ENVIRONMENTAL ASSESSMENT

BlueOval SK Battery Plant (Stanton, TN)
BlueOval SK Battery Park (Glendale, KY)

Department of Energy, Loan Programs Office –
Advanced Technology Vehicles Manufacturing

DOE/EA-2201

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Acronyms and Abbreviations

Acronym/Abbreviation	Definition
ASTs	aboveground storage tanks
ATVM Program	Advanced Technology Vehicle Manufacturing Loan Program
BACT	Best Available Control Technology
BEV	battery electric vehicle
BMPs	best management practices
CAA	Clean Air Act
CDR	Chemical Data Reporting
CE	Categorical Exclusion
CEQ	Council on Environmental Quality
CERT	Center for Economic Research
CFR	Code of Federal Regulations
CO	carbon monoxide
CO_2	carbon dioxide
CWA	Clean Water Act
DOE	U.S. Department of Energy
EA	Environmental Assessment
EJ	Environmental Justice
EPA	Environmental Protection Act
EPCRA	Emergency Planning and Community Right-to-Know Act
ESA	Endangered Species Act
ETSA	Environmental Technical Study Area
FAR	Forestry, Agricultural, and Residential
FHWA	Federal Highway Administration
FONSI	Finding of No Significant Impact
Ford	Ford Motor Company
FPPA	Farmland Protection Policy Act
GHG	greenhouse gas
GPP	groundwater protection plan
GWh	gigawatt hours
HAPs	Hazardous Air Pollutants
HCl	hydrochloric acid
I	Interstate
IMR	Interchange Modification Report
KAR	Kentucky Administrative Regulations
KDAQ	Kentucky Division of Air Quality
kV	kilovolt
KY	Kentucky

KYTC	Kentucky Transportation Cabinet
LPO	Loan Programs Office
MGD	million gallons per day
MMBtu/hr	million British thermal units per hour
NAAQS	National Ambient Air Quality Standards
NATA	National-Scale Air Toxics Assessment
NCCPI	National Crop and Commodity Production Index
NEPA	National Environmental Policy Act
NESHAP	National Emission Standards for Hazardous Air Pollutants
NHPA	National Historic Preservation Act
NMC	nickel manganese cobalt oxide
NMP	n-methyl pyrrolidone
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NSR	New Source Review
PM	particulate matter
PM_{10}	less than 10 micrometers
$PM_{2.5}$	less than 2.5 micrometers
PSD	Prevention of Significant Deterioration
PTE	Potential to Emit
RCRA	Resource Conservation and Recovery Act
SIP	State Implementation Plan
SNURs	Significant New Use Rules
SOF	Statement of Findings
SPCC	Spill Pollution Prevention Plan
SWPPP	Stormwater Pollution Prevention Plan
TDEC	Tennessee Department of Environment and Conservation
TDOT	Tennessee Department of Transportation
TN	Tennessee
TN SHPO	Tennessee State Historic Preservation Officer
tpy	tons per year
TRI	Toxic Release Inventory
TSCA	Toxic Substances Control Act
TVA	Tennessee Valley Authority
USDA	U.S. Department of Agriculture
VOC	volatile organic compound

1. PURPOSE AND NEED

1.1 Purpose and Need for Agency Action

The purpose and need for agency action is to comply with the U.S. Department of Energy (DOE) mandate under Section 136 of the Energy Independence and Security Act of 2007 to select projects for financial assistance that are consistent with the goals of the act.

Ford Motor Company (Ford) has designed electric vehicles (EVs) to enable its electrification efforts worldwide. Ford's global battery electric vehicle (BEV) plan calls for at least 240 gigawatt hours (GWh) of battery cell capacity by 2030. Approximately 140 GWh will be required in North America, with the balance dedicated to other key regions, including Europe and China. Ford is building on nearly two decades of battery expertise by centralizing a cross-functional team of 150 experts in battery technology development, research, manufacturing, planning, purchasing, and finance to develop and manufacture battery cells and batteries, ultimately aiming to deliver more low-cost quality EVs for customers.

Ford and SK Innovation's wholly owned subsidiary, SK On Co., Ltd. (SK), has created a joint venture (BlueOval SK) that is proposing to establish a total of three EV battery manufacturing plants, one in Stanton, Tennessee (BlueOval City - 1 Plant) and two in Glendale, Kentucky (BlueOval SK Battery Park - 2 Plants) (the Project). These three battery plants are anticipated to deliver a total capacity of 127 GWh (45 GWh at BlueOval City in Tennessee and 45 GWh and 37 GWh at BlueOval SK Battery Park in Kentucky) of EV battery production annually, a production total that aligns with Ford's global BEV plan of at least 240 GWh of battery cell capacity globally by 2030.

BlueOval SK has applied for a loan under DOE's Advanced Technology Vehicle Manufacturing Loan Program (ATVM Program), which was created by the Energy Independence and Security Act of 2007 to provide incentives for projects that retrofit, expand, or create manufacturing facilities in the United States for advanced technology vehicles or qualifying components, including engineering costs. The primary goal of the ATVM Program is to improve fuel economy for light-duty vehicles and thereby reduce ozone precursors, greenhouse gas (GHG) emissions, and particulate emissions associated with vehicle fuel combustion. The ATVM Program is designed to stimulate production of the technology required to meet program objectives.

The Project's BlueOval City site (Tennessee [TN]) will include new battery production, assembly, and ancillary facilities. The BlueOval SK Battery Park site (Kentucky [KY]) will include identical battery production and assembly facilities. The Project will allow for the annual production of 127 GWh of high-performance lithium nickel manganese cobalt oxide (NMC) batteries to power Ford's fleet of BEVs. These zero-emission vehicles will help reduce air emissions such as ozone precursors, particulate matter, and GHGs that contribute to global warming, as is consistent with the primary goal of the ATVM Program. DOE's financial support of the Project would help increase the use of BEVs, thereby reducing overall national emissions of air pollutants and human-caused GHGs. Based on an average BEV battery pack capacity of 70 kilowatt hours, the Project would support the battery needs for approximately 1,100,000 BEV vehicles to be produced annually once full-scale operations are achieved.

1.2 Background

The ATVM Program is administered by DOE's Loan Programs Office (LPO). LPO originates, underwrites, and services loans to eligible automotive manufacturers and component manufacturers to finance reequipping, expanding, and/or establishing manufacturing facilities in the United States to produce Advanced Technology Vehicles and qualifying components, and the costs of associated engineering integration performed in the United States.

To fund its Project, BlueOval SK applied to the DOE ATVM Program for financial assistance. LPO determined that the application is substantially complete per the rules governing the ATVM Program in 10 Code of Federal Regulations (CFR) Part 611. BlueOval SK was subsequently invited to enter into the LPO's due diligence process.

1.3 Scope of Environmental Assessment

In accordance with the National Environmental Policy Act (NEPA), LPO is preparing this Environmental Assessment (EA) to address the construction and operation planned for the Project. DOE has prepared this EA to comply with the NEPA, Council on Environmental Quality (CEQ) regulations implementing NEPA (40 CFR Parts 1500−1508), and DOE NEPA Implementing Procedures (10 CFR Part 1021).

This EA allows LPO to consider the environmental impacts of its action (financial assistance/ATVM loan) to support the construction and tooling of the battery plants in Stanton, TN, and Glendale, KY. Therefore, the scope of the Proposed Action (providing a loan to BlueOval SK) encompasses the construction and operation of the battery plants in Stanton, TN and Glendale, KY.

Several factors influenced the scope of issues analyzed in this EA, including previous EAs conducted on the Project sites. In particular, DOE was a cooperating agency with the U.S. Army Corps of Engineers (USACE) Louisville District on the Glendale, KY, battery plants and is adopting and incorporating by reference the EA for the Stanton, TN, battery plant prepared by the USACE Memphis District, as defined below:

- USACE Memphis District's MVM-2015-295 Memorandum of Record (EA and Statement of Findings [SOF]) for the Stanton, TN, battery plant issued on May 16, 2022 (see Appendix A)
- USACE Louisville District's LRL- 2021-443-sea Memorandum of Record (EA and SOF) for the Glendale, KY, battery plants issued on May 19, 2022 (see Appendix B)

Each USACE district independently evaluated the facility located within its jurisdiction. The USACE issued a Finding of No Significant Impact (FONSI) for each facility location. USACE's scope for the Stanton, TN, site included the entire 4,100-acre Project tract, while DOE's analysis focuses on the on-site 214-acre battery plant facility. USACE's scope for the Glendale, KY, site included the entire 1,550-acre site and matches that of the DOE's analysis.

BlueOval SK's loan application includes both the Stanton, TN, and Glendale, KY, locations; therefore, DOE's NEPA review incorporates both into this unified document. See Section 3.2 for the Stanton, TN, analysis and Section 3.3 for the Glendale, KY, analysis.

1.3.1 Scope – Stanton, Tennessee – BlueOval City Battery Plant

For the Stanton, TN, site, the scope of the proposed action is to construct a single 45 GWh battery manufacturing plant on the Memphis Megasite, also known as BlueOval City. For this facility, several factors influenced the scope of issues analyzed in this EA. The location of the new manufacturing facility is on land that was previously disturbed from agricultural activities, and several permits have been issued or are in the process of being issued by regulatory authorities (see summary below and in Appendix D).

Any permits necessary for facility operations will be obtained from the appropriate federal, state, or local regulating authority prior to facility operation. In addition, BlueOval SK will apply for an individual federal Environmental Protection Act (EPA) identification number for the disposal of waste from the facility. The preconstruction permitting for the Stanton, TN, portion of the Project has included the application for and approval of the following environmental permits:

- Clean Water Act (CWA) Section 404 individual permit
- Prevention of Significant Deterioration (PSD) major-source air quality permit
- CWA Section 401 permit
- Construction Stormwater Permit

Prior to operations, the facility will further be required to acquire permits or comply with the following environmental requirements:

- Industrial Stormwater Discharge Permit
- Wastewater Discharge Permit
- Resource Conservation and Recovery Act (RCRA) identification and waste tracking
- Spill Prevention, Control, and Countermeasure (SPCC) plan development

Based on LPO's review of the scope of the Proposed Action, the existing site conditions, the preconstruction permitting, and the USACE EA and SOF, the following resource areas were identified as potentially being affected by the Project, and each was assessed to determine the nature, extent, and significance of those impacts (see Section 3).

- Cultural Resources
- Native American Interests
- Water Resources
- Air Quality
- Noise
- Transportation
- Aesthetic and Visual Resources
- Biological Resources and Threatened and Endangered Specie
- Socioeconomics and Environmental Justice
- Health and Safety
- Waste Management
- Soils and Prime Farmlands

These resource areas were identified as potentially being affected by the Proposed Action near Stanton, TN, and each was assessed to determine the nature, extent, and significance of those impacts. The EA examines the direct, indirect (see Section 3), and cumulative effects (see Section 4) of the Project. The assessment combined desktop research and analysis of existing available information with select field studies, including site assessments related to the DOE Project scope.

The resource area not included in this EA is recreation. Because the new facility is outside centers of urban development and within a larger industrial setting, impacts on this resource are not anticipated; therefore, the resource area is not included in the scope of this EA.

1.3.2 Scope – Glendale, Kentucky – BlueOval SK Battery Park

For the Glendale, KY, site, the scope of the Proposed Action is to construct two adjacent battery manufacturing plants with a capacity of 45 and 37 GWh. For this facility, several factors influenced the scope of issues analyzed in this EA. The location of the new manufacturing facility is on land that was previously disturbed from agricultural activities, and several permits have been issued or are in the process of being issued by regulatory authorities (see summary below and in Appendix D). Any permits necessary for facility operations will be obtained from the appropriate federal, state, or local regulating authority prior to facility operation. In addition, BlueOval SK will apply for an individual federal EPA identification number for the disposal of waste from the facility. The preconstruction permitting for the Glendale, KY, portion of the Project has included the application for and approval of the following environmental permits:

- CWA Section 404 individual permit
- PSD major-source air quality permit
- CWA Section 401 permit
- Construction Stormwater Permit

Prior to operations, the facility will further be required to acquire permits or comply with the following environmental requirements:

- Industrial Stormwater Discharge Permit
- Wastewater Discharge Permit
- RCRA identification and waste tracking
- SPCC plan development

Based on LPO's review of the scope of the Proposed Action, the existing site conditions, a review of the preconstruction permitting, and prior USACE EA and FONSI, the following resource areas were identified as potentially being affected by the Project, and each was assessed to determine the nature, extent, and significance of those impacts (see Section 3).

- Water Resources
- Air Quality
- Noise
- Transportation
- Aesthetic and Visual Resources
- Socioeconomics and Environmental Justice
- Health and Safety
- Waste Management
- Soils and Prime Farmland

These resource areas were identified as potentially being affected by the Proposed Action near Glendale, KY, and each was assessed to determine the nature, extent, and significance of those impacts. The EA examines the direct, indirect (see Section 3), and cumulative effects (see Section 4) of the Project. The assessment combined desktop research and analysis of existing available information with select field studies, including site assessments related to the DOE Project scope.

Resources not included in this EA include recreation, cultural resources (including Native American interests), and biological resources (including endangered and threatened species). Impacts on recreation are not anticipated; therefore, the resource area is not included in the scope of this EA because the new facility is outside centers of urban development and located within a larger industrial setting. For cultural resources and biological resources, these impacts have already been examined under the USACE EA, and LPO concurs with the findings that the impacts are not significant (see Appendix B).

2. DESCRIPTION OF THE PROPOSED ACTION

Under the Proposed Action, the Project involves the development of three new battery manufacturing plants at two sites (one plant in Stanton, TN – BlueOval City and two plants in Glendale, KY – BlueOval SK Battery Park). The facilities will produce NMC batteries to support Ford's BEV production. NMC batteries are a type of lithium-ion battery containing nickel, manganese, and cobalt (hence the name NMC). The ratios of each of the metals within the battery affects the charge density, thermal stability, and other properties. The type of NMC batteries to be produced have nickel-rich lithium transition-metal oxides with nickel concentrations of 80 percent or more and will be used to deliver high energy density and high power at both the cell and pack levels. The Project will include the activities discussed below at each site.

2.1 Stanton, Tennessee – BlueOval City Battery Plant

The Project activities in Tennessee involve constructing a new battery plant and associated infrastructure to build NMC batteries and support Ford's BEV production. The new plant will consist of a 4.4-million-square-foot building to house four large-process operations (Electrode, Assembly, Formation, and Module), with several attendant structures and features to provide various support functions. Attendant structures include parking areas, shipping and receiving areas, utilities, access roads, stormwater management facilities, a substation, a guard house, hazardous materials storage, recycling areas, landscapes areas, and water supply tanks.

The overall area of the Project site may disturb up to 263 acres, which includes the following:

- A 219-acre area for new construction (the manufacturing facility with a 3.2-million-square-foot disturbance area footprint, the recycling building, and their associated attendant structures)
- A 14-acre utility corridor
- Up to 17 acres of additional Project area for stockpiling, laydown, operations, or long-term storage

Within the 263-acre Project site, up to 219 acres will be permanently affected. Permanent features include approximately 72 acres from the proposed building footprint; 5 acres from additional structures and the recycling building; 35 acres from roads, sidewalks, and parking; and 7 acres from stormwater retention basins. Approximately 45 acres will be temporarily affected due to 266 acres of general construction activities and 107 acres for the creation of lawn and landscaped areas as well as utility easements. Up to an additional 45 acres are included in this evaluation because they have potential temporary or permanent uses to meet Project construction needs, such as additional soil stockpiling, laydown, and/or construction operations center, or long-term operational needs, such as sea container storage.

The primary surface road transportation routes to the proposed battery plant site include Interstate (I) 40, approximately 1.2 miles south of the site, and Tennessee State Route 79, approximately 2 miles to the north. These two corridors are connected by Tennessee State Highway 222, immediately adjacent east of the site. In preparation for development of the West Tennessee Megasite, the Tennessee Department of Transportation (TDOT) commenced an upgrade and reorientation project on Tennessee State Highway 222 to accommodate traffic from the site. The battery plant will connect the existing travel corridors through newly constructed on-site roads. The proposed facility will also have access to rail transportation via a proposed railyard (associated with larger BlueOval City aspect of the Project), connecting to an existing rail line on the northwest side of the Megasite. The majority of the Project site is previously disturbed by previous construction activities and ongoing agricultural activities.

2.2 Glendale, Kentucky – BlueOval SK Battery Park

The Project activities in Kentucky involve constructing two new battery plants and associated infrastructure to support Ford's BEV production. The new plants will consist of two 4.1- and 4.4-million-square-foot buildings to house four large-process operations (Electrode, Assembly, Formation, and Module), with several attendant structures and features to provide various support functions. Attendant structures include parking areas, shipping and receiving areas, utilities, access roads, stormwater management facilities, a substation, a guard house, hazardous materials storage, recycling areas, landscapes areas, and water supply tanks.

The overall area of the Project site may disturb up to 952 acres, which includes the following:

- A 793-acre area for new construction (the manufacturing facilities with 3.5- and 3.6-million-square-foot disturbance area footprints, the recycling building, and their associated attendant structures)
- A 69-acre utility corridor
- Up to 11 acres of additional Project area for stockpiling, laydown, operations, or long-term storage

Within the 952-acre Project site, up to 793 acres will be permanently affected. Permanent features include approximately 163 acres from the proposed building footprints; 5 acres from additional structures and the recycling building; 19 acres from roads, sidewalks, and parking; 17 acres from stormwater retention basins; 11,092 linear feet of stream relocation (approximately 4 acres); and 53 acres from a gravel pad. In addition, 862 acres will be temporarily affected due to general construction activities, the creation of lawn and landscaped areas, and utility easements. Of the 862 acres, 786 acres are previously disturbed and used for temporary construction storage, 8 acres are paved and used for a trailer city operations center and a water utility meter area, and 68 acres are mowed and managed grass. Access to the Project site is from Tennessee State Highway 222 and Gilead Church Road, 1.36 miles of which is being reconstructed/realigned as part of a separate project being undertaken by the Kentucky Transportation Cabinet (KYTC). The majority of the Project site is previously disturbed by existing roadways, previous construction activities, and ongoing agricultural activities.

The following subsections describe construction and operation of the Project. The Project footprint of the Stanton, TN, portion of the Project is shown in **Figures 1 and 2.** The Project footprint of the Glendale, KY, portion is shown in **Figures 3 and 4**.

