Speedway Solar, LLC – Alternatives Evaluation Study

September 20, 2021

Prepared for:

Speedway Solar, LLC

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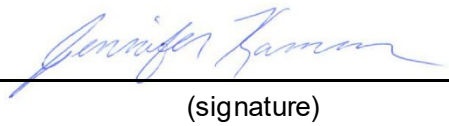
Reviewed by 
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Executive Summary

Speedway Solar, LLC ("Speedway" or "Applicant") is seeking approvals and authorizations required to construct, install, operate and maintain a 199 Megawatt (MW) Alternating Current (AC) solar energy generating facility, Speedway Solar (Project).

In addition, Speedway is seeking federal financing from the Unites States Department of Agriculture Rural Utilities Service (USDA-RUS) for the Project and, at the request of RUS, is preparing this Alternatives Evaluation Study.

Speedway's proposed generation facility would be a wholesale merchant plant. As such, alternatives presented for generation projects within 1970-O Exhibit B are not considered applicable to this Alternatives Evaluation Study. It is the opinion of the Applicant that the Proposed Action and the No Action Alternative are the only valid alternatives for evaluation.

The proposed Project would be located on approximately 1,925 acres of primarily agricultural land in Shelby County, Indiana. The major components of the proposed project include the photovoltaic (PV) panels, power conversion units (PCU), collection lines, a collector substation and a short 345 kV generator tie line.

1.0 INTRODUCTION

On November 29, 2018, Speedway Solar, LLC ("Speedway" or "Applicant") filed a Special Exemption application to construct a new solar photovoltaic (PV) electric generation facility with Shelby County under their Unified Development Ordinance (UDO) for the proposed Speedway Solar project (Project). Per Shelby County's Commercial Solar Energy System (CSES) ordinance, the County regulates the permitting of solar energy systems, preserves and protects public health and safety, allows for the orderly development of land, and protects property values. The applicant filed a petition with the Indiana Utility Regulatory Commission (IURC) for the Project on April 26, 2019 that requested the IURC decline to exercise its jurisdiction pursuant to Ind. Code 8-1-5.5-5. The IURC declined to exercise jurisdiction over the Speedway project in its Order dated September 18, 2019. Application materials provided by Speedway to the IURC can be found at https://iurc.portal.in.gov/docketed-case-details/?id=9161d05e-4f68-e911-826f-1458d04e1b18.

Speedway's proposed generation facility would be a wholesale merchant plant and would have a generating capacity of up to 199 MW alternating current (AC). The proposed Project would be located on approximately 1,925 acres of primarily agricultural land in Shelby County, Indiana (Figure 1 – Appendix A). The major components of the proposed Project include the PV panels, power conversion units (PCU), collection lines, a collector substation, and a short 345 kV generator tie line.

Speedway is seeking financing from the Unites States Department of Agriculture Rural Utilities Service (USDA-RUS) for the Project. This Alternative Evaluation Study is being prepared at the request of the United States Department of Agriculture Rural Utilities Service.

1.1 PROFILE OF THE APPLICANT

Speedway Solar, LLC (Applicant), will be the direct owner of the Project. The Project is being developed by Ranger Power LLC ("Ranger Power") with investment capital from D. E. Shaw Renewable Investments ("DESRI").

1.2 PROFILE OF WABASH VALLEY POWER ALLIANCE

Wabash Valley Power Alliance (Wabash Valley) signed a Power Purchase Agreement with Speedway Solar, LLC on November 20, 2018 to purchase the full power generated by the Project. Wabash Valley is a generation and transmission cooperative based in Indianapolis, Indiana, that provides wholesale electricity to twenty-three Members: nineteen in the northern half of Indiana, three in Illinois and one in Missouri. In turn, these distribution cooperatives supply electricity to more than 313,000 retail members. Just over 75 percent of the retail customer base resides in Indiana, with approximately 16 percent in Illinois, and 9 percent in Missouri.

Wabash Valley was incorporated in December 12, 1963, pursuant to the Indiana Not-For-Profit Corporation Act. The Public Service Commission of Indiana (now the Indiana Utility Regulatory Commission (IURC)) granted the company a Certificate of Convenience and Necessity on January 13, 1978, providing authorization to supply power to their member distribution cooperatives. Except as allowed by Wabash Valley's customer owned generation policy, the company supplies all their members' power requirements from owned generating resources or through purchases from other electric utilities or energy marketing companies. Each Wabash Valley member serves a variety of residential, commercial and industrial loads. The majority of the load is residential in nature.

2.0 PROJECT PURPOSE AND NEED

2.1 APPLICANT'S PURPOSE AND NEED

Ranger Power is a developer of large utility-scale solar farms and is responsible for securing land, transmission access, and permitting projects. Ranger Power seeks solar development opportunities throughout the Midwestern states.

Major Indiana utilities, such as Northern Indiana Public Service Company (NIPSCO) and Indianapolis Power and Light have set goals that remove coal from their fuel mix in favor of renewables within the next two decades. NIPSCO, within its 2018 Integrated Resource Plan, proposes that 65% of its capacity will be served by renewables by 2028. These goals are further driven by the proposed coal fired power plant decommissioning that is scheduled in Indiana. Most notable is the Merom Generating Station, a 1,080-MW coal-fired power plant, which is expected to retire by 2023. Solar power is one of the lowest cost forms of new energy generation for the region, with low operating costs and no fuel costs.

Speedway initiated a preliminary site review to identify potential locations for development of a solar energy facility. The first phase of assessment evaluated electric transmission infrastructure to ensure it is sufficient to connect a project to the power grid. Existing substations and transmission lines are preferred because the cost to connect a project to the grid increases with the distance over which project-specific transmission must be built. Speedway searched for injection points close to major load centers and where the existing electrical infrastructure is robust to minimize the interconnection facility costs and network upgrades required for the new generating facility. In addition, Speedway prioritized projects where open land was available adjacent to the point of interconnection, to minimize the length of high voltage transmission generation tie lines and the number of structures that support them. The Project will not require any significant network upgrades to the transmission system to inject its power. There is one minor upgrade required by the Project which involves rebuilding a short span of the Duke-owned 69kV Van Buren-Morristown line. The Phase 1 and 2 results of the MISO System Impact Study for the DPP 2017 August Central study cycle were released on December 14th, 2018 and March 27th, 2019, respectively. The Project substation will be located adjacent to the existing Duke-owned Gwynneville 345kV substation and has executed a Generator Interconnection Agreement with Duke dated April 24, 2020. Finally, Speedway sought project sites with receptive potential host landowners and values working with communities that welcome solar projects and responsible economic development opportunities.

