

Sebree Solar II, LLC

Case No. 2022-00131

Application – Exhibit 10

**Kentucky State Board on Electric Generation and Transmission Siting
Sebree Solar II, LLC – Case No. 2022-00131
Application – Exhibit 10**

Filing Requirement

An analysis of the proposed facility's economic impact on the affected region and the state (KRS 278.706(2)(j))

Respondent: Jason Andrews

Pursuant to KRS 278.706(2)(j), the attached Sebree Solar II Project Economic Impact Analysis was prepared by Joshua Crawford, J.D., Executive Director at The Pegasus Institute, under the direction and supervision of Jason Andrews, on behalf of Sebree II. The local and state tax analysis included in this report does not reflect tax abatement at any level. The Project does not have any tax abatement agreements in place and will not be seeking a Payment-in-Lieu of Taxes (“PILOT”) agreement with Henderson County. Sebree II will update the Kentucky Siting Board if there are any changes in pursuance of a tax abatement or PILOT with local and/or state authorities.

Attachment A: Sebree Solar II Project Economic Impact Analysis (18 Pages)

**Case No. 2023-00131
Application - Exhibit 10
*Attachment (203 pages)***

Sebree Solar II, LLC

Case No. 2022-00131

Application – Exhibit 10
Attachment A

Sebree Solar II, Inc. Project
Economic Impact Analysis
(18 Pages)



SEBREE II

SOLAR PROJECT

ECONOMIC IMPACT ANALYSIS

APRIL 2023

A PEGASUS INSTITUTE REPORT

PEGASUS INSTITUTE

SEBREE II SOLAR PROJECT ECONOMIC IMPACT ANALYSIS

APRIL 2023

ABOUT PEGASUS INSTITUTE:

Pegasus Institute is a first of its kind, millennial-led, state-based think-tank. Our mission is to provide public policy research and solutions that help improve the lives of all Kentuckians. Pegasus Institute operates as an independent, non-partisan, privately funded research organization focused on state and local policies.

We believe that Kentucky has the potential to emerge as a national leader and a beacon of the New South. That potential can be unlocked with data-driven public policy solutions based in free market principles, individual liberty and responsibility, and effective, limited, and accountable government.

We produce research led by experts and subjected to peer-review prior to publication. To help ensure intellectual independence we do not accept government grants. All projects are designed with our central mission in mind, directed toward a 21st Century Kentucky.

Executive Summary

The solar industry is one of the fastest growing industries in the United States, far outpacing other energy sectors. This growth is expected to continue in the foreseeable future, with an anticipated compound annual growth rate of 17.32% between 2020 and 2025.ⁱ By 2050, solar electricity generation will make up more than half of all renewable energy, outgrowing wind, geothermal, and hydroelectric, which are expected to remain relatively constant.ⁱⁱ The solar industry is one of rapid growth in Kentucky as well, but one with considerable unrealized potential. At the end of 2020, one industry analysis found that the state ranks 48th in the nation for the amount of solar power being produced, trailing all but one of its neighbors.ⁱⁱⁱ

Solar presents a growth opportunity for the state, but several major companies have already adopted the technology. General Motors, which builds the Corvette exclusively in the Bowling Green, Kentucky facility and provides a source of tremendous economic and civil pride throughout the state, utilizes solar power at its plant, and has the largest solar array of any automaker in the state.^{iv} Several other projects have been approved or are expected to begin construction in the next two years.

Henderson County is situated in Western Kentucky directly across the Ohio River from Evansville, Indiana and is part of the Evansville metropolitan area. The Green River forms the county's eastern boundary. The county boasts a strong automotive, metalworking, logistics, and manufacturing base, all of which provide for employment numbers above average in multiple sectors. This provides for a balanced local economy, with companies like Tyson Foods, Gibbs Die Casting, and Century Aluminum providing a strong economic foundation. Despite this, the workforce of the county has shrunk by 6.5% since 2016, according to compiled numbers by the local economic development district.^v Household income in the county remains below state and national average by 20% and 35% respectively.^{vi}

The combined factors of a strong economic foundation and economic potential provide an ideal opportunity for the solar industry in Henderson County. The Sebree II Solar Project, proposed by NextEra Energy Resources, LLC will provide the region with up to 150 megawatts of renewable energy. Once completed, the project will be one of the largest solar operations in the state of Kentucky. The company expects a total investment of \$225 million over the course of the project on 1,000 acres of land in the county.