Figure 1: BlueOval City Battery Plant Project Site Location Map

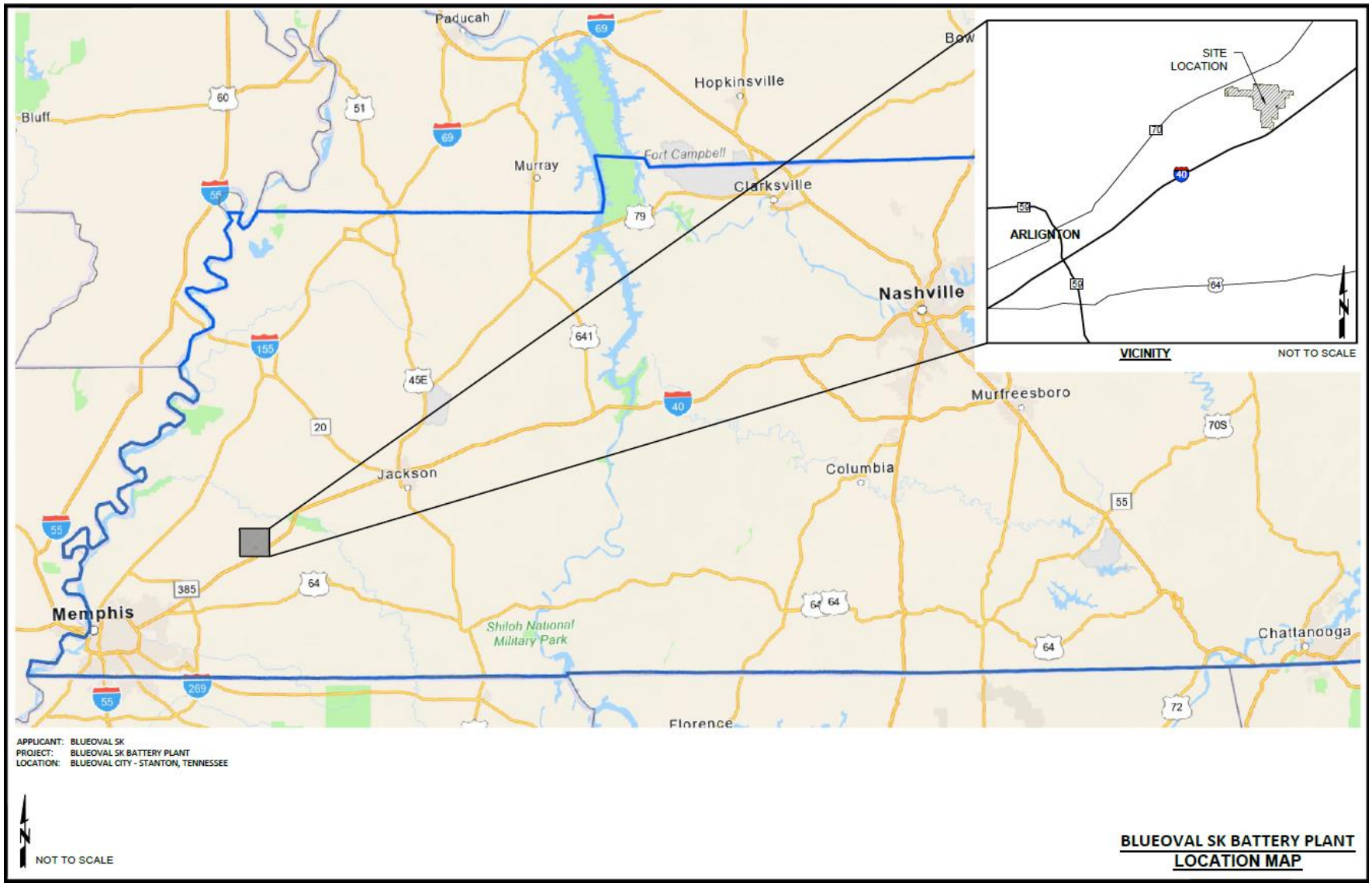

Figure 2: BlueOval City Battery Plant Project Site with Satellite Imagery

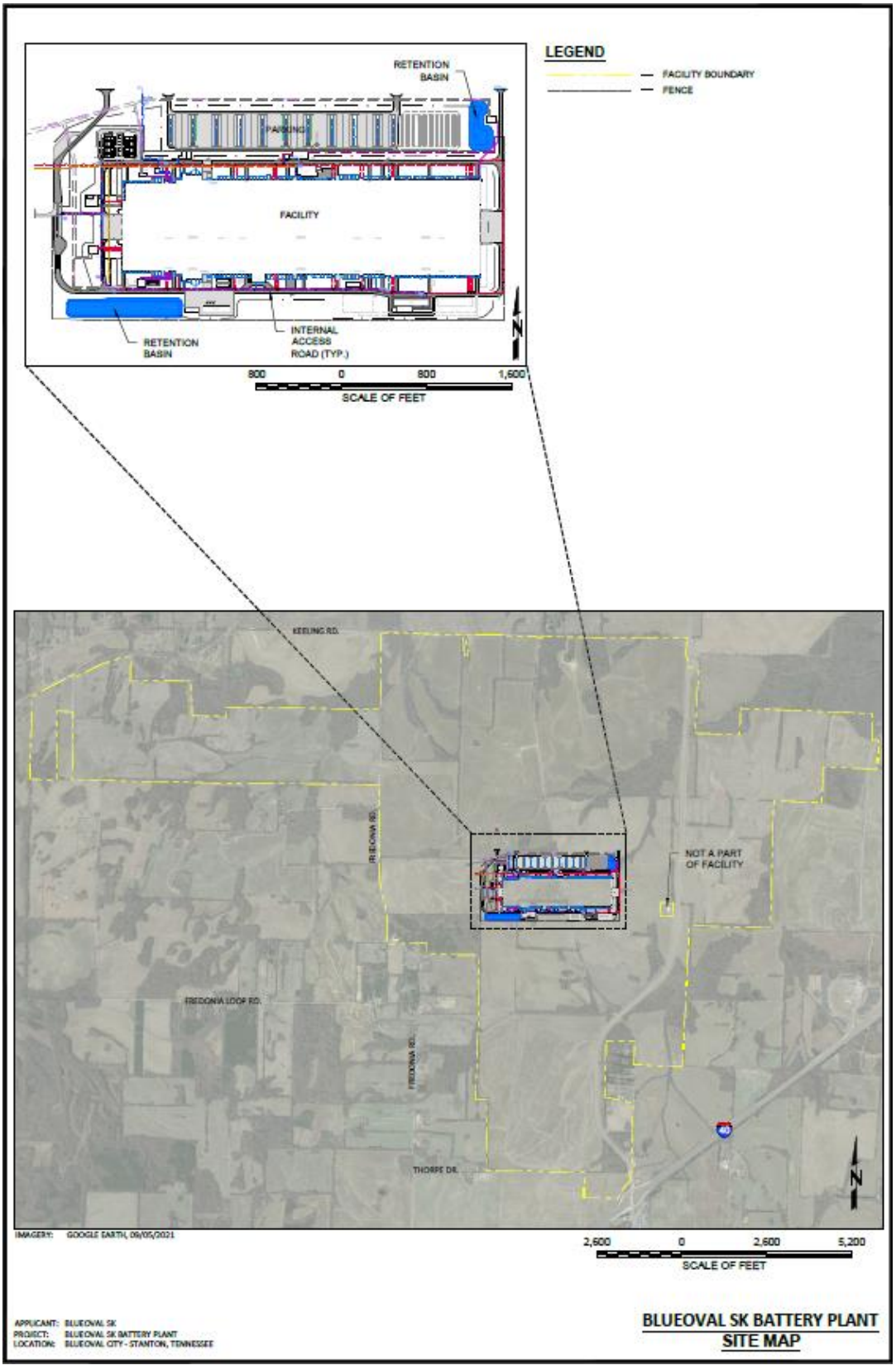

Figure 3: BlueOval SK Battery Park Project Site Location Map

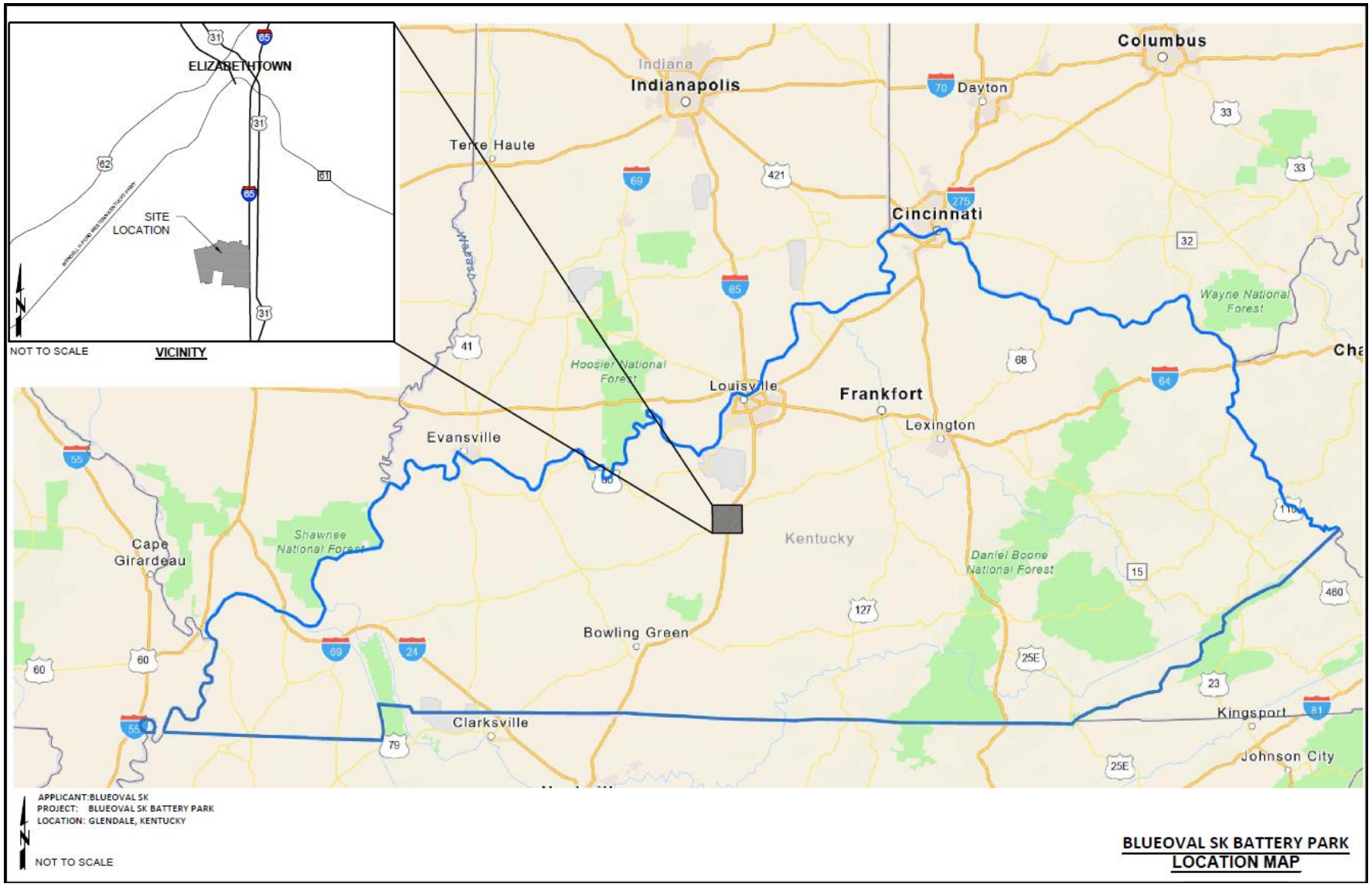

Figure 4: BlueOval SK Battery Park with Satellite Imagery

2.3 Stanton, Tennessee – BlueOval City Battery Plant

2.3.1 Project Construction

The Stanton portion of the Project will include a single 45 GWh battery manufacturing plant as a part of the larger BlueOval City EV manufacturing and assembly facility. The Stanton portion of the Project will permanently affect approximately 263 acres of the site, which includes the new building footprints (72 acres); new roads, sidewalks, support areas; and parking (35 acres). The remaining approximately 156 acres of the site may be disturbed during construction but landscaped upon completion of construction. Additional Project construction activities will include ancillary support and employee buildings, new parking lots, new truck/worker access roads, loading docks, and sidewalks immediately surrounding the buildings. Site preparation activities, including tree clearing, were completed prior to commencement of construction and occurred prior to the commencement of DOE NEPA review. Development of the larger BlueOval City Vehicle Assembly Plant will provide access to infrastructure to support the Project, including natural gas, water, sewer, and power connections. There is a separate project being undertaken by the Tennessee Valley Authority (TVA) for the larger Megasite power supply (discussed in Section 4). These components are outside the scope of the DOE Project.

During battery plant construction, site access traffic will flow primarily along Tennessee State Highway 222. Construction employee and equipment traffic will occur throughout the active construction period and therefore could temporarily affect traffic through increased activity along Tennessee State Highway 222 and other surface access routes. Total construction worker activity and travel will vary throughout the period of active construction.

The BlueOval City battery plant will be located in Haywood County, TN, approximately 40 miles via I-40 from both Memphis and Jackson, TN. During the construction phase of the Project, BlueOval SK estimates that construction peak manpower will require approximately 1,700 to 2,000 people. Based on preliminary construction planning, it is anticipated that between 20 and 25 percent of this manpower will be sourced from the local or regional workforce. The remainder will be allocated from outside of the region.

2.3.1.1 Construction of Project Structures and Equipment Installation

Construction of the Stanton portion of the Project will include the single 45 GWh battery manufacturing plant. The main manufacturing building will encompass 3.1 million square feet (approximately 3,521 feet long by 900 feet wide) and have a concrete floor, an internal steel-frame structure to reduce interior posts, and an insulated metal exterior. The primary structure will have tiers of various heights, ranging from 35 to 92 feet. The building will contain four primary process areas for the cell manufacturing process: Electrode, Formation, Assembly, and Module, with delivery and shipment truck docks on the north and south sides. In addition to the primary building, site structures and attendant features will include workforce parking, permanent stormwater management, waste storage, electric transfer station, process support equipment, and a truck scale. Office space will encompass approximately 242,000 square feet.

Construction on the Project site will sequence through successive phases, starting with establishment of sedimentation and erosion control measures; continuing with rough grading and clearing, building pad preparation and construction, building shell construction, final grading, site stabilization, and landscaping; and concluding with equipment installation, testing, and validation. General site clearing and grading will occur within the 263-acre limits of disturbance, with minor tree clearing along the utility corridor. Building pad preparation will use ¾-inch and smaller crushed, compacted aggregate for base material in slab/foundation construction. Following slab/foundation construction, the skeletal steel structure will be assembled, followed by the building shell. The final phase of building construction will include installation

of the equipment needed to support the battery cell manufacturing process, including boilers; ovens; stocker and roll presses, along with associated piping systems and controls; notching equipment; lamination equipment; testing equipment; stacking and packaging equipment; and associated conveyors and controls.

After the building shell is constructed, the Project site will be landscaped, with consideration of aesthetic views from surrounding land uses and facilities. Landscaping will include trees and shrubbery along Tennessee State Highway 222 east of the Project site and along the parcels adjacent to the Project site to provide screening and enhance aesthetics for viewing from nearby areas that are not industrial land uses. Managed turf grass will surround the facility. Construction in the 14-acre utility area will occur concurrently with construction on the Project site and include a 10-inch ductile iron or high-density polyethylene water line and 6-, 8-, and 10-inch polyvinyl chloride sanitary sewer lines. The natural gas, electricity, and data-fiber utility lines will be installed by the local utility companies within the 14-acre utility corridor. The water and sanitary sewer utilities will be built using open-trench methods for most of the length within the utility corridor. Tie-in locations for the water line are approximately 90 feet from the building, at a meter north of the assembly area and south of the employee parking lot.

2.3.1.2 Project Schedule

The construction phase is planned for June 2022 through September 2025, which includes all of the BlueOval City development. Site earthwork, building foundation preparation, and building utility connections are planned for 2022 and early 2023. Building structural construction and interior utilities and information technology connections will be developed throughout 2023. Manufacturing equipment will begin to be placed in the fourth quarter of 2023; installation is planned to be finished in September 2025 for all manufacturing equipment. Process utilities and automated logistics are scheduled to be complete in mid-2024 and commissioned upon completion of construction, in advance of complete installation of all manufacturing equipment.

Preparation of the utility corridor will begin October 2022, and construction of the water and sanitary sewer utilities is planned for June 2023. Construction of the natural gas, electricity, and data-fiber utility lines is anticipated to begin in October 2022 and conclude by October 2024. Construction activities will take place between the hours of 7 a.m. and 10 p.m. Monday through Friday. Additional surge capacity for the construction workforce will be available for Saturdays on an as-needed basis to respond to unforeseen Project complexities. As described above, construction manpower will require approximately 1,700 to 2,000 people. The manpower will be variable throughout each phase of construction, according to Table 1 below, which shows manpower estimates as a proportion of peak monthly maximum manpower.

Table 1: BlueOval City Proportional Construction Manpower

2022				2023				2024				2025			
Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1%	8%	27%	46%	66%	94%	98%	95%	62%	18%	4%	3%	2%	2%	2%	0%

2.3.2 Operations

Upon commencement of operations, the battery manufacturing plant will include raw material receiving and battery manufacturing processes (mixing, electrode manufacturing, assembly, and formation). Final battery products will be transferred to the on-site battery tray assembly building, which is not part of the DOE Project. The building will be organized into sequential process areas for mixing, electrode manufacturing, assembly, formation, and transport to battery tray assembly. Raw materials are received and prepared in the mixing area. Electrode production includes slurry mixing, coating, and drying. In

assembly production, the cells are built, terminals are added, cells are filled with electrolyte, and the cells are sealed. Formation includes initial charging/discharging of the cells. Cells are then prepped for transfer to the adjacent battery tray assembly process and ultimately for installation in the BEV produced in the adjacent BlueOval City Vehicle Assembly Plant.

2.3.2.1 Manufacturing Process Summary

The battery manufacturing line is divided into three major processes - electrode, cell assembly, and formation. The electrode process consists of two parallel production lines to produce anode and cathode foils. Cathode and anode activation products, carbon, graphite, and other powder products are metered and mixed into slurries using n-methyl pyrrolidone (NMP) as the solvent ingredient for the cathode, and deionized water as a solvent for the anode. The slurries are then applied to aluminum (cathode) and copper (anode) foils and dried. After drying, anode and cathode foils are pressed using a rolling machine to ensure the slurry is evenly applied at the appropriate thickness. Next, uncoated parts of the foil are removed, and the foils are cut into the desired widths according to specifications.

The cell assembly process begins with the notching process where electrode foils are cut into single sheets. Then, residual water and NMP are evaporated from the electrode sheets in vacuum dryers. Residual NMP is captured through a solvent-recovery system. Once the drying process is complete, the anode and cathode electrode sheets are stacked using a “Z-folding” technique. Cathode and anode sheets are evenly stacked between a separator material in a zigzag manner to produce a jelly roll. The “Z-folding” technique is designed to minimize the stress of battery cells and fundamentally prevent contact between anodes and cathodes, which can cause a fire. Next, negative and positive tabs are attached to the jelly roll using an ultra-sonic welding machine. The jelly roll is placed into an aluminum pouch, sealed on three sides, injected with electrolyte, and resealed to form a battery cell.