The sole purpose of the Applicant's business model is to replace load demand by local utilities that is being created by ongoing coal-fired power plant decommissioning activities with solar generation.

2.2 WABASH VALLEY POWER ALLIANCE

As stated above, Wabash Valley signed a Power Purchase Agreement with Speedway Solar, LLC on November 20, 2018 to purchase the power generated by the Project. Wabash Valley's Consolidated Financial Statements as of and for the Years ended December 31, 2020 and 2019 and Independent Auditors' Report state that Wabash Valley has several long-term power supply agreements that obligate the company to purchase power at amounts specified in the agreements regardless of whether it takes delivery of the power. These power supply agreements expire on or before December 31, 2035, and the total amount of these future purchase obligations is approximately $1,382.9 million as of December 31, 2020. Future payments associated with the financing of solar facilities are $6,718 million.

Load Trends

Over the 2018 to 2036 time frame, the Wabash Valley's 2017 Power Requirements Study (PRS) forecasts an average load growth of 0.9% per year for energy and summer coincident peak demand. Table 1

summarizes annual energy sales and summer coincident peak net of Pass-Through Loads. Pass-Through Loads customers are large power customers with non-conforming load that require separate forecasts.

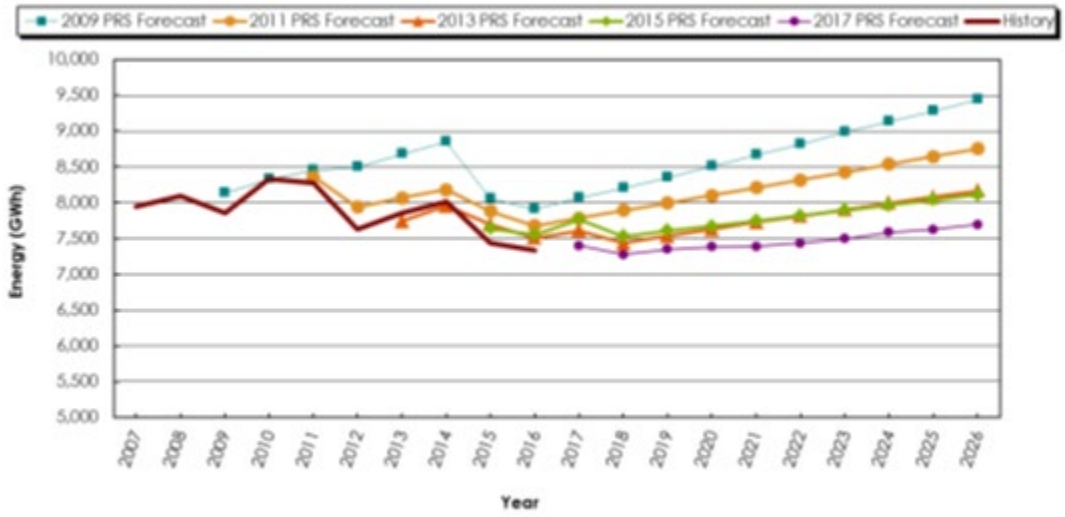
Table 1. Base Case Load Forecast Energy Sales and Summer Coincident Peak Forecast[1]

Year	Energy Sales (GWh)	% Change	Summer Coincident Peak (MW)	% Change
2017	7,401		1,475	
2018	7,277	-1.7%	1,472	-0.2%
2019	7,347	1.0%	1,476	0.3%
2020	7,382	0.5%	1,482	0.4%
2021	7,391	0.1%	1,489	0.5%
2022	7,435	0.6%	1,499	0.7%
2023	7,500	0.9%	1,512	0.9%
2024	7,590	1.2%	1,525	0.9%
2025	7,628	0.5%	1,537	0.8%
2026	7,696	0.9%	1,551	0.9%
2027	7,782	1.1%	1,568	1.1%
2028	7,895	1.5%	1,586	1.1%
2029	7,964	0.9%	1,605	1.2%
2030	8,034	0.9%	1,620	0.9%
2031	8,105	0.9%	1,635	0.9%
2032	8,205	1.2%	1,652	1.0%
2033	8,260	0.7%	1,668	1.0%
2034	8,336	0.9%	1,684	1.0%
2035	8,422	1.0%	1,702	1.1%
2036	8,531	1.3%	1,719	1.0%
18-36		0.9%		0.9%

[1]Net of Pass-Through Loads

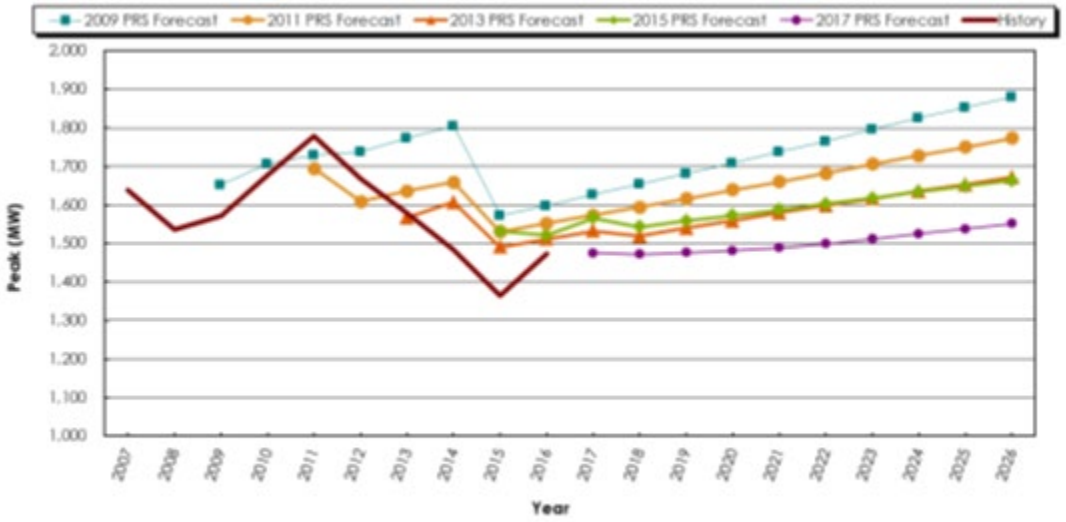
Graph 1 and Graph 2 compare the current and prior-year forecasts. The exit of three Members and the economic recession show as an impact on the load forecasts. The 2009 PRS Forecast, completed during the economic downturn, was optimistic assuming a return to business as usual. The 2011, 2013, and 2015 PRS Forecasts were each more conservative but display an over-forecasting tendency by models used at that time. The 2017 PRS Forecast which was developed with new modeling appears to align with historic data.