There are significant economic impacts expected as a result. The construction phase of the project will contribute approximately 200 one-time jobs over the course of the build, expected to take 18 months. We measure the direct payroll investment by the company

during this phase to be \$10,000,000. The secondary impact of this investment, including both indirect and induced effects during the construction phase, will be an additional 58 jobs created in the region generating \$1,487,274 in payroll. In total, the construction phase alone will account for more than \$11,487,274 in payroll and 258 new jobs.

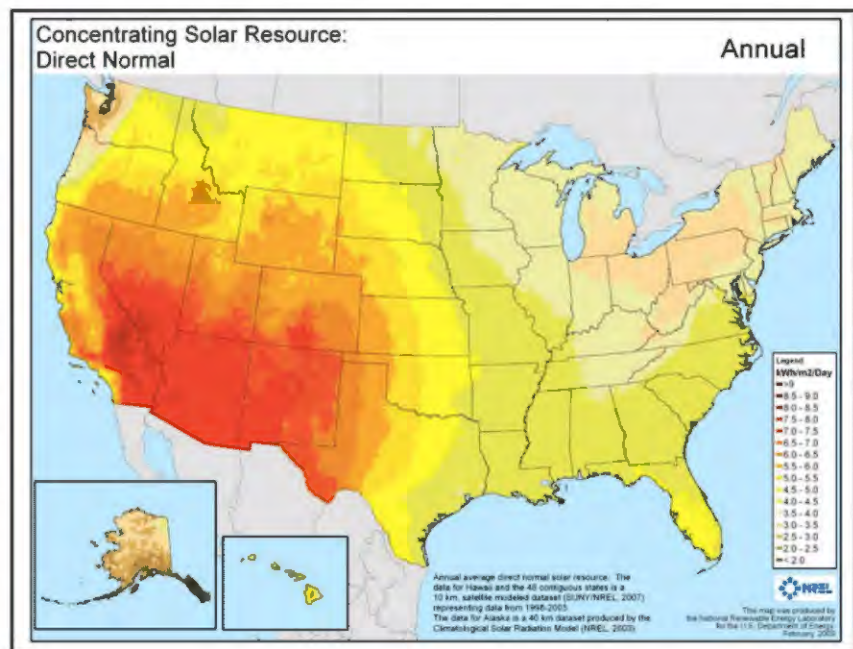
The long-term operational phase of the project will provide an additional \$8.3 million direct payroll investment. The permanent jobs created during that phase will have an average pay of \$119,000 per year. This is considerably higher than the average wage for jobs currently based in the county, which average \$42,892.

Once construction is completed, the land will be subject to property taxes in the respective counties, with considerable increases in revenue anticipated over their current uses. The site is expected to generate \$15.5 million in property tax revenue over the next 35 years.

In total, we estimate the community benefit of this project from the construction phase, operational phase, and property tax revenue will be \$35,287,274.

