

Socioeconomic Report

Hillcrest Solar Farm

Green Township
Brown County, Ohio

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EXECUTIVE SUMMARY

This socioeconomic report is prepared in support of the proposed Hillcrest Solar Farm (“the Project”), a solar-powered generating facility in Green Township in Brown County of the State of Ohio. The Project consists of a large array of ground-mounted photovoltaic (PV) modules, commonly known as solar panels, to generate clean and quiet renewable electricity for consumers in southwestern Ohio. Along with the PV modules, the Project includes associated support facilities, consisting of access roads, a pyranometer, buried electrical collection lines, inverter pads, a Project substation, and a short 138 kV transmission line (“gen-tie”) that will connect the Project substation to the existing utility substation. The Project Area is located within a 5-mile radius of 15 nearby municipalities in Ohio (see Figure 1. Regional Context). The Project layout within the Project Area is illustrated in Figure 2. The Project will have an installed capacity of up to 125 megawatts (MW) and construction is scheduled to begin in early 2018.

The focus of this report is to assess the potential socioeconomic impacts of this Project on local municipalities within a 5-mile radius from the Project Area (“the Study Area”). This involves a review of the past and current demographic and economic characteristics and trends in the Study Area, which includes 15 municipalities, and (where applicable) those of the greater region. The regional economy surrounding the Study Area is shaped in large part by both the rural economy of Brown County and Highland County and the manufacturing economy of the greater Cincinnati metropolitan region. Potential impacts including those to employment, earnings, and overall economic output resulting from Project construction and operation are assessed in light of socioeconomic conditions within the Study Area.

In short, the Hillcrest solar-powered electric generation project is expected to produce a positive economic impact on the communities within the Study Area. Through lease payments to private landowners, short- and long-term job creation, and tax payments to the taxing jurisdiction, the Project will supply a revenue stream to each of these jurisdictions without requiring significant services or expenditures on their behalf.

Part I: Introduction

This socioeconomic report is prepared in support of the proposed Hillcrest Solar Farm (“the Project”), a solar-powered generating facility in Green Township in Brown County of the State of Ohio. The Project consists of a large array of ground-mounted photovoltaic (PV) modules, commonly known as solar panels, to generate clean and quiet renewable electricity for consumers in southwestern Ohio. Along with the PV modules, the Project includes associated support facilities, consisting of access roads, a pyranometer, buried electrical collection lines, inverter pads, a Project substation, and a short 138 kV transmission line (“gen-tie”) that will connect the Project substation to the existing utility substation. The Project Area is located within a 5-mile radius of 15 nearby municipalities in Ohio (see Figure 1. Regional Context). The Project layout within the Project Area is illustrated in Figure 2. The Project will have an installed capacity of up to 125 megawatts (MW) and construction is scheduled to begin in early 2018.

This analysis examines estimated impacts to the local population and economy generated from the construction and operation of the Project. It includes a review of existing demographic and economic characteristics in the area, as well as several trends affecting both. When such comparison is informative, state and federal demographic and economic data also are included. Unless noted otherwise, the Study Area for this report includes the following 15 municipalities in Brown, Highland, and Clermont Counties; all of which are found wholly or partially within a 5-mile radius of the Project substation, which is located within the Project Area. It is noted, however, that while Clermont County is located within the 5-mile Study Area, the total overlapping area between the County and the five-mile radius is very small relative to Brown County and Highland County.

- Village of Mount Orab
- Village of Fayetteville
- Township of Jackson
- Township of Williamsburg
- Township of Perry
- Township of Sterling
- Township of Pike
- Township of Scott
- Township of Green
- Township of Washington
- Township of Dodson
- Township of Salem
- Township of Hamer
- Township of Clay
- Township of Whiteoak

Part II of this report provides an examination of population trends within the Study Area, from 1990 through 2010, including projected population growth through 2030. In addition, Part II provides data regarding the civilian labor force for 2016 by county and impacted cities (latest data available). Part III reviews the types of potential impacts that could be experienced throughout the region, including those regarding housing demand, commercial and industrial employment, and transportation networks. Part IV describes the methods of analysis of potential economic benefits provided within this report, including an overview of the Job and Economic Development Impact (JEDI) Model. This is followed by the JEDI results (Part V), which describes the jobs created by the construction and operation of the Project, as well as a summary of payments to landowners as a result of solar farm land leases. Part VI reviews potential

impacts of the Project from the perspective of local taxing jurisdictions. The findings of this report are summarized in Part VII, which is followed by a bibliography of cited sources in Part VIII.

Part II: Socioeconomic Profile

1. Population trends

As shown in Table 1, the total population of Brown County, which covers all the 5-mile radius of the Project was 35,986 in 2010, marking an increase of 12% over the previous decade. The County populations increased during each of the two decades between 1990 to 2010, with the sharpest increase occurring in Brown County between the years 1990 to 2000, at a rate of 20.9%. Population within the villages and cities mostly increased from 2000 to 2010. The Village of Fayetteville and Townships of Whiteoak, Perry, and Hamer experienced population decreases, however, over the same span. The Township of Williamsburg is the largest of the 15 municipalities within a 5-mile radius of the Project and, along with the Townships of Jackson, Sterling, and Clay, has experienced the greatest increases of growth of all the affected townships (Table 2). The Village of Mount Orab also experienced a substantial increase in population (58%) over the same period.

Table 1: Countywide Population Trends

County	1990 Population	2000 Population	2010 Population	% Change 1990-2010
Brown County	34,966	42,285	44,846	28.3%
Clermont County	150,187	177,977	197,363	31.4%
Highland County	35,728	40,875	43,589	22.0%

Source: U.S. Census Bureau, Decennial Census

The trends experienced by each community from 2000 to 2010 are expected to continue regardless of whether the proposed Project is built. Over the next decade, the population within the Study Area is projected to increase by 25% from 2020 to 2030, from 35,986 to 50,519. Meanwhile, county populations are expected to increase at slower rates, ranging from 8.5% (Clermont County), 2.6% (Highland County) and 1.7% (Brown County) during the same time span (see Table 2).

