



Lawrence B. Somers
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November 13, 2017

VIA ELECTRONIC FILING

M. Lynn Jarvis, Chief Clerk
North Carolina Utilities Commission
4325 Mail Service Center
Raleigh, North Carolina 27699-4325

**RE: Duke Energy Progress, LLC Late-Filed Exhibits
Docket No. E-2, Sub 1150**

Dear Ms. Jarvis:

I enclose two late-filed exhibits on behalf of Duke Energy Progress, LLC ("DEP") for filing in connection with the referenced matter:

- DEP Late-Filed Exhibit No. 1 – Evaluation of 230kV Transmission Line Route to Parallel Existing 500kV Transmission Line
- DEP Late-Filed Exhibit No. 2 – A cost comparison of the four best-scored alternative routes.

Thank you for your attention to this matter. If you have any questions, please let me know.

Sincerely,
A handwritten signature in black ink, appearing to read 'Lawrence B. Somers'.

Lawrence B. Somers

Enclosure

cc: Parties of Record

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Nov 13 2017

Date: November 8, 2017

To: Tim Same, Duke Energy Progress

From: Tim Barton, Burns & McDonnell

Subject: Duke Energy Progress: Cleveland-Matthews Road 500kV Parallel Options

At the request of the North Carolina Utilities Commission (NCUC), Burns & McDonnell revisited and further documented options for paralleling the existing Cumberland-Wake 500kV transmission line, as a route alternative for the Cleveland-Matthews Road 230kV Transmission Tap Line Project. The existing 500kV transmission line is located within a 180-foot wide easement. To accommodate a new 230kV transmission line, an additional 82.5 feet of easement would be required, adjacent to the current easement.

Route options were evaluated that paralleled both the east and west side of the 500kV right-of-way. Routes were also segregated as either north or south of where route segment 1 (as identified in the *Routing Study and Environmental Report*) crosses the 500kV corridor. Route segment 1 is approximately 3.1 miles from the proposed Matthews Road substation to the 500kV corridor.

Aerial photography was reviewed for route options that paralleled the 500kV corridor and homes, apartments and businesses were identified within the easement required for the 230kV transmission line. For the northern route, due to the density of development adjacent to the areas where these structures were identified, there were not feasible route variations that would easily avoid these constraint areas. For the southern routes, there are a few constraint areas that could potentially be avoided but would require the new transmission line to diverge from the existing corridor which would add additional length, impacts to additional landowners, and require crossing under the existing 500kV multiple times. Crossing the 500kV line would require modifications to the existing 500kV structures which would be additional cost beyond just the construction of the 230kV line. The locations of the structures identified in this analysis are provided on figures attached to this memo. Tables 1 and 2 below provide the number of these structures that occur within the right-of-way, along with the length of the transmission required to support the tap line project, segregated by the two northern routes and two southern routes respectively. The route options would all be longer than the Cleveland-Matthews Road preferred route option at 11.5 miles. Both the northern route options are approximately 2.5 miles longer and the southern route options are approximately 8 miles longer, than the preferred route.

Table 1: Structures by Type Located Within the Right-of-Way for the Northern Routes

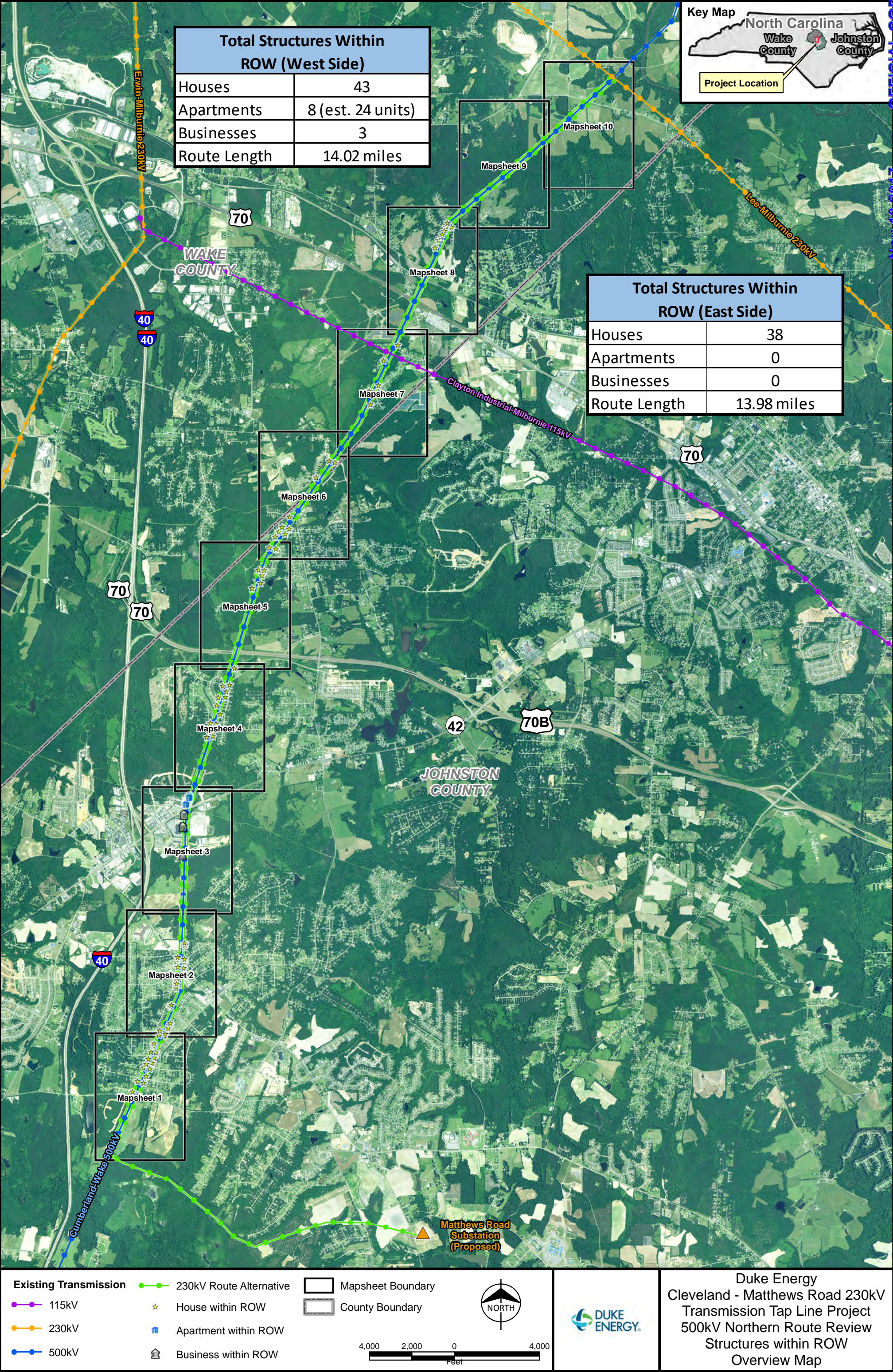
East Side	
Houses	38
Apartments	0
Businesses	0
Route Length	13.98 miles
West Side	
Houses	43
Apartments	8 (est. 24 units)
Businesses	3
Route Length	14.02 miles

