

Environmental Impact Assessment

For

Pit 64 Farm Solar Electric Power Plant Chatham County, North Carolina

(Parcel ID: 9713-13-4471)

Prepared by:

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BA Project #: 112006.44



<u>Issue Dates</u>	<u>Description</u>
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Proposed Project Description and Need:

1. Describe the overall project in detail, including all proposed phases:

This project proposes the development of a solar electric power plant. The Pit 64 Solar Farm is located on US 64 W and Hillside Dairy Road (SR 1511) in Chatham County, North Carolina. The property parcel ID is 9713-13-4471. The property contains 47.92 acres of primarily agricultural and wooded land. An existing shed is located in the southwestern portion of the site. An overhead Duke Power line is located along the southern property boundary, just outside the US 64 W right-of-way. A blueline stream is also located along the western portion of the site. There is one non-jurisdictional pond - a man-made stock pond in the southern portion of the site.

The proposed solar farm will consist of fixed solar panels, dual inverter/transformer areas and a chain link fence along the perimeter of the array. The project will also include temporary laydown and parking areas, a 16 ft. wide soil access drive, and permanent driveway aprons along US 64 W and Hillside Dairy Road. The installation of the solar panels themselves will not generally create significant land disturbance. The panels will be mounted to racks, which are supported by a series of posts. The posts will be driven directly into the existing ground without excavation or land disturbance and the existing ground cover will be allowed to remain to the maximum extent possible. The project area true disturbance caused by rubber tire vehicles accessing the site to distribute and install above grade material, a dozen or so small trenches (2' wide, 36" deep) for wiring the array and rack posts mechanically driven directly into the ground, is typically about a third of the project limits. All areas downslope of disturbed areas will be protected by silt fence. No change in drainage patterns (site drainage remains as sheet flow) or ponding of water will occur as a result of this project. At the completion of construction, the entire site will be seeded to create a good stand of grass.

The typical construction schedule for these standard farms is limited to three months. Energy generated by the farm will be distributed to Duke Power customers.

2. Provide a project location map showing surrounding areas:

See attached Site Plan and Aerial Map.

3. Provide a project site plan showing existing and proposed facilities:

See attached Site Plan.

4. Describe how this project fits into larger plans or connects with adjacent projects:

The redevelopment of this site will have compatible features with neighboring sites. Most of the surrounding properties are also used for agricultural purposes, and although not directly agricultural, the farming nature of the site will remain. In addition, the existing Duke Power line sets precedent for energy systems in this area.

5. List and describe any public facilities or public benefits provided by the project:

This project will provide a much cleaner source of renewable energy with no emissions to Duke Power customers. It will increase the tax base without much demand on public services. It is also considered a low impact development that will not alter the pre-development stormwater runoff characteristics of the site.

6. Discuss the land acreage to be disturbed during each phase:

The installation of the solar panels themselves will not generally create significant land disturbance. The panels will be mounted to racks, which are supported by a series of posts. The posts will be driven directly into the existing ground without excavation or land disturbance and the existing ground cover will be allowed to remain to the extent possible. The project area true disturbance caused by rubber tire vehicles accessing the site to distribute and install above grade material, a dozen or so small trenches (2' wide, 36" deep) for wiring the array and rack posts mechanically driven directly into the ground, is typically about a third of the project limits. All areas downslope of disturbed areas will be protected by silt fence. No change in drainage patterns (site drainage remains as sheet flow) or ponding of water will occur as a result of this project. At the completion of construction, the entire site will be seeded to create a good stand of grass.

7. List square footage and height (in stories) of new buildings:

No new buildings are proposed.

8. Describe proposed uses of all buildings and proposed facilities:

The new facilities will provide a source of solar generated electric power to be sold to Duke Power. The power will be transmitted via an existing three-phase power line on the southern side of the site.

9. Show number of parking spaces in parking lots and decks:

No permanent parking is proposed.

10. Show areas to be cleared, graded, filled, paved, and landscaped:

See attached Site Plan.

