



STATE OF NORTH CAROLINA  
DEPARTMENT OF ADMINISTRATION

Roy Cooper  
GOVERNOR

Machelle Sanders  
Secretary

October 30, 2020

Kimberley Campbell  
North Carolina Department of Commerce  
Utilities Commission  
4325 Mail Service Center  
Raleigh, NC 27699-4325

Re: SCH File # 21-E-4600-0749 Application of Duke Energy Progress, Inc for Certificate to construct a 5 MW Solar Facility in Buncombe Co. Docket # E-2 Sub 1257. View document at <http://starw1.ncuc.net/NCUC/portal/ncuc/page/Docketcts/portal.aspx>, Type E-2 Sub 1257 in the Docket Number search line. Located at 2720 Riverside Drive,

Dear Kimberley Campbell:

The above referenced environmental impact information has been reviewed through the State Clearinghouse under the provisions of the North Carolina Environmental Policy Act.

Attached to this letter are comments made in the review of this document. Because of the nature of the comments, it has been determined that no further State Clearinghouse review action on your part is needed for compliance with the North Carolina Environmental Policy Act. The attached comments should be taken into consideration in project development.

Sincerely,

CRYSTAL BEST  
State Environmental Review Clearinghouse

Attachments

*Mailing Address:*  
NC DEPARTMENT OF ADMINISTRATION  
1301 MAIL SERVICE CENTER  
RALEIGH, NC 27699-1301

*Telephone:* (919)807-2425  
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*Website:* [www.ncadmin.nc.gov](http://www.ncadmin.nc.gov)

*Location:*  
116 WEST JONES STREET  
RALEIGH, NORTH CAROLINA

OFFICIAL COPY

Oct 30 2020

Control No.: 21-E-4600-0749

Date Received: 9/29/2020

County.: BUNCOMBE

Agency Response: 10/29/2020

Review Closed: 10/29/2020

LYN HARDISON  
CLEARINGHOUSE COORDINATOR  
DEPT OF ENVIRONMENTAL QUALITY

Project Information

Type: State Environmental Policy Act Environmental Review

Applicant: North Carolina Department of Commerce

Project Desc.: Application of Duke Energy Progress, Inc for Certificate to construct a 5 MW Solar Facility in Buncombe Co. Docket # E-2 Sub 1257. View document at <http://starw1.ncuc.net/NCUC/portal/ncuc/page/Docketcts/portal.aspx>, Type E-2 Sub 1257 in the Docket Number search line. Located at 2720 Riverside Drive, Woodfin, North Carolina

As a result of this review the following is submitted:

No Comment

Comments Below

Documents Attached

Reviewed By: LYN HARDISON

Date: 10/28/2020



NORTH CAROLINA  
Environmental Quality

ROY COOPER  
Governor

MICHAEL S. REGAN  
Secretary

JAMIE RAGAN  
Director

MEMORANDUM

To: Crystal Best  
State Clearinghouse Coordinator  
Department of Administration

From: Lyn Hardison  
Division of Environmental Assistance and Customer Service  
Environmental Assistance and Project Review Coordinator  
Washington Regional Office

RE: 21-0749  
Environmental Review - Application of Duke Energy Progress.  
Inc for Certificate to construct a 5 MW Solar Facility, Docket #  
E-2 Sub 1257.  
Buncombe County

Date: October 26, 2020

The Department of Environmental Quality has reviewed the proposal for the referenced project. Based on the information provided, several of our agencies have identified permits that may be required and offered some valuable guidance to help minimize impacts to aquatic and terrestrial wildlife resources in and around the project area. The comments are attached for the applicant's review.

The Department's agencies will continue to be available to assist the applicant through the environmental review and permitting processes.

Thank you for the opportunity to respond.

Attachments





## ◻ North Carolina Wildlife Resources Commission ◻

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Cameron Ingram, Executive Director

### MEMORANDUM

TO: Lyn Hardison, Environmental Assistance and SEPA Coordinator  
NCDENR Division of Environmental Assistance and Customer Services

FROM: Andrea Leslie, Mountain Region Coordinator *Andrea Leslie*  
Habitat Conservation

DATE: 22 October 2020

SUBJECT: Woodfin Solar Generating Facility – Duke Energy Progress  
Project No. 21-0749

Biologists with the North Carolina Wildlife Resources Commission (NCWRC) have reviewed the proposed project description. Our comments are provided in accordance with certain provisions of the N.C. Environmental Policy Act (G.S. 113A-1 through 113A-10; 1 NCAC 25) and the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.).

Duke Energy Progress proposes to construct a 5 MW solar farm in Buncombe County. The facility would be at the old Buncombe County landfill site at 2720 Riverside Drive, in Woodfin, Buncombe County. The land is primarily already cleared, covered in herbaceous vegetation. In previous communication on the site, it was stated that no aquatic or wetland resources exist on the site.

We offer the following recommendations to minimize impacts to aquatic and terrestrial wildlife resources:

1. If site and/or transmission line maintenance is needed, avoid mowing between April 1 and October 1 to minimize impacts to nesting wildlife. We suggest a maintenance schedule that incorporates a portion of the area (e.g., one-third of the area) each year. Pesticides, fertilizers, and other chemicals should not be used in wetland areas or near streams.
2. If pesticides or chemicals will be used for site maintenance, stormwater runoff from the site should be directed to bioretention areas prior to discharge to streams or wetlands; this will provide additional protection for water quality and aquatic and terrestrial wildlife habitats.
3. It is especially important to ensure that sediment and erosion control measures are installed prior to any land clearing or construction. These measures should be routinely inspected and properly maintained. Excessive silt and sediment loads can have numerous detrimental

- effects on aquatic resources including destruction of spawning habitat, suffocation of eggs, and clogging of gills of aquatic species.
4. We strongly recommend incorporating a native pollinator mix on site, which can provide pollinator habitat and ultimately reduce maintenance costs. See the attached “North Carolina Technical Guidance for Native Plantings on Solar Sites” for planting recommendations.
  5. We recommend that a wildlife-friendly buffer outside of the solar array be planted with a mix of native warm season grasses and shrubs such as dogwood, button bush, and berry bushes. See the list of recommended plants in the guidance document referenced in #5 above.
  6. Develop a decommissioning plan that identifies the party responsible for decommissioning the facility and the conditions under which decommissioning will occur. In addition, the plan should include that all equipment is removed from the site and the land restored to pre-construction conditions.

Thank you for the opportunity to review and comment on this project. Please contact me at (828) 400-4223 if you have any questions about these comments or need further assistance.

Sincerely,



Andrea Leslie  
Mountain Region Coordinator, Habitat Conservation Program

Attachment: North Carolina Technical Guidance for Native Plantings on Solar Sites. 2018. North Carolina Pollinator Conservation Alliance.

# **North Carolina Technical Guidance for Native Plantings on Solar Sites**

North Carolina Pollinator Conservation Alliance

October 2018

## Introduction

North Carolina is home to nearly 500 species of native bees and more than 2,200 and 170 species of moths and butterflies, respectively. In the North Carolina Wildlife Resources Commission's 2015 State Wildlife Action Plan (SWAP) ([www.ncwildlife.org/plan](http://www.ncwildlife.org/plan)), there are 28 insect species that have been listed as Species of Greatest Conservation Need (SGCN). This list includes the rusty-patched bumble bee (*Bombus affinis*), a species that has been recently listed as federally endangered under the Endangered Species Act (ESA). In addition, the yellow-banded bumble bee (*Bombus terricola*), an SGCN in the SWAP, has been petitioned for listing under the ESA. There are several species of butterfly that are considered threatened or endangered due to loss of host plant habitat, including the frosted elfin (*Callophrys irus*) and monarch butterfly (*Danaus plexippus*), currently under review for listing by the U.S. Fish and Wildlife Service. The primary threat to these imperiled species is habitat loss and fragmentation.

## Threatened and endangered pollinators found in North Carolina



Rusty-patched bumble bee © Susan Day



Yellow-banded bumble bee © Denis Doucet



Frosted Elfin Butterfly © Bill Bouton



Monarch Butterfly © Lindsey Brendel

Historically, a significant portion of North Carolina was considered 'prairie' habitat; less than 1% currently remains. In the early 1500's, European settlers detailed the existence of prairie-type openings across the Piedmont region. In 1540, Hernando de Soto wrote of large swaths of un-forested areas that were easily navigated on horseback with abundant amounts of grass. In 1718, a French explorer, Guillaume Delisle, reported the landscape as a sparsely forested, open grassland containing bison and elk, present from the Neuse River to the foot of the mountains.

These early explorers depicted a vastly different landscape than exists in modern-day North Carolina. It is likely these former prairie-type habitats were maintained by centuries of wildfires and Native Americans who managed the open areas for agricultural purposes and game species. After European colonization, Native Americans and large grazers were displaced and prairie areas were converted to pastures, agriculture fields or succeeded to forest. It is difficult to approximate the floral and faunal diversity that has been lost with the disappearance of this expansive habitat. However, the solar industry has an opportunity to create large areas of habitat with similar prairie characteristics that may offset habitat loss and declining pollinator populations (Forup et al. 2008).

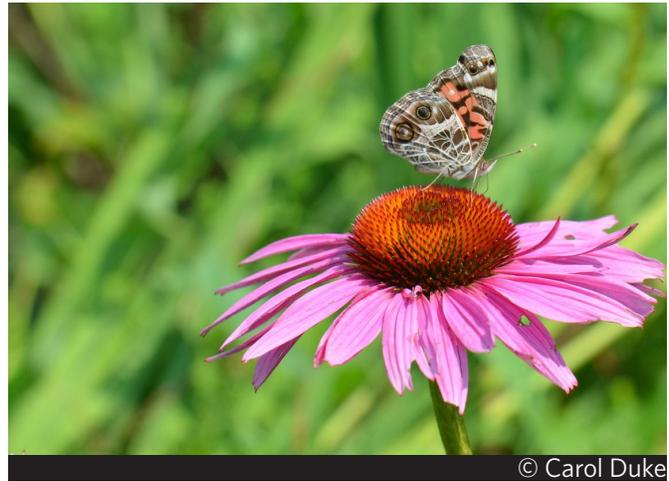
## Healthy Pollinator Communities

A healthy pollinator population is an excellent indicator of the overall health of most terrestrial communities (Kevan 1999). Maintaining species diversity is crucial to providing ecosystem resilience in the face of future environmental change. The most important pollinator conservation actions that can be incorporated into solar facility planning include the creation, restoration and/or preservation of native beneficial pollinator vegetation and vegetated riparian buffers.

