

FINDING OF NO SIGNIFICANT IMPACT TENNESSEE VALLEY AUTHORITY

SHAWNEE FOSSIL PLANT PROJECT PHOENIX ENVIRONMENTAL ASSESSMENT MCCRACKEN COUNTY, KENTUCKY

Background

TVA is proposing to construct a solar facility, known as Project Phoenix, at its Shawnee Fossil Plant (SHF), located adjacent to the Ohio River about 10 miles northwest of Paducah, Kentucky. The solar array is proposed to utilize a portion of the approximately 309-acre area where coal combustion residuals (CCR) are being closed and managed in place. The proposed project would facilitate the repurposing of an industrial brownfield site to produce up to 100 MW of renewable energy. Given its location on a TVA coal plant site, the solar facility would be located near existing transmission lines. The proposed project would require associated infrastructure to interconnect to TVA's transmission lines. In conjunction with the proposed solar array installation, TVA is considering the construction of a Battery Energy Storage System (BESS). The area of TVA's proposed action (herein referred to as the Project Area) comprises the proposed construction area of the solar panel arrangement, potential BESS, transmission connection infrastructure, and construction laydown area.

The proposed Project Phoenix solar development is the first of its kind project which would generate approximately 100 MW of renewable solar energy on top of a closed coal ash site at the SHF. This proposed project is a pilot project which would inform and enable potential future deployment of this innovative solar technology at other similarly situated brownfield sites at active and inactive coal-fired power plants across the Tennessee Valley.

Project Phoenix would include the installation of an approximately 100 MW solar cap over approximately 186 acres of the 309-acre site (Figure 1), which is currently in the process of being closed. The coal ash site closure was assessed in the *Shawnee Fossil Plant Coal Combustion Residual Management Final Environmental Impact Statement* (TVA 2017) and *Shawnee Fossil Plant Coal Combustion Residual Management Final Supplemental Environmental Impact Statement* (TVA 2018). This closure process is utilizing HD ClosureTurf® technology which, when paired with PowerCap® racking system, allows for the placement of solar panels without compromising the integrity of the final cover system.

Purpose and Need for Action

TVA's purpose and need for this proposed pilot action is to optimize power generation by utilizing the transmission related infrastructure present and by redeveloping brownfield areas on the existing plant property for solar generation and potential future energy storage. The construction of the proposed pilot solar facility is designed to use this valuable surface area that is located close to a TVA grid interconnection location. The utilization of the PowerCap® racking system as outlined in the proposed action, in association with the previously reviewed HD ClosureTurf®, allows for the placement of solar panels without compromising the integrity of the cover system of the coal ash site. In an ongoing Valley-wide effort to optimize and update TVA facilities, this opportunity to add additional carbon free power generation in a strategic location is highly sought after. This proposed solar energy production facility would enhance TVA resources by helping to meet energy production needs and providing cost effective renewable energy. TVA also is considering constructing a BESS at this location to modernize renewable power production storage. Overall, TVA's purpose and need for this proposed project would be

to redevelop this existing brownfield area at the SHF site, use the existing transmission structure for a solar generation facility and possible BESS, and demonstrate and inform the viability of the proof of concept and potential future deployment of this innovative solar technology at other similarly situated brownfield sites at active and inactive coal-fired power plants across the Tennessee Valley.

In June 2019, TVA completed an Integrated Resource Plan (IRP) and associated Environmental Impact Statement (TVA 2019). The IRP identified the various resources that TVA intends to use to meet the energy needs of the TVA region over the 20-year planning period while achieving TVA's objectives to deliver reliable, low-cost, and cleaner energy while reducing environmental impacts. The 2019 IRP anticipates growth of solar in all scenarios analyzed, with most scenarios anticipating 5,000-8,000 MW and one anticipating up to 14,000 MW (TVA 2019). With the demand for solar energy increasing, TVA has an expansion target of 10,000 MW of solar by 2035. Project Phoenix would provide cost-effective renewable energy consistent with the target supply mix in the 2019 IRP that is based on least cost planning principles, and TVA long term power generation goals.

Description of Alternatives

In accordance with guidelines outlined in the National Environmental Policy Act (NEPA), TVA has determined there are 2 alternatives available for consideration from the proposed pilot Project Phoenix: Alternative A – The No Action Alternative and Alternative B – Construction of the Solar Panel Facility and the Associated Infrastructure.

