

**Document Type:** EA-Administrative Record  
**Index Field:** Final Environmental  
Assessment  
**Project Name:** Silicon Ranch Houston,  
Mississippi Solar Farms  
**Project Number:** 2016-14

**PURCHASE OF POWER GENERATED AT  
HOUSTON, MISSISSIPPI SOLAR FARMS  
Chickasaw County, Mississippi**

**FINAL ENVIRONMENTAL  
ASSESSMENT**

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June 2016

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## CHAPTER 1 – PURPOSE AND NEED FOR ACTION

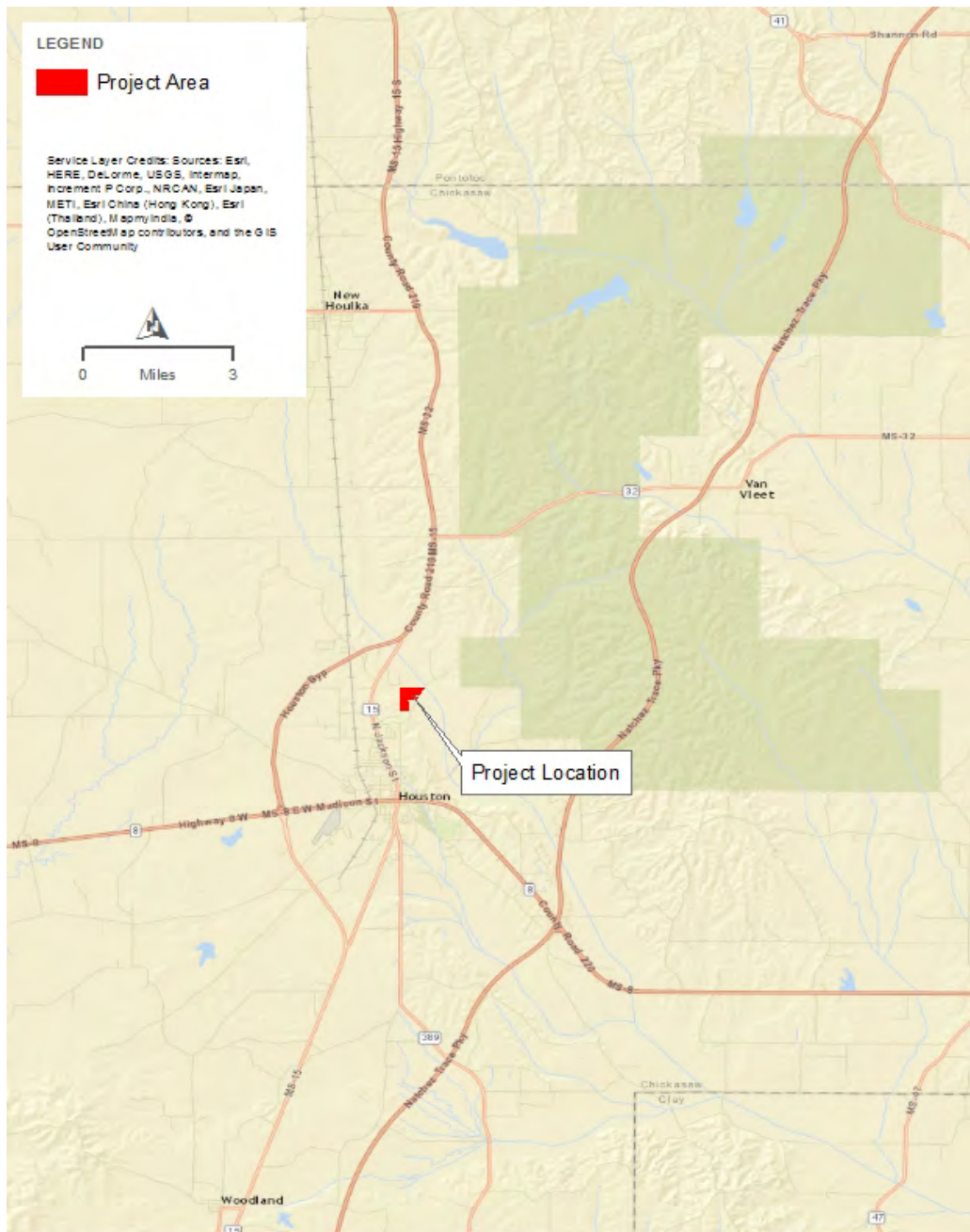
The Tennessee Valley Authority (TVA) proposes to enter into power purchase agreements (PPAs) with SR Houston, LLC and Chickasaw Solar, LLC, facility-specific entities affiliated with Silicon Ranch Corporation, to purchase the electric power generated by Silicon Ranch's two proposed solar photovoltaic (PV) facilities near the town of Houston in Chickasaw County, Mississippi (Figures 1, 2). The proposed solar facilities are the Houston, MS 3.9 MW Solar Project (Houston Facility), which would have direct current (DC) generating capacity of 3.9 megawatts (MW), and the Chickasaw County Solar Farm (Chickasaw Facility), with a capacity of 1 MW DC. The proposed solar facilities would occupy 21 acres of a 60.7-acre tract owned by Silicon Ranch. They would be connected to the Natchez Trace Electric Power Association (NTEPA) distribution network, which would transmit the power to the TVA network. The PPAs would be executed through TVA's Renewable Standard Offer (RSO) program, under which TVA agrees to purchase qualifying renewable energy at set prices for a 20-year period. The Chickasaw Facility would also operate under TVA's Solar Solutions Initiative which provides additional incentives for small solar projects using local certified solar installers.

In its 2011 Integrated Resource Plan (IRP; TVA 2011) TVA established the goal of increasing its renewable energy generating capacity by 1,500 to 2,500 MW by 2020. TVA established the RSO program as one of the means of meeting this goal. Under the RSO program, TVA purchases energy at established terms and conditions (the "standard offer") from operators of qualifying renewable energy-generating facilities. Qualifying facilities must be located within the TVA service area and must generate electricity from specific technologies or fuels. Solar PV generation is one of the qualifying technologies. The Houston and Chickasaw facilities meet the qualifications for the RSO program, and TVA must decide whether to execute the PPAs.

TVA's 2015 IRP (TVA 2015) recommends the continued expansion of renewable energy-generating capacity, including the addition of between 175 and 800 MW of solar capacity within its jurisdiction by 2023. The proposed action would help meet this need for additional solar capacity.

TVA has prepared this environmental assessment (EA) under the National Environmental Policy Act (NEPA) and TVA's NEPA procedures in order to assess the potential impacts of its proposed action (the purchase of power under the two PPAs) and the associated impacts of the construction and operation of the proposed solar facilities by Silicon Ranch.

## Houston Solar Farms



**Figure 1. Project location near Houston, Mississippi.**

## Public Notice/Public Involvement

Both proposed solar facilities were approved by the Mississippi Public Service Commission (PSC; dockets 2015-UA-095 and 2015-UA-096) in August 2015 following public hearings. As part of this approval process, the PSC issued public notices about each facility in June and August, 2015. These notices were published in Houston and Jackson, Mississippi newspapers and distributed to local public officials. The facilities have been supported by local public officials and the community and no comments opposing them were received during the review by the PSC.

The proposed Chickasaw Facility and a portion of the proposed Houston Facility would be constructed in the 100-year floodplain of Pettigrew Creek and an unnamed stream. In accordance with TVA procedures for implementing Executive Order (EO) 11988 on Floodplain Management, TVA issued a draft of this EA for public review and comment for a two-week period in June 2016.

TVA received one comment letter on the draft EA from the Southern Alliance for Clean Energy (SACE; see Appendix). SACE requested more information on the proposed facility's electrical interconnection, whether the facilities would be constructed with fixed-tilt or tracking arrays, the potential for hiring local low-income and minority workers and using locally sourced materials, the length of the PPAs, and the status of the facilities following the expiration of the PPAs. The text of the Chapter 2 description of the Proposed Action Alternative and the Chapter 3 section on Socioeconomics and Environmental Justice has been revised to provide this information. The 20-year length of the PPAs is set by the terms of the Renewable Standard Offer and Solar Solutions Initiative programs.

### **Necessary Permits or Licenses**

Based on the scope of the anticipated construction activities described below in Chapter 2, the proposed Houston Facility would likely require a National Pollutant Discharge Elimination System construction general permit issued by the Mississippi Department of Environmental Quality, depending on the area of land disturbed during construction of the solar facility. This permit would require the development of a stormwater pollution prevention plan and implementation of the defined pollution prevention measures.

The Chickasaw Facility is anticipated to require a Clean Water Act Section 404 Nationwide Permit Number 51 due to a proposed permanent access road crossing a wetland. It is unlikely to require a National Pollutant Discharge Elimination System permit.

## CHAPTER 2 - ALTERNATIVES

### Description of Alternatives

This EA evaluates two alternatives: the No Action Alternative and the Proposed Action Alternative. These are described in more detail below.

#### **Alternative A – The No Action Alternative**

The No Action Alternative provides for a baseline of conditions against which the impacts of the Proposed Action Alternative can be measured. Under this alternative, TVA would not purchase power from the solar facilities and the solar facilities would not be constructed and operated by SRC. TVA would continue to rely on other sources of generation described in the 2015 IRP (TVA 2015) to ensure an adequate energy supply and to meet its goals for increased renewable and low-greenhouse gas (GHG) emitting generation.

Environmental conditions in the project area would remain unchanged in the immediate future. The site would remain as predominantly undeveloped agricultural land and agricultural activities would likely continue. Silicon Ranch would retain the site for future development.