Table 2: Population Projections

Jurisdiction within a 5-Mile Radius of Project	2000 Pop.	2010 Pop.	% Change 2000-2010	Est. 2020 Pop.	Est. 2030 Pop.	% Change 2010-2030
Brown County	42,285	44,846	6.1%	45,850	45,630	1.7%
Clermont County	177,977	197,363	10.9%	208,330	214,090	8.5%
Highland County	40,875	43,589	6.6%	44,320	44,720	2.6%
Township of Clay	1,219	1,431	17.4%	1,680	1,972	37.8%
Township of Dodson	2,514	2,607	3.7%	2,703	2,803	7.5%
Township of Green	3,389	3,652	7.8%	3,935	4,241	16.1%
Township of Hamer	699	680	-2.7%	662	644	-5.4%
Township of Jackson	2,576	2,980	15.7%	3,447	3,988	33.8%
Township of Perry	4,830	4,735	-2.0%	4,642	4,551	-3.9%
Township of Pike	3,742	4,243	13.4%	4,811	5,455	28.6%
Township of Salem	682	780	14.4%	892	1,020	30.8%
Township of Scott	1,253	1,294	3.3%	1,336	1,380	6.7%
Township of Sterling	3,753	4,427	18.0%	5,222	6,160	39.1%
Township of Washington	2,271	2,354	3.7%	2,440	2,529	7.4%
Township of Whiteoak	1,374	1,371	-0.2%	1,368	1,365	-0.4%
Township of Williamsburg	5,005	5,746	14.8%	6,597	7,573	31.8%
Village of Fayetteville	372	330	-11.3%	293	260	-21.3%
Village of Mount Orab	2,307	3,664	58.8%	5,819	9,242	152.2%
<i>Study Area Total¹</i>	35,986	40,294	12.0%	45,118	50,519	25.4%

Source: U.S. Census Bureau Decennial Census (2000 and 2010 population figures), Ohio Development Services Agency (2020 and 2030 projections for Brown, Highland and Clermont Counties), Municipality projections based on their respective 2000-2010 growth rates

Although construction employment related to the construction of the Project will be substantial, this employment is relatively short term and is not expected to result in the permanent relocation of construction workers to the area; therefore, the Project is not anticipated to generate significant population growth within the Study Area. The number of potential short- and long-term employment opportunities associated with the construction and operation of the Project is discussed in further detail below.

¹ Totals calculated by formula, may reflect rounding errors

2. Employment statistics

Table 3 illustrates the size of the local labor force in counties within 5 miles of the proposed Project, as well as the broader State of Ohio. The total annual unemployment rate for Highland County has been relatively consistent with that of the State over the last two years, while Brown and Clermont counties both feature unemployment rates higher-than-statewide averages. Annual average unemployment rates have decreased both state-wide and county-wide from 2014 to 2016.

Table 3: Local Labor Force and Unemployment

Place	Labor Force	Employed	Unemployed	Unemployment rate, 2016 (annual)	Unemployment rate, 2015 (annual)	Unemployment rate, 2014 (annual)
Brown County	19,792	18,663	1,128	5.7	6.2	7.4
Clermont County	103,939	99,393	4,546	6.2	6.3	7.7
Highland County	17,024	15,965	1,060	4.4	4.5	5.5
State total	5,713,087	5,430,790	282,298	4.9	4.9	5.8

Note: Not Seasonally Adjusted; Source: U.S. Bureau of Labor Statistics, 2016.

Tables 4a-c illustrate employment in Brown, Clermont, and Highland Counties, broken down by sector for 2014 (most current data available).

Table 4a: Employment and Payroll by NAICS Sector in Brown County

NAICS code description	Number of full and part-time employees*	First-quarter payroll (\$1,000)	Annual payroll (\$1,000)	Total establishments
Total for all sectors	6,139	43,718	178,594	528
Mining, quarrying, and oil and gas extraction	b	D	D	2
Utilities	e	D	D	3
Construction	183	1,367	7,863	40
Manufacturing	769	5,922	24,918	32
Wholesale trade	198	1,918	8,068	27
Retail trade	973	5,340	20,219	100
Transportation and warehousing	256	1,664	6,326	22
Information	21	408	1,509	6
Finance and insurance	174	1,558	6,571	34
Real estate and rental and leasing	45	193	1,004	15
Professional, scientific, and technical services	127	869	3,553	28
Administrative and support and waste management and remediation services	c	D	D	24
Educational services	140	815	3,554	3
Health care and social assistance	1,474	9,690	36,907	62
Arts, entertainment, and recreation	a	D	D	9
Accommodation and food services	876	2,396	10,867	56
Other services (except public administration)	284	1,290	5,581	64
Industries not classified	a	D	D	1

* Paid employment (Mid-March employment) consists of full- and part-time employees, including salaried officers and executives of corporations, who are on the payroll in the pay period including March 12. Included are employees on paid sick leave, holidays, and vacations; not included are proprietors and partners of unincorporated businesses.

a: 0-19 employees

b: 20-99 employees

c: 100-249 employees

e: 250-499 employees

g: 1,000-2,499 employees

h: 2,500-4,999 employees

D: Withheld to avoid disclosing data for individual companies; data are included in higher level totals. While there are establishments engaged in industry sector, the number of establishments and receipts cannot be shown.

