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February 7, 2022

**VIA ELECTRONIC FILING AND HAND DELIVERY**

Ms. A. Shonta Dunston, Chief Clerk  
North Carolina Utilities Commission  
4325 Mail Service Center  
Raleigh, North Carolina 27699-4300

**RE: Application of Duke Energy Progress, LLC for a Certificate of Environmental Compatibility and Public Convenience and Necessity to Construct 1.3 Miles of Transmission Line in Chatham County, North Carolina  
Docket No. E-2, Sub 1288**

Dear Ms. Dunston:

Pursuant to N.C. Gen. Stat. §§ 62-101 et seq. and Commission Rule R8-62, Duke Energy Progress, LLC ("DEP") submits for filing its Application, a draft public notice summary of the Application, and supporting testimony for a Certificate of Environmental Compatibility and Public Convenience and Necessity to construct approximately 1.3 miles of new 230kV transmission line in Chatham County, North Carolina. The parties identified in N.C. Gen. Stat. § 62-102(b) will be served, and notice will be published in the appropriate newspapers once the Commission approves the draft public notice summary pursuant to N.C. Gen. Stat. § 62-102(c). Pursuant to Commission Rule R8-62(f), DEP respectfully requests that the Commission please either notify DEP of the Commission's approval of such notice or of any required changes within three (3) business days of the filing of this Application. The Application filing fee in the amount of \$250.00 was paid prior to this filing.

Please do not hesitate to contact me if you have any questions or need additional information.

Sincerely,

Kathleen H. Richard

Enclosure

cc: Parties of Record

OFFICIAL COPY

Feb 07 2022

## CERTIFICATE OF SERVICE

I certify that a copy of Duke Energy Progress, LLC's Application for a Certificate of Environmental Compatibility and Public Convenience and Necessity to Construct 1.3 Miles of Transmission Line in Chatham County, North Carolina, in Docket No. E-2, Sub 1288, has been served by electronic mail, hand delivery or by depositing a copy in the United States mail, postage prepaid to the parties of record.

This the 7<sup>th</sup> day of February, 2022.



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**STATE OF NORTH CAROLINA  
UTILITIES COMMISSION  
RALEIGH**

BEFORE THE NORTH CAROLINA UTILITIES COMMISSION

DOCKET NO. E-2, SUB 1288

In the Matter of:	)	
	)	
Application of Duke Energy Progress, LLC for	)	<b>DUKE ENERGY PROGRESS,</b>
a Certificate of Environmental Compatibility	)	<b>LLC'S APPLICATION FOR A</b>
and Public Convenience and Necessity	)	<b>CERTIFICATE OF</b>
Pursuant to N.C. Gen. Stat. §§ 62-100 <u>et. seq.</u>	)	<b>ENVIRONMENTAL</b>
to Construct Approximately 1.3 Miles of New	)	<b>COMPATIBILITY AND</b>
230 kV Transmission line in Chatham County,	)	<b>PUBLIC CONVENIENCE AND</b>
North Carolina	)	<b>NECESSITY</b>

NOW COMES Duke Energy Progress, LLC ("DEP" or the "Applicant"), pursuant to N.C. Gen. Stat. §§ 62-100 et seq. and Rules R1-5 and R8-62 of the Rules of Practice and Procedure of the North Carolina Utilities Commission ("the Commission") and files its Application for a Certificate of Environmental Compatibility and Public Convenience and Necessity ("Certificate") to construct a new 230kV transmission line in Chatham County, North Carolina. The new transmission line will run from the existing Harris Plant – Siler City 230 kV Transmission Line to the proposed Pittsboro Hanks Chapel Substation. The total length of the proposed transmission line is approximately 1.3 miles. In support thereof, DEP shows the following:

1. The Applicant's general offices are located at 410 South Wilmington Street, Raleigh, North Carolina, and its mailing address is:

Duke Energy Progress, LLC  
410 S. Wilmington Street  
NCRH 20/ P. O. Box 1551  
Raleigh, North Carolina 27602

2. The names and addresses of Applicant's attorneys are:

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Copies of all pleadings, testimony, orders, and correspondence in this proceeding should be served upon the attorneys listed above.

3. DEP is engaged in the generation, transmission, distribution, and sale of electricity at retail in the eastern and western portions of North Carolina, and the northeastern portion of South Carolina. It also sells electricity at wholesale to many municipal, cooperative, and investor-owned electric utilities. The Applicant is authorized to transact business in the State of North Carolina and is a public utility under the laws of the State of North Carolina. Accordingly, its operations in the State of North Carolina are subject to the jurisdiction of the Commission.

4. DEP is required by the Federal Energy Regulatory Commission ("the FERC") to comply with the Reliability Standards of the North American Electric Reliability Corporation ("NERC"). NERC may impose stringent penalties for violations of NERC Reliability Standards. In accordance with these Reliability Standards, DEP plans its transmission system to supply projected demands in a reliable manner at all demand levels over the range of forecast system demand, under contingency conditions. Further



in compliance with these Reliability Standards, DEP routinely conducts studies of its transmission system to identify required improvements.

5. DEP provides electricity to approximately 1.5 million customers in North Carolina and South Carolina. Due to growth in Pittsboro and developing rural and suburban areas in Chatham County, the new substation and associated transmission line are required to provide needed capacity and enhanced service reliability to support existing customers and to allow for future residential and commercial growth.

6. DEP's assessment of electric energy requirements has identified the need to build a new 230kV/23kV transmission-to-distribution substation to serve the Pittsboro area in Chatham County, North Carolina. To supply power to the substation, a new 230-kV transmission tap line is proposed to connect the new substation to DEP's existing transmission network. The area is currently served by the Pittsboro 230-KV substation located south of the municipality. In the eastern part of Chatham County, an approximately 7,000-acre development, referred to as Chatham Park, is under development after having been approved by the Pittsboro Board of Commissioners in June 2014. The development is proposing to include 22,000 residential units and 22 million feet of nonresidential space to support a residential population of approximately 60,000 people. Construction is underway in the northern section of the development.

7. The new transmission line will connect the Pittsboro Hanks Chapel Substation to the existing Harris Plant – Siler City 230 kV Transmission line. The total length of the proposed transmission line is approximately 1.3 miles.

8. DEP retained Jacobs Engineering Company, Inc. to assist with the comprehensive transmission line siting and public input process for this project. The

study area encompasses the Pittsboro Hanks Chapel Substation site to the north and the Harris Plant – Siler City 230 kV transmission line to the south, and includes a sufficient area to identify reasonable potential routes between these two points without including nearby areas where similar reasonable potential routes are not present. The northern boundary of the study area extended approximately 1.1 miles along Hanks Chapel Road from east of the intersection with Business Route 64 to the intersection with Hanks Loop Road. The eastern boundary extends south then southwest for approximately 2.8 miles to an area north of Moncure Pittsboro Road. The south-southwestern boundary of the study area parallels the Harris Plant – Siler City 230 kV transmission line for approximately 2.3 miles until it connects with Moncure Pittsboro Road. The western boundary extends approximately 1.8 miles to the northeast from Moncure Pittsboro Road to Hanks Chapel Road. The study area encompasses approximately 3.6 square miles and is shown in Figure 2 of the Routing Study and Environmental Report ("Report"), attached as Exhibit A to this Application.

9. The preferred route's southern endpoint is a proposed tap of DEP's existing Harris Plant – Siler City 230 kV transmission line, approximately 200 feet southeast of the Bynum Tap 230 kV transmission line. From the southern endpoint, the line is proposed to travel north, paralleling DEP's existing Bynum Tap 230 kV transmission line for approximately 1.1 miles. The proposed line then runs northeast for approximately 0.25 miles into the northern endpoint at the planned substation site. This route parallels DEP's existing transmission lines and only crosses land owned by Chatham Park Investors, LLC, which is the developer of Chatham Park.

10. The transmission line routing process, studies and physical properties are fully described in the Report, attached as Exhibit A. The Report satisfies the requirements of N.C. Gen. Stat. § 62-102.

11. Exhibit B is a draft public notice summary of the Application that DEP proposes to publish in the newspapers of general circulation serving the portions of Chatham County impacted by the proposed line. DEP will publish this public notice summary upon Commission approval and serve the parties identified in N.C. Gen. Stat. § 62-102(b) with a copy of this Application and a notice stating the date the Application was filed, the date by which parties must seek intervention, and the statute and the rule governing intervention.

12. The information and data required to be filed by Commission Rule R8-62 is supported by the testimony of Clifton M. Cates and Micah E. Retzlaff and is being filed simultaneously with this Application and incorporated herein by reference.

WHEREFORE, Duke Energy Progress, LLC requests that the Commission grant a Certificate of Environmental Compatibility and Public Convenience and Necessity to construct approximately 1.3 miles of new 230kV transmission line in Chatham County, North Carolina.

Respectfully submitted this 7<sup>th</sup> day of February, 2022.



---

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Feb 07 2022

  
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Lead Transmission Siting Specialist  
Siting, Permitting and Engagement  
Duke Energy Progress, LLC

Notary Public

LEATHER RETZLAFF  
NOTARY  
PUBLIC  
WAKE COUNTY, NC



## Pittsboro Hanks Chapel 230 kV Transmission Line Project

Application for a Certificate of Environmental Compatibility and  
Public Convenience and Necessity

May 2021

Duke Energy Progress, LLC



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## Acronyms and Abbreviations

BMP	best management practice
CEPCPN	Certificate of Environmental Compatibility and Public Convenience and Necessity
CWA	Clean Water Act
DEP	Duke Energy Progress, LLC
FEMA	Federal Emergency Management Agency
Hwy	Highway
IPaC	Information for Planning and Conservation
kV	kilovolt(s)
NHD	National Hydrography Dataset
NHP	Natural Heritage Program
NRHP	National Register of Historic Places
NWI	National Wetlands Inventory
SHPO	State Historic Preservation Office
NCDEQ	North Carolina Department of Environmental Quality
NPDES	National Pollutant Discharge Elimination System
Project	Pittsboro Hanks Chapel 230 kV Transmission Line Project
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service

## 1. Project Description

Duke Energy Progress, LLC (DEP) proposes to construct a new 230-kilovolt (kV) electric transmission tap line from the existing Harris Plant-Siler City 230 kV Transmission Line to the proposed Pittsboro Hanks Chapel Substation in Chatham County, North Carolina. The project is referred to as the Pittsboro Hanks Chapel 230 kV Transmission Line Project (Project).

Pursuant to the requirements of Article 5A, Chapter 62 of the North Carolina General Statutes, the Project requires an Application for a Certificate of Environmental Compatibility and Public Convenience and Necessity (CEPCN) be submitted to the North Carolina Utilities Commission. In accordance with North Carolina statutory requirements, this application contains a description of the proposed Project, a summary of the route selection process, potential environmental impacts and proposed mitigation, and potential permits and approvals required.

### 1.1 Purpose and Need

DEP is proposing to construct a new 230-kV/23-kV transmission to distribution substation to serve the Pittsboro area in Chatham County, North Carolina. Growth in Pittsboro and developing rural and suburban areas of Chatham County is taxing the existing electrical distribution system. The primary source of commercial delivery of service to DEP's customers is the Pittsboro 230-kV substation located south of the municipality. This new substation will provide greater capacity and sustained service reliability to support the existing and future electrical load of the greater Pittsboro area.

To supply power to the substation, a new 230-kV transmission tap line is proposed to connect the new substation to DEP's existing transmission network. The construction of the substation and transmission tap line is scheduled to commence in late 2022 and be completed by late 2024. The 230-kV transmission tap line would be in-service by December 31, 2024.

### 1.2 Project Location

The Project is in Chatham County, approximately 2 miles east of Pittsboro, North Carolina. The Project's southern endpoint is a proposed tap of DEP's existing Harris Plant-Siler City 230 kV Transmission Line. From the southern endpoint, the Project is proposed to travel north parallel to DEP's existing Bynum Tap 230 kV Transmission Line (Bynum Tap) for approximately 1 mile before running east into the Project's northern endpoint, the planned substation site, south of Hanks Chapel Road. The Project location is shown on Figure 1.

### 1.3 Structures

Structures will consist of both tangent H-frame and three-pole angle structures approximately 65 to 85 feet in height and spaced approximately 500 to 700 feet apart. Heights and spans may vary depending on final engineering with regard to the terrain, or measures to mitigate potential environmental impacts.

### 1.4 Right-of-Way

The Project will require an approximately 125-foot-wide right-of-way (62.5 feet on either side of centerline). Where the Project is adjacent to DEP's Bynum Tap, DEP Line Engineering has calculated that only 83 feet of new right-of-way easement would be needed to maintain an adequate separation from the

existing tap line and comply with National Electric Safety Code (NESC) and other applicable code requirements.

## **1.5 Operations and Maintenance**

DEP is committed to continuing its long-standing tradition of operating and maintaining facilities that will support the health, safety, and welfare of the general public. Operation and maintenance of the transmission line would consist of periodic inspections of the line and right-of-way, replacement of equipment as necessary, and removal of danger trees and tall vegetation within and adjacent to the right-of-way that pose a hazard to safe operation of the line.

## **1.6 Estimated Project Cost**

The total estimated cost for the Project (line acquisition, clearing and construction) is \$6.88 million.

## 2. Route Selection Study

In accordance with North Carolina statutory requirements,<sup>1</sup> the Project siting team, consisting of multidisciplinary staff from DEP and Jacobs, applied a common siting methodology that is routinely used to route electric transmission projects in North Carolina and other states. Although core routing processes and goals remain the same across all projects, there are elements unique to each project such as geography and setting, the type of project, the political and regulatory climate, and the project schedule. These unique elements influence the routing criteria and their relative weighting (or emphasis).

Transmission line projects can encounter a suite of competing technical, environmental, and land use criteria requiring a comprehensive, relevant, and effective siting study design. That design should use appropriate data at the appropriate scale to focus quickly on those areas and corridors with the greatest potential for success. The siting process and methodology must also be transparent and effectively communicated.

The siting process provides a layered approach employing appropriate methods for the siting team to determine the proposed route for the Project. The process used for this Project consisted of the following primary tasks and detailed in the following subsections.

- 1) **Identifying a project-specific study area:** The first step in the siting process was to develop a project-specific study area that identifies an appropriate geographic boundary where the siting team can collect detailed constraint and opportunity data. The study area should include a large enough area to investigate reasonable routing alternatives for the Project, but also not so broad as to unnecessarily include nearby areas where similar reasonable alternatives are not present. As part of the identification of a study area, the siting team reviewed publicly available environmental, land use, and socioeconomic information and determined the boundaries of the study area based on the initial opportunity (for example, locations where a new transmission line may have the fewest impacts) review and constraint (for example, existing land or features that are less suitable for a transmission line siting) review.
- 2) **Mapping constraint and opportunity data:** After the siting team developed the study area, further constraint and opportunity data were collected under three broad headings: ecological, land use/cultural, and technical. Data were collected under these broad headings based on their relevance to the Project, the study area, and the availability and quality of the dataset. Once collected, the data were analyzed by way of the following:
  - a) The data was mapped within the study area to produce an overall constraint and opportunity map.
  - b) After the data mapping was complete, the opportunity and constraint information was converted into raster-based (or grid cell) layers and assigned a suitability value related to its suitability to host a transmission line. For example, an existing utility right-of-way would be assigned a high suitability score, while a residential area or wooded wetland would be assigned a low score. These individual suitability layers were combined to form an overall suitability surface, which assisted the siting team with developing a study segment network.
- 3) **Developing a study segment network and identifying alternative routes:** Once the suitability mapping and raster-based layers were completed, the information gleaned from the data analysis was used to develop a study segment network. Study segments were developed by using corridors that were the most conducive to electric transmission line development. Study segments were then refined

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<sup>1</sup> North Carolina General Statutes 62-101 and North Carolina Utilities Commission Rule 8-62.

based on technical constraints related to the construction and operation of the Project. Based on the refined study segments, the siting team developed unique alternative routes for the Project.

- 4) **Conducting public information meeting:** Because of the ongoing COVID-19 pandemic, the Project team held two virtual public information meetings with live sessions to present the Project, the study area, alternative routes, and solicit comments from the public to incorporate in the siting process. This alternative public engagement process was developed and conducted in lieu of in-person public information meetings to maintain a safe environment for everyone involved while providing the community with the chance to gather information and provide feedback on the Project.
- 5) **Comparing alternative routes:** Once the alternative routes were identified, the siting team established a set of metrics to compare and rank the alternative routes. These advanced metrics were based on opportunities and constraints identified within the study area and weighted based on the specific project area setting and primary land uses, as well as the professional judgment of the siting team's experience routing projects in a similar setting. In addition to the quantitative evaluation, qualitative factors such as landowner impacts, visual impacts, local public perception, and preferences also played a crucial role in the selection of the proposed route for the CECPCN application. The siting team used their respective experiences to determine what, and how much qualitative data influenced routing decisions.
- 6) **Selecting a proposed route:** Based on quantitative scores and qualitative analysis, the siting team identified the proposed route for the Project.

## 2.1 Project Area Description

The Project is in central Chatham County near the Town of Pittsboro, which makes up the western edge of the Durham-Chapel Hill, NC Metropolitan Statistical Area. According to the U.S. Census Bureau 2019 population estimates, Chatham County had approximately 74,470 people with less than 20 percent living in the incorporated towns of Siler City, Pittsboro, and Goldston, reflecting the general rural nature of the county (Chatham County 2021). Primary transportation corridors through the central part of the county are U.S. Highway (Hwy) 64, U.S. Hwy 501, and North Carolina Hwy 87.

According to data from the U.S. Census Bureau, Chatham County has sustained approximately 51 percent growth between the 2000 census and the 2019 population estimate, with population growing by 14,176 people between the 2000 and 2010 census (49,329 to 63,505) and 10,965 people between the 2010 census and the 2019 estimate (63,505 to 74,470)(U.S. Census Bureau 2019). This increase in population is largely because of residential growth in the eastern part of the country near larger city centers of Raleigh, Durham, Cary, and Chapel Hill.

In response to the increase in residential growth in the eastern part of the county, Chatham Park Investors, LLC have planned an approximately 7,000-acre technological Live-Work-Play community, referred to as Chatham Park, just east of Pittsboro on both sides of U.S. Hwy 64. Upon final buildout, the development is proposing to include 22,000 residential units and 22 million square feet of nonresidential space to support a residential population of approximately 60,000 people (Chatham Park 2021). The Master Plan was approved by the Pittsboro Board of Commissioners in June 2014.<sup>2</sup> Construction has started in the northern section of the development. The entire development is expected to be completed in 2045.

Terrain in the vicinity of the Project consists of gently rolling hills ranging from 300 to 550 feet above mean sea level with steeper slopes surrounding the riparian areas of streams. Agricultural fields are

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<sup>2</sup> Board of Commissioners meeting on June 9, 2014, Motion made by Commissioner Fiocco seconded by Commissioner Farrell to approve the Ordinance Amending the Zoning Ordinance and approve the Master Plan for Chatham Park. Voting record 4-1 in favor.

interspersed with woodlands on the west side of Pittsboro while the eastern side is largely woodlots, the Haw River, and B. E. Jordan Dam and Lake.

### 2.1.1 Study Area

The study area boundaries encompass the Pittsboro Hanks Chapel Substation site to the north and the Harris Plant-Siler City 230 kV Transmission Line to the south, and included a sufficient area to identify reasonable potential routes between these two points without including nearby areas where similar reasonable potential routes are not present. Given these considerations, the siting team identified a study area encompassing approximately 2,278 acres (3.6 square miles) as shown on Figure 2.

The northern boundary of the study area extends approximately 1.1 miles along Hanks Chapel Road (County Road 1943) from just east of the intersection with Business Route 64 to the intersection with Hanks Loop Road. The eastern boundary extends south then southwest for approximately 2.8 miles to an area north of Moncure Pittsboro Road (County Road 1012). The south-southwestern boundary of the study area parallels (500 feet south) the Harris Plant-Siler City 230 kV Transmission Line for approximately 2.3 miles until it connects with Moncure Pittsboro Road (County Road 1012). The western boundary extends approximately 1.8 miles to northeast from Moncure Pittsboro Road to Hanks Chapel Road.

## 2.2 Constraint and Opportunity Data

Once the study area was developed, and agreed upon by the siting team, Jacobs reviewed publicly available data specific to the study area to identify opportunities and constraints that could affect the viability of a proposed transmission line route. Typical constraints evaluated included the following:

- **Environmental constraints:** wetlands, waterbodies, floodplains, and records of the presence of threatened and endangered species.
- **Cultural resources constraints:** resources listed on the National Register of Historic Places and historic districts, state-listed historical resources, architectural resources, and known archaeology sites.
- **Land use constraints:** existing residential, commercial and industrial uses, federal, state, or local lands, railroads, interstate highways, potential right-of-way encroachments, and planned developments.

The following sections summarize the opportunity and constraint data identified within the study area.