Graph 1. Wabash Valley Energy Forecast (Net of Pass-Through Loads and Non-Member Sales)



Note: One Member exited in 2012. Two Members exited in 2015.

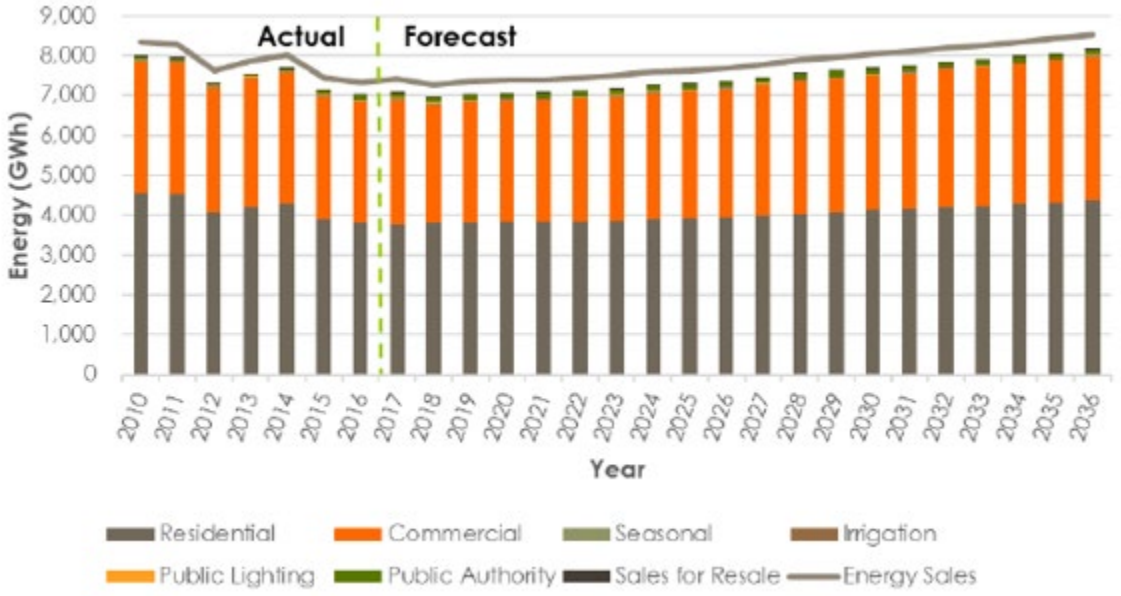
Graph 2. Wabash Valley Peak Forecast (Net of Pass-Through Loads and Non-Member Sales)



Note: One Member exited in 2012. Two Members exited in 2015.

As shown in Graph 3, through 2036, system energy requirements are expected to average 0.9% annual growth. From 2018 to 2036, residential sales increase by 0.8% annually and commercial sales increase by 1.1% annually. The other revenue classes are remain flat.

Graph 3. Wabash Valley Base Case Energy Forecast (GWh) (Net of Pass-Through Loads)



Existing Capacity

Wabash Valley owns several electric generating units within the MISO and PJM footprint. Table 2 summarizes Wabash Valley's generation ownership.

TABLE 2. Generation Ownership

Resource (Wabash Valley Share)	MW
Gibson Unit 5	156
Prairie State	83
Holland Energy	313.5
Wabash River Highland	160
Vermillion	240
Lawrence	86
Landfill Gas	53.6
Solar	1.6
Total Owned Generation	**1,093.7**

Wabash Valley's resource portfolio shows that the company needs additional capacity to meet projected demand requirements starting in 2018. Once power supply requirements are determined, Wabash Valley evaluates several types of power supply alternatives, including long-term and short-term power supply

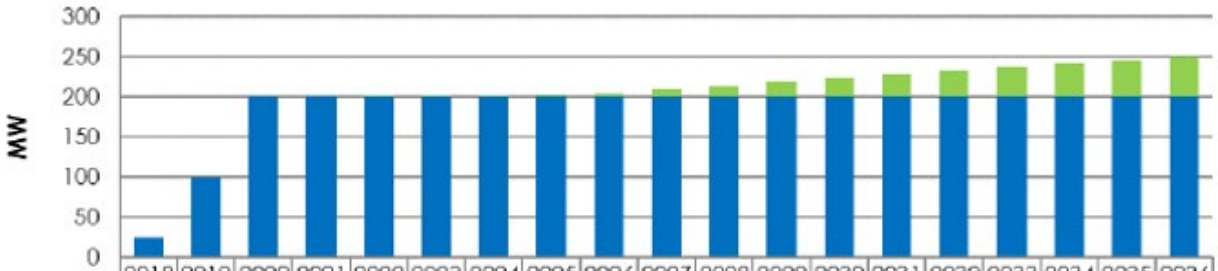
agreements, regional transmission organizations capacity auctions, new generating capacity and wholesale energy market purchases. Wabash Valley evaluates each of these resources using the company's production cost and financial analysis models to determine which supplies, or combinations of supplies, meet expected requirements at the least cost. Additionally, Wabash Valley analyzes the resources with stochastic risk modeling to evaluate the impact of uncertainty with the proposed resource. Wabash Valley continues to examine potential new peaking, intermediate, baseload and renewable generating resources (both independently and jointly, both existing and new), in anticipation of capacity needs in 2018 and beyond. Estimated costs for new capacity are compared to expected long-range wholesale electric market prices.

Owned generation includes a 25 percent undivided ownership in Gibson Unit 5 which Wabash Valley jointly owns with Duke Energy Indiana (Duke Indiana) and Indiana Municipal Power Agency (IMPA). Gibson Unit 5, located in southwestern Indiana, is a 625 MW coal-fired generating facility operated by Duke Indiana. The Gibson Unit 5 is scheduled for retirement in 2034.