During formation, battery cells are energized through the press pre-charge process and stored at a controlled temperature for a period of time. The aging process stabilizes the electrolyte in the cell. Once the cell is energized, gas is created due to the chemical reaction of electrolyte inside the packing. Battery cell degassing is conducted by piercing the cell, extracting residual gas under vacuum pressure, and resealing. The final stage is product inspection where battery cells are evaluated against quality and performance standards.

In general, there would be four main processes in the plant that use chemicals - anode and cathode mixing, NMP use and recycling, electrolyte addition, and solvent-based cleaning. Raw materials will be received and prepared in the mixing area. During the process of mixing the anode and cathode slurries, various dry powders are combined with liquids to create the slurries. The NMP used in the cathode slurry is reclaimed during a solvent recovery process and is reused. Electrolyte is added to the cells in the assembly process.

2.3.2.2 Staffing and Operational Timeframe

During the operational phase of the Project, once full production is reached, BlueOval SK estimates that total employment for the BlueOval City Battery Plant will employ 2,200 hourly employees and 300 salaried employees. Full production and staffing are expected to be reached in 2026, following a gradual ramp-up throughout the second half of 2025.

The BlueOval City Battery Plant will have three shifts at full production; therefore, worker traffic will be split throughout the day and will not occur at one time. No overlapping traffic is anticipated between shifts because all incoming workers will be at the facility before the shift hour begins, and all outgoing workers will leave the facility after the shift hour ends.

2.3.2.3 Shipping and Receiving

Chemicals used in the manufacturing process will be delivered to the facility by truck utilizing a variety of packaging methods, including tanks, drums, supersacks, and pallets. During preparation for facility operations, an SPCC will be developed that covers chemical management, routes of possible spills, and spill prevention measures.

Finished battery cells will be transferred to the adjacent battery tray assembly process for installation in the BEV produced in the adjacent BlueOval City Vehicle Assembly Plant. These BEV will be shipped off-site by truck or rail. The maximum anticipated volume of truck traffic is 50 delivery trucks per day, which includes all shipping and receiving.

2.3.2.4 Waste Management

The proposed BlueOval City Battery Plant will have the capacity to generate waste from the collection of refuse from on-site employee activity and process operations. The majority of process wastes will be recovered and recycled for reuse in the manufacturing process. Cell discharging from cells that are discarded from the manufacturing process will be emptied into dedicated sump pits. Dedicated sumps will be used for electrolyte volatile organic compound (VOC) discharge and hydrochloric acid (HCl) discharge. A limited amount of waste may require off-site treatment and disposal. All wastes will be collected, managed, and recycled/disposed of in accordance with regulatory requirements utilizing the existing solid waste management minimization and removal procedures.

Prior to the commencement of operations, BlueOval SK will determine the facility generator category, as required by the RCRA, and complete appropriate registration to obtain an EPA identification number. Based on the regulatory status determination, a Hazardous Waste Contingency Plan will be developed that covers the various hazardous streams, including storage, waste labeling, and inspections.

It is anticipated that the following waste streams and disposal methods will be reasonably foreseeable, although all final determinations will based be on detailed regulatory review prior to commencement of operations:

- Non-hazardous waste (transported off-site and disposed of at an EPA-approved Class I/II landfill designed to accept both industrial and municipal waste)
- Hazardous waste (accumulated and transported off-site for disposal at a certified waste facility)
- Breached or scrapped batteries, metals, and miscellaneous recyclable materials (collected and recycled within the facility or off-site)
- Process NMP (collected in a recovery system for reuse)
- Contaminated NMP (collected and disposed of per hazardous waste requirements)

2.4 Glendale, Kentucky – BlueOval SK Battery Park

2.4.1 Project Construction

The Glendale portion of the Project will include two adjacent battery manufacturing plants with capacities of 45 and 37 GWh. Each identical production building will consist of battery production and assembly. The site will also include associated ancillary support and employee buildings. Additional Project construction activities will include new parking lots, new stormwater retention basins, new truck/worker access roads and sidewalks, and an electrical switchyard within the site. Tree clearing and ground preparation for a portion of the site was completed prior to commencement of the DOE NEPA

review. The facility will also utilize new infrastructure, including new county roads, natural gas service, and water, sewer, and power connections. This infrastructure is not included in the Project proposed for DOE funding.

The primary surface road transportation route to the proposed BlueOval SK Battery Park is I-65 and Kentucky State Route 222, immediately adjacent north and east of the site. In preparation for the development of the site, Hardin County, in consultation with the KYTC, Department of Highways, District 4, developed a "Comprehensive Development Guide," which identified the ability of the site to service traffic (among other considerations). The operational and construction traffic flow proposed for the site will direct all normal site access from the north off of Kentucky State Route 222. A series of on-site roadways will be constructed to allow for material delivery and pickup as well as employee access and parking. A secondary emergency access route is proposed to connect to Gilead Church Road adjacent to the south side of the site.

During the battery park construction, site access traffic will flow from I-65 and Kentucky State Route 222 into and out of the site. Construction employee and equipment traffic will occur throughout the active construction period and temporarily affect traffic through increased activity along I-65 and Kentucky State Route 222, with potentially limited use of other surface access routes. Total construction worker activity and travel will vary throughout the period of active construction.

The Glendale site encompasses approximately 1,551 acres; however, construction will disturb up to a maximum of 952 acres. The Project will permanently affect approximately 793 acres of the site, which includes the new building footprints (163 acres); new roads, sidewalks, and parking (19 acres); new stormwater retention basins (17 acres); the on-site switchyard (21 acres); and 11,092 linear feet of stream relocation (approximately 4 acres). An additional 862 acres will be temporarily affected due to general construction activities, grading, the creation of lawn and landscaped areas, as well as an electrical substation not controlled by the applicant (16.5 acres).

The BlueOval SK Battery Park will be located in Hardin County, KY, approximately 5 miles via I-65 from Elizabethtown, KY, and 40 miles from Louisville, KY. During the construction phase of the Project, BlueOval SK estimates that construction peak manpower will require approximately 3,500 to 4,000 people. Based on preliminary construction planning, it is anticipated that between 20 and 25 percent of this manpower will be sourced from the local or regional workforce. The remainder will be allocated from outside of the region.

2.4.1.1 Construction of Project Structures and Equipment Installation

The main manufacturing buildings will encompass 7.1 million square feet (approximately 3,430 feet long by 890 feet wide for the 37 GWh battery plant and 3,520 feet long by 890 feet wide for the 45 GWh battery plant) and have concrete floors, internal steel-frame structures to reduce interior posts, and insulated metal exteriors. The primary structures will have tiers of various heights, ranging from 37 to 92 feet. The building will contain four primary process areas for the cell manufacturing process: Electrode, Formation, Assembly, and Module, with delivery and shipment truck docks on the north and south sides. In addition to the primary building, site structures and attendant features will include workforce parking, permanent stormwater management, waste storage, an electric transfer station, process support equipment, and a truck scale. Office space will encompass approximately 210,000 square feet at each plant (420,000 square feet total).

Construction on the Project site will sequence through successive phases, starting with establishment of sedimentation and erosion control measures; continuing with rough grading and clearing, building pad preparation and construction, building shell construction, final grading, site stabilization, and landscaping; and concluding with equipment installation, testing, and validation. General site clearing and grading will occur within the 952-acre limits of disturbance, with minor tree clearing along the utility corridor. The

building pad preparation will use concrete to construct a deep caisson-type foundation. Following the foundation construction, the skeletal steel structure will be assembled, followed by the building shell. The final phase of building construction will include installation of the equipment needed to support the battery cell manufacturing process, including boilers; ovens; stocker and roll presses, along with associated piping systems and controls; notching equipment; lamination equipment; testing equipment; stacking and packaging equipment; and associated conveyors and controls.

After the building shell is constructed, the Project site will be landscaped, with consideration for aesthetic views from surrounding land uses and facilities. Landscaping will include trees and shrubbery along the boundaries of the Project site and along adjacent parcels of non-industrial land uses or roadways to provide screening and enhance aesthetics. Managed turf grass will surround the facility. Construction in the 69-acre utility area will occur concurrently with construction on the Project site and include a 20-inch ductile iron or high-density polyethylene water line and 10-, 12-, 15-, and 21-inch polyvinyl chloride sanitary sewer lines. The natural gas, electricity, and data-fiber utility lines will be installed by the local utility companies within the 69-acre utility corridor. The water and sanitary sewer utilities will be built using open-trench methods for most of the length within the utility corridor. Tie-in locations for the water line are approximately 100 feet from buildings, in the far southwest portion of the Project area.

2.4.1.2 Project Schedule

The construction phase for the 37 GWh plant is planned for June 2022 through February 2025. Site earthwork, building foundation preparation, and building utility connections are planned for 2022 and early 2023. Building structural construction and interior utility and information technology connections will be developed throughout 2023. Manufacturing equipment will begin to be placed in the fourth quarter of 2023, and installation is planned to be finished in February 2025 for all manufacturing equipment. Process utilities and automated logistics are scheduled to be complete in mid-2024 and commissioned upon completion of construction, in advance of the complete installation of all manufacturing equipment.

The construction phase for the 45 GWh plant is planned for January 2023 through September 2026. Site earthwork, building foundation preparation, and building utility connections are planned for 2023. Building structural construction and interior utility and information technology connections will be developed throughout 2024. Manufacturing equipment will begin to be placed in the fourth quarter of 2024, and installation is planned to be finished in August 2026 for all manufacturing equipment. Process utilities and automated logistics are scheduled to be complete in mid-2025 and commissioned upon completion of construction, in advance of the complete installation of all manufacturing equipment.

Construction of the water and sanitary sewer utilities is planned for June 2022. Construction of the natural gas, electricity, and data-fiber utility lines is anticipated to begin in June 2022 and conclude by September 2023.

Construction activities will take place between the hours of 7 a.m. and 10 p.m. Monday through Friday. Additional surge capacity for the construction workforce will be available for Saturdays on an as-needed basis to respond to unforeseen Project complexities. As described above, construction manpower will require approximately 3,500 to 4,000 people. The manpower will be variable throughout each phase of construction, according to **Table 2**, below, which shows manpower estimates as a proportion of peak monthly maximum manpower.

Table 2: BlueOval SK Proportional Construction Manpower

2022				2023				2024				2025				2026			
Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
0%	3%	29%	48%	78%	94%	99%	94%	76%	47%	15%	2%	2%	2%	2%	2%	2%	2%	1%	0%

2.4.2 Operations

Upon commencement of operations, the battery manufacturing plants will include raw material receiving and the battery manufacturing processes (mixing, electrode manufacturing, assembly, and formation). Final battery packs (modules) are shipped offsite for use in BEVs. The building will be organized into sequential process areas for mixing, electrode manufacturing, assembly, formation, and transport offsite. Raw materials are received and prepared in the mixing area. Electrode production includes slurry mixing, coating, and drying. In assembly production, the cells are built, terminals are added, cells are filled with electrolyte, and the cells are sealed. Formation includes initial charging/discharging of the cells. Battery packs (modules) are then prepped shipment offsite for BEVs produced in offsite vehicle assembly plants.

2.4.2.1 Manufacturing Process Summary

The battery manufacturing line is divided into three major processes - electrode, cell assembly, and formation. The electrode process consists of two parallel production lines to produce anode and cathode foils. Cathode and anode activation products, carbon, graphite, and other powder products are metered and mixed into slurries using NMP as the solvent ingredient for the cathode, and deionized water as a solvent for the anode. The slurries are then applied to aluminum (cathode) and copper (anode) foils and dried. After drying, anode and cathode foils are pressed using a rolling machine to ensure the slurry is evenly applied at the appropriate thickness. Next, uncoated parts of the foil are removed, and the foils are cut into the desired widths according to specifications.

The cell assembly process begins with the notching process where electrode foils are cut into single sheets. Then, residual water and NMP are evaporated from the electrode sheets in vacuum dryers. Residual NMP is captured through a solvent-recovery system. Once the drying process is complete, the anode and cathode electrode sheets are stacked using a “Z-folding” technique. Cathode and anode sheets are evenly stacked between a separator material in a zigzag manner to produce a jelly roll. The “Z-folding” technique is designed to minimize the stress of battery cells and fundamentally prevent contact between anodes and cathodes, which can cause a fire. Next, negative and positive tabs are attached to the jelly roll using an ultra-sonic welding machine. The jelly roll is placed into an aluminum pouch, sealed on three sides, injected with electrolyte, and resealed to form a battery cell.

During formation, battery cells are energized through the press pre-charge process and stored at a controlled temperature for a period of time. The aging process stabilizes the electrolyte in the cell. Once the cell is energized, gas is created due to the chemical reaction of electrolyte inside the packing. Battery cell degassing is conducted by piercing the cell, extracting residual gas under vacuum pressure, and resealing. The final stage is product inspection where battery cells are evaluated against quality and performance standards.

In general, there would be four main processes in the plants that use chemicals - anode and cathode mixing, NMP use and recycling, electrolyte addition, and solvent-based cleaning. Raw materials will be received and prepared in the mixing area. During the process of mixing the anode and cathode slurries, various dry powders are combined with liquids to create the slurries. The NMP used in the cathode slurry is reclaimed during a solvent recovery process and is reused. Electrolyte is added to the cells in the assembly process.

2.4.2.2 Staffing and Operational Timeframe

During the operational phase of the Project, once full production is reached, BlueOval SK estimates that the BlueOval SK Battery Park will employ 4,400 hourly employees and 600 salaried employees. Full production and staffing are expected to be reached in 2030, following a gradual ramp-up beginning in 2025.

The BlueOval SK Battery Park will have three shifts at full production; therefore, worker traffic will be split throughout the day and will not occur at one time. No overlapping traffic is anticipated between shifts because all incoming workers will be at the facility before the shift hour begins, and all outgoing workers will leave the facility after the shift hour ends.

2.4.2.3 Shipping and Receiving

Chemicals used in the manufacturing process will be delivered to the facility by truck utilizing a variety of packaging methods, including tanks, drums, supersacks, and pallets. During preparation for facility operations, an SPCC will be developed that covers chemical management, routes of possible spills, and spill prevention measures.

Finished battery cells will be transferred to vehicle assembly plants off-site. The maximum anticipated volume of truck traffic is 100 delivery trucks per day, which includes all shipping and receiving

2.4.2.4 Waste Management

The proposed BlueOval SK Battery Park will have the capacity to generate waste from the collection of refuse from on-site employee activity and process operations. The majority of process waste will be recovered and recycled for reuse in the manufacturing process. Cell discharging from cells that are discarded from the manufacturing process will be emptied into dedicated sump pits. Dedicated sumps will be used for electrolyte VOC discharge and HCl discharge. A limited amount of wastes may require off-site treatment and disposal. All wastes will be collected, managed, and recycled/disposed of in accordance with regulatory requirements, utilizing the proponents existing solid waste management minimization and removal procedures.

Prior to the commencement of operations, BlueOval SK will determine the facility generator category, as required by the RCRA and complete appropriate registration to obtain an EPA identification number. Based on the regulatory status determination, a Hazardous Waste Contingency Plan will be developed that covers the various hazardous streams, including storage, waste labeling, and inspections.

It is anticipated that the following waste streams and disposal methods will be reasonably foreseeable, although all final determinations will be based on detailed regulatory review prior to commencement of operations:

- Non-hazardous waste (transported off-site and disposed of at an EPA-approved Class I/II landfill designed to accept both industrial and municipal waste)
- Hazardous waste (accumulated and transported off-site for disposal at a certified waste facility)
- Breached or scrapped batteries, metals, and miscellaneous recyclable materials (collected and recycled within the facility or off-site)
- Process NMP (collected in a recovery system for reuse)
- Contaminated NMP (collected and disposed per hazardous waste requirements)

3. ENVIRONMENTAL CONSEQUENCES

3.1 Introduction

In the following sections, each site is examined for environmental consequences. Specific resource areas are addressed (as outlined in Section 1.3) using both qualitative and, where applicable, quantitative information to describe the nature and characteristics of the resource that may be affected by the Project as well as the potential direct and indirect impacts on that resource from the Project, given Project controls. A conclusion regarding the significance of impacts is provided for each resource area. As discussed in Section 1.3, USACE has completed a NEPA EA and SOF for each site. DOE is adopting and incorporating by reference both EAs and SOFs, which are referenced within the sections that follow where pertinent.

3.2 Stanton, Tennessee – BlueOval City Battery Plant

3.2.1 Cultural Resources

For the battery plant site, USACE was the lead federal agency for compliance with Section 106 of the National Historic Preservation Act (NHPA). On August 30, 2022, the Tennessee State Historic Preservation Officer (TN SHPO) concurred that it was appropriate for DOE to adopt USACE's findings because the DOE undertaking involved financing a portion of the larger BlueOval Project (see Appendix A, USACE EA Section 9.3).

The USACE found that no historic properties exist within the proposed site boundary; however, four historic properties, which are eligible for listing in the National Register of Historic Places (NRHP), are adjacent to the Project site, along with one ineligible property. The eligible properties are Greenleaf Cemetery, the Fredonia Baptist Church, the Greater Fredonia Baptist Church, and structure HD-20; the ineligible property is another cemetery (Maclin Cemetery).

On December 30, 2021, the TN SHPO concurred with the USACE finding that the BlueOval Battery Plant would have no effect on archaeological historic properties and requested that an architectural survey be performed. The architectural survey found that no architectural historic properties are located within the permit area; however, the survey identified five eligible or potentially eligible NRHP properties within the architectural area of potential effects. On May 13, 2022, the TN SHPO concurred with the USACE determination of no adverse effect on architectural historic properties, with the incorporation of specific avoidance and notification measures, in federal permit MVM-2015-295, Special Condition 6. None of the avoidance and notification measures are directly applicable to the location of the BlueOval Battery Plant that is subject to federal financial support by DOE.

DOE reviewed the findings of the Section 106 process completed by the USACE, and on August 30, 2022, the TN SHPO concurred that the portion of the DOE undertaking (battery plant footprint) evaluated in the USACE reports will result in no adverse effects to any historic resources. The TN SHPO also discussed other actions near the site, which are addressed in Section 4.

3.2.2 Native American Interests

As part of its Section 106 review process, the USACE consulted with the following 17 federally recognized tribes:

- Absentee-Shawnee Tribe of Oklahoma
- Alabama-Quassarte Tribal Town
- Chickasaw Nation

- Coushatta Tribe of Louisiana
- Eastern Band of Cherokee Indians
- Eastern Shawnee Tribe of Oklahoma
- Jena Band of Choctaw Indians
- Kialegee Tribal Town
- Kickapoo Tribe of Oklahoma
- Poarch Band of Creek Indians
- Ponca Tribe of Oklahoma
- Sac and Fox Nation of Oklahoma
- Seminole Nation of Oklahoma
- Shawnee Tribe
- Thlopthlocco Tribal Town
- Tunica-Biloxi Tribe of Louisiana
- United Keetoowah Band of Cherokee

As a result of the USACE request for consultation, responses were received from three tribes (Appendix A, Section 9.3.3). The Eastern Shawnee Tribe, Chickasaw Nation, and Choctaw Nation responded to the coordination effort. The Chickasaw Nation and Choctaw Nation stated no objections to or concerns for the Project. Both Tribes asked to be notified if the USACE becomes aware of a need to enforce other statutes under the American Rescue Plan Act, American Indian Religious Freedom Act, NEPA, Native American Graves and Repatriation Act, or NHPA or the Project inadvertently discovers an archeological site or object(s). The Eastern Shawnee Tribe also asked to be contacted immediately (i.e., within 24 hours), along with the appropriate state agencies, and for all ground-disturbing activity to stop until the tribe and state agencies are consulted in the event of discovery of an archeological site or object(s). These requirements have been incorporated into the USACE final permit (MVM-2015-295, Special Condition 2).