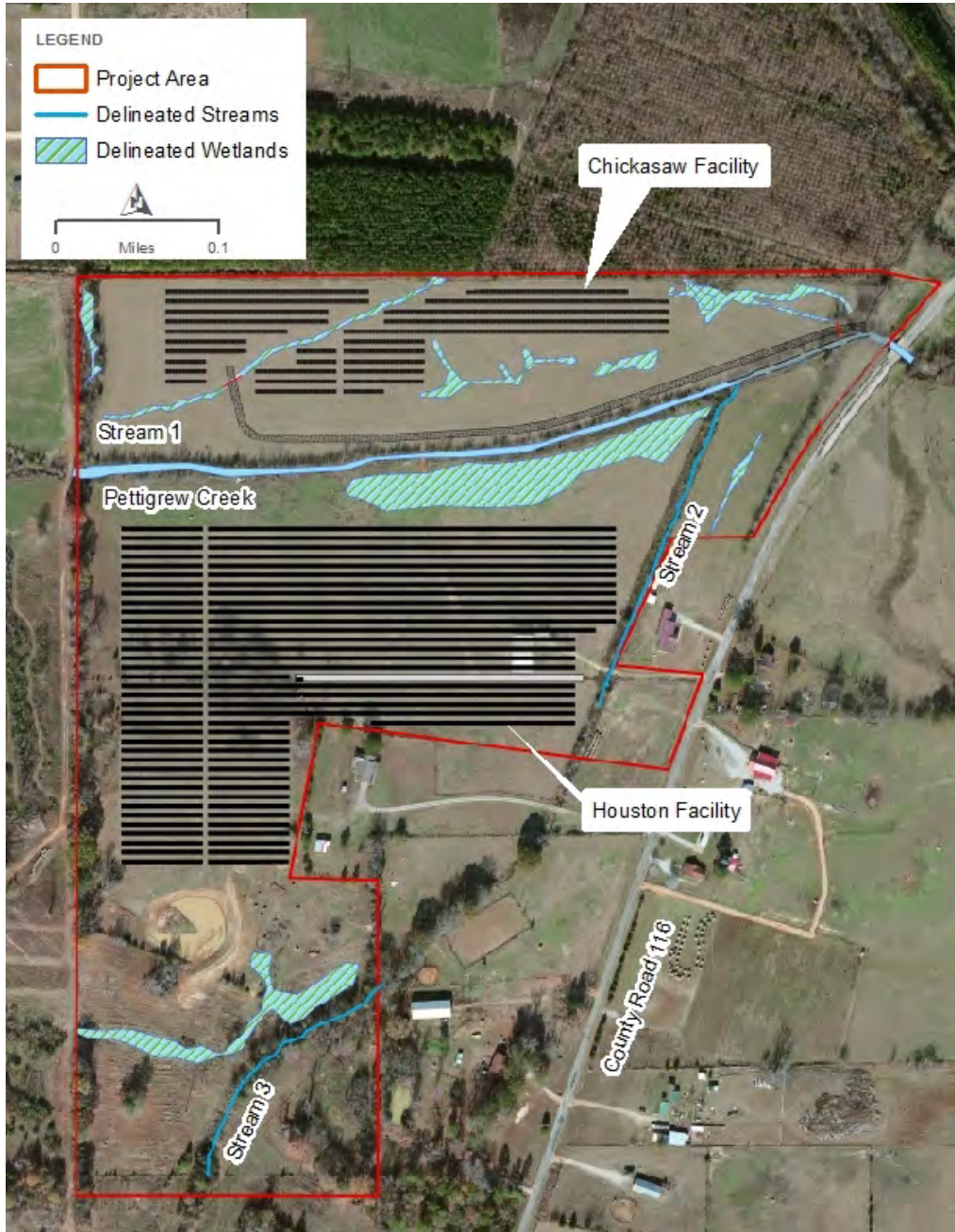
#### **Alternative B – Proposed Action Alternative**

Under the Proposed Action Alternative, TVA would enter into the two 20-year PPAs with SR Houston, LLC and Chickasaw Solar, LLC; SRC would then construct and operate the 3.9-MW Houston and 1-MW Chickasaw solar facilities. The two facilities would collectively occupy approximately 21 acres of a 60.7 acre site owned by Silicon Ranch and located approximately 0.6 mile northeast of the intersection of County Road (CR) 116 and North Jackson Street, approximately 2 miles north of downtown Houston, Mississippi (Figure 1). Both facilities would use PV panels fastened to fixed-tilt metal racks supported by metal poles driven up to 6 feet into the ground and arranged in parallel east-west rows. SRC proposes to use fixed-tilt PV arrays instead of single-axis tracking PV arrays because there is not currently a tracking array system that can incorporate the Stion PV panels proposed to be used for the facilities.

Houston Facility – The Houston Facility would occupy approximately 15.7 acres in the central portion of the site (Figures 2, 3). A 20-foot wide temporary access road for construction would run west from CR 116 along an existing dirt road in the center of the project area. Its eastern end would be located on adjacent property and its owners have granted Silicon Ranch the rights to cross their property. The small patches of trees on and adjacent to the proposed PV would be removed and minor grading/clearing of approximately 2.7 acres on the Houston Facility site would be required. Figure 2 shows two buildings, including a barn on the project site. During a site visit conducted by HDR personnel in December 2015, it was noted that all buildings had been removed from the site, leaving only a concrete foundation pad and building debris, including cinder blocks, concrete, and ceramics, in the area.

A total of 13,024 150W Stion PV panels and 13,420 145W Stion PV panels would be installed on ground-mounted metal racks. Buried electrical cables would connect the rows to two DC to alternating current (AC) power inverters. Trenches for buried cables would be backfilled and the ground surface returned to its original grade. The inverters would be connected by a buried cable to a pad-mounted 3,000 volt amps (kVA) transformer on the south side of the solar arrays. A buried cable would run from the transformer to a riser pole located about 100 feet east of the solar arrays and north of the on-site access road. An overhead line would run east from the riser pole across Stream 2 and CR 116 to connect to NTEPA's existing 25-kV line parallel to the east side of CR 116. A disconnect switch, reclosure, and metering would be

located at the connection point. The NTEPA power line connects to NTEPA's 161-25 kV substation located about 1,700 feet south of the connection point on the east side of CR 116. This substation is connected to TVA's Okolona-Calhoun City 161-kV transmission line.



**Figure 2. Location of proposed solar facilities in project area.**

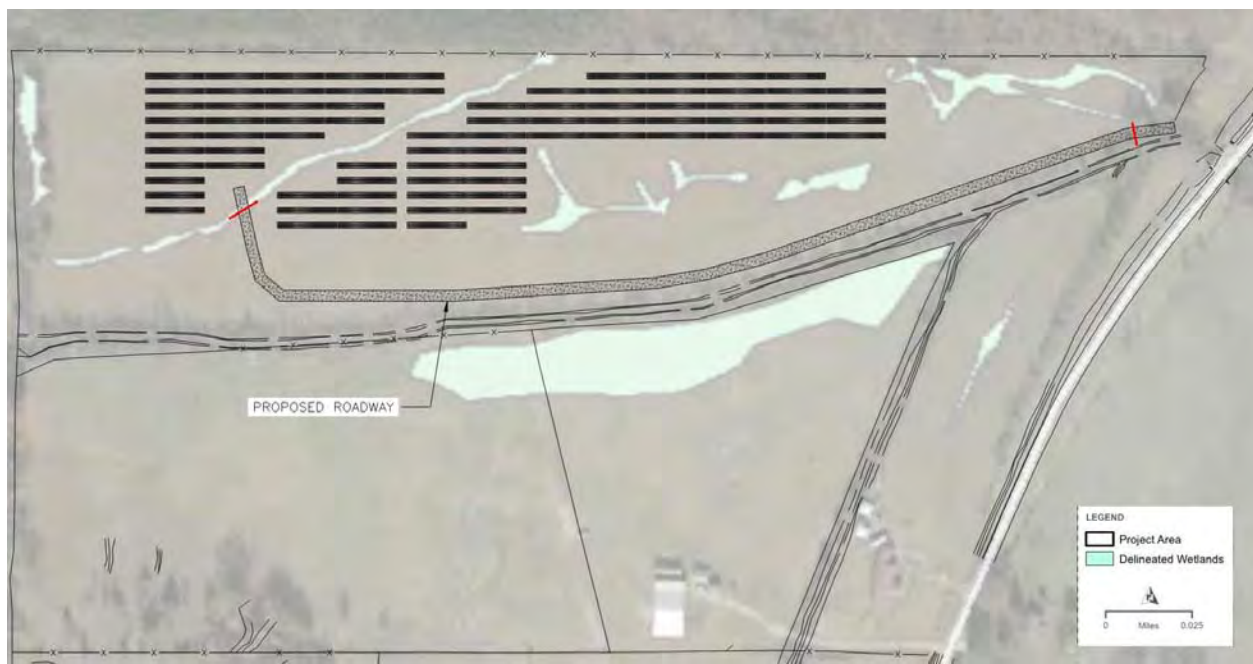
Chickasaw Facility – The Chickasaw Facility would occupy approximately 5.1 acres in the northern portion of the site (Figures 2, 4). A construction access road would be constructed from CR 116 and run along the north side of Pettigrew Creek. No tree-clearing or grading would be required for the Chickasaw Facility. A total of 6,900 145W Stion PV panels would be installed in parallel east-west rows on fixed-tilt metal racks, arranged to avoid the wetlands on the site. Buried electrical cables would connect the rows of PV panels to a power inverter and cross the linear wetland that runs between the PV arrays in the northwest

## Houston Solar Farms

corner of the parcel. Trenches for buried cables would be backfilled and the ground surface returned to its original grade. The inverter would be connected by a buried cable to a pad-mounted 3,000 kVA transformer. A buried cable would connect the transformer to a riser pole located between the arrays and Pettigrew Creek, and an overhead line would run from the riser pole the NTEPA 25-kW line east of the site along CR 116. A small storage shed would be placed on the Chickasaw Facility site.