### Honey bee (left) and painted lady (right) feeding on flowers



© Kees Smans



© Carol Duke

## Vegetation

Pollinator-friendly plants provide food sources, shelter, nesting and egg deposition sites for native pollinator species. Increasing the abundance and diversity of native plants within and around solar facilities can have beneficial effects on native pollinator populations (Tonietto et al. 2011), thereby benefiting other plants and wildlife in the area. Benefits may include increased populations, population fitness and pollinator diversity in and around the project site. Increased populations can also increase home garden and agricultural production in adjacent areas.

- 1. Food Sources** – Consistent, energy rich food sources provide enhanced larval and adult nutrition and better adaptability to pests and diseases. Because flowers provide nectar (high in sugar and amino acids) and pollen (high in protein), the common belief is that pollinator conservation consists solely of increasing floral diversity at a site (Fontaine et al. 2005). While increased floral diversity is desirable, a variety of native grasses, shrubs and trees are as important to pollinator health because they provide vital foraging, cover, nesting and egg deposition areas. To further enhance pollinator health and diversity at solar sites:
  - **Use a wide variety of plants that bloom from early spring into late fall.** Increasing pollinator health and diversity by providing a consistent food sources throughout the seasons is vital to healthy pollinator populations. A diverse pollinator population requires blooming plants from March-November. Early blooming plants (March-May) are particularly important because pollinators are coming out of winter dormancy and need a consistent early food source for colony creation. It is important to use plants that are native to your region because they are adapted to the local climate, soil and pollinator species. Night-blooming plants should be included to support moths and bats.
  - **Incorporate a variety of plant types into the site plan.** Plants of different heights and types (e.g., flowers, grasses, trees and shrubs) will attract different pollinator species and provide a variety of food sources. Fruit-producing shrubs and trees should be planted wherever possible and as required “screening” around the solar facility. Fermenting fruits from trees and shrubs are important food sources for bees, beetles and butterflies.

- **Include larval host plants.** Providing abundant and diverse larval host plants is necessary for healthy butterfly and moth populations. Moths and butterflies require specific plants or habitats to deposit their eggs during different life stages. Eggs must be deposited on or near the plant on which their larva will feed once it hatches. Some butterflies and moths use only a single species or genus for host plants. For example, monarch butterflies lay their eggs only on the leaves of milkweed plants. Upon hatching, the larvae will feed only on milkweed plants. Some butterfly species are generalist feeders and will use a wide range of plants such as trees, shrubs and forbs. Many moth species lay their eggs on the trunk or leaves of trees and shrubs, or in leaf litter on the ground. To provide egg-laying habitat for the highest number of butterflies and moths, planting plans should incorporate plant species that can be used by several species.

### Monarch butterfly eggs on milkweed leaves



2. **Foraging/Cover** – A diversity of plants on solar sites provides pollinators with protection from severe weather and predators. Leaf litter, dead plant material and multiple vegetation layers will help create “shelter areas” across the site for numerous pollinators. Establishing adequate plant density throughout the site will also allow pollinators to avoid predators and safely move through the landscape.
3. **Nesting and Egg Deposition** - Different pollinators have different needs for reproduction. Solar facilities should be designed to maintain a diverse array of habitats to accommodate varied pollinators, from hummingbirds to butterflies to bees. Hummingbirds typically nest in trees or shrubs while many moths and butterflies lay eggs on specific host plants. Most native bees nest in wood (or wood-like structures), hollow plant stems or in the ground. Areas of uncovered soil provide ground-nesting pollinators with easy access to underground tunnels. Brush piles, dead trees/shrubs and leaf litter are ideal for providing nesting and egg deposition habitat for a host of moth and butterfly species.

### Riparian/Wetland areas

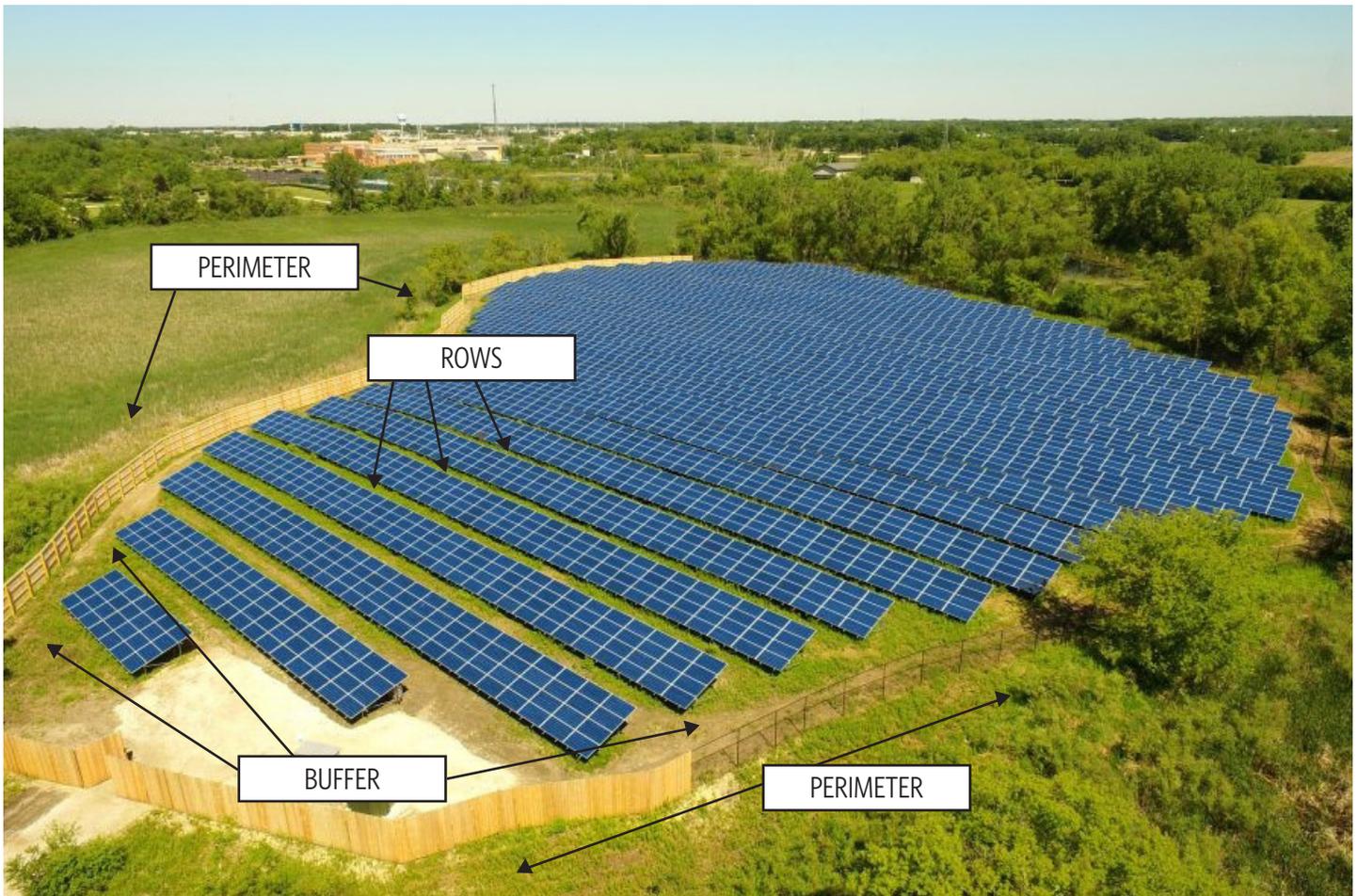
Vegetated riparian buffers are vital to maintaining a healthy ecosystem. These areas can provide many important elements such as food sources, shelter and nesting habitat. Most importantly, they are a water source. A clean, reliable water source provides drinking and bathing opportunities for pollinators. In many areas, vegetated riparian areas have a higher floristic diversity than other areas, and support more foraging pollinators than adjacent fields. By preserving or restoring vegetated, aquatic buffers, solar sites can increase water quality and quantity, and provide cover for pollinators to move safely between feeding and watering areas. Un-interrupted/connected vegetated riparian buffers also provide safe travel corridors between nesting sites for greater dispersal and reproductive efforts. For these reasons, solar sites should be designed so that all riparian buffer areas within the site are “connected”. For more information on solar siting, see Attachment.

## Solar Farm Site Preparation and Planting Guidelines

There are four planting options that can be used to establish pollinator habitat within a solar installation:

1. Clover/grass mix underneath panels and in rows; tall-growing pollinator mix (native forbs and native grass) in buffer area.
2. Clover/grass mix underneath panels; short-growing pollinator mix in rows and buffer area.
3. Short-growing pollinator mix underneath panels and in rows; tall-growing pollinator mix in buffer area.
4. Short-growing pollinator mix throughout the site.

### Solar Farm Layout



When choosing seed mixes for flowers and grasses, the following parameters are recommended:

- A minimum of nine native flower species.
- A minimum of two native grass species.
- At least three flower species from each bloom period (early, mid and late): **early**, April-June; **mid**, June-August; and **late**, August-September.

The use of native plant species is recommended when creating seed mixes. However, clover is an exception as it is a nonnative, naturalized species that has persisted across the landscape without the negative qualities of invasive and noxious plant species. Clover seeds are readily available for purchase, easy to propagate and low-growing. Most importantly, clover provides a valuable nectar source for pollinating insects. Where possible, select native seeds from local growers, as they tend to be adapted to local conditions such as climate, insects/pests and soil.