Renewable Generation Summary

Graph 4 below shows planned renewable addition alternatives for 2018 through 2036 based on the 2017 IRP with wind and energy efficincy being the primary alternatives.

Graph 4. Cumulative Reneable and EE/DR Planned Additions (ICAP)



	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
EE	0	0	0	0	1	1	2	3	4	9	14	19	24	29	33	38	42	46	50
Wind	25	100	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200
LFG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Solar	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Battery	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Need Summary

Wabash Valley considers several factors when selecting new power supply resources. Wabash Valley considers the technical viability of a proposed project including an analysis of the long-term reliability of the resource, assessing fuel supply, environmental compliance, and transmission interconnection constraints. The company also evaluates the creditworthiness of a proposal's counter-party. Additional factors that Wabash Valley considers include operational flexibility, resource deliverability and location, impact on diversification of the company's power portfolio, overall price risk exposure, equity requirements, and contract term. The goal of Wabash Valley's IRP is to identify a mix of new resources that, when considered with their existing portfolio, provides the best combination of expected costs and associated risks and uncertainties for Wabash Valley and its Members.

Table 3 summarizes Wabash Valley's existing generating resources and anticipated capacity needs through 2036. Power supply requirements include expected Member demand, losses, contractual firm sales, and estimated reserves. Existing owned & contracted power resources decline over the plan horizon due to the expiration of existing purchase power agreements at their respective current delivery end date and due to the retirement of LFG generating units. The last four columns of Table 3 present the optimal portfolio of supply-side and demand-side resources that meets Wabash Valley's future capacity needs under this base scenario.

Table 3. Power Supply Expansion Plan

Year	Power Supply Requirements MW (1)	Existing Owned & Contracted Power Resources (MW) (2)	Planned Additions (MW) (2)	Capacity Needs (MW) (2)	Capacity Market (2)	CC (NG) (2)	CT (NG) (2)	EE (2)
2018	1,843	1,512	3	328	337	0	0	0
2019	1,748	1,521	10	217	218	0	0	0
2020	1,900	1,538	20	342	354	0	0	0
2021	1,762	1,502	20	240	48	0	192	0
2022	1,773	1,490	20	263	70	0	192	1
2023	1,786	1,491	20	275	0	96	192	1
2024	1,801	1,492	20	289	0	96	192	2
2025	1,814	1,469	20	325	34	96	192	3
2026	1,829	1,438	20	371	0	192	192	4
2027	1,847	1,439	20	388	0	192	192	9
2028	1,832	1,433	20	379	0	192	192	14
2029	1,852	1,420	20	412	10	192	192	19
2030	1,868	1,413	20	435	0	192	240	24
2031	1,885	1,333	20	532	71	192	240	29
2032	1,902	1,201	20	681	0	384	288	33
2033	1,920	1,162	20	738	29	384	288	38
2034	1,950	993	20	937	0	576	336	42
2035	1,969	993	20	956	0	576	336	46
2036	1,988	991	20	977	16	576	336	50

As depicted above, Wabash Valley's resource portfolio shows that the company needs additional capacity to meet projected demand requirements. From 2018 to 2020, the base resource plan recommended that Wabash Valley purchase incremental capacity from the market. Past 2020, the base resource plan recommends that Wabash Valley add a total of 576 MW of baseload natural gas combined-cycle (CC) resources and 336 MW of peaking combustion turbine (CT) resources along with some incremental market capacity purchases in certain years. Additionally, the base resource plan proposes Wabash Valley add an additional 50 MW of energy efficiency programs. Although their optimization model did not choose their demand response programs during the 20-year plan horizon, Wabash Valley may choose to continue to build demand response resources in the near term to enhance Member and end retail customer value.

Based on past experience and proposed carbon emissions regulation, the company identified four alternate expansion plans that could have a significant impact on production costs. The four alternate expansion plans are:

- High Economic Growth
- Low Economic Growth
- Carbon Emissions Regulation with Coal
- Renewable Cost Improvements

For purposes of the 2017 IRP base scenario, Wabash Valley assumed that the cost of building renewable resources escalates by the estimated inflation rate of 2.5% annually over the forecast horizon. Recent history has shown that the cost of building renewable resources is not necessarily subject to the same escalation as fossil fuel generating options. Therefore, in this scenario, Wabash Valley determined the cost (capital and fixed O&M) at which wind, solar and battery resources begin to compete with natural gas resources as energy and capacity options. Wabash Valley made no other adjustments to operating parameters, such as capacity factor improvements, UCAP value or tax benefits. The primary reason the costs had to drop so significantly to be competitive is due to these resources' low capacity factors and their low contribution to unforced capacity (UCAP) value. These renewable technologies were selected when their costs (in 2017 dollars) reached the following prices shown in Table 4.

Table 4. Renewable Resource Costs

Technology	Capital Cost ($/kW)	% Decrease from Base	Fixed Cost ($/kW-year)	% Decrease from Base
Wind	$1,300	-33%	$25	-43%
Solar	$1,000	-63%	$9	-65%
Battery	$700	-76%	$10	-77%

The estimated expansion plan under the renewable cost improvements scenario is shown in Table 5. Wabash Valley has the same overall needs as the base case from 2018 to 2020. From 2021 to 2036, the cost of renewable resources decreases making them more competitive with natural gas resources. The renewable cost improvements expansion plan recommends that Wabash Valley add a total of 384 MW of baseload CC resources and 480 MW of peaking CT resources along with 50 MW of energy efficiency programs, 45 MW of wind, 10 MW of solar, 9 MW of battery and incremental capacity market purchases in certain years. Compared to the company's base case, 48 MW of natural gas resources is displaced by wind, solar and battery resources as stated in UCAP values. In installed values, 450 MW of wind, 20 MW of solar and 9 MW of battery displace 50 MW of natural gas generation.