**Figure 3. Proposed layout of solar arrays on Houston Facility site.**



**Figure 4. Proposed layout of solar arrays on Chickasaw Facility site.**



Once construction is completed, the facility sites would be revegetated with low-growing grasses. Each site would be fully enclosed by a separate 7- to 8-foot-tall chain-link security fence. No night lighting is anticipated, and no water supply or sewer disposal facilities or services would be required.

Construction of the facilities would last 3 to 4 months and require between 30 and 60 people working on site for variable durations. Once the facilities are completed, there would be no on-site operators. Periodic maintenance would be carried out by workers based outside the project area. Maintenance activities would include mowing the facilities to prevent vegetation from growing tall enough to shade the PV panels or otherwise interfere with their operation.

Following the expiration of the 20-year PPAs with TVA, SRC would assess whether to cease operation at the project site or attempt to enter into a new power purchase contract or other arrangement. If TVA or another entity is willing to enter into such an agreement, the facilities would continue operating. If no commercial arrangement is possible, then the facility would be decommissioned and dismantled and the site restored. In general, the majority of decommissioned equipment and materials would be recycled. Materials that cannot be recycled would be disposed of at an approved facility.

### **Identification of Mitigation Measures**

Silicon Ranch would implement appropriate best management practices (BMPs), including those required by permits, during construction and operation of the facilities. Tree clearing would occur during winter months (between October 15 and April 1) to avoid impacts to roosting northern long-eared bats. TVA has not identified the need for any non-routine mitigation measures to further reduce the anticipated impacts of the proposed action.

### **Comparison of Alternatives**

Under the No Action Alternative, the proposed solar facilities site would likely continue to be managed as pasture and TVA would likely meet its renewable energy goals by purchasing energy from other solar facilities. Under the Proposed Action Alternative, the construction and operation of the proposed solar facilities would result in the conversion of about 21 acres of pasture to industrial use. Although this land use would contrast with that of much of the adjacent land, it would have little impact on the use of adjacent lands. The facilities site provides low quality wildlife habitat and the impacts on vegetation and wildlife would be insignificant. No endangered or threatened species would be affected. The facilities have been designed to minimize impacts to surface waters and wetlands and impacts to these resources would be insignificant. The construction of the facilities would not noticeably affect area air quality and the operation of the facility would have a small beneficial effect on air quality and reduce greenhouse gas emissions. Impacts to prime farmland and to area visual resources (scenery) would be insignificant. The Proposed Action Alternative would have a small beneficial effect on area socioeconomics and would not result in disproportionate adverse impacts on minority or low-income populations. No historic properties would be affected.

### **The Preferred Alternative**

TVA's preferred alternative is Alternative B – Proposed Action Alternative. Under this alternative, TVA would enter into the PPAs with SR Houston, LLC and Chickasaw Solar, LLC; Silicon Ranch would then construct and operate the proposed solar facilities.

## CHAPTER 3 – AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This chapter describes the environmental resources that could be affected by the two alternatives and the effects of the alternatives on those resources. Through scoping of the proposed action, TVA has determined that some environmental resources would not be affected. As determined by a Phase I environmental site assessment, no recognized environmental conditions such as toxic materials are present within the project area and no hazardous wastes would be generated. This proposed action is consistent with Executive Order (EO) 11990 Protection of Wetlands and EO 11988, Floodplain Management. Because the proposed facilities are on private land, there would be no effects on public recreation facilities or activities. Other environmental resources that could be affected are described below.

### **Air Quality and Greenhouse Gas Emissions**

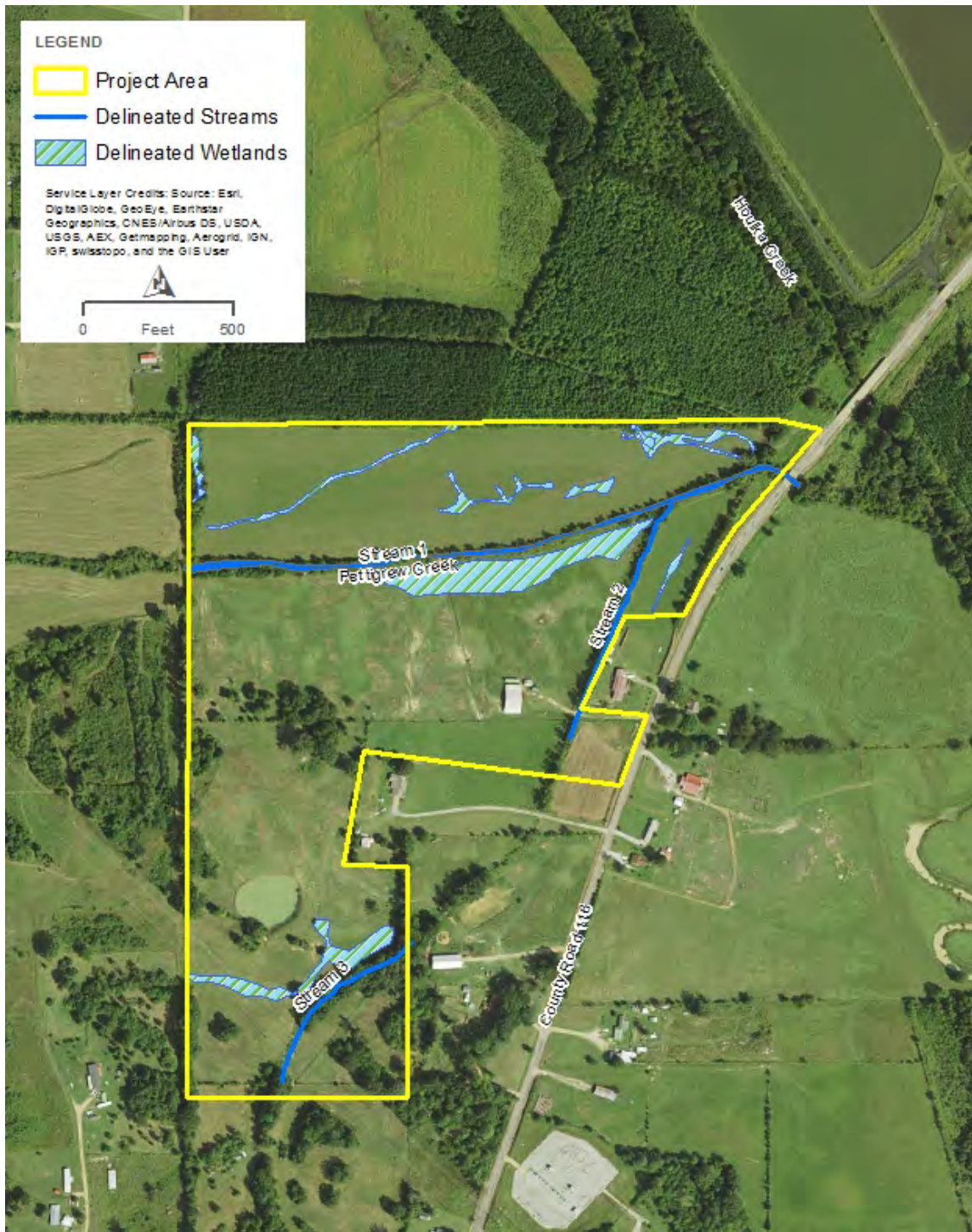
Affected Environment – Chickasaw County is in attainment with the National Ambient Air Quality Standards for criteria pollutants established under the Clean Air Act. The system-wide emissions from TVA's electrical generating facilities are described in TVA's 2015 IRP Environmental Impact Statement (TVA 2015). TVA has reduced its emissions of criteria pollutants and greenhouse gases through the installation of emission controls at fossil-fueled plants, idling and retirement of coal-fired generating units, increased use of low-emission generating facilities, and increased energy efficiency and demand reduction efforts.

Environmental Consequences – Under the No Action Alternative, the proposed solar facilities would not be constructed and no project-related impacts on air quality or climate change would occur. TVA would continue to rely on other generation sources to meet the needs of its customers and its goal of reducing its GHG emissions.

Under the Proposed Action Alternative, minor impacts to air quality would occur. Site grading and other construction activities have the potential to generate fugitive dust, which would be minimized by the use of best management practices such that offsite impacts of the fugitive dust would be negligible. The fossil-fueled construction equipment would emit particulate matter, nitrogen oxides, and other pollutants; the total amount of these emissions would be small and would result in negligible impacts. The construction equipment would also emit GHGs (particularly carbon dioxide or CO<sub>2</sub>); the impacts of these would also be negligible. The operation of the solar facilities would result in a very small reduction in TVA's GHG emission rate because the non-GHG emitting power generated by the solar facilities would displace power that would otherwise be generated in part by fossil fuels. This would result in a minor beneficial impact as described in TVA (2015).

### **Water Resources**

Affected Environment – Three streams are present on the 60.7-acre project site (Figure 5). Pettigrew Creek (Stream 1) flows in a constructed channel west to east across the project area. The unnamed intermittent Stream 2 flows to the north near the eastern edge of the site and feeds Pettigrew Creek. Pettigrew Creek flows a short distance northeast of the site to join Houlka Creek, a tributary to Chuquatonchee Creek and ultimately into the Tombigbee River. Stream 3 (unnamed ephemeral stream) is located in the southern portion of the project area and flows into Stream 2 during heavy rains. Additionally, a farm pond is present in the south-central portion of the project site. Pettigrew Creek and Houlka Creek meet applicable water quality standards. According to the U.S. Environmental Protection Agency's (EPA) Waterbody Quality



**Figure 5. Potential Waters of the U.S. within the project area.**

Assessment Report, Houlka Creek is impaired for sedimentation/siltation and Total Maximum Daily Loads have been implemented (EPA 2014); therefore, Houlka Creek is not included on the Mississippi 2014 Section 303(d) List of Impaired Water Bodies (Mississippi Department of Environmental Quality 2014). No designated aquifer recharge areas or other sensitive groundwater resources occur near the proposed solar site. No Wild or Scenic Rivers or streams listed on the National Rivers Inventory occur in or adjacent to the proposed solar facility.