Alternative A – The No Action Alternative

Under Alternative A, the pilot solar facility, BESS, and associated transmission interconnection infrastructure would not be constructed and operated at the SHF facility, and TVA would be unable to redevelop the existing plant property for solar generation and energy storage using existing transmission infrastructure. Further, TVA would pursue other actions to help achieve its renewable energy goals established in the 2019 IRP (TVA 2019). Under the No Action Alternative, no environmental effects would be anticipated as environmental conditions on the site would remain essentially unchanged for the foreseeable future. The No Action Alternative does not meet the purpose and need to redevelop the plant property using existing transmission infrastructure; however, it serves as the baseline for comparison with the Proposed Action Alternative.

Alternative B – Construction of the Solar Panel Facility and the Associated Infrastructure

Under Alternative B, TVA would install and operate an approximately 100 MW alternating current (AC) pilot solar facility, potential BESS, construction laydown area and associated transmission interconnection infrastructure at SHF in McCracken County, KY. The Proposed Action Alternative would pursue the installation of approximately 186 acres of solar panel coverage and operation, producing approximately 100 MW of Alternating Current (AC) solar power, utilizing the PowerCap® racking system with the HD ClosureTurf technology, to meet energy production needs, provide proof of concept for future development, and cost-effective renewable energy. The Project Area, totaling approximately 340 acres, consists of an approximately 309-acre area encompassing the Ash Pond 2 and Consolidated Waste Disposal Area. The Project Area is comprised of an approximately 186-acre pilot solar panel coverage area, a 13-acre area for construction of the potential BESS, the corridor for transmission connection infrastructure from the solar array and BESS to the switchyard, and an approximately 14-acre construction laydown area.

The location of this proposed project at the SHF on the surface of the coal ash site, which is currently being closed, would allow for the use of the innovative Closure Turf® and Solar Power Cap™ technologies to enable the generation of approximately 100 MW of renewable energy, while only occupying approximately 186-acres of surface area. To generate approximately 100 MW of power not utilizing this innovative solar panel racking technology (which is associated with CCR closure), TVA would need up to approximately 1,000 acres on the plant site using traditional racking technologies. At Shawnee, much of the brownfield acreage that has been previously disturbed is being used by other operating infrastructure such as the coal yard, non-CCR process water basins, and transmission related structures. Other available on-site areas large enough to support solar development are located within floodplains and would not be suitable for solar development.

The Action Alternative (Alternative B) would provide additional carbon free power generation consistent with the 2019 IRP and TVA long term power generation goals.

Preferred Alternative

TVA has identified Alternative B – “Construction of the Solar Panel Facility and the Associated Infrastructure” as the preferred Action Alternative.

Impacts Assessment

Based on the analyses in the Final Environmental Assessment (EA), TVA concludes that the implementation of the Proposed Action would result in minor and temporary direct impacts to terrestrial zoology, parks and recreation, soil erosion and surface water, visual resources, noise, and air quality. TVA also found the Proposed Action would have no impact on floodplains, groundwater, wetlands, vegetation, aquatic ecology, prime farmland, archaeological and historic resources, managed and natural areas, hazardous and solid waste, transportation, socioeconomics and environmental justice. The construction and operation of the solar facility, potential BESS, and associated transmission interconnection infrastructure would not impact the existing infrastructure capacity, allowing additional industrial development in the vicinity of the Project Area and would improve electrical system resiliency. Implementation of the Proposed Action would not result in disproportionate adverse impacts to minority or low-income populations. Construction and operation of the facility would have a very small positive effect on the local economy with the short-term employment of workers during construction and long-term positions created by operation of the facility.

Public and Intergovernmental Review

The Draft EA was released for public review and comment for 30 days beginning on September 18, 2023. The availability of the Draft EA was announced in the local newspaper and was posted on the TVA website at www.tva.com/nepa. TVA also notified the appropriate local, state, and federal agencies and federally recognized tribes of the availability of the Draft EA for review with information on how to submit comments. During the 30-day public review and comment period of the Draft EA, a total of seven comment submissions were received from individuals and non-governmental organizations. These comments were addressed in Appendix G of the Final EA.