Solar Growth in the US

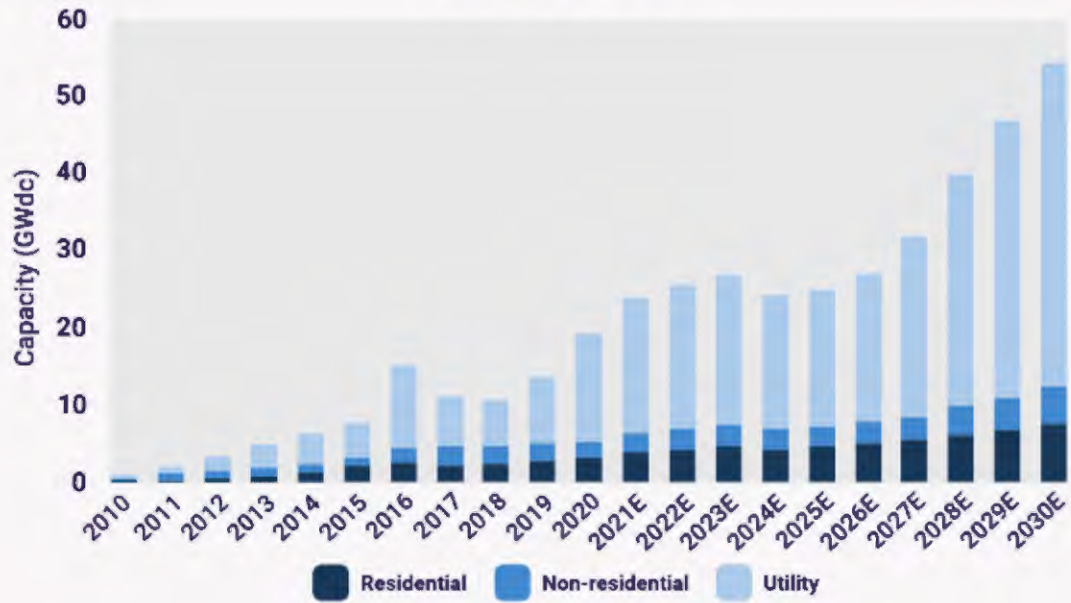
The solar industry is one of the fastest growing sectors in the United States. Since 2010, interlinked changes have occurred that has propelled the industry. Prices have fallen for both rooftop and utility scale solar generation, bringing costs down by more than 70%. For residential systems alone, in 2010, the average cost was \$40,000. Today, the average cost is around \$18,000. This has allowed for a major boom in solar generation, increasing by 25x during the previous decade. Whereas in 2010 there were only a few dozen utility scale solar plants in the United States, by the end of the decade there were nearly 3,000. Employment in the industry has grown as well, more than doubling since 2010.^{vii}



Of new US electricity generation, the growth of solar has been unmatched. In 2010, only 4% of new generation capacity came from solar. By 2019, this reached 40%, and in 2021 was even higher at 43%. The percentage of electricity generated by fossil fuels has dropped significantly in the same time period, from 70% in 2010, to 62% by 2019.

This growth shows no sign of slowing. The industry is expected to grow at a compound annual growth rate of 17.32% between 2020 and 2025. Total solar installations are expected to grow from approximately 20 gigawatts in 2020, to over 50 gigawatts by 2030, with utility installations leading the way.

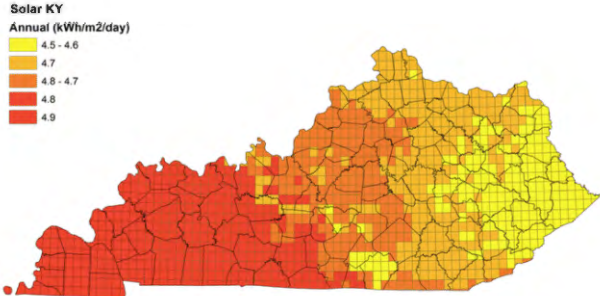
U.S. Solar PV Installations and Forecast 2010-2030



Source: U.S. Solar Market Insight 2020 Year in Review

Solar Growth in Kentucky

Solar electricity generation has grown considerably in Kentucky over the last decade but at a slower pace than most neighboring states. It is difficult to establish the state’s total solar generation operating capacity but at least one 2020 industry analysis found that only one neighboring state was generating less electricity from solar than Kentucky. Most possessed a capacity more than double the Bluegrass State. Despite strong growth from 2010-2020, the solar industry is one of tremendous unrealized potential.