Wetlands throughout project site consist of depressional features with herbaceous, hydrophytic vegetation and hydric soil. The northern portion of the property, where the Chickasaw Facility would be located, contains five wetlands, all of which would be within for the fenced solar facility site. These wetlands, including a linear wetland that crosses the northwest corner of the site, are depressional areas which may have previously been channels for Pettigrew Creek but due to agricultural practices have been cut off and turned into wetlands. The largest wetland is just south of Pettigrew Creek. This wetland collects stormwater runoff from the slopes where it is then trapped behind a berm which follows Pettigrew Creek.

Three wetlands are present in the southern portion of the project site, in the Houston Facility area. The wetland south of the small livestock watering pond has features similar to the wetlands found throughout the site and appears to be the result of agricultural field drainage and pond overflow. It is likely the depressional area captures rainwater and overflow into Stream 3. Livestock grazing has heavily degraded the area throughout the site resulting in mixed vegetation composition, compaction and mixing of soils making wetland identification difficult.

Environmental Consequences – Under the No Action Alternative, the proposed solar facilities would not be constructed and no project-related impacts to water resources would occur.

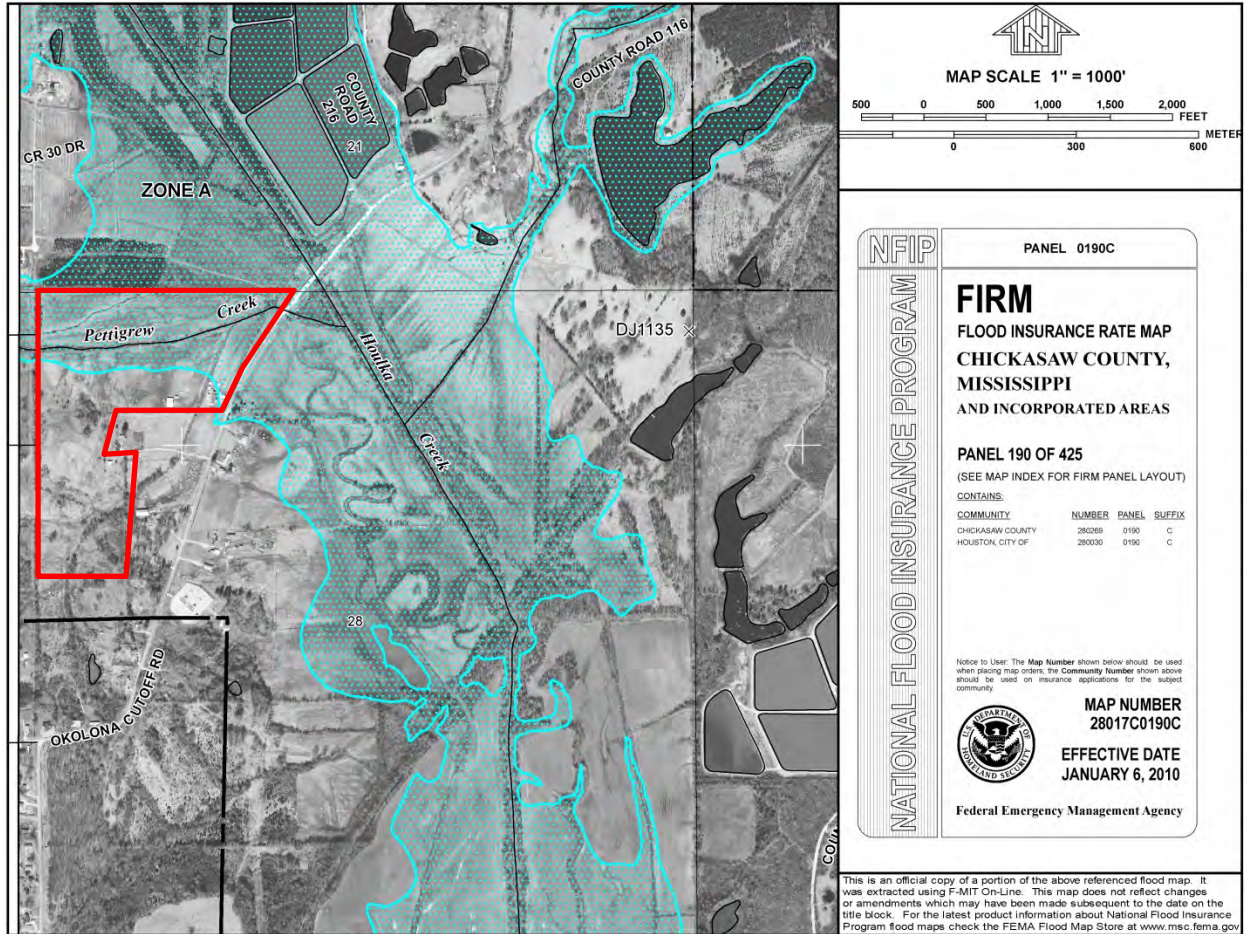
Under the Proposed Action Alternative, impacts to water resources could occur from the runoff of sediment-laden stormwater from the solar facilities, particularly during construction. During construction, BMPs would be implemented for erosion control and site stabilization. Erosion control measures include the installation of sediment barriers (silt fence), water filtration devices (ditch checks), and prompt stabilization and revegetation of graded areas. With implementation of these measures, impacts to surface waters and aquatic life would be insignificant during construction and no long-term impacts are anticipated. Because of the relatively shallow depth of trenching, no impacts to groundwater are anticipated during or after construction.

As seen in Figures 2 and 4, the proposed access road for the Chickasaw Facility would cross the narrow linear wetland that crosses the northwest corner of the site from the center of the northern property boundary towards the southwest and would require a Nationwide Permit Number 51 issued by the U.S. Army Corps of Engineers and accompanying Section 401 water quality certification from the Mississippi Department of Environmental Quality. The road would not be heavily travelled as it would be used only for maintenance. The vehicles that would be using this road on a regular basis once the solar farm is operational would be smaller than the equipment used to mow and operate in the fields currently. All wetlands within the fenced in portions of the northern parcel would be periodically mowed which would result in little change from their current conditions as part of a maintained pasture. Wetland quality may improve through the reduced runoff of fertilizers, pesticides, and sediment from farming activities. Therefore, due to the use of BMPs, the relatively low quality of the wetlands and streams on site and minimal direct impacts to jurisdictional waters, impacts to water resources would be minimal.

## **Floodplains**

Existing Environment – The Federal Emergency Management Agency (FEMA) produces maps which show the likelihood of an area flooding. These maps are used to determine eligibility for the National Flood Insurance Program. The northern portion of the project site, including the entire Chickasaw Facility site and a small portion of the Houston Facility site, is in the 100-year floodplain of Pettigrew Creek and Stream 2, identified as Zone A on the FEMA Flood Insurance Rate Map (FIRM) (Figure 6; FEMA 2015). It is also possible that minor, very localized flooding

could be associated with the small unnamed stream (Stream 3) and the small on-site pond, even though these features are not located in a mapped flood zone.



**Figure 6. FEMA Flood Insurance Rate Map of project area with solar facilities site outlined in red.**

Environmental Consequences – Under the No Action Alternative, the proposed solar facilities would not be constructed and no project-related impacts on floodplains would occur.

Under the Proposed Action Alternative, the proposed facilities would occupy approximately 5.9 acres of floodplains associated with Pettigrew Creek, including approximately 5.1 acres on the Chickasaw Facility and approximately 0.8 acres on the Houston Facility. The Proposed Action was evaluated for floodplain impacts in accordance with EO 11888 and would not involve filling, cutting, or otherwise result in alterations to the floodplain that would result in a net rise. Therefore, a floodplain alteration permit from FEMA is not required and permits are handled at the local (city or county) level. Additionally, a change to the current floodplain boundary would not be needed; therefore, a Letter of Map Revision (LOMR) from FEMA is not required (FEMA 2016). Chickasaw County and the City of Houston participate in the FEMA National Flood Insurance Program, but they do not have any zoning, permitting or ordinance regulations in regards to floodplain development (J. West, Three Rivers Planning & Development District, personal communication, February 12, 2016). Based on the siting criteria used by Silicon Ranch in selecting the project site, TVA has determined that there is no practicable alternative to siting the facilities in the floodplain.

An engineering/hydrology analysis of the project site was completed. The results of this analysis were used to design the solar facility so that all vulnerable electrical components that are not designed for submersion would be raised at least one foot above the 100-year floodplain elevation in accordance with EO 11988 requirements (Littlejohn Engineering Associates 2015). Drainage patterns should not be sufficiently altered by the construction and installation of the solar facility components to change the flood classification of the property, especially with the avoidance of most jurisdictional streams and wetlands. Additionally, the amount of potential fill required to grade the sites is negligible and should not impact any adjacent properties with respect to flooding frequency or intensity. Although minimal grading and fill would be necessary to construct the facilities, including the access roads, no direct or indirect impacts to the floodplain are anticipated under the Proposed Action Alternative. Therefore, adverse impacts to floodplains associated with construction and operation of the facilities are not anticipated.

## **Vegetation and Wildlife**

Existing Environment – The proposed solar facilities are located in the Black Prairie region of the East Gulf Coastal Plain physiographic province. This region is characterized by rolling hills forested with hardwoods and pines.