On August 18, 2022, DOE sent initiation letters to the 17 tribes consulted by USACE as well as initiation letters to the following three Tribes (see sample request letter in Appendix C):

- Cherokee Nation
- Muscogee (Creek) Nation
- Quapaw Tribe of Indians

The initiation letter explained how DOE concurred with the previous Section 106 findings of “no adverse effect” issued by the USACE and concurred by the TN SHPO. A summary of responses is below, and all responses received are included in Appendix C:

- Cherokee Nation: Haywood County, TN, is outside the Cherokee Nation’s Area of Interest.
- Chickasaw Nation: Stated they were in support of the proposed undertaking and presently unaware of any specific historic properties, including those of traditional religious and cultural significance, in the Project area. In the event the agency becomes aware of the need to enforce other statutes, they request to be notified.

- Eastern Band of Cherokee Indians: Informed DOE that the Stanton, TN, location is outside what the tribe's Tribal Historic Preservation Officer considers traditional tribal territory.
- Eastern Shawnee Tribe of Oklahoma: They found their people occupied these areas historically and/or prehistorically. They acknowledged the "no adverse effect" for the Project and instructed that the Project continue as planned. However, should the Project inadvertently discover an archeological site or object(s), they requested to be contacted and that all ground disturbing activity stop until the Tribe and state agencies are consulted.

Please see Appendix C for additional Tribal coordination and comments. See Appendix E for the Cultural Resources Unanticipated Discovery Plan.

Because of the absence of adverse impacts on cultural resources within and surrounding the Project site and the permitted controls in place in the event of an unanticipated discovery of cultural resource materials, impacts on cultural resources—including Native American interests—as a result of the Project would not be significant.

3.2.3 Water Resources

For the battery plant site, the USACE was the lead federal agency for compliance with Section 404 of the CWA. DOE is adopting and incorporating by reference the EA for the Stanton, TN, battery plant prepared by the USACE Memphis District, which covers wetland impacts and mitigation, floodplain impacts, wastewater discharge and mitigation, and stormwater runoff and mitigation (see Appendix A).

3.2.3.1 Groundwater and Surface Water

The battery plant is estimated to require 1.2 million gallons per day (MGD) of water, all of which will be treated potable water. All water will be provided by the Megasite Authority. Multiple new wells will be constructed as part of the Megasite development, and a new water treatment plant will also be constructed to clean well-extracted water to be potable. The exact number of wells is to be determined but the Megasite Authority will have the capacity to provide 7.0 MGD through 7 groundwater wells, which far exceeds the requirement of 1.2 MGD.

The estimated wastewater discharge volume for the battery plant is 0.33 MGD. The Megasite development will include on-site wastewater treatment facilities with a capacity of 5.1 MGD to accommodate site-wide industrial development. Treated wastewater will be piped through a newly constructed 36-mile-long pipeline and discharged to the Mississippi River. Wastewater impacts, as well as groundwater withdrawal, are evaluated separately under the scope of environmental review for the Megasite development.

For operations, the facility will incorporate a water reuse system in which all of the site's domestic and process wastewater, including that from the battery plant, will be collected and treated at the Megasite Authority WWTP and returned in part to the facility in the adjacent assembly plant. Other facility design features such as no underground storage tanks, containment structures, and sealed flooring with dedicated drainage to wastewater collection/treatment will ensure that heavy metals used in manufacturing do not have any contact with water runoff or soils. The proposed facility would obtain all input water and discharge all wastewater within the larger infrastructure of the Megasite authority, therefore, the battery plant would not have significant impacts on groundwater or wastewater discharges.

In preparation for battery plant operations, BlueOval SK will generate and maintain on-site an SPCC and Stormwater Pollution Prevention Plan (SWPPP) to minimize risks associated with surface or groundwater contamination from potential spills or releases of regulated liquids. The facility is being designed to ensure that process controls are in place in preparation for SPCC and SWPPP requirements (secondary containment, etc.). The SWPPP and SPCC give specificity to the mitigations that ensure low or no impact

to groundwater and assures control of any potential pollutant contamination of groundwater or aquifers. These mitigations include:

- Identifying potential pollutant sources (i.e. chemical spills, stormwater runoff of equipment, sediment loading to drainage ways, etc.)
- Spill response plans
- Control measures, schedules, and procedures (i.e. sealing of containers with heavy metals or hazardous chemicals, secondary containment for liquids storage and process units, impenetrable floors in manufacturing and storage areas)
- Storage container material compatibility with liquids or solids contained within
- Groundwater flow patterns and potential contaminant transport pathways
- Best management practices to mitigate or eliminate risks associated with industrial processes
- Employee training and regular inspection procedures
- Reoccurring review and update of SWPPP and SPCC documentation

In addition, the BlueOval SK facility is not currently within a wellhead protection area; however, construction of groundwater wells within the Megasite in the future likely will trigger the broader Megasite location to become a wellhead protection area. The Tennessee Department of Environment and Conservation (TDEC) requires, under the Tennessee Safe Drinking Water Act, that all public water systems that use groundwater as a source are required to develop a Wellhead Protection Plan (WPP) and obtain an approval for each phase of planning from the Tennessee Division of Water Supply. The Megasite authority will own and be responsible for the groundwater wells within the Megasite, and the battery plants that are the subject of this EA will obtain water from them. In addition to BlueOval SK working with the Megasite authority to comply with these requirements, BlueOval SK will follow all requirements designed to prevent surface and subsurface contamination and implement best practices through the SWPPP and/or SPCC plans, both of which are designed to ensure wellhead protection.

Because of the current plans for municipal water use and wastewater treatment provided by the Megasite, the planned control of on-site hazardous liquids, as well as mitigation efforts outlined in the USACE EA, impacts on water resources would not be significant.

3.2.4 Air Quality

3.2.4.1 Setting

Pursuant to the Clean Air Act (CAA), EPA established National Ambient Air Quality Standards (NAAQS) to control a limited number of widely occurring criteria pollutants, including carbon monoxide (CO), nitrogen dioxide, ozone, particulate matter (PM) with a diameter of less than 2.5 micrometers ($PM_{2.5}$), PM with a diameter of less than 10 micrometers (PM_{10}), and sulfur dioxide. Primary air quality standards were developed for these pollutants to protect public health, including sensitive populations such as children, the elderly, and asthmatics, and secondary standards were developed to protect the nation's welfare, including protection against decreased visibility and damage to animals, crops, and vegetation. EPA has concluded that the current NAAQS protect public health, including at-risk populations of older adults, children, and people with asthma, with an adequate margin of safety. The airshed that contains the Project site in Haywood County is in attainment or unclassifiable for the NAAQS, meaning none of the ambient concentrations of criteria pollutants exceed the air quality standards.

To protect air quality, several permitting programs under the CAA regulate point-source air emissions. Under the New Source Review (NSR) permitting program, a major stationary source is one of the 28

listed facility types that has the potential to emit 100 tons per year (tpy) or more of a regulated NSR pollutant or is an unlisted facility that has the potential to emit 250 tpy or more of a regulated NSR pollutants. A Prevention of Significant Deterioration (PSD) permit is required for new major sources or a major source making a major modification in areas that are in attainment for all the NAAQS. The proposed battery manufacturing facility would be considered a major source with respect to the PSD permitting program, National Emission Standards for Hazardous Air Pollutants (NESHAP), and Title V permitting program. The Tennessee Department of Environment and Conservation (TDEC) administers this permitting program and issues the permit to construct and operate the facility. An application containing all required elements under 40 CFR 52 has been submitted and approved by TDEC and EPA.

The applicant completed a PSD major-source permit application, and an associated dispersion modeling analysis was submitted for TDEC and EPA review (October 2021–March 2022). The application demonstrated compliance with all regulatory requirements, emissions control thresholds, and ambient impact assessments. TDEC issued final PSD permits to construct for the entire BlueOval City on May 27, 2022. Permit 979564 was specifically issued by TDEC for the BlueOval SK Battery Plant. The air pollutant loads reflected in **Table 3** represent Potential-to-Emit (PTE) air pollutants from all emission sources at the overall BlueOval City, which includes the battery plant, automobile stamping plant, and automobile assembly plant for BEV. This PTE reflects both permitted and non-permitted emission sources, including insignificant and exempt sources. All permit limits for permitted units have been accounted for in this PTE total. Because the PTE from the facility exceeds 100 tpy, the facility will be subject to the CAA Title V Operating Permit Program.

3.2.4.1 Emissions Analysis

Air emissions would result from construction and operation of the Project. During construction, air emissions would be generated from mobile sources (e.g., trucks, automobiles) and dust as well as on-site rock-crushing operation. Emissions from workers' vehicles and construction equipment would be temporary and transient in nature, and various best management practices (BMPs), such as watering and the use of temporary construction entrances would be implemented to reduce potential impacts. All operations would remain in compliance with the requirements of Tennessee Air Pollution Control Regulation 1200-03-08-.01, Fugitive Dust, including the requirement to limit visible emissions beyond the facility property line to a maximum of 5 minutes per hour or 20 minutes per day.

Table 3: BlueOval City Potential to Emit and PSD Applicability

Pollutant	Nested-Source Potential Emissions (tpy)	Project Potential Emissions (tpy)	Nested-Source PSD Major-Source Threshold (tpy)	Facility-Wide PSD Major-Source Threshold (tpy)	PSD Significant Emission Rate 10 (tpy)	Project Triggers PSD Review? (Yes/No)
PM	0.85	42.94	100	250	25	Yes
PM_{10}	0.85	16.34			15	Yes
$PM_{2.5}$	0.70	10.11			10	Yes
CO	61.77	202.11			40	Yes
NO_X	42.34	212.93			100	Yes
SO_2	0.98	4.24			40	No
VOC	9.01	1,236.36			40	Yes
Lead	8.19E-04	2.55E-03			0.6	No

Pollutant	Nested-Source Potential Emissions (tpy)	Project Potential Emissions (tpy)	Nested-Source PSD Major-Source Threshold (tpy)	Facility-Wide PSD Major-Source Threshold (tpy)	PSD Significant Emission Rate 10 (tpy)	Project Triggers PSD Review? (Yes/No)
GHG (as CO_2e)	195,644.94	612,193.20	--	--	75,000	Yes

CO= carbon monoxide; NO_X = nitrogen oxides; PM_{10} = particulate matter with diameters 10 microns and smaller; $PM_{2.5}$ = particulate matter with diameters 2.5 microns and smaller; SO_2 = sulfur dioxide; tpy = tons per year; CO_2e = carbon dioxide equivalent; VOC = volatile organic compound; GHG = combined GHG in CO_2e

Because emissions during construction would not overlap with emissions during operation, and because of the controls that would be implemented during Project construction, impacts on air quality as a result of construction of the Project would not be significant.

Operation of the battery manufacturing facility would result in several sources of air pollutant emissions that would result in the total emissions presented in **Table 3**. Lithium-ion battery manufacturing plants are not a named source category. However, the Project includes fossil-fuel boilers with more than 250 million British thermal units per hour (MMBtu/hr) of heat input, which is a listed source category. For PSD applicability, the boilers are considered a listed sub-source that is nested within a larger non-listed source (i.e., the entire facility, including the fossil fuel boilers). Therefore, the nested sources (i.e., all fossil fuel boilers) are considered a major source if the PTE of a regulated pollutant from these sources exceeds 100 tpy, and the non-listed source (i.e., the entire facility, including the fossil fuel boilers) is considered major if the PTE of a regulated NSR pollutant exceeds 250 tpy. As demonstrated in **Table 3**, the nested source would not exceed the PSD major source threshold; however, the overall facility would exceed the major source threshold for VOC. Therefore, the overall facility is considered a major stationary source with respect to the PSD permitting program and would follow the permitting requirements.

While limitations within the project's PSD permit should be sufficient to prevent any NAAQS exceedances, TDEC requested BlueOval SK adhere to local pollution mitigation strategies on poor air quality days. Such strategies include, but are not limited to, reducing excessive vehicle idling and/or ensuring control devices are operating properly.

Additional discussion of the cumulative impact of air quality emissions, including the beneficial nature of BEV replacement of automobiles with internal-combustion engines on GHG emissions, is found in Section 4.

Because of the location of the Project site, existing air quality conditions, the amount of anticipated air emissions, and the controls that would be implemented during operation and meeting applicable emission standards, impacts on air quality as a result of the Project would not be significant.

3.2.5 Noise

Noise is any unwanted sound that penetrates the environment or interferes with normal communication or activities. The BlueOval City Battery Plant is proposed to be located on land controlled by the State of Tennessee through the "Megasite Authority of West Tennessee Act of 2021" (Tennessee Code Section 64-9-101). The intent of the authority is "to promote economic development at or within the Megasite" and "establish the authority for the purposes of developing, incentivizing, operating, managing, and promoting the Megasite (Tennessee Code Section 64-9-102). With development of the Megasite Authority, "the property within the Megasite is not subject to local land use regulations." It is intended for industrial development. Overall, the surrounding area remains mostly undeveloped. The Megasite Authority adopted the zoning ordinance for the Megasite on November 17, 2022. All of the land within the Megasite

was zoned “General Industrial.” Automobile manufacturing and battery manufacturing are both permitted uses within the new zoning district.

Tennessee State Highway 222 is immediately adjacent east of the Project site, I-40 is approximately 1.2 miles south of the site, and Tennessee State Route 79 is approximately 2 miles to the north. The Project site is currently in a region with limited residential land uses and influenced by existing sources of noise, which are limited to vehicular traffic, railroad use, and farm machinery.

Haywood County does not have county-specific noise ordinances. Tennessee has noise ordinances for motor vehicles, which are potentially applicable to Project construction and operation, that limit intentionally amplified sound, engine compression braking, and muffler modifications. Motor vehicle usage for construction and operation of the Project is anticipated to be compliant with these Tennessee regulations because typical work-practice standards for commercial vehicle operation inherently limit amplified sound, engine compression braking, and muffler modifications.

Construction of the Project would generate temporary noise during construction from the use of heavy machinery such as bulldozers, graders, excavators, dump trucks, and cement trucks as well as larger building erection equipment such as drilling and piling equipment. Noise and sound levels would be typical of new industrial construction activities and would be intermittent and limited to the construction phase. Noise would be managed during construction by using BMPs, such as limiting outdoor construction activities to daylight working hours (approximately 7 a.m. to 10 p.m.) during weekdays, except for special circumstances if work on a weekend is needed.

A limited number of existing residences with potential exposure to noise impacts from the site construction and operation. The closest existing residence is approximately 0.5 mile from the battery plant location with most residences at much farther from the site. These residences could experience short-term adverse impacts from noise generated during construction of the facility.

The industrial process/manufacturing operations at the facility would not add to local ambient noise levels because the manufacturing processes would be conducted within an enclosed building and consistent with the current intended use of the site, which is industrial activity. Noise from vehicular traffic from commuting workers and material receiving and shipping would be consistent with the intended use of the larger industrial Megasite where the battery plant will be located. The battery plant will operate three shifts on a 24-hour per day schedule. Noise from manufacturing operations inside buildings would be consistent throughout the 24 hours of operation. Noise from worker commuting and material receiving and shipping would occur all hours of the day but be proportionally higher during daytime hours and lower at night due to the larger volume of overall activity during typical daytime hours.

Because of the controls that would be implemented during construction, as well as the nature of the area surrounding the Project site (i.e., the larger industrial Megasite), impacts from noise as a result of the Project would not be significant.

3.2.6 Transportation

The primary surface road transportation routes to the proposed BlueOval City Battery Plant site include I-40, approximately 1.2 miles south of the site, and Tennessee State Route 79, approximately 2 miles to the north. These two corridors are connected by Tennessee State Highway 222, which is immediately adjacent east of the site.

In preparation for development of the West Tennessee Megasite (where the battery plant and larger Blue Oval City will be located), TDOT, in cooperation with the Federal Highway Administration (FHWA), has proposed various roadway improvements in Fayette, Haywood, and Tipton Counties. The roadway improvements are being considered to serve the imminent industrial development at the BlueOval City

within the Megasite. The projected increase in both commuter and freight traffic is anticipated to further increase travel demand within the existing roadway network.

The needs for the proposed roadway improvements have been identified as the following:

- Support ongoing development in the region
- Existing operational deficiencies
- Insufficient connectivity to the Memphis Regional Megasite and the surrounding area

The purpose of the proposed roadway improvements has been identified as the following:

- Accommodate ongoing development in the region
- Improve traffic operational efficiency
- Improve connections to the Memphis Regional Megasite and the surrounding area

The proposed roadway improvements include:

1. Construction of a northern extension of Tennessee State Route 194 from the existing intersection of Tennessee State Route 59/Tennessee State Route 194 in Fayette County to the proposed Tennessee State Route 194/I-40 interchange (Exit 39).
2. Construction of a new interchange (Exit 39) where proposed Tennessee State Route 194 and I-40 intersect.
3. Construction of the Tennessee State Route 194 extension between the proposed Tennessee State Route 194/I-40 interchange (Exit 39) and the proposed Tennessee State Route 194/Blue Oval City connector (proposed Tennessee State Route 468) interchange.
4. Construction of the Tennessee State Route 194/Blue Oval City connector (proposed Tennessee State Route 468) interchange.
5. Construction of the Blue Oval City connector (proposed Tennessee State Route 468) between Tennessee State Route 194/Blue Oval City connector (proposed Tennessee State Route 468) interchange and existing Tennessee State Route 222.
6. Construction of the Tennessee State Route 194 extension between the proposed Tennessee State Route 194/Blue Oval City connector (proposed Tennessee State Route 468) interchange and existing Tennessee State Route 1 (US 70).
7. Modifications to the existing Tennessee State Route 222/I-40 interchange (Exit 42).

TDOT is currently evaluating the environmental impacts related to the proposed roadway improvements. In order to complete the environmental technical studies for the proposed improvements, an Environmental Technical Study Area (ETSA) was developed by TDOT. An ETSA is developed for a project in order to document natural, cultural, and community resources within a broader study area than the immediate project footprint. That way, if the proposed roadway improvements' alignment shifts during the development of the project, TDOT personnel are aware of any resources that are present in that larger study area.

The ETSA for the Project is based on conceptual-level roadway design plans and extends beyond the immediate footprint of the proposed roadway improvements. The ETSA boundaries for the Project encompass an area that is generally 150 to 500 feet on either side of the proposed centerline. The ETSA for the proposed roadway improvements encompasses approximately 1,742 acres.