**Table 1.** Solar Farm Seed Selection

Common Name	Scientific Name	Height	Bloom	Region*
Western Yarrow	<i>Achillea millefolium</i> <i>var. occidentalis</i>	1-3'	Spring	C, P
Fringed Bluestar	<i>Amsonia ciliata</i>	2'	Spring	C
Eastern Bluestar	<i>Amsonia tabernaemontana</i>	3'	Spring	C, P, M
Goldenstar	<i>Chrysogonum virginianum</i>	1'	Spring	C, P, M
Lobed Tickseed	<i>Coreopsis auriculata</i>	1'	Spring	C, P, M
Piedmont Barbara's Buttons	<i>Marshallia obovata</i> <i>var. obovata</i>	2'	Spring	P
Narrowleaf Evening Primrose	<i>Oenothera fruticosa</i>	2'	Spring	C, P, M
Appalachian Ragwort	<i>Packera anonyma</i>	2.5'	Spring	C, P, M
Small's Beardtongue	<i>Penstemon smallii</i>	3'	Spring	P, M
Trailing Phlox	<i>Phlox nivalis</i>	1'	Spring	C, P, M
Heartleaf Scullcap	<i>Scutellaria ovata</i>	2'	Spring	C, P, M
Common Blue Violet	<i>Viola sororia</i>	.5'	Spring	C, P, M
Spiked Wild Indigo	<i>Baptisia albescens</i>	3-4'	Spring-Summer	C, P
Rattlesnake Master	<i>Eryngium yuccifolium</i>	3-6'	Spring-Summer	C, P, M
Indian Blanket	<i>Gaillardia pulchella</i> <i>var. drummondii</i>	1-2'	Spring-Summer	C
Spotted Beebalm	<i>Monarda punctata</i>	1-3'	Spring-Summer	P
Appalachian Beard-tongue	<i>Penstemon laevigatus</i>	2-5'	Spring-Summer	C, P
Golden Alexander	<i>Zizia aurea</i>	1-3'	Spring-Summer	P, M
Butterfly Milkweed	<i>Asclepias tuberosa</i>	1-3'	Spring-Fall	C, P, M
Yellow Wild Indigo	<i>Baptisia tinctoria</i>	2-3'	Spring-Fall	P, M
Wild Bergamot	<i>Monarda fistulosa</i>	2-5'	Spring-Fall	P, M
White Colicroot	<i>Aletris farinosa</i>	3'	Summer	C, P, M
Nodding Onion	<i>Allium cernuum</i>	2'	Summer	P, M
White Milkweed	<i>Asclepias variegata</i>	3'	Summer	C, P, M
Bearded Beggarticks	<i>Bidens aristosa</i>	6'	Summer	C, P, M
Sensitive Pea	<i>Chamaecrista nictitans</i>	1'	Summer	C, P, M
Maryland Goldenaster	<i>Chrysopsis mariana</i>	2'	Summer	C, P, M
Greater Tickseed	<i>Coreopsis major</i>	3'	Summer	C, P, M
Whorled Tickseed	<i>Coreopsis verticillata</i>	3'	Summer	C, P
Wild Quinine	<i>Parthenium integrifolium</i>	1-3'	Summer	C, P, M
Eastern Gray Beard-tongue	<i>Penstemon canescens</i>	2.5'	Summer	P, M
Hoary Mountainmint	<i>Pycnanthemum incanum</i>	3'	Summer	P, M
Clustered Mountain-mint	<i>Pycnanthemum muticum</i>	3'	Summer	C, P, M

Common Name	Scientific Name	Height	Bloom	Region*
Hoary Skullcap	<i>Scutellaria incana</i>	3'	Summer	C, P, M
Partridge Pea	<i>Chamaecrista fasciculata</i>	1-3'	Summer-Fall	P
Mistflower	<i>Conoclinium coelestinum</i>	1-3'	Summer-Fall	C, P
Oxeye Sunflower	<i>Heliopsis helianthoides</i>	3-5'	Summer-Fall	P, M
Slender Bush Clover	<i>Lespedeza virginica</i>	1-2'	Summer-Fall	C, P, M
Grassleaf Blazing Star	<i>Liatris pilosa</i>	4-5'	Summer-Fall	C, P
Dense Blazing Star	<i>Liatris spicata</i>	3-4'	Summer-Fall	P, M
Scaly Blazing Star	<i>Liatris squarrosa</i>	1-2'	Summer-Fall	C, P
Narrowleaf Mountainmint	<i>Pycnanthemum tenuifolium</i>	1-3'	Summer-Fall	C, P, M
Orange Coneflower	<i>Rudbeckia fulgida</i>	2-4'	Summer-Fall	P
Blackeyed Susan	<i>Rudbeckia hirta</i>	1-3'	Summer-Fall	C, P, M
Gray Goldenrod	<i>Solidago nemoralis</i>	1-2'	Summer-Fall	P, M
Licorice-scented Goldenrod	<i>Solidago odora</i>	1-3'	Summer-Fall	C, P
Showy Goldenrod	<i>Solidago speciosa</i>	2-4'	Summer-Fall	P, M
New England Aster	<i>Symphyotrichum novae-angliae</i>	3-6'	Summer-Fall	P, M
Late Purple Aster	<i>Symphyotrichum patens</i>	2-3'	Summer-Fall	C, P, M
Wavy-leaved Aster	<i>Symphyotrichum undulatum</i>	3-4'	Summer-Fall	C, P, M
Ironweed	<i>Vernonia noveboracensis</i>	3-6'	Summer-Fall	C, P, M
White Wood Aster	<i>Eurybia divaricata</i>	2'	Fall	C, P, M
Swamp Sunflower	<i>Helianthus angustifolius</i>	3-6'	Fall	C, P
Browneyed Susan	<i>Rudbeckia triloba</i> var. <i>triloba</i>	3'	Fall	M
Eastern Silver Aster	<i>Symphyotrichum concolor</i>	4'	Fall	C, P, M
Largeflower Aster	<i>Symphyotrichum grandiflorum</i>	3'	Fall	C, P

Grasses	Scientific Name	Height	Bloom	Region*
Downy Danthonia	<i>Danthonia sericea</i>	3'	Spring	C, P, M
Virginia Wildrye	<i>Elymus virginicus</i>	3-6'	Spring	C, P, M
Winter Bentgrass	<i>Agrostis hyemalis</i>	2-4'	Spring-Fall	C, P, M
Deertongue	<i>Dichanthelium clandestinum</i>	2-4'	Spring-Fall	P, M
Sideoats grama	<i>Bouteloua curtipendula</i>	1-2'	Summer-Fall	C, P, M
Bigtop Lovegrass	<i>Eragrostis hirsuta</i>	2-4'	Summer-Fall	C, P

Grasses	Scientific Name	Height	Bloom	Region*
Beaked Panicgrass	<i>Panicum anceps</i>	2-4'	Summer-Fall	C, P, M
Little Bluestem	<i>Schizachyrium scoparium</i>	3-6'	Summer-Fall	C, P, M
Indiangrass	<i>Sorghastrum nutans</i>	3-8'	Summer-Fall	C, P
Purpletop	<i>Tridens flavus</i>	3-5'	Summer-Fall	C, P, M
Muhly Grass	<i>Muhlenbergia capillaris</i>	3'	Fall	C, P, M

Naturalized	Scientific Name	Height	Bloom	Region*
Lanceleaf Coreopsis	<i>Coreopsis lanceolata</i>	1-2'	Spring-Summer	C, P, M
Plains Coreopsis	<i>Coreopsis tinctoria</i>	1-2'	Spring-Summer	C, P, M
Red Clover	<i>Trifolium pratense</i>	1-1.5'	Summer	C, P, M
White Clover	<i>Trifolium repens</i>	.5-1.5'	Spring-Fall	C, P, M

\* C=Coastal, P=Piedmont, M=Mountains

**Solar farm in North Carolina planted with pollinator-friendly vegetation, including blackeyed susans (*Rudbeckia hirta*)**



© Liz Kalies

**Site Preparation**

Collect a soil sample from the proposed site and submit to the local County Cooperative Extension Office for soil testing. Existing invasive, agricultural weeds and nonnative vegetation should be eliminated before planting commences. Please refer to the following list for invasive and nonnative species in North Carolina:

[https://www.ncwildflower.org/plant\\_galleries/invasives\\_list](https://www.ncwildflower.org/plant_galleries/invasives_list).

Herbicide application prior to planting may be necessary. In particular, herbicide treatment across multiple seasons may be necessary to eradicate certain turf grasses and/or invasive species. When determining application amounts, always adhere to instructions on the herbicide label. Allow a minimum of 72 hours between herbicide application and planting. Post-construction, a heavy duty, offset rake attached to an ATV may be used to scarify the ground underneath the panels.

### **Timing**

The ideal planting window is in the month of October or from early-April to late-May. Creating pollinator habitat in already established solar sites is feasible. However, solar infrastructure can complicate establishment and possibly limit site preparation and seeding options. A site assessment at each property will be necessary to determine the appropriate site preparation needed for planting.

### **Planting Method**

A ground-stabilizing mix should be broadcast in the project area, pre-construction. Seasonal conditions may dictate the choice of ground cover. Winter wheat and rye are recommended for fall and winter plantings; browntop millet may be used in the spring and summer. Clover and ground cover mixes may be broadcast post-construction. Short and tall-growing pollinator mixes should be drilled with an appropriate seed drill designed to accommodate the size and texture of different seeds. No-till planting is preferred for establishment to limit soil erosion potential, reduce weed pressure and retain soil moisture. If necessary, smooth the area and firm the soil with a cultipacker to ensure seeds are not planted too deeply. Collect soil samples and have them analyzed prior to planting. Barring an extreme deficiency in potassium, phosphorous or pH of 3.5 or lower, do not use fertilizer or any form of soil augmentation, as that will encourage weed growth. Typically, native plants do not require fertilizer.