### 2.2.1 Environmental Resources

Environmental resources data were reviewed before the development of the study segment network so that environmental constraints to routing electric transmission lines could be identified, and study segments could be developed to avoid and/or minimize potential impacts on environmental resources. For example, large water features such as lakes, wetlands, or floodplains could limit the siting team's ability to develop transmission line study segments in these areas because of challenges of constructing the transmission line or the potential environmental impact that could derive from building a transmission line in those areas. Therefore, the siting team used the environmental data to develop study segments and routing alternatives that avoid these features to the extent practicable. The following environmental resources that could present routing constraints were reviewed.

#### 2.2.1.1 Wetlands

The U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) was reviewed to identify the abundance, characteristics, and distribution of wetlands within the study area. Based on the data, there is relatively sparse coverage of mapped wetland features within the study area (Figure 3). Most NWI wetlands occur in the northern half of the study area, adjacent to unnamed tributaries of Roberson Creek (USFWS 2020b). Wetlands connected to Roberson Creek and unnamed tributaries to the creek would be designated as U.S. Army Corps of Engineers (USACE) jurisdictional waters of the United States.

Wetland crossings are commonplace for overhead electric transmission facilities and may occur within a route corridor. Wetland permitting would be required before installing temporary access roads, temporary work pads, and/or temporary pulling pads. DEP would avoid placing permanent structures within wetlands where possible. Based on the location and size of wetlands within the study area, wetlands were considered a minor constraint to siting a transmission line in the study area.

#### 2.2.1.2 Waterbodies

U.S. Geological Survey topographical maps and the National Hydrography Dataset (NHD) were reviewed to identify major perennial and intermittent streams within the study area that could potentially impact the feasibility of a transmission line either because a greater span length (distance between two transmission structures) would be needed to cross the waterbody or because the waterbody crossings require additional permitting/coordination with federal and state agencies (USGS 2019). Roberson Creek and several unnamed tributaries are within the study area, as shown on Figure 3. Roberson Creek is a perennial stream with Ordinary High Water Mark widths ranging from 35 feet to 55 feet; it flows east across the middle of the study area. It is not classified by the USACE Wilmington District as a Section 10 waterway. The unnamed tributaries to Roberson Creek are perennial and intermittent stream segments that would be designated as waters of the United States as would smaller associated intermittent drainages. These generally run north-south.

Like wetlands, stream crossings may occur within an overhead electric transmission route corridor. Based on the location of the streams within the study area, the resulting span lengths likely to be needed are not expected to impact the feasibility of the transmission line; therefore, streams were considered a minor constraint to siting a transmission line within the study area.

#### 2.2.1.3 Floodplains

Federal Emergency Management Agency (FEMA) floodplain maps were reviewed to identify floodplains within the study area. Based on the information gathered from FEMA, 100-year floodplain occurs adjacent to Roberson Creek across the middle of the study area, and along an unnamed tributary to Roberson Creek south and directly west of the planned substation site (Figure 3). These floodplains vary in size with a maximum width of 1,200 feet in the northeast part of the study area (FEMA 2020).

The floodplains within the study area are associated with the listed streams; therefore, a floodplain crossing would likely occur within a route corridor. Floodplain permitting would be required before installing temporary access roads, temporary work pads, and/or temporary pulling pads and DEP would look to avoid placing permanent structures within the floodplain where possible. Based on the width of the floodplains and DEP's ability to avoid work within the floodplain, they were considered a minor constraint to the Project.



#### 2.2.1.4 Threatened and Endangered Species

USFWS Information for Planning and Conservation (IPaC) and North Carolina Natural Heritage Program (NHP) was reviewed to determine federally and state-listed endangered, threatened, rare, special concern, and species of concern that have the potential to occur within the study area (Appendix A) (USFWS 2020a) (NCNHP 2020). The NHP also reviews important natural communities, natural areas, and conservation or managed areas. Based on the IPaC report, the federally listed red-cockaded woodpecker (*Picoides borealis*), cape fear shiner (*Notropis mekistocholas*), and harperella (*Ptilimnium nodosum*) may be present in the study area (Appendix A). The IPaC database results also list 10 migratory birds with the potential to be in the study area: Bachman's Sparrow (*Aimophila aestivalis*), Bald Eagle (*Haliaeetus leucocephalus*), blue-winged warbler (*Vermivora pinus*), eastern whip-poor-will (*Antrostomus vociferus*), Kentucky warbler (*Oporornis formosus*), Prairie Warbler (*Dendroica discolor*), prothonotary warbler (*Protonotaria citrea*), red-headed woodpecker (*Melanerpes erythrocephalus*), rusty blackbird (*Euphagus carolinus*), and wood thrush (*Hylocichla mustelina*).

Based on the NHP report, there are no documented occurrences of federally or state-listed species within the study area. One area of high-quality natural community (dry-mesic oak-hickory forest) was identified within the study area. Two managed areas are within the study area, the Robeson Creek Slopes Registered Heritage Area and the B. Everett Jordan Dam and Lake. These areas are on the eastern boundary of the study area.

At this stage in the Project, the available data on threatened and endangered species do not limit the opportunities for developing study segments or routing alternatives within the study area and therefore were not considered a constraint to the Project. Jacobs understands that project activities will likely be planned such that potentially suitable habitat areas will be avoided entirely or staged such that effects to federally and state-listed species are unlikely or completely avoided. Coordination with the USFWS and NHP will be conducted to manage any potential impacts to federally or state-listed species.

#### 2.2.2 Cultural Resources

Cultural resources data were reviewed to identify the locations and types of previously recorded cultural resources within the study area. Cultural resources are tangible remains of past human activity and may include, but are not limited to, prehistoric sites, historic or prehistoric objects, buildings, and structures. Cultural resources of exceptional significance, groupings of resources, or large historic districts can present a major constraint for transmission line routing because these resources may impose additional regulatory requirements that could potentially delay or prevent a project from being constructed. Analyzing and mapping cultural resources enables the siting team to develop study segments and routing alternatives that avoid, minimize, or mitigate impacts to known cultural resources within the study area.

Jacobs conducted background research using the North Carolina State Historic Preservation Office (SHPO) and North Carolina Office of State Archaeology online mapping database in March 2020 to locate previously recorded cultural resources and surveys within the siting study area (NCOSA 2020; NCSHPO 2020). This investigation revealed two archaeological sites, four architectural and historical resources, and one National Register of Historic Places (NRHP)-listed historic property within the study area. The architectural and historical resources within the study area are shown on Figure 4. Because of the confidential nature of archaeological sites, their locations cannot be disclosed to the public.

Both previously inventoried archaeological sites (Site 31CH572 and Site 31CH610) are prehistoric lithic scatters of unknown temporal affiliation and are not eligible for NRHP listing. Of the four architectural and historical resources located within the study area, two are residences and two are churches/religious



buildings. All four architectural and historical resources are located near the edges of the study area. One of the residences, the Luther Clegg House (CH0114) is listed on the NRHP as part of the Pittsboro Multiple Resource Area. This resource, which is located at the southwestern edge of the study area along Moncure Pittsboro Road, is significant under NRHP Criteria A, B, and C and was listed on the NRHP in 1982. The other three architectural and historical resources are not eligible for NRHP listing. Because of the location of these architectural and historical resources near the edges of the study area and only the Luther Clegg House listed on the NRHP, Jacobs' siting team determined these resources to be a minor constraint on the Project because they could be avoided during study segment development.

### **2.2.3 Land Use**

Land use impacts include direct and indirect impacts to residential, commercial, recreational, industrial development, and institutional uses (for example, schools, places of worship, cemeteries, and hospitals) and can limit the potential for a transmission line corridor to be constructed in highly developed areas. As part of this siting study, Jacobs analyzed existing land use features as well as future land use plans within the study area and whether these land uses provide opportunities or constraints to route an electric transmission line within the study area.

#### **2.2.3.1 Existing Land Use**

Residential land use within the study area consists of single family homes on large agricultural parcels primarily located in the northern part of the study area within 0.25 mile of Hanks Chapel Road and in the southern part of the study area along local roads off Moncure Pittsboro Road (Figure 4). Nonresidential land use within the study area includes a small area of industrial land with existing transmission/distribution substations in the southwest corner of the study area. No commercial or recreational land use is in the study area. Institutional uses consist of two churches within the study area. Hank Chapel is in the northeast corner of the study area along Hanks Loop Road and Mount Zion Methodist Church is in the southwest corner of the study area, west of Mount Zion Road.

Most of the study area consists of contiguous forested lands that are currently not developed. Much of this forested area is planned for future development as part of the Chatham Park mixed-use project. Existing residential development, primarily in the northern part of the study area, was considered a moderate constraint for study segment development because the availability of large undeveloped parcels created opportunities for study segments to be placed such that they could largely avoid this existing development.

The primary existing roadway in the study area is Hanks Chapel Road located along the northern edge of the study area. In addition to Hanks Chapel Road, there are also local roadways at the northern and southern edges of the study area. None of these roads are located between the Harris Plant-Siler City 230 kV Transmission Line and the substation site, therefore, these roads were not considered a constraint or an opportunity to developing study segments because of their location in relation to the proposed Project endpoints. There are no railways, bus routes, public airports, private airstrips, or additional forms of transportation infrastructure observed within the study area.

DEP's Bynum Tap runs north to south through the western part of the study area and the Harris Plant-Siler City 230 kV Transmission Line is located along the southern boundary of the study area (Figure 4). The Big Woods 23-kV distribution line resides in a 50-foot wide easement and runs along the western boundary of the study area. There are no observed gas lines within the study area. Existing transmission line corridors, especially those owned and operated by DEP, were considered an opportunity because they present opportunities for co-locating the proposed 230-kV transmission line immediately adjacent to an existing

transmission line corridor, potentially minimizing impacts to natural resources and existing and future land use.

#### **2.2.3.2 Future Land Use**

Approximately 75 percent of the study area includes land zoned Planned Development for the Chatham Park development. Based on preliminary plans provided by Chatham Park Investors, LLC, future land use is planned for office space in the northwest and western part of the study area, commercial/village center in the middle of the study area, and medium and low density residential in the northeast and southeast portion of the study area. Open space is planned along Roberson Creek and a pedestrian pathway is planned along the tributary to Roberson Creek that runs along the western edge of the substation parcel. New local and collector roadways are also planned within the study area. Future land use was considered a moderate constraint to routing a transmission line and the siting team looked to develop alternative routes that would limit impacts to the planned development.

#### **2.2.4 Raster-based Suitability Modeling**

Constraint and opportunity data were scored by the siting team based on relative importance; then in conjunction with the National Land Cover Data set (USGS 2016), they were used to create a raster-based suitability surface in the form of a grid over the study area. The purpose of this suitability surface was to aid in developing a study segment network within the study area. The suitability model analysis resulted in three levels of detail, or tiers of suitability surfaces:

- **Tier 1:** Individual layers (for example, woodlots, wetlands, soils, and threatened and endangered species were collected and mapped individually). Each data layer was converted to raster format where each grid cell measured 100 feet by 100 feet and was assigned a "suitability" score between 1 and 10, where 1 is "best" and 10 is "worst." The scores were determined by the Project team using professional experience with similar projects and regulatory guidelines.
- **Tier 2:** Related Tier 1 surfaces were combined into one of three categories (technical, ecological, and land use/cultural) and given a category score. For example, woodlands, wetlands, endangered species, and protected areas were combined to form an "ecological" suitability surface. In addition to serving as the foundational pieces of the suitability model, these grouped layers are useful in communicating the siting process to interested parties.
- **Tier 3:** Tier 3 surfaces were generated by combining and applying statistical weights to the three Tier 2 surfaces. The result was an overall suitability surface model, which is color-coded using a progressive chromatic scale from red (least suitable) to green (most suitable).

The combined suitability model (Figure 5) includes a color-coded display that allows for an easy visual assessment of routing constraints and opportunities. Additionally, geospatial algorithms can be applied to determine the suitability of potential study segments and corridors.

This model is scientifically based and allows for an accurate and reproducible assessment of the data because it employs mathematical principles to arrive at a conclusion, with minimal impact from human error and bias. The purpose of creating the suitability model for this Project was to help identify areas that would be the most suitable for developing a study segment network because of the fact that there is not a lot of existing development that could be considered a constraint within the study area. By assigning a suitability score to the limited constraints within the study area, the suitability model shows areas where routing constraints would limit the development of study segments.

## **2.3 Study Segment Network and Identification of Alternative Routes**

### **2.3.1 Developing a Study Segment Network**

Using the combined suitability model, aerial photography, topographic maps, and the collected attribute and constraint data, Jacobs evaluated the characteristics of the existing land use, considered the future development of this area, and developed eight initial study segments. The intent when developing the initial study segments was to avoid less suitable areas (that is, residential areas, streams, floodplains, areas of future development) and follow more suitable areas (that is, existing developed corridors such as existing transmission/distribution lines).

Avoiding impacts to existing residential areas and environmental resources was the primary consideration for the development of the initial study segments. Impacts to these areas would primarily be in the form of tree clearing and additional footprint changes. Less importance was given to future development areas because this Project is to be constructed prior to the Chatham Park development.

In addition to the existing land use, the future land use maps from the Chatham Park development were evaluated in the development of the initial study segment network to reduce the potential for future incompatible uses within the vicinity of the transmission line where practical. The initial study segments developed for the Project are shown on Figure 6.

The existing residences near the substation parcel were considered in the development of these study segments, therefore four segments (segments 2, 3, 5, 6) were developed to provide options for limiting impacts to existing property owners. The Bynum Tap crosses the substation site and travels to the Harris Plant-Siler City 230 kV Transmission Line, providing an opportunity to develop study segments 1 and 7, which would combine utility assets within the area. In addition, if a route is adjacent to the existing Bynum Tap, then the right-of-way for the new transmission line could be safely reduced to approximately 83 feet of added easement, providing a benefit to segments paralleling the Bynum Tap. In contrast, a greenfield alignment would require a right-of-way of 125 feet.

Two study segments (study segments 1 and 7) were proposed to parallel the Bynum Tap, one on the eastern side, another on the western side of the tap. Two additional study segments (segments 4 and 8) were proposed through woodlots and farm fields to consider options further from the Bynum Tap and to tap into the Harris Plant-Siler City 230 kV Transmission Line at locations further away from the existing Bynum Tap interconnection. Study segment 8 parallels a distribution line west of Bynum Tap, and the other (study segment 4) proposes a straight line south of the study segments that connect into the new substation to the Harris Plant-Siler City 230 kV Transmission Line.

### **2.3.2 Study Segment Evaluation and Refining the Study Segment Network**

The siting team met on November 11, 2020, and November 19, 2020, to evaluate the feasibility of the initial study segments and refine the study segment network according to engineering considerations and conditions observed from a site visit conducted on November 10, 2020.

The study segments that were proposed west of DEP's Bynum Tap (segments 6, 7, and 8) require crossing the Bynum Tap to enter the substation parcel. These study segments would cross under the Bynum Tap and the Bynum Tap structures at the crossing point would be raised, requiring an outage on the Bynum Tap to safely perform construction. DEP determined that an outage to the Bynum Tap is not feasible because of the load demands of the Bynum 230-kV station and the inability to alternatively and temporarily serve the Bynum 230-kV substation from another tap source. Therefore, because of this

outage constraint, study segments 6, 7, and 8 that crossed the Bynum Tap were eliminated from the study segment network.

In the preliminary substation layout for the Pittsboro Hanks Chapel Substation site, the transmission lines enter the substation on the southern end of the parcel because of the positioning of the equipment within the substation. Therefore, study segments 2, 3, and 5 were shifted to enter at the most southern end of the substation parcel. In addition, these segments were slightly adjusted to avoid the need for tree clearing, including danger trees outside of the line right-of-way, on nearby residential lots, and have it largely contained on the Chatham Park development property, where tree clearing is assumed to be necessary to accommodate the future development plans.

Lastly, the connection point to the Harris Plant-Siler City 230 kV Transmission Line was evaluated during the site visit. Transmission equipment congestion occurs where the Bynum Tap connects to the Harris Plant-Siler City 230 kV Transmission Line. This congestion consists of multiple structures in proximity that provide a limited footprint for the new structures required to tap the Harris Plant-Siler City 230 kV Transmission Line. To avoid this congestion, the connection point of study segment 1 was shifted east. The refined study segment network, showing these changes is shown on Figure 7.

### **2.3.3 Developing Alternative Routes**

Using the refined study segment network, the siting team compiled the refined study segments into three alternative routes for analysis and comparison. The alternative routes are shown on Figure 8.

Alternative 1 (study segments 1 and 2) is approximately 1.3 miles long. The southern endpoint is located at the Harris Plant-Siler City 230 kV Transmission Line, approximately 200 feet southeast of the Bynum Tap. From the southern endpoint, the route runs north for approximately 1.1 miles, paralleling the Bynum Tap, until just before the Big Woods 23-kV distribution line crosses under the Bynum Tap. The route then runs northeast for approximately 0.25 mile and enters the substation parcel in the southeast corner of the site. This route parallels DEP's existing transmission line and only crosses land owned by Chatham Park Investors, LLC.

Alternative 2 (study segments 1, 3, and 5) is approximately 1.3 miles long. The southern endpoint is located at the Harris Plant-Siler City 230 kV Transmission Line, approximately 200 feet southeast of the Bynum Tap. From the southern endpoint, the route runs north for approximately 0.9 mile, paralleling the Bynum Tap. The route then pivots northeast for approximately 0.4 mile and enters the substation parcel from the south. This route parallels DEP's existing transmission line for a shorter length than Alternative 1 and would require an easement from the parcel directly south of the substation parcel, which is not included in the Chatham Park planned development.

Alternative 3 (study segments 4 and 5) is approximately 1.7 miles long and is the longest alternative route. The southern endpoint is located at the Harris Plant-Siler City 230 kV Transmission Line, approximately 0.7 mile southeast of the Bynum Tap and east of Bill Thomas Road. From the southern endpoint, the route runs north through woodlot for approximately 1.5 miles, then turns northeast for approximately 0.2 mile and enters the substation parcel from the south. This alternative route does not parallel DEP's existing transmission line. Like Alternative 2, Alternative 3 would require an easement from a parcel not included in the Chatham Park planned development directly south of the substation parcel.

## **2.4 Public Information Meetings and Public Feedback**

Because of the COVID-19 pandemic, the public information meeting was modified to an online meeting format to limit large gatherings and slow the spread of COVID-19. Two virtual open houses were hosted for the Project on the project website (<https://www.pittsboro-hanks-chapel-voh.com/>). Project information, an interactive map, and information for a live-chat session were available on the project website. The website was designed to mimic the experience of an in-person open house, and to gather public feedback via email, online comment form, and directly through the interactive map. Property owners within the study area were notified of the open house process through information provided by mail. The intent of the public information meeting process was to provide potentially affected property owners an opportunity to better understand the Project and gather public feedback.

The first open house session introduced the Project and presented the study area described in Section 2.1.1 for public comment. This open house ran from September 10, 2020 through October 15, 2020, during which the website was active and open to comments. DEP also hosted two live-chat sessions on September 15 and 17, 2020. The second open house session presented the refined study segment network for comment and was conducted between November 23, 2020, and January 10, 2021, with two live-chat sessions hosted on December 8 and 10, 2020. During the live-chat sessions, DEP encouraged attendees to provide comments and feedback via email, online comment form, and directly through the interactive map.

Feedback received through the public engagement process included general concerns about development in the area, and that proximity to residences and view from residences were the most important criteria to consider. As the predominant owner of property in the study area, Chatham Park Investors, LLC, supported the Project being entirely located on land zoned for the planned development, which would limit impacts to surrounding landowners and their existing uses. The siting team reviewed each of the comments received and fully considered the concerns and/or recommendations expressed. Based on the feedback received, the siting team shifted study segment 2 approximately 100 feet south to increase distance from the nearest residences and leave a tree buffer between the residence and the transmission line, considering the right-of-way easement and danger tree rights.

## **2.5 Alternative Route Evaluation**

### **2.5.1 Quantitative Assessment**

Based on the publicly available data assembled to identify opportunities and constraints within the study area, the siting team developed a set of evaluation criteria to quantitatively compare the alternative routes to one another (Appendix B). The data collected and used to evaluate and compare the routes were chosen based on their relevance to siting a transmission line within the Project's study area and similar to the quantitative suitability analysis, grouped into four categories: ecological, social, land use, and technical.

For the ecological category, the siting team evaluated area of woodlots within the right-of-way, NWI wetlands within the right-of-way, NHD stream crossings, and length of floodplain crossed by the alternative routes. Impacts to woodlots and NWI wetlands were measured within the proposed right-of-way to account for construction and clearing of trees, while stream impacts were measured by the number of crossings to account for potential permitting requirements.