Table 5. Power Supply Expansion Plan, Renewable Cost Improvements

Year	Power Supply Req. MW (1)	Existing Owned & Contracted Power Resources (MW) (2)	Planned Additions (MW) (2)	Capacity Needs (MW) (2)	Capacity Market (2)	CC (NG) (2)	CT (NG) (2)	EE (2)	Wind (2)	Solar (2)	Battery (2)
2018	1,843	1,512	3	328	337	0	0	0	0	0	0
2019	1,748	1,521	10	217	218	0	0	0	0	0	0
2020	1,900	1,538	20	342	354	0	0	0	0	0	0
2021	1,762	1,502	20	240	24	0	192	0	9	10	5
2022	1,773	1,490	20	263	46	0	192	1	9	10	5
2023	1,786	1,491	20	275	0	0	240	2	19	10	5
2024	1,801	1,492	20	289	12	0	240	3	19	10	5
2025	1,814	1,469	20	325	47	0	240	4	19	10	5
2026	1,829	1,438	20	371	0	96	240	5	29	10	5
2027	1,847	1,439	20	388	0	96	240	10	29	10	5
2028	1,832	1,433	20	379	0	96	240	15	38	10	9
2029	1,852	1,420	20	412	0	96	240	20	38	10	9
2030	1,868	1,413	20	435	0	96	288	25	45	10	9
2031	1,885	1,333	20	532	54	96	288	30	45	10	9
2032	1,902	1,201	20	681	0	288	336	34	45	10	9
2033	1,920	1,162	20	738	13	288	336	38	45	10	9
2034	1,950	993	20	937	15	384	432	42	45	10	9
2035	1,969	993	20	956	30	384	432	46	45	10	9
2036	1,988	991	20	977	0	384	480	50	45	10	9

(1) Power resource requirements include PJM and MISO reserves.
(2) Resources are reported at their unforced capacity (UCAP) value.

3.0 PROJECT DESCRIPTION

Speedway has sited solar photovoltaic generation assets on approximately 1,925 acres of land in Shelby County, Indiana to optimize solar and land resources in the area while minimizing environmental impacts to the extent practicable. The Project has been designed to comply with local zoning requirements and has received Special Exception approval from the Shelby County Board of Zoning Appeals on March 12, 2019.

Speedway's proposed generation facility would be a wholesale merchant plant. As such, alternatives presented for generation projects within RD Instruction 1970-O Exhibit B are not considered applicable to this Alternatives Evaluation Study. It is the opinion of the Applicant that the Proposed Action and the No Action Alternative are the only valid alternatives for evaluation.

3.1 PROPOSED ACTION

A preliminary site plan for the Project is provided with this document (Figure 2 – Appendix A). The proposed action for Speedway consists of the following:

Solar Panels

The Project area is designed for a generating capacity of 199 MW AC.

The PV module selected for the Speedway Project will have approximately 72-cells and will be a plate glass module with an aluminum frame with approximate dimensions of one meter by two meters. The PV modules will be connected in series for up to 1500V operation and will be mounted on a tracker system in-line in landscape orientation on racking which tracks east to west to follow the sun throughout the day.

Solar Panel Foundations

The solar panels will be mounted on a steel racking frame that is positioned three to seven feet from the finished ground with a +\- 60-degree range of motion (single axis tracking) driven by electric motors. The single axis tracking system is anticipated to be mounted on support posts driven or screwed into the ground with steel piles or helical piles. The horizontal tracker would be in its highest position during the morning and evening hours when the trackers are tilted at their maximum angle and would be a maximum of 12 feet above the ground surface. The bottom edge of the modules will be a minimum of two foot above grade at maximum tilt, and up to four feet above grade when tilted flat at mid-day.

In summary:

- Approximate height of tracker rotation shaft – 3 to 7 feet.
- Minimum tracker height (module edge to ground at maximum tilt) – 2 to 4 feet.
- Maximum tracker height (module edge to ground at maximum tilt) – 12 feet.
- Range of tracking angle - +/-60 degrees.

The variability in height is due to the panel configuration on the racking system. Some systems are designed with panels in a single portrait configuration with a single row of panels arranged in a portrait configuration relative to a viewer east or west of the row. The long axis of the panels would be perpendicular to the axis of the tracking system. The panels would be approximately four feet above grade when tilted flat at mid-day in this design. A racking system with a two-portrait design may also be selected. This system holds two panels in portrait configuration with an axis that is perpendicular to the tracker. The two-portrait configuration requires taller piles and results in a taller overall system, but also provides for wider aisles. Racking system design will be selected prior to construction.

In the case of extreme weather conditions, Speedway has reviewed the closest weather station's climate history, as verified by the Solar America Board for Codes and Standards. Potential tracking technologies

will be assessed in the context of other project attributes, such as resource forecast and expected operating profile. The final selection could assume an operating scenario where equipment can operate in the most extreme heat and cold, or potentially pause tracking operation until these conditions pass.

The complete tracker system will be arranged into rows of individual trackers with an estimated length of 250 feet by seven feet (when panels are horizontal) with gaps placed between sections or groups of sections to allow for maintenance personnel to access the whole site. The piles will run north to south along the row to support each section of the steel structure and will likely include an integrated cable management solution in order to support the insulated copper DC string cabling which interconnects each of the PV modules.

These solar trackers are currently expected to be self-powered, however some tracker systems available require external power to be bought from an auxiliary power source.

Access Roads

The Project plans to utilize existing public roadways to access the site. The Project will have a network of internal access roads. Construction matting may be used to a limited extent during construction in areas with soil strength limitations for construction. In these areas, the existing soil surface will remain intact, planted in perennial vegetation and maintained for operation and maintenance once construction is completed.

If areas are identified as having soil strength limitations to support construction vehicles where vehicle traffic will be more frequent (i.e. site approaches), aggregate materials may be used. In these areas, topsoil will be moved and stored for use during reclamation. Geotextile matting will be installed prior to placement of aggregate to prevent mixing with native subsoil. The aggregate would be maintained for the life of the Project.

Underground Collector Circuits

The collector circuits are planned as an underground system with direct buried cables or cables installed in direct buried ducts. The collector circuit voltage will be 34.5kV.

The collection system will typically be buried at a depth of 36 inches to the top of the cables. The trench for the cable will be one foot wide. Where multiple cables are installed parallel to each other, the cable separation will be two feet apart, therefore the width of the trench will vary depending on the number of circuits within the trench.