The project area is mostly open fields used as horse pasture. The majority of the site is prairie/grazing land composed of herbaceous species including broomsedge (*Andropogon virginicus*), wiregrass (*Aristida stricta*), and bitter weed (*Helenium amarum*). The project site also contains three delineated streams and their narrow but mature riparian buffers, as well as scattered hardwood trees in the center and southern section of the project area. Trees in the riparian areas consist primarily of dogwood (*Cornus*), red maple (*Acer rubrum*), and American persimmon (*Diospyros virginiana*). The western edge of the site is bounded by mixed hardwoods and pines that are part of a 10-acre forested area, the majority of which is off site. Trees in this location consist primarily of oaks including southern red oak (*Quercus falcata*) and scarlet oak (*Quercus coccinea*). Although there is little evidence of regular grazing, there are indications that the fields are regularly mowed. The birds observed during a winter visit to the site were red-tailed hawk (*Buteo jamaicensis*), blue jay (*Cyanocitta cristata*), and savannah sparrow (*Passerculus sandwichensis*). All three of these birds are listed under the Migratory Bird Treaty Act, although they are not listed on the U.S. Fish and Wildlife Service's (USFWS) Information for Planning and Conservation (IPaC) report for migratory birds of conservation concern in the project area. Additional species of migratory birds would likely occur on the site at other times of year; based on the habitats present, these birds would be common and widespread species. No mammals were identified during the field survey, although white-tailed deer hoof prints were present. The habitats on the project site are low in plant and animal diversity, and are relatively common in the surrounding areas. No unusual or rare plant or wildlife communities are present.

Environmental Consequences – Under the No Action Alternative, the proposed solar farm would not be constructed and no project-related impacts to vegetation and wildlife would occur.

Under the Proposed Action Alternative, a few small patches of trees would be removed from the Houston site and select areas of both sites would be graded. Multiple rows of PV panels on metal racks would be installed at the site. These activities would displace much of the wildlife occupying the site. While some species would likely return to the restored grassland habitat on the solar farm site, the presence of the solar arrays would make the area unsuitable for species requiring large areas of unshaded grassland. Although the impacts on plant and animal species at the site would be adverse, these species and their habitats are common in the region and overall impacts would be insignificant. Following the completion of construction, the site would

be revegetated with grasses and maintained by periodic mowing. Operation of the solar facility would not result in any additional adverse impacts to vegetation or wildlife.

## Endangered and Threatened Species

Existing Environment – One plant and two animals listed under the Endangered Species Act (ESA) are identified on the USFWS IPaC report for the project area (Table 1). Several additional plants and animals considered to be of conservation concern by the Mississippi Natural Heritage Program are known from Chickasaw County. No aquatic species listed under the ESA are known to occur in project area and no federally or state-listed aquatic species are known or likely to occur in the streams draining the proposed solar site.

Price's potato bean occurs in open woods and along woodland edges in limestone areas. Although open woods occur sporadically at the project site, this area does not have the shallow limestone geology associated with the species. Suitable habitat for the wood stork, which requires extensive wetland habitat and an ample supply of small fish for food, does not occur at the site. The northern long-eared bat roosts during the summer in living or dead trees with peeling bark or cavities. Due to their small size and species composition, the trees on the project site provide poor quality roosting habitat. There are no known hibernating sites or recorded maternity roosts for the northern long-eared bat in the surrounding area. Based on these factors, the likelihood of northern long-eared bats roosting in the project area is very low. Additionally, the two solar farm sites do not provide suitable habitat for other state-listed species.

**Table 1. Endangered and threatened species reported from Chickasaw County, Mississippi.**

Common Name	Scientific name	Federal status	MS State status
<b><u>Plants</u></b>			
Price's potato-bean	<i>Apios priceana</i>	THR	NOST
<b><u>Animals</u></b>			
Wood stork	<i>Mycteria americana</i>	THR	END
Northern long-eared bat	<i>Myotis septentrionalis</i>	THR	NOST

Source: TVA Heritage database, accessed October 2015:

<http://pbadupws.nrc.gov/docs/ML0428/ML042800163.pdf>, and USFWS IPaC data, accessed October 2015: <http://ecos.fws.gov/ipac/>

Status abbreviations: END – Endangered; THR – Threatened;

NOST – Listed by the state, but no status has been assigned

Environmental Consequences – Under the No Action Alternative, the proposed solar facilities would not be constructed and no project-related impacts to federally or state-listed endangered or threatened species or other species of conservation concern would occur.

Under the Proposed Action Alternative, no federally or state-listed plants or aquatic species would be affected because suitable habitat for those species is not present. The trees on the project site proposed to be removed have a low potential for providing summer roost habitat for the northern long-eared bat and the bat is unlikely to occur in the project area. To further reduce the potential for affecting roosting bats, all tree removal would occur between October 15 and April 1, outside of the bat's summer roosting season. Other trees in the surrounding area with higher potential to provide bat habitat would not be disturbed. Suitable habitat for the other

species listed in Table 1 does not occur on the project site.

## Land Use

Existing Environment – The proposed solar farms would be located in an unincorporated area of Chickasaw County a short distance north of the Houston city limits. Chickasaw County does not have county-wide zoning regulations. The project site is surrounded by pasture, cropland, and woodlots. Two occupied houses border the property. A NTEPA substation is located on CR 116 about 0.2 mile southeast of the site and residential areas within the Houston city limits are about 0.1 mile south of the site.

Environmental Consequences – Under the No Action Alternative, the proposed solar farm would not be built and the land uses of the sites would not change.

Under the Proposed Action Alternative, the development of the solar facilities would result in the conversion of the site from farmland to rural industrial, similar to that of the nearby substation. This would have little effect on the future land use of adjacent tracts and would not conflict with zoning regulations. Overall impacts to land use would be insignificant.

## Soils and Prime Farmland

Existing Environment – Five soils types occur in the project area; two of these soil types are classified as prime farmland and a third is classified as prime farmland if drained (Table 2). Marietta fine sandy loam, classified as prime farmland, occurs on the majority of the area and occupies the entire Chickasaw Facility site. The Houston Facility site is comprised of a mix of the Marietta, Demopolis-Kipling, Ora, and Sweatman soil types. The total amount of prime farmland within the project area is 36.7 acres, or approximately 60 percent.

**Table 2. Soils on the proposed solar farm**

Soil Type	Prime Farmland Rating	Area (acres)	Proportion of Project Area (%)
Marietta fine sandy loam	Prime farmland	33.6	54.7
Sweatman loam, 8 to 12% slopes	Not prime farmland	21.7	35.2
Brewton fine sandy loam	Prime, if drained	<0.1	<0.1
Demopolis-Kipling complex, severely eroded, 8 to 25% slopes	Not prime farmland	3.1	5.1
Ora loam. 2 to 5% slopes	Prime farmland	3.1	5.0

Source: U.S. Department of Agriculture (USDA) Natural Resources Conservation Service Web Soil Survey, Accessed October 2015:

<http://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx>

The Farmland Protection Policy Act (FPPA) requires Federal agencies to take into account the adverse effects of their actions on prime or unique farmlands in order to minimize conversion of farmland to nonagricultural uses. Prime farmland is land that is the most suitable for economically producing sustained high yields of food, feed, fiber, forage, and oilseed crops.

Environmental Consequences – Under the No Action Alternative, there would be no project-related impacts to soils on or in the immediate vicinity of the proposed solar farm site.

Under the Proposed Action Alternative, approximately 34 percent of the overall project site would be covered with solar panels and removed from farm use. This corresponds to



approximately 5.1 acres of the northern portion for the Chickasaw Facility and approximately 15.7 acres of the central and southern portions for the Houston Facility. The entire Chickasaw Facility site is classified as prime farmland and approximately 6.1 acres of the Houston Facility site is classified as prime farmland. The construction and operation of the proposed solar facilities would therefore affect 11.2 acres of prime farmland which would be removed from agricultural production. The remainder of the 60.7-acre tract outside the solar facilities security fencing, including about 25.5 acres of prime farmland, could continue to be used for farming.

Appropriate erosion control measures would be used to control erosion and limit sediment/soil from leaving the site during the construction and operation of the solar facilities. Due to the limited amount of grading and excavation, the majority of existing soils will remain in-situ. A small percentage of the soils within the project area are classified as highly erosive; appropriate special construction techniques or other non-routine measures would be used as appropriate on these areas. The construction and operation of the solar facilities would otherwise have minimal adverse effects on the soils on the project site and the area could be returned to agricultural production with minimal loss of soil productivity following the removal of the solar facilities.

In accordance with FPPA evaluation procedures, USDA Farmland Conversion Impact Rating Form AD-1006 was completed by USDA Natural Resources Conservation Service personnel and TVA. This form assigns a numerical rating between 0 and 260 based on the area of prime farmland to be disturbed, the total area of farmland in the affected county, and other criteria. The rating for the project site, including the area occupied by both facilities, is 145, which is below the threshold score established by RPPA evaluation procedures of 160 indicating potential adverse impacts to prime farmland and the need for evaluation of alternative sites. Thus, the impacts to prime farmland from developing the project site would be insignificant and overall effects on soils, including prime farmland, as a result of the construction and operation of the solar facility would be insignificant.

## Visual Resources

Existing Environment – The project site is located in a rural area surrounded by tree-lined pastures intersected by CR 116, a two-lane roadway with a 45 miles per hour speed limit. CR 116 leads southwest directly into the town of Houston, approximately 1 mile from the center of the proposed site and northeast to more agricultural and forested lands. The site is currently used as pasture. Streams bordered by narrow strips of hardwood trees cross its northern and southern portions and run parallel to part of its eastern border. A small grove of hardwood trees with an open canopy and heavily grazed understory occurs in the central portion of the site. The site is located on the west side of CR 116 with two homes directly bordering the east side of the 60.7 acre area. An additional three residences and an electrical substation are located on the east side of CR 116 across from the project area, all within line of sight from the project area. Scenic attractiveness (a measure of human perceptions of landscape beauty and sense of place) of the area is common and scenic integrity (a measure of the degree of intactness or wholeness of landscape character) is moderate to high, within the immediate two square miles including the site.