The siting team focused on existing land use and residents that may be impacted by the Project for the social category. The siting team evaluated the number of residences within 1,000 feet of centerline to

reflect potential direct impacts from the alternative route as well as potential aesthetic impact, number of property owners crossed, archaeological sites and historic structures within 1,000 feet of centerline, and institutional land uses (churches, hospitals, schools) within 1,000 feet of centerline.

Under the land use category, the siting team chose to evaluate future rather than existing land use because most of the study area is part of the planned development for Chatham Park and currently undeveloped. Also, most of the existing land use in the study area is woodlot and impacts to woodlots were already being captured under the ecological category. Using preliminary drawings of future land use provided by Chatham Park Investors, LLC (Figure 9), the siting team evaluated area of the planned village center, planned office area, and planned residential area, which would be crossed by the right-of-way.

Lastly, the siting team evaluated technical opportunities and constraints by assessing slopes greater than 20 percent crossed by the right-of-way, number of turn angles greater than or equal to 30 degrees, length adjacent to or within existing DEP right-of-way, length from the Bynum Tap connection point, and the overall length of the alternative routes.

For comparison of the alternative routes, raw data for each data category and each route were collected, quantified, and then normalized to a dimensionless parameter.<sup>3</sup> Lower scores indicate "better" conditions, higher scores indicate "worse" conditions. Normalizing the data into a score allows all the constraints to be compared according to the same scale and avoids one constraint being unintentionally influential. It also allows each category to be weighted based on the constraints and opportunities identified within the study area and importance to the Project.

The next step in this process was to weigh the criteria within each category (ecological, social, land use, and technical) and across the four categories. Weighting recognizes that under certain circumstances, one evaluation criterion is more important or relevant than another in determining an outcome. The criteria weighting values were determined by consensus of the siting team and based on the specific project area setting, planned future development, and professional judgment of the siting team members' experience routing projects in a similar setting.

Based on the understanding that the Project will be operational before the Chatham Park development is constructed within the study area, the area of woodlots within the right-of-way was weighted the highest for the ecological category because the Project would need to clear these woodlots. Area of NWI wetlands within the right-of-way, NHD stream crossings, and length of floodplain crossed were weighted less because these features can usually be spanned by the transmission line, reducing the environmental impact the Project may have on them.

For the social category, residences within 250 feet of centerline and within 1,000 feet of centerline were weighted the highest to capture impacts on existing residences within the project area. Few cultural resources and institutional land uses are present within the study area therefore, these criteria were weighted less.

Regarding future land use, planned village center and planned residential area crossed by the right-of-way were both weighted higher than planned office area crossed for the land use category because these land uses are typically more compatible. Aesthetically, planned office areas consist of large buildings and parking lots that could potentially shield large transmission line structures from view to other uses. It is more common to observe transmission line structures within an area of office uses as the spaces are

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<sup>3</sup> The formula used to normalize the raw data: Normalized Score =  $((X_{ij} - \text{Min Value}) / \text{Range}) * 100$ , where: i = xth value in constraint and j = constraint



typically not occupied continuously and serve as a destination point rather than an area of constant habitation and activity. In contrast, transmission lines near village centers and residential properties provide more of an aesthetic contrast because of the differences in height of transmission line and residential homes and village center facilities, resulting in an increased possibility of transmission lines being visible throughout village center and residential areas.

For the technical category, route length adjacent to or within existing DEP right-of-way was weighted the highest because DEP is able to reduce the Project right-of-way width in these areas, resulting in fewer impacts to the area. Also, grouping of transmission lines along a single corridor can reduce the visual impact the transmission line may have on the surrounding area and reduce impacts on current and future land use by allowing for other land use not as conducive to transmission line rights-of-way to occur.

Across the four categories, the ecological category was weighted the highest (35 percent), followed by social (30 percent), technical (20 percent), and lastly land use (15 percent). The siting team gave the ecological category the highest weight because the Project will be built prior to the planned Chatham Park development and therefore, it will make the first ecological impact on the study area. The social category was given the second highest weight to appropriately consider potential impacts to existing residences in the project area.

The technical category was given the second lowest weight because the benefit of paralleling existing transmission lines is factored into right-of-way widths and calculated impacts on ecological, social, and land use features. The land use category was given the lowest weight because the criteria are related to future planned development plans that could change after the Project is constructed.

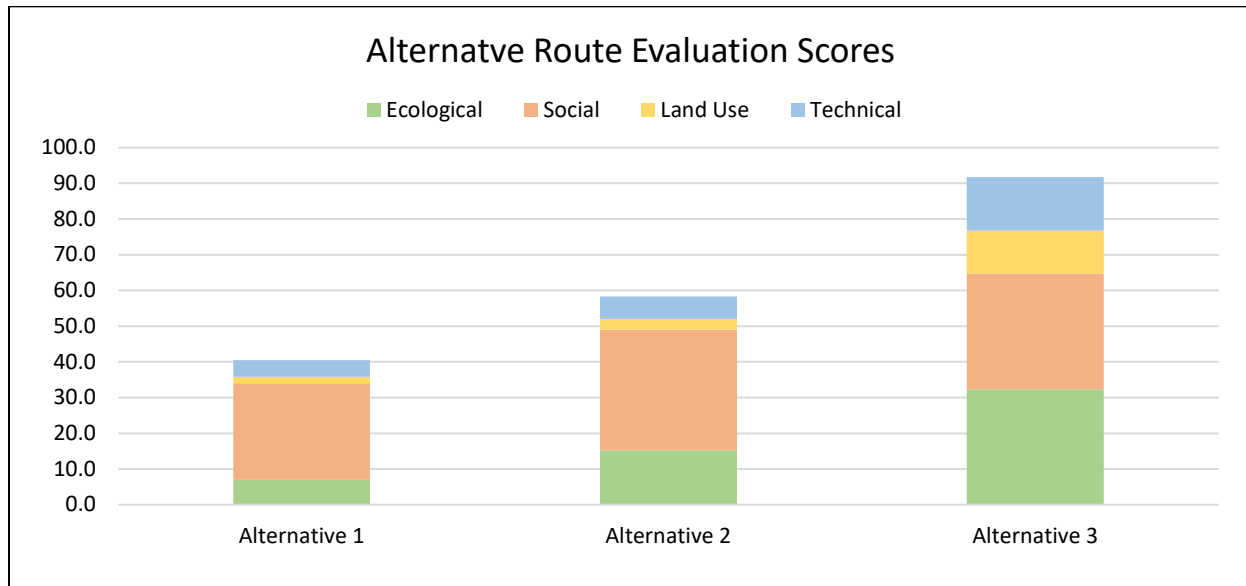
### 2.5.2 Weighted Scoring Results

The three alternative routes were evaluated and compared to one another through the quantitative scoring process. Based on the data collected and route scores, the routes were first ranked by individual category (that is, ecological, social, land use, and technical) then ranked by overall score.

Table 2-1 shows the three alternative routes sorted by overall score. The scores by category are also provided. The alternative routes are also presented as a graphic plot in Graph 2-1, which illustrates that the routes ranged in overall score from 40.5 to 91.7. Additionally, Graph 2-1 also shows how each of the routes scored in each of the four categories.

**Table 2-1. Alternative Route Evaluation Scores**

Route	Ecological Score	Social Score	Land Use Score	Technical Score	Final Score	Overall Rank
Alternative 1	7.0	27.0	1.8	4.7	40.5	1
Alternative 2	15.2	33.8	3.0	6.3	58.3	2
Alternative 3	32.3	32.4	12.0	15.0	91.7	3



**Graph 2-1. Alternative Route Evaluation Scores**

Alternative 1 was identified as the top-ranked route resulting from the weighted scoring process. Alternative 1 parallels DEP's existing Bynum Tap for most of its length and therefore will require the narrowest right-of-way because DEP only needs approximately 83 feet of new right-of-way when adjacent to the Bynum Tap. As a result of the narrower right-of-way, Alternative 1 affects the least area of woodlot. There are no residences within 250 feet of centerline, and Alternative 1 has the fewest residences within 1,000 feet of centerline (11) compared to the other two routes.

Alternative 2 scored second in the ranking. Alternative 2 has slightly more woodlot within the right-of-way than Alternative 1 because of paralleling DEP's Bynum Tap a shorter distance. There are no residences within 250 feet of centerline and there are 13 residences within 1,000 feet of Alternative 2's centerline. As previously mentioned, Alternative 2 would require an easement from a property not within the Chatham Park planned development area.

Alternative 3 was identified as the third ranking route based on results from the scoring process. Alternative 3 had the highest ecological, land use, and technical scores of the three routes. This is because Alternative 3 does not parallel the Bynum Tap and is approximately 25 percent longer than Alternative 1 and 2; therefore impacts to woodlots and other ecological features are greater because of the wider and longer right-of-way. Alternative 3 does not have any residences within 250 feet of centerline and has 14 residences within 1,000 feet of centerline. Like Alternative 2, Alternative 3 would require an easement from a property not within the Chatham Park planned development area.

### 2.5.3 Qualitative Considerations

In addition to the quantitative assessment, the siting team considered qualitative factors throughout the siting process as well as in the evaluation of the alternative routes. The study area for this Project is unique because there is not a lot of existing development that could be considered a constraint. Another unique facet was the fact that the majority of the study area was planned for development, but much of that development is in the conceptual phase. Additionally, the siting team had to consider the fact that the transmission line would be built before the planned development would break ground, so impacts to the



ecological environment would derive first from the transmission line construction and later from the planned development.

The siting team achieved much of the balance of evaluating the aforementioned factors through its quantitative analysis. The qualitative aspects of this Project were largely considered when assigning weighted values to resources in the weighted scoring table. It was the siting team's opinion that potential impacts to existing resources should be considered with more weight than potential impacts to future land uses. Also, much of the existing residential development would remain even after the Chatham Park development was completed; therefore, the siting team placed a high value on mitigating aesthetic and visual impacts to existing residences in the area.

The siting team also considered the fact that the Chatham Park development is in a conceptual development phase within the study area, and the current layout could change based on market demands and other external factors. The siting team acknowledged that though the Chatham Park development was conceptual, it was also a major feature of the study area and had to be considered accordingly; therefore, the siting team made the decision to evaluate the conceptual plans as they were currently proposed, and account for the future land use and the affects the transmission line would have on the different types of the proposed land use in the weighted scoring analysis.

When evaluating the alternative routes, the siting team considered engineering constraints, landowner impacts, visual impacts, and feedback from the public information meetings. One concern with paralleling the Bynum Tap was that the Big Woods 23-kV distribution line links up with the Bynum Tap near the substation site, which could conflict with the alignment of Alternative 1 and Alternative 2. Based on engineering's review of the alignments, Alternative 2 turns east well before the Big Woods 23-kV distribution line links up with the Bynum Tap and Alternative 1, although it parallels the Bynum Tap a little longer than Alternative 2, does not conflict with the Big Woods 23-kV feeder. Another engineering constraint was the entry into the substation site. Due to the size of the parcel and planned design of the substation, the transmission line needed to enter the substation property from the south. All three alternatives appear to enter the substation property to adequately allow the transmission line to be terminated at the substation dead end.

Proximity to the few nearby residences (approximately three residences) at the northern end of the Project was considered a very important qualitative factor when reviewing the alternative routes. At the northern end of the Project where the alternative routes enter the substation site, Alternative 1 is slightly closer to the residence to the north, though right-of-way easement and danger tree rights would not cross onto the residential property, leaving a tree buffer between the residence and the transmission line. Alternative 2 and Alternative 3 are further from all the residences in the area but will need danger tree rights and potentially some right-of-way easement on the residential parcel to the east (not within the Chatham Park planned development area). Although danger tree rights and potentially some right-of-way easement is needed on the residential parcel to the east, it appears a tree buffer will remain between the transmission line and residences, reducing the visual impact on these residences.

Lastly, the siting team considered feedback received through the public engagement process. Based on the three alternative routes, the Chatham Park developer will provide approximately 95 percent of the right-of-way for all alternatives. Per discussions with the developer, they have been a very cooperative partner and is expected to work with DEP for whichever route is selected. As stated in Section 2.4, Chatham Park Investors, LLC supports the Project being entirely located on land zoned for the planned development, which would limit impacts to surrounding landowners and their existing uses.

Throughout the process surrounding the selection of the proposed route, these qualitative factors were considered, and colored discussions surrounding the final decision on the selection of the proposed route for the Project.

## **2.6 Selection of the Proposed Route**

The siting team met on February 25, 2021, to discuss the alternative routes and select the proposed route for inclusion in the CECPCN application. The team considered both the quantitative scores and ranks as well as qualitative factors. The siting team agreed with the quantitative scoring that ranked Alternative 3 as the least preferred option. Although the scores for Alternative 1 and Alternative 2 are similar, the team agreed that distance from residences and avoiding the need for an easement or clearing danger trees from private landowners other than Chatham Park Investors, LLC were the two strongest qualitative considerations. Based on the aforementioned, and the whole of the siting study, the siting team selected Alternative 1 as the proposed route (Figure 8).

The decision to select Alternative 1 was predicated on the following:

- 1) Alternative 1 is adjacent to DEP's Bynum Tap for the majority of the route and for a greater distance than the other alternatives considered; therefore, less right-of-way is needed, resulting in fewer ecological and future land use impacts.
- 2) Alternative 1 is also entirely within the planned development for Chatham Park and DEP's property; therefore, it would not require easements from additional private landowners.
- 3) Alternative 1 presents the least impact to the existing residences and ecological environment while preserving the greatest area for planned future development.

### 3. Environmental Report

#### 3.1 Impacts

The following is a description of potential impacts to resources in the study area by construction and operation of the proposed transmission line. These resources include natural resources, cultural resources, land use, and aesthetics. With the exception of some residences, the proposed route largely avoids existing development and is mostly adjacent to an existing transmission corridor right-of-way. It is primarily within a forested area. The proposed route uses a portion of DEP's existing Bynum Tap transmission right-of-way, which minimizes land disturbance and the associated environmental impact because the new transmission right-of-way can be narrower when located adjacent to an existing right-of-way corridor.

##### 3.1.1 Natural Resources

The proposed route is within the Roberson Creek Watershed (Hydrologic Unit Code 030300020703) and crosses Roberson Creek and two unnamed tributaries that eventually drain to the Haw River (B. Everett Jordan Lake). U.S. Environmental Protection Agency and North Carolina Department of Environmental Quality (NCDEQ) designate waterbody quality conditions based on certain criteria and impairments. The stretch of Roberson Creek crossed by the proposed route is not designated as an impaired waterbody; however, upstream of the proposed route, Roberson Creek is designated as impaired for aquatic life. These waterbody quality classifications are also used to define uses. The NCDEQ classifies Roberson Creek as a non-drinkable water source and nutrient sensitive waters (NCDEQ, 2021). These designations are common for waters within moderately developed watersheds. DEP would avoid placing permanent structures within waterbodies, where possible; therefore, construction and operation of the Project will not significantly impact waterbody resources along the proposed route.

Based on publicly available data, approximately 0.16 acre of wetlands potentially exist within the proposed route right-of-way. A wetland and waterbodies delineation will need to be completed to determine exact wetland and waterbody impacts of the Project. Construction activities associated with the construction of the transmission line that will impact a wetland or waterbody may trigger a Section 404/401 permit from the USACE. DEP would avoid placing permanent structures within wetlands where possible; therefore, construction and operation of the Project will not significantly impact wetland resources along the proposed route.

The proposed route crosses a 100-year floodplain that occurs adjacent to Roberson Creek and another 100-year floodplain that occurs along an unnamed tributary to Roberson Creek, south and directly west of the planned substation site. The 1-percent-annual-chance flood, or 100-year flood is the flood that has a 1 percent chance of being equaled or exceeded in any given year. DEP would span these floodplains; therefore, construction and operation of the Project is not likely to impact floodplain along the proposed route.

The proposed route runs through a large forested area south of Pittsboro and west of B. Everett Jordan Lake. The proposed route minimizes tree clearing and potential habitat loss by paralleling DEP's Bynum Tap. Construction of the Project will require approximately 16.2 acres of tree and shrub clearing. This means 16.2 acres of forested land will be converted to maintained right-of-way. A wetland delineation will be completed to determine potential wetland impacts of the Project.

Based on information from IPaC and NHP, the federally listed red-cockaded woodpecker, cape fear shiner, and harperella may be present in the study area. Ten migratory birds also have the potential to be in the

study area along with the bald eagle, which is known to occur east of the study area near Jordan Lake and the Haw River. The red-cockaded woodpecker is found in relatively open pine tree stands that are 60 to 120 years old. They are found in excavated cavities in older pine trees and generally avoid denser forest stands and hardwood species. Suitable habitat for the red-cockaded woodpecker is potentially present within the right-of-way of the proposed route and may be impacted by the Project because of tree clearing. The primary concern for effect to the red-cockaded woodpecker, migratory birds, and the bald eagle is the cutting, clearing, and removal of existing vegetation during the main nesting season. The Project will require tree, herbaceous, and shrub/sapling removal. Tree clearing will be completed during the winter, outside of any listed species nesting seasons to minimize or avoid potential impacts to these species. Exact tree clearing timeframes will be established upon further consultation with the USFWS.

The cape fear shiner occurs in low flowing streams, pools, or riffles with gravel, cobble, and boulder substrates. It is endemic to the upper Cape Fear River Basin including the Deep River, Haw River, Rocky River, and Cape Fear River in Chatham. The harperella occurs on rocky or gravel shoals and sandbars along swift-flowing streams. It is known to occur in the Tar River in Granville County and was reintroduced into the Deep River. None of these rivers are crossed by the proposed route and DEP would look to avoid impact to streams by spanning over them, resulting in no permanent or temporary impacts; therefore, the Project will have no impact on these species.

The topography along the proposed route is relatively flat, fluctuating between 400 and 300 feet above mean sea level with the lowest elevation where the route crosses Robison Creek. Construction of a transmission line does not require extensive grading or earthwork. Construction of the Project will not result in changes to the existing topography.

Soil survey data from the U.S. Department of Agriculture Natural Resource Conservation Service of Chatham County Web Soil Survey indicate nine soil map units are crossed by the proposed route (NRCS 2020). The Web Soil Survey provides soil data that can be helpful in project planning and development. One soil map unit, Cid-Lignum complex, 2 to 6 percent slopes (CmB) is partially hydric (has 1 to 25 percent hydric soil inclusions) and encompasses a small portion of the route south of the planned substation site. The other soil map units are predominantly nonhydric (has a small percentage of hydric soil inclusions, less than 1 percent) and encompasses the majority of the proposed route. Impacts to soil from construction will be minimal because there will be no extensive grading or earthwork. Soil disturbance will be localized where excavation is required to install the transmission poles. All impacts will be temporary because the site will be stabilized after construction.

### **3.1.2 Cultural Resources**

One archaeological site and one historic structure are within 1,000 feet of the proposed route. Cultural resources will likely not be impacted by the construction and operation of the Project because neither of these cultural resources are within the proposed route right-of-way or NRHP-eligible. Additionally, the proposed route follows an existing transmission corridor, which will minimize the Project's visual impacts.

Consultation with the NC SHPO will be initiated before construction. Cultural surveys may be required along the proposed route. If cultural surveys are completed and cultural resources are identified along the route, these resources can generally be avoided by spanning and strategic pole placement.

### **3.1.3 Land Use**

Land use impacts include direct and indirect impacts to residential, environmental areas, and cultural resources. Construction of a transmission line can result in changes in land use and aesthetic impacts to

residents and recreational users. Existing land use includes contiguous forested areas and existing transmission line rights-of-way. There are no residential, commercial, recreational, industrial development, and institutional uses directly crossed by the proposed route. Impacts to existing land use include the conversion of forested areas into herbaceous right-of-way. The Project will result in permanent change of land use as trees will be cleared for the right-of-way and converted to maintained right-of-way.

The Chatham Park Planned Development District Master Plan identifies future land use for the area overlapping and east of the proposed route. The siting team acknowledged that the planned development is in its conceptual design phase and could change based on market conditions. Based on the current preliminary plans provided by Chatham Park Investors, LLC, future land use crossed by the proposed route includes office space and a village center. Additionally, open space is planned along Roberson Creek and a pedestrian pathway is planned along the tributary to Roberson Creek that runs along the western edge of the substation parcel.

The proposed route follows an existing transmission corridor so it will have a minimal disruption to future planned land uses because it combines proposed transmission assets with existing transmission assets in a single corridor. The construction of the proposed route will occur prior to the proposed Master Plan developments, which will allow the developer to accommodate the new transmission line in their design.

#### **3.1.4 Aesthetics**

Aesthetic impacts involve changes to viewsheds/vistas, terrain, land cover, and land use. New transmission line construction affects the existing aesthetics where the line passes from tree clearing and the introduction of new transmission structures to areas that do have existing tree cover. The proposed route will follow DEP's Bynum Tap transmission corridor, which will minimize the amount of tree clearing. To further mitigate aesthetic impacts, new structures will be placed generally adjacent to existing structures and along a single corridor, thereby minimizing the visual impacts the Project will have in the area.