Project Collector Substation

The Project will include a collector substation with a 345/34.5kV main transformer. An estimated footprint of 280 feet by 195 feet has been allocated at this stage and will generally include items below within the substation:

- 34.5kV switchgear or open-air switches;
- 34.5kV bus and supporting structures;
- 34.5kV metering and instrumentation;
- Station service transformer;
- Main power transformer 34.5kV to 345kV, may also be split into two smaller transformers;
- 345kV circuit breaker;
- 345kV bus and supporting structures;
- 345kV metering and instrumentation;
- 345kV dead-end structure and outgoing transmission line to Duke substation;
- Protection and control building;
- Internal access roads;
- Security fence with vehicle gate, service gate, barbed wire. Fence to be grounded per NESC requirements;

- Buried power cables, control cables and bare copper grounding grid;
- Lightning protection masts (as required);
- Yard lighting to be used during maintenance and or during emergency; and
- Any required power factor control equipment such as a STATCOM or capacitor bank.

Transmission Interconnection

The Project will be interconnected to the transmission grid through an existing substation owned by Duke. The Duke-owned Gwynneville 345kV substation is located to the south of the proposed Project substation and will require a short 345kV overhead line between the two stations.

Project Lifespan

The design life for the Project is approximately 35 years.

Decommissioning

At the end of the Project's useful life, the Project would cease operation. At that time, the facilities would be decommissioned and dismantled and the site restored to its preconstruction condition or returned to farm production. Decommissioning activities will require approximately 12 months to complete. In general, decommissioning activities will include:

1. Dismantling and removal of all above ground equipment (solar panels, racking, transformers, Project Substation, etc.);
2. Excavation and removal of all above ground cabling;
3. Removal of foundations (piles, piers and posts);
4. Underground cables will be removed based on agreed upon conditions reached with the landowner and codified in the lease; and
5. Scarification of compacted areas within and contiguous to the solar facility (including but not limited to internal and external access roadways).

For the gen-tie line, telecommunication lines, and collector substation dismantling would proceed according to four general stages: (1) dismantling and demolishing above ground structures; (2) removal of concrete foundations; (3) excavation and removal of soils and broken concrete from the site; and (4) surface contouring to return the disturbed areas to near-original conditions.

If the facility is to be returned to a condition suitable for agricultural production upon the completion of its decommissioning, the land will be tilled to break up the vegetation cover that has been established for the Project. The vegetation layer within the Project area will consist of a mixture of areas where prairie plantings and non-native vegetation covers have been maintained. The use of deeply rooted native prairie vegetation and the "resting" of soil either under this or a non-native cover has been well documented to provide benefits and improvement to soil health.

3.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, the Applicant would not interconnect at the Gwynneville 345kV substation and would not build the Speedway Project. It is assumed, for the purposed of impact analysis therefore, that the environmental impacts associated with the construction and operation of the proposed Project would not occur.

3.3 ALTERNATIVES CONSIDERED BUT DISMISSED FROM DETAILED ANALYSIS

Alternative Project Locations

The current Project location was selected following a rigorous analysis of three key factors: the existing transmission grid in Indiana, the suitability of available land, and the receptiveness of the landowners. Details of the analysis are provided in the Project's Site Selection Study (Stantec 2021). Further, the Shelby County location was selected based on the results of environmental and engineering studies conducted during the local Special Exemption Permit process. As such, only the current Project location was carried forward for detailed analysis, and other off-site locations were not evaluated further.

Non-Renewable Fuel Sources

Wabash Valley's current energy portfolio includes a combination of renewable and non-renewable energy sources (see Table 2 above). As described in Section 2.2, the Gibson Unit 5 coal-fired facility is planned for retirement in 2034. It is anticipated that energy capacity will be replaced over time with additional renewable generation resources, including solar development, which is a key component to meet Wabash Valley's goal for increased renewable energy production. However, this does not preclude Wabash Valley from continuing to pursue other sources of energy production to fill out their existing portfolio. Therefore, although other energy sources continue to be evaluated and utilized by Wabash Valley as part of their overall energy portfolio, these other sources of energy were not considered as alternatives to development of the Project.

Other Renewable Energy Sources

Wabash Valley owns or purchases renewable energy from a variety of sources and wind energy alternatives could meet Wabash Valley's renewable energy goals. However, solar energy provides the additional advantage of reaching its peak electricity generation during daytime hours when energy demand also peaks. As described in Section 2.2, Wabash Valley signed a Power Purchase Agreement with the Applicant on November 20, 2018 to purchase the power generated by the Project. This PPA is exclusively for solar energy generation with the Project. As a result, other renewable energy resources were not considered as an alternative to development of the Project.

Other PPAs

Wabash Valley selected the Project as the best option to meet its capacity needs and renewable energy goals through a PPA. This PPA is exclusively for solar energy generation with the Project. As a result, other renewable energy resources were not considered as an alternative to development of the Project.

4.0 REQUIRED PERMITS AND APPROVALS

Table 6 summarizes the permits and approval types that are required at the federal, state and local level for the Project. The necessary permits and approvals will be obtained before commencing construction activities.

Table 6. Required Permits and Approvals

Type	Authority or Lead Agency	Regulatory Driver	Permit/ Approval Required
Federal Permits			
Permit	US Army Corps of Engineers (USACE) - Louisville District	Section 404 of Clean Water Act (CWA); Section 10 River and Harbors Act	TBD
Consultation	US Department of Agriculture	Farmland Protection Policy Act (FPPA)	TBD
Consultation	US Fish and Wildlife Service (USFWS)	Due to assumed requirement for CWA Section 404 permit/authorization, Endangered Species Act Section 7 Consultation will be required; Migratory Bird Treaty Act and Bald and Golden Eagle Protection Act (BGEPA) compliance will also be applicable.	Yes
Consultation	Federal Aviation Administration	Title 14 of the Code of Federal Regulations (14 CFR) Part 77	No
State Permits			
Order	Indiana Utilities Regulatory Commission (IURC)	Jurisdiction Determination	Yes - Complete
Permit	Indiana Department of Environmental Management (IDEM)	Section 401 of the CWA, Water Quality Certification and State-Regulated Wetlands (Isolated Wetland Permit)	Yes
Permit	IDEM	National Pollutant Discharge Elimination System (NPDES)/Stormwater Runoff Permit (Rule 5)	Yes
Permit	Indiana Department of Natural Resources (IDNR)	Indiana Flood Control Act (IC 14-28-1)	TBD

Type	Authority or Lead Agency	Regulatory Driver	Permit/ Approval Required
Permit	IDNR - Division of Fish and Wildlife	Indiana Nongame and Endangered Species Conservation Act (IC 14-22-34)	TBD
Consultation	IDNR - Division of Historic Preservation and Archaeology	Cultural Resources (historical and archaeological) under Section 106 of the National Historic Preservation Act	Yes
Shelby County, Indiana			
Permit	Shelby County Board of Zoning Appeals	Special Exception and Development Standards Variances	Yes - Complete
Permit	Shelby County Land Use	Improvement Location Permit	Yes
Permit	Shelby County Land Use	Sign Permit	Yes
Permit	Shelby County Drainage Board	Proposed Crossing of a Legal Drain and Site and Drainage Plan Review	Yes - Complete

5.0 COMMUNITY OUTREACH

Local Residents – Speedway has been meeting with prospective landowners, their tenants, and nearby residents since 2017 to determine local interest in the Project and to lease land.