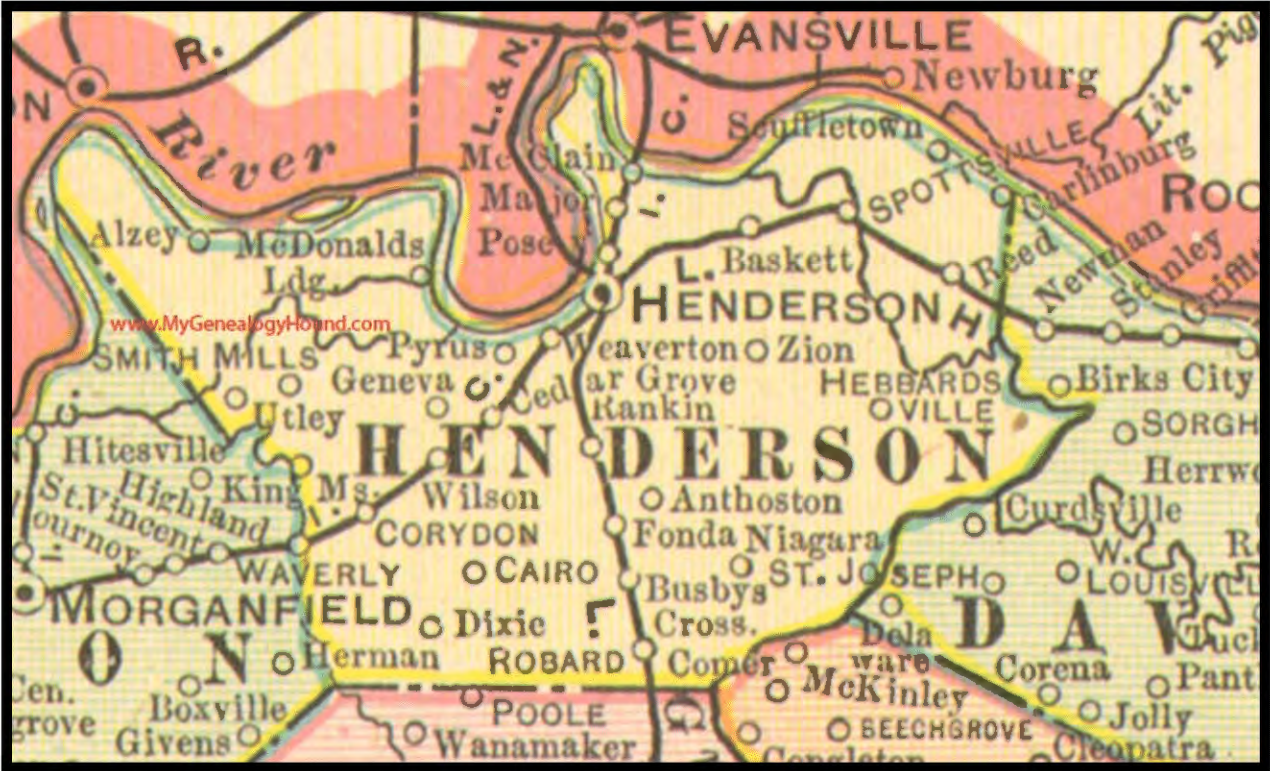
A 2020 report, primarily focused on residential usage, by the Solar Energy Industries Association found that Kentucky has 56.55 megawatts (mw) of solar installed, a dramatic increase from only 6.17mw in 2019. Despite the increase, the Commonwealth still ranked 48th in the nation in total solar capacity, dropping four spots year-over-year as other states outgrew Kentucky’s capacity. The report estimates that the industry directly supports 1,362 employees between 41 solar companies.^{viii} Growth, as measured by residential megawatt capacity, is expected to increase by nearly 12x over the next 5 years to a projected 676.17mw in total. Though this growth is laudable, the state is still expected to be in the bottom third nationwide in overall solar power generation.^{ix}

A second report provides a view beyond residential utilization. The Kentucky Energy and Environmental Cabinet publishes a bi-annual report on Kentucky’s energy production and consumption known as the Kentucky Energy Profile. The most recent profile, published in 2019, found that solar was last among all renewable energy sources. Measured in Btu, solar represented only 481 billion Btu of the 82.3 trillion Btu of energy generated from renewable sources. The report does however show that solar generation is the fastest growing with a 72.9% increase in gigawatt hours generated from the previous year. The report lists eight commercial solar projects with a total megawatt capacity of 28.9mw.^x

Neither report provides an exhaustive review of solar utilization in the state. Comprehensive data collection is needed but both provide valuable insights into the current status and trends in the commonwealth. At present, solar electricity generation represents a significant growth area with considerable increases in recent years and larger increases expected.