Visual impacts to the residences near the planned substation site will be minimized by preserving, to the extent practicable, existing vegetation between the residences and the new transmission corridor. This tree line will provide a vegetative buffer for residences from the transmission line and the substation, which will minimize visual impacts to existing residences.

An existing maintained right-of-way viewshed occurs at Moncure Pittsboro Road where the current Bynum Tap transmission line crosses. The proposed route will parallel the existing Bynum Tap and may also be seen from Moncure Pittsboro Road. Because of the presence of an existing maintained right-of-way and transmission structures at this road crossing, additional aesthetic impacts from the new line will be minimized.

The proposed Project route will not result in permanent topographic changes to the landscape that would potentially further alter the existing viewshed. Any temporary changes to topography resulting from construction activities will be restored to pre-construction contours.

### **3.2 Proposed Mitigation Measures**

The proposed route minimizes impacts to natural resources, land use, and cultural resources. Best management practices (BMPs) will be implemented to address unavoidable impacts from construction and operation of the Project. Measures to avoid or minimize impacts are described in the following subsections.

### **3.2.1 Soil and Erosion Control**

Construction will result in land-disturbing activities that cannot be avoided. Soil may be temporarily disturbed from construction equipment traversing the right-of-way and erecting the transmission structures. Excavations are required for each transmission structure and will require heavy construction equipment. Common soil erosion and sediment control measures will be implemented to prevent soil from leaving the project site during construction and to prevent it from flowing into wetlands or waterbodies. Soil stockpiled from excavations will be placed in upland areas and erosion control devices will be installed appropriately. Prior to construction, the Project will submit a National Pollutant Discharge Elimination System (NPDES) Construction Stormwater Permit and an Erosion Control Plan. Construction will adhere to all conditions listed in the approved stormwater permit and Erosion Control Plan.

### **3.2.2 Wetland and Waterbody Resources**

Wetland and waterbody crossings are commonplace for electric transmission lines. During construction and right-of-way clearing, impacts to wetlands and waterbodies will be avoided to the extent practical. A wetland and waterbody delineation will be conducted to identify wetland locations prior to construction. Transmission structures will be placed outside of wetlands, waterbodies, and floodplains to avoid temporary and permanent impacts to these features.

To the extent practicable, construction equipment will not cross identified waterbodies during construction to avoid impacts to these features. Where possible, construction access to the right-of-way will occur from either side of waterbody to avoid equipment crossings. In places where it is not feasible to avoid crossing a waterbody, a temporary bridge or culvert will be used. In instances where identified wetlands must be crossed during construction, temporary timber mats will be installed to minimize impacts to wetlands and prevent rutting of wetland soil from heavy equipment. BMPs will also be used to prevent runoff of sediment into wetland areas. The right-of-way will be restored to pre-existing contours and there will be no changes to overland stormwater flow from construction. During tree clearing, no debris will be placed in wetlands or waterbodies. Construction will adhere to all permit conditions regarding mitigation measures to wetland and waterbodies.

### **3.2.3 Threatened and Endangered Species**

The NHP did not identify federal- or state-listed species occurring within the proposed Project's right-of-way, however, the proposed route contains potential habitat for federal- or state-listed species. BMPs to avoid impacts to federal- or state-listed species and migratory birds include strategic transmission structure placement, tree clearing windows, avoidance, and other impact minimization measures as recommended during consultation with the USFWS and NHP.

A habitat survey will be conducted before right-of-way clearing to assess potential habitat for threatened and endangered species and determine potential presence or absence of listed species. If habitat is present or listed-species individuals are identified, DEP will further coordinate with applicable state and federal agencies to determine appropriate tree clearing and ground disturbance timeframes and best management practices to avoid and minimize potential impacts to listed species.

## 4. Potential Permits Approvals and Clearances

A summary of the potentially applicable permits and approvals from federal, state, and local agencies required for construction and operation of the Project are provided in Table 4-1. The permitting review is a screening-level assessment based on current understanding of the Project, site-specific characteristics, and DEP's experience with permitting transmission line projects in North Carolina. No permits listed in Table 4-1 have been obtained or applied for.

**Table 4-1. Potential Permits, Approvals, and Clearances**

Agency	Potentially Required Permit, Approval, or Clearance	Action Requiring Permit, Approval, or Clearance
<b>Federal</b>		
USACE	Clean Water Act (CWA) Section 404 Nationwide Permit 57 and Jurisdictional Determination	Impacts to waters of the United States
USFWS	Federally Listed Threatened and Endangered Species Consultation	Work may affect federally listed species; compliance with Section 7 of the Endangered Species Act of 1973
<b>State</b>		
NC Utilities Commission	Certificate of Environmental Compatibility and Public Convenience and Necessity	Constructing a transmission line greater than 161 kV
NCDEQ – Division of Energy, Mineral, and Land Resources	Erosion and Sediment Control Certificate of Approval	Land-disturbing activity covering 1 acre or more; compliance with the Sedimentation Pollution Control Act of 1973
	NPDES General Stormwater Construction Permit	Construction activities that disturb more than 1 acre of land
NCDEQ – Division of Water Resources	CWA Section 401 Water Quality Certification	Any federally permitted or licensed activity that may result in a discharge to waters of the United States.
	Isolated and Other Non-404 Jurisdictional Wetlands and Waters Permit	Impacts to less than 1 acre of non-404 jurisdictional wetlands/open waters and/or impacts to less than 300 feet of non-404 jurisdictional streams
NC Wildlife Resources Commission	State-Listed Threatened and Endangered Species Consultation	Construction may impact state-listed animal species
NC Department of Natural Resources – NC Natural Heritage Program	State-Listed Threatened and Endangered Plant Species Consultation	Construction may impact state-listed plant species
NC SHPO	Cultural Resources Consultation	Compliance with Section 106 of the National Historic Preservation Act

Application for a Certificate of Environmental Compatibility and  
Public Convenience and Necessity

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**Table 4-1. Potential Permits, Approvals, and Clearances**

Agency	Potentially Required Permit, Approval, or Clearance	Action Requiring Permit, Approval, or Clearance
<i>Local</i>		
Chatham County Watershed Protection Department	Floodplain Development Permit	Work within the Roberson Creek floodplain
	Stormwater Permit	Disturbing more than 20,000 square feet
	Land-Disturbing Permit	Disturbing more than 20,000 square feet
Property owners	Right-of-way easement	Relocated route requires easement acquisition



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Application for a Certificate of Environmental Compatibility and  
Public Convenience and Necessity

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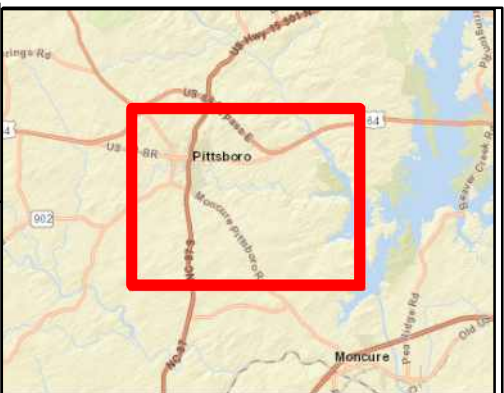
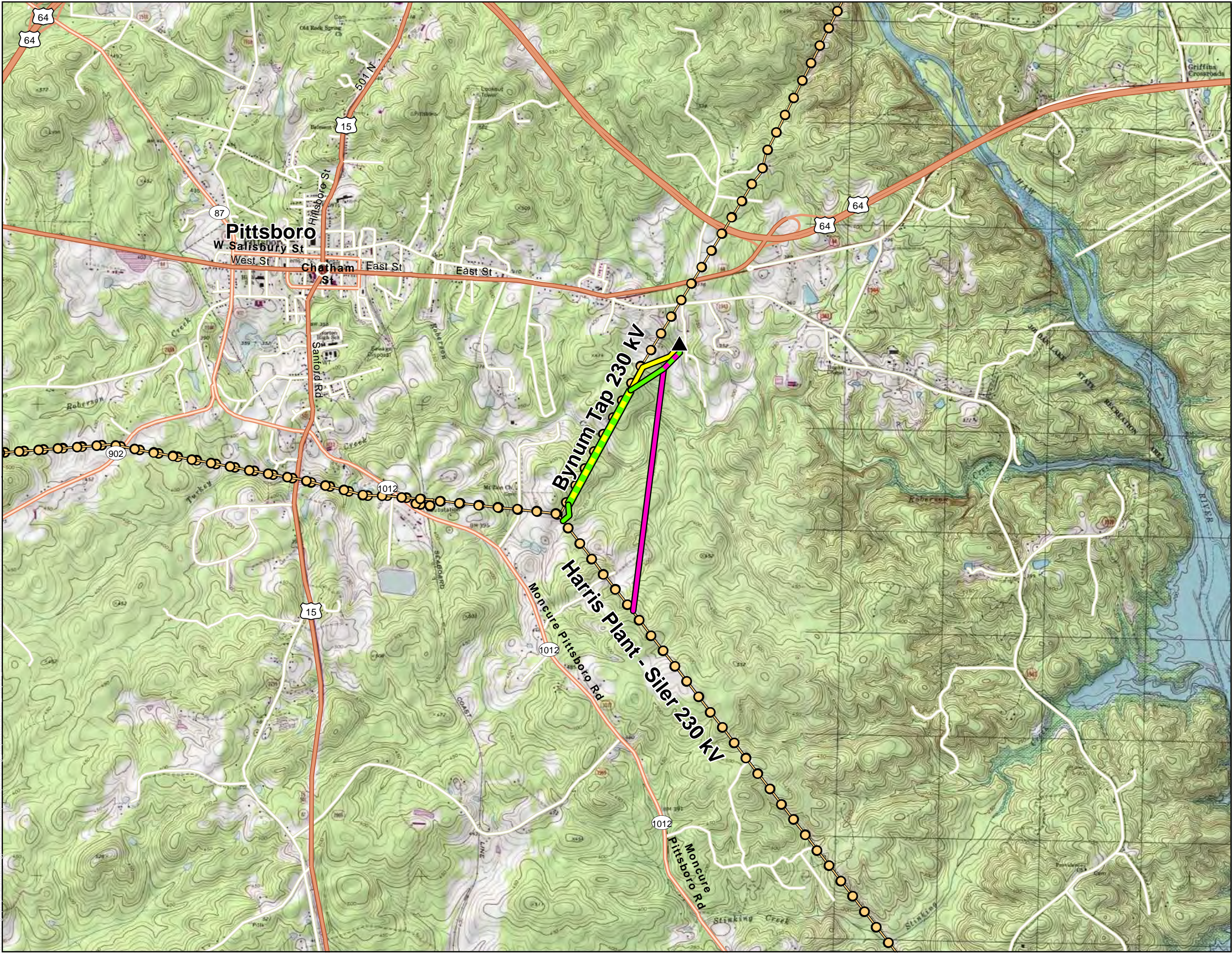
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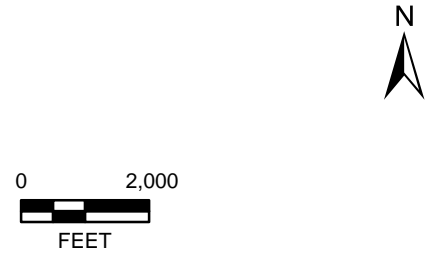
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## Figures





- Legend**
- ▲ Proposed Pittsboro Hanks Chapel Substation
  - Preferred Route
  - Alternative 2
  - Alternative 3
  - Existing 230 kV Transmission




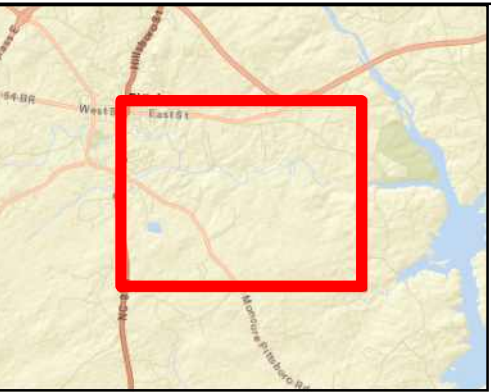
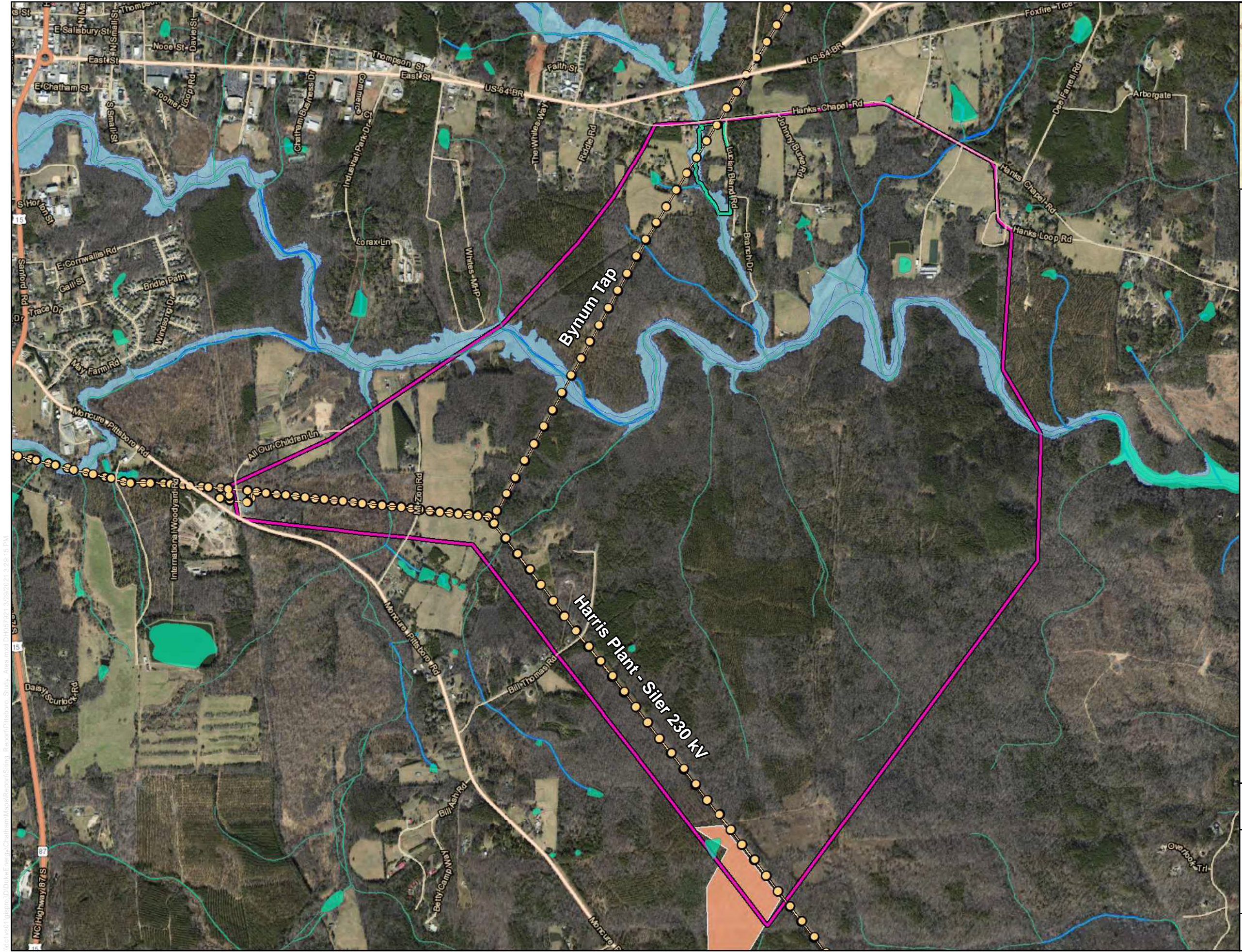
	Pittsboro Hanks Chapel 230 kV Transmission Line Project
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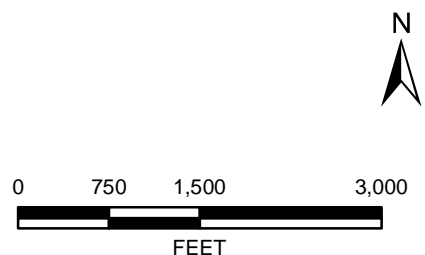
Figure 1 Project Location	
4/7/2021	<b>Jacobs</b>





Legend

- Existing Transmission
- Stream
- Wetland
- Study Area
- Pittsboro Hanks Chapel Substation Site
- Solar Panel Field
- 100-Year Flood Plain

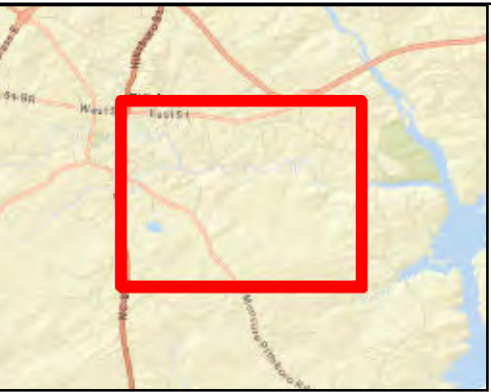
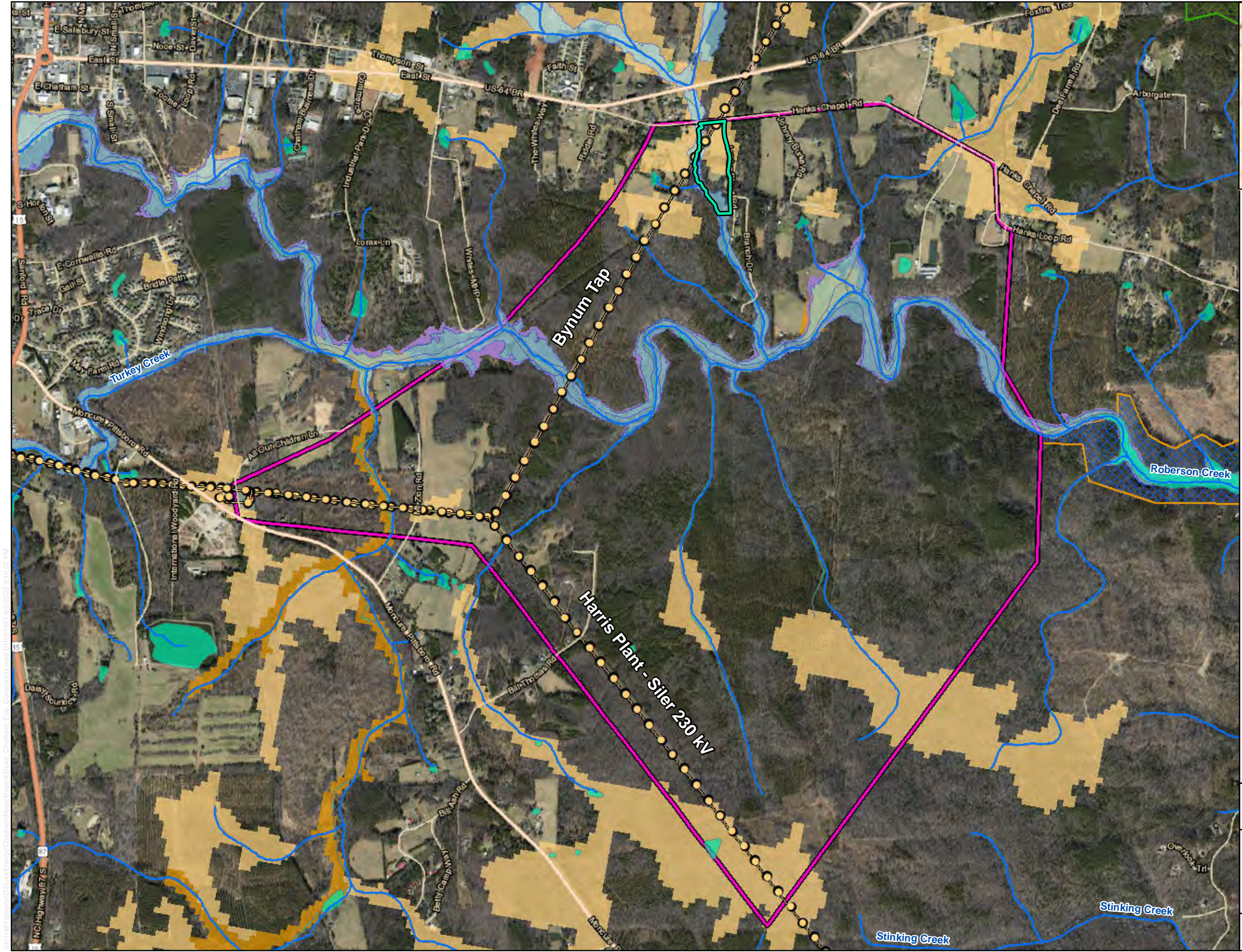