Table 2: Structures by Type Located Within the Right-of-Way for the Southern Routes

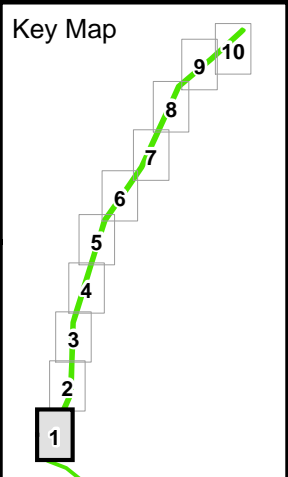
East Side	
Houses	17
Apartments	0
Businesses	0
Route Length	19.45 miles
West Side	
Houses	11
Apartments	0
Businesses	0
Route Length	19.55 miles

In conclusion, due to the significant number of homes, apartments and businesses that would be within a potential right-of-way and would require relocation to accommodate a new 230kV transmission line adjacent to the existing 500kV transmission line, including the additional length of transmission line, we do not think this is a feasible option for the Cleveland-Matthews Road Tap Line Project. Because a route alternative is not feasible, a cost estimate was also not completed by DEP Engineering.

Attachment



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Existing Transmission

115kV

230kV

500kV

230kV Route Alternative

500kV (Existing ROW)

230kV (Expanded ROW)

House within ROW

Apartment within ROW

Business within ROW

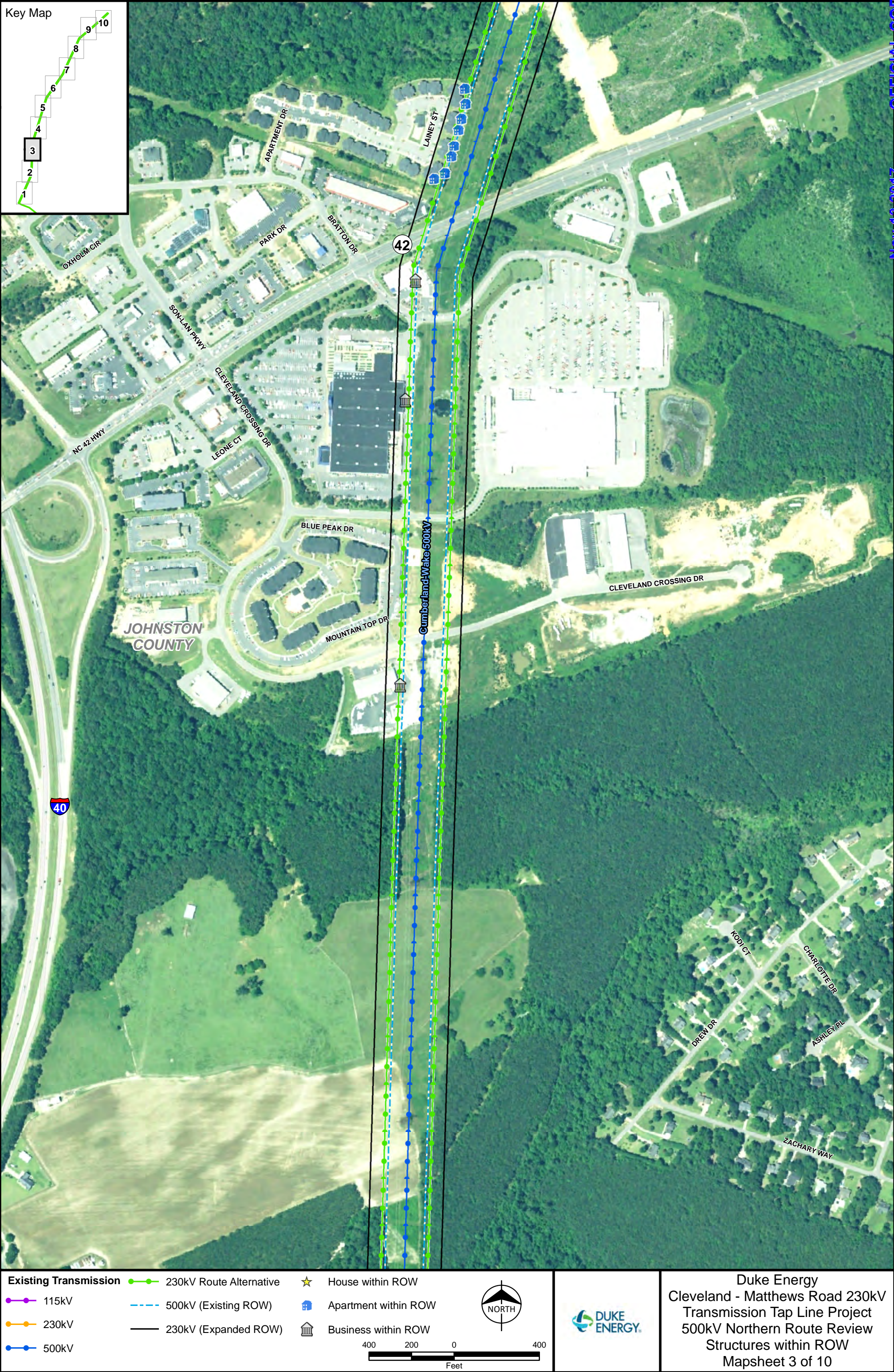
4002000400FeetNORTH

Duke Energy
Cleveland - Matthews Road 230kV
Transmission Tap Line Project
500kV Northern Route Review
Structures within ROW
Mapsheet 1 of 10