Source: U.S. Census Bureau, 2014

Table 4b: Employment and Payroll by NAICS Sector in Clermont County

NAICS code description	Number of full and part-time employees*	First-quarter payroll (\$1,000)	Annual payroll (\$1,000)	Total establishments
Total for all sectors	48,803	443,067	2,068,477	3,524
Agriculture, forestry, fishing and hunting	50	307	1,423	6
Mining, quarrying, and oil and gas extraction	b	D	D	4
Utilities	c	D	D	14
Construction	2,549	23,592	119,404	412
Manufacturing	5,142	68,279	293,801	164
Wholesale trade	1,595	26,475	296,959	192
Retail trade	9,692	59,845	247,664	515
Transportation and warehousing	2,648	26,836	108,477	89
Information	g	D	D	49
Finance and insurance	2,387	34,054	145,591	211
Real estate and rental and leasing	702	6,359	27,669	155
Professional, scientific, and technical services	2,640	36,812	156,624	369
Management of companies and enterprises	902	18,971	65,242	34
Administrative and support and waste management and remediation services	3,019	22,426	93,641	231
Educational services	336	1,763	7,321	34
Health care and social assistance	5,780	45,076	200,512	304
Arts, entertainment, and recreation	683	2,787	14,225	61
Accommodation and food services	6,637	21,462	89,581	301
Other services (except public administration)	2,532	15,149	64,475	372
Industries not classified	a	S	98	7

* Paid employment (Mid-March employment) consists of full- and part-time employees, including salaried officers and executives of corporations, who are on the payroll in the pay period including March 12. Included are employees on paid sick leave, holidays, and vacations; not included are proprietors and partners of unincorporated businesses.

a: 0-19 employees

b: 20-99 employees

c: 100-249 employees

g: 1,000-2,499 employees

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D: Withheld to avoid disclosing data for individual companies; data are included in higher level totals. While there are establishments engaged in industry sector, the number of establishments and receipts cannot be shown.

S: Suppressed; data does not meet publication standard as 40% or more of receipts/establishments are imputed; while there are establishments engaged in industry sector, the number of establishments and receipts cannot be shown.

Source: U.S. Census Bureau, 2014

Table 4c: Employment and Payroll by NAICS Sector in Highland County

NAICS code description	Number of full and part-time employees*	First-quarter payroll (\$1,000)	Annual payroll (\$1,000)	Total establishments
Total for all sectors	8,046	68,080	267,663	671
Agriculture, forestry, fishing and hunting	a	D	D	1
Mining, quarrying, and oil and gas extraction	b	567	2,164	5
Utilities	b	982	3,729	4
Construction	259	1,960	9,798	63
Manufacturing	1,457	14,959	62,572	31
Wholesale trade	c	1,530	5,939	16
Retail trade	1,635	9,088	37,453	138
Transportation and warehousing	124	1,296	6,341	21
Information	42	494	2,078	4
Finance and insurance	565	16,584	46,089	46
Real estate and rental and leasing	71	411	1,886	27
Professional, scientific, and technical services	113	787	3,094	36
Management of companies and enterprises	a	D	D	1
Administrative and support and waste management and remediation services	e	D	D	22
Educational services	b	D	D	3
Health care and social assistance	1,605	11,261	49,410	97
Arts, entertainment, and recreation	133	428	1,710	12
Accommodation and food services	903	2,393	928,508	63
Other services (except public administration)	315	1,206	822,274	3,273
Industries not classified	a	D	1,662	43

* Paid employment (Mid-March employment) consists of full- and part-time employees, including salaried officers and executives of corporations, who are on the payroll in the pay period including March 12. Included are employees on paid sick leave, holidays, and vacations; not included are proprietors and partners of unincorporated businesses.

a: 0-19 employees

b: 20-99 employees

c: 100-249 employees

e: 250-499 employees

g: 1,000-2,499 employees

h: 2,500-4,999 employees

D: Withheld to avoid disclosing data for individual companies; data are included in higher level totals. While there are establishments engaged in industry sector, the number of establishments and receipts cannot be shown.

Source: U.S. Census Bureau, 2014

Part III: Regional Development Impacts

The regional economy surrounding the Study Area is shaped in large part by both the rural economy of Brown County and Highland County and the manufacturing economy of the greater Cincinnati metropolitan region. As a primarily agricultural economy in proximity to one of the strongest manufacturing hubs in the U.S., this area has made substantial progress toward stabilization and growth as it emerges from the recent recession. The regional context for the development of this Project is discussed in further detail below in terms of three primary components: housing, commercial and industrial development, and transportation. In addition, the compatibility of the proposed Project with regional developmental goals and plans is reviewed.

1. Housing

As with all sectors of the economy, the housing market throughout the region has felt the impact of a struggling rural economy. Owner-occupied vacancy rates in this region are slightly higher than the statewide average (0.4% higher), while the 1.7% rental vacancy rate in Brown County is substantially lower than the statewide average of 6.5%.

Table 5: Study Area Housing Characteristics, 2015

Municipality/ County/ State	Total housing units	Occupied units	Vacant units	Vacancy rate		Median housing value of owner- occupied units	Median gross rent	% of households with gross rent > 35% of household income
				Home- owner	Rental			
Village of Fayetteville	164	142	22	6.1	0.0	\$102,900	732	45.5%
Village of Mount Orab	1,463	1,421	42	4.7	0.0	\$110,800	679	33.7%
Township of Clay	559	541	18	0.0	0.0	\$125,900	\$644	57.1%
Township of Dodson	1,018	896	122	2.3	3.4	\$101,800	\$706	52.8%
Township of Green	1,359	1,281	78	0.0	0.0	\$101,800	\$698	33.2%
Township of Hamer	313	294	19	0.0	0.0	\$66,200	(x)	100.0%
Township of Jackson	1,171	1,021	150	2.7	12.6	\$137,900	\$921	41.3%
Township of Perry	2,117	1,781	336	5.5	0.0	\$118,800	\$839	20.2%
Township of Pike	1,524	1,482	42	0.0	0.0	\$114,000	\$767	29.6%
Township of Salem	264	246	18	0.0	0.0	\$112,100	(x)	0.0%
Township of Scott	542	364	178	0.0	0.0	\$114,600	\$826	0.0%
Township of Sterling	1,729	1,508	221	6.7	0.0	\$108,400	\$644	42.4%
Township of Washington	1,012	930	82	3.3	2.7	\$114,400	\$792	47.0%
Township of Whiteoak	565	499	66	0.0	2.2	\$88,700	\$865	38.0%
Township of Williamsburg	2,059	1,921	138	3.5	4.2	\$123,000	\$548	46.5%
Brown County	19,349	16,672	2,677	3.2	6.0	\$113,800	\$649	32.7%
Clermont County	81,668	74,812	6,856	2.0	9.6	\$155,500	\$764	37.7%
Highland County	19,256	16,696	2,560	1.6	3.6	\$103,500	\$643	43.1%
Ohio statewide	5,140,902	4,585,084	55,818	1.9	6.5	\$129,900	\$730	40.3%