Economy of Henderson County

Henderson County, Kentucky has a population of 46,250 across 18,643 households. As of 2019, before the impacts of the coronavirus pandemic, 58.3% of the working age civilian population was in the workforce. The median household income in the county is \$48,926. In 2019, there were 16,450 jobs based in the county. The total payroll for jobs based in the county was \$705,573,000, meaning that the average wage for jobs based in the county equaled \$42,892.



Estimated Population (2020)	46,250
Number of Households	18,643
Median Household Income	\$48,926
Jobs Based in County	16,450
Total Payroll Based in County	\$705,573,000
Average Wage for Jobs Based in County	\$42,892
Working Age Population in Labor Force	58.3%

HENDERSON COUNTY



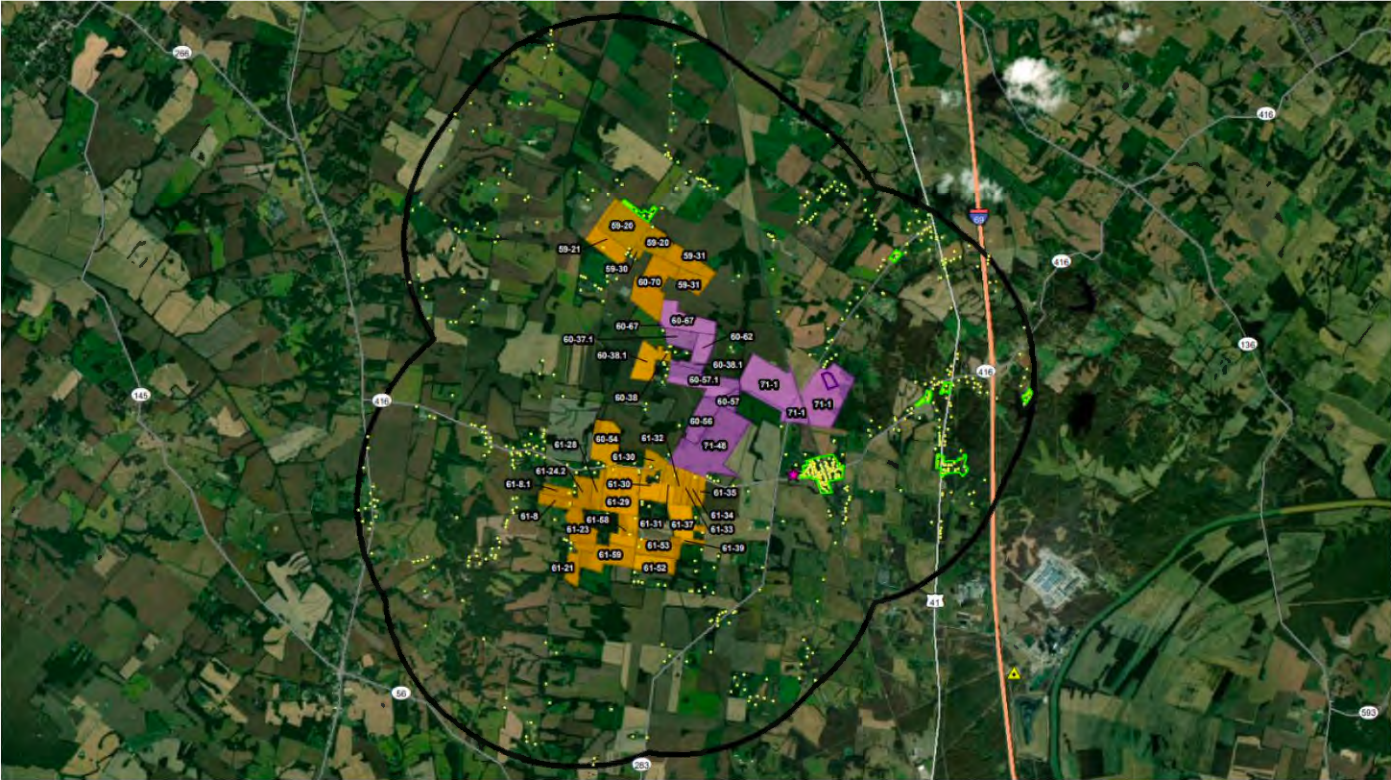
MEDIAN HOUSEHOLD INCOME



AVERAGE WAGE FOR JOBS
BASED IN COUNTY

The Site

The location of the project is in and around Robards, Kentucky, in Henderson County. The site is approximately 15 miles from Henderson, the county seat, and approximately 25 miles from Evansville, Indiana, the nearest Metropolitan Statistical Area. Robards is a home-rule city with a population just above 500. The site is near the Century Aluminum plant, which is the fourth largest private sector employer in the county. The proposed site is currently used for mixed agricultural purposes.



Direct Economic Impact

The Sebree II Solar Project expects a total investment of \$225 million including land acquisition, site preparation, and equipment installation. Construction on the project is expected to last approximately 18 months and will employ an estimated 200 individuals. The estimated pay for these individuals will range from \$23-\$62 an hour.

The Bureau of Labor Statistics provides no listing specific to Kentucky for “Solar Photovoltaic Installer” but the national average annual wage for the position is \$50,701. Good inferences about other relevant occupations for the construction phase can be gleaned from similar occupations measured by the state. Construction managers can be expected to earn over \$129,000, heavy equipment operators around \$80,000, installers around \$72,000, electricians around \$85,000, and fencers \$48,000. Taking the median wage provided by the company, over the course of construction, the total direct payroll expenditure would equal an average wage of \$82,800.