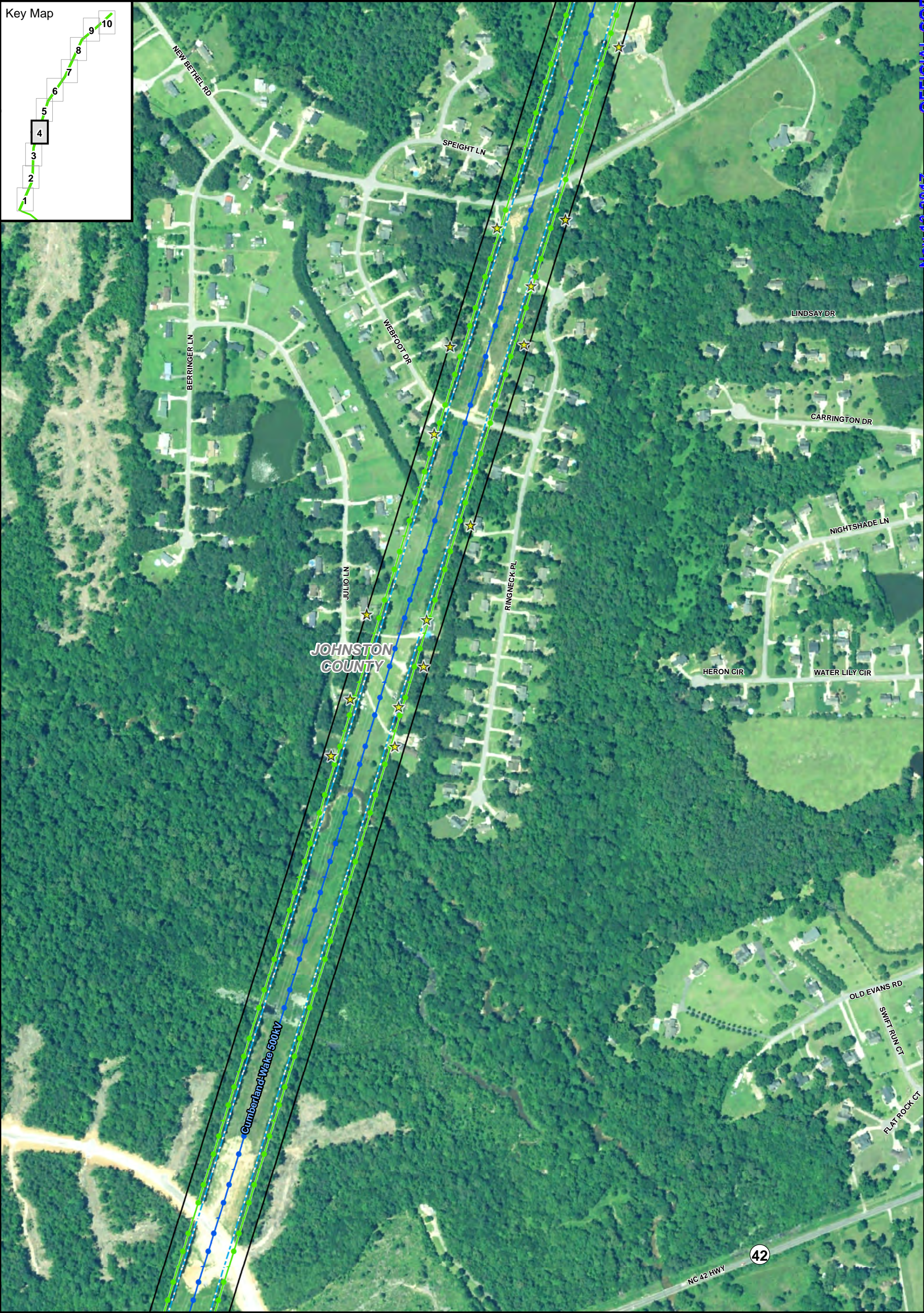
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Existing Transmission	230kV Route Alternative	House within ROW
115kV	500kV (Existing ROW)	Apartment within ROW
230kV	230kV (Expanded ROW)	Business within ROW
500kV		

Duke Energy
Cleveland - Matthews Road 230kV
Transmission Tap Line Project
500kV Northern Route Review
Structures within ROW
Mapsheet 4 of 10

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Existing Transmission	230kV Route Alternative	House within ROW
115kV	500kV (Existing ROW)	Apartment within ROW
230kV	230kV (Expanded ROW)	Business within ROW
500kV		

0 200 400
Feet

Duke Energy
Cleveland - Matthews Road 230kV
Transmission Tap Line Project
500kV Northern Route Review
Structures within ROW
Mapsheet 5 of 10

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Existing Transmission	230kV Route Alternative	House within ROW
115kV	500kV (Existing ROW)	Apartment within ROW
230kV	230kV (Expanded ROW)	Business within ROW
500kV		

400 200 0 400
Feet

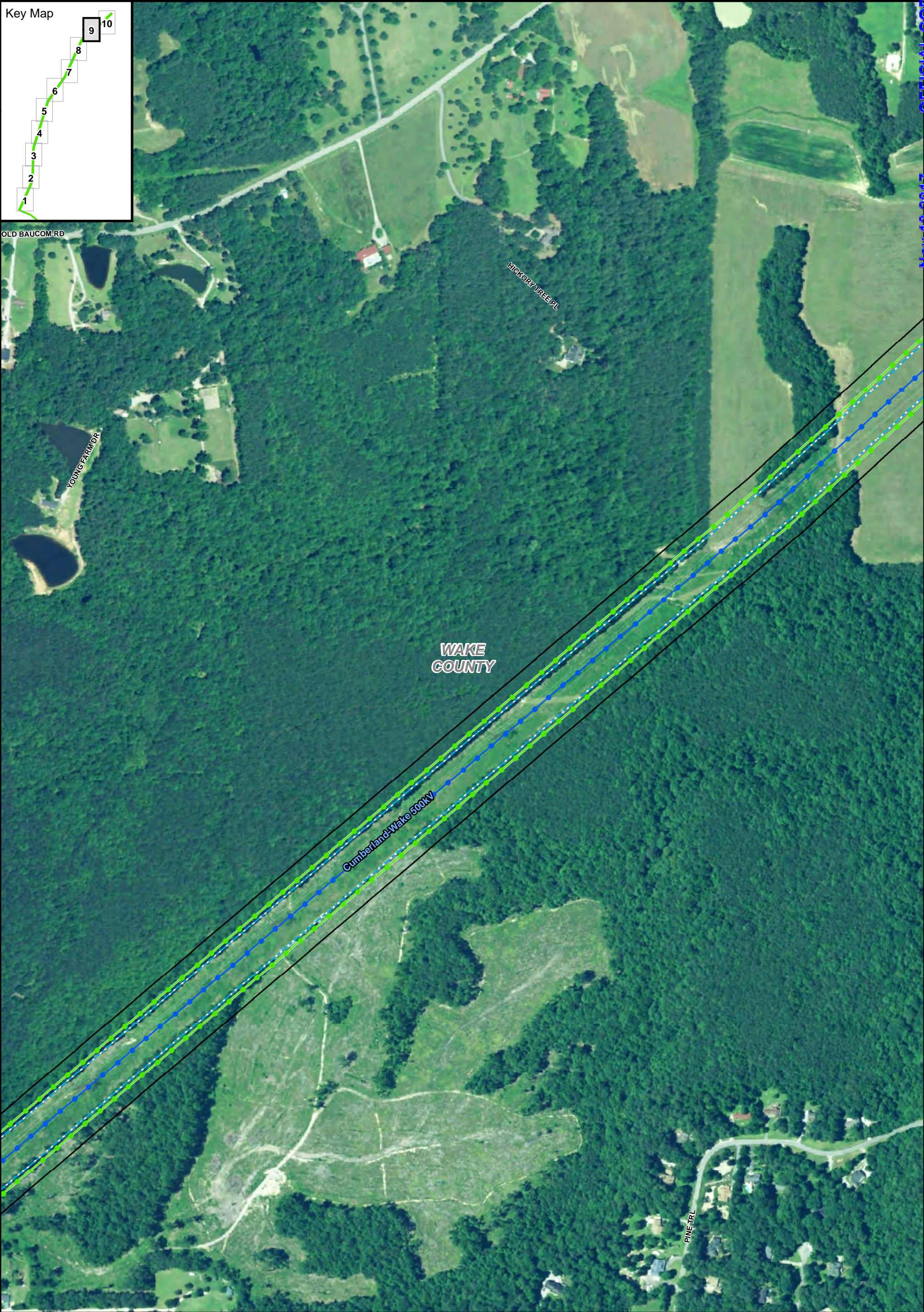
Duke Energy
Cleveland - Matthews Road 230kV
Transmission Tap Line Project
500kV Northern Route Review
Structures within ROW
Mapsheet 7 of 10