Pittsboro Hanks Chapel  
230 kV Transmission  
Line Project

Figure 2  
Study Area

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**Legend**

- |                          |                            |
|--------------------------|----------------------------|
| Existing Transmission    | Federal Ownership          |
| NHD                      | State Ownership            |
| Wetland                  | Local Government Ownership |
| 100-Year Flood Plain     |                            |
| 500-Year Flood Plain     |                            |
| Substation Site          |                            |
| Study Area               |                            |
| Registered Heritage Area |                            |
| Conservation Easement    |                            |
- USA Soils Hydric Class**
- | ClassName                   | Partiality |
|-----------------------------|------------|
| Partially Hydric (1 - 25%)  |            |
| Partially Hydric (26 - 50%) |            |



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Pittsboro Hanks Chapel  
230 kV Transmission  
Line Project

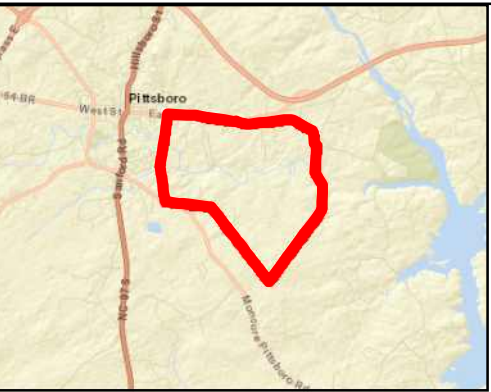
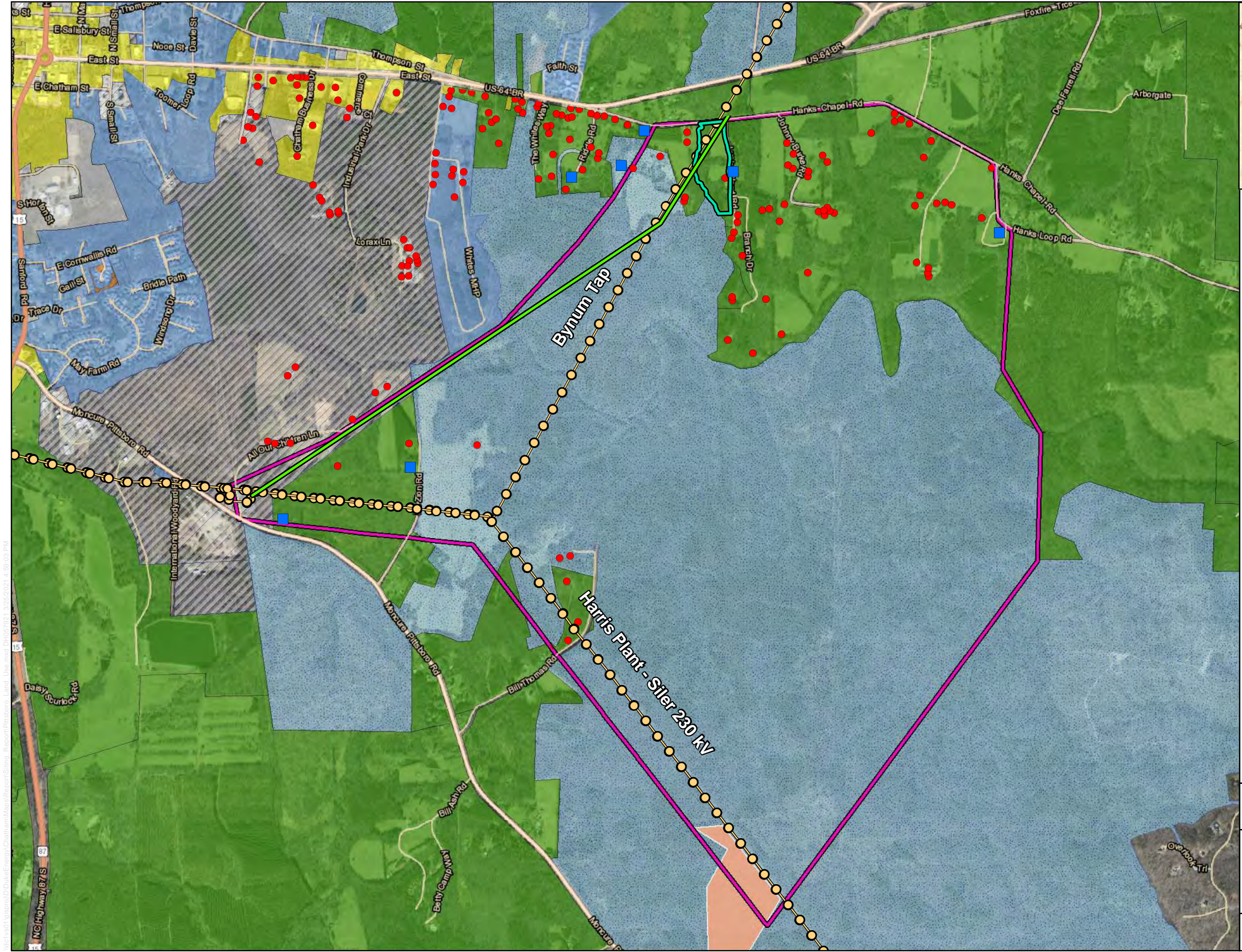
Figure 3  
Ecological Constraints

6/9/2020

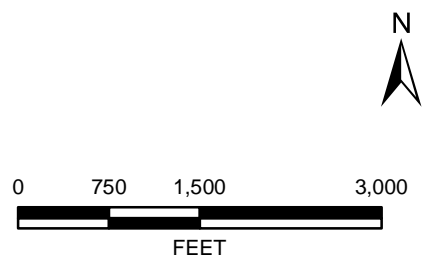
**Jacobs**


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- Legend**
- Historic Structure
  - Building Point
  - Big Woods 23 kV Distribution Line
  - Existing Transmission
  - Pittsboro Hanks Chapel Substation Site
  - Study Area
  - Solar Panel Field
- Zoning Class**
- Commercial
  - Industrial
  - Residential
  - Multi-Use Planned Development
  - Office - Industrial
  - Planned Development District
  - Residential - Agricultural



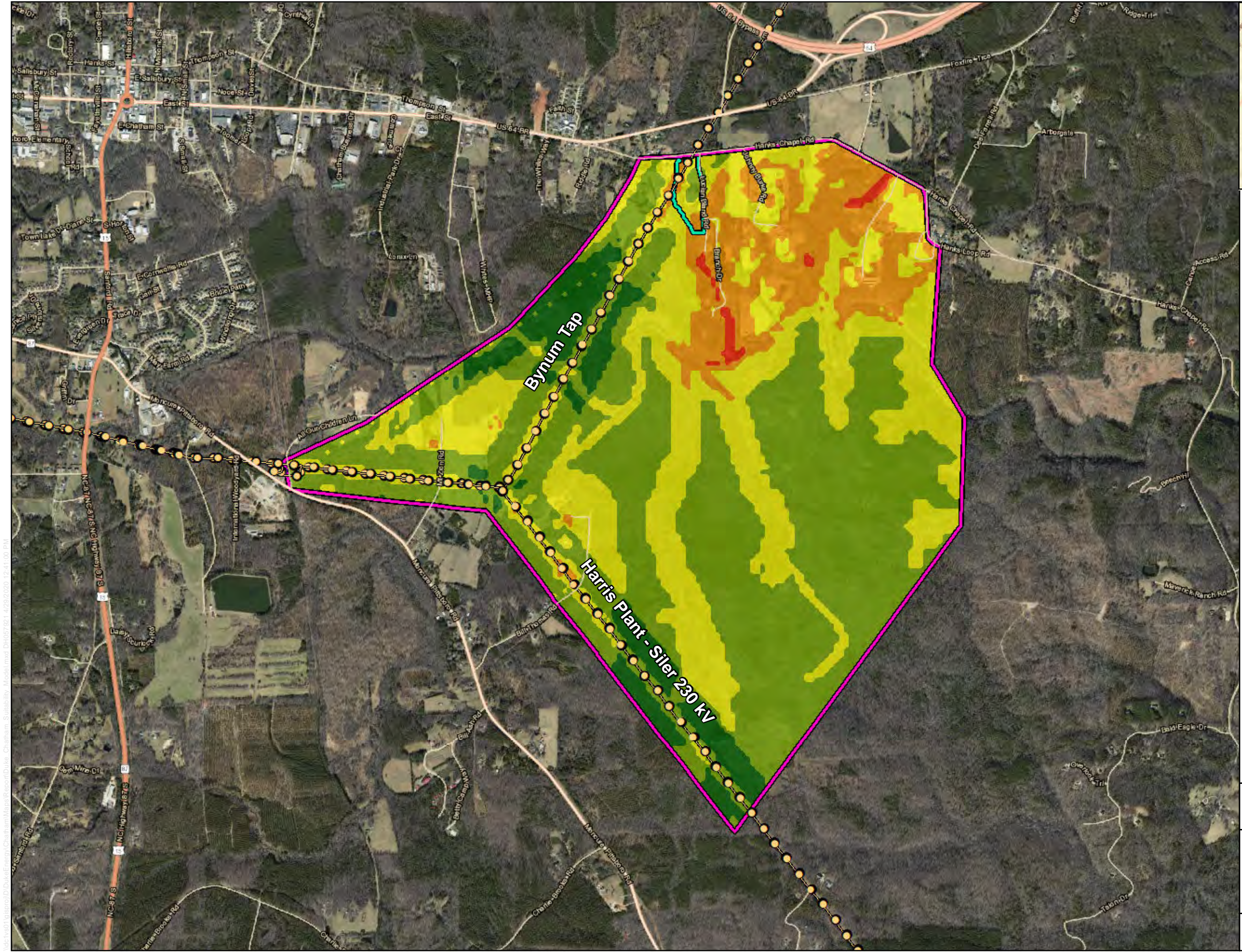


Pittsboro Hanks Chapel  
230 kV Transmission  
Line Project

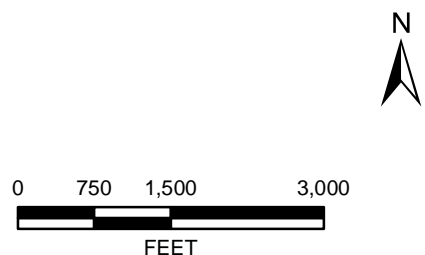
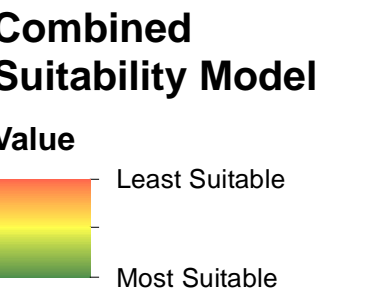
Figure 4  
Land Use

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- Legend**
- Existing Transmission
  - Study Area
  - Pittsboro Hanks Chapel Substation Site



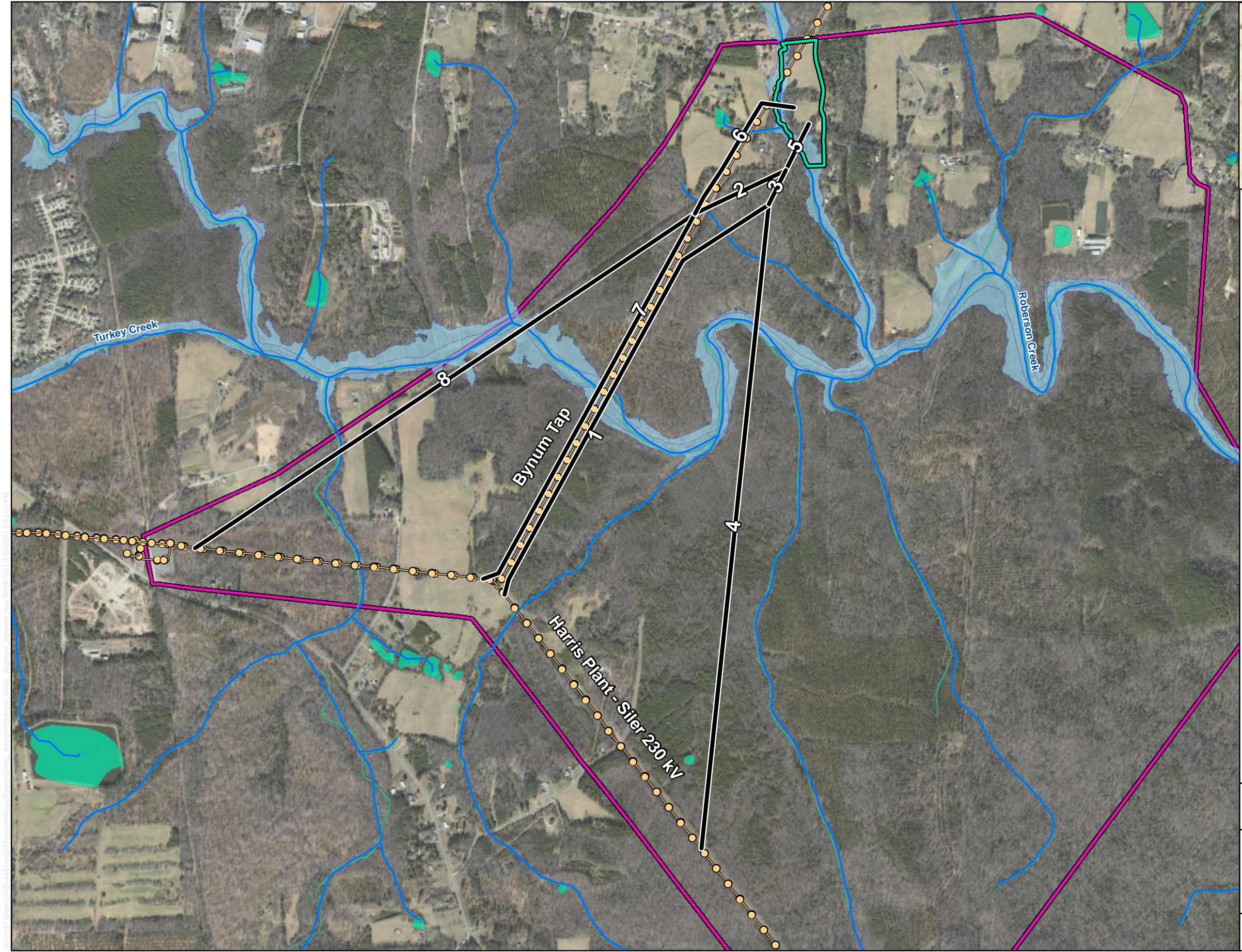
**DUKE ENERGY**

Pittsboro Hanks Chapel  
230 kV Transmission  
Line Project

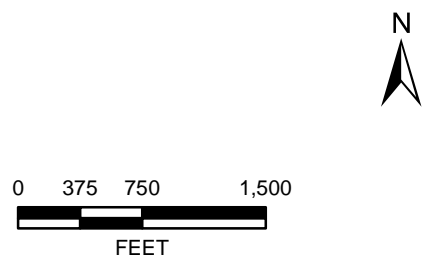
**Figure 5**  
Combined Suitability  
Model

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- ### Legend
- Study Segment
  - Existing Transmission
  - NHD
  - Wetland
  - 100-Year Flood Plain
  - Pittsboro Hanks Chapel Substation Site
  - Study Area



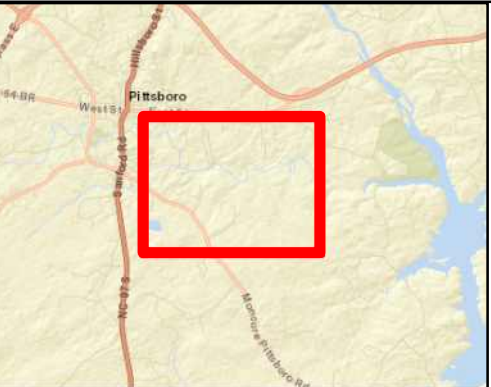
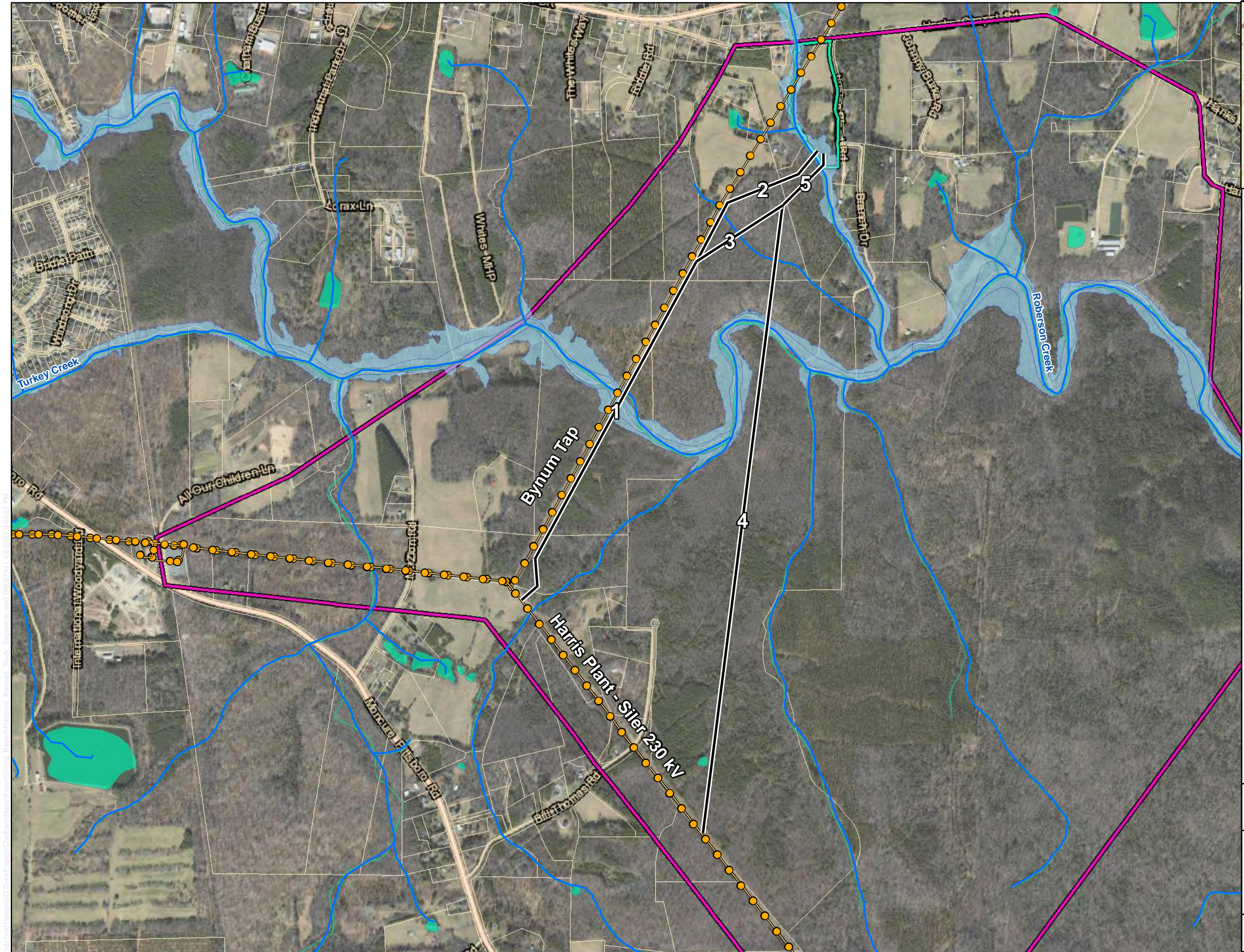
**DUKE ENERGY**

Pittsboro Hanks Chapel  
230 kV Transmission  
Line Project

Figure 6  
Study Segment Network

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## Legend

- Study Segment
- Existing Transmission
- NHD
- Wetland
- Pittsboro Hanks Chapel Substation Site
- Parcel Boundary