Based on this, we can expect a direct payroll impact of \$10 million during the construction phase, depending on the length of construction, which is estimated to be around 18 months.

Job Type	Projected Average Wage
Construction Manager	\$129,000
Electricians	\$85,000
Heavy Equipment Operator	\$80,000
Installers	\$72,000
Fencers	\$48,000
National Average for Solar Photovoltaic Installer	\$50,701
Average Wage (All Jobs) Sebree II Solar LLC Project	\$64,000

Secondary Economic Impacts

Using an IMPLAN model to create a specific economic development estimate for the region, we can determine that there will be positive spin off effects, in addition to the direct investment.^{vi} The model provides for the relevant project as “construction of new power and communications structure,” which provides a guideline for the initial investment. The construction investment accounts for 18 months of projected payroll providing approximately 200 jobs. The projected wages of these jobs equal a payroll of \$10 million.

The IMPLAN model used provides detailed information secondary impacts, using the regional economy to estimate the benefits provided by increased household spending. This includes increases in the retail and service sectors as a result of direct compensation and subsequent consumption increases. The model likewise provides for impacts on local businesses, including predictions on how local supply chains might be utilized to meet project needs as well as additional sales that might support the project. These factors combine to predict the secondary impacts resulting from the initial investment. Using the metrics for the specific region, we project a secondary impact of an additional 58 jobs equaling \$1,487,274 in additional payroll. This will bring the total payroll impact of the construction phase to \$11,487,274 supporting a total of 258 jobs.

CONSTRUCTION PHASE:

258 JOBS

**\$11,487,274
TOTAL PAYROLL**



Long Term Impacts

Once the project reaches the operational phase it will provide substantial primary and secondary long-term impacts. The proposed region does not currently have relevant comparable positions and provides no entries for “Electric Power Generation” because the proposed region does not currently have solar electricity jobs. The operational phase will provide for 2 permanent jobs with a projected average wage of \$119,000 per year. This projection aligns with similar projects in Maryland, North Carolina, and other similar sized projects in the broader region.