### **Maintenance**

The first year of maintenance may require repeated mowings to eradicate weedy growth. During the first year, mow the site when weeds have reached 12-18 inches in height. Mow to a 6-8 inch height. Mowing less than this height may stunt the growth of the pollinator plants. Repeat mowings when weeds reach 12-18 inches in height. Once established, maintenance in proceeding years will be reduced.

Some form of disturbance, likely mowing, will be needed every 2-3 years to prevent establishment of woody vegetation. Mow only in late winter (or early spring) to alleviate adverse impacts to wildlife; an ideal window is March 1 to March 31. Spot-spraying unwanted (woody) vegetation, as well as invasive/nonnative species, will likely be necessary annually.

Once the habitat has been established, mow only a portion of the site per season. One third or one fourth of the area each season is recommended to allow for insect refugia throughout the year. If possible, the same area should not be mowed in consecutive years. Posted informational signage is encouraged to explain the process, as pollinator habitat can take several years to become established and have aesthetic value.

### **Buffers/Screen Areas**

In some areas, vegetated screening is required around solar facilities. The installation of these buffer areas may create another important habitat feature at the project site. In areas where screening will be required or desired, a diverse selection of native tree and shrub species should be used to create a hedgerow habitat structure. Hedgerows typically include a variety of tree and shrub species that vary in height, as opposed to hedges, which are usually made up of a single species in a closely spaced row. The resulting layers of plants mimic an early successional or forest edge habitat, fulfilling different habitat functions for wildlife such as shelter, nesting sites and food sources. Many tree and shrub species can be purchased as bare root saplings at a fraction of the cost of container plants. Hedgerow/forest edge habitat supports a variety of wildlife

species. Hedgerows, like riparian buffers, generally support a higher diversity of pollinator and floral species than surrounding landscapes, and provide a valuable forage resource and corridor for movement of pollinators. Even if screening is not required, the creation of hedgerows in practical areas around the solar facility is an excellent way to create a diverse habitat structure, provide cover for wildlife and enhance the overall aesthetic value of the site.

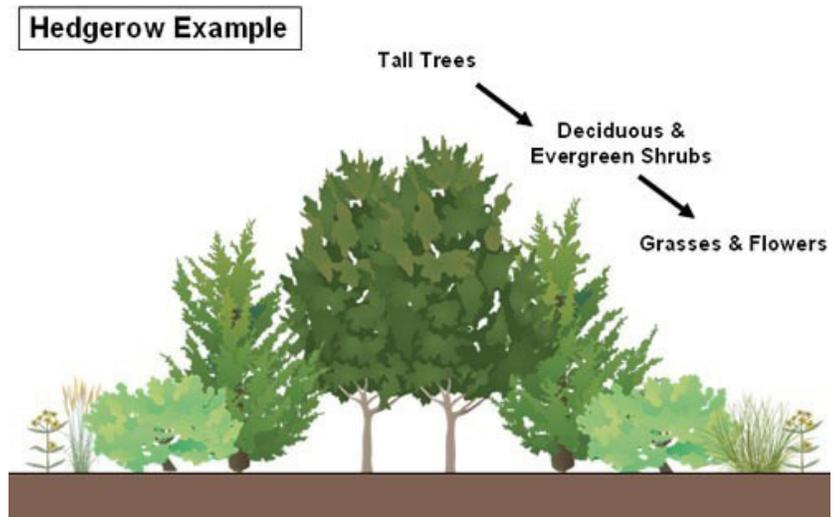
Please see the following table for suggested screening plant species:

**Table 2.** Hedgerow Screening Species

Common Name	Scientific Name		Bloom
Red Buckeye	<i>Aesculus pavia</i>	Small Tree	Spring
Serviceberry	<i>Amelanchier arborea</i>	Small Tree	Spring
Eastern Redbud	<i>Cercis canadensis</i>	Small Tree	Spring
Washington Hawthorn	<i>Crataegus phaenopyrum</i>	Small Tree	Spring
Carolina Silverbell	<i>Halesia carolina</i>	Small Tree	Spring
American Holly	<i>Ilex opaca</i>	Small Tree	Spring
Southern Crabapple	<i>Malus angustifolia</i>	Small Tree	Spring
American Crabapple	<i>Malus coronaria</i>	Small Tree	Spring
American Plum	<i>Prunus americana</i>	Small Tree	Spring
Chickasaw Plum	<i>Prunus angustifolia</i>	Small Tree	Spring
Black Willow	<i>Salix nigra</i>	Small Tree	Spring
Sassafras	<i>Sassafras albidum</i>	Small Tree	Spring
Flowering Dogwood	<i>Cornus florida</i>	Small Tree	Spring-Summer
Smooth Sumac	<i>Rhus glabra</i>	Small Tree	Spring-Summer
Winged Sumac	<i>Rhus copallinum</i>	Small Tree	Summer-Fall
Red Maple	<i>Acer rubrum</i>	Tree	Spring
Pignut Hickory	<i>Carya glabra</i>	Tree	Spring
Shagbark Hickory	<i>Carya ovata</i>	Tree	Spring
Black Cherry	<i>Prunus serotina</i>	Tree	Spring
Persimmon	<i>Diospyros virginiana</i>	Tree	Spring-Summer
Spicebush	<i>Lindera benzoin</i>	Shrub	Spring-Summer
Choke Cherry	<i>Prunus virginiana</i>	Shrub	Spring-Summer
Raspberry, Blackberry	<i>Rubus spp.</i>	Shrub	Spring-Summer
Blueberries	<i>Vaccinium spp.</i>	Shrub	Spring-Summer
Beauty Berry	<i>Callicarpa americana</i>	Shrub	Summer
New Jersey Tea	<i>Ceanothus americanus</i>	Shrub	Summer
Buttonbush	<i>Cephalanthus occidentalis</i>	Shrub	Summer
Sweet Pepperbush	<i>Clethra alnifolia</i>	Shrub	Summer
Elderberry	<i>Sambucus canadensis</i>	Shrub	Summer
Black Haw	<i>Viburnum prunifolium</i>	Shrub	Summer-Fall
Downy Arrowwood	<i>Viburnum rafinesquianum</i>	Shrub	Summer-Fall
Cross Vine	<i>Bignonia capreolata</i>	Vine	Spring
Dutchman's Pipe	<i>Aristolochia macrophylla</i>	Vine	Spring-Summer

Common Name	Scientific Name		Bloom
Coral Honeysuckle	<i>Lonicera sempervirena</i>	Vine	Spring-Summer
Virginia Creeper	<i>Parthenocissus quinquefolia</i>	Vine	Spring-Summer
Passionflower	<i>Passiflora incarnata</i>	Vine	Spring-Fall
Trumpet Creeper	<i>Campsis radicans</i>	Vine	Summer
Virgin's Bower	<i>Clematis virginiana</i>	Vine	Summer-Fall
Climbing Aster	<i>Ampelaster carolinianus</i>	Vine	Fall

### Trees used as buffer zone for solar farm in North Carolina



© photolibary.com; diagram from <http://dnr.maryland.gov/wildlife/Pages/habitat/wahedgerows.aspx>

### Seed Suppliers

Though we do not endorse any specific company, the following establishments can either create a mix of your choice or have pollinator mixes available for purchase:

- Roundstone Native Seed Company
- Ernst Conservation Seeds, Inc.
- Prairie Moon Nursery

The following local establishments can assist with creation of an appropriate native, pollinator mix:

- North Carolina Botanical Garden - Chapel Hill, NC
- Garrett Wildflower Seed Farm - Smithfield, NC
- Mellow Marsh Farm - Siler City, NC
- Niche Gardens - Chapel Hill, NC (no seed mixes)
- Cure Farm - Pittsboro, NC (no seed mixes)
- Big Bloomers Flower Farm - Sanford, NC (no seed mixes)

### Additional Benefits from Pollinator Conservation Activities

Establishing native habitat on solar sites will have numerous benefits to people, wildlife and ecological functions within and adjacent to the site. Specific benefits from establishing native habitat include:

- **Soil stabilization and storm water filtration** - The establishment of diverse, native vegetation and protected riparian buffers can increase water quality and stream bank stabilization both within and downstream of the site (Wratten et al. 2012). Densely planted and deep-rooted vegetation help attenuate the

flow of storm water across the land and allows for increased soil infiltration. This decreases the speed and amount of water entering streams which aids in stream bank stabilization and minimizes turbidity. Prairie root systems also increase water storage capacity on land, creating a natural bio-retention area to help mitigate storm water runoff and flooding caused by impervious surfaces.

- **Pollinator services for agriculture** - Native bees provide free pollination services and are specialized for foraging on flowers, such as squash, berries or orchard crops. This specialization results in more efficient pollination and production of larger and more abundant fruit from certain crops (Blaauw et al. 2014). Pollinators are critical to the \$78 billion agricultural economy of North Carolina. More than 70% of crops require either insect pollination or have higher production because of pollinating insects. A 2012 study in California found that native bees are likely responsible for between \$900 million and \$2.4 billion in crop production, suggesting their role may be greater than previously anticipated (USDA-NRCS 2013). By maintaining habitats that increase diversity and species populations, solar sites can have positive effects on crop production on adjacent agricultural operations.
- **Decreased pesticide use** - In addition to supporting pollinators, native plant habitats attract beneficial insects that are predators and parasitoids of crop pests and are less prone to destructive insects and disease. This can decrease the amount of pesticide needed at the site and adjacent properties.
- **Diversity of other species and species habitats** - Establishing a diverse native plant structure on a site not only benefits pollinators but can benefit other species as well. Many native pollinator plants provide food sources for other animals. Taller native plants on a site can provide habitat to ground nesting/feeding birds, small mammals and a variety of reptiles and amphibians.
- **Travel corridors for movement** - Designing solar farms to ensure wildlife connectivity and movement across the landscape ensures that species have increased access to other forage areas, aids in reproduction and increases genetic diversity. If a solar site is large, including unfenced corridors through the facility allows for movement of pollinators and other wildlife species. Additionally, fencing at sites should be installed in a way that allows small mammal and turtle movement.