11. Show connections to existing utility and sewer lines or new utilities:

No water and sewer will be needed. Interconnection to the electrical grid is shown on the Site Plan. The solar farm connects to the existing three-phase power line on the southern side of the property, next to US 64 W.

12. Show wastewater management systems on a map:

N/A

13. Show proposed areas of impervious and semi-pervious surfaces:

The proposed impervious surfaces include the area of rack posts driven directly into the ground, the inverter areas and the proposed driveway apron. The overall proposed impervious on site is very low. Logging mats are used as needed during construction, but removed at the end of the project.

14. Show and describe any proposed stormwater control devices:

This project is considered a low impact development that will not alter the pre-development stormwater runoff characteristics of the site. No stormwater control devices are proposed.

Alternatives Analysis:

1. Discuss and compare all reasonable development alternatives (site selection, facility layout, utilities, stormwater management, construction methods, open space preservation, and any other pertinent alternative considerations).

A detailed site evaluation has been performed to determine design possibilities and limitations. The nature of this type of development requires access to high power utility lines and very clear unobstructed land free of shading for solar panels. This limits possible site selections. The fact that this site was previously used for agricultural purposes where good sunlight and soils are needed, and the close proximity to an existing power line means this site is ideal. Also, the minimal impervious surfaces and disturbance impacts make this type of development well-suited for this site.

2. Discuss how the preferred alternative was selected and its benefits relative to other alternatives (including a no-build alternative, if applicable).

Given the site suitability for the installation of a solar farm and that the environmental benefits of solar power generation are exponential, the proposed development of this site would provide more benefit than if developed for housing, commercial, or no-build alternatives.

Existing Environment and Project Impacts:

For each resource topic below, describe:

- A. Existing resources and conditions:

The property contains 47.92 acres of primarily agricultural and wooded land. An existing shed is located in the southwestern portion of the site. An overhead Duke Power line is located along the southern property boundary, just outside the US 64 W right-of-way. A blue-line stream is also located along the western portion of the site. There is one non-jurisdictional pond - a man-made stock pond in the southern portion of the site.

- B. Anticipated impacts (short-term construction) impacts, long-term operation impacts, and indirect or secondary impacts):

The short term impact to the site would be the disturbance of soil to smooth the ground for the installation of the solar panels. There will be no impact to adjacent properties. The long term impact will be a much cleaner energy source for the area.

- C. Discuss how potential impacts to the resource will be avoided and minimized through alternative selection, design strategies, construction methods, and long-term maintenance procedures:

Potential impacts to the resource are minimized by installing the solar panels on an area of the site that is mostly flat and mostly uncovered and by utilizing alternative erosion control measures. Additional disturbance or concentrated flows are also avoided by not working near the perimeter or the lower elevation portions of the site.

- D. For unavoidable impacts, describe whether any compensatory mitigation is planned or required:

There is no compensatory mitigation planned or required.

1. Geography:

- Discuss the geographic setting, geology, and topography of the project area and adjacent areas:

The natural geography of the area is rolling.

- Provide a topographic map of the property and surrounding area, use the county GIS website topography (2' contour interval) data at a scale appropriate for the project size, i.e., 1" = 100', etc.):

See attached Site Plan.

- Identify any 100-year floodplains (FEMA Special Flood Hazard Areas) on or adjacent to the property. If present, provide an appropriate-scale map of these flood-prone areas defined by the NC Flood Mapping Program:

FIRM Panel 3710970200J indicates the project limits does not lie within a special flood hazard area.

- Show areas that will be graded or filled, and provide estimated cut/fill volumes:

Minimal cut/fill is anticipated. No soil will be exported or imported from the site. Grading & Drainage plans will be provided.

- If the project includes pond or dam work, show areas that will be flooded:

This project does not include a pond or dam work.

2. Soils and Prime Farmlands:

- Identify dominant soils in the project area (County GIS or NRCS website) and show on a map.

See attached Soils Map. The existing soils are Cid-Lignum complex "CmB", Georgeville silt loam "GaB", and Georgeville silty clay loam "GeB2/GeC2". A large portion of the site (75%) is in hydrologic soils group "B", with the remaining being hydrologic soils group "C".