Source: U.S. Census Bureau, American Community Survey 5-Year Estimates 2011-2015. (x) = data unavailable

The three counties within the Study Area have an average median monthly gross rent value (\$685) below the statewide average of \$730. The average median housing value (\$124,267) in the Project Area is also below the statewide average of \$129,900, with Brown County featuring a measure at \$113,800. These averages are more pronounced in the two counties composing most of the Study Area, Brown County, and Highland County. In Brown County and Clermont County, there is a lower proportion of renters whose rent accounts for more than 35% of their household income than the statewide average (32.7% vs. 40.3%). It is estimated that more than 12,093 housing units within the tri-county area are currently vacant, 1,532 of which occur within the municipalities within the Study Area. Given these figures, in addition to the population projections discussed in Part II of this report, it is not expected that the development of the Project will have a significant impact on the regional housing market. While the Project development may not represent a widespread boom for rental property owners, it is worth noting that the availability of vacant rental housing also indicates that the Project should not have a destabilizing effect on current renters.

2. Commercial and Industrial Development

The diversification of Ohio's energy generation portfolio will have significant and positive economic impacts beyond a reduced dependence on coal imported from outside of the State. At both regional and national levels, the State has a relatively high capacity for both distributed and utility-scale solar photovoltaic systems. In a recent report, the Environmental Law & Policy Center found that Ohio has the second-highest solar capacity in the Midwest region (1,119 MW) (ELPC 2016). At a national level, the Solar Foundation ranked Ohio 26th in the US for installed solar capacity.. Furthermore, there is tremendous room for growth due to an established manufacturing base and trained workforce, central location and reliable transportation infrastructure, and a diverse array of research centers and technical advisory services (ELPC 2016).

The Environmental Law & Policy Center estimated that the State of Ohio is currently home to 207 solar power supply chain businesses, including many component and equipment manufacturers. Many of the State's plastic and glass manufacturers have taken advantage of the growing demand for solar by becoming suppliers for these components and equipment. The 2016 Solar Jobs Census reports that Ohio ranks in the top 11 states for solar jobs, with 5,831 workers in the solar industry (an increase of 21% since 2015). Most these jobs (56%) were for installation, while the remainder were for manufacturing (17%), sales/distribution (10%), project development (11%), and other fields (6%). Each of these categories has increased since 2015. Per the report, the \$1.3 billion produced by the Ohio solar sector represented much higher growth in 2016 than the overall economy of the State, which decreased slightly (-0.02%). Hamilton County, located near the Project, ranks second in the state for the number of solar jobs, with 540 jobs (Solar Foundation, 2016).

While the State's current energy generation portfolio aims for a 12.5% overall renewable energy component by 2026 with a 0.5% solar-specific target, Environment Ohio estimated that if Ohio solar increased to 10% of the State's total energy generation portfolio by 2025, the State would have the potential to produce 25 times as much electricity from solar power as it consumes annually. To meet this target, solar installations would have to continue increasing at 52% annually (Environment Ohio, 2014). With the recent increases in its PV capacity (68% between 2013 and 2014), Ohio is on a path to achieving this target. Specific short- and long-term economic impacts of this Project on commercial and industrial development throughout the region are described in further detail in Part V of this report.

3. Transportation

The region surrounding the Project Area features U.S. and Ohio highways, as well as a network of county and local roadway networks, in addition to freight rail lines and small airports. These facilities are described in more detail below.

The two primary transportation routes to the Project Area are U.S. Route 68, which runs north-south to the west of the Project Area, and State Route 286, which transects the Project Area west-east. These two routes converge at the northeastern corner of the Project Area. US Route 68 links the Project Area to U.S. 50 and State Route 32, both of which connect the Project Area to the Cincinnati Metro Region. U.S. Route 68 and the nearby State Route 32 to the south of the Project Area both provide access to U.S. 62, which provides bypass routes that avoid the Cincinnati congestion and provide access to Columbus and Lexington, Kentucky. These and other primary routes facilitate transportation between the Project Area and the surrounding metropolitan areas. Cincinnati can be accessed via I-75 from the north and south; Interstate 74 from the west; and Interstate 71 from the northeast and southwest.

Workers arriving at the site will most likely enter via U.S. 68 and, if bound for Project substation, will turn off onto Greenbush West Road. The proposed Project is not expected to cause any substantial disruption to major transportation corridors serving the Study Area, as most solar photovoltaic components and equipment are relatively small and require only relatively low-impact means of transport.

A freight rail line, operated by Norfolk Southern, runs through the Village of Mount Orab, approximately 2 miles south of the Project Area. Norfolk Southern has significant operations, serving nearly all metropolitan areas east of the Mississippi River, and the portion of rail extending through the Study Area is part of the NS Cincinnati District. The Village of Mount Orab is the only Study Area municipality connected to the Cincinnati freight rail line. The rail system may be used for the transportation of a very small number of project components, but the Project will not necessitate making any modifications to the system.

The Study Area is also in proximity to the Cincinnati/Northern Kentucky International Airport (approximately 45 miles from Study Area), the regional Clermont County Airport (approximately 20 miles from Study Area). Construction and operation of the Project will not result in any adverse impacts to the regional air transportation network.

4. Local and Regional Plans

Brown County and Green Township are the two host municipalities of the Project Area. Neither municipality has adopted comprehensive land use plans. However, there are land use plans relevant to the future use of the Study Area. It is noted, however, that while Clermont County is located within the 5-mile Study Area, the total overlapping area between the County and the five-mile radius is very small relative to Brown County and Highland County. Descriptions of plans from Study Area jurisdictions and their compatibility with the Project are described below.