**Example of a corridor through this solar farm that follows a streambed.**



- **Carbon sequestration** - Carbon sequestration occurs when the amount of carbon dioxide absorbed by growing plants is greater than the amount of the gas released by decomposing plant material. Forests act as “carbon sinks”, meaning they absorb more carbon dioxide than they release. Grassland/prairies also act as “carbon sinks”, with most of the grassland’s carbon sequestration happening below ground, where roots dig into the soil of depths up to 15 feet and more. It has been shown that grasslands can store more carbon below ground than a forest can store above ground (Pacala et al. 2001).

- **Aesthetic value** – Prairie/pollinator habitat restoration can increase the aesthetic value of the solar site. When properly established, a field of native forbs and grasses can provide a colorful display that will enhance the site and offer a diverse element to the landscape. With proper seed mixes, flowers will last from spring until the first frost, giving a colorful backdrop for most of the year. This is especially valuable in areas where solar farms are sited in proximity to residential or high traffic areas.
- **Decrease maintenance costs** – Native plant communities are a low maintenance alternative to non-native plants. Because most native plant species are adapted to the local environment and have deep root systems, they do not require watering or pesticides. Though native plant communities require some maintenance, proper maintenance would consist of mowing no more than twice a year, which would be considerably lower in cost and recurrence than maintenance of turf grass. Native plant communities take an additional upfront cost to install but result in about 50% savings of the total maintenance costs when compared to turf or pasture (ASLA 2015). The return on investment for conversion of turf/pasture to native plant communities can likely be met within three to five years.

### Additional Conservation Recommendations for Wildlife Conservation

- Install bluebird boxes around the site.
- Provide raptor perches around the site.
- Install bat boxes around the site.
- Leave piles of sand, graded soil or bare ground areas for ground-nesting bees.
- Construct screened areas as hedgerows or forest edge habitat.
- Plant native vines along perimeter fencing to increase diversity and habitat.
- Retain and/or restore wetlands or water features on site.
- Install fencing that allows movement of small wildlife; use fixed-knot woven wire, security fencing, 75 inches in height (17/75/6) deer mesh, with no barbed wire. Install the fencing upside-down such that the bottom section of fence has a vertical wire spaced at least 7 inches apart.



Bluebird box © Dave Kimeer



Wildlife-friendly fencing © Liz Kalies

### For More Information on Designing Your Solar Farm

#### Gabriela Garrison

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 NC Wildlife Resources Commission  
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## Supplemental Information

### *Pollinators and Safety in the Field*

Meadows and native plant fields are the ideal location to find bees and other pollinators. There is concern that large, flowering fields may lead to an increased chance of getting stung. However, if precautions are taken, there is minimal risk of harm.

Native bumble bees and honeybees:

- Male bees do not have stingers.
- Females are unlikely to sting, as it causes them to die.
- Female bees only sting when their nest is threatened.
- If a bee is on a flower, it will likely ignore your presence.

Wasps:

- Most stings are caused by wasps, including yellow jackets and hornets.
- Wasps only sting when their nest is threatened.

How to prevent stings from bees and wasps:

- Avoid perfumed soaps, shampoos and deodorants.
- Wear light-colored clothing and pull hair back to reduce the chance of insects getting tangled in hair.
- Be observant; avoid areas where bees or wasps frequent, such as logs or a hole in the ground.
- Remain calm and still if a stinging insect is flying around. Swatting is perceived as an aggressive motion and may cause stinging behavior.
- Empty trash cans regularly, keep them covered and don't eat near them.
- Store your lunch in a lunchbox and drink in a container with a lid.
- Workers with a history of severe allergic reactions to insect bites or stings should carry an epinephrine auto injector and wear medical ID jewelry stating their allergy.

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1. [https://www.osha.gov/dte/grant\\_materials/fy10/sh-20823-10/outdoorwork-eng.pdf](https://www.osha.gov/dte/grant_materials/fy10/sh-20823-10/outdoorwork-eng.pdf)
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- USDA-NRCS. (2013) Michigan Biology Technical Note No. 20. "Pollinator Biology and Habitat." 36pp. <http://www.xerces.org/wpcontent/uploads/2013/05/MichiganPollinatorBiologyandHabitat.pdf>

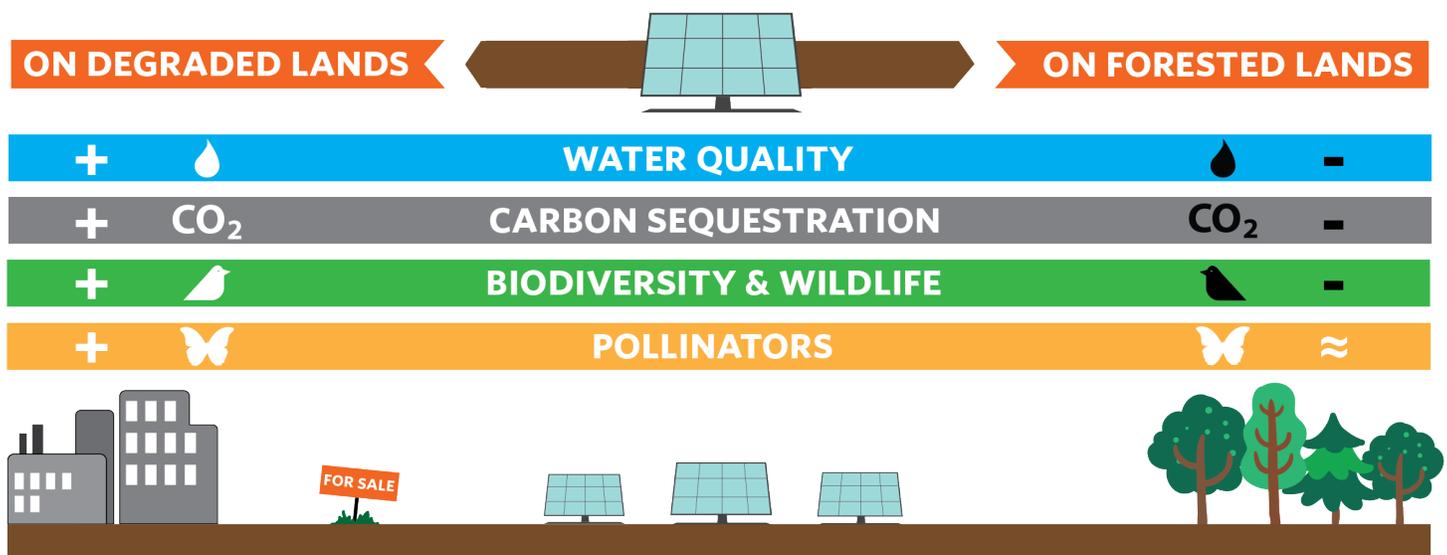
## ATTACHMENT

### Siting of Solar Projects to Benefit Pollinators

Siting solar installations to avoid areas with significant biodiversity and high quality habitat is an important step. It is difficult to absolve the damage once high quality habitat or rare species have disappeared. Choosing 'degraded' sites for solar development (e.g., brownfields, sites with prior development, little or no vegetation, poor soil quality, etc.) reduces impact and diminishes the amount of carbon lost due to site conversion and construction. Furthermore, by developing a degraded site, solar companies have an opportunity to add pollinator habitat to the landscape, rather than destroy potentially rare and/or significant habitat.

This graphic illustrates how "ecosystem services" – benefits to humans that are provided by nature – are compromised least when solar farms are sited on degraded lands.

## The Effects of Solar Farm Development



© Avery Bond

There is an extensive amount of conservation data available for public consumption. These data can be used to determine the location of environmentally sensitive areas with priority habitat and SGCNs. The following is not an all-inclusive list, rather a sampling of publicly-available information for conservation planning:

1. South Atlantic Landscape Conservation Cooperative (SALCC): [www.southatlanticlcc.org](http://www.southatlanticlcc.org). The mission of the SALCC is to facilitate conservation actions that sustain natural and cultural resources, guided by a shared adaptive Blueprint. Their Conservation Blueprint is a living spatial plan to conserve natural and cultural resources across the South Atlantic region. As described on their website, it is 100% data-driven and based on terrestrial, freshwater, marine and cross-ecosystem indicators. The Blueprint represents feedback from over 500 individuals and 150 organizations and agencies.
2. The Nature Conservancy's Resilient and Connected Network (RCN) is the first study to comprehensively map resilient land and significant climate corridors across the eastern United States: <http://maps.tnc.org/resilientland/>. Released in October 2016, the study took eight years to complete, involved 60 scientists and developed innovative new techniques for mapping climate-driven movements. RCN corridors represent areas that species are likely to use to move over time in response to climate change, generally in upward and northward directions. Solar developers should not site in the RCN resilient areas and avoid fragmenting the RCN corridors. This will help protect biodiversity both now and into the future.

3. The North Carolina Wildlife Resource Commission's Green Growth Toolbox (GGT): [www.ncwildlife.org/Conserving/Programs/Green-Growth-Toolbox](http://www.ncwildlife.org/Conserving/Programs/Green-Growth-Toolbox). The GGT is a technical assistance tool designed to help communities and organizations conserve high quality habitats and SGCNs. The goal is to conserve the State's most unique natural assets while continuing to grow as a community. Conservation data includes, but is not limited to, the Biodiversity and Wildlife Habitat Assessment, Natural Heritage Data, National Wetlands Inventory Data, Streams, Important Watersheds and Priority Bird Habitat.

Other siting considerations include maintaining a minimum 100-foot undisturbed native, forested buffer along perennial streams, and a minimum 50-foot buffer along intermittent streams and wetlands. Maintaining undisturbed, forested buffers along these areas will reduce impacts to aquatic and terrestrial wildlife resources, as well as aquatic habitat both within and downstream of the site. In addition, these buffers will act as a travel corridor for wildlife species. Lastly, forested riparian buffers protect water quality by stabilizing stream banks and filtering storm water runoff.