Environmental Consequences – Under the No Action Alternative, the proposed solar farms would not be built and there would be no project-related changes to the visual character of the area.

Under the Proposed Action Alternative, the construction and operation of the solar facilities would result in visual impacts from the removal of trees, clearing and grading of the site, and the

installation of the PV panels and associated equipment and fencing. The solar facilities would be noticeable from CR 116, although they would be screened by the two existing residences and the tree line/riparian buffers associated with the intermittent and ephemeral streams and along the site boundary. Some trees would be trimmed in and around the project site due to considerations with shade reducing the output of the PV panels. An existing tree line just inside the northeast border of the project parallel to CR 116 would be left intact as it would not interfere with the panels although some higher branches may be trimmed to prevent shading of the panels. This tree line would provide screening of about 30 percent of the project site when viewed from CR 116. The riparian buffer associated Stream 2 would remain intact and provide privacy to the remaining portion of the project when viewed from CR 116, and specifically to the residence adjacent to the east of the project site. The residence that would be most affected is located adjacent to the center of the project area, south of the proposed PV fields for the Houston Facility. This house sits on a hill which overlooks most of the currently cleared areas and would have an unblocked view of most of the solar fields.

The character of the site would change from pasture to multiple parallel rows of PV panels supported by low metal racks. The glass panels would face south and be partially visible by the three residences east of CR 116 when looking northwest. The majority of their views however, including from CR 116, would be of the east ends of the rows of low metal rack structures. From the roadway, only 17 percent of the viewscape containing panels would be visible at distances of 700 to 1,060 feet away. Driving the speed limit on CR 116 (45 mph), this equates to approximately 5.3 seconds of panel visibility for those heading north on CR 116. For drivers heading south on that road, the panels would not be visible because of the orientation of the road and tree lines/riparian buffers. The deciduous trees and shrubs in the project areas would provide minimal screening during winter months after leaf fall. Overall visual impacts of the proposed solar facility would be insignificant.

## Noise

Existing Environment – The proposed solar facility is in a rural area adjacent to a county highway. The major sources of noise are traffic on the rural highway and other nearby roads, private planes, mowers, wind, and farm animals. Noise levels in rural areas typically range from 45 to 55 dBA (A-weighted decibels, a measure of noise level). A day-night average sound level of 55 dBA is commonly used as a threshold level for noise levels which could result in adverse impacts, and prolonged exposure to levels above 65 dBA is considered unsuitable for residential areas.

Environmental Consequences – Under the No Action Alternative, no noise would be produced by the construction or operation of the proposed solar farms and there would be no project-related changes to noise levels in the area.

Under the Proposed Action Alternative, construction activities such as tree removal, site grading and installation of PV panel support posts would generate noise. Maximum noise levels produced by the construction equipment are in the range of 80 to 85 dBA at a distance of 50 feet from the equipment. The nearest occupied houses are within 100 feet from the site of the construction activities. Nearby residents could experience elevated noise levels caused by construction equipment, but construction noise would be of very short duration, during normal work hours on weekdays, and likely not exceed the 65 dBA noise level at nearby houses for prolonged periods.

At the nearest sensitive noise receptor, an occupied house near the center of the project area approximately 70 feet from the proposed Houston Facility's southeastern boundary,

construction noise could be perceptible above background noise but would not exceed the 65 dBA noise level.

No noise would be generated by the operation of the solar facilities, but periodic noise would be produced by maintenance activities, primarily mowing. This noise would be similar to existing noises near these sites. Overall noise impacts resulting from the Action Alternative would be insignificant.

## Cultural Resources

Existing Environment – Cultural resources include prehistoric and historic archaeological sites, districts, buildings, structures, and objects, as well as locations of important historic events. Cultural resources that are listed on, or considered eligible for listing on, the National Register of Historic Places (NRHP) maintained by the National Park Service are called historic properties. As a Federal agency, TVA is required by the National Historic Preservation Act (NHPA) to evaluate the potential effects of its actions on historic properties. When a TVA action would adversely affect a historic property, TVA must, in consultation with State Historic Preservation Offices (SHPOs), federally-recognized Indian tribes, and others, consider ways to avoid or minimize the adverse effect, and, if avoidance or minimization is not feasible, to mitigate the adverse effect.

The area of potential effects (APE) for evaluating the impacts on archaeological resources was defined as the 60.7-acre proposed solar farm property. For historic architectural resources (buildings, districts), the APE included a ¼-mile radius surrounding the proposed project area (¼-mile APE). The APE was determined based on a number of factors including the nature of the development, the maximum height of facility components (in this case the 10 feet tall solar panels), the topography surrounding the proposed developments, as well as the specific kind of properties located nearby (Prybylski 2015).

A historic architectural resources survey was conducted in August 2015 and an archeological survey was conducted in July 2015. During the historic architecture survey, three buildings over 50 years of age were identified within the ¼-mile APE (field site [FS] 1, 2, and 3). These three buildings, all houses, are recommended as not eligible for the NRHP because they lack physical integrity due to alterations and deterioration due to neglect, lack integrity of association, setting and feeling, and/or fail to meet any of the National Register criteria for eligibility (Prybylski 2015). No further investigation is recommended for the three buildings. The remaining buildings and structures within the APE were under 50 years of age and were a combination of modern homes, vinyl-sided garages and barns, and grain silos and thus not eligible for the NRHP.

During the archeological survey conducted in July 2015, a total of 98 shovel test pits were excavated within the APE with no archaeological sites identified and one isolated artifact (IF-1) recovered. IF-1 consists of a chert flake and was found in the western portion of the project area on the side slope of a hill. Because a single isolated artifact from a disturbed context has limited research potential, IF-1 is considered not eligible for inclusion in the NRHP and no further investigation is recommended. Background research indicated that three previously recorded archaeological sites (22CS516, 22CS517, and 22CS518) are located within one-half mile of the APE. These previously recorded resources are not eligible for inclusion in the NRHP and were identified and evaluated in the architectural historic survey as FS-1, FS-2 and FS-3. One previous cultural survey examined a 6.7-acre property adjacent to the project area and did not identify archaeological remains and concluded no National Register sites would be affected (Brummitt and Ogden 2015).

Environmental Consequences – Under the No Action Alternative, there would be no project-related impacts to cultural resources.

Under the Proposed Action Alternative, construction and operation of the proposed solar farm would not affect historic properties. In accordance with Section 106 of the NHPA, TVA consulted on this finding with the Mississippi SHPO on March 18, 2016, and with federally recognized Indian tribes on March 23, 2016 (Appendix). TVA did not receive a response from the Mississippi SHPO within the 30-day specified in the NHPA consultation regulations; thus, TVA's obligations under the NHPA were fulfilled. TVA did not receive a response from any tribes.

## **Socioeconomics and Environmental Justice**

Existing Environment – The proposed solar farms are located in a rural area near Houston, Chickasaw County, Mississippi. The 2010 U.S. Census Bureau (Census) total population is 3,623 for Houston, 17,392 for Chickasaw County, and 2,967,297 for Mississippi (Census 2010 and 2015). Minorities make up 48.9 percent of the city population, 46.0 percent of the county, and 40.8 percent of the state population based on the 2010 census. The proportion of the population classified as living below the poverty level in 2014 was 22.2 percent for Houston, 25.4 percent for the county and 22.6 percent for the state. Estimated city, county, and state per capita incomes based on 2014 inflation-adjusted dollars were \$15,740, \$16,750, and \$20,956, respectively (Census 2014).

Environmental Consequences – Under the No Action Alternative, there would be no project-related or disproportionate impacts on the socioeconomics or low-income or minority populations in the project area.

Under the Proposed Action Alternative, a small crew (an average of 30 each week) of workers would be employed for a few weeks to construct the proposed solar facilities. At least half these workers would be based in the local area and construction employment would have a small beneficial impact on the local economy. Advertisements would be placed in local newspapers and a job fair would be held in the community to gather resumes and conduct interviews with the most qualified candidates. The most qualified candidates would be hired to construct the facilities. Some construction materials, such as gravel and concrete, would be acquired locally and the facilities would utilize Stion PV panels manufactured in Hattiesburg, Mississippi. No workers would be needed for the normal day-to-day operation of the solar facilities. Periodic maintenance activities, primarily mowing, would be done by local workers and would not result in an increase in employment. Property tax payments to Houston and to Chickasaw County for the facility would increase due to the increased value of the sites once the facilities are completed.

Executive Order 12898 on Environmental Justice directs federal agencies to consider the impacts of their actions on minority and low-income populations and to avoid disproportionate impacts to those populations. The proportion of minority and low income populations near the proposed solar farm is approximately equal to or greater than the proportions for the county and state. The overall impacts of the solar facility, most of which would occur during the short construction period, would be minor and off-site impacts (i.e., to surrounding properties) would be negligible. Consequently, there would be no disproportionately adverse impacts to minority and low-income populations.

## **Cumulative Impacts**

As described above, the construction and operation of the solar facilities under the Proposed Action Alternative would not affect some environmental resources and would have only minor adverse impacts to other resources such as wetlands, vegetation and wildlife, prime farmland, and visual resources. Based on the low level of anticipated impacts to the resources described above and the absence of other ongoing or proposed major construction or other projects in the surrounding area, TVA has determined that the proposed action would not result in any adverse cumulative impacts.

