public infrastructure” to meet certain Smart Growth Criteria. NYS’ Smart Growth Public Infrastructure Policy Act outlines 10 criteria for evaluating public infrastructure. An

additional criterion was added at a later date. While not required, the Project's consistency with Smart Growth Criteria is addressed below for illustrative purposes. Under the statute, state infrastructure agencies shall not approve, undertake, or finance a public infrastructure project, unless the project, to the extent practicable, meets the relevant criteria set forth in the document (ECL § 6-107).

***Criteria 1: To advance projects for the use, maintenance or improvement of existing infrastructure***

The development of the Project will improve the State's existing energy infrastructure by creating an economically viable, solar-powered electrical-generating facility that provides renewable energy to the NYS power grid. The Project will generate up to 80 MW of renewable energy that will be provided to the NYS electric system that is managed by the NYISO. The Project will use the existing electric system for the distribution of electricity to end users. Existing transportation infrastructure will be used for the conveyance of equipment and construction materials. No long-term impacts to the transportation infrastructure are anticipated.

Based on the contribution to the state electric system and the limited use of transportation infrastructure, the Project is consistent with Smart Growth Criteria 1.

***Criteria 2: To advance projects located in municipal centers***

NYS' Smart Growth Public Infrastructure Policy Act defines "municipal centers" 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 (ECL § 6-107),*

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 (ECL § 6-107).*

The development of solar power projects requires a large land area. As such, solar projects, such as this, are incompatible with municipal centers. Therefore, compliance with this criterion is impracticable. Additionally, siting a solar project requires willing landowners and access to a point of interconnection (POI) in order to provide the electricity generated to the electric system that is managed by the NYISO.

***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***

Solar projects require a large land area and, thus, are incompatible with infill development and waterfront revitalization. The Project is not located in a designated brownfield area. Therefore, compliance with this criterion is impracticable. Additionally, siting a scale solar project requires willing landowners and access to a POI in order to provide the electricity generated to the electric system that is managed by the NYISO.

***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 archeological resources***

The Project is consistent with Criterion 4. Exhibits 4,17, 20, 21, 22, 23, and 24, and related studies, analyze the potential effects on agricultural land, forests, surface and groundwater, air quality, recreation and open space, scenic areas, and significant historic and archaeological resources. These analyses illustrate that the Project has avoided and minimized impacts to the relevant resources to the maximum extent practicable. Any remaining impacts are outweighed by the benefit provided by the Project's generation of up to 80 MW of renewable energy, which will enhance the state's air quality.

***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***

The proposed Project is in the small community of Waterloo. The area is not conducive to mixed land uses, compact development, or the development of diverse and affordable housing in the proximity to places of employment, recreation and commercial development. Further, as

mentioned previously, a solar project requires significant open space and, thus, is incompatible with downtown revitalization. The location is not in a brownfield. Compliance with this criterion is impracticable. Additionally, siting a solar project requires willing landowners and access to a POI in order to provide the electricity generated to the electric system that is managed by the NYISO.

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

The Project will not be designed to impact transportation choices in the area. Therefore, compliance with this criterion is impracticable.

***Criterion 7: To coordinate between state and local government and intermunicipal and regional planning***

The Applicant has been involved in public outreach to local government and planning agencies throughout the development and review of the Project, in accordance with the requirements of the Article 10 process and the PIP plan prepared specifically for the Project. The stakeholder list and information on the public coordination efforts are included in Exhibit 2 and its appendices.

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

The Applicant has conducted and will continue to conduct stakeholder outreach throughout the development and review of the proposed Project. These efforts have been conducted in accordance with the requirements of the PIP, which includes stakeholder consultation and other forms of engagement, public education, public meetings, ample notification periods, and public comment periods at key milestones (see Exhibit 2 and the PIP for more information). Information is also available to the community via the website https://www.trelinasolarenergycenter.com/. These outreach efforts satisfy the criterion related to participation in community-based planning and collaboration.

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

The Applicant's Project will have no influence over building and land use codes in Seneca County or in the Town of Waterloo.

***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***

Solar power, a renewable energy source, generates electricity without the by-product of greenhouse emissions and can reduce the dependence on conventional power plants, thereby reducing the emissions of conventional air pollutants. In fact, the Project is expected to reduce $NO_x$, $SO_2$, and $CO_2$ emissions from the power sector in New York. In 2023, the Project is expected to reduce the annual statewide emissions by 15 tons of SO2, 23 tons of NOx and 50,522 tons of $CO_2$ (see Exhibit 8).

The Project will help the state achieve the goals of having 70 percent of energy generation produced from renewable energy sources by 2030, a 40-percent reduction in GHG emissions from the 1990 level by 2030, and carbon-free generation of electricity by 2040 (CL&CPA of 2019). As this Project will expand the state's clean, renewable energy infrastructure and reduce GHG emissions, the Project is consistent with and will help the state achieve its goals in Criterion 10.

***Criterion 11 (effective March 21, 2015): To mitigate future physical climate risk due to sea level rise, and/or storm surges and/or flooding, based on available data predicting the likelihood of future extreme weather events, including hazard risk analysis data if applicable***

The Project is consistent with New York's efforts to expand reliance on renewable energy sources and reduce GHG emission. In particular, the CL&CPA requires a 40-percent reduction in GHG emissions by 2030. Solar power, as a zero-emission, renewable energy source, not only expands available power generation capabilities without increasing GHG emissions, the addition of a solar power project will result in a decrease in existing GHG emission levels, as solar power displaces generation from fossil fuel facilities. Therefore, the Project is expected to have a positive impact on the mitigation of future physical climate risk, thereby supporting Smart Growth Criterion 11.

### 27(m) Feasibility of Providing Local Access to Energy Generation

If the Town of Waterloo were to implement Community Choice Aggregation (CCA), the local community could have access to energy generated by the Project. The purpose of a CCA is to allow participating local governments to procure energy supply service and distributed energy

resources for eligible energy customers in the community. These customers would have the opportunity to opt out of purchasing power from the existing power provider, while maintaining transmission and distribution service from that utility.

CCA allows local governments to work together through a shared purchasing model to put out for bid the total amount of electricity and/or natural gas being purchased by eligible customers within the jurisdictional boundaries of participating municipalities. Eligible customers have the opportunity to have more control to lower their overall energy costs, to spur clean energy innovation and investment, to improve customer choice and value, and to protect the environment, thereby fulfilling an important public purpose. New York State Energy Research and Development Authority (NYSERDA) has developed a toolkit to assist local governments and CCA Administrators to develop CCA programs in NYS.[11]

### 27(n) Statement on Actual Job Tracking and Tax Payment to Local Jurisdiction

The Applicant is committed to tracking and reporting the actual number of direct jobs created during the construction and operational phases of the Project. Additionally, tax payments to local jurisdictions made during the course of the Project will be recorded and reported.

### 27(o) Socioeconomic Impact Estimate Workpapers

Workpapers associated with the socioeconomic impact analysis presented in this Exhibit will be provided to the New York State Department of Public Service (NYSDPS) under separate cover pursuant to trade secret protection.

[11] See https://www.nyserda.ny.gov/All-Programs/Programs/Clean-Energy-Communities/Clean-Energy-Communities-Program-High-Impact-Action-Toolkits/Community-Choice-Aggregation for additional information.

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