FINDING OF NO SIGNIGIFICANT IMPACT

TENNESSEE VALLEY AUTHORITY

WR GRACELAND SOLAR

SHELBY COUNTY, TENNESSEE

The Tennessee Valley Authority (TVA) has entered into a power purchase agreement (PPA) with WR Graceland Solar, LLC (WR Graceland Solar) to purchase the power and environmental attributes generated by the proposed WR Graceland Solar facility (solar facility) in Shelby County, southeast of the City of Millington, Tennessee (TN). Under the terms of the PPA between TVA and WR Graceland Solar, dated March 2, 2021, TVA would purchase the energy and environmental attributes generated by the proposed 150 megawatt (MW) alternating current (AC) solar facility for an initial term of 20 years, subject to the satisfactory completion of all applicable environmental reviews. The property owners within the solar facility's project boundary would enter into long-term lease agreements with WR Graceland Solar.

The proposed solar facility would occupy approximately 849.67 acres of a 1,482-acre project boundary and would generate up to 150-MW of AC generating capacity output. The proposed solar facility would consist of multiple parallel rows of photovoltaic (PV) panels on single-axis tracking structures, along with direct current (DC) and AC inverters and transformers. The panels are bi-facial modules that produce solar power from both sides of the panel exposing both the front and backside of the solar cells.

In addition, the proposed solar facility would include a substation on the north side and an adjacent 161-kilovolt (kV) switching station on the south side. The proposed interconnection would connect to the Memphis Light, Gas and Water (MLGW) 161-kV transmission line to the north via a 250-foot-long generation tie-in line (gen-tie) [Point of Interconnection (POI)]. Together, the construction and operation of the proposed solar facility's solar array layout, substation, switching station, electrical interconnection's 250-foot gen-tie line, proposed project roadways, and construction access points are herein referred to as the "Project" and the "Proposed Action."

According to the National Environmental Policy Act (NEPA) of 1969, federal agencies are required to evaluate the potential environmental impacts of their Proposed Actions. Therefore, the Final Environmental Assessment (EA) assesses the impact of TVA's action of entering into the PPA with WR Graceland Solar, including any associated impacts of the construction and operation of the proposed solar facility.

In June 2019, TVA completed an Integrated Resource Plan (IRP) and associated Environmental Impact Statement. 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. Customer demand for cleaner energy prompted TVA to release a Request for Proposal (RFP) for renewable energy resources (2020 TVA Renewable RFP to solar developers). The PPAs will help TVA meet immediate needs for additional renewable generating capacity in response to customer demands and fulfill the renewable energy goals

established in the 2019 IRP. The Proposed Action would provide cost-effective renewable energy consistent with the IRP and TVA goals.

The potential effects of the Proposed Action are described in an environmental assessment (EA) incorporated herein by reference.

ALTERNATIVES

The Final EA evaluates two alternatives: The No Action Alternative and the Proposed Action Alternative. Under the No Action Alternative, TVA would not purchase the power generated by the Proposed Action under the 20-year PPA with WR Graceland Solar, and TVA would not be involved with the Project. TVA would continue to rely on other sources of generation described in the 2019 IRP to ensure an adequate energy supply and meet its goals for increased renewable and low greenhouse gas (GHG)-emitting generation. Therefore, a No Action Alternative would not meet the Project purpose and need and would impede TVA's progress towards meeting its long-range program goals.

Under the Proposed Action Alternative, WR Graceland Solar would construct and operate a 150-MW AC single-axis tracking PV solar facility and TVA would purchase 100 percent of the renewable energy from the facility under the terms of the 20-year PPA with WR Graceland Solar. The solar facility would generate up to 150-MW AC output and would occupy approximately 849.67 acres (including nine parcels). The Project would connect to the existing MLGW electrical transmission line via the proposed Project's 250-foot gen-tie line to the proposed switching station adjacent to the proposed substation.

The Project, or solar facility, would be composed of anti-reflective coated smooth glass PV bi-facial modules mounted together on a racking system in arrays. Groups of panels would be connected electrically in series to form "strings" of panels. Approximately 6.5 feet by 4 feet wide and to 7.92-feet high, the panels would be located in individual blocks consisting of the PV arrays and an inverter station. The bi-facial modules would be attached to single-axis trackers that allow the panels to pivot along a typical 180-degree axis to follow the sun's path from east to west across the sky. The trackers would be attached to steel pile foundations. Collections of strings or rows of panels would be connected by underground DC cabling to a central inverter that would convert the DC electricity into AC electricity to be transmitted to the electrical grid. Each inverter would have a collocated mid-voltage transformer (MVT) which boosts the AC voltage to account for the standard electrical loss between the central inverters and the onsite substation. From the MVTs, a network of underground AC power cables would connect to a single main power transformer (MPT) located within the 161-kV Project substation. Cable lines would be installed in trenches approximately 3- to 4 feet deep and 12 inches wide.