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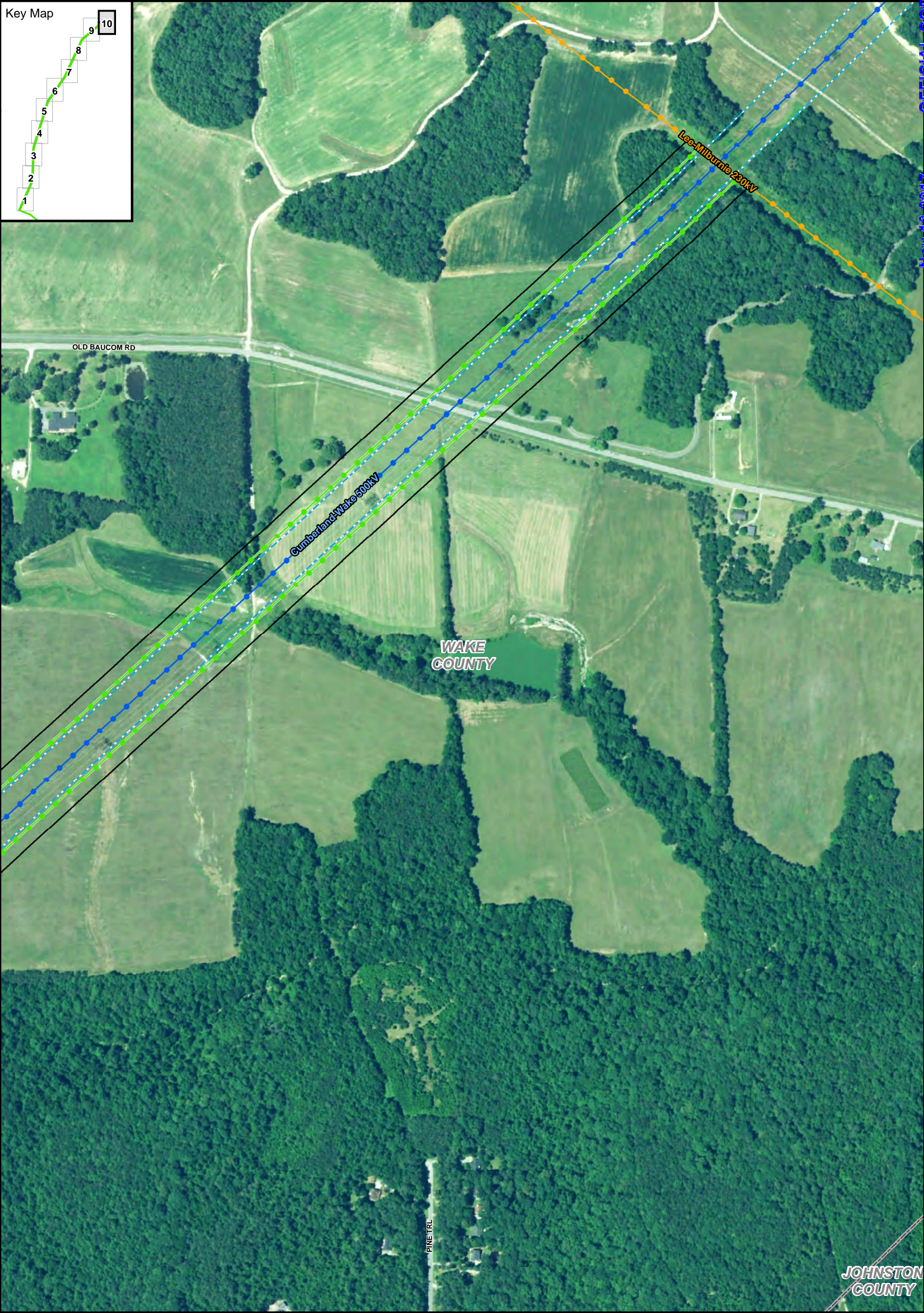
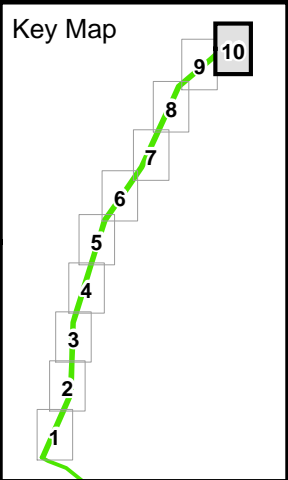
Existing Transmission	230kV Route Alternative	House within ROW
115kV	500kV (Existing ROW)	Apartment within ROW
230kV	230kV (Expanded ROW)	Business within ROW
500kV		

400 200 0 400
Feet

Duke Energy
Cleveland - Matthews Road 230kV
Transmission Tap Line Project
500kV Northern Route Review
Structures within ROW
Mapsheet 9 of 10

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Existing Transmission	230kV Route Alternative	House within ROW
115kV	500kV (Existing ROW)	Apartment within ROW
230kV	230kV (Expanded ROW)	Business within ROW
500kV		

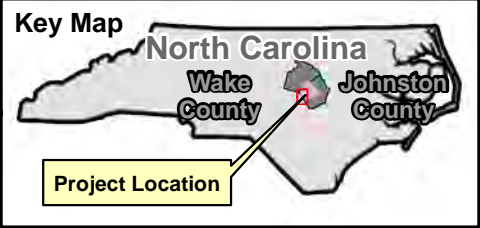
NORTH

400 200 0 400
Feet

Duke Energy
Cleveland - Matthews Road 230kV
Transmission Tap Line Project
500kV Northern Route Review
Structures within ROW
Mapsheet 10 of 10