Several environmental technical studies are still under development, the results of which will be formally published in the EA that TDOT is currently preparing. The public will be asked to provide comments on the anticipated environmental impacts during forthcoming public hearings.

During battery plant construction, site access traffic will flow primarily along Tennessee State Highway 222. Construction employee and equipment traffic would occur throughout the active construction period and would temporarily affect traffic through increased activity along Tennessee State Highway 222 and potentially other surface access routes. Total construction worker activity and travel will vary throughout the period of active construction.

BlueOval City would implement maintenance of traffic plans to ensure safety during various phases of Project construction. As the site plan is further developed, BlueOval City and TDOT will work collaboratively to ensure traffic pattern changes are aligned with Project activities and that appropriate signage and controls are in place to uphold traffic safety, including controlled turning lanes at intersections with major roadways to mitigate disturbances to existing thoroughfares. Pavement markings needed at internal intersections would be updated to avoid anticipated vehicle conflicts due to sight restrictions and the turning envelopes of both passenger vehicles and large trucks.

During battery plant operations, estimated traffic counts for the BlueOval City Battery Plant were calculated using estimated employment and production data. During operations, when at full capacity, truck and employee traffic are estimated to increase to 1,000 employee vehicles and 100 delivery trucks per day**.**

The BlueOval City Battery Plant would utilize three shifts at full production; therefore, worker traffic would be split throughout the day and not occur at one time. No overlapping traffic is anticipated between shifts because all incoming workers would be at the facility before the shift hour begins and all outgoing workers would leave the facility after the shift hour ends.

The facility would also have access to rail transportation via a proposed railyard (associated with larger BlueOval City Project) connecting to an existing rail line on the northwest side of the Megasite.

Additional cumulative off-site traffic related expansions associated with the entire BlueOval City development are included Section 4.

Because of road improvements that have already occurred, associated with development of the Megasite, as well as those proposed to occur in conjunction with site development; the measures incorporated as part of the Project (e.g., accounting for increases in traffic from construction and operation by installing appropriate signage and controls, managing traffic flows at intersections with pavement markings, implementing traffic safety plans); and the operational constraints of shift changes, impacts on transportation as a result of the Project would not be significant.

3.2.7 Aesthetic and Visual Resources

The Project site is approximately 2.5 miles south of Stanton, TN, in Haywood County. Currently no developments of the size of the Project are present in the Stanton, TN, area. However, because of the size of the Project site, which is within BlueOval City and the larger industrial Megasite, only a limited number of residences are within visual range of the Project. Views to the north, west, and south of the battery plant are cleared land for industrial use; the view to the east includes a fire station and additional cleared land for industrial use.

Residences south and west of the battery plant along Fredonia Road are between 0.5 and 1 mile away. Currently, these residences are screened from the larger BlueOval City by intermittent wooded areas. These wooded areas are not proposed for removal by the Project and will continue to provide visual screening during portions of the year. During the portion of the year when deciduous trees have little to no foliage, there could be limited aesthetic and visual impacts on these residences.

Construction of the Project would result in permanent visual changes on the site—namely, new buildings on what is currently open land. However, the new facility would have an appearance consistent with other

industrial complexes within the region and has been designed to incorporate berms and landscaping features to minimize offsite visual impacts. Berms and landscaping would be designed to mimic surrounding topography and vegetation to minimize potential visual distinction of the area. In addition, the siting of the battery facility would be consistent with the intended use for the area, which is industrial. Once construction is complete, reclamation of disturbed areas would remove these temporary visual impacts.

Operations at the new facility would result in minor increases in nighttime light; however, the facility is designed to minimize offsite light impacts to the greatest extent practical. Outdoor lighting has been designed with variable intensities to match the minimum needs of each area of the site. For example, parking lots will have approximately half the amount of illumination as roadways. All outdoor lighting will utilize full-cutoff luminaries that ensure no light above 90 degrees. According to light trespass modeling, there will be no illumination at the Project area boundary, except for what is contributed by lights at entrance roadway intersections with surrounding public roads. The battery plant is surrounded by other industrial land on all four sides, and the larger industrial area would not be affected by increases in nighttime light; thus, the area would not be adversely affected by minor increases in nighttime light.

Because of the design of the Project, which aims to minimize off-site visual and lighting impacts, as well as the distance to existing residential properties, impacts on aesthetic and visual resources as a result of the Project would not be significant.

3.2.8 Biological Resources and Threatened and Endangered Species

The USACE was defined as the lead federal agency, documenting compliance with Section 7 of the Endangered Species Act (ESA). The scope of the USACE EA for biological resources and ESA compliance was defined as the entire disturbance boundary for BlueOval City, including the battery plant (see Appendix A, USACE EA Section 9.1).

The USACE EA concluded that the Project would have no effect on federally listed species and that the effects on fish and wildlife values will be negligible when taking into consideration the applicant proposed compensatory mitigation for the proposed stream impacts. Based on the previous review in the USACE EA of potential impacts on biological resources, the mitigation measures required, and the determination of ESA consultation compliance, impacts on biological resources as a result of the Project would not be significant.

3.2.9 Socioeconomics and Environmental Justice

3.2.9.1 Socioeconomics

The battery plant would be located in Haywood County, TN, approximately 40 miles via I-40 from both Memphis and Jackson, TN. During the construction phase of the Project, BlueOval SK estimates that construction peak manpower will require approximately 1,700 to 2,000 people. Based on preliminary construction planning, it is anticipated that between 20 and 25 percent of this manpower will be sourced from the local or regional workforce. The remainder will be allocated from outside of the region.

During the operational phase of the Project, once full production is reached, BlueOval SK estimates that the battery plant will employ 2,200 hourly employees and 300 salaried employees. Operations are estimated to begin in 2026.

A workforce audit was conducted by HTL Advantage in March of 2021 for the Memphis Regional Megasite. The analysis concluded that, within a 45-minute drive time, the regional labor pool could provide 80 to 85 percent of the workforce for major economic impact projects and that the remaining 15 to 20 percent could be found within a 90-minute drive time. Further, specific to automotive manufacturing, the labor pool within a 45-minute drive time includes the following characteristics:

- A total of 186,508 residents who are employed in the Automotive Manufacturing sector (North American Industry Classification System 336111)
- An additional 10,860 unemployed residents who were previously employed in occupations directly related to the Automotive Manufacturing sector
- An additional 757,937 employed and 43,452 unemployed residents who possess transferable skill sets

Further, the State of Tennessee has allocated $5 million to funding resources to help communities plan and prepare for the anticipated economic growth associated with the development of BlueOval City. The funding is designed to facilitate community planning needs and ensure adequate planned access to infrastructure and governmental services. In addition, incremental tax revenue from the Project will assist with local community impacts. The process is facilitated by a Tennessee Department of Economic and Community Development planning grant. Public information is readily available online through a dedicated interface.[1] Further, BlueOval SK has developed a regional partnership with area K–12 schools and technical colleges to support the skills required for operational workers, with an enumerated goal of providing priority to hiring local workers.

Extensive health care and public safety resources exist within the greater Project region. BlueOval SK continues to review methodologies for contractual obligations for these resources if required to bolster existing resources.

Given the extensive job creation that would occur during construction and operation of the BlueOval City Battery Plant, the availability of a regional workforce, the proactive workforce training, and the housing and public services available in the greater BlueOval City region, significant adverse socioeconomic impacts would not be expected.

3.2.9.2 Environmental Justice

LPO's review of Environmental Justice (EJ) issues focuses on Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations; the National-Scale Air Toxics Assessment (NATA) cancer risk and respiratory hazard index, as defined in EPA's EJ screening tool; and site-specific population centers (e.g., schools, day-care centers) near the Project site.

Executive Order 12898 directs federal agencies to address environmental and human health conditions in minority and low-income communities. The evaluation of EJ is dependent on determining if high and adverse impacts from the Project would disproportionately affect minority or low-income populations in the affected community.

In accordance with EPA's EJ guidelines, minority populations should be identified when either 1) the minority population of the affected area exceeds 50 percent or 2) the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis.

The ethnic and racial composition of the county and the state is presented in **Table 4**. Minority populations are approximately 56 percent of the population in the county and above the minority population percentages in the state. At the census tract level, where the Project is located, the people of color population is 47 percent (see **Table 5**).

[1] Tennessee Department of Economic and Community Development. n.d. *Blue Oval City Community Information*. Available: https://www.tn.gov/ecd/rural-development/blue-oval-city-resources.html.

Table 4: Population, Ethnicity, and Poverty

	Haywood County	Tennessee
Total population	17,864	6,910,840
Race/Ethnicity	--	--
White	43.08%	72.22%
Black or African American	50.56%	15.81%
American Indian and Alaska Native	0.33%	0.41%
Asian	0.15%	1.96%
Native Hawaiian and other Pacific Islander	0.05%	0.06%
Hispanic or Latino	4.69%	6.93%
Poverty	18.0%	13.6%

Note: All population and ethnicity data were gathered from the U.S. Census Bureau web page. Accessed September 15, 2022.

Table 5: EPA's EJ Screen Report

	Value	State Average	Percentile in State	U.S. Average	Percentile in U.S.
NATA* cancer risk (lifetime risk per million)	30	32	80	29	80th–90th
NATA* respiratory hazard index	0.3	0.4	25	0.36	< 50th
People of color population	47%	26%	80	40%	63
Low-income population	40%	35%	62	31%	68

Notes: Selected Variables – Tract: 47075930500, Tennessee, EPA Region 4. Approximate Population: 2,724.

** More information on the NATA can be found at https://www.epa.gov/national-air-toxics-assessment.*

The percentage of persons in poverty is approximately 4 percent higher in Haywood County (18.0 percent) than in the rest of the state (13.6 percent; see **Table 4**). In the EPA's EJ screening tool (**Table 5**), the low-income population is 40 percent, slightly above the state average of 35 percent (62nd percentile) and 9 percentage points higher than the U.S. average of 31 percent (68th percentile).

Although the county and census tract averages for low-income and minority populations exceed the 50th percentile relative to the state averages, the Project region is not a regional outlier in regard to these metrics. Rather, the Project site contains demographic percentile characteristics similar to those of the surrounding counties in western Tennessee, a lower percentage of people of color, and low-income communities similar to those of regions within the greater Memphis metroplex, based on data from EPA's EJ screening tool. For comparison, the three counties in the Memphis metro area closest to the Project area are west, southwest, and south of Stanton, TN (Tipton, Shelby, and Fayette Counties, respectively). For the combined EJ screen report for those three counties, the people of color percentage is 61 percent (compared to a lower 47 percent for the Project area in **Table 5**) and the low-income population is 38 percent (compared to a similar 40 percent for the Project area in **Table 5**).

The NATA cancer risk and respiratory hazard indices are a way to see how local residents compare to everyone else in the state and the entire U.S. For the NATA respiratory hazard index, the region is in the 25th percentile relative to the state and below the 50th percentile relative to the U.S.

For the NATA cancer risk index (lifetime risk per million), the Project is in an area that is in the 80th percentile relative to the state and between the 80th and 90th percentile relative to the U.S. Although these NATA percentiles are higher in comparison to the rest of the U.S., Project emissions and potential ambient air quality impacts were reviewed by the TDEC, as discussed in Section 3.2.4. The permitted levels of criteria pollutants and hazardous air pollutants are considered to be protective of human health and the environment. Also, according to the permit authorizations, best available control technology will be required to be implemented during operation to minimize emissions and potential air quality impacts.

Because of the significant socioeconomic benefit projected to be created during both construction and operation, the Project would represent a benefit with respect to the regional economy and poverty metrics. Given these considerations, no impacts are anticipated that would give rise to disproportionate impacts on minority or low-income populations in the affected area. Therefore, EJ impacts would not be significant.

3.2.10 Health and Safety

The construction contractor developed a site-specific occupational health and safety plan for construction activities and is implementing the plan.

Operations are governed by a global corporate health and safety program that requires review and approval of all novel processes and activities. The health and safety program requires employee training, proper protective equipment, engineering controls, monitoring, and internal assessments of ongoing safety activities.

In general, four main processes in the plant that use chemicals: anode and cathode mixing, NMP use and recycling, electrolyte addition, and solvent-based cleaning. During the process to mix the anode and cathode slurries, various dry powders are combined with liquids to create the slurries. The NMP used in the cathode slurry is reclaimed during a solvent recovery process and reused. Electrolyte is added to the cells in the assembly process. Cell discharging from cells which are discarded from the manufacturing process would be emptied into a dedicated sump pit. Dedicated sumps will be used for electrolyte VOC discharge and HCl discharge. Acetone and isopropyl alcohol would be utilized for facility cleaning. All processes would occur within an engineer assembly process to minimize health and safety risks.

Chemicals used in the manufacturing process would be delivered to the facility by truck using a variety of packaging methods, including tankers, drums, supersacks, and pallets. During preparation for facility operations, a SPCC and SWPPP would be developed that would cover chemical management, routes of possible spills, and spill prevention measures. Safety data sheets for all chemicals would be followed and available on-site.

The facility would utilize storage tanks for materials utilized at the facility, including fresh and waste NMP, collected purge solvent, and electrolyte materials. All storage tanks are proposed to be aboveground storage tanks (ASTs).

Standard BMPs and applicable federal, state, and local regulations and standards for construction and operation of the facility would be implemented to ensure the safety of workers and the public. This would include compliance with federal Occupational Safety and Health Administration (OSHA) regulations and state rules under the Tennessee Occupational Safety and Health Administration.

Various hazardous chemicals are used throughout the battery cell–manufacturing process. Regulated substances per Section 112(r) of the CAA (Risk Management Plan) would not be used or would be used in small quantities not anticipated to trigger risk management plan requirements. A software program would be used to track chemical purchases and run reports to notify the site if any chemicals used trigger CAA Section 112 requirements. Chemicals used in manufacturing will be continuously reviewed for compliance with the Toxic Substances Control Act (TSCA), including requirements for Premanufacture Notice (PMN) for any chemicals not on the TSCA inventory, following the Significant New Use Rules (SNURs), and conducting quadrennial Chemical Data Reporting (CDR) covering applicable chemical manufacture and import. The battery plant would employ a chemical control process that evaluates all new chemicals for environmental and safety regulatory implications prior to that chemical being brought on-site.

Per the Emergency Planning and Community Right-to-Know Act (EPCRA), the battery plant would produce and submit necessary chemical threshold reports, site plans, and site emergency response plans and would participate in local emergency planning and public meetings. The battery plant would also develop the necessary emergency response procedures applicable to the transport of dangerous goods and materials. Reporting of chemical activities under the Toxic Release Inventory (TRI), per EPCRA Section 313 would also be conducted as applicable.

The local fire department (adjacent to the site) would also be informed of potential hazards associated with the facility as well as facility construction and layout information for the site to ensure first responders and the public are protected from exposure to potentially hazardous situations (e.g., toxic smoke or vapors) in the event of a fire or industrial accident.

Because of the measures to address health and safety, including BMPs; compliance with federal, state, and local regulations and standards; plans for preventing chemical spills and potential mishandling of hazardous materials; and the facility's experience with handling and use of the same hazardous materials at the existing facility, impacts on the health and safety of workers and the public from Project construction and operation would not be significant.

3.2.11 Waste Management

The battery plant has the capacity to generate waste from the collection of refuse from on-site employee activity and process operations. The majority of process wastes can be recovered and recycled for reuse in the manufacturing process. A limited amount of wastes may require off-site treatment and disposal. This includes wastewater discharge, which was detailed in Section 3.2.3. All wastes will be collected, managed, and recycled/disposed of in accordance with regulatory requirements utilizing the proponents' existing solid waste management minimization and removal procedures.

Prior to the commencement of operations, BlueOval SK will determine the facility generator category, as required by the RCRA, and complete appropriate registration to obtain an EPA identification number. Based on the regulatory status determination, a Hazardous Waste Contingency Plan will be developed that covers the various hazardous streams, including storage, waste labeling, and inspections.

It is anticipated that the following general categories of waste streams and disposal methods will be reasonably foreseeable, although all final determinations will be based on detailed regulatory review prior to commencement of operations:

- Non-hazardous waste (transported off-site and disposed at an EPA-approved Class I/II landfill designed to accept both industrial and municipal waste)
- Hazardous waste (accumulated and transported off-site for disposal of at a certified waste facility)
- Breached or scrapped batteries, metals, and miscellaneous recyclable materials (collected and recycled within the facility or off-site)
- Process NMP (collected in a recovery system for reuse)
- Contaminated NMP (collected and disposed per hazardous waste requirements)

In addition to the above waste categories, **Table 6** provides more detailed estimations of waste types, generation volumes, transportation methods and packaging, and the expected disposal method.

Table 6: BlueOval City Waste Stream Detail

Waste Type	Packaging	Waste Generation (lb/year)	Expected Transportation	Expected Disposal Method
General Waste	Compactor	1,496,880	Roll off Truck	Waste to Energy
Cardboard	Bales	1,496,880	Truck	Recycling
Waste Cell	Open-top IBC Tote	25,483,392	Truck	Recycling
Waste Module	Open-top IBC Tote	297,792	Truck	Recycling
Cathode Slurry	IBC Tote	6,229,080	Truck	Recycling
Anode Slurry	IBC Tote	4,398,768	Truck	Recycling
Anode Scrap	Sack/IBC Tote	7,291,152	Truck	Recycling
Cathode Scrap	Sack/IBC Tote	9,306,000	Truck	Recycling
Waste Jelly Roll	Sack/IBC Tote	4,626,072	Truck	Recycling
Copper Foil	Sack/IBC Tote	163,944	Truck	Recycling
Anode Jumbo Roll	Sack/IBC Tote	620,928	Truck	Recycling
Aluminum Scrap (Foil+Tab)	Sack/IBC Tote	415,800	Truck	Recycling
Anode Powder	Sack/IBC Tote	449,064	Truck	Recycling
Cathode Powder	Sack/IBC Tote	281,160	Truck	Recycling
Cathode Jumbo Roll	Sack/IBC Tote	578,952	Truck	Recycling
NMP Scrap	Aboveground Storage Tank	144,000,000	Tanker Truck	Recycling
Electrolyte Scrap	Drum	12,672	Truck	Fuels Blending
Scrap Wood	Roll Off	520,344	Truck	Recycling/Compost
Copper Tab	Sack/IBC Tote	499,752	Truck	Recycling
Scrap Metal (miscellaneous)	Roll Off	453,024	Truck	Recycling
Plastic Pallet	Bales	2,707,848	Truck	Recycling
Plastic Tray	Bales	2,560,536	Truck	Recycling
Pouch	Sack/IBC Tote	8,533,800	Truck	Recycling
Universal Waste	Drums/Boxes	83,952	Truck	Recycling
Hazardous Waste	Drum	5,000	Truck	Incineration

IBC = intermediate bulk container

Because of planned waste management practices that would align with all applicable state and federal regulations prior to waste generation and a dedicated program to minimize wastes and enhance material recycling, impacts from waste management activities would not be significant.