The Project substation, approximately one to two acres in size, would have switching, protection, control equipment, and the main power transformer. In addition, the substation would have circuit breakers that are used to interrupt any short circuits or overload currents that may occur on the network. Other devices such as capacitors, voltage regulators, and reactors would also be located at the substation. Other Project components would include security equipment, facility access roads, communications equipment, meteorological stations, an operations and maintenance building, and supporting Project water well.

A permanent Project interconnection switchyard (switching station), approximately three to four acres in size, would be constructed. The switching station would have three 161-kV breakers and would be installed in a ring bus configuration along with associated metering,

communication, and protective equipment. The Project gen-tie line would connect at one of the 161-kV breakers in the ring bus to the existing transmission line owned by MLGW. This switching station would be adjacent to the Project substation, resulting in a 250-foot-long gen-tie line. The proposed location of these facilities would be on the northeast side of the overall solar facility's Project area.

Gravel-based access roads would be located throughout the Project and provide access to each module and inverter block for maintenance and repairs. These project roads would be approximately 20 feet wide and would include either culverts or low water crossings for stream crossings. In addition, there would be construction access points for entry to the project site. The area surrounding the substation and switching station would be filled with gravel. No upgrades are anticipated for the existing transmission line, and if they do occur, the MLGW would be responsible for this work.

There would be multiple locations around the solar facility designated as construction assembly areas (also called laydown areas) for worker assembly, safety briefings, vehicle parking, temporary offices, and material storage during construction. Some of these areas would be staged within the locations proposed for the PV arrays. The laydown areas would be located outside of designated floodplain areas and remain onsite for the duration of construction. Temporary construction trailers for material storage and office space would be parked onsite at the designated location. WR Graceland Solar would utilize one mobile double-wide trailer onsite as the operations and maintenance building or may construct a small freestanding building in accordance with applicable county regulations/requirements. Please note this mobile trailer/structure would be located within the Project boundary and avoid environmentally sensitive resources described in the Final EA. After construction, disturbed areas within the fenced solar facility area would be reseeded with a mix of native grasses and/or noninvasive vegetation that may include pollinator attracting plant species.

The design of the tracker support structures for the solar facility could vary depending on the final PV technology and vendor selected. The trackers would likely be attached to driven steel pile foundations. The steel pile foundations are typically galvanized and used where high load-bearing capacities are required. The pile is driven with a hydraulic ram. The tracker design and pile foundation design would be sealed by a registered Professional Engineer and Structural Engineer, respectively. Screw piles are another option for PV foundations which are drilled into the ground with a truck-mounted auger. Screw piles create a similar soil disturbance footprint as driven piles.

All final electrical collection cables would be underground, and electricians and assistants would run the electrical cabling throughout the solar facility. The trenches to hold the cabling would be approximately 3- to 4 feet deep and 2- to 12 inches wide. This utility work has not undergone design; however, it would remain within the Project boundary or existing utility easement and would avoid environmentally sensitive areas.

The MPT would be supported on a concrete foundation and the aboveground transmission cable would be constructed to connect the MPT through a circuit breaker. This would be within the Project and construction of the MPT would avoid environmentally sensitive areas.

Following the expiration of the 20-year PPA with TVA, WR Graceland Solar would reassess the site operation and determine whether to cease operation or attempt to enter into a new PPA or another arrangement. If TVA or another entity were willing to enter into such an agreement, the facility would continue operating. If no commercial arrangement is possible,

the facility would be decommissioned and dismantled, and the site restored. However, the switching station would remain as a permanent structure.

IMPACTS ASSESSMENT

This Final EA evaluates the potential environmental effects resulting from implementing the No Action Alternative or the Proposed Action Alternative at the WR Graceland Solar Project in Shelby County, Tennessee. The Final EA impact analysis is based on the Project's current and potential future conditions and the surrounding region.

The surrounding area is mixed with agricultural, residential, recreational, industrial, and institutional uses, likely to continue over the next 20 years based on the City of Millington Master Plan. The proposed Project's development is consistent with the development trends and land use of the surrounding areas to the west, north, and east causing little change or growth. Therefore, the Project would result in adverse indirect impacts to adjacent lands. In addition, the Proposed Action may result in more economic development and environmentally friendly development in the surrounding areas.