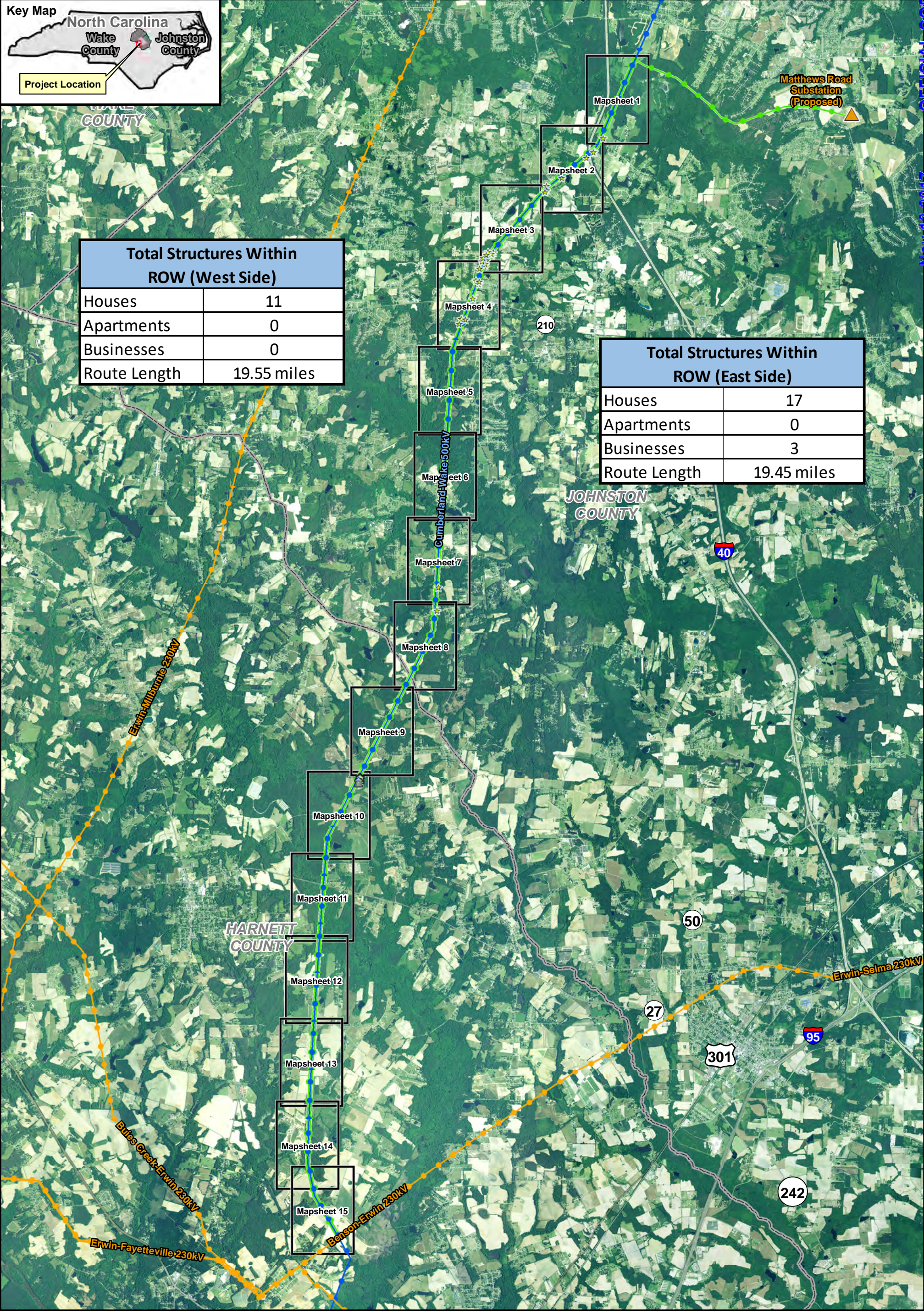
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Total Structures Within ROW (West Side)	
Houses	11
Apartments	0
Businesses	0
Route Length	19.55 miles

Total Structures Within ROW (East Side)	
Houses	17
Apartments	0
Businesses	3
Route Length	19.45 miles



Existing Transmission

- 115kV
- 230kV
- 500kV

230kV Route Alternative

- House within ROW
- Apartment within ROW
- Business within ROW

Mapsheet Boundary

- County Boundary

Legend

- 230kV Route Alternative
- House within ROW
- Apartment within ROW
- Business within ROW

Scale

6,000 3,000 0 6,000

Feet

Duke Energy

Cleveland - Matthews Road 230kV Transmission Tap Line Project

500kV Southern Route Review



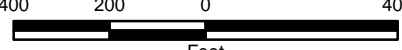
Structures within ROW

Overview Map

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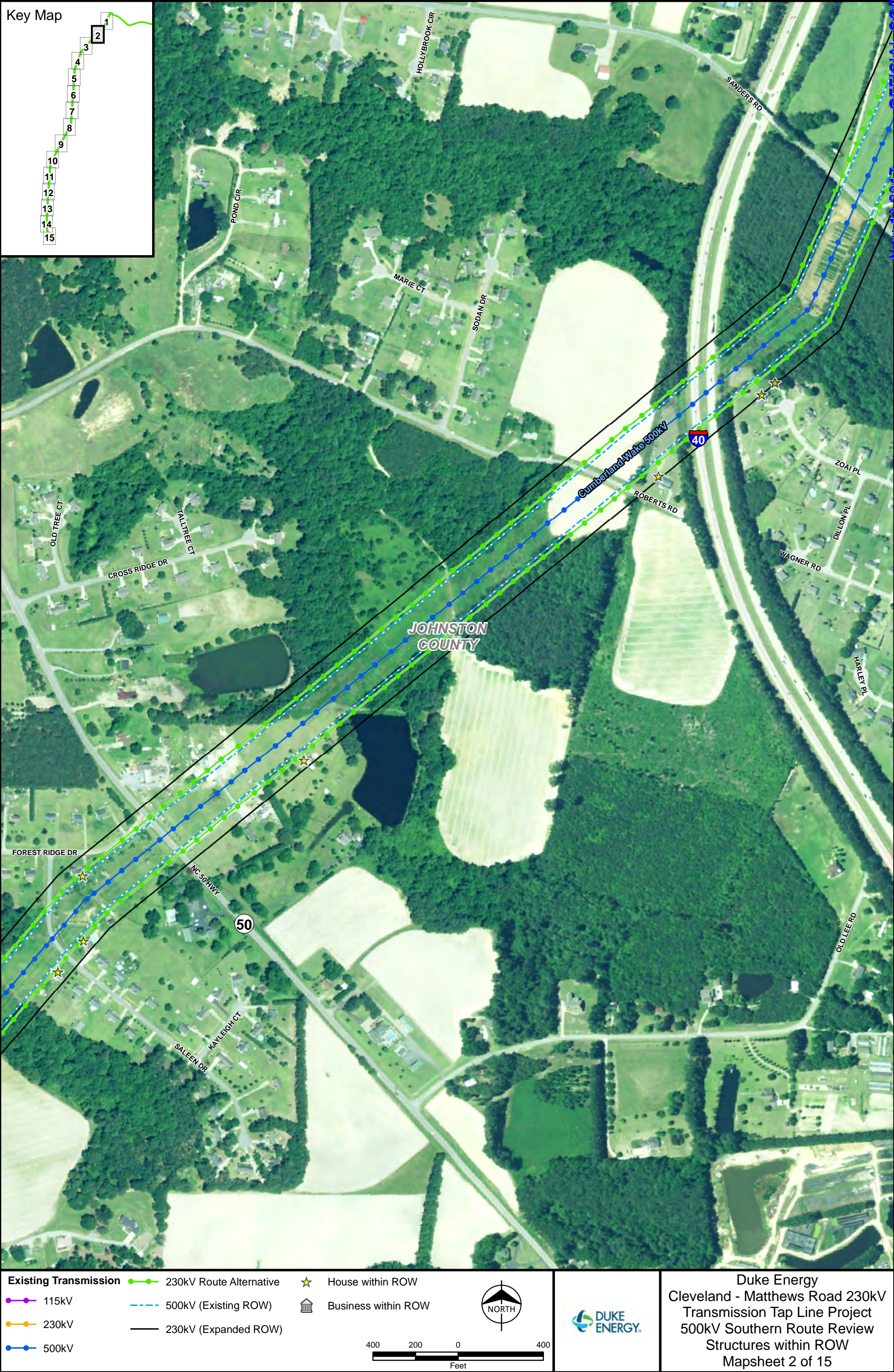
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Existing Transmission ● 115kV ● 230kV ● 500kV	● 230kV Route Alternative --- 500kV (Existing ROW) — 230kV (Expanded ROW)	★ House within ROW 🏠 Business within ROW	 NORTH		Duke Energy Cleveland - Matthews Road 230kV Transmission Tap Line Project 500kV Southern Route Review Structures within ROW Mapsheet 1 of 15
 Feet					