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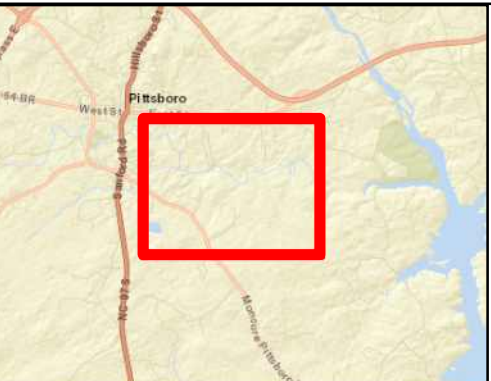
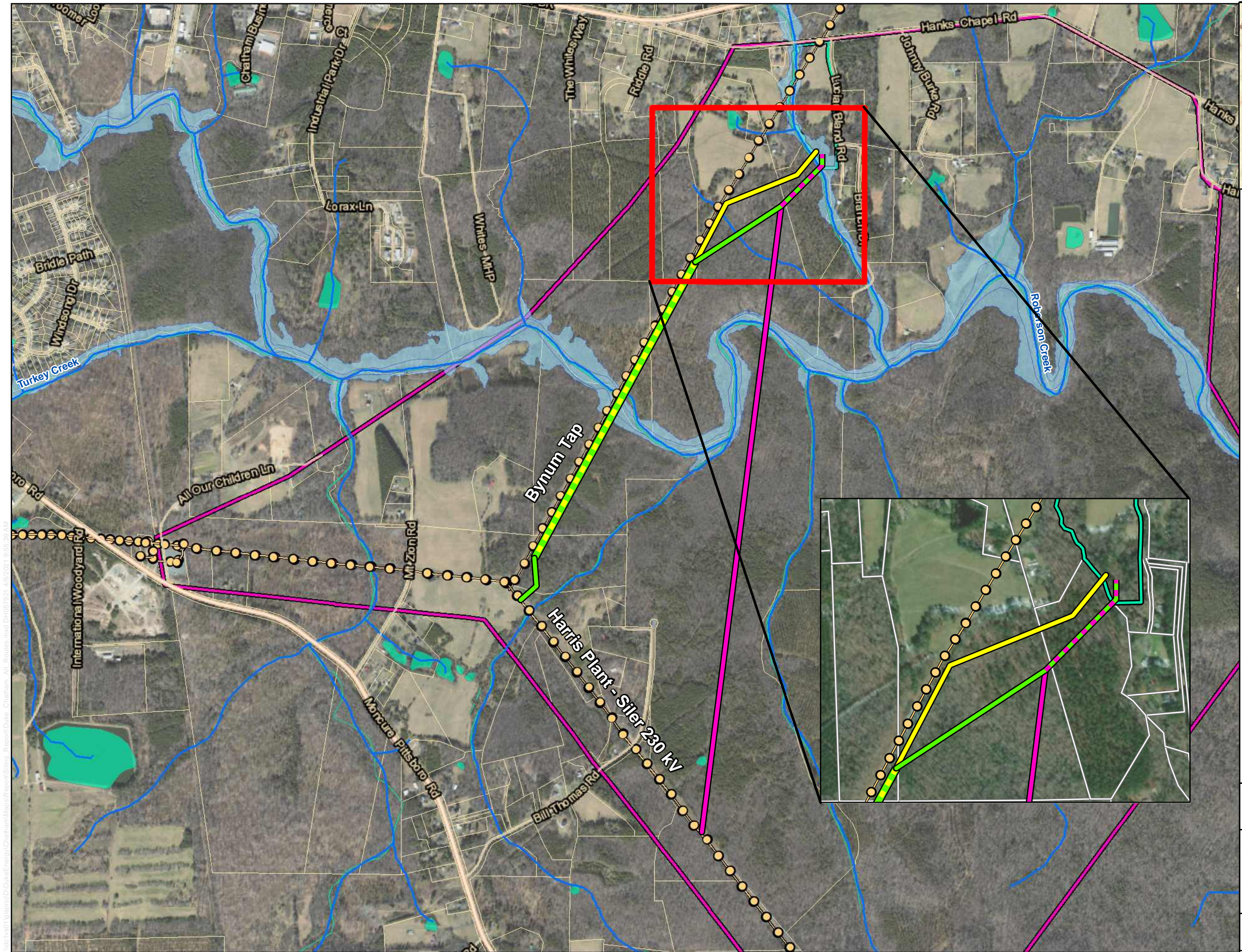
Pittsboro Hanks Chapel  
230 kV Transmission  
Line Project

Figure 7  
Revised Study  
Segment Network

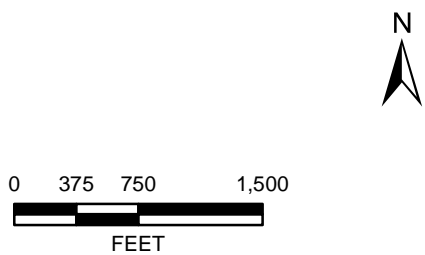
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Jacobs





- Legend**
- Preferred Route
  - Alternative 2
  - Alternative 3
  - Existing Transmission
  - Study Area
  - Pittsboro Hanks Chapel Substation Site
  - Parcel Boundary



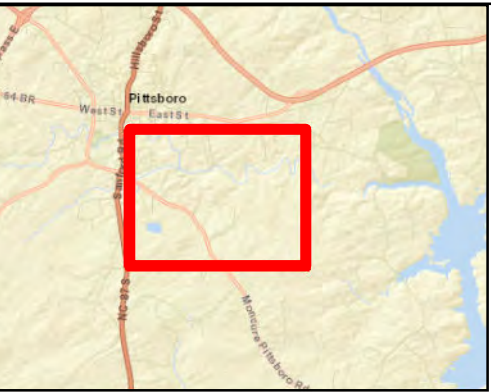
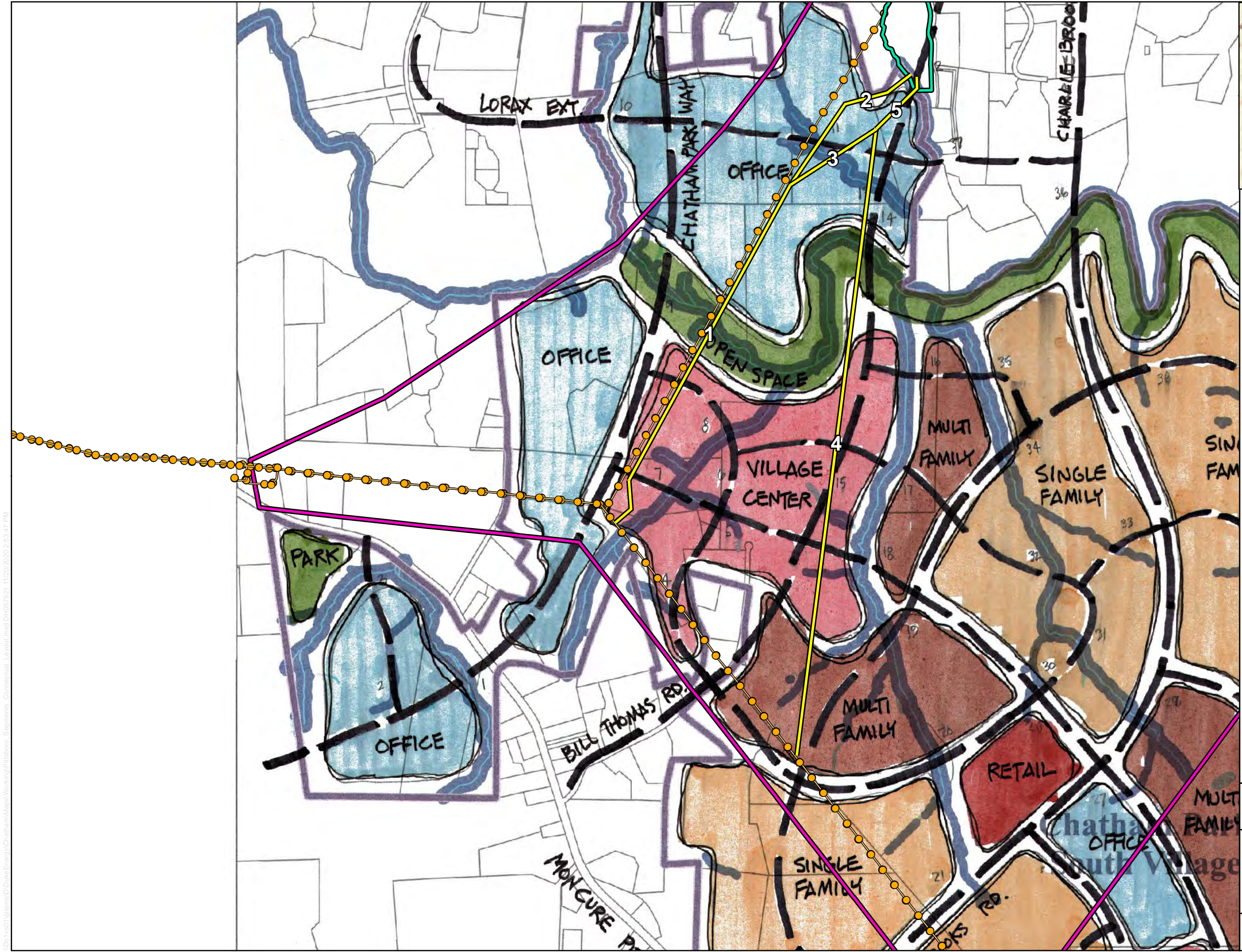
**DUKE ENERGY**

Pittsboro Hanks Chapel  
230 kV Transmission  
Line Project

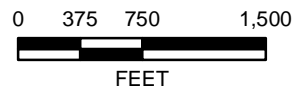
Figure 8  
Alternative Routes

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- Legend**
- Study Segment
  - Existing Transmission
  - Pittsboro Hanks Chapel Substation Site



Pittsboro Hanks Chapel  
230 kV Transmission  
Line Project

Figure 9  
Future Land Use

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# **Appendix A**

## **Threatened and Endangered Species Review**

**IPaC** Information for Planning and Consultation **U.S. Fish & Wildlife Service**

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## IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

### Location

Chatham County, North Carolina



### Local office

Raleigh Ecological Services Field Office

☎ (919) 856-4520

📠 (919) 856-4556

MAILING ADDRESS

Post Office Box 33726  
Raleigh, NC 27636-3726

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OFFICIAL COPY

Feb 07 2022

NOT FOR CONSULTATION

# Endangered species

**This resource list is for informational purposes only and does not constitute an analysis of project level impacts.**

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population, even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

## Listed species

<sup>1</sup> and their critical habitats are managed by the [Ecological Services Program](#) of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries<sup>2</sup>).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact [NOAA Fisheries](#) for [species under their jurisdiction](#).

1. Species listed under the [Endangered Species Act](#) are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the [listing status page](#) for more information.
2. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:



## Birds

NAME	STATUS
Red-cockaded Woodpecker <i>Picoides borealis</i> No critical habitat has been designated for this species. <a href="https://ecos.fws.gov/ecp/species/7614">https://ecos.fws.gov/ecp/species/7614</a>	Endangered

## Fishes

NAME	STATUS
Cape Fear Shiner <i>Notropis mekistocholas</i> There is <b>final</b> critical habitat for this species. Your location is outside the critical habitat. <a href="https://ecos.fws.gov/ecp/species/6063">https://ecos.fws.gov/ecp/species/6063</a>	Endangered

## Flowering Plants

NAME	STATUS
Harperella <i>Ptilimnium nodosum</i> No critical habitat has been designated for this species. <a href="https://ecos.fws.gov/ecp/species/3739">https://ecos.fws.gov/ecp/species/3739</a>	Endangered

## Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

## Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act

<sup>1</sup> and the Bald and Golden Eagle Protection Act<sup>2</sup>.

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described [below](#).

1. The [Migratory Birds Treaty Act](#) of 1918.
2. The [Bald and Golden Eagle Protection Act](#) of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern <http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php>

- Measures for avoiding and minimizing impacts to birds  
<http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php>
- Nationwide conservation measures for birds  
<http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf>

The birds listed below are birds of particular concern either because they occur on the [USFWS Birds of Conservation Concern](#) (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ [below](#). This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the [E-bird data mapping tool](#) (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found [below](#).

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME

BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)

#### Bachman's Sparrow *Aimophila aestivalis*

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/6177>

Breeds May 1 to Sep 30

#### Bald Eagle *Haliaeetus leucocephalus*

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

<https://ecos.fws.gov/ecp/species/1626>

Breeds Sep 1 to Jul 31

Blue-winged Warbler <i>Vermivora pinus</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds May 1 to Jun 30
Eastern Whip-poor-will <i>Antrostomus vociferus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Aug 20
Kentucky Warbler <i>Oporornis formosus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 20 to Aug 20
Prairie Warbler <i>Dendroica discolor</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Jul 31
Prothonotary Warbler <i>Protonotaria citrea</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 1 to Jul 31
Red-headed Woodpecker <i>Melanerpes erythrocephalus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Sep 10
Rusty Blackbird <i>Euphagus carolinus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere
Wood Thrush <i>Hylocichla mustelina</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Aug 31

## Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

### Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is  $0.25/0.25 = 1$ ; at week 20 it is  $0.05/0.25 = 0.2$ .
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

### Breeding Season (🟡)

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

### Survey Effort (|)

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

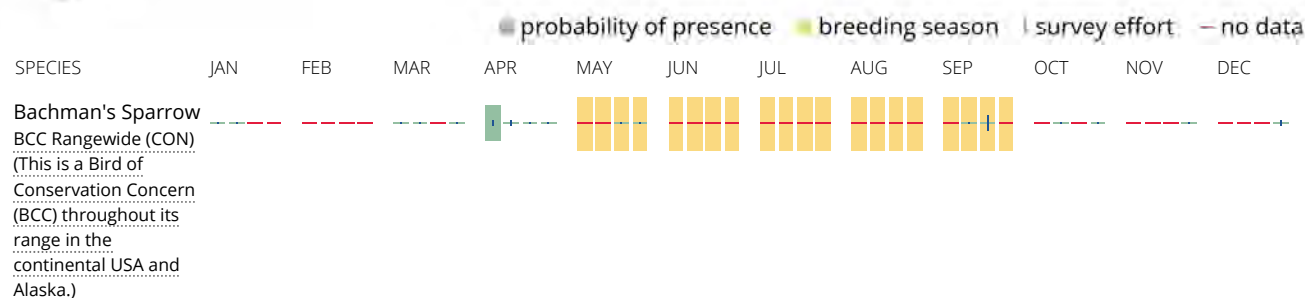
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

### No Data (—)

A week is marked as having no data if there were no survey events for that week.

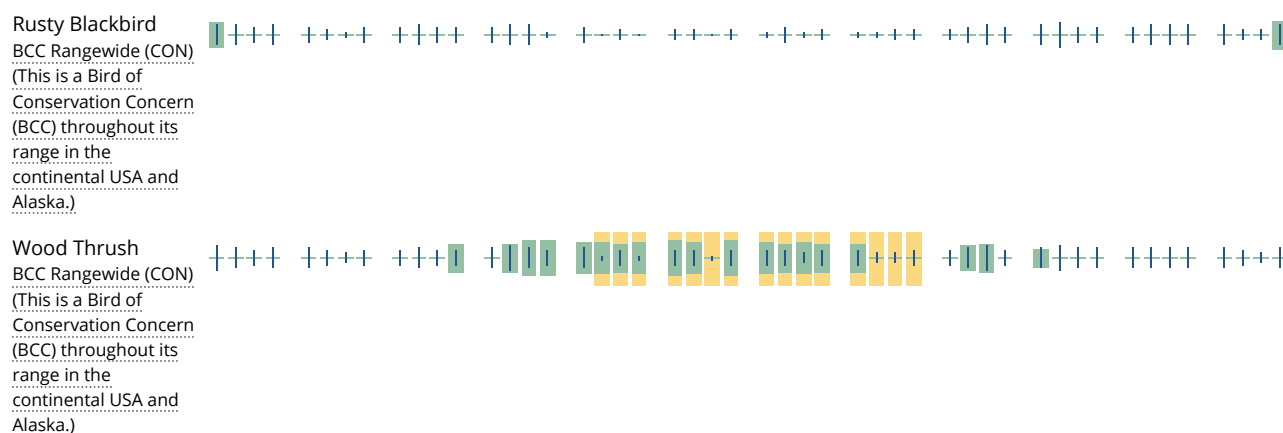
### Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.









Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

[Nationwide Conservation Measures](#) describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. [Additional measures](#) and/or [permits](#) may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS [Birds of Conservation Concern \(BCC\)](#) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle ([Eagle Act](#) requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the [AKN Phenology Tool](#).

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the [Avian Knowledge Network \(AKN\)](#). This data is derived from a growing collection of [survey, banding, and citizen science datasets](#).

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: [The Cornell Lab of Ornithology All About Birds Bird Guide](#), or (if you are unsuccessful in locating the bird of interest there), the [Cornell Lab of Ornithology Neotropical Birds guide](#). If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

### What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are [Birds of Conservation Concern](#) (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the [Eagle Act](#) requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

### Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the [NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf](#) project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the [Diving Bird Study](#) and the [nanotag studies](#) or contact [Caleb Spiegel](#) or [Pam Loring](#).

### What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to [obtain a permit](#) to avoid violating the Eagle Act should such impacts occur.

### Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in

knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

## Facilities

### National Wildlife Refuge lands

Any activity proposed on lands managed by the [National Wildlife Refuge](#) system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

### Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

## Wetlands in the National Wetlands Inventory

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

FRESHWATER EMERGENT WETLAND

[Palustrine](#)

RIVERINE

[Riverine](#)

A full description for each wetland code can be found at the [National Wetlands Inventory website](#)

**Data limitations**



The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

#### **Data exclusions**

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tubercid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

#### **Data precautions**

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.



Roy Cooper, Governor  
Susi Hamilton, Secretary  
Walter Clark, Director, Land and Water Stewardship

NCNHDE-12770

December 17, 2020

Katherine Wilson  
Jacobs  
14120 Ballantyne Corporate Place  
Charlotte, NC 28277  
RE: Chatham

Dear Katherine Wilson:

The North Carolina Natural Heritage Program (NCNHP) appreciates the opportunity to provide information about natural heritage resources for the project referenced above.

A query of the NCNHP database indicates that there are records for rare species, important natural communities, natural areas, and/or conservation/managed areas within the proposed project boundary. These results are presented in the attached 'Documented Occurrences' tables and map.

The attached 'Potential Occurrences' table summarizes rare species and natural communities that have been documented within a one-mile radius of the property boundary. The proximity of these records suggests that these natural heritage elements may potentially be present in the project area if suitable habitat exists. Tables of natural areas and conservation/managed areas within a one-mile radius of the project area, if any, are also included in this report.

If a Federally-listed species is documented within the project area or indicated within a one-mile radius of the project area, the NCNHP recommends contacting the US Fish and Wildlife Service (USFWS) for guidance. Contact information for USFWS offices in North Carolina is found here: <https://www.fws.gov/offices/Directory/ListOffices.cfm?statecode=37>.

Please note that natural heritage element data are maintained for the purposes of conservation planning, project review, and scientific research, and are not intended for use as the primary criteria for regulatory decisions. Information provided by the NCNHP database may not be published without prior written notification to the NCNHP, and the NCNHP must be credited as an information source in these publications. Maps of NCNHP data may not be redistributed without permission.

Also please note that the NC Natural Heritage Program may follow this letter with additional correspondence if a Dedicated Nature Preserve, Registered Heritage Area, Clean Water Management Trust Fund easement, or an occurrence of a Federally-listed species is documented near the project area.

If you have questions regarding the information provided in this letter or need additional assistance, please contact Rodney A. Butler at [rodney.butler@ncdcr.gov](mailto:rodney.butler@ncdcr.gov) or 919-707-8603.

Sincerely,  
NC Natural Heritage Program

OFFICIAL COPY

Feb 07 2022

Natural Heritage Element Occurrences, Natural Areas, and Managed Areas Intersecting the Project Area  
Chatham  
December 17, 2020  
NCNHDE-12770

Element Occurrences Documented Within Project Area

Taxonomic Group	EO ID	Scientific Name	Common Name	Last Observation Date	Element Occurrence Rank	Accuracy	Federal Status	State Status	Global Rank	State Rank
Natural Community	25953	Dry-Mesic Oak--Hickory Forest (Piedmont Subtype)	---	2008-04-10	BC	2-High	---	---	G4G5	S4

No Natural Areas are Documented within the Project Area

Managed Areas Documented Within Project Area\*

Managed Area Name	Owner	Owner Type
B. Everett Jordan Dam and Lake	US Army Corps of Engineers	Federal
Robeson Creek Slopes Registered Heritage Area	US Army Corps of Engineers	Federal

\* NOTE: If the proposed project intersects with a conservation/managed area, please contact the landowner directly for additional information. If the project intersects with a Dedicated Nature Preserve (DNP), Registered Natural Heritage Area (RHA), or Federally-listed species, NCNHP staff may provide additional correspondence regarding the project.

Definitions and an explanation of status designations and codes can be found at <https://ncnhde.natureserve.org/help>. Data query generated on December 17, 2020; source: NCNHP, Q3 October 2020. Please resubmit your information request if more than one year elapses before project initiation as new information is continually added to the NCNHP database.