## CHAPTER 4 – SUPPORTING INFORMATION

### EA Preparers

**Charles P. Nicholson, PhD (TVA)**

Experience: 35 years in zoology, endangered species studies, and NEPA compliance  
Involvement: NEPA compliance, document preparation and review

**Stephen C. Cole, PhD (TVA)**

Experience: 13 years in cultural resource management, 4 years teaching Anthropology at university  
Involvement: Cultural resources

**Renee Mulholland (HDR)**

Experience: 11 years in regulatory compliance, permitting, and NEPA documentation and project management  
Involvement: NEPA project management and document preparation

**Benjamin Burdette, EIT (HDR)**

Experience: 1 year in NEPA coordination and EA/EIS document preparation  
Involvement: Document preparation assistance, GIS mapping, field work

**Jason McMaster, PWS (HDR)**

Experience: 8 years in combined regulatory compliance, preparation of environmental review documents, and project management  
Involvement: Document preparation assistance (farmlands, soils, biological resources)

**Blair Goodman Wade (HDR)**

Experience: 11 years in regulatory compliance, NEPA documentation, and mitigation planning  
Involvement: Document QA/QC

### Literature/References Cited

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U.S. Environmental Protection Agency. 2014. Waterbody Quality Assessment Report. Accessed December 2015. Available at: [http://iaspub.epa.gov/tmdl\\_waters10/attains\\_waterbody.control?p\\_au\\_id=MS807311&p\\_cycle=2014](http://iaspub.epa.gov/tmdl_waters10/attains_waterbody.control?p_au_id=MS807311&p_cycle=2014)

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**Appendix**

**Correspondence and Comments on Draft  
Environmental Assessment**





Tennessee Valley Authority, 400 West Summit Hill Drive, Knoxville, TN 37902

March 18, 2016

Mr. Jim Woodrick, Director  
Mississippi Department of Archives and History  
Historic Preservation Division  
Post Office Box 571  
Jackson, Mississippi 39205-0521

Dear Mr. Woodrick:

TENNESSEE VALLEY AUTHORITY (TVA), SILICON RANCH CORPORATION'S PROPOSED SOLAR FARMS IN HOUSTON, CHICKASAW COUNTY, MISSISSIPPI

TVA proposes to enter into power purchase agreements (PPAs) through the Renewable Standard Offer (RSO) and Solar Solutions Initiative (SSI) programs for the construction, operation, and maintenance of photovoltaic power projects in Houston, Chickasaw County, Mississippi. TVA's RSO program offers pre-set prices (the "standard offer") and terms and conditions for power generated by selected renewable energy technologies. TVA's SSI program provides incentive payments for mid-size solar projects in the RSO program that use local installers. TVA would enter into a PPA with Silicon Ranch Corporation for the two adjacent solar arrays with a combined capacity of 4.9 megawatts (MW) on a circa 60.7-acre site located off County Road 116, east of MS-15/Houston Bypass. TVA has determined that the proposed PPAs constitute an undertaking (as defined at 36 CFR § 800.16(y)) that has the potential to cause effects on historic properties. In this letter, we are initiating consultation with your office regarding the proposed Houston Solar Farms project.

Please note that this project is a separate undertaking from a proposed PPA for a solar farm in Houston, MS, for which we initiated consultation in July 2015 (MDAH Project Log #07-069-15, Report #15-0197). That proposed solar farm was not built and the PPA was not executed.

The solar systems would utilize ground-mounted photovoltaic arrays (i.e., solar panels). The solar panels would be installed on metal racks supported by poles driven three feet into the ground. The racks would be arranged in parallel rows, and would have a total height of approximately 8-9 feet. Construction of each system would include vegetation clearing as necessary, installing the photovoltaic arrays, installing underground wiring in trenches, building access roads, and installing an electrical line to connect the system's transformers to the local electrical power distribution network. TVA has determined that the area of potential effects (APE) for archaeological resources consists of the circa 60.7-acre project site. The APE for above-ground resources consists of the area within a ¼ mile radius surrounding the entire project site from which views of the solar panels would be possible.

Littlejohn Engineering and Associates, Inc. (on behalf of Silicon Ranch Corporation) contracted

Mr. Jim Woodrick  
Page Two  
March 18, 2016

with S&ME to perform a phase I archaeological survey of the APE. Enclosed are three copies of the draft report, titled *Archaeological Survey of Silicon Ranch Parcels 1, 3, & 4, Houston, Mississippi*, along with two CDs containing digital copies of the report. S&ME's site file and literature search indicated that no previously recorded archaeological sites are located within the APE. The survey identified one isolated artifact and no archaeological sites. S&ME recommends no additional archaeological investigations at this project site.

Silicon Ranch Corporation contracted with AMEC Foster Wheeler Environment and Infrastructure, Inc. (AMEC FW) to perform a Phase I historic architectural survey within the undertaking's APE for above ground resources. Enclosed are three copies of the draft report, titled *Historic Architectural Survey for the Proposed Silicon Ranch Solar Power Utility Project, Houston, Chickasaw County, Mississippi*, along with two CDs containing digital copies of the report. AMEC FW's background research indicated that no properties listed in the National Register of Historic Places (NRHP), and no previously inventoried historic structures, are located within the APE. The survey resulted in the identification of three properties over 50 years in age (FS-1 through FS-3), all residential buildings. AMEC FW recommends that all three properties are ineligible for inclusion in the NRHP.

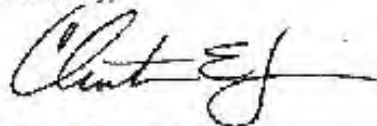
TVA has reviewed the two enclosed reports and agrees with the findings and recommendations of each. TVA finds that the APE contains no resources listed or eligible for listing in the NRHP.

Pursuant to 36 CFR Part 800.3(f)(2), TVA is consulting with federally recognized Indian tribes regarding historic properties within the proposed project's APE that may be of religious and cultural significance and are eligible for the NRHP.

Pursuant to 36 CFR Part 800.4(d)(1), we are seeking your concurrence with TVA's findings and determination that the proposed undertaking would have no effects on historic properties.

If you have any questions or comments, please contact Richard Yarnell by telephone at (865) 632-3463 or by email at [wryarnell@tva.gov](mailto:wryarnell@tva.gov).

Sincerely,



Clinton E. Jones  
Manager, Biological and Cultural Compliance  
Safety, River Management and Environment  
WT11C-K

SCC:CSD  
Enclosures



Tennessee Valley Authority, 400 West Summit Hill Drive, Knoxville, TN 37902

March 23, 2016

To Those Listed:

TENNESSEE VALLEY AUTHORITY (TVA), SILICON RANCH CORPORATION'S PROPOSED SOLAR FARMS IN HOUSTON, CHICKASAW COUNTY, MISSISSIPPI

TVA proposes to enter into power purchase agreements (PPAs) through the Renewable Standard Offer (RSO) and Solar Solutions Initiative (SSI) programs for the construction, operation, and maintenance of photovoltaic power projects in Houston, Chickasaw County, Mississippi. TVA's RSO program offers pre-set prices (the "standard offer") and terms and conditions for power generated by selected renewable energy technologies. TVA's SSI program provides incentive payments for mid-size solar projects in the RSO program that use local installers. TVA would enter into a PPA with Silicon Ranch Corporation for the two adjacent solar arrays with a combined capacity of 4.9 megawatts (MW) on a circa 60.7-acre site located off County Road 116, east of MS-15/Houston Bypass. TVA has determined that the proposed PPAs constitute an undertaking (as defined at 36 CFR § 800.16(y)) that has the potential to cause effects on historic properties. In this letter, we are initiating consultation with your office regarding the proposed Houston Solar Farms project.

Please note that this project is a separate undertaking from a proposed PPA for a solar farm in Houston, MS (which we initiated consultation in July 2015). That proposed solar farm was not built and the PPA was not executed.

The solar systems would utilize ground-mounted photovoltaic arrays (i.e., solar panels). The solar panels would be installed on metal racks supported by poles driven three feet into the ground. The racks would be arranged in parallel rows, and would have a total height of approximately 8-9 feet. Construction of each system would include vegetation clearing as necessary, installing the photovoltaic arrays, installing underground wiring in trenches, building access roads, and installing an electrical line to connect the system's transformers to the local electrical power distribution network. TVA has determined that the area of potential effects (APE) for archaeological resources consists of the circa 60.7-acre project site. The APE for above-ground resources consists of the area within a ¼ mile radius surrounding the entire project site from which views of the solar panels would be possible.

Littlejohn Engineering and Associates, Inc. (on behalf of Silicon Ranch Corporation) contracted with S&ME to perform a phase I archaeological survey of the APE. Please find enclosed a copy of the draft report, titled *Archaeological Survey of Silicon Ranch Parcels 1, 3, & 4, Houston, Mississippi*. S&ME's site file and literature search indicated that no previously recorded archaeological sites are located within the APE. The survey identified one isolated artifact and no archaeological sites. S&ME recommends no additional archaeological investigations at this project site.

To Those Listed  
Page Two  
March 23, 2016

Silicon Ranch Corporation contracted with AMEC Foster Wheeler Environment and Infrastructure, Inc. (AMEC FW) to perform a Phase I historic architectural survey within the undertaking's APE for above ground resources. AMEC FW's background research indicated that no properties listed in the National Register of Historic Places (NRHP), and no previously inventoried historic structures, are located within the APE. The survey resulted in the identification of three properties over 50 years in age (FS-1 through FS-3), all residential buildings. AMEC FW recommends that all three properties are ineligible for inclusion in the NRHP. If you are interested in seeing the architectural report, please let us know and we can provide you a copy.

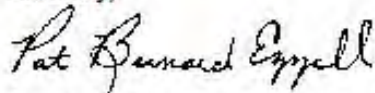
TVA has reviewed the reports and agrees with the findings and recommendations of each. TVA finds that the APE contains no resources listed or eligible for listing in the NRHP.

Pursuant to 36 C.F.R. Part 800.3(f)(2), TVA is consulting with the following federally recognized Indian tribes regarding historic properties within the proposed project's APE that may be of religious and cultural significance and are eligible for the NRHP: Choctaw Nation of Oklahoma, Jena Band of Choctaw Indians, and the Chickasaw Nation.