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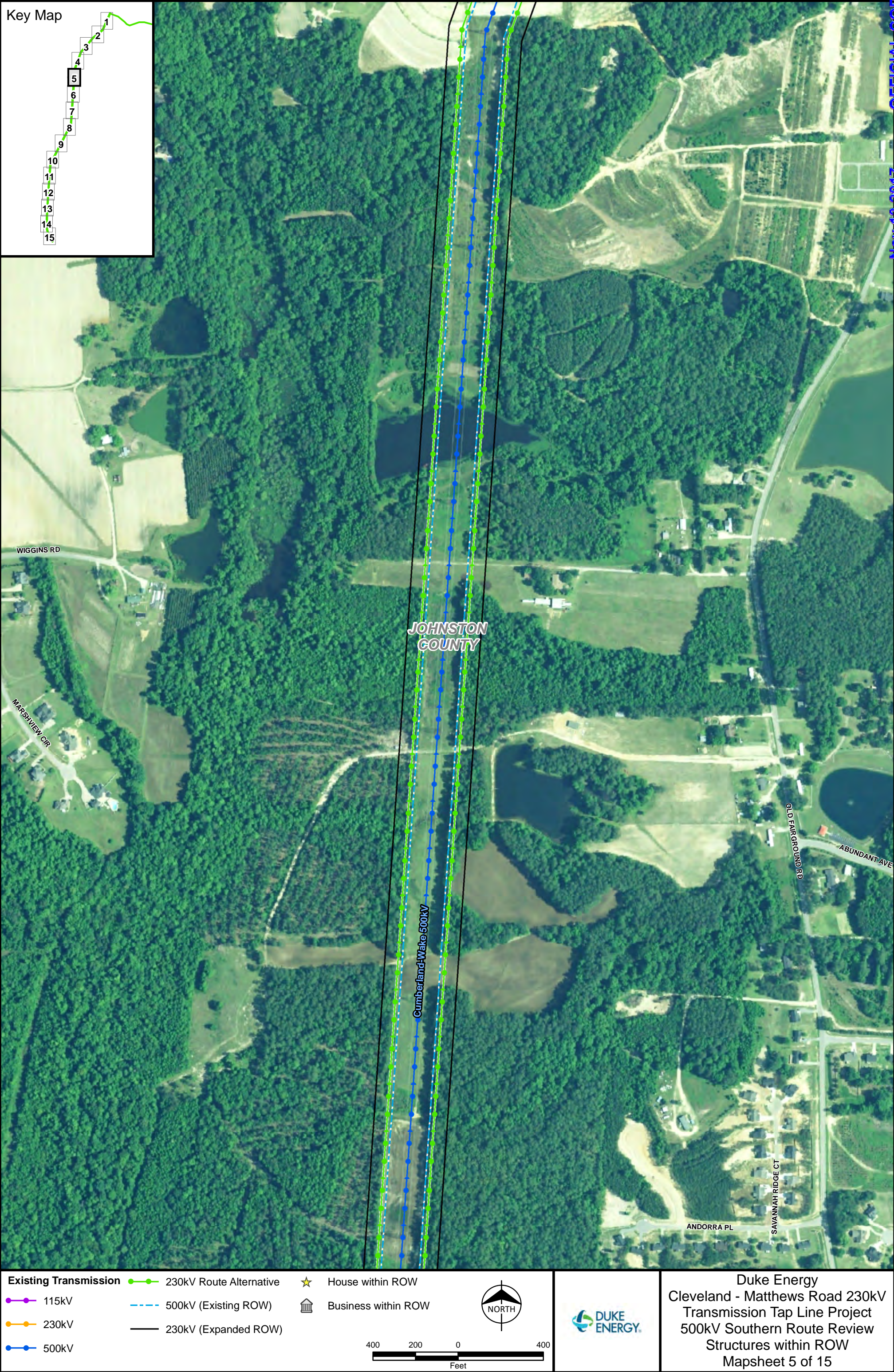