Mitigation

The Proposed Action would implement routine minimization and mitigation measures for resources potentially affected by the Project. These measures would be developed in conjunction with industry proven Best Management Practices (BMPs), requirements of regulatory permits, and adherence to the following plans:

- Storm Water Pollution Prevention Plan (SWPPP),
- Spill Prevention, Control, and Countermeasures (SPCC) Plan, and
- Unanticipated Discovery Plan for Cultural Resources.

TVA would employ standard BMPs, as described in *A Guide for Environmental Protection and Best Management Practices for Tennessee Valley Authority Construction and Maintenance Activities – Revision 4*, TVA’s BMP manual (TVA 2022), to minimize erosion during construction, operation, and maintenance activities. To minimize the introduction and spread of invasive species at the Project Site, access roads, and adjacent areas, TVA would follow standard operating procedures consistent with Executive Order (EO) 13112 (Invasive Species) for revegetating the areas with noninvasive plant species as defined by TVA (2022).

The Proposed Action would implement the following minimization and mitigation measures in relation to potentially affected resources:

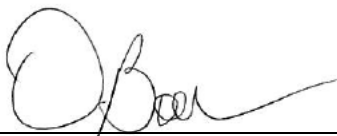
- Geology and soils:
 - Install silt fencing along the perimeter of areas that would be cleared, consistent with local and state stormwater regulations.
 - Implement other soil stabilization and vegetation management measures to reduce the potential for soil erosion during site operations.
- Water resources:
 - Regarding revegetation and restoration following site disturbance, maintain stormwater BMPs in each area according to the TVA BMP Manual (TVA 2022) until stabilization (adequate vegetation regrowth) has been achieved.
 - Avoid direct impacts to the maximum extent practicable on perennial and intermittent streams by maintaining a 50-foot riparian buffer at perennial and intermittent streams and wetlands in accordance with TVA BMP Manual (TVA 2022).
 - Avoid construction within wetlands and floodplains.
 - Use only USEPA-registered and TVA approved herbicides in accordance with designed label directions.
- Biological resources:
 - Plant or seed with noninvasive vegetation and include native and naturalized plant species to create beneficial habitat, reduce erosion, and limit the spread of invasive species.
 - Avoid or minimize direct impacts on nesting and migratory birds and bats, as well as federally listed species, by clearing trees during the winter period (November 15th – March 31st).
 - Install temporary construction fencing around sensitive natural resources that should be avoided.
- Waste management:
 - Develop and implement a variety of plans and programs to ensure safe handling, storage, and use of hazardous materials.
- Public and occupational health and safety:
 - Emphasize BMPs for site safety management to minimize potential risks to workers.

- Use dust mitigation activities such as watering dry exposed soils and roadways, covering open-body trucks, and establishing a speed limit to minimize fugitive dust.
- Transportation:
 - Should traffic flow become a problem, consider implementation of staggered worker shifts during construction and a flag person along the roadside during deliveries that may coincide with heavy commute times to manage the flow of traffic near the Project Site.

Conclusion and Findings

TVA’s goal for this action is to optimize power generation, while utilizing the transmission related infrastructure that is currently in place and by redeveloping a brownfield area for solar generation and energy storage. The construction of the proposed pilot solar facility is designed to utilize this valuable surface area, located within close proximity to a TVA grid interconnection location. The utilization of the HD ClosureTurf® technology as part of the final cover system, when paired with PowerCap® racking system, allows for the placement of solar panels without compromising the integrity of the cover system. In an ongoing Valley wide effort to optimize and update TVA facilities, this opportunity to add additional carbon free power generation in a strategically optimal location is highly sought after. This proposed solar energy production facility would enhance TVA resources, while helping meet energy production needs and meeting potential regulatory requirements. The proposed pilot solar facility would enhance TVA resources by helping to meet energy production needs, provide proof of concept for future development, and provide cost effective renewable energy.

Based on the findings in this Environmental Assessment, we conclude that the Proposed Action to construct the solar facility along with the installation of accompanying infrastructure including a potential future BESS, transmission interconnect infrastructure, and temporary construction laydown area, would not be a major federal action significantly affecting the environment. Accordingly, an environmental impact statement is not required.



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Date Signed