Since excavation would be limited, only minor direct impacts to geological and paleontological resources would be anticipated. Due to limited areas of disturbance and the shallow nature of the proposed subsurface disturbances, only minor indirect impacts to geological resources are anticipated. There is a minor to moderate probability of seismic activity due to the location of the Project near the New Madrid seismic zone that typically causes strong shaking. However, geological hazard impacts on the site would be unlikely to impact off-site resources. Minor disturbance to soils would occur during the operation of the Proposed Action Alternative. Creating a new impervious surface in the form of panel footings and the foundations for the inverter stations and a substation would result in a minor increase in stormwater runoff and potentially increase soil erosion. In addition, vegetation clearing associated with the overall Proposed Action would result in a minor increase in stormwater runoff and increased soil erosion potential. The use of BMPs such as soil erosion and sediment control measures would minimize the potential for increased soil erosion and runoff.

Solar projects do not result in the permanent or irreversible conversion of farmland; however, the switching station would be a permanent structure. While agricultural production would cease on the Project, long-term impacts on prime farmlands and soil productivity would be insignificant. Except for up to four acres of farmland which would be permanently impacted by construction of the switching station, the Project could be readily returned to agricultural production once the solar farm is decommissioned. Based on the limited site disturbance, temporary direct impacts to prime farmland would occur throughout the duration of the Proposed Action Alternative.

Direct adverse impacts to the supply and availability of groundwater are not anticipated as a result of the Proposed Action Alternative. During construction, hazardous materials would be located on-site that could potentially contaminate groundwater resources, including petroleum products for fuel and lubrication of construction equipment, hydraulic fluids, and various other chemicals commonly used for general construction permits. A Spill Prevention, Control, and Countermeasure (SPCC) Plan would be developed and implemented according to applicable requirements to minimize the potential for impacts from leaks or spills that may occur.

Impervious buildings and infrastructure prevent rain from percolating through the soil and result in additional runoff of water and pollutants into storm drains, ditches, and streams. Clearing vegetation and ground cover, and the addition of impervious surfaces, could alter the current stormwater flows. However, stormwater flow would be appropriately treated by implementing proper BMPs or diverting stormwater discharge to ensure adequate drainage. Overall, impacts on local aquifers and groundwater are not anticipated due to the limited volume of groundwater required for initial construction, operation, maintenance, or decommissioning and closure. Additionally, minor, indirect beneficial impacts to groundwater could occur from the discontinued use of broad applications of herbicides, pesticides, and fertilizers resulting from to change in land use from agriculture to solar.

The Proposed Action would avoid construction within mapped 100-year floodplains, which would be consistent with EO 11988. However, the ground is gently sloped, and although not within a mapped 100-year floodplain, could be inundated during larger floods. By implementing mitigation measures, the proposed Project would have no significant impact on floodplains and their natural and beneficial values.

With the implementation of appropriate best management practices (BMPs), impacts to surface waters and aquatic life would be insignificant during construction, and no long-term adverse impacts are anticipated. In addition, there is a potential for long-term beneficial impacts on streams within the Project due to the reduction in annual agriculture activities and applications of pesticides and fertilizer within the Project. There are numerous preliminary non-jurisdictional wet weather conveyances (WWCs) within the Project that would be directly impacted due to grading and fill and/or indirectly impacted by sediment runoff during construction and operation of the facility. These WWCs would be included and accounted for in the stormwater pollution prevention plan (SWPPP) submittal as part of the national pollutant discharge elimination system permit construction general permit (NPDES CGP). Therefore, based on the current design, there would be no direct impacts on preliminary jurisdictional wetlands, but there would be direct impacts to streams as a result of up to nine access road crossings. Additionally, there would be direct impacts on non-jurisdictional WWCs and ponds. No indirect impacts are anticipated.

One benefit of the Proposed Action Alternative would be the planting of native, low-growing grasses and wildflowers that may include pollinator attracting plant species. After construction and during the operation of the solar facility, WR Graceland Solar plans to manage vegetation to limit vegetative height near panels. To avoid the spread of exotic or invasive species within the Project, weed-free seed mixes and mulch will be used, equipment will be cleaned before entering the site, and selective use of US Environmental Protection Agency-approved spot herbicides maybe used to avoid runoff or drift. Under the Proposed Action Alternative, the Proposed Action would have minor impacts to vegetation and would not significantly contribute to the spread of exotic or invasive species.

Overall, temporary direct impacts caused by the construction phase could occur to common wildlife and migratory birds. Additionally, temporary minor indirect impacts (i.e., small, isolated and fringe habitat loss) are anticipated since tree removal is planned; however, there is roughly 1,700 acres of neighboring undeveloped and forested areas for wildlife to disperse. In addition, during the post-construction phase, the revegetation and conversion of croplands to native species (following recommendations from US Department of Agriculture) would provide habitat for displaced individuals and encourage new species to inhabit the Project.