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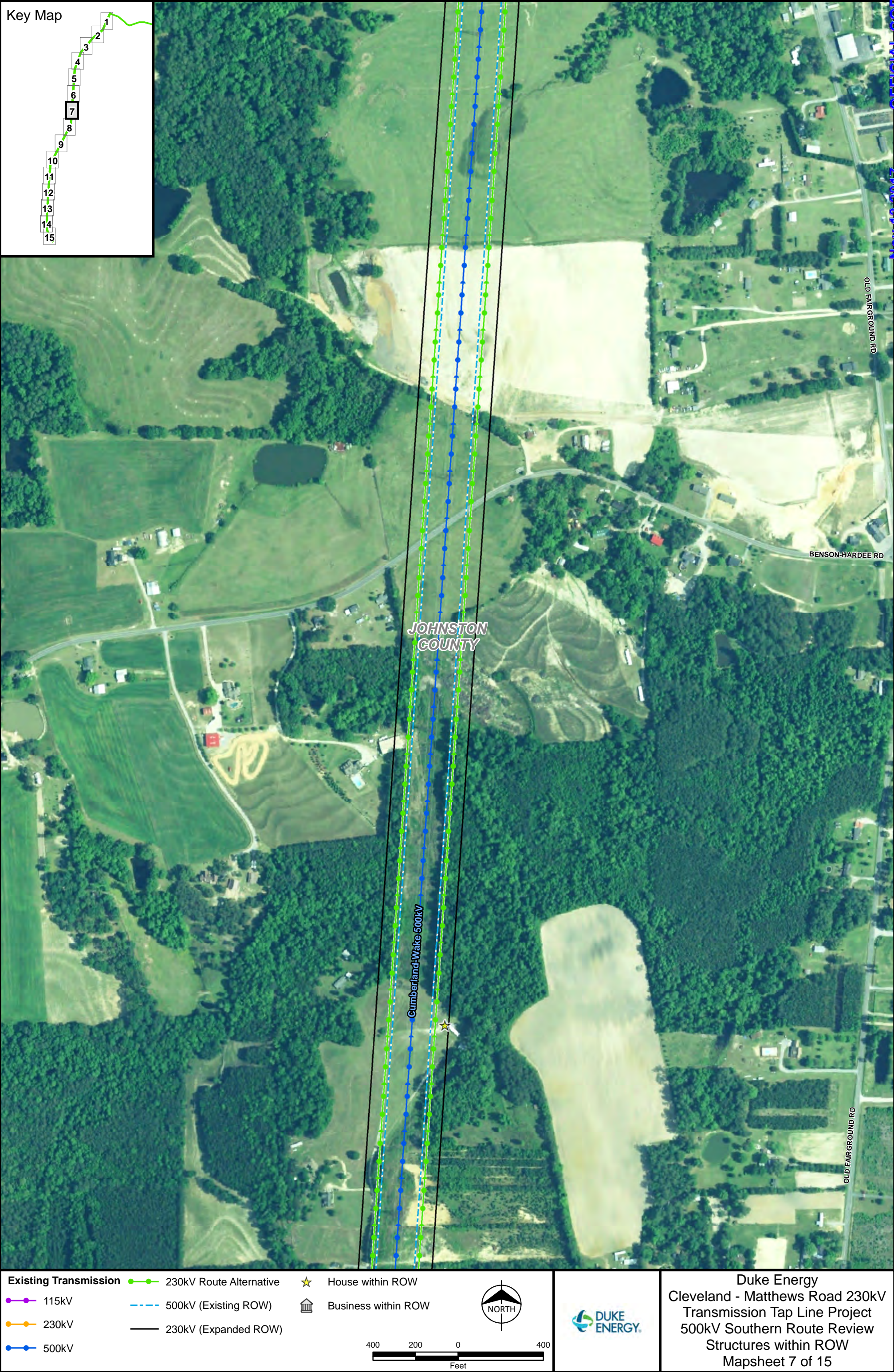
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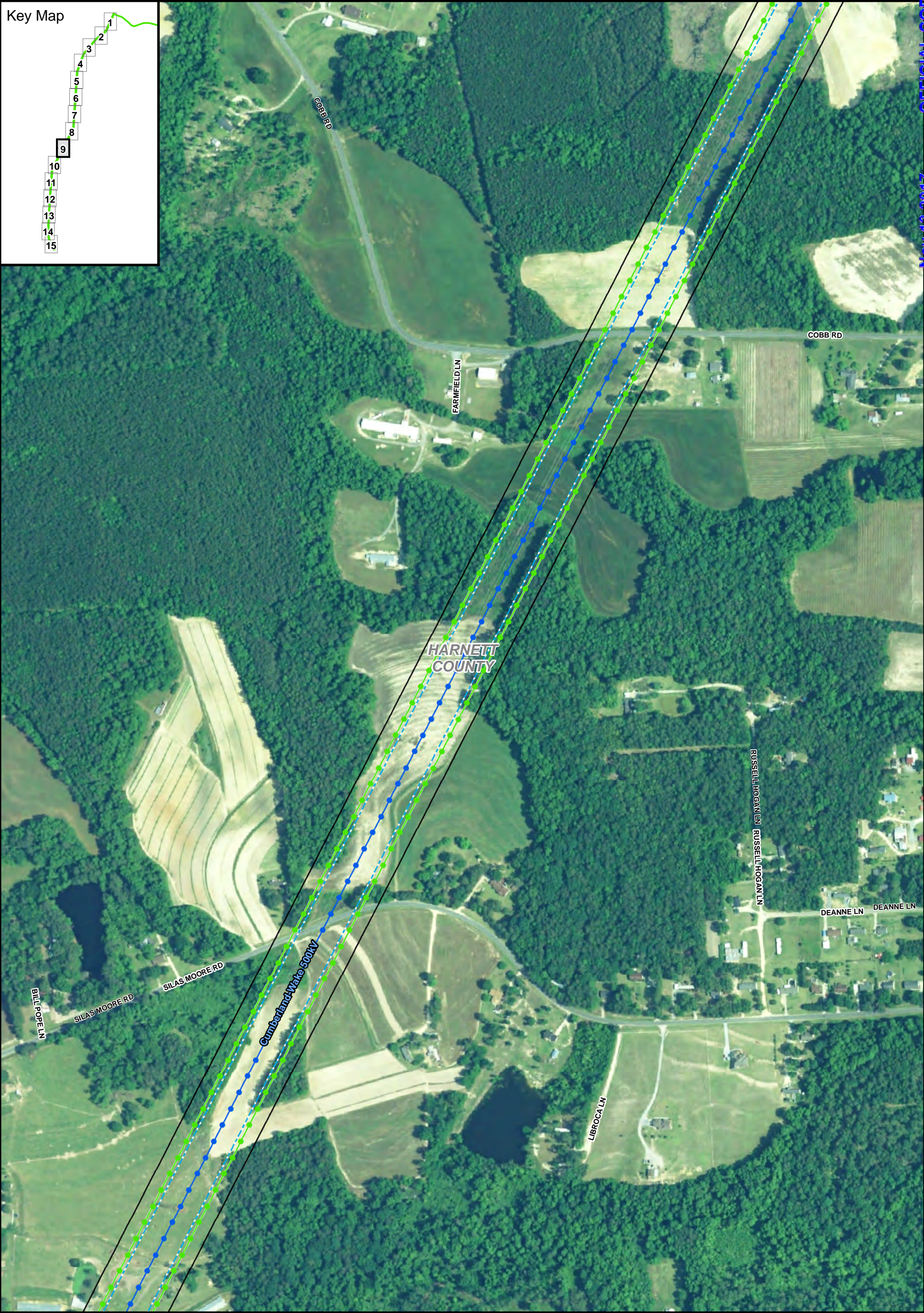


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Existing Transmission

115kV

230kV

500kV

230kV Route Alternative

500kV (Existing ROW)

230kV (Expanded ROW)

House within ROW

Business within ROW

400

200

0

400

Feet

NORTH

DUKE ENERGY

Duke Energy

Cleveland - Matthews Road 230kV
Transmission Tap Line Project

500kV Southern Route Review

Structures within ROW

Mapsheet 9 of 15

Source: USDA NAIP Aerial (2016), USGS, Johnston County, Esri, and Burns & McDonnell Engineering Company, Inc. Issued: 11/8/2017



Existing Transmission

- 115kV
- 230kV
- 500kV

230kV Route Alternative

- 230kV (Existing ROW)
- 230kV (Expanded ROW)

House within ROW

Business within ROW

North

Scale

400 200 0 400

Feet



Duke Energy
Cleveland - Matthews Road 230kV
Transmission Tap Line Project
500kV Southern Route Review
Structures within ROW
Mapsheet 10 of 15

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Existing Transmission

115kV

230kV

500kV

230kV Route Alternative

500kV (Existing ROW)

230kV (Expanded ROW)

House within ROW

Business within ROW

400

200

0

400

Feet

NORTH

DUKE ENERGY

Duke Energy

Cleveland - Matthews Road 230kV

Transmission Tap Line Project

500kV Southern Route Review

Structures within ROW

Mapsheet 11 of 15

Source: USDA NAIP Aerial (2016), USGS, Johnston County, Esri, and Burns & McDonnell Engineering Company, Inc. Issued: 11/8/2017