- 2003 Highland County Comprehensive Plan: The plan features a series of goals, policies and strategies to guide the Highland County Planning Commission when making land use decisions. The portion of the County located within the 5-mile Study Area is primarily agricultural (pasture/hay and row crops), with forested patches interspersed throughout. The top priority action item is the “development of a program supporting the agricultural economy through the implementation of policies aimed at preserving the County’s valuable farmland” (Highland County Comprehensive Plan, 2003). Additionally, the land use actions relevant to the area surrounding the Project Area include 1) the prevention of new sprawl development to allow for cost-efficient provision of public services; 2) the creation of local employment opportunities, and 3) the promotion of tourism as an economic development tool. Infrastructure actions set forth in the plan 1) limited driveway cuts and intersections along major thoroughfares and 2) limiting road improvements in agricultural areas to upgrading nonstandard roads and under-capacity bridges. The Project is entirely compatible with all actions listed above as it will not be constructed in Highland County itself, and therefore will have no impact on the County’s existing agricultural lands.
- 2014 Clermont County Comprehensive Plan: This comprehensive plan identifies recommendations of future land uses within Clermont County through a collection of land use plans from individual townships. These Township land use plans are referenced when considering approval for rezoning applications and development proposals.
 - Jackson Township: The predominate land use is low density rural residential/agriculture. The area of the Township within the 5-mile Study Area is part of the riparian corridor of the East Fork of the Little Miami River. This is an area of great significance for Jackson Township and Clermont County due to its inclusion in the Water Source Overlay District, whose goal is reducing the risk of contamination in the public water supply. The Project, which is nearly 4.5 miles away, is compatible with the use of this area as a natural river corridor as it will have no impact on water quality.
 - Williamsburg Township: This land use plan features five primary land use goals pertaining to housing, rural character, agriculture, tax base, and recreation/open space. The plan calls for the area of the township within the 5-mile Study Area to remain in agricultural use. Agricultural goals presented by the township plan include 1) to maximize the preservation of productive farmland, particularly those on prime soils and 2) to recognize farmland protection is important because it helps to stabilize the local economy,

preserves a valued livelihood, provides visible open space, maintains rural character, controls runoff, conserves prime soils, and enhances air quality. The Project, which is nearly 4.5 miles away, is compatible with the current agricultural use of this area.

- The formally adopted 2014 Comprehensive Plan of Clermont County includes a chapter devoted to economic development. In this chapter, economic conditions and trends within the County are analyzed to inform goals related to the County's future development patterns. The chapter highlights the strong manufacturing sector of the region, which is ranked 6th among the top 10 manufacturing cities in the US (2012 Business Facilities Metro Ranking Report). Job development and tax base increases are two key economic development goals for the County that are compatible with this Project. While no Project components are located within Clermont County, the development of the proposed Project offers an opportunity for the purchase of local goods and services, including but not limited to labor, equipment, maintenance, and supply-chain manufacturing.

The proposed solar farm neither interferes with the agricultural uses of surrounding areas, nor does it necessarily preclude future agricultural development on the existing site. Incorporating parcels into a single solar farm inhibits subdivision and associated sprawl, along with other intensive uses. At the end of the Project's lifespan, if the property owner chooses, panels can be removed and the land can be returned to agricultural use.

5. Concurrent or Secondary Uses

Applicant has no plans for concurrent or secondary use of the Project Area. The public will be prohibited from entering the solar fields, the Project substation, and the pyranometer, which will be enclosed by perimeter fencing. All other aspects of the Project will be buried. On occasion, guided tours of the Project by qualified personnel may allow designated members of the public to enter one or more of the solar fields for limited periods of time. These prohibitions against entry as well as warnings regarding the dangers of high-voltage equipment will be displayed on appropriate signage throughout the Project Area. Perimeter fences will be topped with barbed wire, with entry through locked gates.

Part IV: Measuring Economic Impacts

1. Calculating Economic Benefits

Quantifying the economic impacts of the proposed Hillcrest Solar Farm is essential to understanding the potential benefits that the Project could have on the local economy. Solar power development, like other commercial development projects, can expand the local economy through both direct and indirect means. Income generated from direct employment during the construction and operation phases of the solar farm will subsequently be used to purchase local goods and services, creating a ripple effect throughout the local economy. This report analyzes three levels of impact that the proposed Project is expected to have on the economy:

- **On-site labor impacts:** These are the direct impacts experienced by the companies engaged in the construction and operation of the Project. This value estimates the dollars spent on labor and professional services by project developers, consultants, and construction contractors, as well as on operation and maintenance (O&M) personnel. On-site labor impacts do not reflect material expenditures.
- **Local revenue 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). Indirect measures account for the demand for goods and services such as project components, project analysis, legal services, financing, and insurance.
- **Induced impacts:** Induced impacts measure the estimated effect of increased household income 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 within the economy, such as on household goods, entertainment, food, clothing, and transportation.

Each of these three categories can be measured 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 below:

- **Jobs:** Jobs refer to the increase in employment demand as a result of the development of the Project. These positions are measured across each level of impact, such 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 development. Persons employed for less than full time or less than a full year are included in this total, each representing a fraction of a FTE position (e.g., a half-time, year-round position is 0.5 FTE).

- **Earnings:** This measures the wages earned by the employees described above.
- **Output:** Output refers to the value of industry production in the State or local 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 cable or motor vehicle fuel for use in the Project.

2. Methodology

To quantify the local economic impacts of constructing and operating the Hillcrest Solar Farm, the Job and Economic Development Impact (JEDI) model (version PV10.07.14) was used, which was created by the National Renewable Energy Laboratory (NREL), a branch of the United States Department of Energy. The JEDI model requires project-specific data input (such as year of construction, size of project, module and location), and then calculates the impacts described above using state-specific multipliers. These multipliers account for the change in jobs, earnings, and output likely to occur throughout the local, regional, and statewide economy as a result of project-related expenditures. The resulting data are paired with industry standard values (e.g., wage rates) and data reflecting personal spending patterns (e.g., percent of household income dedicated to housing expenditures) to calculate on-site, supply chain, and induced impacts (USDOE NREL, 2010). This model allows impacts to be estimated for both the construction and operation phases of the proposed development. An economic impact analysis was performed for a large commercial solar farm scheduled to begin construction in 2018 with a rated capacity of 1 MW (1,000 kW) and an assumed 166.25 systems of fixed-mount, thin film photovoltaic panels with a 166,250 kW DC nameplate capacity, with the default base installed system cost of \$1,000/kW_{DC} and the default annual direct operations and maintenance cost of \$11.00/kW. The results of this analysis are illustrated in Table 6, below, and summarized in the narrative that follows. The results shown in Table 6 describe the potential impact of the Project on industries throughout the State, including the on-site labor impacts that occur specifically within the local economy.