Local Units of Government – The Project has also met with local County elected officials and staff to advise them of project activities, to gauge interest in a solar facility, as well as to understand permitting requirements and potential concerns:

- Shelby County Commissioners and Drainage Board;
- Shelby County Council;
- Other Shelby County representatives (County Administration, County Surveyor, Planning and Zoning);
- Shelby Eastern School Board;
- Morristown Town Board;
- The Mayor of Shelbyville.

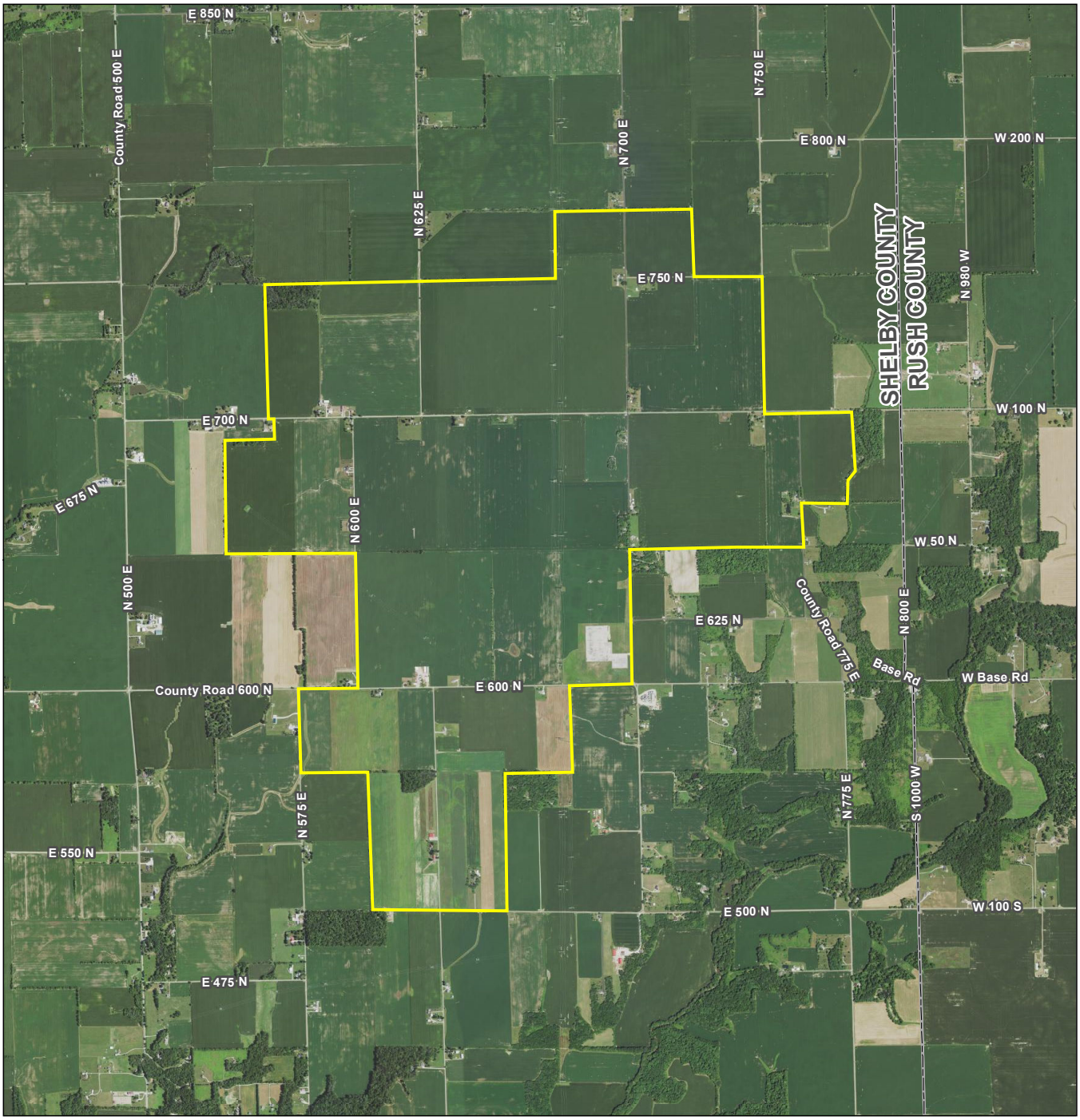
State Elected Representatives and Regulatory Agencies – The Project has also met with state elected representatives and with staff from the Indiana Utility Regulatory Commission, Indiana Farm Bureau, Indiana Department of Agriculture, Indiana Department of Natural Resources (IDNR) and State Historic Preservation Office (SHPO) to discuss permitting and related topics.