The project footprint should be surveyed for wetlands and streams to ensure there are no impacts to surface waters. In addition to providing wildlife habitat, wetland areas and streams aid in flood control and water quality protection. United States Army Corps of Engineers Section 404 Permits and NC Division of Water Resources Section 401 Certifications are required for any impacts to jurisdictional streams or wetlands.

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 County: Buncombe

After review of this project it has been determined that the DEQ permit(s) and/or approvals indicated may need to be obtained in order for this project to comply with North Carolina Law. Questions regarding these permits should be addressed to the Regional Office indicated on the reverse of the form. All applications, information and guidelines relative to these plans and permits are available from the same Regional Office.

	PERMITS	SPECIAL APPLICATION PROCEDURES or REQUIREMENTS	Normal Process Time (statutory time limit)
<input type="checkbox"/>	Permit to construct & operate wastewater treatment facilities, non-standard sewer system extensions & sewer systems that do not discharge into state surface waters.	Application 90 days before begins construction or award of construction contracts. On-site inspection may be required. Post-application technical conference usual.	30 days (90 days)
<input type="checkbox"/>	Permit to construct & operate, sewer extensions involving gravity sewers, pump stations and force mains discharging into a sewer collection system	Fast-Track Permitting program consists of the submittal of an application and an engineer's certification that the project meets all applicable State rules and Division Minimum Design Criteria.	30 days (N/A)
<input type="checkbox"/>	NPDES - permit to discharge into surface water and/or permit to operate and construct wastewater facilities discharging into state surface waters.	Application 180 days before begins activity. On-site inspection. Pre-application conference usual. Additionally, obtain permit to construct wastewater treatment facility-granted after NPDES. Reply time, 30 days after receipt of plans or issue of NPDES permit-whichever is later.	90-120 days (N/A)
<input type="checkbox"/>	Water Use Permit	Pre-application technical conference usually necessary.	30 days (N/A)
<input type="checkbox"/>	Well Construction Permit	Complete application must be received and permit issued prior to the installation of a groundwater monitoring well located on property not owned by the applicant, and for a large capacity (>100,000 gallons per day) water supply well.	7 days (15 days)
<input type="checkbox"/>	Dredge and Fill Permit	Application copy must be served on each adjacent riparian property owner. On-site inspection. Pre-application conference usual. Filling may require Easement to Fill from N.C. Department of Administration and Federal Dredge and Fill Permit.	55 days (90 days)
<input type="checkbox"/>	Permit to construct & operate Air Pollution Abatement facilities and/or Emission Sources as per 15 A NCAC (2Q.O100 thru 2Q.0300)	Application must be submitted and permit received prior to construction and operation of the source. If a permit is required in an area without local zoning, then there are additional requirements and timelines (2Q.0113).	90 days
<input type="checkbox"/>	Any open burning associated with subject proposal must be in compliance with 15 A NCAC 2D.1900	N/A	60 days (90 days)
<input type="checkbox"/>	Demolition or renovations of structures containing asbestos material must be in compliance with 15 A NCAC 20.1110 (a) (1) which requires notification and removal prior to demolition. Contact Asbestos Control Group 919-707-5950	Please Note - The Health Hazards Control Unit (HHCU) of the N.C. Department of Health and Human Services, must be notified of plans to demolish a building, including residences for commercial or industrial expansion, even if no asbestos is present in the building.	60 days (90 days)
<input checked="" type="checkbox"/>	The Sedimentation Pollution Control Act of 1973 must be properly addressed for any land disturbing activity. An erosion & sedimentation control plan will be required if one or more acres are to be disturbed. Plan must be filed with and approved by applicable Regional Office (Land Quality Section) at least 30 days before beginning activity. A NPDES Construction Stormwater permit (NCG010000) is also usually issued should design features meet minimum requirements. A fee of \$65 for the first acre or any part of an acre. An express review option is available with additional fees.		20 days (30 days)
<input type="checkbox"/>	Sedimentation and erosion control must be addressed in accordance with NCDOT's approved program. Particular attention should be given to design and installation of appropriate perimeter sediment trapping devices as well as stable Stormwater conveyances and outlets.		(30 days)
<input checked="" type="checkbox"/>	Sedimentation and erosion control must be addressed in accordance with <u>Buncombe County's Local Government's</u> approved program. Particular attention should be given to design and installation of appropriate perimeter sediment trapping devices as well as stable Stormwater conveyances and outlets.		Based on Local Program
<input checked="" type="checkbox"/>	Compliance with 15A NCAC 2H .0126 - NPDES Stormwater Program which regulates three types of activities: Industrial, Municipal Separate Storm Sewer System & Construction activities that disturb ≥1 acre.		30-60 days (90 days)
<input checked="" type="checkbox"/>	Compliance with 15A NCAC 2H 1000 -State Stormwater Permitting Programs regulate site development and post-construction stormwater runoff control. Areas subject to these permit programs include all 20 coastal counties, and various other counties and watersheds throughout the state.		45 days (90 days)

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	PERMITS	SPECIAL APPLICATION PROCEDURES or REQUIREMENTS	Normal Process Time (statutory time limit)
<input type="checkbox"/>	Mining Permit	On-site inspection usual. Surety bond filed with DEQ Bond amount varies with type mine and number of acres of affected land. Affected area greater than one acre must be permitted. The appropriate bond must be received before the permit can be issued.	30 days (60 days)
<input type="checkbox"/>	Dam Safety Permit	If permit required, application 60 days before begin construction. Applicant must hire N.C. qualified engineer to: prepare plans, inspect construction, and certify construction is according to DEQ approved plans. May also require a permit under mosquito control program. And a 404 permit from Corps of Engineers. An inspection of site is necessary to verify Hazard Classification. A minimum fee of \$200.00 must accompany the application. An additional processing fee based on a percentage or the total project cost will be required upon completion.	30 days (60 days)
<input type="checkbox"/>	Oil Refining Facilities	N/A	90-120 days (N/A)
<input type="checkbox"/>	Permit to drill exploratory oil or gas well	File surety bond of \$5,000 with DEQ running to State of NC conditional that any well opened by drill operator shall, upon abandonment, be plugged according to DEQ rules and regulations.	10 days N/A
<input type="checkbox"/>	Geophysical Exploration Permit	Application filed with DEQ at least 10 days prior to issue of permit. Application by letter. No standard application form.	10 days N/A
<input type="checkbox"/>	State Lakes Construction Permit	Application fee based on structure size is charged. Must include descriptions & drawings of structure & proof of ownership of riparian property	15-20 days N/A
<input type="checkbox"/>	401 Water Quality Certification	Compliance with the T15A 02H .0500 Certifications are required whenever construction or operation of facilities will result in a discharge into navigable water as described in 33 CFR part 323.	60 days (130 days)
<input type="checkbox"/>	Compliance with Catawba, Goose Creek, Jordan Lake, Randleman, Tar Pamlico or Neuse Riparian Buffer Rules is required. Buffer requirements: <a href="http://deq.nc.gov/about/divisions/water-resources/water-resources-permits/wastewater-branch/401-wetlands-buffer-permits/401-riparian-buffer-protection-program">http://deq.nc.gov/about/divisions/water-resources/water-resources-permits/wastewater-branch/401-wetlands-buffer-permits/401-riparian-buffer-protection-program</a>		
<input type="checkbox"/>	Nutrient Offset: Loading requirements for nitrogen and phosphorus in the Neuse and Tar-Pamlico River basins, and in the Jordan and Falls Lake watersheds, as part of the nutrient-management strategies in these areas. DWR nutrient offset information: <a href="http://deq.nc.gov/about/divisions/water-resources/planning/nonpoint-source-management/nutrient-offset-information">http://deq.nc.gov/about/divisions/water-resources/planning/nonpoint-source-management/nutrient-offset-information</a>		
<input type="checkbox"/>	CAMA Permit for MAJOR development	\$250.00 - \$475.00 fee must accompany application	75 days (150 days)
<input type="checkbox"/>	CAMA Permit for MINOR development	\$100.00 fee must accompany application	22 days (25 days)
<input type="checkbox"/>	Abandonment of any wells, if required must be in accordance with Title 15A. Subchapter 2C.0100.		
<input checked="" type="checkbox"/>	Notification of the proper regional office is requested if "orphan" underground storage tanks (USTS) are discovered during any excavation operation.		
<input type="checkbox"/>	Plans and specifications for the construction, expansion, or alteration of a public water system must be approved by the Division of Water Resources/Public Water Supply Section prior to the award of a contract or the initiation of construction as per 15A NCAC 18C .0300 et. seq., Plans and specifications should be submitted to 1634 Mail Service Center, Raleigh, North Carolina 27699-1634. All public water supply systems must comply with state and federal drinking water monitoring requirements. For more information, contact the Public Water Supply Section, (919) 707-9100.		30 days
<input type="checkbox"/>	If existing water lines will be relocated during the construction, plans for the water line relocation must be submitted to the Division of Water Resources/Public Water Supply Section at 1634 Mail Service Center, Raleigh, North Carolina 27699-1634. For more information, contact the Public Water Supply Section, (919) 707-9100.		30 days
<input type="checkbox"/>	Plans and specifications for the construction, expansion, or alteration of the _____ water system must be approved through the _____ delegated plan approval authority. Please contact them at _____ for further information.		