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Existing Transmission

115kV

230kV

500kV

230kV Route Alternative

500kV (Existing ROW)

230kV (Expanded ROW)

House within ROW

Business within ROW

400

200

0

400

Feet

NORTH

DUKE ENERGY

Duke Energy

Cleveland - Matthews Road 230kV Transmission Tap Line Project

500kV Southern Route Review

Structures within ROW

Mapsheet 12 of 15

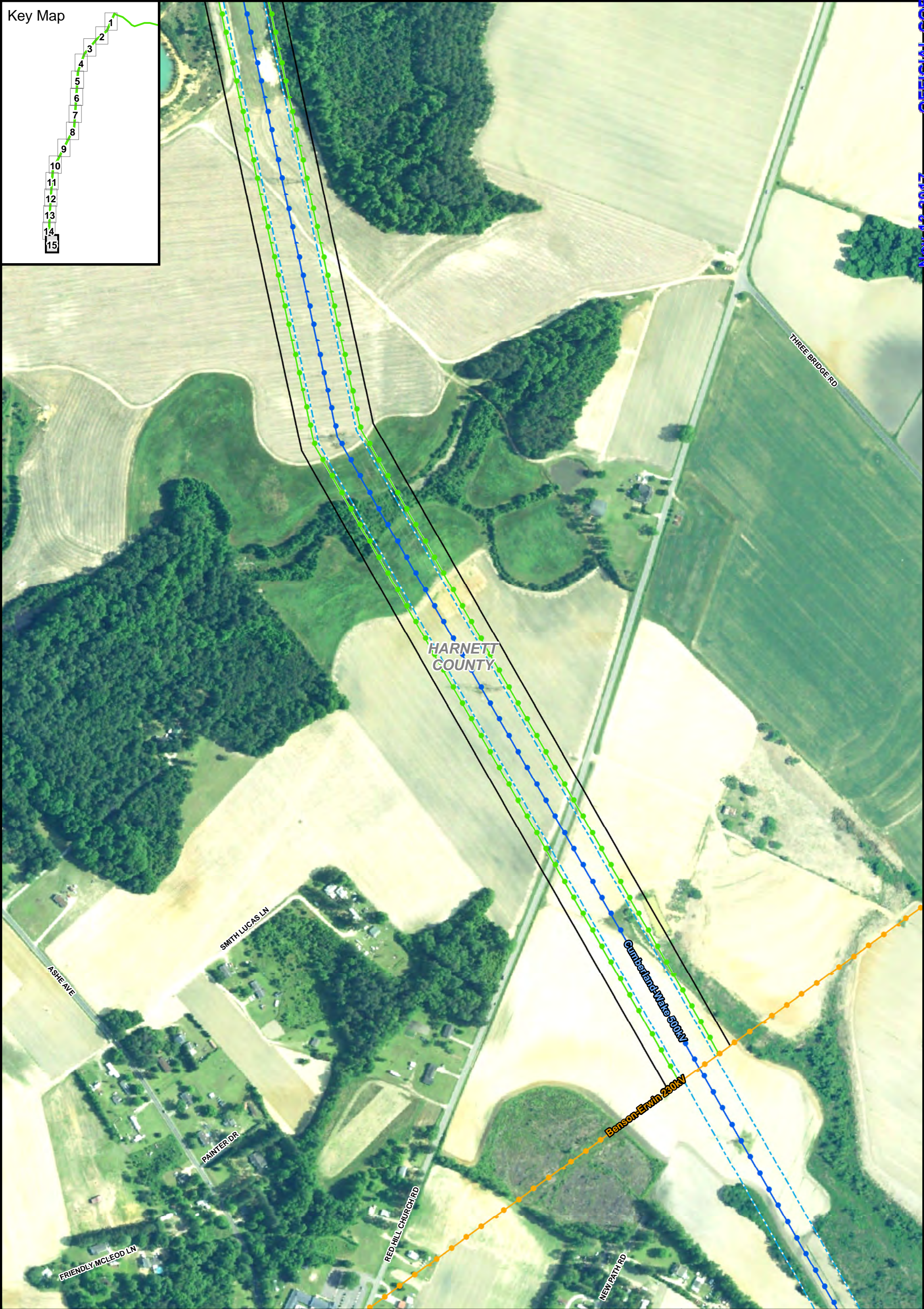
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Existing Transmission ● 115kV ● 230kV ● 500kV	230kV Route Alternative ● 230kV (Existing ROW) ● 230kV (Expanded ROW)	House within ROW ★ Business within ROW ⌂	DUKE ENERGY 	Duke Energy Cleveland - Matthews Road 230kV Transmission Tap Line Project 500kV Southern Route Review Structures within ROW Mapsheet 15 of 15
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400 200 0 400
Feet

NORTH

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Nov 13-2017

Cost Comparison of Routes 31, 4, 32, and 1

	Selected Route Route 31 North-South	Route 4 East-West	Route 32 North-South	Route 1 East-West
Install /Modify Line Structures and Wires	3,328,000	3,072,000	3,119,235	2,891,776
Install /Modify Line Structures and Wires (Inspector's Time)	244,000	200,000	244,000	200,000
Site Finalization (clean-up)	192,000	96,000	192,000	96,000
Site Finalization (clean-up) Inspector	27,000	14,000	27,000	14,000
As-built	2,000	2,000	2,000	2,000
Erosion Control	1,000,000	2,000,000	1,000,000	2,000,000
Staking	24,000	12,000	24,000	12,000
ROW Clearing	1,818,000	940,000	1,818,000	940,000
Centerline Survey	317,000	164,000	317,000	164,000
Tie Plat Survey	180,000	93,000	180,000	93,000
Flagging Clearing Limit	60,000	31,000	60,000	31,000
Subtotal	7,192,000	6,624,000	6,983,235	6,443,776
Engineering labor & Material Estimates	1,936,265	2,142,163	3,001,683	3,151,788
Subtotal - Direct View	9,128,265	8,766,163	9,984,918	9,595,564

Adjusted to Include Burdens	\$ 13,692,398	\$ 13,149,245	\$ 14,977,377	\$ 14,393,346
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CERTIFICATE OF SERVICE

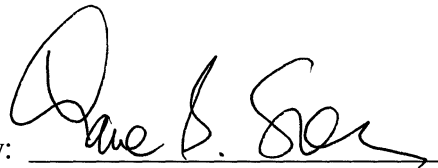
I certify that a copy of the Late-Filed Exhibit of Duke Energy Progress, LLC, in Docket No. E-2, Sub 1150, has been served by electronic mail, hand delivery or by depositing a copy in the United States mail, postage prepaid to the following parties:

David Drooz
Heather D. Fennell
Public Staff
North Carolina Utilities Commission
4326 Mail Service Center
Raleigh, NC 27699-4326
david.drooz@psncuc.nc.gov
heather.fennell@psncuc.nc.gov

Oliver Canaday
713 Camellia Avenue
Panama City, FL 32404

This the 13th day of November, 2017.

By: _____



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