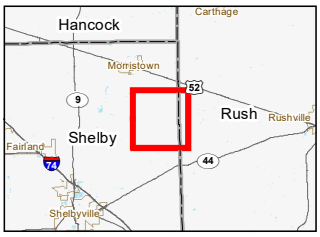
Public – In addition, the Project has engaged in outreach activities to share information and gather feedback from a broader public audience, including:

- Repeated one-on-one communication with Project neighbors and community leaders
- Door knocking and phone campaign to every residential property abutter
- Presentations at public meetings of local units of government: Shelby County Commissioners, Drainage Board, County Council, and Board of Zoning Appeals
- Meetings with representatives of the Shelby Chamber of Commerce, Shelby County Farm Bureau, Shelby County Economic Development, and the Indiana State Farm Bureau.
- Established a dedicated Website (www.speedwaysolar.com) that provides information about the Project along with contact information.
- Actively monitors an informational e-mail address.
- Speedway enjoys two resolutions in support of the project from the Town of Morristown (town closest to the project site) and Shelby Eastern Schools (school district where project is located.
- Speedway enjoys 584 letters of support from area residents, collected in support of the Project's local permitting process

APPENDIX A

FIGURES





Legend

Approximate Project Area

0 1,500 3,000 Feet

(At original document size of 8.5x11)
1:36,000

N

Stantec

Project Location
Shelby Co.
Indiana

Prepared by RA on 2021-01-28
TR by SR on 2021-01-28
IR by SP on 2021-02-01

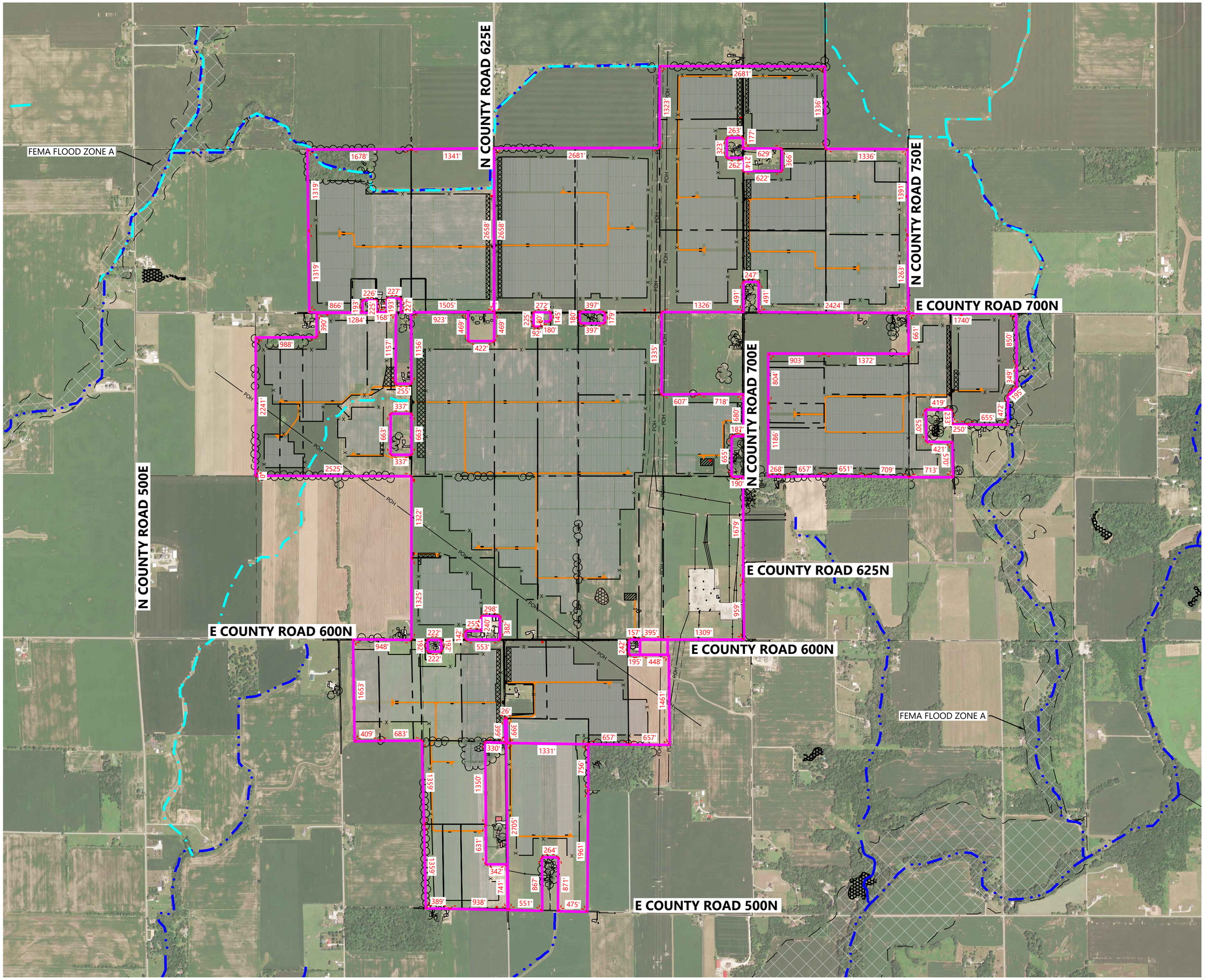
Client/Project
Speedway Solar, LLC
Speedway Solar Project

19370xxxx

Figure No.
1

Title
Speedway Solar Site

Notes
1. Coordinate System: NAD 1983 UTM Zone 16N
2. Data Sources: Stantec, Ranger Power, USGS, NADS
3. Background: NAIP 2019



LEGEND:

- PROPERTY LINE
- PARCEL LINES
- EASEMENT LINES
- EX. RESIDENCE
- EX. TREELINE
- EX. PAVED ROAD
- EX. GRAVEL ROAD
- EX. FENCE
- EX. OVERHEAD POWER
- FEMA FLOOD ZONE
- EX. STREAM
- EX. WETLAND
- EX. DRAIN
- PROPOSED SUBSTATION
- PROPOSED ACCESS ROAD
- PROPOSED SOLAR ARRAY
- PROPOSED INVERTERS
- PROPOSED LAYDOWN YARD
- PROPOSED HORIZONTAL DIRECTIONAL DRILLING/ DIRECTIONAL BORE
- 5286' PARCEL DIMENSION

0' 1000' 2000' 3000'

Westwood

Phone (952) 937-5150
Fax (952) 937-5822
Toll Free (888) 937-5150
12701 Whitewater Drive, Suite #300
Minnetonka, MN 55343
westwoodps.com

Westwood Professional Services, Inc.

Speedway Solar

Shelby County, IN

SAM O. JORGENSEN REGISTERED PE11400095 STATE OF INDIANA PROFESSIONAL ENGINEER 10/1/20

PREPARED FOR:

Speedway Solar, LLC

20 JAY ST #900
BROOKLYN, NY 11201

Figure 2
Overall Site Plan

DATE: 10/07/2020

SHEET: C.000