Natural Heritage Element Occurrences, Natural Areas, and Managed Areas Within a One-mile Radius of the Project Area  
Chatham  
December 17, 2020  
NCNHDE-12770

Element Occurrences Documented Within a One-mile Radius of the Project Area

Taxonomic Group	EO ID	Scientific Name	Common Name	Last Observation Date	Element Occurrence Rank	Accuracy	Federal Status	State Status	Global Rank	State Rank
Crustacean	3066	Cambarus davidi	Carolina Ladle Crayfish	1997-03-06	H?	3-Medium	---	Significantly Rare	G3	S3
Crustacean	37376	Cambarus davidi	Carolina Ladle Crayfish	2013-11-02	E	3-Medium	---	Significantly Rare	G3	S3
Freshwater Fish	23910	Notropis mekistocholas	Cape Fear Shiner	1968-05-30	X	3-Medium	Endangered	Endangered	G1	S1
Natural Community	4779	Basic Mesic Forest (Piedmont Subtype)	---	2013	D	2-High	---	---	G3G4	S3S4
Natural Community	25953	Dry-Mesic Oak--Hickory Forest (Piedmont Subtype)	---	2008-04-10	BC	2-High	---	---	G4G5	S4
Natural Community	14604	Mesic Mixed Hardwood Forest (Piedmont Subtype)	---	2013	B	2-High	---	---	G3G4	S4

Natural Areas Documented Within a One-mile Radius of the Project Area

Site Name	Representational Rating	Collective Rating
Robeson Creek Slopes	R5 (General)	C5 (General)
Pittsboro Wilderness	R5 (General)	C5 (General)
Haw River Levees and Bluffs	R2 (Very High)	C4 (Moderate)

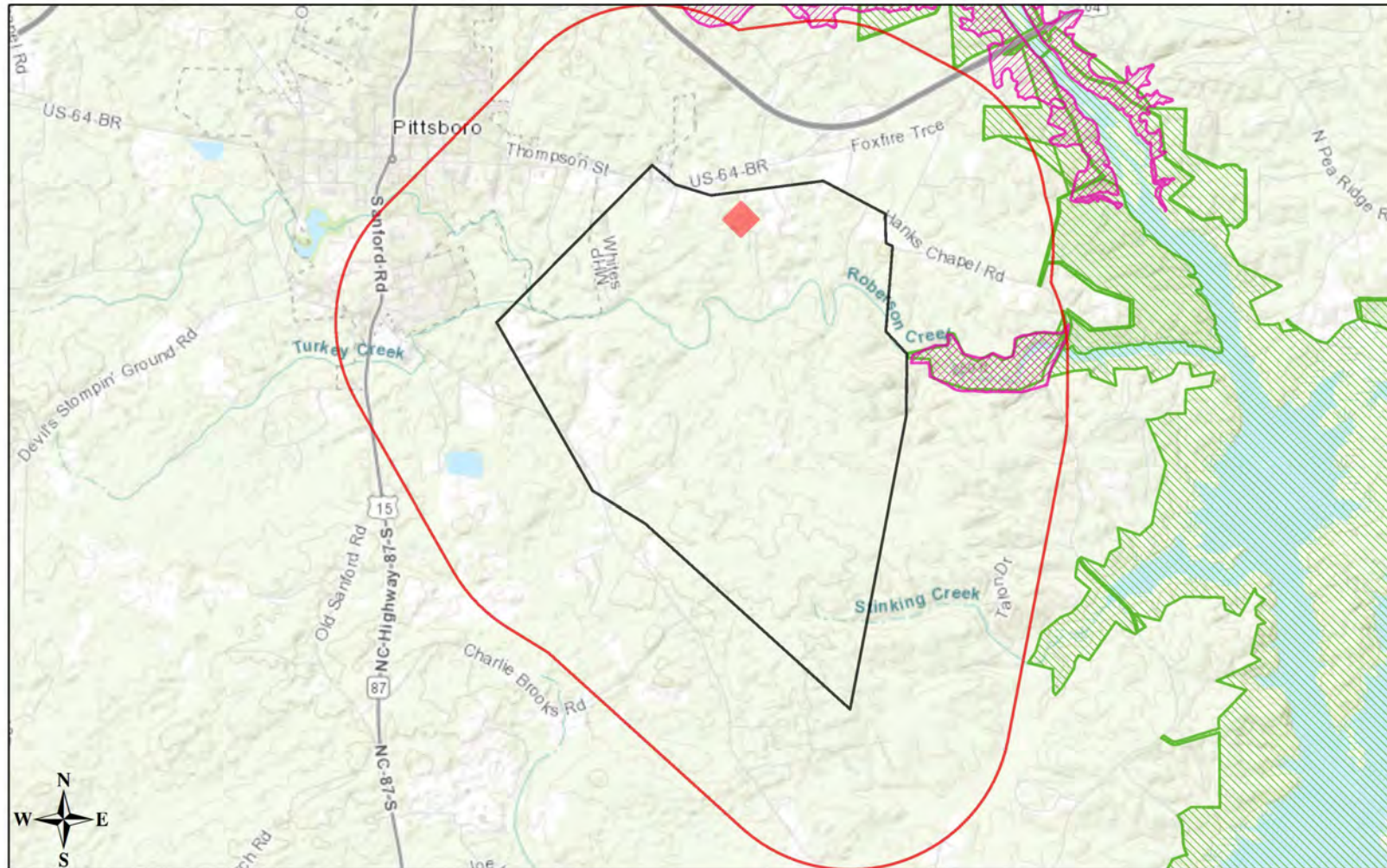
Managed Areas Documented Within a One-mile Radius of the Project Area

Managed Area Name	Owner	Owner Type
B. Everett Jordan Dam and Lake	US Army Corps of Engineers	Federal
Jordan Lake State Recreation Area	US Army Corps of Engineers	Federal
NC Division of Mitigation Services Easement	NC DEQ, Division of Mitigation Services	State
Lower Haw River State Natural Area	NC DNCR, Division of Parks and Recreation	State
Robeson Creek Slopes Registered Heritage Area	US Army Corps of Engineers	Federal

Definitions and an explanation of status designations and codes can be found at <https://ncnhde.natureserve.org/help>. Data query generated on December 17, 2020; source: NCNHP, Q3 October 2020. Please resubmit your information request if more than one year elapses before project initiation as new information is continually added to the NCNHP database.

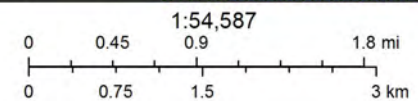


# NCNHDE-12770: Chatham



December 17, 2020

- Project Boundary
- Buffered Project Boundary
- NHP Natural Area (NHNA)
- Managed Area (MAREA)



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

## **Appendix B**

### **Alternative Route Comparison**

Category	Criteria		Criteria Weight	Category Weight	Influence
Ecological	Area of Woodlots within ROW (in acres)		40%	35%	14.0%
	Area of NWI within ROW (in acres)		30%		10.5%
	NHD Stream Crossing		20%		7.0%
	Length of floodplain crossed (feet)		10%		3.5%
Social	Known Archaeology Sites within 1,000-ft of centerline		10.0%	30%	3.0%
	Historic Structures within 1,000-ft of centerline		10.0%		3.0%
	Residence	Residences between 0 and 250-ft of centerline (weighted 60%)	50.0%		9.0%
		Residences between 250 and 1,000-ft of centerline (weighted 40%)			6.0%
	Number of Property Owners within ROW		20.0%		6.0%
	Number of Institutional Land Uses within 1,000-ft of centerline*		10.0%		3.0%
Land Use	Planned Village Center crossed by ROW (in acres)		40.0%	15%	6.0%
	Planned Office crossed by ROW (in acres)		20.0%		3.0%
	Planned Residential crossed by ROW (in acres)		40.0%		6.0%
Technical	Slopes >20% Crossed by ROW (in acres)		5%	20%	1.0%
	Turn Angles Greater than or Equal to 30 Degrees (count)		20%		4.0%
	Length Adjacent or within Existing Duke ROW		40%		8.0%
	Length from Bynum Tap Connection Point on 230 kV Line (feet)		5%		1.0%
	Length of Route (in miles)		30%		6.0%
*Institutional Land Uses include churches, hospitals, and schools					

Route	Study Segments	Ecological							
		Area of Woodlots within ROW (in acres)	Normalized Score for Area of Woodlots within ROW	Area of NWI within ROW (in acres)	Normalized Score for Area of NWI within ROW	NHD Stream Crossing (Count)	Normalized Score for NHD Stream Crossing	Length of Floodplain Crossed (feet)	Normalized Score for Length of Floodplain Crossed
Alternative 1	1,2	16.23	0	0.16	0	3	100	399	0
Alternative 2	1,3,5	17.00	9	0.18	33	3	100	529	100
Alternative 3	4,5	24.99	100	0.22	100	3	100	430	24
	MIN	16.23	0	0.16	0	3	100	399	0
	MAX	24.99	100	0.22	100	3	100	529	100
	RANGE	8.76	100	0.06	100	0	0	130	100

Route	Study Segments	Social											
		Known Archaeology Sites within 1,000-ft of centerline	Normalized Score for Known Archaeology Sites within 1,000-ft of centerline	Historic Structures within 1,000-ft of centerline	Normalized Score for Historic Structures within 1,000-ft of centerline	Residences within 250-ft of centerline	Normalized Score for Residences within 250-ft of centerline (weighted 60%)	Residences between 250 and 1,000-ft of centerline	Normalized Score for Residences between 250 and 1,000-ft of centerline (weighted 40%)	Property Owners Crossed by ROW	Normalized Score for Property Owners Crossed by ROW	Number of Institutional Land Uses within 1,000-ft of centerline	Normalized Score for Number of Institutional Land Uses within 1,000-ft of centerline
Alternative 1	1,2	1	100	1	100	0	100	11	0	2	0	0	100
Alternative 2	1,3,5	1	100	1	100	0	100	12	13	3	100	0	100
Alternative 3	4,5	0	0	1	100	0	100	14	40	3	100	0	100
	MIN	0	0	1	100	0	100	11	0	2	0	0	100
	MAX	1	100	1	100	0	100	14	40	3	100	0	100
	RANGE	1	100	0	0	0	0	3	40	1	100	0	0

\*\*Institutional land use includes schools, churches, and hospitals

Route	Study Segments	Land Use					
		Planned Village Center Crossed by ROW (in acres)	Normalized Score for Planned Village Center Crossed by ROW	Planned Office Crossed by ROW (in acres)	Normalized Score for Planned Office Crossed by ROW	Planned Residential Crossed by ROW (in acres)	Normalized Score for Planned Residential Crossed by ROW
Alternative 1	1,2	5.61	0	7.35	60	0.00	0
Alternative 2	1,3,5	5.61	0	8.87	100	0.00	0
Alternative 3	4,5	9.80	100	5.09	0	4.36	100
	MIN	6	0	5	0	0	0
	MAX	10	100	9	100	4	100
	RANGE	4	100	4	100	4	100



Route	Study Segments	Technical									
		Slopes >20% Crossed by ROW (in acres)	Normalized Score Slopes >20% Crossed by ROW (in acres)	Turn Angles Greater than or Equal to 30 Degrees	Normalized Score for Turn Angles Greater than or Equal to 30 Degrees	Length Adjacent or within Existing Duke ROW (in miles)	Normalized Score for Length Adjacent or within Existing Duke ROW	Length from Bynum Tap Connection Point on 230 kV Line (feet)	Normalized Score for Length from Bynum Tap Connection Point on 230 kV Line	Length of Route (in miles)	Normalized Score for Length of Route
Alternative 1	1,2	0.61	50	3	100	0.95	0	239	0	1.32	3
Alternative 2	1,3,5	1.21	100	3	100	0.80	16	239	0	1.31	0
Alternative 3	4,5	0.00	0	2	0	0.00	100	3896	100	1.65	100
	MIN	0	0	2	0	0	0	239	0	1.31	0
	MAX	1	100	3	100	1	100	3896	100	1.65	100
	RANGE	1	100	1	100	1	100	3657	100	0.34	100

Route	Study Segments	Normalized Scores				Weighted Scores				Final Score	Rank
		Normalized Ecological Score	Normalized Social Score	Normalized Land Use Score	Normalized Technical Score	Weighted Ecological Score	Weighted Social Score	Weighted Land Use Score	Weighted Technical Score		
Alternative 1	1,2	20.0	90.0	12.0	23.4	7.0	27.0	1.8	4.7	40.5	1
Alternative 2	1,3,5	43.5	112.7	20.0	31.3	15.2	33.8	3.0	6.3	58.3	2
Alternative 3	4,5	92.4	108.0	80.0	75.0	32.3	32.4	12.0	15.0	91.7	3

**STATE OF NORTH CAROLINA  
UTILITIES COMMISSION  
RALEIGH**

DOCKET NO. E-2, SUB 1288

BEFORE THE NORTH CAROLINA UTILITIES COMMISSION

In the Matter of:	)	
	)	
Application of Duke Energy Progress, LLC for	)	<b>PUBLIC NOTICE</b>
a Certificate of Environmental Compatibility	)	
and Public Convenience and Necessity	)	
Pursuant to N.C. Gen. Stat. §§ 62-100 <u>et. seq.</u>	)	
to Construct Approximately 1.3 Miles of New	)	
230 kV Transmission line in Chatham County,	)	
North Carolina	)	

NOTICE IS HEREBY GIVEN that on February 7, 2022, Duke Energy Progress, LLC (“DEP” or “Applicant”) filed with the North Carolina Utilities Commission (“Commission”) an application to obtain a certificate of environmental compatibility and public convenience and necessity to construct approximately 1.3 miles of new 230 kV transmission line in Chatham County, North Carolina.

The preferred route’s southern endpoint is a proposed tap of DEP’s existing Harris Plant – Siler City 230 kV transmission line, approximately 200 feet southeast of the Bynum Tap 230 kV transmission line. From the southern endpoint, the line is proposed to travel north, paralleling DEP’s existing Bynum Tap 230 kV transmission line for approximately 1.1 miles. The proposed line then running northeast for approximately 0.25 miles into the northern endpoint, the planned substation site, south of Hanks Chapel Road.

Anyone wishing to view DEP’s certificate application report and/or the detailed maps concerning this project may do so at either the Office of the Chief Clerk of the Commission, Dobbs Building, 430 North Salisbury Street, Raleigh, North Carolina 27603 or at the following DEP location: 410 S. Wilmington Street, Raleigh, North Carolina 27601. Please contact Michael Sykes at 1-919-546-6848 prior to the visit. The filing is also available on the Commission's web site, [www.ncuc.net](http://www.ncuc.net). (Search for Docket No. E-2 Sub 1288).

The Commission has scheduled the application for public hearing at \_\_\_\_ p.m., on \_\_\_\_\_, 2022 in \_\_\_\_\_, North Carolina. This hearing may be canceled if no significant protests are received subsequent to public notice.

Persons desiring to intervene as formal parties of record should file a verified petition under Commission Rules RI-5 and RI-64 no later than \_\_\_\_\_, 2022. Such a petition should be filed with the Chief Clerk, North Carolina Utilities Commission, 4325 Mail Service Center, Raleigh, North Carolina 27699-4300. Intervenor shall also file the direct testimony and exhibits of expert witnesses with the Commission on or before \_\_\_\_\_, 2022. Persons desiring to send written statements to inform the Commission of their position in the matter should address their statements to the North Carolina Utilities Commission, 4325 Mail Service Center, Raleigh, North Carolina 27699-4300 and reference Docket No. E-2, Sub 1288. Such written statements will be included in the Commission's official files. If the public hearing is not canceled, however, such written statements cannot be considered competent evidence unless those persons appear at the hearing and testify concerning the information contained in their written statements. The Public Staff of the Utilities Commission, through its Executive Director, is required by statute to represent the using and consuming public in proceedings before the Commission. Statements to the Executive Director should be addressed to Mr. Chris Ayers, Executive Director, Public Staff-North Carolina Utilities Commission, 4326 Mail Service Center, Raleigh, North Carolina 27699-4300. The Attorney General of North Carolina is also authorized to represent the using and consuming public in proceedings before the Commission. Statements to the Attorney General should be addressed to: The Honorable Josh Stein, Attorney General of North Carolina, 9001 Mail Service Center, Raleigh, North Carolina 27699-9001.

ISSUED BY ORDER OF THE COMMISSION.

This the \_\_\_\_ day of \_\_\_\_\_, 2022.

NORTH CAROLINA UTILITIES COMMISSION  
Shonta Dunston, Chief Clerk

(In accordance with N.C. Gen. Stat. § 62-102(c), Duke Energy Progress, LLC will publish this Public Notice, upon approval and instruction from the North Carolina Utilities Commission, in the newspaper of general circulation in the area of the proposed project.)

STATE OF NORTH CAROLINA  
UTILITIES COMMISSION  
RALEIGH

DOCKET NO. E-2, SUB 1288

BEFORE THE NORTH CAROLINA UTILITIES COMMISSION

In the Matter of )  
)  
Application of Duke Energy Progress, LLC )  
For A Certificate of Environmental )  
Compatibility and Public Convenience and )  
Necessity Pursuant to N.C. Gen. Stat. § 62- )  
100 et seq. to Construct Approximately 1.3 )  
Miles of New 230kV Transmission Line in )  
Chatham County, North Carolina )  
)

**DIRECT TESTIMONY OF  
CLIFTON M. CATES FOR  
DUKE ENERGY PROGRESS, LLC**

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1    **Q.     PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.**

2    A.     My name is Clifton M. Cates, and my business address is 1020 W. Chatham St.  
3           Cary, NC 27511.

4    **Q.     BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?**

5    A.     I am employed as a Capacity Planning Manager in Carolinas East, by Duke  
6           Energy Progress, LLC (“DEP”). DEP is a wholly owned, indirect subsidiary of  
7           Duke Energy Corporation (“Duke Energy”).

8    **Q.     WHAT ARE YOUR RESPONSIBILITIES AS CAPACITY PLANNING  
9           MANAGER?**

10   A.     I am responsible for overseeing the planning of the electrical distribution  
11           infrastructure necessary to serve new growth and development in the DEP  
12           territory of North and South Carolina. This includes coordinating the design  
13           and construction of all transmission-to-distribution substations and their  
14           associated transmission line connections with the Transmission Department.

15   **Q.     PLEASE DESCRIBE YOUR EDUCATIONAL AND PROFESSIONAL  
16           BACKGROUND.**

17   A.     I graduated from North Carolina State University with a Bachelor of Science  
18           degree in Electrical Engineering in 1999. I also graduated from Wake Forest  
19           University with an MBA in 2003. I have worked for DEP for 22 years, all in  
20           the area of Distribution. I have also held various engineering roles at DEP. I  
21           am a licensed Professional Engineer in the State of North Carolina.

22   **Q.     HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE NORTH  
23           CAROLINA UTILITIES COMMISSION?**

1 A. No.

2 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

3 A. The purpose of my testimony in this proceeding is to describe the need and  
4 necessity for the construction of the proposed 1.3 miles of new 230kV  
5 transmission line for the Pittsboro Hanks Chapel 230kV Tap Line project in  
6 Chatham County, North Carolina.

7 **Q. WERE YOU INVOLVED IN PREPARING DEP'S APPLICATION IN**  
8 **THIS DOCKET?**

9 A. Yes.

10 **Q. WHY IS DEP REQUESTING THIS COMMISSION TO GRANT THE**  
11 **CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY?**

12 A. DEP's assessment of electric energy requirements for its customers has  
13 identified the need to build a new 230kV/23kV transmission-to-distribution  
14 substation and a new 230kV transmission line to provide power to the  
15 substation in the area that is on the North and Southeast sides of the Town of  
16 Pittsboro in Chatham County, North Carolina. This area is currently served by  
17 one existing substation, the Pittsboro Substation. This new substation site was  
18 purchased in 2018 based on the projected load center along Hwy 15-501 and  
19 between US 64 Business and US 64 Bypass.

20 Previously, the Pittsboro 230kV substation's planning limit was  
21 projected to be exceeded in Summer 2022; therefore, as a result, a project to  
22 increase its capacity to 40 MVA was completed in December 2021. This  
23 substation is limited to 3 feeders which greatly reduces the ability to manage

1 load growth and transfer load for outage restoration. The Northwood 23 kV  
2 feeder out of Pittsboro substation is projected to exceed its planning limit in  
3 2022, and the Big Woods 23 kV is projected to exceed its planning limit in 2023.  
4 Several infrastructure projects have been completed or planned to manage the  
5 growing load in the area. Projects in 2021 increased the capacity of the Pittsboro  
6 230kV Substation and transferred load to an adjacent feeder. In the next two  
7 years projects will transfer load from the Northwood 24kV to other sources.  
8 While helpful and needed, these infrastructure projects will not provide a  
9 permanent solution.

10 Due to the increasing load growth along US 15-501 from the  
11 Fearington area to near Chapel Hill, limited capacity is available for extended  
12 transfers. To serve future growth in the Pittsboro area, additional substation and  
13 feeder capacity will be needed. The new substation and associated transmission  
14 line are required to provide needed capacity and enhanced service reliability to  
15 support our existing customers, plus allow for future residential and commercial  
16 growth.