Table 6: Local Economic Impacts

During Construction Period	Jobs	Earnings (\$thousand)	Output (\$thousand)
Onsite Labor and Project Development	643.9	\$43,300.4	\$64,345.2
Construction and Installation Labor	287.9	\$18,646.2	--
Construction Related Services	356.0	\$24,654.2	--
Module and Supply Chain Impacts	504.1	\$30,767.8	\$78,356.3
Manufacturing Impacts	0.0	\$0.0	\$0.0
Trade (Wholesale and Retail)	111.2	\$8,294.7	\$21,777.5
Finance, Insurance and Real Estate	0.0	\$0.0	\$0.0
Professional Services	67.8	\$3,964.0	\$10,469.3
Other Services	100.6	\$11,005.2	\$28,547.6
Other Sectors	224.4	\$7,504.0	\$17,561.9
Induced Impacts	361.0	\$18,185.0	\$50,802.7
Total Construction Impacts	1,509.1	\$92,253.1	\$193,504.2
During Operating Years (Annual)	Jobs	Earnings	Output
Onsite Labor Impacts	16.9	\$1,019.1	\$1,019.1
Local Revenue and Supply Chain Impacts	4.7	\$327.2	\$914.0
Induced Impacts	3.8	\$193.8	\$541.5
Total Annual Operational Impacts	25.5	\$1,540.2	\$2,474.6

Notes: Earnings and Output values are millions of dollars in 2017 dollars. Totals may not add up due to independent rounding. Results are based on model default values.

Source: NREL JEDI Model (version PV10.07.14) (USDOE NREL, 2017)

Part V: Economic Impact on the Local Economy

1. New Jobs in the Local Economy

Demand for new jobs associated with the Hillcrest Solar Farm will be created during both the initial construction period and the years following construction, in which the Project is in operation. The money injected into the statewide economy through the creation of these jobs will have long-term, positive impacts on individuals and businesses in Ohio as it ripples through the economy.

2. Local Economic Impact: Construction Phase

Based upon JEDI model computations, it is anticipated that construction of the proposed Project will directly generate employment of an estimated 643.9 on-site construction and project development personnel FTE positions. Module trade and supply chain industries could in turn generate an additional 504.1 jobs over the course of Project construction. In addition, Project construction could induce demand for 361.0 jobs through the spending of additional household income. The total impact of 1,509.1 new jobs could result in up to approximately \$92.3 million of earnings, assuming a 2018 construction start and wage rates consistent with statewide averages. Project construction labor wages for similar construction positions within the Cincinnati region range from approximately \$21 per hour for all installation, maintenance and repair operations, and around \$40 per hour for construction management occupations (Bureau of Labor Statistics, 2015). Local employment will primarily benefit those in the construction trades, including laborers, and electricians. Project construction will also require workers with specialized skills, such as panel 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 Project is expected to have a positive impact on 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 construction of the Project is estimated to be \$193.5 million. Between workers' additional household income and industries' increased production, the impacts associated with the Project are likely to be experienced throughout many different sectors of the statewide economy. Pursuant to Section 5727.75 of the Ohio Revised Code (ORC), the Project may qualify for tax incentives based on the degree to which it employs in-state construction labor (see Part VI).

3. Local Economic Impact: Operations and Management Phase

Based upon JEDI model computations, the operation and maintenance of the proposed Project are estimated to generate 16.9 full-time equivalent jobs with estimated annual earnings of approximately \$1.0 million. These FTE job positions are all anticipated to be wholesale trade employees. Wage rates are projected to be \$24 per hour, consistent with regional averages which are estimated to be around \$16 per hour for administrative personnel (Bureau of Labor Statistics, 2015).

Operations and maintenance of the Project also should generate new jobs in other sectors of the economy through supply chain impacts and the expenditure of new and/or increased household earnings. These impacts may include restaurant, hospitality and other tourism-derived local spending from employees and visitors to the solar farm. Increased employment demand throughout the supply chain is estimated to result in approximately 4.7 jobs with annual earnings of around \$0.3 million. In addition, it is estimated that 3.8 jobs with associated annual earnings of \$0.2 million will be induced through the increased household spending associated with Project operations. In total, while in operation, the Project is estimated to generate demand for 25.5 jobs with annual earnings of approximately \$1.5 million. Total economic output could also increase by an estimated \$2.5 million as a result of Project operations and maintenance.

4. Land Lease Payments

Operation of the Project will result in payment to local landowners in association with the lease agreements executed to host Project components. These annual lease and easement payments will offer direct benefits to participating landowners, which will be in addition to any income generated from the surrounding land use (e.g. agricultural production). The Applicant estimates that these payments will total approximately \$ [REDACTED] on an annual basis each year the Project is in operation, although this value is contingent upon project details still in development (e.g., technology choice and layout). The Project will also generate lease payments during the construction phase; while the value is currently unknown, the lease payments will have a beneficial impact on the local economy during construction. These lease payments will have a positive impact on the region, to the extent that landowners will spend their revenue locally.