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Other Comments (attach additional pages as necessary, being certain to comment authority)

Division	Initials	No comment	Comments	Date Review
DAQ	PVB	<input type="checkbox"/>	For air quality issues in Buncombe County, contact the WNC Regional Air Quality Agency at 828-250-6777.	10/8/2020
DWR-WQROS	GLD	<input type="checkbox"/>	Insufficient project specific information to make a determination	10/1/2020
DWR-PWS		<input type="checkbox"/>		/ /
DEMLR (LQ & SW)	MMS	<input type="checkbox"/>	<p>The Sedimentation Pollution Control Act of 1973 must be properly addressed for any land disturbing activity. An erosion and sedimentation control plan may be required if one or more acres are to be disturbed. A Plan must be filed with and approved by applicable Regional Office (Land Quality Section) at least 30 days before beginning activity. A NPDES Construction Stormwater permit (NCG010000) is also usually issued should design features meet minimum requirements. A fee of \$65 for the first acre or any part of an acre.</p> <p>Sedimentation and erosion control must be addressed in accordance with Buncombe County's approved program. Particular attention should be given to design and installation of appropriate perimeter sediment trapping devices as well as stable Stormwater conveyances and outlets.</p> <p>For this site compliance with 15A NCAC 2H .0126 - NPDES Stormwater Program may be required. This program regulates three types of activities: Industrial, Municipal Separate Storm Sewer System &amp; Construction activities that disturb ≥1 acre.</p> <p>Compliance with 15A NCAC 2H 1000 -State Stormwater Permitting Programs which regulate site development and post-construction stormwater runoff control may be required for this site. Areas subject to these permit programs include all 20 coastal counties, and various other counties and watersheds throughout the state.</p>	10/1/2020
DWM – UST	CEL	<input type="checkbox"/>	<p>I searched the Petroleum Underground Storage Tank (UST) and Non-UST Databases and identified the following petroleum Incidents on or adjacent to the proposed project area:</p> <p>UST Incident #20045, AS-1776, Facility ID 00-0-0000001778, Buncombe County Landfill, Riverside Driver, Asheville, NC. Release discovered on 12/17/98 and closed out on 07/29/13. Files available electronically on CD#655.</p> <p>The following comments are pertinent to my review:</p> <p>The Asheville Regional Office (ARO) UST Section recommends removal of any abandoned or out-of-use petroleum USTs or petroleum ASTs within the project area. The UST Section should be contacted regarding use of any proposed or on-site petroleum USTs or ASTs. We may be reached at (828) 296-4500.</p> <p>Any petroleum USTs or ASTs must be installed and maintained in accordance with applicable local, state, and federal regulations. For additional information on petroleum ASTs it is advisable that the North Carolina Department of Insurance at (919) 661-5880 ext. 239, USEPA (404) 562-8761, local fire department, and Local Building Inspectors be contacted.</p> <p>Any petroleum spills must be contained and the area of impact must be</p>	10/1/2020

INTERGOVERNMENTAL REVIEW PROJECT COMMENTS

		<input type="checkbox"/>	<p>properly restored. Petroleum spills of significant quantity must be reported to the North Carolina Department of Environmental Quality (NCDEQ) – Division of Waste Management (DWM) UST Section in the ARO.</p> <p>Any soils excavated during demolition or construction that show evidence of petroleum contamination, such as stained soil, odors, or free product must be reported immediately to the local Fire Marshall to determine whether explosive or inhalation hazards exist. Also, notify the UST Section of the ARO. Petroleum contaminated soils must be handled in accordance with all applicable regulations.</p> <p>Any questions or concerns regarding spills from petroleum USTs, ASTs, or vehicles should be directed to the UST Section at (828) 296-4500. If you have any questions or need additional information, please contact me via email at <a href="mailto:caroline.lafond@ncdenr.gov">caroline.lafond@ncdenr.gov</a> or by phone at (828) 296-4644.</p>	<p>/ /</p>
Other Comments		<input type="checkbox"/>		<p>/ /</p>

**REGIONAL OFFICES**

Questions regarding these permits should be addressed to the Regional Office marked below.

- |   |   |  |
|---|---|--|
| <input type="checkbox"/> <b>Asheville Regional Office</b><br>2090 U.S. 70 Highway<br>Swannanoa, NC 28778-8211<br>Phone: 828-296-4500<br>Fax: 828-299-7043 | <input type="checkbox"/> <b>Fayetteville Regional Office</b><br>225 Green Street, Suite 714,<br>Fayetteville, NC 28301-5043<br>Phone: 910-433-3300<br>Fax: 910-486-0707 | <input type="checkbox"/> <b>Mooresville Regional Office</b><br>610 East Center Avenue, Suite 301,<br>Mooresville, NC 28115<br>Phone: 704-663-1699<br>Fax: 704-663-6040 |
| <input type="checkbox"/> <b>Raleigh Regional Office</b><br>3800 Barrett Drive,<br>Raleigh, NC 27609<br>Phone: 919-791-4200<br>Fax: 919-571-4718           | <input type="checkbox"/> <b>Washington Regional Office</b><br>943 Washington Square Mall,<br>Washington, NC 27889<br>Phone: 252-946-6481<br>Fax: 252-975-3716           | <input type="checkbox"/> <b>Wilmington Regional Office</b><br>127 Cardinal Drive Ext.,<br>Wilmington, NC 28405<br>Phone: 910-796-7215<br>Fax: 910-350-2004             |
|   | <input type="checkbox"/> <b>Winston-Salem Regional Office</b><br>450 Hanes Mill Road, Suite 300,<br>Winston-Salem, NC 27105<br>Phone: 336-776-9800<br>Fax: 336-776-9797 |  |



NORTH CAROLINA  
Environmental Quality

ROY COOPER  
Governor

MICHAEL S. REGAN  
Secretary

MICHAEL SCOTT  
Director

TO: Lyn Hardison, Environmental Coordinator

FROM: Caroline LaFond, Regional UST Supervisor

COPY: Scott Bullock, Corrective Action Branch Head, Sharon Brinkley, Administrative Secretary

DATE: October 1, 2020

RE: Environmental Review – Project Number 21-0749 – Buncombe County - Environmental Review - Application of Duke Energy Progress. Inc for Certificate to construct a 5 MW Solar Facility in Buncombe Co. Docket # E-2 Sub 1257. View document at <http://starw1.ncuc.net/NCUC/portal/ncuc/page/Docketcts/portal.aspx>, Type E-2 Sub 1257 in the Docket Number search line. Located at 2720 Riverside Drive, Woodfin, North Carolina. GPS Coordinates - 35.660255, -82.60207

I searched the Petroleum Underground Storage Tank (UST) and Non-UST Databases and identified the following petroleum incidents on or adjacent to the proposed project area:

UST Incident #20045, AS-1776, Facility ID 00-0-0000001778, Buncombe County Landfill, Riverside Driver, Asheville, NC. Release discovered on 12/17/98 and closed out on 07/29/13. Files available electronically on CD#655.

The following comments are pertinent to my review:

The Asheville Regional Office (ARO) UST Section recommends removal of any abandoned or out-of-use petroleum USTs or petroleum ASTs within the project area. The UST Section should be contacted regarding use of any proposed or on-site petroleum USTs or ASTs. We may be reached at (828) 296-4500.

Any petroleum USTs or ASTs must be installed and maintained in accordance with applicable local, state, and federal regulations. For additional information on petroleum ASTs it is advisable that the North Carolina Department of Insurance at (919) 661-5880 ext. 239, USEPA (404) 562-8761, local fire department, and Local Building Inspectors be contacted.

Any petroleum spills must be contained and the area of impact must be properly restored. Petroleum spills of significant quantity must be reported to the North Carolina Department of Environmental Quality (NCDEQ) – Division of Waste Management (DWM) UST Section in the ARO.

Any soils excavated during demolition or construction that show evidence of petroleum contamination, such as stained soil, odors, or free product must be reported immediately to the local Fire Marshall to determine whether explosive or inhalation hazards exist. Also, notify the UST Section of the ARO. Petroleum contaminated soils must be handled in accordance with all applicable regulations.



Any questions or concerns regarding spills from petroleum USTs, ASTs, or vehicles should be directed to the UST Section at (828) 296-4500. If you have any questions or need additional information, please contact me via email at [caroline.lafond@ncdenr.gov](mailto:caroline.lafond@ncdenr.gov) or by phone at (828) 296-4644.



NORTH CAROLINA  
Environmental Quality

ROY COOPER  
Governor

MICHAEL S. REGAN  
Secretary

MICHAEL SCOTT  
Director

DATE: October 22, 2020

TO: Michael Scott, Division Director through Sharon Brinkley

FROM: Deb Aja, Western District Supervisor - Solid Waste Section

RE: SEPA Project 21-0749, Buncombe County, N.C.  
Duke Energy Progress – 5 MW Solar Facility

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The Solid Waste Section has reviewed the Application of Duke Energy Progress, Inc. for Certificate to Construct a 5 MW Solar Facility, Docket # E-2 Sub 1257. The solar facility is proposed to be located on the Closed Buncombe County Landfill (Permit No.1101-MSWLF-1979), 2720 Riverside Drive in Woodfin, Buncombe County, North Carolina. A permit modification request for the proposed solar facility has been submitted to the Solid Waste Section and is currently under review by Allen Gaither, Environmental Engineer, Solid Waste Section.

During the project, every feasible effort should be made to minimize the generation of waste, to recycle materials for which viable markets exist, and to use recycled products and materials in the development of this project where suitable. Any wastes generated by this project that cannot be beneficially reused or recycled must also be disposed of at a solid waste management facility approved to manage the respective waste type. The Section strongly recommends that any contractors are required to provide proof of proper disposal for all waste generated as part of the project. A list of permitted solid waste management facilities is available on the Solid Waste Section portal site at:

<http://deq.nc.gov/about/divisions/waste-management/waste-management-rules-data/solid-waste-management-annual-reports/solid-waste-permitted-facility-list>

Please contact Allen Gaither at (828) 296-4703, or by email at [allen.gaither@ncdenr.gov](mailto:allen.gaither@ncdenr.gov), with any questions regarding the permit modification request or any additional project activities that may be proposed at the closed landfill facility. Please contact Kris Riddle, Environmental Senior Specialist, with any other questions regarding solid waste management for this project. Mr. Riddle may be reached at (828) 296-4705 or by email at [kris.riddle@ncdenr.gov](mailto:kris.riddle@ncdenr.gov).