The Proposed Action Alternative would alter the existing rural and open viewsheds. Construction of the Proposed Action Alternative would create temporary changes in views of and from the Project. However, per Memphis and Shelby County UDC, there are required screening buffers that may be applicable to the project. WR Graceland Solar would coordinate with Shelby County to determine the appropriate screening measures necessary to further minimize any potential visual impacts from the Project. In addition, construction activities would also temporarily introduce construction equipment and associated vehicles into the viewshed of surrounding property owners. In areas where grading would be necessary, minor changes to the ground surface's contour, color, and texture would be visible. Erosion control devices such as silt fences would likely be visible from many vantage points during construction. Erosion control silt fences and sediment traps would be removed once construction is complete. Visual changes resulting from construction are considered short-term and temporary.

Based on the solar array parameters provided and the current site design, glare is not predicted from the Project for pilots landing at six airports and one helipad located within a 10-mile radius of the Project, including Charles W. Baker Airport, Needham's Airport, Ray Airport, Millington-Memphis Airport, Shoemaker-Shelby Forest Airstrip, General DeWitt Spain Airport, and the Methodist North Hospital helipad. In addition, the results of the ForgeSolar analysis determined that glare from the Proposed Action is not predicted to occur for drivers of vehicles on 15 roadways adjacent to the Project. Glare is also not predicted for the total of approximately 115 structures, primarily residences, which were analyzed within proximity to the Project Site.

The Proposed Action Alternative would result in short-term noise production related to construction activities. As a result, nearby residents could experience elevated noise levels caused by construction equipment. Still, construction noise would be of short duration and likely not exceed the 71 to 81 A-weighted decibel noise level at nearby houses for prolonged periods. Noise impacts from constructing a temporary substation and permanent switching station (including new transformers and fans) would occur during construction only. The noise increases from vegetation removal and construction activities associated with the proposed substation and switching station would be most noticeable from Paul W. Barret Parkway (SR-385). Elevated noise levels would be temporary and would only occur during daytime hours. During operations, maintenance activities, primarily mowing, would result in noise periodically; however, this noise would be similar to existing noises near the Project. Overall, the Proposed Action Alternative would have temporary direct noise impacts.

Under the Proposed Action Alternative, minor impacts on air quality would occur during the facility's construction. The impacts on air quality are expected to be minimal and short-lived. Any emissions would be temporary and would not adversely impact the environment. No adverse impact to air quality and Greenhouse Gases (GHGs) is anticipated from the Proposed Action. The operation of the solar facility is not anticipated to have any adverse impacts on air quality or GHG emissions, as only minor maintenance would be expected to occur, which would not constitute a major source of air pollutants.

The Proposed Action Alternative would not impact any listed or National Register of Historic Places (NRHP)-eligible architectural sites. On January 5, 2022, the Tennessee State Historic Preservation Office (TN-SHPO) concurred with the findings of the architectural survey reports and concluded that no architectural resources eligible for listing in the NRHP would be affected by the Proposed Action. The Project's conceptual design was altered to

avoid impacting these cultural resource sites with a 20-meter buffer during the construction and operation of the Project. Therefore, no impacts to any listed, eligible, or potentially eligible NRHP archaeological sites would occur due to the Proposed Action Alternative. The TN-SHPO concurred with these findings on February 17, 2022.

TVA and WR Graceland Solar will sign an agreement document that ensures archaeological resource sites 40SY877, 40SY879, 40SY344, 40SY856, and 40SY878 would be avoided during the life of the PPA. Should previously undiscovered cultural resources be identified during construction or operations, a Secretary of the Interior-qualified archaeologist, TVA, and the TN-SHPO would be consulted before any further action is taken.

Under the Proposed Action Alternative, construction activities and facility operations would generate solid waste. Oily rags, worn or broken metal and machine parts, defective or broken electrical materials, other scrap metal and plastic, broken down module boxes, empty containers, paper, glass, and other miscellaneous solid wastes would be generated throughout all phases of the proposed Project. According to the Phase I Environmental Site Assessment findings, the Proposed Action Alternative would not directly impact hazardous materials because they are not likely to be encountered during construction. Therefore, impacts from the generation of hazardous waste during the construction and operation of the proposed facility would be insignificant. Procedures to limit fuel spills would be implemented during the construction and operation of the facility. Details regarding the handling of fluid spills and general trash would be included in the Stormwater Pollution Prevention Plan (SWPPP).