3.2.12 Soils and Prime Farmlands

The Project site is currently owned by the State of Tennessee. Historic local (Hardin County) zoning defined the parcel land use for Forestry, Agricultural, and Residential (FAR) development. In 2021 the control of the Project site was redefined though passage by the State Legislature of the “Megasite Authority of West Tennessee Act of 2021” (Tennessee Code Section 64-9-101). The Megasite Authority adopted the zoning ordinance for the Megasite on November 17, 2022. All of the land within in the Megasite was zoned “General Industrial,” and automobile manufacturing and battery manufacturing are both permitted uses within the new zoning district.

Prime Farmland, as defined by the U.S. Department of Agriculture (USDA), is land that has the best combination of characteristics for producing food, feed, forage, fiber, and oilseed crops. Portions of the Project site are classified as Prime Farmland. Post-construction, construction of the BlueOval City Battery Plant would convert roughly 214 acres of land from being available for farming (see **Figure 2**). Of this acreage, only 59.2 acres are considered Prime and Unique Farmland, as defined by the Natural Resources Conservation Service (NRCS) Land Evaluation submitted to DOE from NRCS on September 22, 2022 (TN NRCS September 2022). Haywood County has more than 273,110 acres of farmland. Therefore, the Project represents a negligible reduction (< 0.05 percent) in total farmland for the county (TN NRCS September 2022).

Based on information obtained from the NRCS, there are five soil associations within the Project site.[2] These soil associations are shown in **Table 7**.

Table 7: BlueOval City Battery Plant Farmland Classification

Map Unit Symbol	Map Unit Name	Acres	Percent of Total Acres	Farmland Classification
Ad	Adler silt loam, 0 to 2 percent slopes, frequently flooded	33.5	15.60%	All areas are Prime Farmland
Ca	Calloway silt loam	1.5	0.70%	All areas are Prime Farmland
FcB2	Feliciana silt loam, 2 to 5 percent slopes, moderately eroded, northern phase	22.7	10.60%	All areas are Prime Farmland
FcD3	Feliciana silt loam, 8 to 12 percent slopes, severely eroded, northern phase	2.8	1.30%	Not Classified*
LoB2	Loring silt loam, 1 to 5 percent slopes, eroded	1.5	0.70%	All areas are Prime Farmland
LoB3	Loring silt loam, 1 to 5 percent slopes, severely eroded	12.2	5.70%	Not Prime Farmland
LoC3	Loring silt loam, 5 to 8 percent slopes, severely eroded	133.1	62.20%	Not Prime Farmland
LoD3	Loring silt loam, 8 to 12 percent slopes, severely eroded	0.2	0.10%	Not Prime Farmland
LPD	Loring and Memphis soils, 5 to 12 percent slopes, gullied	6.6	3.10%	Not Prime Farmland
TOTAL		**214.0**	**100%**	

**NOTE: classification would not change the determination of significant or no significant impact*

The Farmland Protection Policy Act (FPPA) regulations state that project sites receiving a total score of 160 or greater need further consideration for protection (CFR Title 7, Chapter VI, Part 658.4[c][2]). In determining a project site's score, the FPPA requires the use of a site's relative value (National Crop and Commodity Production Index [NCCPI] rating) [Section 658.5[a]] and the site assessment criteria, which are set forth in Section 658.5 (b) and (c) (see Appendix C).

A combined score of up to 260 points, made from up to 100 points for relative value (NCCPI rating) and up to 160 points for the site assessment (Title 7, Chapter VI, Part 658.1–7 [Site Assessment Criteria]), is used to assess the suitability of each proposed site or design alternative for protection. The site

[2] USDA NRCS Web Soil Survey maintains information on soil type, soil descriptions, and series classifications.

assessment for the BlueOval City Battery Plant is 65 points, and when combined with the NCCPI rating of 56, the site has a score of 121 (TN NRCS September 2022), which is below the threshold for further protection considerations.

During construction, soils on 214 acres would be affected, 180 acres of which would be affected over the long term due to the Project's permanent facilities (e.g., plant, roads, parking, other support facilities). Short-term impacts would include soil loss through erosion, compaction, and loss of structure in soils that are disturbed or driven on during construction. After construction, disturbed or compacted areas not needed for operation would be regraded, loosened, and revegetated.

Impacts on soils during the operational phase of the Project would be associated largely with the limited soil erosion induced by vehicle traffic on small portions of unpaved surfaces; soil erosion from this source is expected to be negligible. BlueOval SK would monitor and repair any areas of erosion or soil instability.

Given the limited amount of Prime Farmland affected by the Project; the FPPA assessment scoring for the Project land; the intention for farmland conversion, based on the explicit intent of the Megasite Authority of West Tennessee Act of 2021; and the extensive additional farmland resources within Haywood County, the overall impacts on soils and Prime Farmland by the Project would not be significant.

3.3 Glendale, Kentucky – BlueOval SK Battery Park

3.3.1 Water Resources

DOE was a cooperating agency with USACE for compliance with Section 404 of the CWA. The EA for the Glendale, KY, battery park covered wetland impacts and mitigation, floodplain impacts, wastewater discharge and mitigation, stream relocation, and stormwater runoff and mitigation (see Appendix B).

3.3.1.1 Groundwater and Surface Water

The battery park is estimated to require 2.4 MGD of water, all of which will be treated potable water provided by Hardin County Water District No. 2 ("Water District") through a connection to municipal water lines - well within the Water District's 11.4 MGD capacity. The Water District proposed to construct a water line through the Glendale Megasite that would, in part, service the BlueOval SK site. The water line will be installed in the Water District's easement on the site, which falls within the area evaluated under the USACE EA. The construction of this waterline beyond the BlueOval SK site is being evaluated under an assessment by the USACE to ensure compliance with the CWA.

The estimated wastewater discharge volume for the battery park is 0.66 MGD, which will be transferred to existing municipal wastewater handling infrastructure within Hardin County. This is well within the 8.1 MGD of the municipal wastewater treatment capacity. BlueOval SK has engaged Hardin County officials throughout the facility design process to ensure that the municipal potable water and wastewater systems will be able to accommodate the needs of the battery park. The proposed facility would obtain all input water and discharge all wastewater within the larger infrastructure of Hardin County's existing systems; therefore, the battery park would not have significant impacts on groundwater or wastewater discharges.

In preparation for battery park operations, BlueOval SK will generate and maintain on-site a SPCC and SWPPP to minimize the risk to surface or groundwater contamination from potential spills or releases of regulated liquids. The facility is being designed to ensure process controls are in place in preparation for SPCC and SWPPP requirements (secondary containment, etc.).

In addition to SPCC and SWPPP requirements, Kentucky Administrative Rules (KAR) at 401 KAR 5:037 provide for the prevention, abatement, and control of all water pollution through the implementation of groundwater protection plans (GPPs). The content of a GPP has significant overlap with the elements of

SWPPP and SPCC plans[3]. BlueOval SK will combine the applicable GPP elements with SWPPP/SPCC documents to ensure that all ongoing compliance requirements are contained in comprehensive and easy-to-reference documents. A GPP must be implemented "upon commencement of the regulated activity" and reviewed every 3 years and records must be retained for at least 6 years. These timelines either align with the SWPPP/SPCC compliance timelines or are less stringent.

Because of the current plans for municipal water use, the planned control of on-site hazardous liquids, as well as mitigation efforts outlined in the USACE EA, impacts on water resources would not be significant.

3.3.2 Air Quality

3.3.2.1 Setting

Pursuant to the CAA, EPA established the NAAQS to control a limited number of widely occurring criteria pollutants, including CO, nitrogen dioxide, ozone, $PM_{2.5}$, PM_{10}, and sulfur dioxide. Primary air quality standards were developed for these pollutants to protect public health, including sensitive populations such as children, the elderly, and asthmatics, and secondary standards were developed to protect the nation's welfare, including protection against decreased visibility and damage to animals, crops, and vegetation. EPA has concluded that the current NAAQS protect the public health, including the at-risk populations of older adults, children, and people with asthma, with an adequate margin of safety. The airshed that contains the Project site in Hardin County is in attainment or unclassifiable for the NAAQS, meaning none of the ambient concentrations of criteria pollutants exceed the air quality standards.

To protect air quality, several permitting programs under the CAA regulate point-source air emissions. Under the NSR permitting program, a major stationary source is one of 28 listed facility types that has the potential to emit 100 tpy or more of a regulated NSR pollutant or is an unlisted facility that has the potential to emit 250 tpy or more of a regulated NSR pollutants. A PSD permit is required for new major sources or a major source making a major modification in areas that are in attainment for all the NAAQS. The proposed battery manufacturing facilities would be considered a major source with respect to the PSD permitting program, NESHAP, and Title V permitting program. The Kentucky Division of Air Quality (KDAQ) administers Kentucky's State Implementation Plan–approved NSR permitting program and issues the permit to construct and operate the facility. An application containing all required elements under 401 Kentucky Administrative Regulations (KAR) 52:020 and 401 KAR 51:017 has been submitted and approved by KDAQ.

The applicant completed a PSD major-source permit application, and an associated dispersion modeling analysis was submitted for KDAQ and EPA review (January–March 2022). The application demonstrated compliance with all regulatory requirements, emissions control thresholds, and ambient impact assessments. A final Title V/Title I – PSD, operating/construction permit was approved by KDAQ (Permit V-21-041) on June 20, 2022. The air pollutant loads reflected in **Table 8** represent PTE air pollutants from all emission sources at BlueOval SK Battery Park. This PTE reflects both permitted and non-permitted emission sources, including insignificant and exempt sources. All permit limits for permitted units have been accounted for in this PTE total. Because the PTE from the facility exceeds 100 tpy, the facility will be subject to the CAA Title V Operating Permit Program.

Table 8: BlueOval SK Battery Park Potential to Emit and PSD Applicability

Pollutant	Nested-Source Potential Emissions (tpy)	Project Potential Emissions (tpy)	Nested-Source PSD Major Source	Facility-Wide PSD Major-Source	PSD Significant Emission Rate (tpy)	Project Triggers PSD

[3] https://eec.ky.gov/Environmental-Protection/Water/GW/GPPDocs/GPPGuide.pdf

			Threshold (tpy)	Threshold (tpy)		Review? (Yes/No)
PM	2.8	21.4	100	250	25	No
PM_{10}	2.8	13.0			15	No
$PM_{2.5}$	2.3	9.7			10	No
CO	205.6	263.6			100	Yes
NO_X	179.1	278.5			40	Yes
SO_2	3.3	4.9			40	No
VOC	30.0	293.1			40	Yes
Lead	2.7E-03	3.5E-03			0.6	No
GHG (as CO_2e)	651,370	828,905	--	--	75,000	Yes

CO = carbon monoxide; NO_X = nitrogen oxides; PM_{10} = particulate matter with diameters 10 microns and smaller; $PM_{2.5}$ = particulate matter with diameters 2.5 microns and smaller; SO_2 = sulfur dioxide; tpy = tons per year; VOC = volatile organic compound; GHG = combined GHG in carbon dioxide equivalent (CO_2e)

3.3.2.2 Emissions Analysis

Air emissions would result from construction and operation of the Project. During construction, air emissions would be generated from mobile sources (e.g., trucks, automobiles) and dust as well as the on-site rock-crushing operation. Emissions from workers' vehicles and construction equipment would be temporary and transient in nature, and various BMPs, such as watering and the use of temporary construction entrances, would be implemented to reduce potential impacts. All operations would be in compliance with the requirements of 401 KAR 63:010, Fugitive Emissions.

Because emissions during construction would not overlap with emissions during operation, and because of the controls that would be implemented during Project construction, impacts on air quality as a result of construction of the Project would not be significant.

Operation of the battery-manufacturing facilities would result in several sources of air pollutant emissions and the total emissions presented in **Table 8**. Lithium-ion battery manufacturing plants are not a named source category. However, the Project includes fossil-fuel boilers with more than 250 MMBtu/hr of heat input, which is a listed source category. For PSD applicability, the boilers are considered a listed sub-source that is nested within a larger non-listed source (i.e., the entire facility, including the fossil-fuel boilers). Therefore, the nested sources (i.e., all fossil-fuel boilers) are considered a major source if the PTE of a regulated pollutant from these sources exceeds 100 tpy, and the non-listed source (i.e., the entire facility, including the fossil-fuel boilers) is considered major if the PTE of a regulated NSR pollutant exceeds 250 tpy. As demonstrated in **Table 8**, the nested source would not exceed the PSD major source threshold; however, the overall facility would exceed the major source threshold for VOC. Therefore, the overall facility is considered a major stationary source with respect to the PSD permitting program and would follow the permitting requirements.

Additional discussion of the cumulative impact of air quality emissions. including the beneficial nature of BEV replacement of automobiles with internal-combustion engines on GHG emissions, is found in Section 4.

Because of the location of the Project site, existing air quality conditions, the amount of anticipated air emissions, and the controls that would be implemented during operation to meet applicable emission standards, impacts on air quality as a result of the Project would not be significant.

3.3.3 Noise

The proposed BlueOval SK Battery Park site, which is zoned for industrial land uses, is adjacent to I-65 and the interchange at Kentucky State Route 222. The site is currently located in a region with limited

residential land uses; however, dispersed residential land uses exist north and south of the site as well as across I-65 to the east. The site is influenced primarily by the existing noise sources associated with vehicular traffic on I-65 and Kentucky State Route 222.

The Project would generate temporary noise during construction from the use of heavy machinery such as bulldozers, graders, excavators, dump trucks, and cement trucks as well as larger building erection equipment such as drilling and piling equipment. Noise and sound levels would be typical of new industrial construction activities and would be intermittent and limited to the construction phase.

The Project would manage noise using BMPs, such as limiting outdoor construction activities to daylight working hours (approximately 7 a.m. to 10 p.m.) Monday through Friday, except for special circumstances if work on a weekend is needed.

A limited number of residences could be exposed to noise from construction and operation. The closest residence is approximately 0.5 mile from the battery park; however, most residences are much farther from the site. These residences could experience short-term adverse impacts from noise generated during construction of the proposed facility. In addition, the noise influence from traffic on I-65 is likely to be equivalent to the impact from construction noise sources.

Facility operations would not add to local ambient noise levels because the manufacturing processes would be conducted within an enclosed building and consistent with the current industrial-zoned land use. Noise associated with vehicular traffic from commuting workers and material receiving and shipping are anticipated to be consistent with current traffic noise impacts. During operations, the noise impact from the facility is likely to be below the noise impact from traffic on I-65.

Because of the controls that would be implemented during construction, as well as the nature of the area surrounding the Project (i.e., the significant distance to residential land uses and a location adjacent to an interstate), impacts from noise as a result of the Project would not be significant.

3.3.4 Transportation

The primary surface road transportation routes to the proposed BlueOval SK Battery Park are I-65 and Kentucky State Route 222, immediately adjacent north and east of the site. In preparation for development of the site, Hardin County, in consultation with KYTC, Department of Highways, District 4, developed a “Comprehensive Development Guide,” which identified the ability of the site to service traffic (among other considerations). The following was considered:

- The projected increase in both commuter and freight traffic from BlueOval SK operations
- Additional ongoing development in the region
- Existing operational deficiencies or improvements that would be needed regardless of BlueOval SK development
- Availability of high-capacity roadway connections from the BlueOval SK site to various nearby populated areas (for worker commuting) and larger state highways and interstates (for material shipping and receiving)

The Hardin County and KYTC review recommended a series of proposed roadway improvements. These have the purpose of accommodating ongoing development in the region, improving traffic operational efficiency, and improving connections from the BlueOval SK site to the surrounding area. The proposed roadway improvements include:

- Additional traffic capacity and safety modifications to the existing interchange between I-65 and Kentucky State Route 222, which will involve reconstructing the interchange in a new location approximately 600 feet south of the existing interchange

- Expansion of Gilead-Church Road south of the Project site to accommodate a higher volume of traffic

Several environmental technical studies are still under development for these proposed changes, the results of which will be formally published by KYTC. The public will be asked to provide comments on the anticipated environmental impacts during forthcoming public meetings.

The operational and construction traffic flow proposed for the site will direct all normal site access from the north off of Kentucky State Route 222. A series of on-site roadways will be constructed to allow for material delivery and pickup as well as employee access and parking. A secondary emergency access route is proposed to connect to Gilead Church Road adjacent to the south side of the site.

During construction, site access traffic will flow from I-65 and Kentucky State Route 222 into and out of the site. Construction employee and equipment traffic will occur throughout the active construction period and would temporarily affect traffic through increased activity along I-65 and Kentucky State Route 222, with potentially limited use of other surface access routes. Total construction worker activity and travel will vary throughout the period of active construction.

BlueOval SK would implement “maintenance of traffic” plans to ensure safety during various phases of Project construction. As the site plan is further developed, BlueOval SK and KYTC will work collaboratively to ensure that traffic pattern changes are aligned with Project activities and that appropriate signage and controls are in place to uphold traffic safety, including controlled turning lanes at intersections with major roadways to mitigate disturbances to existing thoroughfares. Pavement markings needed at internal intersections would be updated to avoid anticipated vehicle conflicts due to sight restrictions and turning envelopes of both passenger vehicles and large trucks.

During operations, estimated traffic counts for the battery park were calculated using estimated employment and production data. During operations, when at full capacity, 900 employee vehicles and 50 delivery trucks would access the site each day.

The BlueOval SK Battery Park would utilize three shifts at full production; therefore, worker traffic would be split throughout the day and not occur at one time. No overlapping traffic is anticipated between shifts because all incoming workers would be at the facility before the shift hour begins and all outgoing workers would leave the facility after the shift hour ends.

Additional cumulative off-site traffic-related expansions associated with the BlueOval SK Battery Park development are included in Section 4.

Because of the direct road access to I-65, the road expansions proposed to occur in support of site development (see Section 4), the construction traffic access controls, the measures incorporated as part of the Project (i.e., accounting for increases in traffic from construction and operation by installing appropriate signage and controls, managing traffic flows at intersections with pavement markings, implementing traffic safety plans), and the operational constraints of shift changes, impacts on transportation as a result of the Project would not be significant.

3.3.5 Aesthetic and Visual Resources

The BlueOval SK Battery Park site, which is zoned for industrial land uses, is adjacent to I-65 and the interchange at Kentucky State Route 222. The facility is bounded to the north by additional commercial parcels as well as active transportation-related commercial activities. The Project site is approximately 5 miles south of Elizabethtown, KY, and regions of commercial and industrial development adjacent to the I-65 corridor, which includes other large industrial or commercial activities. The area is currently affected by lighting impacts from commercial activities and traffic along the I-65 corridor. This area previously comprised agricultural and wooded areas. Currently, no developments of the size of the proposed

BlueOval SK Battery Park are present; however, because of the size of the Project site, a limited number of residences are within visual range of the area.

Dispersed residences are found along Gilead Church Road to the south, Kentucky State Route 222 to the north, and S. Dixie Highway, which is across I-65 east of the Project site. The residences are between 0.5 and 2 miles from the site.