Cc: Jason Watkins, Field Operations Branch Head  
Kris Riddle, Environmental Senior Specialist  
Allen Gaither, Environmental Engineer





NORTH CAROLINA  
Environmental Quality

ROY COOPER  
Governor

MICHAEL S. REGAN  
Secretary

MICHAEL SCOTT  
Director

Date: October 23, 2020

To: Michael Scott, Director  
Division of Waste Management

Through: Janet Macdonald  
Inactive Hazardous Sites Branch – Special Projects Unit

From: Bonnie S. Ware  
Inactive Hazardous Sites Branch

Subject: SEPA Project #21-0749, North Carolina Department of Commerce, Buncombe County, North Carolina

The Superfund Section has reviewed the proximity of sites under its jurisdiction to the North Carolina Department of Commerce project. Proposed project is for the Environmental Review - Application of Duke Energy Progress. Inc for Certificate to construct a 5 MW Solar Facility in Buncombe Co. Located at 2720 Riverside Drive, Woodfin, North Carolina.

No sites were identified within one mile of the project as shown on the attached report.

Please contact Janet Macdonald at 919.707.8349 if you have any questions.



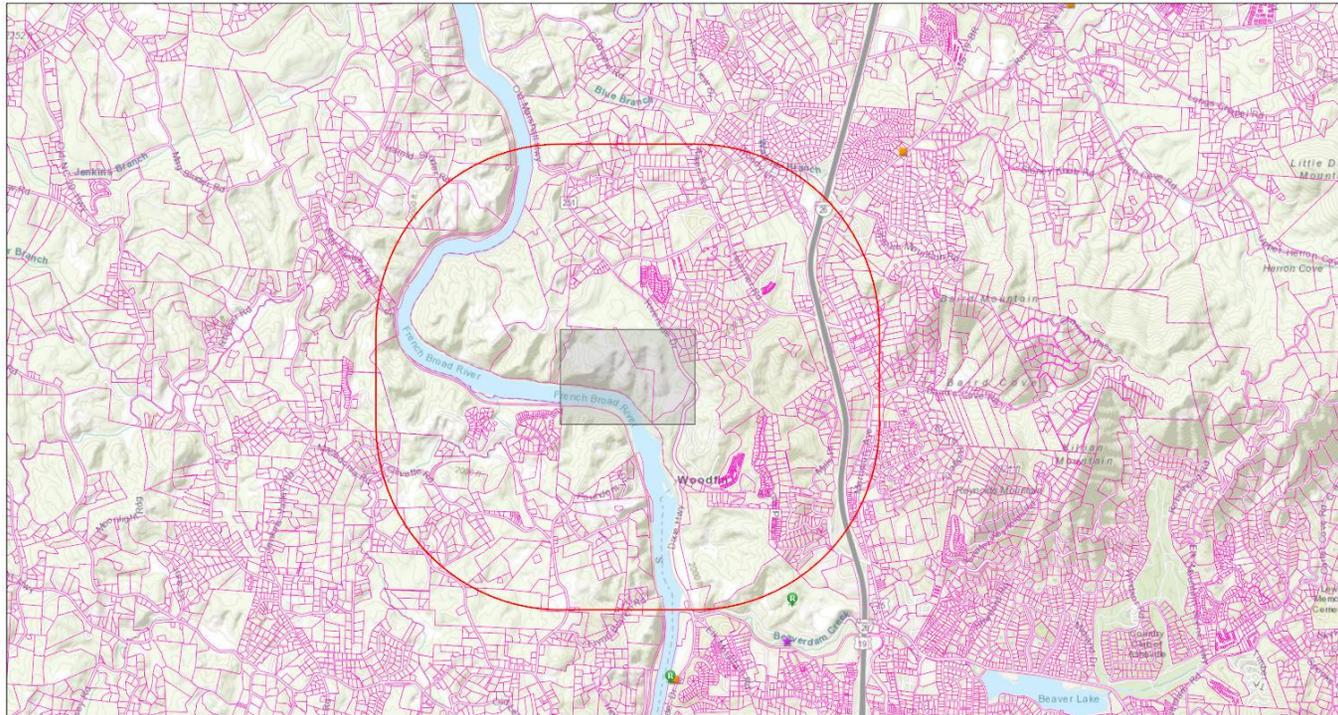


# SEPA/NEPA Review Report

## Area of Interest (AOI) Information

Area : 3,836.84 acres

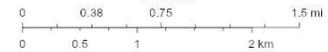
Oct 23 2020 8:24:59 Eastern Daylight Time



NC Brownfields.Location\_View

-  Recorded
-  Pre Regulatory Landfill Sites
-  Inactive Hazardous Sites
-  Parcels (Polygons) - Parcels

1:36,112



Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeBCo, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

21-0749 MEMO

## Summary

Name	Count	Area(acres)	Length(mi)
Certified DSCA Sites	0	N/A	N/A
Federal Remediation Branch Sites	0	N/A	N/A
Inactive Hazardous Sites	0	N/A	N/A
Pre-Regulatory Landfill Sites	0	N/A	N/A
Brownfields Program Sites	0	N/A	N/A

Control No.: 21-E-4600-0749

Date Received: 9/29/2020

County.: BUNCOMBE

Agency Response: 10/29/2020

Review Closed: 10/29/2020

JOSEPH HUDYNIA  
CLEARINGHOUSE COORDINATOR  
DEPT OF AGRICULTURE

Project Information

Type: State Environmental Policy Act Environmental Review

Applicant: North Carolina Department of Commerce

Project Desc.: Application of Duke Energy Progress, Inc for Certificate to construct a 5 MW Solar Facility in Buncombe Co. Docket # E-2 Sub 1257. View document at <http://starw1.ncuc.net/NCUC/portal/ncuc/page/Docketcts/portal.aspx>, Type E-2 Sub 1257 in the Docket Number search line. Located at 2720 Riverside Drive, Woodfin, North Carolina

As a result of this review the following is submitted:

No Comment

Comments Below

Documents Attached

See attached.

Reviewed By: JOSEPH HUDYNIA

Date: 9/29/2020



**Dr. Alexander Stewart**  
Assistant Commissioner

North Carolina Department of Agriculture  
and Consumer Services  
*Agricultural Services*

**Joseph Hudyncia**  
Environmental Programs

Crystal Best  
State Clearinghouse  
N.C. Department of Administration  
1301 Mail Service Center  
Raleigh, NC 27699-1301

RE:

Dear Ms. Best:

The proposed ground-mounted photovoltaic electric generating facility has the potential to negatively impact agricultural, environmental and economic balance in the area of the development project. Development of all types continues to be a threat to one of the state's most valuable natural resources, i.e. productive farmland. As productive farmland is removed from agricultural production the associated potential for providing necessary agricultural products for a growing population is reduced, and with it a substantial amount of recurring, local ag-related economic activity generated by local farming incomes.

We encourage conservation of highly productive soils for their best use – agriculture - and recommend locating ground-mounted solar arrays of this scale on less productive sites on the associated tract if possible. Prioritization of sites based on potential agricultural productivity, whereby less productive sites (e.g. marginal lands) are selected for development and more productive sites are retained for agricultural production, may help mitigate some impact to agricultural resources. One means to assess the agronomic potential of soils is to first consult the published county soil survey to identify soil types (soil map units) and distribution, and then use the NC State Cooperative Extension Realistic Yield Expectation for NC Soils database (<https://realisticyields.ces.ncsu.edu/>) to compare yield potential of soil map units on the tract. This analysis may help prioritize areas for retention in agricultural production.

Additionally, the use of best practices in construction and operation and maintenance of the facility are encouraged to preserve the productive capabilities of the site for future agricultural use, while maintaining or enhancing the integrity of unique or sensitive habitats. It is also recommended that a decommissioning plan that clearly defines the responsible party, process details, timeline, and specific responsibilities (including restoration) be incorporated into the development plan.

We have cross-referenced the parcel for existing easements related to agriculture and found no CREP conservation easements, swine buyout easements, ADFP easements, plant conservation easements, plant conservation priority sites, or Voluntary Agricultural Districts associated with the subject property.

Respectfully,

Joe Hudyncia  
Environmental Programs

Control No.: 21-E-4600-0749

Date Received: 9/29/2020

County.: BUNCOMBE

Agency Response: 10/29/2020

Review Closed: 10/29/2020

JINTAO WEN  
CLEARINGHOUSE COORDINATOR  
DPS - DIV OF EMERGENCY MANAGEMENT

Project Information

Type: State Environmental Policy Act ironmental Review

Applicant: North Carolina Department of Commerce

Project Desc.: Application of Duke Energy Progress. Inc for Certificate to construct a 5 MW Solar Facility in Buncombe Co. Docket # E-2 Sub 1257. View document at <http://starw1.ncuc.net/NCUC/portal/ncuc/page/Dockects/portal.aspx>, Type E-2 Sub 1257 in the Docket Number search line. Located at 2720 Riverside Drive, Woodfin, North Carolina

As a result of this review the following is submitted:

No Comment

Comments Below

Documents Attached

Reviewed By: JINTAO WEN

Date: 10/26/2020

Control No.: 21-E-4600-0749

Date Received: 9/29/2020

County.: BUNCOMBE

Agency Response: 10/29/2020

Review Closed: 10/29/2020

DEVON BORGARDT

Clearinghouse Reviewer

DEPT OF NATURAL & CULTURAL  
RESOURCE

Project Information

Type: State Environmental Policy Act ironmental Review

Applicant: North Carolina Department of Commerce

Project Desc.: Application of Duke Energy Progress. Inc for Certificate to construct a 5 MW Solar Facility in Buncombe Co. Docket # E-2 Sub 1257. View document at <http://starw1.ncuc.net/NCUC/portal/ncuc/page/Dockects/portal.aspx>, Type E-2 Sub 1257 in the Docket Number search line. Located at 2720 Riverside Drive, Woodfin, North Carolina

As a result of this review the following is submitted:

No Comment

Comments Below

Documents Attached

Reviewed By: DEVON BORGARDT

Date: 10/28/2020