- Discuss any soil constraints (fill, wetland soils, septic suitability, slopes, etc.), and indicate those areas on a map.

No soil constraints are anticipated.

- Describe any soil disturbance or contamination expected as a result of this project:

No contamination is expected.

- If contamination is expected, discuss containment plans and procedures:

No contamination is expected.

- If soil will be relocated, specify the number of square yards/feet to be moved, and its relocation site:

No soil will be removed or added to the site.

- Describe runoff management plans for the project.

The site surface drainage flows generally west to an unnamed tributary of Landrum Creek. All areas downslope of disturbed areas will be protected by silt fence. No change in drainage patterns (site drainage remains as sheet flow) or ponding of water will occur as a result of this project.

- If soil disturbance is proposed, describe the off-site impacts expected from this activity.

There will be no offsite impact from soil disturbance.

- Provide a map of any prime or unique farmland soils in the project or service areas, and include references used to make this determination.

No prime or unique farmlands exist on this site.

- Describe impacts to prime or unique farmland soils, including acreage estimates of lost farmland soils and retained farmland soils.

No prime or unique farmlands exist on this site.

3. Land Use:

- Provide a map showing current use of land on the site and surrounding properties.

See attached Aerial Map.

- Discuss how the current land use fits into the surrounding area (conservation, development, ecological function, etc).

The current land use of the site and neighboring sites are mainly agricultural, with residential sites adjacent to the western property line along US 64 W and Hillside Dairy Road.

- Provide the current zoning of the project site and the surrounding area.

The current site is partially zoned R-1 and partially un-zoned. The surrounding area is also R-1 and un-zoned.

- Discuss how the proposed uses fit into the intended land use of the area (conservation, development, ecological function, quality of life).

The proposed use will not alter the spirit of the existing use. This site will remain a farm. It will however be geared towards a green utility alternative instead of for growing crops.

- Indicate whether zoning or local land use plans will need to be changed after project completion.

Land use will not need to be altered at the completion of this site work.

4. Wetlands:

- Indicate whether wetlands are present; describe the basis for this determination and the identity of the person who made the determination.

See attached National Wetlands Inventory Map. The National Wetlands Inventory database indicates that there are no identified wetland areas on site.

- Show identified wetlands on a map, and describe all relevant details, such as acreage, types, delineation, function, etc.).

There are no wetland areas on site.

- If wetlands are to be filled, specify the number of acres that will be affected.

There are no wetland areas on site.

- List all required permits and permitting agencies.

- Erosion Control Permit from Chatham County
- Stormwater Permit from Chatham County
- Building Permit from Chatham County
- Driveway Permit from NCDOT

- If any diversions/additions/withdrawals of surface water will affect wetlands, describe those activities.

There are no wetland areas on site.

5. Public Lands and Scenic, Recreational, and State Natural Areas:

- Provide a map of County or municipal parks, scenic, recreational, or state natural areas (SNHAs, State or Federal Forests, etc.) on or adjacent to the site/project area.

N/A

6. Areas of Archaeological or Historical Value:

- Discuss any archaeological or historical studies of the project location; provide relevant references.

N/A

- Describe and identify on a map any structures (i.e., walls, buildings, etc.) on the site and provide estimated ages of those structures.

A shed is located in the southwestern portion of the site. The intent is for this structure to be removed as necessary.

- Describe all impacts to any archaeological or historical resources in the proposed project area.

N/A

- Describe plans for demolishing or rebuilding any structures.

The shed will be removed as necessary.

- Provide photographs of any significant resources, including all structures older than 50-years.

N/A

- Provide relevant correspondence with the Chatham County Historical Association and NC SHPO.

N/A

7. Air Quality:

- Describe the project's impacts on ambient air quality.

N/A

- Describe plans for any open burning during or after construction.

N/A

- Indicate the number of proposed parking spaces, if applicable.

N/A

- Describe whether the project will increase odor levels, or the likelihood of odor complaints.

N/A

- Provide a copy of any required traffic studies.

N/A

8. Noise Levels:

- Discuss current noise levels; use a benchmark, if possible.