The proposed BlueOval SK Battery Park will introduce permanent visual changes on the site during both construction and operation. Specifically, construction of the BlueOval SK Battery Park would result in permanent visual changes to the land—namely, new buildings on what is currently undeveloped land. However, the BlueOval SK Battery Park would have an appearance consistent with other regional industrial complexes and commercial activities to the north. Furthermore, the siting of the industrial facility is consistent with the industrial zoning for the area.

Once construction is complete, reclamation of disturbed areas would remove the temporary visual impacts. Any areas disturbed by construction, but not operations would be returned to their original vegetated state. Further, the site has been designed to incorporate berms and landscaping features to minimize offsite visual impacts. Berms and landscaping would be designed to mimic surrounding topography and vegetation to minimize potential visual distinction of the area. The final designs for berms and vegetation are still in progress; however, these features will be placed in areas with frequent public access, such as next to roadways.

Operations at the BlueOval SK Battery Park would result in minor increases in nighttime light; however, the Project has incorporated design elements into the facility to minimize offsite light impacts to the greatest extent practical. Site outdoor lighting has been designed with variable intensities to match the minimum needs of each area of the site. For example, parking lots have approximately half the amount of illumination as roadways. All outdoor lighting will utilize full-cutoff luminaries that ensure no light above 90 degrees. According to light trespass modeling, there will be no illumination at the Project area boundary except for what is contributed by lights at entrance roadway intersections with surrounding public roads. All visual and lighting impacts would remain in compliance or exceed the standards required by the local zoning restrictions for the site.

Because of the design of the BlueOval SK Battery Park to minimize off-site visual and lighting impacts, as well as the distance to existing residential properties and the current surrounding commercial and transportation land uses, impacts on aesthetic and visual resources as a result of the Project's Glendale location would not be significant.

3.3.6 Socioeconomics and Environmental Justice

3.3.6.1 Socioeconomics

The BlueOval SK Battery Park would be located in Hardin County, KY, approximately 5 miles via I-65 from Elizabethtown, KY, and 40 miles from Louisville, KY. During the construction phase of the Project, BlueOval SK estimates that construction peak manpower will require approximately 3,500 and 4,000 people. Based on preliminary construction planning, it is anticipated that between 20 and 25 percent of this manpower will be sourced from the local or regional workforce. The remainder will be allocated from outside of the region.

During the operational phase of the Project, once full production is reached, BlueOval SK estimates that the BlueOval SK Battery Park will employ 4,400 hourly employees and 600 salaried employees. This is estimated to begin in 2030.

Based on data provided by the Kentucky Cabinet for Economic Development for Hardin County, KY, the region has a civilian labor force of 50,820, with a participation rate of 62.0%. Of individuals 25 to 64 in Hardin County, KY, 23.3 percent have a bachelor's degree or higher, compared with 33.5 percent in the

nation. As of the second quarter of 2021, total employment for Hardin County, KY, was 48,368 (based on a four-quarter moving average). The largest employment sector in Hardin County, KY, is manufacturing, employing 6,811 workers.

Based on economic planning for the Project, by the time full operations are achieved, the majority of employees will be sourced from the regional workforce. BlueOval SK has engaged with regional educational institutions to provide training opportunities in preparation for facilitating local hiring.

To accommodate the additional workforce, the applicant has identified available temporary and permanent housing stocks and consulted with the planning and development offices in each surrounding county to identify the number of units available within a 40-mile radius. In addition, BlueOval SK is working closely with the Elizabethtown Tourism Department to evaluate opportunities for worker services. This new capital investment and incremental tax revenue from the Project will offset local community impacts and provide opportunities for service expansions.

Given the extensive job creation that would occur during construction and operation of the BlueOval SK Battery Park, the availability of the regional workforce, proactive workforce training, and the housing and public services available in the greater Project region, significant adverse socioeconomic impacts would not be expected.

3.3.6.2 Environmental Justice

The assessment methods described in Section 3.2.9 were used to determine the ethnic and racial composition of the county and the state, as presented in **Table 9**. Minority populations make up less than 50 percent of the population in Hardin County, which is not meaningfully different from the percentage of minority populations within the state. At the census tract level, where the Project is located, the people of color population is 7 percent (see **Table 10**).

The percentage of persons in poverty is approximately 5.4 percent lower in Hardin County (11.1 percent) compared with the rest of the state (16.5 percent; see **Table 9**). In the EPA's EJ screening tool (**Table 10**), the low-income population is 26 percent, which is lower than the state average of 37 percent (34th percentile) and 5 percentage points lower than the U.S. average of 31 percent (47th percentile).

Because the percentage of minority or low-income populations does not exceed the 50th percentile, the Project is not anticipated to have a disproportionate impact on those communities.

Table 9: Population, Ethnicity, and Poverty

	Hardin County	Kentucky
Total population	110,702	4,624,047
Race/Ethnicity		
White	74.94%	82.37%
Black or African American	11.59%	8.04%
American Indian and Alaska Native	0.44%	0.28%
Asian	2.06%	1.65%
Native Hawaiian and other Pacific Islander	0.38%	0.08%
Hispanic or Latino	6.05%	4.61%
Poverty	11.1%	16.5%

Note: All population and ethnicity data were gathered from the U.S. Census Bureau web page. Accessed September 15, 2022.

Table 10: EPA's EJ Screen Report

	Value	State Average	Percentile in State	US.S. Average	Percentile in U.S.

NATA* cancer risk (lifetime risk per million)	30	29	99	29	80-90th
NATA* respiratory hazard index	0.3	0.36	46	0.36	<50th
People of color population	7%	15%	41	40%	14
Low-income population	26%	37%	34	31%	47

Notes: Selected Variables – Tract 21093001600, Kentucky, EPA Region 4. Approximate Population: 9,496.
** More information on the NATA can be found at https://www.epa.gov/national-air-toxics-assessment.*

The NATA respiratory hazard index for the Project region is below the 50th percentile relative to both the state and U.S. averages. For the NATA cancer risk index (lifetime risk per million), the Project region is in the 99th percentile relative to the state and between the 80th and 90th percentile relative to the U.S. Although these NATA percentiles are higher in comparison to the rest of the U.S., Project emissions and potential ambient air quality impacts were reviewed by the KDAQ, as discussed in Section 3.3.2, Air Quality. The permitted emission levels of criteria pollutants and hazardous air pollutants are considered to be protective of human health and the environment. Also, based on the permit authorizations, BACT emissions controls are required to be implemented during operation to minimize emissions and potential air quality impacts. Finally, as part of KDAQ and EPA permitting review, a Hazardous Air Pollutants (HAPs) Health Risk Assessment was completed for two non-combustion-related HAPS: hydrogen chloride and acetonitrile. The results of this analysis concluded that the impacts would remain well below EPA regional screening levels and that public health would be protected.

Because of the significant socioeconomic benefit projected to be created during both construction and operation, the Project would represent a benefit to the regional economy and poverty metrics. Given these considerations, no impacts are anticipated that could give rise to disproportionate impacts on minority or low-income populations in the affected area. Therefore, EJ impacts would not be significant.

3.3.7 Health and Safety

The health and safety activities and considerations for the BlueOval SK Battery Park are consistent with those identified in Section 3.2.10. The BlueOval SK Battery Park will implement the analogous requirements of the SPCC, EPCRA, TSCA, CAA Risk Management Plans, OSHA, and the Kentucky Safety and Health Program under the statutory authority of Kentucky Revised Statutes Chapter 338.

Because of the measures to address health and safety, including BMPs; compliance with federal, state, and local regulations and standards; and plans for preventing chemical spills and potential mishandling of hazardous materials, as well as and experience from handling the same hazardous materials at an existing facility, impacts on the health and safety of workers and the public from Project construction and operation would not be significant.

3.3.8 Waste Management

The proposed BlueOval SK Battery Park has the capacity to generate waste from the collection of refuse from onsite employee activity and process operations. The majority of process wastes can be recovered and recycled for reuse in the manufacturing process. A limited amount of wastes may require off-site treatment and disposal. This includes wastewater discharge, which was detailed in Section 3.3.1.1. All wastes will be collected, managed, and recycled/disposed of in accordance with regulatory requirements utilizing existing solid waste management minimization and removal procedures.

Prior to the commencement of operations, BlueOval SK will determine the facility generator category, as required by the RCRA, and complete appropriate registration to obtain an EPA identification number. Based on the regulatory status determination, a Hazardous Waste Contingency Plan will be developed that covers the various hazardous streams, including storage, waste labeling, and inspections.

It is anticipated that the following general categories of waste streams and disposal methods will be reasonably foreseeable, although all final determinations will be based on detailed regulatory review prior to commencement of operations:

- Non-hazardous waste (transported off-site and disposed at an EPA-approved Class I/II landfill designed to accept both industrial and municipal waste)
- Hazardous waste (accumulated and transported off-site for disposal of at a certified waste facility)
- Breached or scrapped batteries, metals, and miscellaneous recyclable materials (collected and recycled within the facility or off-site)
- Process NMP (collected in a recovery system for reuse)
- Contaminated NMP (collected and disposed per hazardous waste requirements)

In addition to the above waste categories, **Table 11** provides more detailed estimations of waste types, generation volumes, transportation methods and packaging, and the expected disposal method.

Table 11: BlueOval City Waste Stream Detail

Waste Type	Packaging	Waste Generation (lb/year)	Expected Transportation	Expected Disposal Method
General Waste	Compactor	2,993,760	Roll-off Truck	Waste to Energy
Cardboard	Bales	2,993,760	Truck	Recycling
Waste Cell	Open-top IBC Tote	50,966,784	Truck	Recycling
Waste Module	Open-top IBC Tote	595,584	Truck	Recycling
Cathode Slurry	IBC Tote	12,458,160	Truck	Recycling
Anode Slurry	IBC Tote	8,797,536	Truck	Recycling
Anode Scrap	Sack/IBC Tote	14,582,304	Truck	Recycling
Cathode Scrap	Sack/IBC Tote	18,612,000	Truck	Recycling
Waste Jelly Roll	Sack/IBC Tote	9,252,144	Truck	Recycling
Copper Foil	Sack/IBC Tote	327,888	Truck	Recycling
Anode Jumbo Roll	Sack/IBC Tote	1,241,856	Truck	Recycling
Aluminum Scrap (Foil+Tab)	Sack/IBC Tote	831,600	Truck	Recycling
Anode Powder	Sack/IBC Tote	898,128	Truck	Recycling
Cathode Powder	Sack/IBC Tote	562,320	Truck	Recycling
Cathode Jumbo Roll	Sack/IBC Tote	1,157,904	Truck	Recycling
NMP Scrap	Aboveground Storage Tank	288,000,000	Tanker Truck	Recycling
Electrolyte Scrap	Drum	25,344	Truck	Fuels Blending
Scrap Wood	Roll Off	1,040,688	Truck	Recycling/Compost
Copper Tab	Sack/IBC Tote	999,504	Truck	Recycling
Scrap Metal (miscellaneous)	Roll Off	906,048	Truck	Recycling
Plastic Pallet	Bales	5,415,696	Truck	Recycling
Plastic Tray	Bales	5,121,072	Truck	Recycling
Pouch	Sack/IBC Tote	17,067,600	Truck	Recycling
Universal Waste	Drums/Boxes	167,904	Truck	Recycling
Hazardous Waste	Drum	10,000	Truck	Incineration

IBC = intermediate bulk container

Because planned waste management practices would align with all applicable state and federal regulations prior to waste generation and a dedicated program to minimize wastes and enhance material recycling, impacts from waste management activities would not be significant.

3.3.9 Soils and Prime Farmlands

The Project site is currently owned by the Elizabethtown/Hardin County Industrial Foundation, Inc., and zoned for industrial uses. Although industrially zoned, the parcel has been historically leased by the Elizabethtown/Hardin County Industrial Foundation for intermittent agricultural use.

Portions of the Project site are classified as Prime Farmland. Post-construction, the construction of the BlueOval City Battery Park would convert roughly 320 acres of land from being available for farming (see **Figure 4**). Of this acreage, only 260.22 acres are considered Prime and Unique Farmland, as defined by the NRCS Land Evaluation submitted to DOE from NRCS on September 19, 2022 (KY NRCS September 2022). Hardin County has more than 305,475 acres of farmland. Therefore, the Project would represent a negligible reduction (< 0.12 percent) in total farmland for the county (KY NRCS September 2022).

Based on information obtained from the NRCS, there are five soil associations within the Project's Glendale site.[4] These soil associations are shown in **Table 12**.

Table 12: BlueOval SK Battery Park Farmland Classification

Map Unit Symbol	Map Unit Name	Acres	Percent of Total Acres	Farmland Classification
BrB	Bedford silt loam, 2 to 6 percent slopes	16.9	5.30%	All areas are Prime Farmland
CrB	Crider silt loam, 2 to 6 percent slopes	85.1	26.80%	All areas are Prime Farmland
CrC	Crider silt loam, 6 to 12 percent slopes	45.3	14.30%	Farmland of Statewide Importance
CsC	Cumberland silt loam, 6 to 12 percent slopes	4.1	1.30%	Farmland of Statewide Importance
Lc	Lawrence silt loam, 0 to 2 percent slopes, rarely flooded	27.3	8.60%	Prime Farmland if drained
Mv	Melvin silt loam	17.5	5.50%	Prime Farmland if drained and either protected from flooding or not frequently flooded during the growing season
Nb	Newark silt loam, 0 to 2 percent slopes, frequently flooded	0.7	0.20%	Prime Farmland if drained and either protected from flooding or not frequently flooded during the growing season
No	Nolin silt loam, 0 to 2 percent slopes, frequently flooded	8	2.50%	Prime Farmland if protected from flooding or not frequently flooded during the growing season
OtA	Otwood silt loam, 0 to 2 percent slopes, rarely flooded	83.1	26.10%	All areas are Prime Farmland
OtB	Otwood silt loam, 2 to 6 percent slopes, occasionally flooded	21.3	6.70%	All areas are Prime Farmland
PmC	Pembroke silt loam, 6 to 12 percent slopes	1.5	0.50%	Farmland of Statewide Importance

[4] USDA NRCS Web Soil Survey maintains information on soil type, soil descriptions, and series classifications.

Map Unit Symbol	Map Unit Name	Acres	Percent of Total Acres	Farmland Classification
SnB	Sonora silt loam, 2 to 6 percent slopes	0.5	0.10%	All areas are Prime Farmland
WcC3	Waynesboro clay loam, 6 to 12 percent slopes, severely eroded	6.5	2.10%	Not Prime Farmland
TOTAL		**317.8**	**100%**	

Based on the methodologies described in Section 3.2.12, the site assessment for the BlueOval SK Battery Park is 68 points and when combined with the NCCPI rating of 86, the site has a score of 154 (KY NRCS September 2022), which is below the threshold for further protection considerations.

During construction, upwards of 600 acres of soils would be affected, approximately 320 acres of which would be affected over the long term due to the Project's permanent facilities (e.g., plant, roads, parking, and other support facilities). Short-term impacts include soil loss through erosion, compaction, and loss of structure in soils that are disturbed or driven on during construction. After construction, surface disturbed or compacted areas not needed for operation would be regraded, loosened, and revegetated.

Impacts on soils during the operational phase of the Project would be associated largely with the limited soil erosion induced by vehicle traffic on small portions of unpaved surfaces; however, soil erosion from this source is expected to be negligible. BlueOval SK would monitor and repair any areas of erosion or soil instability.

Based on the amount of Prime Farmland affected by the Project; the FPPA assessment scoring for the Project land; the intention for farmland conversion, based on the parcel's industrial zoning; and the extensive additional farmland resources within Hardin County, the overall impacts on soils and Prime Farmland by the Project would not be significant.

4. CUMULATIVE EFFECTS

Cumulative impacts are potential effects on the environment from the incremental impact of the Project when added to other past, present, and reasonably foreseeable future actions undertaken by other agencies (federal or nonfederal) or persons (40 CFR Part 1508.1[g]). The existing setting, as presented for each Project location (Stanton, TN, and Glendale, KY), takes into account past actions, while the present and future actions that may contribute to a cumulative effect were identified through a review of active project lists and planning documents from Tennessee (TVA, TDOT, Brownsville/Haywood County Chamber of Commerce, the West Tennessee Industrial Association) and Kentucky (Kentucky Public Service Commission, KYTC, Hardin County Chamber of Commerce, and the Elizabethtown Hardin County Industrial Foundation). The review identified the present and reasonably foreseeable future projects associated with each Project location.

Stanton, Tennessee – BlueOval City Battery Plant

- **Memphis Regional Megasite Power Supply.** TVA plans to construct a new 500-kilovolt (kV) substation and two new 161 kV transmission lines within the State of Tennessee Memphis Regional Megasite property. This same Megasite will be the location of the BlueOval City Battery Plant in Stanton.
- **Tennessee State Route 194 Extension and Exit 39.** TDOT, in cooperation with FHWA, has proposed various roadway improvements to support industrial development at the BlueOval City Battery Plant. These improvements include a south–north extension of Tennessee State Route 194, a new interchange on I-40 at Exit 39, a west–east connector (proposed Tennessee State Route 468), and interchange modifications on I-40 at existing Exit 42. The proposed improvements would total approximately 13.7 miles in length.

Glendale, Kentucky – BlueOval SK Battery Park

- **Kentucky Utilities Company Transmission Line Installation**. The Kentucky Public Service Commission has approved construction of two 345 kV and two 138 kV transmission lines and associated substations in Hardin County, KY. These transmission lines are a response to demonstrated need to support the Project facilities and the Glendale Megasite.
- **Rhudes Creek Solar Project**. The Kentucky State Board on Electric Generation and Transmission Siting has approved construction of a 100 MW solar facility on approximately 1,072 acres in Hardin County, KY.

The review of cumulative impacts associated with the overall Project found that the GHG emissions and climate change impacts are geographically broad, whereas the impacts associated with other resources (traffic and transportation, socioeconomic and environmental justice, air quality, and aesthetic and visual resources) are specific to the region and locality of the specific Project locations (Stanton, TN, and Glendale, KY). The following discussion of cumulative impacts begins with impacts associated with GHG emissions and climate change from the overall Project, then provides a review of the regional cumulative impacts associated with the specific Project locations in Stanton, TN, and Glendale, KY.