The positions are significant first because they will pay well above the regional income averages. The average household income in Henderson County is \$48,926. The permanent positions provided by the operational phase will be 42% above average household income respectively. Even more encouraging, the positions will be nearly double the average wage for a job in each county. The current average wage for jobs in Henderson County is \$48,926.ⁱⁱⁱ

This will yield a long-term benefit of \$160,000 per year in direct payroll, accounting for \$5,600,000 of payroll over 35 years.

Economic Impact of Sebree II Solar Operational Phase	
Average Wage for Henderson County Base Jobs	\$48,926
Average Wage for Permanent Nextera Positions	\$119,000
Project Payroll Impact (35 Year)	\$5,600,000



**AVERAGE WAGE
FOR HENDERSON
COUNTY JOB**

\$48,926



**AVERAGE WAGE
FOR NEXTERA
POSITION**

\$119,000

PROJECT PAYROLL IMPACT (35 YEAR)

\$8,300,00

Local Tax Revenues

Four entities in Kentucky are permitted to levy property taxes; the state, school districts, local governments, and special taxing districts.^{xiii} State property taxes are levied on real and tangible property and support the state's general fund. School districts are required by state law to levy property taxes at a minimum of 30 cents per \$100 of assessed value. Local governments set property taxes through county fiscal courts or city councils. Special taxing districts are the creation of local governments and might include fire districts, ambulance services, library services, soil conservation services, and others, as determined on the local level.

Henderson County levies property taxes on real estate and tangible property (tables below). School taxes in the county are considerably higher than the combined county taxes at 64 cents per \$100 valuation. Total county wide taxes, by contrast, amount to 32.1690 cents per \$100 valuation for real estate and 43.0358 cents per \$100 valuation for tangible property. This includes the jurisdiction of the Fiscal Court, Health services, Library, and Extension Services. In total, the combined property tax for all services plus schools amount to around 1 percent of the overall value.

Property tax estimates provided by NextEra Energy Resources, LLC estimate an average of just over \$390,000 per year paid in property taxes. In total, the project will yield \$15.5 million in property taxes over the next 35 years, with approximately half of that amount supporting schools.

Similar projects have yielded dramatic increases in property tax values in the counties where solar installations occurred. A 2020 study by the North Carolina Sustainable Energy Association found increases in value ranging from 63% to over 5000%. Two North Carolina counties in the study were home to facilities of 200mw or larger with property tax revenues in the two increasing by an average of 1,486%. All 70 counties studied experienced a positive increase.^{xiv}

Prior Usage and Net Impact

The specific history for the plots of land being used are unknown, though all plots had either residential or agricultural prior use. General yields for agriculture land in Henderson County, however, are known. Henderson County, as of 2017, has 180,644 acres dedicated to farmland. Of that land, 126,792 acres (91%) is dedicated to cropland and pasture. The land is divided between 456 farms with an average size of 394 acres. The number of acres dedicated to farmland increased in Henderson County four percent between 2012 and 2017 though the total number of farms decreased two percent over that time period. Of those farms, 354 (87%) had a value of sales under \$100,000.

To calculate how profitable the land is, on average, we can look at collected total production expenditures compared with the market value of agricultural products sold in Henderson. Total production expenditures include the total amount of hired labor, feed purchased, livestock and poultry purchased, petroleum products and utilities, seeds, plants, vines and trees, as well as fertilizer, lime, soils conditioners, and other chemicals purchased. In Henderson County, the total expenditures for these inputs were \$69,057,000 in 2017. This equals an average cost per acre of farmland of \$382.28.

Calculating the market value of products sold combines all crops, including nursery and greenhouse products as well as grains, tobacco, and hay, and livestock and poultry, which includes poultry, eggs, milk and dairy, cattle, and hogs and pigs. The total value of agricultural products sold in Henderson County in 2017 was \$97,697,000. This equals an average output per acre of \$540.83.