Typical noise levels for construction sites. Heavy trucks and equipment are intermittently loud during the workday hours. See Site Plan Note #18.

- Describe any increases in noise levels expected from this project.

No additional noise. Site should have significant reduction in noise levels due to the nature of the solar panel operation. See Site Plan Note #18.

- Specify the distance at which the increased noise will be heard.

N/A. See Site Plan Note #18.

- Discuss whether surrounding properties will be affected by noise levels.

See Site Plan Note #18.

- If commercial uses are proposed, specify the hours of operation.

N/A

9. Light Levels:

- Describe lighting plans for the project, including how lighting will impact adjacent residents and wildlife.

No additional lights for the site are proposed.

10. Surface and Groundwater Resources (discuss separately):

- Identify and provide a map of surface waters in the project area. Describe groundwater (aquifers) in the project area.

Groundwater will not be affected as no proposed drilling or excessive grading will occur.

- Include names, locations, classifications, and use support ratings for surface waters.

There is one non-jurisdictional pond - a man-made stock pond in the southern portion of the site that will not be affected by construction.

- Specify and show on a map the river basin in which the project is located.

The site is located in the Cape Fear River basin and is not within a designated water supply watershed area.

- Discuss any known groundwater quality issues.

N/A

- Discuss drinking water sources.

N/A

11. Fish and Aquatic Habitats:

- Describe fish and aquatic habitats in and adjacent to the site/project area.

N/A

- Discuss impacts to fish and aquatic life and their habitats, including a map showing those habitats.

N/A

12. Wildlife and Natural Vegetation:

- Describe and provide a map of natural community types on and adjacent to the site/project area.

See attached Site Plan & Aerial Map. Mostly wooded land and farmlands are adjacent to the property.

- List the species of dominant plants and animals observed on the site that typify those communities.

N/A

- Evaluate and discuss whether suitable habitat exists for rare, threatened, and/or endangered species, as described by the NC Natural Heritage Program.

N/A

- If wildlife will be displaced, discuss any limitations of adjacent areas to support them.

Minimal wildlife will be displaced.

- Identify, list, and describe the distribution of the invasive species present on the site. Consult the NC Botanical Garden's Web page, "Plants to Avoid in the Southeast US" for a list of invasive species common to the region.

No invasive species have been found on site.

- If forests will be cleared, discuss the extent of planned deforestation and specify the forestry methods to be used, including BMPs.

There will be minimal clearing on site.

13. Hazardous Materials:

- List all hazardous materials to be stored or introduced during construction or operation.

There will be no hazardous materials stored or introduced on site.

- For each hazardous material, other than in de minimis quantities or for routine housekeeping purposes, describe the procedures to be used to ensure their proper management, storage, and disposal.

There will be no hazardous materials stored or introduced on site.

Topographic Map:

A topographic map with contours at vertical intervals of not more than five (5) feet, at the same scale as the First Plat, for all major subdivisions unless not deemed necessary by staff. Staff may require a topographic map for other subdivisions if necessary for adequate review. The date and method of preparing the topographic survey shall be stated.

See attached Site Plan and USGS Topographic Map.

Soils Evaluation:

A soils evaluation shall be performed by a certified/licensed soil scientist or persons approved by the Health Department to perform such evaluations or investigations. Such evaluations shall be performed unless a central sewage disposal system is proposed. A soils map showing the location of suitable soils and a letter of explanation shall be submitted to perform such evaluations or investigations.

No wastewater treatment, septic systems or drinking water wells are proposed for this project.

Utility Plans:

Plans of proposed utility layouts for sewer and water where applicable, showing feasible connections to the existing utility system, or any proposed utility system.

No new sewer or water connections or changes are proposed with this project.

U.S. Army Corps of Engineers and Division of Water Quality Permits or Certifications:

Indicate if US Army Corps of Engineers and/or NC Division of Water Quality permits or certifications will be required. These permits and/or certifications may be required when development improvements may involve the placement of excavated material or fill material into streams, creeks, lakes, or wetlands. If any of these permits or certifications will be required, copies of the approved permits shall be submitted at time of Construction Plan submittal.

No USACE permits are required for this project.