17 **Q. DOES THIS CONCLUDE YOUR PRE-FILED DIRECT TESTIMONY?**

18 **A.** Yes.



STATE OF NORTH CAROLINA  
UTILITIES COMMISSION  
RALEIGH  
DOCKET NO. E-2, SUB 1288

BEFORE THE NORTH CAROLINA UTILITIES COMMISSION

In the Matter of )  
)  
Application of Duke Energy Progress, LLC )  
For A Certificate of Environmental )  
Compatibility and Public Convenience and )  
Necessity Pursuant to N.C. Gen. Stat. § 62- )  
100 et seq. to Construct Approximately 1.3 )  
Miles of New 230kV Transmission Line in )  
Chatham County, North Carolina )  
)

**DIRECT TESTIMONY OF**  
**MICAH E. RETZLAFF**  
**FOR**  
**DUKE ENERGY PROGRESS,**  
**LLC**

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1    **Q.     PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.**

2    A.     My name is Micah E. Retzlaff, and my business address is 410 S. Wilmington  
3           Street, Raleigh, North Carolina 27601.

4    **Q.     BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?**

5    A.     I am employed as Lead Siting Manager, Transmission Siting, Permitting, and  
6           Engagement by Duke Energy Progress, LLC (“DEP”).

7    **Q.     WHAT ARE YOUR RESPONSIBILITIES AS LEAD TRANSMISSION  
8           SITING SPECIALIST?**

9    A.     As Lead Transmission Siting Manager, Transmission Siting and Permitting, I  
10          am responsible for both the siting/due diligence of substation sites to be  
11          purchased in fee, as well as the selection of preferred/least impactful routes for  
12          transmission lines which require easement and/or right of way (“ROW”)   
13          acquisition for DEP territories.

14   **Q.     PLEASE DESCRIBE YOUR EDUCATIONAL AND PROFESSIONAL  
15          BACKGROUND.**

16   A.     I have a Bachelor of Science in Environmental Health from East Carolina  
17          University. I have over 20 years of experience developing public infrastructure,  
18          in the telecommunication and utilities industries. I began my career in the  
19          wireless telecommunication as a Senior Real Estate Specialist with American  
20          Tower Corporation, the largest owner and operator of multi-use tower sites in  
21          the United States, then as a Project Manager with SpectraSite Communications,  
22          an owner and developer of over 8,000 tower facilities. Starting in 2006, I was  
23          a Senior Program Manager with Excell Communications, a turn-key site

1 development consultant firm, managing wireless and wireline/fiber optic  
2 deployment projects for clients throughout the southeastern United States.  
3 After 18 years in the wireless telecommunication industry and having  
4 developed more than 350 greenfield tower facilities, I joined Duke Energy  
5 Progress in my current role as Lead Siting Manager, Transmission in 2017. I  
6 hold a Project Management Professional (PMP) certificate from the Project  
7 Management Institute and have Real Estate Brokers (or equivalent) licenses in  
8 North Carolina, South Carolina and Virginia.

9 **Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE NORTH**  
10 **CAROLINA UTILITIES COMMISSION?**

11 A. Yes, I filed direct testimony in Docket No. E-2, Sub 1215 for DEP's  
12 Application for a Certificate of Public Convenience and Necessity for a new  
13 transmission line in New Hanover County, North Carolina. The Commission  
14 granted that certificate on January 10, 2020.

15 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

16 A. The purpose of my testimony in this proceeding is to support DEP's Application  
17 for a Certificate of Public Convenience and Necessity to construct 1.3 miles of  
18 new 230kV transmission line near Pittsboro in Chatham County, North Carolina,  
19 which I will refer to as the "Pittsboro Hanks Chapel line" or "Project".

20 **Q. WERE YOU INVOLVED IN PREPARING DEP'S APPLICATION IN**  
21 **THIS DOCKET?**

22 A. Yes.

1    **Q.    TO YOUR KNOWLEDGE, WILL DEP FILE AND PROVIDE ALL**  
2           **INFORMATION, BEGIN PUBLIC NOTICE REQUIRED BY THIS**  
3           **COMMISSION, AND OBTAIN ALL FEDERAL AND STATE**  
4           **LICENSES, PERMITS, AND EXEMPTIONS REQUIRED FOR**  
5           **CONSTRUCTION AND OPERATION OF THIS TRANSMISSION**  
6           **LINE?**

7    A.    Yes.

8    **Q.    PLEASE DESCRIBE THE PROCESS UTILIZED TO ROUTE THE**  
9           **PITTSBORO HANKS CHAPEL LINE.**

10   A.    Duke Energy Progress retained JacobsCH2M Hill North Carolina, Inc. a  
11           subsidiary of Jacobs Engineering Group Inc. (“Jacobs”), an American  
12           international technical professional services firm with substantial utility and  
13           infrastructure siting experience, to assist the Company with the line routing and  
14           public input for the Project. Jacobs conducted a comprehensive routing study  
15           and prepared a Routing Study and Environmental Report (the “Routing  
16           Study”), which is attached as Exhibit A to the Application. My role was to  
17           oversee Jacobs’ performance of DEP’s routing study scope of work from  
18           preliminary route alternative identification through the selection of the  
19           preferred route.

20           The following is an overview of the steps involved in the identification  
21           of the route alternatives and the selection of a preferred route for the Project:

22

1 The limits of the study area were established based on the proposed location of  
2 the Pittsboro Hanks Chapel Substation east of the intersection of US Hwy. 64  
3 Business and Hanks Chapel Road in Chatham County; the location of the Harris  
4 Plant – Siler City 230kV transmission line; and a preliminary review of  
5 potential routing opportunities and constraints in the area. The study area, which  
6 encompasses approximately 3.6 square miles, is shown in Figure 2 of the  
7 Routing Report. The study area was defined to incorporate potential Project tap  
8 points while offering an area large enough to provide a set of reasonable and  
9 geographically distinct route alternatives.

10 After establishing the study area, data was collected from publicly  
11 available sources, including Federal, State, county, and local agencies, for  
12 constraints and environmental concerns that could result in challenges for the  
13 siting of a transmission line. The collected data were used to create a raster-  
14 based suitability surface within a GIS framework. The purpose of the suitability  
15 surface, and subsequent analysis, was to aid in the identification of areas more  
16 likely suitable for the placement of a transmission line route. DEP held two  
17 public information meetings to introduce the project and receive input from  
18 residents in the study area and local public officials.

19 Collected data were grouped into one of three categories: Technical,  
20 Ecological and Land Use/Cultural. Each category was further divided into  
21 individual criteria and assigned a weight from 1 to 10 according to each  
22 criterion's potential sensitivity to a transmission line, as determined by  
23 members of DEP's Project team and feedback obtained from public comments.

1 The weight scale of 10 representing the highest consideration during the  
2 evaluation.

3 The suitability surface was created using the weighted criteria. Using  
4 GIS, criteria were combined through a process called overlay analysis, which  
5 results in a cumulative suitability rating by adding the weighted criteria together  
6 for each cell within the suitability raster. This results in a single suitability  
7 surface that can be reviewed by the siting team as a means of identifying  
8 preferred siting areas. GIS can then use color-coding to help visually display  
9 areas of lesser potential impact (see Figure 5 of the Routing Study Report.).

10 After completion of a suitability analysis, potential routes were  
11 identified. The objective was to identify economically feasible routes that  
12 connected the proposed Pittsboro Hanks Chapel Substation to the Harris Plant  
13 – Siler City 230kV transmission line while avoiding or minimizing impacts to  
14 both community and natural resources. Local, State, and Federal government  
15 agencies were contacted by DEP to obtain information on resources of  
16 particular concern that were relevant to the routing process. The potential route  
17 alternatives were shared with the public and local officials throughout the route  
18 identification process to obtain input for the evaluation of the alternatives. The  
19 study team then quantified the engineering, land use, social, and environmental  
20 resources that would be impacted by each feasible route. Quantitative data and  
21 public input were used to evaluate the alternatives and to select a preferred route  
22 for the proposed transmission line.

1    **Q.     HOW DID YOU DEVELOP THREE (3) ALTERNATE ROUTES FOR**  
2       **THE PITTSBORO HANKS CHAPEL 230kV LINE?**

3    A.     The objective of the routing analysis was to identify an economically feasible  
4           route that offered the most benefits in terms of providing reliable electric  
5           service, but also limited adverse impacts to the social and natural environment  
6           within the study area. This effort included leveraging four main sources of data:

- 7                 • Field reconnaissance of the study area from publicly accessible
- 8                 roadways
- 9                 • Review of USGS topographic maps and recent aerial photography
- 10                • Review of local planning and zoning documents and available GIS
- 11                data
- 12                • Contacts with local, State, and Federal agencies

13           Based on the information gathered, a set of feasible routes were identified that  
14           connect the proposed Pittsboro Hanks Chapel Substation to an available  
15           transmission line. The primary goals regarding routing were to:

- 16                • Minimize overall impacts by paralleling existing ROWs, including
- 17                transmission lines, highways, and roads, where possible
- 18                • Maximize the distance of the line from existing residences
- 19                • Minimize the overall length of the route

20           The route alternatives consist of individual segments that can be combined in  
21           different arrangements to form a continuous path from the proposed substation  
22           site to the transmission line. Each segment begins and ends at intersections  
23           with other segments. The set of route alternatives for this Project consisted of



1           seven (7) individual segments. The alternatives were identified to avoid and/or  
2           minimize, to the extent practicable, impacts to environmentally sensitive  
3           features and residential areas while providing a direct route alignment.  
4           Ultimately, three (3) distinct routes were developed using a combination of the  
5           seven (7) segments.

6       **Q.     DID DUKE ENERGY PROGRESS SEEK PUBLIC INPUT AS PART OF**  
7       **THE   PITTSBORO   HANKS   CHAPEL   230kV    LINE   ROUTING**  
8       **PROCESS?**

9       A.     Yes. To solicit study area data and determine community values relative to the  
10           proposed Project, the route selection process included several forms of public  
11           input. Several public information meetings were hosted by DEP to provide  
12           project information and updates and collect information from the public. All  
13           input during the first public meetings was used to identify environmental and  
14           land use sensitivities located in the study area and assess the values and attitudes  
15           of the residents and public officials regarding the Project, which enabled the  
16           Project team to identify the most appropriate factors to evaluate the routes and  
17           to develop routes that limited impacts to resources of primary concern to the  
18           environmental agencies and to residents. Due to the COVID-19 pandemic, each  
19           meeting was held virtually where DEP provided a safe environment available  
20           online and via telephone conference by which members of the public could join  
21           to ask questions about the project, provide feedback and data about properties  
22           within the study area and learn about project updates.

1 State and Federal agencies were contacted by DEP or Jacobs to provide  
2 input on threatened and endangered species, wetlands, wildlife resources,  
3 stream sensitivity, hydric soils, and other potential permitting issues. The  
4 following agencies were contacted: the U.S. Army Corps of Engineers  
5 (“USACE”), U.S. Fish and Wildlife Service (“USFWS”), NC Wildlife  
6 Resources Commission (“NCWRC”), NC Natural Heritage Program (“NHP”),  
7 and N.C. Department of Environmental Quality (“NCDEQ”), including the  
8 N.C. Division of Water Resources and N.C. Division of Land Quality. On  
9 August 4, 2020, DEP held an agency scoping meeting that included attendees  
10 from all of the agencies that were contacted above.

11 The primary issues discussed during the agency scoping meeting were  
12 related to several environmentally sensitive features known within the study  
13 area including creeks that serve as headwaters to nearby Jordan Lake and the  
14 possible presence of habitat for threatened or endangered species historically  
15 observed in Chatham County, including Bald Eagles. Representatives of NC  
16 Wildlife and NC Department of Environmental Quality, Water Resources  
17 division, offered to share historical data of sensitivity occurrences in the study  
18 area to assist with identification and avoidance of these features.

19 The intent of the second public information meetings was to both  
20 request data on sensitive features located in the study area and on private  
21 properties and provide potentially affected landowners the location of  
22 alternative routes, a description of the decision-making process DEP will use to

1 select a preferred route, and a forum for stakeholders to voice concerns about  
2 the proposed Project.

3           Invitations to the study area community meetings were sent to all  
4 owners of property in the Project study area. The virtual open house live  
5 sessions, where members of the Duke Energy project team were available to  
6 answer questions, took place on the afternoon of September 17, 2020 and the  
7 evening of September 22, 2020. Attendees were informed that no alternative  
8 line routes had been identified as the purpose of the workshop was to notify the  
9 general public of the project, present preliminary data collected and solicit  
10 information known by the attendees about area sensitivities that help the  
11 Company identify constraints and opportunities for the line. Information about  
12 the Project and various maps of the study area were also available on the DEP  
13 website throughout the duration of the Project. The Project website is updated  
14 as the development and construction of the Project progresses. Information  
15 gathered at the study area live sessions was combined with data collected during  
16 the initial phase of the Project to identify the seven (7) potential line segments  
17 previously noted.

18           Once route alternatives were developed, DEP held additional  
19 informational virtual open house live sessions on the morning of December 8,  
20 2020 and the evening of December 10, 2020.

21           Each public workshop included virtual displays with information on  
22 Project need, engineering, route alternatives, environmental management, and  
23 ROW requirements. Representatives from DEP and Jacobs were available

1 during each virtual live session to address the public's questions and receive  
2 comments. Potential routes for the proposed transmission line were depicted on  
3 aerial photographs. Photographs and drawings showing the types of structures  
4 proposed for the Project were displayed. DEP staff was also present to discuss  
5 ROW acquisition and maintenance, and electric and magnetic fields associated  
6 with transmission lines.

7 Participants at the workshops were directed to the project website noted  
8 on all virtual open house invitations and discussed during each live session as  
9 the best method for communicating their opinions on the routing criteria, the  
10 segment locations, and issues of concern regarding the Project. The Project  
11 website also included an interactive web map that allowed visitors to review a  
12 map of the study area, study segments and other area features. In order to  
13 collect and consider all stakeholder feedback, a preferred route had not been  
14 selected at the time of the workshops.

15 **Q. AFTER COMPILING DATA FROM VIRTUAL OPEN HOUSE**  
16 **MEETINGS, PROPERTY OWNERS IN THE AREA AND DATA FROM**  
17 **OTHER SOURCES, HOW DID YOU EVALUATE THE THREE**  
18 **ALTERNATE ROUTES?**

19 **A.** The analysis of alternatives was based on technical, land use, social, ecological  
20 factors. Data for each factor were quantified for each segment and summed for  
21 each route.

22 The evaluation of the proposed routes included a systematic comparison  
23 of the alternatives based on the social, ecological, land use, and technical factors



1 that represent the potential adverse effects on resources in the study area. The  
2 routing factors include the following:

3 Technical:

- 4 • Total length (Feet)
- 5 • Slopes greater than 20% (Number)
- 6 • Heavy angles (>30 degrees) (Number)
- 7 • Length adjacent to existing utility infrastructure (Feet)

8 Land Use:

- 9 • Proximity to existing and future land uses (Feet)

10 Social:

- 11 • Residences within 1000 feet of centerline (Number)
- 12 • Property owners impacted (Number)
- 13 • Archeological/Historical sites within 1000 feet (Number)
- 14 • Institutional uses (churches, hospitals, schools) within 1000 feet
- 15 (Number)

16 Ecological:

- 17 • Woodlot areas within ROW (Acres)
- 18 • NWI wetlands within ROW (Acres)
- 19 • Stream crossings (Number)
- 20 • Length of floodplain crossed (Feet)

21 The next step in this process was to weigh the criteria within each  
22 category (ecological, social, land use, and technical) and across the four

1 categories. Weighting recognizes that under certain circumstances, one  
2 evaluation criterion is more important or relevant than another in determining  
3 an outcome. The criteria weighting values were determined by consensus of the  
4 siting team and based on the specific project area setting, planned future  
5 development, and professional judgment of the siting team members'  
6 experience routing projects in a similar setting.

7 Based on the understanding that the Project will be operational before  
8 the Chatham Park development is constructed within the study area, the area of  
9 woodlots within the right-of-way was weighted the highest for the ecological  
10 category because the Project would need to clear these woodlots. Area of NWI  
11 wetlands within the right-of-way, NHD stream crossings, and length of  
12 floodplain crossed were weighted less because these features can usually be  
13 spanned by the transmission line, reducing the environmental impact the Project  
14 may have on them.

15 For the social category, residences within 250 feet of centerline and  
16 within 1,000 feet of centerline were weighted the highest to capture impacts on  
17 existing residences within the project area. Few cultural resources and  
18 institutional land uses are present within the study area therefore, these criteria  
19 were weighted less.

20 Regarding future land use, planned village center and planned  
21 residential area crossed by the right-of-way were both weighted higher than  
22 planned office area crossed for the land use category because these land uses

1 are typically more compatible. Aesthetically, planned office areas consist of  
2 large buildings and parking lots that could potentially shield large transmission  
3 line structures from view to other uses. It is more common to observe  
4 transmission line structures within an area of office uses as the spaces are  
5 typically not occupied continuously and serve as a destination point rather than  
6 an area of constant habitation and activity. In contrast, transmission lines near  
7 village centers and residential properties provide more of an aesthetic contrast  
8 because of the differences in height of transmission line and residential homes  
9 and village center facilities, resulting in an increased possibility of transmission  
10 lines being visible throughout village center and residential areas.

11 For the technical category, route length adjacent to or within existing  
12 DEP right-of-way was weighted the highest because DEP is able to reduce the  
13 Project right-of-way width in these areas, resulting in fewer impacts to the area.  
14 Also, grouping of transmission lines along a single corridor can reduce the  
15 visual impact the transmission line may have on the surrounding area and  
16 reduce impacts on current and future land use by allowing for other land use  
17 not as conducive to transmission line rights-of-way to occur.

18 Across the four categories, the ecological category was weighted the  
19 highest (35 percent), followed by social (30 percent), technical (20 percent),  
20 and lastly land use (15 percent). The siting team gave the ecological category  
21 the highest weight because the Project will be built prior to the planned  
22 Chatham Park development and therefore, it will make the first ecological

1 impact on the study area. The social category was given the second highest  
2 weight to appropriately consider potential impacts to existing residences in the  
3 project area.

4 The technical category was given the second lowest weight because the  
5 benefit of paralleling existing transmission lines is factored into right-of-way  
6 widths and calculated impacts on ecological, social, and land use features. The  
7 land use category was given the lowest weight because the criteria are related  
8 to future planned development plans that could change after the Project is  
9 constructed.

10 **Q. WHAT WERE THE RESULTS OF THE COMPREHENSIVE**  
11 **EVALUATION?**

12 A. Route Alternative 1 scored the best in the quantitative analysis, and the DEP  
13 team found this route to be the least impactful overall route.

14 **Q. WHY?**

15 A. Route Alternative 1 was selected as the best route for the following reasons:

- 16 • Maximizes distance to existing residences; there are no residential  
17 structures within 250 feet of the route;
- 18 • Parallels DEP's existing Bynum Tap for a majority of its length,  
19 grouping these utility uses together which also requires addition of less  
20 right-of-way easement than a single, greenfield transmission line;
- 21 • Requires new ROW from a single property owner, the developer of a  
22 future large, multi-use community.



1           The preferred route was the least overall impacting route in the  
2           numerical evaluation performed for the proposed Project. For this and the above  
3           reasons, and by using standard construction procedures and mitigation  
4           techniques when coordinating the Project with State and Federal agencies to  
5           comply with necessary regulations, the construction, operation, and  
6           maintenance of the proposed Project will have limited effects on the natural and  
7           social resources within the study area. DEP will continue to work with  
8           environmental stakeholders and landowners to reduce impacts of this proposed  
9           Project.

10   **Q.   PLEASE DESCRIBE THE PREFERRED ROUTE OF THE PROPOSED**  
11   **TRANSMISSION LINE.**

12   A.   The preferred route originates at the site of the proposed Pittsboro Hanks  
13       Chapel Substation, a 17-acre parcel located 1,000 feet east of the intersection  
14       of US Hwy. 64 Business and Hanks Chapel Rd in Chatham County, North  
15       Carolina. The route exits the substation site to the southwest and extends for  
16       approximately 1250 feet before turning south-southwest for approximately  
17       5,500 feet before terminating at the selected tap location on the existing Harris  
18       Plant – Siler City 230kV transmission line.

19   **Q.   HOW MANY LANDOWNERS WILL BE DIRECTLY AFFECTED BY**  
20   **THE PROPOSED TRANSMISSION LINE, AND HAS DUKE ENERGY**  
21   **PROGRESS CONTACTED THOSE LANDOWNERS?**

22   A.   Only 1 property owner will be directly affected by the proposed 125-foot wide  
23       right-of-way on their property. Duke Energy Progress has communicated with

1           the property owner throughout the siting process and has notified the company  
2           of the preferred route decision.

3   **Q.     DOES THIS CONCLUDE YOUR PRE-FILED DIRECT TESTIMONY?**

4   A.     Yes.