By this letter, TVA is providing notification of these findings and is seeking your comments regarding any properties that may be of religious and cultural significance and may be eligible for listing in the NRHP pursuant to 36CFR § 800.2 (c)(2)(ii), 800.3 (f)(2), and 800.4 (a)(4)(b).

Please respond by April 22, if you have any comments on the proposed undertaking. If you have any questions, please contact me at (865)632-6461 or by email at [pbezzell@tva.gov](mailto:pbezzell@tva.gov).

Sincerely,



Patricia Bernard Ezzell  
Senior Program Manager  
Native American Tribal Relations and Corporate Historian  
Public Relations and Corporate Information  
Communications  
WT460 7D-K

MMS:CSD  
Enclosure

IDENTICAL LETTER MAILED TO THE FOLLOWING ON MARCH 23, 2016:

Ms. Karen Brunso  
Tribal Historic Preservation Officer  
Division of Historic Preservation  
Department of Culture & Humanities  
The Chickasaw Nation  
Post Office Box 1548  
Ada, Oklahoma 74821-1548

Ms. Alina J. Shively  
Tribal Historic Preservation Officer  
Jena Band of Choctaw Indians  
Post Office Box 14  
Jena, Louisiana 71342

Dr. Ian Thompson  
Tribal Historic Preservation Officer  
Choctaw Nation of Oklahoma  
Post Office Drawer 1210  
Durant, Oklahoma 74702

Charles P. Nicholson, PhD  
NEPA Compliance  
Tennessee Valley Authority  
400 West Summit Hill Drive, WT 11D  
Knoxville, TN 37902-1499  
Via electronic mail to [cpnicholson@tva.gov](mailto:cpnicholson@tva.gov)

June 17, 2016

Re: Comments on the Houston, Mississippi Solar Farms Draft Environmental Assessment

Dear Dr. Nicholson,

On behalf of the Southern Alliance for Clean Energy (SACE), I submit the following comments on the Tennessee Valley Authority's (TVA) Draft Environmental Assessment (EA) for the proposed Houston, MS 3.9 MW Solar Project (Houston Facility) and the 1 MW Chickasaw County Solar Farm (Chickasaw Facility) (together, the Houston Facility and the Chickasaw Facility are referred to as the Project).

TVA proposes to enter into 20-year Power Purchase Agreements (PPAs) with SR Houston, LLC and Chickasaw Solar, LLC, facility-specific entities affiliated with Silicon Ranch Corporation, to purchase power generated by the Project. Based on the generation resource, the physical location and characteristics of the Project, the results of the analysis conducted as part of the EA, and the Project's consistency with TVA's 2015 Integrated Resource Plan (IRP) renewable energy development recommendations, SACE supports the development of the Project and TVA's purchase of the electricity generated by the Project. We write to highlight the Project's positive characteristics and impacts as well as to request several clarifications and make select recommendations.

#### **1. Project Siting and Design**

The Project is sited in one of the best areas for solar in the TVA region. Based on the Tennessee Valley Utility Scale Solar Assessment prepared for SACE in 2014 by Clean Power Research, the site selected for the Project is in the region SACE identified as having the best match between solar generation and TVA system peak demand. SACE estimated that solar

tracking facilities in this area would have a dependable on-peak capacity factor of 64.8% and fixed mount facilities in this area would have a dependable on-peak capacity factor of 49.9%.<sup>1</sup>

In other solar project Environmental Assessments, TVA has provided information and graphics showing that the projects are located close to the existing power infrastructure to which they will be connected, but TVA has not provided that type of information in this EA. SACE has generally appreciated TVA's attention to project proximity to existing power infrastructure for connection, which reduces the environmental footprint and line power losses associated with projects, as well as overall costs of projects.

We assume that TVA has ensured that the Project is adequately proximate to existing power infrastructure to garner the above-described benefits, but the EA's discussion of the Project is unclear on this point. The EA's discussion of the Houston Facility provides that "[t]he transformer's 25kV output for the facility would run underground to a point where it enters a riser and connects to Natchez Trace Electric Power Association's overhead power line near the site."<sup>2</sup> The EA's discussion of the Chickasaw Facility provides that "[t]he inverter would be connected by a buried cable to a pad-mounted 3,000 kVA transformer which would be connected to the 25-kilowatt Natchez Trace Electric Power Association distribution network."<sup>3</sup> It is unclear how far the Project's transformers will be from the existing power line and whether the Chickasaw Facility transformer would be connected underground.

The EA should provide details about the distance of the Project from the existing power line and the construction required for the type of connection proposed for the Chickasaw transformer, as well as show the locations of the underground cable pathway, inverters, transformers, connecting lines, and existing power line on the Project maps, to clarify that the Project siting offers a reduction of the environmental footprint and line power losses associated with the Project, as well as the Project's overall costs.

The EA does not specify whether the Project is contemplated to incorporate a single axis tracking system or a fixed tilt array system. SACE supports a tracking system over a fixed tilt array system because tracking systems offer a lesser visual impact as well as greater on-peak and production value to the TVA system.

## 2. Environmental Justice and Economic Development

The Environmental Protection Agency's Environmental Justice Guidance for NEPA Reviews recommends that federal agencies seek local resources for local and up-to-date

<sup>1</sup> SACE comments on TVA 2015 IRP at 15:

[http://www.cleaneenergy.org/wp-content/uploads/SACE-TVA-Draft-2015-IRP-Comments\\_0427153.pdf](http://www.cleaneenergy.org/wp-content/uploads/SACE-TVA-Draft-2015-IRP-Comments_0427153.pdf)  
[http://www.mississippisolarfarms.com/wp-content/uploads/SACE-TVA-Draft-2015-IRP-Comments\\_0427153.pdf](http://www.mississippisolarfarms.com/wp-content/uploads/SACE-TVA-Draft-2015-IRP-Comments_0427153.pdf)

<sup>2</sup> Houston, Mississippi Solar Farms, Draft Environmental Assessment at 4

<sup>3</sup> Houston, Mississippi Solar Farms, Draft Environmental Assessment at 5

knowledge of a given area and its inhabitants, including economic development agencies, when undertaking actions that affect minority or environmental justice communities.<sup>4</sup> Thus, TVA should make it a practice to engage with these economic development groups during the development of projects and ensure this and any future EAs include discussion of the potential of the projects to employ low-income and minority community members.

The EA discusses the higher low-income population percentage in both the city of Houston and Chickasaw County compared to the state of Tennessee as a whole. The EA highlights temporary beneficial local economic impacts anticipated from construction activities. The EA provides that the workforce would be locally based.

The EA should discuss the Project's potential to employ low-income and minority community members and to source materials, equipment, and services locally to help ensure that this and future solar projects maximize economic development opportunities for vulnerable, surrounding communities. The Project can serve as a model for other communities and states as they work to address poverty, employment, and energy issues. SACE recommends that TVA establish a program to facilitate the sourcing of local products and the training and hiring of low-income and minority community members for this and future solar projects.

### 3. Extended Operation Analysis

NEPA requires the agency proposing the action to provide a full and fair analysis of the environmental impacts of a proposed action and its alternatives.<sup>5</sup> In this EA, TVA failed to analyze alternatives related to the continued operation of the Project after expiration of the proposed PPAs. TVA must include discussion and analysis of alternative or extended PPA timelines.

The EA fails to include discussion and analysis of an alternative that would prioritize operation of the Project through the useful life of the facilities and not based on the terms of the PPA contract timelines.

The EA should discuss the importance of TVA executing new or extended PPAs, or TVA and Silicon Ranch Corporation working to find another customer to execute a new PPA or other arrangement, to ensure that the Project continues to generate power throughout its useful life rather than being prematurely deconstructed and decommissioned. Solar arrays typically last longer than 20 years. Decommissioning the Project after only 20 years would be a waste of money and infrastructure. Generally, SACE recommends that TVA execute a 25-year solar PPA

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<sup>4</sup> Final Guidance for Incorporating Environmental Justice Concerns in EPA's NEPA Compliance Analysis, April 1998 at 18, available at [https://www.epa.gov/sites/production/files/2014-08/documents/ej\\_guidance\\_nepa\\_epa0498.pdf](https://www.epa.gov/sites/production/files/2014-08/documents/ej_guidance_nepa_epa0498.pdf)

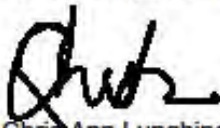
<sup>5</sup> 40 C.F.R. § 1502.14.



rather than a 20-year PPA to maximize project economics and make sure that each solar project generates power throughout its useful life.

SACE strongly supports TVA in adding clean, renewable energy resources to its generation resource mix as recommended by the 2015 IRP. Solar energy is an important economic driver in the United States, employing 209,000 people by November 2015, adding workers at a rate nearly 12 times faster than the overall economy and accounting for 1.2% of all jobs created in the U.S. over the past year.<sup>6</sup> As of July 2015, Tennessee's solar market consisted of 151 companies employing roughly 2,200 workers across the state.<sup>7</sup> Adding significant solar capacity to the TVA system has the potential to create many more high value jobs in the Valley. In addition, solar energy avoids the emissions of carbon dioxide associated with fossil fuel resources. The Project will help TVA meet the recommendations outlined in TVA's 2015 IRP of adding "between 150 and 800 MW of large-scale solar by 2023, and between 3,150 and 3,800 MW of large-scale solar by 2033."

Respectfully submitted,



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<sup>6</sup> National Solar Jobs Census: <http://www.thesolarfoundation.org/national/>

<sup>7</sup> Clean Jobs Tennessee: [chrome-extension://oemmdcbldboiebfnladdacbfmadadm/https://www.e2.org/wp-content/uploads/2016/01/TNJobsReport\\_Final.pdf](chrome-extension://oemmdcbldboiebfnladdacbfmadadm/https://www.e2.org/wp-content/uploads/2016/01/TNJobsReport_Final.pdf)