Workers at the Proposed Action Alternative and associated electrical lines would have an increased safety risk associated with the construction activities. However, because construction work has known hazards, standard practice is for contractors to establish and maintain health and safety plans in compliance with Occupational Safety and Health Administration regulations. No public health or safety hazards would be anticipated due to operations. Overall, impacts to public health and safety in association with the implementation of the Proposed Action would be considered temporary and minor.

The Proposed Action would not result in residential dislocations or impact land uses currently associated with residential activities. Based on the analysis presented above, residents of the Census Groups, including the Project, are not considered a minority or low-income population. In addition, based on the impact analysis, there would be no significant adverse health impacts on members of the public or significant adverse environmental impacts on the physical environment (water, air, and terrestrial resources) and socioeconomic conditions. Therefore, there would be no disproportionately high or adverse direct or indirect impacts on minority populations due to the Proposed Action's human health or environmental effects.

The operation of the solar facility would not overburden the local or regional roadway network, as operating activities would require three on-site staff and vehicular traffic, consisting of periodic visits to conduct facility inspections and maintenance. Therefore, the proposed project would result in minor, temporary, direct, and indirect impacts to traffic during construction activities; however, there would be no long-term impacts on the existing roadway conditions.

PUBLIC INVOLVEMENT

TVA issued a copy of the Draft EA for a 30-day public and agency review and comment period. TVA notified the public of the availability of the Draft EA via an advertisement through the following media outlets:

- Tri-State Defender
- The Commercial Appeal (two separate people were emailed)
- The South Reporter
- The Gazette
- The Daily Memphian
- Inside Memphis Business
- WMC-TV
- WHBQ-TV
- High Grounds News
- La Prensa Latina
- Memphis Business Journal
- The News Leader
- Daily Corinthian
- WREG-TV

The Draft EA public comment period began on April 15, 2022 and ended on May 10, 2022. TVA also notified appropriate local, state, and federal agencies and federally recognized tribes of the availability of the Draft EA. A total of two comments were received from the general public and interested agencies: specifically, a local organization, Protect our Aquifer, and a state agency, TDEC. TVA reviewed comments received on the Draft EA and addressed substantive comments, as appropriate, as part of this Final EA. TVA also consulted on the effects of the Project with appropriate regulatory agencies and tribes.

MITIGATION MEASURES

WR Graceland Solar would implement the following minimization and mitigation measures concerning resources potentially affected by the proposed Project.

- Comply with the terms of the SWPPP prepared as part of the NPDES CGP process and implement other routine BMPs, such as non-mechanical tree removal within surface waters, placement of silt fences and sediment traps along buffer edges, and proper vehicle maintenance to reduce the potential for adverse impacts to groundwater.

- Comply with the conditions of the Clean Water Act (CWA) Section 401 Water Quality Certification/Tennessee Department Environment and Conservation Aquatic Resource Alteration Permit and CWA Section 404 permit [33 (United States Code) U.S.C. § 1251 et seq.], as applicable.

- WR Graceland Solar has agreed to implement 50-foot buffers to all jurisdictional wetlands and a 50-foot buffers to the jurisdictional streams.

- Should traffic flow be a problem for local developments, WR Graceland Solar would consider staggering work shifts to space out traffic flow to and from the Project. The use of such mitigation measures would minimize potential adverse impacts to traffic and transportation to less than significant levels.

- WR Graceland Solar would design and implement the fencing and screening for the Project in adherence with the relevant requirements of Memphis and Shelby County Unified Development Code. Panel arrays would meet all setback requirements of the respective district in which they are located. Panel arrays should be set back no less than 110 percent of the height of the array.

- If Project plans change, resource agencies will request re-consultation to determine if further action is required to comply with regulations.

- The individual solar panels and any flood-damageable equipment would be elevated to at least elevation 270.3 feet, which would be one foot above the 100-year flood elevation.

- Any additional night-time lighting would be downward-facing and timer and/or motion-activated to minimize impacts to avoid visual and wildlife impacts.

- After construction, disturbed areas within the fenced solar facility area would be reseeded with a mix of native grasses and/or non-invasive vegetation that may include pollinator attracting plant species.

- Upon decommissioning and deconstruction of the Project at the end of its useful life, any demolition debris would be deposited off-site, outside 100-year floodways.

CONCLUSION AND FINDINGS

Based upon the analyses documented in the EA, TVA concludes that its Proposed Action Alternative of the construction and operation of the solar generating facility and TVA's purchase of the electric output pursuant to the PPA with Graceland Solar, LLC, would not be a major federal action significantly affecting the environment. Accordingly, an environmental impact statement is not required.

09/01/2022

Dawn Booker
Manager
NEPA Program

Date