Part VI: Local Tax Revenues

1. Legislative Context

Solar energy projects in the State of Ohio can be exempted from tangible personal property and real property tax payments if they meet certain conditions. These conditions are enumerated in Section 5727.75 of the ORC. Operators of these exempted projects, known as qualified energy projects (QEP), are instead required to make annual payments in lieu of taxes (PILOT). In order to be certified as a QEP by the State, a project must meet all of the following criteria:

- an application for certification of the energy project as a QEP that complies with the requirements under Section 5727.75 of the ORC and Chapter 122:23-1 of the OAC must be submitted to the director of the Ohio Development Services Agency (ODSA) on or before December 31, 2020;
- an application under Section 4906.20 of the ORC must be submitted to the Ohio Power Siting Board (OPSB) on or before December 31, 2020;
- the county commissioners of the county in which property of the project is located must have adopted a resolution approving the application submitted to ODSA or the county commissioners must pass a resolution declaring the county an alternative energy zone (AEZ);
- at least 80% of the full-time equivalent construction and installation employees, as defined in Section 5727.75 of the ORC, must be Ohio-domiciled; and
- construction (defined as either the date the application for a certificate is filed with OPSB or the date the contract for construction or installation is entered into, whichever is earlier) must begin by January 1, 2021.

If an applicant is granted exemption from taxation for any of the tax years 2011 through 2021, the QEP will be exempt from taxation for tax year 2022 and all ensuing years, as long as the property was placed into service before January 1, 2022. The amount of PILOT to be paid annually to the county treasurer is assessed per megawatt (MW) of nameplate capacity, with the rate of \$7,000/MW (Table 7). County commissioners may require an additional service payment, as long as the total of the additional payment and the PILOT do not exceed \$9,000 per MW.

2. Estimated Payments In Lieu Of Taxes

The Project is expected to achieve commercial operations in late 2018 and to meet all the above criteria for a PILOT pursuant to Section 5727.75 of the ORC. All of the components of the Project will be located in Green Township and one school district (Western Brown Local School District) within Brown County. Table 7 displays the total estimated PILOT revenues to be generated by the Project.

Table 7: Estimated Total PILOT Revenue

Total Project Capacity	PILOT at \$7,000/MW
125	\$875,000

Part VII: Conclusion

The socioeconomic effects of the Hillcrest Solar Farm, when assessed in light of regional and local economic trends, will have a positive impact on the communities within the Study Area. Lease payments, short- and long-term job creation, and PILOT revenues will benefit private landowners, businesses, and taxing jurisdictions. The Project is not expected to generate significant expenditures on behalf of these beneficiaries; therefore, it will have a positive impact on the social and economic conditions of these communities.

1. Total Local Economic Benefit

The construction of the Hillcrest Solar Farm is expected to produce an estimated \$92.5 million in employment earnings and \$193.5 million in total economic output. Subsequently, each year the Project is operational it is expected to generate approximately \$1.5 million in earnings and \$2.5 million in total economic output.

2. Local Employment Benefits

During the construction period, the Project is expected to support demand for a total estimate of 1,509 onsite, supply chain, and induced employment positions. It is expected to support an estimated total of 26 positions during each year of its operation.

3. Land Lease Revenues

The development of the Project will result in approximately \$[REDACTED] in total annual lease payments made to participating landowners during the 40-year estimated lifespan of the Project.

4. Property Tax Revenues

Construction of the proposed Hillcrest Solar Farm will increase local government revenues through payments in lieu of taxes (PILOTs). Although the agreements outlining these payments are not yet finalized, it is estimated that annual PILOT revenues could amount to approximately \$1,163,750 to be distributed to local taxing jurisdictions.

Part VIII: References

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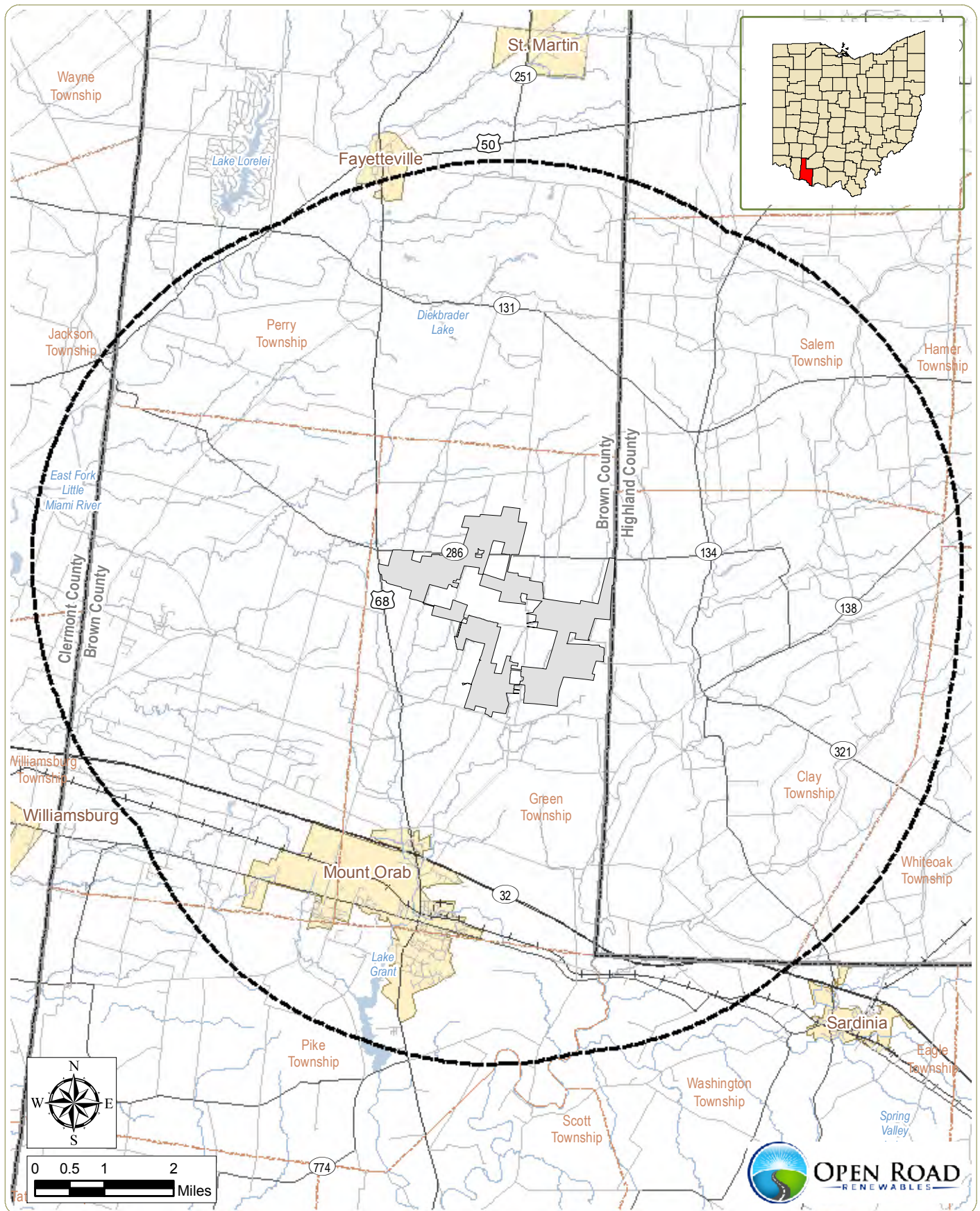
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Figures