Combining these calculations equals an average net profit per acre in Henderson County of \$158.55. Though it should again be noted, these numbers are influenced by the 104 (23%) of farms that have a value of sales above \$100,000.

It is equally important to look at the number of jobs per acre that each county is responsible for. In 2017, 107 farms hired farm labor for a total of 327 laborers. Of those farms, 88 (82%) employed four or fewer laborers. According to recently available USDA Farm Labor rates (April 2019) the average hourly wage for all hired farm workers, including field, livestock, and combined work, for the Appalachian II sector, which includes Kentucky, is \$13.30 per hour.

Conclusion: Measured Impact

Impact	Economic Value
Total Projected Investment	\$225,000,000
Direct Construction Phase Payroll Investment	\$10,000,000
Secondary Construction Phase Payroll Impact (Indirect & Induced)	\$1,487,274
Total Construction Phase Payroll Impact	\$11,487,274
Direct Construction Phase Employment (Jobs)	200
Secondary Construction Phase Employment Impact (Jobs)	58
Direct Operational Phase Payroll Investment (35 Year)	\$8,300,000
Lifetime Property Tax Revenue (35 Year)	\$15,500,000
Total Measured Investment	\$35,287,274

Endnotes

ⁱ ReportLinker. “The United States Solar Energy Market Is Expected to Grow at a CAGR of 17.32% during 2020-2025.” GlobeNewswire News Room, "GlobeNewswire", 31 Aug. 2020, www.globenewswire.com/news-release/2020/08/31/2085905/0/en/The-United-States-solar-energy-market-is-expected-to-grow-at-a-CAGR-of-17-32-during-2020-2025.html.

ⁱⁱ Yen, Terry. “U.S. Energy Information Administration - EIA - Independent Statistics and Analysis.” EIA's Annual Energy Outlook 2019 Projects Growing Oil, Natural Gas, Renewables Production - Today in Energy - U.S. Energy Information Administration (EIA), 24 Jan. 2019, www.eia.gov/todayinenergy/detail.php?id=38112.

ⁱⁱⁱ “State Solar Spotlight: Kentucky.” SEIA, Solar Energy Industries Association, 15 Dec. 2020, www.seia.org/sites/default/files/2020-12/Kentucky.pdf.

^{iv} “GM Corporate Newsroom - United States - Company.” Media.gm.com, General Motors, media.gm.com/media/us/en/gm/company_info/facilities/assembly/bowlinggreen.html.

^v “Workforce Development.” Henderson Economic Development, hendersonkyedc.com/workforce-development.

^{vi} *ibid*

^{vii} “Solar Industry Sets Records in 2020, On Track to Quadruple by 2030.” SEIA, 16 Mar. 2021, www.seia.org/news/solar-industry-sets-records-2020-track-quadruple-2030.

^{viii} “State Solar Spotlight: Kentucky.” SEIA, Solar Energy Industries Association, 15 Dec. 2020, www.seia.org/sites/default/files/2020-12/Kentucky.pdf.

^{ix} *ibid*

^x Kentucky Energy Profile. Kentucky Energy and Environment Cabinet -- Office of Energy Policy, 2019, eec.ky.gov/Energy/KY%20Energy%20Profile/Kentucky%20Energy%20Profile%202019.pdf#page55.

^{xi} IMPLAN modeling provided by Dr. Paul Coomes, Professor Emeritus at the University of Louisville and Senior Fellow for Pegasus Institute

^{xii} US Census Bureau 2019

^{xiii} Understanding Kentucky Property Tax. Kentucky Department of Revenue Office of Property Valuation, s3.amazonaws.com/funded.edbuild.org/public/citations/653_Understanding-KYPropertyTax.pdf.

^{xiv} Brookshire, Daniel, et al. NC Sustainable Energy Association, 2020, Increased North Carolina County Tax Revenue from Solar Development -- 2020 Update.