4.1 Greenhouse Gas Emissions and Climate Change

The contemporary understanding and agreement among the scientific community is that anthropogenic sources of GHGs have been the dominant cause of global temperature increases since the mid-20th century (Intergovernmental Panel on Climate Change 2013).[5] The growth in industrial activity over the past two centuries has increased concentrations of GHGs in the atmosphere, such as carbon dioxide (CO_2), nitrous

[5] Intergovernmental Panel on Climate Change. 2013. *Climate Change 2013: The Physical Science Basis.* Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change. Stocker, T.F., D. Qin, G.K. Plattner, M. Tignor, S.K. Allen, J. Boschung, A. Nauels, Y. Xia, V. Bex, and P.M. Midgley (eds.). Cambridge University Press, Cambridge, United Kingdom, and New York, NY, USA, 1,535 pp.

oxide, methane, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. The dominant GHG contributed from fossil-fuel combustion, in terms of global warming impact, is CO_2. In the past century, changes in regional weather patterns and climate have been observed and attributed to increasing global temperatures. These changes involve precipitation (high and low extremes in rainfall, flooding, and droughts), rising sea levels, polar ice melt, and more severe and frequent heat waves (Intergovernmental Panel on Climate Change 2013). Scientific evidence is clear that steadily increasing atmospheric GHG concentrations have had significant impacts on Earth's climate (Council on Environmental Quality 2016).[6]

4.1.1 Impacts Associated with Greenhouse Gas Emissions and Climate Change – Stanton, TN, and Glendale, KY, Battery Plants

The Stanton and Glendale battery plants will be designed to produce a total of 127 GWh of battery capacity annually. The manufacturing of batteries for use in EVs will allow for the replacement of gasoline-powered vehicles, with an associated displacement in GHG emissions. Project construction-related GHG emissions would be minimal in comparison to the overall GHG emissions displaced by EVs brought to market. The 127 GWh of battery manufacturing capacity would support an estimated 1.1 million vehicles per year. The associated displacement of GHG emissions is calculated using U.S. government figures for CO_2 emissions per vehicle per year, as shown in **Table 13**.

Table 13: Total GHG Emissions Displaced

Value	Unit	Description
1,100,000	vehicles per year	Annual battery production, expressed as equivalent number of vehicles
13,476	miles	Average miles driven per vehicle per year[7]
21.75	miles per gallon	Average gasoline fuel efficiency of existing highway vehicles (2020 data)[8]
619.6	gallons per vehicle per year	Calculated gallons of gasoline displaced per vehicle per year
681.5MM	gallons	Calculated total gallons of gasoline displaced per year from full production
19.37	pounds CO_2 per gallon of gas	Mass of CO_2 emissions per gallon of gasoline[9]
13,202	million pounds CO_2 per year	Calculated equivalent GHG displacement by annual battery production and use in EVs
5,988,110	metric tonnes CO_2 per year	

The above calculations demonstrate that the Project will result in the displacement of approximately 6 million metric tonnes of CO_2 annually from the replacement of gasoline with battery-powered vehicles, while operation of the Project will result in the annual emission of approximately 1.3 million metric tonnes of CO_2, resulting in an overall potential reduction of approximately 4.7 million metric tons of CO_2 from EV integration. In general, the potential benefits associated with reducing CO_2 emissions would support a reduction in GHG concentrations and reduce the associated climate change impacts (e.g., increases in atmospheric temperature, changes in precipitation, increases in the frequency and intensity of extreme weather events, rising sea levels).

[6] U.S. Council on Environmental Quality. 2016. *Final Guidance for Federal Departments and Agencies on Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in National Environmental Policy Act Reviews*. August 1, 33 pp.

[7] U.S. Department of Transportation. 2022. *Federal Highway Administration (2022) Average Annual Miles per Driver by Age Group.* Available: https://www.fhwa.dot.gov/ohim/onh00/bar8.htm. Accessed: October 4, 2022.

[8] U.S. Bureau of Transportation Statistics. 2022. *U.S. Vehicle Miles Dataset Table* (01_35_021522.xls). Available: https://www.bts.gov/content/us-vehicle-miles. Accessed: October 4, 2022.

[9] U.S. Energy Information Administration. 2022. *Carbon Dioxide Emissions Coefficients*. Available: https://www.eia.gov/environment/emissions/co2_vol_mass.php. Accessed: October 4, 2022.

Because the Project would result in an overall benefit by reducing GHG concentrations through displacement, it is not anticipated that significant adverse cumulative effects related to GHGs and climate change would occur.

4.2 Stanton, Tennessee – BlueOval City Battery Plant

The following presents a discussion of the cumulative impacts from the incremental impact of the Project (BlueOval City Battery Plant in Stanton, TN) when added to other past, present, and reasonably foreseeable future actions undertaken by other agencies (federal or nonfederal) or persons. Cumulative impacts are evaluated for aesthetic and visual resources, air quality, socioeconomic and environmental justice, and traffic and transportation.

4.2.1 Aesthetics and Visual Resources

The location of the Megasite is intended for industrial development. Section 3.2.7 describes the potential for insignificant direct impacts of the Project as a result of its design and location with respect to residential properties. Additional projects in the region would augment existing transmission line and roadway infrastructure and thereby could have an insignificant incremental impact on visual resources. However, because of the Project location, design, and surrounding infrastructure, cumulative impacts on aesthetics and visual resources would not be significant.

4.2.2 Air Quality

The Project's construction phase would result in air emissions, primarily from fugitive dust associated with earthmoving and exhaust from fuel combustion. However, emissions resulting from construction would be temporary and minimized through the use of BMPs. The Project will support the proliferation of EVs, thereby reducing emissions from fuel combustion. Although the construction phase would have temporary impacts on air quality, the long-term effect of increased EV implementation would outweigh impacts from construction and result in a net benefit.

The potential exists for the Project to result in cumulative impacts on regional air quality. As discussed in Section 3.2.4, Air Quality, Haywood County is in attainment or unclassifiable for all of the NAAQS; in accordance with the CAA, the state has developed a State Implementation Plan to maintain compliance with the NAAQS. Any new emissions in the airshed, including those of the identified projects in the region, that are subject to CAA permitting would have to comply with CAA regulations and would be reviewed to ensure that air quality in the region maintains compliance with the NAAQS. Therefore, the cumulative impacts on air quality associated with operation of the Project and the other projects in the region would not be significant because of the regulatory oversite of the CAA.

In addition to direct and indirect sources of atmospheric emissions described in Section 3.2.4, cumulative emissions associated with the proposed BlueOval City Battery Plant are reasonably foreseeable from off-site combustion associated with electrical generation, mobile-source and rail fuel combustion, and stationary-source emissions associated with regional suppliers or vendors near the facility. Although the extent of cumulative emissions cannot be accurately quantified, for each of the cumulative-source emissions categories, regulatory requirements, including the CAA and Tennessee State Statute, constrain emissions sources, based on public health considerations. The Project would also facilitate growth with respect to EV use, thereby offsetting emissions from the exhaust of gasoline- and diesel-powered vehicles. As a result, cumulative impacts associated with air quality would not be significant.

4.2.3 Socioeconomics and Environmental Justice

The Center for Economic Research (CERT) in Tennessee completed a preliminary economic review of the proposed Ford BlueOval City Project (CERT, 2021) and its potential cumulative economic effects. This will include the direct jobs created by the Project as well as the economic ecosystem that will develop to support the facility, including vendors, suppliers, support services, and associated economic activity within the region. The report outlined the anticipated economic and fiscal impacts that the Project will have on the state and local economies. Annual projections reflect estimates for the first year of Project operations.

The Project is anticipated to generate 27,000 new jobs and $1.02 billion in annual earnings. This workforce includes 5,760 direct new jobs in Haywood County with total annual earnings of $329.9 million, and an additional 21,300 indirect and induced new jobs in the state with total annual earnings of $698.2 million. Indirect and induced jobs support the company's operations, as well as company employees and their families.

The Project is anticipated to contribute $3.5 billion each year to Tennessee's gross state product (value added).[10] The company's operations are projected to generate $9.1 billion annually in economic output from direct and indirect economic activity.

The Project is anticipated to generate additional temporary construction benefits. For example, $5.6 billion will be spent on buildings and other property improvements, furniture, fixtures, and equipment. During the construction period, 33,000 direct, indirect, and induced jobs will be supported, representing approximately 15,700 direct workers and 17,300 indirect and induced workers in the region. It is estimated that this will generate $1.87 billion in salaries related to Project construction, representing $1.05 billion in workers' salaries and an additional $829.6 million in estimated salaries to indirect and induced workers.

The Project is further anticipated to generate the following fiscal impacts for the State of Tennessee:

- A total of $22.4 million in state tax revenues annually. This includes sales tax revenues generated by company purchases as well as purchases of food and general items made by employees of the company and the workforce, thereby indirectly supporting the company's operations. In addition, these projections include franchise and excise taxes generated by the company and its supplier network as well as additional miscellaneous taxes and user fees generated through direct and indirect impacts.
- A total of $17.3 million in net fiscal benefits for the State of Tennessee annually. Net benefits reflect the $22.4 million in state revenues, less costs to the State of Tennessee for providing services to citizens and businesses. The services and costs provided by the state include educational services, law and safety services, health and social services, and the cost of infrastructure assets and maintenance.
- A total of $178.9 million in state sales and use tax collections generated during the construction period. Construction of the company's facility in Haywood County will generate $178.9 million in state sales and use tax revenue through construction and company expenditures on furniture, fixtures, and equipment.

[10] Value added, or contribution to state gross domestic product, is the portion of total economic output that excludes the cost of intermediate inputs.

Finally, for Haywood and surrounding counties, the Project is anticipated to result in significant local fiscal impacts, which include:

- A total of $6.8 million in local sales and use tax collections annually. This includes sales tax collections generated annually through direct business purchases as well as purchases of food and general items made by direct and indirect worker spending.
- A total of $70.3 million in local sales and use tax collections generated during the construction period. The construction of the company's facility will generate $70.3 million in local sales and use tax collections through construction, improvements, and company expenditures on furniture, fixtures, and equipment.

Given the data, the Project is anticipated to have a significant beneficial impact on the local, regional, and state economy. These benefits are anticipated to allow for the expansion of governmental resources and ensure economic development of the entirety of the community.

A detailed analysis of EJ impacts was included in Section 3.10.2.1, which concluded that EJ impacts would not be significant, based on the significant socioeconomic benefit projected to be created during both construction and operation. The BlueOval City Battery Plant would represent a benefit to the regional economy, as well as poverty metrics, without disproportionate impacts on minority or low-income populations in the area.

4.2.4 Traffic and Transportation

In addition to the previously discussed expansion and realignment of Tennessee State Route 222 (Section 3.7.1), TDOT is supporting two major transportation expansion projects that are associated with development of the BlueOval City site. TDOT, in cooperation with the FHWA, proposes to construct a new interchange along I-40 at Exit 39, roadway extension improvements to Tennessee State Route 194, and a new connector road (proposed Tennessee State Route 468) between existing Tennessee State Route 222 and the proposed Tennessee State Route 194 extension to serve the imminent industrial development at the BlueOval City site. The proposed improvements total approximately 11.6 miles in length.

The proposed interchange along I-40 in northern Fayette County, immediately south of the Haywood and Tipton county lines. The location is situated approximately 4 miles east of Exit 35 (Tennessee State Route 59) and 3 miles west of Exit 42 (Tennessee State Route 222). In addition, the Project will also include a roadway extension of Tennessee State Route 194 northward from its current terminus at Tennessee State Route 59 in Fayette County to a new terminus at Tennessee State Route 1 (US 70) in Tipton County.

Because the Project involves a new connection to an interstate facility, the Project is subject to the requirements of NEPA. TDOT and FHWA are preparing an EA in accordance with NEPA to identify and evaluate the environmental effects of the Project and identify measures to minimize harm.

Several environmental technical studies are still under development, the results of which will be formally published in the EA that TDOT is currently preparing. The public will be asked to provide comments on the anticipated environmental impacts during the public hearing, which is tentatively scheduled for the fourth quarter of 2022 or early in the first quarter of 2023.

The Project, in conjunction with the identified projects in the region, would lead to an incremental increase in overall traffic; however, no significant adverse cumulative effects on the region's overall transportation network are anticipated.

4.3 Glendale, Kentucky – BlueOval SK Battery Park

The following presents a discussion of the cumulative impacts from the incremental impact of the Project (BlueOval SK Battery Park in Glendale, KY) when added to other past, present, and reasonably foreseeable future actions undertaken by other agencies (federal or nonfederal) or persons. Cumulative impacts are evaluated for aesthetic and visual resources, air quality, socioeconomic and environmental justice, and traffic and transportation.

4.3.1 Aesthetic and Visual Resources

The proposed BlueOval SK Battery Park site, which is zoned for industrial land uses, is adjacent to developed commercial areas, I-65, and Kentucky State Route 222. It is also in a region with prevalent commercial and industrial development. Section 3.3.5 describes the Project's potential direct visual impacts on a limited number of nearby residential areas due to the presence of new buildings. However, the Project will incorporate lighting and landscaping designs that will minimize off-site visual impacts. Additional projects in the region would augment existing transmission line infrastructure and thereby could have an incremental impact on visual resources. However, because of the design of the Project, including visual and lighting designs; the distance to residential properties; presence of surrounding industrial and commercial development; and the minimal incremental effect new transmission lines, cumulative impacts on aesthetic and visual resources would not be significant.

4.3.2 Air Quality

The Project's construction phase would result in air emissions, primarily from fugitive dust associated with earthmoving and exhaust from fuel combustion. However, emissions resulting from construction would be temporary and minimized through the use of BMPs. The Project will support the proliferation of EVs, thereby reducing emissions from fuel combustion. Although the construction phase would have temporary impacts on air quality, the long-term effect of increased EV implementation would outweigh impacts from construction and result in a net benefit.

The potential exists for the Project to result in cumulative impacts on regional air quality. As discussed in Section 3.3.2, Air Quality, Hardin County is in attainment or unclassifiable for all of the NAAQS; in accordance with the CAA, the state has developed a State Implementation Plan to maintain compliance with the NAAQS. Any new emissions in the airshed, including those of the identified projects in the region, that are subject to CAA permitting will have to comply with CAA regulations and be reviewed to ensure that air quality in the region maintains compliance with the NAAQS. Therefore, the cumulative impacts on air quality associated with the operation of the Project and the other projects in the region would not be significant because of the regulatory oversite of the CAA.

In addition to direct and indirect source of atmospheric emissions described in Section 3.3.2, cumulative emissions associated with the proposed BlueOval SK Battery Park are reasonably foreseeable from off-site combustion associated with electrical generation, mobile-source fuel combustion, and stationary-source emissions associated with regional suppliers or vendors near the facility. Although the extent of cumulative emissions cannot be accurately quantified, for each of the cumulative-source emissions categories, regulatory requirements, including the CAA and Kentucky State Statute, constrain the emissions sources, based on public health considerations. The Project would also facilitate growth with respect to EV use, thereby offsetting emissions from the exhaust of gasoline- and diesel-powered vehicles. As a result, cumulative impacts associated with air quality would not be significant.

4.3.3 Socioeconomic and Environmental Justice

In November 2021, the University of Louisville developed an economic assessment of the "Overall Estimated Economic Impacts of the New BlueOval SK Battery Park in Glendale, Kentucky" (Lambert 2021). The study used IMPLAN regional economic analysis software to estimate the impact or ripple effect (specifically backward linkages) of a given economic activity within the Project area. By utilizing the estimated 5,000 jobs to be created by the BlueOval SK Project, the analysis concluded that an additional 6,300 jobs would be created in the region, based on the cumulative impacts of the Project. An estimate using an average pay of $74,000 per job in 2021 dollars would yield a direct plant payroll of around $370 million, which in turn would almost be matched by labor income in other sectors throughout the area. Therefore, the new plants will have a significant beneficial socioeconomic impact on the regional economy. In addition, new capital investment and employment in the local economy is anticipated to generate tax revenues for local, state, and federal governments. Based on information from the IMPLAN software, every dollar the industry pays to local governments, its suppliers, and other businesses pays another $2.76; every dollar it pays to state government, its suppliers, and other businesses pays another $2.28; and every dollar it pays to the federal government, its vendors, and other establishments pays another $1.00.

Overall, governments would receive an extra $1.33 in tax revenues for every dollar that the industry pays thanks to the economic "ripple" or multiplier effects of the industry's activities. These numbers do not incorporate government incentives relative to the projects.

Given the data, the Project is anticipated to have a significant beneficial impact on the local, regional, and state economy. These benefits are anticipated to allow for the expansion of governmental resources and ensure economic development of the entirety of the community.

A detailed analysis of EJ impacts was included in Section 3.3.6.2, which concluded that EJ impacts would not be significant, based on the significant socioeconomic benefit projected to be created during both construction and operation. The BlueOval SK Battery Park would represent a benefit to the regional economy, as well as poverty metrics, without disproportionate impacts on minority or low-income populations in the area.

4.3.4 Traffic and Transportation

To support development of the BlueOval SK Battery Park or associated commercial development surrounding the Project site, it is anticipated that additional traffic capacity and traffic safety modifications will be required for the interchange between I-65 and Kentucky State Route 222. These interchange modifications were initially reviewed by KYTC in 2008, and a reevaluation was completed in 2020. The Glendale Interchange Modification Report (IMR), 2020 Reevaluation of the 2008 IMR (KYTC Item No. 4-20.00, June 2020), built upon the evaluation win the January 2008 IMR for the I-65/Kentucky State Route 222 interchange. FHWA approved the engineering and operational feasibility for the preferred alternative (i.e., reconstruction of the interchange as a single-point urban interchange approximately 600 feet south of its current location) on February 12, 2008. A Categorical Exclusion (CE), satisfying requirements NEPA to consider the effects of federal actions, was approved March 19, 2009.

The purpose of the Glendale Interchange Project, as stated in 2008, remains the same in 2020: "to improve safety and increase capacity of the I-65/KY 222 interchange at Glendale, Kentucky." In the proposed build scenario, all movements to and from I-65 are preserved. Kentucky State Route 222 and its interchange with I-65 are relocated to the south, creating a controlled-access section of highway 650 or more feet from the ramp termini. Phased construction is proposed, along with upgrading ramps and a 1,750-foot section of Kentucky State Route 222 to four lanes as traffic volumes warrant increased capacity.

Traffic forecasts developed for the 2008 IMR were reexamined to determine changes in growth rates and traffic volumes from 2008 to 2019. The 1,500-acre Glendale Industrial Site is an important factor in both traffic analyses.

Additional considerations are ongoing for expansion to Gilead-Church Road south of the Project site. That project scope is not yet defined; however, review by KYTC will be required to fulfill the regulatory requirement under NEPA. Based on the applicability of a CE for the I-65/Kentucky State Route 222 interchange project, it is reasonably foreseeable that the Gilead-Church Road project would also qualify for a CE.

The Project, in conjunction with the identified projects in the region, would lead to an incremental increase in overall traffic; however, no significant adverse cumulative effects on the region's overall transportation network are anticipated.

5. FINDING

Based on this EA, DOE has determined that providing a federal loan to BlueOval SK to support the construction of manufacturing facilities to produce lithium nickel, manganese, and cobalt (NMC) batteries at sites in Stanton, Tennessee and Glendale, Kentucky will not have a significant effect on the human environment. The preparation of an environmental impact statement is therefore not required, and DOE is issuing this Finding of No Significant Impact.

TODD STRIBLEY

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Todd Stribley, NEPA Compliance Officer
Director, Environmental Compliance
U.S. Department of Energy, Loan Programs Office

6. LIST OF AGENCIES CONTACTED

Please see table for each site in Appendix C.

7. LIST OF PREPARERS

7.1 DOE

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