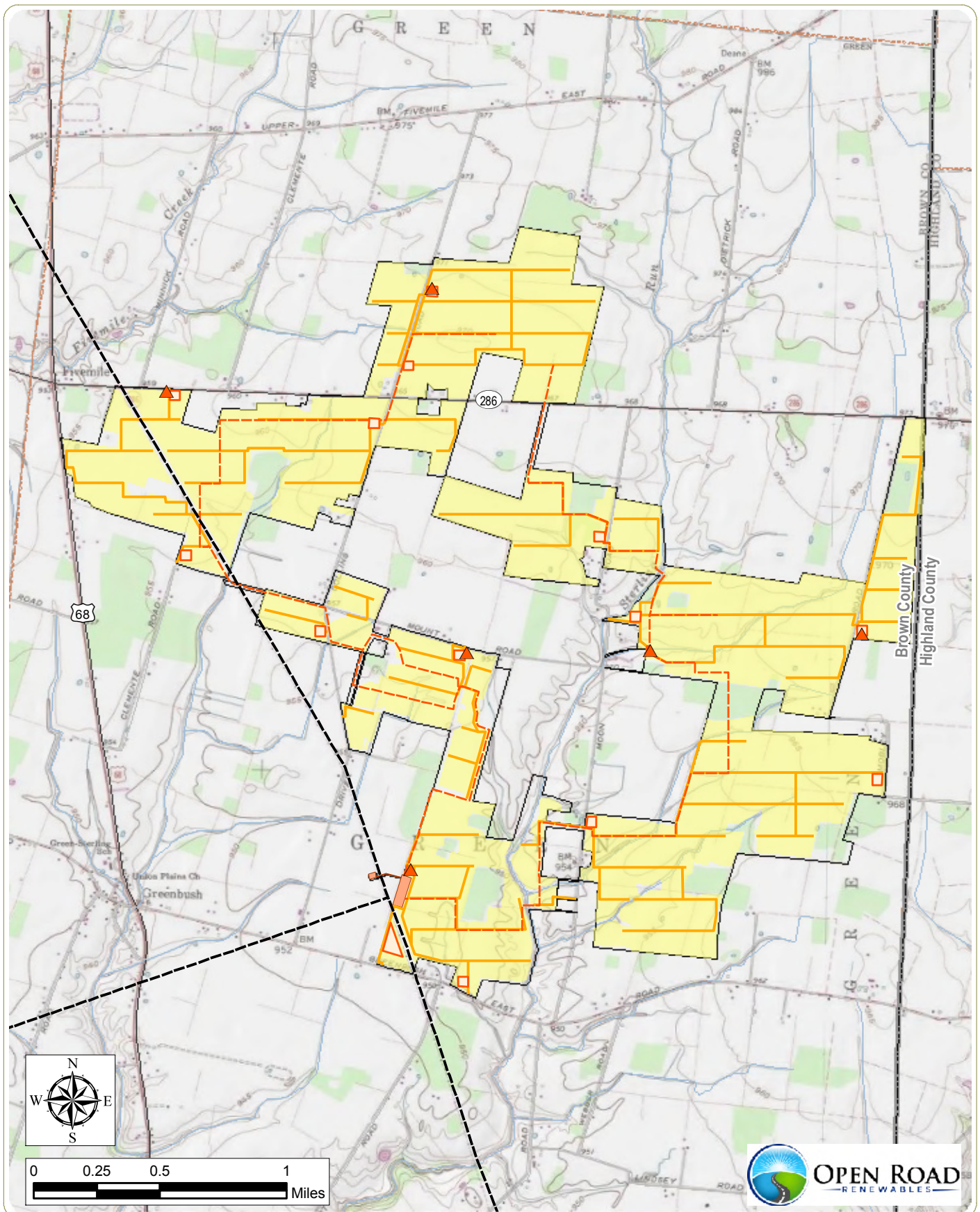
Hillcrest Solar Farm

Green Township, Brown County, Ohio

Figure 1. Regional Context

- Notes:**
1. Basemap: ESRI StreetMap North America, 2012.
 2. This map was generated in ArcMap on June 16, 2017.
 3. This is a color graphic. Reproduction in grayscale may misrepresent the data.

- 5-Mile Study Area
- Project Area
- Township Boundary
- County Boundary
- Major Highways
- Highways
- Major Roads
- Streets
- + Main and Branch Rails











Hillcrest Solar Farm

Green Township, Brown County, Ohio

Figure 2. Project Layout within Project Area

- Notes:**
1. Basemap: ESRI StreetMap North America, 2012.
 2. This map was generated in ArcMap on June 16, 2017.
 3. This is a color graphic. Reproduction in grayscale may misrepresent the data.

- | | |
|--|---|
|  Pyranometer |  Staging Area |
|  Collection Line |  Substation Facilities |
|  Access Road |  Potential Solar Array |
|  Existing Transmission Line |  Project Area |

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Summary: Application - Exhibit D Socioeconomic Report electronically filed by Mr. Michael J. Settineri on behalf of Hillcrest Solar I, LLC